APPENDIX F – GROUNDWATER MONITORING AND CORRECTIVE ACTION

Groundwater Monitoring System Certification – A-1 Landfill
Groundwater Monitoring System Certification-Addendum No. 1 – A-1 Landfill
Groundwater Monitoring System Certification-Addendum No. 2 - A-1 Landfill Groundwater Monitoring System Certification – Ash Pond Area
Groundwater Monitoring System Certification – PDP-5
Groundwater Monitoring System Certification-Addendum No. 1 – PDP-5
Groundwater Monitoring Plan-Revision 2 - A1 Landfill
Groundwater Monitoring Plan-Revision 2 - Ash Pond Area
Groundwater Monitoring Plan-Revision 2 - PDP-5
Statistical Analysis Plan-Revision 1 – A1 Landfill
Statistical Analysis Plan-Revision 1 – Ash Pond Area
Statistical Analysis Plan-Revision 1 – PDP-5
Background Groundwater Monitoring and Statistical Analysis Summary Report - A1 Landfill
Background Groundwater Monitoring and Statistical Analysis Summary Report - Ash Pond Area
Background Groundwater Monitoring and Statistical Analysis Summary Report - PDP-5
2020 Groundwater Monitoring and Corrective Action Report – A1 Landfill
2020 Groundwater Monitoring and Corrective Action Report – Ash Pond Area
2020 Groundwater Monitoring and Corrective Action Report – PDP-5
2021 Groundwater Monitoring and Corrective Action Report-Revision 1 – A1 Landfill
2021 Groundwater Monitoring and Corrective Action Report-Revision 1 – Ash Pond Area
2021 Groundwater Monitoring and Corrective Action Report-Revision 1 – PDP-5
CCR Assessment of Corrective Measures - A1 Landfill
CCR Assessment of Corrective Measures - Ash Pond Area
Assessment of Corrective Measures Public Meeting Documents
Remedy Selection Report - A1 Landfill
Remedy Selection Report - Ash Pond Area

COAL COMBUSTION RESIDUAL RULE
GROUNDWATER MONITORING SYSTEM CERTIFICATION

MARTIN LAKE STEAM ELECTRIC STATION
A1 AREA LANDFILL
RUSK COUNTY, TEXAS

OCTOBER 16, 2017

LUMINANT

Prepared For:

Luminant Generation Company, LLC
6555 Sierra Drive
Irving, TX 75039

Prepared By:

Pastor, Behling & Wheeler, LLC
2201 Double Creek Drive, Suite 4004
Round Rock, Texas 78664
Texas Engineering Firm No. 4760

October 16, 2017

PROFESSIONAL CERTIFICATION

This document and all attachments were prepared by Pastor, Behling & Wheeler, LLC under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I hereby certify that the groundwater monitoring system installed at the referenced facility has been designed and constructed to meet the requirements of Section 257.91 of the CCR Rule.

Patrick J. Behling, P.E.
Principal Engineer
PASTOR, BEHLING & WHEELER, LLC

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A	CCR Monitoring Well Logs
B	Photographs of CCR Groundwater Monitoring Wells
C	Groundwater Potentiometric Surface Maps
D	Aquifer Test Data

1.0 INTRODUCTION

Luminant Power (Luminant) operates the Martin Lake Steam Electric Station (MLSES) located approximately 5 miles southeast of Tatum, Rusk County, Texas (Figure 1). The MLSES consists of three coal/lignite-fired power generation units. Coal Combustion Residuals (CCRs) including fly ash, bottom ash and gypsum are generated as part of the MLSES unit operations. Currently, CCRs generated at the MLSES are transported off-site for beneficial use by third-parties or are managed by Luminant in surface impoundments located on the MLSES property or the A1 Area Landfill located approximately 2.5 miles east of the MLSES. Three CCR Units have been identified within the MLSES operations, the Ash Pond Area (the West Ash Pond (WAP) East Ash Pond (EAP), and the New Scrubber Pond), Permanent Disposal Pond 5 (PDP 5), and A1 Area Landfill. This report discusses the A1 Area Landfill (the Site).

The CCR Rule (40 CFR 257 Subpart D - *Standards for the Receipt of Coal Combustion Residuals in Landfills and Surface Impoundments*) has been promulgated by the EPA to regulate the management and disposal of CCRs as solid waste under Resource Conservation and Recovery Act (RCRA) Subtitle D. The final CCR Rule was published in the Federal Register on April 17, 2015. The effective date of the CCR Rule was October 19, 2015.

The CCR Rule establishes national minimum criteria for existing and new CCR landfills, existing and new CCR surface impoundments, and lateral expansions to landfills/impoundments. Pastor, Behling & Wheeler, LLC (PBW) was retained by Luminant to evaluate and certify the groundwater monitoring system at the Site in accordance with Section 257.91 of the CCR Rule.

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1.1 Description of A1 Area Landfill

The A1 Area Landfill and adjacent A1 Area Landfill Expansion (collectively referred to as the A1 Area Landfill) are located at the Beckville Lignite Mine, approximately 2.5 miles southeast of the MLSES power units, on the opposite side of Martin Lake from the MLSES (Figure 2). CCRs generated at the MLSES, including fly ash and bottom ash, are transported and managed/disposed of by Luminant in the A1 Area Landfill. The A1 Area Landfill was constructed within a mined-out area of the Beckville Lignite Mine, and is surrounded and underlain by spoil material that was previously excavated during lignite mining operations. The A1 Area Landfill is considered an existing CCR unit under the CCR Rule.

1.2 CCR Unit Groundwater Monitoring System Requirements

Section 257.91 of the CCR Rule indicates that existing CCR landfills and surface impoundments be provided with a groundwater monitoring system that consists of sufficient wells, installed at appropriate location and depths, to yield groundwater samples from the uppermost aquifer that meet the following criteria:

- Accurately represent the quality of background groundwater that has not been affected by leakage from a CCR unit; and
- Accurately represent the quality of groundwater passing the waste boundary of the CCR unit. The downgradient monitoring system must be installed at the waste boundary to ensure detection of groundwater contamination in the uppermost aquifer. All potential contaminant pathways must be monitored.

The specific configuration of the groundwater monitoring system must be determined based on site-specific technical information that must include aquifer thickness, groundwater flow rate, groundwater flow direction (including seasonal and temporal fluctuation in groundwater flow), saturated and unsaturated geologic units and fill materials that overly the uppermost aquifer, materials comprising the uppermost aquifer, and materials comprising the confining unit defining the lower boundary of the upmost aquifer, including, but not limited to, thickness, stratigraphy, lithology, hydraulic conductivities, porosities, and effective porosities.

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At a minimum, the monitoring system must consist of at least one upgradient and three downgradient monitoring wells, and any additional monitoring wells necessary to accurately represent the quality of the background groundwater that has not been affected by leakage from the CCR unit and the quality of groundwater passing the waste boundary of the CCR unit. Multi-unit groundwater monitoring systems are allowed but must be equally as capable of detecting monitored constituents at the waste boundary of a CCR unit as individual groundwater monitoring wells.

Monitoring wells must be cased in a manner that maintains the integrity of the monitoring well borehole. This casing must be screened or perforated and packed with gravel or sand, where necessary, to enable collection of groundwater samples. The annular space above the sampling depth must be sealed to prevent contamination of samples and the groundwater. There must be documentation in the operating record of the design, installation, development, and decommissioning of any monitoring wells, piezometers and other measurement, sampling, and analytical devices. The qualified engineer must have access to and must review this documentation as part of the groundwater monitoring system certification.

2.0 GROUNDWATER MONITORING SYSTEM EVALUATION

2.1 A1 Area Landfill Groundwater Monitoring System

The CCR groundwater monitoring well system at the Site consists of eleven monitoring wells (BMW-11AR, BMW-18, BMW-19, BMW-20, BMW-21, BMW-22, BMW-23, BMW-24, BMW-26, BMW-27, and BMW-28) that are each screened in the uppermost aquifer at the Site. The locations of the CCR monitoring wells are shown on Figure 2. Well construction information and survey data for the CCR wells are summarized in Table 1, CCR monitoring well logs are presented in Appendix A, and photographs of the CCR wells are presented in Appendix B.

2.2 Local Geology and Hydrogeology

The Site is located in the outcrop area of the Eocene-aged Wilcox Group (Barnes, 1965). PBW reviewed current and historical soil boring logs, monitoring well completion documentation, and historical reports to describe the geologic and hydrogeologic conditions at the A1 Area Landfill. Geologic cross sections were constructed through this area using this data. Cross section locations are presented on Figure 3 and the cross sections are presented on Figures 4, 5, 6, and 7.

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The A1 Area Landfill is constructed within spoil material that was excavated during lignite mining operations at the Beckville Lignite Mine. Available lithologic descriptions of the spoil material indicate that it primarily consists of a heterogenous mixture of clay and sand with trace imbedded fragments of lignite. The spoil depth generally increases to the northwest. The spoil/native contact in the southeastern portion of the A1 Area Landfill was encountered at depths ranging from 9 feet bgs to 70 feet bgs (BMW-, while the spoil/native contact in the northwestern portion of the A1 Area Landfill was encountered at depths ranging from 90 feet bgs to 150 feet bgs. Native material encountered below the spoil zone consisted of lignite or native, silty clay. The A1 Area Landfill groundwater monitoring wells are all completed within the spoil zone.

2.3 Groundwater Potentiometric Surface Elevations

Eight background groundwater monitoring events were performed using the A1 Area Landfill CCR monitoring well system. Static water levels measured during the background monitoring period indicated water elevations ranging from 318.19 feet above mean sea level (amsl) to 386.98 feet amsl, and depths to water ranging from 1.77 feet bgs to 55.02 feet bgs (Table 2). Groundwater potentiometric surface maps

based on data collected during the background monitoring period are presented in Appendix C.

Groundwater elevations were generally highest on the north side of the landfill, with an inferred groundwater flow direction radially outward from the north side of the landfill. Based on the inferred groundwater flow direction, the location of each CCR monitoring well relative to the A1 Area Landfill is as follows:

Upgradient Wells	Downgradient Wells
BMW-11A-R	BMW-18
	BMW-19
	BMW-20
	BMW-21
	BMW-22
	BMW-23
	BMW-24
	BMW-26
	BMW-27
	BMW-28

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2.4 Uppermost Aquifer Hydraulic Conductivity Testing

PBW performed slug tests at monitoring wells BMW-21, BMW-23, and BMW-24 on October 7, 2015 to evaluate groundwater linear flow velocities at the uppermost aquifer at the Site. Slug test data and time-head change plots used to calculate hydraulic conductivities and transmissivities of the uppermost aquifer are provided in Appendix D. A summary of these hydraulic properties is presented in Table 3. The average hydraulic conductivities for the wells ranged from 9.55×10^{-5} cm/sec (well BMW-24) to 1.53×10^{-3} cm/sec (well BMW-23), with a geometric mean for the test wells of 3.05×10^{-4} cm/sec.

2.5 Conclusions

The CCR groundwater monitoring well system at the A1 Landfill complies with Section 257.91 of the CCR Rule. This conclusion is supported by the following as described in detail in previous sections of this report:

- Eleven monitoring wells are included in the CCR groundwater monitoring system – one upgradient monitoring well and ten downgradient monitoring wells.

- Each monitoring well is screened in the uppermost aquifer at the Site. Samples collected from upgradient monitoring wells will be representative of the quality of background groundwater that has not been affected by leakage from the CCR unit and samples collected from downgradient wells will ensure detection of groundwater contamination in the uppermost aquifer from the CCR unit.

- The monitoring wells are constructed with appropriate well casing to maintain the integrity of the monitoring well borehole and with slotted well screens to enable collection of groundwater samples. In addition, the annular space above the well screen is appropriately sealed to prevent contamination of groundwater samples from surface sources.

- Appropriate documentation exists concerning the design, installation, and development of the monitoring wells.

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3.0 REFERENCES

Barnes, Virgil E., 1965. Geologic Atlas of Texas, Tyler Sheet. Texas Bureau of Economic Geology.

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Tables

TABLE 1
WELL CONSTRUCTION SUMMARY
A1 AREA LANDFILL

Well ID	Date Installed	Northing	Easting	Ground Elevation (ft amsl)	TOC Elevation (ft amsl)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	Screen Length (ft)	Total Design Depth (ft bgs)	Casing Diameter (in)
BMW-11AR	2012	221220	2919014	423.37	426.05	119	139	20	139	4
BMW-18	9/29/15	216951	2915600	355.50	357.83	100	120	20	120	2
BMW-19	10/7/15	219535	2918071	397.47	400.69	25	45	20	45	2
BMW-20	10/8/15	219167	2923996	354.67	357.51	10	30	20	30	2
BMW-21	9/27/15	217793	2923479	347.87	350.98	20	40	20	40	2
BMW-22	9/27/15	216298	2924360	329.53	332.30	20	40	20	40	2
BMW-23	9/28/15	215105	2923180	339.43	341.90	15	35	20	35	2
BMW-24	9/28/15	213874	2921447	344.70	347.07	20	40	20	40	2
BMW-26	8/31/16	221187	2921307	365.96	369.44	20	30	10	30	4
BMW-27	9/1/16	220024	2922347	373.46	376.25	20	30	10	30	4
BMW-28	10/27/16	215307	2917356	371.27	373.21	40	60	20	60	2

Notes:
1. Abbreviations: ft - feet; amsl - above mean sea level; bgs - below ground surface.

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TABLE 2
GROUNDWATER ELEVATION SUMMARY
A1 AREA LANDFILL

Well ID	TOC Elevation (ft amsl)	Date	Depth to Water (ft btoc)	Water Elevation (ft amsl)
BMW-11AR	426.05	10/30/15	43.79	382.26
		12/30/15	43.11	382.94
		02/24/16	41.77	384.28
		04/07/16	40.49	385.56
		06/08/16	39.26	386.79
		08/11/16	39.24	386.81
		10/25/16	39.07	386.98
		12/13/16	40.57	385.48
BMW-18	357.83	10/30/15	33.40	324.43
		12/30/15	32.16	325.67
		02/24/16	29.49	328.34
		04/07/16	28.98	328.85
		06/08/16	28.04	329.79
		08/11/16	28.19	329.64
		10/25/16	28.31	329.52
		12/13/16	29.88	327.95
BMW-19	400.69	10/30/15	21.42	379.27
		12/30/15	20.14	380.55
		02/24/16	20.41	380.28
		04/07/16	19.56	381.13
		06/08/16	19.22	381.47
		08/11/16	20.84	379.85
		10/25/16	20.33	380.36
		12/13/16	24.11	376.58
BMW-20	357.51	10/30/15	8.56	348.95
		12/30/15	8.81	348.70
		02/24/16	8.96	348.55
		04/07/16	9.24	348.27
		06/08/16	8.81	348.70
		08/11/16	8.52	348.99
		10/25/16	8.36	349.15
		12/13/16	10.21	347.30
BMW-21	350.98	10/30/15	5.23	345.75
		12/30/15	4.09	346.89
		02/24/16	3.83	347.15
		04/07/16	3.93	347.05
		06/08/16	3.34	347.64
		08/11/16	4.56	346.42
		10/25/16	3.84	347.14
		12/13/16	6.89	344.09
BMW-22	332.30	10/30/15	7.11	325.19
		12/30/15	6.17	326.13
		02/24/16	5.74	326.56
		04/07/16	7.33	324.97
		06/08/16	6.91	325.39
		08/11/16	5.96	326.34
		10/25/16	6.07	326.23
		12/13/16	7.86	324.44

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TABLE 2
GROUNDWATER ELEVATION SUMMARY
A1 AREA LANDFILL

Well ID	TOC Elevation (ft amsl)	Date	Depth to Water (ft btoc)	Water Elevation (ft amsl)
BMW-23	341.90	10/30/15	16.47	325.43
		12/30/15	15.34	326.56
		02/24/16	14.78	327.12
		04/07/16	13.98	327.92
		06/08/16	11.72	330.18
		08/11/16	15.21	326.69
		10/25/16	15.51	326.39
		12/13/16	17.56	324.34
BMW-24	347.07	10/30/15	14.26	332.81
		12/30/15	12.09	334.98
		02/24/16	12.11	334.96
		04/07/16	12.03	335.04
		06/08/16	11.22	335.85
		08/11/16	12.73	334.34
		10/25/16	12.72	334.35
		12/13/16	14.27	332.80
BMW-26	369.44	9/13/16	1.77	367.67
		10/25/16	2.39	367.05
		12/13/16	4.02	365.42
		1/23/17	2.21	367.23
		2/23/17	2.67	366.77
		3/24/17	2.46	366.98
		4/24/17	2.24	367.20
		5/25/17	2.13	367.31
		6/29/17	2.12	367.32
BMW-27	376.25	9/13/16	2.12	374.13
		10/25/16	2.46	373.79
		12/13/16	4.11	372.14
		1/23/17	2.51	373.74
		2/23/17	2.84	373.41
		3/24/17	2.67	373.58
		4/24/17	3.07	373.18
		5/25/17	2.67	373.58
		6/29/17	2.24	374.01
BMW-28	373.21	12/13/16	55.02	318.19
		1/23/17	45.94	327.27
		2/23/17	39.97	333.24
		3/24/17	39.82	333.39
		4/24/17	36.81	336.40
		5/25/17	34.91	338.30
		6/29/17	33.85	339.36
		8/1/17	41.96	331.25

Notes:
1. Abbreviations: ft - feet; amsl - above mean sea level; bgs - below ground surface; toc - top of casing; btoc - below top of casing.

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TABLE 3
SUMMARY OF AQUIFER TEST RESULTS
A1 AREA LANDFILL

Well ID	Test Type	Aquifer Type	Analysis Method	Saturated Thickness (feet)	Results	
					T (cm^2/sec)	K (cm/sec)
PDP 5						
A1 Area Landfill						
BMW-21	Slug-In	Confined	Bouwer-Rice	10	6.24E-02	2.05E-04
BMW-21	Slug-Out	Confined	Bouwer-Rice	10	5.64E-02	1.85E-04
				Mean	**5.94E-02**	**1.95E-04**
BMW-23	Slug-In	Semi-Confined to Confined	Bouwer-Rice	15	8.00E-01	1.75E-03
BMW-23	Slug-Out	Semi-Confined to Confined	Bouwer-Rice	15	5.97E-01	1.31E-03
				Mean	**6.98E-01**	**1.53E-03**
BMW-24	Slug-In	Confined	Bouwer-Rice	5	1.30E-02	8.52E-05
BMW-24	Slug-Out	Confined	Bouwer-Rice	5	1.61E-02	1.06E-04
				Mean	**1.46E-02**	**9.55E-05**
				Geometric Mean for All A1 Area Landfill Tests	**8.45E-02**	**3.05E-04**

Notes:
1. Abbreviations: T - transmissivity; K - hydraulic conductivity.

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Figures

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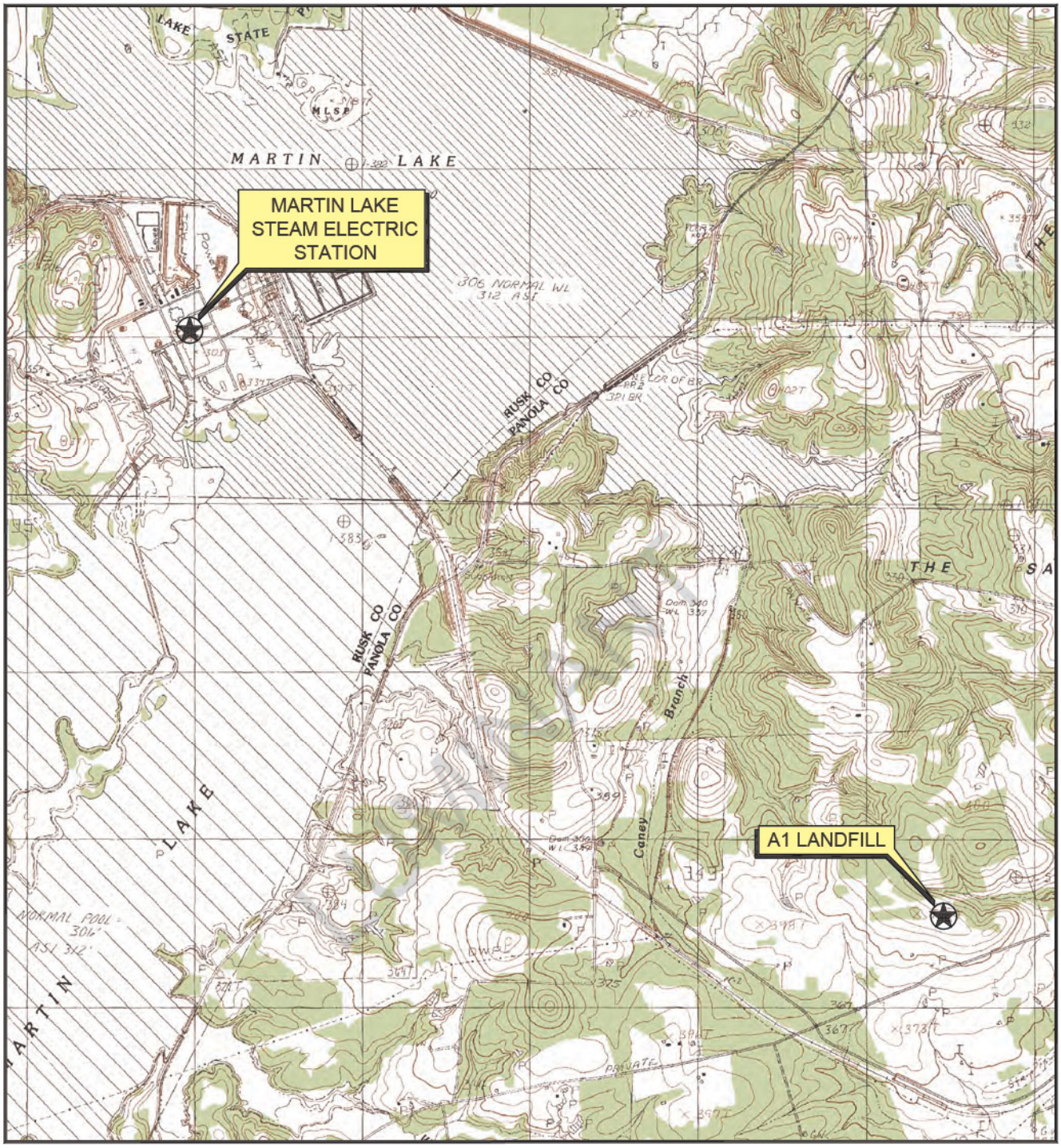


TEXAS

QUADRANGLE LOCATION

N

Scale in Feet

0 1500 3000

SOURCE:
Base map from www.tnris.gov, Tatum, TX 7.5 min. USGS quadrangle dated 1983.

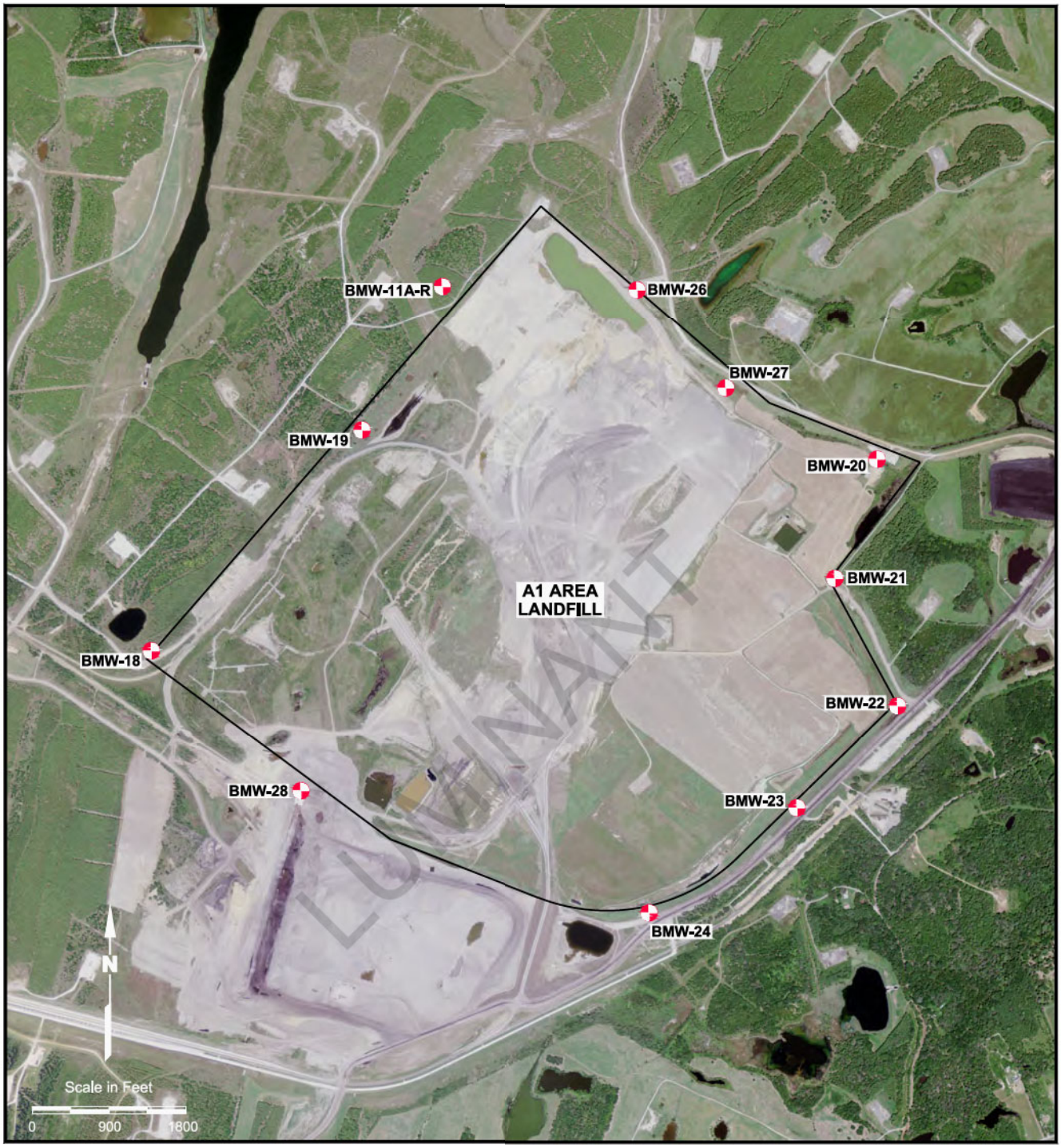
MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

Figure 1

A1 AREA LANDFILL SITE LOCATION MAP

PROJECT: 5123B	BY: AJD	REVISIONS
DATE: JUNE, 2015	CHECKED: PJB	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS



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EXPLANATION

CCR Monitoring Well

MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

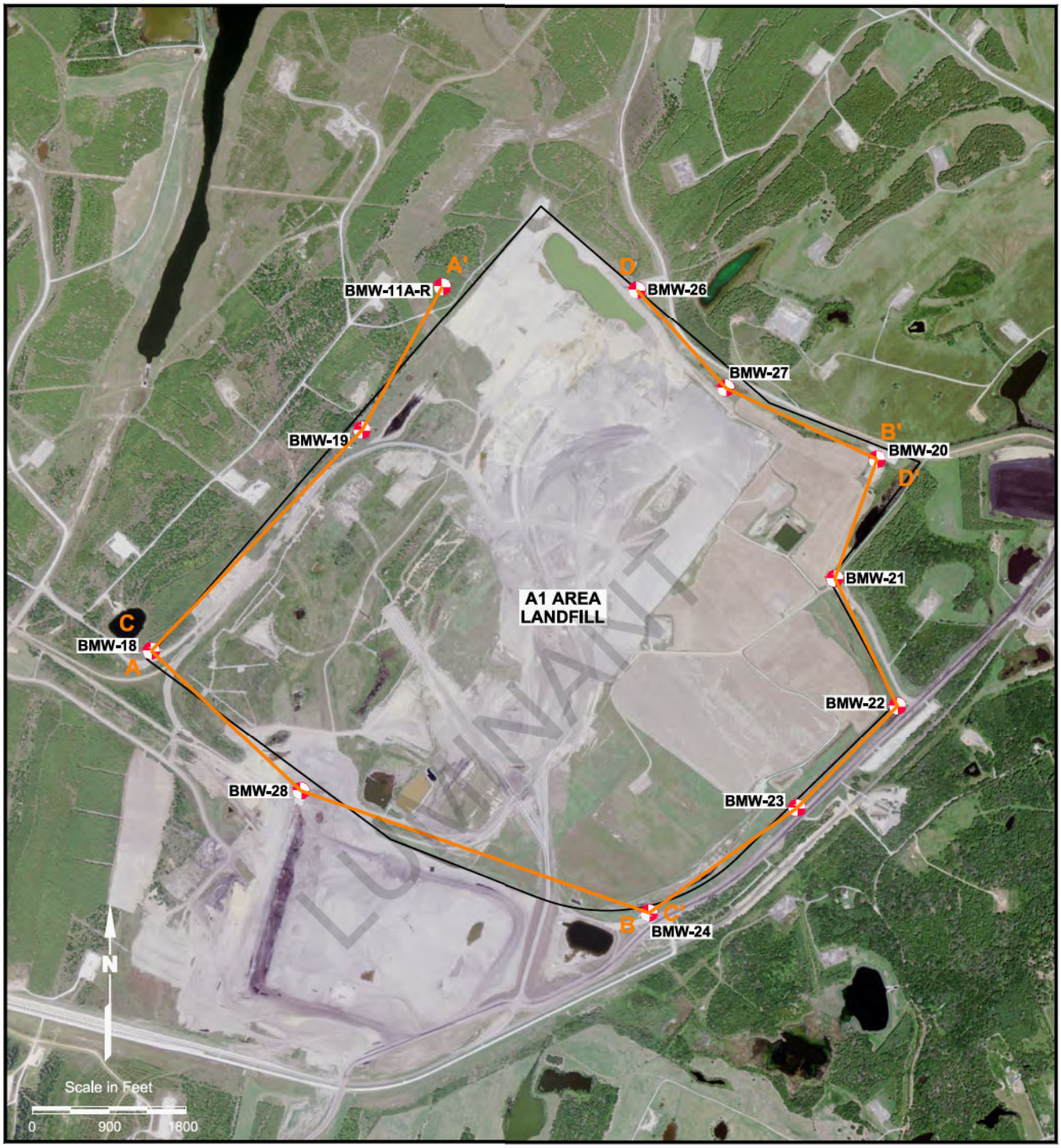
Figure 2

A1 AREA LANDFILL
DETAILED SITE MAP

PROJECT: 5164B	BY: AJD	REVISIONS
DATE: SEPT., 2017	CHECKED: PJB	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS

SOURCE:
Imagery from www.tnris.gov, Rusk County, aerial photographs, 2012.



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EXPLANATION

CCR Monitoring Well

A____A' Geologic Cross Section Location Lines

SOURCE:
Imagery from www.tnris.gov, Rusk County, aerial photographs, 2012.

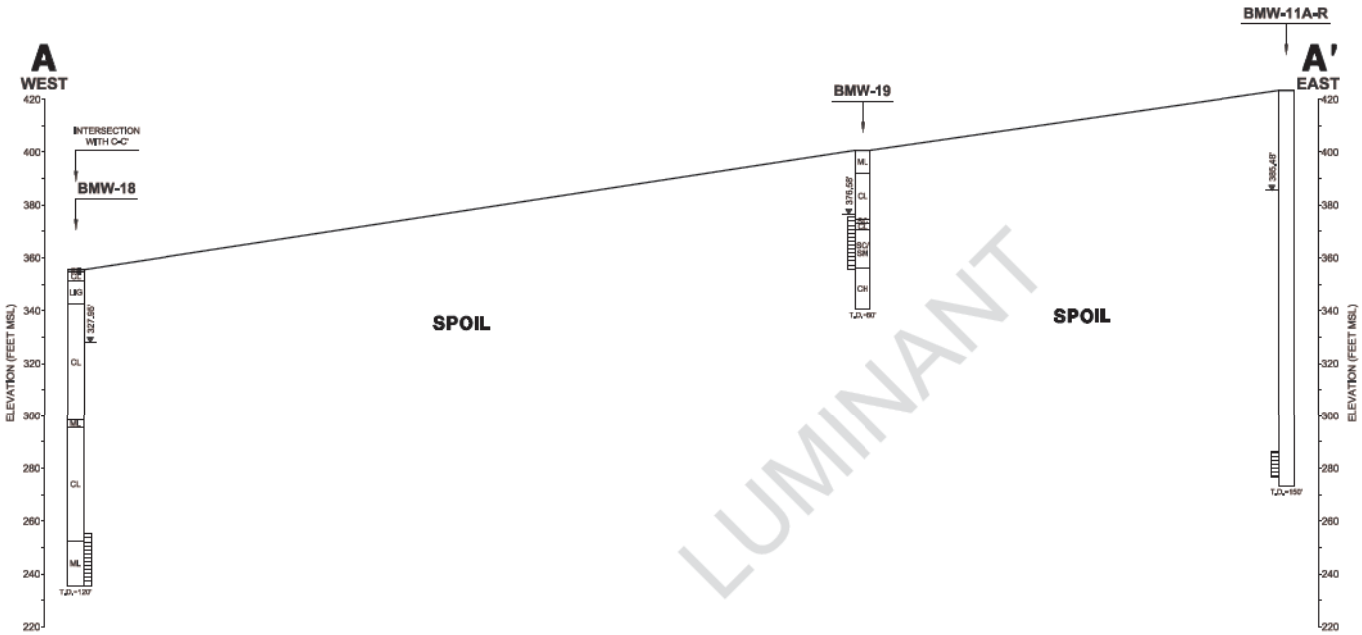
MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

Figure 3

A1 AREA LANDFILL
CROSS SECTION LOCATION MAP

PROJECT: 5164B	BY: AJD	REVISIONS
DATE: SEPT., 2017	CHECKED: PJB	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS



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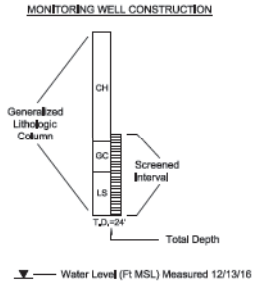
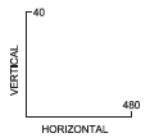




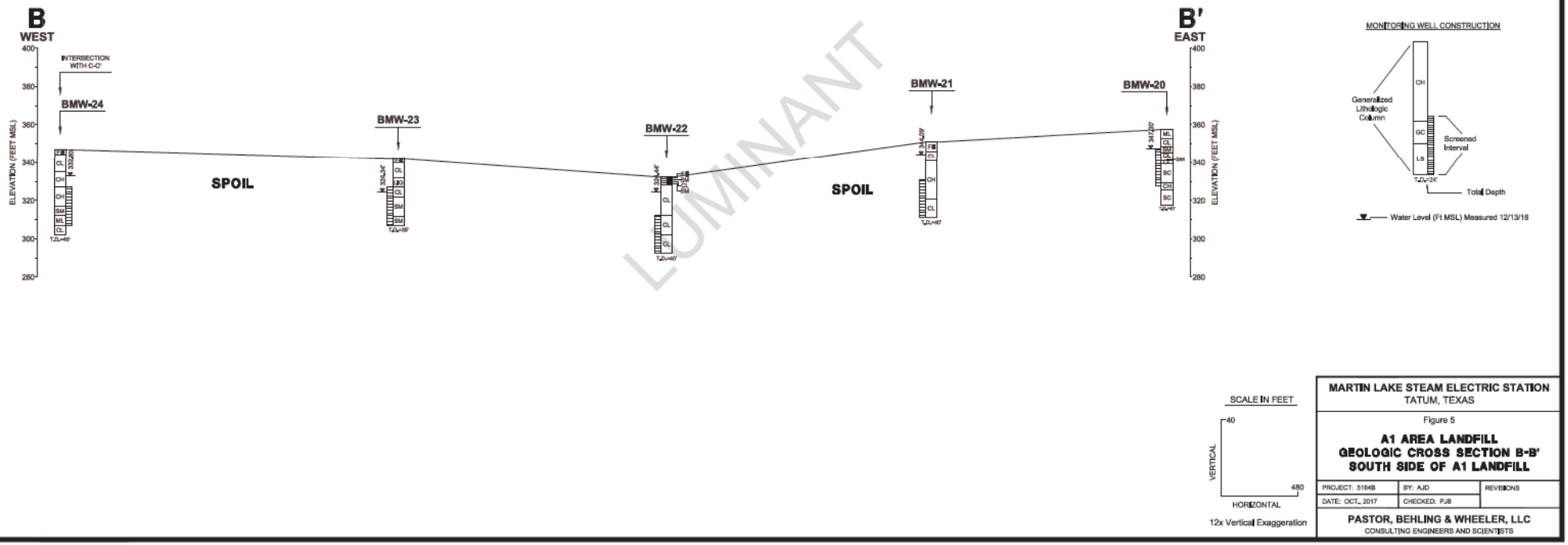
MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

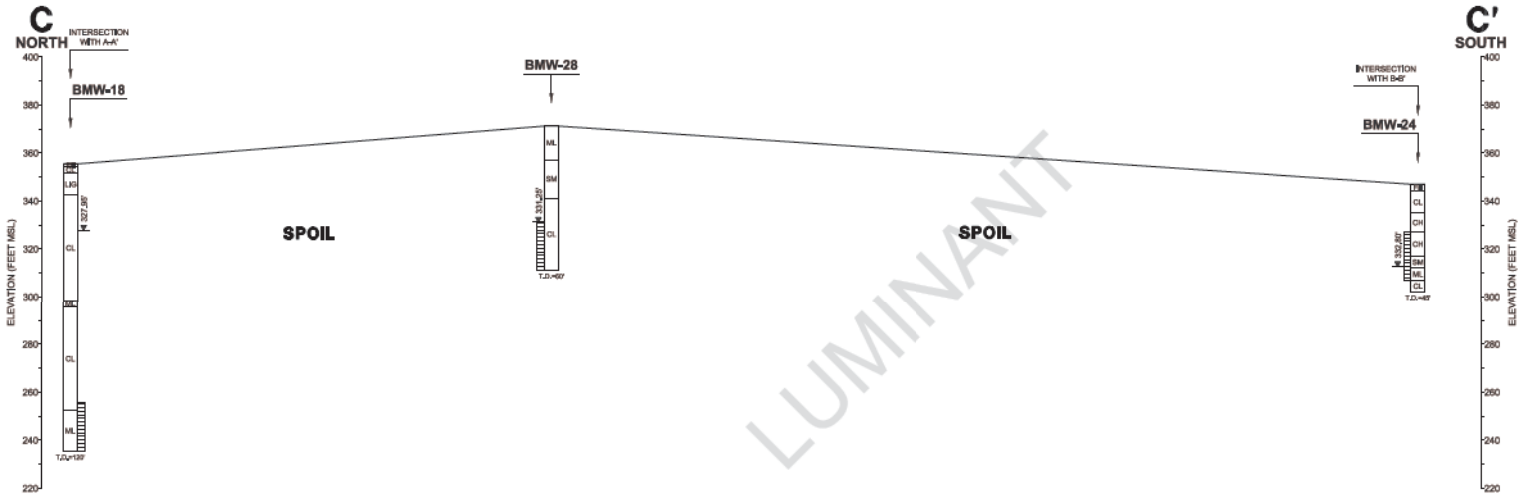
Figure 4

A1 AREA LANDFILL
GEOLOGIC CROSS SECTION A-A'
NORTH SIDE OF A1 EXPANSION AREA

PROJECT: 5164B	BY: AJD	REVISIONS
DATE: OCT., 2017	CHECKED: PJB	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS


B
WEST
B'
EAST
ELEVATION (FEET MSL)
INTERSECTION WITH C-C'
BMW-24
BMW-23
BMW-22
BMW-21
BMW-20
SPOIL
SPOIL
LUMINANT
MONITORING WELL CONSTRUCTION
Generalized Lithologic Column
Screened Interval
Total Depth
Water Level (Ft MSL) Measured 12/13/16
SCALE IN FEET
VERTICAL
HORIZONTAL
40
480
12x Vertical Exaggeration
MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS
Figure 5
A1 AREA LANDFILL
GEOLOGIC CROSS SECTION B-B'
SOUTH SIDE OF A1 LANDFILL
PROJECT: 5164B
BY: AJD
REVISIONS
DATE: OCT., 2017
CHECKED: PJB
PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS



LUMINANT

SCALE IN FEET

VERTICAL 40

HORIZONTAL 480

12x Vertical Exaggeration

MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

Figure 6

A1 AREA LANDFILL
GEOLOGIC CROSS SECTION C-C'
WEST SIDE OF A1 LANDFILL

PROJECT: 5164B	BY: AJD	REVISIONS
DATE: OCT., 2017	CHECKED: PJB	

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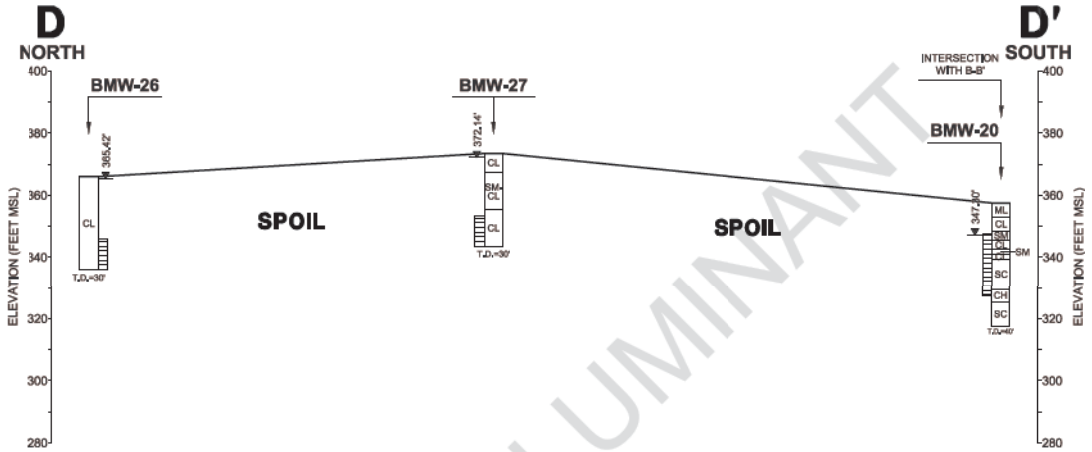
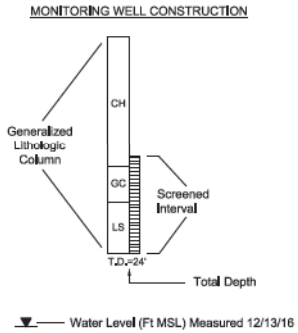
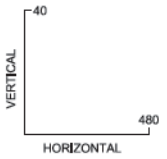


LUMINANT



SCALE IN FEET



12x Vertical Exaggeration

MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

Figure 7

A1 AREA LANDFILL
GEOLOGIC CROSS SECTION D-D'
EAST SIDE OF A1 LANDFILL

PROJECT: 5164B	BY: AJD	REVISIONS
DATE: OCT., 2017	CHECKED: PJB	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS

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Appendix A

CCR Monitoring Well Logs

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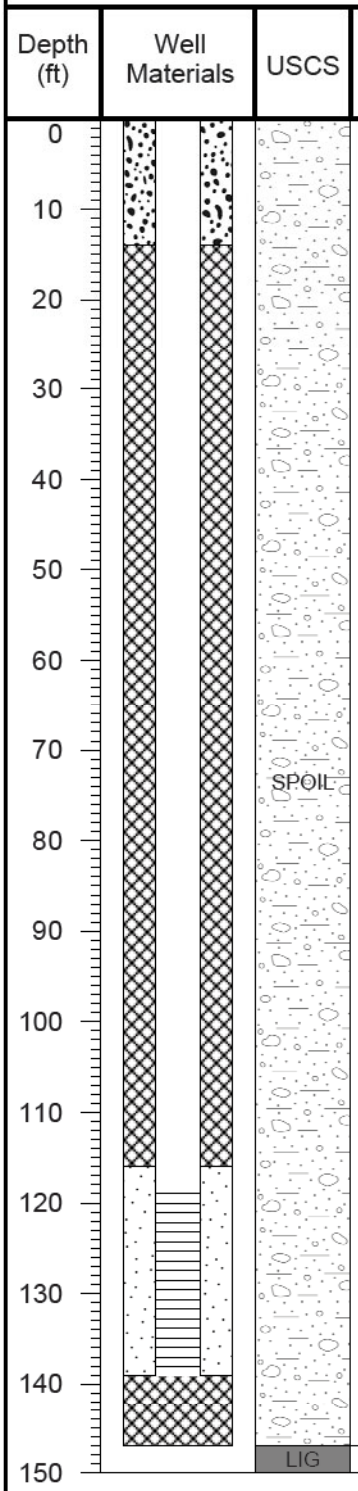
Log of Boring: BMW-11AR

Beckville Mine
Beckville, TX

PBW Project No. 1793

Completion Date:	5/24/12	Drilling Method:	Mud Rotary
Drilling Company:	Diversified	Borehole Diameter (in.):	10
Driller:	Ed Noble	Total Depth (ft):	147
Driller's License:	5031M	Northing:	
Field Supervisor:	R. McClure/S. Berry	Easting:	
Sampling Method:	Cuttings	Ground Elev. (ft AMSL):	



Lithologic Description

(0.0 - 147.0) MINE SPOIL, clay/silty clay, dark brownish gray, abundant red and orange clay/silty clay fragments from 0.0-10.0', abundant lignite fragments from 0.0-147.0', soft, medium plasticity.

Trace red and orange clay/silty clay fragments from 10.0-147.0'.

(147.0 - 150.0) LIGNITE, black.

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Notes:
Centralizers located at 124.0' and 137.0'. Lithology taken at 150.0' pilot hole.

TOC Elevation (ft AMSL):

Annular Materials
(0.0 - 14.0) Concrete
(14.0 - 116.0) Bentonite Grout
(116.0 - 139.0) 20/40 Silica Sand
(139.0 -147.0) Cuttings

Well Materials
(+3.0 - 119.0) Casing, 4" Sch 40 FJT PVC
(119.0 - 139.0) Screen, 4" Sch 40 FJT PVC, 0.01 slot

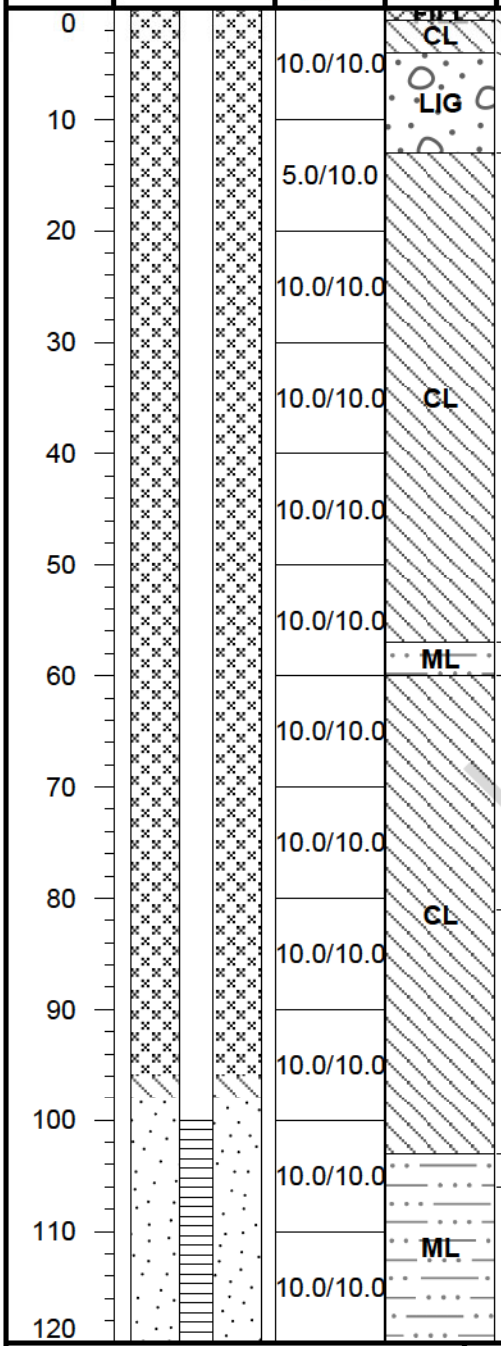
Luminant

Log of Boring: BMW-18

Martin Lake Steam Electric Station
Tatum, TX

PBW Project No. 5164B

Completion Date:	9/29/2015	Drilling Method:	Sonic
Drilling Company:	Walker-Hill Environmental	Borehole Diameter (in.):	6.5
Driller:	Timmy Beach	Total Depth (ft):	120
Driller's License:	5814M	TOC Elevation (ft. AMSL):	357.833
Logged By:	Jeremiah Bihl	Northing:	
Sampling Method:	4"x10' Core barrel	Easting:	



Lithologic Description
(0 - 1) Top soil, light brown, rocks (1-3 cm) present
(1 - 4) CLAY, dark gray to black with pale tan mottling, dry, firm, brittle
(4 - 13) LIGNITE with clay, dark grey to black, dry to moist, soft, brittle, angular, low plasticity
(13 - 57) Silty CLAY, dark gray to dark brown with red and yellow mottling, dry, soft to firm, crumbly, medium plasticity, color change to tan at 30', coal seam at 32' (black, dry to moist, soft), pieces of lignite present, color change to gray to dark gray at 35'
(57 - 60) Clayey SILT, light brown to tan, moist, soft, low plasticity, lignite seam at 59'
(60 - 81) Silty CLAY, black to gray, dry, soft to firm, low plasticity, crumbly, 6" dry white gravel layer at 69', 4" light brown silty sand layer at 81'
(81 - 103) Silty CLAY, light gray, dry to moist, soft, low to medium plasticity, crumbly, rubber tire pieces at 89', hard lignite seam at 90' (hard, dry, black, firm), streaks of black (91'- 94'), becomes hard at 94', light to dark gray (94'-103')
(103 - 106) Clayey SILT, gray, very moist, soft, medium plasticity
(106 - 120) Clayey SILT, gray to dark gray, dry, firm, low plasticity

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Notes:
1. This log should not be used separately from the report to which it is attached.
2. All logged material is mine spoil.

Well Materials
(0-100) Casing, 2" Sch 40 FJT PVC
(100-120) Screen, 2" Sch 40 FJT PVC, 0.010" slot

Annular Materials
(0'-96') Grout
(96'-98') Bentonite pellets
(98'-110') 20/40 sand

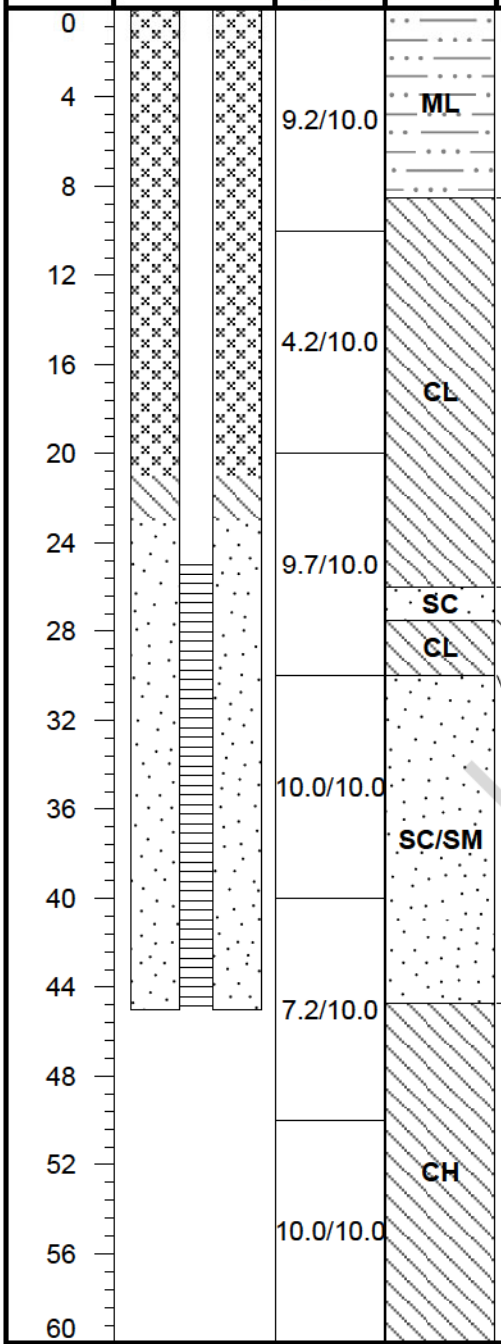
Luminant

Log of Boring: BMW-19

Martin Lake Steam Electric Station
Tatum, TX

PBW Project No. 5164B

Completion Date:	10/7/2015	Drilling Method:	Sonic
Drilling Company:	Walker-Hill Environmental	Borehole Diameter (in.):	6.5
Driller:	Timmy Beach	Total Depth (ft):	60
Driller's License:	5814M	TOC Elevation (ft. AMSL):	400.685
Logged By:	Nolan Townsend	Northing:	
Sampling Method:	4"x10' Core barrel	Easting:	



Lithologic Description

(0 - 8.5) Sandy SILT with clay, light brown to brownish yellow, dry to slightly mosit, soft, low plasticity, more clay content below ~1.0', trace black lignite fragments - dry, firm to hard, brittle, friable, sharp basal contact

(8.5 - 26) Sandy CLAY, yellowish brown, gray after 9.5', trace to moderate orange-yellow mottling, dry to moist, firm, low plasticity, trace black lignite fragments, very fine sand, sharp basal contact

(26 - 27.5) Clayey SAND, gray to yellowish brown, very moist to wet, soft, low plasticity, very fine sand, sharp basal conact

(27.5 - 30) Sandy CLAY, gray to yellowish brown, trace to moderate orange mottling, moist to very moist, soft to firm, moderate plasticity, very fine sand, small lignite seam 29.7'-30.0', brittle and friable, dry, black, hard, sharp basal contact

(30 - 44.7) Clayey silty SAND - sandy CLAY, brownish yellow to gray to greenish gray, trace orange mottling, abundant orange mottling 37.5'-38.5' and 42'-44.7', very moist to wet, soft to firm, moderate to high plasicity, very fine sand

(44.7 - 60) Sandy CLAY, greenish gray to gray, trace orange-red mottling, dry to moist, firm, moderate to high plasticity, trace black lignite fragments, abundant orange and red mottling 56.0'-59.5'

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Notes:
1. This log should not be used separately from the report to which it is attached.
2. Hole collapsed - drilled back down to 45' with 6" casing to set well.
3. All logged material is mine spoil.

Well Materials
(0-25) Casing, 2" Sch 40 FJT PVC
(25-45) Screen, 2" Sch 40 FJT PVC, 0.010" slot

Annular Materials
(0'-21') Grout
(21'-23') Bentonite pellets
(23'-45') 20/40 sand

Luminant

Log of Boring: BMW-20

Martin Lake Steam Electric Station
Tatum, TX

PBW Project No. 5164B

Completion Date:	10/8/2015	Drilling Method:	Sonic
Drilling Company:	Walker-Hill Environmental	Borehole Diameter (in.):	6.5
Driller:	Timmy Beach	Total Depth (ft):	40
Driller's License:	5814M	TOC Elevation (ft. AMSL):	357.512
Logged By:	Nolan Townsend	Northing:	
Sampling Method:	4"x10' Core barrel	Easting:	

Depth (ft)	Well Materials	Recovery (ft/ft)	USCS	Lithologic Description
0			ML	(0 - 4.5) Sandy SILT with clay, brownish yellow to gray, trace to moderate orange mottling near 4.0', dry, soft, low plasticity, very fine sand
4		9.5/10.0	CL	(4.5 - 9) CLAY with trace sand lenses, gray with trace to moderate orange/yellow mottling, dry to slightly moist, firm to hard, low to moderate plasticity, trace calcareous precipitates, sharp basal contact
8			SM	(9 - 12) Slightly silty SAND, yellowish orange to tan, moist to very moist, slightly unconsolidated, moderate to high plasticity, very fine sand, moderately to well sorted, mostly quarts with ~5-10% lithic fragments, clay content present 10'-12', dark gray, sharp basal contact
12			CL	(12 - 15) CLAY, slightly sandy, gray to dark gray, dry to slihgtly moist, firm to hard, low to moderate plasticity, trace black lignite fragments, sandy lenses, trace orange mottling
16		9.8/10.0	SM	(15 - 16.5) Silty SAND with clay, tan to yellowish orange, moist to very moist, moderately consolidated, medium to high plasticity, very fine sand
18			CL	(16.5 - 18) CLAY as above, dry to moist, firm to hard, moderate plasticity
22			SC	(18 - 28) Clayey SAND, reddish orange and gray, very moist, wet at 20.0', moderately consolidated, moderate to high plasticity, clay composition increases and decreases throughout, very fine sand, becomes gray at 28.0' and more clay content
26		10.0/10.0		
28			CH	(28 - 32) Sandy CLAY, gray, trace orange mottling, moist to very moist, firm, moderate to high plasticity, locally sandy lenses/interbeds, trace lignitic fragments (black)
34		10.0/10.0	SC	(32 - 40) Clayey SAND, reddish orange with gray clay, very moist to wet, moderately consolidated, moderate to high plasticity, very fine sand, localized small sandy clay seams, trace lignite fragments
40				

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Notes:
1. This log should not be used separately from the report to which it is attached.
2. All logged material is mine spoil.

Well Materials
(0-10) Casing, 2" Sch 40 FJT PVC
(10-30) Screen, 2" Sch 40 FJT PVC, 0.010" slot

Annular Materials
(0'-6') Grout
(6'-8') Bentonite pellets
(8'-30') 20/40 sand

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Log of Boring: BMW-21

Martin Lake Steam Electric Station
Tatum, TX

PBW Project No. 5164B

Completion Date:	9/27/2015	Drilling Method:	Sonic
Drilling Company:	Walker-Hill Environmental	Borehole Diameter (in.):	6.5
Driller:	Timmy Beach	Total Depth (ft):	40
Driller's License:	5814M	TOC Elevation (ft. AMSL):	350.976
Logged By:	Jeremiah Bihl	Northing:	
Sampling Method:	4"x10' Core barrel	Easting:	

Depth (ft)	Well Materials	Recovery (ft/ft)	USCS	Lithologic Description
0 – 5		10.0/10.1	FILL	(0 - 5) Top soil, sandy with small amounts of clay, tan/brown, moist, soft, low plasticity
5 – 10			CL	(5 - 10) Sandy CLAY, dark gray to black, moist, soft, low to medium plasticity, trace amounts of lignite, clay content increases with depth
10 – 20		10.0/10.0	CH	(10 - 30) CLAY with angular lignite, light gray, moist, soft, high plasticity, 1'-thick lignite layer at 25', hardness increases from 26' to 30'
20 – 30		10.0/10.0		
30 – 40		10.0/10.0	CL	(30 - 40) CLAY with angular lignite pieces, wet, soft with increasing hardness with depth, medium plasticity, water present at 30', moisture decreases at 35'

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Notes:
1. This log should not be used separately from the report to which it is attached.
2. All logged material is mine spoil.

Well Materials
(0-20) Casing, 2" Sch 40 FJT PVC
(20-40) Screen, 2" Sch 40 FJT PVC, 0.010" slot

Annular Materials
(0'-16') Grout
(16'-18') Bentonite pellets
(18'-40') 20/40 sand

Luminant

Log of Boring: BMW-22

Martin Lake Steam Electric Station
Tatum, TX

PBW Project No. 5164B

Completion Date:	9/27/2015	Drilling Method:	Sonic
Drilling Company:	Walker-Hill Environmental	Borehole Diameter (in.):	6.5
Driller:	Timmy Beach	Total Depth (ft):	40
Driller's License:	5814M	TOC Elevation (ft. AMSL):	332.304
Logged By:	Jeremiah Bihl	Northing:	
Sampling Method:	4"x10' Core barrel	Easting:	

Depth (ft)	Well Materials	Recovery (ft/ft)	USCS	Lithologic Description
0			FILL	(0 - 1) Top soil, light brown
2			SM	(1 - 2) Sandy silty soil with pieces of rock, light brown, abundant organics
			CL	(2 - 3) CLAY, yellow-reddish
4			SM	(3 - 4) Sandy silty soil with pieces of rock, light brown/tan, abundant organics
6		10.0/10.0		
8				
10				(4 - 20) CLAY, dark gray, lignite present (angular), color change to light gray to yellow clay with some red mottling at 6', firm, moist, medium plasticity, color change to tan at 10', moist and soft lignite layer (12'-13'), hard and lignite layer (angular pieces) at 13'
12				
14		10.0/10.0		
16				
18				
20			CL	
22				
24				(20 - 30) Sandy CLAY, light gray, moist, soft, medium plasticity, moisture content decreases with depth, hardness increases with depth, plasticity decreases with depth
26		10.0/10.0		
28				
30				
32				(30 - 40) Sandy CLAY, light gray, wet, soft, hardness increases with depth
34				
36		10.0/10.0		
38				
40				

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Notes:
1. This log should not be used separately from the report to which it is attached.
2. All logged material is mine spoil.

Well Materials
(0-20) Casing, 2" Sch 40 FJT PVC
(20-40) Screen, 2" Sch 40 FJT PVC, 0.010" slot

Annular Materials
(0'-16') Grout
(16'-18') Bentonite pellets
(18'-40') 20/40 sand

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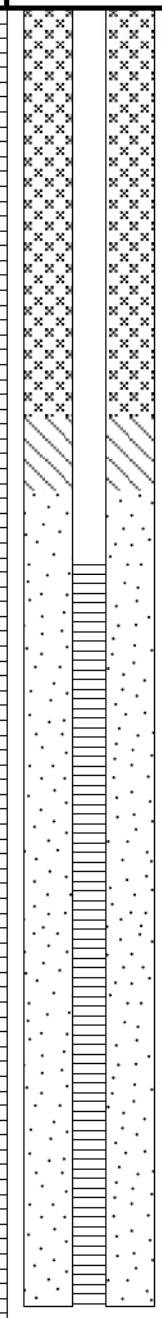
Log of Boring: BMW-23

Martin Lake Steam Electric Station
Tatum, TX

PBW Project No. 5164B

Completion Date:	9/28/2015	Drilling Method:	Sonic
Drilling Company:	Walker-Hill Environmental	Borehole Diameter (in.):	6.5
Driller:	Timmy Beach	Total Depth (ft):	35
Driller's License:	5814M	TOC Elevation (ft. AMSL):	341.903
Logged By:	Jeremiah Bihl	Northing:	
Sampling Method:	4"x10' Core barrel	Easting:	

Depth (ft)	Well Materials	Recovery (ft/ft)	USCS	Lithologic Description
0			FILL	(0 - 2) Top soil, sandy silty CLAY, moist, soft, light brown
2		10.0/10.0	CL	(2 - 10) CLAY, light gray to pale yellow, some sand present, soft, moist, low plasticity, color change to brown at 5'
10		10.0/10.0	LIG	(10 - 15) LIGNITE, black, soft, moist, crumbly, sharp contact
16			CL	(15 - 20) CLAY, dark gray and light tan, dry, hard, medium plasticity
20		10.0/10.0	SM	(20 - 30) Silty SAND with small amounts of clay, moist, soft, low plasticity, small seams of lignite, clay content increases with depth (20'-30')
30		10.0/10.0		(30 - 35) Silty SAND, light gray, wet, very soft, low plasticity, some clay content at 32', sand lenses present
36				

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Notes:
1. This log should not be used separately from the report to which it is attached.
2. All logged material is mine spoil.

Well Materials
(0-15) Casing, 2" Sch 40 FJT PVC
(15-35) Screen, 2" Sch 40 FJT PVC, 0.010" slot

Annular Materials
(0'-11') Grout
(11'-13') Bentonite pellets
(13'-35') 20/40 sand

Luminant

Log of Boring: BMW-24

Martin Lake Steam Electric Station
Tatum, TX

PBW Project No. 5164B

Completion Date:	9/28/2015	Drilling Method:	Sonic
Drilling Company:	Walker-Hill Environmental	Borehole Diameter (in.):	6.5
Driller:	Timmy Beach	Total Depth (ft):	45
Driller's License:	5814M	TOC Elevation (ft. AMSL):	347.074
Logged By:	Jeremiah Bihl	Northing:	
Sampling Method:	4"x10' Core barrel	Easting:	

Depth (ft)	Well Materials	Recovery (ft/ft)	USCS	Lithologic Description
0			FILL	(0 - 3) Top soil, brown, moist, roots present
4		10.0/10.0	CL	(3 - 4) CLAY, light brown with yellow and orange mottling, dry, soft, low plasticity (4 - 6) CLAY with some silt, tan to yellow/gray, moist, firm, medium plasticity (6 - 12) CLAY, black with lignite pieces (0.2-1 cm), dry, soft, low plasticity, sharp contact
8				
12		10.0/10.0	CH	(12 - 20) CLAY, dark gray with yellow and red mottling, dry, hard, medium to high plasticity
16				
20		10.0/10.0		(20 - 30) Silty CLAY, light gray to gray, yellow and red mottling, moist, very soft, high plasticity, pieces of lignite present, decreasing silt content with depth and becomes harder, more brittle, and dry (28'-30'), increase in red, yellow, and black mottling at 28'
24				
28				
32		10.0/10.0	SM	(30 - 35) Silty SAND, gray, wet, soft, low plasticity, subangular to rounded
36			ML	(35 - 40) Clayey SILT, dry, firm, low plasticity, silt content decreases with depth
40		10.0/10.0	CL	(40 - 45) Silty CLAY, light gray, dry, firm, low plasticity
44				
48				

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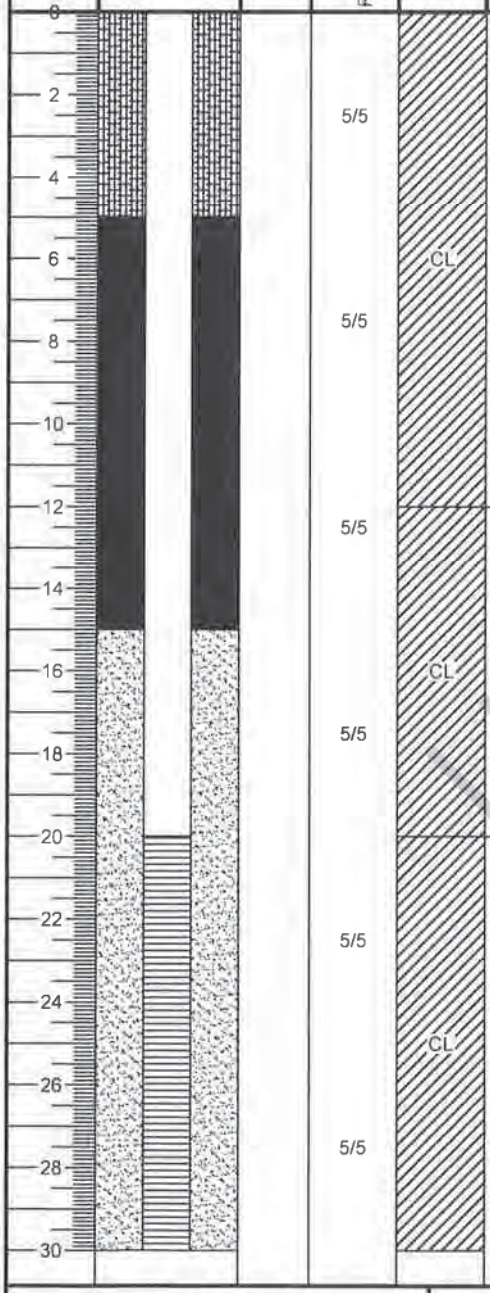
Notes:
1. This log should not be used separately from the report to which it is attached.
2. All logged material is mine spoil.

Well Materials
(0-20) Casing, 2" Sch 40 FJT PVC
(20-40) Screen, 2" Sch 40 FJT PVC, 0.010" slot

Annular Materials
(0'-16') Grout
(16'-18') Bentonite pellets
(18'-40') 20/40 sand

LUMINANT	Log of Boring: BMW-26

A-1 AREA LANDFILL TATUM, TEXAS	Completion Date:	8-31-16	Drilling Method:	HS Auger
	Drilling Company:	Walker-Hill Env	Borehole Diameter (in.):	10.25"
	Driller:	Jeremy Thornhill	Total Depth (ft):	30.0'
PBW PROJECT No.: 5164-F	Driller's License:	NA	Northing:	221187.022
	Field Supervisor:	RKS	Easting:	2921306.755
	Sampling Method:	5'Macrocore Sampler	Ground Elev. (ft AMSL):	365.958



Lithologic Description

0.0-12.0 - Clay with silt and lignite fragments, dark gray-black, soft, moist, low plasticity

Wet at 4.0'

12.0-20.0 - Silty clay, dark brown, saturated, low plasticity

20.0-30.0 - Silty clay, fine grained, dark brown, saturated, low plasticity

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Notes:

1. All logged material is mine spoil.

Depth (bgs)	Well Materials	Depth (bgs)	Annular Materials
0' - 20'	Casing, 4" Sch 40 PVC, FJT	0' - 5'	Grout
20' - 30'	Screen, 4" Sch 40 PVC, 010 Slot	5' - 15'	Bentonite Pellet Seal
		15' - 30'	20/40 Sand

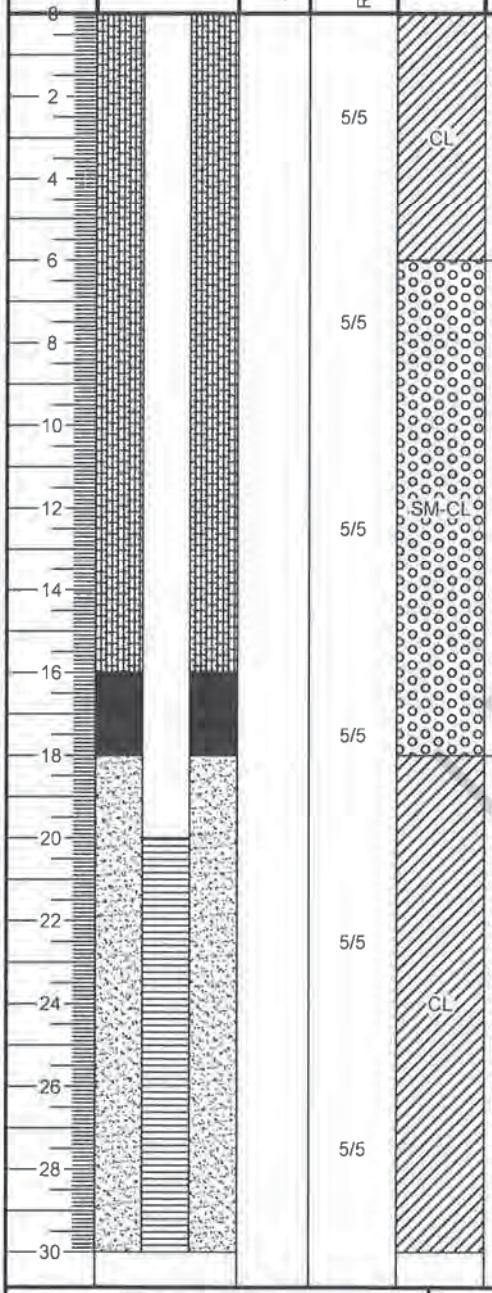
LUMINANT

Log of Boring: BMW-27

A-1 AREA LANDFILL
TATUM, TEXAS

PBW PROJECT No.: 5164-F

Completion Date:	9-1-16	Drilling Method:	HS Auger
Drilling Company:	Walker-Hill Env.	Borehole Diameter (in.):	10.25"
Driller:	Jeremy Thornhill	Total Depth (ft):	30.0'
Driller's License:	NA	Northing:	220024.389
Field Supervisor:	RKS	Easting:	2922347.297
Sampling Method:	5'Macrocore Sampler	Ground Elev. (ft AMSL):	373.463



Lithologic Description

0.0-6.0 - Clay with silt and fine sand, dark gray, soft, moist, low plasticity

Wet at 5.0'

6.0-18.0 - Silty sand with clay, brown, soft, moist

18.0-30.0 - Silty clay with lignite, dark brown-gray, wet, low plasticity

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Notes:
1. All logged material is mine spoil.

Depth (bgs)	Well Materials
0' - 20'	Casing, 4" Sch 40 PVC, FJT
20' - 30'	Screen, 4" Sch 40 PVC, .010 Slot

Depth (bgs)	Annular Materials
0' - 16'	Grout
16' - 18'	Bentonite Pellet Seal
18' - 30'	20/40 Sand

Luminant

Log of Boring: BMW-28

A-1 Area Landfill
Tatum, TX

PBW Project No. 5164F

Completion Date:	10/27/2016	Drilling Method:	HSA
Drilling Company:	ETTL	Borehole Diameter (in.):	10.25
Driller:	Tommy Cook	Total Depth (ft):	60
Driller's License:	2853	TOC Elevation (ft. AMSL):	373.208
Logged By:	Jeremiah Bihl	Northing:	
Sampling Method:	4"x10' Core barrel	Easting:	

Depth (ft)	Well Materials	USCS	Lithologic Description
0 – 14		ML	(0 - 14) Clayey SILT (spoil), black to brown, some pieces of coal, moist, low plasticity.
14 – 30		SM	(14 - 30) SAND with silt and small amounts of clay (spoil), some coal pieces, black, soft, dry, low plasticity.
30 – 60		CL	(30 - 60) CLAY with some silt (spoil), pieces of coal, soft, black to dark gray, dry, low plasticity, possible sandstone/siltstone boulder at 40'.

LUMINANT

PBW
Pastor, Behling & Wheeler, LLC
2201 Double Creek Dr., Suite 4004
Round Rock, TX 78664
Tel (512) 671-3434 Fax (512) 671-3446

Notes:
1. This log should not be used separately from the report to which it is attached.
2. All logged material is mine spoil.

Well Materials
(0-40) Casing, 2" Sch 40 FJT PVC
(40-60) Screen, 2" Sch 40 FJT PVC, 0.010" slot

Annular Materials
(0'-5') Grout
(5'-35') Bentonite pellets
(35'-60') 20/40 sand

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Appendix B

Photographs of CCR Groundwater Monitoring Wells

Appendix B – Photographs of CCR Groundwater Monitoring Wells
A1 Area Landfill

Photograph 1: BMW-18

Photograph 2: BMW-19

Appendix B – Photographs of CCR Groundwater Monitoring Wells
A1 Area Landfill

Photograph 3: BMW-20

Photograph 4: BMW-21

Appendix B – Photographs of CCR Groundwater Monitoring Wells
A1 Area Landfill

Photograph 5: BMW-22

Photograph 6: BMW-23

Appendix B – Photographs of CCR Groundwater Monitoring Wells
A1 Area Landfill

Photograph 7: BMW-24

Photograph 8: BMW-26

Appendix B – Photographs of CCR Groundwater Monitoring Wells
A1 Area Landfill

Photograph 9: BMW-27

Photograph 10: BMW-28

Appendix B – Photographs of CCR Groundwater Monitoring Wells
A1 Area Landfill

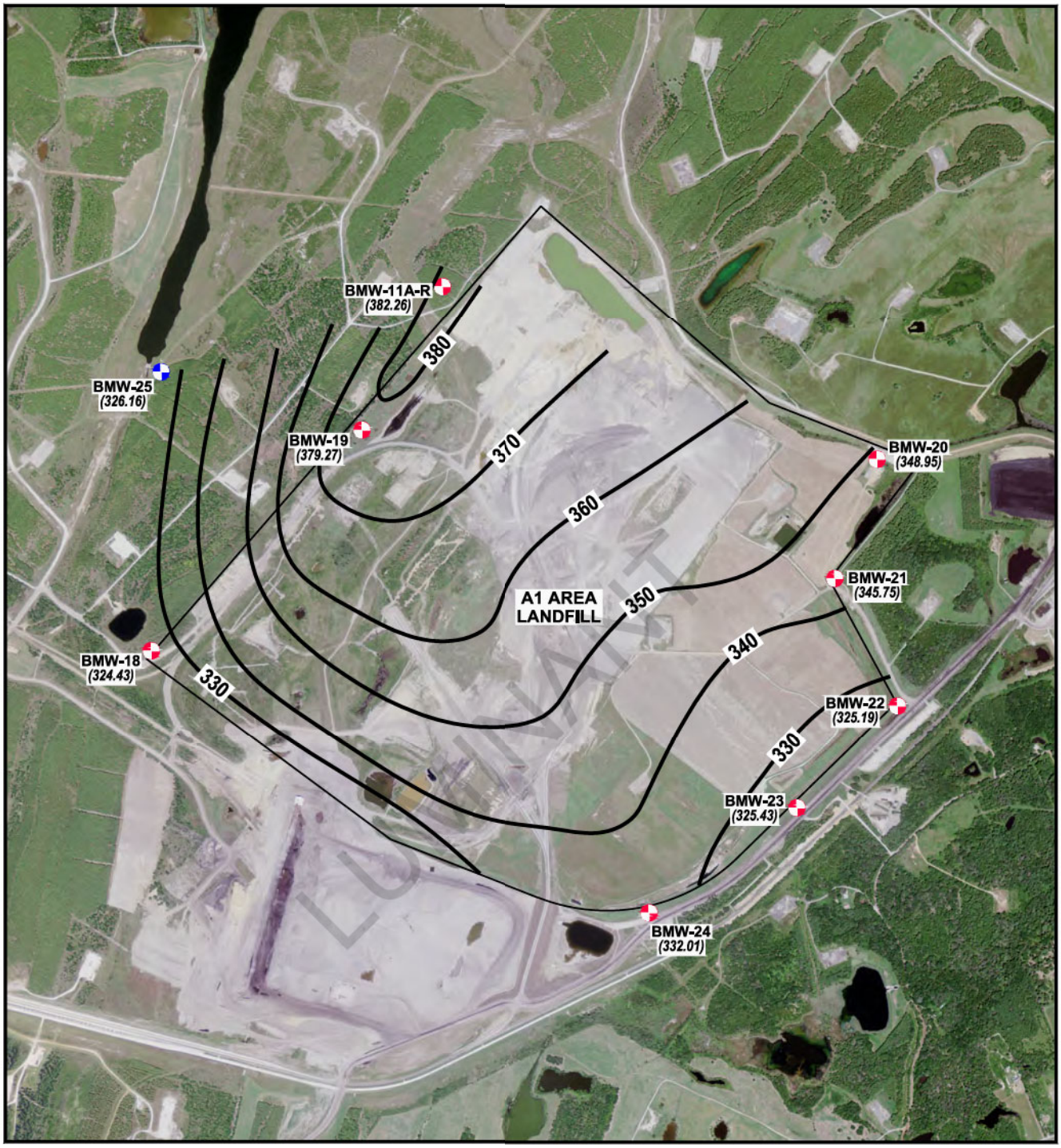
Photograph 11: BMW-11-AR

LUMINA

Appendix C

Groundwater Potentiometric Surface Maps

LUMINANT



EXPLANATION

- CCR Monitoring Well Location
- Non-CCR Monitoring Well Used to Further Evaluate Groundwater Flow Direction
- (358.02) Groundwater Potentiometric Surface (ft. MSL)
- —360— Groundwater Potentiometric Surface Contour (C.I. = 10 ft.)

N

Scale in Feet

0 900 1800

SOURCE:
Imagery from www.tnris.gov, Rusk County, aerial photographs, 2012.

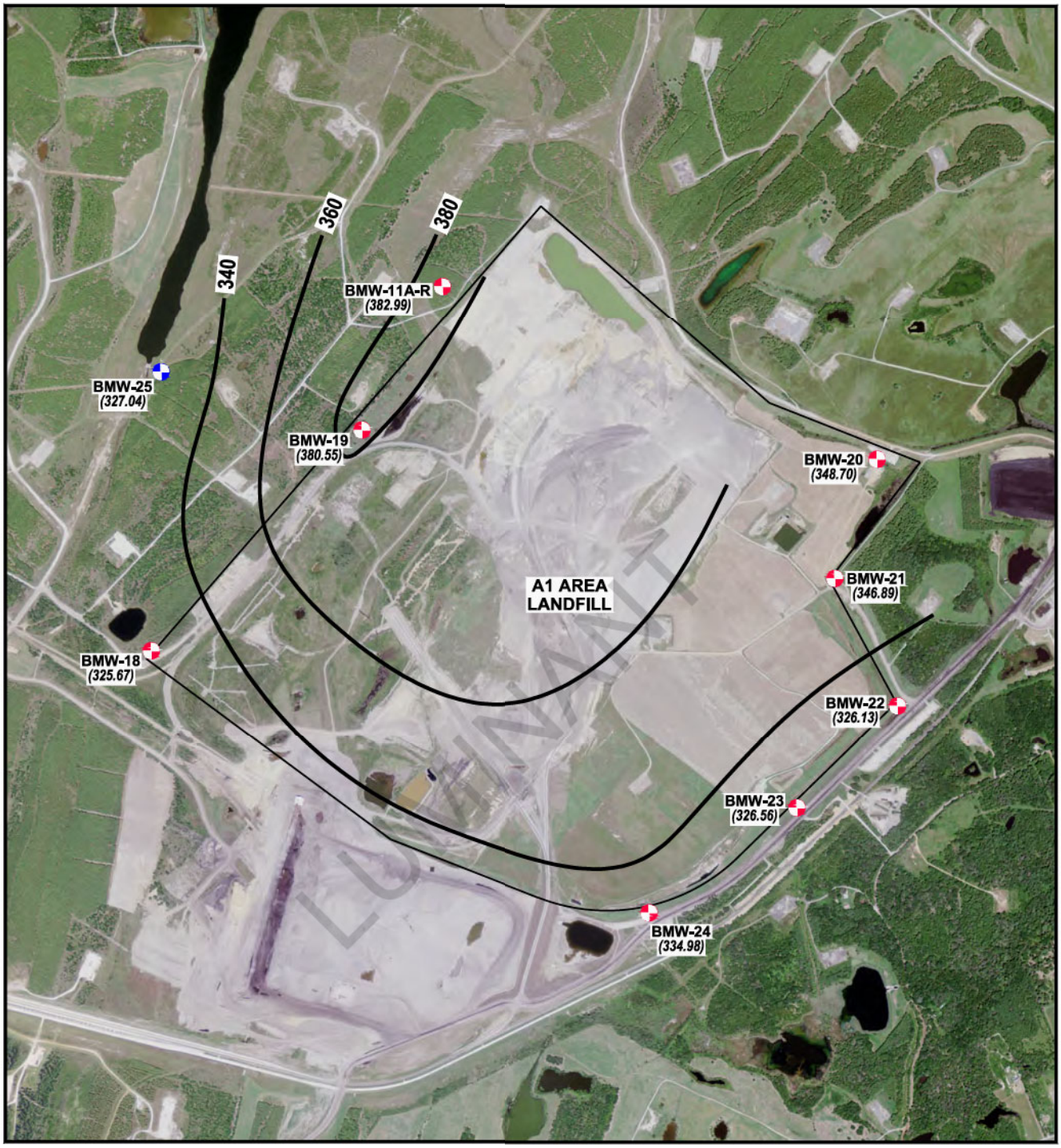
MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

Figure 1

A1 AREA LANDFILL GROUNDWATER POTENTIOMETRIC SURFACE MAP OCTOBER 30, 2015

PROJECT: 5164B	BY: AJD	REVISIONS
DATE: SEPT., 2017	CHECKED: PJB	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS



EXPLANATION

- CCR Monitoring Well Location
- Non-CCR Monitoring Well Used to Further Evaluate Groundwater Flow Direction
- (358.02) Groundwater Potentiometric Surface (ft. MSL)
- —360— Groundwater Potentiometric Surface Contour (C.I. = 20 ft.)

N

Scale in Feet

0 900 1800

SOURCE:
Imagery from www.tnris.gov, Rusk County, aerial photographs, 2012.

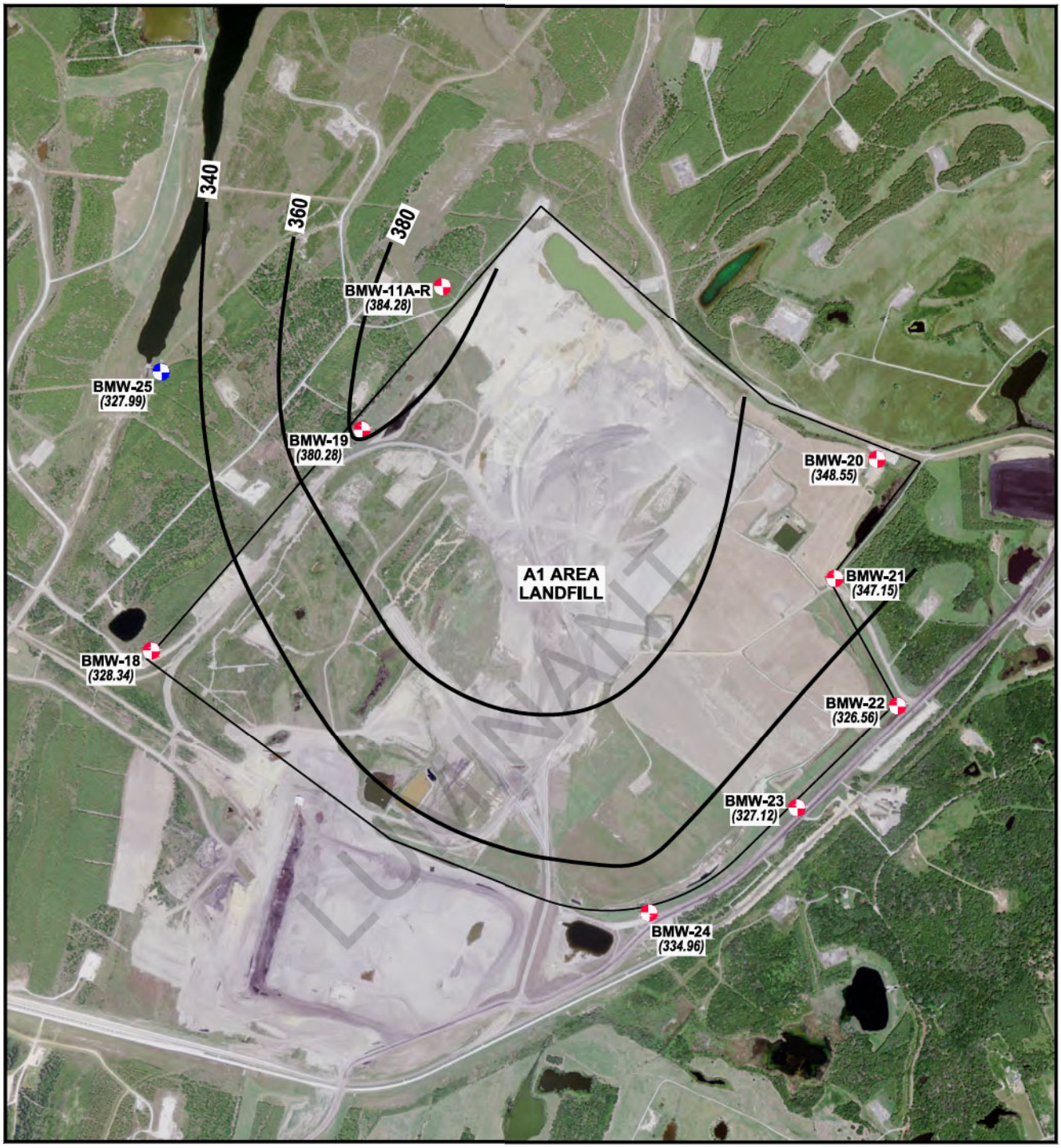
MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

Figure 2

A1 AREA LANDFILL GROUNDWATER POTENTIOMETRIC SURFACE MAP DEC. 30, 2015

PROJECT: 5164B	BY: AJD	REVISIONS
DATE: SEPT., 2017	CHECKED: PJB	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS



EXPLANATION

- CCR Monitoring Well Location
- Non-CCR Monitoring Well Used to Further Evaluate Groundwater Flow Direction
- (358.02) Groundwater Potentiometric Surface (ft. MSL)
- —360— Groundwater Potentiometric Surface Contour (C.I. = 20 ft.)

N

Scale in Feet

0 900 1800

SOURCE:
Imagery from www.tnris.gov, Rusk County, aerial photographs, 2012.

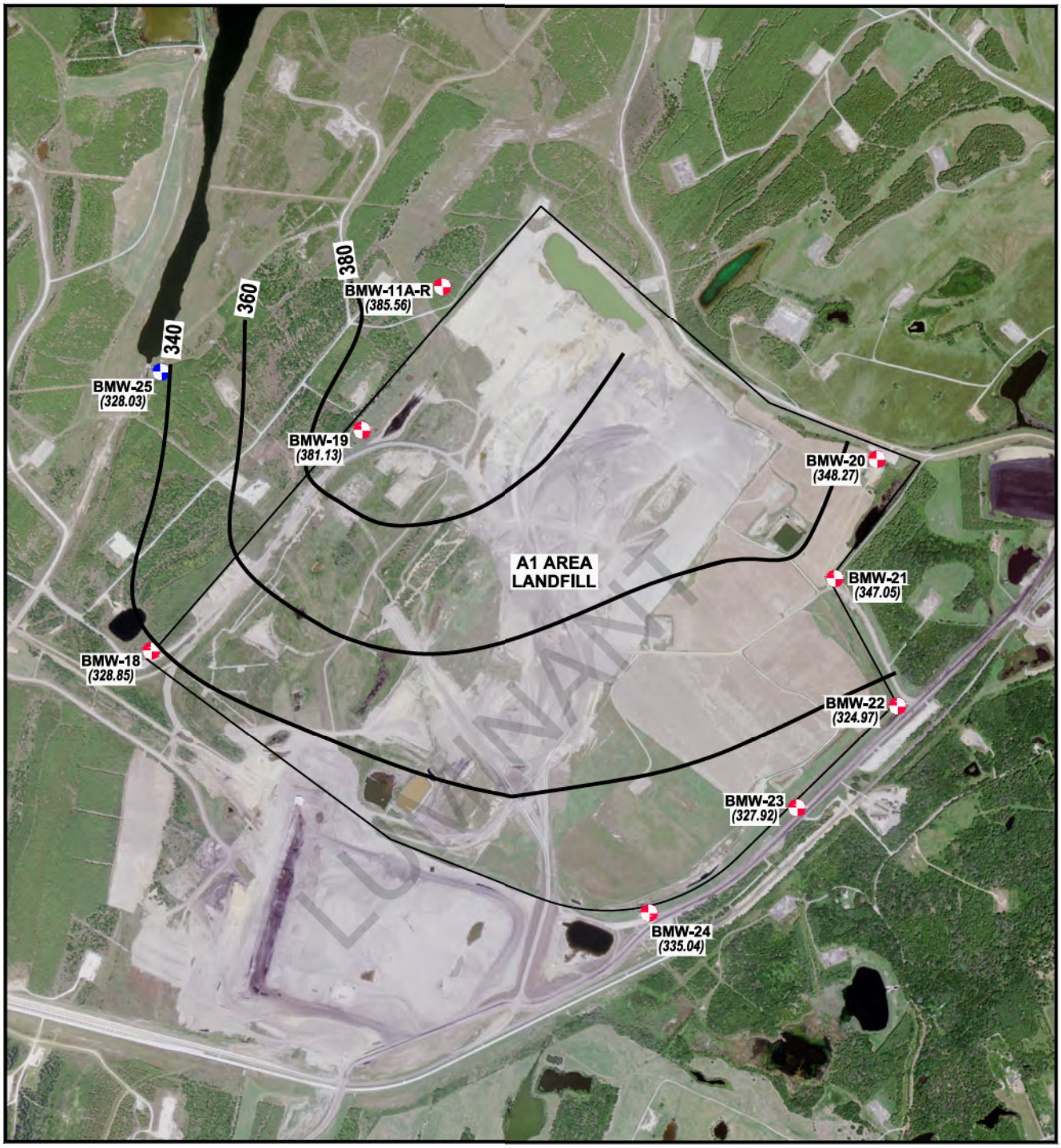
MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

Figure 3

A1 AREA LANDFILL GROUNDWATER POTENTIOMETRIC SURFACE MAP FEB. 24, 2016

PROJECT: 5164B	BY: AJD	REVISIONS
DATE: SEPT., 2017	CHECKED: PJB	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS



EXPLANATION

- CCR Monitoring Well Location
- Non-CCR Monitoring Well Used to Further Evaluate Groundwater Flow Direction
- (358.02) Groundwater Potentiometric Surface (ft. MSL)
- —360— Groundwater Potentiometric Surface Contour (C.I. = 20 ft.)

N

Scale in Feet

0 900 1800

SOURCE:
Imagery from www.tnris.gov, Rusk County, aerial photographs, 2012.

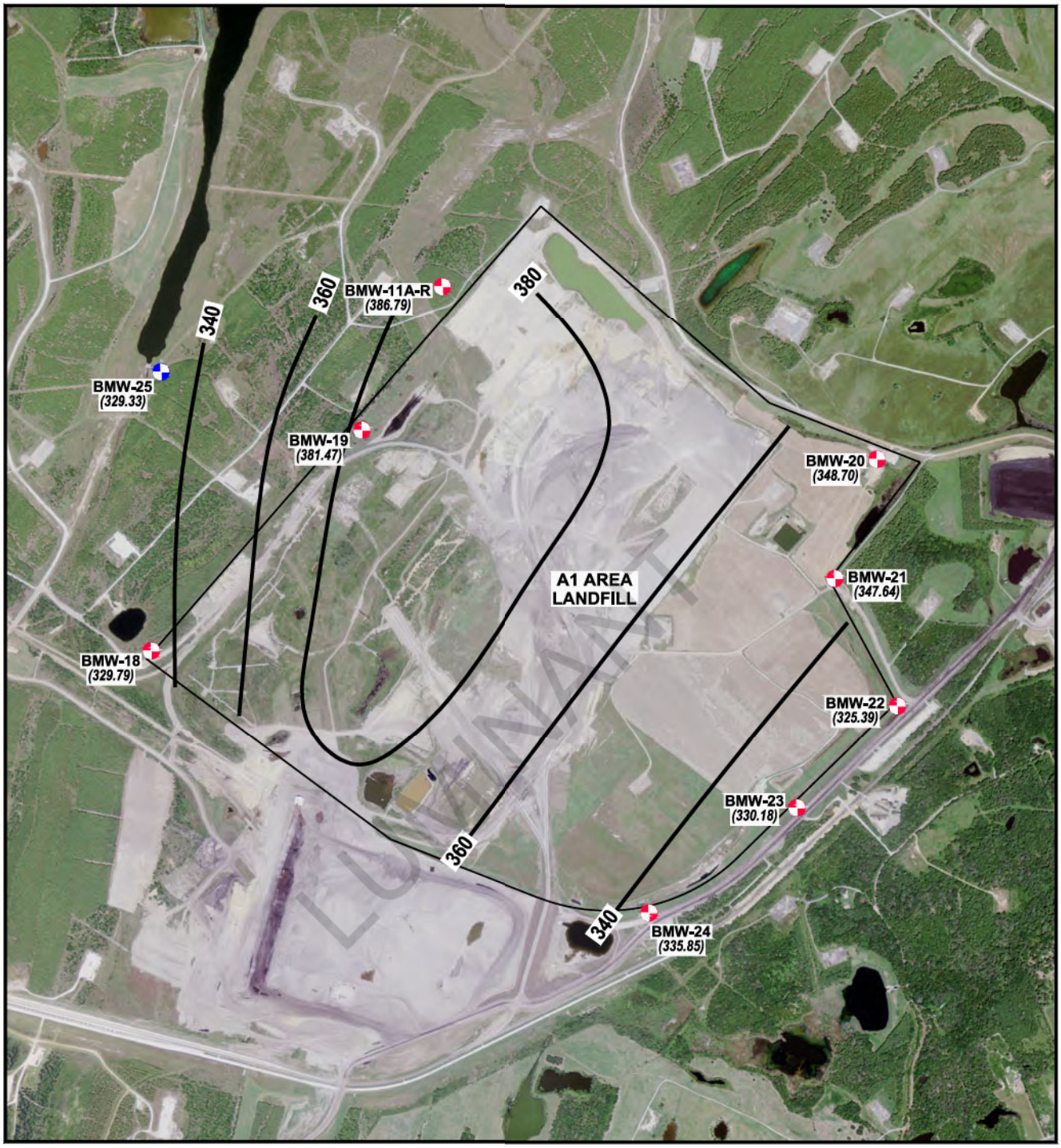
MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

Figure 4

A1 AREA LANDFILL GROUNDWATER POTENTIOMETRIC SURFACE MAP APRIL 7, 2016

PROJECT: 5164B	BY: AJD	REVISIONS
DATE: SEPT., 2017	CHECKED: PJB	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS



EXPLANATION

- CCR Monitoring Well Location
- Non-CCR Monitoring Well Used to Further Evaluate Groundwater Flow Direction
- (358.02) Groundwater Potentiometric Surface (ft. MSL)
- —360— Groundwater Potentiometric Surface Contour (C.I. = 20 ft.)

N

Scale in Feet

0 900 1800

SOURCE:
Imagery from www.tnris.gov, Rusk County, aerial photographs, 2012.

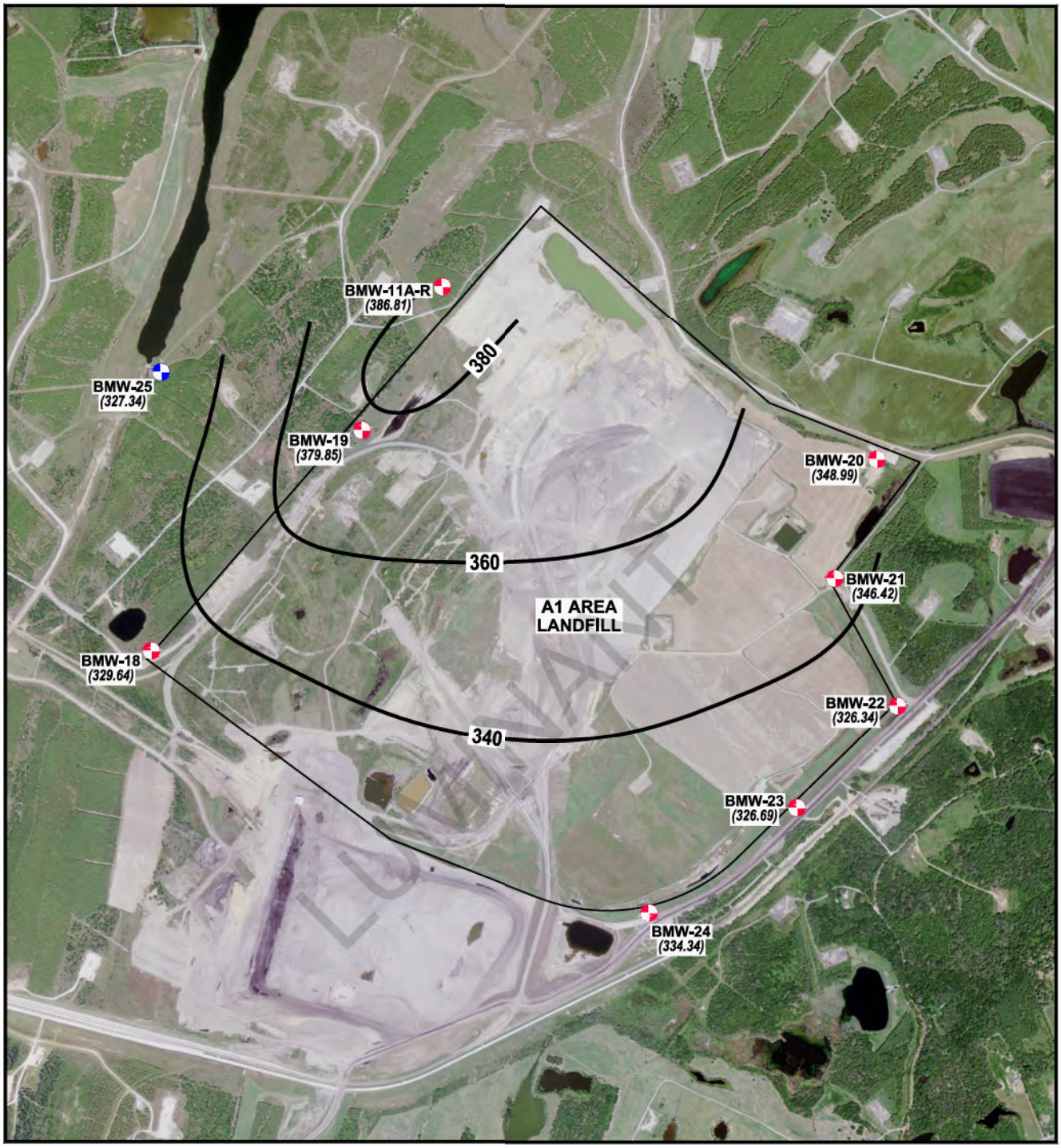
MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

Figure 5

A1 AREA LANDFILL GROUNDWATER POTENTIOMETRIC SURFACE MAP JUNE 6, 2016

PROJECT: 5164B	BY: AJD	REVISIONS
DATE: SEPT., 2017	CHECKED: PJB	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS



EXPLANATION

- CCR Monitoring Well Location
- Non-CCR Monitoring Well Used to Further Evaluate Groundwater Flow Direction
- (358.02) Groundwater Potentiometric Surface (ft. MSL)
- —360— Groundwater Potentiometric Surface Contour (C.I. = 20 ft.)

N

Scale in Feet

0 900 1800

SOURCE:
Imagery from www.tnris.gov, Rusk County, aerial photographs, 2012.

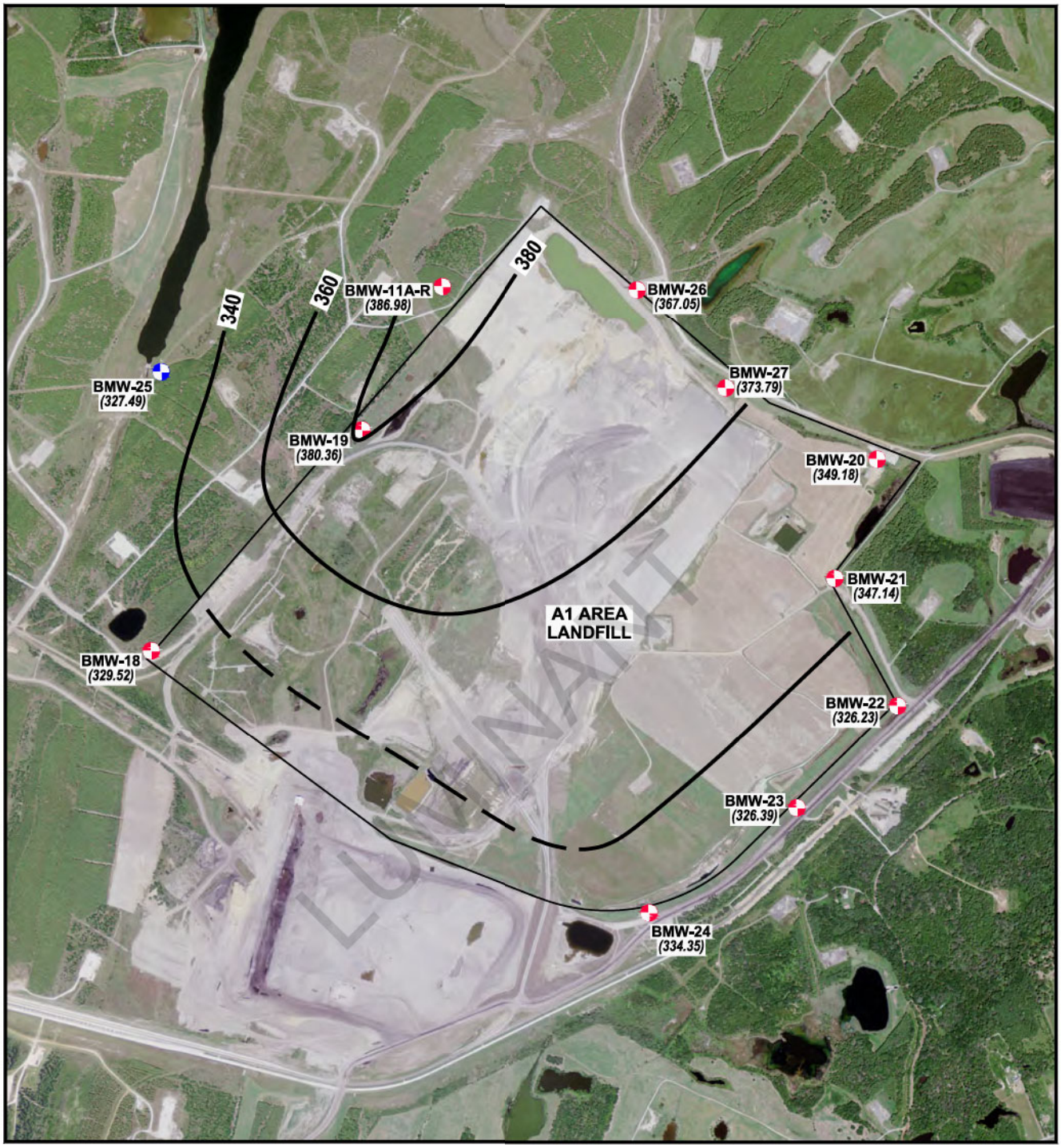
MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

Figure 6

A1 AREA LANDFILL GROUNDWATER POTENTIOMETRIC SURFACE MAP AUGUST 11, 2016

PROJECT: 5164B	BY: AJD	REVISIONS
DATE: SEPT., 2017	CHECKED: PJB	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS



EXPLANATION

- CCR Monitoring Well Location
- Non-CCR Monitoring Well Used to Further Evaluate Groundwater Flow Direction
- (358.02) Groundwater Potentiometric Surface (ft. MSL)
- 360 Groundwater Potentiometric Surface Contour (C.I. = 20 ft.)

N

Scale in Feet

0 900 1800

SOURCE:
Imagery from www.tnris.gov, Rusk County, aerial photographs, 2012.

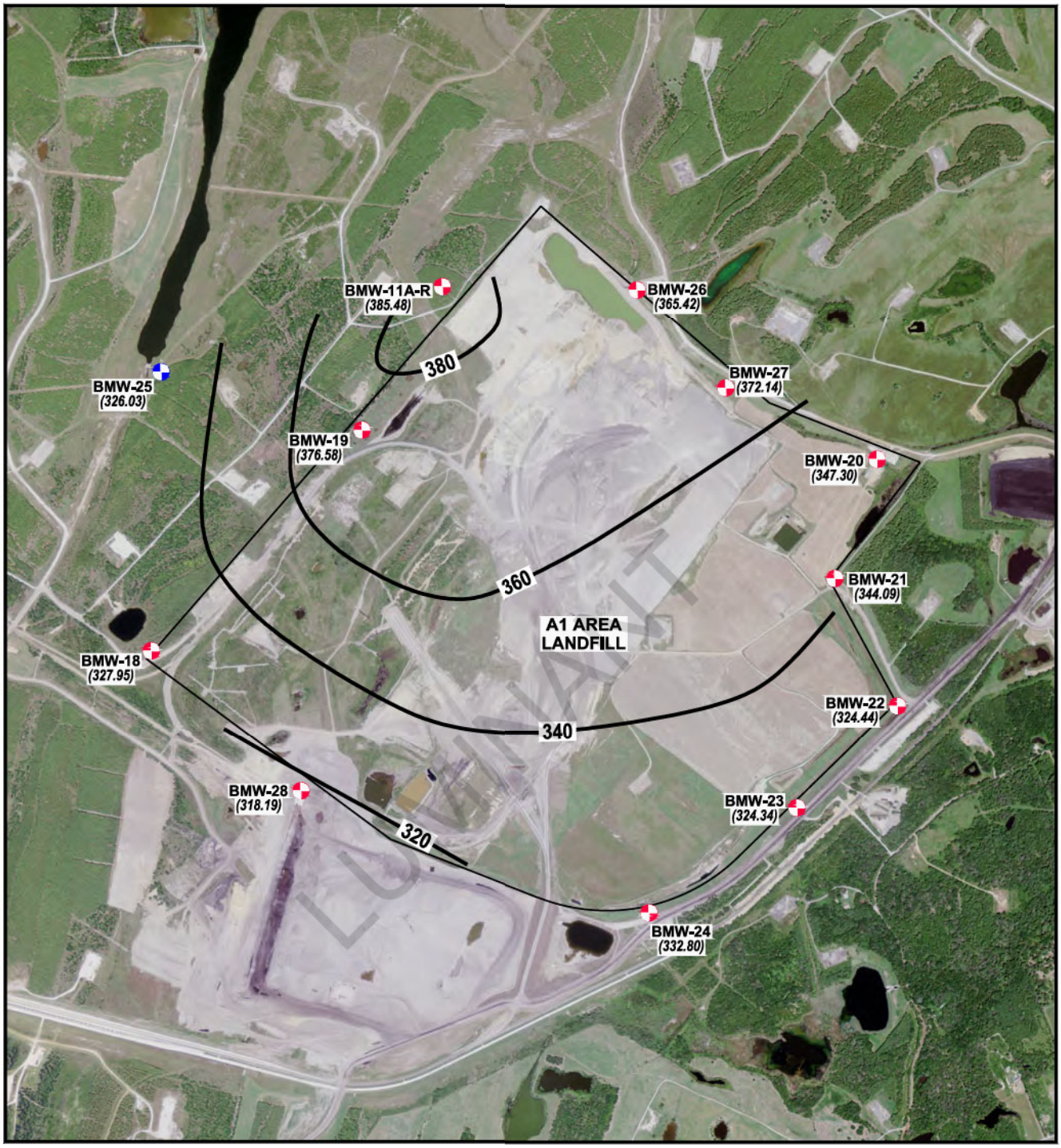
MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

Figure 7

A1 AREA LANDFILL GROUNDWATER POTENTIOMETRIC SURFACE MAP OCTOBER 25, 2016

PROJECT: 5164B	BY: AJD	REVISIONS
DATE: SEPT., 2017	CHECKED: PJB	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS



EXPLANATION

- CCR Monitoring Well Location
- Non-CCR Monitoring Well Used to Further Evaluate Groundwater Flow Direction
- (358.02) Groundwater Potentiometric Surface (ft. MSL)
- —360— Groundwater Potentiometric Surface Contour (C.I. = 20 ft.)

N

Scale in Feet

0 900 1800

SOURCE:
Imagery from www.tnris.gov, Rusk County, aerial photographs, 2012.

MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

Figure 8

A1 AREA LANDFILL GROUNDWATER POTENTIOMETRIC SURFACE MAP DECEMBER 13, 2016

PROJECT: 5164B	BY: AJD	REVISIONS
DATE: SEPT., 2017	CHECKED: PJB	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS

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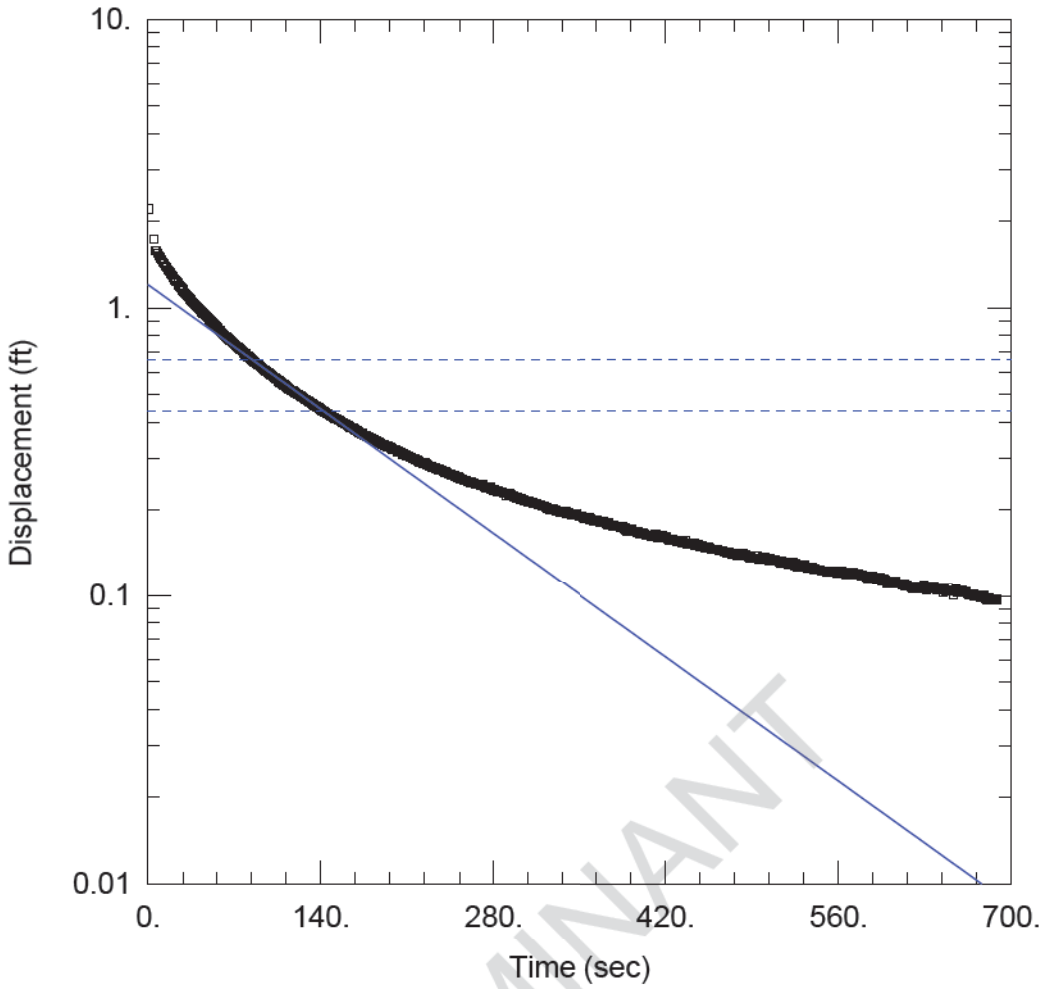
Appendix D

Aquifer Test Data



LUMINANT

WELL TEST ANALYSIS

Data Set: J:\...\BMW-21 Slug IN.aqt
Date: 12/16/15 Time: 10:22:24

PROJECT INFORMATION

Company: PBW
Client: Luminant
Project: 5164-B
Location: Beckville Mine
Test Well: BMW-21
Test Date: 9-22-2015

AQUIFER DATA

Saturated Thickness: 10. ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (BMW-21)

Initial Displacement: 2.2 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.083 ft
Static Water Column Height: 38.08 ft
Screen Length: 10. ft
Well Radius: 0.27 ft

SOLUTION

Aquifer Model: Confined
Solution Method: Bouwer-Rice
K = 0.0002046 cm/sec
y0 = 1.204 ft

Data Set: J:\5164 - Luminant CCR Well Installation and GW Sampling\5164-B_Martin Lake\Slug Tests\A1 LF\Aqtes
Date: 12/16/15
Time: 10:24:36

PROJECT INFORMATION

Company: PBW
Client: Luminant
Project: 5164-B
Location: Beckville Mine
Test Date: 9-22-2015
Test Well: BMW-21

AQUIFER DATA

Saturated Thickness: 10. ft
Anisotropy Ratio (Kz/Kr): 1.

SLUG TEST WELL DATA

Test Well: BMW-21

X Location: 0. ft
Y Location: 0. ft

Initial Displacement: 2.2 ft
Static Water Column Height: 38.08 ft
Casing Radius: 0.083 ft
Well Radius: 0.27 ft
Well Skin Radius: 0.27 ft
Screen Length: 10. ft
Total Well Penetration Depth: 10. ft

No. of Observations: 685

Observation Data

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
0.	0.	347.	0.1923
5.	1.725	348.	0.193
6.	1.573	349.	0.1901
7.	1.58	350.	0.1904
8.	1.547	351.	0.1894
9.	1.52	352.	0.1889
10.	1.493	353.	0.187
11.	1.468	354.	0.1876
12.	1.444	355.	0.1868
13.	1.424	356.	0.1872
14.	1.401	357.	0.186
15.	1.38	358.	0.1871
16.	1.356	359.	0.1848
17.	1.338	360.	0.1838
18.	1.319	361.	0.1843
19.	1.302	362.	0.1833
20.	1.282	363.	0.1829
21.	1.265	364.	0.1835
22.	1.249	365.	0.1823
23.	1.233	366.	0.1825
24.	1.218	367.	0.1806
25.	1.201	368.	0.1809
26.	1.187	369.	0.1811
27.	1.172	370.	0.1813
28.	1.156	371.	0.1799
29.	1.143	372.	0.1792
30.	1.129	373.	0.1775
31.	1.114	374.	0.1798
32.	1.101	375.	0.1769
33.	1.09	376.	0.1771

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Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
34.	1.076	377.	0.1757
35.	1.064	378.	0.1758
36.	1.05	379.	0.1751
37.	1.039	380.	0.1753
38.	1.028	381.	0.175
39.	1.016	382.	0.1749
40.	1.005	383.	0.1729
41.	0.994	384.	0.1729
42.	0.9826	385.	0.1741
43.	0.9714	386.	0.1736
44.	0.962	387.	0.1724
45.	0.9552	388.	0.1698
46.	0.9466	389.	0.1687
47.	0.9345	390.	0.1699
48.	0.9261	391.	0.1701
49.	0.9153	392.	0.1704
50.	0.9058	393.	0.1674
51.	0.8976	394.	0.1678
52.	0.8867	395.	0.1678
53.	0.8794	396.	0.1675
54.	0.8698	397.	0.167
55.	0.8616	398.	0.1676
56.	0.8539	399.	0.165
57.	0.844	400.	0.1657
58.	0.8371	401.	0.166
59.	0.8284	402.	0.1667
60.	0.8203	403.	0.1646
61.	0.8126	404.	0.1633
62.	0.8052	405.	0.1623
63.	0.7972	406.	0.163
64.	0.7909	407.	0.1624
65.	0.7837	408.	0.1617
66.	0.7748	409.	0.1612
67.	0.7694	410.	0.1632
68.	0.7622	411.	0.1637
69.	0.7567	412.	0.1648
70.	0.7481	413.	0.1629
71.	0.7415	414.	0.1602
72.	0.7337	415.	0.1607
73.	0.7293	416.	0.162
74.	0.7219	417.	0.1624
75.	0.7163	418.	0.1597
76.	0.7086	419.	0.1591
77.	0.7023	420.	0.1607
78.	0.6981	421.	0.1597
79.	0.6922	422.	0.1579
80.	0.6841	423.	0.1572
81.	0.6792	424.	0.1574
82.	0.6738	425.	0.158
83.	0.6673	426.	0.1573
84.	0.6634	427.	0.1563
85.	0.6582	428.	0.1563
86.	0.6521	429.	0.1556
87.	0.6465	430.	0.1561
88.	0.6426	431.	0.1568
89.	0.6351	432.	0.1555
90.	0.6336	433.	0.1539
91.	0.6276	434.	0.154
92.	0.6202	435.	0.1535
93.	0.617	436.	0.1557
94.	0.6114	437.	0.1522
95.	0.6065	438.	0.1533
96.	0.603	439.	0.1532
97.	0.5984	440.	0.1516
98.	0.5934	441.	0.1518
99.	0.5885	442.	0.1522

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Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
100.	0.5843	443.	0.1524
101.	0.5809	444.	0.1507
102.	0.5748	445.	0.151
103.	0.5707	446.	0.1512
104.	0.5673	447.	0.1502
105.	0.5629	448.	0.1481
106.	0.5594	449.	0.15
107.	0.5537	450.	0.1496
108.	0.5511	451.	0.1489
109.	0.5452	452.	0.147
110.	0.5423	453.	0.1484
111.	0.5374	454.	0.1488
112.	0.5339	455.	0.1478
113.	0.5305	456.	0.1469
114.	0.5259	457.	0.1458
115.	0.5217	458.	0.146
116.	0.5192	459.	0.1454
117.	0.5159	460.	0.1454
118.	0.5144	461.	0.1451
119.	0.5101	462.	0.145
120.	0.5068	463.	0.1442
121.	0.503	464.	0.144
122.	0.5	465.	0.144
123.	0.4949	466.	0.144
124.	0.4944	467.	0.143
125.	0.4898	468.	0.1429
126.	0.4869	469.	0.1414
127.	0.4834	470.	0.1425
128.	0.4805	471.	0.142
129.	0.4759	472.	0.1408
130.	0.4748	473.	0.141
131.	0.4715	474.	0.1402
132.	0.4679	475.	0.1401
133.	0.4662	476.	0.1403
134.	0.4616	477.	0.1392
135.	0.4576	478.	0.1391
136.	0.4561	479.	0.1395
137.	0.4535	480.	0.1396
138.	0.4516	481.	0.1386
139.	0.4476	482.	0.1387
140.	0.4445	483.	0.1402
141.	0.4411	484.	0.1393
142.	0.4393	485.	0.1391
143.	0.4368	486.	0.1385
144.	0.4348	487.	0.1369
145.	0.4315	488.	0.1359
146.	0.4303	489.	0.1361
147.	0.4265	490.	0.1357
148.	0.4235	491.	0.1358
149.	0.421	492.	0.138
150.	0.4181	493.	0.1374
151.	0.4152	494.	0.1381
152.	0.414	495.	0.1341
153.	0.4116	496.	0.135
154.	0.4083	497.	0.1356
155.	0.4074	498.	0.1343
156.	0.4054	499.	0.1347
157.	0.4006	500.	0.1365
158.	0.4	501.	0.1356
159.	0.3979	502.	0.1339
160.	0.3965	503.	0.1339
161.	0.3925	504.	0.1326
162.	0.3916	505.	0.1351
163.	0.3898	506.	0.1338
164.	0.386	507.	0.1342
165.	0.384	508.	0.1327

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Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
166.	0.3832	509.	0.1336
167.	0.3799	510.	0.133
168.	0.3771	511.	0.133
169.	0.3758	512.	0.132
170.	0.3748	513.	0.1307
171.	0.3709	514.	0.1326
172.	0.3695	515.	0.1317
173.	0.3668	516.	0.1309
174.	0.3671	517.	0.1315
175.	0.3628	518.	0.1314
176.	0.3628	519.	0.1286
177.	0.3599	520.	0.1293
178.	0.3569	521.	0.1294
179.	0.3563	522.	0.1299
180.	0.3544	523.	0.131
181.	0.3528	524.	0.1279
182.	0.3516	525.	0.1292
183.	0.349	526.	0.1287
184.	0.3479	527.	0.1264
185.	0.345	528.	0.1273
186.	0.3432	529.	0.1279
187.	0.3418	530.	0.1277
188.	0.3398	531.	0.1277
189.	0.3356	532.	0.1286
190.	0.3357	533.	0.1271
191.	0.3377	534.	0.1257
192.	0.3344	535.	0.1254
193.	0.3335	536.	0.1248
194.	0.3317	537.	0.1249
195.	0.3297	538.	0.1253
196.	0.3286	539.	0.1258
197.	0.3269	540.	0.1232
198.	0.3251	541.	0.1242
199.	0.3231	542.	0.1236
200.	0.3225	543.	0.1232
201.	0.3221	544.	0.1231
202.	0.3183	545.	0.1236
203.	0.3183	546.	0.1221
204.	0.3169	547.	0.1226
205.	0.3164	548.	0.1218
206.	0.3122	549.	0.1222
207.	0.3117	550.	0.1211
208.	0.31	551.	0.1211
209.	0.3088	552.	0.1206
210.	0.3082	553.	0.1219
211.	0.3068	554.	0.1207
212.	0.3036	555.	0.1206
213.	0.304	556.	0.1206
214.	0.3014	557.	0.1213
215.	0.2998	558.	0.1226
216.	0.2994	559.	0.1204
217.	0.2979	560.	0.1224
218.	0.2968	561.	0.1214
219.	0.2947	562.	0.1217
220.	0.292	563.	0.1217
221.	0.2926	564.	0.1207
222.	0.2909	565.	0.1204
223.	0.2891	566.	0.1192
224.	0.289	567.	0.1202
225.	0.2909	568.	0.12
226.	0.2874	569.	0.1192
227.	0.2852	570.	0.1201
228.	0.2839	571.	0.1184
229.	0.2833	572.	0.1203
230.	0.2818	573.	0.1193
231.	0.2804	574.	0.1181

LUMINANT

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
232.	0.2807	575.	0.1196
233.	0.2786	576.	0.1191
234.	0.2768	577.	0.1181
235.	0.276	578.	0.118
236.	0.2761	579.	0.1189
237.	0.2744	580.	0.1176
238.	0.2737	581.	0.1171
239.	0.2724	582.	0.1174
240.	0.2702	583.	0.116
241.	0.2711	584.	0.115
242.	0.2686	585.	0.1165
243.	0.2664	586.	0.1154
244.	0.266	587.	0.117
245.	0.2658	588.	0.1157
246.	0.2638	589.	0.1152
247.	0.2633	590.	0.1151
248.	0.2632	591.	0.1134
249.	0.2601	592.	0.1162
250.	0.2602	593.	0.1143
251.	0.2596	594.	0.116
252.	0.2586	595.	0.1131
253.	0.2561	596.	0.1138
254.	0.2546	597.	0.1145
255.	0.2561	598.	0.1131
256.	0.2536	599.	0.1105
257.	0.2533	600.	0.1122
258.	0.2526	601.	0.1119
259.	0.2508	602.	0.1125
260.	0.2501	603.	0.1116
261.	0.248	604.	0.1109
262.	0.2488	605.	0.1124
263.	0.247	606.	0.1122
264.	0.2483	607.	0.1106
265.	0.2447	608.	0.1104
266.	0.2454	609.	0.1106
267.	0.245	610.	0.1105
268.	0.2444	611.	0.1104
269.	0.2441	612.	0.1094
270.	0.2424	613.	0.1102
271.	0.244	614.	0.1084
272.	0.2407	615.	0.1092
273.	0.241	616.	0.1079
274.	0.2385	617.	0.108
275.	0.2385	618.	0.1081
276.	0.2379	619.	0.1068
277.	0.2387	620.	0.1064
278.	0.2354	621.	0.1082
279.	0.2351	622.	0.107
280.	0.2342	623.	0.1077
281.	0.2325	624.	0.1072
282.	0.2329	625.	0.1063
283.	0.2318	626.	0.1065
284.	0.2311	627.	0.1075
285.	0.2313	628.	0.1067
286.	0.2309	629.	0.1092
287.	0.23	630.	0.1078
288.	0.2281	631.	0.1052
289.	0.2286	632.	0.1057
290.	0.2243	633.	0.1078
291.	0.2276	634.	0.1074
292.	0.224	635.	0.1079
293.	0.2269	636.	0.1076
294.	0.2249	637.	0.1077
295.	0.2229	638.	0.1062
296.	0.2224	639.	0.1062
297.	0.2217	640.	0.1053

LUMINANT

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
298.	0.2197	641.	0.1061
299.	0.2203	642.	0.106
300.	0.2191	643.	0.1066
301.	0.2182	644.	0.1056
302.	0.219	645.	0.1031
303.	0.2163	646.	0.1055
304.	0.2166	647.	0.1039
305.	0.2151	648.	0.105
306.	0.2147	649.	0.1066
307.	0.2146	650.	0.1044
308.	0.2121	651.	0.1051
309.	0.2138	652.	0.1038
310.	0.2126	653.	0.1009
311.	0.2129	654.	0.1048
312.	0.2115	655.	0.1056
313.	0.2097	656.	0.1027
314.	0.2097	657.	0.1029
315.	0.2095	658.	0.1039
316.	0.208	659.	0.1032
317.	0.2078	660.	0.1051
318.	0.2074	661.	0.1025
319.	0.2063	662.	0.1035
320.	0.2055	663.	0.1034
321.	0.2059	664.	0.1013
322.	0.2041	665.	0.1012
323.	0.2031	666.	0.1019
324.	0.2013	667.	0.1011
325.	0.2008	668.	0.1014
326.	0.2006	669.	0.1013
327.	0.202	670.	0.0994
328.	0.2009	671.	0.1009
329.	0.2002	672.	0.1009
330.	0.1999	673.	0.0995
331.	0.1985	674.	0.1
332.	0.1971	675.	0.0988
333.	0.1975	676.	0.0991
334.	0.1958	677.	0.1001
335.	0.1961	678.	0.1002
336.	0.1964	679.	0.0982
337.	0.1975	680.	0.0966
338.	0.1969	681.	0.0989
339.	0.1943	682.	0.0983
340.	0.1954	683.	0.0977
341.	0.1948	684.	0.0973
342.	0.1943	685.	0.0974
343.	0.1924	686.	0.0978
344.	0.1943	687.	0.0972
345.	0.1936	688.	0.0971
346.	0.1939		

SOLUTION

Slug Test
Aquifer Model: Confined
Solution Method: Bouwer-Rice
ln(Re/rw): 2.748

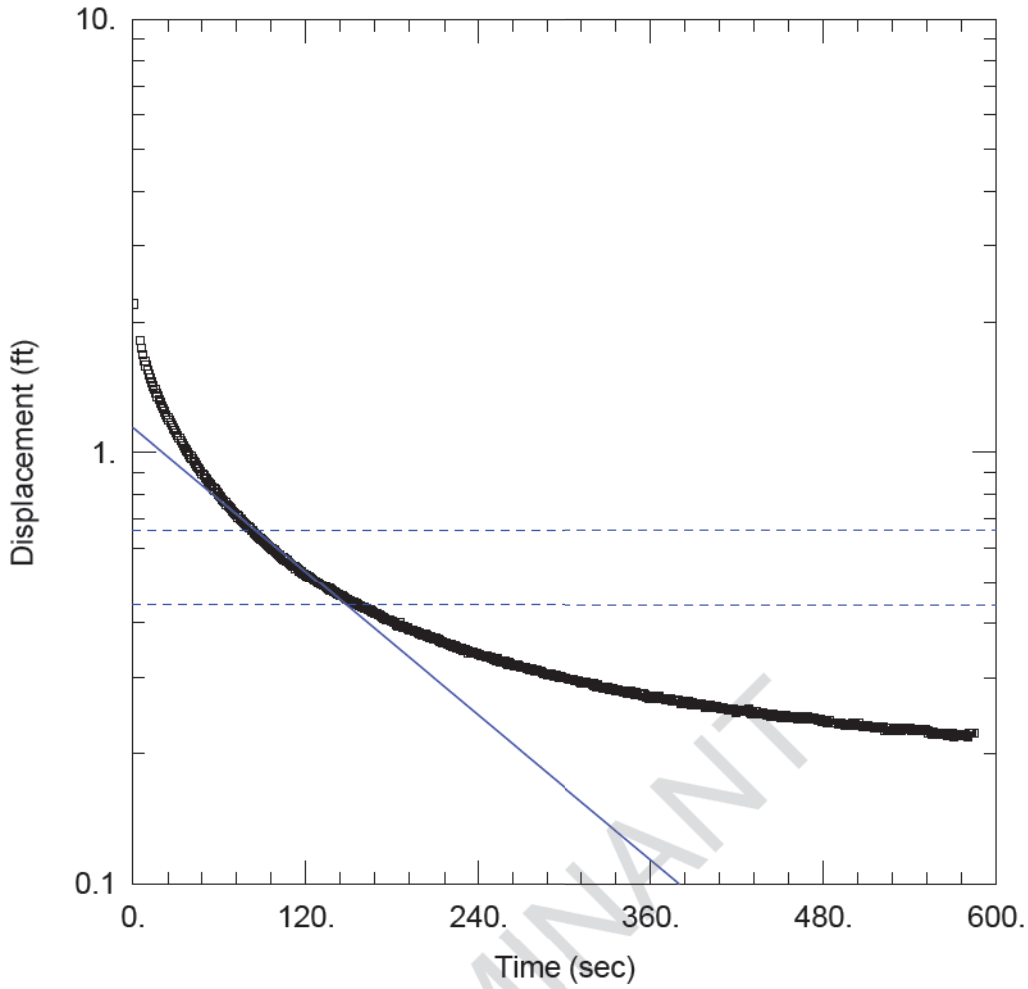
VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
K	0.0002046	cm/sec
y0	1.204	ft

T = K*b = 0.06235 cm²/sec

LUMINANT



LUMINANT

SLUG OUT

Data Set: J:\...\BMW-21 Slug OUT.aqt
Date: 12/16/15 Time: 10:22:40

PROJECT INFORMATION

Company: PBW
Client: Luminant
Project: 5164-B
Location: Beckville Mine
Test Well: BMW-21
Test Date: 9-22-2015

AQUIFER DATA

Saturated Thickness: 10. ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (BMW-21)

Initial Displacement: 2.2 ft Static Water Column Height: 38.08 ft
Total Well Penetration Depth: 10. ft Screen Length: 10. ft
Casing Radius: 0.083 ft Well Radius: 0.27 ft

SOLUTION

Aquifer Model: Confined Solution Method: Bouwer-Rice
K = 0.0001849 cm/sec y0 = 1.14 ft

Data Set: J:\5164 - Luminant CCR Well Installation and GW Sampling\5164-B_Martin Lake\Slug Tests\A1 LF\Aqtes
Title: Slug OUT
Date: 12/16/15
Time: 10:24:27

PROJECT INFORMATION

Company: PBW
Client: Luminant
Project: 5164-B
Location: Beckville Mine
Test Date: 9-22-2015
Test Well: BMW-21

AQUIFER DATA

Saturated Thickness: 10. ft
Anisotropy Ratio (Kz/Kr): 1.

SLUG TEST WELL DATA

Test Well: BMW-21

X Location: 0. ft
Y Location: 0. ft

Initial Displacement: 2.2 ft
Static Water Column Height: 38.08 ft
Casing Radius: 0.083 ft
Well Radius: 0.27 ft
Well Skin Radius: 0.27 ft
Screen Length: 10. ft
Total Well Penetration Depth: 10. ft

No. of Observations: 581

Observation Data

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
0.	0.	295.	0.3014
5.	1.809	296.	0.2997
6.	1.74	297.	0.3012
7.	1.68	298.	0.301
8.	1.628	299.	0.2999
9.	1.585	300.	0.2994
10.	1.548	301.	0.2992
11.	1.511	302.	0.2976
12.	1.48	303.	0.2969
13.	1.451	304.	0.2972
14.	1.423	305.	0.2978
15.	1.396	306.	0.2968
16.	1.37	307.	0.2952
17.	1.347	308.	0.2944
18.	1.325	309.	0.295
19.	1.301	310.	0.2953
20.	1.281	311.	0.2938
21.	1.262	312.	0.2919
22.	1.241	313.	0.2934
23.	1.22	314.	0.2926
24.	1.203	315.	0.2927
25.	1.185	316.	0.2918
26.	1.168	317.	0.2918
27.	1.152	318.	0.291
28.	1.136	319.	0.291
29.	1.122	320.	0.2902
30.	1.107	321.	0.2868
31.	1.091	322.	0.286
32.	1.078	323.	0.288

LUMINANT

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
33.	1.064	324.	0.2846
34.	1.049	325.	0.2851
35.	1.037	326.	0.2854
36.	1.022	327.	0.2828
37.	1.012	328.	0.284
38.	1.002	329.	0.2846
39.	0.9864	330.	0.2842
40.	0.9767	331.	0.2819
41.	0.9654	332.	0.2829
42.	0.9543	333.	0.2827
43.	0.9438	334.	0.2821
44.	0.9317	335.	0.282
45.	0.9221	336.	0.2803
46.	0.9145	337.	0.2803
47.	0.9036	338.	0.2792
48.	0.8933	339.	0.2799
49.	0.8844	340.	0.2801
50.	0.8746	341.	0.2787
51.	0.8674	342.	0.2788
52.	0.8542	343.	0.2778
53.	0.8472	344.	0.2768
54.	0.8417	345.	0.2786
55.	0.8322	346.	0.279
56.	0.8236	347.	0.2773
57.	0.8178	348.	0.2766
58.	0.8082	349.	0.2745
59.	0.8018	350.	0.2767
60.	0.7934	351.	0.2753
61.	0.7889	352.	0.2761
62.	0.7789	353.	0.2748
63.	0.7735	354.	0.2727
64.	0.7656	355.	0.2747
65.	0.7583	356.	0.2727
66.	0.7532	357.	0.2707
67.	0.7472	358.	0.2723
68.	0.7396	359.	0.2692
69.	0.7331	360.	0.272
70.	0.7273	361.	0.2693
71.	0.7221	362.	0.2682
72.	0.7151	363.	0.2696
73.	0.7086	364.	0.2693
74.	0.7028	365.	0.2697
75.	0.6996	366.	0.2708
76.	0.6921	367.	0.2683
77.	0.6881	368.	0.2685
78.	0.6831	369.	0.2684
79.	0.6772	370.	0.2658
80.	0.6724	371.	0.267
81.	0.6679	372.	0.2668
82.	0.6617	373.	0.2666
83.	0.659	374.	0.2674
84.	0.6526	375.	0.2656
85.	0.6481	376.	0.2658
86.	0.6426	377.	0.2644
87.	0.6392	378.	0.2648
88.	0.6349	379.	0.2665
89.	0.6306	380.	0.2642
90.	0.6264	381.	0.2616
91.	0.6204	382.	0.263
92.	0.6173	383.	0.2631
93.	0.612	384.	0.2632
94.	0.6092	385.	0.2627
95.	0.6054	386.	0.2637
96.	0.6002	387.	0.2619
97.	0.5954	388.	0.2602
98.	0.5936	389.	0.2631

LUMINANT

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
99.	0.5881	390.	0.2613
100.	0.5845	391.	0.2615
101.	0.5808	392.	0.2609
102.	0.5782	393.	0.2601
103.	0.573	394.	0.2586
104.	0.5701	395.	0.2601
105.	0.5664	396.	0.2587
106.	0.5623	397.	0.2592
107.	0.5624	398.	0.2564
108.	0.5562	399.	0.2585
109.	0.5526	400.	0.2556
110.	0.5503	401.	0.2585
111.	0.5464	402.	0.2575
112.	0.5442	403.	0.2563
113.	0.54	404.	0.2561
114.	0.5373	405.	0.2556
115.	0.5323	406.	0.257
116.	0.5303	407.	0.2561
117.	0.5287	408.	0.2557
118.	0.524	409.	0.254
119.	0.5223	410.	0.2552
120.	0.5198	411.	0.2543
121.	0.5167	412.	0.2541
122.	0.5142	413.	0.2534
123.	0.5117	414.	0.252
124.	0.5082	415.	0.2537
125.	0.5058	416.	0.2537
126.	0.5033	417.	0.253
127.	0.5019	418.	0.2524
128.	0.4999	419.	0.2499
129.	0.4957	420.	0.2513
130.	0.4934	421.	0.2522
131.	0.4923	422.	0.2525
132.	0.4891	423.	0.2513
133.	0.4882	424.	0.2529
134.	0.4856	425.	0.2509
135.	0.4834	426.	0.2527
136.	0.4805	427.	0.2522
137.	0.4773	428.	0.2531
138.	0.4753	429.	0.2487
139.	0.4736	430.	0.2481
140.	0.4714	431.	0.25
141.	0.4703	432.	0.2476
142.	0.4664	433.	0.2496
143.	0.4655	434.	0.2468
144.	0.4638	435.	0.2477
145.	0.4622	436.	0.2477
146.	0.4605	437.	0.2466
147.	0.4564	438.	0.2478
148.	0.4545	439.	0.2476
149.	0.4543	440.	0.2477
150.	0.4511	441.	0.2462
151.	0.4509	442.	0.2456
152.	0.4472	443.	0.2447
153.	0.446	444.	0.2465
154.	0.445	445.	0.2472
155.	0.4428	446.	0.2455
156.	0.4408	447.	0.2446
157.	0.4393	448.	0.2453
158.	0.4393	449.	0.2454
159.	0.4354	450.	0.2428
160.	0.4352	451.	0.2432
161.	0.4325	452.	0.2424
162.	0.4323	453.	0.2438
163.	0.4301	454.	0.2456
164.	0.4304	455.	0.2433

LUMINANT

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
165.	0.4279	456.	0.2416
166.	0.4249	457.	0.244
167.	0.4245	458.	0.2433
168.	0.4215	459.	0.2431
169.	0.4216	460.	0.2428
170.	0.4186	461.	0.2428
171.	0.418	462.	0.241
172.	0.4146	463.	0.243
173.	0.4133	464.	0.2411
174.	0.4108	465.	0.2426
175.	0.4097	466.	0.2426
176.	0.407	467.	0.243
177.	0.4068	468.	0.243
178.	0.4058	469.	0.2432
179.	0.4044	470.	0.24
180.	0.4034	471.	0.2421
181.	0.4004	472.	0.2402
182.	0.4005	473.	0.2415
183.	0.396	474.	0.2401
184.	0.3946	475.	0.2402
185.	0.4001	476.	0.2391
186.	0.3933	477.	0.2405
187.	0.3916	478.	0.2396
188.	0.3921	479.	0.2379
189.	0.3907	480.	0.2375
190.	0.3896	481.	0.237
191.	0.3893	482.	0.2364
192.	0.3857	483.	0.2353
193.	0.386	484.	0.2392
194.	0.3857	485.	0.2357
195.	0.3831	486.	0.2362
196.	0.383	487.	0.2354
197.	0.3817	488.	0.2355
198.	0.3795	489.	0.2356
199.	0.3787	490.	0.2348
200.	0.3772	491.	0.2349
201.	0.3753	492.	0.2356
202.	0.3748	493.	0.2345
203.	0.3761	494.	0.2346
204.	0.3735	495.	0.2327
205.	0.3726	496.	0.2322
206.	0.3704	497.	0.2334
207.	0.3712	498.	0.2328
208.	0.3701	499.	0.2337
209.	0.3681	500.	0.235
210.	0.3681	501.	0.2337
211.	0.3673	502.	0.2337
212.	0.3661	503.	0.2326
213.	0.3634	504.	0.2348
214.	0.3614	505.	0.2321
215.	0.3611	506.	0.2321
216.	0.3606	507.	0.2314
217.	0.3596	508.	0.2322
218.	0.358	509.	0.2328
219.	0.3577	510.	0.2313
220.	0.3562	511.	0.232
221.	0.3559	512.	0.2309
222.	0.353	513.	0.2308
223.	0.354	514.	0.2314
224.	0.3526	515.	0.2301
225.	0.3509	516.	0.2307
226.	0.3499	517.	0.2302
227.	0.3488	518.	0.231
228.	0.3492	519.	0.2299
229.	0.3457	520.	0.2299
230.	0.3481	521.	0.2309

LUMINANT

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
231.	0.3465	522.	0.2264
232.	0.3449	523.	0.2288
233.	0.3418	524.	0.2285
234.	0.3427	525.	0.2293
235.	0.3429	526.	0.2291
236.	0.3427	527.	0.2294
237.	0.3409	528.	0.2265
238.	0.3409	529.	0.2277
239.	0.3403	530.	0.2292
240.	0.3389	531.	0.2291
241.	0.336	532.	0.2281
242.	0.3368	533.	0.2288
243.	0.3359	534.	0.2263
244.	0.336	535.	0.2286
245.	0.3349	536.	0.2292
246.	0.3349	537.	0.2278
247.	0.3341	538.	0.2276
248.	0.3333	539.	0.2294
249.	0.3309	540.	0.2287
250.	0.3302	541.	0.2268
251.	0.3298	542.	0.2276
252.	0.3281	543.	0.2276
253.	0.3304	544.	0.2269
254.	0.3268	545.	0.2269
255.	0.3249	546.	0.2257
256.	0.3247	547.	0.2258
257.	0.3246	548.	0.2283
258.	0.3271	549.	0.2262
259.	0.3235	550.	0.2264
260.	0.3214	551.	0.2279
261.	0.3243	552.	0.2263
262.	0.3224	553.	0.2229
263.	0.3201	554.	0.2247
264.	0.3211	555.	0.2211
265.	0.3189	556.	0.2238
266.	0.319	557.	0.2211
267.	0.3207	558.	0.2224
268.	0.3181	559.	0.2229
269.	0.3159	560.	0.2233
270.	0.3166	561.	0.222
271.	0.3157	562.	0.2222
272.	0.3166	563.	0.2212
273.	0.3144	564.	0.2212
274.	0.3145	565.	0.2235
275.	0.3129	566.	0.2201
276.	0.3136	567.	0.221
277.	0.314	568.	0.2205
278.	0.3117	569.	0.2226
279.	0.3105	570.	0.2192
280.	0.3108	571.	0.2216
281.	0.3099	572.	0.2214
282.	0.309	573.	0.2208
283.	0.3099	574.	0.2206
284.	0.3081	575.	0.2212
285.	0.3061	576.	0.2199
286.	0.3059	577.	0.2211
287.	0.3046	578.	0.2203
288.	0.3038	579.	0.2204
289.	0.3052	580.	0.2194
290.	0.3041	581.	0.2231
291.	0.304	582.	0.2234
292.	0.3015	583.	0.2232
293.	0.3015	584.	0.2228
294.	0.302		

SOLUTION

LUMINANT

Slug Test
Aquifer Model: Confined
Solution Method: Bouwer-Rice
ln(Re/rw): 2.748

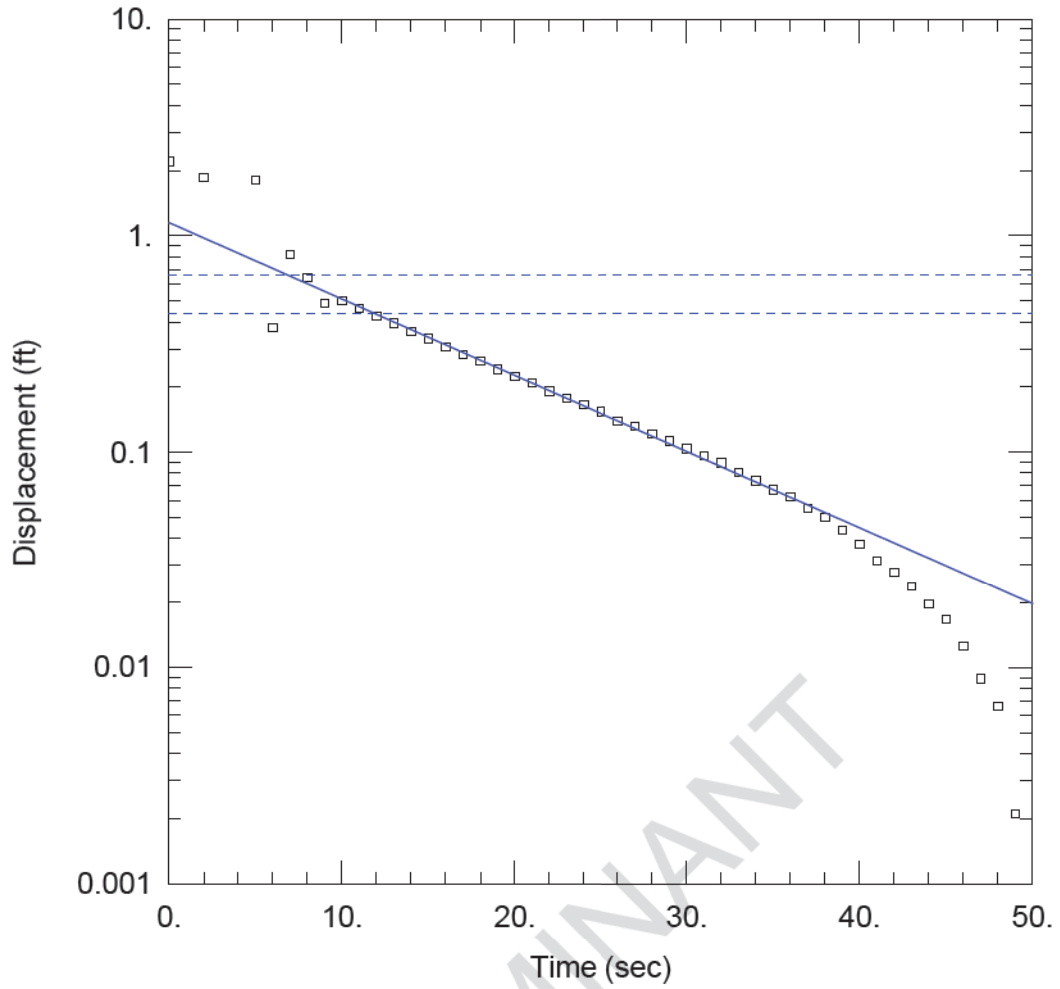
VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
K	0.0001849	cm/sec
y0	1.14	ft

T = K*b = 0.05637 cm²/sec

LUMINANT



LUMINANT

WELL TEST ANALYSIS

Data Set: J:\...\BMW-23 Slug IN.aqt
Date: 12/16/15 Time: 10:22:50

PROJECT INFORMATION

Company: PBW
Client: Luminant
Project: 5164-B
Location: Beckville Mine
Test Well: BMW-23
Test Date: 9-22-2015

AQUIFER DATA

Saturated Thickness: 15. ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (BMW-23)

Initial Displacement: 2.2 ft
Total Well Penetration Depth: 15. ft
Casing Radius: 0.083 ft
Static Water Column Height: 21.76 ft
Screen Length: 15. ft
Well Radius: 0.27 ft

SOLUTION

Aquifer Model: Confined
Solution Method: Bouwer-Rice
K = 0.00175 cm/sec
y0 = 1.15 ft

Data Set: J:\5164 - Luminant CCR Well Installation and GW Sampling\5164-B_Martin Lake\Slug Tests\A1 LF\Aqtes
Date: 12/16/15
Time: 10:24:14

PROJECT INFORMATION

Company: PBW
Client: Luminant
Project: 5164-B
Location: Beckville Mine
Test Date: 9-22-2015
Test Well: BMW-23

AQUIFER DATA

Saturated Thickness: 15. ft
Anisotropy Ratio (Kz/Kr): 1.

SLUG TEST WELL DATA

Test Well: BMW-23

X Location: 0. ft
Y Location: 0. ft

Initial Displacement: 2.2 ft
Static Water Column Height: 21.76 ft
Casing Radius: 0.083 ft
Well Radius: 0.27 ft
Well Skin Radius: 0.27 ft
Screen Length: 15. ft
Total Well Penetration Depth: 15. ft

No. of Observations: 48

Observation Data

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
0.	0.	27.	0.1315
2.	1.854	28.	0.1208
5.	1.8	29.	0.1124
6.	0.3769	30.	0.1038
7.	0.8153	31.	0.0959
8.	0.6414	32.	0.0891
9.	0.4853	33.	0.0802
10.	0.4989	34.	0.0738
11.	0.4631	35.	0.067
12.	0.4267	36.	0.0624
13.	0.3941	37.	0.055
14.	0.3618	38.	0.0499
15.	0.3346	39.	0.0434
16.	0.3059	40.	0.0375
17.	0.2828	41.	0.0314
18.	0.264	42.	0.0277
19.	0.2415	43.	0.024
20.	0.2231	44.	0.0197
21.	0.2085	45.	0.0167
22.	0.1915	46.	0.0126
23.	0.1775	47.	0.0089
24.	0.1664	48.	0.0066
25.	0.1541	49.	0.0021
26.	0.1393	50.	0.

SOLUTION

Slug Test
Aquifer Model: Confined
Solution Method: Bouwer-Rice

LUMINANT

ln(Re/rw): 3.079

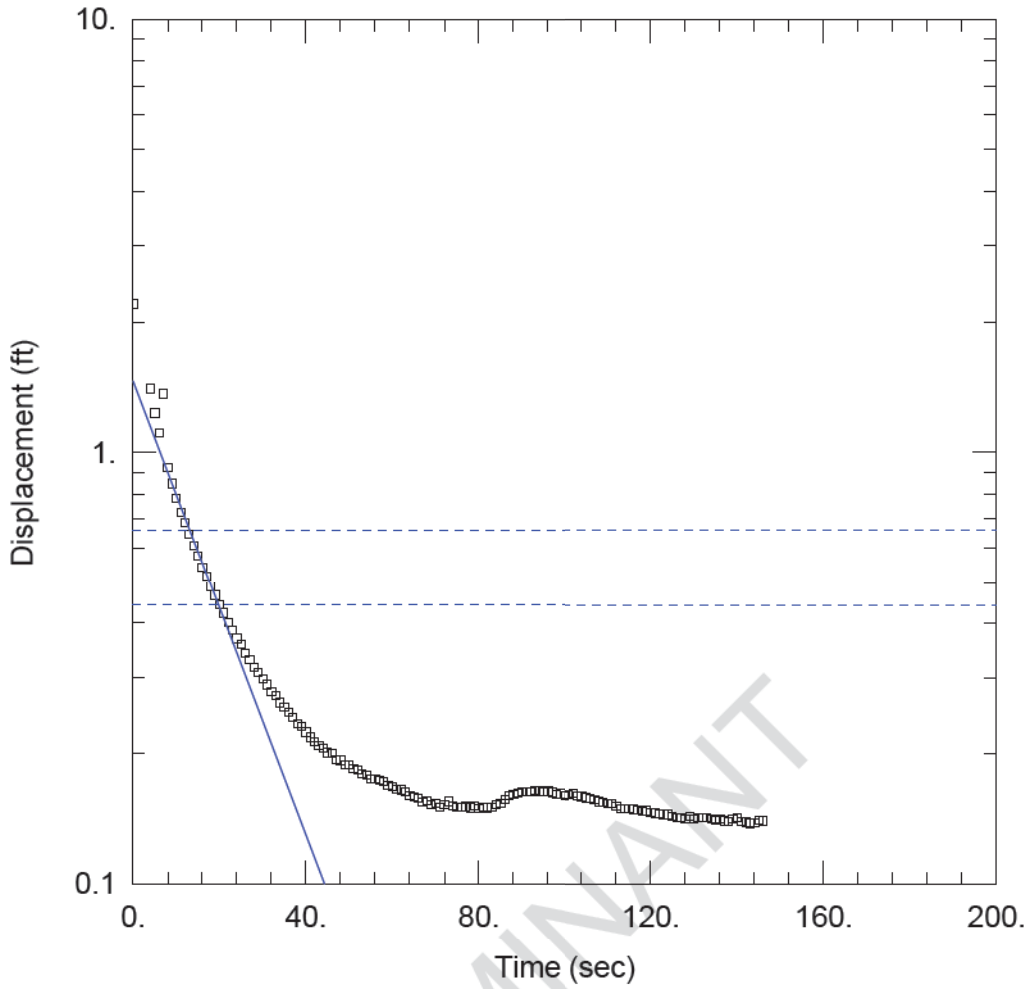
VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
K	0.00175	cm/sec
y0	1.15	ft

T = K*b = 0.8 cm²/sec

LUMINANT



LUMINANT

WELL TEST ANALYSIS

Data Set: J:\...\BMW-23 Slug OUT.aqt
Date: 12/16/15 Time: 10:22:59

PROJECT INFORMATION

Company: PBW
Client: Luminant
Project: 5164-B
Location: Beckville Mine
Test Well: BMW-23
Test Date: 9-22-2015

AQUIFER DATA

Saturated Thickness: 15. ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (New Well)

Initial Displacement: 2.2 ft
Total Well Penetration Depth: 15. ft
Casing Radius: 0.083 ft
Static Water Column Height: 21.76 ft
Screen Length: 15. ft
Well Radius: 0.27 ft

SOLUTION

Aquifer Model: Confined
Solution Method: Bouwer-Rice
K = 0.001305 cm/sec
y0 = 1.46 ft

Data Set: J:\5164 - Luminant CCR Well Installation and GW Sampling\5164-B_Martin Lake\Slug Tests\A1 LF\Aqtes
Date: 12/16/15
Time: 10:24:02

PROJECT INFORMATION

Company: PBW
Client: Luminant
Project: 5164-B
Location: Beckville Mine
Test Date: 9-22-2015
Test Well: BMW-23

AQUIFER DATA

Saturated Thickness: 15. ft
Anisotropy Ratio (Kz/Kr): 1.

SLUG TEST WELL DATA

Test Well: New Well

X Location: 0. ft
Y Location: 0. ft

Initial Displacement: 2.2 ft
Static Water Column Height: 21.76 ft
Casing Radius: 0.083 ft
Well Radius: 0.27 ft
Well Skin Radius: 0.27 ft
Screen Length: 15. ft
Total Well Penetration Depth: 15. ft

No. of Observations: 144

Observation Data

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
0.	0.	75.	0.1502
4.	1.404	76.	0.1502
5.	1.232	77.	0.1506
6.	1.108	78.	0.1497
7.	1.366	79.	0.151
8.	0.9205	80.	0.1495
9.	0.8461	81.	0.15
10.	0.7847	82.	0.1498
11.	0.7252	83.	0.1501
12.	0.687	84.	0.1525
13.	0.6474	85.	0.1535
14.	0.6094	86.	0.1561
15.	0.5752	87.	0.1596
16.	0.5429	88.	0.1605
17.	0.5153	89.	0.162
18.	0.487	90.	0.1634
19.	0.4645	91.	0.1633
20.	0.4424	92.	0.1634
21.	0.4221	93.	0.1638
22.	0.4021	94.	0.1637
23.	0.3858	95.	0.1631
24.	0.3684	96.	0.1637
25.	0.3576	97.	0.1624
26.	0.3409	98.	0.1611
27.	0.3289	99.	0.1614
28.	0.3165	100.	0.1595
29.	0.308	101.	0.1608
30.	0.2965	102.	0.1623
31.	0.288	103.	0.1601
32.	0.278	104.	0.1592

LUMINANT

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
33.	0.2717	105.	0.1582
34.	0.262	106.	0.1575
35.	0.2558	107.	0.1565
36.	0.2484	108.	0.1549
37.	0.2422	109.	0.1544
38.	0.2341	110.	0.1536
39.	0.2304	111.	0.1534
40.	0.2238	112.	0.1509
41.	0.218	113.	0.1494
42.	0.2128	114.	0.149
43.	0.2089	115.	0.149
44.	0.2051	116.	0.1487
45.	0.2006	117.	0.148
46.	0.1996	118.	0.1475
47.	0.1937	119.	0.1477
48.	0.1926	120.	0.146
49.	0.1884	121.	0.1457
50.	0.1885	122.	0.1451
51.	0.1846	123.	0.1447
52.	0.1826	124.	0.1447
53.	0.1795	125.	0.1435
54.	0.1783	126.	0.1419
55.	0.1749	127.	0.1423
56.	0.1744	128.	0.1414
57.	0.1735	129.	0.143
58.	0.1724	130.	0.1414
59.	0.1688	131.	0.1422
60.	0.1675	132.	0.1419
61.	0.1655	133.	0.142
62.	0.1647	134.	0.1413
63.	0.1629	135.	0.1405
64.	0.1594	136.	0.1409
65.	0.1585	137.	0.1398
66.	0.1573	138.	0.1392
67.	0.154	139.	0.1415
68.	0.1557	140.	0.1422
69.	0.1526	141.	0.1394
70.	0.1531	142.	0.1389
71.	0.1502	143.	0.138
72.	0.1521	144.	0.1387
73.	0.1549	145.	0.1402
74.	0.151	146.	0.1398

LUMINANT

SOLUTION

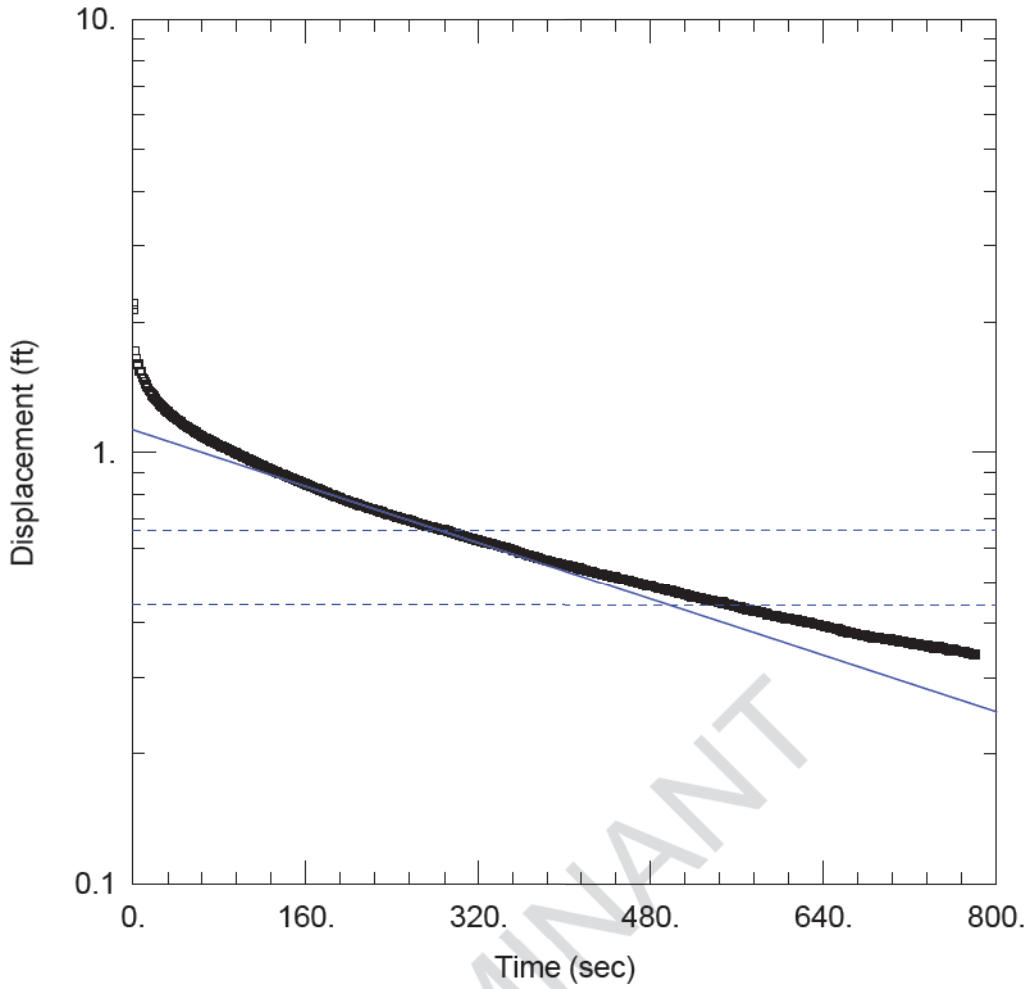
Slug Test
Aquifer Model: Confined
Solution Method: Bouwer-Rice
ln(Re/rw): 3.079

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
K	0.001305	cm/sec
y0	1.46	ft

T = K*b = 0.5966 cm²/sec



LUMINANT

WELL TEST ANALYSIS

Data Set: J:\...\BMW-24 Slug IN.aqt
Date: 12/16/15 Time: 10:23:09

PROJECT INFORMATION

Company: PBW
Client: Luminant
Project: 5164-B
Location: Beckville Mine
Test Well: BMW-24
Test Date: 9-22-2015

AQUIFER DATA

Saturated Thickness: 5. ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (New Well)

Initial Displacement: 2.2 ft
Total Well Penetration Depth: 5. ft
Casing Radius: 0.083 ft
Static Water Column Height: 23.87 ft
Screen Length: 5. ft
Well Radius: 0.27 ft

SOLUTION

Aquifer Model: Confined
Solution Method: Bouwer-Rice
K = 8.517E-5 cm/sec
y0 = 1.127 ft

Data Set: J:\5164 - Luminant CCR Well Installation and GW Sampling\5164-B_Martin Lake\Slug Tests\A1 LF\Aqtes
Date: 12/16/15
Time: 10:23:49

PROJECT INFORMATION

Company: PBW
Client: Luminant
Project: 5164-B
Location: Beckville Mine
Test Date: 9-22-2015
Test Well: BMW-24

AQUIFER DATA

Saturated Thickness: 5. ft
Anisotropy Ratio (Kz/Kr): 1.

SLUG TEST WELL DATA

Test Well: New Well

X Location: 0. ft
Y Location: 0. ft

Initial Displacement: 2.2 ft
Static Water Column Height: 23.87 ft
Casing Radius: 0.083 ft
Well Radius: 0.27 ft
Well Skin Radius: 0.27 ft
Screen Length: 5. ft
Total Well Penetration Depth: 5. ft

No. of Observations: 782

Observation Data

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
0.	0.	391.	0.5552
1.	2.135	392.	0.5553
2.	1.713	393.	0.5553
3.	1.646	394.	0.5526
4.	1.59	395.	0.5518
5.	1.596	396.	0.5522
6.	1.54	397.	0.5522
7.	1.536	398.	0.5526
8.	1.523	399.	0.5501
9.	1.487	400.	0.5492
10.	1.47	401.	0.5474
11.	1.451	402.	0.5498
12.	1.435	403.	0.546
13.	1.42	404.	0.547
14.	1.405	405.	0.5451
15.	1.392	406.	0.5462
16.	1.379	407.	0.5438
17.	1.367	408.	0.5439
18.	1.357	409.	0.5421
19.	1.346	410.	0.5412
20.	1.335	411.	0.5423
21.	1.326	412.	0.5402
22.	1.317	413.	0.5369
23.	1.308	414.	0.5397
24.	1.298	415.	0.5362
25.	1.289	416.	0.537
26.	1.282	417.	0.5378
27.	1.276	418.	0.5334
28.	1.268	419.	0.5335
29.	1.258	420.	0.5332

LUMINANT

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
30.	1.252	421.	0.5318
31.	1.246	422.	0.5301
32.	1.241	423.	0.5296
33.	1.235	424.	0.5297
34.	1.23	425.	0.5268
35.	1.223	426.	0.5285
36.	1.218	427.	0.526
37.	1.21	428.	0.5259
38.	1.205	429.	0.5262
39.	1.201	430.	0.5248
40.	1.195	431.	0.5231
41.	1.189	432.	0.5223
42.	1.185	433.	0.5234
43.	1.178	434.	0.5223
44.	1.174	435.	0.5206
45.	1.168	436.	0.5215
46.	1.166	437.	0.5194
47.	1.158	438.	0.5192
48.	1.157	439.	0.5175
49.	1.15	440.	0.5178
50.	1.145	441.	0.517
51.	1.14	442.	0.5163
52.	1.139	443.	0.5172
53.	1.132	444.	0.5146
54.	1.129	445.	0.5139
55.	1.125	446.	0.5144
56.	1.122	447.	0.5143
57.	1.116	448.	0.5122
58.	1.112	449.	0.5116
59.	1.108	450.	0.509
60.	1.103	451.	0.5093
61.	1.1	452.	0.5082
62.	1.096	453.	0.509
63.	1.092	454.	0.5074
64.	1.089	455.	0.5089
65.	1.087	456.	0.5065
66.	1.082	457.	0.5062
67.	1.077	458.	0.5055
68.	1.076	459.	0.5023
69.	1.073	460.	0.5043
70.	1.069	461.	0.5021
71.	1.067	462.	0.5016
72.	1.06	463.	0.4994
73.	1.061	464.	0.5005
74.	1.056	465.	0.4986
75.	1.055	466.	0.4985
76.	1.05	467.	0.4982
77.	1.048	468.	0.4954
78.	1.043	469.	0.4974
79.	1.041	470.	0.4953
80.	1.038	471.	0.4956
81.	1.035	472.	0.4929
82.	1.032	473.	0.494
83.	1.029	474.	0.4924
84.	1.026	475.	0.4916
85.	1.024	476.	0.4904
86.	1.022	477.	0.4903
87.	1.019	478.	0.4915
88.	1.017	479.	0.4913
89.	1.012	480.	0.4907
90.	1.01	481.	0.488
91.	1.007	482.	0.4887
92.	1.005	483.	0.488
93.	1.002	484.	0.4865
94.	0.9982	485.	0.4857
95.	0.9974	486.	0.4846

LUMINANT

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
96.	0.9917	487.	0.4832
97.	0.9907	488.	0.4839
98.	0.9886	489.	0.483
99.	0.9849	490.	0.4818
100.	0.9827	491.	0.482
101.	0.9804	492.	0.482
102.	0.9768	493.	0.4798
103.	0.9743	494.	0.4807
104.	0.973	495.	0.4792
105.	0.9678	496.	0.4776
106.	0.9668	497.	0.4771
107.	0.9641	498.	0.4763
108.	0.9607	499.	0.4746
109.	0.9582	500.	0.4771
110.	0.9574	501.	0.4757
111.	0.9536	502.	0.4744
112.	0.9508	503.	0.4752
113.	0.9487	504.	0.4737
114.	0.9473	505.	0.4728
115.	0.9434	506.	0.4705
116.	0.9415	507.	0.4707
117.	0.9378	508.	0.4698
118.	0.9362	509.	0.4699
119.	0.9351	510.	0.4688
120.	0.9313	511.	0.4688
121.	0.9274	512.	0.4679
122.	0.9269	513.	0.4682
123.	0.9236	514.	0.4665
124.	0.9219	515.	0.4648
125.	0.9196	516.	0.4647
126.	0.9171	517.	0.4638
127.	0.9155	518.	0.461
128.	0.9118	519.	0.4628
129.	0.9077	520.	0.462
130.	0.9065	521.	0.4611
131.	0.9058	522.	0.4603
132.	0.9041	523.	0.4609
133.	0.9008	524.	0.4594
134.	0.8978	525.	0.4593
135.	0.8947	526.	0.4576
136.	0.8924	527.	0.4587
137.	0.8902	528.	0.4578
138.	0.8906	529.	0.4562
139.	0.8887	530.	0.4575
140.	0.8833	531.	0.4555
141.	0.8834	532.	0.4552
142.	0.8817	533.	0.4539
143.	0.8786	534.	0.4523
144.	0.8768	535.	0.4544
145.	0.8751	536.	0.4524
146.	0.8732	537.	0.4529
147.	0.8714	538.	0.4514
148.	0.8696	539.	0.4501
149.	0.8685	540.	0.4512
150.	0.865	541.	0.4516
151.	0.8609	542.	0.4472
152.	0.8604	543.	0.4499
153.	0.8588	544.	0.4486
154.	0.8563	545.	0.4473
155.	0.8552	546.	0.4453
156.	0.8527	547.	0.4489
157.	0.8492	548.	0.4457
158.	0.8494	549.	0.4443
159.	0.8471	550.	0.445
160.	0.8441	551.	0.4443
161.	0.8414	552.	0.4418

LUMINANT

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
162.	0.8407	553.	0.443
163.	0.8385	554.	0.4425
164.	0.8355	555.	0.4415
165.	0.8311	556.	0.4409
166.	0.8323	557.	0.4397
167.	0.8306	558.	0.4383
168.	0.8266	559.	0.4382
169.	0.8268	560.	0.4384
170.	0.8241	561.	0.4382
171.	0.8233	562.	0.4365
172.	0.8194	563.	0.4364
173.	0.8188	564.	0.4371
174.	0.8189	565.	0.4331
175.	0.8143	566.	0.4341
176.	0.8123	567.	0.4343
177.	0.8115	568.	0.4332
178.	0.8098	569.	0.4311
179.	0.807	570.	0.4312
180.	0.8068	571.	0.4313
181.	0.8033	572.	0.4298
182.	0.8006	573.	0.4296
183.	0.8	574.	0.4287
184.	0.7986	575.	0.4284
185.	0.7965	576.	0.4272
186.	0.7942	577.	0.4283
187.	0.791	578.	0.4278
188.	0.7909	579.	0.427
189.	0.7882	580.	0.4255
190.	0.788	581.	0.4258
191.	0.7866	582.	0.4249
192.	0.783	583.	0.4231
193.	0.7822	584.	0.4233
194.	0.7793	585.	0.4234
195.	0.778	586.	0.4245
196.	0.7764	587.	0.4238
197.	0.7756	588.	0.4192
198.	0.7725	589.	0.4203
199.	0.7709	590.	0.4188
200.	0.7696	591.	0.4186
201.	0.7672	592.	0.4186
202.	0.7677	593.	0.4182
203.	0.7659	594.	0.4176
204.	0.7641	595.	0.4158
205.	0.7625	596.	0.4171
206.	0.7602	597.	0.4162
207.	0.7587	598.	0.4153
208.	0.759	599.	0.4143
209.	0.7565	600.	0.4139
210.	0.7539	601.	0.4134
211.	0.7531	602.	0.4152
212.	0.7516	603.	0.4119
213.	0.7502	604.	0.4111
214.	0.75	605.	0.4129
215.	0.748	606.	0.4129
216.	0.7463	607.	0.4107
217.	0.7454	608.	0.4111
218.	0.7435	609.	0.409
219.	0.7418	610.	0.4098
220.	0.7402	611.	0.4086
221.	0.7402	612.	0.4098
222.	0.7382	613.	0.4094
223.	0.7381	614.	0.4074
224.	0.737	615.	0.4085
225.	0.7348	616.	0.4097
226.	0.7343	617.	0.406
227.	0.7337	618.	0.4034

LUMINANT

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
228.	0.7303	619.	0.405
229.	0.7293	620.	0.4064
230.	0.7283	621.	0.4034
231.	0.727	622.	0.4046
232.	0.7251	623.	0.4044
233.	0.7232	624.	0.4027
234.	0.7221	625.	0.403
235.	0.7228	626.	0.4021
236.	0.7194	627.	0.4025
237.	0.7192	628.	0.401
238.	0.7168	629.	0.4022
239.	0.7164	630.	0.4008
240.	0.715	631.	0.3986
241.	0.7121	632.	0.3983
242.	0.7121	633.	0.3982
243.	0.711	634.	0.399
244.	0.7088	635.	0.3981
245.	0.7087	636.	0.3978
246.	0.707	637.	0.3966
247.	0.7063	638.	0.3966
248.	0.7051	639.	0.3964
249.	0.7025	640.	0.3958
250.	0.7026	641.	0.3926
251.	0.7023	642.	0.3945
252.	0.6998	643.	0.3931
253.	0.6955	644.	0.3933
254.	0.6995	645.	0.3936
255.	0.6965	646.	0.3906
256.	0.6958	647.	0.3896
257.	0.6944	648.	0.39
258.	0.6946	649.	0.3913
259.	0.6934	650.	0.3904
260.	0.6903	651.	0.391
261.	0.689	652.	0.3885
262.	0.6885	653.	0.3873
263.	0.688	654.	0.3893
264.	0.6874	655.	0.3859
265.	0.6842	656.	0.3862
266.	0.6837	657.	0.3858
267.	0.6822	658.	0.3829
268.	0.6806	659.	0.385
269.	0.6802	660.	0.3852
270.	0.6799	661.	0.3835
271.	0.6752	662.	0.3814
272.	0.6771	663.	0.3817
273.	0.6741	664.	0.3813
274.	0.674	665.	0.3811
275.	0.6736	666.	0.3821
276.	0.674	667.	0.3789
277.	0.672	668.	0.379
278.	0.6716	669.	0.3796
279.	0.6705	670.	0.3791
280.	0.6679	671.	0.378
281.	0.6675	672.	0.3778
282.	0.6673	673.	0.3764
283.	0.6662	674.	0.377
284.	0.6641	675.	0.3755
285.	0.6626	676.	0.3758
286.	0.6618	677.	0.3748
287.	0.6602	678.	0.3757
288.	0.6621	679.	0.3749
289.	0.6605	680.	0.3738
290.	0.6585	681.	0.3732
291.	0.6568	682.	0.3735
292.	0.6579	683.	0.3733
293.	0.6555	684.	0.3729

ZUMINANT

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
294.	0.654	685.	0.3711
295.	0.6514	686.	0.371
296.	0.6498	687.	0.373
297.	0.6505	688.	0.3703
298.	0.6482	689.	0.3708
299.	0.6489	690.	0.3704
300.	0.6466	691.	0.37
301.	0.6463	692.	0.3711
302.	0.644	693.	0.3704
303.	0.6441	694.	0.3693
304.	0.6419	695.	0.3699
305.	0.6422	696.	0.3681
306.	0.6405	697.	0.3683
307.	0.6395	698.	0.3678
308.	0.6383	699.	0.3683
309.	0.6368	700.	0.3684
310.	0.6358	701.	0.368
311.	0.6332	702.	0.3691
312.	0.633	703.	0.3662
313.	0.6328	704.	0.3658
314.	0.632	705.	0.3661
315.	0.6295	706.	0.3656
316.	0.6299	707.	0.3647
317.	0.6271	708.	0.3665
318.	0.6285	709.	0.3648
319.	0.627	710.	0.3635
320.	0.6253	711.	0.3627
321.	0.6246	712.	0.3648
322.	0.6213	713.	0.3636
323.	0.6248	714.	0.3646
324.	0.6208	715.	0.3626
325.	0.6208	716.	0.3625
326.	0.619	717.	0.3614
327.	0.6205	718.	0.3602
328.	0.6175	719.	0.3606
329.	0.6178	720.	0.3606
330.	0.6171	721.	0.3614
331.	0.6164	722.	0.359
332.	0.615	723.	0.3586
333.	0.6157	724.	0.359
334.	0.6138	725.	0.3594
335.	0.6113	726.	0.359
336.	0.6109	727.	0.3585
337.	0.6097	728.	0.3582
338.	0.6087	729.	0.3567
339.	0.6083	730.	0.3571
340.	0.607	731.	0.3554
341.	0.6053	732.	0.3551
342.	0.6056	733.	0.3556
343.	0.6039	734.	0.3547
344.	0.6041	735.	0.3548
345.	0.6021	736.	0.3559
346.	0.6023	737.	0.3536
347.	0.5998	738.	0.3542
348.	0.5988	739.	0.3522
349.	0.5987	740.	0.3526
350.	0.5967	741.	0.3534
351.	0.5957	742.	0.3503
352.	0.5938	743.	0.3523
353.	0.5934	744.	0.3536
354.	0.5915	745.	0.3526
355.	0.5907	746.	0.352
356.	0.5891	747.	0.3543
357.	0.5885	748.	0.3512
358.	0.5861	749.	0.3503
359.	0.5843	750.	0.3507

LUMINANT

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
360.	0.5838	751.	0.3522
361.	0.5826	752.	0.3504
362.	0.5824	753.	0.3497
363.	0.5801	754.	0.3482
364.	0.5789	755.	0.3501
365.	0.5805	756.	0.3465
366.	0.5769	757.	0.3477
367.	0.5776	758.	0.3452
368.	0.5755	759.	0.347
369.	0.5758	760.	0.3491
370.	0.5747	761.	0.3456
371.	0.5739	762.	0.3477
372.	0.5727	763.	0.3469
373.	0.5706	764.	0.3458
374.	0.5705	765.	0.3456
375.	0.5697	766.	0.3458
376.	0.5682	767.	0.3452
377.	0.5679	768.	0.3455
378.	0.5681	769.	0.3442
379.	0.5651	770.	0.3449
380.	0.5651	771.	0.3445
381.	0.5651	772.	0.3432
382.	0.5632	773.	0.3425
383.	0.5624	774.	0.342
384.	0.561	775.	0.3402
385.	0.5607	776.	0.3408
386.	0.5602	777.	0.3407
387.	0.5588	778.	0.3391
388.	0.5578	779.	0.3396
389.	0.5562	780.	0.3391
390.	0.5569	781.	0.3394

SOLUTION

Slug Test
Aquifer Model: Confined
Solution Method: Bouwer-Rice
ln(Re/rw): 2.155

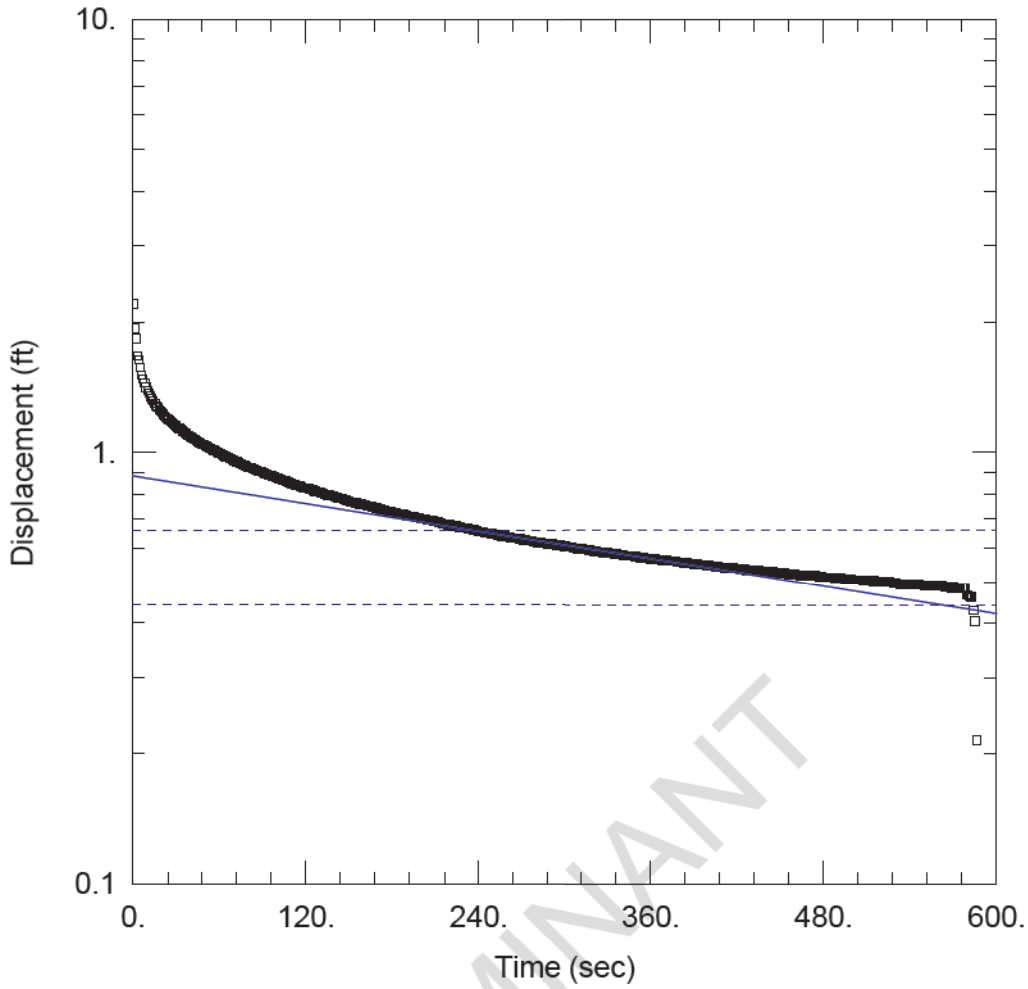
VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
K	8.517E-5	cm/sec
y0	1.127	ft

$T = K*b = 0.01298$ cm²/sec

LUMINANT



LUMINANT

WELL TEST ANALYSIS

Data Set: J:\...\BMW-24 Slug OUT.aqt
Date: 10/03/17 Time: 17:25:14

PROJECT INFORMATION

Company: PBW
Client: Luminant
Project: 5164-B
Location: Beckville Mine
Test Well: BMW-24
Test Date: 9-22-2015

AQUIFER DATA

Saturated Thickness: 5. ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (BMW-24)

Initial Displacement: 2.2 ft
Total Well Penetration Depth: 5. ft
Casing Radius: 0.083 ft
Static Water Column Height: 23.87 ft
Screen Length: 5. ft
Well Radius: 0.27 ft

SOLUTION

Aquifer Model: Confined
Solution Method: Bouwer-Rice
K = 5.558E-5 cm/sec
y0 = 0.8822 ft

Data Set: J:\5164 - Luminant CCR GW Monitoring\5164-B_Martin Lake\Slug Tests\A1 LF\Aqtesolv files\BMW-24 Sl
Date: 10/03/17
Time: 17:25:42

PROJECT INFORMATION

Company: PBW
Client: Luminant
Project: 5164-B
Location: Beckville Mine
Test Date: 9-22-2015
Test Well: BMW-24

AQUIFER DATA

Saturated Thickness: 5. ft
Anisotropy Ratio (Kz/Kr): 1.

SLUG TEST WELL DATA

Test Well: BMW-24

X Location: 0. ft
Y Location: 0. ft

Initial Displacement: 2.2 ft
Static Water Column Height: 23.87 ft
Casing Radius: 0.083 ft
Well Radius: 0.27 ft
Well Skin Radius: 0.27 ft
Screen Length: 5. ft
Total Well Penetration Depth: 5. ft

No. of Observations: 587

Observation Data

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
0.	0.	294.	0.6108
1.	1.934	295.	0.609
2.	1.83	296.	0.6095
3.	1.668	297.	0.6098
4.	1.635	298.	0.6078
5.	1.571	299.	0.6053
6.	1.51	300.	0.6062
7.	1.476	301.	0.6068
8.	1.444	302.	0.6035
9.	1.414	303.	0.6047
10.	1.389	304.	0.6031
11.	1.367	305.	0.6035
12.	1.347	306.	0.6012
13.	1.329	307.	0.6008
14.	1.315	308.	0.6001
15.	1.297	309.	0.5979
16.	1.282	310.	0.6005
17.	1.269	311.	0.598
18.	1.256	312.	0.5994
19.	1.246	313.	0.5958
20.	1.234	314.	0.5955
21.	1.224	315.	0.5955
22.	1.212	316.	0.5966
23.	1.206	317.	0.593
24.	1.196	318.	0.5936
25.	1.188	319.	0.5928
26.	1.18	320.	0.5928
27.	1.17	321.	0.5894
28.	1.165	322.	0.5917
29.	1.156	323.	0.5886

LUMINANT

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
30.	1.151	324.	0.5889
31.	1.14	325.	0.5887
32.	1.136	326.	0.5868
33.	1.13	327.	0.5863
34.	1.121	328.	0.5876
35.	1.117	329.	0.5859
36.	1.11	330.	0.5863
37.	1.105	331.	0.5853
38.	1.094	332.	0.5846
39.	1.091	333.	0.5838
40.	1.084	334.	0.5827
41.	1.08	335.	0.5814
42.	1.074	336.	0.5829
43.	1.069	337.	0.5803
44.	1.063	338.	0.5796
45.	1.057	339.	0.5803
46.	1.054	340.	0.5798
47.	1.05	341.	0.5781
48.	1.045	342.	0.5772
49.	1.04	343.	0.5764
50.	1.036	344.	0.5756
51.	1.032	345.	0.5754
52.	1.027	346.	0.5752
53.	1.022	347.	0.5755
54.	1.019	348.	0.5763
55.	1.016	349.	0.5727
56.	1.011	350.	0.575
57.	1.007	351.	0.5722
58.	1.002	352.	0.5722
59.	0.9982	353.	0.5703
60.	0.9939	354.	0.5709
61.	0.9917	355.	0.5701
62.	0.9883	356.	0.5693
63.	0.9845	357.	0.568
64.	0.9776	358.	0.5684
65.	0.9747	359.	0.5686
66.	0.9727	360.	0.5661
67.	0.969	361.	0.5692
68.	0.9658	362.	0.5674
69.	0.9621	363.	0.5659
70.	0.958	364.	0.5648
71.	0.9541	365.	0.564
72.	0.9517	366.	0.5643
73.	0.9493	367.	0.5641
74.	0.9413	368.	0.5627
75.	0.9407	369.	0.5621
76.	0.9359	370.	0.562
77.	0.9342	371.	0.5641
78.	0.931	372.	0.5613
79.	0.9275	373.	0.5613
80.	0.9232	374.	0.5598
81.	0.9206	375.	0.5602
82.	0.9199	376.	0.5592
83.	0.9155	377.	0.5594
84.	0.9145	378.	0.5578
85.	0.9098	379.	0.5577
86.	0.9092	380.	0.5571
87.	0.9057	381.	0.5578
88.	0.9026	382.	0.5554
89.	0.9012	383.	0.555
90.	0.8962	384.	0.556
91.	0.8945	385.	0.5549
92.	0.8913	386.	0.5524
93.	0.8893	387.	0.5536
94.	0.8861	388.	0.5526
95.	0.8848	389.	0.5532

LUMINANT

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
96.	0.8834	390.	0.5513
97.	0.8793	391.	0.5503
98.	0.88	392.	0.5505
99.	0.8748	393.	0.5477
100.	0.8728	394.	0.55
101.	0.8702	395.	0.5487
102.	0.8692	396.	0.5483
103.	0.8651	397.	0.5479
104.	0.8628	398.	0.5479
105.	0.8602	399.	0.5472
106.	0.8587	400.	0.5479
107.	0.8572	401.	0.5446
108.	0.8528	402.	0.5449
109.	0.8515	403.	0.546
110.	0.8466	404.	0.546
111.	0.8458	405.	0.5429
112.	0.8451	406.	0.5423
113.	0.8395	407.	0.5436
114.	0.8391	408.	0.5426
115.	0.8369	409.	0.5412
116.	0.8349	410.	0.5414
117.	0.8333	411.	0.5398
118.	0.8285	412.	0.5405
119.	0.8273	413.	0.5409
120.	0.826	414.	0.5395
121.	0.8249	415.	0.5386
122.	0.8239	416.	0.5403
123.	0.8205	417.	0.5394
124.	0.8197	418.	0.5368
125.	0.8183	419.	0.5371
126.	0.8134	420.	0.5371
127.	0.8133	421.	0.5385
128.	0.8118	422.	0.5359
129.	0.8095	423.	0.536
130.	0.8075	424.	0.5356
131.	0.8049	425.	0.5369
132.	0.8027	426.	0.5324
133.	0.8009	427.	0.5334
134.	0.801	428.	0.5324
135.	0.797	429.	0.5328
136.	0.7972	430.	0.5323
137.	0.795	431.	0.5328
138.	0.7927	432.	0.5319
139.	0.7918	433.	0.5313
140.	0.7874	434.	0.5303
141.	0.7883	435.	0.5335
142.	0.7854	436.	0.5302
143.	0.783	437.	0.5301
144.	0.7827	438.	0.5283
145.	0.7812	439.	0.5304
146.	0.7795	440.	0.5294
147.	0.7756	441.	0.529
148.	0.7747	442.	0.5283
149.	0.7737	443.	0.5277
150.	0.7715	444.	0.5271
151.	0.7683	445.	0.5295
152.	0.7667	446.	0.5278
153.	0.7659	447.	0.5255
154.	0.7649	448.	0.5267
155.	0.7639	449.	0.5245
156.	0.7624	450.	0.5247
157.	0.7595	451.	0.5245
158.	0.7591	452.	0.524
159.	0.7602	453.	0.5251
160.	0.755	454.	0.5228
161.	0.7554	455.	0.5248

LUMINANT

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
162.	0.7528	456.	0.5214
163.	0.7516	457.	0.5229
164.	0.751	458.	0.5216
165.	0.7503	459.	0.5217
166.	0.7491	460.	0.5228
167.	0.7456	461.	0.5204
168.	0.7448	462.	0.5206
169.	0.7439	463.	0.5198
170.	0.7426	464.	0.517
171.	0.7393	465.	0.5205
172.	0.7402	466.	0.5183
173.	0.737	467.	0.5203
174.	0.7376	468.	0.5172
175.	0.7355	469.	0.5183
176.	0.733	470.	0.5172
177.	0.7305	471.	0.5185
178.	0.7291	472.	0.5167
179.	0.7312	473.	0.5158
180.	0.7271	474.	0.5185
181.	0.7278	475.	0.516
182.	0.7249	476.	0.5168
183.	0.7244	477.	0.5148
184.	0.7224	478.	0.516
185.	0.7207	479.	0.5147
186.	0.7189	480.	0.5137
187.	0.7184	481.	0.5137
188.	0.72	482.	0.5135
189.	0.7152	483.	0.5126
190.	0.7142	484.	0.5123
191.	0.7128	485.	0.5128
192.	0.7117	486.	0.5119
193.	0.7123	487.	0.5117
194.	0.7105	488.	0.5113
195.	0.7099	489.	0.5115
196.	0.7059	490.	0.5096
197.	0.7069	491.	0.5101
198.	0.7062	492.	0.5107
199.	0.7056	493.	0.5095
200.	0.7037	494.	0.5095
201.	0.7012	495.	0.5077
202.	0.7009	496.	0.508
203.	0.7005	497.	0.5068
204.	0.6987	498.	0.5062
205.	0.6977	499.	0.5078
206.	0.6958	500.	0.507
207.	0.6955	501.	0.5054
208.	0.6968	502.	0.505
209.	0.6928	503.	0.5066
210.	0.692	504.	0.505
211.	0.6936	505.	0.5048
212.	0.6903	506.	0.5051
213.	0.6886	507.	0.5046
214.	0.6876	508.	0.5042
215.	0.6841	509.	0.5038
216.	0.6835	510.	0.5041
217.	0.6832	511.	0.5032
218.	0.6807	512.	0.5039
219.	0.681	513.	0.5045
220.	0.6804	514.	0.5006
221.	0.6779	515.	0.5038
222.	0.6765	516.	0.502
223.	0.6765	517.	0.5
224.	0.6756	518.	0.5016
225.	0.673	519.	0.5004
226.	0.6711	520.	0.4998
227.	0.6718	521.	0.5008

LUMINANT

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
228.	0.6702	522.	0.5023
229.	0.67	523.	0.5006
230.	0.6687	524.	0.5015
231.	0.6678	525.	0.5008
232.	0.6676	526.	0.5004
233.	0.6658	527.	0.4988
234.	0.6643	528.	0.4987
235.	0.6631	529.	0.4966
236.	0.6615	530.	0.4981
237.	0.6624	531.	0.4955
238.	0.6596	532.	0.4962
239.	0.6606	533.	0.4938
240.	0.6559	534.	0.4953
241.	0.6565	535.	0.4958
242.	0.6563	536.	0.4962
243.	0.6542	537.	0.4956
244.	0.6524	538.	0.494
245.	0.6519	539.	0.4947
246.	0.6523	540.	0.4949
247.	0.6507	541.	0.494
248.	0.6506	542.	0.4948
249.	0.6487	543.	0.4946
250.	0.6471	544.	0.4951
251.	0.6482	545.	0.4936
252.	0.6467	546.	0.4938
253.	0.6439	547.	0.4935
254.	0.6439	548.	0.4935
255.	0.6436	549.	0.4913
256.	0.6406	550.	0.4904
257.	0.6417	551.	0.4893
258.	0.6401	552.	0.4919
259.	0.6379	553.	0.4919
260.	0.6371	554.	0.4903
261.	0.6378	555.	0.4893
262.	0.6363	556.	0.4904
263.	0.6343	557.	0.4893
264.	0.6324	558.	0.4903
265.	0.6336	559.	0.4894
266.	0.6336	560.	0.4879
267.	0.6326	561.	0.4887
268.	0.6312	562.	0.4908
269.	0.6312	563.	0.4885
270.	0.6286	564.	0.4875
271.	0.6274	565.	0.4866
272.	0.6274	566.	0.4865
273.	0.6263	567.	0.4878
274.	0.6261	568.	0.4871
275.	0.6256	569.	0.4843
276.	0.6244	570.	0.4883
277.	0.6241	571.	0.4862
278.	0.6208	572.	0.484
279.	0.621	573.	0.4842
280.	0.6218	574.	0.4863
281.	0.6187	575.	0.485
282.	0.6191	576.	0.4841
283.	0.6187	577.	0.4845
284.	0.6181	578.	0.4845
285.	0.6163	579.	0.467
286.	0.6154	580.	0.4656
287.	0.6155	581.	0.4631
288.	0.6129	582.	0.461
289.	0.6139	583.	0.4616
290.	0.6134	584.	0.4288
291.	0.6142	585.	0.4051
292.	0.6121	586.	0.2148
293.	0.6109		

LUMINANT

SOLUTION

Slug Test
Aquifer Model: Confined
Solution Method: Bouwer-Rice
ln(Re/rw): 2.155

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
K	5.558E-5	cm/sec
y0	0.8822	ft

T = K*b = 0.00847 cm²/sec

LUMINANT

REPORT

Groundwater Monitoring System Certification Addendum No. 1

Martin Lake Steam Electric Station - A1 Area Landfill
Panola County, Texas

Submitted to:

Luminant Generation Company LLC

Submitted by:

WSP GOLDER

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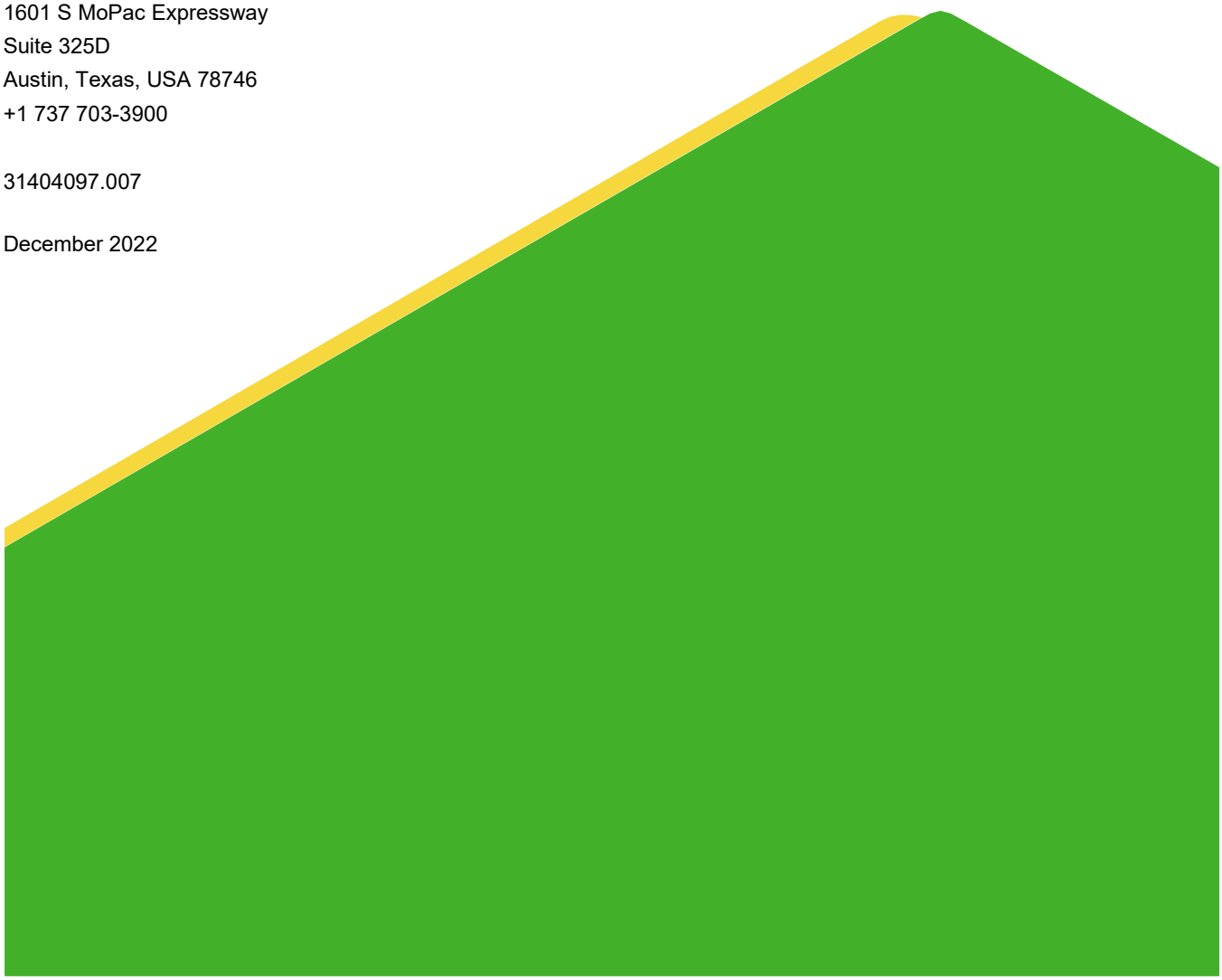
31404097.007

December 2022



PROFESSIONAL CERTIFICATION

This document and all attachments were prepared by WSP Golder under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I hereby certify that Addendum No.1 to the Groundwater Monitoring System Certification for the A1 Area Landfill associated with the Martin Lake Steam Electric Station has been prepared in accordance with the requirements of 40 C.F.R. §257.91.

Patrick J. Behling, P.E.
Principal Engineer
WSP Golder
Texas Firm Registration No. 22771

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DOCUMENT REVISION RECORD

Issue No.	Date	Details of Revisions
Revision 0	October 2017	Original Document
Addendum 1	December 2022	Updated site plan to indicate extent of final waste boundary and extent of historical mining near the A1 Area Landfill, updated cross sections to show mine spoil thickness and additional geological information below the spoil zone, revised designation of uppermost groundwater-bearing unit to indicate it is an unconfined unit, and added professional seal to figures where applicable

1.0 INTRODUCTION

On behalf of Luminant Generation Company LLC (Luminant), WSP Golder (Golder) has prepared this Addendum No. 1 to the Groundwater Monitoring System Certification for the A1 Area Landfill located in Panola County, Texas (Figure 1). Coal Combustion Residuals (CCRs) including fly ash, bottom ash and gypsum, which are generated as part of the power unit operations at the Martin Lake Steam Electric Station (MLSES), are currently transported off-site for beneficial reuse by third-parties or are managed by Luminant in surface impoundments located on the MLSES property or the A1 Area Landfill located approximately 2.5 miles east of the MLSES. This report discusses the A1 Area Landfill (the Site), which is currently active and considered an Existing CCR Landfill under 40 C.F.R. Part 257, Subpart D (the CCR Rule). The original Groundwater Monitoring System Certification for the A1 Area Landfill was prepared in October 2017 in accordance with 40 C.F.R. §257.91 and placed in the MLSES operating record in accordance with 40 C.F.R. §257.105 (PBW, 2017).

2.0 LOCAL GEOLOGY AND HYDROGEOLOGY

The A1 Area Landfill is located in the outcrop area of the Eocene-aged Wilcox Group (Barnes, 1965). The Wilcox Group near the Site primarily consists of unconsolidated silt and clay with varying amounts of interbedded sand and lignite. The A1 Area Landfill is constructed on top of a formerly mined area of the Wilcox Group at the Beckville Lignite Mine. The mine areas consist of an overburden interval (the interval above the lowest mined lignite seam that was disturbed during mining operations) and an underburden interval (the interval below the lowest mined lignite seam that was not disturbed during mining operations). The overburden material that was excavated and backfilled during mining is called “mine spoil.” The A1 Area Landfill is underlain by a compacted clay liner that sits on top of the mine spoil zone. It is surrounded by constructed berms that generally extend about 10 feet above grade.

The extent of mining near the A1 Area Landfill is shown on Figure 2. Lithologic descriptions of the spoil material indicate that it consists of a heterogeneous mixture of clay, silt, and sand with trace embedded fragments of lignite. Spoil depths are greatest near the center and northwest portions of the A1 Area Landfill and shallowest to the southeast. Spoil depths near the center and northwest portions of the A1 Area Landfill generally range from about 100 to 200 feet below ground surface (bgs). The spoil zone in the southeastern portion of the A1 Area Landfill decreases in thickness toward the southeastern boundary of the landfill, where the spoil depths are generally about 25 to 50 feet bgs. Native clay is encountered below the spoil zone throughout the A1 Area Landfill. A geologic cross section location map and geologic cross sections of the Site are presented on Figures 3 through 7.

As shown on the cross sections, groundwater is first encountered in the mine spoil zone, which sits below the A1 Area Landfill. The uppermost aquifer at the Site is the saturated portion of the mine spoil interval. It extends from the water table (generally about 1 to 55 feet bgs) to the base of the mine spoil interval, which is marked by remnant native lignite (where left in place) and a clay confining unit. The uppermost aquifer occurs under unconfined/water table conditions. Aquifer testing and total dissolved solids (TDS) data from wells completed within the mine spoil indicate that it is a Class 2 groundwater resource (i.e., it produces greater than 150 gallons per day and has TDS concentrations less than 10,000 mg/L).

2.1 CCR Groundwater Monitoring Network

All of the groundwater monitoring wells in the CCR groundwater monitoring network are completed in the mine spoil zone and are located outside the constructed berms that surround the A1 Area Landfill waste boundary. The CCR groundwater monitoring system at the A1 Area Landfill consists of the following twelve monitoring wells:

Upgradient Wells	Downgradient Wells
BMW-11A-R	BMW-18
BMW-33	BMW-19
	BMW-20
	BMW-21
	BMW-22
	BMW-23
	BMW-24
	BMW-26
	BMW-27
	BMW-28

A detailed Site Plan of the A1 Area Landfill showing the CCR monitoring well locations is presented on Figure 2.

3.0 UPPERMOST AQUIFER HYDRAULIC CONDUCTIVITY TESTING

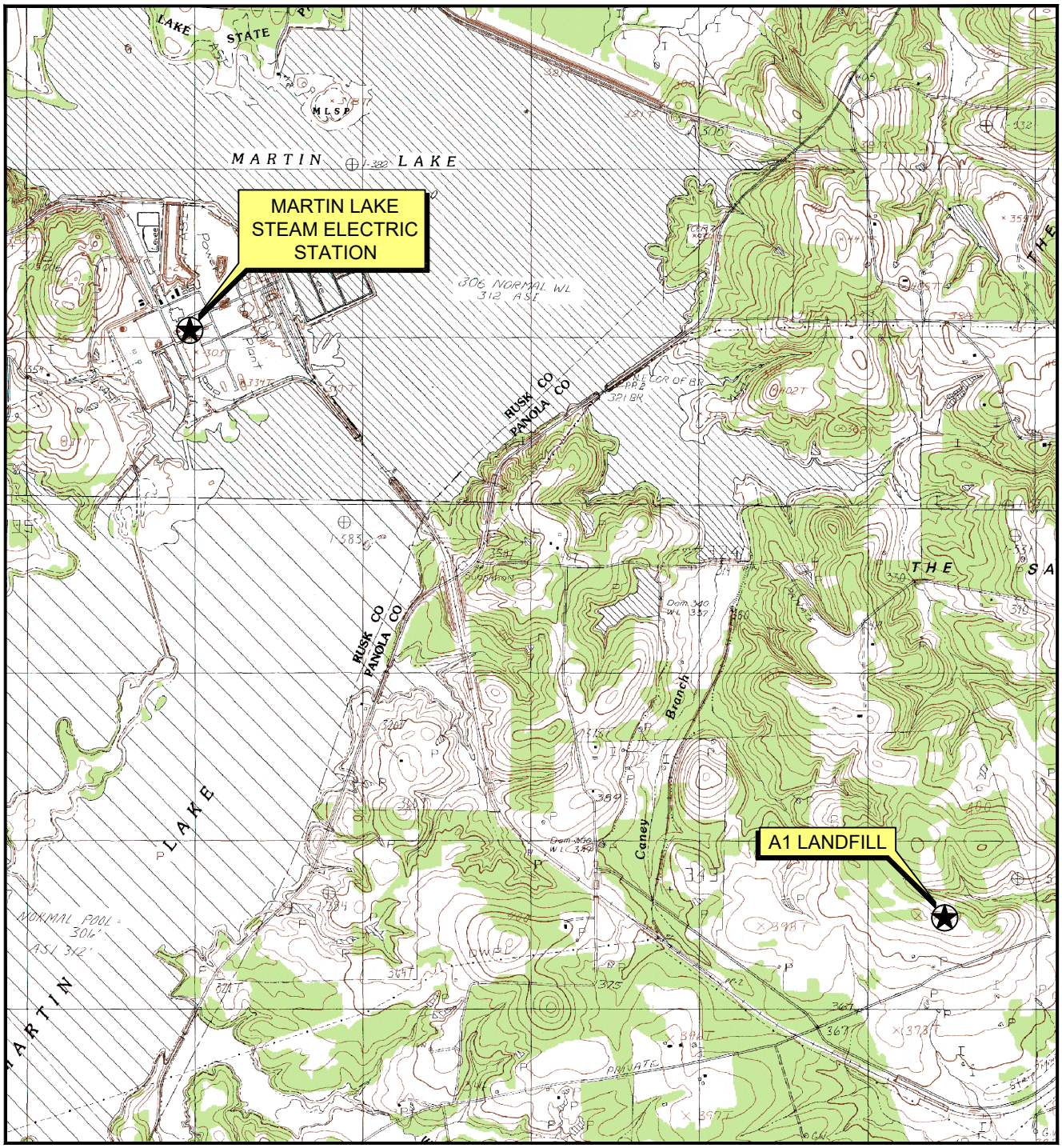
Slug tests were performed at monitoring wells BMW-21, BMW-23, and BMW-24 on October 7, 2015 to evaluate hydraulic properties of the uppermost aquifer at the Site. A summary of the hydraulic properties calculated from the slug test data are presented in Table 1. The average hydraulic conductivities for the wells ranged from 9.55×10^{-5} cm/sec (well BMW-24) to 1.53×10^{-3} cm/sec (well BMW-23), with a geometric mean for the test wells of 3.05×10^{-4} cm/sec.

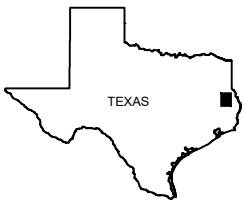
4.0 REFERENCES

Barnes, Virgil E., 1974. Geologic Atlas of Texas, Tyler Sheet. Texas Bureau of Economic Geology.

Pastor, Behling & Wheeler, LLC (PBW), 2017. CCR Groundwater Monitoring System Certification – A1 Area Landfill, Martin Lake Steam Electric Station, Panola County, Texas.

FIGURES





□UADRANGLE LOCATION

N

Scale in Feet

0 1500 3000

SOURCE:
Base map from www.tnris.gov, Tatum, TX 7.5 min. USGS □uadrangle dated 1□83.

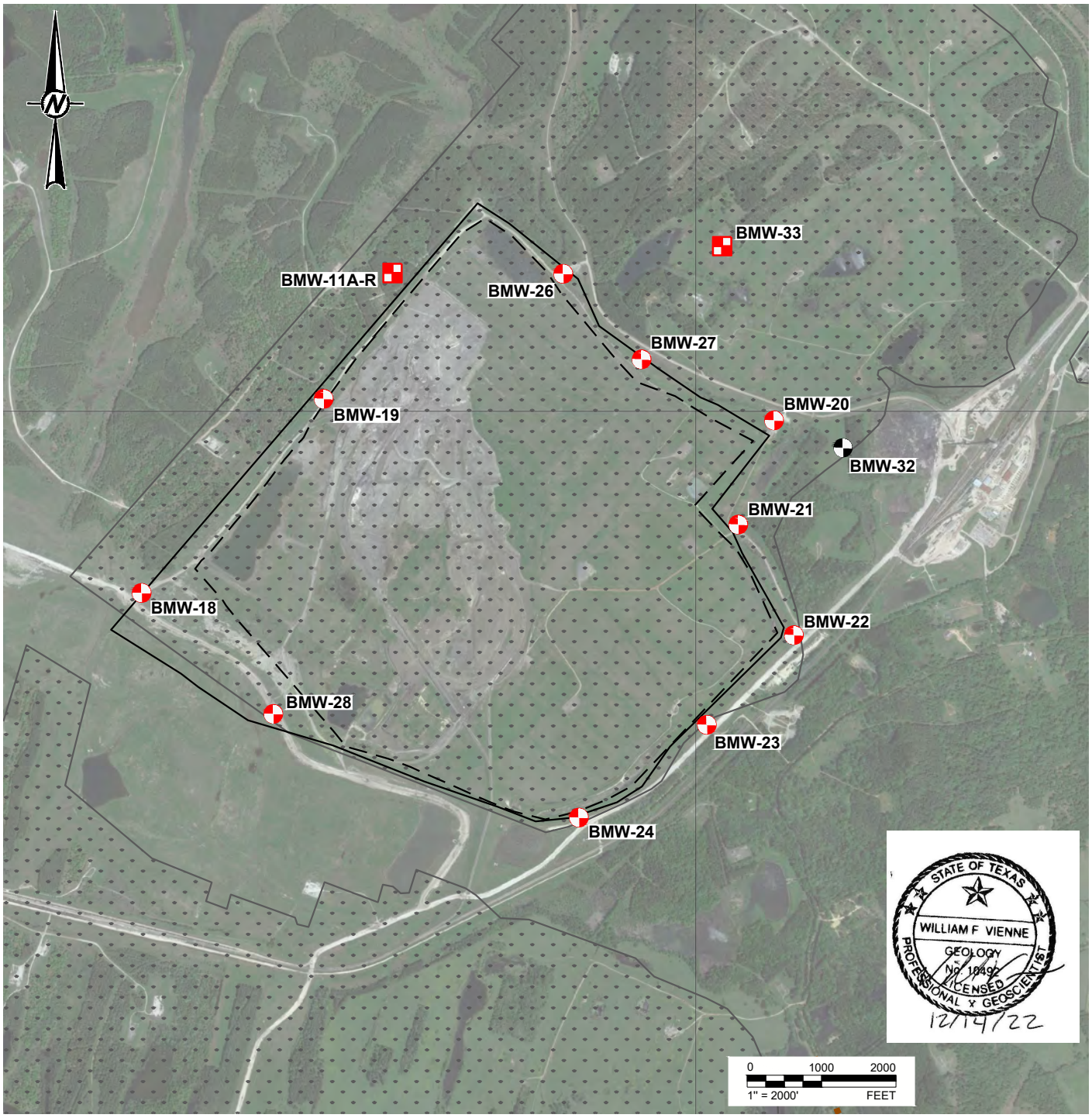
MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

Figure 1

SITE LOCATION MAP

PROJECT:	BY: AJD	REVISIONS
DATE: JUNE, 2015	CHECKED: PJB	

WSP GOLDER



STATE OF TEXAS
WILLIAM F VIENNE
GEOLOGY
No. 10496
LICENSED
PROFESSIONAL GEOSCIENTIST
12/14/22

LEGEND

- MINED OUT AREA
- DEED RESTRICTION BOUNDARY
- WASTE BOUNDARY
- DOWNGRADIENT CCR MONITORING WELL
- UPGRADIENT CCR MONITORING WELL
- CCR DELINEATION MONITORING WELL

NOTE(S)

1. EXTENT OF MINED OUT AREAS WAS TAKEN FROM THE 1993 MINING PERMIT FOR THE BECKVILLE MINE AND SHOULD BE CONSIDERED APPROXIMATE.

REFERENCE(S)

BASE MAP TAKEN FROM GOOGLE EARTH IMAGERY DATED 4/6/17.

CLIENT
LUMINANT

PROJECT
MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

TITLE
DETAILED SITE PLAN - A1 AREA LANDFILL

CONSULTANT
WSP GOLDER

YYYY-MM-DD	2022-12-06
DESIGNED	AJD
PREPARED	AJD
REVIEWED	WFV
APPROVED	WFV

PROJECT NO.	CONTROL	REV.	FIGURE
		0	2

Last Edited By: usad701305 Date: 2022-12-12 Time:12:30:00 PM | Printed By: USAD701305 Date: 2022-12-13 Time:10:23:26 AM
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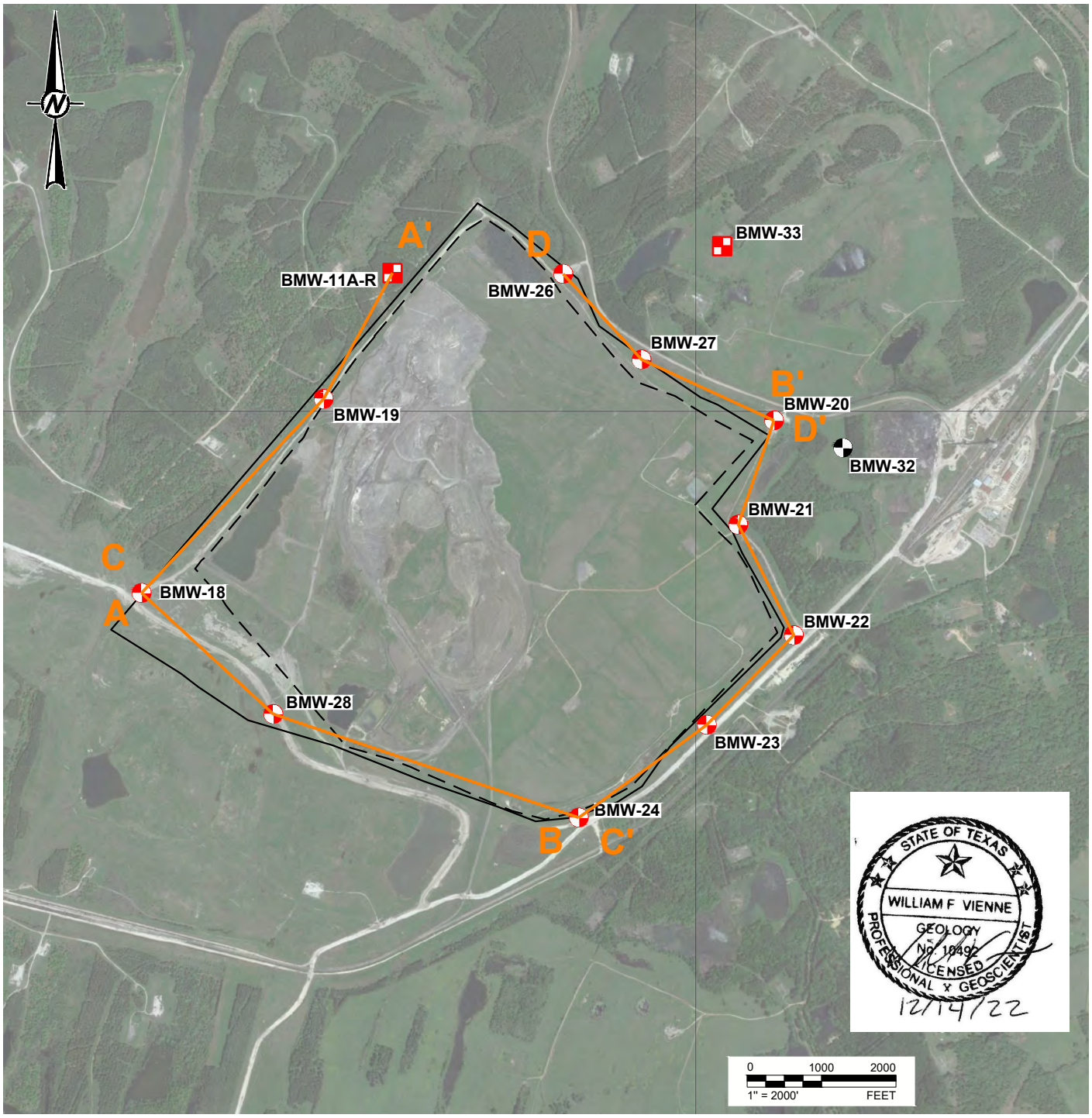

LEGEND

- DEED RESTRICTION BOUNDARY
- WASTE BOUNDARY
- DOWNGRADIENT CCR MONITORING WELL
- UPGRADIENT CCR MONITORING WELL
- CCR DELINEATION MONITORING WELL
- A — A' GEOLOGIC CROSS SECTION LOCATION LINES

REFERENCE(S)
BASE MAP TAKEN FROM GOOGLE EARTH IMAGERY DATED 4/6/17.

CLIENT
LUMINANT

PROJECT
MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

TITLE
A1 AREA LANDFILL CROSS SECTION LOCATION MAP

CONSULTANT
WSP GOLDER

YYYY-MM-DD	2022-12-06
DESIGNED	AJD
PREPARED	AJD
REVIEWED	WFV
APPROVED	WFV

PROJECT NO. | CONTROL | REV. 0 | FIGURE 3

Last Edited By: usad701305 Date: 2022-12-13 Time:10:30:59 AM | Printed By: USAD701305 Date: 2022-12-14 Time:10:05:33 AM
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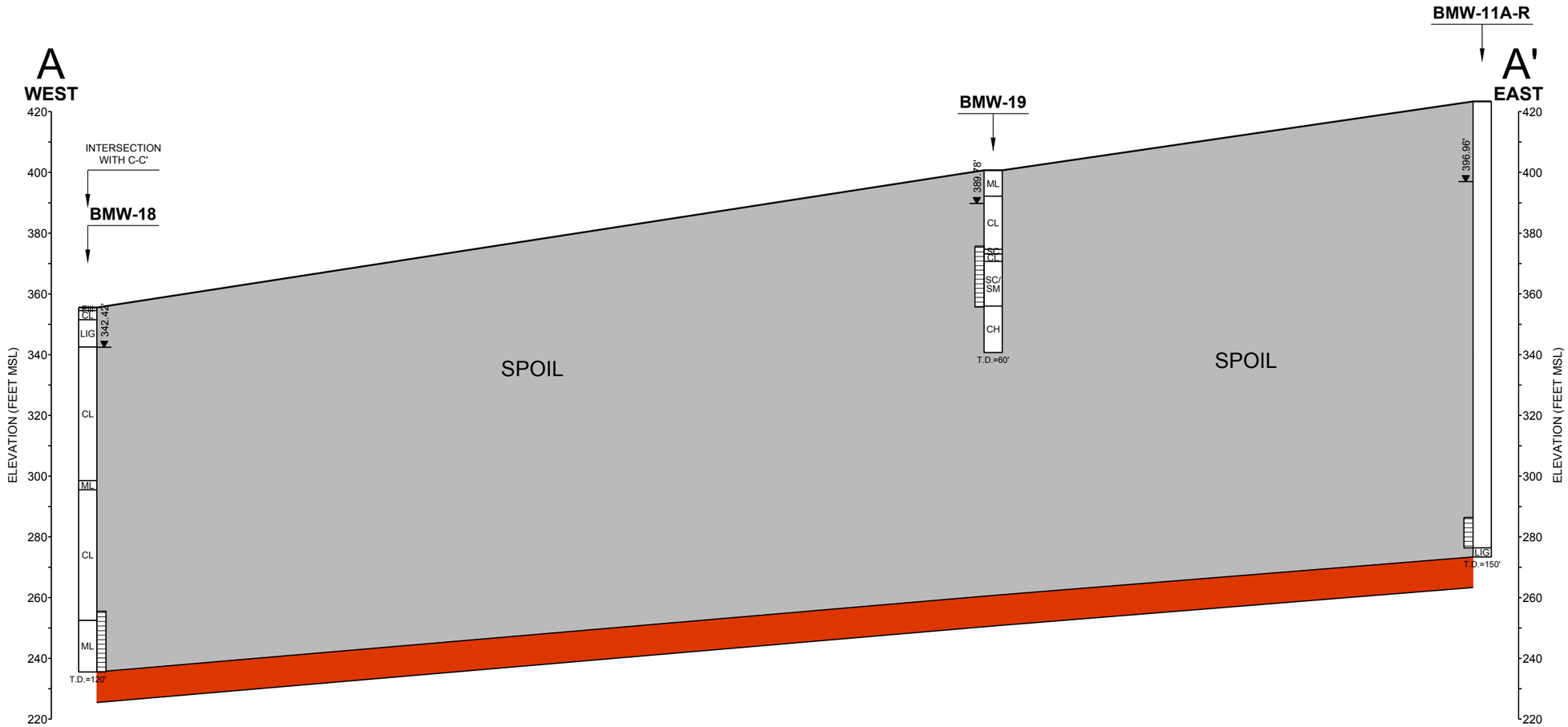
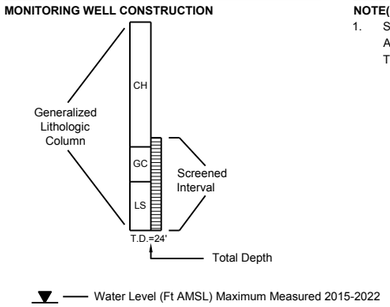


LEGEND

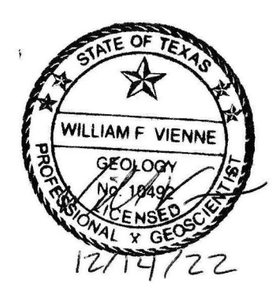
- SPOIL
- NATIVE CLAY

MONITORING WELL CONSTRUCTION

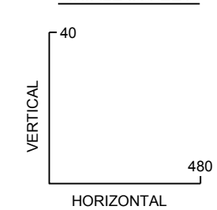


NOTE(S)

1. SPOIL DEPTHS AND OCCURRENCE OF NATIVE CLAY BELOW SPOIL ZONE ARE APPROXIMATED BASED ON HISTORICAL DATA FROM SOIL BORINGS COMPLETED NEAR THE CCR WELLS.



SCALE IN FEET



12x Vertical Exaggeration

CLIENT
LUMINANT

PROJECT
MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

TITLE
A1 AREA LANDFILL
GEOLOGIC CROSS SECTION A-A'
NORTH SIDE OF A1 EXPANSION AREA

CONSULTANT
wsp GOLDER

YYYY-MM-DD	2022-12-13
DESIGNED	AJD
PREPARED	AJD
REVIEWED	WFV
APPROVED	WFV

PROJECT NO. | REV. 0 | FIGURE 4

APPENDIX F-Revision 2 February 27, 2024

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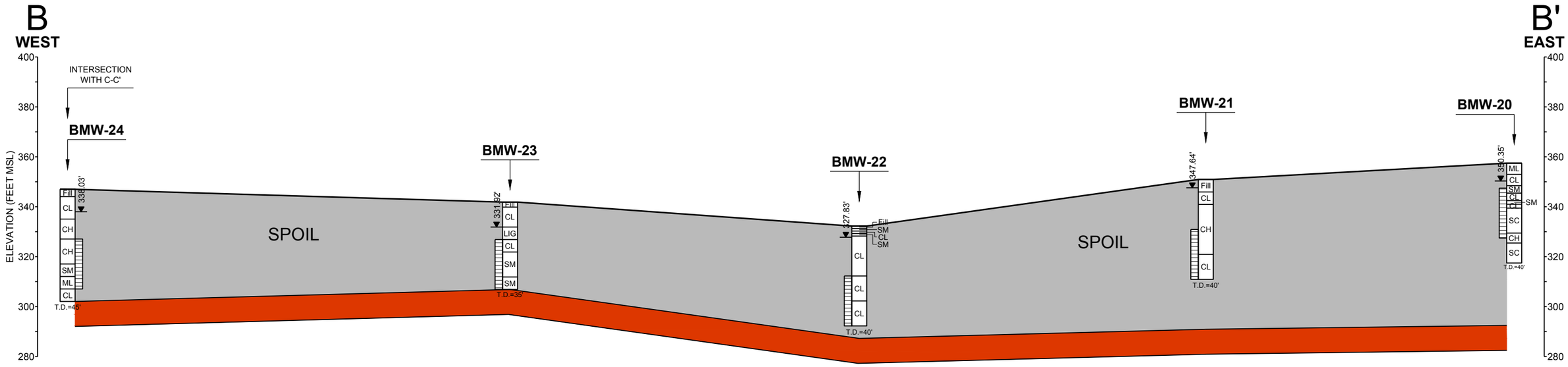
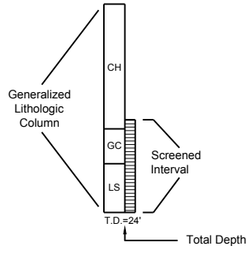


LEGEND

- SPOIL
- NATIVE CLAY

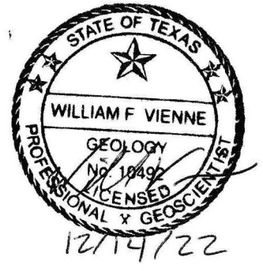
MONITORING WELL CONSTRUCTION



Water Level (Ft AMSL) Maximum Measured 2015-2022

NOTE(S)

1. SPOIL DEPTHS AND OCCURRENCE OF NATIVE CLAY BELOW SPOIL ZONE ARE APPROXIMATED BASED ON HISTORICAL DATA FROM SOIL BORINGS COMPLETED NEAR THE CCR WELLS.



SCALE IN FEET

VERTICAL 40

HORIZONTAL 480

12x Vertical Exaggeration

CLIENT
LUMINANT

PROJECT
MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

TITLE
A1 AREA LANDFILL
GEOLOGIC CROSS SECTION B-B'
SOUTH SIDE OF A1 LANDFILL

CONSULTANT
WSP GOLDER

YYYY-MM-DD	2022-12-13
DESIGNED	AJD
PREPARED	AJD
REVIEWED	WFV
APPROVED	WFV

PROJECT NO. | REV. 0 | FIGURE 5

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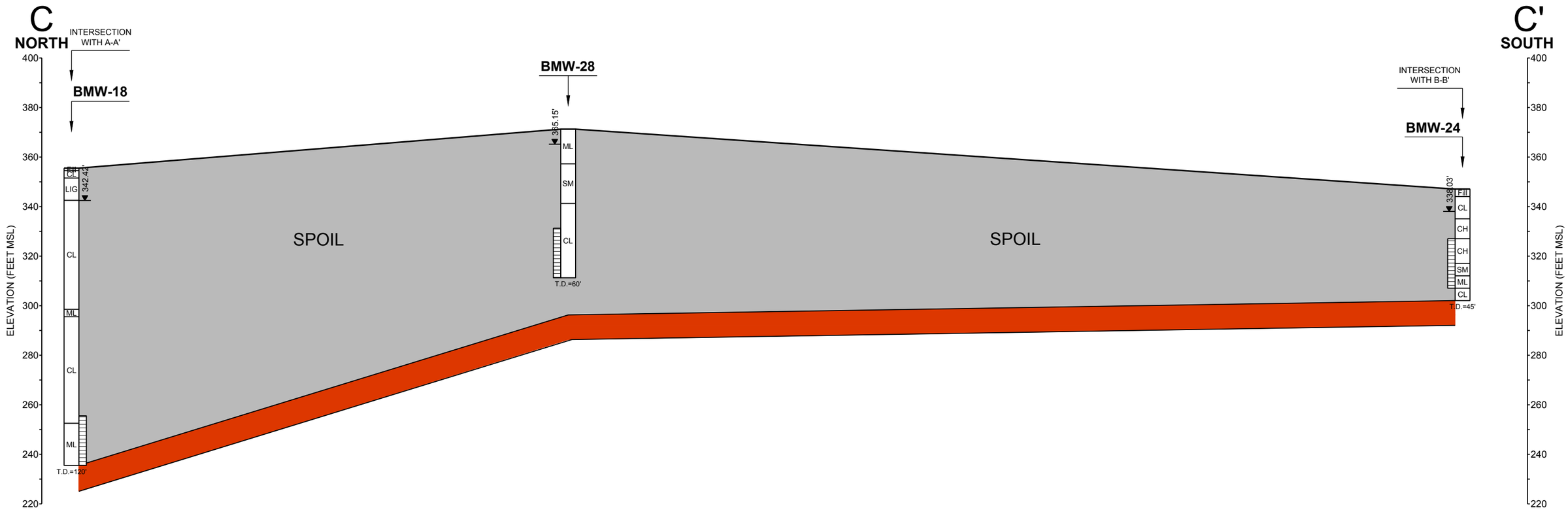
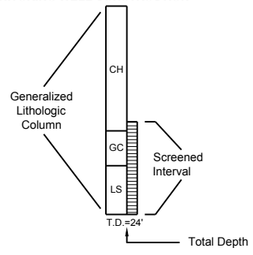


LEGEND

- SPOIL
- NATIVE CLAY

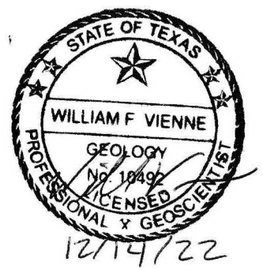
MONITORING WELL CONSTRUCTION



Water Level (Ft AMSL) Maximum Measured 2015-2022

NOTE(S)

1. SPOIL DEPTHS AND OCCURRENCE OF NATIVE CLAY BELOW SPOIL ZONE ARE APPROXIMATED BASED ON HISTORICAL DATA FROM SOIL BORINGS COMPLETED NEAR THE CCR WELLS.



SCALE IN FEET

40 VERTICAL

480 HORIZONTAL

12x Vertical Exaggeration

CLIENT
LUMINANT

PROJECT
MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

TITLE
A1 AREA LANDFILL
GEOLOGIC CROSS SECTION C-C'
WEST SIDE OF A1 LANDFILL

CONSULTANT
WSP GOLDER

YYYY-MM-DD	2022-12-13
DESIGNED	AJD
PREPARED	AJD
REVIEWED	WFV
APPROVED	WFV

PROJECT NO.

REV. 0

FIGURE 6

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

1 in
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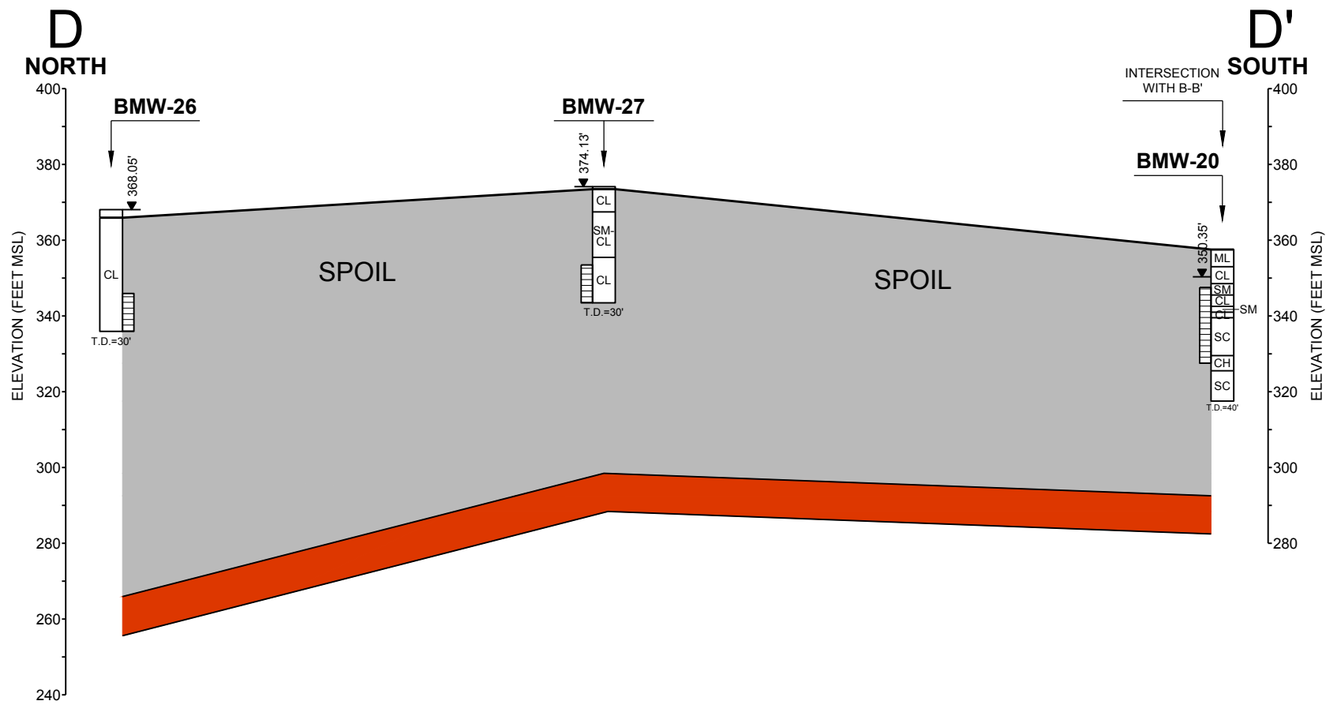
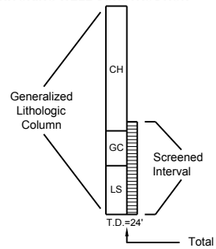


LEGEND

- SPOIL
- NATIVE CLAY

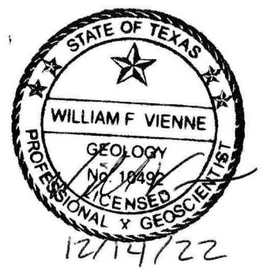
MONITORING WELL CONSTRUCTION



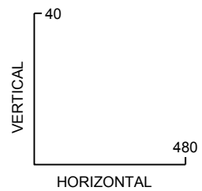
Water Level (Ft AMSL) Maximum Measured 2015-2022

NOTE(S)

1. SPOIL DEPTHS AND OCCURRENCE OF NATIVE CLAY BELOW SPOIL ZONE ARE APPROXIMATED BASED ON HISTORICAL DATA FROM SOIL BORINGS COMPLETED NEAR THE CCR WELLS.



SCALE IN FEET



12x Vertical Exaggeration

CLIENT
LUMINANT

PROJECT
MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

TITLE
A1 AREA LANDFILL
GEOLOGIC CROSS SECTION D-D'
EAST SIDE OF A1 LANDFILL

CONSULTANT
WSP GOLDER

YYYY-MM-DD	2022-12-13
DESIGNED	AJD
PREPARED	AJD
REVIEWED	WFV
APPROVED	WFV

PROJECT NO.

REV. 0

FIGURE 7

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

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TABLES

TABLE 1
SUMMARY OF AQUIFER TEST RESULTS
A1 AREA LANDFILL

Well ID	Test Type	Aquifer Type	Analysis Method	Saturated Thickness (feet)	Results T (cm^2/[illegible])	Results K (cm/sec)
PDP 5						
A1 Area Landfill						
[illegible]M[illegible] [illegible]21	[illegible]	Unc[illegible]d	[illegible]r[illegible]	10	[illegible]2[illegible]02	2[illegible]0[illegible]0[illegible]
[illegible]M[illegible] [illegible]21	[illegible]	Unconfined	[illegible]r[illegible]	10	[illegible]02	1[illegible]0[illegible]
				Mean	**5.94E-02**	**1.95E-04**
[illegible]M[illegible] [illegible]2[illegible]	[illegible]	Unconfined	[illegible]r[illegible]	1[illegible]	[illegible]00[illegible]01	1[illegible]0[illegible]
[illegible]M[illegible] [illegible]2[illegible]	[illegible]	Unconfined	[illegible]r[illegible]	1[illegible]	[illegible]01	1[illegible]1[illegible]0[illegible]
				Mean	**6.98E-01**	**1.53E-03**
[illegible]M[illegible] [illegible]2[illegible]	[illegible]	Unconfined	[illegible]r[illegible]	[illegible]	1[illegible]0[illegible]02	[illegible]2[illegible]0[illegible]
[illegible]M[illegible] [illegible]2[illegible]	[illegible]	Unconfined	[illegible]r[illegible]	[illegible]	1[illegible]1[illegible]02	1[illegible]0[illegible]0[illegible]
				Mean	**1.46E-02**	**9.55E-05**
				Geometric Mean for All A1 Area Landfill Tests	**8.45E-02**	**3.05E-04**

[illegible]

1[illegible]r[illegible]r[illegible]dr[illegible]d[illegible]

February 12, 2024
BBA Project No. 23643-01-2024

Mr. Eric Chavers
Luminant Generation Company LLC
6555 Sierra Drive.
Irving, Texas 75309

RE: Groundwater Monitoring System Certification – Addendum No. 2
Martin Lake Steam Electric Station – A1 Area Landfill
Panola County, Texas
(TCEQ CCR Registration Application No. CCR105)

DOCUMENT REVISION RECORD

Issue No.	Date	Details of Revisions
Revision 0	October 2017	Original Document
Addendum 1	December 2022	Updated site plan to indicate extent of final waste boundary and extent of historical mining near the A1 Area Landfill, updated cross sections to show mine spoil thickness and additional geological information below the spoil zone, revised designation of uppermost groundwater-bearing unit to indicate it is an unconfined unit, and added professional seal to figures where applicable
Addendum 2	February 2024	Provide certification and other relevant information for upgradient well BMW-33

1.0 INTRODUCTION

Luminant Generation Company LLC (Luminant) owns and operates the Martin Lake Steam Electric Station (MLSES) located approximately 5 miles southeast of Tatum, Rusk County, Texas (Figure 1). The MLSES consists of three coal-fired power generation units. Coal Combustion Residuals (CCRs) including fly ash, bottom ash and gypsum are generated as part of the MLSES unit operations. Currently, CCRs generated at the MLSES are transported off-site for beneficial reuse by third-parties or are managed by Luminant in surface impoundments located on the MLSES property or at the A1 Area Landfill located approximately 2.5 miles east of the MLSES in Panola County.

The CCR Rule (40 C.F.R. 257 Subpart D - *Standards for the Receipt of Coal Combustion Residuals in Landfills and Surface Impoundments*) was promulgated by the United States Environmental Protection Agency (USEPA) to regulate the management and disposal of CCRs as solid waste under Resource Conservation and Recovery Act (RCRA) Subtitle D. TCEQ has adopted portions of the federal CCR rule at 30 T.A.C. Chapter 352 (Texas CCR Rule), and USEPA published its final approval of the Texas CCR rule on June 28, 2021.

The A1 Area Landfill CCR groundwater monitoring system was certified by a professional engineer in accordance with 40 C.F.R §257.91 in the 2017 Groundwater Monitoring System Certification report (PBW 2017). This addendum to the original A1 Area Landfill Groundwater Monitoring System Certification provides a professional engineer's certification and other relevant information associated with upgradient well BMW-33, which was incorporated into the A1 Area Landfill CCR groundwater monitoring system in 2020.

2.0 A1 AREA LANDFILL GROUNDWATER MONITORING SYSTEM

The A1 Area Landfill CCR groundwater monitoring system consists of the following twelve monitoring wells:

Upgradient Wells	Downgradient Wells
BMW-11A-R	BMW-18
BMW-33	BMW-19
	BMW-20
	BMW-21
	BMW-22
	BMW-23
	BMW-24
	BMW-26
	BMW-27
	BMW-28

A detailed Site Plan of the A1 Area Landfill showing the CCR monitoring well locations is presented on Figure 2.

The A1 Area Landfill is currently operating under an Assessment Monitoring Program. An Assessment of Corrective Measures (ACM) for Appendix IV parameters identified at statistically significant levels above groundwater protection standards was completed in September 2019 (Golder 2019) pursuant to 40 C.F.R. §257.95(g). Five nature and extent monitoring wells (BMW-29, BMW-30, BMW-31, BMW-32, and BMW-33) were completed at the site in May 2019 as part of the ACM evaluation. As noted in the A1 Area Landfill 2020 Annual Groundwater Monitoring and Corrective Action Report (Golder 2021), upgradient/background monitoring well BMW-33, which was installed and sampled as part of the 2019 ACM evaluation, was incorporated into the CCR monitoring program in 2020.

The monitoring well construction log for BMW-33 is presented in Attachment 1. Monitoring well construction logs for the other CCR groundwater monitoring wells were provided in the 2017

Groundwater Monitoring System Certification (PBW 2017). Groundwater potentiometric surface maps, which show the inferred groundwater flow direction and location of each CCR monitoring well relative to the A1 Area Landfill are presented in Attachment 2. The groundwater potentiometric surface maps indicate that BMW-33 is located hydraulically upgradient of the A1 Area Landfill. A professional engineer's certification is provided in Section 4.

3.0 REFERENCES

Golder, 2019. CCR Assessment of Corrective Measures, Martin Lake Steam Electric Station – A1 Area Landfill, Panola County, Texas. September.

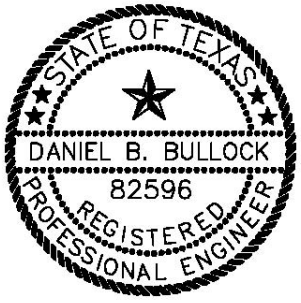
Golder, 2021. 2020 Annual Groundwater Monitoring and Corrective Action Report, Martin Lake Steam Electric Station A1 Area Landfill - Panola County, Texas. January.

Pastor, Behling & Wheeler, LLC (PBW), 2017. Coal Combustion Residual Rule Groundwater Monitoring System Certification, Martin Lake Steam Electric Station, A1 Area Landfill.

4.0 PROFESSIONAL CERTIFICATION

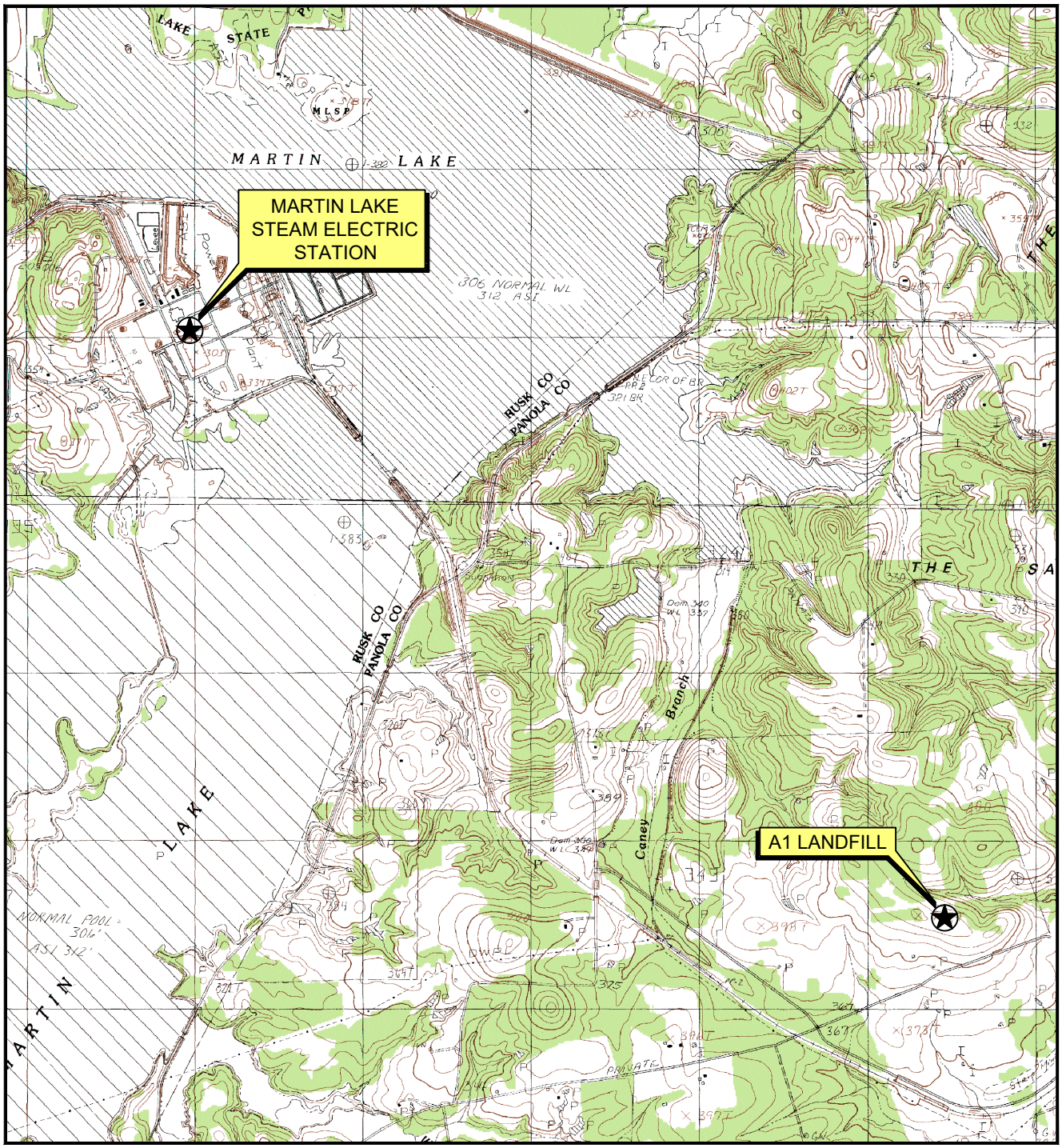
This document and all attachments were prepared by Bullock, Bennett & Associates, LLC under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I hereby certify that Addendum No.2 to the Groundwater Monitoring System Certification for the A1 Area Landfill associated with the Martin Lake Steam Electric Station has been prepared in accordance with the requirements of 40 C.F.R. §257.91 and 30 T.A.C §352.911.

Daniel B. Bullock, P.E.
Principal Engineer
Bullock, Bennett & Associates, LLC
Texas Professional Engineering Firm No. 8542



2/12/2024

FIGURES



TE□AS

□UADRANGLE LOCATION

N

Scale in Feet

0 1500 □000

SOURCE:
Base map from www.tnris.gov, Tatum, T□ 7.5 min. USGS □uadrangle dated 1□□□.

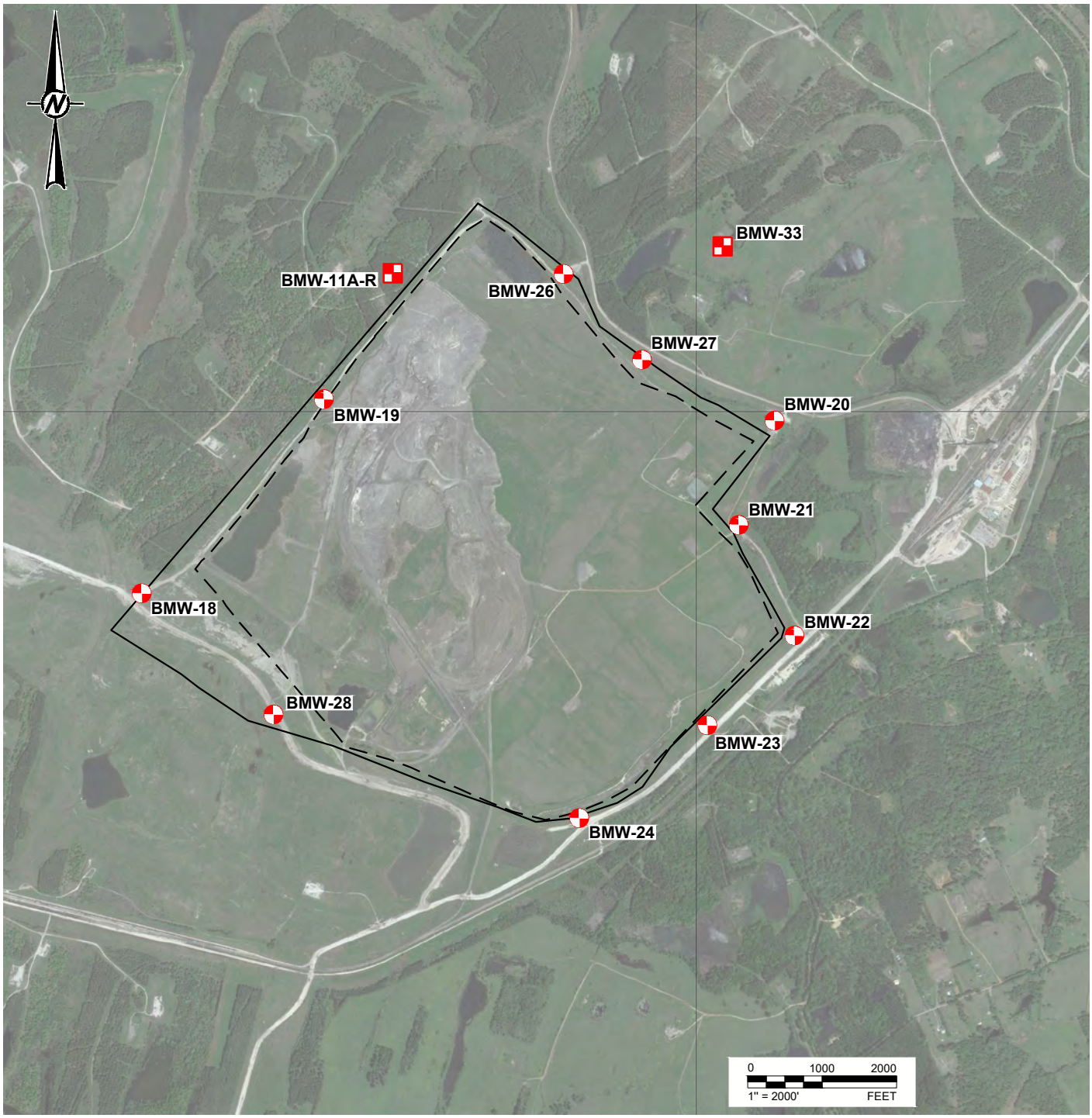
MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TE□AS

Figure 1

A1 AREA LANDFILL
SITE LOCATION MAP

PROJECT: 23436-01-2024	BY: WFV	REVISIONS
DATE: Feb. 2024	CHECKED: WFV	

Bullock, Bennett & Associates, LLC
Engineering and Geoscience
Texas Registrations: Engineering F-8542, Geoscience 50127



LEGEND

- DEED RESTRICTION BOUNDARY
- WASTE BOUNDARY
- DOWNGRADIENT CCR MONITORING WELL
- UPGRADIENT CCR MONITORING WELL

STATE OF TEXAS
WILLIAM F VIENNE
GEOLOGY
No. 10492
LICENSED
PROFESSIONAL GEOSCIENTIST
01/31/2024

REFERENCE(S)
BASE MAP TAKEN FROM GOOGLE EARTH IMAGERY DATED 4/6/17.

MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

Figure 2

A1 AREA LANDFILL CCR GROUNDWATER MONITORING SYSTEM

PROJECT: 23436-01-2024	BY: WFV	REVISIONS
DATE: Feb. 2024	CHECKED: WFV	

Bullock, Bennett & Associates, LLC
Engineering and Geoscience
Texas Registrations: Engineering F-8542, Geoscience 50127

ATTACHMENT 1

BMW-33 Monitoring Well Boring Log

Luminant

Log of Boring: BMW-33

Big Brown Steam Electric Station
Franklin, Texas

Golder Project No. 19122434E

Completion Date:	5/30/2019	Drilling Method:	Sonic
Drilling Company:	Walker-Hill Environmental	Borehole Diameter (in.):	6
Driller:	Rodney Labrosse	Total Depth (ft):	48
Driller's License:	60059	TOC Elevation (ft. AMSL):	427.7
Logged By:	Sergio Ruiz	Northing:	3568008
Sampling Method:	4"x10' Core barrel	Easting:	357427.5

Depth (ft)	Well Materials	Recovery (ft/ft)	USCS	Lithologic Description
0				
5		6.2/10.0	SP	(0 - 16.7) SAND, fine grained, wet, soft, subround, no plasticity, mix of orange, light orange, few gray clay lenses, thick clay lense 7.3' to 7.8', saturated at 11', trace organics in top 1'
10				
15		6.4/10.0		
			CH	(16.7 - 18.4) CLAY, dark gray, moist, very firm, high plasticity
20				
25		7.3/10.0		
30				
35		6.1/10.0	SC	(18.4 - 48.9) Clayey SAND, wet below 20', mix of gray, light gray, and tan, soft to firm, large pieces of lignite 18.5' to 20' and mixed throughout, dark gray fat clay lense 27.7'-28.2', mixed clay nodules below 29', saturated at 38',
40				
45		6.9/9.0		
				(48.9 - 49) CLAY , gray stiff, with some sand throughout, some black lignite pieces
50				

STATE OF TEXAS
WILLIAM F VIENNE
GEOLOGY
No. 10492
LICENSED
PROFESSIONAL GEOSCIENTIST
01/31/2024

GOLDER
2201 Double Creek Dr., Suite 4004
Round Rock, Texas 78664
O·512.671.3434 F·512.671.3446

APPENDIX F-Revision 2 February 27, 2024

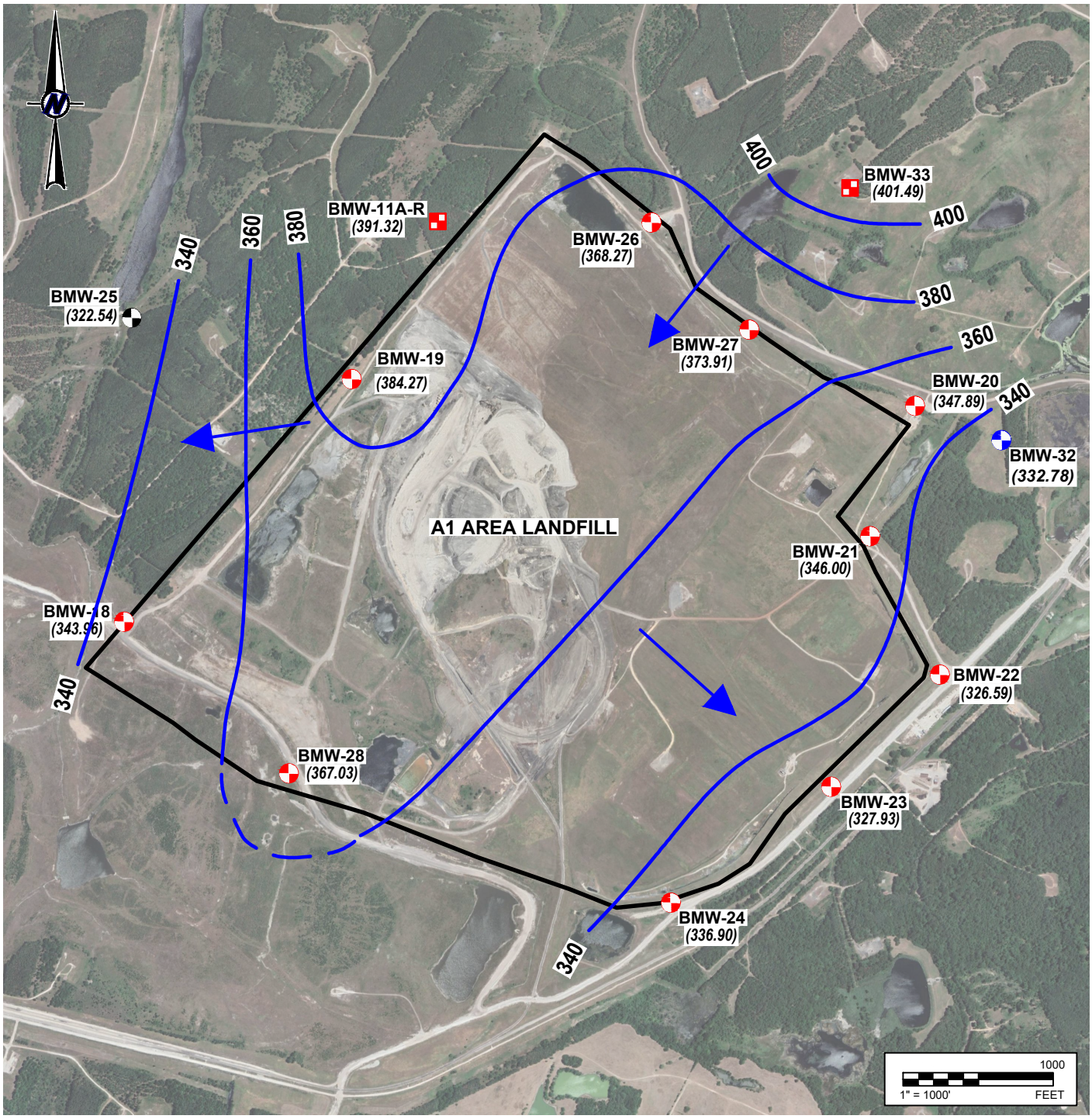
Notes:
1. This log should not be used separately from the report to which it is attached.
2. Entire core is composed of mine spoil.

Well Materials
(+3 - 38) Casing, 2" Sch 40 FJT PVC
(38 - 48) Screen, 2" Sch 40 FJT PVC, 0.010" slot

Annular Materials
(0'-32') Grout
(32'-36') Bentonite pellets
(36'-48') 20/40 sand

ATTACHMENT 2

2023 Groundwater Potentiometric Surface Maps



LEGEND

- DOWNGRADIENT CCR MONITORING WELL
- UPGRADIENT CCR MONITORING WELL
- ACM DELINEATION MONITORING WELL
- NON-CCR MONITORING WELL
- (358.02) GROUNDWATER POTENTIOMETRIC SURFACE (FT MSL)
- 340 GROUNDWATER POTENTIOMETRIC SURFACE CONTOUR (C.I. = 20 FT)
- INFERRED GROUNDWATER FLOW DIRECTION

STATE OF TEXAS
WILLIAM F VIENNE
GEOLOGY
No. 10492
LICENSED
PROFESSIONAL GEOSCIENTIST
01/31/2024

REFERENCE(S)
BASE MAP TAKEN FROM GOOGLE EARTH, IMAGERY DATE JANUARY 2021

MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

A1 AREA LANDFILL
POTENTIOMETRIC SURFACE MAP
MAY 2023

PROJECT: 23643.03	BY: SLB	DATE: 12/19/2023	CHECKED: WV

Bullock, Bennett & Associates, LLC
Engineering and Geoscience
Texas Registrations: Engineering F-8542, Geoscience 50127

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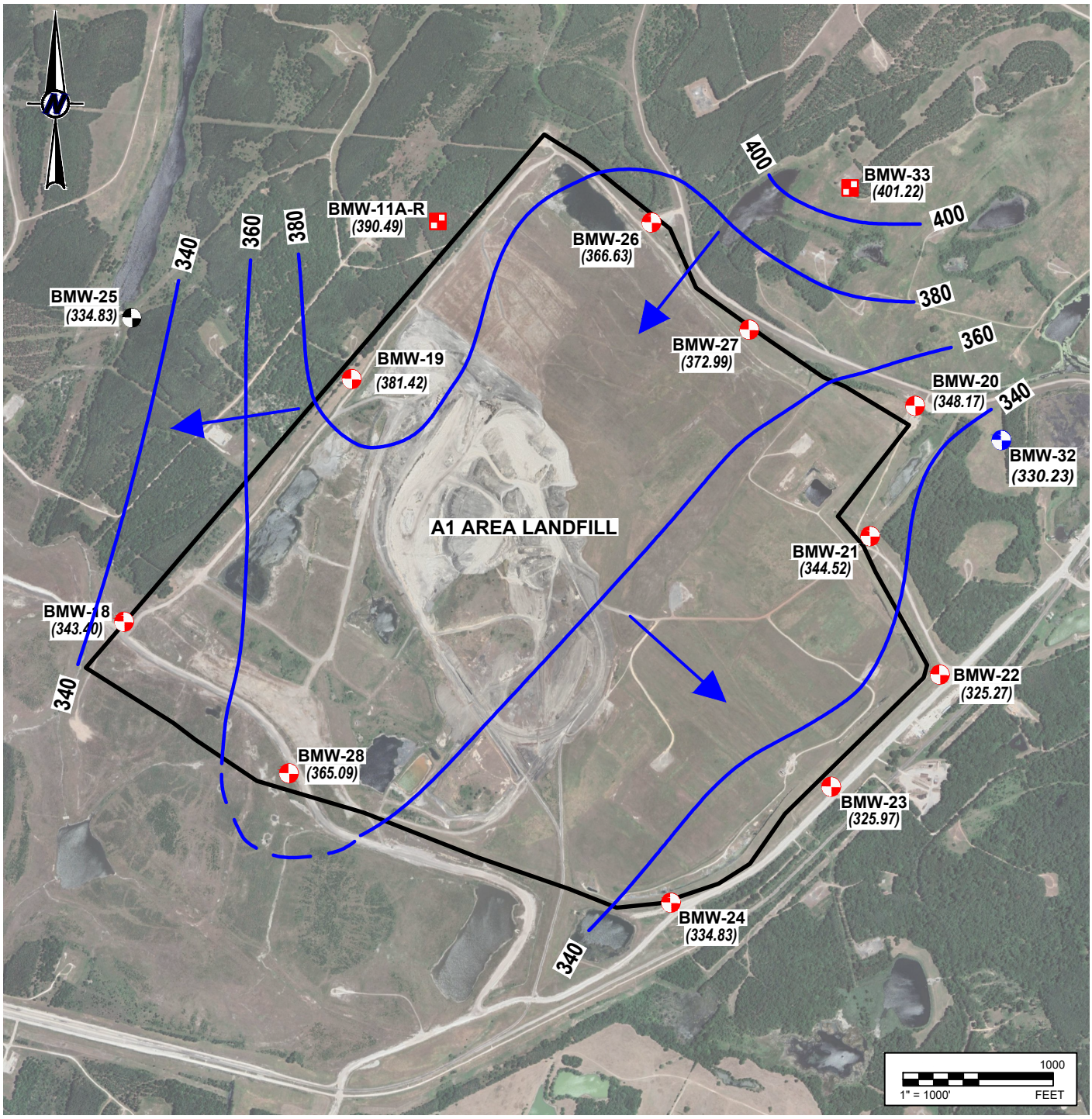

LEGEND

- DOWNGRADIENT CCR MONITORING WELL
- UPGRADIENT CCR MONITORING WELL
- ACM DELINEATION MONITORING WELL
- NON-CCR MONITORING WELL
- (358.02) GROUNDWATER POTENTIOMETRIC SURFACE (FT MSL)
- 340 GROUNDWATER POTENTIOMETRIC SURFACE CONTOUR (C.I. = 20 FT)
- INFERRED GROUNDWATER FLOW DIRECTION

STATE OF TEXAS
WILLIAM F VIENNE
GEOLOGY
No. 10492
LICENSED
PROFESSIONAL GEOSCIENTIST
01/31/2024

REFERENCE(S)
BASE MAP TAKEN FROM GOOGLE EARTH, IMAGERY DATE JANUARY 2021

MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

A1 AREA LANDFILL
POTENTIOMETRIC SURFACE MAP
AUGUST 2023

PROJECT: 23643.03	BY: SLB	DATE: 12/19/2023	CHECKED: WV

Bullock, Bennett & Associates, LLC
Engineering and Geoscience
Texas Registrations: Engineering F-8542, Geoscience 50127

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COAL COMBUSTION RESIDUAL RULE
GROUNDWATER MONITORING SYSTEM CERTIFICATION

MARTIN LAKE STEAM ELECTRIC STATION
ASH POND AREA
RUSK COUNTY, TEXAS

OCTOBER 16, 2017

LUMINANT

Prepared For:

Luminant Generation Company, LLC
6555 Sierra Drive
Irving, TX 75039

Prepared By:

Pastor, Behling & Wheeler, LLC
2201 Double Creek Drive, Suite 4004
Round Rock, Texas 78664
Texas Engineering Firm No. 4760

October 16, 2017

PROFESSIONAL CERTIFICATION

This document and all attachments were prepared by Pastor, Behling & Wheeler, LLC under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I hereby certify that the groundwater monitoring system installed at the referenced facility has been designed and constructed to meet the requirements of Section 257.91 of the CCR Rule.

Patrick J. Behling, P.E.
Principal Engineer
PASTOR, BEHLING & WHEELER, LLC

LUMINANT

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LUMINANT

LIST OF APPENDICES

Appendix	Title
A	CCR Monitoring Well Logs
B	Photographs of CCR Groundwater Monitoring Wells
C	Groundwater Potentiometric Surface Maps

1.0 INTRODUCTION

Luminant Power (Luminant) operates the Martin Lake Steam Electric Station (MLSES) located approximately 5 miles southeast of Tatum, Rusk County, Texas (Figure 1). The MLSES consists of three coal/lignite-fired power generation units. Coal Combustion Residuals (CCRs) including fly ash, bottom ash and gypsum are generated as part of the MLSES unit operations. Currently, CCRs generated at the MLSES are transported off-site for beneficial use by third-parties or are managed by Luminant in surface impoundments located on the MLSES property or the A1 Area Landfill located approximately 2.5 miles east of the MLSES. Three CCR Units have been identified within the MLSES operations, the Ash Pond Area, Permanent Disposal Pond 5 (PDP 5), and A1 Area Landfill. This report discusses the Ash Pond Area (the Site), which includes the West Ash Pond (WAP), East Ash Pond (EAP), and the New Scrubber Pond. The Ash Ponds meet the definition of CCR surface impoundments and are subject to groundwater monitoring system requirements of the CCR Rule.

The CCR Rule (40 CFR 257 Subpart D - *Standards for the Receipt of Coal Combustion Residuals in Landfills and Surface Impoundments*) has been promulgated by the EPA to regulate the management and disposal of CCRs as solid waste under Resource Conservation and Recovery Act (RCRA) Subtitle D. The final CCR Rule was published in the Federal Register on April 17, 2015. The effective date of the CCR Rule was October 19, 2015.

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The CCR Rule establishes national minimum criteria for existing and new CCR landfills, existing and new CCR surface impoundments, and lateral expansions to landfills/impoundments. Pastor, Behling & Wheeler, LLC (PBW) was retained by Luminant to evaluate and certify that the groundwater monitoring system at the Site has been designed and constructed to meet the requirements of Section 257.91 of the CCR Rule.

1.1 Description of the Ash Pond Area

The WAP, EAP, and New Scrubber Pond (collectively referred to as the "Ash Ponds") are located immediately east of the MLSES power units (Figure 2). The WAP and EAP receive fluids from bottom ash dewatering bins and other MLSES process wastewater sources that typically include bottom ash fines. Solids present in these wastewaters settle within the ponds and are periodically dredged, dewatered, and transported to the A1 Area Landfill for disposal. The WAP and EAP are both provided with some

combination of clay/single or double 60-mil high density polyethylene (HDPE) liners, separated by a geonet with a 4-inch protective revetment mat. The liner systems for the WAP and EAP per the CCR Rule are considered unlined impoundments (BM, 2015).

The New Scrubber Pond is the primary impoundment used for recycling process wastewater from the flue-gas desulfurization (FGD) process at the MLSES. Solids present in the FGD wastewater settle within the pond and are periodically removed and managed similar to the ash solids from the WAP and EAP. The New Scrubber Pond is provided with a double 60-mil HDPE liner, separated by a geonet and a 4-inch protective revetment mat. The liner for the New Scrubber Pond per the CCR Rule is considered an unlined impoundment (BM, 2015).

Several other water management ponds that are not considered CCR units are also located in the vicinity of the Ash Ponds, including two emergency catch basins (Catch Basin 1 and Catch Basin 2) and a storm water pond. Catch Basins 1 and 2 are used for storage of seal water and other fluids from adjacent low pressure ash water pump stations and have historically been unlined (18-inch thick clay liners were installed in the catch basins in April 2015). Water stored in Catch Basins 1 and 2 is transferred to the New Scrubber Pond or used for process make-up water. The storm water pond receives/stores storm water run-off from the lignite/coal storage area run-off at the plant. Water stored in the storm water pond is used for process make-up water (PBW, 2011).

The Process Water Pond, which is also located in the Ash Pond Area, was formerly used to manage process wastewaters similar to the New Scrubber Pond; however, Luminant had CCR within the Process Water Pond removed prior to the effective date of the CCR Rule. As a result, the Process Water Pond is not included as a CCR unit as part of this evaluation.

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1.2 CCR Unit Groundwater Monitoring System Requirements

Section 257.91 of the CCR Rule indicates that existing CCR landfills and surface impoundments be provided with a groundwater monitoring system that consists of sufficient wells, installed at appropriate location and depths, to yield groundwater samples from the uppermost aquifer that meet the following criteria:

- Accurately represent the quality of background groundwater that has not been affected by leakage from a CCR unit; and

- Accurately represent the quality of groundwater passing the waste boundary of the CCR unit. The downgradient monitoring system must be installed at the waste boundary to ensure detection of groundwater contamination in the uppermost aquifer. All potential contaminant pathways must be monitored.

The specific configuration of the groundwater monitoring system must be determined based on site-specific technical information that must include aquifer thickness, groundwater flow rate, groundwater flow direction (including seasonal and temporal fluctuation in groundwater flow), saturated and unsaturated geologic units and fill materials that overly the uppermost aquifer, materials comprising the uppermost aquifer, and materials comprising the confining unit defining the lower boundary of the upmost aquifer, including, but not limited to, thickness, stratigraphy, lithology, hydraulic conductivities, porosities, and effective porosities.

At a minimum, the monitoring system must consist of at least one upgradient and three downgradient monitoring wells, and any additional monitoring wells necessary to accurately represent the quality of the background groundwater that has not been affected by leakage from the CCR unit and the quality of groundwater passing the waste boundary of the CCR unit. Multi-unit groundwater monitoring systems are allowed but must be equally as capable of detecting monitored constituents at the waste boundary of a CCR unit as individual groundwater monitoring wells.

Monitoring wells must be cased in a manner that maintains the integrity of the monitoring well borehole. This casing must be screened or perforated and packed with gravel or sand, where necessary, to enable collection of groundwater samples. The annular space above the sampling depth must be sealed to prevent contamination of samples and the groundwater. There must be documentation in the operating record of the design, installation, development, and decommissioning of any monitoring wells, piezometers and other measurement, sampling, and analytical devices. The qualified engineer must have access to and must review this documentation as part of the groundwater monitoring system certification.

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2.0 GROUNDWATER MONITORING SYSTEM EVALUATION

2.1 Ash Pond Area Groundwater Monitoring System

The CCR groundwater monitoring well system at the Ash Pond Area consists of seven monitoring wells (H-26, H-27, H-28, H-29, H-31, H-32, and H-33) that are each screened in the uppermost aquifer at the Site. The locations of the CCR monitoring wells are shown on Figure 2. Well construction information and survey data for the CCR wells are summarized in Table 1, CCR monitoring well logs are presented in Appendix A, and photographs of the CCR wells are presented in Appendix B.

2.2 Local Geology and Hydrogeology

The FGD Ponds are located in the outcrop area of the Eocene-aged Wilcox Group (Barnes, 1965). PBW reviewed current and historical soil boring logs, monitoring well completion documentation, and historical reports to describe the geologic and hydrogeologic conditions in the Ash Pond Area. Geologic cross sections were constructed using these data. Cross section locations are presented on Figure 3 and the cross sections are presented on Figures 4, 5, and 6.

The geology of the Site consists of an upper zone composed of an approximately 30 to 40-foot thick low to medium plasticity, lean clay to clayey sand unit. The upper zone is underlain by an intermediate zone composed of poorly-graded fine sand and silty sand unit that is generally about 5 to 20 feet thick. The intermediate zone underlain by a laterally continuous silty to sandy confining clay unit. The uppermost aquifer occurs in the intermediate sand and silty sand unit at the Site.

2.3 Groundwater Potentiometric Surface Elevations

Eight background groundwater monitoring events were performed using the Ash Pond Area CCR monitoring well system from October 2015 to December 2016. Static water levels measured during the background monitoring period indicated water elevations ranging from 302.30 feet above mean sea level (amsl) to 310.04 feet amsl, and depths to water ranging from 9.24 feet bgs to 26.94 feet bgs (Table 2). Groundwater potentiometric surface maps based on data collected during the background monitoring period are presented in Appendix C.

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Groundwater elevations were generally highest in the west, with an inferred groundwater flow direction to the east. Based on the inferred groundwater flow direction, the location of each CCR monitoring well relative to the Ash Pond Area is as follows:

Upgradient Wells	Downgradient Wells
H-26	H-28
H-27	H-29
H-33	H-31
	H-32

2.4 Uppermost Aquifer Hydraulic Conductivity Testing

Aquifer tests (slug tests) were conducted in both the upper zone of clayey sand and the intermediate zone of sand and silty sand (see Section 2.2) as part of an Affected Property Assessment Report (APAR) prepared for the Ash Pond Area (PBW, 2011). The APAR was approved by the Texas Commission on Environmental Quality (TCEQ) in December 2011 (TCEQ, 2011). The hydraulic conductivities of upper zone reportedly ranged from 3.5×10^{-6} to 3.8×10^{-4} cm/sec, and hydraulic conductivities of the intermediate zone ranged from 1.2×10^{-4} to 7.5×10^{-3} cm/sec.

LUMINANT

2.5 Conclusions

The CCR groundwater monitoring well system at the Ash Pond Area complies with Section 257.91 of the CCR Rule. This conclusion is supported by the following as described in detail in previous sections of this report:

- Seven monitoring wells are included in the CCR groundwater monitoring system – three upgradient monitoring wells and four downgradient monitoring wells.
- Each monitoring well is screened in the uppermost aquifer at the Site. Samples collected from upgradient monitoring wells will be representative of the quality of background groundwater that has not been affected by leakage from the CCR units and samples collected from downgradient wells will ensure detection of groundwater contamination in the uppermost aquifer from the CCR units.
- The monitoring wells are constructed with appropriate well casing to maintain the integrity of the monitoring well borehole and with slotted well screens to enable collection of groundwater samples. In addition, the annular space above the well screen is appropriately sealed to prevent contamination of groundwater samples from surface sources.
- Appropriate documentation exists concerning the design, installation, and development of the monitoring wells.

3.0 REFERENCES

Barnes, Virgil E., 1965. Geologic Atlas of Texas, Tyler Sheet. Texas Bureau of Economic Geology.

Burns & McDonnell Engineering Company, Inc (BM), 2015. CCR Study for Martin Lake Steam Electric Station – Final Draft. June 2015.

Pastor, Behling & Wheeler, LLC (PBW), 2011. Revised Affected Property Assessment Report, Martin Lake Steam Electric Station – Ash Pond Area (TCEQ SWR No. 31277). May 3.

Texas Commission on Environmental Quality (TCEQ), 2011. Approved Addendum to Revised Affected Property Assessment Report for Ash Ponds Area. December 1.

LUMINANT

LUMINANT

Tables

TABLE 1
WELL CONSTRUCTION SUMMARY
ASH POND AREA
MARTIN LAKE STEAM ELECTRIC STATION

Well ID	Date Installed	Northing	Easting	Ground Elevation (ft amsl)	TOC Elevation (ft amsl)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	Screen Length (ft)	Total Design Depth (ft bgs)	Casing Diameter (in)
H-26	9/14/15	229020	2907068	320.44	323.70	35	40	5	40	2
H-27	9/15/15	229615	2906851	330.50	330.42	45	50	5	50	2
H-28	9/15/15	230034	2907669	314.04	316.82	27	32	5	32	2
H-29	9/23/15	229428	2907900	329.55	329.26	52	57	5	57	2
H-31	9/24/15	229262	2908597	329.46	329.26	42	52	10	52	2
H-32	9/24/15	228728	2908233	330.15	329.85	42	52	10	52	2
H-33	9/14/15	228609	2907268	320.78	323.85	41	46	5	46	2

Notes:
1. Abbreviations: ft - feet; amsl - above mean sea level; bgs - below ground surface.

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TABLE 2
GROUNDWATER ELEVATION SUMMARY
ASH POND AREA
MARTIN LAKE STEAM ELECTRIC STATION

Well ID	TOC Elevation (ft amsl)	Date	Depth to Water (ft bgs)	Water Elevation (ft amsl)
H-26	323.70	10/21/15	16.29	307.41
		12/14/15	15.57	308.13
		02/23/16	14.96	308.74
		04/05/16	15.34	308.36
		06/06/16	14.33	309.37
		08/09/16	15.30	308.40
		10/17/16	15.79	307.91
		12/11/16	17.54	306.16
H-27	330.42	10/21/15	23.66	306.76
		12/14/15	22.49	307.93
		02/23/16	21.95	308.47
		04/05/16	22.54	307.88
		06/06/16	21.70	308.72
		08/09/16	22.62	307.80
		10/17/16	23.12	307.30
		12/11/16	25.42	305.00
H-28	316.82	10/21/15	12.96	303.86
		12/14/15	10.41	306.41
		02/23/16	9.86	306.96
		04/05/16	10.46	306.36
		06/06/16	9.24	307.58
		08/09/16	11.81	305.01
		10/17/16	12.23	304.59
		12/11/16	14.52	302.30
H-29	329.26	10/21/15	24.51	304.75
		12/14/15	22.57	306.69
		02/23/16	22.02	307.24
		04/05/16	22.73	306.53
		06/06/16	22.09	307.17
		08/09/16	23.38	305.88
		10/17/16	23.59	305.67
		12/11/16	25.89	303.37
H-31	329.26	10/20/15	26.44	302.82
		12/14/15	22.99	306.27
		02/23/16	22.79	306.47
		04/05/16	23.34	305.92
		06/06/16	22.62	306.64
		08/09/16	25.15	304.11
		10/17/16	25.26	304.00
		12/11/16	26.88	302.38
H-32	329.85	10/22/15	26.11	303.74
		12/14/15	23.47	306.38
		02/23/16	23.05	306.80
		04/05/16	23.72	306.13
		06/06/16	23.11	306.74
		08/09/16	24.84	305.01
		10/17/16	25.03	304.82
		12/11/16	26.94	302.91

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TABLE 2
GROUNDWATER ELEVATION SUMMARY
ASH POND AREA
MARTIN LAKE STEAM ELECTRIC STATION

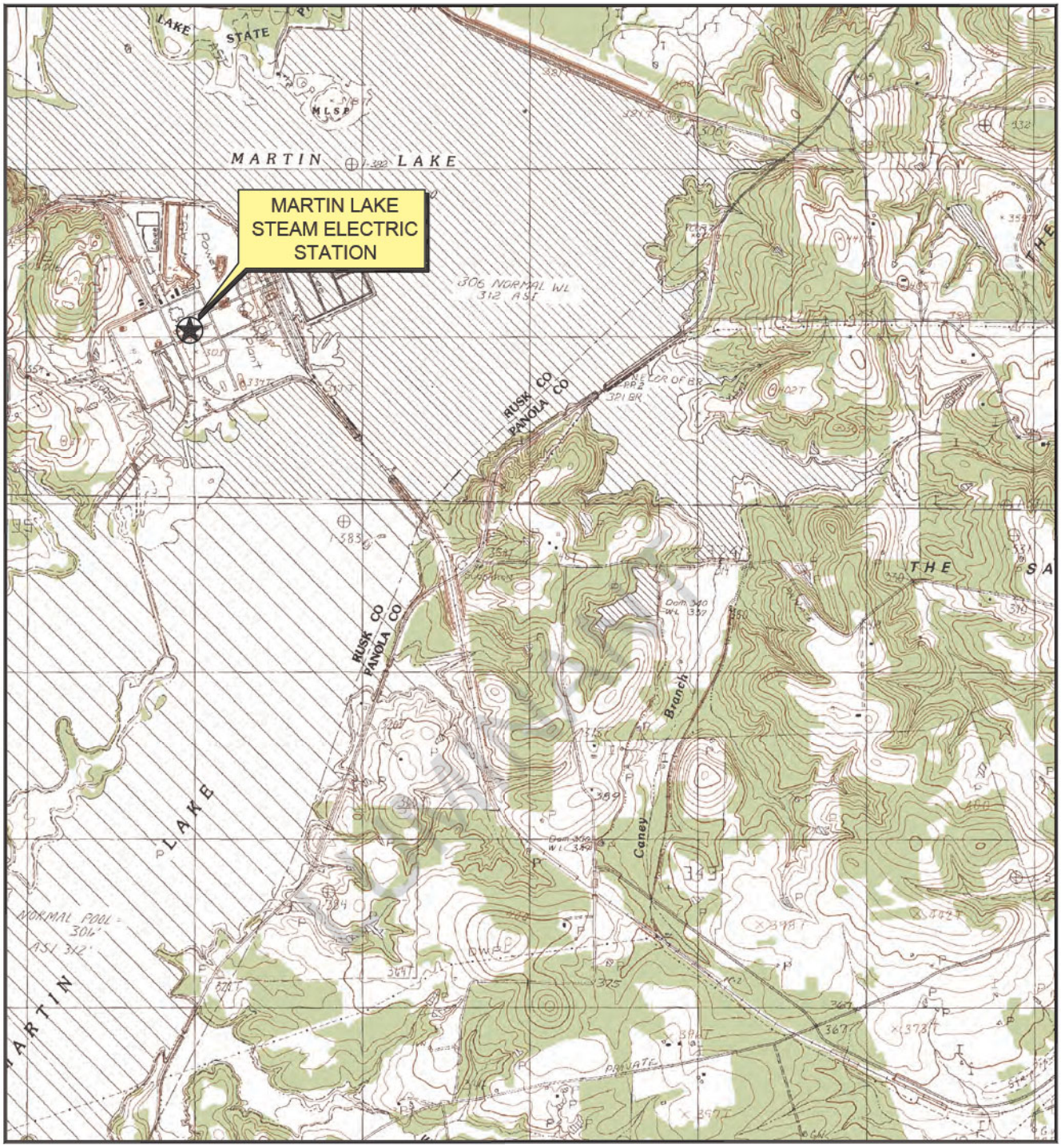
Well ID	TOC Elevation (ft amsl)	Date	Depth to Water (ft bgs)	Water Elevation (ft amsl)
H-33	323.85	10/22/15	15.91	307.94
		12/14/15	14.78	309.07
		02/23/16	14.79	309.06
		04/05/16	14.82	309.03
		06/06/16	13.81	310.04
		08/09/16	15.00	308.85
		10/17/16	15.34	308.51
		12/11/16	17.52	306.33

Notes:
1. Abbreviations: ft - feet; amsl - above mean sea level; bgs - below ground surface

LUMINANT

Figures

LUMINANT



QUADRANGLE LOCATION

N

Scale in Feet

0 1500 3000

SOURCE:
Base map from www.tnris.gov, Tatum, TX 7.5 min. USGS quadrangle dated 1983.

MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

Figure 1

ASH POND AREA
SITE LOCATION MAP

PROJECT: 5123B	BY: AJD	REVISIONS
DATE: JUNE, 2015	CHECKED: PJB	

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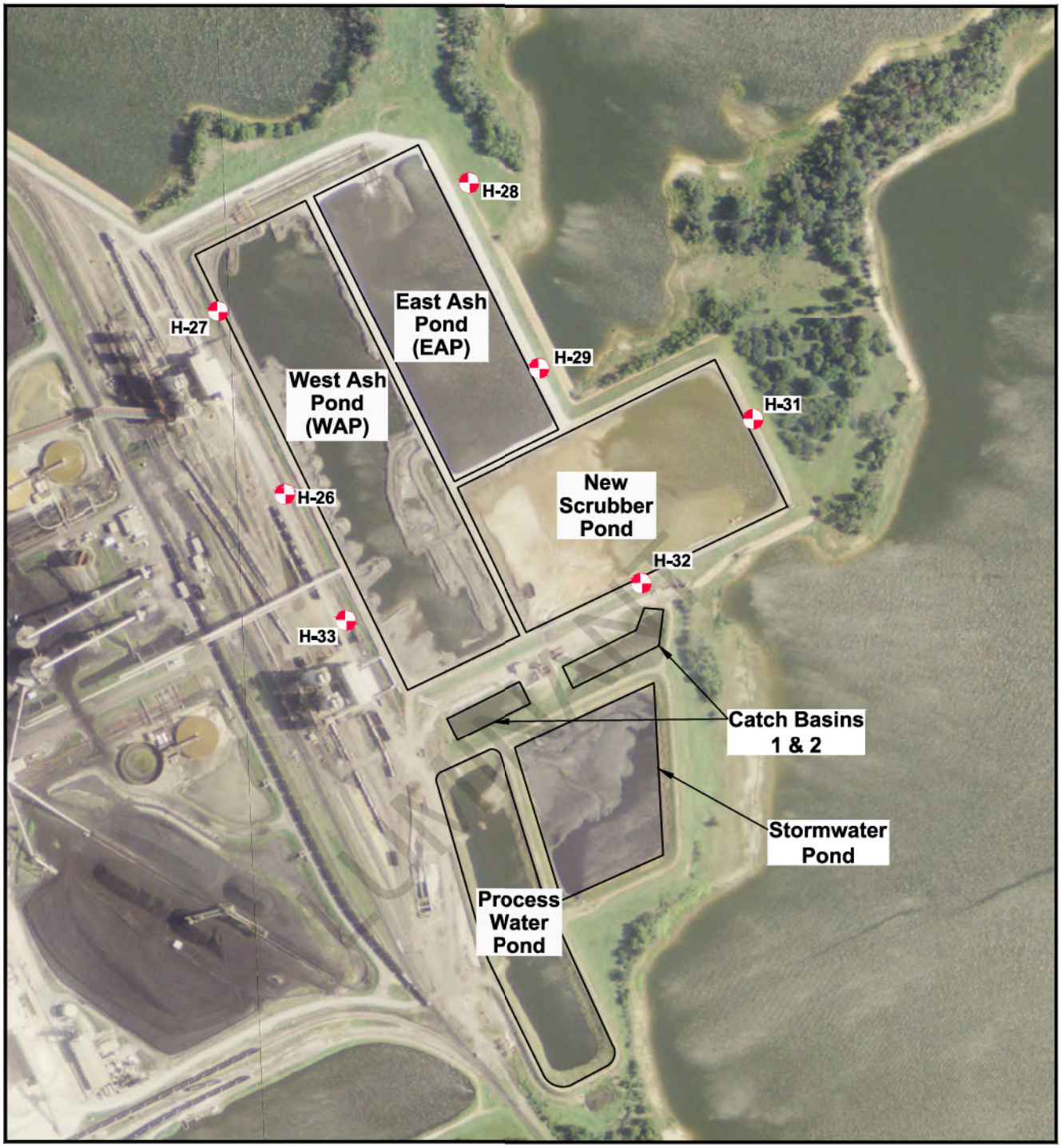
CONSULTING ENGINEERS AND SCIENTISTS



EXPLANATION

CCR Monitoring Well Location

N

Scale in Feet

0 250 500

SOURCE: Imagery from www.tnris.gov, Rusk County, aerial photographs, 2012.

MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

Figure 2

ASH POND AREA DETAILED SITE PLAN

PROJECT: 5164B	BY: AJD	REVISIONS
DATE: SEPT., 2017	CHECKED: PJB	

PASTOR, BEHLING & WHEELER, LLC
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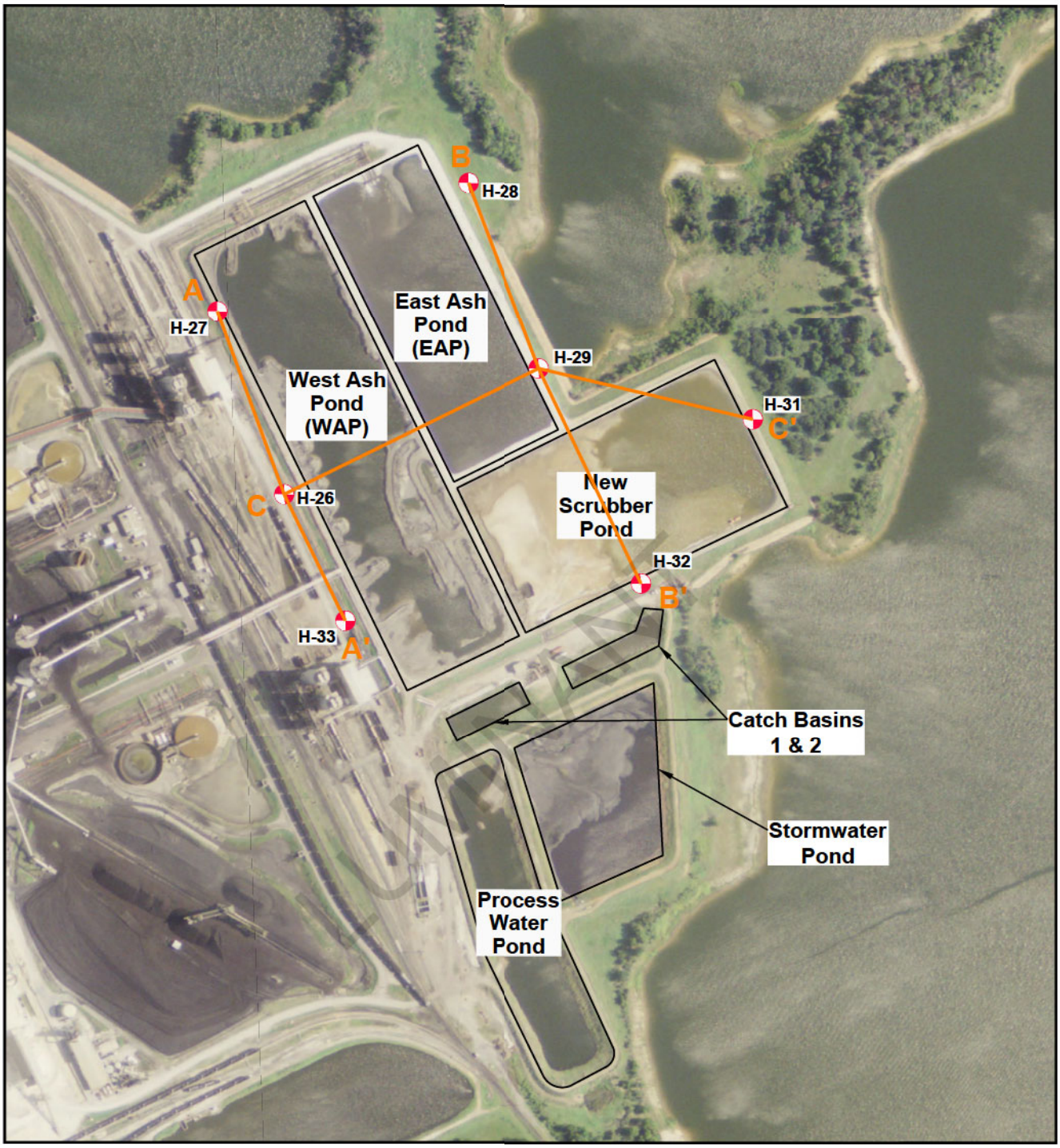


EXPLANATION

CCR Monitoring Well Location

A A' Geologic Cross Section Location Lines

N

Scale in Feet

0 250 500

SOURCE: Imagery from www.tnris.gov, Rusk County, aerial photographs, 2012.

MARTIN LAKE STEAM ELECTRIC STATION

TATUM, TEXAS

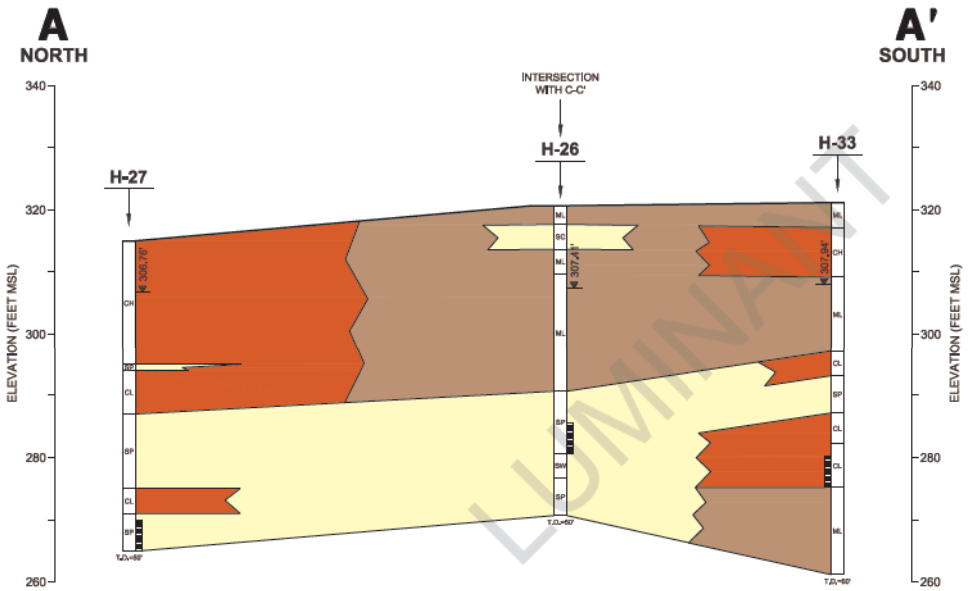
Figure 3

ASH POND AREA
CROSS SECTION LOCATION MAP

PROJECT: 5164B	BY: AJD	REVISIONS
DATE: SEPT., 2017	CHECKED: PJB	

PASTOR, BEHLING & WHEELER, LLC

CONSULTING ENGINEERS AND SCIENTISTS

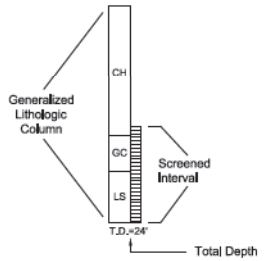


LUMINANT

EXPLANATION

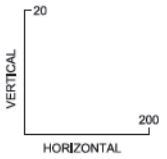
- FILL
- SAND
- CLAY
- SILT

MONITORING WELL CONSTRUCTION



Water Level (Ft MSL)
Measured 10/20/15 - 10/22/15

SCALE IN FEET



10x Vertical Exaggeration

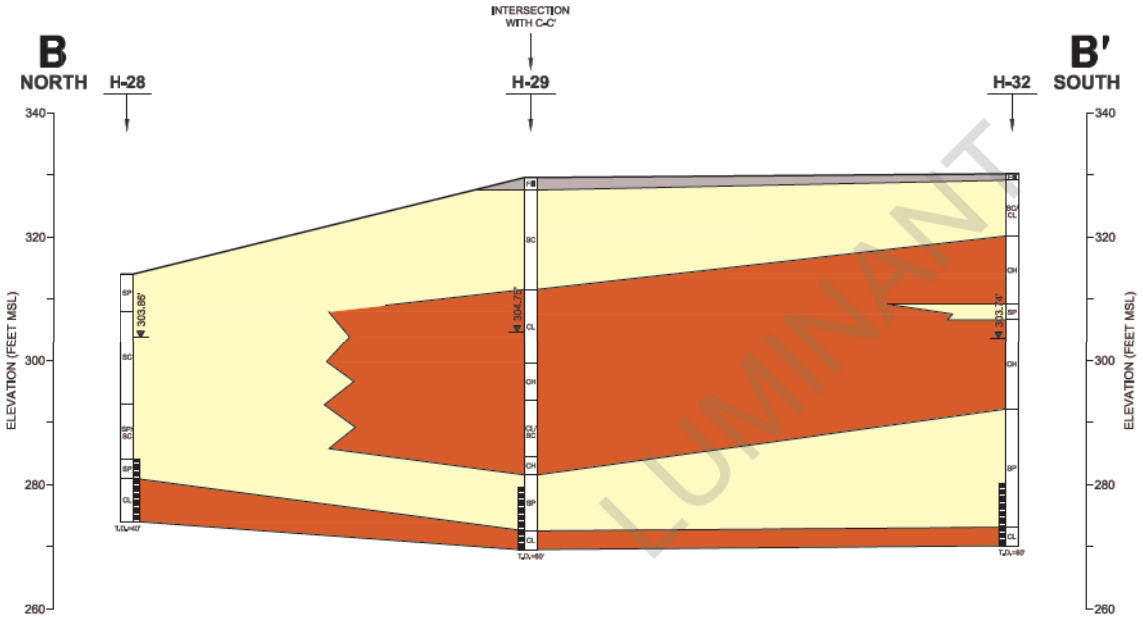
MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

Figure 4

ASH POND AREA
GEOLOGIC CROSS SECTION A-A'
WEST SIDE OF WEST ASH POND
THROUGH PROCESS WATER POND

PROJECT: 5164B	BY: AJD	REVISIONS
DATE: OCT., 2017	CHECKED: PJB	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS

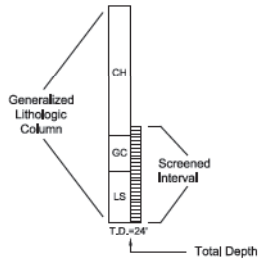


LUMINANT

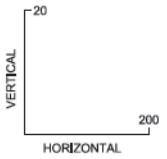
EXPLANATION

- FILL
- SAND
- CLAY
- SILT

MONITORING WELL CONSTRUCTION



SCALE IN FEET



10x Vertical Exaggeration

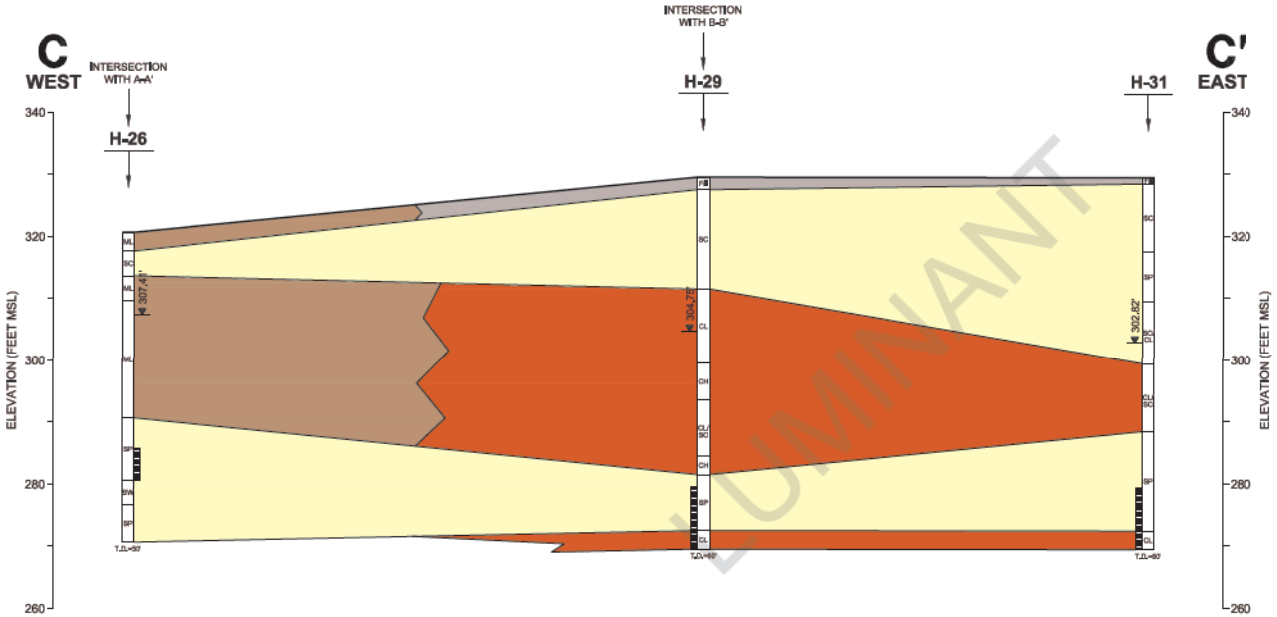
MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

Figure 5

ASH POND AREA
GEOLOGIC CROSS SECTION B-B'
EAST SIDE OF ASH POND
THROUGH SCRUBBER POND

PROJECT: 5164B	BY: AJD	REVISIONS
DATE: OCT., 2017	CHECKED: PJB	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS

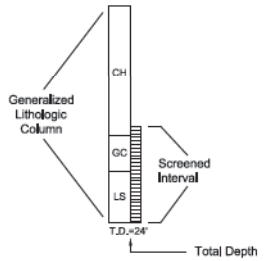


LUMINANT

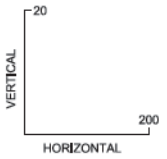
EXPLANATION

- FILL
- SAND
- CLAY
- SILT

MONITORING WELL CONSTRUCTION



SCALE IN FEET



10x Vertical Exaggeration

MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

Figure 6

ASH POND AREA
GEOLOGIC CROSS SECTION C-C'
THROUGH WEST ASH POND
AND EAST ASH POND

PROJECT: 5164B	BY: AJD	REVISIONS
DATE: OCT., 2017	CHECKED: PJB	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS

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Appendix A

CCR Monitoring Well Logs

Luminant

Log of Boring: H-26

Martin Lake Steam Electric Station
Tatum, TX

PBW Project No. 5164B

Completion Date:	9/14/2015	Drilling Method:	Sonic
Drilling Company:	Walker-Hill Environmental	Borehole Diameter (in.):	6.5
Driller:	Timmy Beach	Total Depth (ft):	50
Driller's License:	5814M	TOC Elevation (ft. AMSL):	
Logged By:	Ryan Francis	Northing:	
Sampling Method:	4"x10' Core barrel	Easting:	

Depth (ft)	Well Materials	Recovery (ft/ft)	USCS	Lithologic Description
0			ML	(0 - 3) Silty CLAY, dark brown, dry, soft to firm, weak cementation, flat, low plasticity
4		10.0/10.0	SC	(3 - 7) Sandy CLAY, red/orange with gray clay ribbons, dry, soft to firm, weak cementation, medium plasticity, minor rounded pebbles
8				(7 - 11) Silty SAND, gray, dry, soft, weak cementation, subrounded, sharp contact
12		10.0/10.0	ML	(11 - 30) Clayey silty SAND, tan with red and gray ribbons, moist to wet, soft, weak cementation, medium plasticity
16				
20				
24		10.0/10.0		
28				
32		10.0/10.0	SP	(30 - 40) SAND, tan and orange, fine grained, higher clay content (31'-34'), wet, very soft to soft, low to medium plasticity
36				
40			SW	(40 - 44) SAND, red, wet, soft to firm, moderate cementation, heavy iron content, iron concretions ("rocky" texture)
44		10.0/10.0	SP	(44 - 50) SAND, red and gray, wet, soft, fine grained, subrounded, gradual color change to dark brown/black (47'-50'), moisture content decreases with depth, hard sand (48'-50')
48				
52				

LUMINANT

PBW
Pastor, Behling & Wheeler, LLC
2201 Double Creek Dr., Suite 4004
Round Rock, TX 78664
Tel (512) 671-3434 Fax (512) 671-3446

Notes:
1. This log should not be used separately from the report to which it is attached.

Well Materials
(0-35) Casing, 2" Sch 40 FJT PVC
(35-40) Screen, 2" Sch 40 FJT PVC, 0.010" slot

Annular Materials
(0'-31') Grout
(31'-33') Bentonite pellets
(33'-40') 20/40 sand

Luminant

Log of Boring: H-27

Martin Lake Steam Electric Station
Tatum, TX

PBW Project No. 5164B

Completion Date:	9/15/2015	Drilling Method:	Sonic
Drilling Company:	Walker-Hill Environmental	Borehole Diameter (in.):	6.5
Driller:	Timmy Beach	Total Depth (ft):	50
Driller's License:	5814M	TOC Elevation (ft. AMSL):	
Logged By:	Ryan Francis	Northing:	
Sampling Method:	4"x10' Core barrel	Easting:	

Depth (ft)	Well Materials	Recovery (ft/ft)	USCS	Lithologic Description
0				
4		10.0/10.0	CH	(0 - 20) CLAY, orange and brown mottling, minor black sreaking, blocky, moist, soft to hard, low to high plasticity, dry and variable sand content (5'-7'), wet at 20'
8				
12		10.0/10.0		
16				
20			SP	(20 - 21) SAND, gray, moist, soft, subrounded, sharp contact
24		10.0/10.0	CL	(21 - 28) CLAY, gray and orange, blocky, moist, firm to hard, moderate cementation, low plasticity
28				
32		10.0/10.0	SP	(28 - 40) SAND, light gray to tan/orange, moist to wet, soft, none to low plasticity, minor clay content decreasing with depth
36				
40			CL	(40 - 44) Sandy CLAY, orange and gray, moist, firm, low to medium plasticity, flat, sharp contact, very hard and little to no sand at 43'
44		10.0/10.0	SP	(44 - 50) Clayey SAND, orange and gray, wet, soft, low plasticity, fine grained, decreasing clay content with depth, sharp contact, color change to brown at 48'
48				
52				

LUMINANT

PBW
Pastor, Behling & Wheeler, LLC
2201 Double Creek Dr., Suite 4004
Round Rock, TX 78664
Tel (512) 671-3434 Fax (512) 671-3446

Notes:
1. This log should not be used separately from the report to which it is attached.

Well Materials
(0-45) Casing, 2" Sch 40 FJT PVC
(45-50) Screen, 2" Sch 40 FJT PVC, 0.010" slot

Annular Materials
(0'-41') Grout
(41'-43') Bentonite pellets
(43'-50') 20/40 sand

Luminant

Log of Boring: H-28

Martin Lake Steam Electric Station
Tatum, TX

PBW Project No. 5164B

Completion Date:	9/15/2015	Drilling Method:	Sonic
Drilling Company:	Walker-Hill Environmental	Borehole Diameter (in.):	6.5
Driller:	Timmy Beach	Total Depth (ft):	40
Driller's License:	5814M	TOC Elevation (ft. AMSL):	
Logged By:	Ryan Francis	Northing:	
Sampling Method:	4"x10' Core barrel	Easting:	

Depth (ft)	Well Materials	Recovery (ft/ft)	USCS	Lithologic Description
0 – 6		10.0/10.0	SP	(0 - 6) Soil with SAND, tan, dry, firm, moderate cementation, hard packed
6 – 20		10.0/10.0	SC	(6 - 21) Clayey SAND, moist, soft to firm, weak cementation, none to low plasticity, flat, 6" gray fine to very fine sand lense at 10', gray and orange mottling (11'-21'), fine grained
20 – 30		10.0/10.0	SP/SC	(21 - 30) Clayey SAND, tan and orange, wet, soft to firm, low plasticity, none to weak cementation, variation in clay content with depth, highest clay content at 21', more orange and less clay (29'-30')
30 – 33			SP	(30 - 33) SAND, orange and gray, fine grained, wet, soft, low plasticity, minor clay content, color change from tna to brown to dark gray
33 – 40		10.0/10.0	CL	(33 - 40) Silty CLAY, dark gray, moderate sand, dry, hard, weak cementation, flat

LUMINANT

PBW
Pastor, Behling & Wheeler, LLC
2201 Double Creek Dr., Suite 4004
Round Rock, TX 78664
Tel (512) 671-3434 Fax (512) 671-3446

Notes:
1. This log should not be used separately from the report to which it is attached.

Well Materials
(0-27) Casing, 2" Sch 40 FJT PVC
(27-32) Screen, 2" Sch 40 FJT PVC, 0.010" slot

Annular Materials
(0'-23') Grout
(23'-25') Bentonite pellets
(25'-32') 20/40 sand

Luminant

Log of Boring: H-29

Martin Lake Steam Electric Station
Tatum, TX

PBW Project No. 5164B

Completion Date:	9/23/2015	Drilling Method:	Sonic
Drilling Company:	Walker-Hill Environmental	Borehole Diameter (in.):	6.5
Driller:	Timmy Beach	Total Depth (ft):	60
Driller's License:	5814M	TOC Elevation (ft. AMSL):	
Logged By:	Ryan Francis	Northing:	
Sampling Method:	4"x10' Core barrel	Easting:	

Depth (ft)	Well Materials	Recovery (ft/ft)	USCS	Lithologic Description
0			FILL	(0 - 2) Hard rock road bed, dry
4		10.0/10.0	SC	(2 - 18) Clayey SAND, orange and gray mottling, very fine grained, dry to moist, firm, weak cementation, low to medium plasticity, increasing clay content with depth
8				
12		10.0/10.0		
16				
20		10.0/10.0	CL	(18 - 30) CLAY, orange, moist, firm, low to medium plasticity, very little sand or silt, black striping at 22', increasing sand content with depth (28'-30')
24				
28				
32		10.0/10.0	CH	(30 - 36) CLAY, orange, moist, soft, friable, high plasticity, minor silt
36				
40		10.0/10.0	CL/SC	(36 - 45) Sandy CLAY/Clayey SAND, orange/gray/red mottling, friable, wet, soft to firm, low to medium plasticity, increasing clay content with depth
44				
48			CH	(45 - 48) CLAY with sand, orange and gray mottling, wet, soft, high plasticity
52		10.0/10.0	SP	(48 - 57) SAND, gray, wet, soft, one to low plasticity, some black roots/ organics, interspersed clay lenses
56				
60			CL	(57 - 60) Silty CLAY, gray/brown, dry, hard, weak cementation, sharp contact

LUMINANT

PBW
Pastor, Behling & Wheeler, LLC
2201 Double Creek Dr., Suite 4004
Round Rock, TX 78664
Tel (512) 671-3434 Fax (512) 671-3446

Notes:
1. This log should not be used separately from the report to which it is attached.

Well Materials
(0-52) Casing, 2" Sch 40 FJT PVC
(52-57) Screen, 2" Sch 40 FJT PVC, 0.010" slot

Annular Materials
(0'-48') Grout
(48'-50') Bentonite pellets
(50'-57') 20/40 sand

Luminant

Log of Boring: H-31

Martin Lake Steam Electric Station
Tatum, TX

PBW Project No. 5164B

Completion Date:	9/24/2015	Drilling Method:	Sonic
Drilling Company:	Walker-Hill Environmental	Borehole Diameter (in.):	6.5
Driller:	Timmy Beach	Total Depth (ft):	60
Driller's License:	5814M	TOC Elevation (ft. AMSL):	
Logged By:	Ryan Francis	Northing:	
Sampling Method:	4"x10' Core barrel	Easting:	

Depth (ft)	Well Materials	Recovery (ft/ft)	USCS	Lithologic Description
0			FILL	(0 - 1) Hard, packed gravel road bed, dry
4		10.0/10.0	SC	(1 - 12) Clayey SAND, orange, dry to moist, soft to firm, low plasticity, fine grained, increasing clay content with depth, gray clay ribbons at 10'
8				
12		5.0/10.0	SP	(12 - 20) SAND, orange with red and gray mottling, dry to moist, soft, none to low plasticity, weak cementation, fine grained, very little clay
16				
20		10.0/10.0	SC/CL	(20 - 30) Sandy CLAY, orange, dry to moist, firm, crumbly, color variation with depth, low plasticity, some gray sand lenses, very fine grained, color change to gray at 29'
24				
28				
32		10.0/10.0	CL/SC	(30 - 41) Sandy CLAY,/ Clayey SAND, gray and tan, moist, soft, fine grained, low plasticity, variations in clay content and firmness with depth, moisture content changes to wet at 35'
36				
40		10.0/10.0	SP	(41 - 57) SAND, orange/tan, wet, very soft, fine grained, subrounded, increasing red color with depth starting at 52', hard iron concretion layer with some black staining at 55'
44				
48				
52		10.0/10.0		
56				
60			CL	(57 - 60) Sandy CLAY, gray, dry to moist, hard, fine grained, weak cementation, low plasticity, flat

LUMINANT

PBW
Pastor, Behling & Wheeler, LLC
2201 Double Creek Dr., Suite 4004
Round Rock, TX 78664
Tel (512) 671-3434 Fax (512) 671-3446

Notes:
1. This log should not be used separately from the report to which it is attached.

Well Materials
(0-42) Casing, 2" Sch 40 FJT PVC
(42-52) Screen, 2" Sch 40 FJT PVC, 0.010" slot

Annular Materials
(0'-38') Grout
(38'-40') Bentonite pellets
(40'-52') 20/40 sand

Luminant

Log of Boring: H-32

Martin Lake Steam Electric Station
Tatum, TX

PBW Project No. 5164B

Completion Date:	9/24/2015	Drilling Method:	Sonic
Drilling Company:	Walker-Hill Environmental	Borehole Diameter (in.):	6.5
Driller:	Timmy Beach	Total Depth (ft):	60
Driller's License:	5814M	TOC Elevation (ft. AMSL):	
Logged By:	Ryan Francis	Northing:	
Sampling Method:	4"x10' Core barrel	Easting:	

Depth (ft)	Well Materials	Recovery (ft/ft)	USCS	Lithologic Description
0			FILL	(0 - 1) Hard, packed gravel road bed, dry
4		10.0/10.0	SC/CL	(1 - 10) Sandy CLAY/Clayey SAND, orange/tan, dry, firm, fine grained, low plasticity, weak cementation
8				
12		10.0/10.0	CH	(10 - 21) CLAY with minor silt/sand, orange with some black streaks, moist, firm, high plasticity, gradual contact
16				
20			SP	(21 - 23.5) SAND, gray, dry, soft to firm, friable, fine grained
24		10.0/10.0	CH	(23.5 - 38) CLAY, orange/tan/gray, moist, soft to firm, unconsolidated, high plasticity, minor sand at 30', tan and gray with orange stripes (30'-38'), sharp contact
28				
32				
36		10.0/10.0		
40			SP	(38 - 57) SAND, orange/tan, moist to wet, very soft to soft, fine grained, subrounded, minor clay, low plasticity, no clay content at 42', gradual coarsening of sand grains (48'-55'), some gray streakings at 49', color change to reddish brown at 52'
44		10.0/10.0		
48				
52				
56		10.0/10.0		
60			CL	(57 - 60) Sandy CLAY, dark red and brown, wet, soft, low plasticity, layer of dark red concretions at 57', weak cementation, flat

LUMINANT

PBW
Pastor, Behling & Wheeler, LLC
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Round Rock, TX 78664
Tel (512) 671-3434 Fax (512) 671-3446

Notes:
1. This log should not be used separately from the report to which it is attached.

Well Materials
(0-42) Casing, 2" Sch 40 FJT PVC
(42-52) Screen, 2" Sch 40 FJT PVC, 0.010" slot

Annular Materials
(0'-38') Grout
(38'-40') Bentonite pellets
(40'-52') 20/40 sand

Luminant

Log of Boring: H-33

Martin Lake Steam Electric Station
Tatum, TX

PBW Project No. 5164B

Completion Date:	9/14/2015	Drilling Method:	Sonic
Drilling Company:	Walker-Hill Environmental	Borehole Diameter (in.):	6.5
Driller:	Timmy Beach	Total Depth (ft):	60
Driller's License:	5814M	TOC Elevation (ft. AMSL):	
Logged By:	Ryan Francis	Northing:	
Sampling Method:	4"x10' Core barrel	Easting:	

Depth (ft)	Well Materials	Recovery (ft/ft)	USCS	Lithologic Description
0			ML	(0 - 4) Silty CLAY, minor sand, red and orange with gray ribbons, dry, soft to firm, low to medium plasticity, flat
4		10.0/10.0	CH	(4 - 12) CLAY, red with gray concretions, moist, soft to firm, high plasticity, gradual contact
8				
12		10.0/10.0	ML	(12 - 24) Sandy SILT, gray and red, dry, soft, weak cementation, sharp contact, red and gray clay lense at 19'
16				
20				
24		10.0/10.0	CL	(24 - 28) Clay, red, moist to wet, soft to firm, high plasticity, pebbles present
28			SP	(28 - 34) SAND, gray, wet, soft to firm, minor clay, low to medium plasticity, subrounded, increasing clay content with depth, sharp contact
32		10.0/10.0		
36			CL	(34 - 39) CLAY, orange and gray mottling, dry, very hard, moderate cementation, low plasticity
40				(39 - 46) Sandy CLAY, orange and gray, moist to wet, firm, medium plasticity, weak cementation, increasing sand content with depth
44		10.0/10.0		
48				
52		10.0/10.0	ML	(46 - 60) Sandy SILT, dark gray, dry, hard, flat
56				
60				

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PBW
Pastor, Behling & Wheeler, LLC
2201 Double Creek Dr., Suite 4004
Round Rock, TX 78664
Tel (512) 671-3434 Fax (512) 671-3446

Notes:
1. This log should not be used separately from the report to which it is attached.

Well Materials
(0-41) Casing, 2" Sch 40 FJT PVC
(41-46) Screen, 2" Sch 40 FJT PVC, 0.010" slot

Annular Materials
(0'-37') Grout
(37'-39') Bentonite pellets
(39'-46') 20/40 sand

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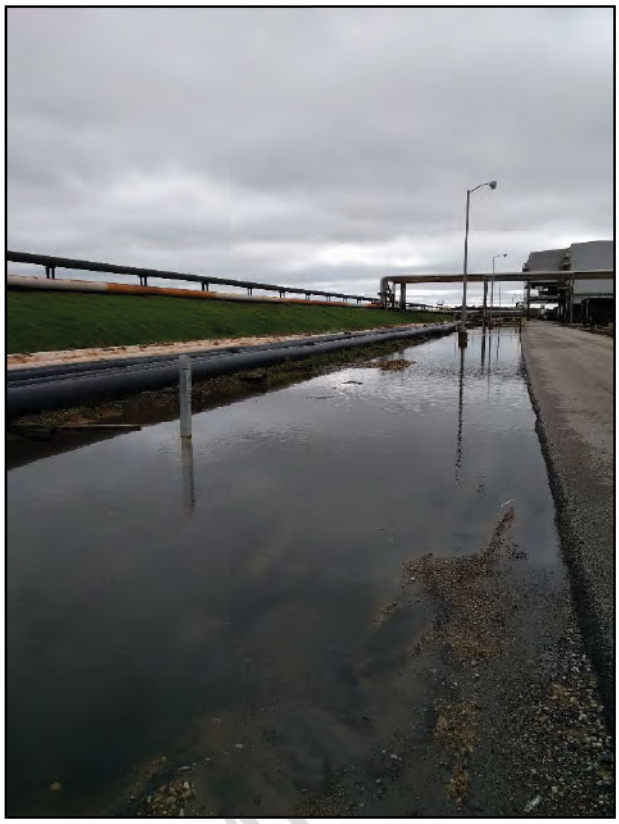
Appendix B

Photographs of CCR Groundwater Monitoring Wells

Appendix B – Photographs of CCR Groundwater Monitoring Wells
Martin Lake Steam Electric Station

ASH POND AREA



Photograph 1: H26

Photograph 2: H27

Appendix B – Photographs of CCR Groundwater Monitoring Wells
Martin Lake Steam Electric Station

Photograph 3: H28

Photograph 4: H29

Appendix B – Photographs of CCR Groundwater Monitoring Wells
Martin Lake Steam Electric Station

Photograph 6: H31

Photograph 7: H32

Appendix B – Photographs of CCR Groundwater Monitoring Wells
Martin Lake Steam Electric Station

Photograph 8: H33

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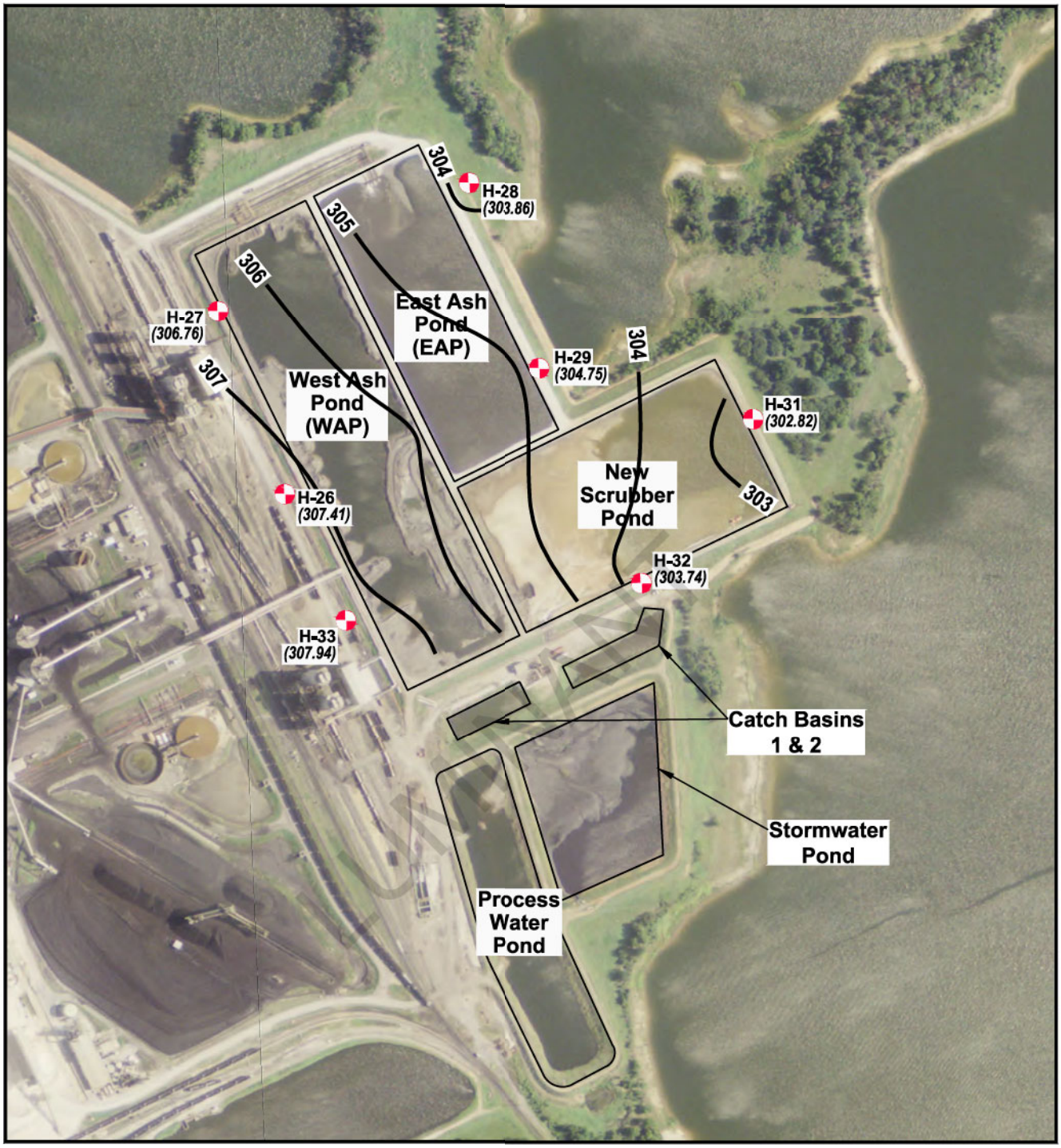
Appendix C

Groundwater Potentiometric Surface Maps

LUMINANT



EXPLANATION

- CCR Monitoring Well Location
- (308.70) Groundwater Potentiometric Surface (ft. MSL)
- 308 Groundwater Potentiometric Surface Contour (C.I. = 1 ft.)

N

Scale in Feet

0 250 500

SOURCE: Imagery from www.tnris.gov, Rusk County, aerial photographs, 2012.

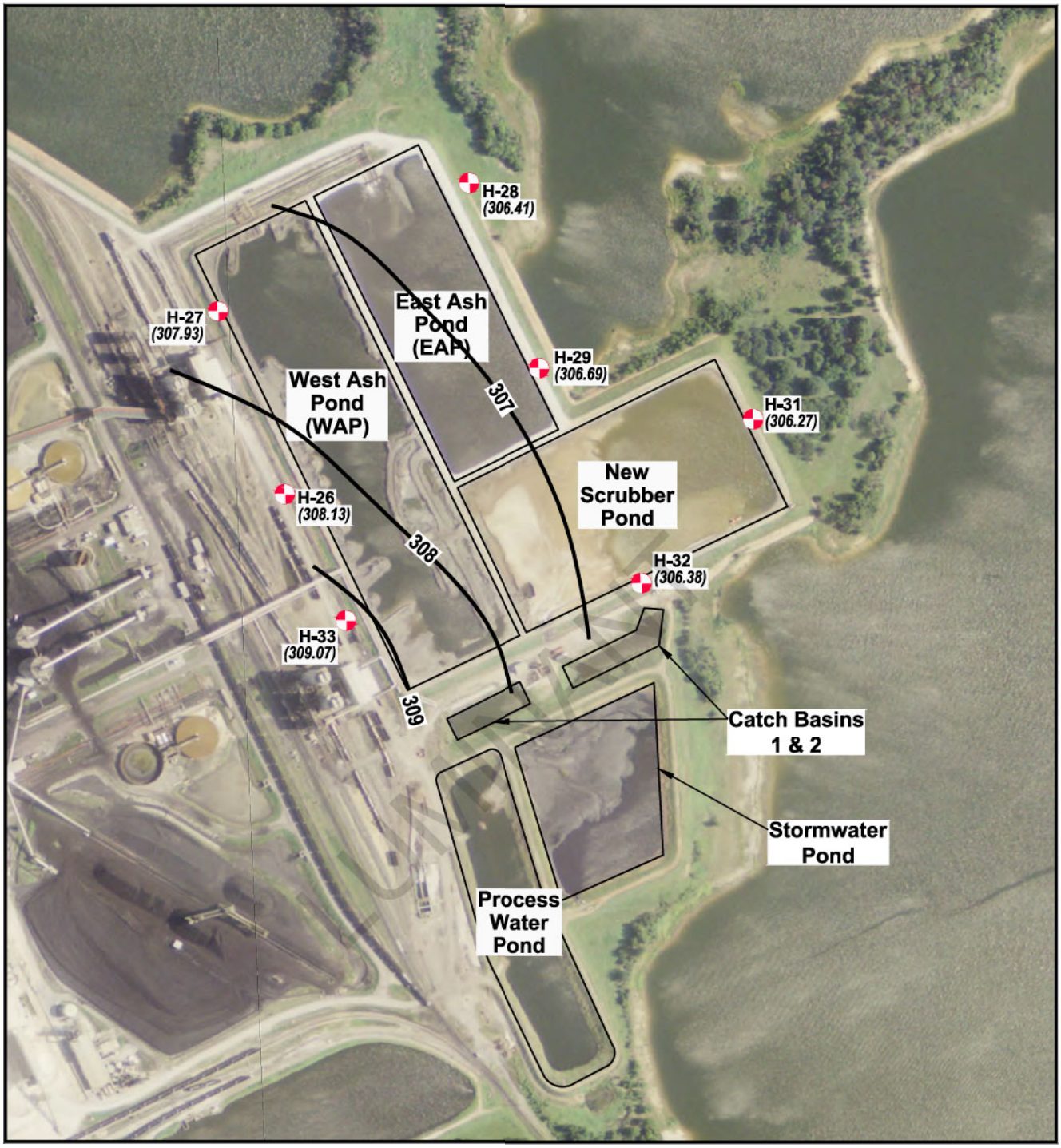
MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

Figure 1

ASH POND AREA - GROUNDWATER ZONE B POTENTIOMETRIC SURFACE MAP - OCTOBER 21-22, 2015

PROJECT: 5164B	BY: AJD	REVISIONS
DATE: SEPT., 2017	CHECKED: PJB	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS



EXPLANATION

- CCR Monitoring Well Location
- (308.70) Groundwater Potentiometric Surface (ft. MSL)
- 308 Groundwater Potentiometric Surface Contour (C.I. = 1 ft.)

N

Scale in Feet

0 250 500

SOURCE: Imagery from www.tnris.gov, Rusk County, aerial photographs, 2012.

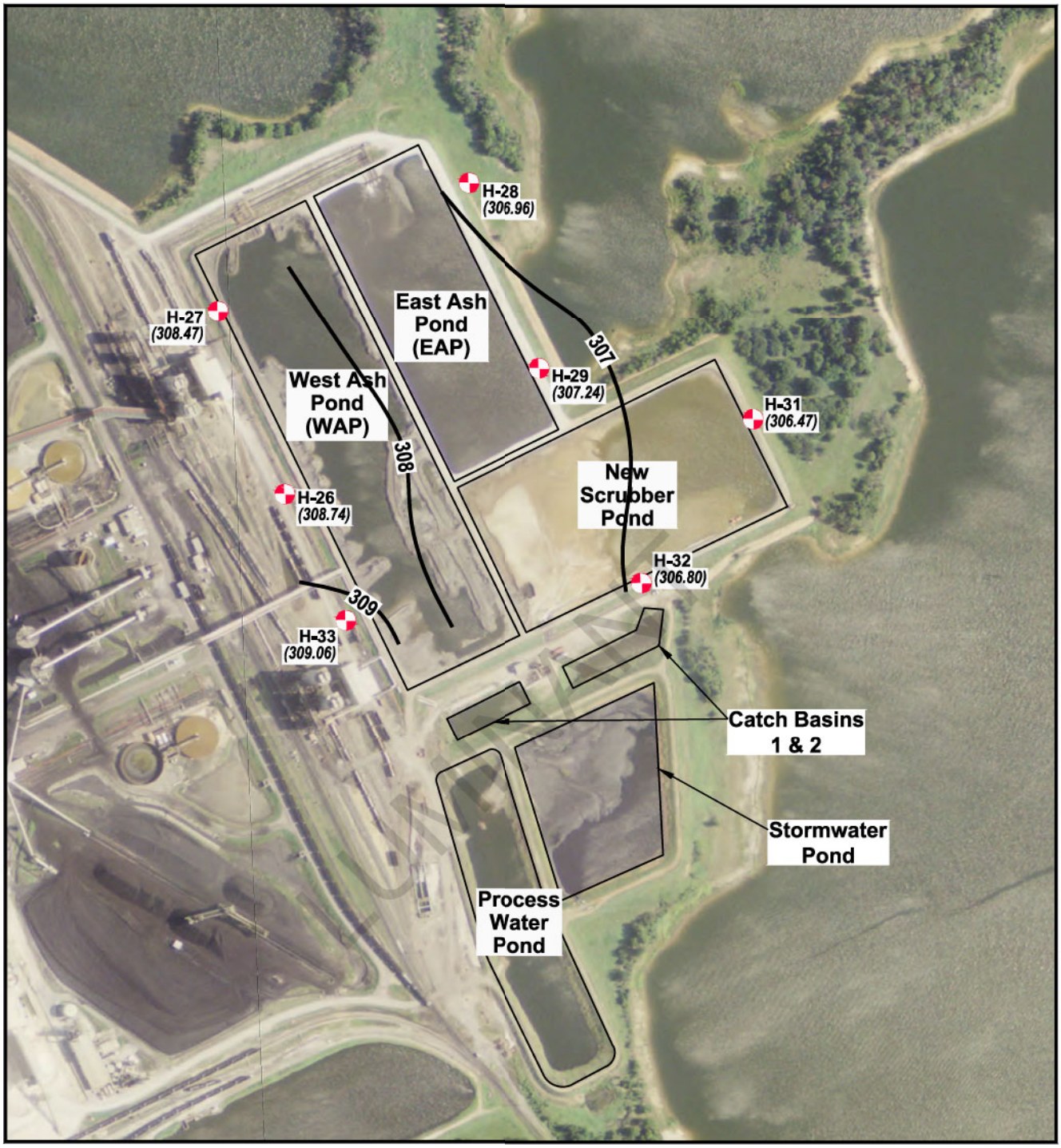
MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

Figure 2

ASH POND AREA - GROUNDWATER ZONE B POTENTIOMETRIC SURFACE MAP - DECEMBER 14, 2015

PROJECT: 5164B	BY: AJD	REVISIONS
DATE: SEPT., 2017	CHECKED: PJB	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS



EXPLANATION

- CCR Monitoring Well Location
- (308.70) Groundwater Potentiometric Surface (ft. MSL)
- 308 Groundwater Potentiometric Surface Contour (C.I. = 1 ft.)

N

Scale in Feet

0 250 500

SOURCE: Imagery from www.tnris.gov, Rusk County, aerial photographs, 2012.

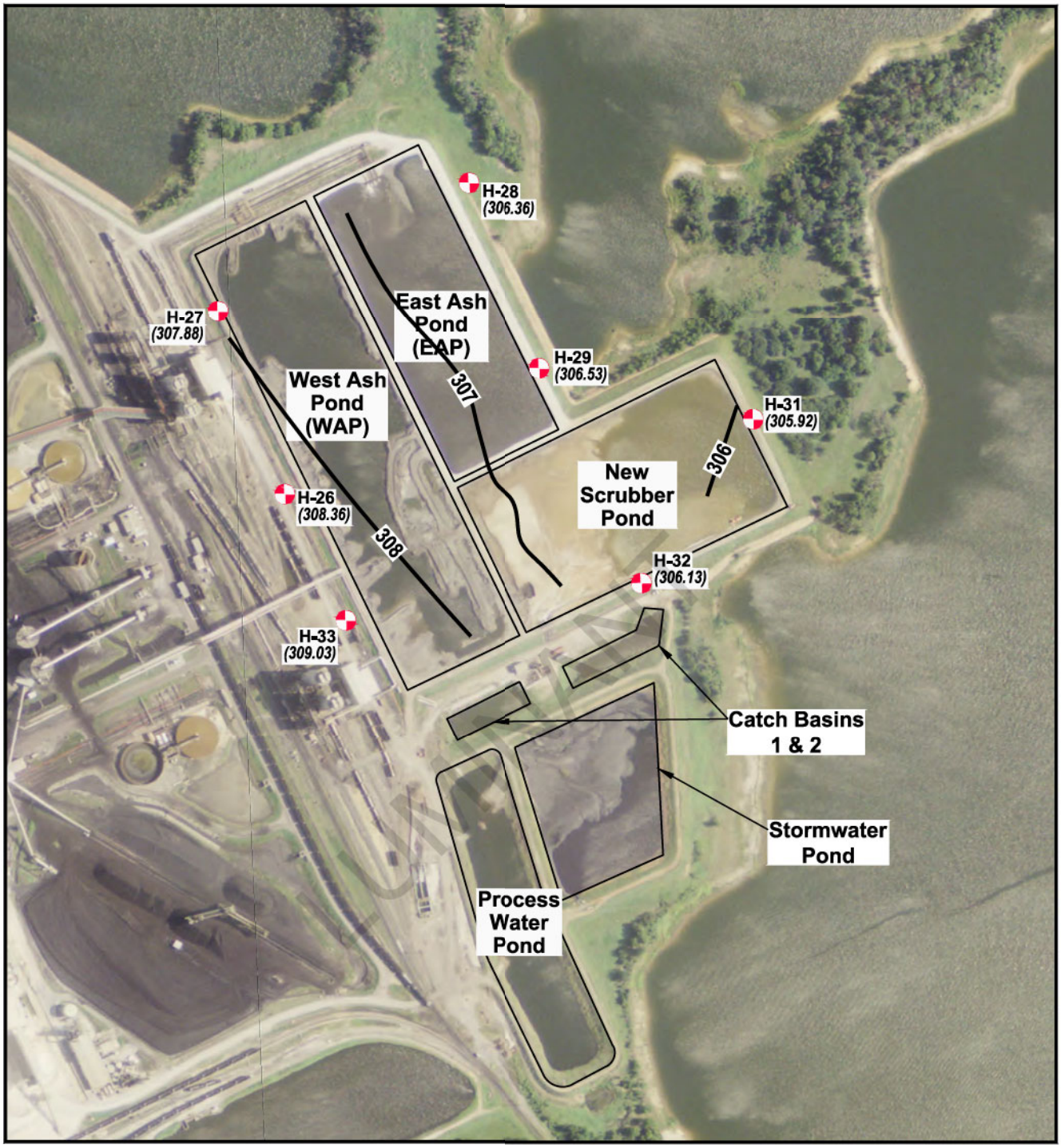
MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

Figure 3

ASH POND AREA - GROUNDWATER ZONE B POTENTIOMETRIC SURFACE MAP - FEBRUARY 25, 2016

PROJECT: 5164B	BY: AJD	REVISIONS
DATE: SEPT., 2017	CHECKED: PJB	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS



EXPLANATION

- CCR Monitoring Well Location
- (308.70) Groundwater Potentiometric Surface (ft. MSL)
- 308 Groundwater Potentiometric Surface Contour (C.I. = 1 ft.)

N

Scale in Feet

0 250 500

SOURCE: Imagery from www.tnris.gov, Rusk County, aerial photographs, 2012.

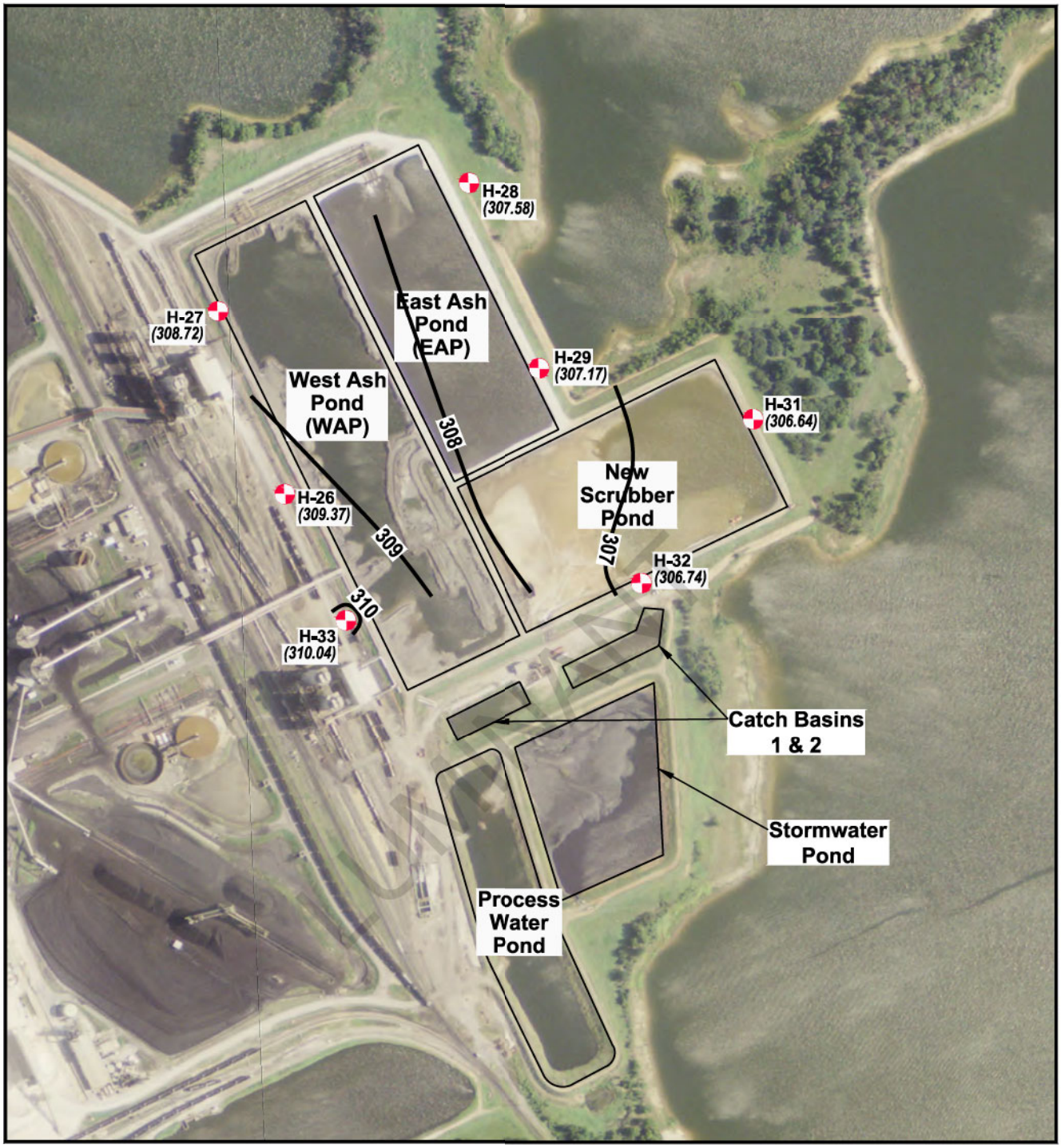
MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

Figure 4

ASH POND AREA - GROUNDWATER ZONE B POTENTIOMETRIC SURFACE MAP - APRIL 5, 2016

PROJECT: 5164B	BY: AJD	REVISIONS
DATE: SEPT., 2017	CHECKED: PJB	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS



EXPLANATION

- CCR Monitoring Well Location
- (308.70) Groundwater Potentiometric Surface (ft. MSL)
- 308 Groundwater Potentiometric Surface Contour (C.I. = 1 ft.)

N

Scale in Feet

0 250 500

SOURCE: Imagery from www.tnris.gov, Rusk County, aerial photographs, 2012.

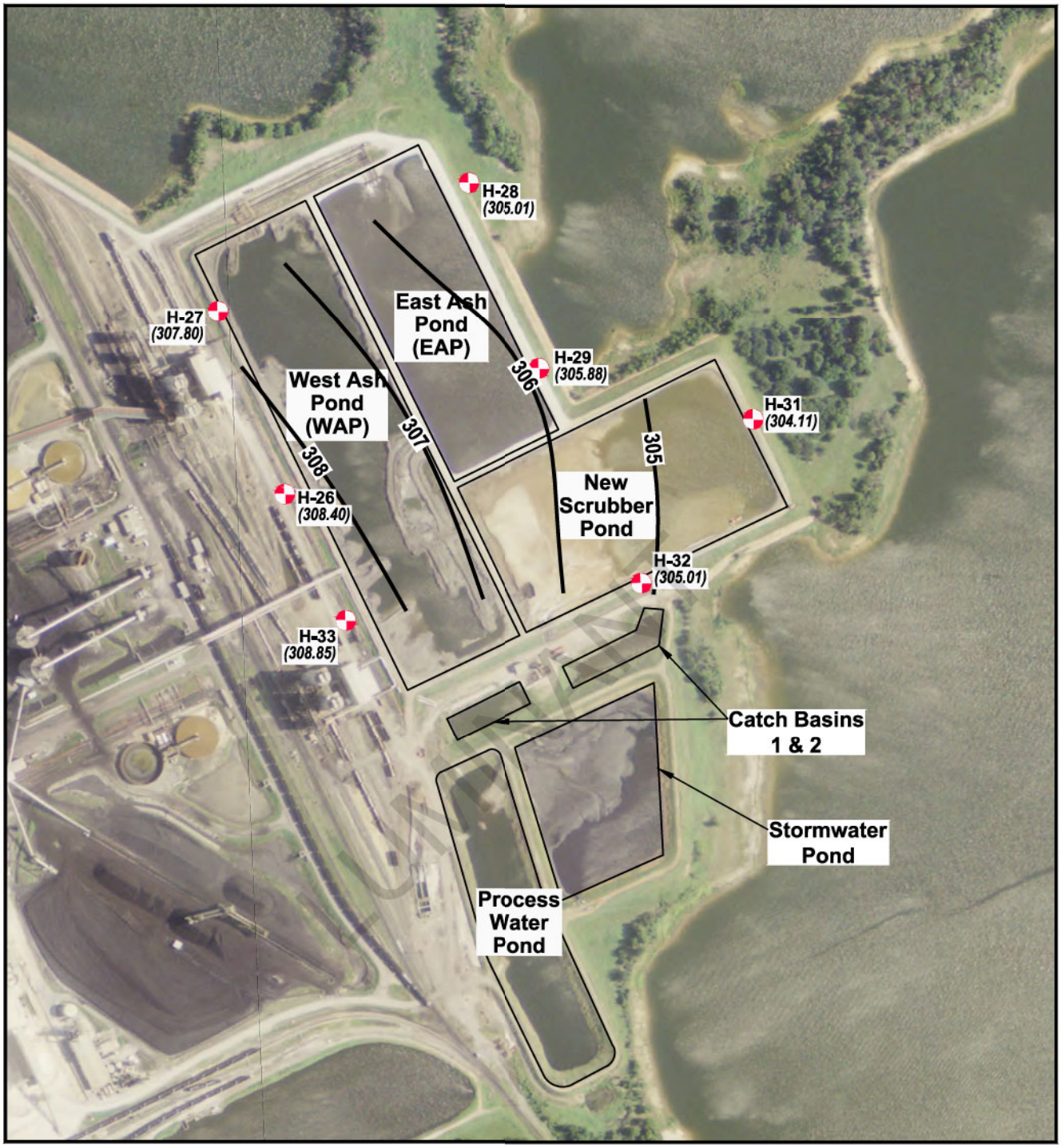
MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

Figure 5

ASH POND AREA - GROUNDWATER ZONE B POTENTIOMETRIC SURFACE MAP - JUNE 6, 2016

PROJECT: 5164B	BY: AJD	REVISIONS
DATE: SEPT., 2017	CHECKED: PJB	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS



EXPLANATION

- CCR Monitoring Well Location
- (308.70) Groundwater Potentiometric Surface (ft. MSL)
- 308 Groundwater Potentiometric Surface Contour (C.I. = 1 ft.)

N

Scale in Feet

0 250 500

SOURCE: Imagery from www.tnris.gov, Rusk County, aerial photographs, 2012.

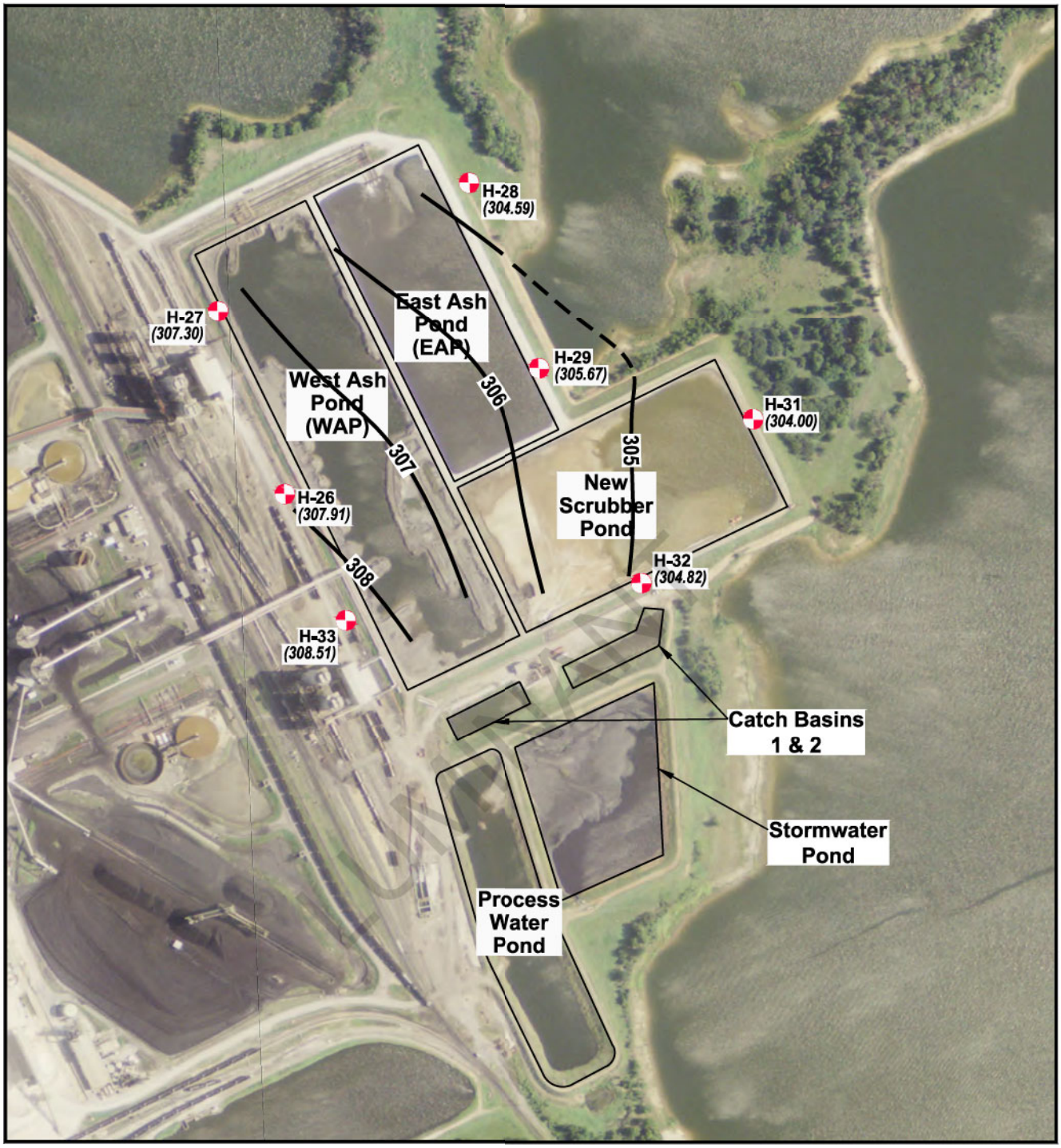
MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

Figure 6

ASH POND AREA - GROUNDWATER ZONE B POTENTIOMETRIC SURFACE MAP - AUGUST 9, 2016

PROJECT: 5164B	BY: AJD	REVISIONS
DATE: SEPT., 2017	CHECKED: PJB	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS



EXPLANATION

- CCR Monitoring Well Location
- (308.70) Groundwater Potentiometric Surface (ft. MSL)
- 308 Groundwater Potentiometric Surface Contour (C.I. = 1 ft.)

N

Scale in Feet

0 250 500

SOURCE: Imagery from www.tnris.gov, Rusk County, aerial photographs, 2012.

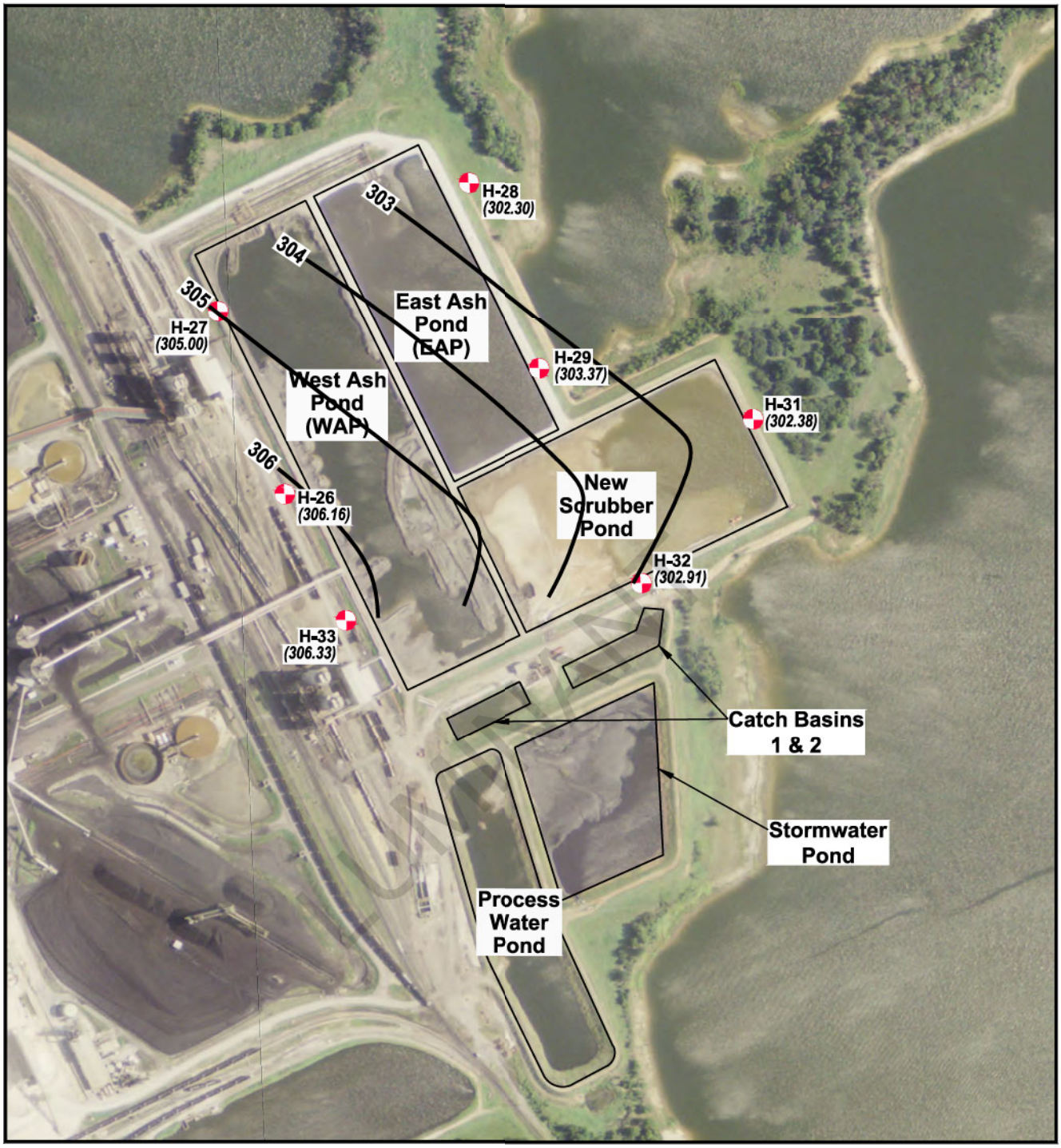
MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

Figure 7

ASH POND AREA - GROUNDWATER ZONE B POTENTIOMETRIC SURFACE MAP - OCTOBER 17, 2016

PROJECT: 5164B	BY: AJD	REVISIONS
DATE: SEPT., 2017	CHECKED: PJB	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS



EXPLANATION

- CCR Monitoring Well Location
- (308.70) Groundwater Potentiometric Surface (ft. MSL)
- 308 Groundwater Potentiometric Surface Contour (C.I. = 1 ft.)

N

Scale in Feet

0 250 500

SOURCE: Imagery from www.tnris.gov, Rusk County, aerial photographs, 2012.

MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

Figure 8

ASH POND AREA - GROUNDWATER ZONE B POTENTIOMETRIC SURFACE MAP - DECEMBER 11, 2016

PROJECT: 5164B	BY: AJD	REVISIONS
DATE: SEPT., 2017	CHECKED: PJB	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS

COAL COMBUSTION RESIDUAL RULE
GROUNDWATER MONITORING SYSTEM CERTIFICATION

MARTIN LAKE STEAM ELECTRIC STATION
PERMANENT DISPOSAL POND 5
RUSK COUNTY, TEXAS

OCTOBER 16, 2017

LUMINANT

Prepared For:

Luminant Generation Company, LLC
6555 Sierra Drive
Irving, TX 75039

Prepared By:

Pastor, Behling & Wheeler, LLC
2201 Double Creek Drive, Suite 4004
Round Rock, Texas 78664
Texas Engineering Firm No. 4760

October 16, 2017

PROFESSIONAL CERTIFICATION

This document and all attachments were prepared by Pastor, Behling & Wheeler, LLC under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I hereby certify that the groundwater monitoring system installed at the referenced facility has been designed and constructed to meet the requirements of Section 257.91 of the CCR Rule.

Patrick J. Behling, P.E.
Principal Engineer
PASTOR, BEHLING & WHEELER, LLC

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LIST OF APPENDICES

Appendix	Title
A	CCR Monitoring Well Logs
B	Photographs of CCR Groundwater Monitoring Wells
C	Groundwater Potentiometric Surface Maps
D	Aquifer Test Data

1.0 INTRODUCTION

Luminant Power (Luminant) operates the Martin Lake Steam Electric Station (MLSES) located approximately 5 miles southeast of Tatum, Rusk County, Texas (Figure 1). The MLSES consists of three coal/lignite-fired power generation units. Coal Combustion Residuals (CCRs) including fly ash, bottom ash and gypsum are generated as part of the MLSES unit operations. Currently, CCRs generated at the MLSES are transported off-site for beneficial use by third-parties or are managed by Luminant in surface impoundments located on the MLSES property or the A1 Area Landfill located approximately 2.5 miles east of the MLSES. Three CCR Units have been identified within the MLSES operations, the Ash Pond Area (the West Ash Pond (WAP) East Ash Pond (EAP), and the New Scrubber Pond), Permanent Disposal Pond 5 (PDP 5), and A1 Area Landfill. This report discusses PDP 5 (the Site). PDP 5 meets the definition of a CCR surface impoundment and is subject to groundwater monitoring system requirements of the CCR Rule.

The CCR Rule (40 CFR 257 Subpart D - *Standards for the Receipt of Coal Combustion Residuals in Landfills and Surface Impoundments*) has been promulgated by the EPA to regulate the management and disposal of CCRs as solid waste under Resource Conservation and Recovery Act (RCRA) Subtitle D. The final CCR Rule was published in the Federal Register on April 17, 2015. The effective date of the CCR Rule was October 19, 2015.

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The CCR Rule establishes national minimum criteria for existing and new CCR landfills, existing and new CCR surface impoundments, and lateral expansions to landfills/impoundments. Pastor, Behling & Wheeler, LLC (PBW) was retained by Luminant to evaluate and certify that the groundwater monitoring system at the Site in accordance with Section 257.91 of the CCR Rule.

1.1 Description of PDP 5

PDP 5 was constructed in 2010 and is located approximately 3,000 feet west of the MLSES power units (Figure 2). It is used for emergency storm water storage and for storage of material from the ash ponds and New Scrubber Pond during cleaning cycles (BM, 2015).

Based on drawings provided by Luminant and included in the BM report, PDP 5 is lined with compacted soil measuring 3 feet thick on its sides and 2 feet thick on its bottom (BM, 2015). PDP 5 is built on top of three closed and capped landfills (PDP 1, PDP 2, and PDP 3). PDP 4, which is located adjacent to PDP 5

to the south, is also a closed and capped landfill. PDP 1 through PDP 4 are not considered regulated units under the CCR Rule.

1.2 CCR Unit Groundwater Monitoring System Requirements

Section 257.91 of the CCR Rule indicates that existing CCR landfills and surface impoundments be provided with a groundwater monitoring system that consists of sufficient wells, installed at appropriate location and depths, to yield groundwater samples from the uppermost aquifer that meet the following criteria:

- Accurately represent the quality of background groundwater that has not been affected by leakage from a CCR unit; and
- Accurately represent the quality of groundwater passing the waste boundary of the CCR unit. The downgradient monitoring system must be installed at the waste boundary to ensure detection of groundwater contamination in the uppermost aquifer. All potential contaminant pathways must be monitored.

The specific configuration of the groundwater monitoring system must be determined based on site-specific technical information that must include aquifer thickness, groundwater flow rate, groundwater flow direction (including seasonal and temporal fluctuation in groundwater flow), saturated and unsaturated geologic units and fill materials that overly the uppermost aquifer, materials comprising the uppermost aquifer, and materials comprising the confining unit defining the lower boundary of the upmost aquifer, including, but not limited to, thickness, stratigraphy, lithology, hydraulic conductivities, porosities, and effective porosities.

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At a minimum, the monitoring system must consist of at least one upgradient and three downgradient monitoring wells, and any additional monitoring wells necessary to accurately represent the quality of the background groundwater that has not been affected by leakage from the CCR unit and the quality of groundwater passing the waste boundary of the CCR unit. Multi-unit groundwater monitoring systems are allowed but must be equally as capable of detecting monitored constituents at the waste boundary of a CCR unit as individual groundwater monitoring wells.

Monitoring wells must be cased in a manner that maintains the integrity of the monitoring well borehole. This casing must be screened or perforated and packed with gravel or sand, where necessary, to enable collection of groundwater samples. The annular space above the sampling depth must be sealed to prevent contamination of samples and the groundwater. There must be documentation in the operating

record of the design, installation, development, and decommissioning of any monitoring wells, piezometers and other measurement, sampling, and analytical devices. The qualified engineer must have access to and must review this documentation as part of the groundwater monitoring system certification.

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2.0 GROUNDWATER MONITORING SYSTEM EVALUATION

2.1 PDP 5 Groundwater Monitoring System

The CCR groundwater monitoring well system at PDP 5 consists of nine monitoring wells (MW-17A, MW-18A, MW-19, MW-20A, PDP-22, PDP-23, PDP-24, PDP-25, PDP-26) that are each screened in the uppermost aquifer at the Site. The locations of the CCR monitoring wells are shown on Figure 2. Well construction information and survey data for the CCR wells are summarized in Table 1, CCR monitoring well logs are presented in Appendix A, and photographs of the CCR wells are presented in Appendix B.

2.2 Local Geology and Hydrogeology

PDP 5 is located in the outcrop area of the Eocene-aged Wilcox Group (Barnes, 1965). PBW reviewed current and historical soil boring logs, monitoring well completion documentation, and historical reports to describe the geologic and hydrogeologic conditions at PDP 5. Geologic cross sections were constructed using these data. Cross section locations are presented on Figure 3 and the cross sections are presented on Figures 4, 5, and 6.

The geologic units encountered during the completion of monitoring wells/soil borings in the PDP 5 Area include: (1) an upper sand unit observed on hilltops and other topographically high areas, (2) an intermediate continuous clay unit that contains discontinuous, interbedded sand layers, and (3) a lower unit of silt and sand that contains discontinuous packages of relatively thick, interbedded clay. Based on information provided by Luminant, PDP 5 is completed entirely within the upper hilltop sand unit. The uppermost aquifer at the Site occurs in the lower unit of silt and sand that contains discontinuous packages of relatively thick, interbedded clay.

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2.3 Groundwater Potentiometric Surface Elevations

Eight background groundwater monitoring events were performed using the PDP 5 CCR monitoring well system from October 2015 to December 2016. Static water levels measured during the background monitoring period indicated water elevations ranging from 352.38 feet above mean sea level (amsl) to 381.40 feet amsl, and depths to water ranging from 5.14 feet bgs to 37.46 feet bgs (Table 2). Groundwater potentiometric surface maps based on data collected during the background monitoring period are presented in Appendix C.

Groundwater is mounded at PDP 5, with an inferred groundwater flow direction radially outward from the unit. Based on the inferred direction of groundwater flow, there are no upgradient areas in the immediate vicinity of PDP 5. All of the CCR monitoring wells, which are positioned radially around PDP 5, are downgradient wells.

2.4 Uppermost Aquifer Hydraulic Conductivity Testing

PBW performed slug tests at monitoring wells PDP-22, PDP-25, and PDP-26 on October 7, 2015 to evaluate groundwater linear flow velocities at the uppermost aquifer at the Site. Slug test data and time-head change plots used to calculate hydraulic conductivities and transmissivities of the uppermost aquifer are provided in Appendix D. A summary of these hydraulic properties is presented in Table 3. The average hydraulic conductivities for the wells ranged from 2.48×10^{-5} cm/sec (well PDP-22) to 1.37×10^{-4} cm/sec (well PDP-25), with a geometric mean for the test wells of 4.40×10^{-5} cm/sec.

2.5 Conclusions

The CCR groundwater monitoring well system at PDP 5 complies with Section 257.91 of the CCR Rule. This conclusion is supported by the following as described in detail in previous sections of this report:

- Nine monitoring wells are included in the CCR groundwater monitoring system. Based on the inferred direction of groundwater flow there are no upgradient areas in the immediate vicinity of PDP 5, and all of the CCR monitoring wells, which are positioned radially around PDP 5, are downgradient wells.
- Each monitoring well is screened in the uppermost aquifer at the Site. Samples collected from the downgradient wells will ensure detection of groundwater contamination in the uppermost aquifer from the CCR unit.
- The monitoring wells are constructed with appropriate well casing to maintain the integrity of the monitoring well borehole and with slotted well screens to enable collection of groundwater samples. In addition, the annular space above the well screen is appropriately sealed to prevent contamination of groundwater samples from surface sources.
- Appropriate documentation exists concerning the design, installation, and development of the monitoring wells.

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3.0 REFERENCES

Barnes, Virgil E., 1965. Geologic Atlas of Texas, Tyler Sheet. Texas Bureau of Economic Geology.

Burns & McDonnell Engineering Company, Inc (BM), 2015. CCR Study for Martin Lake Steam Electric Station – Final Draft. June 2015.

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Tables

TABLE 1
WELL CONSTRUCTION SUMMARY
PERMANENT DISPOSAL POND 5
MARTIN LAKE STEAM ELECTRIC STATION

Well ID	Date Installed	Northing	Easting	Ground Elevation (ft amsl)	TOC Elevation (ft amsl)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	Screen Length (ft)	Total Design Depth (ft bgs)	Casing Diameter (in)
MW-17A	10/01/08	228279	2902653	384.57	387.75	27	47	20	47	2
MW-18A	10/2/08	228860	2902563	410.89	414.44	47	67	20	67	2
MW-19	9/30/08	229492	2902142	367.98	371.33	10	25	15	25	2
MW-20A	9/30/08	228847	2901077	395.74	398.98	10	40	30	41	2
PDP-22	9/9/15	229672	2901564	383.90	386.75	35	60	25	60	2
PDP-23	9/10/15	229231	2902465	391.06	394.43	35	45	10	45	2
PDP-24	9/11/15	228132	2902782	387.06	389.73	30	40	10	40	2
PDP-25	9/11/15	227735	2901945	385.13	387.97	50	60	10	60	2
PDP-26	9/9/15	227663	2900878	394.29	397.68	39	49	10	49	2

Notes:
1. Abbreviations: ft - feet; amsl - above mean sea level; bgs - below ground surface.

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TABLE 2
GROUNDWATER ELEVATION SUMMARY
PERMANENT DISPOSAL POND 5
MARTIN LAKE STEAM ELECTRIC STATION

Well ID	TOC Elevation (ft amsl)	Date	Depth to Water (ft bgs)	Water Elevation (ft amsl)
MW-17A	387.75	10/19/15	18.69	369.06
		12/14/15	17.14	370.61
		02/24/16	16.80	370.95
		04/05/16	16.46	371.29
		06/06/16	15.62	372.13
		08/09/16	16.14	371.61
		10/17/16	16.39	371.36
		12/11/16	18.17	369.58
MW-18A	414.44	10/20/15	37.41	377.03
		12/14/15	35.92	378.52
		02/24/16	34.84	379.60
		04/05/16	33.88	380.56
		06/06/16	33.96	380.48
		08/09/16	33.04	381.40
		10/17/16	35.31	379.13
		12/11/16	37.46	376.98
MW-19	371.33	10/20/15	12.60	358.73
		12/14/15	5.14	366.19
		02/24/16	5.56	365.77
		04/05/16	5.99	365.34
		06/06/16	5.31	366.02
		08/09/16	9.59	361.74
		10/17/16	6.81	364.52
		12/11/16	9.06	362.27
MW-20A	398.98	10/20/15	25.17	373.81
		12/14/15	23.64	375.34
		02/24/16	23.44	375.54
		04/05/16	23.23	375.75
		06/06/16	22.39	376.59
		08/09/16	23.92	375.06
		10/17/16	24.47	374.51
		12/11/16	25.96	373.02
PDP-22	386.75	10/20/15	34.17	352.58
		12/14/15	33.48	353.27
		02/24/16	33.09	353.66
		04/05/16	32.66	354.09
		06/06/16	33.49	353.26
		08/09/16	32.21	354.54
		10/17/16	32.59	354.16
		12/11/16	34.37	352.38
PDP-23	394.43	10/20/15	23.61	370.82
		12/14/15	22.34	372.09
		02/24/16	19.94	374.49
		04/05/16	19.29	375.14
		06/06/16	18.11	376.32
		08/09/16	21.41	373.02
		10/17/16	22.51	371.92
		12/11/16	23.04	371.39

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TABLE 2
GROUNDWATER ELEVATION SUMMARY
PERMANENT DISPOSAL POND 5
MARTIN LAKE STEAM ELECTRIC STATION

Well ID	TOC Elevation (ft amsl)	Date	Depth to Water (ft bgs)	Water Elevation (ft amsl)
PDP-24	389.73	10/20/15	25.62	364.11
		12/14/15	24.94	364.79
		02/24/16	24.76	364.97
		04/05/16	24.51	365.22
		06/06/16	23.87	365.86
		08/09/16	22.61	367.12
		10/17/16	22.08	367.65
		12/11/16	24.19	365.54
PDP-25	387.97	10/20/15	13.49	374.48
		12/14/15	12.76	375.21
		02/24/16	26.84	361.13
		04/05/16	26.96	361.01
		06/06/16	26.17	361.80
		08/09/16	26.06	361.91
		10/17/16	27.83	360.14
		12/11/16	29.71	358.26
PDP-26	397.68	10/20/15	31.24	366.44
		12/14/15	30.67	367.01
		02/24/16	30.11	367.57
		04/05/16	29.89	367.79
		06/06/16	29.06	368.62
		08/09/16	29.54	368.14
		10/17/16	30.57	367.11
		12/11/16	32.81	364.87
PDP-27	377.58	10/20/15	18.28	359.30
		12/14/15	7.61	369.97
		02/24/16	11.95	365.63
		04/05/16	10.27	367.31
		06/06/16	7.44	370.14
		08/09/16	17.46	360.12
		10/17/16	19.06	358.52
		12/11/16	19.78	357.80
PDP-28	368.62	10/20/15	13.68	354.94
		12/14/15	13.68	354.94
		02/24/16	10.75	357.87
		04/05/16	9.61	359.01
		06/06/16	11.74	356.88
		08/09/16	10.91	357.71
		10/17/16	12.19	356.43
		12/11/16	13.09	355.53
PDP-29	383.05	10/20/15	14.12	368.93
		12/14/15	14.06	368.99
		02/24/16	12.45	370.60
		04/05/16	10.86	372.19
		06/06/16	12.62	370.43
		08/09/16	11.24	371.81
		10/17/16	13.09	369.96
		12/11/16	14.23	368.82

Notes:
1. Abbreviations: ft - feet; amsl - above mean sea level; bgs - below ground surface

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TABLE 3
SUMMARY OF AQUIFER TEST RESULTS
PERMANENT DISPOSAL POND 5
MARTIN LAKE STEAM ELECTRIC STATION

Well ID	Test Type	Aquifer Type	Analysis Method	Saturated Thickness (feet)	Results	
					T (cm^2/sec)	K (cm/sec)
PDP 5						
PDP-22	Slug-In	Unconfined	Bouwer-Rice	22.84	3.04E-02	4.36E-05
PDP-22	Slug-Out	Unconfined	Bouwer-Rice	22.84	4.16E-03	5.98E-06
				Mean	**1.73E-02**	**2.48E-05**
PDP-25	Slug-In	Confined	Bouwer-Rice	24	1.09E-01	1.49E-04
PDP-25	Slug-Out	Confined	Bouwer-Rice	24	9.05E-02	1.24E-04
				Mean	**9.99E-02**	**1.37E-04**
PDP-26	Slug-In	Confined	Bouwer-Rice	8	8.31E-03	3.41E-05
PDP-26	Slug-Out	Confined	Bouwer-Rice	8	3.95E-03	1.62E-05
				Mean	**6.13E-03**	**2.51E-05**
				Geometric Mean for All PDP 5 Tests	**2.19E-02**	**4.40E-05**

Notes:
1. Abbreviations: T - transmissivity; K - hydraulic conductivity.

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Figures

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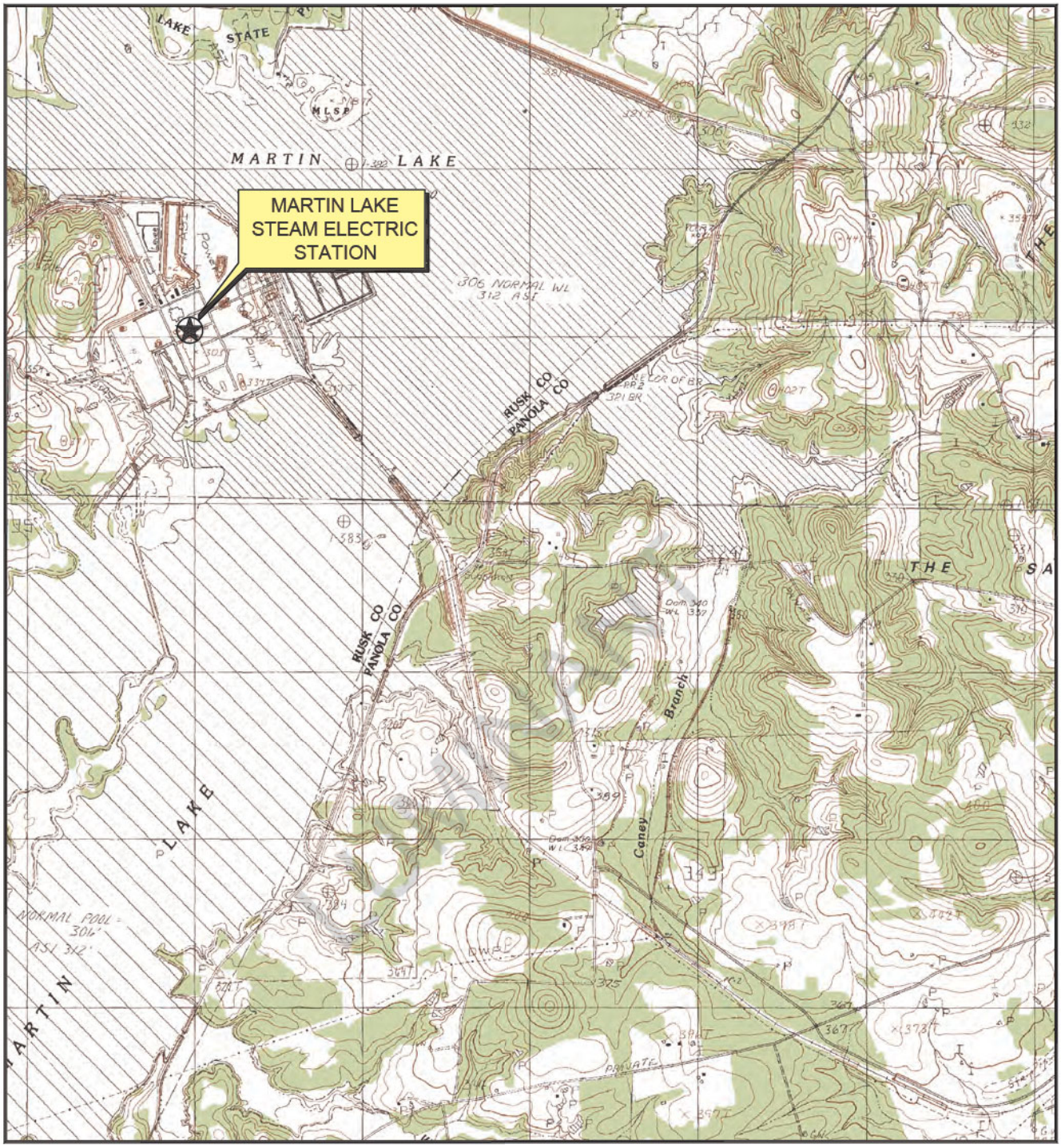

QUADRANGLE LOCATION

N

Scale in Feet

0 1500 3000

SOURCE:
Base map from www.tnris.gov, Tatum, TX 7.5 min. USGS quadrangle dated 1983.

MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

Figure 1

PDP 5 AREA
SITE LOCATION MAP

PROJECT: 5123B	BY: AJD	REVISIONS
DATE: JUNE, 2015	CHECKED: PJB	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS

EXPLANATION

CCR Monitoring Well

N

Scale in Feet

0 275 550

SOURCE:
Imagery from www.tnris.gov, Rusk County, aerial photographs, 2012.

MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

Figure 2

PDP 5 AREA
DETAILED SITE PLAN

PROJECT: 5164B	BY: AJD	REVISIONS
DATE: SEPT., 2017	CHECKED: PJB	

PASTOR, BEHLING & WHEELER, LLC
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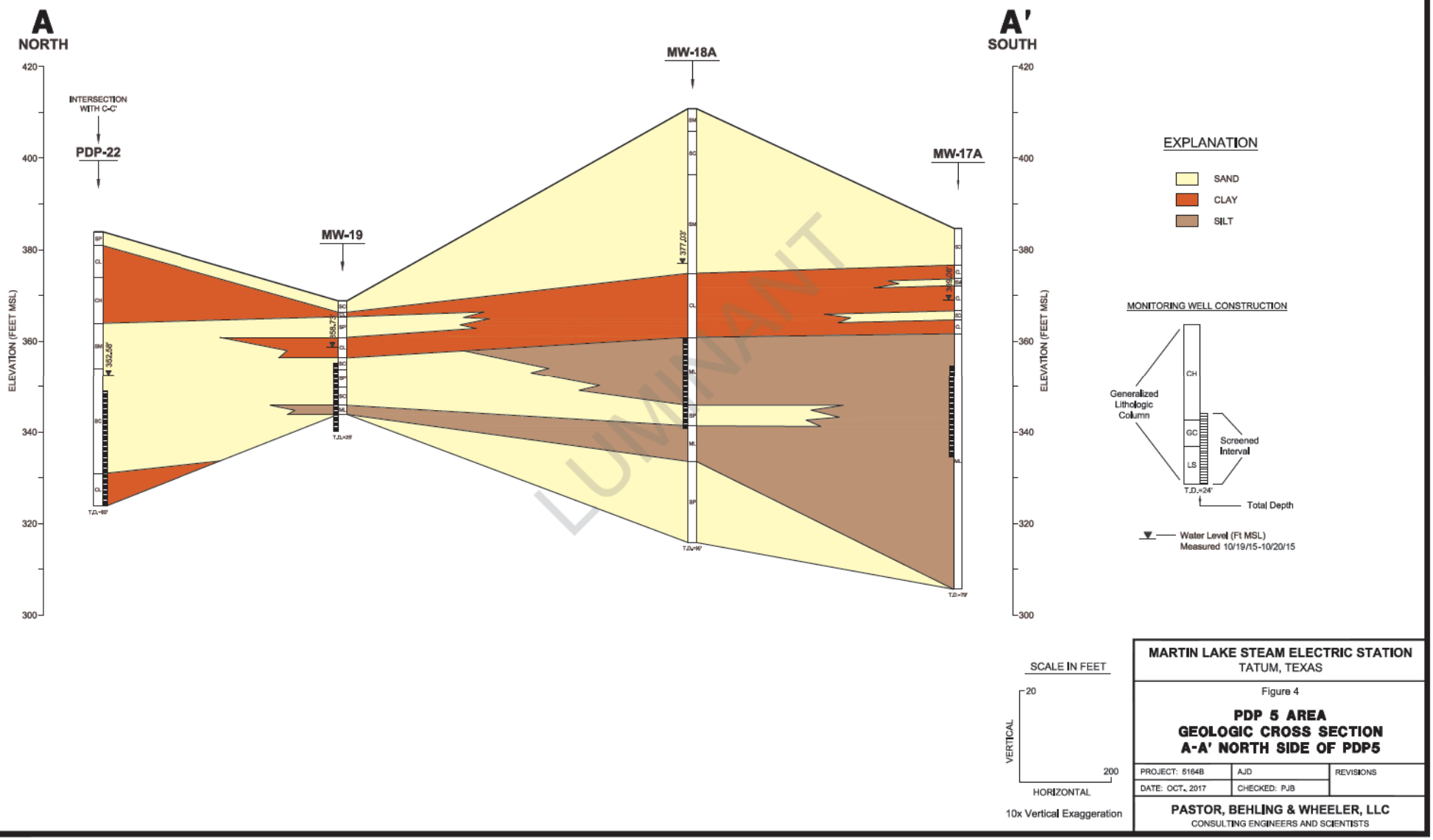
A
NORTH
A'
SOUTH
MW-18A
MW-17A
MW-19
PDP-22
INTERSECTION WITH C-C'
ELEVATION (FEET MSL)
420
400
380
360
340
320
300
EXPLANATION
SAND
CLAY
SILT
MONITORING WELL CONSTRUCTION
Generalized Lithologic Column
CH
GC
LS
Screened Interval
T.D.=24'
Total Depth
Water Level (Ft MSL) Measured 10/19/15-10/20/15
SCALE IN FEET
VERTICAL
20
HORIZONTAL
200
10x Vertical Exaggeration
MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS
Figure 4
PDP 5 AREA
GEOLOGIC CROSS SECTION
A-A' NORTH SIDE OF PDP5
PROJECT: 5164B
AJD
REVISIONS
DATE: OCT., 2017
CHECKED: PJB
PASTOR, BEHLING & WHEELER, LLC
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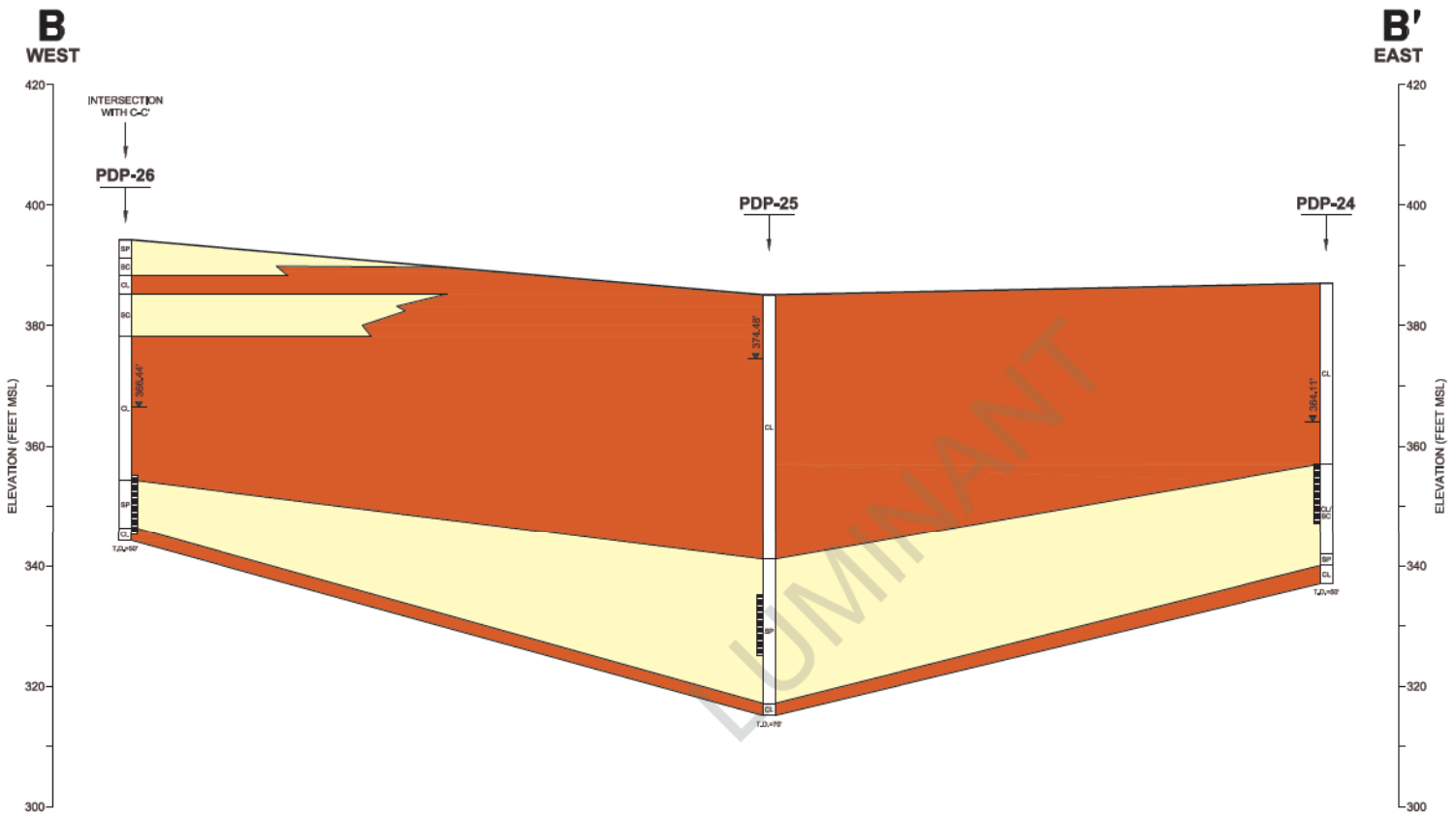
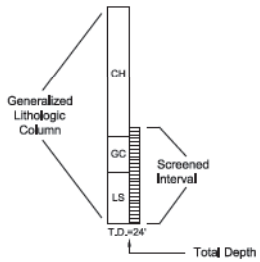


LUMINANT

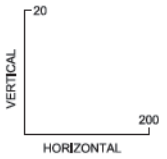
EXPLANATION

SAND
CLAY
SILT

MONITORING WELL CONSTRUCTION



SCALE IN FEET



10x Vertical Exaggeration

MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

Figure 5

PDP 5 AREA
GEOLOGIC CROSS SECTION
B-B' SOUTH SIDE OF PDP 5

PROJECT: 5164B	BY: AJD	REVISIONS
DATE: OCT., 2017	CHECKED: PJB	

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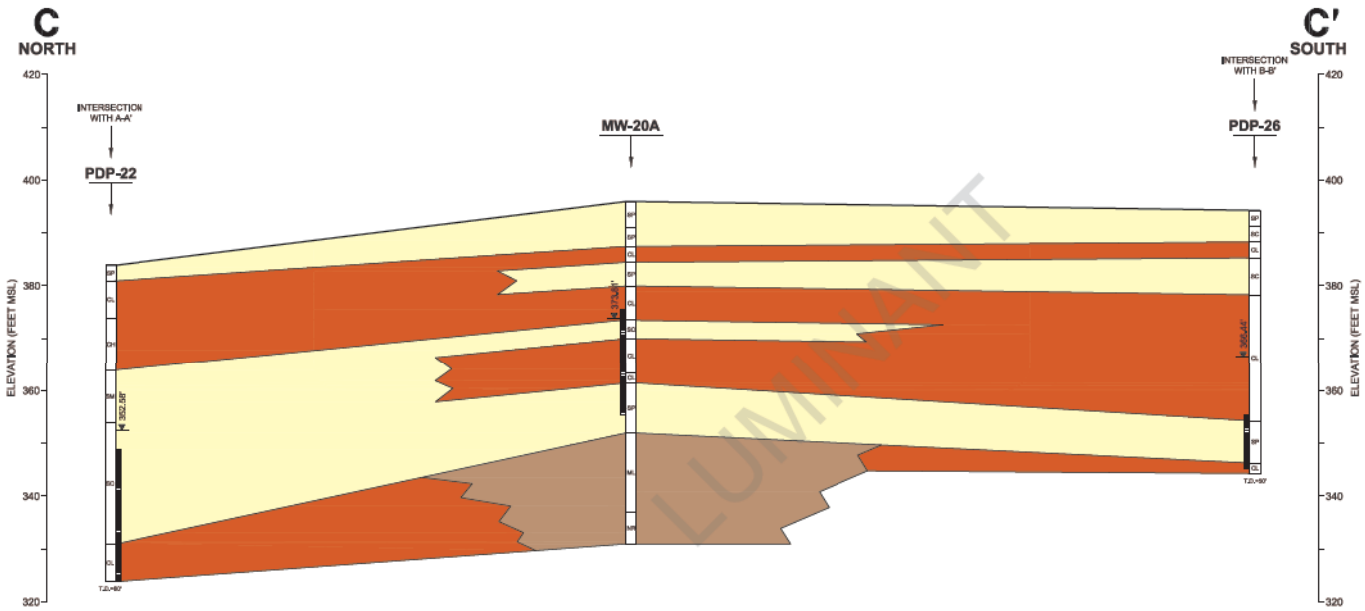
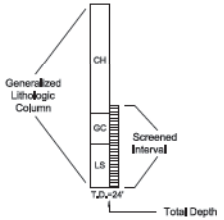


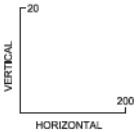
EXPLANATION

SAND
CLAY
SILT

MONITORING WELL CONSTRUCTION



SCALE IN FEET



10x Vertical Exaggeration

MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

Figure 6

PDP 5 AREA
GEOLOGIC CROSS SECTION
C-C' WEST SIDE OF PDP 5

PROJECT: 5164B	BY: AJD	REVISIONS
DATE: OCT., 2017	CHECKED: PJB	

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Appendix A

CCR Monitoring Well Logs

GREEN STAR ENVIRONMENTAL

BORING/WELL CONSTRUCTION LOG

Project Number:	08-1388	Boring/Well Number:	MW-17A
Project Name:	Martin Lake SES	Date Drilled:	October 1, 2008
Location:	8850 FM 2658 Tatum, TX	Casing Type/Diameter:	PVC/2" ID
Drilling Method:	HSA	Screen Type/Diameter:	PVC/0.01"
Sampling Method:	CT	Gravel Pack Type:	8/16 Grade Silica Sand
Ground Elevation:	384.63' msl	Grout Type:	Bentonite Pellets
Top of Casing Elevation:	387.53' msl	Depth to Water/Date:	26.62' BTOC/10-09-2008
Logged by:	T. Ripley	Ground Water Elevation/Date:	360.91' msl/10-09-2008
Remarks:		Drilling Co./Driller:	SCI / M. Bridges

PID (ppm)	Blow Counts	Recovery (%)	Sampling Method	Sample	Depth (ft. BGL)	U.S.C.S	Graphic Log	Lithologic Description	Contact Depth
NA	NA	NA	CT	NA	10, 20, 30, 40, 50			See MW-17B boring log for Lithologic Description	10.0, 20.0, 30.0, 40.0, 50.0
								The boring was terminated and the well was set at 47' bgs. The well was completed with a protective stickup which requires approximately 3 feet of additional casing above grade.	

▽

Well Diagram:
- Cement/ Concrete Well Cover
- Bentonite Pellets to 25'
- 30' Casing
- 20' Screen with 2" End Cap
- Sand Backfill of Annular Space from 25' to 47'

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GREEN STAR ENVIRONMENTAL

BORING/WELL CONSTRUCTION LOG

Project Number:	08-1388	Boring/Well Number:	MW-18A
Project Name:	Martin Lake SES	Date Drilled:	October 2, 2008
Location:	8850 FM 2658 Tatum, TX	Casing Type/Diameter:	PVC/2" ID
Drilling Method:	HSA	Screen Type/Diameter:	PVC/0.01"
Sampling Method:	CT	Gravel Pack Type:	8/16 Grade Silica Sand
Ground Elevation:	410.83' msl	Grout Type:	Bentonite Pellets
Top of Casing Elevation:	414.43' msl	Depth to Water/Date:	43.17' BTOC/10-09-2008
Logged by:	T. Ripley	Ground Water Elevation/Date:	371.26' msl/10-09-2008
Remarks:		Drilling Co./Driller:	SCI / M. Bridges

PID (ppm)	Blow Counts	Recovery (%)	Sampling Method	Sample	Depth (ft. BGL)	U.S.C.S	Graphic Log	Lithologic Description	Contact Depth	Well Diagram
NA	NA	NA	CT	NA				See MW-18B boring log for Lithologic Description		Cement/ Concrete Well Cover
					10				10.0	Bentonite Pellets to 45'
					20				20.0	
					30				30.0	50' Casing
					40				40.0 ▽	
					50				50.0	20' Screen with 2" End Cap
					60				60.0	Sand Backfill of Annular Space from 45' to 67'
					70			The boring was terminated and the well was set at 67' bgs. The well was completed with a protective stickup which requires approximately 3 feet of additional casing above grade.	70.0	

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BORING/WELL CONSTRUCTION LOG

GREEN STAR ENVIRONMENTAL

Project Number:	08-1388	Boring/Well Number:	MW-19
Project Name:	Martin Lake SES	Date Drilled:	September 30, 2008
Location:	8850 FM 2658 Tatum, TX	Casing Type/Diameter:	PVC/2" ID
Drilling Method:	HSA	Screen Type/Diameter:	PVC/0.01"
Sampling Method:	CT	Gravel Pack Type:	20/40 Grade Silica Sand
Ground Elevation:	367.84' msl	Grout Type:	Bentonite Pellets
Top of Casing Elevation:	371.23' msl	Depth to Water/Date:	13.89' BTOC/10-09-2008
Logged by:	T. Ripley	Ground Water Elevation/Date:	357.34' msl/10-09-2008
Remarks:		Drilling Co./Driller:	SCI / M. Bridges

PID (ppm)	Blow Counts	Recovery (%)	Sampling Method	Sample	Depth (ft. BGL)	U.S.C.S	Graphic Log	Lithologic Description	Contact Depth
NA	NA	90	CT	NA		SC		Moist, medium dense, reddish-brown, CLAYEY SAND (fine-grained SAND)	
						CL		Moist, soft, reddish-brown, SANDY CLAY	
						SP		Moist, loose, reddish-brown, fine-grained SAND	
					5			-gray	5.0
		60				CL		Moist to wet, soft, brown, SANDY CLAY (fine-grained SAND)	
								-stiff	
					10			-light gray ▽	10.0
		100				CL		Moist, very stiff, light gray, SILTY CLAY	
						SC		Moist, dense, gray and reddish-brown, CLAYEY SAND (fine-grained SAND ▽	15.0
		70			15	SP		Wet, loose, light gray and reddish-brown, fine-grained SAND	
								-medium dense	
					20	SC		Wet, medium dense, light gray and reddish-brown, CLAYEY SAND (fine-grained SAND)	20.0
		100						-stringer of dense	
								-stringer of dense	
						ML		Moist, very stiff, gray CLAYEY SILT with some iron staining	25.0
					25			The boring was terminated and the well was set at 25' bgs. The well was completed with a protective stickup which requires approximately 3 feet of additional casing above grade.	

Well Diagram

- Cement/ Concrete Well Cover
- Bentonite Pellets to 9'
- 13' Casing
- 15' Screen with 2" End Cap
- Sand Backfill of Annular Space from 9' to 25'

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GREEN STAR ENVIRONMENTAL

BORING/WELL CONSTRUCTION LOG

Project Number:	08-1388	Boring/Well Number:	MW-20A
Project Name:	Martin Lake SES	Date Drilled:	September 30, 2008
Location:	8850 FM 2658 Tatum, TX	Casing Type/Diameter:	PVC/2" ID
Drilling Method:	HSA	Screen Type/Diameter:	PVC/0.01"
Sampling Method:	CT	Gravel Pack Type:	20/40 Grade Silica Sand
Ground Elevation:	395.95' msl	Grout Type:	Bentonite Pellets
Top of Casing Elevation:	398.34' msl	Depth to Water/Date:	29.19' BTOC/10-09-2008
Logged by:	T. Ripley	Ground Water Elevation/Date:	369.65' msl/10-09-2008
Remarks:		Drilling Co./Driller:	SCI / M. Bridges

PID (ppm)	Blow Counts	Recovery (%)	Sampling Method	Sample	Depth (ft. BGL)	U.S.C.S	Graphic Log	Lithologic Description	Contact Depth	Well Diagram
NA	NA	NA	CT	NA	10 20 30 40			See MW-20B boring log for Lithologic Description ▽ The boring was terminated and the well was set at 41' bgs. The well was completed with a protective stickup which requires approximately 3 feet of additional casing above grade.	10.0 20.0 30.0 40.0	Cement/ Concrete Well Cover Bentonite Pellets to 19' 24' Casing 20' Screen with 2" End Cap Sand Backfill of Annular Space from 19' to 41'

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Log of Boring: PDP-22

Martin Lake Steam Electric Station
Tatum, TX

PBW Project No. 5164B

Completion Date:	9/9/2015	Drilling Method:	Sonic
Drilling Company:	Walker-Hill Environmental	Borehole Diameter (in.):	6.5
Driller:	Timmy Beach	Total Depth (ft):	60
Driller's License:	5814M	TOC Elevation (ft. AMSL):	
Logged By:	Ryan Francis	Northing:	
Sampling Method:	4"x10' Core barrel	Easting:	

Depth (ft)	Well Materials	Recovery (ft/ft)	USCS	Lithologic Description
0			SP	(0 - 3) Fine SAND, tan, dry, very soft, small iron concretions, grass roots
4		8.0/10.0	CL	(3 - 10) Sandy CLAY, red/orange mottled, dry, firm, moderate cementation, flat to subrounded, sharp contact
8				
12		10.0/10.0	CH	(10 - 20) Silty CLAY with minor sand, dry, firm, moderate cementation, flat to subrounded, medium to high plasticity, micro laminated structure, increasing sand content with depth, transition from red/gray at 10' to tan at 20'
16				
20		10.0/10.0	SM	(20 - 28) Sandy SILT, gray and tan, dry, firm, moderate cementation, flat to subrounded, grass lense (fill), transition to gray at 26'
24				
28				(28 - 30) Silty SAND, iron-rich, dry, soft, weak cementation, subrounded, sharp contact
32		10.0/10.0	SC	(30 - 53) SAND, gray with small streaks and iron at 32', moist to wet, soft, moderate plasticity at 30', transition to low plasticity at 40', minor clay content
36				
40				
44		10.0/10.0		
48				
52		10.0/10.0	CL	(53 - 60) Silty CLAY, gray, dry, firm, moderate cementation, dry, flat, transition to very hard gray/dark gray clay at 56'
56				
60				

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PBW
Pastor, Behling & Wheeler, LLC
2201 Double Creek Dr., Suite 4004
Round Rock, TX 78664
Tel (512) 671-3434 Fax (512) 671-3446

Notes:
1. This log should not be used separately from the report to which it is attached.

Well Materials
(0-35) Casing, 2" Sch 40 FJT PVC
(35-60) Screen, 2" Sch 40 FJT PVC, 0.010" slot

Annular Materials
(0'-31') Grout
(31'-33') Bentonite pellets
(33'-60') 20/40 sand

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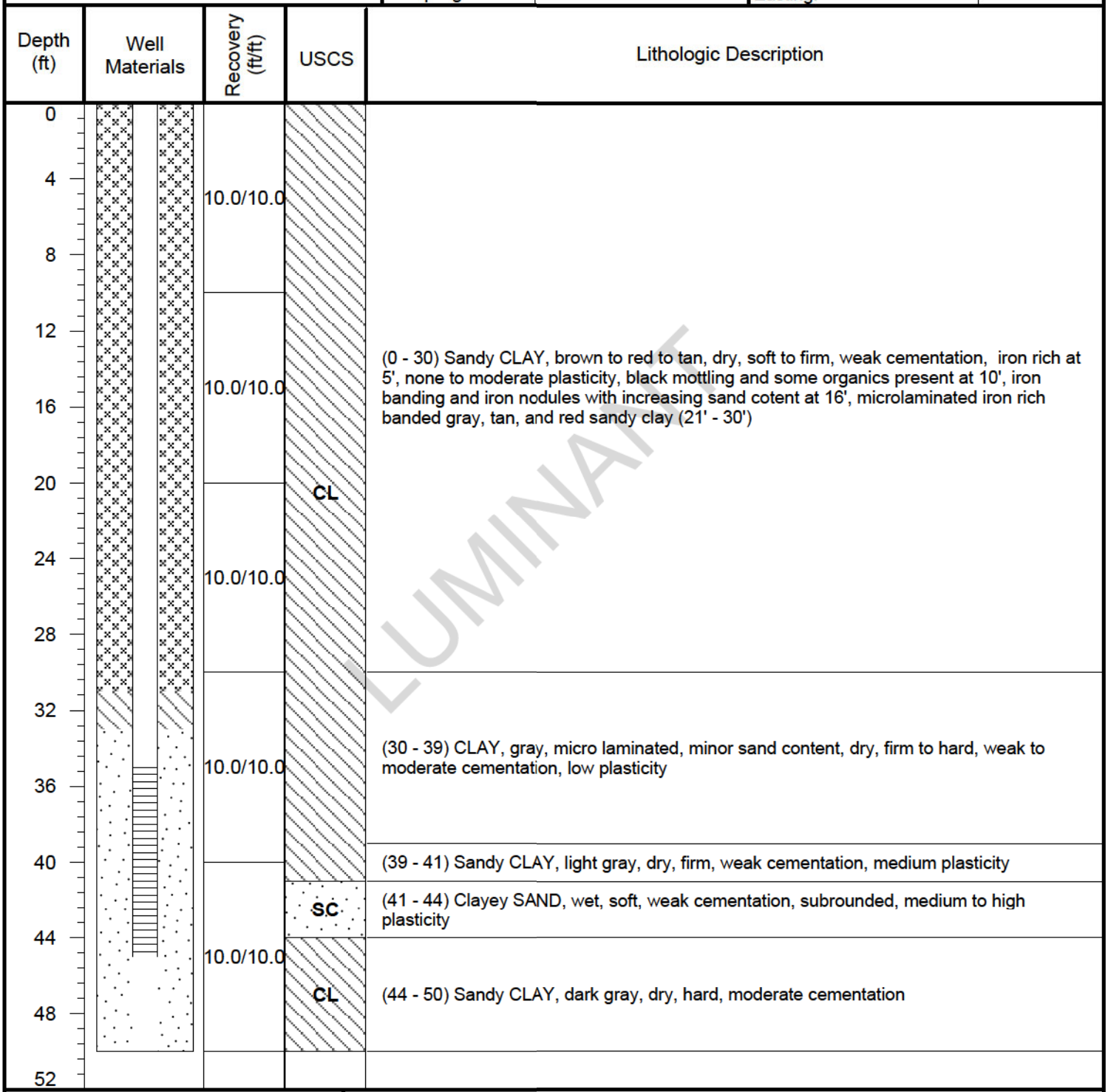
Log of Boring: PDP-23

Martin Lake Steam Electric Station
Tatum, TX

PBW Project No. 5164B

Completion Date:	9/10/2015	Drilling Method:	Sonic
Drilling Company:	Walker-Hill Environmental	Borehole Diameter (in.):	6.5
Driller:	Timmy Beach	Total Depth (ft):	50
Driller's License:	5814M	TOC Elevation (ft. AMSL):	
Logged By:	Ryan Francis	Northing:	
Sampling Method:	4"x10' Core barrel	Easting:	



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Round Rock, TX 78664
Tel (512) 671-3434 Fax (512) 671-3446

Notes:
1. This log should not be used separately from the report to which it is attached.

Well Materials
(0-35) Casing, 2" Sch 40 FJT PVC
(35-45) Screen, 2" Sch 40 FJT PVC, 0.010" slot

Annular Materials
(0'-31') Grout
(31'-33') Bentonite pellets
(33'-45') 20/40 sand

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Log of Boring: PDP-24

Martin Lake Steam Electric Station
Tatum, TX

PBW Project No. 5164B

Completion Date:	9/11/2015	Drilling Method:	Sonic
Drilling Company:	Walker-Hill Environmental	Borehole Diameter (in.):	6.5
Driller:	Timmy Beach	Total Depth (ft):	50
Driller's License:	5814M	TOC Elevation (ft. AMSL):	
Logged By:	Ryan Francis	Northing:	
Sampling Method:	4"x10' Core barrel	Easting:	

Depth (ft)	Well Materials	Recovery (ft/ft)	USCS	Lithologic Description
0				
4		8.0/10.0		
8				
12		7.0/10.0	CL	(0 - 30) Sandy CLAY, red and tan mottling, fine sand, dry to moist, firm, weak cementation, low to medium plasticity, occasional black inclusions, minor very fine sand content in gray and orange clay and high plasticity (20'-30')
16				
20		10.0/10.0		
24				
28				
32		10.0/10.0	CL/SC	(30 - 45) Sandy CLAY/Clayey SAND, gray, moist to wet, very fine grained, firm, weak cementation, medium plasticity, softens and increasing wetness with depth (35'-39'), brown with increased iron content (39'-42'), dark gray, dry, and none to low plasticity (39'-45')
36				
40				
44		10.0/10.0	SP	(45 - 47) Clayey SAND, wet, soft, weak cementation, medium to high plasticity
48			CL	(47 - 50) Sandy CLAY, dark gray, fine grained, dry, firm to hard, weak cementation
52				

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Notes:
1. This log should not be used separately from the report to which it is attached.

Well Materials
(0-30) Casing, 2" Sch 40 FJT PVC
(30-40) Screen, 2" Sch 40 FJT PVC, 0.010" slot

Annular Materials
(0'-26') Grout
(26'-28') Bentonite pellets
(28'-40') 20/40 sand

Luminant

Log of Boring: PDP-25

Martin Lake Steam Electric Station
Tatum, TX

PBW Project No. 5164B

Completion Date:	9/11/2015	Drilling Method:	Sonic
Drilling Company:	Walker-Hill Environmental	Borehole Diameter (in.):	6.5
Driller:	Timmy Beach	Total Depth (ft):	70
Driller's License:	5814M	TOC Elevation (ft. AMSL):	
Logged By:	Ryan Francis	Northing:	
Sampling Method:	4"x10' Core barrel	Easting:	

Depth (ft)	Well Materials	Recovery (ft/ft)	USCS	Lithologic Description
0				
4		10.0/10.0		
8				
12		10.0/10.0		
16				
20			CL	(0 - 44) Sandy CLAY, red to gray and tan, very fine grained, dry to moist, firm, low to medium plasicity, weak to moderate cementation, micro laminated, minor organics, variable sand content with depth, high plasticity and very low sand content (22'-23'), higher sand content and high iron content with occasional subrounded pebbles (27'-30'), red, orange, tan, and gray mottling (30'-44')
24		10.0/10.0		
28				
32				
36		10.0/10.0		
40				
44		10.0/10.0		
48				
52				
56		10.0/10.0	SP	(44 - 68) Clayey SAND, gray, moist, soft to firm, minor orange streaking, low plasticity, weak cementation, subrounded, minor wet and soft clay zone (62'-64')
60				
64		10.0/10.0		
68			CL	(68 - 70) CLAY, black, minor silt, dry, very hard, moderate cementation, smooth shiny surface when fractured
72				

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Notes:
1. This log should not be used separately from the report to which it is attached.

Well Materials
(0-50) Casing, 2" Sch 40 FJT PVC
(50-60) Screen, 2" Sch 40 FJT PVC, 0.010" slot

Annular Materials
(0'-46') Grout
(46'-48') Bentonite pellets
(48'-60') 20/40 sand

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Log of Boring: PDP-26

Martin Lake Steam Electric Station
Tatum, TX

PBW Project No. 5164B

Completion Date:	9/9/2015	Drilling Method:	Sonic
Drilling Company:	Walker-Hill Environmental	Borehole Diameter (in.):	6.5
Driller:	Timmy Beach	Total Depth (ft):	50
Driller's License:	5814M	TOC Elevation (ft. AMSL):	
Logged By:	Ryan Francis	Northing:	
Sampling Method:	4"x10' Core barrel	Easting:	

Depth (ft)	Well Materials	Recovery (ft/ft)	USCS	Lithologic Description
0			SP	(0 - 3) SAND, tan, dry, very soft, weak cementation
4		10.0/10.0	SC	(3 - 6) Clayey SAND, dry, firm, black lignite present
8			CL	(6 - 9) CLAY with minor sand, red, moist, firm, medium plasticity, smear zone black lignite
12		10.0/10.0	SC	(9 - 16) Clayey SAND, tan, moist, soft, low plasticity, more clay content with depth
16				
20		10.0/10.0	CL	(16 - 40) CLAY, tan, micro laminated orange and gray, moist, soft, medium plasticity, dry and silty clay (19'-27'), micro laminated gray and dark gray (27'-36'), increasing sand content (30'-36'), organics layer (36.5'-37'), high iron content (39'-40')
24				
28				
32		10.0/10.0		
36				
40		10.0/10.0	SP	(40 - 48) SAND, tan, medium, moist to wet, soft, subrounded
44				
48			CL	(48 - 50) CLAY, gray, micro laminated, dry, firm, moderate cementation
52				

LUMINANT

PBW
Pastor, Behling & Wheeler, LLC
2201 Double Creek Dr., Suite 4004
Round Rock, TX 78664
Tel (512) 671-3434 Fax (512) 671-3446

Notes:
1. This log should not be used separately from the report to which it is attached.

Well Materials
(0-39) Casing, 2" Sch 40 FJT PVC
(39-49) Screen, 2" Sch 40 FJT PVC, 0.010" slot

Annular Materials
(0'-35') Grout
(35'-37') Bentonite pellets
(37'-49') 20/40 sand

LUMINANT

Appendix B

Photographs of CCR Groundwater Monitoring Wells

Appendix B – Photographs of CCR Groundwater Monitoring Wells
Martin Lake Steam Electric Station – PDP 5 Area

Photograph 1: PDP22

Photograph 2: PDP23

Appendix B – Photographs of CCR Groundwater Monitoring Wells
Martin Lake Steam Electric Station – PDP 5 Area

Photograph 3: PDP24

Photograph 4: PDP25

Appendix B – Photographs of CCR Groundwater Monitoring Wells
Martin Lake Steam Electric Station – PDP 5 Area

Photograph 5: PDP26

Photograph 6: MW-17A

Appendix B – Photographs of CCR Groundwater Monitoring Wells
Martin Lake Steam Electric Station – PDP 5 Area

Photograph 7: MW-18A

Photograph 8: MW-19

Appendix B – Photographs of CCR Groundwater Monitoring Wells
Martin Lake Steam Electric Station – PDP 5 Area

Photograph 9: MW-20A

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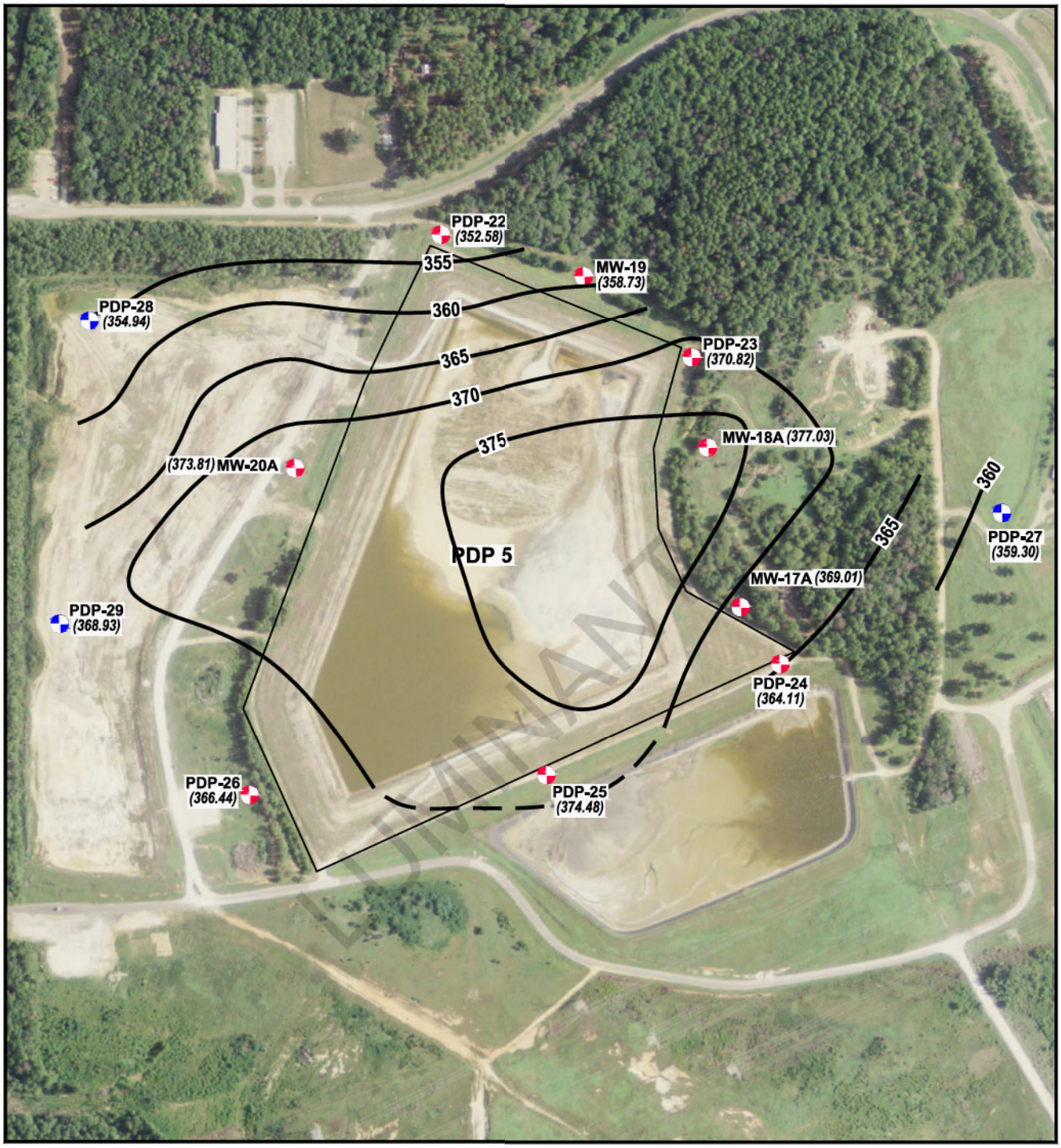
Appendix C

Groundwater Potentiometric Surface Maps

LUMINANT



EXPLANATION

- CCR Monitoring Well Location
- Non-CCR Monitoring Well Used to Further Evaluate Groundwater Flow Direction
- (374.34) Groundwater Potentiometric Surface (ft. MSL)
- 360 Groundwater Potentiometric Surface Contour (C.I. = 5 ft.)

N

Scale in Feet

0 275 550

SOURCE:
Imagery from www.tnris.gov, Rusk County, aerial photographs, 2012.

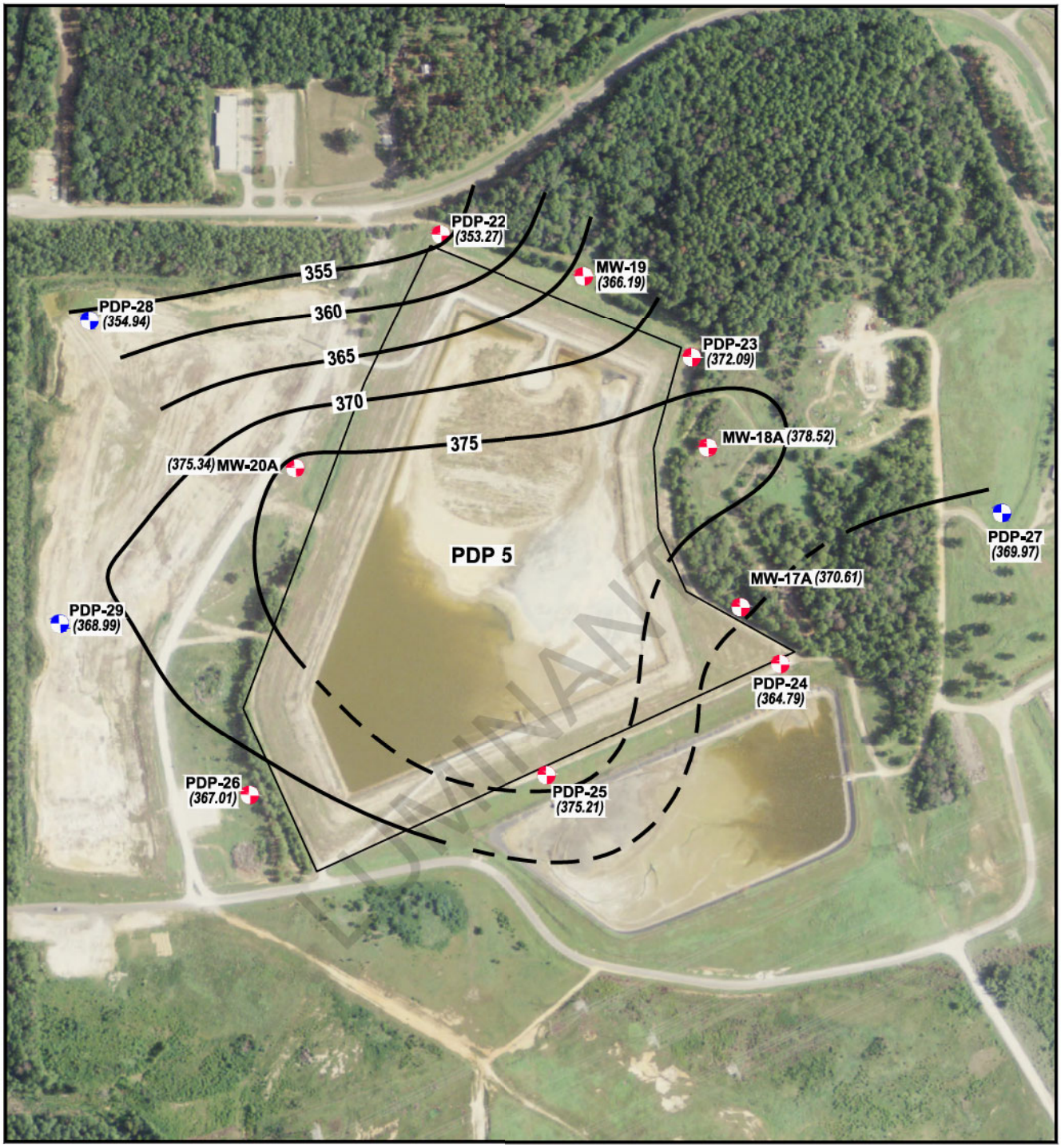
MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

Figure 1

PDP 5 - GROUNDWATER ZONE A POTENTIOMETRIC SURFACE MAP OCTOBER 20, 2015

PROJECT: 5164B	BY: AJD	REVISIONS
DATE: SEPT., 2017	CHECKED: PJB	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS



EXPLANATION

- CCR Monitoring Well Location
- Non-CCR Monitoring Well Used to Further Evaluate Groundwater Flow Direction
- (374.34) Groundwater Potentiometric Surface (ft. MSL)
- —360— Groundwater Potentiometric Surface Contour (C.I. = 5 ft.)

N

Scale in Feet

0 275 550

SOURCE:
Imagery from www.tnris.gov, Rusk County, aerial photographs, 2012.

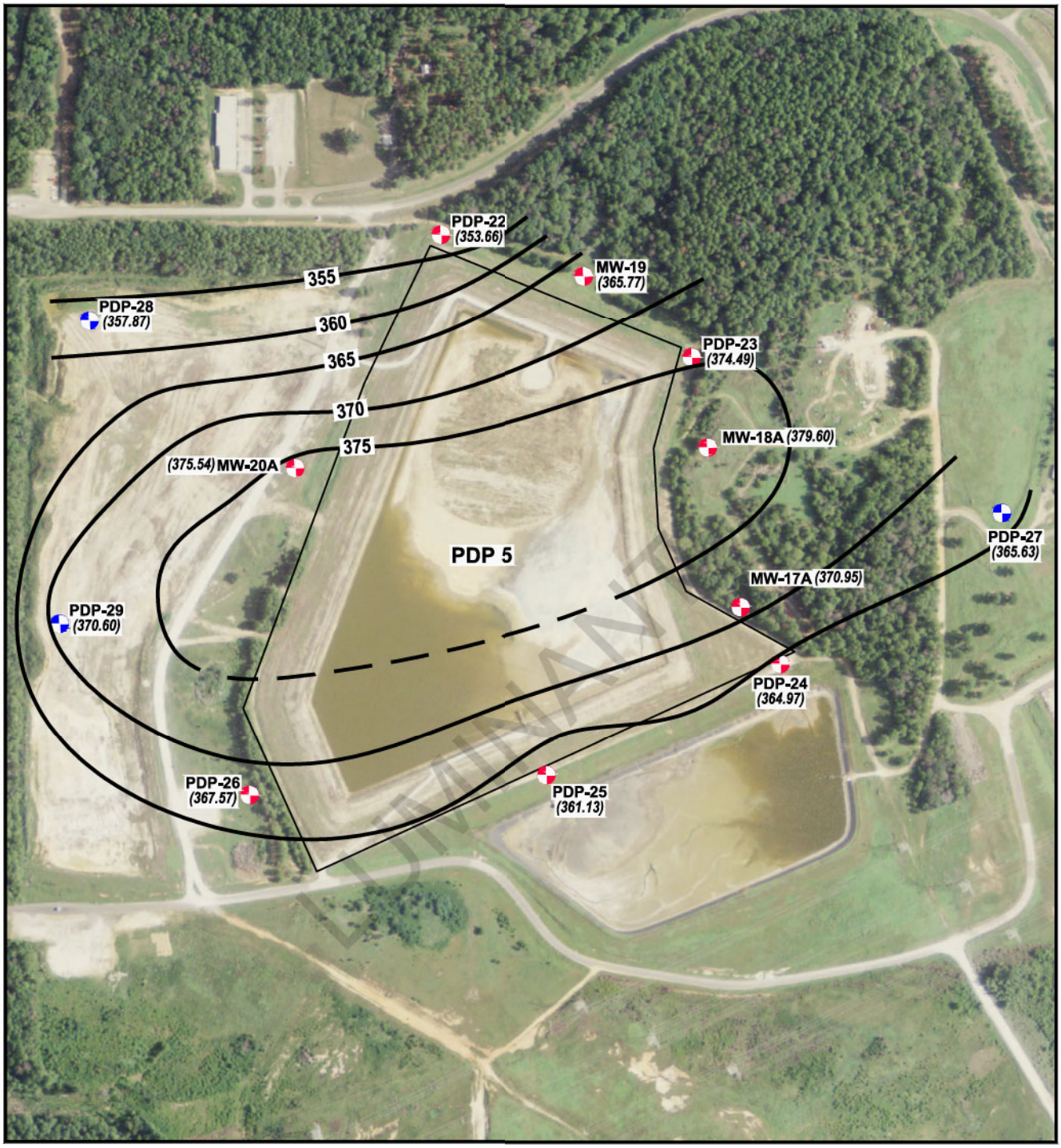
MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

Figure 2

PDP 5 - GROUNDWATER ZONE A POTENTIOMETRIC SURFACE MAP - DEC. 14, 2015

PROJECT: 5164B	BY: AJD	REVISIONS
DATE: SEPT., 2017	CHECKED: PJB	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS



EXPLANATION

- CCR Monitoring Well Location
- Non-CCR Monitoring Well Used to Further Evaluate Groundwater Flow Direction
- (374.34) Groundwater Potentiometric Surface (ft. MSL)
- 360 Groundwater Potentiometric Surface Contour (C.I. = 5 ft.)

N

Scale in Feet

0 275 550

SOURCE:
Imagery from www.tnris.gov, Rusk County, aerial photographs, 2012.

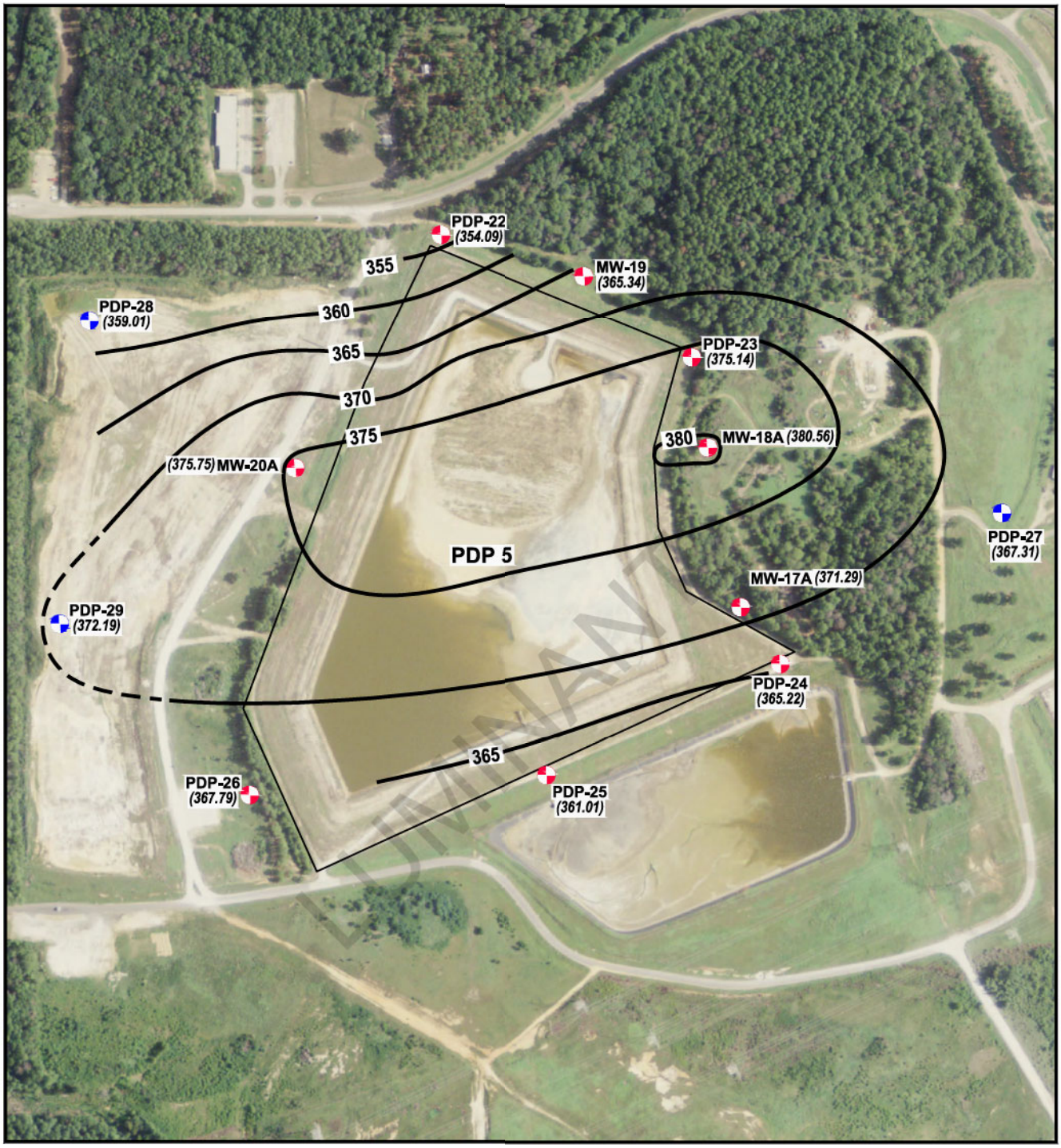
MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

Figure 3

PDP 5 - GROUNDWATER ZONE A POTENTIOMETRIC SURFACE MAP - FEB. 24, 2016

PROJECT: 5164B	BY: AJD	REVISIONS
DATE: SEPT., 2017	CHECKED: PJB	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS



EXPLANATION

- CCR Monitoring Well Location
- Non-CCR Monitoring Well Used to Further Evaluate Groundwater Flow Direction
- (374.34) Groundwater Potentiometric Surface (ft. MSL)
- —360— Groundwater Potentiometric Surface Contour (C.I. = 5 ft.)

N

Scale in Feet

0 275 550

SOURCE:
Imagery from www.tnris.gov, Rusk County, aerial photographs, 2012.

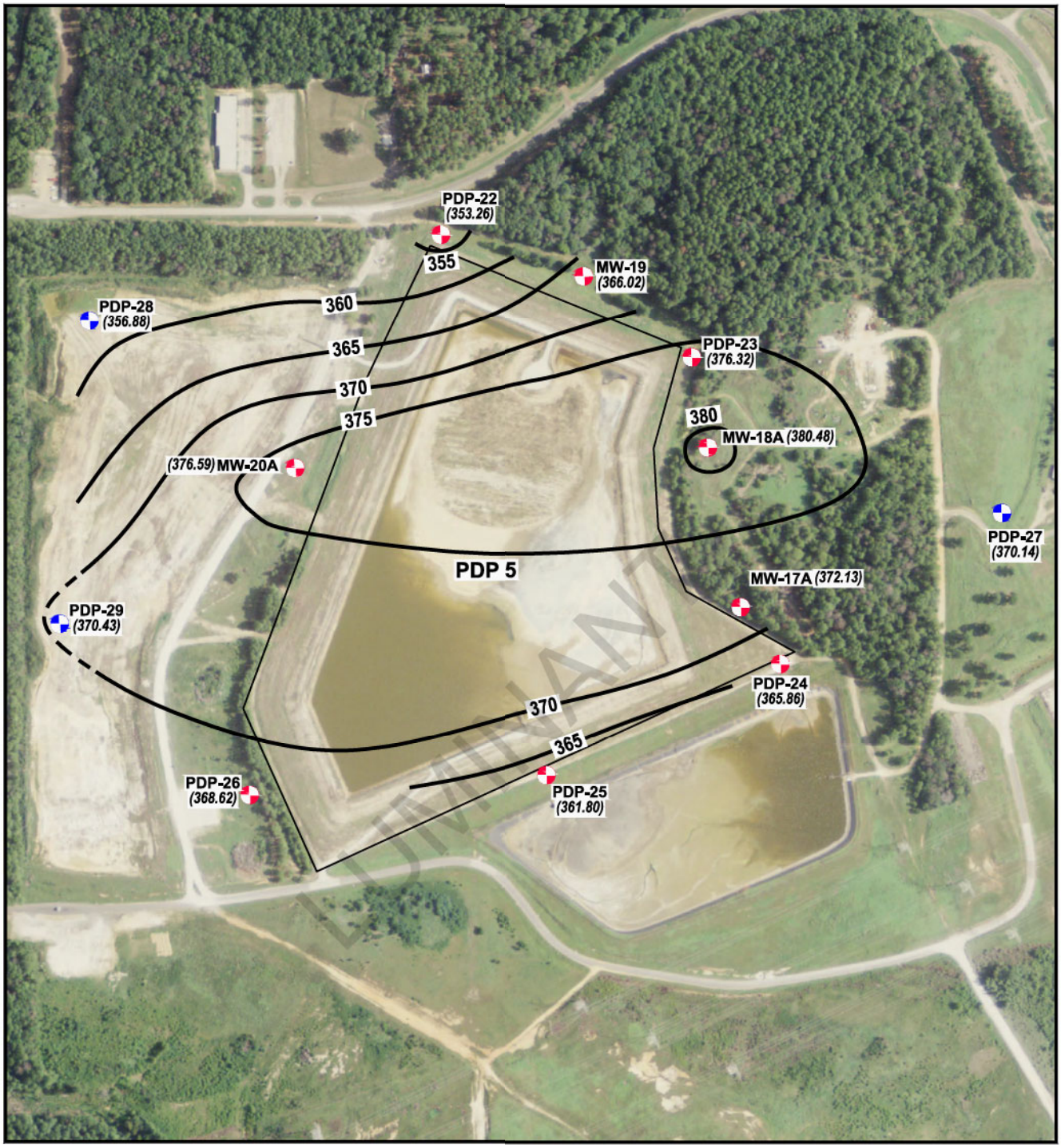
MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

Figure 4

PDP 5 - GROUNDWATER ZONE A POTENTIOMETRIC SURFACE MAP - APRIL 5, 2016

PROJECT: 5164B	BY: AJD	REVISIONS
DATE: SEPT., 2017	CHECKED: PJB	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS



EXPLANATION

- CCR Monitoring Well Location
- Non-CCR Monitoring Well Used to Further Evaluate Groundwater Flow Direction
- (374.34) Groundwater Potentiometric Surface (ft. MSL)
- —360— Groundwater Potentiometric Surface Contour (C.I. = 5 ft.)

N

Scale in Feet

0 275 550

SOURCE:
Imagery from www.tnris.gov, Rusk County, aerial photographs, 2012.

MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

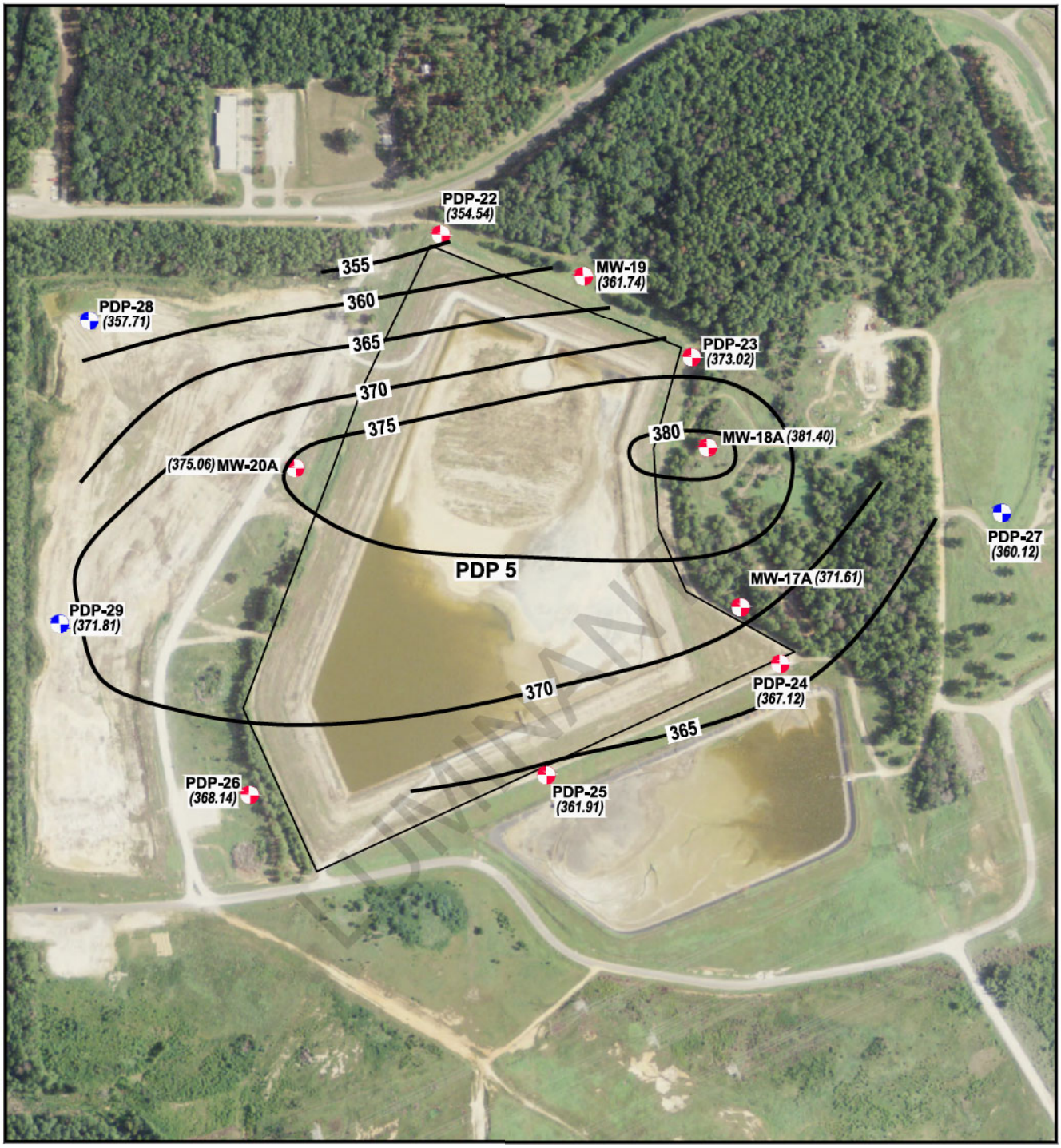
Figure 5

PDP 5 - GROUNDWATER ZONE A POTENTIOMETRIC SURFACE MAP - JUNE 6, 2016

PROJECT: 5164B	BY: AJD	REVISIONS
DATE: SEPT., 2017	CHECKED: PJB	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS

PLAINTIFF'S EXHIBIT



EXPLANATION

- CCR Monitoring Well Location
- Non-CCR Monitoring Well Used to Further Evaluate Groundwater Flow Direction
- (374.34) Groundwater Potentiometric Surface (ft. MSL)
- —360— Groundwater Potentiometric Surface Contour (C.I. = 5 ft.)

N

Scale in Feet

0 275 550

SOURCE:
Imagery from www.tnris.gov, Rusk County, aerial photographs, 2012.

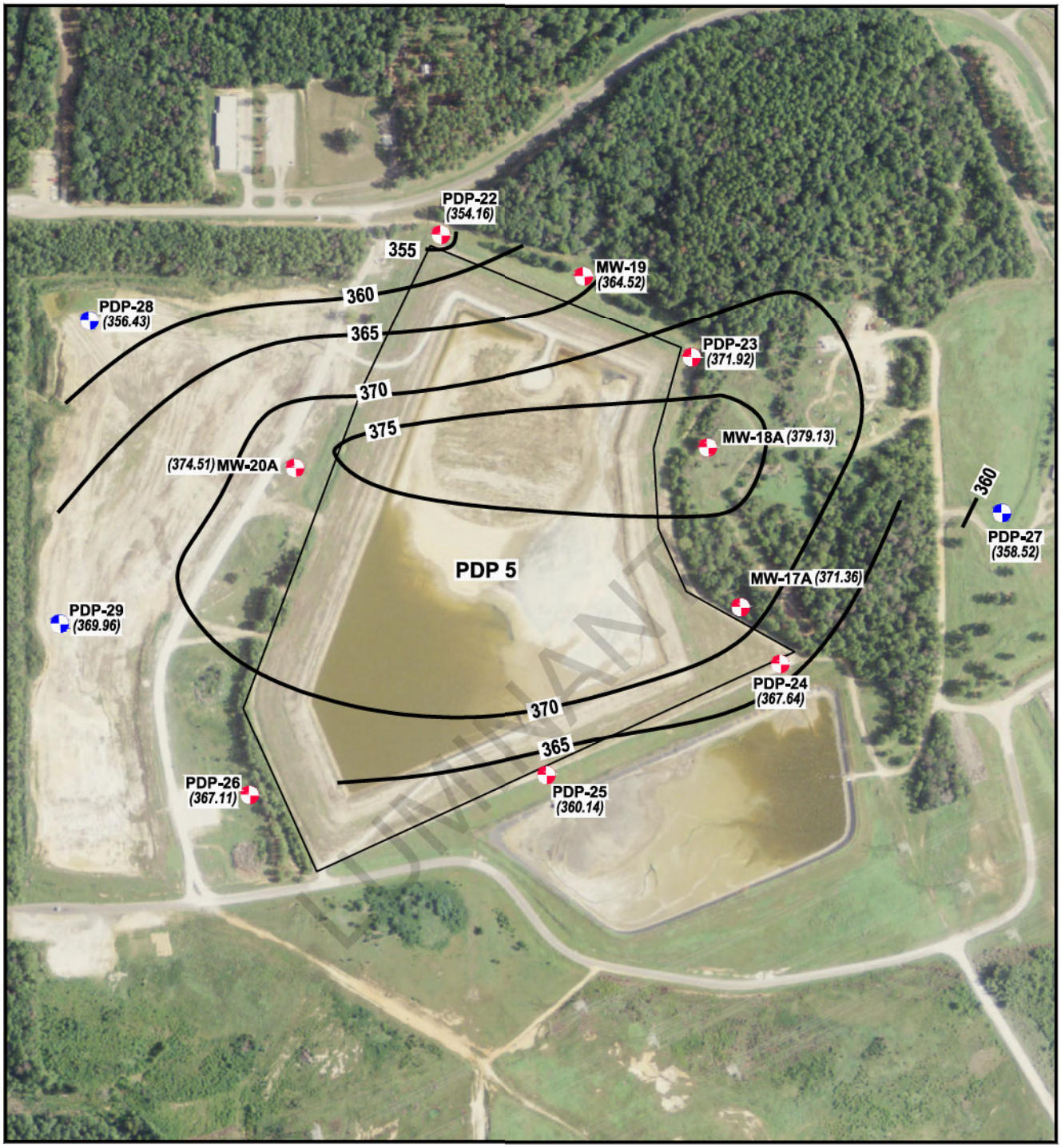
MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

Figure 6

PDP 5 - GROUNDWATER ZONE A POTENTIOMETRIC SURFACE MAP - AUGUST 9, 2016

PROJECT: 5164B	BY: AJD	REVISIONS
DATE: SEPT., 2017	CHECKED: PJB	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS



EXPLANATION

- CCR Monitoring Well Location
- Non-CCR Monitoring Well Used to Further Evaluate Groundwater Flow Direction
- (374.34) Groundwater Potentiometric Surface (ft. MSL)
- 360 Groundwater Potentiometric Surface Contour (C.I. = 5 ft.)

N

Scale in Feet

0 275 550

SOURCE:
Imagery from www.tnris.gov, Rusk County, aerial photographs, 2012.

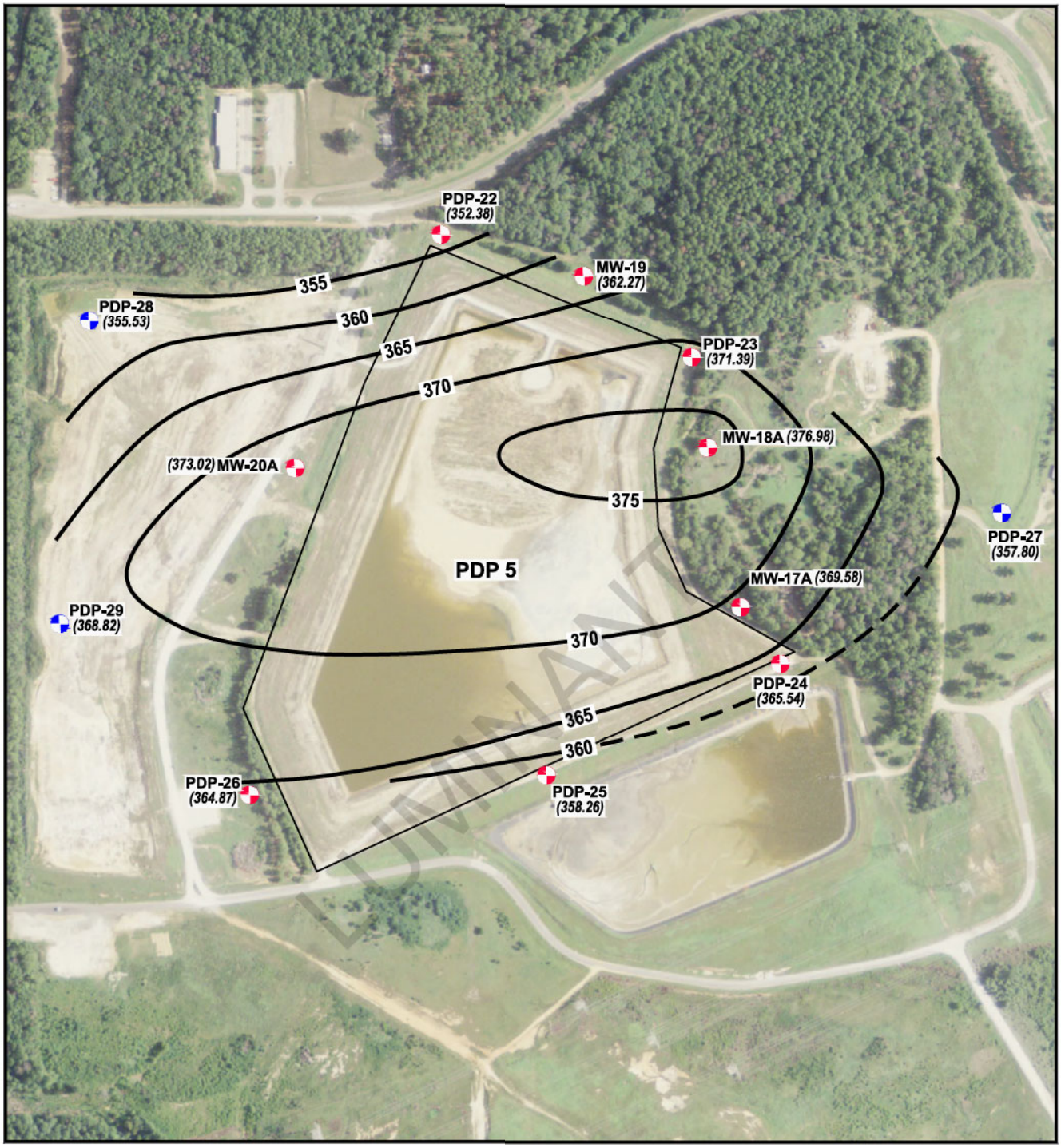
MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

Figure 7

PDP 5 - GROUNDWATER ZONE A POTENTIOMETRIC SURFACE MAP - OCTOBER 17, 2016

PROJECT: 5164B	BY: AJD	REVISIONS
DATE: SEPT., 2017	CHECKED: PJB	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS



EXPLANATION

- CCR Monitoring Well Location
- Non-CCR Monitoring Well Used to Further Evaluate Groundwater Flow Direction
- (374.34) Groundwater Potentiometric Surface (ft. MSL)
- —360— Groundwater Potentiometric Surface Contour (C.I. = 5 ft.)

N

Scale in Feet

0 275 550

SOURCE:
Imagery from www.tnris.gov, Rusk County, aerial photographs, 2012.

MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

Figure 8

PDP 5 - GROUNDWATER ZONE A POTENTIOMETRIC SURFACE MAP - DECEMBER 11, 2016

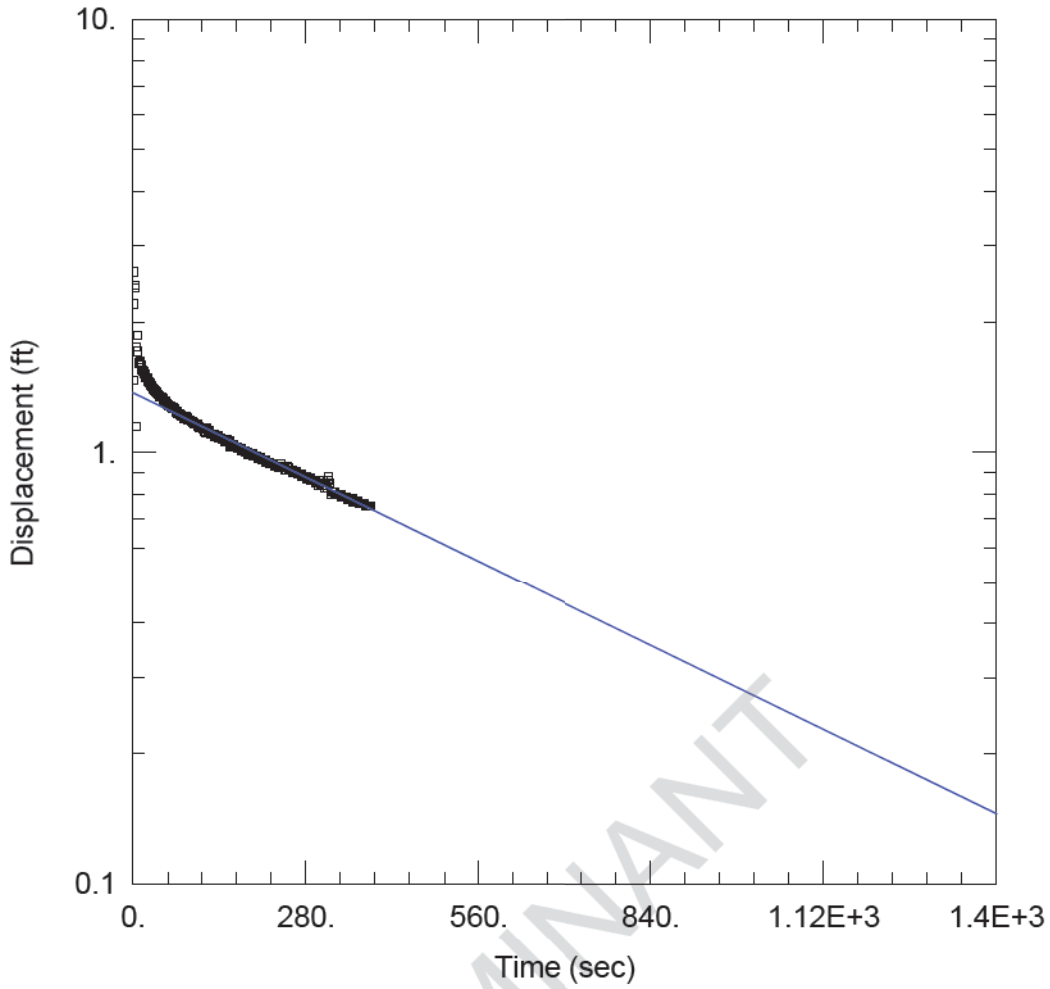
PROJECT: 5164B	BY: AJD	REVISIONS
DATE: SEPT., 2017	CHECKED: PJB	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS

LUMINANT

Appendix D

Aquifer Test Data



LUMINANT

PDP-22 SLUG IN

Data Set: J:\...\PDP-22 Slug In.aqt
Date: 12/16/15 Time: 10:25:03

PROJECT INFORMATION

Company: PBW
Client: Luminant
Project: 5164
Location: MLSES
Test Well: PDP-22
Test Date: 10/7/15

AQUIFER DATA

Saturated Thickness: 22.84 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (PDP-22)

Initial Displacement: 2.2 ft
Total Well Penetration Depth: 14.84 ft
Casing Radius: 0.083 ft
Static Water Column Height: 22.84 ft
Screen Length: 10. ft
Well Radius: 0.27 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 4.362E-5 cm/sec
y0 = 1.373 ft

Data Set: J:\5164 - Luminant CCR Well Installation and GW Sampling\5164-B_Martin Lake\Slug Tests\PDP5\Aqtes
Title: PDP-22 Slug In
Date: 12/16/15
Time: 10:26:54

PROJECT INFORMATION

Company: PBW
Client: Luminant
Project: 5164
Location: MLSES
Test Date: 10/7/15
Test Well: PDP-22

AQUIFER DATA

Saturated Thickness: 22.84 ft
Anisotropy Ratio (Kz/Kr): 1.

SLUG TEST WELL DATA

Test Well: PDP-22

X Location: 0. ft
Y Location: 0. ft

Initial Displacement: 2.2 ft
Static Water Column Height: 22.84 ft
Casing Radius: 0.083 ft
Well Radius: 0.27 ft
Well Skin Radius: 0.27 ft
Screen Length: 10. ft
Total Well Penetration Depth: 14.84 ft

No. of Observations: 385

Observation Data

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
1.	1.47	194.	0.98
2.	2.61	195.	0.98
3.	2.43	196.	0.98
4.	2.4	197.	0.98
5.	1.15	198.	0.98
6.	1.75	199.	0.98
7.	1.86	200.	0.98
8.	1.71	201.	0.98
9.	1.61	202.	0.97
10.	1.6	203.	0.97
11.	1.62	204.	0.97
12.	1.61	205.	0.97
13.	1.59	206.	0.97
14.	1.57	207.	0.97
15.	1.55	208.	0.96
16.	1.55	209.	0.96
17.	1.54	210.	0.96
18.	1.53	211.	0.96
19.	1.52	212.	0.96
20.	1.5	213.	0.96
21.	1.49	214.	0.96
22.	1.49	215.	0.95
23.	1.49	216.	0.95
24.	1.47	217.	0.95
25.	1.46	218.	0.95
26.	1.46	219.	0.95
27.	1.45	220.	0.95
28.	1.45	221.	0.94
29.	1.43	222.	0.94

LUMINANT

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
30.	1.43	223.	0.94
31.	1.42	224.	0.94
32.	1.41	225.	0.94
33.	1.4	226.	0.94
34.	1.4	227.	0.94
35.	1.39	228.	0.94
36.	1.38	229.	0.93
37.	1.38	230.	0.93
38.	1.38	231.	0.93
39.	1.37	232.	0.93
40.	1.36	233.	0.93
41.	1.36	234.	0.93
42.	1.35	235.	0.93
43.	1.35	236.	0.92
44.	1.34	237.	0.92
45.	1.34	238.	0.92
46.	1.34	239.	0.92
47.	1.34	240.	0.94
48.	1.33	241.	0.92
49.	1.32	242.	0.92
50.	1.31	243.	0.93
51.	1.31	244.	0.93
52.	1.31	245.	0.93
53.	1.3	246.	0.91
54.	1.3	247.	0.91
55.	1.3	248.	0.91
56.	1.29	249.	0.91
57.	1.29	250.	0.93
58.	1.28	251.	0.92
59.	1.28	252.	0.91
60.	1.28	253.	0.91
61.	1.28	254.	0.91
62.	1.27	255.	0.91
63.	1.27	256.	0.91
64.	1.26	257.	0.91
65.	1.27	258.	0.91
66.	1.26	259.	0.9
67.	1.26	260.	0.9
68.	1.26	261.	0.9
69.	1.24	262.	0.9
70.	1.24	263.	0.9
71.	1.24	264.	0.9
72.	1.24	265.	0.9
73.	1.23	266.	0.89
74.	1.23	267.	0.89
75.	1.23	268.	0.89
76.	1.22	269.	0.89
77.	1.22	270.	0.89
78.	1.22	271.	0.89
79.	1.21	272.	0.89
80.	1.21	273.	0.88
81.	1.21	274.	0.88
82.	1.21	275.	0.88
83.	1.2	276.	0.88
84.	1.2	277.	0.88
85.	1.21	278.	0.88
86.	1.21	279.	0.88
87.	1.2	280.	0.88
88.	1.2	281.	0.87
89.	1.19	282.	0.87
90.	1.19	283.	0.87
91.	1.19	284.	0.87
92.	1.19	285.	0.87
93.	1.19	286.	0.87
94.	1.18	287.	0.87
95.	1.18	288.	0.86

LUMINANT

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
96.	1.18	289.	0.86
97.	1.17	290.	0.86
98.	1.17	291.	0.86
99.	1.17	292.	0.86
100.	1.16	293.	0.86
101.	1.16	294.	0.86
102.	1.16	295.	0.86
103.	1.16	296.	0.85
104.	1.16	297.	0.85
105.	1.15	298.	0.85
106.	1.15	299.	0.85
107.	1.15	300.	0.84
108.	1.14	301.	0.85
109.	1.14	302.	0.86
110.	1.14	303.	0.85
111.	1.14	304.	0.85
112.	1.14	305.	0.84
113.	1.13	306.	0.85
114.	1.13	307.	0.84
115.	1.12	308.	0.86
116.	1.13	309.	0.84
117.	1.11	310.	0.83
118.	1.12	311.	0.84
119.	1.14	312.	0.84
120.	1.13	313.	0.84
121.	1.12	314.	0.83
122.	1.12	315.	0.83
123.	1.12	316.	0.88
124.	1.12	317.	0.86
125.	1.1	318.	0.85
126.	1.1	319.	0.85
127.	1.1	320.	0.8
128.	1.1	321.	0.8
129.	1.1	322.	0.81
130.	1.1	323.	0.81
131.	1.1	324.	0.81
132.	1.1	325.	0.81
133.	1.09	326.	0.81
134.	1.09	327.	0.81
135.	1.09	328.	0.8
136.	1.09	329.	0.8
137.	1.09	330.	0.8
138.	1.08	331.	0.8
139.	1.08	332.	0.8
140.	1.08	333.	0.8
141.	1.08	334.	0.8
142.	1.08	335.	0.8
143.	1.08	336.	0.8
144.	1.07	337.	0.8
145.	1.07	338.	0.79
146.	1.07	339.	0.79
147.	1.07	340.	0.79
148.	1.07	341.	0.79
149.	1.06	342.	0.79
150.	1.06	343.	0.79
151.	1.07	344.	0.79
152.	1.07	345.	0.79
153.	1.06	346.	0.79
154.	1.06	347.	0.78
155.	1.06	348.	0.78
156.	1.06	349.	0.78
157.	1.03	350.	0.78
158.	1.04	351.	0.78
159.	1.04	352.	0.78
160.	1.04	353.	0.78
161.	1.04	354.	0.78

LUMINANT

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
162.	1.04	355.	0.78
163.	1.04	356.	0.78
164.	1.03	357.	0.77
165.	1.03	358.	0.77
166.	1.03	359.	0.77
167.	1.03	360.	0.77
168.	1.03	361.	0.77
169.	1.02	362.	0.77
170.	1.02	363.	0.77
171.	1.02	364.	0.77
172.	1.02	365.	0.77
173.	1.02	366.	0.76
174.	1.02	367.	0.76
175.	1.02	368.	0.76
176.	1.01	369.	0.76
177.	1.01	370.	0.76
178.	1.01	371.	0.76
179.	1.01	372.	0.76
180.	1.01	373.	0.76
181.	1.01	374.	0.76
182.	1.	375.	0.76
183.	1.	376.	0.75
184.	1.	377.	0.75
185.	1.	378.	0.75
186.	1.	379.	0.75
187.	0.99	380.	0.75
188.	0.99	381.	0.75
189.	0.99	382.	0.75
190.	0.99	383.	0.75
191.	0.99	384.	0.75
192.	0.99	385.	0.75
193.	0.99		

SOLUTION

Slug Test
Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
ln(Re/rw): 2.589

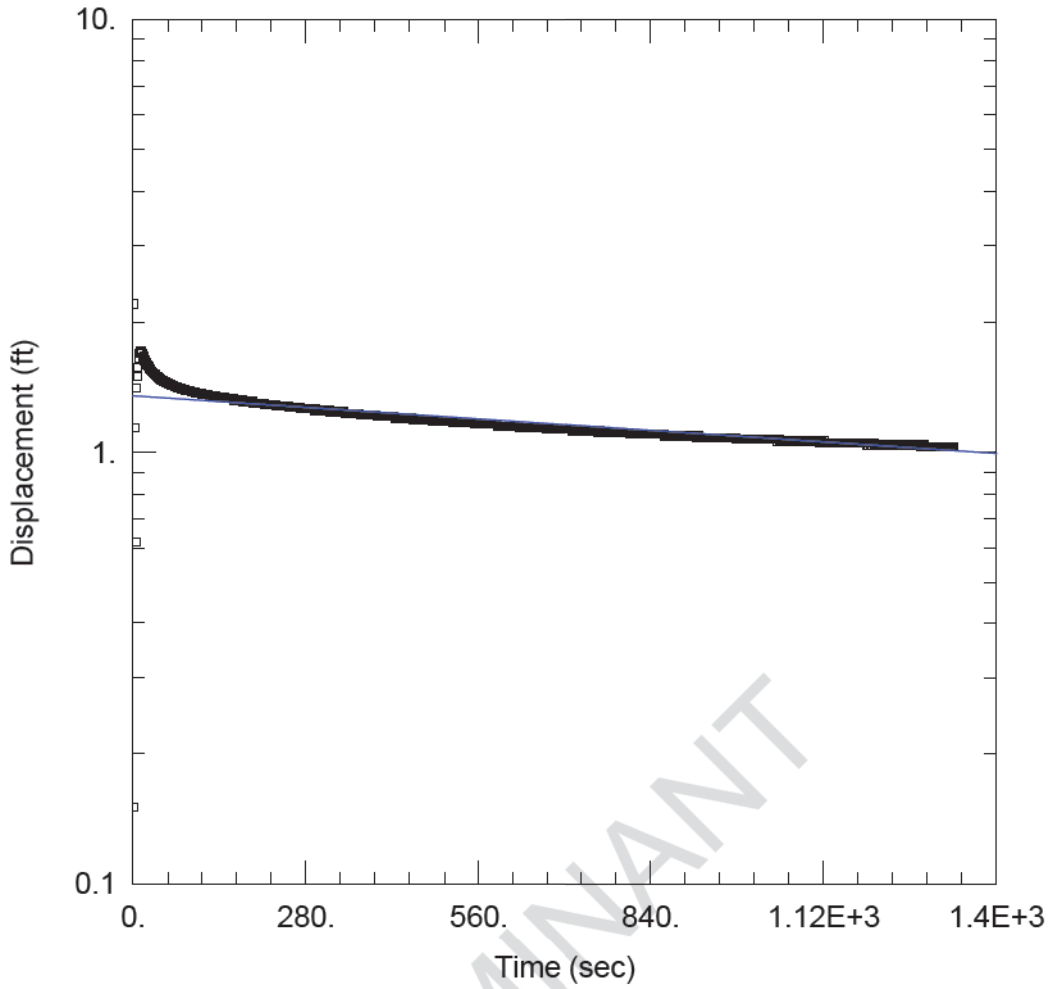
VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
K	4.362E-5	cm/sec
y0	1.373	ft

$T = K*b = 0.03037$ cm²/sec

LUMINANT



LUMINANT

PDP-22 SLUG OUT

Data Set: J:\...\PDP-22 Slug Out.aqt
Date: 12/16/15 Time: 10:25:15

PROJECT INFORMATION

Company: PBW
Client: Luminant
Project: 5164
Location: MLSES
Test Well: PDP-22
Test Date: 10/7/15

AQUIFER DATA

Saturated Thickness: 22.84 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (PDP-22)

Initial Displacement: 2.2 ft
Total Well Penetration Depth: 14.84 ft
Casing Radius: 0.083 ft
Static Water Column Height: 22.84 ft
Screen Length: 10. ft
Well Radius: 0.27 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 5.977E-6 cm/sec
y0 = 1.351 ft

Data Set: J:\5164 - Luminant CCR Well Installation and GW Sampling\5164-B_Martin Lake\Slug Tests\PDP5\Aqtes
Title: PDP-22 Slug Out
Date: 12/16/15
Time: 10:26:45

PROJECT INFORMATION

Company: PBW
Client: Luminant
Project: 5164
Location: MLSES
Test Date: 10/7/15
Test Well: PDP-22

AQUIFER DATA

Saturated Thickness: 22.84 ft
Anisotropy Ratio (Kz/Kr): 1.

SLUG TEST WELL DATA

Test Well: PDP-22

X Location: 0. ft
Y Location: 0. ft

Initial Displacement: 2.2 ft
Static Water Column Height: 22.84 ft
Casing Radius: 0.083 ft
Well Radius: 0.27 ft
Well Skin Radius: 0.27 ft
Screen Length: 10. ft
Total Well Penetration Depth: 14.84 ft

No. of Observations: 1329

Observation Data

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
1.	0.15	667.	1.14
2.	0.09	668.	1.14
3.	1.14	669.	1.13
5.	0.62	670.	1.14
6.	1.41	671.	1.13
7.	1.5	672.	1.13
8.	1.57	673.	1.13
9.	1.65	674.	1.13
10.	1.69	675.	1.13
11.	1.7	676.	1.13
12.	1.71	677.	1.13
13.	1.71	678.	1.13
14.	1.69	679.	1.13
15.	1.69	680.	1.13
16.	1.66	681.	1.13
17.	1.65	682.	1.13
18.	1.67	683.	1.13
19.	1.63	684.	1.13
20.	1.62	685.	1.13
21.	1.61	686.	1.13
22.	1.6	687.	1.13
23.	1.59	688.	1.13
24.	1.58	689.	1.13
25.	1.58	690.	1.13
26.	1.57	691.	1.13
27.	1.56	692.	1.13
28.	1.56	693.	1.13
29.	1.55	694.	1.13
30.	1.54	695.	1.13

LUMINANT

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
31.	1.54	696.	1.13
32.	1.53	697.	1.13
33.	1.53	698.	1.13
34.	1.52	699.	1.13
35.	1.52	700.	1.13
36.	1.51	701.	1.13
37.	1.51	702.	1.13
38.	1.5	703.	1.13
39.	1.5	704.	1.13
40.	1.5	705.	1.13
41.	1.49	706.	1.13
42.	1.49	707.	1.13
43.	1.48	708.	1.13
44.	1.48	709.	1.13
45.	1.48	710.	1.13
46.	1.47	711.	1.13
47.	1.47	712.	1.13
48.	1.47	713.	1.12
49.	1.47	714.	1.12
50.	1.46	715.	1.12
51.	1.46	716.	1.12
52.	1.46	717.	1.12
53.	1.45	718.	1.12
54.	1.45	719.	1.12
55.	1.45	720.	1.12
56.	1.45	721.	1.12
57.	1.44	722.	1.12
58.	1.44	723.	1.12
59.	1.44	724.	1.12
60.	1.44	725.	1.12
61.	1.44	726.	1.12
62.	1.43	727.	1.12
63.	1.43	728.	1.12
64.	1.43	729.	1.12
65.	1.43	730.	1.12
66.	1.43	731.	1.12
67.	1.42	732.	1.12
68.	1.42	733.	1.12
69.	1.42	734.	1.12
70.	1.42	735.	1.12
71.	1.42	736.	1.12
72.	1.41	737.	1.12
73.	1.41	738.	1.12
74.	1.41	739.	1.12
75.	1.41	740.	1.12
76.	1.41	741.	1.12
77.	1.41	742.	1.12
78.	1.4	743.	1.12
79.	1.4	744.	1.12
80.	1.4	745.	1.12
81.	1.4	746.	1.12
82.	1.4	747.	1.12
83.	1.4	748.	1.12
84.	1.4	749.	1.12
85.	1.39	750.	1.12
86.	1.39	751.	1.12
87.	1.39	752.	1.12
88.	1.39	753.	1.12
89.	1.39	754.	1.12
90.	1.39	755.	1.11
91.	1.39	756.	1.12
92.	1.39	757.	1.11
93.	1.39	758.	1.12
94.	1.38	759.	1.12
95.	1.38	760.	1.11
96.	1.38	761.	1.11

LUMINANT

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
97.	1.38	762.	1.11
98.	1.38	763.	1.11
99.	1.38	764.	1.11
100.	1.38	765.	1.11
101.	1.38	766.	1.11
102.	1.37	767.	1.11
103.	1.37	768.	1.11
104.	1.37	769.	1.11
105.	1.37	770.	1.11
106.	1.37	771.	1.11
107.	1.37	772.	1.11
108.	1.37	773.	1.11
109.	1.37	774.	1.11
110.	1.37	775.	1.11
111.	1.36	776.	1.11
112.	1.36	777.	1.11
113.	1.36	778.	1.11
114.	1.36	779.	1.11
115.	1.36	780.	1.11
116.	1.36	781.	1.11
117.	1.36	782.	1.11
118.	1.36	783.	1.11
119.	1.36	784.	1.11
120.	1.36	785.	1.11
121.	1.36	786.	1.11
122.	1.36	787.	1.11
123.	1.35	788.	1.11
124.	1.35	789.	1.11
125.	1.35	790.	1.11
126.	1.35	791.	1.11
127.	1.35	792.	1.11
128.	1.35	793.	1.11
129.	1.35	794.	1.11
130.	1.35	795.	1.11
131.	1.35	796.	1.11
132.	1.35	797.	1.11
133.	1.35	798.	1.11
134.	1.35	799.	1.11
135.	1.34	800.	1.11
136.	1.34	801.	1.11
137.	1.34	802.	1.11
138.	1.34	803.	1.11
139.	1.34	804.	1.11
140.	1.34	805.	1.11
141.	1.34	806.	1.11
142.	1.34	807.	1.1
143.	1.34	808.	1.1
144.	1.34	809.	1.1
145.	1.34	810.	1.1
146.	1.34	811.	1.1
147.	1.34	812.	1.1
148.	1.34	813.	1.1
149.	1.33	814.	1.1
150.	1.33	815.	1.1
151.	1.33	816.	1.1
152.	1.33	817.	1.1
153.	1.33	818.	1.1
154.	1.33	819.	1.1
155.	1.33	820.	1.1
156.	1.33	821.	1.1
157.	1.33	822.	1.1
158.	1.33	823.	1.1
159.	1.33	824.	1.1
160.	1.33	825.	1.1
161.	1.33	826.	1.1
162.	1.33	827.	1.1

LUMINANT

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
163.	1.32	828.	1.1
164.	1.32	829.	1.1
165.	1.32	830.	1.1
166.	1.32	831.	1.1
167.	1.32	832.	1.1
168.	1.32	833.	1.1
169.	1.32	834.	1.1
170.	1.32	835.	1.1
171.	1.32	836.	1.1
172.	1.32	837.	1.1
173.	1.32	838.	1.1
174.	1.32	839.	1.1
175.	1.32	840.	1.1
176.	1.32	841.	1.1
177.	1.31	842.	1.1
178.	1.32	843.	1.1
179.	1.31	844.	1.1
180.	1.31	845.	1.1
181.	1.31	846.	1.1
182.	1.31	847.	1.1
183.	1.31	848.	1.1
184.	1.31	849.	1.1
185.	1.31	850.	1.1
186.	1.31	851.	1.1
187.	1.31	852.	1.1
188.	1.31	853.	1.1
189.	1.31	854.	1.1
190.	1.31	855.	1.1
191.	1.31	856.	1.1
192.	1.31	857.	1.1
193.	1.31	858.	1.1
194.	1.3	859.	1.1
195.	1.3	860.	1.1
196.	1.3	861.	1.1
197.	1.3	862.	1.09
198.	1.3	863.	1.09
199.	1.3	864.	1.09
200.	1.3	865.	1.09
201.	1.3	866.	1.09
202.	1.3	867.	1.09
203.	1.3	868.	1.09
204.	1.3	869.	1.09
205.	1.3	870.	1.09
206.	1.3	871.	1.09
207.	1.3	872.	1.09
208.	1.3	873.	1.09
209.	1.3	874.	1.09
210.	1.3	875.	1.09
211.	1.3	876.	1.09
212.	1.3	877.	1.09
213.	1.3	878.	1.09
214.	1.29	879.	1.09
215.	1.29	880.	1.09
216.	1.29	881.	1.09
217.	1.29	882.	1.09
218.	1.29	883.	1.09
219.	1.29	884.	1.09
220.	1.29	885.	1.09
221.	1.29	886.	1.09
222.	1.29	887.	1.09
223.	1.29	888.	1.09
224.	1.29	889.	1.09
225.	1.29	890.	1.09
226.	1.29	891.	1.09
227.	1.29	892.	1.09
228.	1.29	893.	1.09

LUMINANT

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
229.	1.29	894.	1.09
230.	1.29	895.	1.09
231.	1.29	896.	1.09
232.	1.28	897.	1.09
233.	1.28	898.	1.09
234.	1.28	899.	1.09
235.	1.28	900.	1.09
236.	1.28	901.	1.09
237.	1.28	902.	1.09
238.	1.28	903.	1.09
239.	1.28	904.	1.09
240.	1.28	905.	1.09
241.	1.28	906.	1.09
242.	1.28	907.	1.09
243.	1.28	908.	1.09
244.	1.28	909.	1.09
245.	1.28	910.	1.09
246.	1.28	911.	1.09
247.	1.28	912.	1.09
248.	1.28	913.	1.09
249.	1.28	914.	1.09
250.	1.28	915.	1.08
251.	1.28	916.	1.09
252.	1.27	917.	1.09
253.	1.27	918.	1.08
254.	1.27	919.	1.08
255.	1.27	920.	1.08
256.	1.27	921.	1.08
257.	1.27	922.	1.08
258.	1.27	923.	1.08
259.	1.27	924.	1.08
260.	1.27	925.	1.08
261.	1.27	926.	1.08
262.	1.27	927.	1.08
263.	1.27	928.	1.08
264.	1.27	929.	1.08
265.	1.27	930.	1.08
266.	1.27	931.	1.08
267.	1.27	932.	1.08
268.	1.27	933.	1.08
269.	1.27	934.	1.08
270.	1.27	935.	1.08
271.	1.26	936.	1.08
272.	1.26	937.	1.08
273.	1.26	938.	1.08
274.	1.26	939.	1.08
275.	1.26	940.	1.08
276.	1.26	941.	1.08
277.	1.26	942.	1.08
278.	1.26	943.	1.08
279.	1.26	944.	1.08
280.	1.26	945.	1.08
281.	1.26	946.	1.08
282.	1.26	947.	1.08
283.	1.26	948.	1.08
284.	1.26	949.	1.08
285.	1.26	950.	1.08
286.	1.26	951.	1.08
287.	1.26	952.	1.08
288.	1.26	953.	1.08
289.	1.26	954.	1.08
290.	1.26	955.	1.08
291.	1.26	956.	1.08
292.	1.26	957.	1.08
293.	1.26	958.	1.08
294.	1.25	959.	1.08

LUMINANT

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
295.	1.25	960.	1.08
296.	1.26	961.	1.08
297.	1.25	962.	1.08
298.	1.25	963.	1.08
299.	1.25	964.	1.08
300.	1.25	965.	1.08
301.	1.25	966.	1.08
302.	1.25	967.	1.08
303.	1.25	968.	1.08
304.	1.25	969.	1.08
305.	1.25	970.	1.08
306.	1.25	971.	1.08
307.	1.25	972.	1.08
308.	1.25	973.	1.08
309.	1.25	974.	1.08
310.	1.25	975.	1.08
311.	1.25	976.	1.08
312.	1.25	977.	1.08
313.	1.25	978.	1.08
314.	1.25	979.	1.07
315.	1.25	980.	1.07
316.	1.25	981.	1.07
317.	1.25	982.	1.07
318.	1.25	983.	1.07
319.	1.24	984.	1.07
320.	1.24	985.	1.07
321.	1.24	986.	1.07
322.	1.24	987.	1.07
323.	1.24	988.	1.07
324.	1.24	989.	1.07
325.	1.24	990.	1.07
326.	1.24	991.	1.07
327.	1.24	992.	1.07
328.	1.24	993.	1.07
329.	1.24	994.	1.07
330.	1.24	995.	1.07
331.	1.24	996.	1.07
332.	1.24	997.	1.07
333.	1.24	998.	1.07
334.	1.24	999.	1.07
335.	1.24	1000.	1.07
336.	1.24	1001.	1.07
337.	1.24	1002.	1.07
338.	1.24	1003.	1.07
339.	1.24	1004.	1.07
340.	1.24	1005.	1.07
341.	1.24	1006.	1.07
342.	1.24	1007.	1.07
343.	1.23	1008.	1.07
344.	1.23	1009.	1.07
345.	1.23	1010.	1.07
346.	1.23	1011.	1.07
347.	1.23	1012.	1.07
348.	1.23	1013.	1.07
349.	1.23	1014.	1.07
350.	1.23	1015.	1.07
351.	1.23	1016.	1.07
352.	1.23	1017.	1.07
353.	1.23	1018.	1.07
354.	1.23	1019.	1.07
355.	1.23	1020.	1.07
356.	1.23	1021.	1.07
357.	1.23	1022.	1.07
358.	1.23	1023.	1.07
359.	1.23	1024.	1.07
360.	1.23	1025.	1.07

LUMINANT

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
361.	1.23	1026.	1.07
362.	1.23	1027.	1.07
363.	1.23	1028.	1.07
364.	1.23	1029.	1.07
365.	1.23	1030.	1.07
366.	1.23	1031.	1.07
367.	1.23	1032.	1.07
368.	1.22	1033.	1.07
369.	1.22	1034.	1.07
370.	1.22	1035.	1.07
371.	1.22	1036.	1.07
372.	1.22	1037.	1.07
373.	1.22	1038.	1.07
374.	1.22	1039.	1.07
375.	1.22	1040.	1.07
376.	1.22	1041.	1.07
377.	1.22	1042.	1.07
378.	1.22	1043.	1.07
379.	1.22	1044.	1.06
380.	1.22	1045.	1.06
381.	1.22	1046.	1.07
382.	1.22	1047.	1.07
383.	1.22	1048.	1.07
384.	1.22	1049.	1.06
385.	1.22	1050.	1.06
386.	1.22	1051.	1.06
387.	1.22	1052.	1.06
388.	1.22	1053.	1.06
389.	1.22	1054.	1.06
390.	1.22	1055.	1.06
391.	1.22	1056.	1.06
392.	1.22	1057.	1.06
393.	1.22	1058.	1.06
394.	1.22	1059.	1.06
395.	1.21	1060.	1.06
396.	1.21	1061.	1.06
397.	1.21	1062.	1.06
398.	1.21	1063.	1.06
399.	1.21	1064.	1.06
400.	1.21	1065.	1.06
401.	1.21	1066.	1.06
402.	1.21	1067.	1.06
403.	1.21	1068.	1.06
404.	1.21	1069.	1.06
405.	1.21	1070.	1.06
406.	1.21	1071.	1.06
407.	1.21	1072.	1.06
408.	1.21	1073.	1.06
409.	1.21	1074.	1.06
410.	1.21	1075.	1.06
411.	1.21	1076.	1.06
412.	1.21	1077.	1.06
413.	1.21	1078.	1.06
414.	1.21	1079.	1.06
415.	1.21	1080.	1.06
416.	1.21	1081.	1.06
417.	1.21	1082.	1.06
418.	1.21	1083.	1.06
419.	1.21	1084.	1.06
420.	1.21	1085.	1.06
421.	1.21	1086.	1.06
422.	1.21	1087.	1.06
423.	1.21	1088.	1.06
424.	1.2	1089.	1.06
425.	1.2	1090.	1.06
426.	1.2	1091.	1.06

LUMINANT

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
427.	1.2	1092.	1.06
428.	1.2	1093.	1.06
429.	1.2	1094.	1.06
430.	1.2	1095.	1.06
431.	1.2	1096.	1.06
432.	1.2	1097.	1.06
433.	1.2	1098.	1.06
434.	1.2	1099.	1.06
435.	1.2	1100.	1.06
436.	1.2	1101.	1.06
437.	1.2	1102.	1.06
438.	1.2	1103.	1.06
439.	1.2	1104.	1.06
440.	1.2	1105.	1.06
441.	1.2	1106.	1.06
442.	1.2	1107.	1.06
443.	1.2	1108.	1.06
444.	1.2	1109.	1.06
445.	1.2	1110.	1.06
446.	1.2	1111.	1.06
447.	1.2	1112.	1.06
448.	1.2	1113.	1.06
449.	1.2	1114.	1.05
450.	1.2	1115.	1.06
451.	1.2	1116.	1.06
452.	1.2	1117.	1.06
453.	1.19	1118.	1.05
454.	1.19	1119.	1.05
455.	1.19	1120.	1.05
456.	1.19	1121.	1.05
457.	1.19	1122.	1.06
458.	1.19	1123.	1.05
459.	1.19	1124.	1.05
460.	1.19	1125.	1.05
461.	1.19	1126.	1.05
462.	1.19	1127.	1.05
463.	1.19	1128.	1.05
464.	1.19	1129.	1.05
465.	1.19	1130.	1.05
466.	1.19	1131.	1.05
467.	1.19	1132.	1.05
468.	1.19	1133.	1.05
469.	1.19	1134.	1.05
470.	1.19	1135.	1.05
471.	1.19	1136.	1.05
472.	1.19	1137.	1.05
473.	1.19	1138.	1.05
474.	1.19	1139.	1.05
475.	1.19	1140.	1.05
476.	1.19	1141.	1.05
477.	1.19	1142.	1.05
478.	1.19	1143.	1.05
479.	1.19	1144.	1.05
480.	1.19	1145.	1.05
481.	1.19	1146.	1.05
482.	1.19	1147.	1.05
483.	1.19	1148.	1.05
484.	1.19	1149.	1.05
485.	1.18	1150.	1.05
486.	1.18	1151.	1.05
487.	1.18	1152.	1.05
488.	1.18	1153.	1.05
489.	1.18	1154.	1.05
490.	1.18	1155.	1.05
491.	1.18	1156.	1.05
492.	1.18	1157.	1.05

LUMINANT

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
493.	1.18	1158.	1.05
494.	1.18	1159.	1.05
495.	1.18	1160.	1.05
496.	1.18	1161.	1.05
497.	1.18	1162.	1.05
498.	1.18	1163.	1.05
499.	1.18	1164.	1.05
500.	1.18	1165.	1.05
501.	1.18	1166.	1.05
502.	1.18	1167.	1.05
503.	1.18	1168.	1.05
504.	1.18	1169.	1.05
505.	1.18	1170.	1.05
506.	1.18	1171.	1.05
507.	1.18	1172.	1.05
508.	1.18	1173.	1.05
509.	1.18	1174.	1.05
510.	1.18	1175.	1.05
511.	1.18	1176.	1.05
512.	1.18	1177.	1.05
513.	1.18	1178.	1.05
514.	1.18	1179.	1.05
515.	1.18	1180.	1.05
516.	1.18	1181.	1.05
517.	1.18	1182.	1.05
518.	1.17	1183.	1.05
519.	1.17	1184.	1.05
520.	1.17	1185.	1.05
521.	1.17	1186.	1.05
522.	1.17	1187.	1.05
523.	1.17	1188.	1.05
524.	1.17	1189.	1.05
525.	1.17	1190.	1.04
526.	1.17	1191.	1.05
527.	1.17	1192.	1.04
528.	1.17	1193.	1.05
529.	1.17	1194.	1.05
530.	1.17	1195.	1.05
531.	1.17	1196.	1.05
532.	1.17	1197.	1.04
533.	1.17	1198.	1.04
534.	1.17	1199.	1.05
535.	1.17	1200.	1.05
536.	1.17	1201.	1.05
537.	1.17	1202.	1.04
538.	1.17	1203.	1.04
539.	1.17	1204.	1.04
540.	1.17	1205.	1.04
541.	1.17	1206.	1.04
542.	1.17	1207.	1.04
543.	1.17	1208.	1.04
544.	1.17	1209.	1.04
545.	1.17	1210.	1.04
546.	1.17	1211.	1.04
547.	1.17	1212.	1.04
548.	1.17	1213.	1.04
549.	1.17	1214.	1.04
550.	1.17	1215.	1.04
551.	1.17	1216.	1.04
552.	1.17	1217.	1.04
553.	1.17	1218.	1.04
554.	1.16	1219.	1.04
555.	1.16	1220.	1.04
556.	1.16	1221.	1.04
557.	1.17	1222.	1.04
558.	1.16	1223.	1.04

LUMINANT

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
559.	1.16	1224.	1.04
560.	1.16	1225.	1.04
561.	1.16	1226.	1.04
562.	1.16	1227.	1.04
563.	1.16	1228.	1.04
564.	1.16	1229.	1.04
565.	1.16	1230.	1.04
566.	1.16	1231.	1.04
567.	1.16	1232.	1.04
568.	1.16	1233.	1.04
569.	1.16	1234.	1.04
570.	1.16	1235.	1.04
571.	1.16	1236.	1.04
572.	1.16	1237.	1.04
573.	1.16	1238.	1.04
574.	1.16	1239.	1.04
575.	1.16	1240.	1.04
576.	1.16	1241.	1.04
577.	1.16	1242.	1.04
578.	1.16	1243.	1.04
579.	1.16	1244.	1.04
580.	1.16	1245.	1.04
581.	1.16	1246.	1.04
582.	1.16	1247.	1.04
583.	1.16	1248.	1.04
584.	1.16	1249.	1.04
585.	1.16	1250.	1.04
586.	1.16	1251.	1.04
587.	1.16	1252.	1.04
588.	1.16	1253.	1.04
589.	1.16	1254.	1.04
590.	1.16	1255.	1.04
591.	1.15	1256.	1.04
592.	1.15	1257.	1.04
593.	1.15	1258.	1.04
594.	1.15	1259.	1.04
595.	1.15	1260.	1.04
596.	1.15	1261.	1.04
597.	1.15	1262.	1.04
598.	1.15	1263.	1.04
599.	1.15	1264.	1.04
600.	1.15	1265.	1.04
601.	1.15	1266.	1.04
602.	1.15	1267.	1.04
603.	1.15	1268.	1.04
604.	1.15	1269.	1.04
605.	1.15	1270.	1.04
606.	1.15	1271.	1.04
607.	1.15	1272.	1.04
608.	1.15	1273.	1.04
609.	1.15	1274.	1.04
610.	1.15	1275.	1.04
611.	1.15	1276.	1.04
612.	1.15	1277.	1.03
613.	1.15	1278.	1.03
614.	1.15	1279.	1.04
615.	1.15	1280.	1.04
616.	1.15	1281.	1.04
617.	1.15	1282.	1.04
618.	1.15	1283.	1.03
619.	1.15	1284.	1.03
620.	1.15	1285.	1.03
621.	1.15	1286.	1.03
622.	1.15	1287.	1.03
623.	1.15	1288.	1.03
624.	1.15	1289.	1.03

LUMINANT

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
625.	1.15	1290.	1.03
626.	1.14	1291.	1.03
627.	1.14	1292.	1.03
628.	1.14	1293.	1.03
629.	1.14	1294.	1.03
630.	1.14	1295.	1.03
631.	1.14	1296.	1.03
632.	1.14	1297.	1.03
633.	1.14	1298.	1.03
634.	1.14	1299.	1.03
635.	1.14	1300.	1.03
636.	1.14	1301.	1.03
637.	1.14	1302.	1.03
638.	1.14	1303.	1.03
639.	1.14	1304.	1.03
640.	1.14	1305.	1.03
641.	1.14	1306.	1.03
642.	1.14	1307.	1.03
643.	1.14	1308.	1.03
644.	1.14	1309.	1.03
645.	1.14	1310.	1.03
646.	1.14	1311.	1.03
647.	1.14	1312.	1.03
648.	1.14	1313.	1.03
649.	1.14	1314.	1.03
650.	1.14	1315.	1.03
651.	1.14	1316.	1.03
652.	1.14	1317.	1.03
653.	1.14	1318.	1.03
654.	1.14	1319.	1.03
655.	1.14	1320.	1.03
656.	1.14	1321.	1.03
657.	1.14	1322.	1.03
658.	1.14	1323.	1.03
659.	1.14	1324.	1.03
660.	1.14	1325.	1.03
661.	1.14	1326.	1.03
662.	1.14	1327.	1.03
663.	1.14	1328.	1.03
664.	1.14	1329.	1.03
665.	1.14	1330.	1.03
666.	1.14		

LUMINANT

SOLUTION

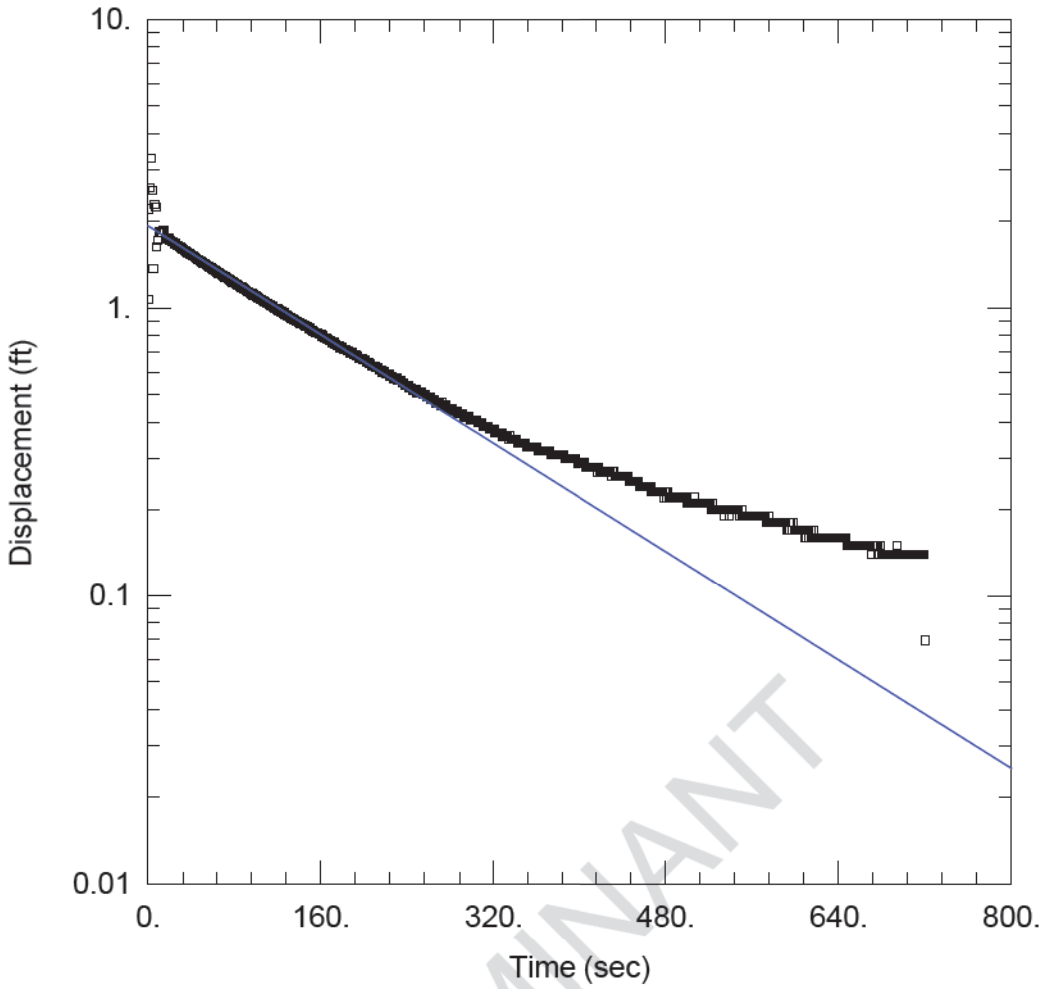
Slug Test
Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
ln(Re/rw): 2.589

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
K	5.977E-6	cm/sec
y0	1.351	ft

$T = K*b = 0.004161$ cm²/sec



LUMINANT

PDP-25 SLUG IN

Data Set: J:\...\PDP-25 Slug In.aqt
Date: 12/16/15 Time: 10:25:24

PROJECT INFORMATION

Company: PBW
Client: Luminant
Project: 5164
Location: MLSES
Test Well: PDP-25
Test Date: 10/7/15

AQUIFER DATA

Saturated Thickness: 24. ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (PDP-25)

Initial Displacement: 2.2 ft
Total Well Penetration Depth: 16. ft
Casing Radius: 0.083 ft
Static Water Column Height: 38.89 ft
Screen Length: 10. ft
Well Radius: 0.27 ft

SOLUTION

Aquifer Model: Confined
Solution Method: Bouwer-Rice
K = 0.0001494 cm/sec
y0 = 1.925 ft

Data Set: J:\5164 - Luminant CCR Well Installation and GW Sampling\5164-B_Martin Lake\Slug Tests\PDP5\Aqtes
Title: PDP-25 Slug In
Date: 12/16/15
Time: 10:26:36

PROJECT INFORMATION

Company: PBW
Client: Luminant
Project: 5164
Location: MLSES
Test Date: 10/7/15
Test Well: PDP-25

AQUIFER DATA

Saturated Thickness: 24. ft
Anisotropy Ratio (Kz/Kr): 1.

SLUG TEST WELL DATA

Test Well: PDP-25

X Location: 0. ft
Y Location: 0. ft

Initial Displacement: 2.2 ft
Static Water Column Height: 38.89 ft
Casing Radius: 0.083 ft
Well Radius: 0.27 ft
Well Skin Radius: 0.27 ft
Screen Length: 10. ft
Total Well Penetration Depth: 16. ft

No. of Observations: 720

Observation Data

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
1.	1.07	361.	0.32
2.	2.6	362.	0.32
3.	3.3	363.	0.32
4.	2.55	364.	0.32
5.	1.37	365.	0.32
6.	2.28	366.	0.32
7.	2.24	367.	0.32
8.	1.63	368.	0.32
9.	1.71	369.	0.32
10.	1.83	370.	0.32
11.	1.82	371.	0.32
12.	1.83	372.	0.32
13.	1.83	373.	0.31
14.	1.86	374.	0.31
15.	1.86	375.	0.31
16.	1.75	376.	0.31
17.	1.73	377.	0.31
18.	1.75	378.	0.31
19.	1.74	379.	0.31
20.	1.72	380.	0.31
21.	1.71	381.	0.31
22.	1.7	382.	0.31
23.	1.69	383.	0.31
24.	1.68	384.	0.31
25.	1.67	385.	0.31
26.	1.66	386.	0.3
27.	1.65	387.	0.3
28.	1.64	388.	0.3
29.	1.63	389.	0.3

LUMINANT

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
30.	1.62	390.	0.3
31.	1.61	391.	0.3
32.	1.6	392.	0.3
33.	1.59	393.	0.3
34.	1.58	394.	0.3
35.	1.57	395.	0.3
36.	1.56	396.	0.3
37.	1.55	397.	0.3
38.	1.55	398.	0.29
39.	1.54	399.	0.29
40.	1.53	400.	0.29
41.	1.52	401.	0.29
42.	1.51	402.	0.29
43.	1.5	403.	0.29
44.	1.49	404.	0.29
45.	1.48	405.	0.29
46.	1.47	406.	0.28
47.	1.47	407.	0.28
48.	1.46	408.	0.28
49.	1.45	409.	0.28
50.	1.44	410.	0.28
51.	1.43	411.	0.28
52.	1.43	412.	0.28
53.	1.42	413.	0.28
54.	1.41	414.	0.28
55.	1.4	415.	0.28
56.	1.39	416.	0.28
57.	1.38	417.	0.27
58.	1.38	418.	0.28
59.	1.37	419.	0.27
60.	1.36	420.	0.27
61.	1.35	421.	0.27
62.	1.35	422.	0.27
63.	1.34	423.	0.27
64.	1.33	424.	0.27
65.	1.32	425.	0.27
66.	1.32	426.	0.27
67.	1.31	427.	0.27
68.	1.3	428.	0.27
69.	1.3	429.	0.27
70.	1.29	430.	0.26
71.	1.28	431.	0.27
72.	1.28	432.	0.27
73.	1.27	433.	0.26
74.	1.26	434.	0.26
75.	1.26	435.	0.26
76.	1.25	436.	0.26
77.	1.24	437.	0.26
78.	1.23	438.	0.26
79.	1.23	439.	0.26
80.	1.22	440.	0.26
81.	1.21	441.	0.26
82.	1.21	442.	0.26
83.	1.2	443.	0.26
84.	1.2	444.	0.26
85.	1.19	445.	0.26
86.	1.18	446.	0.25
87.	1.18	447.	0.25
88.	1.17	448.	0.25
89.	1.16	449.	0.25
90.	1.16	450.	0.25
91.	1.15	451.	0.25
92.	1.14	452.	0.25
93.	1.14	453.	0.25
94.	1.13	454.	0.25
95.	1.13	455.	0.25

LUMINANT

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
96.	1.12	456.	0.24
97.	1.11	457.	0.24
98.	1.11	458.	0.24
99.	1.1	459.	0.24
100.	1.1	460.	0.24
101.	1.09	461.	0.24
102.	1.08	462.	0.24
103.	1.08	463.	0.24
104.	1.07	464.	0.24
105.	1.07	465.	0.24
106.	1.06	466.	0.24
107.	1.06	467.	0.23
108.	1.05	468.	0.23
109.	1.05	469.	0.23
110.	1.04	470.	0.23
111.	1.04	471.	0.23
112.	1.03	472.	0.23
113.	1.03	473.	0.23
114.	1.02	474.	0.23
115.	1.02	475.	0.23
116.	1.01	476.	0.23
117.	1.	477.	0.23
118.	1.	478.	0.22
119.	0.99	479.	0.23
120.	0.99	480.	0.23
121.	0.98	481.	0.22
122.	0.98	482.	0.23
123.	0.97	483.	0.22
124.	0.97	484.	0.22
125.	0.96	485.	0.22
126.	0.96	486.	0.22
127.	0.95	487.	0.22
128.	0.95	488.	0.22
129.	0.94	489.	0.22
130.	0.94	490.	0.22
131.	0.93	491.	0.22
132.	0.93	492.	0.22
133.	0.92	493.	0.22
134.	0.92	494.	0.22
135.	0.91	495.	0.22
136.	0.91	496.	0.22
137.	0.9	497.	0.22
138.	0.9	498.	0.22
139.	0.89	499.	0.22
140.	0.89	500.	0.21
141.	0.88	501.	0.21
142.	0.88	502.	0.21
143.	0.88	503.	0.21
144.	0.87	504.	0.21
145.	0.87	505.	0.21
146.	0.86	506.	0.21
147.	0.86	507.	0.22
148.	0.86	508.	0.21
149.	0.85	509.	0.21
150.	0.85	510.	0.21
151.	0.84	511.	0.21
152.	0.84	512.	0.21
153.	0.83	513.	0.21
154.	0.83	514.	0.21
155.	0.82	515.	0.21
156.	0.82	516.	0.21
157.	0.82	517.	0.21
158.	0.81	518.	0.21
159.	0.81	519.	0.21
160.	0.81	520.	0.21
161.	0.8	521.	0.21

LUMINANT

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
162.	0.8	522.	0.2
163.	0.79	523.	0.21
164.	0.79	524.	0.2
165.	0.79	525.	0.2
166.	0.78	526.	0.2
167.	0.78	527.	0.2
168.	0.77	528.	0.2
169.	0.77	529.	0.2
170.	0.76	530.	0.2
171.	0.76	531.	0.2
172.	0.76	532.	0.2
173.	0.75	533.	0.2
174.	0.75	534.	0.19
175.	0.74	535.	0.2
176.	0.74	536.	0.2
177.	0.74	537.	0.2
178.	0.73	538.	0.2
179.	0.73	539.	0.19
180.	0.73	540.	0.2
181.	0.72	541.	0.2
182.	0.72	542.	0.2
183.	0.72	543.	0.2
184.	0.71	544.	0.2
185.	0.71	545.	0.2
186.	0.71	546.	0.2
187.	0.7	547.	0.2
188.	0.7	548.	0.19
189.	0.7	549.	0.19
190.	0.69	550.	0.2
191.	0.69	551.	0.19
192.	0.69	552.	0.19
193.	0.68	553.	0.19
194.	0.68	554.	0.19
195.	0.67	555.	0.19
196.	0.67	556.	0.19
197.	0.67	557.	0.19
198.	0.67	558.	0.19
199.	0.66	559.	0.19
200.	0.66	560.	0.19
201.	0.66	561.	0.19
202.	0.65	562.	0.19
203.	0.65	563.	0.19
204.	0.65	564.	0.19
205.	0.64	565.	0.19
206.	0.64	566.	0.19
207.	0.63	567.	0.19
208.	0.63	568.	0.19
209.	0.63	569.	0.19
210.	0.63	570.	0.19
211.	0.62	571.	0.19
212.	0.62	572.	0.19
213.	0.62	573.	0.18
214.	0.61	574.	0.18
215.	0.61	575.	0.19
216.	0.61	576.	0.18
217.	0.6	577.	0.18
218.	0.6	578.	0.18
219.	0.6	579.	0.18
220.	0.59	580.	0.18
221.	0.59	581.	0.18
222.	0.59	582.	0.18
223.	0.59	583.	0.18
224.	0.58	584.	0.18
225.	0.58	585.	0.18
226.	0.58	586.	0.18
227.	0.57	587.	0.18

LUMINANT

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
228.	0.57	588.	0.18
229.	0.57	589.	0.18
230.	0.57	590.	0.18
231.	0.56	591.	0.18
232.	0.56	592.	0.17
233.	0.56	593.	0.17
234.	0.56	594.	0.18
235.	0.55	595.	0.17
236.	0.55	596.	0.18
237.	0.55	597.	0.17
238.	0.54	598.	0.18
239.	0.54	599.	0.17
240.	0.54	600.	0.17
241.	0.54	601.	0.17
242.	0.53	602.	0.17
243.	0.53	603.	0.17
244.	0.53	604.	0.17
245.	0.52	605.	0.17
246.	0.52	606.	0.17
247.	0.52	607.	0.17
248.	0.52	608.	0.17
249.	0.51	609.	0.16
250.	0.51	610.	0.16
251.	0.51	611.	0.17
252.	0.51	612.	0.17
253.	0.51	613.	0.16
254.	0.5	614.	0.17
255.	0.5	615.	0.16
256.	0.5	616.	0.16
257.	0.5	617.	0.17
258.	0.49	618.	0.16
259.	0.49	619.	0.16
260.	0.49	620.	0.16
261.	0.49	621.	0.16
262.	0.48	622.	0.16
263.	0.48	623.	0.16
264.	0.48	624.	0.16
265.	0.48	625.	0.16
266.	0.47	626.	0.16
267.	0.47	627.	0.16
268.	0.47	628.	0.16
269.	0.47	629.	0.16
270.	0.47	630.	0.16
271.	0.46	631.	0.16
272.	0.47	632.	0.16
273.	0.46	633.	0.16
274.	0.46	634.	0.16
275.	0.46	635.	0.16
276.	0.46	636.	0.16
277.	0.45	637.	0.16
278.	0.45	638.	0.16
279.	0.45	639.	0.16
280.	0.45	640.	0.16
281.	0.45	641.	0.16
282.	0.44	642.	0.16
283.	0.44	643.	0.16
284.	0.44	644.	0.16
285.	0.44	645.	0.16
286.	0.44	646.	0.16
287.	0.43	647.	0.16
288.	0.43	648.	0.15
289.	0.43	649.	0.15
290.	0.43	650.	0.15
291.	0.43	651.	0.15
292.	0.42	652.	0.15
293.	0.42	653.	0.15

LUMINANT

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
294.	0.42	654.	0.15
295.	0.42	655.	0.15
296.	0.42	656.	0.15
297.	0.42	657.	0.15
298.	0.41	658.	0.15
299.	0.41	659.	0.15
300.	0.41	660.	0.15
301.	0.41	661.	0.15
302.	0.41	662.	0.15
303.	0.41	663.	0.15
304.	0.41	664.	0.15
305.	0.4	665.	0.15
306.	0.4	666.	0.15
307.	0.4	667.	0.15
308.	0.4	668.	0.15
309.	0.4	669.	0.15
310.	0.39	670.	0.14
311.	0.39	671.	0.15
312.	0.39	672.	0.15
313.	0.39	673.	0.15
314.	0.39	674.	0.15
315.	0.39	675.	0.15
316.	0.38	676.	0.15
317.	0.38	677.	0.14
318.	0.38	678.	0.14
319.	0.38	679.	0.15
320.	0.38	680.	0.14
321.	0.37	681.	0.14
322.	0.37	682.	0.14
323.	0.37	683.	0.14
324.	0.37	684.	0.14
325.	0.37	685.	0.14
326.	0.37	686.	0.14
327.	0.37	687.	0.14
328.	0.36	688.	0.14
329.	0.36	689.	0.14
330.	0.36	690.	0.14
331.	0.36	691.	0.14
332.	0.36	692.	0.14
333.	0.36	693.	0.14
334.	0.35	694.	0.15
335.	0.36	695.	0.14
336.	0.35	696.	0.14
337.	0.35	697.	0.14
338.	0.35	698.	0.14
339.	0.35	699.	0.14
340.	0.35	700.	0.14
341.	0.35	701.	0.14
342.	0.34	702.	0.14
343.	0.34	703.	0.14
344.	0.34	704.	0.14
345.	0.34	705.	0.14
346.	0.34	706.	0.14
347.	0.34	707.	0.14
348.	0.34	708.	0.14
349.	0.34	709.	0.14
350.	0.33	710.	0.14
351.	0.33	711.	0.14
352.	0.33	712.	0.14
353.	0.33	713.	0.14
354.	0.33	714.	0.14
355.	0.33	715.	0.14
356.	0.33	716.	0.14
357.	0.33	717.	0.14
358.	0.33	718.	0.14
359.	0.33	719.	0.14

LUMINANT

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
360.	0.33	720.	0.07

SOLUTION

Slug Test
Aquifer Model: Confined
Solution Method: Bouwer-Rice
ln(Re/rw): 2.624

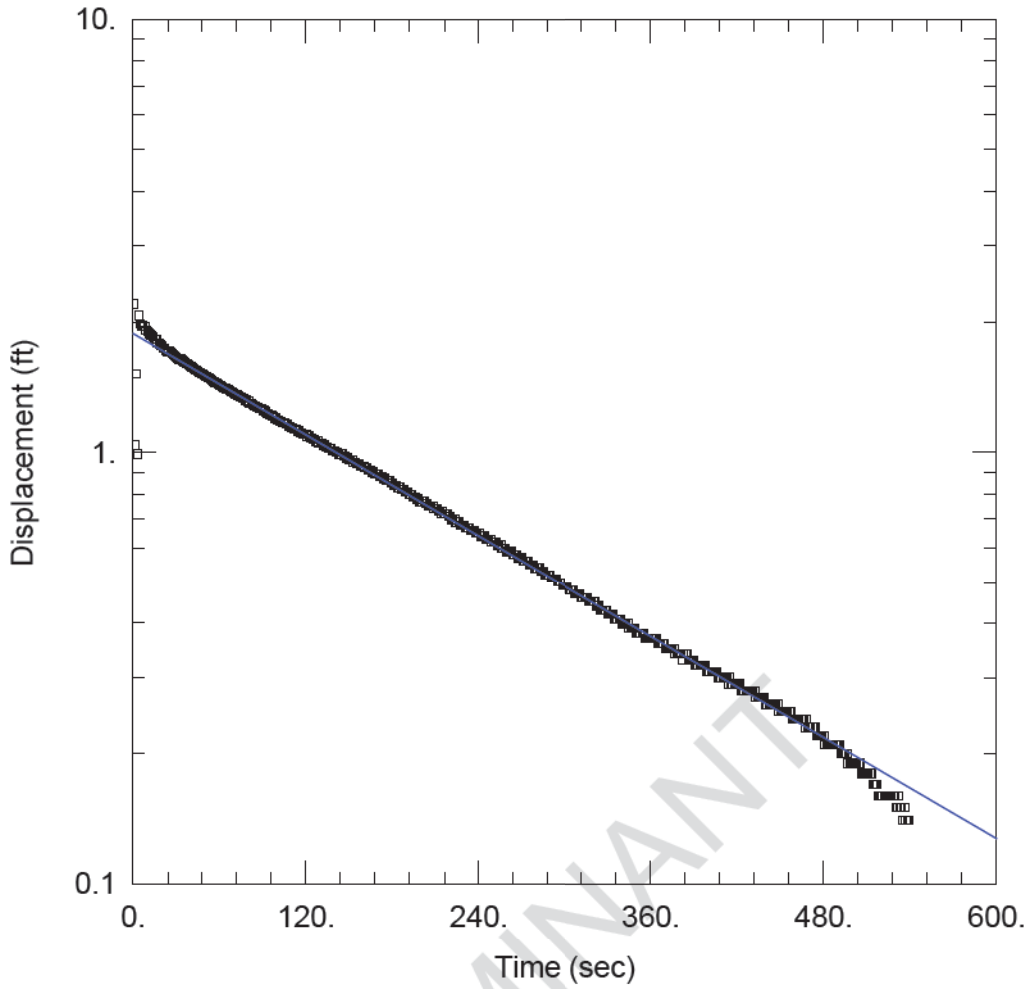
VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
K	0.0001494	cm/sec
y0	1.925	ft

$T = K*b = 0.1093$ cm²/sec

LUMINANT



LUMINANT

PDP-25 SLUG OUT

Data Set: J:\...\PDP-25 Slug Out.aqt
Date: 12/16/15 Time: 10:25:32

PROJECT INFORMATION

Company: PBW
Client: Luminant
Project: 5164
Location: MLSES
Test Well: PDP-25
Test Date: 10/7/15

AQUIFER DATA

Saturated Thickness: 24. ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (PDP-25)

Initial Displacement: 2.2 ft
Total Well Penetration Depth: 16. ft
Casing Radius: 0.083 ft
Static Water Column Height: 38.89 ft
Screen Length: 10. ft
Well Radius: 0.27 ft

SOLUTION

Aquifer Model: Confined
Solution Method: Bouwer-Rice
K = 0.0001237 cm/sec
y0 = 1.881 ft

Data Set: J:\5164 - Luminant CCR Well Installation and GW Sampling\5164-B_Martin Lake\Slug Tests\PDP5\Aqtes
Title: PDP-25 Slug Out
Date: 12/16/15
Time: 10:26:27

PROJECT INFORMATION

Company: PBW
Client: Luminant
Project: 5164
Location: MLSES
Test Date: 10/7/15
Test Well: PDP-25

AQUIFER DATA

Saturated Thickness: 24. ft
Anisotropy Ratio (Kz/Kr): 1.

SLUG TEST WELL DATA

Test Well: PDP-25

X Location: 0. ft
Y Location: 0. ft

Initial Displacement: 2.2 ft
Static Water Column Height: 38.89 ft
Casing Radius: 0.083 ft
Well Radius: 0.27 ft
Well Skin Radius: 0.27 ft
Screen Length: 10. ft
Total Well Penetration Depth: 16. ft

No. of Observations: 539

Observation Data

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
1.	1.04	271.	0.56
2.	1.52	272.	0.56
3.	0.99	273.	0.56
4.	2.07	274.	0.56
5.	1.98	275.	0.55
6.	1.96	276.	0.55
7.	1.96	277.	0.55
8.	1.95	278.	0.55
9.	1.91	279.	0.54
10.	1.9	280.	0.54
11.	1.88	281.	0.54
12.	1.87	282.	0.54
13.	1.86	283.	0.53
14.	1.85	284.	0.53
15.	1.82	285.	0.53
16.	1.82	286.	0.52
17.	1.79	287.	0.52
18.	1.78	288.	0.52
19.	1.77	289.	0.52
20.	1.76	290.	0.51
21.	1.74	291.	0.51
22.	1.74	292.	0.51
23.	1.72	293.	0.51
24.	1.71	294.	0.51
25.	1.71	295.	0.5
26.	1.7	296.	0.5
27.	1.69	297.	0.5
28.	1.68	298.	0.49
29.	1.67	299.	0.49

LUMINANT

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
30.	1.66	300.	0.49
31.	1.65	301.	0.49
32.	1.64	302.	0.49
33.	1.64	303.	0.48
34.	1.63	304.	0.48
35.	1.62	305.	0.48
36.	1.61	306.	0.48
37.	1.6	307.	0.47
38.	1.6	308.	0.47
39.	1.59	309.	0.47
40.	1.58	310.	0.47
41.	1.57	311.	0.47
42.	1.56	312.	0.46
43.	1.55	313.	0.46
44.	1.55	314.	0.46
45.	1.54	315.	0.46
46.	1.53	316.	0.46
47.	1.53	317.	0.45
48.	1.52	318.	0.45
49.	1.51	319.	0.45
50.	1.5	320.	0.45
51.	1.5	321.	0.45
52.	1.49	322.	0.44
53.	1.49	323.	0.44
54.	1.48	324.	0.44
55.	1.47	325.	0.43
56.	1.46	326.	0.43
57.	1.45	327.	0.43
58.	1.45	328.	0.43
59.	1.44	329.	0.43
60.	1.43	330.	0.42
61.	1.43	331.	0.42
62.	1.42	332.	0.42
63.	1.41	333.	0.42
64.	1.41	334.	0.42
65.	1.4	335.	0.41
66.	1.4	336.	0.41
67.	1.39	337.	0.41
68.	1.38	338.	0.41
69.	1.38	339.	0.41
70.	1.37	340.	0.4
71.	1.36	341.	0.4
72.	1.36	342.	0.4
73.	1.35	343.	0.4
74.	1.34	344.	0.4
75.	1.34	345.	0.39
76.	1.33	346.	0.39
77.	1.33	347.	0.39
78.	1.32	348.	0.39
79.	1.32	349.	0.39
80.	1.31	350.	0.38
81.	1.3	351.	0.38
82.	1.3	352.	0.38
83.	1.29	353.	0.38
84.	1.28	354.	0.38
85.	1.28	355.	0.38
86.	1.27	356.	0.37
87.	1.27	357.	0.37
88.	1.26	358.	0.37
89.	1.26	359.	0.37
90.	1.25	360.	0.37
91.	1.25	361.	0.37
92.	1.24	362.	0.37
93.	1.23	363.	0.37
94.	1.23	364.	0.37
95.	1.22	365.	0.36

LUMINANT

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
96.	1.22	366.	0.36
97.	1.21	367.	0.36
98.	1.2	368.	0.36
99.	1.2	369.	0.36
100.	1.19	370.	0.35
101.	1.19	371.	0.35
102.	1.18	372.	0.35
103.	1.18	373.	0.35
104.	1.17	374.	0.35
105.	1.17	375.	0.35
106.	1.16	376.	0.35
107.	1.16	377.	0.34
108.	1.15	378.	0.34
109.	1.15	379.	0.34
110.	1.14	380.	0.34
111.	1.14	381.	0.34
112.	1.13	382.	0.33
113.	1.13	383.	0.34
114.	1.12	384.	0.34
115.	1.12	385.	0.34
116.	1.11	386.	0.33
117.	1.11	387.	0.33
118.	1.1	388.	0.33
119.	1.1	389.	0.33
120.	1.1	390.	0.33
121.	1.09	391.	0.32
122.	1.09	392.	0.32
123.	1.08	393.	0.32
124.	1.08	394.	0.32
125.	1.07	395.	0.32
126.	1.07	396.	0.32
127.	1.06	397.	0.32
128.	1.06	398.	0.32
129.	1.05	399.	0.31
130.	1.05	400.	0.31
131.	1.05	401.	0.31
132.	1.04	402.	0.31
133.	1.04	403.	0.31
134.	1.03	404.	0.31
135.	1.03	405.	0.31
136.	1.02	406.	0.31
137.	1.02	407.	0.3
138.	1.01	408.	0.3
139.	1.01	409.	0.3
140.	1.01	410.	0.3
141.	1.	411.	0.3
142.	1.	412.	0.3
143.	0.99	413.	0.3
144.	0.99	414.	0.29
145.	0.99	415.	0.3
146.	0.98	416.	0.29
147.	0.98	417.	0.29
148.	0.97	418.	0.29
149.	0.97	419.	0.29
150.	0.96	420.	0.29
151.	0.96	421.	0.29
152.	0.96	422.	0.29
153.	0.95	423.	0.28
154.	0.95	424.	0.28
155.	0.94	425.	0.28
156.	0.94	426.	0.28
157.	0.94	427.	0.28
158.	0.93	428.	0.28
159.	0.93	429.	0.28
160.	0.93	430.	0.28
161.	0.92	431.	0.28

LUMINANT

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
162.	0.92	432.	0.28
163.	0.91	433.	0.27
164.	0.91	434.	0.27
165.	0.91	435.	0.27
166.	0.9	436.	0.27
167.	0.9	437.	0.27
168.	0.89	438.	0.27
169.	0.89	439.	0.27
170.	0.89	440.	0.26
171.	0.88	441.	0.26
172.	0.88	442.	0.26
173.	0.88	443.	0.26
174.	0.87	444.	0.26
175.	0.87	445.	0.26
176.	0.86	446.	0.26
177.	0.86	447.	0.26
178.	0.86	448.	0.26
179.	0.85	449.	0.25
180.	0.85	450.	0.25
181.	0.84	451.	0.25
182.	0.84	452.	0.25
183.	0.84	453.	0.25
184.	0.83	454.	0.25
185.	0.83	455.	0.25
186.	0.82	456.	0.25
187.	0.82	457.	0.25
188.	0.82	458.	0.24
189.	0.81	459.	0.24
190.	0.81	460.	0.24
191.	0.81	461.	0.24
192.	0.8	462.	0.24
193.	0.8	463.	0.24
194.	0.79	464.	0.24
195.	0.79	465.	0.24
196.	0.79	466.	0.24
197.	0.78	467.	0.23
198.	0.78	468.	0.24
199.	0.77	469.	0.23
200.	0.77	470.	0.23
201.	0.77	471.	0.23
202.	0.77	472.	0.23
203.	0.76	473.	0.23
204.	0.76	474.	0.23
205.	0.75	475.	0.22
206.	0.75	476.	0.22
207.	0.75	477.	0.22
208.	0.75	478.	0.22
209.	0.74	479.	0.22
210.	0.74	480.	0.22
211.	0.74	481.	0.21
212.	0.73	482.	0.21
213.	0.73	483.	0.21
214.	0.72	484.	0.21
215.	0.73	485.	0.21
216.	0.72	486.	0.21
217.	0.72	487.	0.21
218.	0.72	488.	0.21
219.	0.71	489.	0.21
220.	0.71	490.	0.21
221.	0.7	491.	0.21
222.	0.7	492.	0.2
223.	0.7	493.	0.2
224.	0.69	494.	0.2
225.	0.69	495.	0.2
226.	0.69	496.	0.2
227.	0.68	497.	0.19

LUMINANT

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
228.	0.68	498.	0.19
229.	0.68	499.	0.19
230.	0.68	500.	0.19
231.	0.67	501.	0.19
232.	0.67	502.	0.19
233.	0.67	503.	0.19
234.	0.66	504.	0.19
235.	0.66	505.	0.19
236.	0.66	506.	0.18
237.	0.66	507.	0.18
238.	0.65	508.	0.18
239.	0.65	509.	0.18
240.	0.65	510.	0.18
241.	0.64	511.	0.18
242.	0.64	512.	0.18
243.	0.64	513.	0.18
244.	0.64	514.	0.17
245.	0.63	515.	0.17
246.	0.63	516.	0.17
247.	0.63	517.	0.17
248.	0.63	518.	0.16
249.	0.62	519.	0.16
250.	0.62	520.	0.16
251.	0.62	521.	0.16
252.	0.62	522.	0.16
253.	0.61	523.	0.16
254.	0.61	524.	0.16
255.	0.61	525.	0.16
256.	0.6	526.	0.16
257.	0.6	527.	0.16
258.	0.6	528.	0.16
259.	0.59	529.	0.16
260.	0.59	530.	0.15
261.	0.59	531.	0.15
262.	0.59	532.	0.16
263.	0.59	533.	0.15
264.	0.58	534.	0.15
265.	0.58	535.	0.14
266.	0.58	536.	0.15
267.	0.57	537.	0.14
268.	0.57	538.	0.14
269.	0.57	539.	0.14
270.	0.57		

LUMINANT

SOLUTION

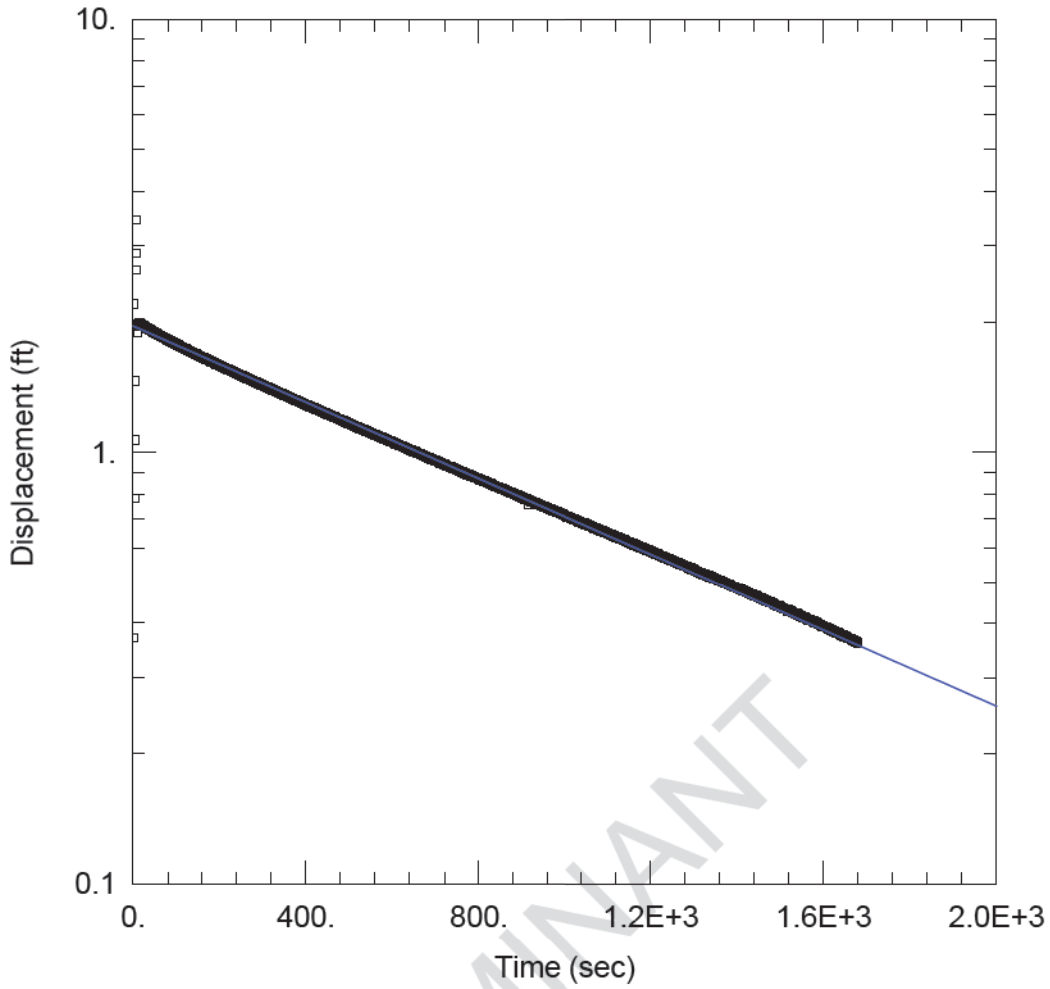
Slug Test
Aquifer Model: Confined
Solution Method: Bouwer-Rice
ln(Re/rw): 2.624

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
K	0.0001237	cm/sec
y0	1.881	ft

T = K*b = 0.09046 cm²/sec



LUMINANT

PDP-26 SLUG IN

Data Set: J:\...\PDP-26 Slug In.aqt
Date: 12/16/15 Time: 10:25:41

PROJECT INFORMATION

Company: PBW
Client: Luminant
Project: 5164
Location: MLSES
Test Well: PDP-26
Test Date: 10/6/15

AQUIFER DATA

Saturated Thickness: 8. ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (PDP-26)

Initial Displacement: 2.2 ft
Total Well Penetration Depth: 8. ft
Casing Radius: 0.083 ft
Static Water Column Height: 20.02 ft
Screen Length: 8. ft
Well Radius: 0.27 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 3.407E-5 cm/sec
y0 = 1.958 ft

Data Set: J:\5164 - Luminant CCR Well Installation and GW Sampling\5164-B_Martin Lake\Slug Tests\PDP5\Aqtes
Title: PDP-26 Slug In
Date: 12/16/15
Time: 10:26:18

PROJECT INFORMATION

Company: PBW
Client: Luminant
Project: 5164
Location: MLSES
Test Date: 10/6/15
Test Well: PDP-26

AQUIFER DATA

Saturated Thickness: 8. ft
Anisotropy Ratio (Kz/Kr): 1.

SLUG TEST WELL DATA

Test Well: PDP-26

X Location: 0. ft
Y Location: 0. ft

Initial Displacement: 2.2 ft
Static Water Column Height: 20.02 ft
Casing Radius: 0.083 ft
Well Radius: 0.27 ft
Well Skin Radius: 0.27 ft
Screen Length: 8. ft
Total Well Penetration Depth: 8. ft

No. of Observations: 1678

Observation Data

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
2.	0.3688	841.	0.8334
3.	1.067	842.	0.833
4.	0.7836	843.	0.8319
5.	1.461	844.	0.8315
6.	2.631	845.	0.8311
7.	2.886	846.	0.8291
8.	3.433	847.	0.8298
9.	1.891	848.	0.8273
10.	1.884	849.	0.8279
11.	1.953	850.	0.8254
12.	1.979	851.	0.8269
13.	1.986	852.	0.8246
14.	1.991	853.	0.8249
15.	1.988	854.	0.8235
16.	1.984	855.	0.8228
17.	1.982	856.	0.8227
18.	1.979	857.	0.8203
19.	1.976	858.	0.8212
20.	1.973	859.	0.8192
21.	1.97	860.	0.8176
22.	1.968	861.	0.8161
23.	1.963	862.	0.8159
24.	1.96	863.	0.8155
25.	1.958	864.	0.8148
26.	1.957	865.	0.8137
27.	1.953	866.	0.8132
28.	1.95	867.	0.8137
29.	1.947	868.	0.812
30.	1.941	869.	0.8111

LUMINANT

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
31.	1.939	870.	0.8099
32.	1.936	871.	0.8091
33.	1.934	872.	0.8103
34.	1.931	873.	0.807
35.	1.93	874.	0.8071
36.	1.926	875.	0.8072
37.	1.923	876.	0.8068
38.	1.92	877.	0.8063
39.	1.919	878.	0.8043
40.	1.915	879.	0.8035
41.	1.913	880.	0.8028
42.	1.912	881.	0.802
43.	1.908	882.	0.8017
44.	1.905	883.	0.8008
45.	1.902	884.	0.8004
46.	1.9	885.	0.7994
47.	1.897	886.	0.7985
48.	1.895	887.	0.7965
49.	1.892	888.	0.7966
50.	1.889	889.	0.7968
51.	1.888	890.	0.796
52.	1.885	891.	0.7954
53.	1.883	892.	0.7934
54.	1.881	893.	0.7912
55.	1.878	894.	0.7915
56.	1.875	895.	0.7915
57.	1.874	896.	0.79
58.	1.869	897.	0.7885
59.	1.868	898.	0.7886
60.	1.865	899.	0.7879
61.	1.863	900.	0.7865
62.	1.861	901.	0.7857
63.	1.859	902.	0.7846
64.	1.857	903.	0.7838
65.	1.853	904.	0.7839
66.	1.849	905.	0.7832
67.	1.849	906.	0.7826
68.	1.847	907.	0.7802
69.	1.845	908.	0.7813
70.	1.842	909.	0.7796
71.	1.838	910.	0.7796
72.	1.836	911.	0.7769
73.	1.835	912.	0.7783
74.	1.834	913.	0.7781
75.	1.831	914.	0.7762
76.	1.827	915.	0.7569
77.	1.825	916.	0.7759
78.	1.825	917.	0.7727
79.	1.822	918.	0.774
80.	1.818	919.	0.7726
81.	1.816	920.	0.7731
82.	1.816	921.	0.7702
83.	1.813	922.	0.7703
84.	1.811	923.	0.7707
85.	1.808	924.	0.7683
86.	1.807	925.	0.7686
87.	1.804	926.	0.7669
88.	1.8	927.	0.766
89.	1.799	928.	0.7655
90.	1.8	929.	0.7649
91.	1.795	930.	0.7656
92.	1.792	931.	0.7637
93.	1.792	932.	0.7639
94.	1.788	933.	0.763
95.	1.785	934.	0.7615
96.	1.785	935.	0.7603

LUMINANT

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
97.	1.782	936.	0.7602
98.	1.78	937.	0.7583
99.	1.777	938.	0.7594
100.	1.777	939.	0.7584
101.	1.774	940.	0.7569
102.	1.771	941.	0.7561
103.	1.769	942.	0.7551
104.	1.768	943.	0.7539
105.	1.764	944.	0.7567
106.	1.763	945.	0.7537
107.	1.761	946.	0.7534
108.	1.758	947.	0.7518
109.	1.76	948.	0.7511
110.	1.754	949.	0.7485
111.	1.754	950.	0.7511
112.	1.754	951.	0.751
113.	1.751	952.	0.7475
114.	1.748	953.	0.7488
115.	1.745	954.	0.7487
116.	1.742	955.	0.7461
117.	1.743	956.	0.7464
118.	1.74	957.	0.7454
119.	1.736	958.	0.7457
120.	1.737	959.	0.7418
121.	1.734	960.	0.7426
122.	1.733	961.	0.7404
123.	1.73	962.	0.7424
124.	1.728	963.	0.7399
125.	1.726	964.	0.739
126.	1.724	965.	0.7395
127.	1.722	966.	0.7383
128.	1.719	967.	0.7368
129.	1.718	968.	0.7367
130.	1.716	969.	0.7368
131.	1.714	970.	0.7343
132.	1.711	971.	0.7368
133.	1.709	972.	0.7358
134.	1.707	973.	0.7353
135.	1.706	974.	0.7311
136.	1.704	975.	0.7324
137.	1.701	976.	0.7319
138.	1.698	977.	0.7316
139.	1.698	978.	0.7311
140.	1.696	979.	0.7291
141.	1.694	980.	0.7298
142.	1.692	981.	0.7298
143.	1.691	982.	0.7282
144.	1.689	983.	0.7269
145.	1.686	984.	0.7247
146.	1.684	985.	0.7255
147.	1.683	986.	0.726
148.	1.682	987.	0.7263
149.	1.679	988.	0.7234
150.	1.679	989.	0.7219
151.	1.676	990.	0.7218
152.	1.673	991.	0.7208
153.	1.67	992.	0.7204
154.	1.668	993.	0.7204
155.	1.667	994.	0.7191
156.	1.666	995.	0.7182
157.	1.663	996.	0.7171
158.	1.661	997.	0.7184
159.	1.659	998.	0.7169
160.	1.658	999.	0.7157
161.	1.657	1000.	0.7131
162.	1.655	1001.	0.7141

LUMINANT

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
163.	1.653	1002.	0.7131
164.	1.651	1003.	0.7125
165.	1.65	1004.	0.7096
166.	1.646	1005.	0.7109
167.	1.646	1006.	0.713
168.	1.644	1007.	0.71
169.	1.64	1008.	0.71
170.	1.639	1009.	0.7106
171.	1.641	1010.	0.7075
172.	1.638	1011.	0.7074
173.	1.633	1012.	0.7068
174.	1.632	1013.	0.707
175.	1.632	1014.	0.7056
176.	1.629	1015.	0.7044
177.	1.626	1016.	0.7038
178.	1.626	1017.	0.7011
179.	1.623	1018.	0.7037
180.	1.622	1019.	0.702
181.	1.619	1020.	0.7001
182.	1.619	1021.	0.7014
183.	1.617	1022.	0.7
184.	1.613	1023.	0.6994
185.	1.614	1024.	0.6981
186.	1.611	1025.	0.6966
187.	1.611	1026.	0.6984
188.	1.609	1027.	0.6956
189.	1.607	1028.	0.6956
190.	1.604	1029.	0.6945
191.	1.603	1030.	0.6932
192.	1.6	1031.	0.6936
193.	1.598	1032.	0.6926
194.	1.599	1033.	0.6903
195.	1.596	1034.	0.6909
196.	1.594	1035.	0.6924
197.	1.591	1036.	0.6898
198.	1.59	1037.	0.6897
199.	1.588	1038.	0.6888
200.	1.588	1039.	0.6876
201.	1.585	1040.	0.6866
202.	1.583	1041.	0.6861
203.	1.582	1042.	0.6861
204.	1.58	1043.	0.6853
205.	1.578	1044.	0.6853
206.	1.578	1045.	0.6834
207.	1.575	1046.	0.686
208.	1.573	1047.	0.6818
209.	1.571	1048.	0.6818
210.	1.57	1049.	0.6807
211.	1.569	1050.	0.6808
212.	1.565	1051.	0.6796
213.	1.564	1052.	0.6814
214.	1.561	1053.	0.6815
215.	1.562	1054.	0.6791
216.	1.56	1055.	0.6784
217.	1.559	1056.	0.677
218.	1.556	1057.	0.6777
219.	1.555	1058.	0.676
220.	1.554	1059.	0.6751
221.	1.551	1060.	0.6757
222.	1.549	1061.	0.6748
223.	1.547	1062.	0.6745
224.	1.546	1063.	0.6735
225.	1.545	1064.	0.6724
226.	1.543	1065.	0.6706
227.	1.542	1066.	0.6701
228.	1.54	1067.	0.6702

LUMINANT

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
229.	1.54	1068.	0.6696
230.	1.537	1069.	0.6689
231.	1.536	1070.	0.6662
232.	1.535	1071.	0.6686
233.	1.53	1072.	0.667
234.	1.53	1073.	0.666
235.	1.528	1074.	0.6665
236.	1.526	1075.	0.6641
237.	1.525	1076.	0.6659
238.	1.525	1077.	0.6635
239.	1.523	1078.	0.6622
240.	1.52	1079.	0.6638
241.	1.517	1080.	0.662
242.	1.518	1081.	0.6603
243.	1.516	1082.	0.6601
244.	1.514	1083.	0.659
245.	1.512	1084.	0.6603
246.	1.51	1085.	0.6582
247.	1.509	1086.	0.6581
248.	1.509	1087.	0.6559
249.	1.507	1088.	0.6577
250.	1.505	1089.	0.6556
251.	1.506	1090.	0.6557
252.	1.502	1091.	0.6563
253.	1.501	1092.	0.6535
254.	1.499	1093.	0.6536
255.	1.497	1094.	0.6552
256.	1.496	1095.	0.6535
257.	1.493	1096.	0.6518
258.	1.492	1097.	0.6513
259.	1.491	1098.	0.6515
260.	1.49	1099.	0.6498
261.	1.488	1100.	0.6493
262.	1.487	1101.	0.6479
263.	1.484	1102.	0.6474
264.	1.482	1103.	0.6471
265.	1.48	1104.	0.6461
266.	1.481	1105.	0.6469
267.	1.478	1106.	0.6443
268.	1.478	1107.	0.6457
269.	1.475	1108.	0.6435
270.	1.474	1109.	0.6427
271.	1.473	1110.	0.6447
272.	1.47	1111.	0.6419
273.	1.469	1112.	0.6419
274.	1.468	1113.	0.6404
275.	1.468	1114.	0.641
276.	1.464	1115.	0.6397
277.	1.464	1116.	0.6398
278.	1.462	1117.	0.6394
279.	1.46	1118.	0.6387
280.	1.459	1119.	0.6375
281.	1.458	1120.	0.6358
282.	1.456	1121.	0.6361
283.	1.454	1122.	0.6351
284.	1.452	1123.	0.6357
285.	1.452	1124.	0.6346
286.	1.451	1125.	0.6337
287.	1.446	1126.	0.6326
288.	1.446	1127.	0.6322
289.	1.445	1128.	0.6314
290.	1.443	1129.	0.6319
291.	1.442	1130.	0.6306
292.	1.439	1131.	0.6312
293.	1.438	1132.	0.6307
294.	1.437	1133.	0.63

LUMINANT

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
295.	1.436	1134.	0.6293
296.	1.435	1135.	0.6287
297.	1.433	1136.	0.6277
298.	1.432	1137.	0.6257
299.	1.43	1138.	0.6271
300.	1.428	1139.	0.6264
301.	1.427	1140.	0.6274
302.	1.426	1141.	0.6239
303.	1.424	1142.	0.6225
304.	1.423	1143.	0.622
305.	1.422	1144.	0.6217
306.	1.419	1145.	0.6223
307.	1.417	1146.	0.6209
308.	1.417	1147.	0.6198
309.	1.415	1148.	0.6189
310.	1.414	1149.	0.6205
311.	1.413	1150.	0.6186
312.	1.411	1151.	0.6179
313.	1.412	1152.	0.6172
314.	1.408	1153.	0.6167
315.	1.406	1154.	0.615
316.	1.405	1155.	0.6153
317.	1.403	1156.	0.6167
318.	1.402	1157.	0.6132
319.	1.401	1158.	0.6136
320.	1.399	1159.	0.6145
321.	1.398	1160.	0.6133
322.	1.397	1161.	0.6126
323.	1.395	1162.	0.6101
324.	1.393	1163.	0.6109
325.	1.393	1164.	0.61
326.	1.389	1165.	0.6098
327.	1.389	1166.	0.6095
328.	1.387	1167.	0.6076
329.	1.386	1168.	0.6069
330.	1.385	1169.	0.6075
331.	1.382	1170.	0.6074
332.	1.382	1171.	0.6063
333.	1.38	1172.	0.6068
334.	1.379	1173.	0.6037
335.	1.378	1174.	0.6034
336.	1.377	1175.	0.6037
337.	1.375	1176.	0.6037
338.	1.373	1177.	0.6022
339.	1.373	1178.	0.6016
340.	1.371	1179.	0.6016
341.	1.369	1180.	0.6019
342.	1.368	1181.	0.6008
343.	1.365	1182.	0.6001
344.	1.365	1183.	0.6005
345.	1.363	1184.	0.5999
346.	1.363	1185.	0.5971
347.	1.36	1186.	0.5968
348.	1.36	1187.	0.5979
349.	1.359	1188.	0.5958
350.	1.356	1189.	0.5945
351.	1.355	1190.	0.5951
352.	1.355	1191.	0.5938
353.	1.353	1192.	0.594
354.	1.351	1193.	0.5917
355.	1.35	1194.	0.5947
356.	1.349	1195.	0.5938
357.	1.345	1196.	0.5915
358.	1.345	1197.	0.5907
359.	1.344	1198.	0.5907
360.	1.342	1199.	0.5884

LUMINANT

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
361.	1.341	1200.	0.5902
362.	1.341	1201.	0.5884
363.	1.337	1202.	0.5883
364.	1.337	1203.	0.5885
365.	1.335	1204.	0.5875
366.	1.334	1205.	0.5865
367.	1.333	1206.	0.5862
368.	1.331	1207.	0.5855
369.	1.33	1208.	0.5846
370.	1.33	1209.	0.584
371.	1.327	1210.	0.5832
372.	1.326	1211.	0.583
373.	1.323	1212.	0.5816
374.	1.323	1213.	0.5808
375.	1.323	1214.	0.5816
376.	1.32	1215.	0.5814
377.	1.319	1216.	0.5807
378.	1.319	1217.	0.5787
379.	1.316	1218.	0.5793
380.	1.315	1219.	0.5783
381.	1.314	1220.	0.5796
382.	1.313	1221.	0.5772
383.	1.31	1222.	0.5766
384.	1.31	1223.	0.576
385.	1.309	1224.	0.5749
386.	1.308	1225.	0.5756
387.	1.305	1226.	0.5746
388.	1.304	1227.	0.5744
389.	1.305	1228.	0.5738
390.	1.302	1229.	0.5733
391.	1.301	1230.	0.5728
392.	1.299	1231.	0.572
393.	1.3	1232.	0.5704
394.	1.298	1233.	0.5702
395.	1.297	1234.	0.5705
396.	1.295	1235.	0.5693
397.	1.293	1236.	0.5682
398.	1.29	1237.	0.5673
399.	1.289	1238.	0.5686
400.	1.288	1239.	0.5674
401.	1.288	1240.	0.5681
402.	1.285	1241.	0.567
403.	1.285	1242.	0.5653
404.	1.283	1243.	0.566
405.	1.282	1244.	0.565
406.	1.281	1245.	0.5636
407.	1.279	1246.	0.563
408.	1.278	1247.	0.5619
409.	1.276	1248.	0.562
410.	1.276	1249.	0.562
411.	1.274	1250.	0.5623
412.	1.272	1251.	0.5606
413.	1.27	1252.	0.5612
414.	1.271	1253.	0.5597
415.	1.269	1254.	0.5595
416.	1.27	1255.	0.5592
417.	1.267	1256.	0.559
418.	1.265	1257.	0.5576
419.	1.265	1258.	0.5561
420.	1.264	1259.	0.5575
421.	1.26	1260.	0.5559
422.	1.261	1261.	0.5565
423.	1.26	1262.	0.555
424.	1.258	1263.	0.5541
425.	1.256	1264.	0.5538
426.	1.257	1265.	0.5544

LUMINANT

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
427.	1.256	1266.	0.5538
428.	1.254	1267.	0.5525
429.	1.251	1268.	0.5496
430.	1.251	1269.	0.551
431.	1.25	1270.	0.5505
432.	1.247	1271.	0.5506
433.	1.248	1272.	0.5495
434.	1.245	1273.	0.5485
435.	1.245	1274.	0.5484
436.	1.244	1275.	0.5471
437.	1.243	1276.	0.5486
438.	1.24	1277.	0.5455
439.	1.239	1278.	0.5454
440.	1.239	1279.	0.5443
441.	1.237	1280.	0.544
442.	1.237	1281.	0.5461
443.	1.236	1282.	0.5443
444.	1.235	1283.	0.544
445.	1.232	1284.	0.5433
446.	1.232	1285.	0.5411
447.	1.231	1286.	0.5409
448.	1.229	1287.	0.541
449.	1.228	1288.	0.5401
450.	1.225	1289.	0.5416
451.	1.226	1290.	0.5402
452.	1.224	1291.	0.5397
453.	1.224	1292.	0.5392
454.	1.221	1293.	0.5403
455.	1.22	1294.	0.5386
456.	1.219	1295.	0.536
457.	1.218	1296.	0.5365
458.	1.217	1297.	0.5368
459.	1.215	1298.	0.5345
460.	1.214	1299.	0.5348
461.	1.213	1300.	0.5362
462.	1.211	1301.	0.5334
463.	1.21	1302.	0.5329
464.	1.207	1303.	0.5321
465.	1.208	1304.	0.5299
466.	1.207	1305.	0.5318
467.	1.204	1306.	0.5309
468.	1.203	1307.	0.5298
469.	1.202	1308.	0.5296
470.	1.202	1309.	0.5303
471.	1.2	1310.	0.5278
472.	1.198	1311.	0.5284
473.	1.197	1312.	0.5284
474.	1.196	1313.	0.5277
475.	1.194	1314.	0.5267
476.	1.194	1315.	0.5276
477.	1.195	1316.	0.525
478.	1.191	1317.	0.5273
479.	1.191	1318.	0.5258
480.	1.19	1319.	0.524
481.	1.188	1320.	0.5226
482.	1.188	1321.	0.5246
483.	1.186	1322.	0.5221
484.	1.185	1323.	0.5219
485.	1.183	1324.	0.5242
486.	1.181	1325.	0.5212
487.	1.181	1326.	0.5209
488.	1.182	1327.	0.5214
489.	1.177	1328.	0.5199
490.	1.176	1329.	0.5191
491.	1.176	1330.	0.5178
492.	1.174	1331.	0.5196

LUMINANT

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
493.	1.175	1332.	0.5181
494.	1.172	1333.	0.5174
495.	1.171	1334.	0.5177
496.	1.171	1335.	0.5162
497.	1.169	1336.	0.5159
498.	1.167	1337.	0.5145
499.	1.167	1338.	0.5145
500.	1.165	1339.	0.5139
501.	1.166	1340.	0.5147
502.	1.162	1341.	0.5133
503.	1.163	1342.	0.5138
504.	1.16	1343.	0.5114
505.	1.16	1344.	0.5126
506.	1.159	1345.	0.5114
507.	1.157	1346.	0.5106
508.	1.156	1347.	0.5121
509.	1.155	1348.	0.509
510.	1.155	1349.	0.5099
511.	1.152	1350.	0.5094
512.	1.152	1351.	0.5092
513.	1.15	1352.	0.5049
514.	1.15	1353.	0.508
515.	1.146	1354.	0.5073
516.	1.147	1355.	0.5049
517.	1.145	1356.	0.5046
518.	1.145	1357.	0.5056
519.	1.143	1358.	0.5043
520.	1.143	1359.	0.5042
521.	1.14	1360.	0.5041
522.	1.141	1361.	0.503
523.	1.139	1362.	0.5027
524.	1.136	1363.	0.503
525.	1.139	1364.	0.5024
526.	1.138	1365.	0.5014
527.	1.134	1366.	0.5003
528.	1.133	1367.	0.5009
529.	1.134	1368.	0.4999
530.	1.132	1369.	0.5
531.	1.13	1370.	0.4983
532.	1.13	1371.	0.4991
533.	1.127	1372.	0.4964
534.	1.127	1373.	0.4979
535.	1.126	1374.	0.496
536.	1.124	1375.	0.4964
537.	1.124	1376.	0.4969
538.	1.123	1377.	0.4951
539.	1.12	1378.	0.4965
540.	1.12	1379.	0.4942
541.	1.119	1380.	0.4923
542.	1.118	1381.	0.4935
543.	1.116	1382.	0.4939
544.	1.116	1383.	0.4922
545.	1.116	1384.	0.492
546.	1.115	1385.	0.4911
547.	1.11	1386.	0.4912
548.	1.112	1387.	0.4889
549.	1.11	1388.	0.4895
550.	1.111	1389.	0.4894
551.	1.108	1390.	0.4896
552.	1.108	1391.	0.4892
553.	1.105	1392.	0.4878
554.	1.105	1393.	0.4869
555.	1.104	1394.	0.486
556.	1.102	1395.	0.4846
557.	1.102	1396.	0.4858
558.	1.1	1397.	0.4866

LUMINANT

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
559.	1.1	1398.	0.4852
560.	1.098	1399.	0.4848
561.	1.097	1400.	0.484
562.	1.097	1401.	0.4835
563.	1.095	1402.	0.4831
564.	1.093	1403.	0.485
565.	1.093	1404.	0.4821
566.	1.091	1405.	0.4823
567.	1.093	1406.	0.4799
568.	1.089	1407.	0.4794
569.	1.087	1408.	0.4805
570.	1.086	1409.	0.4807
571.	1.087	1410.	0.4798
572.	1.086	1411.	0.4795
573.	1.082	1412.	0.4778
574.	1.082	1413.	0.4774
575.	1.083	1414.	0.4768
576.	1.081	1415.	0.4781
577.	1.081	1416.	0.4764
578.	1.079	1417.	0.4755
579.	1.077	1418.	0.4748
580.	1.075	1419.	0.4753
581.	1.075	1420.	0.4751
582.	1.072	1421.	0.4741
583.	1.073	1422.	0.4738
584.	1.072	1423.	0.473
585.	1.072	1424.	0.4726
586.	1.07	1425.	0.4723
587.	1.07	1426.	0.4722
588.	1.068	1427.	0.471
589.	1.068	1428.	0.4702
590.	1.066	1429.	0.4697
591.	1.065	1430.	0.4696
592.	1.064	1431.	0.4688
593.	1.064	1432.	0.4692
594.	1.062	1433.	0.4671
595.	1.061	1434.	0.4675
596.	1.06	1435.	0.4679
597.	1.06	1436.	0.4658
598.	1.059	1437.	0.4673
599.	1.057	1438.	0.4651
600.	1.055	1439.	0.4658
601.	1.055	1440.	0.4645
602.	1.056	1441.	0.463
603.	1.05	1442.	0.4637
604.	1.052	1443.	0.4646
605.	1.051	1444.	0.4625
606.	1.051	1445.	0.4624
607.	1.048	1446.	0.4619
608.	1.047	1447.	0.463
609.	1.045	1448.	0.4608
610.	1.046	1449.	0.4601
611.	1.043	1450.	0.4594
612.	1.042	1451.	0.46
613.	1.043	1452.	0.459
614.	1.041	1453.	0.4581
615.	1.04	1454.	0.4588
616.	1.039	1455.	0.4579
617.	1.037	1456.	0.4572
618.	1.037	1457.	0.4572
619.	1.034	1458.	0.4567
620.	1.033	1459.	0.4559
621.	1.034	1460.	0.4562
622.	1.033	1461.	0.4548
623.	1.031	1462.	0.4535
624.	1.031	1463.	0.4535

LUMINANT

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
625.	1.028	1464.	0.4539
626.	1.028	1465.	0.4539
627.	1.028	1466.	0.4532
628.	1.026	1467.	0.4512
629.	1.025	1468.	0.4528
630.	1.024	1469.	0.4502
631.	1.022	1470.	0.4513
632.	1.022	1471.	0.4508
633.	1.022	1472.	0.4501
634.	1.02	1473.	0.4499
635.	1.021	1474.	0.4486
636.	1.019	1475.	0.4481
637.	1.018	1476.	0.4498
638.	1.017	1477.	0.4479
639.	1.016	1478.	0.4479
640.	1.014	1479.	0.4474
641.	1.014	1480.	0.4476
642.	1.012	1481.	0.4474
643.	1.011	1482.	0.4466
644.	1.009	1483.	0.4457
645.	1.01	1484.	0.4443
646.	1.007	1485.	0.4438
647.	1.005	1486.	0.4445
648.	1.007	1487.	0.444
649.	1.004	1488.	0.4422
650.	1.004	1489.	0.4413
651.	1.005	1490.	0.4413
652.	1.004	1491.	0.4405
653.	1.002	1492.	0.4411
654.	1.	1493.	0.4392
655.	1.001	1494.	0.4386
656.	0.9979	1495.	0.44
657.	0.9979	1496.	0.4391
658.	0.9956	1497.	0.4397
659.	0.9952	1498.	0.4387
660.	0.9949	1499.	0.4375
661.	0.9944	1500.	0.4371
662.	0.992	1501.	0.4374
663.	0.9924	1502.	0.4362
664.	0.9919	1503.	0.436
665.	0.9904	1504.	0.436
666.	0.9897	1505.	0.4355
667.	0.989	1506.	0.4358
668.	0.9884	1507.	0.4354
669.	0.9875	1508.	0.4336
670.	0.9849	1509.	0.433
671.	0.984	1510.	0.4326
672.	0.9835	1511.	0.4331
673.	0.9821	1512.	0.433
674.	0.9812	1513.	0.4328
675.	0.9804	1514.	0.4324
676.	0.9783	1515.	0.4302
677.	0.9766	1516.	0.4297
678.	0.977	1517.	0.4282
679.	0.9757	1518.	0.4309
680.	0.9756	1519.	0.4271
681.	0.9737	1520.	0.4283
682.	0.9737	1521.	0.4285
683.	0.9709	1522.	0.4255
684.	0.9721	1523.	0.4279
685.	0.9705	1524.	0.427
686.	0.9702	1525.	0.4257
687.	0.9684	1526.	0.4257
688.	0.9685	1527.	0.4255
689.	0.9655	1528.	0.4254
690.	0.9666	1529.	0.4245

LUMINANT

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
691.	0.9645	1530.	0.4238
692.	0.964	1531.	0.4245
693.	0.9623	1532.	0.4243
694.	0.96	1533.	0.4221
695.	0.9627	1534.	0.4228
696.	0.9588	1535.	0.4215
697.	0.9609	1536.	0.4227
698.	0.9577	1537.	0.4212
699.	0.9566	1538.	0.4212
700.	0.9571	1539.	0.4224
701.	0.9554	1540.	0.4209
702.	0.9538	1541.	0.4176
703.	0.9544	1542.	0.4198
704.	0.952	1543.	0.4175
705.	0.9528	1544.	0.4172
706.	0.95	1545.	0.4181
707.	0.9504	1546.	0.4153
708.	0.9489	1547.	0.4167
709.	0.9491	1548.	0.4174
710.	0.9449	1549.	0.4148
711.	0.9464	1550.	0.416
712.	0.9441	1551.	0.4145
713.	0.9445	1552.	0.4138
714.	0.9431	1553.	0.4132
715.	0.9429	1554.	0.4137
716.	0.9408	1555.	0.4131
717.	0.939	1556.	0.4123
718.	0.9399	1557.	0.4117
719.	0.9381	1558.	0.4137
720.	0.9368	1559.	0.4122
721.	0.9377	1560.	0.4106
722.	0.9343	1561.	0.4123
723.	0.9354	1562.	0.4091
724.	0.9325	1563.	0.4096
725.	0.9335	1564.	0.4081
726.	0.9308	1565.	0.4088
727.	0.9293	1566.	0.4086
728.	0.9305	1567.	0.4064
729.	0.9305	1568.	0.4078
730.	0.9288	1569.	0.4072
731.	0.9271	1570.	0.4076
732.	0.9279	1571.	0.4066
733.	0.9257	1572.	0.4068
734.	0.9248	1573.	0.4059
735.	0.9254	1574.	0.406
736.	0.9234	1575.	0.4054
737.	0.9224	1576.	0.4045
738.	0.921	1577.	0.4042
739.	0.9198	1578.	0.405
740.	0.9185	1579.	0.4028
741.	0.9187	1580.	0.4029
742.	0.9169	1581.	0.4005
743.	0.9188	1582.	0.4012
744.	0.9175	1583.	0.4009
745.	0.9159	1584.	0.4025
746.	0.9153	1585.	0.4003
747.	0.9151	1586.	0.4
748.	0.9115	1587.	0.3995
749.	0.911	1588.	0.3978
750.	0.9099	1589.	0.3983
751.	0.9094	1590.	0.398
752.	0.9082	1591.	0.3986
753.	0.9084	1592.	0.3974
754.	0.907	1593.	0.3973
755.	0.9062	1594.	0.3974
756.	0.9048	1595.	0.3945

LUMINANT

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
757.	0.9037	1596.	0.3957
758.	0.904	1597.	0.3946
759.	0.9023	1598.	0.3954
760.	0.9038	1599.	0.3947
761.	0.9009	1600.	0.3936
762.	0.9012	1601.	0.3931
763.	0.899	1602.	0.3931
764.	0.8964	1603.	0.3924
765.	0.8977	1604.	0.3927
766.	0.896	1605.	0.3927
767.	0.895	1606.	0.3927
768.	0.8939	1607.	0.3923
769.	0.893	1608.	0.3918
770.	0.8931	1609.	0.3907
771.	0.8923	1610.	0.3881
772.	0.8912	1611.	0.389
773.	0.8914	1612.	0.3881
774.	0.8887	1613.	0.39
775.	0.89	1614.	0.3875
776.	0.8893	1615.	0.3878
777.	0.8877	1616.	0.3865
778.	0.8866	1617.	0.3865
779.	0.8858	1618.	0.3848
780.	0.8848	1619.	0.3862
781.	0.8836	1620.	0.3847
782.	0.8825	1621.	0.3857
783.	0.8811	1622.	0.3848
784.	0.8816	1623.	0.385
785.	0.8813	1624.	0.3833
786.	0.8803	1625.	0.3841
787.	0.8794	1626.	0.3826
788.	0.879	1627.	0.3827
789.	0.8758	1628.	0.3826
790.	0.8745	1629.	0.3819
791.	0.8732	1630.	0.3811
792.	0.8739	1631.	0.3806
793.	0.8744	1632.	0.3805
794.	0.8712	1633.	0.3814
795.	0.8714	1634.	0.3804
796.	0.8711	1635.	0.3796
797.	0.8711	1636.	0.3792
798.	0.8701	1637.	0.3796
799.	0.8689	1638.	0.3791
800.	0.8667	1639.	0.3781
801.	0.8659	1640.	0.3776
802.	0.8669	1641.	0.3765
803.	0.8648	1642.	0.3761
804.	0.8632	1643.	0.3763
805.	0.8635	1644.	0.3765
806.	0.8627	1645.	0.3743
807.	0.8629	1646.	0.3737
808.	0.8624	1647.	0.3762
809.	0.8598	1648.	0.3736
810.	0.8597	1649.	0.3722
811.	0.859	1650.	0.3727
812.	0.8584	1651.	0.3733
813.	0.8551	1652.	0.3737
814.	0.855	1653.	0.3735
815.	0.8559	1654.	0.3714
816.	0.8543	1655.	0.3701
817.	0.8541	1656.	0.3704
818.	0.8534	1657.	0.3703
819.	0.8523	1658.	0.369
820.	0.8516	1659.	0.3702
821.	0.8503	1660.	0.3694
822.	0.8479	1661.	0.3691

LUMINANT

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
823.	0.85	1662.	0.369
824.	0.8486	1663.	0.3688
825.	0.8461	1664.	0.3672
826.	0.8457	1665.	0.3669
827.	0.8465	1666.	0.3669
828.	0.8434	1667.	0.3675
829.	0.8429	1668.	0.3661
830.	0.8418	1669.	0.3654
831.	0.8415	1670.	0.3661
832.	0.841	1671.	0.3654
833.	0.8399	1672.	0.3651
834.	0.8386	1673.	0.3642
835.	0.8392	1674.	0.3634
836.	0.8371	1675.	0.3629
837.	0.8358	1676.	0.3653
838.	0.8345	1677.	0.3627
839.	0.8337	1678.	0.3618
840.	0.8343	1679.	0.3592

SOLUTION

Slug Test
Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
ln(Re/rw): 2.56

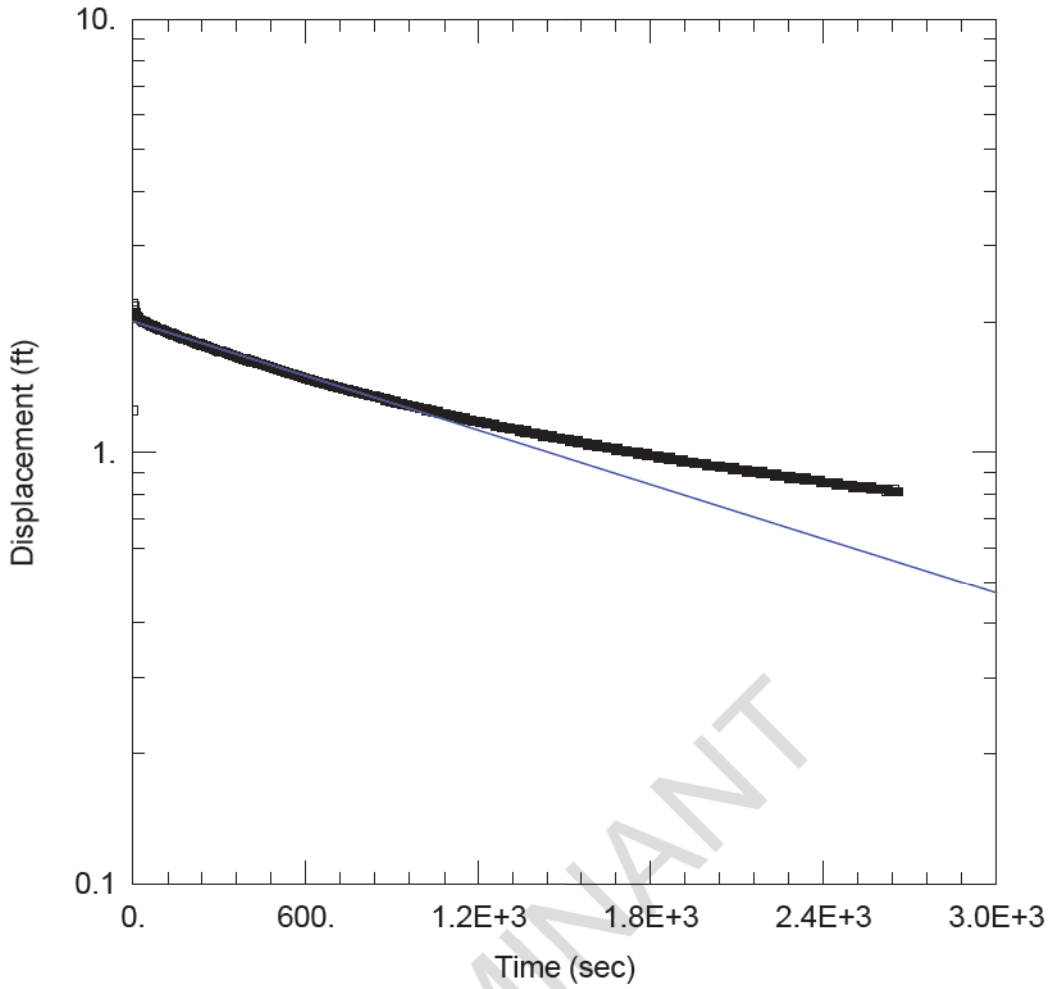
VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
K	3.407E-5	cm/sec
y0	1.958	ft

T = K*b = 0.008307 cm²/sec

LUMINANT



LUMINANT

PDP-26 SLUG OUT

Data Set: J:\...\PDP-26 Slug Out.aqt
Date: 12/16/15 Time: 10:25:50

PROJECT INFORMATION

Company: PBW
Client: Luminant
Project: 5164
Location: MLSES
Test Well: PDP-26
Test Date: 10/6/15

AQUIFER DATA

Saturated Thickness: 8. ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (PDP-26)

Initial Displacement: 2.2 ft
Total Well Penetration Depth: 8. ft
Casing Radius: 0.083 ft
Static Water Column Height: 20.02 ft
Screen Length: 8. ft
Well Radius: 0.27 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 1.621E-5 cm/sec
y0 = 2.006 ft

Data Set: J:\5164 - Luminant CCR Well Installation and GW Sampling\5164-B_Martin Lake\Slug Tests\PDP5\Aqtes
Title: PDP-26 Slug Out
Date: 12/16/15
Time: 10:26:04

PROJECT INFORMATION

Company: PBW
Client: Luminant
Project: 5164
Location: MLSES
Test Date: 10/6/15
Test Well: PDP-26

AQUIFER DATA

Saturated Thickness: 8. ft
Anisotropy Ratio (Kz/Kr): 1.

SLUG TEST WELL DATA

Test Well: PDP-26

X Location: 0. ft
Y Location: 0. ft

Initial Displacement: 2.2 ft
Static Water Column Height: 20.02 ft
Casing Radius: 0.083 ft
Well Radius: 0.27 ft
Well Skin Radius: 0.27 ft
Screen Length: 8. ft
Total Well Penetration Depth: 8. ft

No. of Observations: 2657

Observation Data

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
3.	1.25	1332.	1.13
4.	1.25	1333.	1.13
5.	2.17	1334.	1.13
6.	2.13	1335.	1.13
7.	2.09	1336.	1.13
8.	2.1	1337.	1.13
9.	2.11	1338.	1.13
10.	2.09	1339.	1.12
11.	2.09	1340.	1.12
12.	2.08	1341.	1.12
13.	2.09	1342.	1.12
14.	2.06	1343.	1.12
15.	2.05	1344.	1.12
16.	2.04	1345.	1.12
17.	2.04	1346.	1.12
18.	2.04	1347.	1.12
19.	2.04	1348.	1.12
20.	2.03	1349.	1.12
21.	2.03	1350.	1.12
22.	2.03	1351.	1.12
23.	2.02	1352.	1.12
24.	2.02	1353.	1.12
25.	2.02	1354.	1.12
26.	2.02	1355.	1.12
27.	2.02	1356.	1.12
28.	2.02	1357.	1.12
29.	2.01	1358.	1.12
30.	2.01	1359.	1.12
31.	2.01	1360.	1.12

LUMINANT

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
32.	2.01	1361.	1.11
33.	2.01	1362.	1.12
34.	2.	1363.	1.12
35.	2.	1364.	1.11
36.	2.	1365.	1.12
37.	2.	1366.	1.12
38.	2.	1367.	1.11
39.	2.	1368.	1.11
40.	2.	1369.	1.11
41.	1.99	1370.	1.11
42.	1.99	1371.	1.11
43.	1.99	1372.	1.11
44.	1.99	1373.	1.11
45.	1.99	1374.	1.11
46.	1.99	1375.	1.11
47.	1.98	1376.	1.11
48.	1.98	1377.	1.11
49.	1.98	1378.	1.11
50.	1.98	1379.	1.11
51.	1.98	1380.	1.11
52.	1.98	1381.	1.11
53.	1.98	1382.	1.11
54.	1.98	1383.	1.11
55.	1.97	1384.	1.11
56.	1.97	1385.	1.11
57.	1.97	1386.	1.11
58.	1.97	1387.	1.11
59.	1.97	1388.	1.11
60.	1.97	1389.	1.11
61.	1.97	1390.	1.11
62.	1.96	1391.	1.11
63.	1.96	1392.	1.11
64.	1.96	1393.	1.11
65.	1.96	1394.	1.11
66.	1.96	1395.	1.1
67.	1.96	1396.	1.1
68.	1.96	1397.	1.11
69.	1.95	1398.	1.1
70.	1.95	1399.	1.1
71.	1.95	1400.	1.1
72.	1.95	1401.	1.1
73.	1.95	1402.	1.1
74.	1.95	1403.	1.1
75.	1.95	1404.	1.1
76.	1.94	1405.	1.1
77.	1.94	1406.	1.1
78.	1.94	1407.	1.1
79.	1.94	1408.	1.1
80.	1.94	1409.	1.1
81.	1.94	1410.	1.1
82.	1.94	1411.	1.1
83.	1.94	1412.	1.1
84.	1.94	1413.	1.1
85.	1.93	1414.	1.1
86.	1.93	1415.	1.1
87.	1.93	1416.	1.1
88.	1.93	1417.	1.1
89.	1.93	1418.	1.1
90.	1.93	1419.	1.1
91.	1.93	1420.	1.09
92.	1.92	1421.	1.1
93.	1.92	1422.	1.1
94.	1.92	1423.	1.1
95.	1.92	1424.	1.09
96.	1.92	1425.	1.1
97.	1.92	1426.	1.09

LUMINANT

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
98.	1.92	1427.	1.09
99.	1.92	1428.	1.09
100.	1.92	1429.	1.09
101.	1.91	1430.	1.09
102.	1.91	1431.	1.09
103.	1.91	1432.	1.09
104.	1.91	1433.	1.09
105.	1.91	1434.	1.09
106.	1.91	1435.	1.09
107.	1.91	1436.	1.09
108.	1.91	1437.	1.09
109.	1.9	1438.	1.09
110.	1.9	1439.	1.09
111.	1.9	1440.	1.09
112.	1.9	1441.	1.09
113.	1.9	1442.	1.09
114.	1.9	1443.	1.09
115.	1.9	1444.	1.09
116.	1.9	1445.	1.09
117.	1.9	1446.	1.09
118.	1.89	1447.	1.09
119.	1.89	1448.	1.09
120.	1.89	1449.	1.09
121.	1.89	1450.	1.09
122.	1.89	1451.	1.09
123.	1.89	1452.	1.09
124.	1.89	1453.	1.09
125.	1.89	1454.	1.09
126.	1.88	1455.	1.08
127.	1.88	1456.	1.09
128.	1.88	1457.	1.08
129.	1.88	1458.	1.08
130.	1.88	1459.	1.08
131.	1.88	1460.	1.08
132.	1.88	1461.	1.08
133.	1.88	1462.	1.08
134.	1.88	1463.	1.08
135.	1.87	1464.	1.08
136.	1.87	1465.	1.08
137.	1.87	1466.	1.08
138.	1.87	1467.	1.08
139.	1.87	1468.	1.08
140.	1.87	1469.	1.08
141.	1.87	1470.	1.08
142.	1.87	1471.	1.08
143.	1.87	1472.	1.08
144.	1.87	1473.	1.08
145.	1.86	1474.	1.08
146.	1.86	1475.	1.08
147.	1.86	1476.	1.08
148.	1.86	1477.	1.08
149.	1.86	1478.	1.08
150.	1.86	1479.	1.08
151.	1.86	1480.	1.08
152.	1.86	1481.	1.08
153.	1.86	1482.	1.08
154.	1.85	1483.	1.08
155.	1.85	1484.	1.08
156.	1.85	1485.	1.08
157.	1.85	1486.	1.08
158.	1.85	1487.	1.07
159.	1.85	1488.	1.07
160.	1.85	1489.	1.07
161.	1.85	1490.	1.07
162.	1.85	1491.	1.07
163.	1.85	1492.	1.07

LUMINANT

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
164.	1.84	1493.	1.07
165.	1.84	1494.	1.07
166.	1.84	1495.	1.07
167.	1.84	1496.	1.07
168.	1.84	1497.	1.07
169.	1.84	1498.	1.07
170.	1.84	1499.	1.07
171.	1.84	1500.	1.07
172.	1.84	1501.	1.07
173.	1.84	1502.	1.07
174.	1.83	1503.	1.07
175.	1.83	1504.	1.07
176.	1.83	1505.	1.07
177.	1.83	1506.	1.07
178.	1.83	1507.	1.07
179.	1.83	1508.	1.07
180.	1.83	1509.	1.07
181.	1.83	1510.	1.07
182.	1.83	1511.	1.07
183.	1.82	1512.	1.07
184.	1.82	1513.	1.07
185.	1.82	1514.	1.07
186.	1.82	1515.	1.07
187.	1.82	1516.	1.07
188.	1.82	1517.	1.07
189.	1.82	1518.	1.06
190.	1.82	1519.	1.06
191.	1.82	1520.	1.06
192.	1.81	1521.	1.06
193.	1.81	1522.	1.06
194.	1.81	1523.	1.06
195.	1.81	1524.	1.06
196.	1.81	1525.	1.06
197.	1.81	1526.	1.06
198.	1.81	1527.	1.06
199.	1.81	1528.	1.06
200.	1.81	1529.	1.06
201.	1.81	1530.	1.06
202.	1.81	1531.	1.06
203.	1.8	1532.	1.06
204.	1.8	1533.	1.06
205.	1.8	1534.	1.06
206.	1.8	1535.	1.06
207.	1.8	1536.	1.06
208.	1.8	1537.	1.06
209.	1.8	1538.	1.06
210.	1.8	1539.	1.06
211.	1.8	1540.	1.06
212.	1.8	1541.	1.06
213.	1.79	1542.	1.06
214.	1.79	1543.	1.06
215.	1.79	1544.	1.06
216.	1.79	1545.	1.05
217.	1.79	1546.	1.05
218.	1.79	1547.	1.06
219.	1.79	1548.	1.06
220.	1.79	1549.	1.06
221.	1.79	1550.	1.05
222.	1.79	1551.	1.05
223.	1.78	1552.	1.05
224.	1.78	1553.	1.05
225.	1.78	1554.	1.05
226.	1.78	1555.	1.05
227.	1.78	1556.	1.05
228.	1.78	1557.	1.05
229.	1.78	1558.	1.05

LUMINANT

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
230.	1.78	1559.	1.05
231.	1.78	1560.	1.05
232.	1.78	1561.	1.05
233.	1.78	1562.	1.05
234.	1.77	1563.	1.05
235.	1.77	1564.	1.05
236.	1.77	1565.	1.05
237.	1.77	1566.	1.05
238.	1.77	1567.	1.05
239.	1.77	1568.	1.05
240.	1.77	1569.	1.05
241.	1.77	1570.	1.05
242.	1.77	1571.	1.05
243.	1.77	1572.	1.05
244.	1.76	1573.	1.05
245.	1.76	1574.	1.05
246.	1.76	1575.	1.05
247.	1.76	1576.	1.05
248.	1.76	1577.	1.05
249.	1.76	1578.	1.05
250.	1.76	1579.	1.05
251.	1.76	1580.	1.05
252.	1.76	1581.	1.04
253.	1.75	1582.	1.04
254.	1.75	1583.	1.04
255.	1.76	1584.	1.04
256.	1.75	1585.	1.04
257.	1.75	1586.	1.04
258.	1.75	1587.	1.04
259.	1.75	1588.	1.04
260.	1.75	1589.	1.04
261.	1.75	1590.	1.04
262.	1.75	1591.	1.04
263.	1.75	1592.	1.04
264.	1.75	1593.	1.04
265.	1.74	1594.	1.04
266.	1.74	1595.	1.04
267.	1.74	1596.	1.04
268.	1.74	1597.	1.04
269.	1.74	1598.	1.04
270.	1.74	1599.	1.04
271.	1.74	1600.	1.04
272.	1.74	1601.	1.04
273.	1.74	1602.	1.04
274.	1.74	1603.	1.04
275.	1.74	1604.	1.04
276.	1.74	1605.	1.04
277.	1.73	1606.	1.04
278.	1.73	1607.	1.04
279.	1.73	1608.	1.04
280.	1.73	1609.	1.04
281.	1.73	1610.	1.04
282.	1.73	1611.	1.04
283.	1.73	1612.	1.04
284.	1.73	1613.	1.03
285.	1.73	1614.	1.04
286.	1.72	1615.	1.03
287.	1.73	1616.	1.03
288.	1.73	1617.	1.03
289.	1.72	1618.	1.03
290.	1.72	1619.	1.03
291.	1.72	1620.	1.03
292.	1.72	1621.	1.03
293.	1.72	1622.	1.03
294.	1.72	1623.	1.03
295.	1.72	1624.	1.03

LUMINANT

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
296.	1.72	1625.	1.03
297.	1.72	1626.	1.03
298.	1.71	1627.	1.03
299.	1.71	1628.	1.03
300.	1.71	1629.	1.03
301.	1.71	1630.	1.03
302.	1.71	1631.	1.03
303.	1.71	1632.	1.03
304.	1.71	1633.	1.03
305.	1.71	1634.	1.03
306.	1.71	1635.	1.03
307.	1.71	1636.	1.03
308.	1.71	1637.	1.03
309.	1.71	1638.	1.03
310.	1.71	1639.	1.03
311.	1.7	1640.	1.03
312.	1.7	1641.	1.03
313.	1.7	1642.	1.03
314.	1.7	1643.	1.03
315.	1.7	1644.	1.03
316.	1.7	1645.	1.03
317.	1.7	1646.	1.03
318.	1.7	1647.	1.02
319.	1.7	1648.	1.02
320.	1.7	1649.	1.02
321.	1.7	1650.	1.02
322.	1.7	1651.	1.02
323.	1.7	1652.	1.02
324.	1.69	1653.	1.02
325.	1.69	1654.	1.02
326.	1.69	1655.	1.02
327.	1.69	1656.	1.02
328.	1.69	1657.	1.02
329.	1.69	1658.	1.02
330.	1.69	1659.	1.02
331.	1.69	1660.	1.02
332.	1.69	1661.	1.02
333.	1.68	1662.	1.02
334.	1.68	1663.	1.02
335.	1.68	1664.	1.02
336.	1.68	1665.	1.02
337.	1.68	1666.	1.02
338.	1.68	1667.	1.02
339.	1.68	1668.	1.02
340.	1.68	1669.	1.02
341.	1.68	1670.	1.02
342.	1.68	1671.	1.02
343.	1.68	1672.	1.02
344.	1.68	1673.	1.02
345.	1.68	1674.	1.02
346.	1.67	1675.	1.02
347.	1.67	1676.	1.02
348.	1.67	1677.	1.02
349.	1.67	1678.	1.02
350.	1.67	1679.	1.02
351.	1.67	1680.	1.01
352.	1.67	1681.	1.02
353.	1.67	1682.	1.02
354.	1.67	1683.	1.02
355.	1.67	1684.	1.01
356.	1.67	1685.	1.01
357.	1.67	1686.	1.01
358.	1.66	1687.	1.02
359.	1.66	1688.	1.01
360.	1.66	1689.	1.01
361.	1.66	1690.	1.01

LUMINANT

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
362.	1.66	1691.	1.01
363.	1.66	1692.	1.01
364.	1.66	1693.	1.01
365.	1.66	1694.	1.01
366.	1.66	1695.	1.01
367.	1.66	1696.	1.01
368.	1.66	1697.	1.01
369.	1.65	1698.	1.01
370.	1.65	1699.	1.01
371.	1.65	1700.	1.01
372.	1.65	1701.	1.01
373.	1.65	1702.	1.01
374.	1.65	1703.	1.01
375.	1.65	1704.	1.01
376.	1.65	1705.	1.01
377.	1.65	1706.	1.01
378.	1.65	1707.	1.01
379.	1.65	1708.	1.01
380.	1.65	1709.	1.01
381.	1.65	1710.	1.01
382.	1.65	1711.	1.01
383.	1.64	1712.	1.01
384.	1.64	1713.	1.01
385.	1.64	1714.	1.
386.	1.64	1715.	1.01
387.	1.64	1716.	1.01
388.	1.64	1717.	1.
389.	1.64	1718.	1.
390.	1.64	1719.	1.
391.	1.64	1720.	1.
392.	1.64	1721.	1.
393.	1.64	1722.	1.
394.	1.63	1723.	1.
395.	1.63	1724.	1.
396.	1.63	1725.	1.
397.	1.63	1726.	1.
398.	1.63	1727.	1.
399.	1.63	1728.	1.
400.	1.63	1729.	1.
401.	1.63	1730.	1.
402.	1.63	1731.	1.
403.	1.63	1732.	1.
404.	1.63	1733.	1.
405.	1.63	1734.	1.
406.	1.63	1735.	1.
407.	1.63	1736.	1.
408.	1.62	1737.	1.
409.	1.62	1738.	1.
410.	1.62	1739.	1.
411.	1.62	1740.	1.
412.	1.62	1741.	1.
413.	1.62	1742.	1.
414.	1.62	1743.	1.
415.	1.62	1744.	1.
416.	1.62	1745.	1.
417.	1.62	1746.	1.
418.	1.62	1747.	1.
419.	1.61	1748.	1.
420.	1.61	1749.	1.
421.	1.61	1750.	1.
422.	1.61	1751.	1.
423.	1.61	1752.	1.
424.	1.61	1753.	1.
425.	1.61	1754.	0.99
426.	1.61	1755.	1.
427.	1.61	1756.	1.

LUMINANT

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
428.	1.61	1757.	0.99
429.	1.61	1758.	0.99
430.	1.6	1759.	0.99
431.	1.61	1760.	0.99
432.	1.6	1761.	0.99
433.	1.6	1762.	0.99
434.	1.6	1763.	0.99
435.	1.6	1764.	0.99
436.	1.6	1765.	0.99
437.	1.6	1766.	0.99
438.	1.6	1767.	0.99
439.	1.6	1768.	0.99
440.	1.6	1769.	0.99
441.	1.6	1770.	0.99
442.	1.6	1771.	0.99
443.	1.6	1772.	0.99
444.	1.6	1773.	0.99
445.	1.6	1774.	0.99
446.	1.6	1775.	0.99
447.	1.59	1776.	0.99
448.	1.59	1777.	0.99
449.	1.59	1778.	0.99
450.	1.59	1779.	0.99
451.	1.59	1780.	0.99
452.	1.59	1781.	0.99
453.	1.59	1782.	0.99
454.	1.59	1783.	0.99
455.	1.59	1784.	0.98
456.	1.59	1785.	0.99
457.	1.59	1786.	0.98
458.	1.59	1787.	0.99
459.	1.58	1788.	0.99
460.	1.58	1789.	0.98
461.	1.58	1790.	0.99
462.	1.58	1791.	0.98
463.	1.58	1792.	0.98
464.	1.58	1793.	0.98
465.	1.58	1794.	0.98
466.	1.58	1795.	0.98
467.	1.58	1796.	0.98
468.	1.58	1797.	0.98
469.	1.58	1798.	0.98
470.	1.58	1799.	0.98
471.	1.58	1800.	0.98
472.	1.58	1801.	0.98
473.	1.57	1802.	0.98
474.	1.57	1803.	0.98
475.	1.57	1804.	0.98
476.	1.57	1805.	0.98
477.	1.57	1806.	0.98
478.	1.57	1807.	0.98
479.	1.57	1808.	0.98
480.	1.57	1809.	0.98
481.	1.57	1810.	0.98
482.	1.57	1811.	0.98
483.	1.57	1812.	0.98
484.	1.57	1813.	0.98
485.	1.57	1814.	0.98
486.	1.56	1815.	0.98
487.	1.56	1816.	0.98
488.	1.56	1817.	0.98
489.	1.56	1818.	0.98
490.	1.56	1819.	0.98
491.	1.56	1820.	0.98
492.	1.56	1821.	0.98
493.	1.56	1822.	0.98

LUMINANT

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
494.	1.56	1823.	0.98
495.	1.56	1824.	0.97
496.	1.56	1825.	0.98
497.	1.56	1826.	0.98
498.	1.56	1827.	0.97
499.	1.55	1828.	0.98
500.	1.55	1829.	0.98
501.	1.55	1830.	0.97
502.	1.55	1831.	0.97
503.	1.55	1832.	0.97
504.	1.55	1833.	0.97
505.	1.55	1834.	0.97
506.	1.55	1835.	0.97
507.	1.55	1836.	0.97
508.	1.55	1837.	0.97
509.	1.55	1838.	0.97
510.	1.55	1839.	0.97
511.	1.55	1840.	0.97
512.	1.55	1841.	0.97
513.	1.55	1842.	0.97
514.	1.54	1843.	0.97
515.	1.54	1844.	0.97
516.	1.54	1845.	0.97
517.	1.54	1846.	0.97
518.	1.54	1847.	0.97
519.	1.54	1848.	0.97
520.	1.54	1849.	0.97
521.	1.54	1850.	0.97
522.	1.54	1851.	0.97
523.	1.54	1852.	0.97
524.	1.54	1853.	0.97
525.	1.54	1854.	0.97
526.	1.54	1855.	0.97
527.	1.54	1856.	0.97
528.	1.53	1857.	0.97
529.	1.53	1858.	0.97
530.	1.53	1859.	0.97
531.	1.53	1860.	0.97
532.	1.53	1861.	0.97
533.	1.53	1862.	0.97
534.	1.53	1863.	0.96
535.	1.53	1864.	0.97
536.	1.53	1865.	0.96
537.	1.53	1866.	0.97
538.	1.53	1867.	0.97
539.	1.53	1868.	0.96
540.	1.52	1869.	0.97
541.	1.52	1870.	0.96
542.	1.52	1871.	0.96
543.	1.52	1872.	0.96
544.	1.52	1873.	0.96
545.	1.52	1874.	0.96
546.	1.52	1875.	0.96
547.	1.52	1876.	0.96
548.	1.52	1877.	0.96
549.	1.52	1878.	0.96
550.	1.52	1879.	0.96
551.	1.52	1880.	0.96
552.	1.52	1881.	0.96
553.	1.52	1882.	0.96
554.	1.52	1883.	0.96
555.	1.52	1884.	0.96
556.	1.52	1885.	0.96
557.	1.51	1886.	0.96
558.	1.51	1887.	0.96
559.	1.51	1888.	0.96

LUMINANT

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
560.	1.51	1889.	0.96
561.	1.51	1890.	0.96
562.	1.51	1891.	0.96
563.	1.51	1892.	0.96
564.	1.51	1893.	0.96
565.	1.51	1894.	0.96
566.	1.51	1895.	0.96
567.	1.51	1896.	0.96
568.	1.51	1897.	0.96
569.	1.51	1898.	0.96
570.	1.51	1899.	0.96
571.	1.5	1900.	0.96
572.	1.5	1901.	0.96
573.	1.5	1902.	0.96
574.	1.5	1903.	0.96
575.	1.5	1904.	0.96
576.	1.5	1905.	0.96
577.	1.5	1906.	0.95
578.	1.5	1907.	0.96
579.	1.5	1908.	0.95
580.	1.5	1909.	0.95
581.	1.5	1910.	0.95
582.	1.5	1911.	0.95
583.	1.5	1912.	0.96
584.	1.49	1913.	0.95
585.	1.49	1914.	0.95
586.	1.49	1915.	0.95
587.	1.49	1916.	0.95
588.	1.49	1917.	0.95
589.	1.49	1918.	0.95
590.	1.49	1919.	0.95
591.	1.49	1920.	0.95
592.	1.49	1921.	0.95
593.	1.49	1922.	0.95
594.	1.49	1923.	0.95
595.	1.49	1924.	0.95
596.	1.49	1925.	0.95
597.	1.49	1926.	0.95
598.	1.48	1927.	0.95
599.	1.49	1928.	0.95
600.	1.48	1929.	0.95
601.	1.48	1930.	0.95
602.	1.48	1931.	0.95
603.	1.48	1932.	0.95
604.	1.48	1933.	0.95
605.	1.48	1934.	0.95
606.	1.48	1935.	0.95
607.	1.48	1936.	0.95
608.	1.48	1937.	0.95
609.	1.48	1938.	0.95
610.	1.48	1939.	0.95
611.	1.48	1940.	0.95
612.	1.47	1941.	0.95
613.	1.48	1942.	0.95
614.	1.48	1943.	0.95
615.	1.47	1944.	0.95
616.	1.47	1945.	0.95
617.	1.47	1946.	0.95
618.	1.47	1947.	0.95
619.	1.47	1948.	0.95
620.	1.47	1949.	0.95
621.	1.47	1950.	0.95
622.	1.47	1951.	0.94
623.	1.47	1952.	0.94
624.	1.47	1953.	0.94
625.	1.47	1954.	0.94

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Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
626.	1.47	1955.	0.94
627.	1.47	1956.	0.94
628.	1.47	1957.	0.94
629.	1.46	1958.	0.94
630.	1.46	1959.	0.94
631.	1.46	1960.	0.94
632.	1.46	1961.	0.94
633.	1.46	1962.	0.94
634.	1.46	1963.	0.94
635.	1.46	1964.	0.94
636.	1.46	1965.	0.94
637.	1.46	1966.	0.94
638.	1.46	1967.	0.94
639.	1.46	1968.	0.94
640.	1.46	1969.	0.94
641.	1.46	1970.	0.94
642.	1.46	1971.	0.94
643.	1.46	1972.	0.94
644.	1.46	1973.	0.94
645.	1.45	1974.	0.94
646.	1.45	1975.	0.94
647.	1.45	1976.	0.94
648.	1.45	1977.	0.94
649.	1.45	1978.	0.94
650.	1.45	1979.	0.94
651.	1.45	1980.	0.94
652.	1.45	1981.	0.94
653.	1.45	1982.	0.94
654.	1.45	1983.	0.94
655.	1.45	1984.	0.94
656.	1.45	1985.	0.94
657.	1.45	1986.	0.94
658.	1.45	1987.	0.94
659.	1.45	1988.	0.94
660.	1.45	1989.	0.94
661.	1.44	1990.	0.94
662.	1.44	1991.	0.94
663.	1.45	1992.	0.94
664.	1.44	1993.	0.94
665.	1.44	1994.	0.93
666.	1.44	1995.	0.94
667.	1.44	1996.	0.93
668.	1.44	1997.	0.93
669.	1.44	1998.	0.93
670.	1.44	1999.	0.93
671.	1.44	2000.	0.93
672.	1.44	2001.	0.93
673.	1.44	2002.	0.93
674.	1.44	2003.	0.93
675.	1.44	2004.	0.93
676.	1.44	2005.	0.93
677.	1.43	2006.	0.93
678.	1.43	2007.	0.93
679.	1.43	2008.	0.93
680.	1.44	2009.	0.93
681.	1.43	2010.	0.93
682.	1.43	2011.	0.93
683.	1.43	2012.	0.93
684.	1.43	2013.	0.93
685.	1.43	2014.	0.93
686.	1.43	2015.	0.93
687.	1.43	2016.	0.93
688.	1.43	2017.	0.93
689.	1.43	2018.	0.93
690.	1.43	2019.	0.93
691.	1.43	2020.	0.93

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Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
692.	1.42	2021.	0.93
693.	1.43	2022.	0.93
694.	1.43	2023.	0.93
695.	1.43	2024.	0.93
696.	1.42	2025.	0.93
697.	1.42	2026.	0.93
698.	1.42	2027.	0.93
699.	1.42	2028.	0.93
700.	1.42	2029.	0.93
701.	1.42	2030.	0.93
702.	1.42	2031.	0.93
703.	1.42	2032.	0.93
704.	1.42	2033.	0.93
705.	1.42	2034.	0.93
706.	1.42	2035.	0.93
707.	1.42	2036.	0.93
708.	1.42	2037.	0.92
709.	1.42	2038.	0.93
710.	1.42	2039.	0.92
711.	1.41	2040.	0.93
712.	1.41	2041.	0.92
713.	1.42	2042.	0.92
714.	1.41	2043.	0.92
715.	1.41	2044.	0.92
716.	1.41	2045.	0.92
717.	1.41	2046.	0.92
718.	1.41	2047.	0.92
719.	1.41	2048.	0.92
720.	1.41	2049.	0.92
721.	1.41	2050.	0.92
722.	1.41	2051.	0.92
723.	1.41	2052.	0.92
724.	1.41	2053.	0.92
725.	1.41	2054.	0.92
726.	1.41	2055.	0.92
727.	1.4	2056.	0.92
728.	1.4	2057.	0.92
729.	1.4	2058.	0.92
730.	1.4	2059.	0.92
731.	1.4	2060.	0.92
732.	1.4	2061.	0.92
733.	1.4	2062.	0.92
734.	1.4	2063.	0.92
735.	1.4	2064.	0.92
736.	1.4	2065.	0.92
737.	1.4	2066.	0.92
738.	1.4	2067.	0.92
739.	1.4	2068.	0.92
740.	1.4	2069.	0.92
741.	1.4	2070.	0.92
742.	1.4	2071.	0.92
743.	1.4	2072.	0.92
744.	1.4	2073.	0.92
745.	1.4	2074.	0.92
746.	1.39	2075.	0.92
747.	1.39	2076.	0.92
748.	1.4	2077.	0.92
749.	1.4	2078.	0.92
750.	1.39	2079.	0.92
751.	1.39	2080.	0.92
752.	1.39	2081.	0.92
753.	1.39	2082.	0.92
754.	1.39	2083.	0.92
755.	1.39	2084.	0.92
756.	1.39	2085.	0.91
757.	1.39	2086.	0.92

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Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
758.	1.39	2087.	0.91
759.	1.39	2088.	0.91
760.	1.39	2089.	0.92
761.	1.38	2090.	0.91
762.	1.39	2091.	0.91
763.	1.39	2092.	0.91
764.	1.38	2093.	0.91
765.	1.39	2094.	0.91
766.	1.38	2095.	0.91
767.	1.38	2096.	0.91
768.	1.38	2097.	0.91
769.	1.38	2098.	0.91
770.	1.38	2099.	0.91
771.	1.38	2100.	0.91
772.	1.38	2101.	0.91
773.	1.38	2102.	0.91
774.	1.38	2103.	0.91
775.	1.38	2104.	0.91
776.	1.38	2105.	0.91
777.	1.38	2106.	0.91
778.	1.38	2107.	0.91
779.	1.38	2108.	0.91
780.	1.38	2109.	0.91
781.	1.38	2110.	0.91
782.	1.38	2111.	0.91
783.	1.37	2112.	0.91
784.	1.37	2113.	0.91
785.	1.37	2114.	0.91
786.	1.37	2115.	0.91
787.	1.37	2116.	0.91
788.	1.37	2117.	0.91
789.	1.37	2118.	0.91
790.	1.37	2119.	0.91
791.	1.37	2120.	0.91
792.	1.37	2121.	0.91
793.	1.37	2122.	0.91
794.	1.37	2123.	0.91
795.	1.37	2124.	0.91
796.	1.37	2125.	0.91
797.	1.37	2126.	0.91
798.	1.36	2127.	0.91
799.	1.37	2128.	0.91
800.	1.37	2129.	0.91
801.	1.36	2130.	0.91
802.	1.36	2131.	0.91
803.	1.36	2132.	0.91
804.	1.36	2133.	0.91
805.	1.36	2134.	0.9
806.	1.36	2135.	0.91
807.	1.36	2136.	0.9
808.	1.36	2137.	0.9
809.	1.36	2138.	0.9
810.	1.36	2139.	0.9
811.	1.36	2140.	0.9
812.	1.36	2141.	0.9
813.	1.36	2142.	0.9
814.	1.36	2143.	0.9
815.	1.35	2144.	0.9
816.	1.35	2145.	0.9
817.	1.36	2146.	0.9
818.	1.35	2147.	0.9
819.	1.35	2148.	0.9
820.	1.35	2149.	0.9
821.	1.35	2150.	0.9
822.	1.35	2151.	0.9
823.	1.35	2152.	0.9

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Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
824.	1.35	2153.	0.9
825.	1.35	2154.	0.9
826.	1.35	2155.	0.9
827.	1.35	2156.	0.9
828.	1.35	2157.	0.9
829.	1.35	2158.	0.9
830.	1.35	2159.	0.9
831.	1.35	2160.	0.9
832.	1.35	2161.	0.9
833.	1.35	2162.	0.9
834.	1.35	2163.	0.9
835.	1.35	2164.	0.9
836.	1.35	2165.	0.9
837.	1.35	2166.	0.9
838.	1.34	2167.	0.9
839.	1.34	2168.	0.9
840.	1.34	2169.	0.9
841.	1.34	2170.	0.9
842.	1.34	2171.	0.9
843.	1.35	2172.	0.9
844.	1.34	2173.	0.9
845.	1.34	2174.	0.9
846.	1.34	2175.	0.9
847.	1.34	2176.	0.9
848.	1.34	2177.	0.9
849.	1.34	2178.	0.9
850.	1.34	2179.	0.9
851.	1.34	2180.	0.9
852.	1.34	2181.	0.9
853.	1.34	2182.	0.9
854.	1.34	2183.	0.89
855.	1.33	2184.	0.9
856.	1.34	2185.	0.89
857.	1.33	2186.	0.89
858.	1.33	2187.	0.89
859.	1.33	2188.	0.89
860.	1.33	2189.	0.9
861.	1.33	2190.	0.89
862.	1.33	2191.	0.89
863.	1.33	2192.	0.89
864.	1.33	2193.	0.89
865.	1.33	2194.	0.89
866.	1.33	2195.	0.89
867.	1.33	2196.	0.89
868.	1.33	2197.	0.89
869.	1.33	2198.	0.89
870.	1.33	2199.	0.89
871.	1.33	2200.	0.89
872.	1.33	2201.	0.89
873.	1.32	2202.	0.89
874.	1.33	2203.	0.89
875.	1.32	2204.	0.89
876.	1.33	2205.	0.89
877.	1.32	2206.	0.89
878.	1.32	2207.	0.89
879.	1.32	2208.	0.89
880.	1.32	2209.	0.89
881.	1.32	2210.	0.89
882.	1.32	2211.	0.89
883.	1.32	2212.	0.89
884.	1.32	2213.	0.89
885.	1.32	2214.	0.89
886.	1.32	2215.	0.89
887.	1.32	2216.	0.89
888.	1.32	2217.	0.89
889.	1.32	2218.	0.89

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Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
890.	1.32	2219.	0.89
891.	1.32	2220.	0.89
892.	1.32	2221.	0.89
893.	1.32	2222.	0.89
894.	1.31	2223.	0.89
895.	1.31	2224.	0.89
896.	1.31	2225.	0.89
897.	1.31	2226.	0.89
898.	1.31	2227.	0.89
899.	1.31	2228.	0.88
900.	1.31	2229.	0.89
901.	1.31	2230.	0.89
902.	1.31	2231.	0.88
903.	1.31	2232.	0.89
904.	1.31	2233.	0.88
905.	1.31	2234.	0.88
906.	1.31	2235.	0.88
907.	1.31	2236.	0.88
908.	1.31	2237.	0.89
909.	1.31	2238.	0.88
910.	1.31	2239.	0.88
911.	1.31	2240.	0.88
912.	1.3	2241.	0.88
913.	1.31	2242.	0.88
914.	1.3	2243.	0.88
915.	1.3	2244.	0.88
916.	1.3	2245.	0.88
917.	1.3	2246.	0.88
918.	1.3	2247.	0.88
919.	1.3	2248.	0.88
920.	1.3	2249.	0.88
921.	1.3	2250.	0.88
922.	1.3	2251.	0.88
923.	1.3	2252.	0.88
924.	1.3	2253.	0.88
925.	1.3	2254.	0.88
926.	1.3	2255.	0.88
927.	1.3	2256.	0.88
928.	1.3	2257.	0.88
929.	1.3	2258.	0.88
930.	1.29	2259.	0.88
931.	1.3	2260.	0.88
932.	1.3	2261.	0.88
933.	1.3	2262.	0.88
934.	1.3	2263.	0.88
935.	1.29	2264.	0.88
936.	1.29	2265.	0.88
937.	1.29	2266.	0.88
938.	1.29	2267.	0.88
939.	1.29	2268.	0.88
940.	1.29	2269.	0.88
941.	1.29	2270.	0.88
942.	1.29	2271.	0.88
943.	1.29	2272.	0.88
944.	1.29	2273.	0.88
945.	1.29	2274.	0.88
946.	1.29	2275.	0.88
947.	1.29	2276.	0.88
948.	1.29	2277.	0.87
949.	1.29	2278.	0.88
950.	1.29	2279.	0.87
951.	1.29	2280.	0.88
952.	1.29	2281.	0.88
953.	1.29	2282.	0.87
954.	1.28	2283.	0.87
955.	1.28	2284.	0.87

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Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
956.	1.28	2285.	0.88
957.	1.28	2286.	0.87
958.	1.28	2287.	0.87
959.	1.28	2288.	0.87
960.	1.28	2289.	0.87
961.	1.28	2290.	0.87
962.	1.28	2291.	0.87
963.	1.28	2292.	0.87
964.	1.28	2293.	0.87
965.	1.28	2294.	0.87
966.	1.28	2295.	0.87
967.	1.28	2296.	0.87
968.	1.28	2297.	0.87
969.	1.28	2298.	0.87
970.	1.28	2299.	0.87
971.	1.28	2300.	0.87
972.	1.28	2301.	0.87
973.	1.28	2302.	0.87
974.	1.28	2303.	0.87
975.	1.28	2304.	0.87
976.	1.27	2305.	0.87
977.	1.27	2306.	0.87
978.	1.27	2307.	0.87
979.	1.27	2308.	0.87
980.	1.27	2309.	0.87
981.	1.27	2310.	0.87
982.	1.27	2311.	0.87
983.	1.27	2312.	0.87
984.	1.27	2313.	0.87
985.	1.27	2314.	0.87
986.	1.27	2315.	0.87
987.	1.27	2316.	0.87
988.	1.27	2317.	0.87
989.	1.27	2318.	0.87
990.	1.27	2319.	0.87
991.	1.27	2320.	0.87
992.	1.27	2321.	0.87
993.	1.27	2322.	0.87
994.	1.27	2323.	0.87
995.	1.26	2324.	0.87
996.	1.26	2325.	0.87
997.	1.26	2326.	0.87
998.	1.26	2327.	0.87
999.	1.26	2328.	0.87
1000.	1.26	2329.	0.87
1001.	1.26	2330.	0.87
1002.	1.26	2331.	0.87
1003.	1.26	2332.	0.87
1004.	1.26	2333.	0.86
1005.	1.26	2334.	0.86
1006.	1.26	2335.	0.86
1007.	1.26	2336.	0.87
1008.	1.26	2337.	0.86
1009.	1.26	2338.	0.86
1010.	1.26	2339.	0.86
1011.	1.26	2340.	0.87
1012.	1.26	2341.	0.86
1013.	1.26	2342.	0.86
1014.	1.26	2343.	0.86
1015.	1.26	2344.	0.86
1016.	1.26	2345.	0.86
1017.	1.26	2346.	0.86
1018.	1.25	2347.	0.86
1019.	1.25	2348.	0.86
1020.	1.26	2349.	0.86
1021.	1.25	2350.	0.86

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Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
1022.	1.25	2351.	0.86
1023.	1.25	2352.	0.86
1024.	1.25	2353.	0.86
1025.	1.25	2354.	0.86
1026.	1.25	2355.	0.86
1027.	1.25	2356.	0.86
1028.	1.25	2357.	0.86
1029.	1.25	2358.	0.86
1030.	1.25	2359.	0.86
1031.	1.25	2360.	0.86
1032.	1.25	2361.	0.86
1033.	1.25	2362.	0.86
1034.	1.25	2363.	0.86
1035.	1.25	2364.	0.86
1036.	1.25	2365.	0.86
1037.	1.24	2366.	0.86
1038.	1.24	2367.	0.86
1039.	1.24	2368.	0.86
1040.	1.24	2369.	0.86
1041.	1.24	2370.	0.86
1042.	1.24	2371.	0.86
1043.	1.24	2372.	0.86
1044.	1.24	2373.	0.86
1045.	1.24	2374.	0.86
1046.	1.24	2375.	0.86
1047.	1.24	2376.	0.86
1048.	1.24	2377.	0.86
1049.	1.24	2378.	0.86
1050.	1.24	2379.	0.86
1051.	1.24	2380.	0.86
1052.	1.24	2381.	0.86
1053.	1.24	2382.	0.86
1054.	1.24	2383.	0.86
1055.	1.24	2384.	0.86
1056.	1.24	2385.	0.86
1057.	1.24	2386.	0.86
1058.	1.24	2387.	0.86
1059.	1.23	2388.	0.86
1060.	1.24	2389.	0.85
1061.	1.23	2390.	0.86
1062.	1.23	2391.	0.85
1063.	1.23	2392.	0.85
1064.	1.23	2393.	0.85
1065.	1.23	2394.	0.85
1066.	1.23	2395.	0.85
1067.	1.23	2396.	0.85
1068.	1.23	2397.	0.85
1069.	1.23	2398.	0.85
1070.	1.23	2399.	0.85
1071.	1.23	2400.	0.85
1072.	1.23	2401.	0.85
1073.	1.23	2402.	0.85
1074.	1.23	2403.	0.85
1075.	1.23	2404.	0.85
1076.	1.23	2405.	0.85
1077.	1.23	2406.	0.85
1078.	1.23	2407.	0.85
1079.	1.23	2408.	0.85
1080.	1.23	2409.	0.85
1081.	1.23	2410.	0.85
1082.	1.23	2411.	0.85
1083.	1.22	2412.	0.85
1084.	1.23	2413.	0.85
1085.	1.23	2414.	0.85
1086.	1.22	2415.	0.85
1087.	1.22	2416.	0.85

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Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
1088.	1.22	2417.	0.85
1089.	1.22	2418.	0.85
1090.	1.22	2419.	0.85
1091.	1.22	2420.	0.85
1092.	1.22	2421.	0.85
1093.	1.22	2422.	0.85
1094.	1.22	2423.	0.85
1095.	1.22	2424.	0.85
1096.	1.22	2425.	0.85
1097.	1.22	2426.	0.85
1098.	1.22	2427.	0.85
1099.	1.22	2428.	0.85
1100.	1.22	2429.	0.85
1101.	1.22	2430.	0.85
1102.	1.22	2431.	0.85
1103.	1.22	2432.	0.85
1104.	1.22	2433.	0.85
1105.	1.21	2434.	0.85
1106.	1.21	2435.	0.85
1107.	1.21	2436.	0.85
1108.	1.21	2437.	0.85
1109.	1.21	2438.	0.85
1110.	1.21	2439.	0.85
1111.	1.21	2440.	0.85
1112.	1.21	2441.	0.85
1113.	1.21	2442.	0.85
1114.	1.21	2443.	0.84
1115.	1.21	2444.	0.85
1116.	1.21	2445.	0.84
1117.	1.21	2446.	0.85
1118.	1.21	2447.	0.84
1119.	1.21	2448.	0.85
1120.	1.21	2449.	0.85
1121.	1.21	2450.	0.84
1122.	1.21	2451.	0.84
1123.	1.21	2452.	0.84
1124.	1.21	2453.	0.84
1125.	1.21	2454.	0.84
1126.	1.21	2455.	0.84
1127.	1.21	2456.	0.84
1128.	1.2	2457.	0.84
1129.	1.2	2458.	0.84
1130.	1.2	2459.	0.84
1131.	1.2	2460.	0.84
1132.	1.2	2461.	0.84
1133.	1.2	2462.	0.84
1134.	1.2	2463.	0.84
1135.	1.2	2464.	0.84
1136.	1.2	2465.	0.84
1137.	1.2	2466.	0.84
1138.	1.2	2467.	0.84
1139.	1.2	2468.	0.84
1140.	1.2	2469.	0.84
1141.	1.2	2470.	0.84
1142.	1.2	2471.	0.84
1143.	1.2	2472.	0.84
1144.	1.2	2473.	0.84
1145.	1.2	2474.	0.84
1146.	1.2	2475.	0.84
1147.	1.2	2476.	0.84
1148.	1.2	2477.	0.84
1149.	1.2	2478.	0.84
1150.	1.2	2479.	0.84
1151.	1.19	2480.	0.84
1152.	1.2	2481.	0.84
1153.	1.19	2482.	0.84

LUMINANT

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
1154.	1.19	2483.	0.84
1155.	1.19	2484.	0.84
1156.	1.19	2485.	0.84
1157.	1.19	2486.	0.84
1158.	1.19	2487.	0.84
1159.	1.19	2488.	0.84
1160.	1.19	2489.	0.84
1161.	1.19	2490.	0.84
1162.	1.19	2491.	0.84
1163.	1.19	2492.	0.84
1164.	1.19	2493.	0.84
1165.	1.19	2494.	0.84
1166.	1.19	2495.	0.84
1167.	1.19	2496.	0.84
1168.	1.19	2497.	0.84
1169.	1.19	2498.	0.84
1170.	1.19	2499.	0.84
1171.	1.19	2500.	0.83
1172.	1.19	2501.	0.84
1173.	1.19	2502.	0.84
1174.	1.19	2503.	0.83
1175.	1.18	2504.	0.83
1176.	1.19	2505.	0.83
1177.	1.19	2506.	0.83
1178.	1.18	2507.	0.83
1179.	1.18	2508.	0.83
1180.	1.18	2509.	0.83
1181.	1.18	2510.	0.83
1182.	1.18	2511.	0.83
1183.	1.18	2512.	0.83
1184.	1.18	2513.	0.83
1185.	1.18	2514.	0.83
1186.	1.18	2515.	0.83
1187.	1.18	2516.	0.83
1188.	1.18	2517.	0.83
1189.	1.18	2518.	0.83
1190.	1.18	2519.	0.83
1191.	1.18	2520.	0.83
1192.	1.18	2521.	0.83
1193.	1.18	2522.	0.83
1194.	1.18	2523.	0.83
1195.	1.18	2524.	0.83
1196.	1.18	2525.	0.83
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1198.	1.18	2527.	0.83
1199.	1.18	2528.	0.83
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1201.	1.18	2530.	0.83
1202.	1.17	2531.	0.83
1203.	1.17	2532.	0.83
1204.	1.17	2533.	0.83
1205.	1.18	2534.	0.83
1206.	1.17	2535.	0.83
1207.	1.17	2536.	0.83
1208.	1.17	2537.	0.83
1209.	1.17	2538.	0.83
1210.	1.17	2539.	0.83
1211.	1.17	2540.	0.83
1212.	1.17	2541.	0.83
1213.	1.17	2542.	0.83
1214.	1.17	2543.	0.83
1215.	1.17	2544.	0.83
1216.	1.17	2545.	0.83
1217.	1.17	2546.	0.83
1218.	1.17	2547.	0.83
1219.	1.17	2548.	0.83

LUMINANT

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
1220.	1.17	2549.	0.83
1221.	1.17	2550.	0.83
1222.	1.17	2551.	0.83
1223.	1.17	2552.	0.83
1224.	1.17	2553.	0.83
1225.	1.16	2554.	0.83
1226.	1.16	2555.	0.83
1227.	1.16	2556.	0.83
1228.	1.17	2557.	0.83
1229.	1.16	2558.	0.83
1230.	1.16	2559.	0.83
1231.	1.16	2560.	0.83
1232.	1.16	2561.	0.83
1233.	1.16	2562.	0.82
1234.	1.16	2563.	0.82
1235.	1.16	2564.	0.82
1236.	1.16	2565.	0.83
1237.	1.16	2566.	0.82
1238.	1.16	2567.	0.82
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1242.	1.16	2571.	0.82
1243.	1.16	2572.	0.82
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1256.	1.16	2585.	0.82
1257.	1.15	2586.	0.82
1258.	1.15	2587.	0.82
1259.	1.15	2588.	0.82
1260.	1.15	2589.	0.82
1261.	1.15	2590.	0.82
1262.	1.15	2591.	0.82
1263.	1.15	2592.	0.82
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1281.	1.14	2610.	0.82
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1283.	1.14	2612.	0.82
1284.	1.14	2613.	0.82
1285.	1.14	2614.	0.82

LUMINANT

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
1286.	1.14	2615.	0.82
1287.	1.14	2616.	0.81
1288.	1.14	2617.	0.82
1289.	1.14	2618.	0.82
1290.	1.14	2619.	0.82
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1293.	1.14	2622.	0.82
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1295.	1.14	2624.	0.81
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1297.	1.14	2626.	0.81
1298.	1.14	2627.	0.81
1299.	1.14	2628.	0.81
1300.	1.14	2629.	0.81
1301.	1.14	2630.	0.81
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1307.	1.13	2636.	0.81
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1329.	1.13	2658.	0.81
1330.	1.13	2659.	0.81
1331.	1.13		

LUMINANT

SOLUTION

Slug Test
Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
ln(Re/rw): 2.56

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
K	1.621E-5	cm/sec
y0	2.006	ft

T = K*b = 0.003953 cm²/sec

REPORT

Groundwater Monitoring System Certification Addendum No. 1

Martin Lake Steam Electric Station - PDP 5
Rusk County, Texas

Submitted to:

Luminant Generation Company LLC

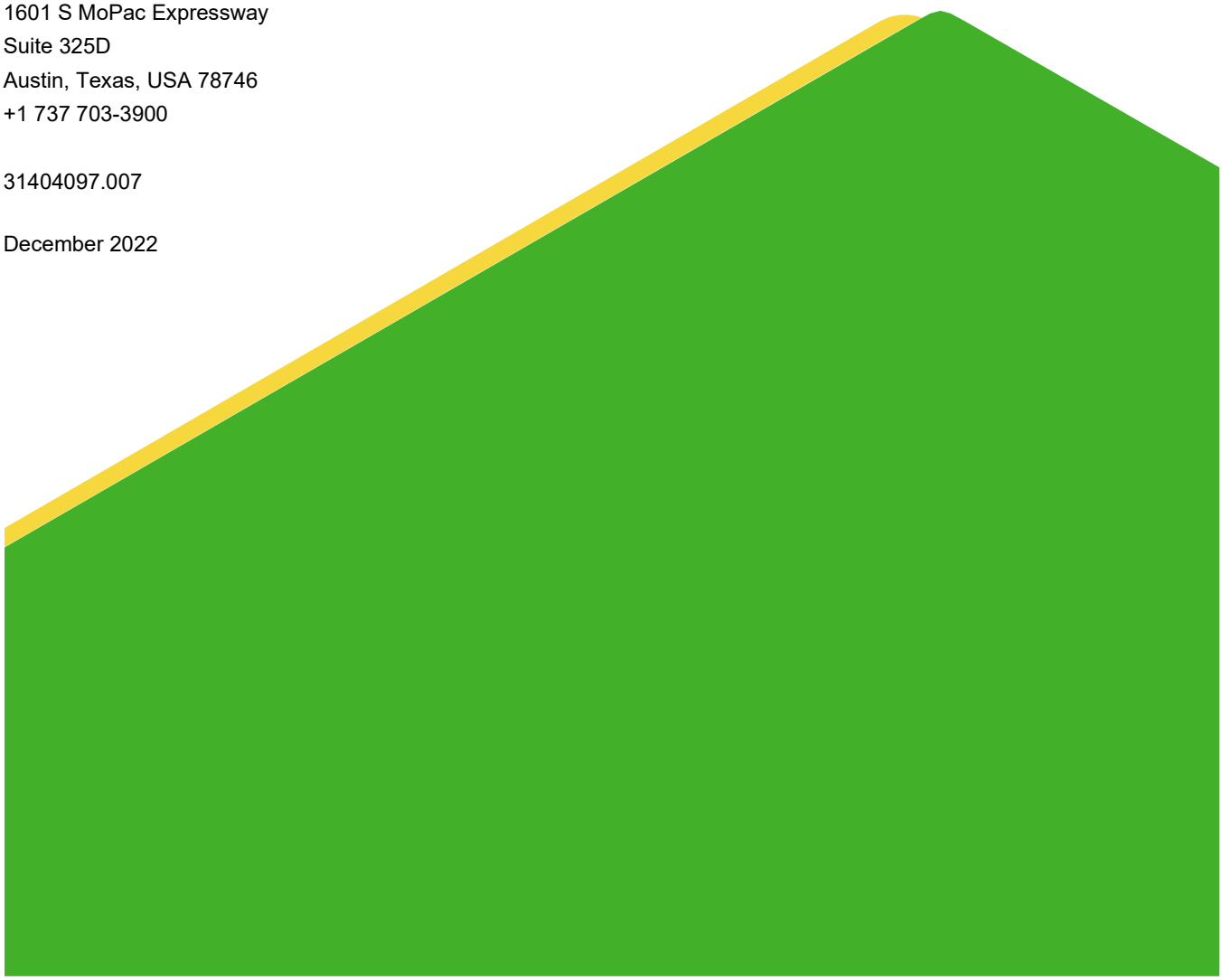
Submitted by:

WSP GOLDER

1601 S MoPac Expressway
Suite 325D
Austin, Texas, USA 78746
+1 737 703-3900

31404097.007

December 2022



PROFESSIONAL CERTIFICATION

This document and all attachments were prepared by WSP Golder under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I hereby certify that Addendum No.1 to the Groundwater Monitoring System Certification for the Permanent Disposal Pond 5 at the Martin Lake Steam Electric Station has been prepared in accordance with the requirements of 40 C.F.R. §257.91.

Patrick J. Behling, P.E.
Principal Engineer
WSP Golder
Texas Firm Registration No. 22771

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DOCUMENT REVISION RECORD

Issue No.	Date	Details of Revisions
Revision 0	October 2017	Original Document
Addendum 1	December 2022	Includes the cross section location map that was missing from the original 2017 report, an updated cross section location map, and updated cross sections

1.0 INTRODUCTION

On behalf of Luminant Generation Company LLC (Luminant), WSP Golder (Golder) has prepared this Addendum No. 1 to the Groundwater Monitoring System Certification for the Permanent Disposal Pond 5 (PDP 5) located at the Martin Lake Steam Electric Station (MLSES) in Rusk County, Texas. PDP 5 is used to store coal combustion residuals (CCRs) from other MLSES CCR surface impoundments during cleaning cycles and for storage of water from large precipitation events and excess process wastewater from the MLSES flue gas desulfurization (FGD) system (scrubber gypsum) and bottom ash transport systems. PDP-5 is active and is considered an Existing CCR Surface Impoundment under 40 C.F.R. Part 257, Subpart D (the CCR Rule).

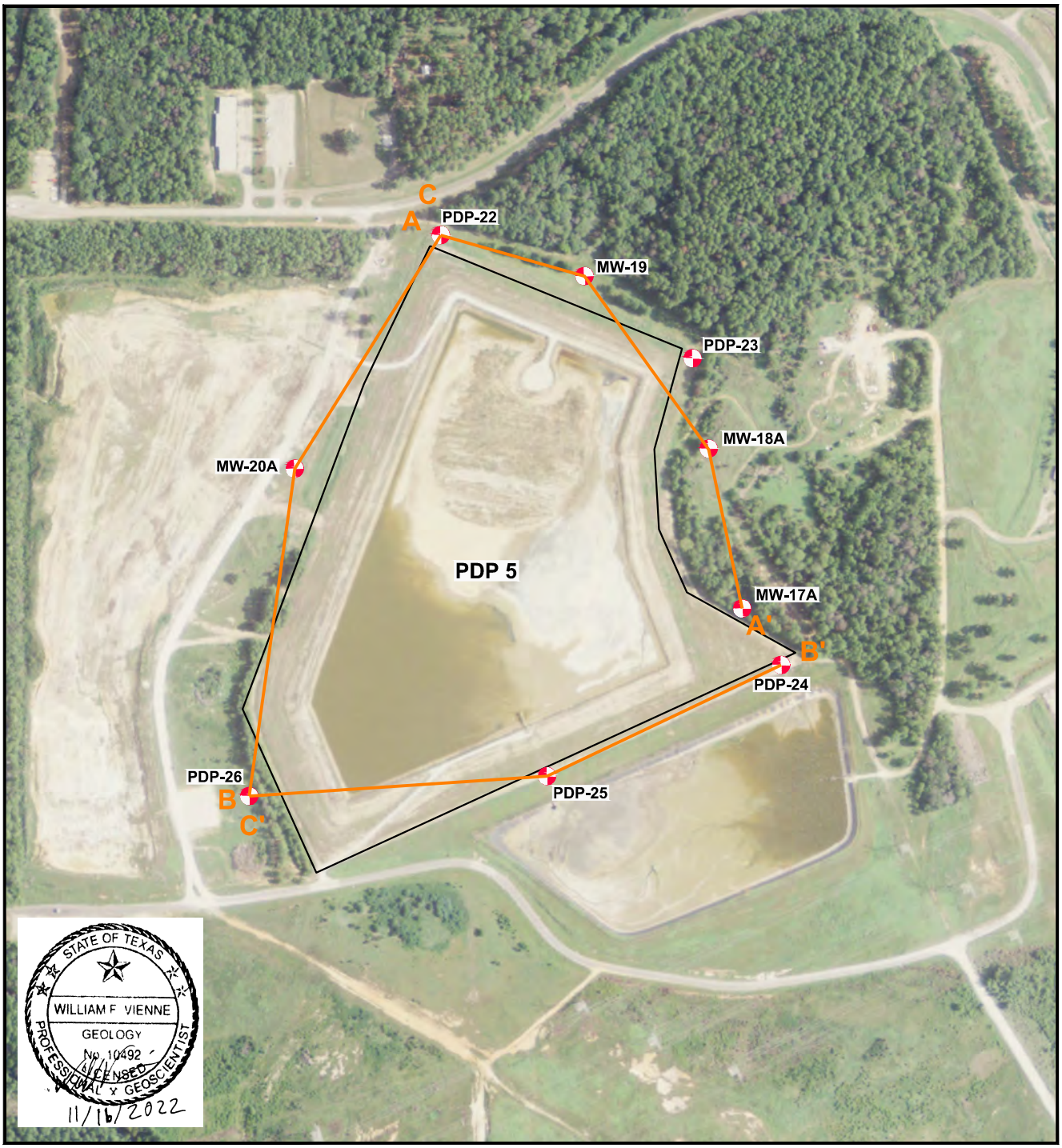
2.0 SUMMARY OF UPDATES

The original Groundwater Monitoring System Certification for PDP 5 was prepared in October 2017 in accordance with 40 C.F.R. §257.91 and placed in the MLSES operating record in accordance with 40 C.F.R. §257.105 (PBW, 2017). This Addendum No. 1 provides the cross section location map that was missing in the original report (Figure 1), an updated cross section location map (Figure 2), and updated cross sections that include additional construction information for PDP 5 and other closed and capped pre-CCR Rule coal ash surface impoundments (PDP 1 through 4) that are located immediately adjacent to PDP 5 (Figure 3 and 4).

3.0 REFERENCES

Pastor, Behling & Wheeler, LLC (PBW), 2017. CCR Groundwater Monitoring System Certification – PDP 5, Martin Lake Steam Electric Station, Rusk County, Texas.

FIGURES



STATE OF TEXAS
WILLIAM F VIENNE
GEOLOGY
No 10492
LICENSED
PROFESSIONAL GEOSCIENTIST
11/16/2022

EXPLANATION

- CCR Monitoring Well
- A A' Geologic Cross Section Location Lines

N

Scale in Feet

0 275 550

SOURCE:
Imagery from www.tnris.gov, Rusk County, aerial photographs, 2012.

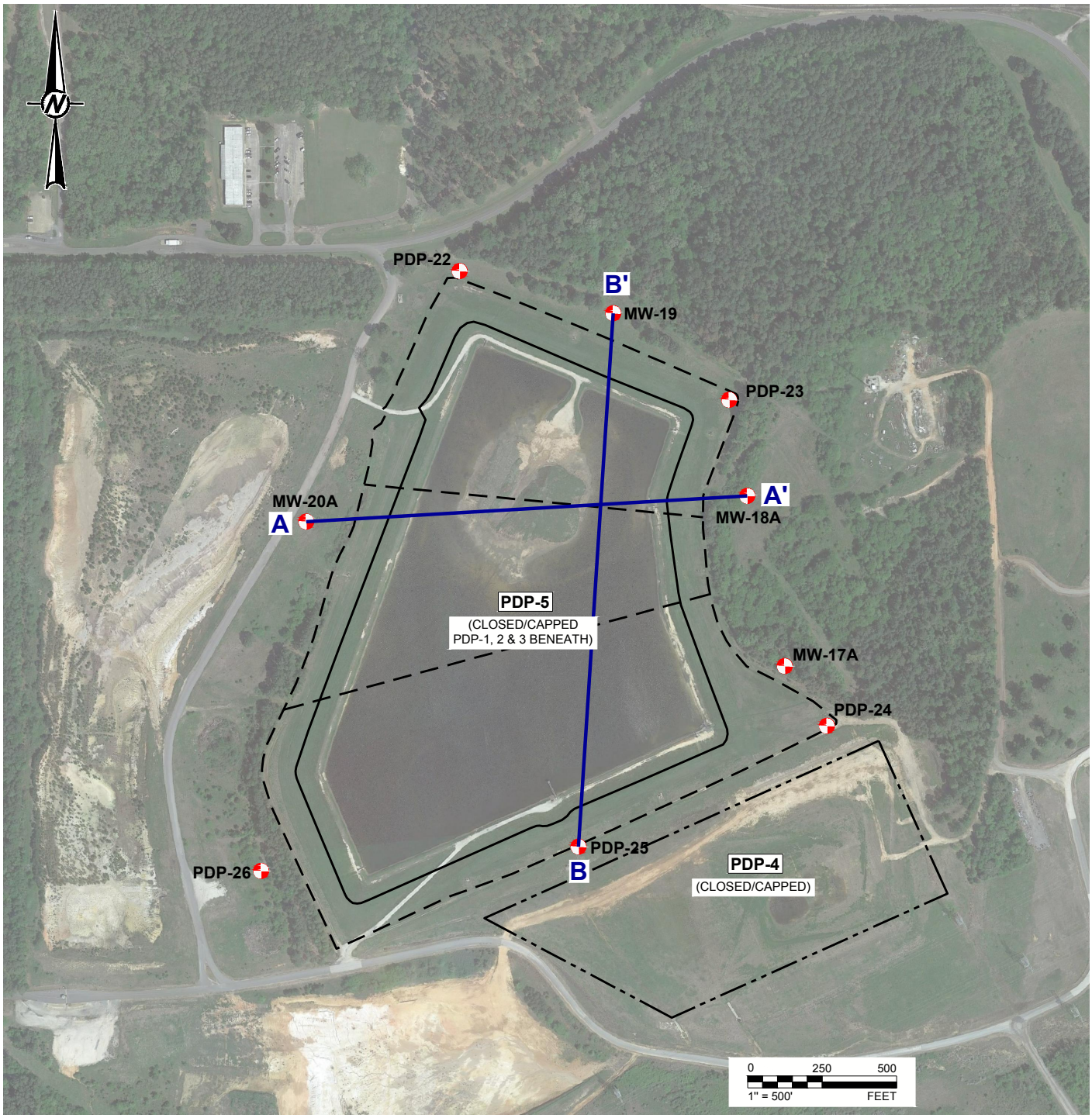
MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

Figure 1

PDP-5
CROSS SECTION LOCATION MAP

PROJECT: 5164B	BY: AJD	REVISIONS
DATE: SEPT., 2017	CHECKED: PJB	

WSP GOLDER



LEGEND

- CCR MONITORING WELL
- APPROXIMATE EXTENT OF CLOSED PDP 1, 2 & 3
- EXTERIOR TOE OF PDP-5 BERMS
- APPROXIMATE EXTENT OF CLOSED PDP-4
- A — A' GEOLOGIC CROSS SECTION LOCATION LINES

STATE OF TEXAS
WILLIAM F. VIENNE
GEOLOGY
No. 10492
LICENSED
PROFESSIONAL GEOSCIENTIST
11/16/2022

REFERENCE(S)
BASE MAP TAKEN FROM GOOGLE EARTH IMAGERY DATED 2019.

CLIENT
LUMINANT GENERATION COMPANY LLC

PROJECT
MARTIN LAKE STEAM ELECTRIC STATION PDP-5

TITLE
UPDATED CROSS SECTION LOCATION MAP

CONSULTANT
WSP GOLDER

YYYY-MM-DD	2021-11-09
DESIGNED	AJD
PREPARED	AJD
REVIEWED	PJB
APPROVED	PJB

PROJECT NO.	CONTROL	REV.	FIGURE
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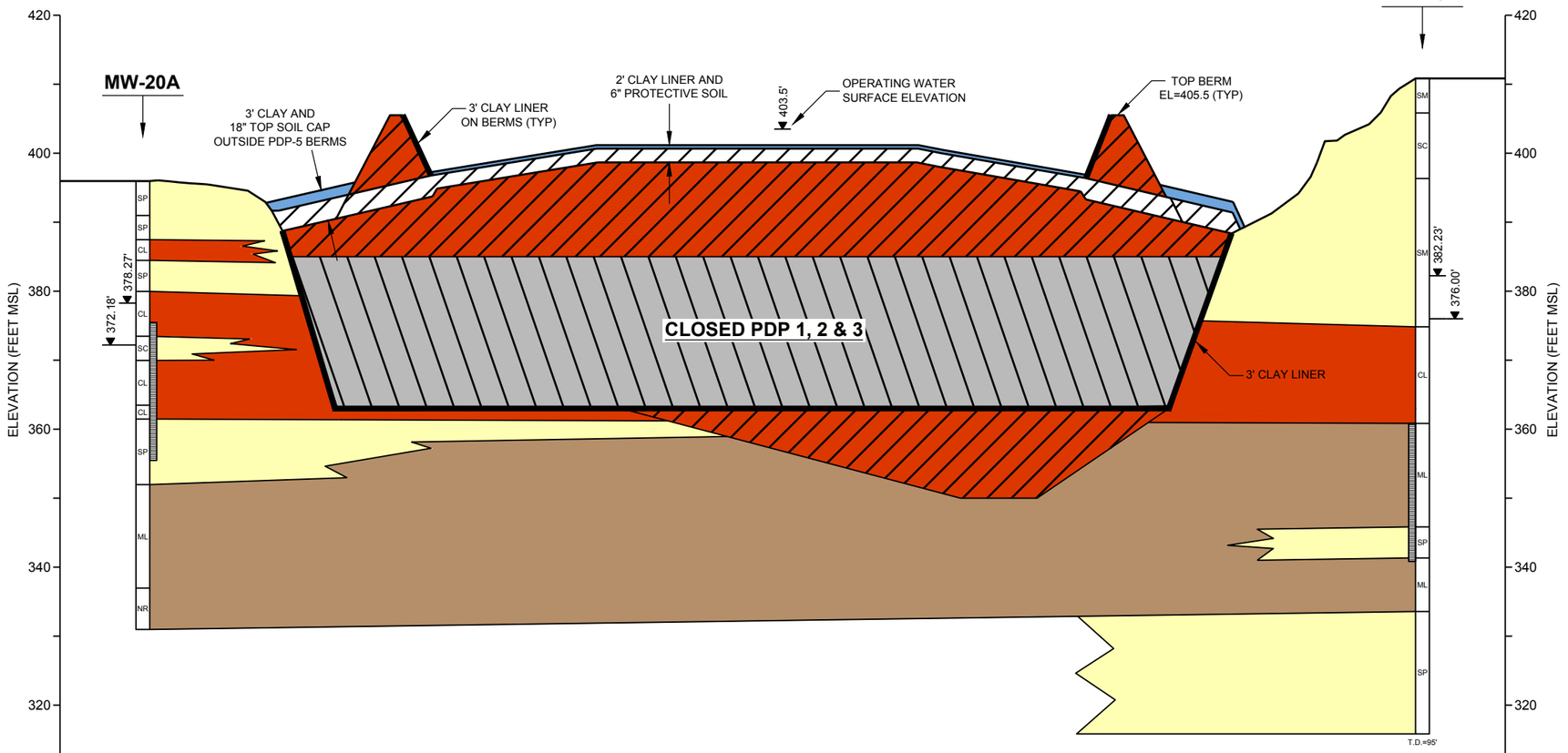
0 1 in

A — WEST

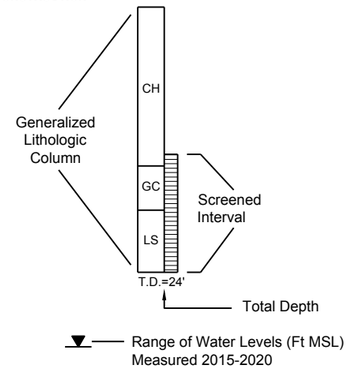
A' — EAST



LEGEND

- SAND
- CLAY
- SILT
- TOP SOIL
- CLOSED PDP 1, 2 & 3
- PDP-5 CLAY LINER AND CLOSED PDP 1, 2 & 4 CLAY CAP
- FILL

MONITORING WELL CONSTRUCTION



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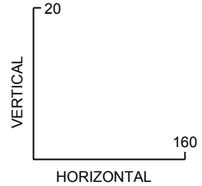

8x Vertical Exaggeration

STATE OF TEXAS
WILLIAM F. VIENNE
GEOLOGY
No. 10492
LICENSED
PROFESSIONAL GEOSCIENTIST
11/16/2022

CLIENT
LUMINANT GENERATION COMPANY LLC

PROJECT
MARTIN LAKE STEAM ELECTRIC STATION
PDP-5

TITLE
GEOLOGIC CROSS SECTION - A-A'

CONSULTANT
WSP GOLDER

YYYY-MM-DD	2021-11-09
DESIGNED	AJD
PREPARED	AJD
REVIEWED	PJB
APPROVED	PJB

PROJECT NO.	CONTROL	REV.	FIGURE
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APPENDIX F-Revision 2 February 27, 2024

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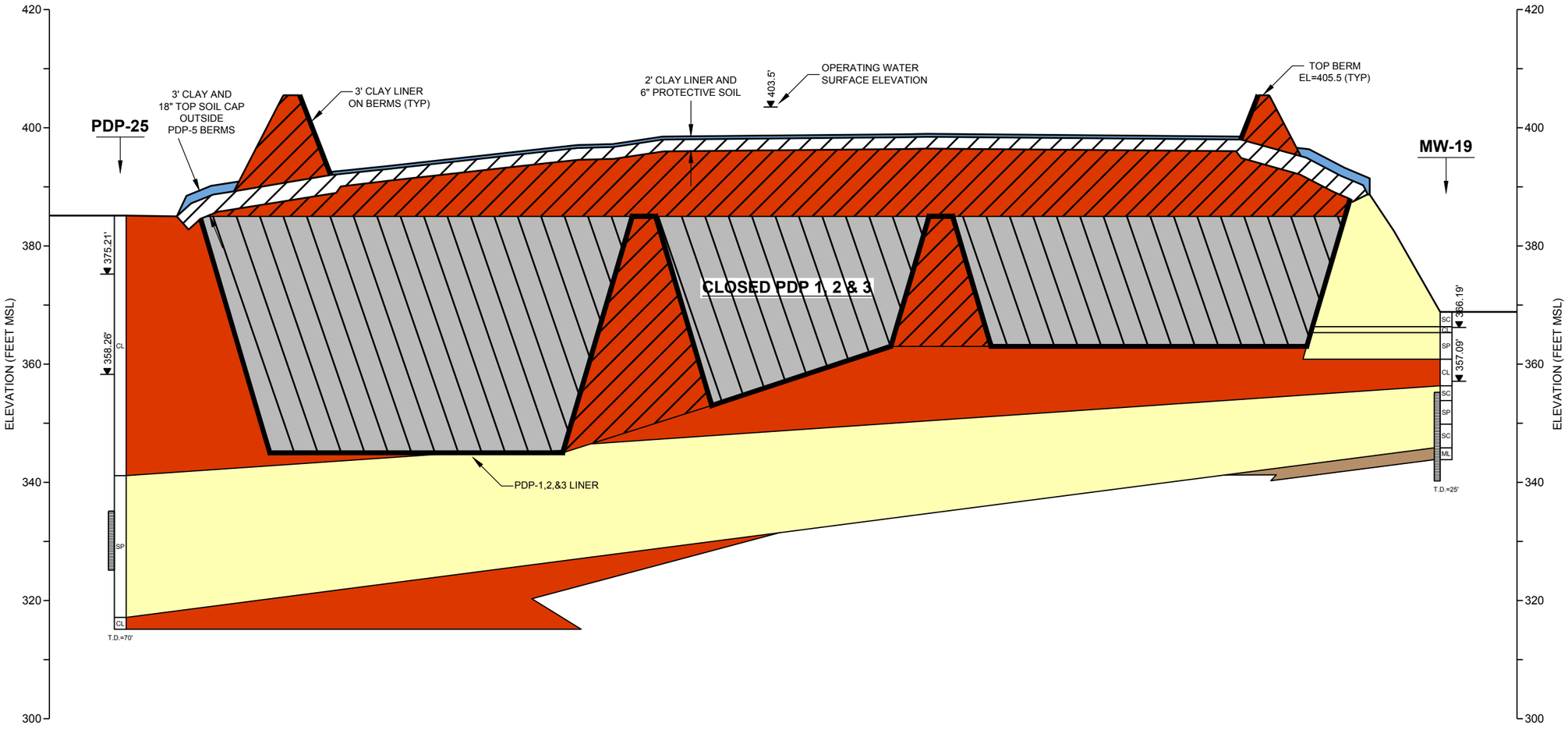
B
SOUTH

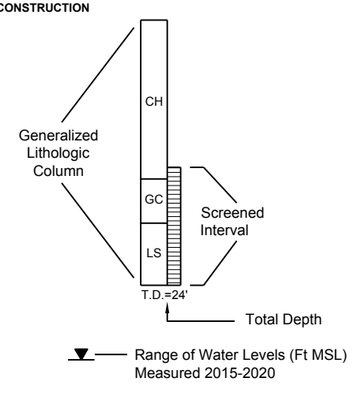
B'
NORTH



LEGEND

- SAND
- CLAY
- SILT
- TOP SOIL
- CLOSED PDP 1, 2 & 3
- PDP-5 CLAY LINER AND CLOSED PDP 1, 2 & 4 CLAY CAP
- FILL

MONITORING WELL CONSTRUCTION



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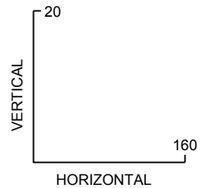

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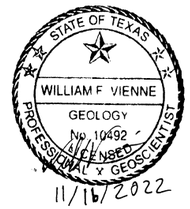

CLIENT
LUMINANT GENERATION COMPANY LLC

PROJECT
MARTIN LAKE STEAM ELECTRIC STATION
PDP-5

TITLE
GEOLOGIC CROSS SECTION - B-B'

CONSULTANT
WSP GOLDER

YYYY-MM-DD	2021-11-09
DESIGNED	AJD
PREPARED	AJD
REVIEWED	PJB
APPROVED	PJB

PROJECT NO.	CONTROL	REV.	FIGURE
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APPENDIX F-Revision 2 February 27, 2024

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REPORT

Groundwater Monitoring Plan - Revision 2

Martin Lake Steam Electric Station - A1 Area Landfill
Panola County, Texas

Submitted to:

Luminant Generation Company LLC

Submitted by:

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1601 S MoPac Expressway
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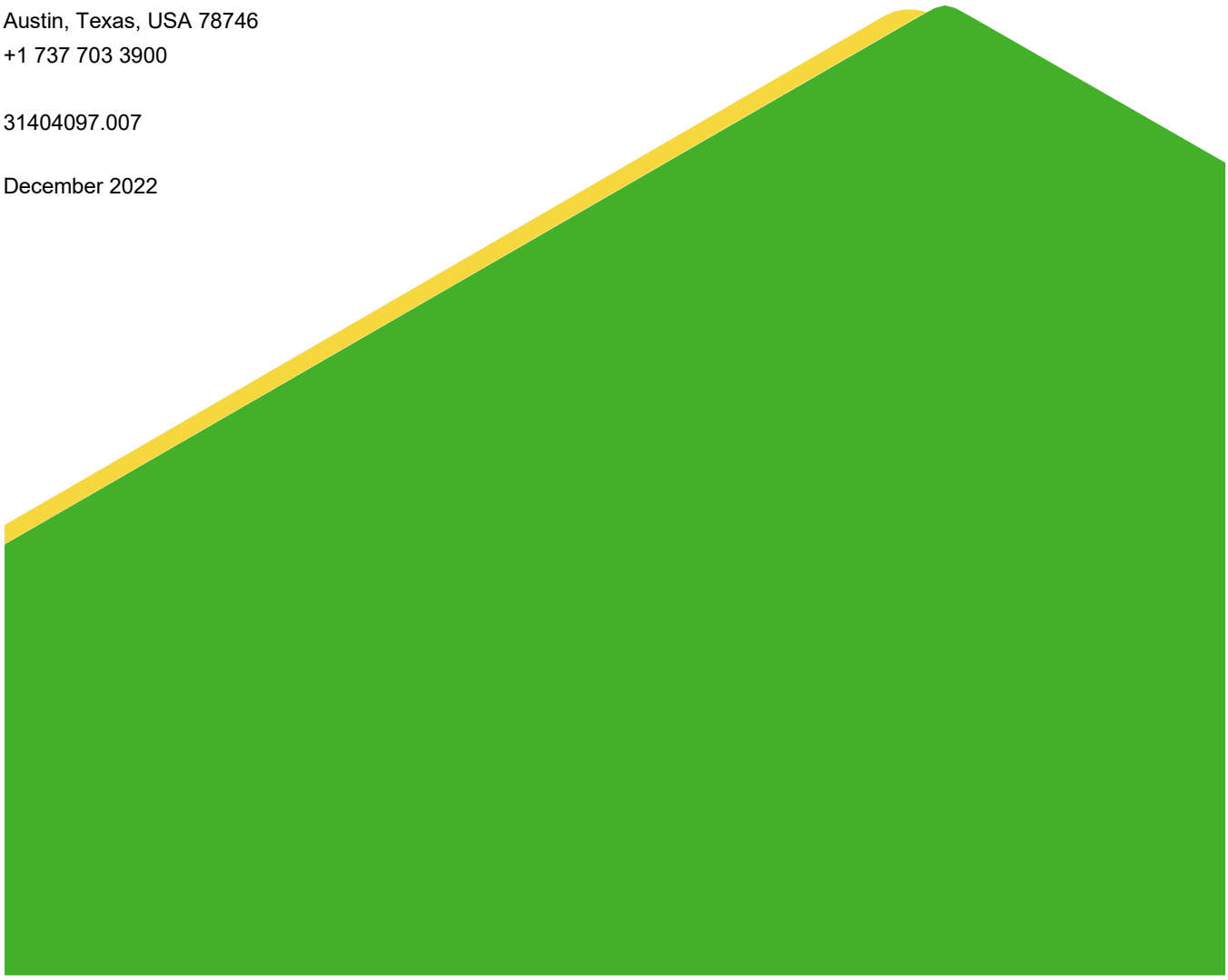
31404097.007

December 2022



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APPENDICES

Appendix A CCR Monitoring Well Logs

DOCUMENT REVISION RECORD

Issue No.	Date	Details of Revisions
Revision 0	October 2017	Original Document
Revision 1	January 2022	Updated information on data evaluation procedures, updated well information
Revision 2	December 2022	Signed/sealed report and added professional geoscientist seal to figures where appropriate, addressed sample shipment and quality assurance/quality control procedures, specified that the rate and direction of groundwater flow will be determined each sampling event, provided additional information on the statistical methods used to develop background values and evaluate sample data, specified that Alternate Source Demonstrations must be certified by a professional engineer, and updated GWPS information for cobalt, lithium, molybdenum

1.0 INTRODUCTION

Luminant Power (Luminant) operates the Martin Lake Steam Electric Station (MLSES) located approximately 5 miles southeast of Tatum, Rusk County, Texas (Figure 1). The MLSES consists of three coal/lignite-fired power generation units. Coal Combustion Residuals (CCRs) including fly ash, bottom ash and gypsum are generated as part of the MLSES unit operations. Currently, CCRs generated at the MLSES are transported off-site for beneficial reuse by third-parties or are managed by Luminant in surface impoundments located on the MLSES property or the A1 Area Landfill located approximately 2.5 miles east of the MLSES in Panola County, Texas. This report discusses the A1 Area Landfill (the Site).

The CCR Rule (40 CFR 257 Subpart D - *Standards for the Receipt of Coal Combustion Residuals in Landfills and Surface Impoundments*) has been promulgated by the EPA to regulate the management and disposal of CCRs as solid waste under Resource Conservation and Recovery Act (RCRA) Subtitle D. The CCR Rule establishes national minimum criteria for existing and new CCR landfills, existing and new CCR surface impoundments, and lateral expansions to landfills/impoundments. A groundwater monitoring plan was developed for the Site in accordance with Sections 257.90 through 257.95 of the CCR Rule (PBW, 2017a). The CCR groundwater monitoring system at the Site was certified by a professional engineer in accordance with Section 257.91 of the CCR Rule as part of a separate report (PBW, 2017b). This revised groundwater monitoring plan updates and replaces the previous groundwater monitoring plan for the A1 Area Landfill.

1.1 CCR Unit Groundwater Monitoring Applicability

Section 257.90 of the CCR Rule requires that existing CCR landfills and surface impoundments be in compliance with the following groundwater monitoring requirements:

- Install a groundwater monitoring system as required under Section 257.91;
- Develop a groundwater sampling and analysis program to include selection of the statistical procedures to be used for evaluating groundwater monitoring data as required under Section 257.93;
- Initiate a detection monitoring program to include obtaining a minimum of eight independent samples for each background and downgradient monitoring well as required under Section 257.94; and
- Begin evaluating the groundwater monitoring data for statistically significant increases over background levels for the constituents listed in Appendix III of this part as required under

Section 257.94.

Once a groundwater monitoring system and groundwater monitoring program has been established at the CCR unit, the owner or operator must conduct groundwater monitoring and, if necessary, corrective action throughout the active life and post-closure care period of the CCR unit. In the event of a release from a CCR unit, the owner or operator must take all necessary measures to control the source(s) of releases so as to reduce or eliminate, to the maximum extent feasible, further releases of contaminants into the environment.

For existing CCR landfills and surface impoundments, the owner or operator must prepare an annual groundwater monitoring and corrective action report to document the status of the groundwater monitoring and corrective action program for the CCR unit for the previous calendar year.

1.2 Groundwater Sampling and Analysis Requirements

The CCR Rule establishes groundwater sampling and analysis criteria that are designed to create consistency and ensure that monitoring results provide accurate representations of groundwater quality at the CCR groundwater monitoring wells. A sampling and analysis program must be developed for each unit that includes procedures and techniques for sample collection, sample preservation and shipment, analytical procedures, chain of custody control, and quality assurance and quality control. Depending on the constituents and concentrations detected, groundwater monitoring at each CCR unit may consist of detection monitoring (Section 257.94) only or a combination of detection monitoring and assessment monitoring (Section 257.95). Selected technical groundwater sampling and analysis criteria are described in detail below; however, the complete CCR Rule should be referenced for notification requirements and other criteria.

1.2.1 Groundwater Elevations

Groundwater elevations must be measured in each well immediately prior to purging, each time groundwater is sampled. The groundwater flow rate and direction must be determined each time the groundwater is sampled.

1.2.2 General Groundwater Analytical Requirements

The CCR groundwater monitoring program must include sampling and analytical methods that are appropriate for groundwater sampling and that accurately measure hazardous constituents and other

monitoring parameters in groundwater samples. The EPA publication *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods (SW-846)*, is EPA'S official compendium of analytical and sampling methods that have been evaluated and approved for use in complying with the RCRA regulations (EPA, 2015).

Groundwater monitoring under the CCR Rule includes analyses for inorganic parameters and metals. All metals analyses must be reported as "total recoverable metals" to capture both the particulate fraction and dissolved fraction of metals in the groundwater. The CCR Rule stipulates that groundwater samples cannot be field filtered prior to analysis.

1.2.3 Background Groundwater Quality Determination

Background groundwater quality must be established in a hydraulically upgradient or background well(s) for each of the groundwater constituents required in the detection monitoring or assessment monitoring program that applies to the CCR unit. Background groundwater quality may be established at wells that are not located hydraulically upgradient from the CCR unit if the samples accurately represent the quality of background groundwater that has not been affected by leakage from the CCR unit.

1.2.4 Detection Monitoring Requirements

Groundwater detection monitoring must be performed at each CCR unit (CCR Rule Section 257.94). The following constituents must be included in the detection monitoring program (from Appendix III to the CCR Rule):

- Boron
- Calcium
- Chloride
- Fluoride
- pH
- Sulfate
- Total Dissolved Solids (TDS)

The monitoring frequency for these constituents must be at least semi-annual during the active life of the CCR unit and post-closure period. The reported concentrations of the detection monitoring constituents must be compared to the respective CCR unit background concentration developed for

each constituent. If a statistically significant increase over background levels is determined for one or more of the constituents listed above at any monitoring well at the CCR unit waste boundary, within 90 days the owner or operator must:

- Establish an assessment monitoring program as described in Section 257.95 of the Rule, or
- Demonstrate that a source other than the CCR unit caused the statistically significant increase over background levels for a constituent or that the statistically significant increase resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. If a successful demonstration is completed within the 90-day period, the owner or operator of the CCR unit may continue with the detection monitoring program.

1.2.5 Assessment Monitoring Requirements

Assessment monitoring is required under the CCR Rule whenever a statistically significant increase over background levels has been detected for one or more of the detection monitoring constituents listed above (CCR Rule Section 257.95). The following constituents must be included in the assessment monitoring program (from Appendix IV to the CCR Rule):

- Antimony
- Arsenic
- Barium
- Beryllium
- Cadmium
- Chromium
- Cobalt
- Fluoride
- Lead
- Lithium
- Mercury
- Molybdenum
- Selenium
- Thallium
- Radium 226 and 228 combined

Within 90 days of triggering an assessment monitoring program, and annually thereafter, the owner or operator of the CCR unit must sample and analyze the groundwater for all assessment monitoring constituents (Appendix IV) listed above. At least one sample must be collected from each well associated with the CCR unit.

Within 90 days of obtaining the results from the initial assessment monitoring sampling event, the

owner or operator of the CCR unit must resample all wells associated with the CCR unit, conduct analyses for all detection monitoring parameters (Appendix III) and for those assessment monitoring constituents (Appendix IV) that have been detected as part of assessment monitoring. At least one sample must be collected from each well associated with the CCR unit. This monitoring must be performed on at least a semi-annual basis thereafter. The owner or operator of a CCR unit may demonstrate the need for an alternative monitoring frequency for repeated sampling and analysis for these constituents during the active life and the post-closure care period based on the availability of groundwater. If there is not adequate groundwater flow to sample wells semi-annually, the alternative frequency shall be no less than annual.

Within 90 days of obtaining the results from the initial assessment monitoring sampling event, groundwater protection standards (GWPSs) must be established for all assessment monitoring constituents (Appendix IV) detected in the CCR unit monitoring wells. The GWPS shall be:

- For constituents for which a federal maximum contaminant level (MCL) has been established under 40 CFR 141.62 and 141.66, the MCL for that constituent; or
- For constituents for which an MCL has not been established, the background concentration for the constituent or approved alternative GWPS established in accordance with CCR Rule Section 257.95(h); or
- For constituents for which the background level is higher than the MCL, the background concentration.

Following are the GWPSs that have been established for the assessment monitoring constituents (Appendix IV) identified in the Rule:

Constituent	GWPS (mg/L)
Antimony	0.006
Arsenic	0.0164
Barium	2.0
Beryllium	0.004
Cadmium	0.005
Chromium	0.1
Cobalt	0.0124
Fluoride	4.0

Constituent	GWPS (mg/L)
Lead	0.015
Lithium	0.103
Mercury	0.002
Molybdenum	0.1
Selenium	0.05
Thallium	0.002
Radium 226/228 Combined	10.7 pCi/L*

* pCi/L = picocuries per liter

If the concentrations of all detection monitoring constituents (Appendix III) and assessment monitoring constituents (Appendix IV) are shown to be statistically at or below background values for two consecutive sampling events, the owner or operator may return to performing only detection monitoring of the CCR unit. If the concentrations of any detection monitoring constituents (Appendix III) and assessment monitoring constituents (Appendix IV) are shown to be statistically above background values, but all concentrations are below their respective GWPSs, the owner or operator must continue assessment monitoring of the CCR Unit.

Within 90 days of finding that any of the assessment monitoring constituents (Appendix IV) have been detected at a statistically significant level exceeding their respective GWPSs, the owner or operator of the CCR unit must either:

- Initiate an assessment of corrective measures for the CCR unit (CCR Rule Section 257.96); or
- Demonstrate that a source other than the CCR unit caused the contamination, or that the statistically significant increase resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. If a successful demonstration is made, the owner or operator must continue assessment monitoring. If a successful demonstration has not been made at the end of the 90 day period, the owner or operator of the CCR unit must initiate an assessment of corrective measures for the CCR unit.

If one or more assessment monitoring constituents (Appendix IV) are detected at statistically significant levels above their respective GWPSs, the owner or operator of the CCR unit must characterize the nature and extent of the release. Characterization of the release includes the following minimum measures:

- Install additional monitoring wells necessary to define the contaminant plume(s);

- Collect data on the nature and estimated quantity of material released including specific information on the assessment monitoring constituents (Appendix IV) and the levels at which they are present in the material released;

- Install at least one additional monitoring well at the facility boundary in the direction of contaminant migration and sample this well for all detection monitoring parameters (Appendix III) and for those assessment monitoring constituents (Appendix IV) that have been detected as part of assessment monitoring. This monitoring must be performed on at least a semi-annual basis thereafter.

- Sample all CCR unit wells for all detection monitoring parameters (Appendix III) and for those assessment monitoring constituents (Appendix IV) that have been detected as part of assessment monitoring. This monitoring must be performed on at least a semi-annual basis thereafter.

If an assessment of corrective measures is required as a result of assessment monitoring, and if the CCR unit being monitored is considered an existing unlined CCR surface impoundment under the CCR Rule, then the CCR unit is required to retrofit or close in accordance with the applicable parts of the CCR Rule.

1.3 Groundwater Statistical Evaluation Procedures

Statistical analysis of the groundwater monitoring data is required as part of detection monitoring and assessment monitoring under the CCR Rule. One of the following statistical methods must be used to evaluate groundwater monitoring data for each monitored constituent:

- A parametric analysis of variance followed by multiple comparison procedures to identify statistically significant evidence of contamination. The method must include estimation and testing of the contrasts between each compliance well's mean and the background mean levels for each constituent; or

- An analysis of variance based on ranks followed by multiple comparison procedures to identify statistically significant evidence of contamination. The method must include estimation and testing of the contrasts between each compliance well's median and the background median levels for each constituent; or

- A tolerance or prediction interval procedure in which an interval for each constituent is established from the distribution of the background data. The level of each constituent in each compliance well is compared to the upper tolerance or prediction limit established from the background data; or

- A control chart approach that gives control limits for each constituent; or

- Another statistical test method that meets the performance standards.

Any statistical method chosen must comply with the following performance standards:

- The statistical method used to evaluate groundwater monitoring data shall be appropriate for the distribution of constituents. Probability distributions of data values shall use parametric methods, and non-probability distributions of data values shall use non-parametric methods. If the distribution of the constituents is shown to be inappropriate for a probability theory test, the data must be transformed or a distribution-free (non-parametric) theory test must be used. If the distributions for the constituents differ, more than one statistical method may be needed;

- If an individual well comparison procedure is used to compare an individual compliance well constituent concentration with background constituent concentrations or a GWPS, the test shall be done at a Type I error level no less than 0.01 for each testing period. If a multiple comparison procedure is used, the Type I experiment wise error rate for each testing period shall be no less than 0.05; however, the Type I error of no less than 0.01 for individual well comparison must be maintained. This performance standard does not apply to tolerance intervals, prediction intervals, or control charts;

- If a control chart approach is used to evaluate groundwater monitoring data, the specific type of chart and its associated parameter values shall be such that this approach is at least as effective as any other approach in this section for evaluating groundwater data. The parameter values shall be determined after considering the number of samples in the background database, the data distribution, and the range of the concentration values for each constituent of concern;

- If a tolerance interval or a prediction interval is used to evaluate groundwater monitoring data, the levels of confidence and, for tolerance intervals, the percentage of the population that the interval must contain, shall be such that this approach is at least as effective as any other approach in this section for evaluating groundwater data. These parameters shall be determined after considering the number of samples in the background database, the data distribution, and the range of the concentration values for each constituent of concern;

- The statistical method must account for data below the limit of detection with one or more statistical procedures that shall be at least as effective as any other approach in this section for evaluating groundwater data. Any practical quantitation limit that is used in the statistical method shall be the lowest concentration level that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operating conditions that are available to the facility; and

- If necessary, the statistical method must include procedures to control or correct for seasonal and spatial variability as well as temporal correlation in the data.

The owner/operator of the CCR unit must determine if there has been a statistically significant increase over background (detection monitoring) or MCLs/background (assessment monitoring) for each

constituent required in the particular groundwater monitoring program that applies to the CCR unit. The determination of statistical increase over background/MCLs for each constituent at each monitoring well must be made within 90 days after completing sampling and analysis.

2.0 GROUNDWATER MONITORING PROCEDURES

This section describes groundwater sampling and analysis procedures for monitoring the CCR unit wells to comply with the requirements of 40 CFR 257.90 - 257.95 of the CCR Rule.

2.1 A1 Area Landfill Groundwater Monitoring System

The CCR groundwater monitoring system at the A1 Area Landfill consists of the following twelve monitoring wells:

Upgradient Wells	Downgradient Wells
BMW-11A-R	BMW-18
BMW-33	BMW-19
	BMW-20
	BMW-21
	BMW-22
	BMW-23
	BMW-24
	BMW-26
	BMW-27
	BMW-28

A detailed Site Plan of the A1 Area Landfill showing the CCR monitoring well locations is presented on Figure 2. Well logs for the wells are reproduced in Appendix A. The A1 Area Landfill CCR groundwater monitoring system was certified by a professional engineer in accordance with Section 257.91 of the CCR Rule as part of a separate report (PBW, 2017b).

2.2 Groundwater Sampling Procedures

2.2.1 Equipment Assembly and Preparation

Activities that occur during groundwater sampling are summarized as follows:

- pre-arrangement of sample analytical requests with analytical testing laboratory;
- assembly and preparation of sampling equipment and supplies;
- groundwater sampling;
- water-level measurements;
- well purging;
- field parameter measurements;
- sample collection;
- sample preservation;
- sample labeling;
- completion of sample records;
- completion of chain-of-custody records; and
- sample shipment.

Prior to each sampling event, equipment to be used is assembled, properly cleaned and its operating condition verified. In addition, all record-keeping materials are prepared. Sampling procedures are conducted in general accordance with EPA SW-846 methods.

Decontamination of all non-disposable or non-dedicated field measurement, purging, and sampling equipment are performed for each sampling event before any purging/sampling activities begin, after each well is sampled, and at the end of the sampling event. Decontamination procedures are summarized below:

(1) Wash equipment with low-residue soap and/or detergent solution.
(2) Rinse with distilled water; and
(3) Repeat steps (1) and (2) above, as necessary.

2.2.2 General Groundwater Sampling Procedures

Prior to collecting samples, each well is inspected for signs of damage to the well protective casing and well pad. Each field instrument is calibrated according to the manufacturer's instructions prior to use.

Special care should be exercised to prevent contamination of the groundwater and extracted samples during the sampling activities. The primary way in which such contamination can occur is contact with improperly cleaned equipment. To prevent such contamination, all non-dedicated sampling equipment is thoroughly cleaned before and between uses at different sampling locations. In addition to the use of properly cleaned equipment, a new pair of disposable latex (or similar) gloves is worn for each well.

2.2.3 Groundwater Level Measurements

Groundwater levels are measured prior to purging the wells. Using a pre-cleaned water level meter, the groundwater surface is measured from the casing datum to the nearest 0.01-foot. Total depth measurements are also collected on, at least, an annual basis. The rate and direction of groundwater flow should be determined for each groundwater monitoring event.

2.2.4 Well Purging and Sampling

Well purging and sampling is conducted using either a submersible pump or peristaltic pump in accordance with standard low flow sampling procedures. The sampler withdraws water in a manner that minimized stress (drawdown) to the system to the extent practicable. When the pump intake is located within the screened interval, the water pumped is drawn in directly from the formation with little mixing of casing water or disturbance to the sampling zone. Thus, sample results are more representative of the constituents present in the groundwater.

Purging rates during sample collection are generally performed at 0.5 liters per minute (L/min) or less. Field parameters (pH, temperature, conductivity and turbidity) are measured to evaluate when the well is adequately purged. Turbidity in the samples should be minimized as much as possible. By using minimal pumping rates, dedicated equipment whenever possible, and positioning the intake for the sample tubing or submersible pump off of the bottom of the well.

For groundwater samples, at least three field measurements should be taken during the course of purging the well. If the parameters have not stabilized at that time, field measurements and purging will continue until two consecutive readings have stabilized to within the following limits:

- Temperature: +/-1° C
- pH: +/-0.1 pH units
- Specific conductance: +/-10%
- Turbidity: +/- 10%

Sample extraction is accomplished by using the pump that was previously used to purge the well. The sample bottle is filled directly from the pump line. The pumping rate and parameter measurements are recorded on groundwater sampling forms in the field. If a well goes dry during purging, sampling is performed after the well has sufficiently recharged to allow sample collection.

Groundwater samples will not be filtered in the field prior to collection in accordance with Section 257.93(i) of the CCR Rule.

2.2.5 Container, Labels, and Shipment

Samples are collected in laboratory-supplied containers. The following information is legibly and indelibly written on the label:

- project identification;
- sample identification;
- name or initials of collector;
- date and time of collection;
- analysis requested; and
- sample preservative, if applicable.

After the samples are collected, the sample containers are placed in a cooler or similar container, preserved with ice, and shipped to the laboratory for analysis.

2.2.6 Chain-of-Custody Control

After samples are collected, chain-of-custody procedures are followed to establish a written record concerning sample movement between the sampling site and the testing laboratory. Each shipping container has a chain-of-custody form completed by the sampling personnel packing the samples. The chain-of-custody form for each container is completed and sealed in the shipping container.

2.3 Analytical Procedures

The laboratory analytical methods utilized for the analysis of detection monitoring and assessment monitoring programs are appropriate and commonly utilized EPA methodologies, or other similar standard methodologies. Typical methodologies used to analyze the detection and assessment program constituents are presented below:

Detection Monitoring Program (Appendix III Constituents)

- Boron and calcium by EPA Method SW6020;
- Chloride, fluoride, and sulfate by EPA Method E300;
- pH by Standard Method M4500-H + B (field measurement); and
- TDS by Standard Method M2540.

Assessment Monitoring Program (Appendix IV Constituents)

- Antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, lead, lithium, molybdenum, selenium, and thallium by EPA Method SW6020;
- Fluoride EPA Method E300;
- Mercury by EPA Method SW7470; and
- Radium 226 and 228 by EPA Methods 904.0/SW9320 Modified and 903.1 Modified.

All metals analyses shall be reported as “total recoverable metals” in accordance with Section 257.93(1) of the CCR Rule. Filtering of samples prior to analysis is not permitted.

2.3.1 Data Quality Assurance/Quality Control

A quality assurance/quality control (QA/QC) program will be implemented to confirm the validity of the analytical results. Laboratory QC samples will include method blanks, laboratory control samples, and matrix spike/matrix spike duplicates. Field QC samples will include one field duplicate per sampling event. The selected laboratory must have in place documented quality assurance protocols and quality control checks to demonstrate the laboratory’s procedures and practices are consistent with the National Environmental Laboratory Accreditation Conference (NELAC) standards. Potential issues regarding the quality of the data should be evaluated through the examination of:

- The project objectives;
- Laboratory review checklist and associated exceptions report;
- The reportable data; and
- The field notes and data associated with the sampling event(s).

In the case where quality control criteria are outside applicable limits, a summary must be presented that indicates the affected samples, the quality control parameter reviewed, the qualifiers and bias code(s) applied to the data point, and the determination made concerning the usability of data.

3.0 STATISTICAL EVALUATION PROCEDURES

The following statistical evaluation approaches were selected to demonstrate groundwater compliance for the A1 Area Landfill under the CCR Rule:

- Use of interwell data evaluations, which compare new sample data to data from upgradient or background monitoring wells.

- Use of upper prediction limits (UPLs) to develop site-specific background concentrations for all Appendix III and Appendix IV constituents. This approach is a common statistical method used to evaluate groundwater compliance for Subtitle D landfill facilities and is one of the approved options for groundwater quality data statistical evaluation under the CCR Rule.

- After every detection monitoring event, Appendix III constituent concentrations from each well are compared to background UPLs to ascertain if a statistically significant increase above background exists. Background UPLs are based on a 1-of-2 resampling approach, meaning that if zero or one concentration measurement from a series of two independent samples collected from a well do not exceed the appropriate UPL, then a statistically significant increase over background has not occurred at a CCR unit.

- If in assessment monitoring, the 95% lower confidence limit of the mean (LCL) is calculated after each assessment monitoring event for each Appendix IV constituent. The set of data used to calculate LCLs are based on current and historical constituent concentrations. A statistically significant increase over the GWPS has occurred at a CCR unit when the LCL for at least one assessment monitoring constituent at a well is greater than the appropriate GWPS.

The statistical evaluation procedures proposed for the A1 Area Landfill groundwater data conforms with the Rule requirements shown above, as well as the Statistical Analysis Plan for the Site (Golder, 2022), EPA's *Unified Guidance: Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities* (EPA, 2009) and the American Society for Testing and Materials (ASTM) standard D6312-17, *Developing Appropriate Statistical Approaches for Groundwater Detection Monitoring Programs at waste Disposal Facilities* (ASTM, 2017).

Eight independent groundwater samples were evaluated for each Appendix III parameter at each well to statistically establish detection monitoring prediction limits. Eight independent groundwater samples were also evaluated for each Appendix IV parameter at each well to establish assessment monitoring GWPSs. The GWPSs were developed using the following methodology:

- For constituents for which a federal maximum contaminant level (MCL) has been established, the MCL for that constituent; or

- For constituents for which an MCL has not been established, the background concentration (prediction limit) or approved alternative GWPS for the constituent; or

- For constituents for which the background level (prediction limit) is higher than the MCL, the background concentration (prediction limit) for the constituent.

4.0 DETECTION MONITORING DATA EVALUATION

CCR groundwater detection monitoring will be performed at the A1 Area Landfill groundwater monitoring system on a semi-annual basis during the active life of the landfill and during the post-closure period. Each CCR monitoring well will be sampled for the following Appendix III constituents as part of the detection monitoring program:

- Boron
- Calcium
- Chloride
- Fluoride
- pH
- Sulfate
- Total Dissolved Solids (TDS)

Sampling and analytical procedures will be as described in previous sections of this plan.

After each detection monitoring event, the reported concentrations of the detection monitoring constituents at each well will be compared to the background concentration prediction limits developed for each constituent as described in Section 3 of this plan to ascertain if a statistically significant increase above background concentrations does or no does not exist. Possible outcomes from comparing the detection monitoring constituent concentrations in each well to their respective background concentration prediction limits are as follows:

- All detection monitoring constituent concentrations in each well are less than or equal to their respective background concentration prediction limits in the well; or
- One or more detection monitoring constituent concentrations in each well are above their respective background concentration prediction limits in the well.

4.1 No Statistically Significant Increase Over Background Concentrations

The background concentration prediction limits were developed based on a one-of-two resampling approach, meaning that if concentrations in at least one sample in a series of two independent samples collected from a well do not exceed their prediction limits, then a statistically significant increase over background concentrations has not occurred. This conclusion will be reached if the data indicate either of the following:

- All detection monitoring constituent concentrations in each well are less than or equal to their respective background concentration prediction limits; or

- One or more detection monitoring constituent concentrations in any well is above the respective background concentration prediction limits. If this occurs, the well or wells with concentrations above the prediction limits will be resampled and analyzed for the detection monitoring constituent or constituents that exceed the prediction limits. If the resample indicates that the target detection monitoring constituent concentrations in the well or wells are less than or equal to their respective background concentration prediction limits, then it can be concluded that a statistically significant increase over background concentrations for all detection monitoring constituents does not exist, since concentrations in one sample of the two independent samples do not exceed their prediction limits.

If the groundwater monitoring data indicate that a statistically significant increase over background does not exist at the CCR wells, detection monitoring at all CCR wells will continue on a semi-annual basis.

4.2 Statistically Significant Increase Over Background Concentrations

If one or more detection monitoring constituent concentrations in any well is above the respective background concentration prediction limit in both the original detection monitoring sample and the resample, then a statistically significant increase over background concentrations for the target detection monitoring constituents can be concluded. If a statistically significant increase is indicated, within 90 days the owner/operator must:

- Establish an assessment monitoring program as described in this plan, or

- Demonstrate that a source other than the CCR unit caused the statistically significant increase over background levels for a constituent, or that the statistically significant increase resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. The demonstration must be summarized in a report that is certified by a professional engineer. If a successful demonstration is completed within the 90-day period, the owner or operator of the CCR unit may continue with the detection monitoring program.

5.0 ASSESSMENT MONITORING DATA EVALUATION

CCR groundwater assessment monitoring will be performed at the A1 Area Landfill groundwater monitoring system whenever a statistically significant increase over GWPSs has been confirmed for one or more of the detection monitoring constituents listed in this plan. Within 90 days of triggering the assessment monitoring program, and annually thereafter, each CCR monitoring well in the A1 Area Landfill groundwater monitoring system will be sampled for the following Appendix IV parameters as part of the assessment monitoring program:

- Antimony
- Arsenic
- Barium
- Beryllium
- Cadmium
- Chromium
- Cobalt
- Fluoride
- Lead
- Lithium
- Mercury
- Molybdenum
- Selenium
- Thallium
- Radium 226 and 228 combined

Sampling and analytical procedures will be as described in previous sections of this plan.

Within 90 days of obtaining the results from the initial assessment monitoring sampling event, all wells in the groundwater monitoring system will be resampled and analyzed for:

- All Appendix III detection monitoring parameters; and
- The Appendix IV assessment monitoring parameters that were detected as part of the assessment monitoring event.

This monitoring will be performed on at least a semi-annual basis thereafter, unless the owner/operator can demonstrate the need for an alternative monitoring frequency for repeated sampling and analysis for these constituents during the active life and the post-closure care period based on the availability of groundwater. If there is not adequate groundwater flow to sample wells semi-annually, the alternative frequency shall be no less than annual.

Within 90 days of obtaining the results from the initial assessment monitoring sampling event, GWPSs will be established for all Appendix IV assessment monitoring constituents that were detected in the A1 Area Landfill groundwater monitoring system wells as follows:

- For constituents for which a federal maximum contaminant level (MCL) has been established, the MCL for that constituent; or
- For constituents for which an MCL has not been established, the background concentration or approved alternative GWPS for the constituent; or
- For constituents for which the background level is higher than the MCL, the background concentration for the constituent.

The 95% LCL of each Appendix IV constituent concentration at each well will be compared to the GWPS established for each constituent to ascertain if a statistically significant increase above the GWPS does or does not exist.

5.1 No Statistically Significant Increase Over GWPSs

If the groundwater monitoring data indicate that a statistically significant increase over GWPSs does not exist at the CCR wells, all wells in the groundwater monitoring system will be sampled on a semi-annual basis and analyzed for:

- All Appendix III detection monitoring parameters; and
- The Appendix IV assessment monitoring parameters that were detected as part of the initial assessment monitoring event.

This monitoring will be performed on at least a semi-annual basis, unless the owner/operator can demonstrate the need for an alternative monitoring frequency for repeated sampling and analysis for these constituents during the active life and the post-closure care period based on the availability of groundwater.

If the concentrations of all Appendix III detection monitoring constituents and Appendix IV assessment monitoring constituents are shown to be statistically at or below background values for two consecutive assessment monitoring sampling events, assessment monitoring will be terminated and detection monitoring as described in this plan will resume. If the concentrations of any Appendix III detection monitoring constituents and Appendix IV assessment monitoring constituents are shown to be

statistically above background values, but all concentrations are below their respective GWPSs, assessment monitoring will continue.

5.2 Statistically Significant Increase Over GWPSs

If a statistically significant increase over GWPSs for any Appendix IV assessment monitoring constituent is confirmed, within 90 days of the initial assessment monitoring event, the owner/operator must:

- Initiate an assessment of corrective measures for the CCR unit in accordance with CCR Rule Section 257.96; or
- Demonstrate that a source other than the CCR unit caused the contamination, or that the statistically significant increase resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. The demonstration must be summarized in a report that is certified by a professional engineer. If a successful demonstration is made, the owner or operator must continue assessment monitoring. If a successful demonstration has not been made at the end of the 90 day period, the owner or operator of the CCR unit must initiate an assessment of corrective measures for the CCR unit.

If one or more Appendix IV assessment monitoring constituents are detected at statistically significant levels above their respective GWPSs in any sampling event, and if a source other than the CCR unit cannot be demonstrated to have caused the contamination, a release from the CCR unit is likely and the nature and extent of the release will be further characterized as follows:

- Install additional monitoring wells necessary to define the contaminant plume(s);
- Collect data on the nature and estimated quantity of material released including specific information on the Appendix IV assessment monitoring constituents and the levels at which they are present in the material released;
- Install at least one additional monitoring well at the facility boundary in the direction of contaminant migration and sample this well for all Appendix III detection monitoring parameters and for those Appendix IV assessment monitoring constituents that have been detected as part of assessment monitoring. This monitoring must be performed on at least a semi-annual basis thereafter.
- Sample all CCR unit wells for all Appendix III detection monitoring parameters and for those Appendix IV assessment monitoring constituents that have been detected as part of assessment monitoring. This monitoring must be performed on at least a semi-annual basis thereafter.

6.0 REPORTING REQUIREMENTS

The results of the CCR groundwater monitoring program will be reported each year in an Annual Groundwater Monitoring and Corrective Action Report. The annual report will document the status of the groundwater monitoring and corrective action program, summarize key actions completed, describe any problems encountered, discuss actions to resolve the problems, and project key activities for the upcoming year. At a minimum, the Annual Groundwater Monitoring and Corrective Action Report will contain the following information:

- A map, aerial image, or diagram showing the CCR unit and all background (or upgradient) and downgradient monitoring wells, to include the well identification numbers, that are part of the groundwater monitoring program for the CCR unit;
- Identification of any monitoring wells that were installed or decommissioned during the preceding year, along with a narrative description of why those actions were taken;
- In addition to all the monitoring data obtained under CCR Rule Sections 257.90 through 257.98, a summary including the number of groundwater samples that were collected for analysis for each background and downgradient well, the dates the samples were collected, and whether the sample was required by the detection monitoring or assessment monitoring programs;
- A narrative discussion of any transition between monitoring programs (e.g., the date and circumstances for transitioning from detection monitoring to assessment monitoring in addition to identifying the constituent(s) detected at a statistically significant increase over background levels); and
- Other information required to be included in the annual report as specified in CCR Rule Sections 257.90 through 257.98.

The Groundwater Monitoring and Corrective Action Reports must be placed in the MLSES facility operating record no later than January 31 of the year following completion of the groundwater monitoring program from the preceding calendar year.

7.0 REFERENCES

ASTM, 2017. Standard Guide for Developing Appropriate Statistical Approaches for Groundwater Detection Monitoring Programs at Waste Disposal Facilities - D6312-17.

EPA, 2015. Test Methods for Evaluating Solid Waste, Physical/Chemical Methods (SW-846). On-Line.

EPA, 2009. Unified Guidance Document: Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, EPA 530/R-09-007, March.

Golder Associates USA, Inc. (Golder), 2022. Statistical Analysis Plan, Revision No. 1, A1 Area Landfill, Martin Lake Steam Electric Station. November.

PBW, 2017a. Groundwater Monitoring Plan – Martin Lake Steam Electric Station, A1 Area Landfill, Rusk County, Texas, August.

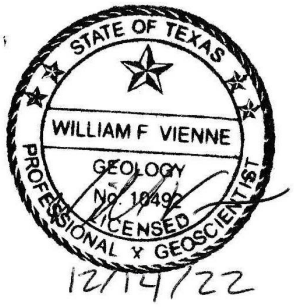
PBW, 2017b. CCR Groundwater Monitoring System Certification – Martin Lake Steam Electric Station, A1 Area Landfill, Rusk County, Texas, August.

SIGNATURE PAGE

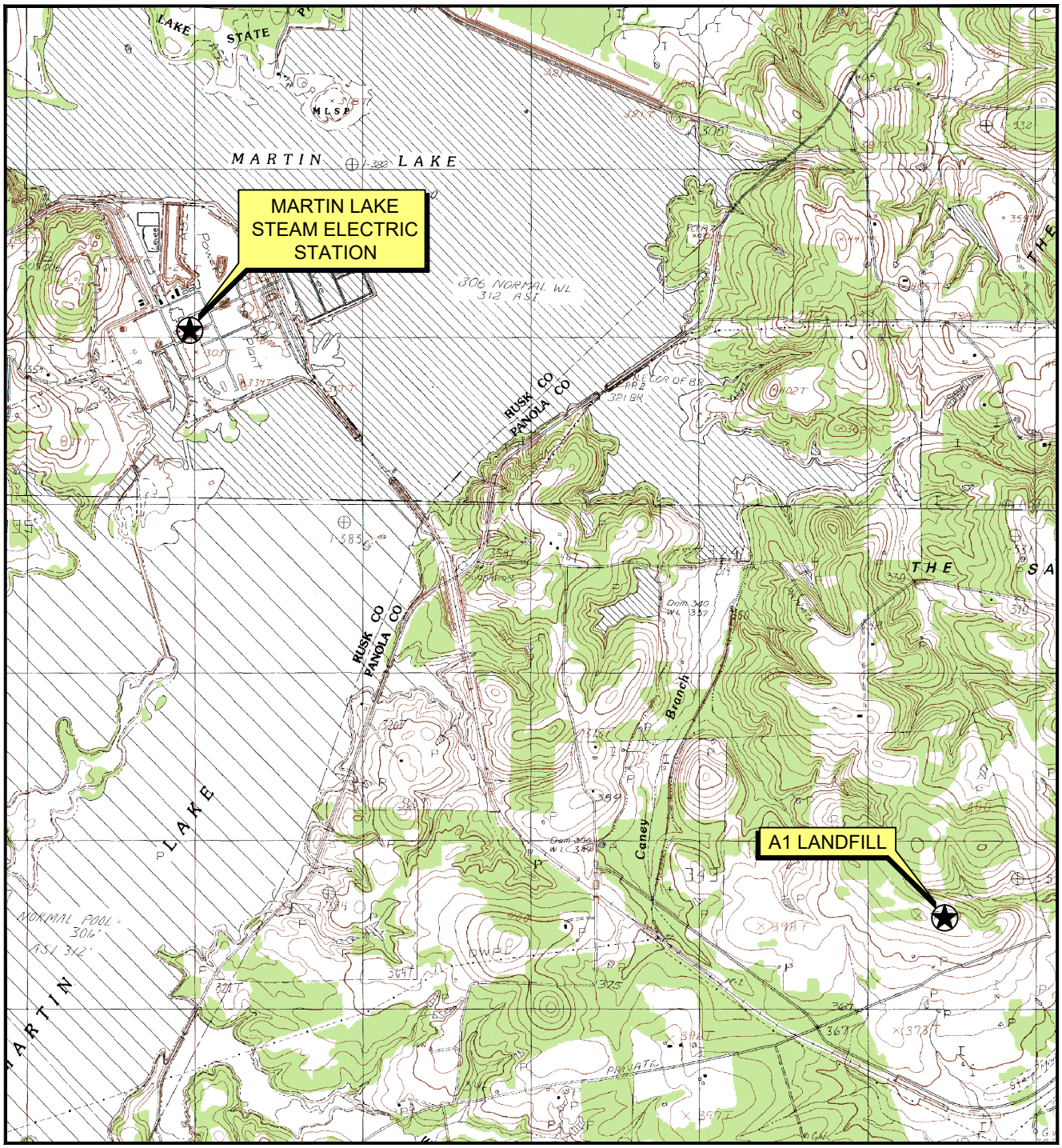
Golder Associates Inc., Member of WSP

Patrick J. Behling
Principal Engineer

William F. Vienne
Senior Hydrogeologist



FIGURES



TE□AS

□UADRANGLE LOCATION

N

Scale in Feet

0 1500 □000

SOURCE:
Base map from www.tnris.gov, Tatum, T□ 7.5 min. USGS □uadrangle dated 1□□□.

MARTIN LAKE STEAM ELECTRIC STATION

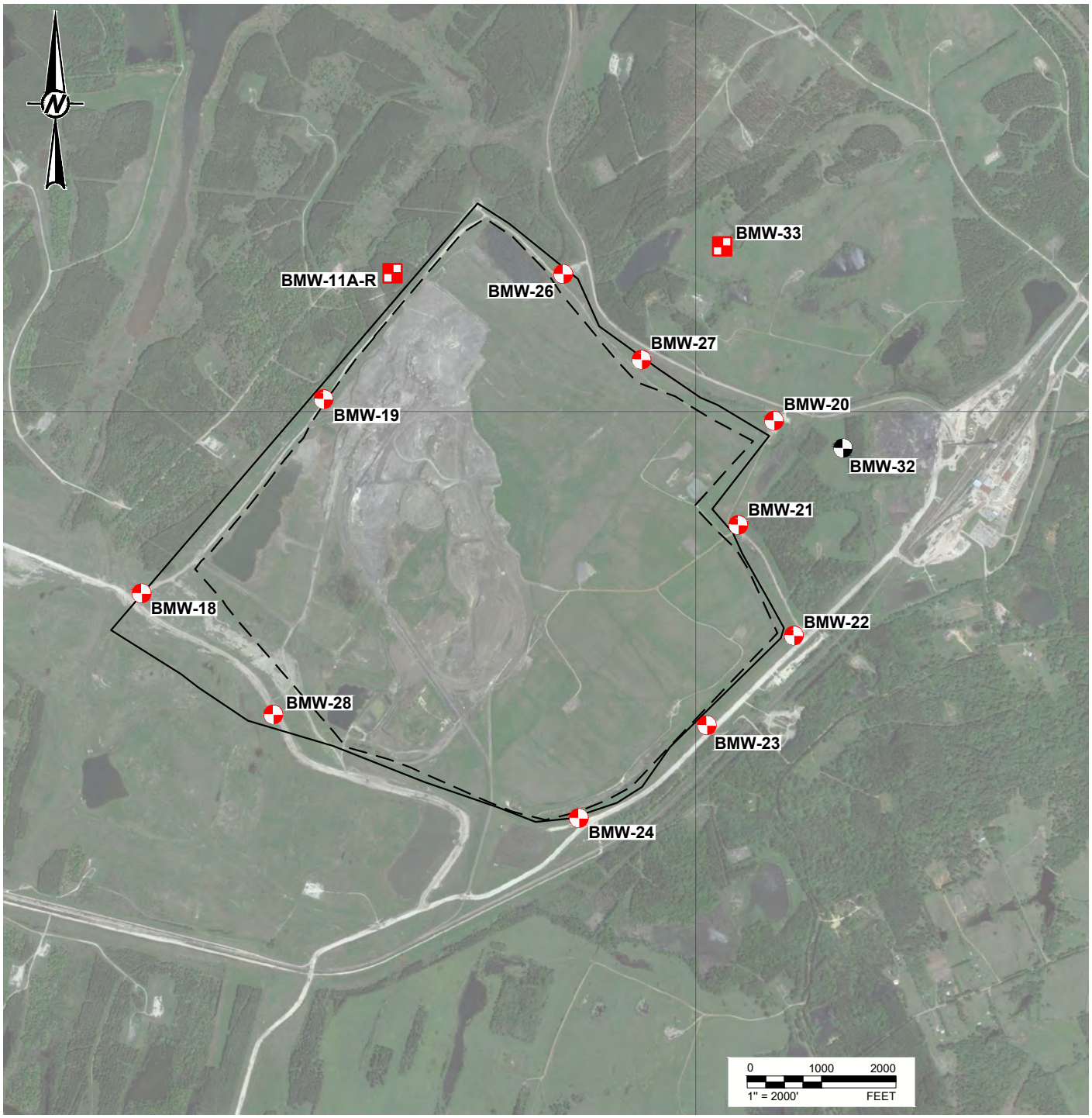
TATUM, TE□AS

Figure 1

SITE LOCATION MAP

PROJECT:	BY: AJD	REVISIONS
DATE: JUNE, 2015	CHECKED: PJB	

WSP GOLDER



LEGEND

- DEED RESTRICTION BOUNDARY
- WASTE BOUNDARY
- DOWNGRADIENT CCR MONITORING WELL
- UPGRADIENT CCR MONITORING WELL
- CCR DELINEATION MONITORING WELL

STATE OF TEXAS
WILLIAM F VIENNE
GEOLOGY
No. 10492
LICENSED
PROFESSIONAL GEOSCIENTIST
11/16/2022

REFERENCE(S)
BASE MAP TAKEN FROM GOOGLE EARTH IMAGERY DATED 4/6/17.

CLIENT
LUMINANT

PROJECT
MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

TITLE
DETAILED SITE PLAN - A1 AREA LANDFILL

CONSULTANT
WSP GOLDER

YYYY-MM-DD	2022-12-06
DESIGNED	AJD
PREPARED	AJD
REVIEWED	WFV
APPROVED	WFV

PROJECT NO. | CONTROL | REV. 0 | FIGURE 2

Last Edited By: usad701305 Date: 2022-12-09 Time:2:57:47 PM | Printed By: USAD701305 Date: 2022-12-12 Time:11:31:46 AM
Path: \\golder.gds\complexdata\office\Texarkana\Projects - Round Rock_2019\19122262 - Luminant\D - MLSES\2022-12\ | File Name: 1 - Detailed Site Plan (A1 Area Landfill).dwg
IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI A
0 1 in

APPENDIX A

CCR Monitoring Well Logs

Luminant

Log of Boring: BMW-11AR

[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	10
[illegible]	[illegible]	[illegible]	14[illegible]
[illegible]	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	

D[illegible]	[illegible]	[illegible]	[illegible]
0			[illegible]
10			[illegible]
20			
[illegible]			
40			
[illegible]			
60			
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[illegible]			
[illegible]			
100			
110			
120			
1[illegible]0			
140			
1[illegible]0			[illegible]

STATE OF TEXAS
WILLIAM F. VIENNE
GEOLOGY
No. 10492
LICENSED
PROFESSIONAL GEOSCIENTIST
11/16/2022

PBW

Pastor, Behling & Wheeler, LLC
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Tel (512) 671-3434 Fax (512) 671-3446

Notes:

Centralizers located at 124.0' and 137.0'. Lithology taken at 150.0' pilot hole.

TOC Elevation (ft AMSL):

[illegible]

[illegible]

Luminant

Log of Boring: BMW-18

Martin Lake Steam Electric Station
Tatum, TX

PBW Project No. 5164B

Completion Date:	9/29/2015	Drilling Method:	Sonic
Drilling Company:	Walker-Hill Environmental	Borehole Diameter (in.):	6.5
Driller:	Timmy Beach	Total Depth (ft):	120
Driller's License:	5814M	TOC Elevation (ft. AMSL):	357.833
Logged By:	Jeremiah Bihl	Northing:	1051216950.561
Sampling Method:	4"x10' Core barrel	Easting:	2915599.992

Depth (ft)	Well Materials	Recovery (ft/ft)	USCS	Lithologic Description
0			FILL	(0 - 1) Top soil, light brown, rocks (1-3 cm) present
			CL	(1 - 4) CLAY, dark gray to black with pale tan mottling, dry, firm, brittle
		10.0/10.0	LIG	(4 - 13) LIGNITE with clay, dark grey to black, dry to moist, soft, brittle, angular, low plasticity
10				
		5.0/10.0		
20		10.0/10.0		
30		10.0/10.0	CL	(13 - 57) Silty CLAY, dark gray to dark brown with red and yellow mottling, dry, soft to firm, crumbly, medium plasticity, color change to tan at 30', coal seam at 32' (black, dry to moist, soft), pieces of lignite present, color change to gray to dark gray at 35'
40		10.0/10.0		
50		10.0/10.0		
		10.0/10.0	ML	(57 - 60) Clayey SILT, light brown to tan, moist, soft, low plasticity, lignite seam at 59'
60		10.0/10.0		(60 - 81) Silty CLAY, black to gray, dry, soft to firm, low plasticity, crumbly, 6" dry white gravel layer at 69', 4" light brown silty sand layer at 81'
70		10.0/10.0		
80		10.0/10.0	CL	(81 - 103) Silty CLAY, light gray, dry to moist, soft, low to medium plasticity, crumbly, rubber tire pieces at 89', hard lignite seam at 90' (hard, dry, black, firm), streaks of black (91'- 94'), becomes hard at 94', light to dark gray (94'-103')
90		10.0/10.0		
100		10.0/10.0		(103 - 106) Clayey SILT, gray, very moist, soft, medium plasticity
110		10.0/10.0	ML	(106 - 120) Clayey SILT, gray to dark gray, dry, firm, low plasticity
120				

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Notes:
1. This log should not be used separately from the report to which it is attached.

Well Materials
(0-100) Casing, 2" Sch 40 FJT PVC
(100-120) Screen, 2" Sch 40 FJT PVC, 0.010" slot

Annular Materials
(0'-96') Grout
(96'-98') Bentonite pellets
(98'-110') 20/40 sand

STATE OF TEXAS
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11/16/2022

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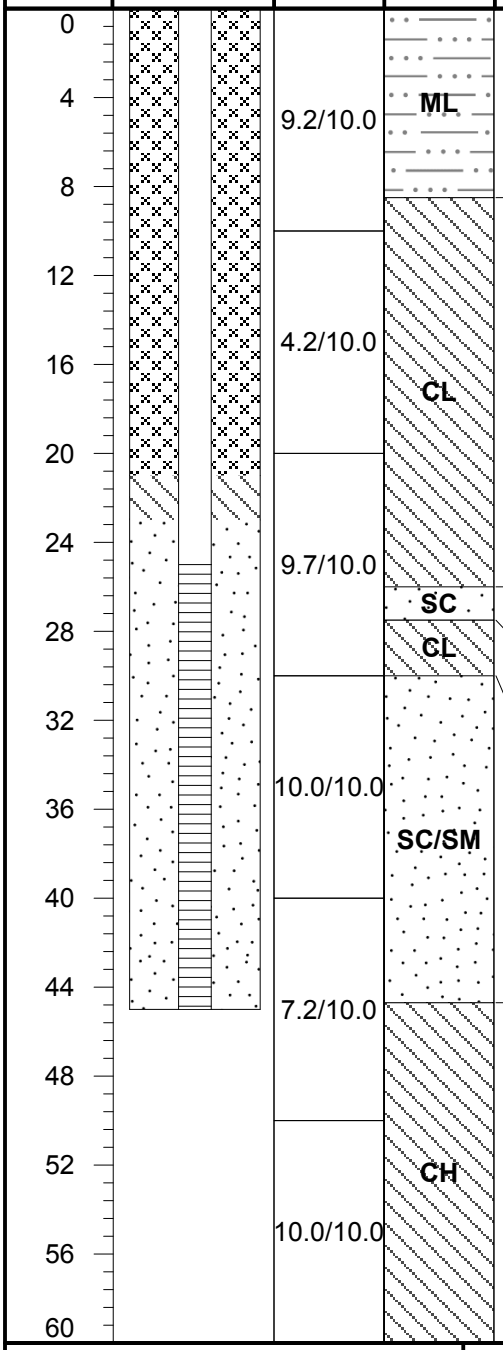
Log of Boring: BMW-19

Martin Lake Steam Electric Station Tatum, TX	Completion Date:	10/7/2015	Drilling Method:	Sonic
	Drilling Company:	Walker-Hill Environmental	Borehole Diameter (in.):	6.5
	Driller:	Timmy Beach	Total Depth (ft):	60
	Driller's License:	5814M	TOC Elevation (ft. AMSL):	400.685
PBW Project No. 5164B	Logged By:	Nolan Townsend	Northing:	1048219535.121
	Sampling Method:	4"x10' Core barrel	Easting:	2918071.024



Depth (ft)	Well Materials	Recovery (ft/ft)	USCS	Lithologic Description
0 – 8.5		9.2/10.0	ML	(0 - 8.5) Sandy SILT with clay, light brown to brownish yellow, dry to slightly mosit, soft, low plasticity, more clay content below ~1.0', trace black lignite fragments - dry, firm to hard, brittle, friable, sharp basal contact
8.5 – 26		4.2/10.0 9.7/10.0	CL	(8.5 - 26) Sandy CLAY, yellowish brown, gray after 9.5', trace to moderate orange-yellow mottling, dry to moist, firm, low plasticity, trace black lignite fragments, very fine sand, sharp basal contact
26 – 27.5			SC	(26 - 27.5) Clayey SAND, gray to yellowish brown, very moist to wet, soft, low plasticity, very fine sand, sharp basal conact
27.5 – 30			CL	(27.5 - 30) Sandy CLAY, gray to yellowish brown, trace to moderate orange mottling, moist to very moist, soft to firm, moderate plasticity, very fine sand, small lignite seam 29.7'-30.0', brittle and friable, dry, black, hard, sharp basal contact
30 – 44.7		10.0/10.0 7.2/10.0	SC/SM	(30 - 44.7) Clayey silty SAND - sandy CLAY, brownish yellow to gray to greenish gray, trace orange mottling, abundant orange mottling 37.5'-38.5' and 42'-44.7', very moist to wet, soft to firm, moderate to high plasicity, very fine sand
44.7 – 60		10.0/10.0	CH	(44.7 - 60) Sandy CLAY, greenish gray to gray, trace orange-red mottling, dry to moist, firm, moderate to high plasticity, trace black lignite fragments, abundant orange and red mottling 56.0'-59.5'

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APPENDIX F - Revision 2 February 27, 2024

Notes:
1. This log should not be used separately from the report to which it is attached
2. Hole collapsed - drilled back down to 45' with 6" casing to set well.

Well Materials
(0-25) Casing, 2" Sch 40 FJT PVC
(25-45) Screen, 2" Sch 40 FJT PVC, 0.010" slot

Annular Materials
(0'-21') Grout
(21'-23') Bentonite pellets
(23'-45') 20/40 sand

STATE OF TEXAS
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GEOLOGY
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11/16/2022

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Log of Boring: BMW-20

Martin Lake Steam Electric Station
Tatum, TX

PBW Project No. 5164B

Completion Date:	10/8/2015	Drilling Method:	Sonic
Drilling Company:	Walker-Hill Environmental	Borehole Diameter (in.):	6.5
Driller:	Timmy Beach	Total Depth (ft):	40
Driller's License:	5814M	TOC Elevation (ft. AMSL):	357.512
Logged By:	Nolan Townsend	Northing:	1057219166.631
Sampling Method:	4"x10' Core barrel	Easting:	2923995.525

Depth (ft)	Well Materials	Recovery (ft/ft)	USCS	Lithologic Description
0			ML	(0 - 4.5) Sandy SILT with clay, brownish yellow to gray, trace to moderate orange mottling near 4.0', dry, soft, low plasticity, very fine sand
4		9.5/10.0	CL	(4.5 - 9) CLAY with trace sand lenses, gray with trace to moderate orange/yellow mottling, dry to slightly moist, firm to hard, low to moderate plasticity, trace calcareous precipitates, sharp basal contact
8			SM	(9 - 12) Slightly silty SAND, yellowish orange to tan, moist to very moist, slightly unconsolidated, moderate to high plasticity, very fine sand, moderately to well sorted, mostly quarts with ~5-10% lithic fragments, clay content present 10'-12', dark gray, sharp basal contact
12			CL	(12 - 15) CLAY, slightly sandy, gray to dark gray, dry to slihgtly moist, firm to hard, low to moderate plasticity, trace black lignite fragments, sandy lenses, trace orange mottling
16		9.8/10.0	SM	(15 - 16.5) Silty SAND with clay, tan to yellowish orange, moist to very moist, moderately consolidated, medium to high plasticity, very fine sand
18			CL	(16.5 - 18) CLAY as above, dry to moist, firm to hard, moderate plasticity
22		10.0/10.0	SC	(18 - 28) Clayey SAND, reddish orange and gray, very moist, wet at 20.0', moderately consolidated, moderate to high plasticity, clay composition increases and decreases throughout, very fine sand, becomes gray at 28.0' and more clay content
30			CH	(28 - 32) Sandy CLAY, gray, trace orange mottling, moist to very moist, firm, moderate to high plasticity, locally sandy lenses/interbeds, trace lignitic fragments (black)
36		10.0/10.0	SC	(32 - 40) Clayey SAND, reddish orange with gray clay, very moist to wet, moderately consolidated, moderate to high plasticity, very fine sand, localized small sandy clay seams, trace lignite fragments
40				

PBW

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Notes:
1. This log should not be used separately from the report to which it is attached.

Well Materials
(0-10) Casing, 2" Sch 40 FJT PVC
(10-30) Screen, 2" Sch 40 FJT PVC, 0.010" slot

Annular Materials
(0'-6') Grout
(6'-8') Bentonite pellets
(8'-30') 20/40 sand

STATE OF TEXAS
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11/16/2022

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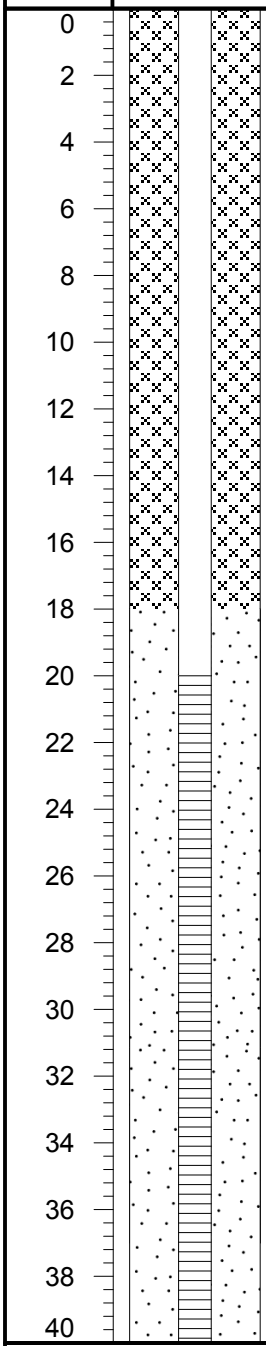
Log of Boring: BMW-21

Martin Lake Steam Electric Station
Tatum, TX

PBW Project No. 5164B

Completion Date:	9/27/2015	Drilling Method:	Sonic
Drilling Company:	Walker-Hill Environmental	Borehole Diameter (in.):	6.5
Driller:	Timmy Beach	Total Depth (ft):	40
Driller's License:	5814M	TOC Elevation (ft. AMSL):	350.976
Logged By:	Jeremiah Bihl	Northing:	1054217792.58
Sampling Method:	4"x10' Core barrel	Easting:	2923478.615



Depth (ft)	Recovery (ft/ft)	USCS	Lithologic Description
0 – 5	10.0/10.1	FILL	(0 - 5) Top soil, sandy with small amounts of clay, tan/brown, moist, soft, low plasticity
5 – 10		CL	(5 - 10) Sandy CLAY, dark gray to black, moist, soft, low to medium plasticity, trace amounts of lignite, clay content increases with depth
10 – 20	10.0/10.0	CH	(10 - 30) CLAY with angular lignite, light gray, moist, soft, high plasticity, 1'-thick lignite layer at 25', hardness increases from 26' to 30'
20 – 30	10.0/10.0		
30 – 40	10.0/10.0	CL	(30 - 40) CLAY with angular lignite pieces, wet, soft with increasing hardness with depth, medium plasticity, water present at 30', moisture decreases at 35'

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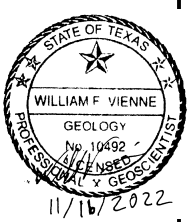
Notes:
1. This log should not be used separately from the report to which it is attached

Well Materials
(0-20) Casing, 2" Sch 40 FJT PVC
(20-40) Screen, 2" Sch 40 FJT PVC, 0.010" slot

Annular Materials
(0'-37') Grout
(16'-18') Bentonite pellets
(18'-40') 20/40 sand



Luminant

Log of Boring: BMW-22

Martin Lake Steam Electric Station Tatum, TX	Completion Date:	9/27/2015	Drilling Method:	Sonic
	Drilling Company:	Walker-Hill Environmental	Borehole Diameter (in.):	6.5
	Driller:	Timmy Beach	Total Depth (ft):	40
	Driller's License:	5814M	TOC Elevation (ft. AMSL):	332.304
PBW Project No. 5164B	Logged By:	Jeremiah Bihl	Northing:	1060216298.457
	Sampling Method:	4"x10' Core barrel	Easting:	2924359.671

Depth (ft)	Well Materials	Recovery (ft/ft)	USCS	Lithologic Description
0			FILL	(0 - 1) Top soil, light brown
			SM	(1 - 2) Sandy silty soil with pieces of rock, light brown, abundant organics
2			CL	(2 - 3) CLAY, yellow-reddish
			SM	(3 - 4) Sandy silty soil with pieces of rock, light brown/tan, abundant organics
4		10.0/10.0	CL	(4 - 20) CLAY, dark gray, lignite present (angular), color change to light gray to yellow clay with some red mottling at 6', firm, moist, medium plasticity, color change to tan at 10', moist and soft lignite layer (12'-13'), hard and lignite layer (angular pieces) at 13'
10		10.0/10.0		
20		10.0/10.0		(20 - 30) Sandy CLAY, light gray, moist, soft, medium plasticity, moisture content decreases with depth, hardness increases with depth, plasticity decreases with depth
30		10.0/10.0		(30 - 40) Sandy CLAY, light gray, wet, soft, hardness increases with depth

Depth scale: 0, 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40

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Round Rock, TX 78664
Tel (512) 671-3434 Fax (512) 671-3446

Notes:
1. This log should not be used separately from the report to which it is attached

Well Materials
(0-20) Casing, 2" Sch 40 FJT PVC
(20-40) Screen, 2" Sch 40 FJT PVC, 0.010" slot

Annular Materials
(0'-37') Grout
(16'-18') Bentonite pellets
(18'-40') 20/40 sand

STATE OF TEXAS
WILLIAM F. VIENNE
GEOLOGY
No. 10492
LICENSED
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11/16/2022

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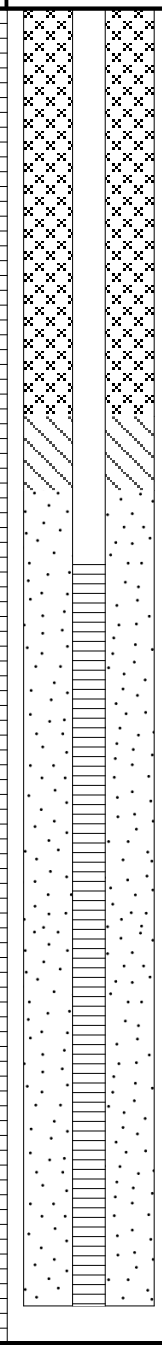
Log of Boring: BMW-23

Martin Lake Steam Electric Station
Tatum, TX

PBW Project No. 5164B

Completion Date:	9/28/2015	Drilling Method:	Sonic
Drilling Company:	Walker-Hill Environmental	Borehole Diameter (in.):	6.5
Driller:	Timmy Beach	Total Depth (ft):	35
Driller's License:	5814M	TOC Elevation (ft. AMSL):	341.903
Logged By:	Jeremiah Bihl	Northing:	1061215105.129
Sampling Method:	4"x10' Core barrel	Easting:	2923179.729

Depth (ft)	Well Materials	Recovery (ft/ft)	USCS	Lithologic Description
0			FILL	(0 - 2) Top soil, sandy silty CLAY, moist, soft, light brown
2		10.0/10.0		
4				
6			CL	(2 - 10) CLAY, light gray to pale yellow, some sand present, soft, moist, low plasticity, color change to brown at 5'
8				
10		10.0/10.0		
12			LIG	(10 - 15) LIGNITE, black, soft, moist, crumbly, sharp contact
14				
16			CL	(15 - 20) CLAY, dark gray and light tan, dry, hard, medium plasticity
18				
20		10.0/10.0		
22				
24				(20 - 30) Silty SAND with small amounts of clay, moist, soft, low plasticity, small seams of lignite, clay content increases with depth (20'-30')
26				
28			SM	
30		10.0/10.0		
32				(30 - 35) Silty SAND, light gray, wet, very soft, low plasticity, some clay content at 32', sand lenses present
34				
36				

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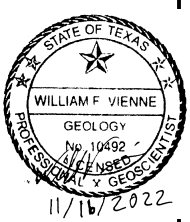
Tel (512) 671-3434 - Fax (512) 671-3446

Notes:
1. This log should not be used separately from the report to which it is attached

Well Materials
(0-15) Casing, 2" Sch 40 FJT PVC
(15-35) Screen, 2" Sch 40 FJT PVC, 0.010" slot

Annular Materials
(0'-11') Grout
(11'-13') Bentonite pellets
(13'-35') 20/40 sand



Luminant

Log of Boring: BMW-24

Martin Lake Steam Electric Station
Tatum, TX

PBW Project No. 5164B

Completion Date:	9/28/2015	Drilling Method:	Sonic
Drilling Company:	Walker-Hill Environmental	Borehole Diameter (in.):	6.5
Driller:	Timmy Beach	Total Depth (ft):	45
Driller's License:	5814M	TOC Elevation (ft. AMSL):	347.074
Logged By:	Jeremiah Bihl	Northing:	1066213874.314
Sampling Method:	4"x10' Core barrel	Easting:	2921447.467

Depth (ft)	Well Materials	Recovery (ft/ft)	USCS	Lithologic Description
0			FILL	(0 - 3) Top soil, brown, moist, roots present
4		10.0/10.0	CL	(3 - 4) CLAY, light brown with yellow and orange mottling, dry, soft, low plasticity (4 - 6) CLAY with some silt, tan to yellow/gray, moist, firm, medium plasticity
8				(6 - 12) CLAY, black with lignite pieces (0.2-1 cm), dry, soft, low plasticity, sharp contact
12		10.0/10.0		(12 - 20) CLAY, dark gray with yellow and red mottling, dry, hard, medium to high plasticity
16				
20		10.0/10.0	CH	(20 - 30) Silty CLAY, light gray to gray, yellow and red mottling, moist, very soft, high plasticity, pieces of lignite present, decreasing silt content with depth and becomes harder, more brittle, and dry (28'-30'), increase in red, yellow, and black mottling at 28'
24				
28				
32		10.0/10.0	SM	(30 - 35) Silty SAND, gray, wet, soft, low plasticity, subangular to rounded
36			ML	(35 - 40) Clayey SILT, dry, firm, low plasticity, silt content decreases with depth
40		10.0/10.0	CL	(40 - 45) Silty CLAY, light gray, dry, firm, low plasticity
44				
48				

PBW

Pastor, Behling & Wheeler, LLC
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Round Rock, TX 78664
Tel (512) 671-3434 - Fax (512) 671-3446

Notes:
1. This log should not be used separately from the report to which it is attached

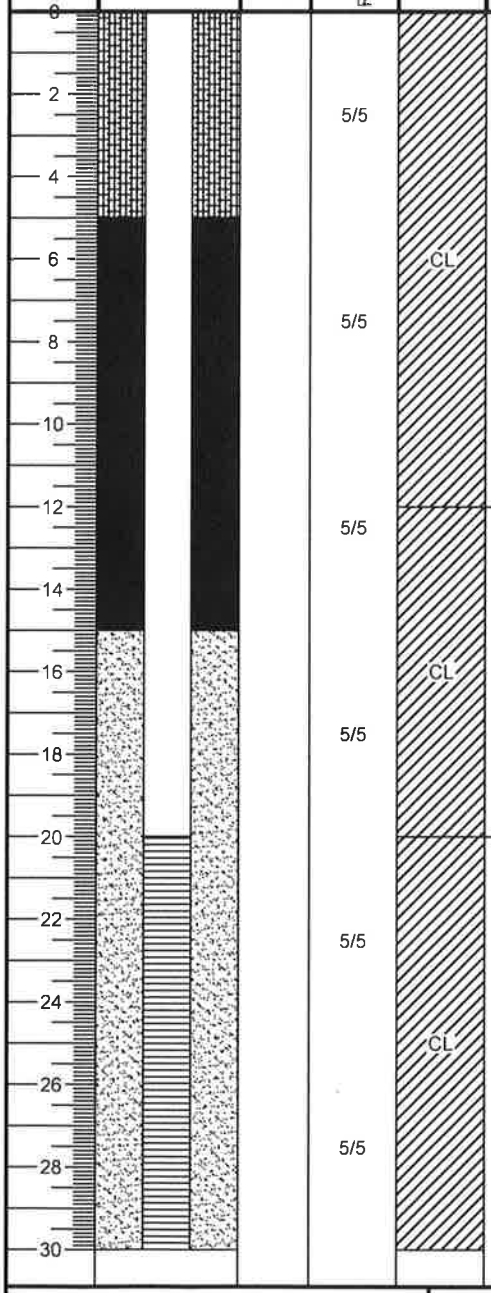
Well Materials
(0-20) Casing, 2" Sch 40 FJT PVC
(20-40) Screen, 2" Sch 40 FJT PVC, 0.010" slot

Annular Materials
(0'-16') Grout
(16'-18') Bentonite pellets
(18'-40') 20/40 sand

STATE OF TEXAS
WILLIAM F. VIENNE
GEOLOGY
No. 10492
LICENSED
PROFESSIONAL GEOSCIENTIST
11/16/2022

LUMINANT	Log of Boring: BMW-26

A-1 AREA LANDFILL TATUM, TEXAS	Completion Date:	8-31-16	Drilling Method:	HS Auger
	Drilling Company:	Walker-Hill Env.	Borehole Diameter (in.):	10.25"
	Driller:	Jeremy Thornhill	Total Depth (ft):	30.0'
PBW PROJECT No.: 5164-F	Driller's License:	NA	Northing:	221187.022
	Field Supervisor:	RKS	Easting:	2921306.755
	Sampling Method:	5'Macrocore Sampler	Ground Elev. (ft AMSL):	365.958



Lithologic Description

0.0-12.0 - Clay with silt and lignite fragments, dark gray-black, soft, moist, low plasticity

Wet at 4.0'

12.0-20.0 - Silty clay, dark brown, saturated, low plasticity

20.0-30.0 - Silty clay, fine grained, dark brown, saturated, low plasticity

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Notes:

Depth (bgs)	Well Materials	Depth (bgs)	Annular Materials
0' - 20'	Casing, 4" Sch 40 PVC, FJT	0' - 5'	Grout
20' - 30'	Screen, 4" Sch 40 PVC, .010 Slot	5' - 15'	Bentonite Pellet Seal
		15' - 30'	20/40 Sand

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11/16/2022

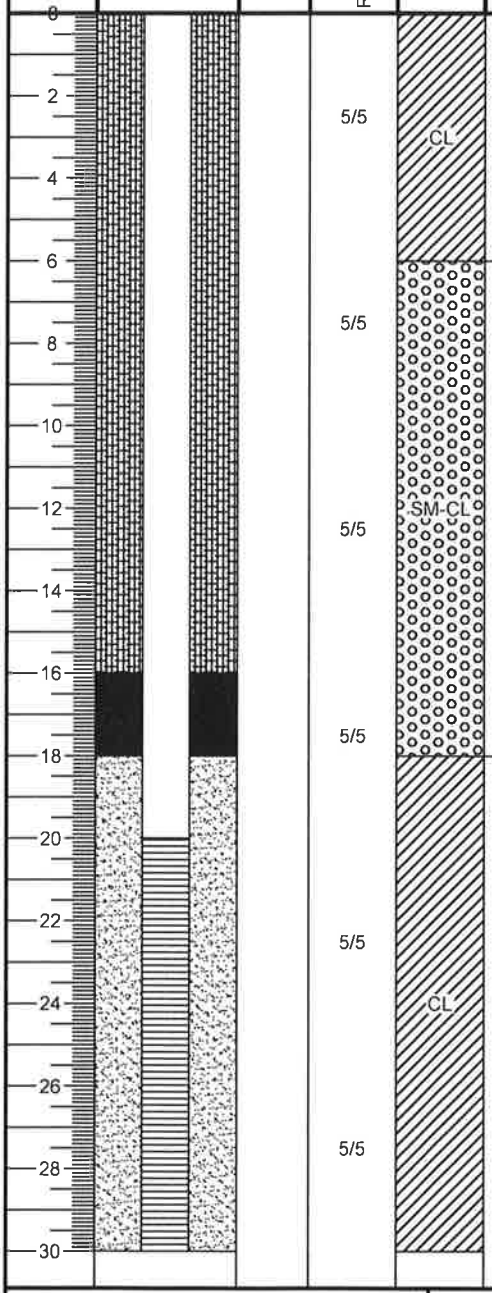
LUMINANT

Log of Boring: BMW-27

A-1 AREA LANDFILL
TATUM, TEXAS

PBW PROJECT No.: 5164-F

Completion Date:	9-1-16	Drilling Method:	HS Auger
Drilling Company:	Walker-Hill Env.	Borehole Diameter (in.):	10.25"
Driller:	Jeremy Thornhill	Total Depth (ft):	30.0'
Driller's License:	NA	Northing:	220024.389
Field Supervisor:	RKS	Easting:	2922347.297
Sampling Method:	5'Macrocore Sampler	Ground Elev. (ft AMSL):	373.463



Lithologic Description

0.0-6.0 - Clay with silt and fine sand, dark gray, soft, moist, low plasticity

Wet at 5.0'

6.0-18.0 - Silty sand with clay, brown, soft, moist

18.0-30.0 - Silty clay with lignite, dark brown-gray, wet, low plasticity

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Notes:

Depth (bgs)	Well Materials
0' - 20'	Casing, 4" Sch 40 PVC, FJT
20' - 30'	Screen, 4" Sch 40 PVC, .010 Slot

Depth (bgs)	Annular Materials
0' - 16'	Grout
16' - 18'	Bentonite Pellet Seal
18' - 30'	20/40 Sand

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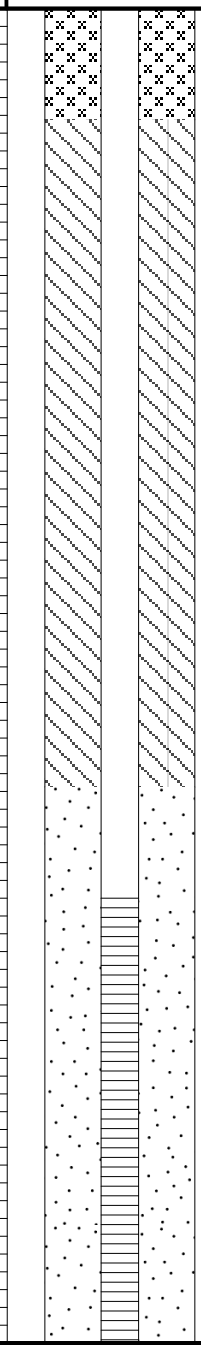
Log of Boring: BMW-28

A-1 Area Landfill
Tatum, TX

PBW Project No. 5164F

Completion Date:	10/27/2016	Drilling Method:	HSA
Drilling Company:	ETTL	Borehole Diameter (in.):	10.25
Driller:	Tommy Cook	Total Depth (ft):	60
Driller's License:	2853	TOC Elevation (ft. AMSL):	373.208
Logged By:	Jeremiah Bihl	Northing:	15215304.503
Sampling Method:	4"x10' Core barrel	Easting:	2917355.698

Depth (ft)	Well Materials	USCS	Lithologic Description
0 – 14		ML	(0 - 14) Clayey SILT (spoil), black to brown, some pieces of coal, moist, low plasticity.
14 – 30		SM	(14 - 30) SAND with silt and small amounts of clay (spoil), some coal pieces, black, soft, dry, low plasticity.
30 – 60		CL	(30 - 60) CLAY with some silt (spoil), pieces of coal, soft, black to dark gray, dry, low plasticity, possible sandstone/siltstone boulder at 40'.

0 4 8 12 16 20 24 28 32 36 40 44 48 52 56 60

PBW

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Notes:
1. This log should not be used separately from the report to which it is attached

Well Materials
(0-40) Casing, 2" Sch 40 FJT PVC
(40-60) Screen, 2" Sch 40 FJT PVC, 0.010" slot

Annular Materials
(0'-5') Grout
(5'-35') Bentonite pellets
(35'-60') 20/40 sand

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Log of Boring: BMW-32

Big Brown Steam Electric Station
Franklin, Texas

Golder Project No. 19122434E

Completion Date:	5/29/2019	Drilling Method:	Sonic
Drilling Company:	Walker-Hill Environmental	Borehole Diameter (in.):	6
Driller:	Rodney Labrosse	Total Depth (ft):	37
Driller's License:	60059	TOC Elevation (ft. AMSL):	344.09
Logged By:	Kelsey Worley	Northing:	3567175
Sampling Method:	4"x10' Core barrel	Easting:	357875

Depth (ft)	Well Materials	Recovery (ft/ft)	USCS	Lithologic Description
0				
5		6.9/10.0	CL	(0 - 8.9) CLAY fill material, organics and roots on the top foot, mix of tan gray and orange, some iron content, firm, trace sand, black coal pieces mixed in clay below 8.0'
10			CH	(8.9 - 14.7) CLAY, mixture of clay with black staining, and lignite pieces, soft to firm, moist to wet, subangular, moderate to high plasticity
15		6.5/10.0	LIG	(14.7 - 24.5) LIGNITE, fine to large lignite pieces, subangular, wet at 22.5'-23.5' small to fine lignite, hard, black to brown, soft to hard
20				
25		4.4/5.0	CL/CH	(24.5 - 25) CLAY, dark brown, black, dry, very hard, some orange streaks throughout with black staining
30			SC	(25 - 37) Clayey SAND, gray with some oxidation, soft, round, low plasticity, sand is fine to very fine, increasing clay content with depth
35		7.0/7.0		

STATE OF TEXAS
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11/16/2022

GOLDER
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Notes:
1. This log should not be used separately from the report to which it is attached.

Well Materials
(+3 - 27) Casing, 2" Sch 40 FJT PVC
(27 - 37) Screen, 2" Sch 40 FJT PVC, 0.010" slot

Annular Materials
(0'-21') Grout
(21'-25') Bentonite pellets
(25'-37') 20/40 sand

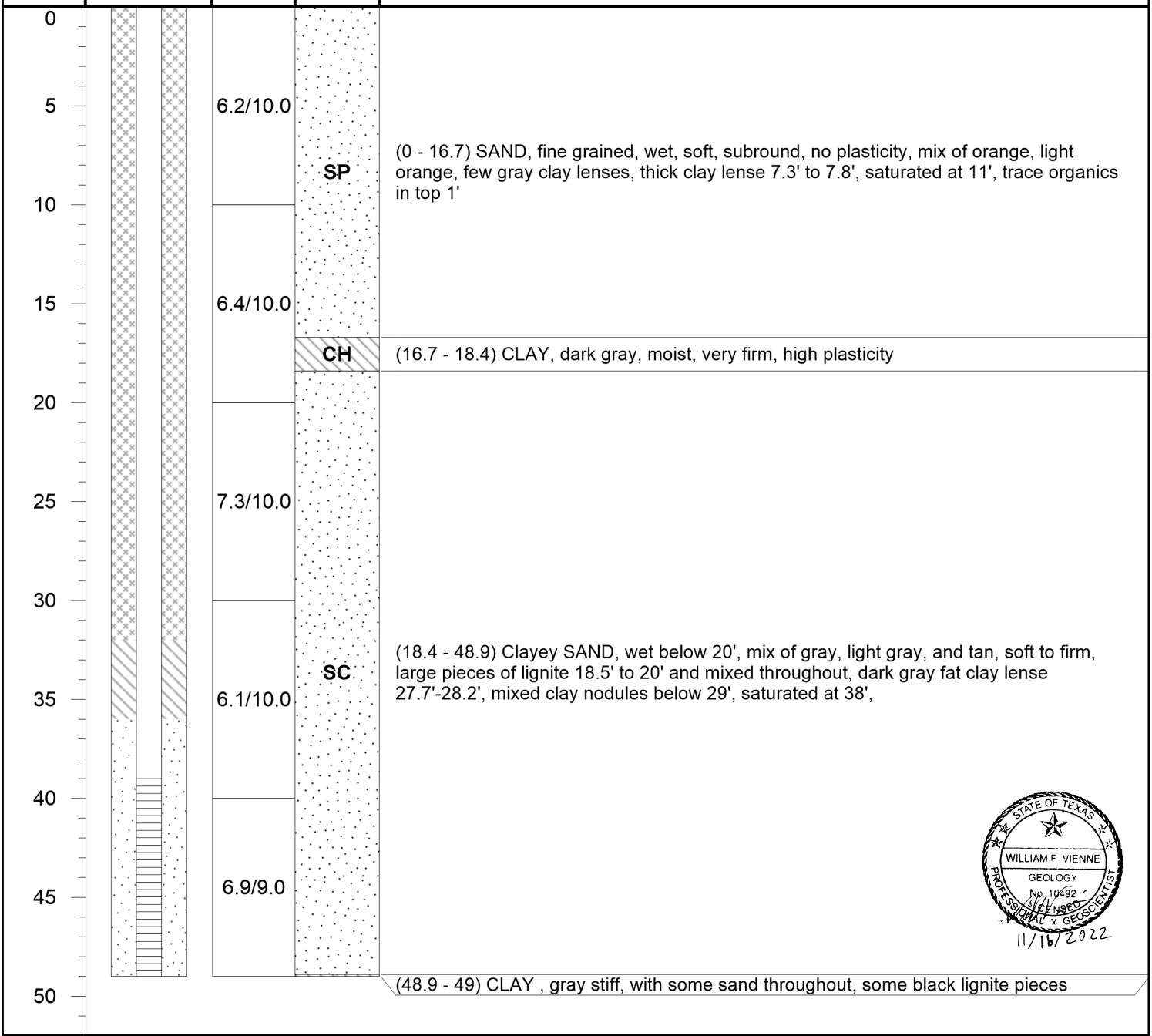
Luminant

Log of Boring: BMW-33

Big Brown Steam Electric Station
Franklin, Texas

Golder Project No. 19122434E

Completion Date:	5/30/2019	Drilling Method:	Sonic
Drilling Company:	Walker-Hill Environmental	Borehole Diameter (in.):	6
Driller:	Rodney Labrosse	Total Depth (ft):	48
Driller's License:	60059	TOC Elevation (ft. AMSL):	427.7
Logged By:	Sergio Ruiz	Northing:	3568008
Sampling Method:	4"x10' Core barrel	Easting:	357427.5



STATE OF TEXAS
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11/16/2022

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APPENDIX F-Revision 2 February 27, 2024

Notes:
1. This log should not be used separately from the report to which it is attached.

Well Materials
(+3 - 38) Casing, 2" Sch 40 FJT PVC
(38 - 48) Screen, 2" Sch 40 FJT PVC, 0.010" slot

Annular Materials
(0'-32') Grout
(32'-36') Bentonite pellets
(36'-48') 20/40 sand

REPORT

Groundwater Monitoring Plan - Revision 2

Martin Lake Steam Electric Station - Ash Pond Area
Rusk County, Texas

Submitted to:

Luminant Generation Company LLC

Submitted by:

WSP GOLDER
1601 S MoPac Expressway
Suite 325D
Austin, Texas, USA 78746
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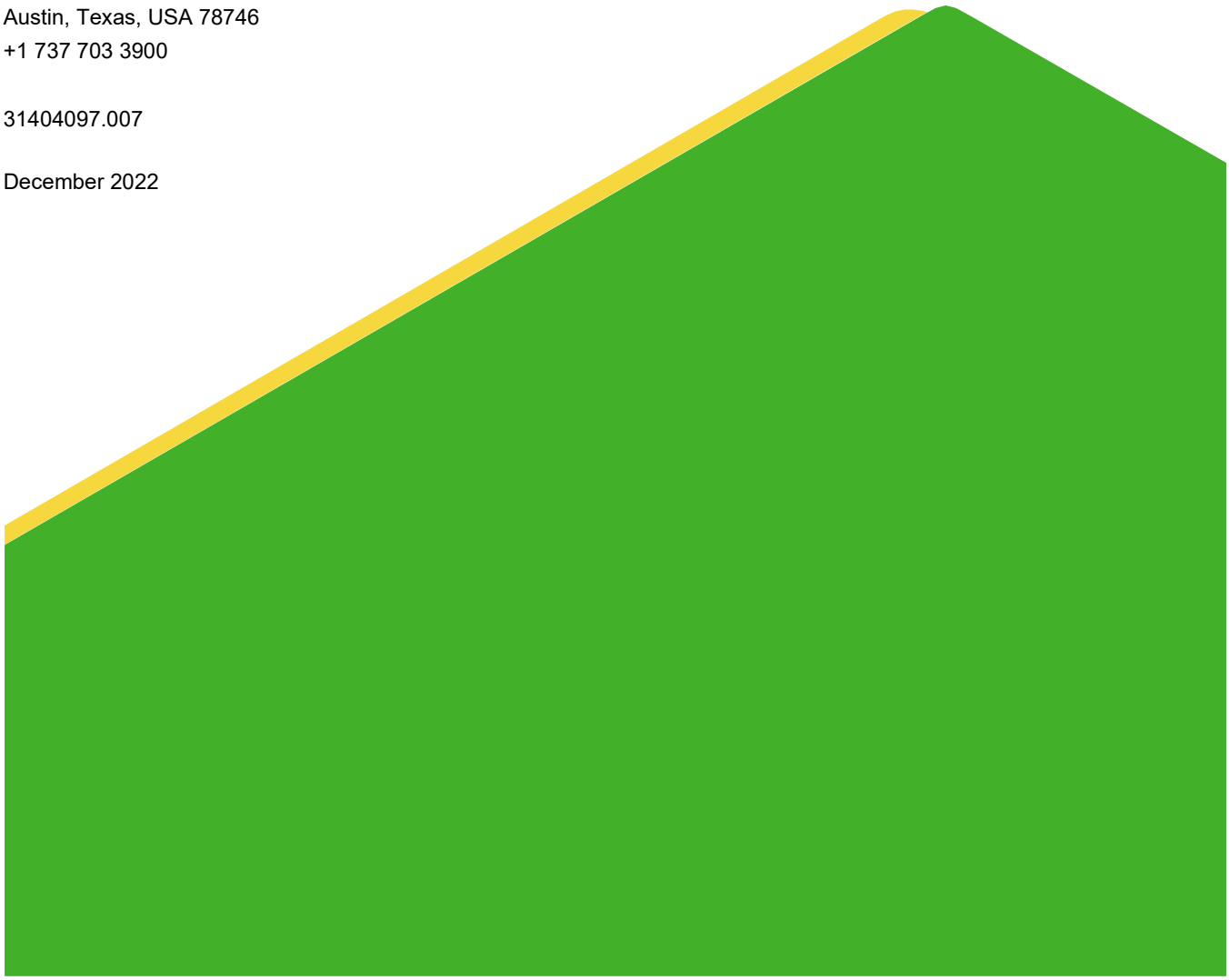
31404097.007

December 2022



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FIGURES

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APPENDICES

Appendix A CCR Monitoring Well Logs

DOCUMENT REVISION RECORD

Issue No.	Date	Details of Revisions
Revision 0	October 2017	Original Document
Revision 1	January 2022	Updated information on data evaluation procedures, updated well information
Revision 2	November 2022	Signed/sealed report and added professional geoscientist seal to figures where appropriate, addressed sample shipment and quality assurance/quality control procedures, specified that the rate and direction of groundwater flow will be determined each sampling event, provided additional information on the statistical methods used to develop background values and evaluate sample data, specified that Alternate Source Demonstrations must be certified by a professional engineer, and updated GWPS information for cobalt, lithium, molybdenum

1.0 INTRODUCTION

Luminant Power (Luminant) operates the Martin Lake Steam Electric Station (MLSES) located approximately 5 miles southeast of Tatum, Rusk County, Texas (Figure 1). The MLSES consists of three coal/lignite-fired power generation units. Coal Combustion Residuals (CCRs) including fly ash, bottom ash and gypsum are generated as part of the MLSES unit operations. Currently, CCRs generated at the MLSES are transported off-site for beneficial reuse by third-parties or are managed by Luminant in surface impoundments located on the MLSES property or the A1 Area Landfill located approximately 2.5 miles east of the MLSES. This report discusses the Ash Pond Area (the Site), which includes the West Ash Pond (WAP), East Ash Pond (EAP), and the New Scrubber Pond.

The CCR Rule (40 CFR 257 Subpart D - *Standards for the Receipt of Coal Combustion Residuals in Landfills and Surface Impoundments*) has been promulgated by the EPA to regulate the management and disposal of CCRs as solid waste under Resource Conservation and Recovery Act (RCRA) Subtitle D.

The CCR Rule establishes national minimum criteria for existing and new CCR landfills, existing and new CCR surface impoundments, and lateral expansions to landfills/impoundments. The Ash Ponds are considered “existing surface imoundments” under 40 C.F.R 257.53. A groundwater monitoring plan for the Site was developed for the Site in accordance with Sections 257.90 through 257.95 of the CCR Rule (PBW, 2017a). The CCR groundwater monitoring system at the Site was certified by a professional engineer in accordance with Section 257.91 of the CCR Rule as part of a separate report (PBW, 2017b). This revised groundwater monitoring plan updates and replaces the previous groundwater monitoring plan for the Site.

1.1 CCR Unit Groundwater Monitoring Applicability

Section 257.90 of the CCR Rule requires that existing CCR landfills and surface impoundments be in compliance with the following groundwater monitoring requirements no later than October 17, 2017:

- Install a groundwater monitoring system as required under Section 257.91;
- Develop a groundwater sampling and analysis program to include selection of the statistical procedures to be used for evaluating groundwater monitoring data as required under Section 257.93;
- Initiate a detection monitoring program to include obtaining a minimum of eight independent

samples for each background and downgradient monitoring well as required under Section 257.94; and

- Begin evaluating the groundwater monitoring data for statistically significant increases over background levels for the constituents listed in Appendix III of this part as required under Section 257.94.

Once a groundwater monitoring system and groundwater monitoring program has been established at the CCR unit, the owner or operator must conduct groundwater monitoring and, if necessary, corrective action throughout the active life and post-closure care period of the CCR unit. In the event of a release from a CCR unit, the owner or operator must take all necessary measures to control the source(s) of releases so as to reduce or eliminate, to the maximum extent feasible, further releases of contaminants into the environment.

For existing CCR landfills and surface impoundments, the owner or operator must prepare an annual groundwater monitoring and corrective action report to document the status of the groundwater monitoring and corrective action program for the CCR unit for the previous calendar year.

1.2 Groundwater Sampling and Analysis Requirements

The CCR Rule establishes groundwater sampling and analysis criteria that are designed to create consistency and ensure that monitoring results provide accurate representations of groundwater quality at the CCR groundwater monitoring wells. A sampling and analysis program must be developed for each unit that includes procedures and techniques for sample collection, sample preservation and shipment, analytical procedures, chain of custody control, and quality assurance and quality control. Depending on the constituents and concentrations detected, groundwater monitoring at each CCR unit may consist of detection monitoring (Section 257.94) only or a combination of detection monitoring and assessment monitoring (Section 257.95). Selected technical groundwater sampling and analysis criteria are described in detail below; however, the complete CCR Rule should be referenced for notification requirements and other criteria.

1.2.1 Groundwater Elevations

Groundwater elevations must be measured in each well immediately prior to purging, each time groundwater is sampled. Remove sentence about flow and flow directions

1.2.2 General Groundwater Analytical Requirements

The CCR groundwater monitoring program must include sampling and analytical methods that are appropriate for groundwater sampling and that accurately measure hazardous constituents and other monitoring parameters in groundwater samples. The EPA publication *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods (SW-846)*, is EPA'S official compendium of analytical and sampling methods that have been evaluated and approved for use in complying with the RCRA regulations (EPA, 2015).

Groundwater monitoring under the CCR Rule includes analyses for inorganic parameters and metals. All metals analyses must be reported as "total recoverable metals" to capture both the particulate fraction and dissolved fraction of metals in the groundwater. The CCR Rule stipulates that groundwater samples cannot be field filtered prior to analysis.

1.2.3 Background Groundwater Quality Determination

Background groundwater quality must be established in a hydraulically upgradient or background well(s) for each of the groundwater constituents required in the detection monitoring or assessment monitoring program that applies to the CCR unit. Background groundwater quality may be established at wells that are not located hydraulically upgradient from the CCR unit if the samples accurately represent the quality of background groundwater that has not been affected by leakage from the CCR unit.

1.2.4 Detection Monitoring Requirements

Groundwater detection monitoring must be performed at each CCR unit (CCR Rule Section 257.94). The following constituents must be included in the detection monitoring program (from Appendix III to the CCR Rule):

- Boron
- Calcium
- Chloride
- Fluoride
- pH
- Sulfate
- Total Dissolved Solids (TDS)

The monitoring frequency for these constituents must be at least semi-annual during the active life of the CCR unit and post-closure period. The reported concentrations of the detection monitoring

constituents must be compared to the respective CCR unit background concentration developed for each constituent. If a statistically significant increase over background levels is determined for one or more of the constituents listed above at any monitoring well at the CCR unit waste boundary, within 90 days the owner or operator must:

- Establish an assessment monitoring program as described in Section 257.95 of the Rule, or
- Demonstrate that a source other than the CCR unit caused the statistically significant increase over background levels for a constituent or that the statistically significant increase resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. If a successful demonstration is completed within the 90-day period, the owner or operator of the CCR unit may continue with the detection monitoring program.

1.2.5 Assessment Monitoring Requirements

Assessment monitoring is required under the CCR Rule whenever a statistically significant increase over background levels has been detected for one or more of the detection monitoring constituents listed above (CCR Rule Section 257.95). The following constituents must be included in the assessment monitoring program (from Appendix IV to the CCR Rule):

- Antimony
- Arsenic
- Barium
- Beryllium
- Cadmium
- Chromium
- Cobalt
- Fluoride
- Lead
- Lithium
- Mercury
- Molybdenum
- Selenium
- Thallium
- Radium 226 and 228 combined

Within 90 days of triggering an assessment monitoring program, and annually thereafter, the owner or operator of the CCR unit must sample and analyze the groundwater for all assessment monitoring constituents (Appendix IV) listed above. At least one sample must be collected from each well associated with the CCR unit.

Within 90 days of obtaining the results from the initial assessment monitoring sampling event, the owner or operator of the CCR unit must resample all wells associated with the CCR unit, conduct analyses for all detection monitoring parameters (Appendix III) and for those assessment monitoring constituents (Appendix IV) that have been detected as part of assessment monitoring. At least one sample must be collected from each well associated with the CCR unit. This monitoring must be performed on at least a semi-annual basis thereafter. The owner or operator of a CCR unit may demonstrate the need for an alternative monitoring frequency for repeated sampling and analysis for these constituents during the active life and the post-closure care period based on the availability of groundwater. If there is not adequate groundwater flow to sample wells semi-annually, the alternative frequency shall be no less than annual.

Within 90 days of obtaining the results from the initial assessment monitoring sampling event, groundwater protection standards (GWPSs) must be established for all assessment monitoring constituents (Appendix IV) detected in the CCR unit monitoring wells. The GWPS shall be:

- For constituents for which a federal maximum contaminant level (MCL) has been established under 40 CFR 141.62 and 141.66, the MCL for that constituent; or
- For constituents for which an MCL has not been established, the background concentration for the constituent or approved alternative GWPS established in accordance with CCR Rule Section 257.95(h); or
- For constituents for which the background level is higher than the MCL, the background concentration.

Following are the GWPSs that have been established for the assessment monitoring constituents (Appendix IV) identified in the Rule:

Constituent	GWPS (mg/L)
Antimony	0.006
Arsenic	0.01
Barium	2.0
Beryllium	0.004
Cadmium	0.005
Chromium	0.1
Cobalt	0.0564

Constituent	GWPS (mg/L)
Fluoride	4.0
Lead	0.015
Lithium	0.177
Mercury	0.002
Molybdenum	0.1
Selenium	0.05
Thallium	0.002
Radium 226/228 Combined	5 pCi/L**

** pCi/L = picocuries per liter

If the concentrations of all detection monitoring constituents (Appendix III) and assessment monitoring constituents (Appendix IV) are shown to be statistically at or below background values for two consecutive sampling events, the owner or operator may return to performing only detection monitoring of the CCR unit. If the concentrations of any detection monitoring constituents (Appendix III) and assessment monitoring constituents (Appendix IV) are shown to be statistically above background values, but all concentrations are below their respective GWPSs, the owner or operator must continue assessment monitoring of the CCR Unit.

Within 90 days of finding that any of the assessment monitoring constituents (Appendix IV) have been detected at a statistically significant level exceeding their respective GWPSs, the owner or operator of the CCR unit must either:

- Initiate an assessment of corrective measures for the CCR unit (CCR Rule Section 257.96); or
- Demonstrate that a source other than the CCR unit caused the contamination, or that the statistically significant increase resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. If a successful demonstration is made, the owner or operator must continue assessment monitoring. If a successful demonstration has not been made at the end of the 90 day period, the owner or operator of the CCR unit must initiate an assessment of corrective measures for the CCR unit.

If one or more assessment monitoring constituents (Appendix IV) are detected at statistically significant levels above their respective GWPSs, the owner or operator of the CCR unit must characterize the nature and extent of the release. Characterization of the release includes the following minimum measures:

- Install additional monitoring wells necessary to define the contaminant plume(s);

- Collect data on the nature and estimated quantity of material released including specific information on the assessment monitoring constituents (Appendix IV) and the levels at which they are present in the material released;

- Install at least one additional monitoring well at the facility boundary in the direction of contaminant migration and sample this well for all detection monitoring parameters (Appendix III) and for those assessment monitoring constituents (Appendix IV) that have been detected as part of assessment monitoring. This monitoring must be performed on at least a semi-annual basis thereafter.

- Sample all CCR unit wells for all detection monitoring parameters (Appendix III) and for those assessment monitoring constituents (Appendix IV) that have been detected as part of assessment monitoring. This monitoring must be performed on at least a semi-annual basis thereafter.

If an assessment of corrective measures is required as a result of assessment monitoring, and if the CCR unit being monitored is considered an existing unlined CCR surface impoundment under the CCR Rule, then the CCR unit is required to retrofit or close in accordance with the applicable parts of the CCR Rule.

1.3 Groundwater Statistical Evaluation Procedures

Statistical analysis of the groundwater monitoring data is required as part of detection monitoring and assessment monitoring under the CCR Rule. One of the following statistical methods must be used to evaluate groundwater monitoring data for each monitored constituent:

- A parametric analysis of variance followed by multiple comparison procedures to identify statistically significant evidence of contamination. The method must include estimation and testing of the contrasts between each compliance well's mean and the background mean levels for each constituent; or

- An analysis of variance based on ranks followed by multiple comparison procedures to identify statistically significant evidence of contamination. The method must include estimation and testing of the contrasts between each compliance well's median and the background median levels for each constituent; or

- A tolerance or prediction interval procedure in which an interval for each constituent is established from the distribution of the background data. The level of each constituent in each compliance well is compared to the upper tolerance or prediction limit established from the background data; or

- A control chart approach that gives control limits for each constituent; or

- Another statistical test method that meets the performance standards.

Any statistical method chosen must comply with the following performance standards:

- The statistical method used to evaluate groundwater monitoring data shall be appropriate for the distribution of constituents. Probability distributions of data values shall use parametric methods, and non-probability distributions of data values shall use non-parametric methods. If the distribution of the constituents is shown to be inappropriate for a probability theory test, the data must be transformed or a distribution-free (non-parametric) theory test must be used. If the distributions for the constituents differ, more than one statistical method may be needed;

- If an individual well comparison procedure is used to compare an individual compliance well constituent concentration with background constituent concentrations or a GWPS, the test shall be done at a Type I error level no less than 0.01 for each testing period. If a multiple comparison procedure is used, the Type I experiment wise error rate for each testing period shall be no less than 0.05; however, the Type I error of no less than 0.01 for individual well comparison must be maintained. This performance standard does not apply to tolerance intervals, prediction intervals, or control charts;

- If a control chart approach is used to evaluate groundwater monitoring data, the specific type of chart and its associated parameter values shall be such that this approach is at least as effective as any other approach in this section for evaluating groundwater data. The parameter values shall be determined after considering the number of samples in the background database, the data distribution, and the range of the concentration values for each constituent of concern;

- If a tolerance interval or a prediction interval is used to evaluate groundwater monitoring data, the levels of confidence and, for tolerance intervals, the percentage of the population that the interval must contain, shall be such that this approach is at least as effective as any other approach in this section for evaluating groundwater data. These parameters shall be determined after considering the number of samples in the background database, the data distribution, and the range of the concentration values for each constituent of concern;

- The statistical method must account for data below the limit of detection with one or more statistical procedures that shall be at least as effective as any other approach in this section for evaluating groundwater data. Any practical quantitation limit that is used in the statistical method shall be the lowest concentration level that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operating conditions that are available to the facility; and

- If necessary, the statistical method must include procedures to control or correct for seasonal and spatial variability as well as temporal correlation in the data.

The owner/operator of the CCR unit must determine if there has been a statistically significant increase over background (detection monitoring) or MCLs/background (assessment monitoring) for each

constituent required in the particular groundwater monitoring program that applies to the CCR unit. The determination of statistical increase over background/MCLs for each constituent at each monitoring well must be made within 90 days after completing sampling and analysis.

2.0 GROUNDWATER MONITORING PROCEDURES

This section describes groundwater sampling and analysis procedures for monitoring the CCR unit wells to comply with the requirements of 40 CFR 257.90 - 257.95 of the CCR Rule.

2.1 Ash Pond Area Groundwater Monitoring System

The CCR groundwater monitoring system at the Ash Pond Area consists of the following eight monitoring wells:

Upgradient Wells	Downgradient Wells
H-26	H-28
H-27	H-29
H-33	H-30
	H-31
	H-32

A detailed Site Plan showing the CCR monitoring well locations is presented on Figure 2. Well logs for the wells are reproduced in Appendix A. The CCR groundwater monitoring system was certified by a professional engineer in accordance with Section 257.91 of the CCR Rule as part of a separate report (PBW, 2017b).

2.2 Groundwater Sampling Procedures

2.2.1 Equipment Assembly and Preparation

Activities that occur during groundwater sampling are summarized as follows:

- pre-arrangement of sample analytical requests with analytical testing laboratory;
- assembly and preparation of sampling equipment and supplies;
- groundwater sampling;
- water-level measurements;
- well purging;
- field parameter measurements;
- sample collection;
- sample preservation;
- sample labeling;
- completion of sample records;
- completion of chain-of-custody records; and
- sample shipment.

Prior to each sampling event, equipment to be used is assembled, properly cleaned and its operating condition verified. In addition, all record-keeping materials are prepared. Sampling procedures are conducted in general accordance with EPA SW-846 methods.

Decontamination of all non-disposable or non-dedicated field measurement, purging, and sampling equipment are performed for each sampling event before any purging/sampling activities begin, after each well is sampled, and at the end of the sampling event. Decontamination procedures are summarized below:

(1) Wash equipment with low-residue soap and/or detergent solution.
(2) Rinse with distilled water; and
(3) Repeat steps (1) and (2) above, as necessary.

2.2.2 General Groundwater Sampling Procedures

Prior to collecting samples, each well is inspected for signs of damage to the well protective casing and well pad. Each field instrument is calibrated according to the manufacturer's instructions prior to use.

Special care should be exercised to prevent contamination of the groundwater and extracted samples during the sampling activities. The primary way in which such contamination can occur is contact with improperly cleaned equipment. To prevent such contamination, all non-dedicated sampling equipment is thoroughly cleaned before and between uses at different sampling locations. In addition to the use of properly cleaned equipment, a new pair of disposable latex (or similar) gloves is worn for each well.

2.2.3 Groundwater Level Measurements

Groundwater levels are measured prior to purging the wells. Using a pre-cleaned water level meter, the groundwater surface is measured from the casing datum to the nearest 0.01-foot. Total depth measurements are also collected on, at least, an annual basis. The rate and direction of groundwater flow should be determined for each groundwater monitoring event.

2.2.4 Well Purging and Sampling

Well purging and sampling is conducted using either a submersible pump or peristaltic pump in accordance with standard low flow sampling procedures. The sampler withdraws water in a manner that minimized stress (drawdown) to the system to the extent practicable. When the pump intake is located within the screened interval, the water pumped is drawn in directly from the formation with little mixing of casing water or disturbance to the sampling zone. Thus, sample results are more representative of the constituents present in the groundwater.

Purging rates during sample collection are generally performed at 0.5 liters per minute (L/min) or less. Field parameters (pH, temperature, conductivity and turbidity) are measured to evaluate when the well is adequately purged. Turbidity in the samples should be minimized as much as possible. By using minimal pumping rates, dedicated equipment whenever possible, and positioning the intake for the sample tubing or submersible pump off of the bottom of the well.

For groundwater samples, at least three field measurements should be taken during the course of purging the well. If the parameters have not stabilized at that time, field measurements and purging will continue until two consecutive readings have stabilized to within the following limits:

- Temperature: +/-1° C
- pH: +/-0.1 pH units
- Specific conductance: +/-10%
- Turbidity: +/- 10%

Sample extraction is accomplished by using the pump that was previously used to purge the well. The sample bottle is filled directly from the pump line. The pumping rate and parameter measurements are recorded on groundwater sampling forms in the field. If a well goes dry during purging, sampling is performed after the well has sufficiently recharged to allow sample collection.

Groundwater samples will not be filtered in the field prior to collection in accordance with Section 257.93(i) of the CCR Rule.

2.2.5 Container, Labels, and Shipment

Samples are collected in laboratory-supplied containers. The following information is legibly and indelibly written on the label:

- project identification;
- sample identification;
- name or initials of collector;
- date and time of collection;
- analysis requested; and
- sample preservative, if applicable.

After the samples are collected, the sample containers are placed in a cooler or similar container, preserved with ice, and shipped to the laboratory for analysis.

2.2.6 Chain-of-Custody Control

After samples are collected, chain-of-custody procedures are followed to establish a written record concerning sample movement between the sampling site and the testing laboratory. Each shipping container has a chain-of-custody form completed by the sampling personnel packing the samples. The chain-of-custody form for each container is completed and sealed in the shipping container.

2.3 Analytical Procedures

The laboratory analytical methods utilized for the analysis of detection monitoring and assessment monitoring programs are appropriate and commonly utilized EPA methodologies, or other similar standard methodologies. Typical methodologies used to analyze the detection and assessment program constituents are presented below:

Detection Monitoring Program (Appendix III Constituents)

- Boron and calcium by EPA Method SW6020;
- Chloride, fluoride, and sulfate by EPA Method E300;
- pH by Standard Method M4500-H + B (field measurement); and
- TDS by Standard Method M2540.

Assessment Monitoring Program (Appendix IV Constituents)

- Antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, lead, lithium, molybdenum, selenium, and thallium by EPA Method SW6020;
- Fluoride EPA Method E300;
- Mercury by EPA Method SW7470; and
- Radium 226 and 228 by EPA Methods 904.0/SW9320 Modified and 903.1 Modified.

All metals analyses shall be reported as “total recoverable metals” in accordance with Section 257.93(1) of the CCR Rule. Filtering of samples prior to analysis is not permitted.

2.3.1 Data Quality Assurance/Quality Control

A quality assurance/quality control (QA/QC) program will be implemented to confirm the validity of the analytical results. Laboratory QC samples will include method blanks, laboratory control samples, and matrix spike/matrix spike duplicates. Field QC samples will include one field duplicate per sampling event. The selected laboratory must have in place documented quality assurance protocols and quality control checks to demonstrate the laboratory’s procedures and practices are consistent with the National Environmental Laboratory Accreditation Conference (NELAC) standards. Potential issues regarding the quality of the data should be evaluated through the examination of:

- The project objectives;
- Laboratory review checklist and associated exceptions report;
- The reportable data; and
- The field notes and data associated with the sampling event(s).

In the case where quality control criteria are outside applicable limits, a summary must be presented that indicates the affected samples, the quality control parameter reviewed, the qualifiers and bias code(s) applied to the data point, and the determination made concerning the usability of data.

3.0 STATISTICAL EVALUATION PROCEDURES

The following statistical evaluation approaches were selected to demonstrate groundwater compliance for the Ash Pond Area under the CCR Rule:

- Use of upper prediction limits (UPLs) to develop site-specific background concentrations for all Appendix III and Appendix IV constituents. This approach is a common statistical method used to evaluate groundwater compliance for Subtitle D landfill facilities and is one of the approved options for groundwater quality data statistical evaluation under the CCR Rule.

- After every detection monitoring event, Appendix III constituent concentrations from each well are compared to background UPLs to ascertain if a statistically significant increase above background exists. Background UPLs are based on a 1-of-2 resampling approach, meaning that if zero or one concentration measurement from a series of two independent samples collected from a well do not exceed the appropriate UPL, then a statistically significant increase over background has not occurred at a CCR unit.

- If in assessment monitoring, the 95% lower confidence limit of the mean (LCL) is calculated after each assessment monitoring event for each Appendix IV constituent. The set of data used to calculate LCLs are based on current and historical constituent concentrations. A statistically significant increase over the GWPS has occurred at a CCR unit when the LCL for at least one assessment monitoring constituent at a well is greater than the appropriate GWPS.

The statistical evaluation procedures proposed for the Ash Pond Area groundwater data conforms with the Rule requirements shown above, as well as the Statistical Analysis Plan for the Site (Golder, 2022), EPA's *Unified Guidance: Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities* (EPA, 2009) and the American Society for Testing and Materials (ASTM) standard D6312-17, *Developing Appropriate Statistical Approaches for Groundwater Detection Monitoring Programs at waste Disposal Facilities* (ASTM, 2017).

Eight independent groundwater samples were evaluated for each Appendix III parameter at each well to statistically establish detection monitoring prediction limits.

Eight independent groundwater samples were also evaluated for each Appendix IV parameter at each well to establish assessment monitoring GWPSs. The GWPSs were developed using the following methodology:

- For constituents for which a federal maximum contaminant level (MCL) has been established, the MCL for that constituent; or

- For constituents for which an MCL has not been established, the background concentration (prediction limit) or approved alternative GWPS for the constituent; or

- For constituents for which the background level (prediction limit) is higher than the MCL, the

background concentration (prediction limit) for the constituent.

4.0 DETECTION MONITORING DATA EVALUATION

CCR groundwater detection monitoring will be performed on a semi-annual basis during the active life of the CCR units and during the post-closure period. Each CCR monitoring well will be sampled for the following Appendix III constituents as part of the detection monitoring program:

- Boron
- Calcium
- Chloride
- Fluoride
- pH
- Sulfate
- Total Dissolved Solids (TDS)

Sampling and analytical procedures will be as described in previous sections of this plan.

After each detection monitoring event, the reported concentrations of the detection monitoring constituents at each well will be compared to the background concentration prediction limits developed for each constituent as described in Section 3 of this plan to ascertain if a statistically significant increase above background concentrations does or no does not exist. Possible outcomes from comparing the detection monitoring constituent concentrations in each well to their respective background concentration prediction limits are as follows:

- All detection monitoring constituent concentrations in each well are less than or equal to their respective background concentration prediction limits in the well; or
- One or more detection monitoring constituent concentrations in each well are above their respective background concentration prediction limits in the well.

4.1 No Statistically Significant Increase Over Background Concentrations

The background concentration prediction limits were developed based on a one-of-two resampling approach, meaning that if concentrations in at least one sample in a series of two independent samples collected from a well do not exceed their prediction limits, then a statistically significant increase over background concentrations has not occurred. This conclusion will be reached if the data indicate either of the following:

- All detection monitoring constituent concentrations in each well are less than or equal to their respective background concentration prediction limits; or

- One or more detection monitoring constituent concentration in any well is above the respective background concentration prediction limits. If this occurs, the well or wells with concentrations above the prediction limits will be resampled and analyzed for the detection monitoring constituent or constituents that exceed the prediction limits. If the resample indicates that the target detection monitoring constituent concentrations in the well or wells are less than or equal to their respective background concentration prediction limits, then it can be concluded that a statistically significant increase over background concentrations for all detection monitoring constituents does not exist, since concentrations in one sample of the two independent samples do not exceed their prediction limits.

If the groundwater monitoring data indicate that a statistically significant increase over background does not exist at the CCR wells, detection monitoring at all CCR wells will continue on a semi-annual basis.

4.2 Statistically Significant Increase Over Background Concentrations

If one or more detection monitoring constituent concentrations in any well is above the respective background concentration prediction limit in both the original detection monitoring sample and the resample, then a statistically significant increase over background concentrations for the target detection monitoring constituents can be concluded. If a statistically significant increase is indicated, within 90 days the owner/operator must:

- Establish an assessment monitoring program as described in this plan, or
- Demonstrate that a source other than the CCR unit caused the statistically significant increase over background levels for a constituent, or that the statistically significant increase resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. The demonstration must be summarized in a report that is certified by a professional engineer. If a successful demonstration is completed within the 90-day period, the owner or operator of the CCR unit may continue with the detection monitoring program.

5.0 ASSESSMENT MONITORING DATA EVALUATION

CCR groundwater assessment monitoring will be performed at the Ash Pond Area groundwater monitoring system whenever a statistically significant increase over GWPSs has been confirmed for one or more of the detection monitoring constituents listed in this plan. Within 90 days of triggering the assessment monitoring program, and annually thereafter, each CCR monitoring well in the Ash Pond Area groundwater monitoring system will be sampled for the following Appendix IV parameters as part of the assessment monitoring program:

- Antimony
- Arsenic
- Barium
- Beryllium
- Cadmium
- Chromium
- Cobalt
- Fluoride
- Lead
- Lithium
- Mercury
- Molybdenum
- Selenium
- Thallium
- Radium 226 and 228 combined

Sampling and analytical procedures will be as described in previous sections of this plan.

Within 90 days of obtaining the results from the initial assessment monitoring sampling event, all wells in the groundwater monitoring system will be resampled and analyzed for:

- All Appendix III detection monitoring parameters; and
- The Appendix IV assessment monitoring parameters that were detected as part of the assessment monitoring event.

This monitoring will be performed on at least a semi-annual basis thereafter, unless the owner/operator can demonstrate the need for an alternative monitoring frequency for repeated sampling and analysis for these constituents during the active life and the post-closure care period based on the availability of groundwater. If there is not adequate groundwater flow to sample wells semi-annually, the alternative frequency shall be no less than annual.

Within 90 days of obtaining the results from the initial assessment monitoring sampling event, GWPSs will be established for all Appendix IV assessment monitoring constituents that were detected in the Ash Pond Area groundwater monitoring system wells as follows:

- For constituents for which a federal maximum contaminant level (MCL) has been established, the MCL for that constituent; or
- For constituents for which an MCL has not been established, the background concentration or approved alternative GWPS for the constituent; or
- For constituents for which the background level is higher than the MCL, the background concentration for the constituent.

The 95% LCL of each Appendix IV constituent concentration at each well will be compared to the GWPS established for each constituent to ascertain if a statistically significant increase above the GWPS does or does not exist.

5.1 No Statistically Significant Increase Over GWPSs

If the groundwater monitoring data indicate that a statistically significant increase over GWPSs does not exist at the CCR wells, all wells in the groundwater monitoring system will be sampled on a semi-annual basis and analyzed for:

- All Appendix III detection monitoring parameters; and
- The Appendix IV assessment monitoring parameters that were detected as part of the initial assessment monitoring event.

This monitoring will be performed on at least a semi-annual basis unless the owner/operator can demonstrate the need for an alternative monitoring frequency for repeated sampling and analysis for these constituents during the active life and the post-closure care period based on the availability of groundwater.

If the concentrations of all Appendix III detection monitoring constituents and Appendix IV assessment monitoring constituents are shown to be statistically at or below background values for two consecutive assessment monitoring sampling events, assessment monitoring will be terminated and detection monitoring as described in this plan will resume. If the concentrations of any Appendix III detection monitoring constituents and Appendix IV assessment monitoring constituents are shown to be

statistically above background values, but all concentrations are below their respective GWPSs, assessment monitoring will continue.

5.2 Statistically Significant Increase Over GWPSs

If a statistically significant increase over GWPSs for any Appendix IV assessment monitoring constituent is confirmed, within 90 days of the initial assessment monitoring event, the owner/operator will either:

- Initiate an assessment of corrective measures for the CCR unit in accordance with CCR Rule Section 257.96; or
- Demonstrate that a source other than the CCR unit caused the contamination, or that the statistically significant increase resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. The demonstration must be summarized in a report that is certified by a professional engineer. If a successful demonstration is made, the owner or operator must continue assessment monitoring. If a successful demonstration has not been made at the end of the 90 day period, the owner or operator of the CCR unit must initiate an assessment of corrective measures for the CCR unit.

If one or more Appendix IV assessment monitoring constituents are detected at statistically significant levels above their respective GWPSs in any sampling event, and if a source other than the CCR unit cannot be demonstrated to have caused the contamination, a release from the CCR unit is likely and the nature and extent of the release will be further characterized as follows:

- Install additional monitoring wells necessary to define the contaminant plume(s);
- Collect data on the nature and estimated quantity of material released including specific information on the Appendix IV assessment monitoring constituents and the levels at which they are present in the material released;
- Install at least one additional monitoring well at the facility boundary in the direction of contaminant migration and sample this well for all Appendix III detection monitoring parameters and for those Appendix IV assessment monitoring constituents that have been detected as part of assessment monitoring. This monitoring must be performed on at least a semi-annual basis thereafter.
- Sample all CCR unit wells for all Appendix III detection monitoring parameters and for those Appendix IV assessment monitoring constituents that have been detected as part of assessment monitoring. This monitoring must be performed on at least a semi-annual basis thereafter.

6.0 REPORTING REQUIREMENTS

The results of the CCR groundwater monitoring program will be reported each year in an Annual Groundwater Monitoring and Corrective Action Report. The annual report will document the status of the groundwater monitoring and corrective action program, summarize key actions completed, describe any problems encountered, discuss actions to resolve the problems, and project key activities for the upcoming year. At a minimum, the Annual Groundwater Monitoring and Corrective Action Report will contain the following information:

- A map, aerial image, or diagram showing the CCR unit and all background (or upgradient) and downgradient monitoring wells, to include the well identification numbers, that are part of the groundwater monitoring program for the CCR unit;
- Identification of any monitoring wells that were installed or decommissioned during the preceding year, along with a narrative description of why those actions were taken;
- In addition to all the monitoring data obtained under CCR Rule Sections 257.90 through 257.98, a summary including the number of groundwater samples that were collected for analysis for each background and downgradient well, the dates the samples were collected, and whether the sample was required by the detection monitoring or assessment monitoring programs;
- A narrative discussion of any transition between monitoring programs (e.g., the date and circumstances for transitioning from detection monitoring to assessment monitoring in addition to identifying the constituent(s) detected at a statistically significant increase over background levels); and
- Other information required to be included in the annual report as specified in CCR Rule Sections 257.90 through 257.98.

The Groundwater Monitoring and Corrective Action Reports must be placed in the facility operating record no later than January 31 of the year following completion of the groundwater monitoring program from the preceding calendar year.

7.0 REFERENCES

ASTM, 2017. Standard Guide for Developing Appropriate Statistical Approaches for Groundwater Detection Monitoring Programs at Waste Disposal Facilities - D6312-17.

EPA, 2015. Test Methods for Evaluating Solid Waste, Physical/Chemical Methods (SW-846). On-Line.

EPA, 2009. Unified Guidance Document: Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, EPA 530/R-09-007, March.

Golder Associates USA, Inc. (Golder), 2022. Statistical Analysis Plan, Revision No. 1, Ash Pond Area, Martin Lake Steam Electric Station. November.

PBW, 2017a. Groundwater Monitoring Plan – Martin Lake Steam Electric Station, Ash Pond Area, Rusk County, Texas, August.

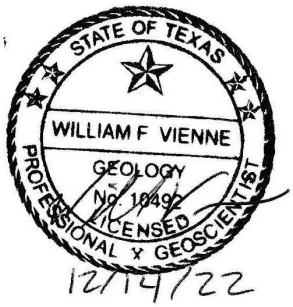
PBW, 2017b. CCR Groundwater Monitoring System Certification – Martin Lake Steam Electric Station, Ash Pond Area, Rusk County, Texas, August.

SIGNATURE PAGE

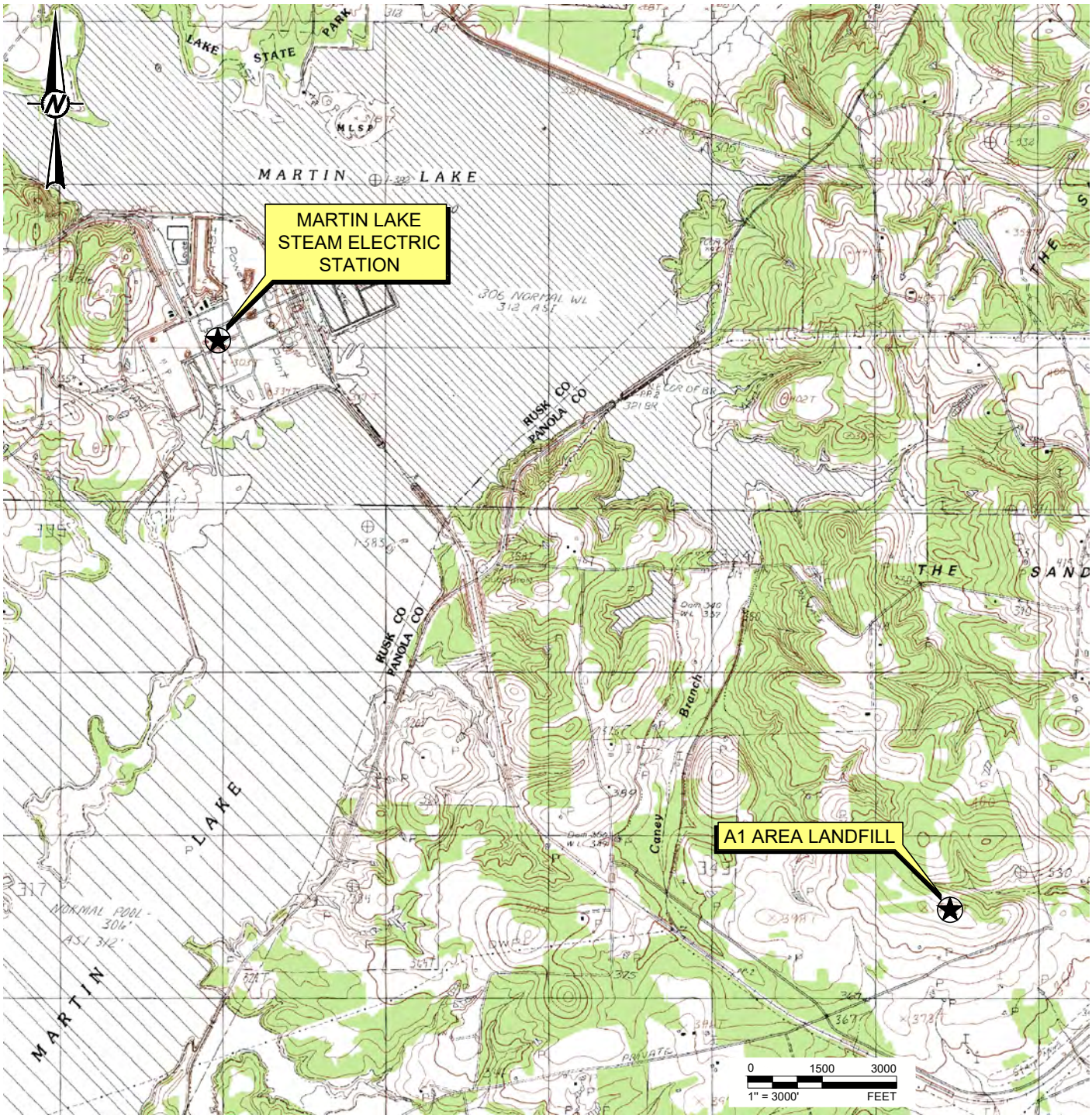
Golder Associates Inc., Member of WSP

Patrick J. Behling
Principal Engineer

William F. Vienne
Senior Hydrogeologist

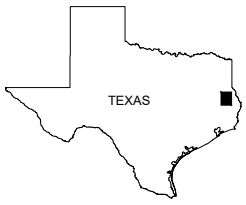


FIGURES



REFERENCE(S)

BASE MAP TAKEN FROM TNRIS.GOV, TATUM, TX 7.5 MIN. USGS QUADRANGLE DATED 1983.



QUADRANGLE LOCATION

CLIENT
LUMINANT GENERATION COMPANY, LLC

PROJECT
MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

TITLE
TOPOGRAPHIC MAP

CONSULTANT

GOLDER
MEMBER OF WSP

YYYY-MM-DD	2021-12-13
DESIGNED	AJD
PREPARED	AJD
REVIEWED	WFV
APPROVED	WFV

PROJECT NO. | REV. 0 | FIGURE 1

Last Edited By: rsalazar Date: 2021-12-13 Time:3:25:42 PM | Printed By: RSalazar Date: 2021-12-13 Time:3:35:41 PM
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1 in
0

LEGEND

- DOWNGRADIENT CCR MONITORING WELL
- UPGRADIENT CCR MONITORING WELL

STATE OF TEXAS
WILLIAM F VIENNE
GEOLOGY
No. 10492
LICENSED
PROFESSIONAL GEOSCIENTIST
11/16/2022

REFERENCE(S)
BASE MAP TAKEN FROM GOOGLE EARTH IMAGERY DATED 4/6/17.

CLIENT
LUMINANT

PROJECT
MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

TITLE
SITE PLAN

CONSULTANT
GOLDER
MEMBER OF WSP

YYYY-MM-DD	2020-01-23
DESIGNED	AJD
PREPARED	AJD
REVIEWED	WFV
APPROVED	WFV

PROJECT NO.

REV. 0

FIGURE 2

Last Edited By: adiamond Date: 2020-01-23 Time:9:52:24 AM | Printed By: adiamond Date: 2020-01-23 Time:9:52:58 AM
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APPENDIX A

CCR Monitoring Well Logs

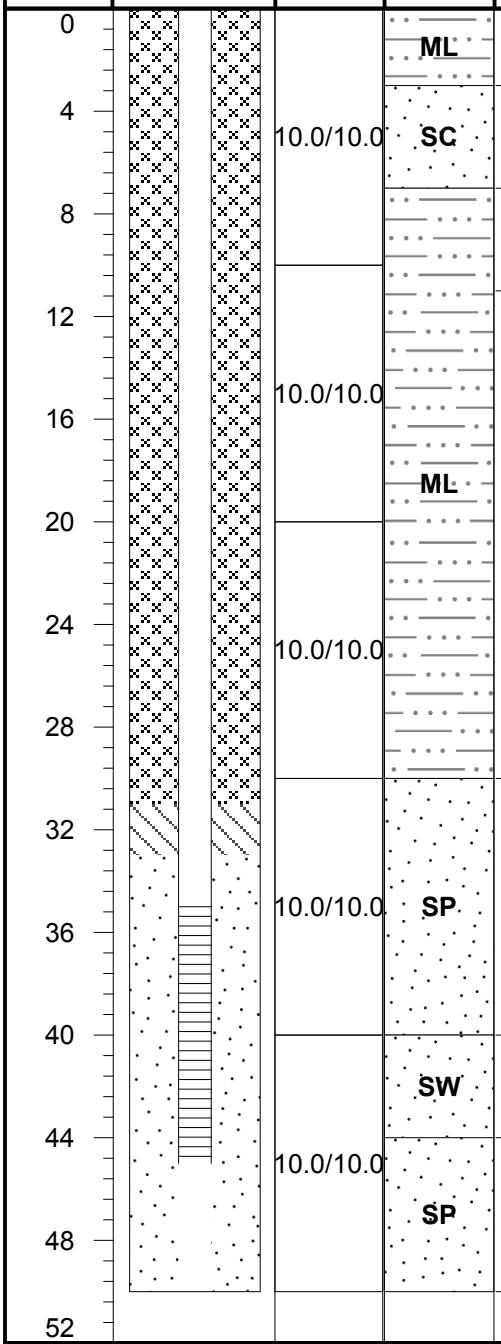
Luminant

Log of Boring: H-26

Martin Lake Steam Electric Station
Tatum, TX

PBW Project No. 5164B

Completion Date:	9/14/2015	Drilling Method:	Sonic
Drilling Company:	Walker-Hill Environmental	Borehole Diameter (in.):	6.5
Driller:	Timmy Beach	Total Depth (ft):	50
Driller's License:	5814M	TOC Elevation (ft. AMSL):	
Logged By:	Ryan Francis	Northing:	
Sampling Method:	4"x10' Core barrel	Easting:	



Lithologic Description
(0 - 3) Silty CLAY, dark brown, dry, soft to firm, weak cementation, flat, low plasticity
(3 - 7) Sandy CLAY, red/orange with gray clay ribbons, dry, soft to firm, weak cementation, medium plasticity, minor rounded pebbles
(7 - 11) Silty SAND, gray, dry, soft, weak cementation, subrounded, sharp contact
(11 - 30) Clayey silty SAND, tan with red and gray ribbons, moist to wet, soft, weak cementation, medium plasticity
(30 - 40) SAND, tan and orange, fine grained, higher clay content (31'-34'), wet, very soft to soft, low to medium plasticity
(40 - 44) SAND, red, wet, soft to firm, moderate cementation, heavy iron content, iron concretions ("rocky" texture)
(44 - 50) SAND, red and gray, wet, soft, fine grained, subrounded, gradual color change to dark brown/black (47'-50'), moisture content decreases with depth, hard sand (48'-50')

PBW

Pastor, Behling & Wheeler, LLC
2201 Double Creek Dr., Suite 4004
Round Rock, TX 78664
Tel (512) 671-3434 Fax (512) 671-3446

Notes:
1. This log should not be used separately from the report to which it is attached.

Well Materials
(0-35) Casing, 2" Sch 40 FJT PVC
(35-40) Screen, 2" Sch 40 FJT PVC, 0.010" slot

Annular Materials
(0'-31') Grout
(31'-33') Bentonite pellets
(33'-40') 20/40 sand

STATE OF TEXAS
WILLIAM F. VIENNE
GEOLOGY
No. 10492
LICENSED
PROFESSIONAL GEOSCIENTIST
11/16/2022

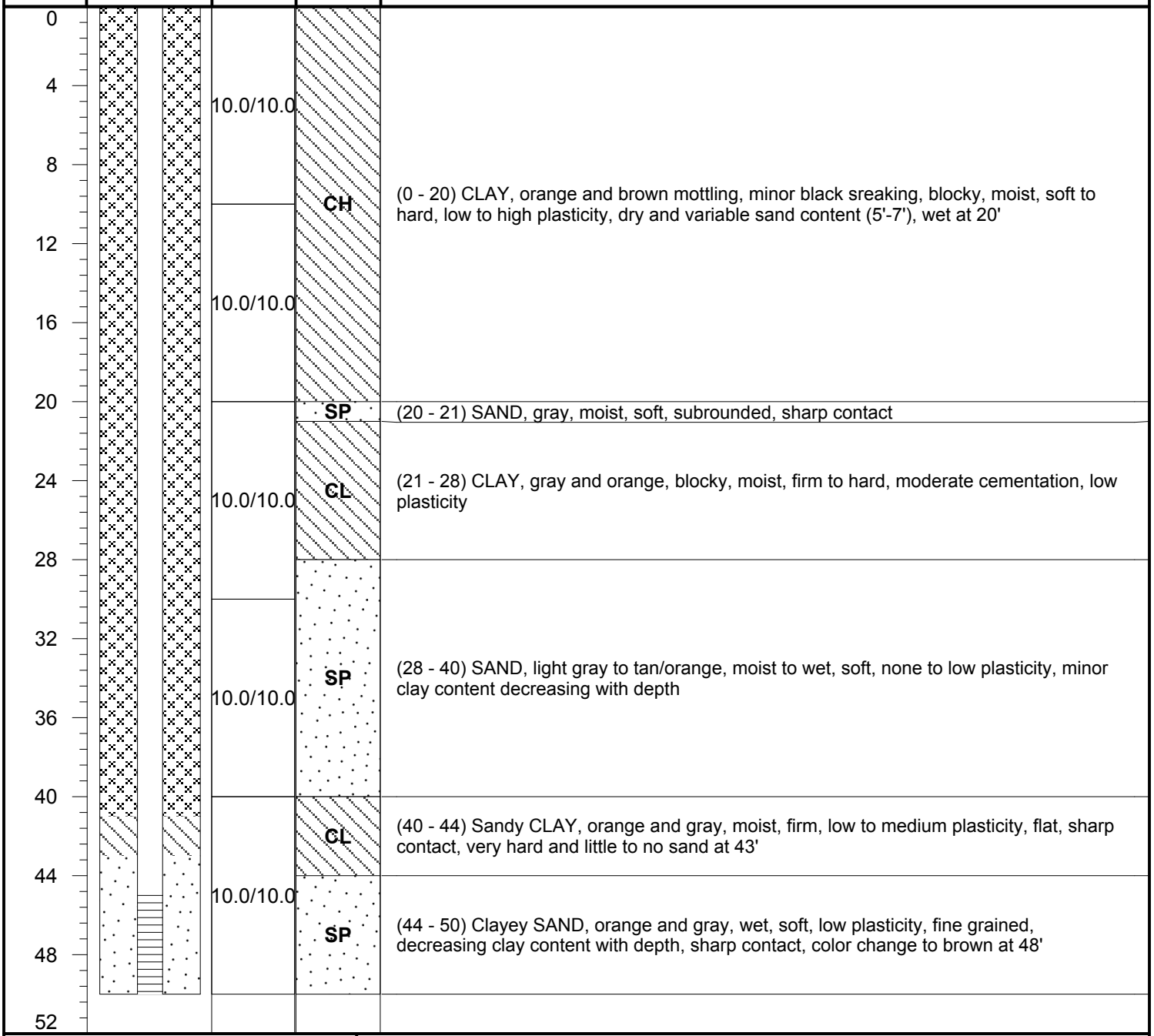
Luminant

Log of Boring: H-27

Martin Lake Steam Electric Station
Tatum, TX

PBW Project No. 5164B

Completion Date:	9/15/2015	Drilling Method:	Sonic
Drilling Company:	Walker-Hill Environmental	Borehole Diameter (in.):	6.5
Driller:	Timmy Beach	Total Depth (ft):	50
Driller's License:	5814M	TOC Elevation (ft. AMSL):	
Logged By:	Ryan Francis	Northing:	
Sampling Method:	4"x10' Core barrel	Easting:	



PBW

Pastor, Behling & Wheeler, LLC
2201 Double Creek Dr., Suite 4004
Round Rock, TX 78664
Tel (512) 671-3434 - Fax (512) 671-3446

Notes:
1. This log should not be used separately from the report to which it is attached.

Well Materials
(0-45) Casing, 2" Sch 40 FJT PVC
(45-50) Screen, 2" Sch 40 FJT PVC, 0.010" slot

Annular Materials
(0'-41') Grout
(41'-43') Bentonite pellets
(43'-50') 20/40 sand

STATE OF TEXAS
WILLIAM F. VIENNE
GEOLOGY
No. 10492
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11/16/2022

Luminant

Log of Boring: H-28

Martin Lake Steam Electric Station
Tatum, TX

PBW Project No. 5164B

Completion Date:	9/15/2015	Drilling Method:	Sonic
Drilling Company:	Walker-Hill Environmental	Borehole Diameter (in.):	6.5
Driller:	Timmy Beach	Total Depth (ft):	40
Driller's License:	5814M	TOC Elevation (ft. AMSL):	
Logged By:	Ryan Francis	Northing:	
Sampling Method:	4"x10' Core barrel	Easting:	

Depth (ft)	Well Materials	Recovery (ft/ft)	USCS	Lithologic Description
0 – 6		10.0/10.0	SP	(0 - 6) Soil with SAND, tan, dry, firm, moderate cementation, hard packed
6 – 20		10.0/10.0	SC	(6 - 21) Clayey SAND, moist, soft to firm, weak cementation, none to low plasticity, flat, 6" gray fine to very fine sand lense at 10', gray and orange mottling (11'-21'), fine grained
20 – 30		10.0/10.0	SP/SC	(21 - 30) Clayey SAND, tan and orange, wet, soft to firm, low plasticity, none to weak cementation, variation in clay content with depth, highest clay content at 21', more orange and less clay (29'-30')
30 – 33			SP	(30 - 33) SAND, orange and gray, fine grained, wet, soft, low plasticity, minor clay content, color change from tna to brown to dark gray
33 – 40		10.0/10.0	CL	(33 - 40) Silty CLAY, dark gray, moderate sand, dry, hard, weak cementation, flat

PBW

Pastor, Behling & Wheeler, LLC
2201 Double Creek Dr., Suite 4004
Round Rock, TX 78664
Tel (512) 671-3434 - Fax (512) 671-3446

Notes:
1. This log should not be used separately from the report to which it is attached.

Well Materials
(0-27) Casing, 2" Sch 40 FJT PVC
(27-32) Screen, 2" Sch 40 FJT PVC, 0.010" slot

Annular Materials
(0'-23') Grout
(23'-25') Bentonite pellets
(25'-32') 20/40 sand

STATE OF TEXAS
WILLIAM F. VIENNE
GEOLOGY
No. 10492
LICENSED
PROFESSIONAL GEOSCIENTIST
11/16/2022

Luminant

Log of Boring: H-29

Martin Lake Steam Electric Station
Tatum, TX

PBW Project No. 5164B

Completion Date:	9/23/2015	Drilling Method:	Sonic
Drilling Company:	Walker-Hill Environmental	Borehole Diameter (in.):	6.5
Driller:	Timmy Beach	Total Depth (ft):	60
Driller's License:	5814M	TOC Elevation (ft. AMSL):	
Logged By:	Ryan Francis	Northing:	
Sampling Method:	4"x10' Core barrel	Easting:	

Depth (ft)	Well Materials	Recovery (ft/ft)	USCS	Lithologic Description
0			FILL	(0 - 2) Hard rock road bed, dry
4		10.0/10.0	SC	(2 - 18) Clayey SAND, orange and gray mottling, very fine grained, dry to moist, firm, weak cementation, low to medium plasticity, increasing clay content with depth
8				
12		10.0/10.0		
16				
20		10.0/10.0	CL	(18 - 30) CLAY, orange, moist, firm, low to medium plasticity, very little sand or silt, black striping at 22', increasing sand content with depth (28'-30')
24				
28				
32		10.0/10.0	CH	(30 - 36) CLAY, orange, moist, soft, friable, high plasticity, minor silt
36				
40		10.0/10.0	CL/SC	(36 - 45) Sandy CLAY/Clayey SAND, orange/gray/red mottling, friable, wet, soft to firm, low to medium plasticity, increasing clay content with depth
44				
48			CH	(45 - 48) CLAY with sand, orange and gray mottling, wet, soft, high plasticity
52		10.0/10.0	SP	(48 - 57) SAND, gray, wet, soft, one to low plasticity, some black roots/ organics, interspersed clay lenses
56				
60			CL	(57 - 60) Silty CLAY, gray/brown, dry, hard, weak cementation, sharp contact

PBW

Pastor, Behling & Wheeler, LLC
2201 Double Creek Dr., Suite 4004
Round Rock, TX 78664
Tel (512) 671-3434 • Fax (512) 671-3446

Notes:
1. This log should not be used separately from the report to which it is attached.

Well Materials
(0-52) Casing, 2" Sch 40 FJT PVC
(52-57) Screen, 2" Sch 40 FJT PVC, 0.010" slot

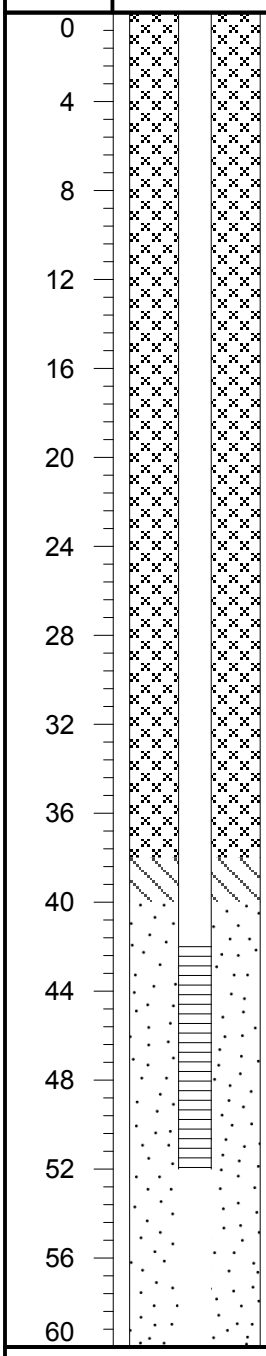
Annular Materials
(0'-48') Grout
(48'-50') Bentonite pellets
(50'-57') 20/40 sand

STATE OF TEXAS
WILLIAM F. VIENNE
GEOLOGY
No. 10492
LICENSED
PROFESSIONAL GEOSCIENTIST
11/16/2022

Luminant

Log of Boring: H-31

Martin Lake Steam Electric Station Tatum, TX	Completion Date:	9/24/2015	Drilling Method:	Sonic
	Drilling Company:	Walker-Hill Environmental	Borehole Diameter (in.):	6.5
	Driller:	Timmy Beach	Total Depth (ft):	60
	Driller's License:	5814M	TOC Elevation (ft. AMSL):	
PBW Project No. 5164B	Logged By:	Ryan Francis	Northing:	
	Sampling Method:	4"x10' Core barrel	Easting:	



Depth (ft)	Recovery (ft/ft)	USCS	Lithologic Description
0		FILL	(0 - 1) Hard, packed gravel road bed, dry
4, 8	10.0/10.0	SC	(1 - 12) Clayey SAND, orange, dry to moist, soft to firm, low plasticity, fine grained, increasing clay content with depth, gray clay ribbons at 10'
12, 16, 20	5.0/10.0	SP	(12 - 20) SAND, orange with red and gray mottling, dry to moist, soft, none to low plasticity, weak cementation, fine grained, very little clay
24, 28	10.0/10.0	SC/CL	(20 - 30) Sandy CLAY, orange, dry to moist, firm, crumbly, color variation with depth, low plasticity, some gray sand lenses, very fine grained, color change to gray at 29'
32, 36, 40	10.0/10.0	CL/SC	(30 - 41) Sandy CLAY,/ Clayey SAND, gray and tan, moist, soft, fine grained, low plasticity, variations in clay content and firmness with depth, moisture content changes to wet at 35'
44, 48, 52, 56	10.0/10.0 10.0/10.0	SP	(41 - 57) SAND, orange/tan, wet, very soft, fine grained, subrounded, increasing red color with depth starting at 52', hard iron concretion layer with some black staining at 55'
60		CL	(57 - 60) Sandy CLAY, gray, dry to moist, hard, fine grained, weak cementation, low plasticity, flat

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Notes:
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Well Materials
(0-42) Casing, 2" Sch 40 FJT PVC
(42-52) Screen, 2" Sch 40 FJT PVC, 0.010" slot

Annular Materials
(0'-38') Grout
(38'-40') Bentonite pellets
(40'-52') 20/40 sand

STATE OF TEXAS
WILLIAM F. VIENNE
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11/16/2022

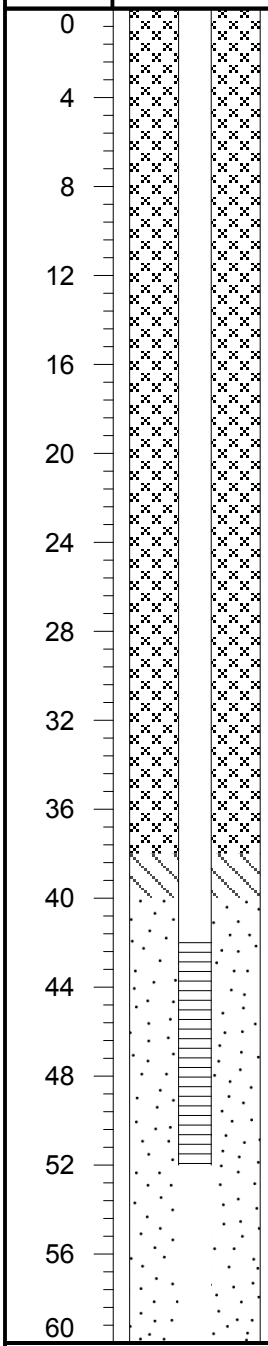
Luminant

Log of Boring: H-32

Martin Lake Steam Electric Station
Tatum, TX

PBW Project No. 5164B

Completion Date:	9/24/2015	Drilling Method:	Sonic
Drilling Company:	Walker-Hill Environmental	Borehole Diameter (in.):	6.5
Driller:	Timmy Beach	Total Depth (ft):	60
Driller's License:	5814M	TOC Elevation (ft. AMSL):	
Logged By:	Ryan Francis	Northing:	
Sampling Method:	4"x10' Core barrel	Easting:	



Depth (ft)	Recovery (ft/ft)	USCS	Lithologic Description
0		FILL	(0 - 1) Hard, packed gravel road bed, dry
4	10.0/10.0	SC/CL	(1 - 10) Sandy CLAY/Clayey SAND, orange/tan, dry, firm, fine grained, low plasticity, weak cementation
8			
12	10.0/10.0	CH	(10 - 21) CLAY with minor silt/sand, orange with some black streaks, moist, firm, high plasticity, gradual contact
16			
20		SP	(21 - 23.5) SAND, gray, dry, soft to firm, friable, fine grained
24	10.0/10.0	CH	(23.5 - 38) CLAY, orange/tan/gray, moist, soft to firm, unconsolidated, high plasticity, minor sand at 30', tan and gray with orange stripes (30'-38'), sharp contact
28			
32			
36	10.0/10.0		
40		SP	(38 - 57) SAND, orange/tan, moist to wet, very soft to soft, fine grained, subrounded, minor clay, low plasticity, no clay content at 42', gradual coarsening of sand grains (48'-55'), some gray streakings at 49', color change to reddish brown at 52'
44	10.0/10.0		
48			
52			
56	10.0/10.0		
60		CL	(57 - 60) Sandy CLAY, dark red and brown, wet, soft, low plasticity, layer of dark red concretions at 57', weak cementation, flat

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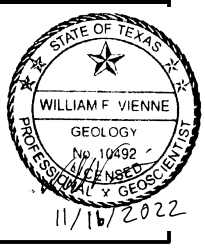
(42-52) Screen, 2" Sch 40 FJT PVC, 0.010" slot

Annular Materials
(0'-38') Grout
(38'-40') Bentonite pellets
(40'-52') 20/40 sand



11/16/2022

Luminant

Log of Boring: H-33

Martin Lake Steam Electric Station
Tatum, TX

PBW Project No. 5164B

Completion Date:	9/14/2015	Drilling Method:	Sonic
Drilling Company:	Walker-Hill Environmental	Borehole Diameter (in.):	6.5
Driller:	Timmy Beach	Total Depth (ft):	60
Driller's License:	5814M	TOC Elevation (ft. AMSL):	
Logged By:	Ryan Francis	Northing:	
Sampling Method:	4"x10' Core barrel	Easting:	

Depth (ft)	Well Materials	Recovery (ft/ft)	USCS	Lithologic Description
0			ML	(0 - 4) Silty CLAY, minor sand, red and orange with gray ribbons, dry, soft to firm, low to medium plasticity, flat
4		10.0/10.0	CH	(4 - 12) CLAY, red with gray concretions, moist, soft to firm, high plasticity, gradual contact
8				
12		10.0/10.0	ML	(12 - 24) Sandy SILT, gray and red, dry, soft, weak cementation, sharp contact, red and gray clay lense at 19'
16				
20				
24		10.0/10.0	CL	(24 - 28) Clay, red, moist to wet, soft to firm, high plasticity, pebbles present
28			SP	(28 - 34) SAND, gray, wet, soft to firm, minor clay, low to medium plasticity, subrounded, increasing clay content with depth, sharp contact
32		10.0/10.0		
36			CL	(34 - 39) CLAY, orange and gray mottling, dry, very hard, moderate cementation, low plasticity
40				(39 - 46) Sandy CLAY, orange and gray, moist to wet, firm, medium plasticity, weak cementation, increasing sand content with depth
44		10.0/10.0		
48				
52		10.0/10.0	ML	(46 - 60) Sandy SILT, dark gray, dry, hard, flat
56				
60				

PBW

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Notes:
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Well Materials
(0-41) Casing, 2" Sch 40 FJT PVC
(41-46) Screen, 2" Sch 40 FJT PVC, 0.010" slot

Annular Materials
(0'-37') Grout
(37'-39') Bentonite pellets
(39'-46') 20/40 sand

STATE OF TEXAS
WILLIAM F. VIENNE
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No. 10492
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11/16/2022

REPORT

Groundwater Monitoring Plan - Revision 2

Martin Lake Steam Electric Station - Permanent Disposal Pond 5
Rusk County, Texas

Submitted to:

Luminant Generation Company LLC

Submitted by:

WSP GOLDER

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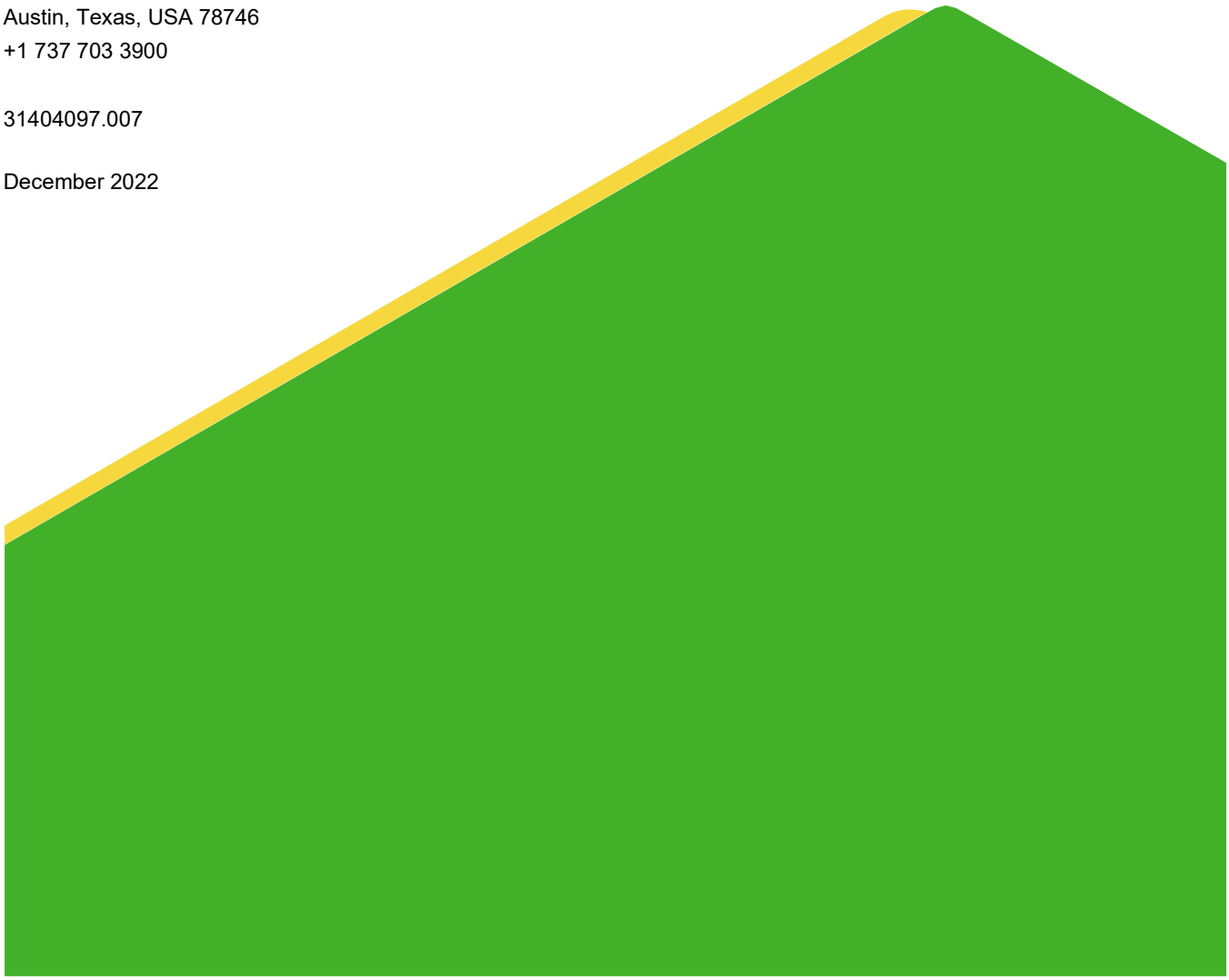
31404097.007

December 2022



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FIGURES

Figure 1 Site Location Map

Figure 2 Site Plan

APPENDICES

Appendix A CCR Monitoring Well Logs

DOCUMENT REVISION RECORD

Issue No.	Date	Details of Revisions
Revision 0	October 2017	Original Document
Revision 1	January 2022	Updated information on data evaluation procedures, updated well information
Revision 2	December 2022	Signed/sealed report and added professional geoscientist seal to figures where appropriate, addressed sample shipment and quality assurance/quality control procedures, specified that the rate and direction of groundwater flow will be determined each sampling event, provided additional information on the statistical methods used to develop background values and evaluate sample data, specified that Alternate Source Demonstrations must be certified by a professional engineer, and updated GWPS information for cobalt, lithium, molybdenum

1.0 INTRODUCTION

Luminant Power (Luminant) operates the Martin Lake Steam Electric Station (MLSES) located approximately 5 miles southeast of Tatum, Rusk County, Texas (Figure 1). The MLSES consists of three coal/lignite-fired power generation units. Coal Combustion Residuals (CCRs) including fly ash, bottom ash and gypsum are generated as part of the MLSES unit operations. Currently, CCRs generated at the MLSES are transported off-site for beneficial reuse by third-parties or are managed by Luminant in surface impoundments located on the MLSES property or the A1 Area Landfill located approximately 2.5 miles east of the MLSES. This report discusses the Permanent Disposal Pond 5 (PDP 5) CCR unit at the MLSES (the Site).

The CCR Rule (40 CFR 257 Subpart D - *Standards for the Receipt of Coal Combustion Residuals in Landfills and Surface Impoundments*) has been promulgated by the EPA to regulate the management and disposal of CCRs as solid waste under Resource Conservation and Recovery Act (RCRA) Subtitle D.

The CCR Rule establishes national minimum criteria for existing and new CCR landfills, existing and new CCR surface impoundments, and lateral expansions to landfills/impoundments. PDP 5 is considered an “existing surface imoundment” under 40 C.F.R 257.53. A groundwater monitoring plan for the Site was developed in accordance with Sections 257.90 through 257.95 of the CCR Rule (PBW, 2017a). The CCR groundwater monitoring system at the Site was certified by a professional engineer in accordance with Section 257.91 of the CCR Rule as part of a separate report (PBW, 2017b). This revised groundwater monitoring plan updates and replaces the previous groundwater monitoring plan for the Site.

1.1 CCR Unit Groundwater Monitoring Applicability

Section 257.90 of the CCR Rule requires that existing CCR landfills and surface impoundments be in compliance with the following groundwater monitoring requirements no later than October 17, 2017:

- Install a groundwater monitoring system as required under Section 257.91;
- Develop a groundwater sampling and analysis program to include selection of the statistical procedures to be used for evaluating groundwater monitoring data as required under Section 257.93;
- Initiate a detection monitoring program to include obtaining a minimum of eight independent

samples for each background and downgradient monitoring well as required under Section 257.94; and

- Begin evaluating the groundwater monitoring data for statistically significant increases over background levels for the constituents listed in Appendix III of this part as required under Section 257.94.

Once a groundwater monitoring system and groundwater monitoring program has been established at the CCR unit, the owner or operator must conduct groundwater monitoring and, if necessary, corrective action throughout the active life and post-closure care period of the CCR unit. In the event of a release from a CCR unit, the owner or operator must take all necessary measures to control the source(s) of releases so as to reduce or eliminate, to the maximum extent feasible, further releases of contaminants into the environment.

For existing CCR landfills and surface impoundments, the owner or operator must prepare an annual groundwater monitoring and corrective action report to document the status of the groundwater monitoring and corrective action program for the CCR unit for the previous calendar year.

1.2 Groundwater Sampling and Analysis Requirements

The CCR Rule establishes groundwater sampling and analysis criteria that are designed to create consistency and ensure that monitoring results provide accurate representations of groundwater quality at the CCR groundwater monitoring wells. A sampling and analysis program must be developed for each unit that includes procedures and techniques for sample collection, sample preservation and shipment, analytical procedures, chain of custody control, and quality assurance and quality control. Depending on the constituents and concentrations detected, groundwater monitoring at each CCR unit may consist of detection monitoring (Section 257.94) only or a combination of detection monitoring and assessment monitoring (Section 257.95). Selected technical groundwater sampling and analysis criteria are described in detail below; however, the complete CCR Rule should be referenced for notification requirements and other criteria.

1.2.1 Groundwater Elevations

Groundwater elevations must be measured in each well immediately prior to purging, each time groundwater is sampled. Remove sentence about flow and flow directions

1.2.2 General Groundwater Analytical Requirements

The CCR groundwater monitoring program must include sampling and analytical methods that are appropriate for groundwater sampling and that accurately measure hazardous constituents and other monitoring parameters in groundwater samples. The EPA publication *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods (SW-846)*, is EPA'S official compendium of analytical and sampling methods that have been evaluated and approved for use in complying with the RCRA regulations (EPA, 2015).

Groundwater monitoring under the CCR Rule includes analyses for inorganic parameters and metals. All metals analyses must be reported as "total recoverable metals" to capture both the particulate fraction and dissolved fraction of metals in the groundwater. The CCR Rule stipulates that groundwater samples cannot be field filtered prior to analysis.

1.2.3 Background Groundwater Quality Determination

Background groundwater quality must be established in a hydraulically upgradient or background well(s) for each of the groundwater constituents required in the detection monitoring or assessment monitoring program that applies to the CCR unit. Background groundwater quality may be established at wells that are not located hydraulically upgradient from the CCR unit if the samples accurately represent the quality of background groundwater that has not been affected by leakage from the CCR unit.

1.2.4 Detection Monitoring Requirements

Groundwater detection monitoring must be performed at each CCR unit (CCR Rule Section 257.94). The following constituents must be included in the detection monitoring program (from Appendix III to the CCR Rule):

- Boron
- Calcium
- Chloride
- Fluoride
- pH
- Sulfate
- Total Dissolved Solids (TDS)

The monitoring frequency for these constituents must be at least semi-annual during the active life of the CCR unit and post-closure period. The reported concentrations of the detection monitoring

constituents must be compared to the respective CCR unit background concentration developed for each constituent. If a statistically significant increase over background levels is determined for one or more of the constituents listed above at any monitoring well at the CCR unit waste boundary, within 90 days the owner or operator must:

- Establish an assessment monitoring program as described in Section 257.95 of the Rule, or
- Demonstrate that a source other than the CCR unit caused the statistically significant increase over background levels for a constituent or that the statistically significant increase resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. If a successful demonstration is completed within the 90-day period, the owner or operator of the CCR unit may continue with the detection monitoring program.

1.2.5 Assessment Monitoring Requirements

Assessment monitoring is required under the CCR Rule whenever a statistically significant increase over background levels has been detected for one or more of the detection monitoring constituents listed above (CCR Rule Section 257.95). The following constituents must be included in the assessment monitoring program (from Appendix IV to the CCR Rule):

- Antimony
- Arsenic
- Barium
- Beryllium
- Cadmium
- Chromium
- Cobalt
- Fluoride
- Lead
- Lithium
- Mercury
- Molybdenum
- Selenium
- Thallium
- Radium 226 and 228 combined

Within 90 days of triggering an assessment monitoring program, and annually thereafter, the owner or operator of the CCR unit must sample and analyze the groundwater for all assessment monitoring constituents (Appendix IV) listed above. At least one sample must be collected from each well associated with the CCR unit.

Within 90 days of obtaining the results from the initial assessment monitoring sampling event, the owner or operator of the CCR unit must resample all wells associated with the CCR unit, conduct analyses for all detection monitoring parameters (Appendix III) and for those assessment monitoring constituents (Appendix IV) that have been detected as part of assessment monitoring. At least one sample must be collected from each well associated with the CCR unit. This monitoring must be performed on at least a semi-annual basis thereafter. The owner or operator of a CCR unit may demonstrate the need for an alternative monitoring frequency for repeated sampling and analysis for these constituents during the active life and the post-closure care period based on the availability of groundwater. If there is not adequate groundwater flow to sample wells semi-annually, the alternative frequency shall be no less than annual.

Within 90 days of obtaining the results from the initial assessment monitoring sampling event, groundwater protection standards (GWPSs) must be established for all assessment monitoring constituents (Appendix IV) detected in the CCR unit monitoring wells. The GWPS shall be:

- For constituents for which a federal maximum contaminant level (MCL) has been established under 40 CFR 141.62 and 141.66, the MCL for that constituent; or
- For constituents for which an MCL has not been established, the background concentration for the constituent or approved alternative GWPS established in accordance with CCR Rule Section 257.95(h); or
- For constituents for which the background level is higher than the MCL, the background concentration.

Following are the federal MCLs or alternate accepted screening criteria that have been established for the assessment monitoring constituents (Appendix IV) identified in the Rule:

Constituent	**MCL (mg/L)**
Antimony	0.006
Arsenic	0.01
Barium	2.0
Beryllium	0.004
Cadmium	0.005
Chromium	0.1
Cobalt	0.006*

Constituent	MCL (mg/L)
Fluoride	4.0
Lead	0.015*
Lithium	0.04*
Mercury	0.002
Molybdenum	0.1*
Selenium	0.05
Thallium	0.002
Radium 226/228 Combined	5 pCi/L**

* Health-protective benchmarks adopted by the USEPA for Appendix IV constituents without established MCLs.
** pCi/L = picocuries per liter
Note: This table does not include background prediction limits.

If the concentrations of all detection monitoring constituents (Appendix III) and assessment monitoring constituents (Appendix IV) are shown to be statistically at or below background values for two consecutive sampling events, the owner or operator may return to performing only detection monitoring of the CCR unit. If the concentrations of any detection monitoring constituents (Appendix III) and assessment monitoring constituents (Appendix IV) are shown to be statistically above background values, but all concentrations are below their respective GWPSs, the owner or operator must continue assessment monitoring of the CCR Unit.

Within 90 days of finding that any of the assessment monitoring constituents (Appendix IV) have been detected at a statistically significant level exceeding their respective GWPSs, the owner or operator of the CCR unit must either:

- Initiate an assessment of corrective measures for the CCR unit (CCR Rule Section 257.96); or
- Demonstrate that a source other than the CCR unit caused the contamination, or that the statistically significant increase resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. If a successful demonstration is made, the owner or operator must continue assessment monitoring. If a successful demonstration has not been made at the end of the 90 day period, the owner or operator of the CCR unit must initiate an assessment of corrective measures for the CCR unit.

If one or more assessment monitoring constituents (Appendix IV) are detected at statistically significant levels above their respective GWPSs, the owner or operator of the CCR unit must characterize the

nature and extent of the release. Characterization of the release includes the following minimum measures:

- Install additional monitoring wells necessary to define the contaminant plume(s);
- Collect data on the nature and estimated quantity of material released including specific information on the assessment monitoring constituents (Appendix IV) and the levels at which they are present in the material released;
- Install at least one additional monitoring well at the facility boundary in the direction of contaminant migration and sample this well for all detection monitoring parameters (Appendix III) and for those assessment monitoring constituents (Appendix IV) that have been detected as part of assessment monitoring. This monitoring must be performed on at least a semi-annual basis thereafter.
- Sample all CCR unit wells for all detection monitoring parameters (Appendix III) and for those assessment monitoring constituents (Appendix IV) that have been detected as part of assessment monitoring. This monitoring must be performed on at least a semi-annual basis thereafter.

If an assessment of corrective measures is required as a result of assessment monitoring, and if the CCR unit being monitored is considered an existing unlined CCR surface impoundment under the CCR Rule, then the CCR unit is required to retrofit or close in accordance with the applicable parts of the CCR Rule.

1.3 Groundwater Statistical Evaluation Procedures

Statistical analysis of the groundwater monitoring data is required as part of detection monitoring and assessment monitoring under the CCR Rule. One of the following statistical methods must be used to evaluate groundwater monitoring data for each monitored constituent:

- A parametric analysis of variance followed by multiple comparison procedures to identify statistically significant evidence of contamination. The method must include estimation and testing of the contrasts between each compliance well's mean and the background mean levels for each constituent; or
- An analysis of variance based on ranks followed by multiple comparison procedures to identify statistically significant evidence of contamination. The method must include estimation and testing of the contrasts between each compliance well's median and the background median levels for each constituent; or
- A tolerance or prediction interval procedure in which an interval for each constituent is established from the distribution of the background data. The level of each constituent in each

compliance well is compared to the upper tolerance or prediction limit established from the background data; or

- A control chart approach that gives control limits for each constituent; or

- Another statistical test method that meets the performance standards.

Any statistical method chosen must comply with the following performance standards:

- The statistical method used to evaluate groundwater monitoring data shall be appropriate for the distribution of constituents. Probability distributions of data values shall use parametric methods, and non-probability distributions of data values shall use non-parametric methods. If the distribution of the constituents is shown to be inappropriate for a probability theory test, the data must be transformed or a distribution-free (non-parametric) theory test must be used. If the distributions for the constituents differ, more than one statistical method may be needed;

- If an individual well comparison procedure is used to compare an individual compliance well constituent concentration with background constituent concentrations or a GWPS, the test shall be done at a Type I error level no less than 0.01 for each testing period. If a multiple comparison procedure is used, the Type I experiment wise error rate for each testing period shall be no less than 0.05; however, the Type I error of no less than 0.01 for individual well comparison must be maintained. This performance standard does not apply to tolerance intervals, prediction intervals, or control charts;

- If a control chart approach is used to evaluate groundwater monitoring data, the specific type of chart and its associated parameter values shall be such that this approach is at least as effective as any other approach in this section for evaluating groundwater data. The parameter values shall be determined after considering the number of samples in the background database, the data distribution, and the range of the concentration values for each constituent of concern;

- If a tolerance interval or a prediction interval is used to evaluate groundwater monitoring data, the levels of confidence and, for tolerance intervals, the percentage of the population that the interval must contain, shall be such that this approach is at least as effective as any other approach in this section for evaluating groundwater data. These parameters shall be determined after considering the number of samples in the background database, the data distribution, and the range of the concentration values for each constituent of concern;

- The statistical method must account for data below the limit of detection with one or more statistical procedures that shall be at least as effective as any other approach in this section for evaluating groundwater data. Any practical quantitation limit that is used in the statistical method shall be the lowest concentration level that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operating conditions that are available to the facility; and

- If necessary, the statistical method must include procedures to control or correct for seasonal and spatial variability as well as temporal correlation in the data.

The owner/operator of the CCR unit must determine if there has been a statistically significant increase over background (detection monitoring) or MCLs/background (assessment monitoring) for each constituent required in the particular groundwater monitoring program that applies to the CCR unit. The determination of statistical increase over background/MCLs for each constituent at each monitoring well must be made within 90 days after completing sampling and analysis.

2.0 GROUNDWATER MONITORING PROCEDURES

This section describes groundwater sampling and analysis procedures for monitoring the CCR unit wells to comply with the requirements of 40 CFR 257.90 - 257.95 of the CCR Rule.

2.1 PDP 5 Area Groundwater Monitoring System

PDP-5 was constructed in 2010 on top of and immediately adjacent to closed and capped former pre-CCR Rule coal ash surface impoundments that began operation in 1979. PDP-5 extends significantly above natural grade and represents a localized topographic high relative to the surrounding area. Based on this configuration, there are no upgradient monitoring wells at PDP-5 (PBW 2017b).

The CCR groundwater monitoring well system at PDP 5 consists of nine monitoring wells (MW-17A, MW-18A, MW-19, MW-20A, PDP-22, PDP-23, PDP-24, PDP-25, PDP-26). As shown on Figure 2, the wells are distributed radially along the perimeter of PDP-5 and are screened in the uppermost aquifer.Well logs for the wells are reproduced in Appendix A. The CCR groundwater monitoring system was certified by a professional engineer in accordance with Section 257.91 of the CCR Rule as part of a separate report (PBW, 2017b).

2.2 Groundwater Sampling Procedures

2.2.1 Equipment Assembly and Preparation

Activities that occur during groundwater sampling are summarized as follows:

- pre-arrangement of sample analytical requests with analytical testing laboratory;
- assembly and preparation of sampling equipment and supplies;
- groundwater sampling;
- water-level measurements;
- well purging;
- field parameter measurements;
- sample collection;
- sample preservation;
- sample labeling;
- completion of sample records;
- completion of chain-of-custody records; and
- sample shipment.

Prior to each sampling event, equipment to be used is assembled, properly cleaned and its operating condition verified. In addition, all record-keeping materials are prepared. Sampling procedures are conducted in general accordance with EPA SW-846 methods.

Decontamination of all non-disposable or non-dedicated field measurement, purging, and sampling equipment are performed for each sampling event before any purging/sampling activities begin, after each well is sampled, and at the end of the sampling event. Decontamination procedures are summarized below:

(1) Wash equipment with low-residue soap and/or detergent solution.
(2) Rinse with distilled water; and
(3) Repeat steps (1) and (2) above, as necessary.

2.2.2 General Groundwater Sampling Procedures

Prior to collecting samples, each well is inspected for signs of damage to the well protective casing and well pad. Each field instrument is calibrated according to the manufacturer's instructions prior to use.

Special care should be exercised to prevent contamination of the groundwater and extracted samples during the sampling activities. The primary way in which such contamination can occur is contact with improperly cleaned equipment. To prevent such contamination, all non-dedicated sampling equipment is thoroughly cleaned before and between uses at different sampling locations. In addition to the use of properly cleaned equipment, a new pair of disposable latex (or similar) gloves is worn for each well.

2.2.3 Groundwater Level Measurements

Groundwater levels are measured prior to purging the wells. Using a pre-cleaned water level meter, the groundwater surface is measured from the casing datum to the nearest 0.01-foot. Total depth measurements are also collected on, at least, an annual basis. The rate and direction of groundwater flow should be determined for each groundwater monitoring event.

2.2.4 Well Purging and Sampling

Well purging and sampling is conducted using either a submersible pump or peristaltic pump in accordance with standard low flow sampling procedures. The sampler withdraws water in a manner that minimized stress (drawdown) to the system to the extent practicable. When the pump intake is located within the screened interval, the water pumped is drawn in directly from the formation with little mixing of casing water or disturbance to the sampling zone. Thus, sample results are more representative of the constituents present in the groundwater.

Purging rates during sample collection are generally performed at 0.5 liters per minute (L/min) or less. Field parameters (pH, temperature, conductivity and turbidity) are measured to evaluate when the well is adequately purged. Turbidity in the samples should be minimized as much as possible. By using

minimal pumping rates, dedicated equipment whenever possible, and positioning the intake for the sample tubing or submersible pump off of the bottom of the well.

For groundwater samples, at least three field measurements should be taken during the course of purging the well. If the parameters have not stabilized at that time, field measurements and purging will continue until two consecutive readings have stabilized to within the following limits:

- Temperature: +/-1° C
- pH: +/-0.1 pH units
- Specific conductance: +/-10%
- Turbidity: +/- 10%

Sample extraction is accomplished by using the pump that was previously used to purge the well. The sample bottle is filled directly from the pump line. The pumping rate and parameter measurements are recorded on groundwater sampling forms in the field. If a well goes dry during purging, sampling is performed after the well has sufficiently recharged to allow sample collection.

Groundwater samples will not be filtered in the field prior to collection in accordance with Section 257.93(i) of the CCR Rule.

2.2.5 Container, Labels, and Shipment

Samples are collected in laboratory-supplied containers. The following information is legibly and indelibly written on the label:

- project identification;
- sample identification;
- name or initials of collector;
- date and time of collection;
- analysis requested; and
- sample preservative, if applicable.

After the samples are collected, the sample containers are placed in a cooler or similar container, preserved with ice, and shipped to the laboratory for analysis.

2.2.6 Chain-of-Custody Control

After samples are collected, chain-of-custody procedures are followed to establish a written record concerning sample movement between the sampling site and the testing laboratory. Each shipping container has a chain-of-custody form completed by the sampling personnel packing the samples. The chain-of-custody form for each container is completed and sealed in the shipping container.

2.3 Analytical Procedures

The laboratory analytical methods utilized for the analysis of detection monitoring and assessment monitoring programs are appropriate and commonly utilized EPA methodologies, or other similar standard methodologies. Typical methodologies used to analyze the detection and assessment program constituents are presented below:

Detection Monitoring Program (Appendix III Constituents)

- Boron and calcium by EPA Method SW6020;
- Chloride, fluoride, and sulfate by EPA Method E300;
- pH by Standard Method M4500-H + B (field measurement); and
- TDS by Standard Method M2540.

Assessment Monitoring Program (Appendix IV Constituents)

- Antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, lead, lithium, molybdenum, selenium, and thallium by EPA Method SW6020;
- Fluoride EPA Method E300;
- Mercury by EPA Method SW7470; and
- Radium 226 and 228 by EPA Methods 904.0/SW9320 Modified and 903.1 Modified.

All metals analyses shall be reported as “total recoverable metals” in accordance with Section 257.93(1) of the CCR Rule. Filtering of samples prior to analysis is not permitted.

2.3.1 Data Quality Assurance/Quality Control

A quality assurance/quality control (QA/QC) program will be implemented to confirm the validity of the analytical results. Laboratory QC samples will include method blanks, laboratory control samples, and matrix spike/matrix spike duplicates. Field QC samples will include one field duplicate per sampling event. The selected laboratory must have in place documented quality assurance protocols and quality control checks to demonstrate the laboratory’s procedures and practices are consistent with the National Environmental Laboratory Accreditation Conference (NELAC) standards. Potential issues regarding the quality of the data should be evaluated through the examination of:

- The project objectives;
- Laboratory review checklist and associated exceptions report;
- The reportable data; and
- The field notes and data associated with the sampling event(s).

In the case where quality control criteria are outside applicable limits, a summary must be presented that indicates the affected samples, the quality control parameter reviewed, the qualifiers and bias code(s) applied to the data point, and the determination made concerning the usability of data.

3.0 STATISTICAL EVALUATION PROCEDURES

The following statistical evaluation approaches were selected to demonstrate groundwater compliance for PDP 5 under the CCR Rule:

- Use of upper prediction limits (UPLs) to develop site-specific background concentrations for all Appendix III and Appendix IV constituents. This approach is a common statistical method used to evaluate groundwater compliance for Subtitle D landfill facilities and is one of the approved options for groundwater quality data statistical evaluation under the CCR Rule.

- After every detection monitoring event, Appendix III constituent concentrations from each well are compared to background UPLs to ascertain if a statistically significant increase above background exists. Background UPLs are based on a 1-of-2 resampling approach, meaning that if zero or one concentration measurement from a series of two independent samples collected from a well do not exceed the appropriate UPL, then a statistically significant increase over background has not occurred at a CCR unit.

- If in assessment monitoring, the 95% lower confidence limit of the mean (LCL) is calculated after each assessment monitoring event for each Appendix IV constituent. The set of data used to calculate LCLs are based on current and historical constituent concentrations. A statistically significant increase over the GWPS has occurred at a CCR unit when the LCL for at least one assessment monitoring constituent at a well is greater than the appropriate GWPS.

The statistical evaluation procedures proposed for PDP 5 groundwater data conforms with the Rule requirements shown above, as well as the Statistical Analysis Plan for the Site (Golder, 2022), EPA's *Unified Guidance: Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities* (EPA, 2009) and the American Society for Testing and Materials (ASTM) standard D6312-17, *Developing Appropriate Statistical Approaches for Groundwater Detection Monitoring Programs at waste Disposal Facilities* (ASTM, 2017).

Eight independent groundwater samples were evaluated for each Appendix III parameter at each well to statistically establish detection monitoring prediction limits.

Eight independent groundwater samples were also evaluated for each Appendix IV parameter at each well to establish assessment monitoring GWPSs. The GWPSs were developed using the following methodology:

- For constituents for which a federal maximum contaminant level (MCL) has been established, the MCL for that constituent; or

- For constituents for which an MCL has not been established, the background concentration (prediction limit) or approved alternative GWPS for the constituent; or

- For constituents for which the background level (prediction limit) is higher than the MCL, the

background concentration (prediction limit) for the constituent.

4.0 DETECTION MONITORING DATA EVALUATION

CCR groundwater detection monitoring will be performed on a semi-annual basis during the active life of the CCR units and during the post-closure period. Each CCR monitoring well will be sampled for the following Appendix III constituents as part of the detection monitoring program:

- Boron
- Calcium
- Chloride
- Fluoride
- pH
- Sulfate
- Total Dissolved Solids (TDS)

Sampling and analytical procedures will be as described in previous sections of this plan.

After each detection monitoring event, the reported concentrations of the detection monitoring constituents at each well will be compared to the background concentration prediction limits developed for each constituent as described in Section 3 of this plan to ascertain if a statistically significant increase above background concentrations does or no does not exist. Possible outcomes from comparing the detection monitoring constituent concentrations in each well to their respective background concentration prediction limits are as follows:

- All detection monitoring constituent concentrations in each well are less than or equal to their respective background concentration prediction limits in the well; or
- One or more detection monitoring constituent concentrations in each well are above their respective background concentration prediction limits in the well.

4.1 No Statistically Significant Increase Over Background Concentrations

The background concentration prediction limits were developed based on a one-of-two resampling approach, meaning that if concentrations in at least one sample in a series of two independent samples collected from a well do not exceed their prediction limits, then a statistically significant increase over background concentrations has not occurred. This conclusion will be reached if the data indicate either of the following:

- All detection monitoring constituent concentrations in each well are less than or equal to their respective background concentration prediction limits; or

- One or more detection monitoring constituent concentration in any well is above the respective background concentration prediction limits. If this occurs, the well or wells with concentrations above the prediction limits will be resampled and analyzed for the detection monitoring constituent or constituents that exceed the prediction limits. If the resample indicates that the target detection monitoring constituent concentrations in the well or wells are less than or equal to their respective background concentration prediction limits, then it can be concluded that a statistically significant increase over background concentrations for all detection monitoring constituents does not exist, since concentrations in one sample of the two independent samples do not exceed their prediction limits.

If the groundwater monitoring data indicate that a statistically significant increase over background does not exist at the CCR wells, detection monitoring at all CCR wells will continue on a semi-annual basis.

4.2 Statistically Significant Increase Over Background Concentrations

If one or more detection monitoring constituent concentrations in any well is above the respective background concentration prediction limit in both the original detection monitoring sample and the resample, then a statistically significant increase over background concentrations for the target detection monitoring constituents can be concluded. If a statistically significant increase is indicated, within 90 days the owner/operator must:

- Establish an assessment monitoring program as described in this plan, or
- Demonstrate that a source other than the CCR unit caused the statistically significant increase over background levels for a constituent, or that the statistically significant increase resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. The demonstration must be summarized in a report that is certified by a professional engineer. If a successful demonstration is completed within the 90-day period, the owner or operator of the CCR unit may continue with the detection monitoring program.

5.0 ASSESSMENT MONITORING DATA EVALUATION

CCR groundwater assessment monitoring will be performed at PDP 5 groundwater monitoring system whenever a statistically significant increase over GWPSs has been confirmed for one or more of the detection monitoring constituents listed in this plan. Within 90 days of triggering the assessment monitoring program, and annually thereafter, each CCR monitoring well in the PDP 5 groundwater monitoring system will be sampled for the following Appendix IV parameters as part of the assessment monitoring program:

- Antimony
- Arsenic
- Barium
- Beryllium
- Cadmium
- Chromium
- Cobalt
- Fluoride
- Lead
- Lithium
- Mercury
- Molybdenum
- Selenium
- Thallium
- Radium 226 and 228 combined

Sampling and analytical procedures will be as described in previous sections of this plan.

Within 90 days of obtaining the results from the initial assessment monitoring sampling event, all wells in the groundwater monitoring system will be resampled and analyzed for:

- All Appendix III detection monitoring parameters; and
- The Appendix IV assessment monitoring parameters that were detected as part of the assessment monitoring event.

This monitoring will be performed on at least a semi-annual basis thereafter, unless the owner/operator can demonstrate the need for an alternative monitoring frequency for repeated sampling and analysis for these constituents during the active life and the post-closure care period based on the availability of groundwater. If there is not adequate groundwater flow to sample wells semi-annually, the alternative frequency shall be no less than annual.

Within 90 days of obtaining the results from the initial assessment monitoring sampling event, GWPSs will be established for all Appendix IV assessment monitoring constituents that were detected in the PDP 5 groundwater monitoring system wells as follows:

- For constituents for which a federal maximum contaminant level (MCL) has been established, the MCL for that constituent; or
- For constituents for which an MCL has not been established, the background concentration or approved alternative GWPS for the constituent; or
- For constituents for which the background level is higher than the MCL, the background concentration for the constituent.

The 95% LCL of each Appendix IV constituent concentration at each well will be compared to the GWPS established for each constituent to ascertain if a statistically significant increase above the GWPS does or does not exist.

5.1 No Statistically Significant Increase Over GWPSs

If the groundwater monitoring data indicate that a statistically significant increase over GWPSs does not exist at the CCR wells, all wells in the groundwater monitoring system will be sampled on a semi-annual basis and analyzed for:

- All Appendix III detection monitoring parameters; and
- The Appendix IV assessment monitoring parameters that were detected as part of the initial assessment monitoring event.

This monitoring will be performed on at least a semi-annual basis unless the owner/operator can demonstrate the need for an alternative monitoring frequency for repeated sampling and analysis for these constituents during the active life and the post-closure care period based on the availability of groundwater.

If the concentrations of all Appendix III detection monitoring constituents and Appendix IV assessment monitoring constituents are shown to be statistically at or below background values for two consecutive assessment monitoring sampling events, assessment monitoring will be terminated and detection monitoring as described in this plan will resume. If the concentrations of any Appendix III detection monitoring constituents and Appendix IV assessment monitoring constituents are shown to be

statistically above background values, but all concentrations are below their respective GWPSs, assessment monitoring will continue.

5.2 Statistically Significant Increase Over GWPSs

If a statistically significant increase over GWPSs for any Appendix IV assessment monitoring constituent is confirmed, within 90 days of the initial assessment monitoring event, the owner/operator will either:

- Initiate an assessment of corrective measures for the CCR unit in accordance with CCR Rule Section 257.96; or
- Demonstrate that a source other than the CCR unit caused the contamination, or that the statistically significant increase resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. The demonstration must be summarized in a report that is certified by a professional engineer. If a successful demonstration is made, the owner or operator must continue assessment monitoring. If a successful demonstration has not been made at the end of the 90 day period, the owner or operator of the CCR unit must initiate an assessment of corrective measures for the CCR unit.

If one or more Appendix IV assessment monitoring constituents are detected at statistically significant levels above their respective GWPSs in any sampling event, and if a source other than the CCR unit cannot be demonstrated to have caused the contamination, a release from the CCR unit is likely and the nature and extent of the release will be further characterized as follows:

- Install additional monitoring wells necessary to define the contaminant plume(s);
- Collect data on the nature and estimated quantity of material released including specific information on the Appendix IV assessment monitoring constituents and the levels at which they are present in the material released;
- Install at least one additional monitoring well at the facility boundary in the direction of contaminant migration and sample this well for all Appendix III detection monitoring parameters and for those Appendix IV assessment monitoring constituents that have been detected as part of assessment monitoring. This monitoring must be performed on at least a semi-annual basis thereafter.
- Sample all CCR unit wells for all Appendix III detection monitoring parameters and for those Appendix IV assessment monitoring constituents that have been detected as part of assessment monitoring. This monitoring must be performed on at least a semi-annual basis thereafter.

6.0 REPORTING REQUIREMENTS

The results of the CCR groundwater monitoring program will be reported each year in an Annual Groundwater Monitoring and Corrective Action Report. The annual report will document the status of the groundwater monitoring and corrective action program, summarize key actions completed, describe any problems encountered, discuss actions to resolve the problems, and project key activities for the upcoming year. At a minimum, the Annual Groundwater Monitoring and Corrective Action Report will contain the following information:

- A map, aerial image, or diagram showing the CCR unit and all background (or upgradient) and downgradient monitoring wells, to include the well identification numbers, that are part of the groundwater monitoring program for the CCR unit;
- Identification of any monitoring wells that were installed or decommissioned during the preceding year, along with a narrative description of why those actions were taken;
- In addition to all the monitoring data obtained under CCR Rule Sections 257.90 through 257.98, a summary including the number of groundwater samples that were collected for analysis for each background and downgradient well, the dates the samples were collected, and whether the sample was required by the detection monitoring or assessment monitoring programs;
- A narrative discussion of any transition between monitoring programs (e.g., the date and circumstances for transitioning from detection monitoring to assessment monitoring in addition to identifying the constituent(s) detected at a statistically significant increase over background levels); and
- Other information required to be included in the annual report as specified in CCR Rule Sections 257.90 through 257.98.

The Groundwater Monitoring and Corrective Action Reports must be placed in the facility operating record no later than January 31 of the year following completion of the groundwater monitoring program from the preceding calendar year.

7.0 REFERENCES

ASTM, 2017. Standard Guide for Developing Appropriate Statistical Approaches for Groundwater Detection Monitoring Programs at Waste Disposal Facilities - D6312-17.

EPA, 2015. Test Methods for Evaluating Solid Waste, Physical/Chemical Methods (SW-846). On-Line.

EPA, 2009. Unified Guidance Document: Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, EPA 530/R-09-007, March.

Golder Associates USA, Inc. (Golder), 2022. Statistical Analysis Plan, Revision No. 1, PDP 5, Martin Lake Steam Electric Station. November.

PBW, 2017a. Groundwater Monitoring Plan – Martin Lake Steam Electric Station, PDP 5, Rusk County, Texas, August.

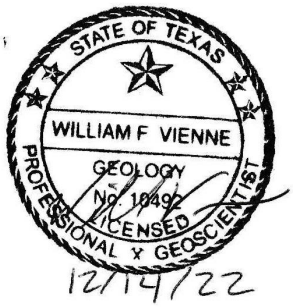
PBW, 2017b. CCR Groundwater Monitoring System Certification – Martin Lake Steam Electric Station, PDP 5, Rusk County, Texas, August.

SIGNATURE PAGE

Golder Associates Inc., Member of WSP

Patrick J. Behling
Principal Engineer

William F. Vienne
Senior Hydrogeologist



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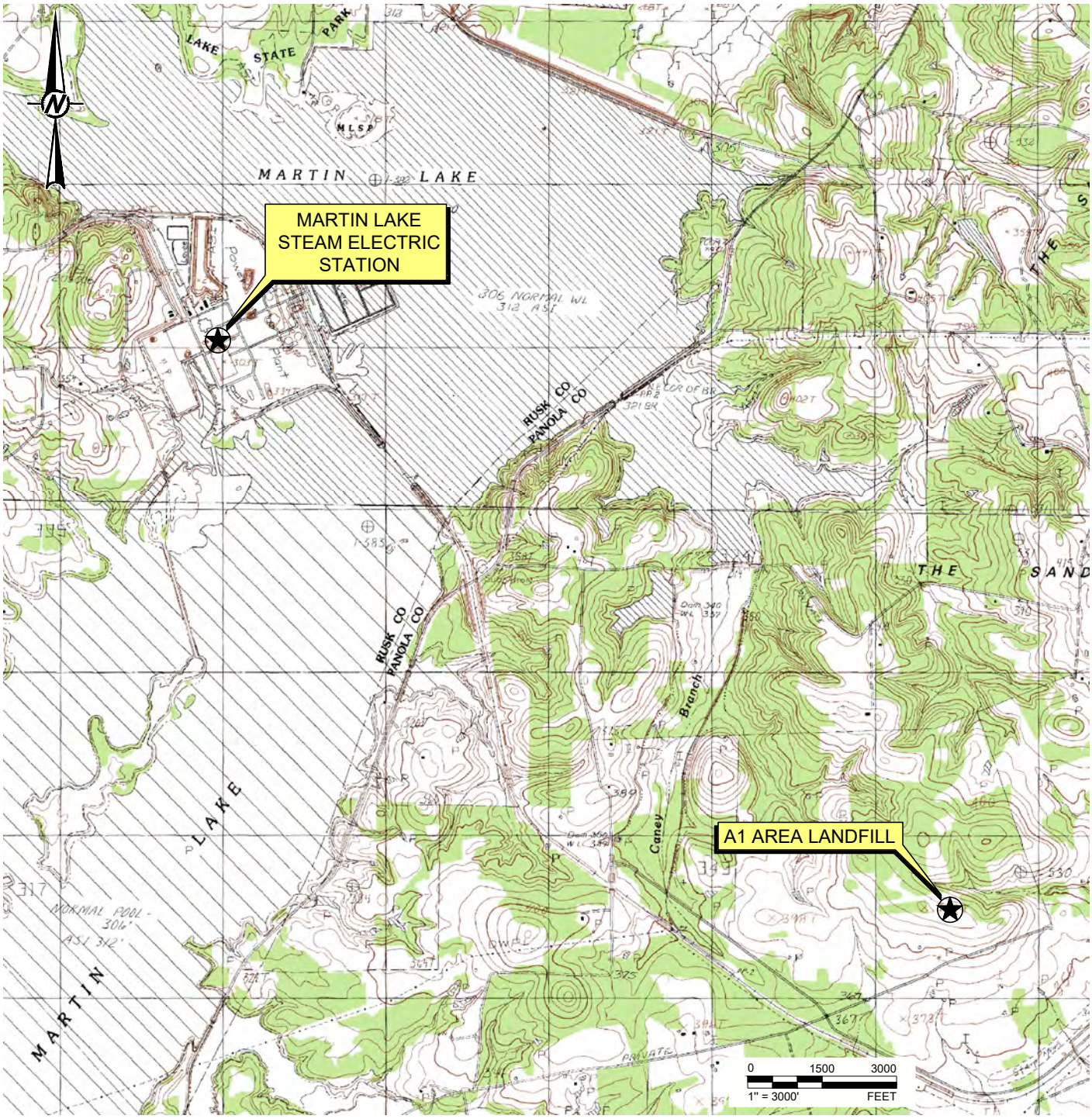

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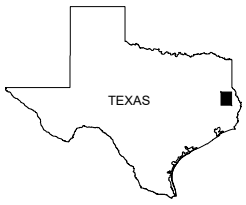

QUADRANGLE LOCATION

CLIENT
LUMINANT GENERATION COMPANY, LLC

PROJECT
MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

TITLE
SITE LOCATION MAP

CONSULTANT

GOLDER
MEMBER OF WSP

YYYY-MM-DD	2021-12-13
DESIGNED	AJD
PREPARED	AJD
REVIEWED	WFV
APPROVED	WFV

PROJECT NO.	REV.	FIGURE
20142034	0	1

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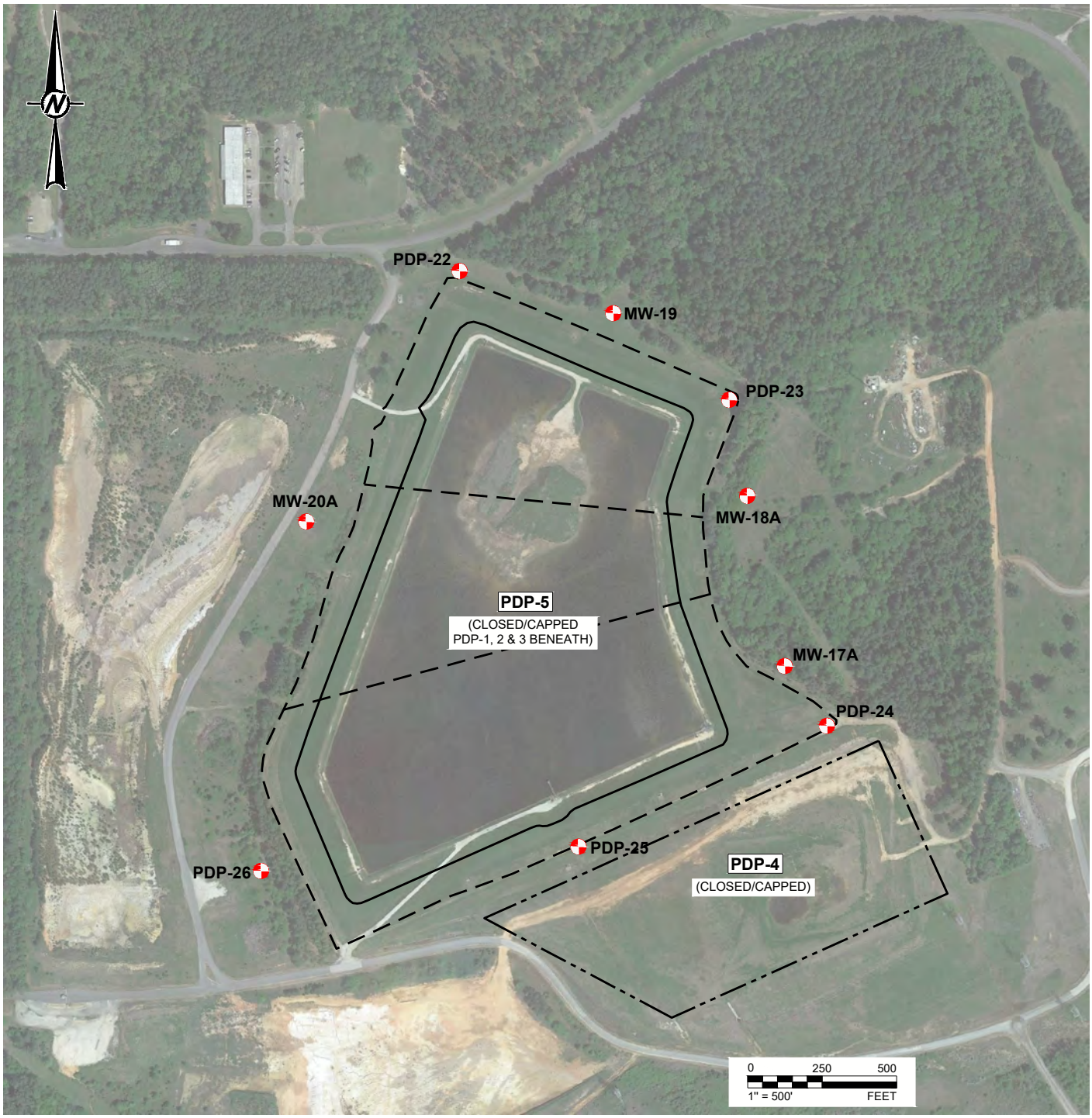

LEGEND

- CCR MONITORING WELL
- APPROXIMATE EXTENT OF CLOSED PDP 1, 2 & 3
- EXTERIOR TOE OF PDP-5 BERMS
- APPROXIMATE EXTENT OF CLOSED PDP-4

STATE OF TEXAS
WILLIAM F. VIENNE
GEOLOGY
No. 10492
LICENSED
PROFESSIONAL GEOSCIENTIST
11/16/2022

REFERENCE(S)
BASE MAP TAKEN FROM GOOGLE EARTH IMAGERY DATED 4/9/19.

CLIENT
LUMINANT GENERATION COMPANY LLC

PROJECT
MARTIN LAKE STEAM ELECTRIC STATION
PDP-5

TITLE
SITE PLAN

CONSULTANT
GOLDER
MEMBER OF WSP

YYYY-MM-DD	2021-11-09
DESIGNED	AJD
PREPARED	AJD
REVIEWED	PJB
APPROVED	PJB

PROJECT NO.	CONTROL	REV.	FIGURE
20142271		0	2

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APPENDIX A

CCR Monitoring Well Logs

GREEN STAR ENVIRONMENTAL

BORING/WELL CONSTRUCTION LOG

Project Number:	08-1388	Boring/Well Number:	MW-17A
Project Name:	Martin Lake SES	Date Drilled:	October 1, 2008
Location:	8850 FM 2658 Tatum, TX	Casing Type/Diameter:	PVC/2" ID
Drilling Method:	HSA	Screen Type/Diameter:	PVC/0.01"
Sampling Method:	CT	Gravel Pack Type:	8/16 Grade Silica Sand
Ground Elevation:	384.63' msl	Grout Type:	Bentonite Pellets
Top of Casing Elevation:	387.53' msl	Depth to Water/Date:	26.62' BTOC/10-09-2008
Logged by:	T. Ripley	Ground Water Elevation/Date:	360.91' msl/10-09-2008
Remarks:		Drilling Co./Driller:	SCI / M. Bridges

PID (ppm)	Blow Counts	Recovery (%)	Sampling Method	Sample	Depth (ft. BGL)	U.S.C.S	Graphic Log	Lithologic Description	Contact Depth	Well Diagram
NA	NA	NA	CT	NA	10			See MW-17B boring log for Lithologic Description	10.0	Cement/ Concrete Well Cover; Bentonite Pellets to 25'; 30' Casing
					20			▽	20.0	
					30				30.0	20' Screen with 2" End Cap
					40				40.0	Sand Backfill of Annular Space from 25' to 47'
					50			The boring was terminated and the well was set at 47' bgs. The well was completed with a protective stickup which requires approximately 3 feet of additional casing above grade.	50.0	

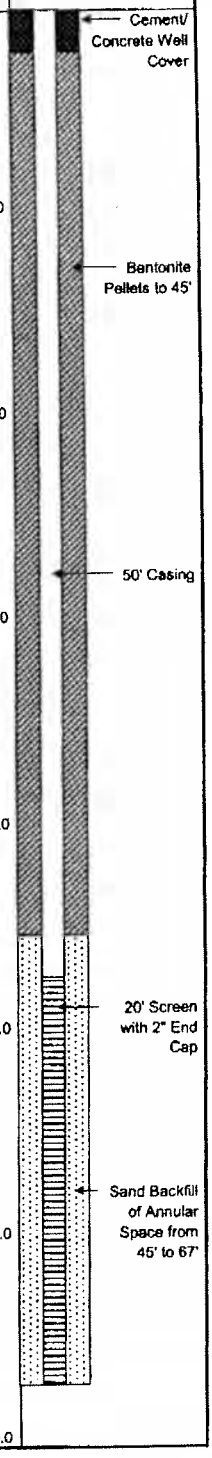
GREEN STAR ENVIRONMENTAL

BORING/WELL CONSTRUCTION LOG

Project Number:	08-1388	Boring/Well Number:	MW-18A
Project Name:	Martin Lake SES	Date Drilled:	October 2, 2008
Location:	8850 FM 2658 Tatum, TX	Casing Type/Diameter:	PVC/2" ID
Drilling Method:	HSA	Screen Type/Diameter:	PVC/0.01"
Sampling Method:	CT	Gravel Pack Type:	8/16 Grade Silica Sand
Ground Elevation:	410.83' msl	Grout Type:	Bentonite Pellets
Top of Casing Elevation:	414.43' msl	Depth to Water/Date:	43.17' BTOC/10-09-2008
Logged by:	T. Ripley	Ground Water Elevation/Date:	371.26' msl/10-09-2008
Remarks:		Drilling Co./Driller:	SCI / M. Bridges

PID (ppm)	Blow Counts	Recovery (%)	Sampling Method	Sample	Depth (ft. BGL)	U.S.C.S	Graphic Log	Lithologic Description	Contact Depth
NA	NA	NA	CT	NA	10, 20, 30, 40, 50, 60, 70			See MW-18B boring log for Lithologic Description	10.0, 20.0, 30.0, 40.0 ▽, 50.0, 60.0, 70.0
								The boring was terminated and the well was set at 67' bgs. The well was completed with a protective stickup which requires approximately 3 feet of additional casing above grade.	

Well Diagram



GREEN STAR ENVIRONMENTAL

BORING/WELL CONSTRUCTION LOG

Project Number:	08-1388	Boring/Well Number:	MW-19
Project Name:	Martin Lake SES	Date Drilled:	September 30, 2008
Location:	8850 FM 2658 Tatum, TX	Casing Type/Diameter:	PVC/2" ID
Drilling Method:	HSA	Screen Type/Diameter:	PVC/0.01"
Sampling Method:	CT	Gravel Pack Type:	20/40 Grade Silica Sand
Ground Elevation:	367.84' msl	Grout Type:	Bentonite Pellets
Top of Casing Elevation:	371.23' msl	Depth to Water/Date:	13.89' BTOC/10-09-2008
Logged by:	T. Ripley	Ground Water Elevation/Date:	357.34' msl/10-09-2008
Remarks:		Drilling Co./Driller:	SCI / M. Bridges

PID (ppm)	Blow Counts	Recovery (%)	Sampling Method	Sample	Depth (ft BGL)	U.S.C.S	Graphic Log	Lithologic Description	Contact Depth
NA	NA	90	CT	NA		SC		Moist, medium dense, reddish-brown, CLAYEY SAND (fine-grained SAND)	
						CL		Moist, soft, reddish-brown, SANDY CLAY	
					5	SP		Moist, loose, reddish-brown, fine-grained SAND	
		60						-gray	5.0
						CL		Moist to wet, soft, brown, SANDY CLAY (fine-grained SAND)	
					10			-stiff	
		100						-light gray ▽	10.0
						CL		Moist, very stiff, light gray, SILTY CLAY	
						SC		Moist, dense, gray and reddish-brown, CLAYEY SAND (fine-grained SAND) ▽	15.0
		70			15	SP		Wet, loose, light gray and reddish-brown, fine-grained SAND	
								-medium dense	
					20	SC		Wet, medium dense, light gray and reddish-brown, CLAYEY SAND (fine-grained SAND)	20.0
		100						-stringer of dense	
								-stringer of dense	
					25	ML		Moist, very stiff, gray CLAYEY SILT with some iron staining	25.0
								The boring was terminated and the well was set at 25' bgs. The well was completed with a protective stickup which requires approximately 3 feet of additional casing above grade.	

Well Diagram

- Cement/ Concrete Well Cover
- Bentonite Pellets to 9'
- 13' Casing
- 15' Screen with 2" End Cap
- Sand Backfill of Annular Space from 9' to 25'

GREEN STAR ENVIRONMENTAL

BORING/WELL CONSTRUCTION LOG

Project Number:	08-1388	Boring/Well Number:	MW-20A
Project Name:	Martin Lake SES	Date Drilled:	September 30, 2008
Location:	6850 FM 2658 Tatum, TX	Casing Type/Diameter:	PVC/2" ID
Drilling Method:	HSA	Screen Type/Diameter:	PVC/0.01"
Sampling Method:	CT	Gravel Pack Type:	20/40 Grade Silica Sand
Ground Elevation:	395.95' msl	Grout Type:	Bentonite Pellets
Top of Casing Elevation:	398.34' msl	Depth to Water/Date:	29.19' BTOC/10-09-2008
Logged by:	T. Ripley	Ground Water Elevation/Date:	369.65' msl/10-09-2008
Remarks:		Drilling Co./Driller:	SCI / M. Bridges

PID (ppm)	Blow Counts	Recovery (%)	Sampling Method	Sample	Depth (ft. BGL)	U.S.C.S	Graphic Log	Lithologic Description	Contact Depth	Well Diagram
NA	NA	NA	CT	NA	10			See MW-20B boring log for Lithologic Description	10.0	Cement/ Concrete Well Cover; Bentonite Pellets to 19'; 24' Casing
					20				20.0	20' Screen with 2" End Cap
					30				30.0	Sand Backfill of Annular Space from 19' to 41'
					40			The boring was terminated and the well was set at 41' bgs. The well was completed with a protective stickup which requires approximately 3 feet of additional casing above grade.	40.0	

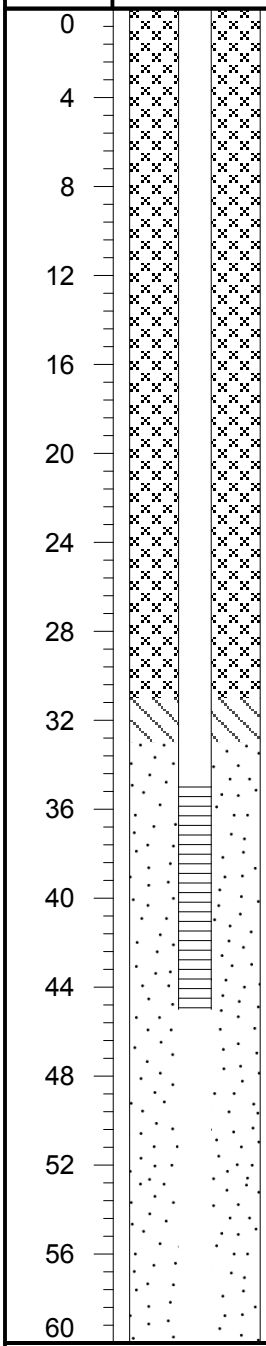
Luminant

Log of Boring: PDP-22

Martin Lake Steam Electric Station
Tatum, TX

PBW Project No. 5164B

Completion Date:	9/9/2015	Drilling Method:	Sonic
Drilling Company:	Walker-Hill Environmental	Borehole Diameter (in.):	6.5
Driller:	Timmy Beach	Total Depth (ft):	60
Driller's License:	5814M	TOC Elevation (ft. AMSL):	
Logged By:	Ryan Francis	Northing:	
Sampling Method:	4"x10' Core barrel	Easting:	



Depth (ft)	Recovery (ft/ft)	USCS	Lithologic Description
0		SP	(0 - 3) Fine SAND, tan, dry, very soft, small iron concretions, grass roots
4	8.0/10.0	CL	(3 - 10) Sandy CLAY, red/orange mottled, dry, firm, moderate cementation, flat to subrounded, sharp contact
8			
12	10.0/10.0	CH	(10 - 20) Silty CLAY with minor sand, dry, firm, moderate cementation, flat to subrounded, medium to high plasticity, micro laminated structure, increasing sand content with depth, transition from red/gray at 10' to tan at 20'
16			
20	10.0/10.0	SM	(20 - 28) Sandy SILT, gray and tan, dry, firm, moderate cementation, flat to subrounded, grass lense (fill), transition to gray at 26'
24			
28			(28 - 30) Silty SAND, iron-rich, dry, soft, weak cementation, subrounded, sharp contact
32	10.0/10.0	SC	(30 - 53) SAND, gray with small streaks and iron at 32', moist to wet, soft, moderate plasticity at 30', transition to low plasticity at 40', minor clay content
36			
40			
44	10.0/10.0		
48			
52	10.0/10.0	CL	(53 - 60) Silty CLAY, gray, dry, firm, moderate cementation, dry, flat, transition to very hard gray/dark gray clay at 56'
56			
60			

PBW

Pastor, Behling & Wheeler, LLC
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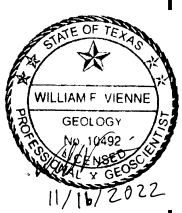
Round Rock, TX 78664
Tel (512) 671-3434 - Fax (512) 671-3446

Notes:
1. This log should not be used separately from the report to which it is attached.

Well Materials
(0-35) Casing, 2" Sch 40 FJT PVC
(35-60) Screen, 2" Sch 40 FJT PVC, 0.010" slot

Annular Materials
(0'-31') Grout
(31'-33') Bentonite pellets
(33'-60') 20/40 sand



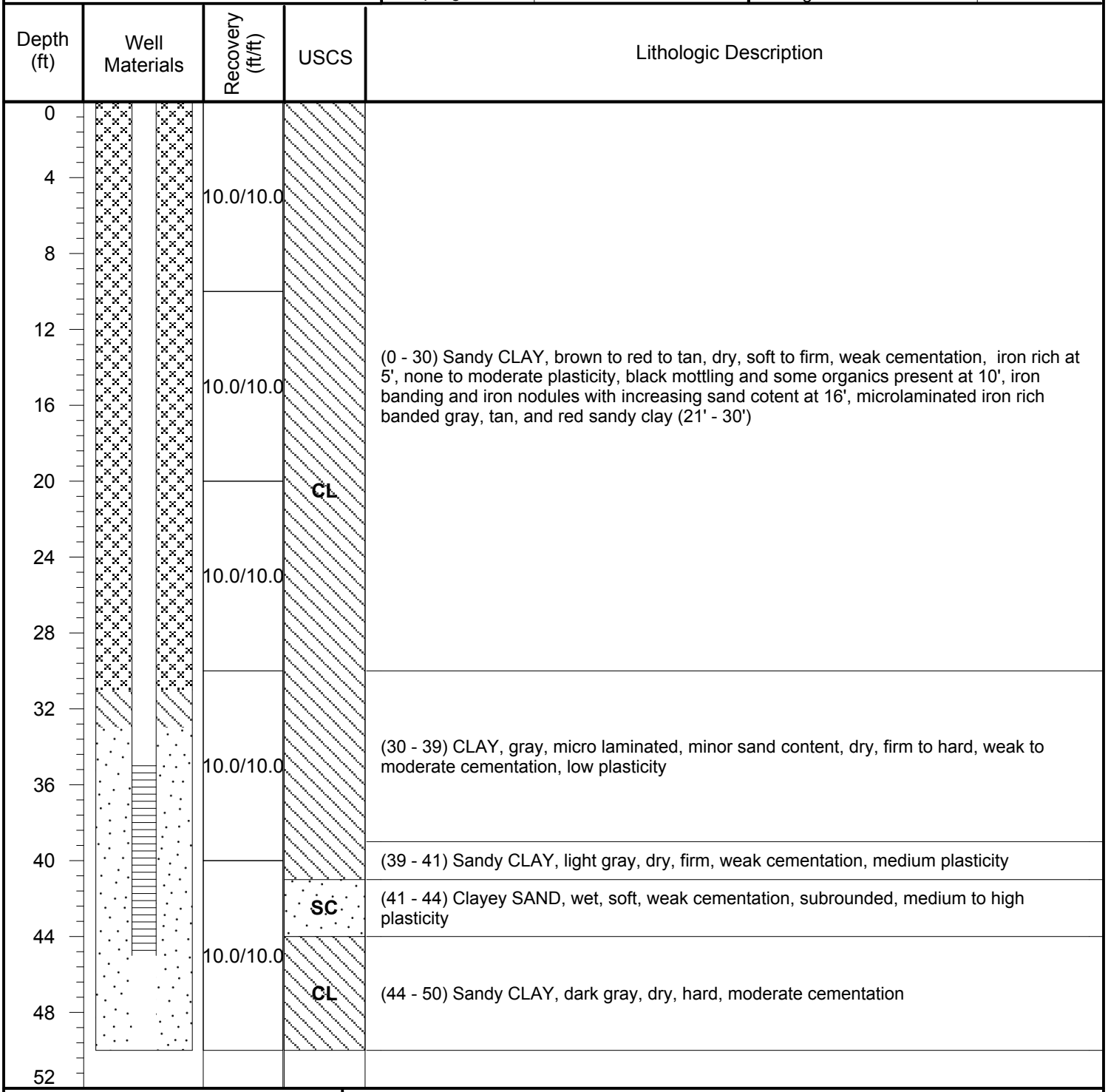
Luminant

Log of Boring: PDP-23

Martin Lake Steam Electric Station
Tatum, TX

PBW Project No. 5164B

Completion Date:	9/10/2015	Drilling Method:	Sonic
Drilling Company:	Walker-Hill Environmental	Borehole Diameter (in.):	6.5
Driller:	Timmy Beach	Total Depth (ft):	50
Driller's License:	5814M	TOC Elevation (ft. AMSL):	
Logged By:	Ryan Francis	Northing:	
Sampling Method:	4"x10' Core barrel	Easting:	



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APPENDIX B - Revised February 27, 2024

Notes:
1. This log should not be used separately from the report to which it is attached.

Well Materials
(0-35) Casing, 2" Sch 40 FJT PVC
(35-45) Screen, 2" Sch 40 FJT PVC, 0.010" slot

Annular Materials
(0'-31') Grout
(31'-33') Bentonite pellets
(33'-45') 20/40 sand

STATE OF TEXAS
WILLIAM F. VIENNE
GEOLOGY
No. 10492
LICENSED
PROFESSIONAL GEOSCIENTIST
11/16/2022

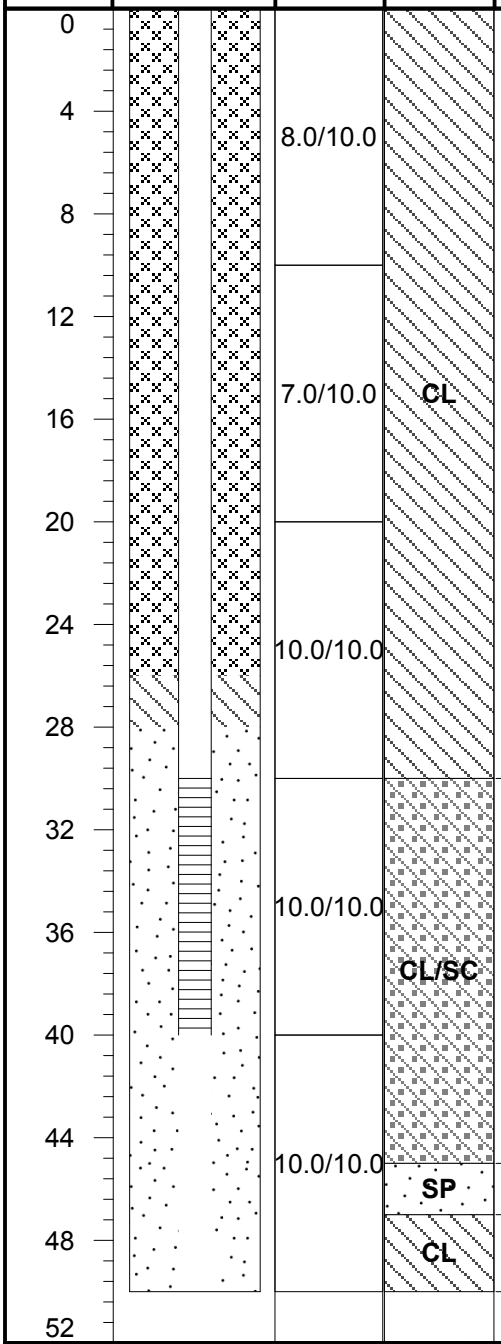
Luminant

Log of Boring: PDP-24

Martin Lake Steam Electric Station
Tatum, TX

PBW Project No. 5164B

Completion Date:	9/11/2015	Drilling Method:	Sonic
Drilling Company:	Walker-Hill Environmental	Borehole Diameter (in.):	6.5
Driller:	Timmy Beach	Total Depth (ft):	50
Driller's License:	5814M	TOC Elevation (ft. AMSL):	
Logged By:	Ryan Francis	Northing:	
Sampling Method:	4"x10' Core barrel	Easting:	



Lithologic Description

(0 - 30) Sandy CLAY, red and tan mottling, fine sand, dry to moist, firm, weak cementation, low to medium plasticity, occasional black inclusions, minor very fine sand content in gray and orange clay and high plasticity (20'-30')

(30 - 45) Sandy CLAY/Clayey SAND, gray, moist to wet, very fine grained, firm, weak cementation, medium plasticity, softens and increasing wetness with depth (35'-39'), brown with increased iron content (39'-42'), dark gray, dry, and none to low plasticity (39'-45')

(45 - 47) Clayey SAND, wet, soft, weak cementation, medium to high plasticity

(47 - 50) Sandy CLAY, dark gray, fine grained, dry, firm to hard, weak cementation

PBW

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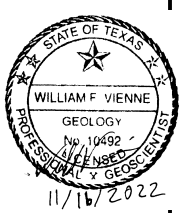
Notes:
1. This log should not be used separately from the report to which it is attached.

Well Materials
(0-30) Casing, 2" Sch 40 FJT PVC
(30-40) Screen, 2" Sch 40 FJT PVC, 0.010" slot

Annular Materials
(0'-26') Grout
(26'-28') Bentonite pellets
(28'-40') 20/40 sand



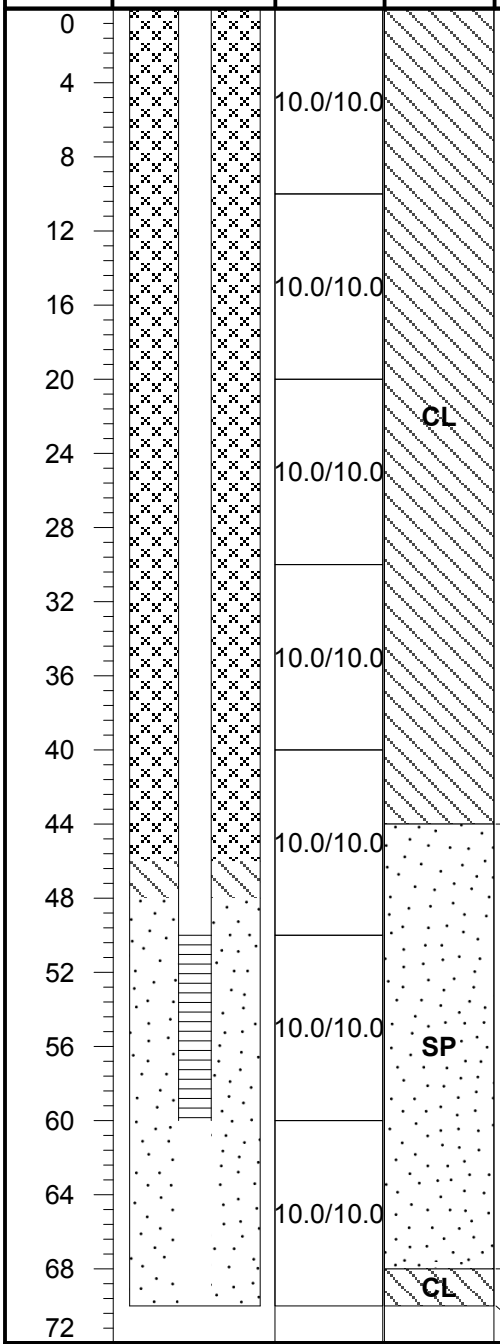
Luminant

Log of Boring: PDP-25

Martin Lake Steam Electric Station
Tatum, TX

PBW Project No. 5164B

Completion Date:	9/11/2015	Drilling Method:	Sonic
Drilling Company:	Walker-Hill Environmental	Borehole Diameter (in.):	6.5
Driller:	Timmy Beach	Total Depth (ft):	70
Driller's License:	5814M	TOC Elevation (ft. AMSL):	
Logged By:	Ryan Francis	Northing:	
Sampling Method:	4"x10' Core barrel	Easting:	



Lithologic Description

(0 - 44) Sandy CLAY, red to gray and tan, very fine grained, dry to moist, firm, low to medium plasicity, weak to moderate cementation, micro laminated, minor organics, variable sand content with depth, high plasticity and very low sand content (22'-23'), higher sand content and high iron content with occasional subrounded pebbles (27'-30'), red, orange, tan, and gray mottling (30'-44')

(44 - 68) Clayey SAND, gray, moist, soft to firm, minor orange streaking, low plasticity, weak cementation, subrounded, minor wet and soft clay zone (62'-64')

(68 - 70) CLAY, black, minor silt, dry, very hard, moderate cementation, smooth shiny surface when fractured

PBW

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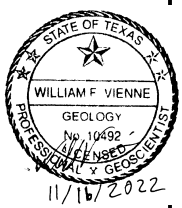
APPENDIX 4 - Revision 2 - February 27, 2024

Notes:
1. This log should not be used separately from the report to which it is attached.

Well Materials
(0-50) Casing, 2" Sch 40 FJT PVC
(50-60) Screen, 2" Sch 40 FJT PVC, 0.010" slot

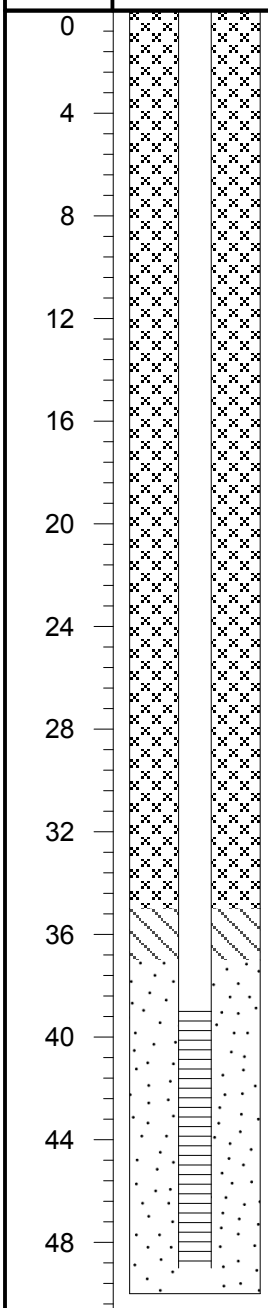
Annular Materials
(0'-46') Grout
(46'-48') Bentonite pellets
(48'-60') 20/40 sand



Luminant

Log of Boring: PDP-26

Martin Lake Steam Electric Station Tatum, TX	Completion Date:	9/9/2015	Drilling Method:	Sonic
	Drilling Company:	Walker-Hill Environmental	Borehole Diameter (in.):	6.5
	Driller:	Timmy Beach	Total Depth (ft):	50
	Driller's License:	5814M	TOC Elevation (ft. AMSL):	
PBW Project No. 5164B	Logged By:	Ryan Francis	Northing:	
	Sampling Method:	4"x10' Core barrel	Easting:	



Depth (ft)	Well Materials	Recovery (ft/ft)	USCS	Lithologic Description
0			SP	(0 - 3) SAND, tan, dry, very soft, weak cementation
4		10.0/10.0	SC	(3 - 6) Clayey SAND, dry, firm, black lignite present
8			CL	(6 - 9) CLAY with minor sand, red, moist, firm, medium plasticity, smear zone black lignite
12		10.0/10.0	SC	(9 - 16) Clayey SAND, tan, moist, soft, low plasticity, more clay content with depth
16			CL	(16 - 40) CLAY, tan, micro laminated orange and gray, moist, soft, medium plasticity, dry and silty clay (19'-27'), micro laminated gray and dark gray (27'-36'), increasing sand content (30'-36'), organics layer (36.5'-37'), high iron content (39'-40')
20				
24		10.0/10.0		
28				
32		10.0/10.0		
36				
40			SP	(40 - 48) SAND, tan, medium, moist to wet, soft, subrounded
44		10.0/10.0		
48			CL	(48 - 50) CLAY, gray, micro laminated, dry, firm, moderate cementation
52				

PBW

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Notes:
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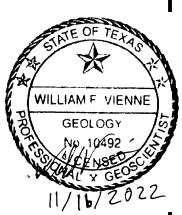
Well Materials
(0-39) Casing, 2" Sch 40 FJT PVC
(39-49) Screen, 2" Sch 40 FJT PVC, 0.010" slot

Annular Materials
(0'-35') Grout
(35'-37') Bentonite pellets
(37'-49') 20/40 sand

STATE OF TEXAS
WILLIAM F. VIENNE
GEOLOGY
No. 10492
LICENSED
PROFESSIONAL GEOSCIENTIST
11/16/2022



COAL COMBUSTION RESIDUAL RULE
STATISTICAL ANALYSIS PLAN
REVISION NO. 1

MARTIN LAKE STEAM ELECTRIC
STATION A1 AREA LANDFILL
RUSK COUNTY, TEXAS

NOVEMBER 16, 2022

Prepared For:

Luminant Generation Company LLC

Prepared By:

Golder Associates USA , Inc.
1601 S. Mopac Expy, Suite 325D
Austin, Texas 78746
Texas Engineering Firm Registration No. 22771

PROFESSIONAL CERTIFICATION

This document and all attachments were prepared by Golder Associates USA, Inc. under my direction or supervision. I hereby certify that the proposed statistical method is appropriate for evaluating groundwater data in accordance with the requirements of Sections 257.93 through 257.95 of the CCR Rule.

Patrick J. Behling, P.E.
Principal Engineer
GOLDER ASSOCIATES USA, INC.

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1	Process for Selecting ANOVA or Kruskal-Wallis Test to Compare Upgradient Well Averages
2	Process for Defining a Distribution for a Data Set

LIST OF ACRONYMS AND ABBREVIATIONS

ANOVA	analysis of variance
CCR	coal combustion residuals
EPA	United States Environmental Protection Agency
GWPS	groundwater protection standard
LCL	lower confidence limit of the mean
MCL	maximum contaminant level
PPCC	Filliben's probability plot correlation coefficient test
RROS	robust regression order statistics
SAP	statistical analysis plan
SWFPR	site-wide false positive rate
UPL	upper prediction limit

1.0 INTRODUCTION

The United States Environmental Protection Agency (EPA) issued regulations regarding the disposal of coal combustion residuals (CCR) in certain landfills and impoundments in April 2015. These regulations, found under 40 CFR 257, Subpart D and referred to as the "CCR Rule" require facilities to design a groundwater monitoring program to monitor if landfills or impoundments with CCR materials, called CCR units, are impacting downgradient groundwater quality.

Section 257.90 of the CCR Rule requires that all existing CCR landfills and surface impoundments comply with the following groundwater monitoring requirements no later than October 17, 2017:

- Install a groundwater monitoring system as required under Section 257.91;
- Develop a groundwater sampling and analysis program to include selection of the statistical procedures to be used for evaluating groundwater monitoring data as required under Section 257.93;
- Initiate a detection monitoring program to include obtaining a minimum of eight independent samples for each background upgradient and downgradient monitoring well as required under Section 257.94; and
- Begin evaluating the groundwater monitoring data for statistically significant increases over background levels for the constituents listed in Appendix III of this part as required under Section 257.94.

Statistical analysis of groundwater monitoring data is required as part of detection monitoring and assessment monitoring under Section 257.93 of the CCR Rule. Section 257.93 of the CCR Rule provides several options for statistically evaluating groundwater data. The owner or operator of the CCR unit must select one of the statistical methods specified in paragraphs (f)(1) through (5) of Section 257.93 when evaluating constituent concentrations from the groundwater monitoring. EPA's *Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Unified Guidance* (EPA, 2009), also called the "Unified Guidance", presents acceptable statistical approaches for such evaluations and analyses. However, neither the CCR Rule nor the Unified Guidance outlines a step-by-step process to consistently evaluate groundwater monitoring data in order to satisfy the CCR Rule.

The purpose of this statistical analysis plan (SAP) is to develop a standard set of statistical approaches to follow when demonstrating groundwater compliance for each CCR unit in accordance with the CCR Rule and the Unified Guidance. Depending on the CCR unit and the evaluation of groundwater data for the CCR

unit, CCR groundwater compliance may be evaluated using either an interwell or an intrawell approach—the interwell approach being a comparison of water quality data upgradient of the CCR unit to water quality data downgradient of the CCR unit, and the intrawell approach being a comparison of water quality data of a well against background values established from that well's own historical water quality data.

This SAP describes and summarizes the statistical approach for establishing and evaluating baseline conditions to use for detection monitoring and assessment monitoring. The plan is designed to detect a release from a CCR facility. The plan conforms with EPA "Unified Guidance Document: Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities," March 2009, and the American Society for Testing and Materials (ASTM) Standard D6312-17, Developing Appropriate Statistical Approaches for Groundwater Detection Monitoring Programs at Waste Disposal Facilities.

2.0 DATA PREPARATION

Analytical data from wells in the groundwater monitoring network at a CCR unit during each sampling event are first reviewed for usability after final data packages are received from the laboratory. The analytical data are then prepared for statistical analysis. Methods for handling duplicate and non-detect data are implemented during this data preparation phase in order to comply with the performance standards outlined in 40 CFR 257.93. During the data preparation, anomalously low or high constituent concentrations are also considered for usability. The following subsections provide further details.

2.1 Handling Duplicate Data

Field duplicates and data rejected after data validation are removed from the data set. Only the primary samples are retained for the statistical evaluation.

2.2 Handling Non-Detect Data

A non-detected constituent concentration is defined as any analytical result that either has an instrument response but is below a sample detection limit or that has no instrument response. A non-detected concentration is handled by using one of two approaches, depending on the percentage of detections in the data set:

- If a data set has at least 85% of samples detected, half of the sample detection limit is substituted as a proxy concentration. In these cases, substituting a proxy concentration will not alter the results of statistical tests or summary statistics (EPA, 2009; EPA, 2000).

- If a data set has at least 50% but no more than 85% of the samples detected, the robust regression order statistics (RROS) method is used to estimate summary statistics such as the mean and standard deviation (EPA, 2009).

- If a data set has fewer than 50% of the samples detected, then nonparametric statistical approaches are used to evaluate the data and to prepare summary statistics (EPA, 2009; EPA, 2000).

It should be noted that J-flagged data (estimated concentrations between the sample detection limit and the reporting limit) are defined as detected concentrations.

2.3 Handling Anomalous Detections

There may be infrequent cases when an anomalously high or low detection cannot be confirmed after resampling a well. In such cases, the anomalous detection should be considered for removal from the data

set and should be replaced by the resampled concentration so that current conditions are not over- or under-estimated. This is particularly important when estimating a baseline or background value to use to compare to future constituent concentrations from the network of groundwater monitoring wells. An anomalous detection may be identified at any point after analytical laboratory results are available, based on professional judgment or based on the outlier evaluation (see Section 3.4 for more details about testing for outliers). If an analytical result is removed, documentation should be provided in the annual report stating which analytical result was removed and justifying its removal.

3.0 STATISTICAL ASSUMPTIONS

Before baseline or background values can be established, a number of statistical assumptions are evaluated to determine if concentrations are independent and identically distributed. A sample's constituent concentration is independent when no other sample concentrations influence its measurement, regardless of when or where the sample was collected. Statistical independence is indicated by a set of random data. But randomness is only demonstrated by the presence of mean and variance stationarity and the lack of evidence for effects such as spatial and temporal variation, autocorrelation, and trends (EPA, 2009).

The validity of statistical independence is checked by testing for:

- Spatial stationarity,
- Temporal stationarity,
- Lack of autocorrelation, and
- Lack of statistical data outliers.

For the purpose of this SAP, the statistical software R (The R Foundation, 2017) is assumed to be used to perform the statistical tests used for checking the validity of independent samples. Other applicable programs may be used as necessary.

3.1 Spatial Stationarity

Spatial stationarity is defined as the lack of variability across well locations. Spatial variation may be naturally occurring and unaffected by human activity, or may be caused by human activity. The presence of spatial variability does not necessarily mean that contamination is present. If spatial variability is present, regardless whether it's naturally-occurring or not, it may hinder attempts to identify the cause of a statistically significant increase in constituent concentrations between current and baseline or background conditions (EPA, 2009). In some cases, spatial variability may make upgradient-to-downgradient comparisons (also called interwell comparisons) difficult (EPA, 2009).

One way to identify spatial stationarity is to observe whether spatial variability does or does not exist across multiple wells. This is particularly true when a CCR unit has more than one upgradient well and when interwell comparisons are used for detection or assessment monitoring. Constituent concentrations from each upgradient well are taken as a single data set and then upgradient well data sets are compared. Before establishing baseline or background values for the detection monitoring or assessment monitoring

programs, two steps are taken to check for spatial stationarity for each constituent and groundwater monitoring well (recommended by the Unified Guidance):

1. Side-by-side box plots are created, and
2. The one-way analysis of variance (ANOVA) or Kruskal-Wallis test is used.

Box plots provide a quick screen for possible spatial variation. The ANOVA and Kruskal-Wallis test are more formal tests for identifying spatial variability. All of the statistical tests are performed and the box plots are generated using the statistical software R (The R Foundation, 2017) or similar software.

In some cases, spatial variability, where substantial differences in average constituent concentrations are present among upgradient wells, can make interwell comparisons difficult (EPA, 2009). Professional judgment should be used to determine whether the set of constituent concentrations from all upgradient wells appropriately represent baseline or background conditions and whether the spatial variability will prevent the detection or assessment monitoring from identifying a potential release at a CCR unit. If the spatial variability were to indicate that analytical data from a set of upgradient wells do not appropriately represent background conditions or if the spatial variability were to hinder the detection or assessment monitoring, then the data set should be adjusted accordingly.

3.1.1 Box Plots

A box plot is a graphical representation of the pattern and distribution of concentrations for a single constituent data set. Visually comparing box plots for upgradient well's constituent concentrations, side-by-side, is one way to identify similarities or differences across upgradient well concentrations. If box plots contain similar range of concentrations, then the concentrations for the upgradient wells are similar (spatial stationarity). Likewise, if box plots do not contain similar range of concentrations, then the concentrations for the upgradient wells are different: spatial variability. Section 3.4.1 provides more details about how to create box plots.

3.1.2 ANOVA and Kruskal-Wallis Tests

The ANOVA and Kruskal-Wallis tests are similar statistical tests; both tests indicate significant spatial variability by indicating whether a statistically significant difference exists among average, upgradient well concentrations. The ANOVA is a parametric approach for comparing average concentrations across two

or more wells. The Kruskal-Wallis test is a non-parametric approach to the ANOVA using the ranks of concentrations, rather than using the actual concentration measurements. Neither test can be performed if the variances across upgradient wells are unequal. A Type I error rate (α), or level of significance, is set to α=0.05 for identifying a statistical significant different among well averages.

Determining which test to perform, either the ANOVA or Kruskal-Wallis tests, depends upon the frequency of detected results, the validity of assuming normality or lognormality for residuals, and the validity of assuming upgradient wells have equal variances. More details about these dependencies are provided in the subsections below (Sections 3.1.2.1-3.1.2.3). Figure 1 outlines the steps taken to define which statistical test (ANOVA or Kruskal-Wallis) should be used. The method used to determine the appropriate statistical test is based on the Unified Guidance recommendations. Tests of normality and equal variances use a 0.01 level of significance, rather than a 0.05 level of significance, because the ANOVA is reasonably robust to small departures of normality and equal variances (EPA, 2009).

No statistical test is performed when there are no detected concentration measurements in any of the upgradient wells.

If there are at least 85% detected concentrations in every upgradient well, then the ANOVA may be considered. For any non-detected concentration, half of the sample detection limit is used as a proxy concentration (see Section 2.2 for more details). The assumptions of normality and equal variances are checked. To test the normality assumption, residuals are tested using two distributional tests, the Shapiro-Wilk test and Filliben's probability plot correlation coefficient (PPCC) test. The Levene's test is used to check for equal variances. Only when evidence exists that both assumptions are valid is the ANOVA using the raw concentration measurements used. If either assumption is not met, then the assumptions of normality and equal variances are checked using the log-transformed data. Only when evidence exists that both assumptions are valid is the ANOVA using the log-transformed concentration measurements used. If either assumption is not met, then an ANOVA cannot be considered.

If there are fewer than 85% detected concentrations or if the ANOVA cannot be considered, then the Kruskal-Wallis may be considered. Non-detected data are treated differently for the Kruskal-Wallis test since the ranks of the data are used rather than the concentration measurements: all data below the maximum sample detection limit are set to the same value, lower than the maximum sample detection limit (Helsel, 2012). Since the Kruskal-Wallis tests uses ranks of the data, the actual value used for data below the maximum sample detection limit is not relevant. The assumption of equal variances is checked using

the Fligner's test. If the Fligner's test indicates that the assumption of equal variances is valid, then the Kruskal-Wallis test is used. Otherwise, no test can be performed because variances are heterogeneous among upgradient well concentration measurements.

3.2 Temporal Stationarity

Temporal stationarity is the lack of temporal variability. Temporal variability refers to the concept that concentration measurements vary over time. Temporal variability may be present across a group of wells and/or constituents. Temporal variability can also be present at an individual well or for a single constituent. By definition, temporal variability also includes autocorrelation, which is discussed separately in Section 3.3.

Any temporal pattern can invalidate or weaken the results of statistical testing (EPA, 2009). Plotting concentrations over time for a given constituent and for a given well is one way to identify possible trends. The Mann-Kendall trend test is another way to identify possible temporal variation for a given constituent and well. The Mann-Kendall is a nonparametric method to test for an increasing or decreasing linear trend over time. The Mann-Kendall doesn't require any special treatment for non-detects, other than all non-detects should be set to a common value lower than any of the detected concentrations (EPA, 2009 p.8-32). The Mann-Kendall is performed for any set of data with at least one detected concentration.

Before establishing baseline or background values for the detection monitoring or assessment monitoring programs, two steps are taken to check for temporal stationarity for each constituent and groundwater monitoring well:

1. A time plot is created, and
2. The Mann-Kendall trend test is used.

The time plots are generated and the Mann-Kendall trend test is performed using the statistical software R (The R Foundation, 2017) and the EnvStats package (Package 'EnvStats', 2017) or similar software.

Statistically significant increasing or decreasing temporal trends are not expected for any upgradient well since, by definition, an upgradient well should not be impacted by a release at the CCR unit. If, however, there is evidence of a temporal trend, then professional judgment should be used to determine whether constituent concentrations from that upgradient well appropriately represent baseline or background conditions and whether the trend will prevent the detection or assessment monitoring from identifying a

potential release at a CCR unit. If the trend were to indicate that an upgradient well does not appropriately represent baseline or background conditions or if the trend were to hinder the detection or assessment monitoring, then the data set should be adjusted accordingly.

To identify a statistically significant temporal trend, a Type I experiment wise error rate (α) is set to $\alpha = 0.05$. That means, a single test error rate is defined for each well across the detected Appendix III or Appendix IV constituents. Each well's single test error rate is based on the number of detected constituents, d, for a given constituent list. For example, a well with five detected Appendix IV constituents ($d = 5$) has a single test error rate equal to $1 - (1 - \alpha)^{1/d^*} = 1 - (1 - 0.05)^{1/5} = 0.0102$. A statistically significant linear trend is identified when the p-value for the Mann-Kendall test is less than the single test error rate.

3.3 Lack of Autocorrelation

Autocorrelation is the statistical dependence between pairs of constituent concentrations across a sequence of time. That is, pairs of consecutive concentrations will exhibit stronger similarity in concentration measurements than expected from pairs collected at random times (p.6-25, EPA, 2009). To identify autocorrelation, the Unified Guidance recommends using the rank von Neumann ratio test for its ease of use and robustness when applied to either normal or non-normal distributions (p.14-17 EPA, 2009). Since this test has not been designed to handle tied values such as non-detect concentrations, this test is only performed for those wells and constituents with at least 50% detected concentrations.

The rank von Neumann ratio test statistic and associated p-value are computed using the statistical software R (The R Foundation, 2017) and the EnvStats package (Package 'EnvStats', 2017) or similar software.

Before baseline or background values are established for the detection monitoring or assessment monitoring programs, the rank von Neumann ratio test is used. Statistically significant autocorrelation is not expected for any well since, by definition, constituent concentration measurements from a well should be collected with far enough time between sampling events that a more recent sample does not include the same volume of groundwater as any previous sample. If, however, there is evidence of autocorrelation, then professional judgment should be used to determine whether constituent concentrations from a well appropriately represent baseline or background conditions and whether the trend will prevent the detection or assessment monitoring from identifying a potential release at a CCR unit. If the trend were to indicate that a well does not appropriately represent baseline or background conditions or if the trend were to hinder the detection

or assessment monitoring, then the data set should be adjusted accordingly.

To identify a statistically significant autocorrelation, a Type I experiment wise error rate, α, of 0.05 is used for each well across the detected Appendix III or Appendix IV constituents. Each well's single test error rate is based on the number of constituents detected at least 50% of the time, d^*, for a given constituent list. For example, a well with five detected Appendix IV constituents ($d^* = 5$), has a single test error rate equal to $1 - (1 - \alpha)^{1/d^*} = 1 - (1 - 0.05)^{1/5} = 0.0102$. A statistically significant autocorrelation is identified when the p-value for the rank von Neumann test is less than the single test error rate.

3.4 Lack of Statistical Outliers

Based on the Unified Guidance, outliers are "extreme, unusual-looking measurements". An outlier may be an invalid concentration measurement due to a typographical error, an equipment error, a sampling error, etc. Or an outlier may be a valid concentration measurement that reflects a "...temporary, local 'hot spot' of higher concentration" (EPA, 2009). Furthermore, outliers are "measurements (larger or smaller than other data values) that are not representative of the sample population from which they were drawn" (EPA, 2002).

The Unified Guidance recommends testing for outliers to attempt to determine whether a suspect outlier may have been drawn from the same sample population as the rest of the data. "The basic problem with including statistical outliers in analyzing groundwater data is that they do not come from the same distribution as the other measurements in the sample and so fail the identically distributed presumption of most tests" (EPA, 2009).

The consequences of keeping statistical outliers when developing a baseline or background value may lead to an unreasonably high value that will be unable to identify potential releases at a CCR unit. Professional judgment should be used to determine whether to retain or remove any outlier. The Unified Guidance states that outliers generally should not be removed unless some basis for a likely error or discrepancy can be identified. Possible errors or discrepancies include "...values significantly outside the historical ranges of background data" (EPA, 2009). "The decision to discard an outlier should be based on some scientific or quality assurance basis" (EPA, 2000). "A data point should not be eliminated from the background data set simply because it is the highest value that was observed" (EPA, 2002). EPA recommends "…that all data not known to be in error should be considered valid" (EPA, 1989). Furthermore, "[t]he general rule is that a measurement should never be deleted from a data set solely on the basis of an outlier test" (SWDIV,

1999).

Before baseline or background values are established for the detection monitoring or assessment monitoring programs, two steps are taken to check for suspect outliers for each constituent with at least 50% detected concentrations and at each well or set of upgradient wells:

1. A box plot is created to identify suspect outliers, and
2. The Dixon's test or Rosner's test is used.

Possible, or suspect, outliers are identified using a box plot. The statistical outlier tests, the Dixon's test and Rosner's test, are tests to check whether any suspect outlier is a statistical outlier. The box plots are generated and the Dixon's or Rosner's test is performed using the statistical software R (The R Foundation, 2017) or similar software.

3.4.1 Box Plots

Creating a box plot is a visual technique used to identify suspect outliers. Box plots can also demonstrate the pattern and distribution of constituent concentrations for a data set. The size of the vertical box in a box plot indicates where the middle half of the data fall (i.e., the interquartile range, IQR). Concentration measurements that plot further away from the others indicate suspect outliers; for a box plot, these measurements are called mild or extreme outliers (EPA, 2009).

Box plots are constructed to identify two types of suspect outliers: mild and extreme outliers. Suspect outliers are defined in terms of the IQR, represented by the range of the middle half of the data and indicated by the vertical 'box' in a box plot. The IQR is the difference between the upper quartile and the lower quartile of the data. Mild and extreme outliers are identified for small or large sample detected concentration measurements. A high, mild outlier is any detected concentration that exceeds 1.5 times the IQR, but no more than 3 times the IQR, from the upper quartile. A small, mild outlier is any detected concentration that is below 1.5 times the IQR, but no less than 3 times the IQR, from the lower quartile. A high, extreme outlier is any detected concentration greater than 3 times the IQR from the upper quartile. A low, extreme outlier is any detected concentration less than 3 times the IQR from the lower quartile. EPA, 2009 and EPA, 2017 state that mild and extreme outliers should be considered suspect outliers. Computational details for box plots are found in EPA guidance documents (EPA, 2000; EPA, 2009).

3.4.2 Statistical Outlier Tests

A statistical outlier test, either the Dixon's test or Rosner's test, is performed for each data set having at least one suspect outlier in order to determine if the suspect outlier is also a statistical outlier. For a data set with no more than 25 samples, the Dixon's test is used. For a data set with at least 20 samples, the Rosner's test is used. Dixon's test can only test if one detected concentration (i.e., the minimum or the maximum) is a statistical outlier. The Rosner's test can test if one or more detected concentrations are statistical outliers (EPA, 2000; EPA, 2002; EPA, 2009). Computational details for these outlier tests are outlined in EPA documents (EPA, 2000; EPA, 2009). Based on results from the statistical outlier tests, mild and extreme outliers are classified as statistical outliers.

Both statistical outlier tests assume that the data set with the suspect outlier(s) removed is normally distributed (or lognormally distributed if the data are transformed to the natural-log scale). Section 4.1.2 below discusses how to test distributional assumptions of normality or lognormality.

Any extreme, suspect outlier that is also identified as a statistical outlier is evaluated for possible errors or data discrepancies before a baseline or background value is established. Suspect outliers, including those also classified as statistical outliers, should be reviewed for having possible analytical or other quality errors. Professional judgment should be used to determine whether constituent concentrations defined as suspect or statistical outliers should be removed so that baseline or background conditions are properly represented so that detection or assessment monitoring can identify a potential release at a CCR unit. If an outlier does not represent baseline or background conditions or if the outlier hinders the detection or assessment monitoring, then the data set should be adjusted accordingly.

4.0 STATISTICAL APPROACH FOR DETECTION AND ASSESSMENT MONITORING

Section 257.93 of the CCR rule provides several options for statistically evaluating the groundwater data and the performance standards to follow at CCR facilities. At each CCR unit, upper prediction limits (UPLs) are calculated for each detected constituent to establish baseline or background values. To achieve UPLs with sufficient statistical power, the UPLs are designed to include retesting procedures based on the 1-of-2 approach (one assigned sample and one resample—see Section 4.1.3). Using UPLs is one of the preferred methods for comparing groundwater based on the Unified Guidance (EPA, 2009).

UPLs are computed using baseline or background data. The source of the baseline or background data may differ, depending whether interwell or intrawell comparisons are appropriate. "With interwell tests, background is derived from distinct, initially upgradient background wells" (EPA, 2009). "Future data from each of these compliance wells are then tested against this common background. On the other hand, intrawell background [also called baseline] is derived from and represents historical groundwater conditions in each individual compliance well." (EPA, 2009)

There are several considerations to make when determining whether interwell or intrawell comparisons should be performed. To consider interwell comparisons for a CCR unit, the groundwater monitoring data should meet the statistical assumptions of spatial stationarity, temporal stationarity, lack of autocorrelation, and lack of statistical outliers (see Section 3). Furthermore, the CCR unit should

- have at least one upgradient well,
- have a clearly defined groundwater flow direction without any radial flow, and
- not contain highly variable mine spoil.

If any of these conditions cannot be met or if the statistical assumptions cannot be met, then intrawell comparisons should be considered for a CCR unit. Both Gibbons and EPA's Unified guidance recommend using intrawell analyses when spatial variability exists. Both Gibbons and the Unified Guidance caution that intrawell analyses are appropriate in the absence of contamination. Since a CCR unit may be an existing landfill or impoundment that is now under the CCR rule, there is a possibility that contamination may be present. Professional judgment should be used for such CCR units to determine if contamination is likely present, and to determine which type of comparison is more appropriate.

4.1 Calculating UPLs

UPLs are estimated with constituent concentrations that are independent and identically distributed, as described in Section 3. The set of data used to calculate UPLs are based on constituent concentrations from the eight background sampling events and from either:

- upgradient wells for the CCR unit (for interwell comparisons), or
- individual compliance well (for intrawell comparisons).

UPLs must be calculated using a single-test error rate that accounts for the site-wide false positive rate (SWFPR) associated with all of the detection or assessment monitoring comparisons. The SWFPR is set based on the Unified Guidance recommendations and is discussed in more detail in Section 4.1.1.

After assumptions have been checked and outliers have been identified for the appropriate set of data, the data distribution is defined in accordance with EPA guidance (EPA, 2000; EPA, 2002; EPA, 2009; EPA, 2017; SWDIV, 1998). UPLs are then calculated based on the defined data distribution. Distributions are defined using the methodology outlined in Section 4.1.2, and the UPLs are calculated using the methodology described in Section 4.1.3.

The statistical software R (The R Foundation, 2017) or similar software is used to perform all statistical distribution tests and to calculate UPLs.

4.1.1 Defining Single-test error rate

Based on 40 CFR 257.93 (g)(2) and the Unified Guidance, the cumulative SWFPR or Type I experiment wise error rate for yearly monitoring shall be no more than 0.10. That means, a single test error rate must be considerably lower than 0.10. The single test error rate depends on the number of detected constituents and number of compliance wells evaluated in a CCR unit's monitoring program, defined as:
$1 - (1 - \alpha)^{1/cw}$, where:

- α=0.10, the SWFPR;
- c=the number detected constituents for the monitoring program (the Appendix III constituents for detection monitoring or Appendix IV constituents for assessment monitoring); and
- w=the number of compliance wells at the CCR unit.

Sampling frequency is not included in this single-test error rate because UPL calculations are designed to account for the number of sampling events per year.

4.1.2 Defining a Distribution for Background

The type of UPL calculated is based on a data set's defined distribution. Figure 2 outlines the steps to take to define whether a data set follows a normal, gamma, lognormal, or nonparametric distribution. If there are no detections for a data set, no distribution is defined. For a constituent with fewer than 50% detected concentrations, the distribution is defined as nonparametric (EPA, 2000; EPA, 2009).

For each data set with at least 50% detected concentrations and at least 4 samples, the data's distribution is tested using up to three distributional tests, which include the Shapiro-Wilk test, Kolmogorov-Smirnov test, and PPCC test. A test for the gamma distribution is included because EPA, 2017 generally recommends using summary statistics from a gamma distribution before using statistics from a lognormal distribution when both the gamma and lognormal distributional assumptions are valid. All of these distributional tests are recommended by EPA (EPA, 2000; EPA, 2002; EPA, 2009; EPA, 2017). Each distributional test is performed with only the detected data, which reflects how ProUCL performs distributional tests (EPA, 2017).

The method used to define a distribution, using the largest p-value from all of the appropriate tests and comparing it to a 0.05 level of significance, is designed to follow ProUCL's distributional recommendations. It should be noted that for a data set with fewer than five detected samples, the Kolmogorov-Smirnov test and the PPCC test cannot be performed. And, the Kolmogorov-Smirnov test is not used to test for gamma distributions.

If results from any of these three tests indicate the data are normally distributed (when the largest p-value is greater than 0.05), the distribution is defined as normal. If none of the test results indicate normality, the detected data set is tested for the gamma distribution by running the Shapiro-Wilk and PPCC tests. If either test indicates the data set follow a gamma distribution (when the larger p-value is greater than 0.05), the

distribution is defined as a gamma distribution. If none of the test results indicate a gamma distribution, the data set is tested for lognormality by running the Shapiro-Wilk, Kolmogorov-Smirnov, and PPCC tests with the log-transformed detected data. If results from any of these tests indicate the data set is lognormally distributed (when the largest p-value is greater than 0.05), the distribution is defined as lognormal. If none of the distributional test results indicate normality, a gamma distribution, or lognormality, the data's distribution is defined as nonparametric.

4.1.3 Calculating UPLs

UPLs are calculated using a 1-of-2 retesting strategy to ensure comparisons are statistically powerful and to minimize the SWFPR. A 1-of-2 retesting strategy means that if one or more constituent concentrations in a compliance well are above their respective background concentration, a resample is collected to validate or invalidate the background concentration exceedance. According to the Unified Guidance, "A *1-of-m* retesting plan implies that up to *m* groundwater measurements may have to be collected at each compliance well, including the initial observation and *(m-1)* possible resamples. For the test to be valid, all of these sample measurements need to be statistically independent" (EPA, 2009). An independent resample may be collected between sampling events if necessary.

The Unified Guidance defines when a well is in-compliance and out-of-compliance: "If the initial groundwater observation is in-bounds [in compliance with the designed standard], the test is complete and no resamples need to be collected. Only when the first concentration exceeds the UPL, does additional sampling come into play" (EPA, 2009). If all *m* samples (the initial sample plus *m-1* resamples) exceed, then the well is considered out-of-compliance. If none of the *(m-1)* resamples exceed after the initial sample exceeded, then the well can still be considered to be in-compliance (EPA, 2009).

The type of UPL computed (e.g., parametric or nonparametric) is based on the detection frequency and the defined data distribution for each data set, as described in Section 4.1.2. For a constituent with no detected concentration measurements in the baseline or background data, the UPL is set to the reporting limit (EPA, 2009). For a constituent with at least 50% detections, the UPL calculation adjusts for non-detected concentration(s) as described in Section 2.2, and the appropriate UPL calculation is used based on results from the distributional tests. If no parametric distribution (normal, lognormal, or gamma) can be defined for a data set, then a nonparametric UPL is estimated. Since J-flagged data are defined as detected, a calculated UPL may be less than the reporting limit; in such cases, the UPL is set to the reporting limit.

4.2 Establishing Background Values

Background values used for detection monitoring or assessment monitoring are based on UPLs. For detection monitoring (Appendix III constituents), background values are defined as the higher of the UPL and reporting limit. For assessment monitoring (Appendix IV constituents) background values are defined as the highest of the maximum concentration level (MCL), UPL, reporting limit, or other accepted screening level for constituents without MCLs. The reporting limit is included so that a constituent having an UPL below the reporting limit does not have an unfair limitation because most or all of the baseline or background constituent concentrations are below the reporting limit. For each CCR unit, tables of statistically-derived background values will be prepared for each Appendix III and Appendix IV constituent. For interwell comparisons, background values will be developed using upgradient well data. For intrawell comparisons, background values will be developed for each monitoring well using historical data from the well.

4.3 Updating Background Values

As detection or assessment monitoring continues, it is recommended to update baseline or background data sets periodically with valid monitoring concentrations that are representative of groundwater unimpacted by leakage from the CCR unit. The Unified Guidance recommends reviewing and possibly updating background values when enough new concentrations have been collected to perform statistical comparisons. That means, background values should be reviewed about every two or three years during. Failure to update background will exclude factors such as natural temporal variation, changes in field or laboratory methodologies, and changes in the water table due to meteorological conditions or other influences.

5.0 DETECTION MONITORING DATA EVALUATION

Detection monitoring will be performed at each CCR unit's groundwater monitoring system on a semi-annual basis during the active life of the CCR unit and during the post-closure period. Each CCR monitoring well will be sampled for the following Appendix III constituents as part of the detection monitoring program:

- Boron
- Calcium
- Chloride
- Fluoride
- field-measured pH
- Sulfate
- Total Dissolved Solids (TDS)

After every detection monitoring event, the constituent concentrations from each well will be compared to the background values, as described in Section 3 of this plan, to ascertain if a statistically significant increase above background exists. Possible outcomes from comparing the detection monitoring constituent concentrations in each well to their respective background values are as follows:

- All detection monitoring constituent concentrations in a compliance well are less than or equal to their respective background values; or

- One or more detection monitoring constituent concentrations in a compliance well are above their respective background values.

5.1 No Statistically Significant Increase over Background Values

Baseline and background UPLs are based on a 1-of-2 resampling approach, meaning that if zero or one concentration measurements from a series of two independent samples collected from a well do not exceed the appropriate UPL, then a statistically significant increase over baseline or background has not occurred at a CCR unit. This conclusion will be reached if the data indicate either of the following:

- All detection monitoring constituent concentrations in a compliance well are less than or equal to their respective background values; or

- At least one detection monitoring constituent concentration in a well is above the respective background value. If this occurs, the well or wells with constituent concentration(s) above the background value(s) will be resampled and analyzed for the detection monitoring constituent(s) with exceedances. If the resample indicates that the target detection monitoring constituent concentration(s) in the well or wells is less than or equal to their respective background value(s),

then it can be concluded that a statistically significant increase over background for all detection monitoring constituents has not occurred, since concentrations in one sample of the two independent samples do not exceed the appropriate baseline or background value(s).

If the groundwater monitoring data indicates that a statistically significant increase over background has not occurred at the CCR wells, then detection monitoring at all CCR wells will continue on a semi-annual basis.

5.2 Statistically Significant Increase over Background Values

If one or more detection monitoring constituent concentrations in any well is above the respective background value in both the original detection monitoring sample and the resample, then a statistically significant increase over background for the target detection monitoring constituents can be concluded. If a statistically significant increase is indicated, within 90 days Luminant will:

- Establish an assessment monitoring program as described in this plan, or
- Demonstrate that a source other than the CCR unit caused the statistically significant increase over the baseline or background value for a constituent, or that the statistically significant increase resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. If a successful demonstration is completed within the 90-day period, the owner or operator of the CCR unit may continue with the detection monitoring program.

6.0 ASSESSMENT MONITORING DATA EVALUATION

Assessment monitoring will be performed at a CCR unit's groundwater monitoring system after a statistically significant increase over background values has been confirmed in that well for one or more of the detection monitoring constituents. Within 90 days of triggering the assessment monitoring program, and annually thereafter, each CCR monitoring well requiring assessment monitoring will be sampled for the following Appendix IV parameters as part of the assessment monitoring program:

- Antimony
- Arsenic
- Barium
- Beryllium
- Cadmium
- Chromium
- Cobalt
- Fluoride
- Lead
- Lithium
- Mercury
- Molybdenum
- Selenium
- Thallium
- Radium 226 and 228 combined

Within 90 days of obtaining the results from the initial assessment monitoring sampling event, all wells in a CCR unit's groundwater monitoring system will be resampled and analyzed for:

- All Appendix III detection monitoring parameters; and
- The Appendix IV assessment monitoring parameters that were detected as part of the assessment monitoring event.

This monitoring will be performed on at least an annual basis thereafter, unless Luminant can demonstrate the need for an alternative monitoring frequency for repeated sampling and analysis for these constituents during the active life and the post-closure care period based on the availability of groundwater.

Within 90 days of obtaining the results from the initial assessment monitoring sampling event, a GWPS will be established for each of the Appendix IV assessment monitoring constituents that were detected in the groundwater monitoring system wells as follows:

- For constituents for which an MCL has been established, the highest of the MCL, UPL, and reporting limit for that constituent; or

- For constituents for which an MCL has not been established, the higher of the UPL, reporting limit, or levels that are equivalent to specified regional screening level (RSL) for that constituent (note: future revisions to the Rule may allow additional flexibility in establishing GWPS for states with EPA-approved CCR permit programs for Appendix IV constituents that do not have a MCL).

Each assessment monitoring constituent will be evaluated to ascertain if a statistically significant increase above the GWPS exists. Possible outcomes are as follows:

- All averages from assessment monitoring constituent concentrations at a well are not statistically greater than to their respective GWPS; or
- One or more averages from assessment monitoring constituent concentrations at a well are statistically greater than their respective GWPS.

6.1 Calculating LCLs

For each assessment monitoring constituent, the 95% lower confidence limit of the mean (LCL) is estimated. The set of data used to calculate LCLs are based on the constituent concentrations from the current year's sampling events and enough previous sampling events to reasonably estimate each LCL (the goal should be to have around eight to ten samples).

LCLs are calculated based on the defined data distribution. The data distribution is defined in accordance with EPA guidance (EPA, 2000; EPA, 2002; EPA, 2009; EPA, 2017; SWDIV, 1998). Distributions are defined using the methodology outlined in Section 6.1.1. The LCLs are calculated using the methodology described in Section 6.1.2.

The statistical software R (The R Foundation, 2017) or similar software is used to perform all statistical distribution tests and to calculate LCLs.

6.1.1 Defining a Distribution for LCLs

The type of LCL calculated is based on a data set's defined distribution. The same methodology for defining a distribution for background, described in Section 4.1.2 and outlined in Figure 2, is used to define the distribution for each assessment monitoring constituent data set as normal, gamma, lognormal, or nonparametric.

6.1.2 Calculating LCLs

The type of LCL computed (e.g., parametric or nonparametric) is based on the detection frequency and the defined data distribution for each data set, as described in Section 6.1.1. For a constituent with no detected concentration measurements, the LCL is set to the reporting limit (EPA, 2009). For a constituent with at least 50% detections, the LCL calculation adjusts for non-detected concentration(s) as described in Section 2.2, and the appropriate LCL calculation is used based on results from the distributional tests. If no parametric distribution (normal, lognormal, or gamma) can be defined for a data set or there are fewer than 50% detections, then a nonparametric, approximate 95% lower confidence limit of the median is estimated.

6.2 No Statistically Significant Increase Over GWPS

A statistically significant increase over the groundwater protection standard has not occurred at a CCR unit when the LCL for every assessment monitoring constituent at a well is less than or equal to the appropriate GWPS.

Assessment monitoring will continue on an annual basis. If for two consecutive assessment monitoring sampling events, the constituent concentrations for all Appendix III constituents are at or below background values and all Appendix IV constituents are shown to be statistically at or below their appropriate GWPS, then assessment monitoring will be terminated and detection monitoring as described in this plan will resume. If the constituent concentrations of any Appendix III constituents are shown to be statistically above background values, but all Appendix IV constituents have no statistically significant increase over their respective GWPS, then assessment monitoring will continue.

6.3 Statistically Significant Increase Over GWPS

A statistically significant increase over the groundwater protection standard has occurred at a CCR unit when the LCL for at least one assessment monitoring constituent at a well is greater than the appropriate GWPS. If a statistically significant increase over groundwater protection standards for any Appendix IV assessment monitoring constituent is confirmed, within 90 days of the initial assessment monitoring event, Luminant will either:

- Initiate an assessment of corrective measures for the CCR unit in accordance with CCR Rule Section 257.96; or
- Demonstrate that a source other than the CCR unit caused the contamination, or that the statistically

significant increase resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. If a successful demonstration is made, the owner or operator must continue assessment monitoring. If a successful demonstration has not been made at the end of the 90 day period, the owner or operator of the CCR unit must initiate an assessment of corrective measures for the CCR unit.

If one or more Appendix IV assessment monitoring constituent concentrations are statistically above the respective groundwater protection standards, and if a source other than the CCR unit cannot be demonstrated to have caused the contamination, a release from the CCR unit is likely and the nature and extent of the release will be further characterized as follows:

- Install additional monitoring wells necessary to define the contaminant plume(s);
- Collect data on the nature and estimated quantity of material released including specific information on the Appendix IV assessment monitoring constituents and the levels at which they are present in the material released;
- Install at least one additional monitoring well at the facility boundary in the direction of contaminant migration and sample this well for all Appendix III detection monitoring parameters and for those Appendix IV assessment monitoring constituents that have been detected as part of assessment monitoring. This monitoring must be performed on at least an annual basis thereafter.
- Sample all CCR unit wells for all Appendix III detection monitoring parameters and for those Appendix IV assessment monitoring constituents that have been detected as part of assessment monitoring. This monitoring must be performed on at least an annual basis thereafter.

7.0 REPORTING REQUIREMENTS

The results of the CCR groundwater monitoring program performed at each CCR unit will be reported yearly in an Annual Groundwater Monitoring and Corrective Action Report. A separate annual report for each CCR unit will document the status of the groundwater monitoring and corrective action program, summarize key actions completed, describe any problems encountered, discuss actions to resolve the problems, and project key activities for the upcoming year. At a minimum, the Annual Groundwater Monitoring and Corrective Action Report will contain the following information:

- A map, aerial image, or diagram showing the CCR unit and all background (or upgradient) and downgradient monitoring wells, to include the well identification numbers, that are part of the groundwater monitoring program for the CCR unit;

- Identification of any monitoring wells that were installed or decommissioned during the preceding year, along with a narrative description of why those actions were taken;

- In addition to all the monitoring data obtained under CCR Rule Sections 257.90 through 257.98, a summary including the number of groundwater samples that were collected for analysis for each background and downgradient well, the dates the samples were collected, and whether the sample was required by the detection monitoring or assessment monitoring programs, as well as the basis for the background values and the statistical methods employed to establish the background values;

- A narrative discussion of any transition between monitoring programs (e.g., the date and circumstances for transitioning from detection monitoring to assessment monitoring in addition to identifying the constituent(s) detected at a statistically significant increase over background levels); and

- Other information required to be included in the annual report as specified in CCR Rule Sections 257.90 through 257.98.

The Groundwater Monitoring and Corrective Action Report for the 2017 monitoring program must be placed in each facility operating record no later than January 31, 2018. Subsequent reports must be placed in the facility operating records no later than January 31 of the year following completion of the groundwater monitoring program from the preceding calendar year. The reports must also be posted to the owner or operator's CCR Rule Compliance Data and Information internet site within 30 days of placing the reports in the operating record.

8.0 REFERENCES

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FIGURES

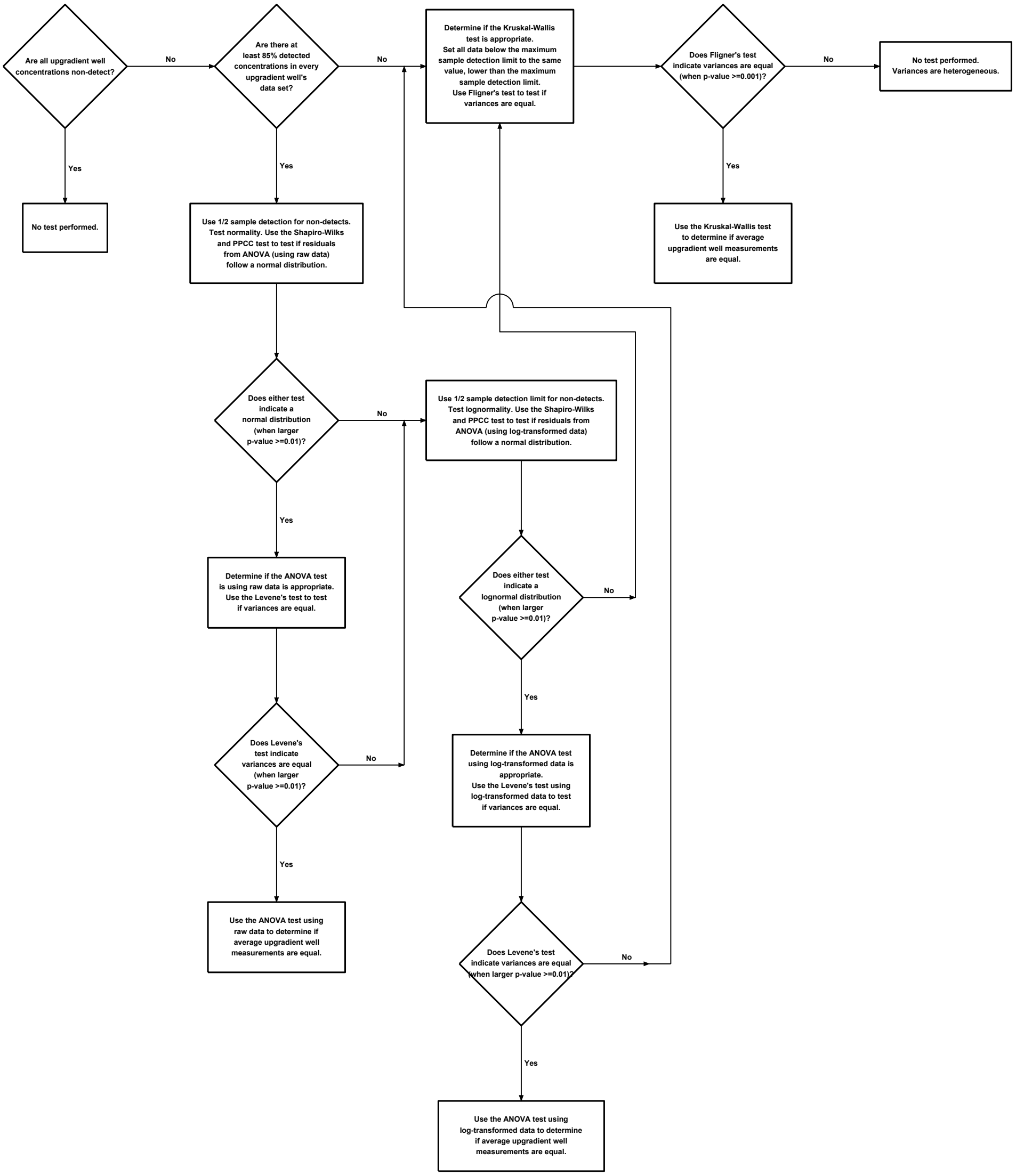
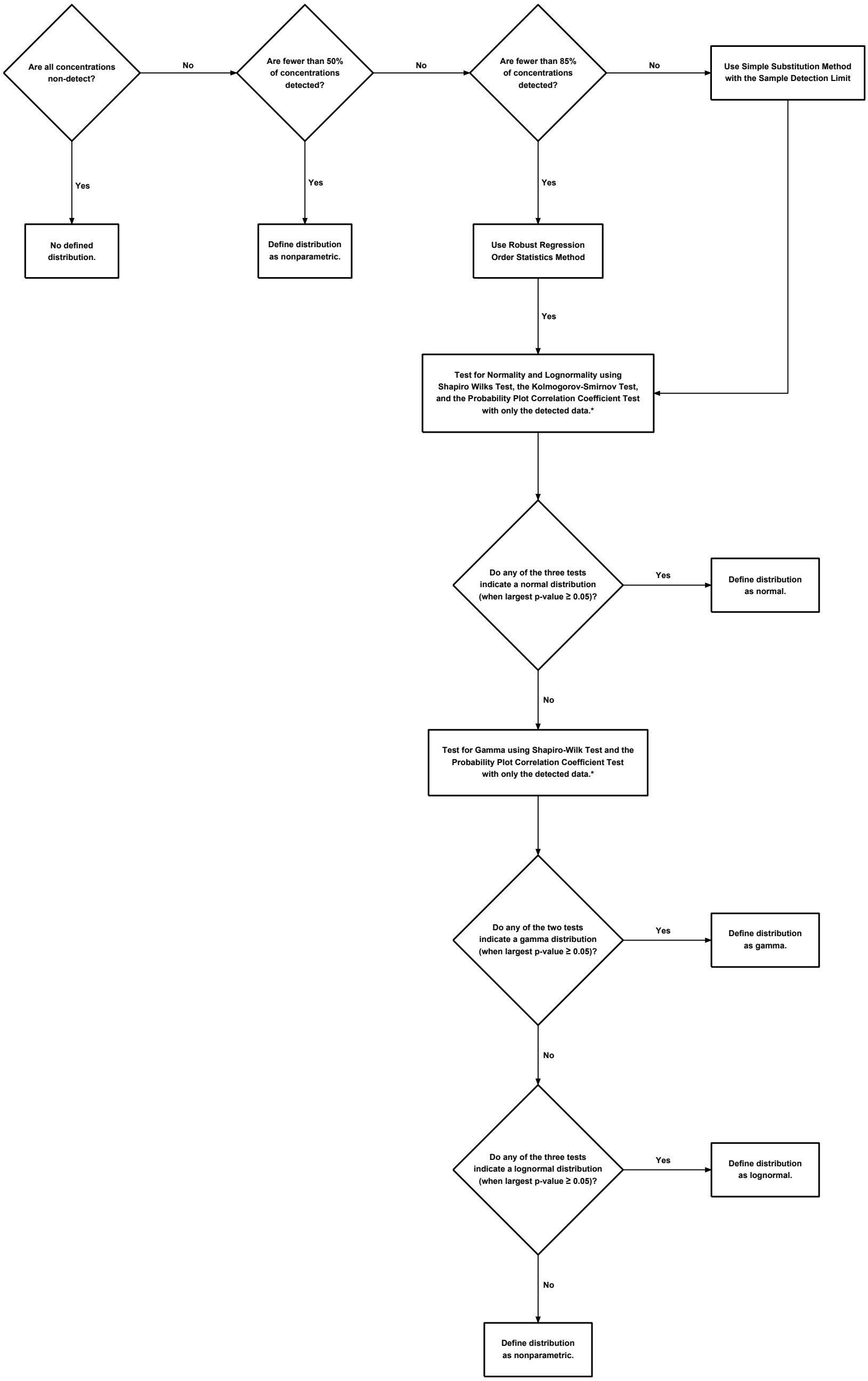


Figure 1

PROCESS FOR SELECTING ANOVA OR KRUSKAL-WALLIS TEST TO COMPARE UPGRADIENT WELL AVERAGES

PROJECT: 51□4E	BY: AJD	REVISIONS
DATE: JAN 2019	CHECKED: PJB	

GOLDER ASSOCIATES USA, INC.



Note:
□- Distri□utional tests can not □e performed for the following cases:
1. For a data group with fewer than five detected samples, the Kolmogorov-Smirnov Test and the Pro□a□ility Plot Correlation Coefficient Test can not □e performed using only the detected concentrations.
2. For a data group with fewer than four detected samples, the Shapiro-Wilks Test can not □e performed using only the detected concentrations.

Figure 2

PROCESS FOR DEFINING A DISTRIBUTION FOR A DATA SET

PROJECT: 51□4E	BY: AJD	REVISIONS
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GOLDER ASSOCIATES USA, INC.

COAL COMBUSTION RESIDUAL RULE
STATISTICAL ANALYSIS PLAN

REVISION NO. 1

MARTIN LAKE STEAM ELECTRIC STATION
ASH PONDS
RUSK COUNTY, TEXAS

NOVEMBER 16, 2022

Prepared For:

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PROFESSIONAL CERTIFICATION

This document and all attachments were prepared by Golder Associates USA, Inc. under my direction or supervision. I hereby certify that the proposed statistical method is appropriate for evaluating groundwater data in accordance with the requirements of Sections 257.93 through 257.95 of the CCR Rule.

Patrick J. Behling, P.E.
Principal Engineer
GOLDER ASSOCIATES USA, INC.

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1	Process for Selecting ANOVA or Kruskal-Wallis Test to Compare Upgradient Well Averages
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LIST OF ACRONYMS AND ABBREVIATIONS

ANOVA	analysis of variance
CCR	coal combustion residuals
EPA	United States Environmental Protection Agency
GWPS	groundwater protection standard
LCL	lower confidence limit of the mean
MCL	maximum contaminant level
PPCC	Filliben's probability plot correlation coefficient test
RROS	robust regression order statistics
SAP	statistical analysis plan
SWFPR	site-wide false positive rate
UPL	upper prediction limit

1.0 INTRODUCTION

The United States Environmental Protection Agency (EPA) issued regulations regarding the disposal of coal combustion residuals (CCR) in certain landfills and impoundments in April 2015. These regulations, found under 40 CFR 257, Subpart D and referred to as the "CCR Rule" require facilities to design a groundwater monitoring program to monitor if landfills or impoundments with CCR materials, called CCR units, are impacting downgradient groundwater quality.

Section 257.90 of the CCR Rule requires that all existing CCR landfills and surface impoundments comply with the following groundwater monitoring requirements no later than October 17, 2017:

- Install a groundwater monitoring system as required under Section 257.91;
- Develop a groundwater sampling and analysis program to include selection of the statistical procedures to be used for evaluating groundwater monitoring data as required under Section 257.93;
- Initiate a detection monitoring program to include obtaining a minimum of eight independent samples for each background upgradient and downgradient monitoring well as required under Section 257.94; and
- Begin evaluating the groundwater monitoring data for statistically significant increases over background levels for the constituents listed in Appendix III of this part as required under Section 257.94.

Statistical analysis of groundwater monitoring data is required as part of detection monitoring and assessment monitoring under Section 257.93 of the CCR Rule. Section 257.93 of the CCR Rule provides several options for statistically evaluating groundwater data. The owner or operator of the CCR unit must select one of the statistical methods specified in paragraphs (f)(1) through (5) of Section 257.93 when evaluating constituent concentrations from the groundwater monitoring. EPA's *Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Unified Guidance* (EPA, 2009), also called the "Unified Guidance", presents acceptable statistical approaches for such evaluations and analyses. However, neither the CCR Rule nor the Unified Guidance outlines a step-by-step process to consistently evaluate groundwater monitoring data in order to satisfy the CCR Rule.

The purpose of this statistical analysis plan (SAP) is to develop a standard set of statistical approaches to follow when demonstrating groundwater compliance for each CCR unit in accordance with the CCR Rule and the Unified Guidance. Depending on the CCR unit and the evaluation of groundwater data for the CCR

unit, CCR groundwater compliance may be evaluated using either an interwell or an intrawell approach—the interwell approach being a comparison of water quality data upgradient of the CCR unit to water quality data downgradient of the CCR unit, and the intrawell approach being a comparison of water quality data of a well against background values established from that well's own historical water quality data.

This SAP describes and summarizes the statistical approach for establishing and evaluating baseline conditions to use for detection monitoring and assessment monitoring. The plan is designed to detect a release from a CCR facility. The plan conforms with EPA "Unified Guidance Document: Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities," March 2009, and the American Society for Testing and Materials (ASTM) Standard D6312-17, Developing Appropriate Statistical Approaches for Groundwater Detection Monitoring Programs at Waste Disposal Facilities.

2.0 DATA PREPARATION

Analytical data from wells in the groundwater monitoring network at a CCR unit during each sampling event are first reviewed for usability after final data packages are received from the laboratory. The analytical data are then prepared for statistical analysis. Methods for handling duplicate and non-detect data are implemented during this data preparation phase in order to comply with the performance standards outlined in 40 CFR 257.93. During the data preparation, anomalously low or high constituent concentrations are also considered for usability. The following subsections provide further details.

2.1 Handling Duplicate Data

Field duplicates and data rejected after data validation are removed from the data set. Only the primary samples are retained for the statistical evaluation.

2.2 Handling Non-Detect Data

A non-detected constituent concentration is defined as any analytical result that either has an instrument response but is below a sample detection limit or that has no instrument response. A non-detected concentration is handled by using one of two approaches, depending on the percentage of detections in the data set:

- If a data set has at least 85% of samples detected, half of the sample detection limit is substituted as a proxy concentration. In these cases, substituting a proxy concentration will not alter the results of statistical tests or summary statistics (EPA, 2009; EPA, 2000).

- If a data set has at least 50% but no more than 85% of the samples detected, the robust regression order statistics (RROS) method is used to estimate summary statistics such as the mean and standard deviation (EPA, 2009).

- If a data set has fewer than 50% of the samples detected, then nonparametric statistical approaches are used to evaluate the data and to prepare summary statistics (EPA, 2009; EPA, 2000).

It should be noted that J-flagged data (estimated concentrations between the sample detection limit and the reporting limit) are defined as detected concentrations.

2.3 Handling Anomalous Detections

There may be infrequent cases when an anomalously high or low detection cannot be confirmed after resampling a well. In such cases, the anomalous detection should be considered for removal from the data

set and should be replaced by the resampled concentration so that current conditions are not over- or under-estimated. This is particularly important when estimating a baseline or background value to use to compare to future constituent concentrations from the network of groundwater monitoring wells. An anomalous detection may be identified at any point after analytical laboratory results are available, based on professional judgment or based on the outlier evaluation (see Section 3.4 for more details about testing for outliers). If an analytical result is removed, documentation should be provided in the annual report stating which analytical result was removed and justifying its removal.

3.0 STATISTICAL ASSUMPTIONS

Before baseline or background values can be established, a number of statistical assumptions are evaluated to determine if concentrations are independent and identically distributed. A sample's constituent concentration is independent when no other sample concentrations influence its measurement, regardless of when or where the sample was collected. Statistical independence is indicated by a set of random data. But randomness is only demonstrated by the presence of mean and variance stationarity and the lack of evidence for effects such as spatial and temporal variation, autocorrelation, and trends (EPA, 2009).

The validity of statistical independence is checked by testing for:

- Spatial stationarity,
- Temporal stationarity,
- Lack of autocorrelation, and
- Lack of statistical data outliers.

For the purpose of this SAP, the statistical software R (The R Foundation, 2017) is assumed to be used to perform the statistical tests used for checking the validity of independent samples. Other applicable programs may be used as necessary.

3.1 Spatial Stationarity

Spatial stationarity is defined as the lack of variability across well locations. Spatial variation may be naturally occurring and unaffected by human activity, or may be caused by human activity. The presence of spatial variability does not necessarily mean that contamination is present. If spatial variability is present, regardless whether it's naturally-occurring or not, it may hinder attempts to identify the cause of a statistically significant increase in constituent concentrations between current and baseline or background conditions (EPA, 2009). In some cases, spatial variability may make upgradient-to-downgradient comparisons (also called interwell comparisons) difficult (EPA, 2009).

One way to identify spatial stationarity is to observe whether spatial variability does or does not exist across multiple wells. This is particularly true when a CCR unit has more than one upgradient well and when interwell comparisons are used for detection or assessment monitoring. Constituent concentrations from each upgradient well are taken as a single data set and then upgradient well data sets are compared. Before establishing baseline or background values for the detection monitoring or assessment monitoring

programs, two steps are taken to check for spatial stationarity for each constituent and groundwater monitoring well (recommended by the Unified Guidance):

1. Side-by-side box plots are created, and
2. The one-way analysis of variance (ANOVA) or Kruskal-Wallis test is used.

Box plots provide a quick screen for possible spatial variation. The ANOVA and Kruskal-Wallis test are more formal tests for identifying spatial variability. All of the statistical tests are performed and the box plots are generated using the statistical software R (The R Foundation, 2017) or similar software.

In some cases, spatial variability, where substantial differences in average constituent concentrations are present among upgradient wells, can make interwell comparisons difficult (EPA, 2009). Professional judgment should be used to determine whether the set of constituent concentrations from all upgradient wells appropriately represent baseline or background conditions and whether the spatial variability will prevent the detection or assessment monitoring from identifying a potential release at a CCR unit. If the spatial variability were to indicate that analytical data from a set of upgradient wells do not appropriately represent background conditions or if the spatial variability were to hinder the detection or assessment monitoring, then the data set should be adjusted accordingly.

3.1.1 Box Plots

A box plot is a graphical representation of the pattern and distribution of concentrations for a single constituent data set. Visually comparing box plots for upgradient well's constituent concentrations, side-by-side, is one way to identify similarities or differences across upgradient well concentrations. If box plots contain similar range of concentrations, then the concentrations for the upgradient wells are similar (spatial stationarity). Likewise, if box plots do not contain similar range of concentrations, then the concentrations for the upgradient wells are different: spatial variability. Section 3.4.1 provides more details about how to create box plots.

3.1.2 ANOVA and Kruskal-Wallis Tests

The ANOVA and Kruskal-Wallis tests are similar statistical tests; both tests indicate significant spatial variability by indicating whether a statistically significant difference exists among average, upgradient well concentrations. The ANOVA is a parametric approach for comparing average concentrations across two

or more wells. The Kruskal-Wallis test is a non-parametric approach to the ANOVA using the ranks of concentrations, rather than using the actual concentration measurements. Neither test can be performed if the variances across upgradient wells are unequal. A Type I error rate (α), or level of significance, is set to α=0.05 for identifying a statistical significant different among well averages.

Determining which test to perform, either the ANOVA or Kruskal-Wallis tests, depends upon the frequency of detected results, the validity of assuming normality or lognormality for residuals, and the validity of assuming upgradient wells have equal variances. More details about these dependencies are provided in the subsections below (Sections 3.1.2.1-3.1.2.3). Figure 1 outlines the steps taken to define which statistical test (ANOVA or Kruskal-Wallis) should be used. The method used to determine the appropriate statistical test is based on the Unified Guidance recommendations. Tests of normality and equal variances use a 0.01 level of significance, rather than a 0.05 level of significance, because the ANOVA is reasonably robust to small departures of normality and equal variances (EPA, 2009).

No statistical test is performed when there are no detected concentration measurements in any of the upgradient wells.

If there are at least 85% detected concentrations in every upgradient well, then the ANOVA may be considered. For any non-detected concentration, half of the sample detection limit is used as a proxy concentration (see Section 2.2 for more details). The assumptions of normality and equal variances are checked. To test the normality assumption, residuals are tested using two distributional tests, the Shapiro-Wilk test and Filliben's probability plot correlation coefficient (PPCC) test. The Levene's test is used to check for equal variances. Only when evidence exists that both assumptions are valid is the ANOVA using the raw concentration measurements used. If either assumption is not met, then the assumptions of normality and equal variances are checked using the log-transformed data. Only when evidence exists that both assumptions are valid is the ANOVA using the log-transformed concentration measurements used. If either assumption is not met, then an ANOVA cannot be considered.

If there are fewer than 85% detected concentrations or if the ANOVA cannot be considered, then the Kruskal-Wallis may be considered. Non-detected data are treated differently for the Kruskal-Wallis test since the ranks of the data are used rather than the concentration measurements: all data below the maximum sample detection limit are set to the same value, lower than the maximum sample detection limit (Helsel, 2012). Since the Kruskal-Wallis tests uses ranks of the data, the actual value used for data below the maximum sample detection limit is not relevant. The assumption of equal variances is checked using

the Fligner's test. If the Fligner's test indicates that the assumption of equal variances is valid, then the Kruskal-Wallis test is used. Otherwise, no test can be performed because variances are heterogeneous among upgradient well concentration measurements.

3.2 Temporal Stationarity

Temporal stationarity is the lack of temporal variability. Temporal variability refers to the concept that concentration measurements vary over time. Temporal variability may be present across a group of wells and/or constituents. Temporal variability can also be present at an individual well or for a single constituent. By definition, temporal variability also includes autocorrelation, which is discussed separately in Section 3.3.

Any temporal pattern can invalidate or weaken the results of statistical testing (EPA, 2009). Plotting concentrations over time for a given constituent and for a given well is one way to identify possible trends. The Mann-Kendall trend test is another way to identify possible temporal variation for a given constituent and well. The Mann-Kendall is a nonparametric method to test for an increasing or decreasing linear trend over time. The Mann-Kendall doesn't require any special treatment for non-detects, other than all non-detects should be set to a common value lower than any of the detected concentrations (EPA, 2009 p.8-32). The Mann-Kendall is performed for any set of data with at least one detected concentration.

Before establishing baseline or background values for the detection monitoring or assessment monitoring programs, two steps are taken to check for temporal stationarity for each constituent and groundwater monitoring well:

1. A time plot is created, and
2. The Mann-Kendall trend test is used.

The time plots are generated and the Mann-Kendall trend test is performed using the statistical software R (The R Foundation, 2017) and the EnvStats package (Package 'EnvStats', 2017) or similar software.

Statistically significant increasing or decreasing temporal trends are not expected for any upgradient well since, by definition, an upgradient well should not be impacted by a release at the CCR unit. If, however, there is evidence of a temporal trend, then professional judgment should be used to determine whether constituent concentrations from that upgradient well appropriately represent baseline or background conditions and whether the trend will prevent the detection or assessment monitoring from identifying a

potential release at a CCR unit. If the trend were to indicate that an upgradient well does not appropriately represent baseline or background conditions or if the trend were to hinder the detection or assessment monitoring, then the data set should be adjusted accordingly.

To identify a statistically significant temporal trend, a Type I experiment wise error rate (α) is set to $\alpha = 0.05$. That means, a single test error rate is defined for each well across the detected Appendix III or Appendix IV constituents. Each well's single test error rate is based on the number of detected constituents, d, for a given constituent list. For example, a well with five detected Appendix IV constituents ($d = 5$) has a single test error rate equal to $1 - (1 - \alpha)^{1/d^*} = 1 - (1 - 0.05)^{1/5} = 0.0102$. A statistically significant linear trend is identified when the p-value for the Mann-Kendall test is less than the single test error rate.

3.3 Lack of Autocorrelation

Autocorrelation is the statistical dependence between pairs of constituent concentrations across a sequence of time. That is, pairs of consecutive concentrations will exhibit stronger similarity in concentration measurements than expected from pairs collected at random times (p.6-25, EPA, 2009). To identify autocorrelation, the Unified Guidance recommends using the rank von Neumann ratio test for its ease of use and robustness when applied to either normal or non-normal distributions (p.14-17 EPA, 2009). Since this test has not been designed to handle tied values such as non-detect concentrations, this test is only performed for those wells and constituents with at least 50% detected concentrations.

The rank von Neumann ratio test statistic and associated p-value are computed using the statistical software R (The R Foundation, 2017) and the EnvStats package (Package 'EnvStats', 2017) or similar software.

Before baseline or background values are established for the detection monitoring or assessment monitoring programs, the rank von Neumann ratio test is used. Statistically significant autocorrelation is not expected for any well since, by definition, constituent concentration measurements from a well should be collected with far enough time between sampling events that a more recent sample does not include the same volume of groundwater as any previous sample. If, however, there is evidence of autocorrelation, then professional judgment should be used to determine whether constituent concentrations from a well appropriately represent baseline or background conditions and whether the trend will prevent the detection or assessment monitoring from identifying a potential release at a CCR unit. If the trend were to indicate that a well does not appropriately represent baseline or background conditions or if the trend were to hinder the detection

or assessment monitoring, then the data set should be adjusted accordingly.

To identify a statistically significant autocorrelation, a Type I experiment wise error rate, α, of 0.05 is used for each well across the detected Appendix III or Appendix IV constituents. Each well's single test error rate is based on the number of constituents detected at least 50% of the time, d^*, for a given constituent list. For example, a well with five detected Appendix IV constituents ($d^* = 5$), has a single test error rate equal to $1 - (1 - \alpha)^{1/d^*} = 1 - (1 - 0.05)^{1/5} = 0.0102$. A statistically significant autocorrelation is identified when the p-value for the rank von Neumann test is less than the single test error rate.

3.4 Lack of Statistical Outliers

Based on the Unified Guidance, outliers are "extreme, unusual-looking measurements". An outlier may be an invalid concentration measurement due to a typographical error, an equipment error, a sampling error, etc. Or an outlier may be a valid concentration measurement that reflects a "...temporary, local 'hot spot' of higher concentration" (EPA, 2009). Furthermore, outliers are "measurements (larger or smaller than other data values) that are not representative of the sample population from which they were drawn" (EPA, 2002).

The Unified Guidance recommends testing for outliers to attempt to determine whether a suspect outlier may have been drawn from the same sample population as the rest of the data. "The basic problem with including statistical outliers in analyzing groundwater data is that they do not come from the same distribution as the other measurements in the sample and so fail the identically distributed presumption of most tests" (EPA, 2009).

The consequences of keeping statistical outliers when developing a baseline or background value may lead to an unreasonably high value that will be unable to identify potential releases at a CCR unit. Professional judgment should be used to determine whether to retain or remove any outlier. The Unified Guidance states that outliers generally should not be removed unless some basis for a likely error or discrepancy can be identified. Possible errors or discrepancies include "...values significantly outside the historical ranges of background data" (EPA, 2009). "The decision to discard an outlier should be based on some scientific or quality assurance basis" (EPA, 2000). "A data point should not be eliminated from the background data set simply because it is the highest value that was observed" (EPA, 2002). EPA recommends "…that all data not known to be in error should be considered valid" (EPA, 1989). Furthermore, "[t]he general rule is that a measurement should never be deleted from a data set solely on the basis of an outlier test" (SWDIV,

1999).

Before baseline or background values are established for the detection monitoring or assessment monitoring programs, two steps are taken to check for suspect outliers for each constituent with at least 50% detected concentrations and at each well or set of upgradient wells:

1. A box plot is created to identify suspect outliers, and
2. The Dixon's test or Rosner's test is used.

Possible, or suspect, outliers are identified using a box plot. The statistical outlier tests, the Dixon's test and Rosner's test, are tests to check whether any suspect outlier is a statistical outlier. The box plots are generated and the Dixon's or Rosner's test is performed using the statistical software R (The R Foundation, 2017) or similar software.

3.4.1 Box Plots

Creating a box plot is a visual technique used to identify suspect outliers. Box plots can also demonstrate the pattern and distribution of constituent concentrations for a data set. The size of the vertical box in a box plot indicates where the middle half of the data fall (i.e., the interquartile range, IQR). Concentration measurements that plot further away from the others indicate suspect outliers; for a box plot, these measurements are called mild or extreme outliers (EPA, 2009).

Box plots are constructed to identify two types of suspect outliers: mild and extreme outliers. Suspect outliers are defined in terms of the IQR, represented by the range of the middle half of the data and indicated by the vertical 'box' in a box plot. The IQR is the difference between the upper quartile and the lower quartile of the data. Mild and extreme outliers are identified for small or large sample detected concentration measurements. A high, mild outlier is any detected concentration that exceeds 1.5 times the IQR, but no more than 3 times the IQR, from the upper quartile. A small, mild outlier is any detected concentration that is below 1.5 times the IQR, but no less than 3 times the IQR, from the lower quartile. A high, extreme outlier is any detected concentration greater than 3 times the IQR from the upper quartile. A low, extreme outlier is any detected concentration less than 3 times the IQR from the lower quartile. EPA, 2009 and EPA, 2017 state that mild and extreme outliers should be considered suspect outliers. Computational details for box plots are found in EPA guidance documents (EPA, 2000; EPA, 2009).

3.4.2 Statistical Outlier Tests

A statistical outlier test, either the Dixon's test or Rosner's test, is performed for each data set having at least one suspect outlier in order to determine if the suspect outlier is also a statistical outlier. For a data set with no more than 25 samples, the Dixon's test is used. For a data set with at least 20 samples, the Rosner's test is used. Dixon's test can only test if one detected concentration (i.e., the minimum or the maximum) is a statistical outlier. The Rosner's test can test if one or more detected concentrations are statistical outliers (EPA, 2000; EPA, 2002; EPA, 2009). Computational details for these outlier tests are outlined in EPA documents (EPA, 2000; EPA, 2009). Based on results from the statistical outlier tests, mild and extreme outliers are classified as statistical outliers.

Both statistical outlier tests assume that the data set with the suspect outlier(s) removed is normally distributed (or lognormally distributed if the data are transformed to the natural-log scale). Section 4.1.2 below discusses how to test distributional assumptions of normality or lognormality.

Any extreme, suspect outlier that is also identified as a statistical outlier is evaluated for possible errors or data discrepancies before a baseline or background value is established. Suspect outliers, including those also classified as statistical outliers, should be reviewed for having possible analytical or other quality errors. Professional judgment should be used to determine whether constituent concentrations defined as suspect or statistical outliers should be removed so that baseline or background conditions are properly represented so that detection or assessment monitoring can identify a potential release at a CCR unit. If an outlier does not represent baseline or background conditions or if the outlier hinders the detection or assessment monitoring, then the data set should be adjusted accordingly.

4.0 STATISTICAL APPROACH FOR DETECTION AND ASSESSMENT MONITORING

Section 257.93 of the CCR rule provides several options for statistically evaluating the groundwater data and the performance standards to follow at CCR facilities. At each CCR unit, upper prediction limits (UPLs) are calculated for each detected constituent to establish baseline or background values. To achieve UPLs with sufficient statistical power, the UPLs are designed to include retesting procedures based on the 1-of-2 approach (one assigned sample and one resample—see Section 4.1.3). Using UPLs is one of the preferred methods for comparing groundwater based on the Unified Guidance (EPA, 2009).

UPLs are computed using baseline or background data. The source of the baseline or background data may differ, depending whether interwell or intrawell comparisons are appropriate. "With interwell tests, background is derived from distinct, initially upgradient background wells" (EPA, 2009). "Future data from each of these compliance wells are then tested against this common background. On the other hand, intrawell background [also called baseline] is derived from and represents historical groundwater conditions in each individual compliance well." (EPA, 2009)

There are several considerations to make when determining whether interwell or intrawell comparisons should be performed. To consider interwell comparisons for a CCR unit, the groundwater monitoring data should meet the statistical assumptions of spatial stationarity, temporal stationarity, lack of autocorrelation, and lack of statistical outliers (see Section 3). Furthermore, the CCR unit should

- have at least one upgradient well,
- have a clearly defined groundwater flow direction without any radial flow, and
- not contain highly variable mine spoil.

If any of these conditions cannot be met or if the statistical assumptions cannot be met, then intrawell comparisons should be considered for a CCR unit. Both Gibbons and EPA's Unified guidance recommend using intrawell analyses when spatial variability exists. Both Gibbons and the Unified Guidance caution that intrawell analyses are appropriate in the absence of contamination. Since a CCR unit may be an existing landfill or impoundment that is now under the CCR rule, there is a possibility that contamination may be present. Professional judgment should be used for such CCR units to determine if contamination is likely present, and to determine which type of comparison is more appropriate.

4.1 Calculating UPLs

UPLs are estimated with constituent concentrations that are independent and identically distributed, as described in Section 3. The set of data used to calculate UPLs are based on constituent concentrations from the eight background sampling events and from either:

- upgradient wells for the CCR unit (for interwell comparisons), or
- individual compliance well (for intrawell comparisons).

UPLs must be calculated using a single-test error rate that accounts for the site-wide false positive rate (SWFPR) associated with all of the detection or assessment monitoring comparisons. The SWFPR is set based on the Unified Guidance recommendations and is discussed in more detail in Section 4.1.1.

After assumptions have been checked and outliers have been identified for the appropriate set of data, the data distribution is defined in accordance with EPA guidance (EPA, 2000; EPA, 2002; EPA, 2009; EPA, 2017; SWDIV, 1998). UPLs are then calculated based on the defined data distribution. Distributions are defined using the methodology outlined in Section 4.1.2, and the UPLs are calculated using the methodology described in Section 4.1.3.

The statistical software R (The R Foundation, 2017) or similar software is used to perform all statistical distribution tests and to calculate UPLs.

4.1.1 Defining Single-test error rate

Based on 40 CFR 257.93 (g)(2) and the Unified Guidance, the cumulative SWFPR or Type I experiment wise error rate for yearly monitoring shall be no more than 0.10. That means, a single test error rate must be considerably lower than 0.10. The single test error rate depends on the number of detected constituents and number of compliance wells evaluated in a CCR unit's monitoring program, defined as:
$1 - (1 - \alpha)^{1/cw}$, where:

- α=0.10, the SWFPR;
- c=the number detected constituents for the monitoring program (the Appendix III constituents for detection monitoring or Appendix IV constituents for assessment monitoring); and
- w=the number of compliance wells at the CCR unit.

Sampling frequency is not included in this single-test error rate because UPL calculations are designed to account for the number of sampling events per year.

4.1.2 Defining a Distribution for Background

The type of UPL calculated is based on a data set's defined distribution. Figure 2 outlines the steps to take to define whether a data set follows a normal, gamma, lognormal, or nonparametric distribution. If there are no detections for a data set, no distribution is defined. For a constituent with fewer than 50% detected concentrations, the distribution is defined as nonparametric (EPA, 2000; EPA, 2009).

For each data set with at least 50% detected concentrations and at least 4 samples, the data's distribution is tested using up to three distributional tests, which include the Shapiro-Wilk test, Kolmogorov-Smirnov test, and PPCC test. A test for the gamma distribution is included because EPA, 2017 generally recommends using summary statistics from a gamma distribution before using statistics from a lognormal distribution when both the gamma and lognormal distributional assumptions are valid. All of these distributional tests are recommended by EPA (EPA, 2000; EPA, 2002; EPA, 2009; EPA, 2017). Each distributional test is performed with only the detected data, which reflects how ProUCL performs distributional tests (EPA, 2017).

The method used to define a distribution, using the largest p-value from all of the appropriate tests and comparing it to a 0.05 level of significance, is designed to follow ProUCL's distributional recommendations. It should be noted that for a data set with fewer than five detected samples, the Kolmogorov-Smirnov test and the PPCC test cannot be performed. And, the Kolmogorov-Smirnov test is not used to test for gamma distributions.

If results from any of these three tests indicate the data are normally distributed (when the largest p-value is greater than 0.05), the distribution is defined as normal. If none of the test results indicate normality, the detected data set is tested for the gamma distribution by running the Shapiro-Wilk and PPCC tests. If either test indicates the data set follow a gamma distribution (when the larger p-value is greater than 0.05), the

distribution is defined as a gamma distribution. If none of the test results indicate a gamma distribution, the data set is tested for lognormality by running the Shapiro-Wilk, Kolmogorov-Smirnov, and PPCC tests with the log-transformed detected data. If results from any of these tests indicate the data set is lognormally distributed (when the largest p-value is greater than 0.05), the distribution is defined as lognormal. If none of the distributional test results indicate normality, a gamma distribution, or lognormality, the data's distribution is defined as nonparametric.

4.1.3 Calculating UPLs

UPLs are calculated using a 1-of-2 retesting strategy to ensure comparisons are statistically powerful and to minimize the SWFPR. A 1-of-2 retesting strategy means that if one or more constituent concentrations in a compliance well are above their respective background concentration, a resample is collected to validate or invalidate the background concentration exceedance. According to the Unified Guidance, "A *1-of-m* retesting plan implies that up to *m* groundwater measurements may have to be collected at each compliance well, including the initial observation and *(m-1)* possible resamples. For the test to be valid, all of these sample measurements need to be statistically independent" (EPA, 2009). An independent resample may be collected between sampling events if necessary.

The Unified Guidance defines when a well is in-compliance and out-of-compliance: "If the initial groundwater observation is in-bounds [in compliance with the designed standard], the test is complete and no resamples need to be collected. Only when the first concentration exceeds the UPL, does additional sampling come into play" (EPA, 2009). If all *m* samples (the initial sample plus *m-1* resamples) exceed, then the well is considered out-of-compliance. If none of the *(m-1)* resamples exceed after the initial sample exceeded, then the well can still be considered to be in-compliance (EPA, 2009).

The type of UPL computed (e.g., parametric or nonparametric) is based on the detection frequency and the defined data distribution for each data set, as described in Section 4.1.2. For a constituent with no detected concentration measurements in the baseline or background data, the UPL is set to the reporting limit (EPA, 2009). For a constituent with at least 50% detections, the UPL calculation adjusts for non-detected concentration(s) as described in Section 2.2, and the appropriate UPL calculation is used based on results from the distributional tests. If no parametric distribution (normal, lognormal, or gamma) can be defined for a data set, then a nonparametric UPL is estimated. Since J-flagged data are defined as detected, a calculated UPL may be less than the reporting limit; in such cases, the UPL is set to the reporting limit.

4.2 Establishing Background Values

Background values used for detection monitoring or assessment monitoring are based on UPLs. For detection monitoring (Appendix III constituents), background values are defined as the higher of the UPL and reporting limit. For assessment monitoring (Appendix IV constituents) background values are defined as the highest of the maximum concentration level (MCL), UPL, reporting limit, or other accepted screening level for constituents without MCLs. The reporting limit is included so that a constituent having an UPL below the reporting limit does not have an unfair limitation because most or all of the baseline or background constituent concentrations are below the reporting limit. For each CCR unit, tables of statistically-derived background values will be prepared for each Appendix III and Appendix IV constituent. For interwell comparisons, background values will be developed using upgradient well data. For intrawell comparisons, background values will be developed for each monitoring well using historical data from the well.

4.3 Updating Background Values

As detection or assessment monitoring continues, it is recommended to update baseline or background data sets periodically with valid monitoring concentrations that are representative of groundwater unimpacted by leakage from the CCR unit. The Unified Guidance recommends reviewing and possibly updating background values when enough new concentrations have been collected to perform statistical comparisons. That means, background values should be reviewed about every two or three years during. Failure to update background will exclude factors such as natural temporal variation, changes in field or laboratory methodologies, and changes in the water table due to meteorological conditions or other influences.

5.0 DETECTION MONITORING DATA EVALUATION

Detection monitoring will be performed at each CCR unit's groundwater monitoring system on a semi-annual basis during the active life of the CCR unit and during the post-closure period. Each CCR monitoring well will be sampled for the following Appendix III constituents as part of the detection monitoring program:

- Boron
- Calcium
- Chloride
- Fluoride
- field-measured pH
- Sulfate
- Total Dissolved Solids (TDS)

After every detection monitoring event, the constituent concentrations from each well will be compared to the background values, as described in Section 3 of this plan, to ascertain if a statistically significant increase above background exists. Possible outcomes from comparing the detection monitoring constituent concentrations in each well to their respective background values are as follows:

- All detection monitoring constituent concentrations in a compliance well are less than or equal to their respective background values; or

- One or more detection monitoring constituent concentrations in a compliance well are above their respective background values.

5.1 No Statistically Significant Increase over Background Values

Baseline and background UPLs are based on a 1-of-2 resampling approach, meaning that if zero or one concentration measurements from a series of two independent samples collected from a well do not exceed the appropriate UPL, then a statistically significant increase over baseline or background has not occurred at a CCR unit. This conclusion will be reached if the data indicate either of the following:

- All detection monitoring constituent concentrations in a compliance well are less than or equal to their respective background values; or

- At least one detection monitoring constituent concentration in a well is above the respective background value. If this occurs, the well or wells with constituent concentration(s) above the background value(s) will be resampled and analyzed for the detection monitoring constituent(s) with exceedances. If the resample indicates that the target detection monitoring constituent concentration(s) in the well or wells is less than or equal to their respective background value(s),

then it can be concluded that a statistically significant increase over background for all detection monitoring constituents has not occurred, since concentrations in one sample of the two independent samples do not exceed the appropriate baseline or background value(s).

If the groundwater monitoring data indicates that a statistically significant increase over background has not occurred at the CCR wells, then detection monitoring at all CCR wells will continue on a semi-annual basis.

5.2 Statistically Significant Increase over Background Values

If one or more detection monitoring constituent concentrations in any well is above the respective background value in both the original detection monitoring sample and the resample, then a statistically significant increase over background for the target detection monitoring constituents can be concluded. If a statistically significant increase is indicated, within 90 days Luminant will:

- Establish an assessment monitoring program as described in this plan, or
- Demonstrate that a source other than the CCR unit caused the statistically significant increase over the baseline or background value for a constituent, or that the statistically significant increase resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. If a successful demonstration is completed within the 90-day period, the owner or operator of the CCR unit may continue with the detection monitoring program.

6.0 ASSESSMENT MONITORING DATA EVALUATION

Assessment monitoring will be performed at a CCR unit's groundwater monitoring system after a statistically significant increase over background values has been confirmed in that well for one or more of the detection monitoring constituents. Within 90 days of triggering the assessment monitoring program, and annually thereafter, each CCR monitoring well requiring assessment monitoring will be sampled for the following Appendix IV parameters as part of the assessment monitoring program:

- Antimony
- Arsenic
- Barium
- Beryllium
- Cadmium
- Chromium
- Cobalt
- Fluoride
- Lead
- Lithium
- Mercury
- Molybdenum
- Selenium
- Thallium
- Radium 226 and 228 combined

Within 90 days of obtaining the results from the initial assessment monitoring sampling event, all wells in a CCR unit's groundwater monitoring system will be resampled and analyzed for:

- All Appendix III detection monitoring parameters; and
- The Appendix IV assessment monitoring parameters that were detected as part of the assessment monitoring event.

This monitoring will be performed on at least an annual basis thereafter, unless Luminant can demonstrate the need for an alternative monitoring frequency for repeated sampling and analysis for these constituents during the active life and the post-closure care period based on the availability of groundwater.

Within 90 days of obtaining the results from the initial assessment monitoring sampling event, a GWPS will be established for each of the Appendix IV assessment monitoring constituents that were detected in the groundwater monitoring system wells as follows:

- For constituents for which an MCL has been established, the highest of the MCL, UPL, and reporting limit for that constituent; or

- For constituents for which an MCL has not been established, the higher of the UPL, reporting limit, or levels that are equivalent to specified regional screening level (RSL) for that constituent (note: future revisions to the Rule may allow additional flexibility in establishing GWPS for states with EPA-approved CCR permit programs for Appendix IV constituents that do not have a MCL).

Each assessment monitoring constituent will be evaluated to ascertain if a statistically significant increase above the GWPS exists. Possible outcomes are as follows:

- All averages from assessment monitoring constituent concentrations at a well are not statistically greater than to their respective GWPS; or
- One or more averages from assessment monitoring constituent concentrations at a well are statistically greater than their respective GWPS.

6.1 Calculating LCLs

For each assessment monitoring constituent, the 95% lower confidence limit of the mean (LCL) is estimated. The set of data used to calculate LCLs are based on the constituent concentrations from the current year's sampling events and enough previous sampling events to reasonably estimate each LCL (the goal should be to have around eight to ten samples).

LCLs are calculated based on the defined data distribution. The data distribution is defined in accordance with EPA guidance (EPA, 2000; EPA, 2002; EPA, 2009; EPA, 2017; SWDIV, 1998). Distributions are defined using the methodology outlined in Section 6.1.1. The LCLs are calculated using the methodology described in Section 6.1.2.

The statistical software R (The R Foundation, 2017) or similar software is used to perform all statistical distribution tests and to calculate LCLs.

6.1.1 Defining a Distribution for LCLs

The type of LCL calculated is based on a data set's defined distribution. The same methodology for defining a distribution for background, described in Section 4.1.2 and outlined in Figure 2, is used to define the distribution for each assessment monitoring constituent data set as normal, gamma, lognormal, or nonparametric.

6.1.2 Calculating LCLs

The type of LCL computed (e.g., parametric or nonparametric) is based on the detection frequency and the defined data distribution for each data set, as described in Section 6.1.1. For a constituent with no detected concentration measurements, the LCL is set to the reporting limit (EPA, 2009). For a constituent with at least 50% detections, the LCL calculation adjusts for non-detected concentration(s) as described in Section 2.2, and the appropriate LCL calculation is used based on results from the distributional tests. If no parametric distribution (normal, lognormal, or gamma) can be defined for a data set or there are fewer than 50% detections, then a nonparametric, approximate 95% lower confidence limit of the median is estimated.

6.2 No Statistically Significant Increase Over GWPS

A statistically significant increase over the groundwater protection standard has not occurred at a CCR unit when the LCL for every assessment monitoring constituent at a well is less than or equal to the appropriate GWPS.

Assessment monitoring will continue on an annual basis. If for two consecutive assessment monitoring sampling events, the constituent concentrations for all Appendix III constituents are at or below background values and all Appendix IV constituents are shown to be statistically at or below their appropriate GWPS, then assessment monitoring will be terminated and detection monitoring as described in this plan will resume. If the constituent concentrations of any Appendix III constituents are shown to be statistically above background values, but all Appendix IV constituents have no statistically significant increase over their respective GWPS, then assessment monitoring will continue.

6.3 Statistically Significant Increase Over GWPS

A statistically significant increase over the groundwater protection standard has occurred at a CCR unit when the LCL for at least one assessment monitoring constituent at a well is greater than the appropriate GWPS. If a statistically significant increase over groundwater protection standards for any Appendix IV assessment monitoring constituent is confirmed, within 90 days of the initial assessment monitoring event, Luminant will either:

- Initiate an assessment of corrective measures for the CCR unit in accordance with CCR Rule Section 257.96; or
- Demonstrate that a source other than the CCR unit caused the contamination, or that the statistically

significant increase resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. If a successful demonstration is made, the owner or operator must continue assessment monitoring. If a successful demonstration has not been made at the end of the 90 day period, the owner or operator of the CCR unit must initiate an assessment of corrective measures for the CCR unit.

If one or more Appendix IV assessment monitoring constituent concentrations are statistically above the respective groundwater protection standards, and if a source other than the CCR unit cannot be demonstrated to have caused the contamination, a release from the CCR unit is likely and the nature and extent of the release will be further characterized as follows:

- Install additional monitoring wells necessary to define the contaminant plume(s);
- Collect data on the nature and estimated quantity of material released including specific information on the Appendix IV assessment monitoring constituents and the levels at which they are present in the material released;
- Install at least one additional monitoring well at the facility boundary in the direction of contaminant migration and sample this well for all Appendix III detection monitoring parameters and for those Appendix IV assessment monitoring constituents that have been detected as part of assessment monitoring. This monitoring must be performed on at least an annual basis thereafter.
- Sample all CCR unit wells for all Appendix III detection monitoring parameters and for those Appendix IV assessment monitoring constituents that have been detected as part of assessment monitoring. This monitoring must be performed on at least an annual basis thereafter.

7.0 REPORTING REQUIREMENTS

The results of the CCR groundwater monitoring program performed at each CCR unit will be reported yearly in an Annual Groundwater Monitoring and Corrective Action Report. A separate annual report for each CCR unit will document the status of the groundwater monitoring and corrective action program, summarize key actions completed, describe any problems encountered, discuss actions to resolve the problems, and project key activities for the upcoming year. At a minimum, the Annual Groundwater Monitoring and Corrective Action Report will contain the following information:

- A map, aerial image, or diagram showing the CCR unit and all background (or upgradient) and downgradient monitoring wells, to include the well identification numbers, that are part of the groundwater monitoring program for the CCR unit;

- Identification of any monitoring wells that were installed or decommissioned during the preceding year, along with a narrative description of why those actions were taken;

- In addition to all the monitoring data obtained under CCR Rule Sections 257.90 through 257.98, a summary including the number of groundwater samples that were collected for analysis for each background and downgradient well, the dates the samples were collected, and whether the sample was required by the detection monitoring or assessment monitoring programs, as well as the basis for the background values and the statistical methods employed to establish the background values;

- A narrative discussion of any transition between monitoring programs (e.g., the date and circumstances for transitioning from detection monitoring to assessment monitoring in addition to identifying the constituent(s) detected at a statistically significant increase over background levels); and

- Other information required to be included in the annual report as specified in CCR Rule Sections 257.90 through 257.98.

The Groundwater Monitoring and Corrective Action Report for the 2017 monitoring program must be placed in each facility operating record no later than January 31, 2018. Subsequent reports must be placed in the facility operating records no later than January 31 of the year following completion of the groundwater monitoring program from the preceding calendar year. The reports must also be posted to the owner or operator's CCR Rule Compliance Data and Information internet site within 30 days of placing the reports in the operating record.

8.0 REFERENCES

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FIGURES

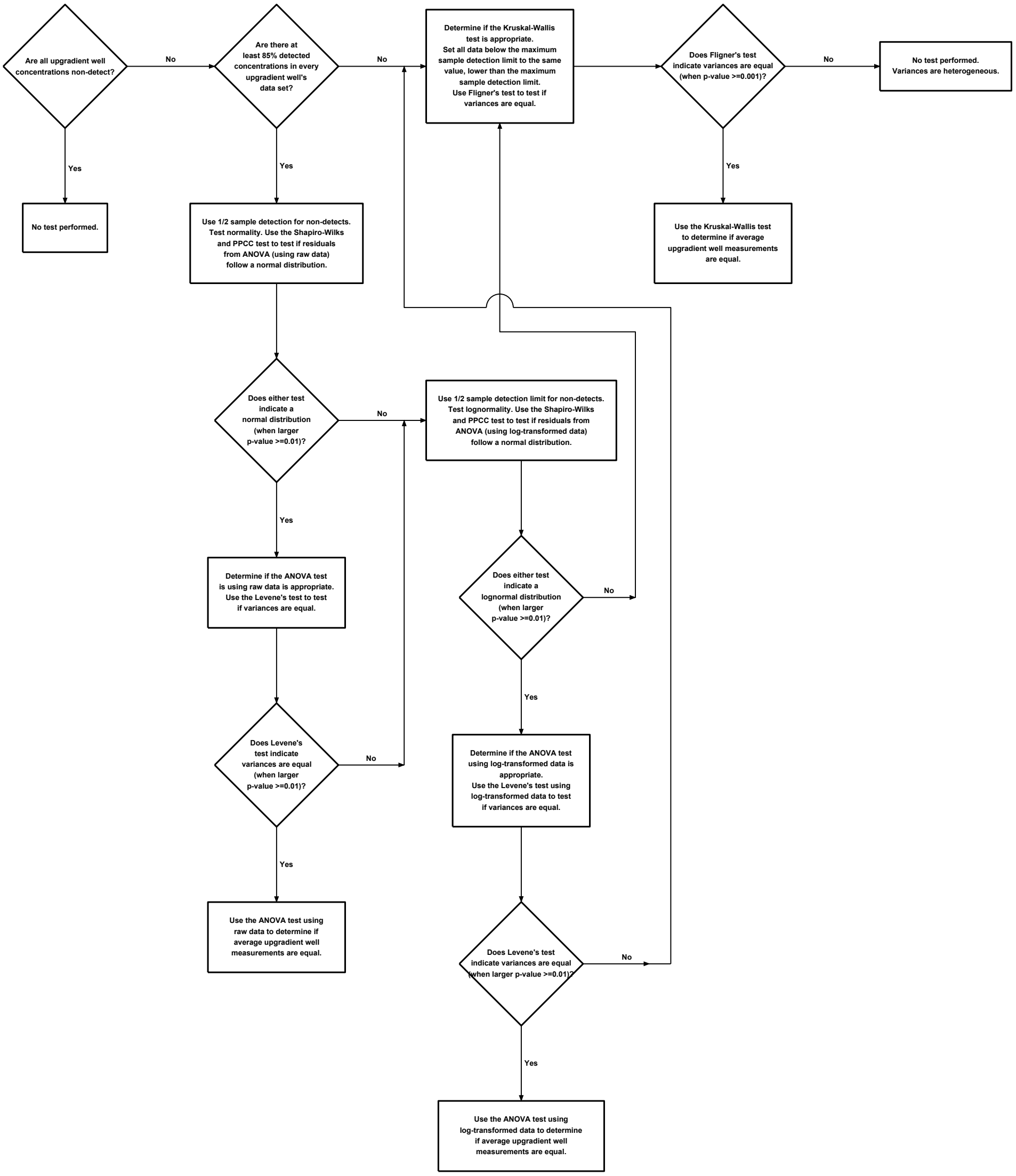
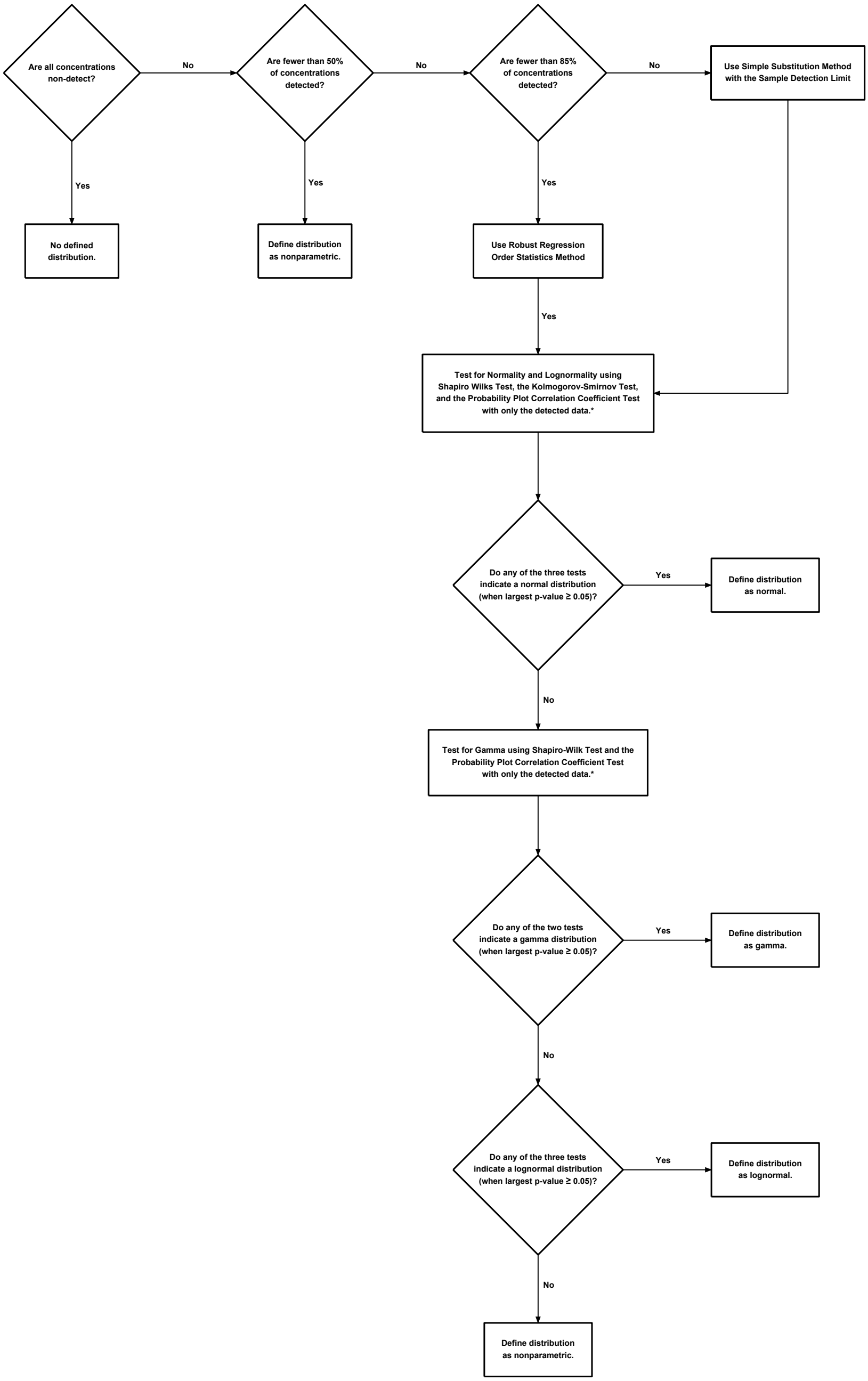


Figure 1

PROCESS FOR SELECTING ANOVA OR KRUSKAL-WALLIS TEST TO COMPARE UPGRADIENT WELL AVERAGES

PROJECT: 51□4E	BY: AJD	REVISIONS
DATE: JAN 2019	CHECKED: PJB	

GOLDER ASSOCIATES USA, INC.



Note:
□- Distri□utional tests can not □e performed for the following cases:
1. For a data group with fewer than five detected samples, the Kolmogorov-Smirnov Test and the Pro□a□ility Plot Correlation Coefficient Test can not □e performed using only the detected concentrations.
2. For a data group with fewer than four detected samples, the Shapiro-Wilks Test can not □e performed using only the detected concentrations.

Figure 2

PROCESS FOR DEFINING A DISTRIBUTION FOR A DATA SET

PROJECT: 51□4E	BY: AJD	REVISIONS
DATE: JAN 2019	CHECKED: PJB	

GOLDER ASSOCIATES USA, INC.

COAL COMBUSTION RESIDUAL RULE
STATISTICAL ANALYSIS PLAN

REVISION NO. 1

MARTIN LAKE STEAM ELECTRIC STATION
PERMANENT DISPOSAL POND 5
RUSK COUNTY, TEXAS

NOVEMBER 16, 2022

Prepared For:

Luminant Generation Company LLC

Prepared By:

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Texas Engineering Firm Registration No. 22771

PROFESSIONAL CERTIFICATION

This document and all attachments were prepared by Golder Associates USA, Inc. under my direction or supervision. I hereby certify that the proposed statistical method is appropriate for evaluating groundwater data in accordance with the requirements of Sections 257.93 through 257.95 of the CCR Rule.

Patrick J. Behling, P.E.
Principal Engineer
GOLDER ASSOCIATES USA, INC.

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LIST OF ACRONYMS AND ABBREVIATIONS

ANOVA	analysis of variance
CCR	coal combustion residuals
EPA	United States Environmental Protection Agency
GWPS	groundwater protection standard
LCL	lower confidence limit of the mean
MCL	maximum contaminant level
PPCC	Filliben's probability plot correlation coefficient test
RROS	robust regression order statistics
SAP	statistical analysis plan
SWFPR	site-wide false positive rate
UPL	upper prediction limit

1.0 INTRODUCTION

The United States Environmental Protection Agency (EPA) issued regulations regarding the disposal of coal combustion residuals (CCR) in certain landfills and impoundments in April 2015. These regulations, found under 40 CFR 257, Subpart D and referred to as the "CCR Rule" require facilities to design a groundwater monitoring program to monitor if landfills or impoundments with CCR materials, called CCR units, are impacting downgradient groundwater quality.

Section 257.90 of the CCR Rule requires that all existing CCR landfills and surface impoundments comply with the following groundwater monitoring requirements no later than October 17, 2017:

- Install a groundwater monitoring system as required under Section 257.91;
- Develop a groundwater sampling and analysis program to include selection of the statistical procedures to be used for evaluating groundwater monitoring data as required under Section 257.93;
- Initiate a detection monitoring program to include obtaining a minimum of eight independent samples for each background upgradient and downgradient monitoring well as required under Section 257.94; and
- Begin evaluating the groundwater monitoring data for statistically significant increases over background levels for the constituents listed in Appendix III of this part as required under Section 257.94.

Statistical analysis of groundwater monitoring data is required as part of detection monitoring and assessment monitoring under Section 257.93 of the CCR Rule. Section 257.93 of the CCR Rule provides several options for statistically evaluating groundwater data. The owner or operator of the CCR unit must select one of the statistical methods specified in paragraphs (f)(1) through (5) of Section 257.93 when evaluating constituent concentrations from the groundwater monitoring. EPA's *Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Unified Guidance* (EPA, 2009), also called the "Unified Guidance", presents acceptable statistical approaches for such evaluations and analyses. However, neither the CCR Rule nor the Unified Guidance outlines a step-by-step process to consistently evaluate groundwater monitoring data in order to satisfy the CCR Rule.

The purpose of this statistical analysis plan (SAP) is to develop a standard set of statistical approaches to follow when demonstrating groundwater compliance for each CCR unit in accordance with the CCR Rule and the Unified Guidance. Depending on the CCR unit and the evaluation of groundwater data for the CCR

unit, CCR groundwater compliance may be evaluated using either an interwell or an intrawell approach—the interwell approach being a comparison of water quality data upgradient of the CCR unit to water quality data downgradient of the CCR unit, and the intrawell approach being a comparison of water quality data of a well against background values established from that well's own historical water quality data.

This SAP describes and summarizes the statistical approach for establishing and evaluating baseline conditions to use for detection monitoring and assessment monitoring. The plan is designed to detect a release from a CCR facility. The plan conforms with EPA "Unified Guidance Document: Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities," March 2009, and the American Society for Testing and Materials (ASTM) Standard D6312-17, Developing Appropriate Statistical Approaches for Groundwater Detection Monitoring Programs at Waste Disposal Facilities.

2.0 DATA PREPARATION

Analytical data from wells in the groundwater monitoring network at a CCR unit during each sampling event are first reviewed for usability after final data packages are received from the laboratory. The analytical data are then prepared for statistical analysis. Methods for handling duplicate and non-detect data are implemented during this data preparation phase in order to comply with the performance standards outlined in 40 CFR 257.93. During the data preparation, anomalously low or high constituent concentrations are also considered for usability. The following subsections provide further details.

2.1 Handling Duplicate Data

Field duplicates and data rejected after data validation are removed from the data set. Only the primary samples are retained for the statistical evaluation.

2.2 Handling Non-Detect Data

A non-detected constituent concentration is defined as any analytical result that either has an instrument response but is below a sample detection limit or that has no instrument response. A non-detected concentration is handled by using one of two approaches, depending on the percentage of detections in the data set:

- If a data set has at least 85% of samples detected, half of the sample detection limit is substituted as a proxy concentration. In these cases, substituting a proxy concentration will not alter the results of statistical tests or summary statistics (EPA, 2009; EPA, 2000).

- If a data set has at least 50% but no more than 85% of the samples detected, the robust regression order statistics (RROS) method is used to estimate summary statistics such as the mean and standard deviation (EPA, 2009).

- If a data set has fewer than 50% of the samples detected, then nonparametric statistical approaches are used to evaluate the data and to prepare summary statistics (EPA, 2009; EPA, 2000).

It should be noted that J-flagged data (estimated concentrations between the sample detection limit and the reporting limit) are defined as detected concentrations.

2.3 Handling Anomalous Detections

There may be infrequent cases when an anomalously high or low detection cannot be confirmed after resampling a well. In such cases, the anomalous detection should be considered for removal from the data

set and should be replaced by the resampled concentration so that current conditions are not over- or under-estimated. This is particularly important when estimating a baseline or background value to use to compare to future constituent concentrations from the network of groundwater monitoring wells. An anomalous detection may be identified at any point after analytical laboratory results are available, based on professional judgment or based on the outlier evaluation (see Section 3.4 for more details about testing for outliers). If an analytical result is removed, documentation should be provided in the annual report stating which analytical result was removed and justifying its removal.

3.0 STATISTICAL ASSUMPTIONS

Before baseline or background values can be established, a number of statistical assumptions are evaluated to determine if concentrations are independent and identically distributed. A sample's constituent concentration is independent when no other sample concentrations influence its measurement, regardless of when or where the sample was collected. Statistical independence is indicated by a set of random data. But randomness is only demonstrated by the presence of mean and variance stationarity and the lack of evidence for effects such as spatial and temporal variation, autocorrelation, and trends (EPA, 2009).

The validity of statistical independence is checked by testing for:

- Spatial stationarity,
- Temporal stationarity,
- Lack of autocorrelation, and
- Lack of statistical data outliers.

For the purpose of this SAP, the statistical software R (The R Foundation, 2017) is assumed to be used to perform the statistical tests used for checking the validity of independent samples. Other applicable programs may be used as necessary.

3.1 Spatial Stationarity

Spatial stationarity is defined as the lack of variability across well locations. Spatial variation may be naturally occurring and unaffected by human activity, or may be caused by human activity. The presence of spatial variability does not necessarily mean that contamination is present. If spatial variability is present, regardless whether it's naturally-occurring or not, it may hinder attempts to identify the cause of a statistically significant increase in constituent concentrations between current and baseline or background conditions (EPA, 2009). In some cases, spatial variability may make upgradient-to-downgradient comparisons (also called interwell comparisons) difficult (EPA, 2009).

One way to identify spatial stationarity is to observe whether spatial variability does or does not exist across multiple wells. This is particularly true when a CCR unit has more than one upgradient well and when interwell comparisons are used for detection or assessment monitoring. Constituent concentrations from each upgradient well are taken as a single data set and then upgradient well data sets are compared. Before establishing baseline or background values for the detection monitoring or assessment monitoring

programs, two steps are taken to check for spatial stationarity for each constituent and groundwater monitoring well (recommended by the Unified Guidance):

1. Side-by-side box plots are created, and
2. The one-way analysis of variance (ANOVA) or Kruskal-Wallis test is used.

Box plots provide a quick screen for possible spatial variation. The ANOVA and Kruskal-Wallis test are more formal tests for identifying spatial variability. All of the statistical tests are performed and the box plots are generated using the statistical software R (The R Foundation, 2017) or similar software.

In some cases, spatial variability, where substantial differences in average constituent concentrations are present among upgradient wells, can make interwell comparisons difficult (EPA, 2009). Professional judgment should be used to determine whether the set of constituent concentrations from all upgradient wells appropriately represent baseline or background conditions and whether the spatial variability will prevent the detection or assessment monitoring from identifying a potential release at a CCR unit. If the spatial variability were to indicate that analytical data from a set of upgradient wells do not appropriately represent background conditions or if the spatial variability were to hinder the detection or assessment monitoring, then the data set should be adjusted accordingly.

3.1.1 Box Plots

A box plot is a graphical representation of the pattern and distribution of concentrations for a single constituent data set. Visually comparing box plots for upgradient well's constituent concentrations, side-by-side, is one way to identify similarities or differences across upgradient well concentrations. If box plots contain similar range of concentrations, then the concentrations for the upgradient wells are similar (spatial stationarity). Likewise, if box plots do not contain similar range of concentrations, then the concentrations for the upgradient wells are different: spatial variability. Section 3.4.1 provides more details about how to create box plots.

3.1.2 ANOVA and Kruskal-Wallis Tests

The ANOVA and Kruskal-Wallis tests are similar statistical tests; both tests indicate significant spatial variability by indicating whether a statistically significant difference exists among average, upgradient well concentrations. The ANOVA is a parametric approach for comparing average concentrations across two

or more wells. The Kruskal-Wallis test is a non-parametric approach to the ANOVA using the ranks of concentrations, rather than using the actual concentration measurements. Neither test can be performed if the variances across upgradient wells are unequal. A Type I error rate (α), or level of significance, is set to α=0.05 for identifying a statistical significant different among well averages.

Determining which test to perform, either the ANOVA or Kruskal-Wallis tests, depends upon the frequency of detected results, the validity of assuming normality or lognormality for residuals, and the validity of assuming upgradient wells have equal variances. More details about these dependencies are provided in the subsections below (Sections 3.1.2.1-3.1.2.3). Figure 1 outlines the steps taken to define which statistical test (ANOVA or Kruskal-Wallis) should be used. The method used to determine the appropriate statistical test is based on the Unified Guidance recommendations. Tests of normality and equal variances use a 0.01 level of significance, rather than a 0.05 level of significance, because the ANOVA is reasonably robust to small departures of normality and equal variances (EPA, 2009).

No statistical test is performed when there are no detected concentration measurements in any of the upgradient wells.

If there are at least 85% detected concentrations in every upgradient well, then the ANOVA may be considered. For any non-detected concentration, half of the sample detection limit is used as a proxy concentration (see Section 2.2 for more details). The assumptions of normality and equal variances are checked. To test the normality assumption, residuals are tested using two distributional tests, the Shapiro-Wilk test and Filliben's probability plot correlation coefficient (PPCC) test. The Levene's test is used to check for equal variances. Only when evidence exists that both assumptions are valid is the ANOVA using the raw concentration measurements used. If either assumption is not met, then the assumptions of normality and equal variances are checked using the log-transformed data. Only when evidence exists that both assumptions are valid is the ANOVA using the log-transformed concentration measurements used. If either assumption is not met, then an ANOVA cannot be considered.

If there are fewer than 85% detected concentrations or if the ANOVA cannot be considered, then the Kruskal-Wallis may be considered. Non-detected data are treated differently for the Kruskal-Wallis test since the ranks of the data are used rather than the concentration measurements: all data below the maximum sample detection limit are set to the same value, lower than the maximum sample detection limit (Helsel, 2012). Since the Kruskal-Wallis tests uses ranks of the data, the actual value used for data below the maximum sample detection limit is not relevant. The assumption of equal variances is checked using

the Fligner's test. If the Fligner's test indicates that the assumption of equal variances is valid, then the Kruskal-Wallis test is used. Otherwise, no test can be performed because variances are heterogeneous among upgradient well concentration measurements.

3.2 Temporal Stationarity

Temporal stationarity is the lack of temporal variability. Temporal variability refers to the concept that concentration measurements vary over time. Temporal variability may be present across a group of wells and/or constituents. Temporal variability can also be present at an individual well or for a single constituent. By definition, temporal variability also includes autocorrelation, which is discussed separately in Section 3.3.

Any temporal pattern can invalidate or weaken the results of statistical testing (EPA, 2009). Plotting concentrations over time for a given constituent and for a given well is one way to identify possible trends. The Mann-Kendall trend test is another way to identify possible temporal variation for a given constituent and well. The Mann-Kendall is a nonparametric method to test for an increasing or decreasing linear trend over time. The Mann-Kendall doesn't require any special treatment for non-detects, other than all non-detects should be set to a common value lower than any of the detected concentrations (EPA, 2009 p.8-32). The Mann-Kendall is performed for any set of data with at least one detected concentration.

Before establishing baseline or background values for the detection monitoring or assessment monitoring programs, two steps are taken to check for temporal stationarity for each constituent and groundwater monitoring well:

1. A time plot is created, and
2. The Mann-Kendall trend test is used.

The time plots are generated and the Mann-Kendall trend test is performed using the statistical software R (The R Foundation, 2017) and the EnvStats package (Package 'EnvStats', 2017) or similar software.

Statistically significant increasing or decreasing temporal trends are not expected for any upgradient well since, by definition, an upgradient well should not be impacted by a release at the CCR unit. If, however, there is evidence of a temporal trend, then professional judgment should be used to determine whether constituent concentrations from that upgradient well appropriately represent baseline or background conditions and whether the trend will prevent the detection or assessment monitoring from identifying a

potential release at a CCR unit. If the trend were to indicate that an upgradient well does not appropriately represent baseline or background conditions or if the trend were to hinder the detection or assessment monitoring, then the data set should be adjusted accordingly.

To identify a statistically significant temporal trend, a Type I experiment wise error rate (α) is set to $\alpha = 0.05$. That means, a single test error rate is defined for each well across the detected Appendix III or Appendix IV constituents. Each well's single test error rate is based on the number of detected constituents, d, for a given constituent list. For example, a well with five detected Appendix IV constituents ($d = 5$) has a single test error rate equal to $1 - (1 - \alpha)^{1/d^*} = 1 - (1 - 0.05)^{1/5} = 0.0102$. A statistically significant linear trend is identified when the p-value for the Mann-Kendall test is less than the single test error rate.

3.3 Lack of Autocorrelation

Autocorrelation is the statistical dependence between pairs of constituent concentrations across a sequence of time. That is, pairs of consecutive concentrations will exhibit stronger similarity in concentration measurements than expected from pairs collected at random times (p.6-25, EPA, 2009). To identify autocorrelation, the Unified Guidance recommends using the rank von Neumann ratio test for its ease of use and robustness when applied to either normal or non-normal distributions (p.14-17 EPA, 2009). Since this test has not been designed to handle tied values such as non-detect concentrations, this test is only performed for those wells and constituents with at least 50% detected concentrations.

The rank von Neumann ratio test statistic and associated p-value are computed using the statistical software R (The R Foundation, 2017) and the EnvStats package (Package 'EnvStats', 2017) or similar software.

Before baseline or background values are established for the detection monitoring or assessment monitoring programs, the rank von Neumann ratio test is used. Statistically significant autocorrelation is not expected for any well since, by definition, constituent concentration measurements from a well should be collected with far enough time between sampling events that a more recent sample does not include the same volume of groundwater as any previous sample. If, however, there is evidence of autocorrelation, then professional judgment should be used to determine whether constituent concentrations from a well appropriately represent baseline or background conditions and whether the trend will prevent the detection or assessment monitoring from identifying a potential release at a CCR unit. If the trend were to indicate that a well does not appropriately represent baseline or background conditions or if the trend were to hinder the detection

or assessment monitoring, then the data set should be adjusted accordingly.

To identify a statistically significant autocorrelation, a Type I experiment wise error rate, α, of 0.05 is used for each well across the detected Appendix III or Appendix IV constituents. Each well's single test error rate is based on the number of constituents detected at least 50% of the time, d^*, for a given constituent list. For example, a well with five detected Appendix IV constituents ($d^* = 5$), has a single test error rate equal to $1 - (1 - \alpha)^{1/d^*} = 1 - (1 - 0.05)^{1/5} = 0.0102$. A statistically significant autocorrelation is identified when the p-value for the rank von Neumann test is less than the single test error rate.

3.4 Lack of Statistical Outliers

Based on the Unified Guidance, outliers are "extreme, unusual-looking measurements". An outlier may be an invalid concentration measurement due to a typographical error, an equipment error, a sampling error, etc. Or an outlier may be a valid concentration measurement that reflects a "...temporary, local 'hot spot' of higher concentration" (EPA, 2009). Furthermore, outliers are "measurements (larger or smaller than other data values) that are not representative of the sample population from which they were drawn" (EPA, 2002).

The Unified Guidance recommends testing for outliers to attempt to determine whether a suspect outlier may have been drawn from the same sample population as the rest of the data. "The basic problem with including statistical outliers in analyzing groundwater data is that they do not come from the same distribution as the other measurements in the sample and so fail the identically distributed presumption of most tests" (EPA, 2009).

The consequences of keeping statistical outliers when developing a baseline or background value may lead to an unreasonably high value that will be unable to identify potential releases at a CCR unit. Professional judgment should be used to determine whether to retain or remove any outlier. The Unified Guidance states that outliers generally should not be removed unless some basis for a likely error or discrepancy can be identified. Possible errors or discrepancies include "...values significantly outside the historical ranges of background data" (EPA, 2009). "The decision to discard an outlier should be based on some scientific or quality assurance basis" (EPA, 2000). "A data point should not be eliminated from the background data set simply because it is the highest value that was observed" (EPA, 2002). EPA recommends "…that all data not known to be in error should be considered valid" (EPA, 1989). Furthermore, "[t]he general rule is that a measurement should never be deleted from a data set solely on the basis of an outlier test" (SWDIV,

1999).

Before baseline or background values are established for the detection monitoring or assessment monitoring programs, two steps are taken to check for suspect outliers for each constituent with at least 50% detected concentrations and at each well or set of upgradient wells:

1. A box plot is created to identify suspect outliers, and
2. The Dixon's test or Rosner's test is used.

Possible, or suspect, outliers are identified using a box plot. The statistical outlier tests, the Dixon's test and Rosner's test, are tests to check whether any suspect outlier is a statistical outlier. The box plots are generated and the Dixon's or Rosner's test is performed using the statistical software R (The R Foundation, 2017) or similar software.

3.4.1 Box Plots

Creating a box plot is a visual technique used to identify suspect outliers. Box plots can also demonstrate the pattern and distribution of constituent concentrations for a data set. The size of the vertical box in a box plot indicates where the middle half of the data fall (i.e., the interquartile range, IQR). Concentration measurements that plot further away from the others indicate suspect outliers; for a box plot, these measurements are called mild or extreme outliers (EPA, 2009).

Box plots are constructed to identify two types of suspect outliers: mild and extreme outliers. Suspect outliers are defined in terms of the IQR, represented by the range of the middle half of the data and indicated by the vertical 'box' in a box plot. The IQR is the difference between the upper quartile and the lower quartile of the data. Mild and extreme outliers are identified for small or large sample detected concentration measurements. A high, mild outlier is any detected concentration that exceeds 1.5 times the IQR, but no more than 3 times the IQR, from the upper quartile. A small, mild outlier is any detected concentration that is below 1.5 times the IQR, but no less than 3 times the IQR, from the lower quartile. A high, extreme outlier is any detected concentration greater than 3 times the IQR from the upper quartile. A low, extreme outlier is any detected concentration less than 3 times the IQR from the lower quartile. EPA, 2009 and EPA, 2017 state that mild and extreme outliers should be considered suspect outliers. Computational details for box plots are found in EPA guidance documents (EPA, 2000; EPA, 2009).

3.4.2 Statistical Outlier Tests

A statistical outlier test, either the Dixon's test or Rosner's test, is performed for each data set having at least one suspect outlier in order to determine if the suspect outlier is also a statistical outlier. For a data set with no more than 25 samples, the Dixon's test is used. For a data set with at least 20 samples, the Rosner's test is used. Dixon's test can only test if one detected concentration (i.e., the minimum or the maximum) is a statistical outlier. The Rosner's test can test if one or more detected concentrations are statistical outliers (EPA, 2000; EPA, 2002; EPA, 2009). Computational details for these outlier tests are outlined in EPA documents (EPA, 2000; EPA, 2009). Based on results from the statistical outlier tests, mild and extreme outliers are classified as statistical outliers.

Both statistical outlier tests assume that the data set with the suspect outlier(s) removed is normally distributed (or lognormally distributed if the data are transformed to the natural-log scale). Section 4.1.2 below discusses how to test distributional assumptions of normality or lognormality.

Any extreme, suspect outlier that is also identified as a statistical outlier is evaluated for possible errors or data discrepancies before a baseline or background value is established. Suspect outliers, including those also classified as statistical outliers, should be reviewed for having possible analytical or other quality errors. Professional judgment should be used to determine whether constituent concentrations defined as suspect or statistical outliers should be removed so that baseline or background conditions are properly represented so that detection or assessment monitoring can identify a potential release at a CCR unit. If an outlier does not represent baseline or background conditions or if the outlier hinders the detection or assessment monitoring, then the data set should be adjusted accordingly.

4.0 STATISTICAL APPROACH FOR DETECTION AND ASSESSMENT MONITORING

Section 257.93 of the CCR rule provides several options for statistically evaluating the groundwater data and the performance standards to follow at CCR facilities. At each CCR unit, upper prediction limits (UPLs) are calculated for each detected constituent to establish baseline or background values. To achieve UPLs with sufficient statistical power, the UPLs are designed to include retesting procedures based on the 1-of-2 approach (one assigned sample and one resample—see Section 4.1.3). Using UPLs is one of the preferred methods for comparing groundwater based on the Unified Guidance (EPA, 2009).

UPLs are computed using baseline or background data. The source of the baseline or background data may differ, depending whether interwell or intrawell comparisons are appropriate. "With interwell tests, background is derived from distinct, initially upgradient background wells" (EPA, 2009). "Future data from each of these compliance wells are then tested against this common background. On the other hand, intrawell background [also called baseline] is derived from and represents historical groundwater conditions in each individual compliance well." (EPA, 2009)

There are several considerations to make when determining whether interwell or intrawell comparisons should be performed. To consider interwell comparisons for a CCR unit, the groundwater monitoring data should meet the statistical assumptions of spatial stationarity, temporal stationarity, lack of autocorrelation, and lack of statistical outliers (see Section 3). Furthermore, the CCR unit should

- have at least one upgradient well,
- have a clearly defined groundwater flow direction without any radial flow, and
- not contain highly variable mine spoil.

If any of these conditions cannot be met or if the statistical assumptions cannot be met, then intrawell comparisons should be considered for a CCR unit. Both Gibbons and EPA's Unified guidance recommend using intrawell analyses when spatial variability exists. Both Gibbons and the Unified Guidance caution that intrawell analyses are appropriate in the absence of contamination. Since a CCR unit may be an existing landfill or impoundment that is now under the CCR rule, there is a possibility that contamination may be present. Professional judgment should be used for such CCR units to determine if contamination is likely present, and to determine which type of comparison is more appropriate.

4.1 Calculating UPLs

UPLs are estimated with constituent concentrations that are independent and identically distributed, as described in Section 3. The set of data used to calculate UPLs are based on constituent concentrations from the eight background sampling events and from either:

- upgradient wells for the CCR unit (for interwell comparisons), or
- individual compliance well (for intrawell comparisons).

UPLs must be calculated using a single-test error rate that accounts for the site-wide false positive rate (SWFPR) associated with all of the detection or assessment monitoring comparisons. The SWFPR is set based on the Unified Guidance recommendations and is discussed in more detail in Section 4.1.1.

After assumptions have been checked and outliers have been identified for the appropriate set of data, the data distribution is defined in accordance with EPA guidance (EPA, 2000; EPA, 2002; EPA, 2009; EPA, 2017; SWDIV, 1998). UPLs are then calculated based on the defined data distribution. Distributions are defined using the methodology outlined in Section 4.1.2, and the UPLs are calculated using the methodology described in Section 4.1.3.

The statistical software R (The R Foundation, 2017) or similar software is used to perform all statistical distribution tests and to calculate UPLs.

4.1.1 Defining Single-test error rate

Based on 40 CFR 257.93 (g)(2) and the Unified Guidance, the cumulative SWFPR or Type I experiment wise error rate for yearly monitoring shall be no more than 0.10. That means, a single test error rate must be considerably lower than 0.10. The single test error rate depends on the number of detected constituents and number of compliance wells evaluated in a CCR unit's monitoring program, defined as:
$1 - (1 - \alpha)^{1/cw}$, where:

- α=0.10, the SWFPR;
- c=the number detected constituents for the monitoring program (the Appendix III constituents for detection monitoring or Appendix IV constituents for assessment monitoring); and
- w=the number of compliance wells at the CCR unit.

Sampling frequency is not included in this single-test error rate because UPL calculations are designed to account for the number of sampling events per year.

4.1.2 Defining a Distribution for Background

The type of UPL calculated is based on a data set's defined distribution. Figure 2 outlines the steps to take to define whether a data set follows a normal, gamma, lognormal, or nonparametric distribution. If there are no detections for a data set, no distribution is defined. For a constituent with fewer than 50% detected concentrations, the distribution is defined as nonparametric (EPA, 2000; EPA, 2009).

For each data set with at least 50% detected concentrations and at least 4 samples, the data's distribution is tested using up to three distributional tests, which include the Shapiro-Wilk test, Kolmogorov-Smirnov test, and PPCC test. A test for the gamma distribution is included because EPA, 2017 generally recommends using summary statistics from a gamma distribution before using statistics from a lognormal distribution when both the gamma and lognormal distributional assumptions are valid. All of these distributional tests are recommended by EPA (EPA, 2000; EPA, 2002; EPA, 2009; EPA, 2017). Each distributional test is performed with only the detected data, which reflects how ProUCL performs distributional tests (EPA, 2017).

The method used to define a distribution, using the largest p-value from all of the appropriate tests and comparing it to a 0.05 level of significance, is designed to follow ProUCL's distributional recommendations. It should be noted that for a data set with fewer than five detected samples, the Kolmogorov-Smirnov test and the PPCC test cannot be performed. And, the Kolmogorov-Smirnov test is not used to test for gamma distributions.

If results from any of these three tests indicate the data are normally distributed (when the largest p-value is greater than 0.05), the distribution is defined as normal. If none of the test results indicate normality, the detected data set is tested for the gamma distribution by running the Shapiro-Wilk and PPCC tests. If either test indicates the data set follow a gamma distribution (when the larger p-value is greater than 0.05), the

distribution is defined as a gamma distribution. If none of the test results indicate a gamma distribution, the data set is tested for lognormality by running the Shapiro-Wilk, Kolmogorov-Smirnov, and PPCC tests with the log-transformed detected data. If results from any of these tests indicate the data set is lognormally distributed (when the largest p-value is greater than 0.05), the distribution is defined as lognormal. If none of the distributional test results indicate normality, a gamma distribution, or lognormality, the data's distribution is defined as nonparametric.

4.1.3 Calculating UPLs

UPLs are calculated using a 1-of-2 retesting strategy to ensure comparisons are statistically powerful and to minimize the SWFPR. A 1-of-2 retesting strategy means that if one or more constituent concentrations in a compliance well are above their respective background concentration, a resample is collected to validate or invalidate the background concentration exceedance. According to the Unified Guidance, "A *1-of-m* retesting plan implies that up to *m* groundwater measurements may have to be collected at each compliance well, including the initial observation and *(m-1)* possible resamples. For the test to be valid, all of these sample measurements need to be statistically independent" (EPA, 2009). An independent resample may be collected between sampling events if necessary.

The Unified Guidance defines when a well is in-compliance and out-of-compliance: "If the initial groundwater observation is in-bounds [in compliance with the designed standard], the test is complete and no resamples need to be collected. Only when the first concentration exceeds the UPL, does additional sampling come into play" (EPA, 2009). If all *m* samples (the initial sample plus *m-1* resamples) exceed, then the well is considered out-of-compliance. If none of the *(m-1)* resamples exceed after the initial sample exceeded, then the well can still be considered to be in-compliance (EPA, 2009).

The type of UPL computed (e.g., parametric or nonparametric) is based on the detection frequency and the defined data distribution for each data set, as described in Section 4.1.2. For a constituent with no detected concentration measurements in the baseline or background data, the UPL is set to the reporting limit (EPA, 2009). For a constituent with at least 50% detections, the UPL calculation adjusts for non-detected concentration(s) as described in Section 2.2, and the appropriate UPL calculation is used based on results from the distributional tests. If no parametric distribution (normal, lognormal, or gamma) can be defined for a data set, then a nonparametric UPL is estimated. Since J-flagged data are defined as detected, a calculated UPL may be less than the reporting limit; in such cases, the UPL is set to the reporting limit.

4.2 Establishing Background Values

Background values used for detection monitoring or assessment monitoring are based on UPLs. For detection monitoring (Appendix III constituents), background values are defined as the higher of the UPL and reporting limit. For assessment monitoring (Appendix IV constituents) background values are defined as the highest of the maximum concentration level (MCL), UPL, reporting limit, or other accepted screening level for constituents without MCLs. The reporting limit is included so that a constituent having an UPL below the reporting limit does not have an unfair limitation because most or all of the baseline or background constituent concentrations are below the reporting limit. For each CCR unit, tables of statistically-derived background values will be prepared for each Appendix III and Appendix IV constituent. For interwell comparisons, background values will be developed using upgradient well data. For intrawell comparisons, background values will be developed for each monitoring well using historical data from the well.

4.3 Updating Background Values

As detection or assessment monitoring continues, it is recommended to update baseline or background data sets periodically with valid monitoring concentrations that are representative of groundwater unimpacted by leakage from the CCR unit. The Unified Guidance recommends reviewing and possibly updating background values when enough new concentrations have been collected to perform statistical comparisons. That means, background values should be reviewed about every two or three years during. Failure to update background will exclude factors such as natural temporal variation, changes in field or laboratory methodologies, and changes in the water table due to meteorological conditions or other influences.

5.0 DETECTION MONITORING DATA EVALUATION

Detection monitoring will be performed at each CCR unit's groundwater monitoring system on a semi-annual basis during the active life of the CCR unit and during the post-closure period. Each CCR monitoring well will be sampled for the following Appendix III constituents as part of the detection monitoring program:

- Boron
- Calcium
- Chloride
- Fluoride
- field-measured pH
- Sulfate
- Total Dissolved Solids (TDS)

After every detection monitoring event, the constituent concentrations from each well will be compared to the background values, as described in Section 3 of this plan, to ascertain if a statistically significant increase above background exists. Possible outcomes from comparing the detection monitoring constituent concentrations in each well to their respective background values are as follows:

- All detection monitoring constituent concentrations in a compliance well are less than or equal to their respective background values; or

- One or more detection monitoring constituent concentrations in a compliance well are above their respective background values.

5.1 No Statistically Significant Increase over Background Values

Baseline and background UPLs are based on a 1-of-2 resampling approach, meaning that if zero or one concentration measurements from a series of two independent samples collected from a well do not exceed the appropriate UPL, then a statistically significant increase over baseline or background has not occurred at a CCR unit. This conclusion will be reached if the data indicate either of the following:

- All detection monitoring constituent concentrations in a compliance well are less than or equal to their respective background values; or

- At least one detection monitoring constituent concentration in a well is above the respective background value. If this occurs, the well or wells with constituent concentration(s) above the background value(s) will be resampled and analyzed for the detection monitoring constituent(s) with exceedances. If the resample indicates that the target detection monitoring constituent concentration(s) in the well or wells is less than or equal to their respective background value(s),

then it can be concluded that a statistically significant increase over background for all detection monitoring constituents has not occurred, since concentrations in one sample of the two independent samples do not exceed the appropriate baseline or background value(s).

If the groundwater monitoring data indicates that a statistically significant increase over background has not occurred at the CCR wells, then detection monitoring at all CCR wells will continue on a semi-annual basis.

5.2 Statistically Significant Increase over Background Values

If one or more detection monitoring constituent concentrations in any well is above the respective background value in both the original detection monitoring sample and the resample, then a statistically significant increase over background for the target detection monitoring constituents can be concluded. If a statistically significant increase is indicated, within 90 days Luminant will:

- Establish an assessment monitoring program as described in this plan, or
- Demonstrate that a source other than the CCR unit caused the statistically significant increase over the baseline or background value for a constituent, or that the statistically significant increase resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. If a successful demonstration is completed within the 90-day period, the owner or operator of the CCR unit may continue with the detection monitoring program.

6.0 ASSESSMENT MONITORING DATA EVALUATION

Assessment monitoring will be performed at a CCR unit's groundwater monitoring system after a statistically significant increase over background values has been confirmed in that well for one or more of the detection monitoring constituents. Within 90 days of triggering the assessment monitoring program, and annually thereafter, each CCR monitoring well requiring assessment monitoring will be sampled for the following Appendix IV parameters as part of the assessment monitoring program:

- Antimony
- Arsenic
- Barium
- Beryllium
- Cadmium
- Chromium
- Cobalt
- Fluoride
- Lead
- Lithium
- Mercury
- Molybdenum
- Selenium
- Thallium
- Radium 226 and 228 combined

Within 90 days of obtaining the results from the initial assessment monitoring sampling event, all wells in a CCR unit's groundwater monitoring system will be resampled and analyzed for:

- All Appendix III detection monitoring parameters; and
- The Appendix IV assessment monitoring parameters that were detected as part of the assessment monitoring event.

This monitoring will be performed on at least an annual basis thereafter, unless Luminant can demonstrate the need for an alternative monitoring frequency for repeated sampling and analysis for these constituents during the active life and the post-closure care period based on the availability of groundwater.

Within 90 days of obtaining the results from the initial assessment monitoring sampling event, a GWPS will be established for each of the Appendix IV assessment monitoring constituents that were detected in the groundwater monitoring system wells as follows:

- For constituents for which an MCL has been established, the highest of the MCL, UPL, and reporting limit for that constituent; or

- For constituents for which an MCL has not been established, the higher of the UPL, reporting limit, or levels that are equivalent to specified regional screening level (RSL) for that constituent (note: future revisions to the Rule may allow additional flexibility in establishing GWPS for states with EPA-approved CCR permit programs for Appendix IV constituents that do not have a MCL).

Each assessment monitoring constituent will be evaluated to ascertain if a statistically significant increase above the GWPS exists. Possible outcomes are as follows:

- All averages from assessment monitoring constituent concentrations at a well are not statistically greater than to their respective GWPS; or
- One or more averages from assessment monitoring constituent concentrations at a well are statistically greater than their respective GWPS.

6.1 Calculating LCLs

For each assessment monitoring constituent, the 95% lower confidence limit of the mean (LCL) is estimated. The set of data used to calculate LCLs are based on the constituent concentrations from the current year's sampling events and enough previous sampling events to reasonably estimate each LCL (the goal should be to have around eight to ten samples).

LCLs are calculated based on the defined data distribution. The data distribution is defined in accordance with EPA guidance (EPA, 2000; EPA, 2002; EPA, 2009; EPA, 2017; SWDIV, 1998). Distributions are defined using the methodology outlined in Section 6.1.1. The LCLs are calculated using the methodology described in Section 6.1.2.

The statistical software R (The R Foundation, 2017) or similar software is used to perform all statistical distribution tests and to calculate LCLs.

6.1.1 Defining a Distribution for LCLs

The type of LCL calculated is based on a data set's defined distribution. The same methodology for defining a distribution for background, described in Section 4.1.2 and outlined in Figure 2, is used to define the distribution for each assessment monitoring constituent data set as normal, gamma, lognormal, or nonparametric.

6.1.2 Calculating LCLs

The type of LCL computed (e.g., parametric or nonparametric) is based on the detection frequency and the defined data distribution for each data set, as described in Section 6.1.1. For a constituent with no detected concentration measurements, the LCL is set to the reporting limit (EPA, 2009). For a constituent with at least 50% detections, the LCL calculation adjusts for non-detected concentration(s) as described in Section 2.2, and the appropriate LCL calculation is used based on results from the distributional tests. If no parametric distribution (normal, lognormal, or gamma) can be defined for a data set or there are fewer than 50% detections, then a nonparametric, approximate 95% lower confidence limit of the median is estimated.

6.2 No Statistically Significant Increase Over GWPS

A statistically significant increase over the groundwater protection standard has not occurred at a CCR unit when the LCL for every assessment monitoring constituent at a well is less than or equal to the appropriate GWPS.

Assessment monitoring will continue on an annual basis. If for two consecutive assessment monitoring sampling events, the constituent concentrations for all Appendix III constituents are at or below background values and all Appendix IV constituents are shown to be statistically at or below their appropriate GWPS, then assessment monitoring will be terminated and detection monitoring as described in this plan will resume. If the constituent concentrations of any Appendix III constituents are shown to be statistically above background values, but all Appendix IV constituents have no statistically significant increase over their respective GWPS, then assessment monitoring will continue.

6.3 Statistically Significant Increase Over GWPS

A statistically significant increase over the groundwater protection standard has occurred at a CCR unit when the LCL for at least one assessment monitoring constituent at a well is greater than the appropriate GWPS. If a statistically significant increase over groundwater protection standards for any Appendix IV assessment monitoring constituent is confirmed, within 90 days of the initial assessment monitoring event, Luminant will either:

- Initiate an assessment of corrective measures for the CCR unit in accordance with CCR Rule Section 257.96; or
- Demonstrate that a source other than the CCR unit caused the contamination, or that the statistically

significant increase resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. If a successful demonstration is made, the owner or operator must continue assessment monitoring. If a successful demonstration has not been made at the end of the 90 day period, the owner or operator of the CCR unit must initiate an assessment of corrective measures for the CCR unit.

If one or more Appendix IV assessment monitoring constituent concentrations are statistically above the respective groundwater protection standards, and if a source other than the CCR unit cannot be demonstrated to have caused the contamination, a release from the CCR unit is likely and the nature and extent of the release will be further characterized as follows:

- Install additional monitoring wells necessary to define the contaminant plume(s);
- Collect data on the nature and estimated quantity of material released including specific information on the Appendix IV assessment monitoring constituents and the levels at which they are present in the material released;
- Install at least one additional monitoring well at the facility boundary in the direction of contaminant migration and sample this well for all Appendix III detection monitoring parameters and for those Appendix IV assessment monitoring constituents that have been detected as part of assessment monitoring. This monitoring must be performed on at least an annual basis thereafter.
- Sample all CCR unit wells for all Appendix III detection monitoring parameters and for those Appendix IV assessment monitoring constituents that have been detected as part of assessment monitoring. This monitoring must be performed on at least an annual basis thereafter.

7.0 REPORTING REQUIREMENTS

The results of the CCR groundwater monitoring program performed at each CCR unit will be reported yearly in an Annual Groundwater Monitoring and Corrective Action Report. A separate annual report for each CCR unit will document the status of the groundwater monitoring and corrective action program, summarize key actions completed, describe any problems encountered, discuss actions to resolve the problems, and project key activities for the upcoming year. At a minimum, the Annual Groundwater Monitoring and Corrective Action Report will contain the following information:

- A map, aerial image, or diagram showing the CCR unit and all background (or upgradient) and downgradient monitoring wells, to include the well identification numbers, that are part of the groundwater monitoring program for the CCR unit;

- Identification of any monitoring wells that were installed or decommissioned during the preceding year, along with a narrative description of why those actions were taken;

- In addition to all the monitoring data obtained under CCR Rule Sections 257.90 through 257.98, a summary including the number of groundwater samples that were collected for analysis for each background and downgradient well, the dates the samples were collected, and whether the sample was required by the detection monitoring or assessment monitoring programs, as well as the basis for the background values and the statistical methods employed to establish the background values;

- A narrative discussion of any transition between monitoring programs (e.g., the date and circumstances for transitioning from detection monitoring to assessment monitoring in addition to identifying the constituent(s) detected at a statistically significant increase over background levels); and

- Other information required to be included in the annual report as specified in CCR Rule Sections 257.90 through 257.98.

The Groundwater Monitoring and Corrective Action Report for the 2017 monitoring program must be placed in each facility operating record no later than January 31, 2018. Subsequent reports must be placed in the facility operating records no later than January 31 of the year following completion of the groundwater monitoring program from the preceding calendar year. The reports must also be posted to the owner or operator's CCR Rule Compliance Data and Information internet site within 30 days of placing the reports in the operating record.

8.0 REFERENCES

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FIGURES

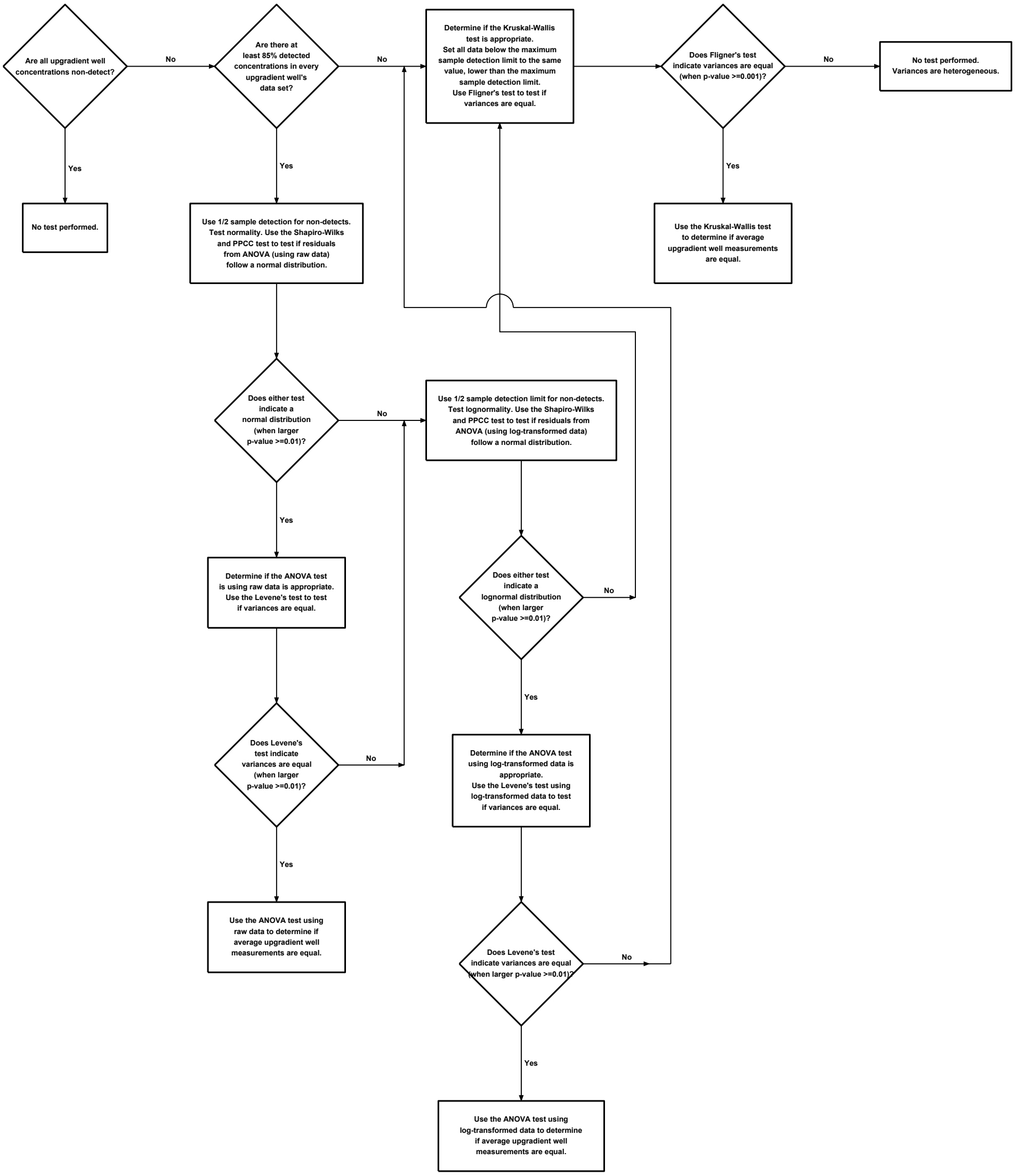

Figure 1

PROCESS FOR SELECTING ANOVA OR KRUSKAL-WALLIS TEST TO COMPARE UPGRADIENT WELL AVERAGES

PROJECT: 51□4E	BY: AJD	REVISIONS
DATE: JAN 2019	CHECKED: PJB	

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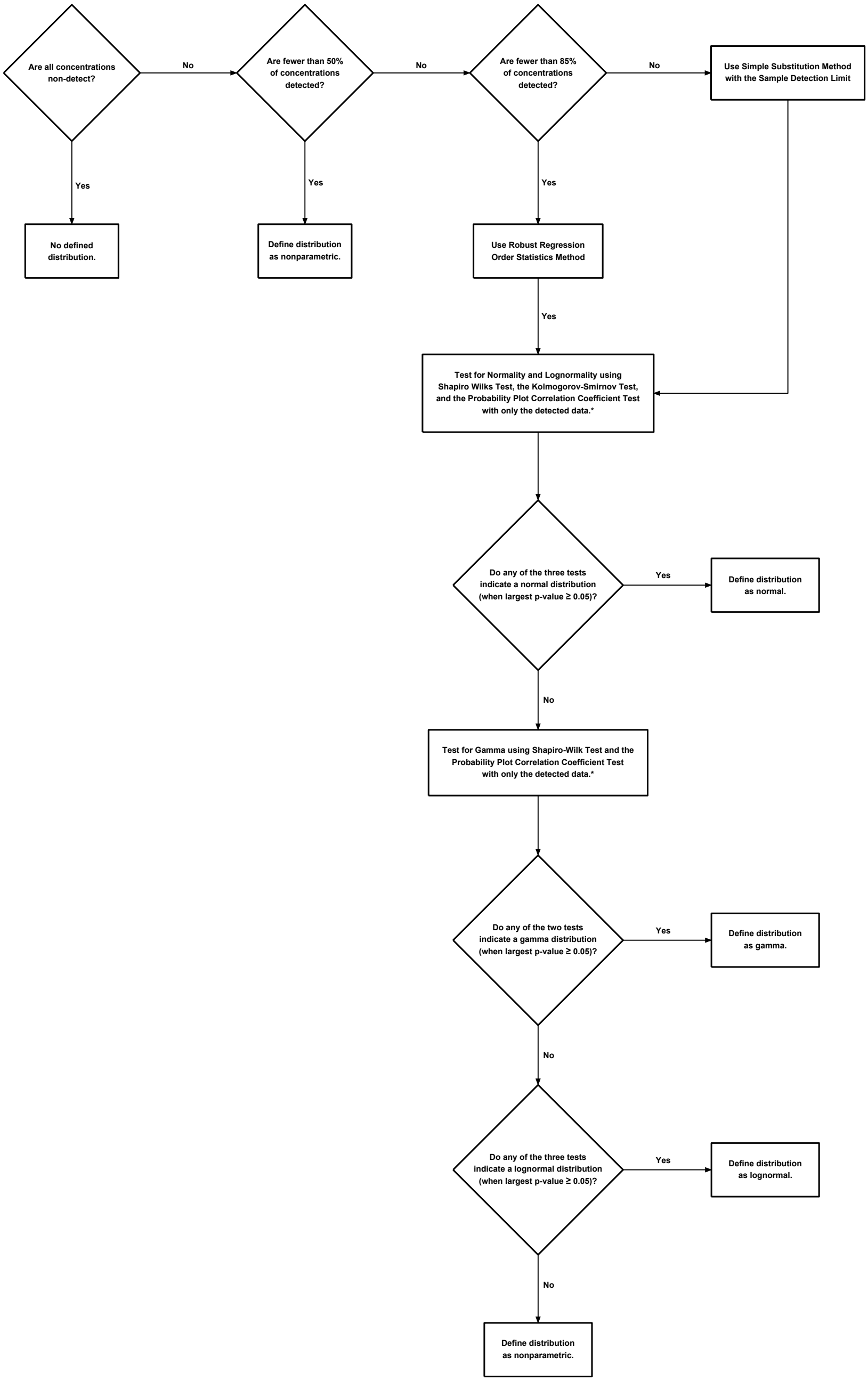

Note:
□- Distri□utional tests can not □e performed for the following cases:
1. For a data group with fewer than five detected samples, the Kolmogorov-Smirnov Test and the Pro□a□ility Plot Correlation Coefficient Test can not □e performed using only the detected concentrations.
2. For a data group with fewer than four detected samples, the Shapiro-Wilks Test can not □e performed using only the detected concentrations.

Figure 2

PROCESS FOR DEFINING A DISTRIBUTION FOR A DATA SET

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DATE: JAN 2019	CHECKED: PJB	

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COAL COMBUSTION RESIDUAL RULE BACKGROUND GROUNDWATER MONITORING AND STATISTICAL ANALYSIS SUMMARY REPORT

A1 AREA LANDFILL
MARTIN LAKE STEAM ELECTRIC STATION
PANOLA COUNTY, TEXAS

February 26, 2024

Prepared For:

Luminant Generation Company LLC

Prepared By:

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2	A1 Area Landfill CCR Groundwater Monitoring Network

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A	Groundwater Potentiometric Surface Maps
B	Laboratory Analytical Reports
C	Statistical Approach to Establishing Baseline Concentrations

1.0 INTRODUCTION

Luminant Power (Luminant) operates the Martin Lake Steam Electric Station (MLSES) located approximately 5 miles southeast of Tatum, Rusk County, Texas (Figure 1). The MLSES consists of three coal-fired power generation units. Coal Combustion Residuals (CCRs) including fly ash, bottom ash and gypsum are generated as part of the MLSES unit operations. Currently, CCRs generated at the MLSES are transported off-site for beneficial reuse by third-parties or are managed by Luminant in surface impoundments located on the MLSES property or at the A1 Area Landfill located approximately 2.5 miles east of the MLSES. This report discusses the A1 Area Landfill (the Site).

The federal CCR Rule (Title 40 Code of Federal Regulations (CFR) Section 257 Subpart D - *Standards for the Receipt of Coal Combustion Residuals in Landfills and Surface Impoundments*) has been promulgated by the United States Environmental Protection Agency (USEPA) to regulate the management and disposal of CCRs as solid waste under Resource Conservation and Recovery Act (RCRA) Subtitle D. The final CCR Rule was published in the Federal Register on April 17, 2015. The effective date of the CCR Rule is October 19, 2015. TCEQ adopted portions of the Federal CCR Rule at Title 30 Texas Administrative Code (TAC) Chapter 352 (Texas CCR Rule). The USEPA published its final approval of the Texas CCR Rule on June 28, 2021 and the Texas CCR Rule became effective on July 28, 2021. It adopts and incorporates by reference the Federal CCR Program requirements for groundwater monitoring at 30 TAC Sections 352.901 through 352.951.

The CCR Rule establishes national minimum criteria for existing and new CCR landfills, existing and new CCR surface impoundments, and lateral expansions to landfills/impoundments. 40 C.F.R § 257.93(d) of the CCR Rule requires that the owner or operator of the CCR unit must establish background groundwater quality in a hydraulically upgradient or background well(s) for each of the constituents required in the particular groundwater monitoring program that applies to the CCR unit as determined under 40 C.F.R § 257.94(a) (*Detection Monitoring Program)* and 40 C.F.R § 257.95(a) (*Assessment Monitoring Program)*. 40 C.F.R § 257.94(b) of the CCR Rule requires that a minimum of eight independent groundwater samples from each background and downgradient well associated with a CCR unit be collected and analyzed for the constituents listed in Appendix III and IV to Part 257 no later than October 17, 2017. This report presents a summary of the sampling and analytical activities performed to establish background

groundwater quality at the Site.

1.1 Description of A1 Area Landfill

The A1 Area Landfill is located at the Beckville Lignite Mine, approximately 2.5 miles southeast of the MLSES power units, on the opposite side of Martin Lake from the MLSES (Figure 1). CCRs generated at the MLSES, including fly ash and bottom ash, are transported and managed/disposed of by Luminant in the A1 Area Landfill. The A1 Area Landfill was constructed within a mined-out area of the Beckville Lignite Mine and is surrounded and underlain by spoil material that was previously excavated during lignite mining operations. The A1 Area Landfill is considered an existing CCR unit under the CCR Rule.

1.2 A1 Area Landfill Area Groundwater Monitoring System

The A1 Area Landfill CCR groundwater monitoring system wells are all completed in the mine spoil zone outside the constructed berms that surround the A1 Area Landfill waste boundary. The CCR groundwater monitoring system consists of the following twelve monitoring wells:

Upgradient Wells	Downgradient Wells
BMW-11A-R	BMW-18
BMW-33	BMW-19
	BMW-20
	BMW-21
	BMW-22
	BMW-23
	BMW-24
	BMW-26
	BMW-27
	BMW-28

The CCR monitoring well locations are shown on Figure 2 and groundwater potentiometric surface maps of the A1 Area Landfill from the background monitoring period are presented in Appendix A. The CCR groundwater monitoring system was certified by a professional engineer in accordance with 40 C.F.R § 257.91 of the CCR Rule (PBW, 2017).

2.0 BACKGROUND GROUNDWATER MONITORING PROGRAM

This section describes groundwater sampling and analysis procedures used in the background monitoring program.

2.1 Groundwater Sampling Procedures

Background groundwater sampling was performed from October 2015 to December 2016 in accordance with the Site Groundwater Monitoring Plan-Revision 2 (WSP Golder, 2022a). Water levels were measured in each well to the nearest 0.01-foot prior to purging or sampling the wells. The wells were purged using low-flow methods until field water quality parameters stabilized, after which a groundwater sample was collected in a laboratory-supplied container. After the samples were collected, the sample containers were placed in a cooler or similar container, preserved with ice, and delivered to the laboratory for analysis.

2.2 Analytes and Analytical Procedures

Groundwater samples collected during the background monitoring period were analyzed for the constituents listed in Appendix III and IV to Part 257, including:

Appendix III Constituents	Appendix IV Constituents
Boron	Arsenic
Calcium	Barium
Chloride	Beryllium
Fluoride	Cadmium
pH	Chromium
Sulfate	Cobalt
Total Dissolved Solids (TDS)	Fluoride
	Lead
	Lithium
	Mercury
	Molybdenum
	Selenium
	Thallium
	Radium 226 and 228 (combined)

The laboratory methods used to analyze the Appendix III and IV constituents were as follows:

Appendix III Constituents

- Boron and calcium by USEPA Method SW6020;
- Chloride, fluoride, and sulfate by USEPA Method E300;
- pH by Standard Method M4500-H + B (field measurement); and
- TDS by Standard Method M2540.

Appendix IV Constituents

- Antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, lead, lithium, molybdenum, selenium, and thallium by USEPA Method SW6020;
- Fluoride USEPA Method E300;
- Mercury by USEPA Method SW7470; and
- Radium 226 and 228 by USEPA Methods 904.0/SW9320 Modified and 903.1 Modified.

All metals analyses were reported as “total recoverable metals” in accordance with 40 C.F.R § 257.93(1) of the CCR Rule. Samples were not filtered prior to analysis.

2.3 Background Groundwater Monitoring Sampling Results

Eight background groundwater monitoring events were performed using the monitoring well system from October 2015 to December 2016. The laboratory analytical reports for the background samples are presented in Appendix B and the background sample data are summarized in Appendix C, Table C-1 (Appendix III) and Table C-2 (Appendix IV).

2.4 Establishing Background Assessment Levels

The following statistical evaluation approach was selected to develop background groundwater quality assessment levels for the Site:

- Use of interwell data evaluations, which compare new sample data to data from upgradient or background monitoring wells.

- Use of upper prediction limits (UPLs) to develop site-specific background concentrations for all Appendix III and Appendix IV constituents. This approach is a common statistical method used to evaluate groundwater compliance for Subtitle D landfill facilities and is one of the approved options for groundwater quality data statistical evaluations under the CCR Rule.

Documentation on the statistical procedures used to establish background UPLs is presented in Appendix C.

3.0 DETECTION AND ASSESSMENT MONITORING DATA EVALUATION PROCEDURES

Statistical analysis of groundwater monitoring data is required as part of detection monitoring and assessment monitoring under 40 C.F.R § 257.93 of the CCR Rule, and as adopted by the state of Texas at 30 T.A.C. § 352.931. The CCR Rule provides several options for statistically evaluating groundwater data. The owner or operator of the CCR unit must select one of the following statistical methods specified in paragraphs (f)(1) through (5) of 40 C.F.R § 257.93 to evaluate groundwater monitoring data for each specified constituent:

(1) A parametric analysis of variance followed by multiple comparison procedures to identify statistically significant evidence of contamination. The method must include estimation and testing of the contrasts between each compliance well's mean and the background mean levels for each constituent.

(2) An analysis of variance based on ranks followed by multiple comparison procedures to identify statistically significant evidence of contamination. The method must include estimation and testing of the contrasts between each compliance well's median and the background median levels for each constituent.

(3) A tolerance or prediction interval procedure, in which an interval for each constituent is established from the distribution of the background data and the level of each constituent in each compliance well is compared to the upper tolerance or prediction limit.

(4) A control chart approach that gives control limits for each constituent.

(5) Another statistical test method that meets the performance standards of paragraph (g) of this section.

The following statistical evaluation approaches were selected to demonstrate groundwater compliance for the A1 Area Landfill under the CCR Rule:

- Use of interwell data evaluations, which compare new sample data to data from upgradient or background monitoring wells.
- Use of UPLs to develop site-specific background concentrations for all Appendix III and Appendix IV constituents. This approach is a common statistical method used to evaluate groundwater compliance for Subtitle D landfill facilities and is one of the approved options for groundwater quality data statistical evaluations under the CCR Rule.
- After every detection monitoring event, Appendix III constituent concentrations from each well are compared to background UPLs to ascertain if a statistically significant increase above background exists. Background UPLs are based on a 1-of-2 resampling

approach, meaning that if one or more constituent concentrations in a compliance well are above their respective background concentration, a resample can be collected to validate or invalidate the background concentration exceedance.

- If in assessment monitoring, the 95% lower confidence limit of the mean (LCL) is calculated after each assessment monitoring event for each Appendix IV constituent. The data set used to calculate LCLs is based on current and historical constituent concentrations. A statistically significant increase over the Groundwater Protection Standard (GWPS) has occurred at a CCR unit when the LCL for at least one assessment monitoring constituent at a well is greater than the appropriate GWPS. Development of the GWPSs is discussed in Section 3.2 and statistical procedures used to develop LCLs are discussed in Appendix C.

The selected statistical evaluation procedures conform with the CCR Rule requirements, as well as the Statistical Analysis Plan-Revision 1 for the Site (WSP Golder, 2022b), USEPA's *Unified Guidance: Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities* (USEPA, 2009), and the American Society for Testing and Materials (ASTM) standard D6312-17, *Developing Appropriate Statistical Approaches for Groundwater Detection Monitoring Programs at waste Disposal Facilities* (ASTM, 2017).

3.1 Detection Monitoring Data Evaluation

Background UPLs are based on a 1-of-2 resampling approach, meaning that if zero or one concentration measurements from a series of two independent samples collected from a well do not exceed the appropriate UPL, then a statistically significant increase over background has not occurred at the CCR unit. This conclusion will be reached if the data indicate either of the following:

- All detection monitoring constituent concentrations in a compliance well are less than or equal to their respective background UPL; or

- At least one detection monitoring constituent concentration in a well is above the respective background UPL. If this occurs, the well or wells with constituent concentration(s) above the background UPL(s) may be resampled and analyzed for the detection monitoring constituent(s) with exceedances. If the resample indicates that the target detection monitoring constituent concentration(s) in the well or wells is less than or equal to their respective background UPL(s), then it can be concluded that a statistically significant increase over background for all detection monitoring constituents has not occurred since concentrations in one sample of the two independent samples do not exceed the appropriate background UPL(s).

If the groundwater monitoring data indicate that a statistically significant increase over background has not occurred at the CCR wells, then detection monitoring at all CCR wells will

continue on a semi-annual basis.

If one or more detection monitoring constituent concentration in any well is above the respective background UPL in both the original detection monitoring sample and the resample, then a statistically significant increase over background for the target detection monitoring constituents can be concluded. In accordance with 40 C.F.R. § 257.94(e), if a statistically significant increase is indicated, within 90 days the owner/operator shall:

- Establish an assessment monitoring program, or
- Demonstrate that a source other than the CCR unit caused the statistically significant increase over the background UPL for a constituent, or that the statistically significant increase resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. Per 30 TAC § 352.941, in making an alternative source demonstration, the owner or operator must:
    - Notify the TCEQ executive director, and any local pollution agency with jurisdiction that has requested to be notified, in writing within 14 days that the owner or operator intends to make an alternative source demonstration; and
    - Within 90 days of making a determination of a statistically significant increase over the background value for any Appendix III constituent, submit a report prepared and certified in accordance with 30 TAC § 352.4 (relating to Engineering and Geoscientific Information) to the TCEQ executive director and any local pollution agency with jurisdiction that has requested to be notified, demonstrating that a source other than a CCR unit caused the statistically significant increase or that the statistically significant increase resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality.

The Appendix III detection monitoring prediction limits are summarized in Table 1. Documentation on the statistical procedures used to establish background groundwater quality prediction limits is presented in Appendix C.

3.2 Assessment Monitoring Data Evaluation

Assessment monitoring will be performed at a CCR unit's groundwater monitoring system after a statistically significant increase over background has been confirmed for one or more of the detection monitoring constituents and the statistically significant increase cannot be attributed to a source other than the CCR unit. Within 90 days of obtaining the results from the initial assessment monitoring sampling event, GWPSs will be established for all Appendix IV assessment monitoring constituents as follows:

- For constituents for which an MCL has been established, the GWPS is the highest of the MCL, UPL, or laboratory reporting limit for each constituent; or

- For constituents for which an MCL has not been established, the GWPS is the higher of the UPL, laboratory reporting limit, and alternative GWPS (as applicable for cobalt, lead, lithium, and molybdenum).

The GWPS for each Appendix IV constituent is presented in Table 2.

The 95% LCL for each Appendix IV constituent concentration for each well is compared to the GWPS established for the constituent to ascertain if a statistically significant increase above the GWPS does or does not exist. A statistically significant increase is indicated if the LCL exceeds the GWPS. Additional information on the development of Appendix IV constituent LCLs is provided in Appendix C.

In accordance with 40 C.F.R. § 257.95(g)(3), if a statistically significant increase over GWPSs for any Appendix IV assessment monitoring constituent is confirmed, within 90 days of the initial assessment monitoring event, the owner/operator will either:

- Initiate an assessment of corrective measures for the CCR unit in accordance with 40 C.F.R. § 257.96; or

- Demonstrate that a source other than the CCR unit caused the statistically significant level over the background UPL for a constituent, or that the statistically significant increase resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. Per 30 TAC § 352.951, in making an alternative source demonstration, the owner or operator must:

    - Notify the TCEQ executive director, and any local pollution agency with jurisdiction that has requested to be notified, in writing within 14 days that the owner or operator intends to make an alternative source demonstration; and

    - Within 90 days of making a determination of a statistically significant increase over the GWPS of any Appendix IV constituent, submit a report prepared and certified in accordance with 30 TAC § 352.4 (relating to Engineering and Geoscientific Information) to the TCEQ executive director, and any local pollution agency with jurisdiction that has requested to be notified, demonstrating that a source other than a CCR unit caused the exceedance or that the exceedance resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality.

If one or more Appendix IV assessment monitoring constituents are detected at statistically significant levels above their respective GWPS in any sampling event, and if a source other than

the CCR unit cannot be demonstrated to have caused the exceedance, the nature and extent of the release should be further characterized as follows in accordance with 40 C.F.R § 257.95(g)(1):

- Install additional monitoring wells necessary to define the contaminant plume(s);
- Collect data on the nature and estimated quantity of material released including specific information on the Appendix IV assessment monitoring constituents and the levels at which they are present in the material released;
- Install at least one additional monitoring well at the facility boundary in the direction of contaminant migration and sample this well for all Appendix III detection monitoring parameters and for those Appendix IV assessment monitoring constituents that have been detected as part of assessment monitoring. This monitoring must be performed on at least a semi-annual basis thereafter; and
- Sample all wells in accordance with 40 C.F.R § 257.95(d)(1) to characterize the nature and extent of the release.

4.0 REFERENCES

ASTM, 2017. Standard Guide for Developing Appropriate Statistical Approaches for Groundwater Detection Monitoring Programs at Waste Disposal Facilities - D6312-17.

PBW, 2017. CCR Groundwater Monitoring System Certification – Martin Lake Steam Electric Station, A1 Area Landfill, Panola County, Texas, August.

USEPA, 2009. Unified Guidance Document: Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, EPA 530/R-09-007, March.

WSP Golder, 2022a. Groundwater Monitoring Plan – Revision 2, Martin Lake Steam Electric Station – A1 Area Landfill, Panola County, Texas.

WSP Golder, 2022b. Statistical Analysis Plan – Revision 1, Martin Lake Steam Electric Station – A1 Area Landfill, Panola County, Texas.

SIGNATURE PAGE

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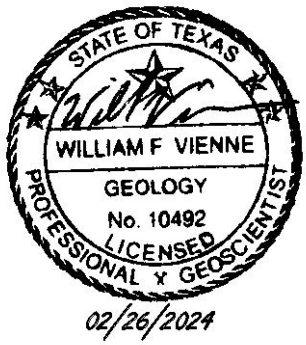


02/26/2024

TABLES

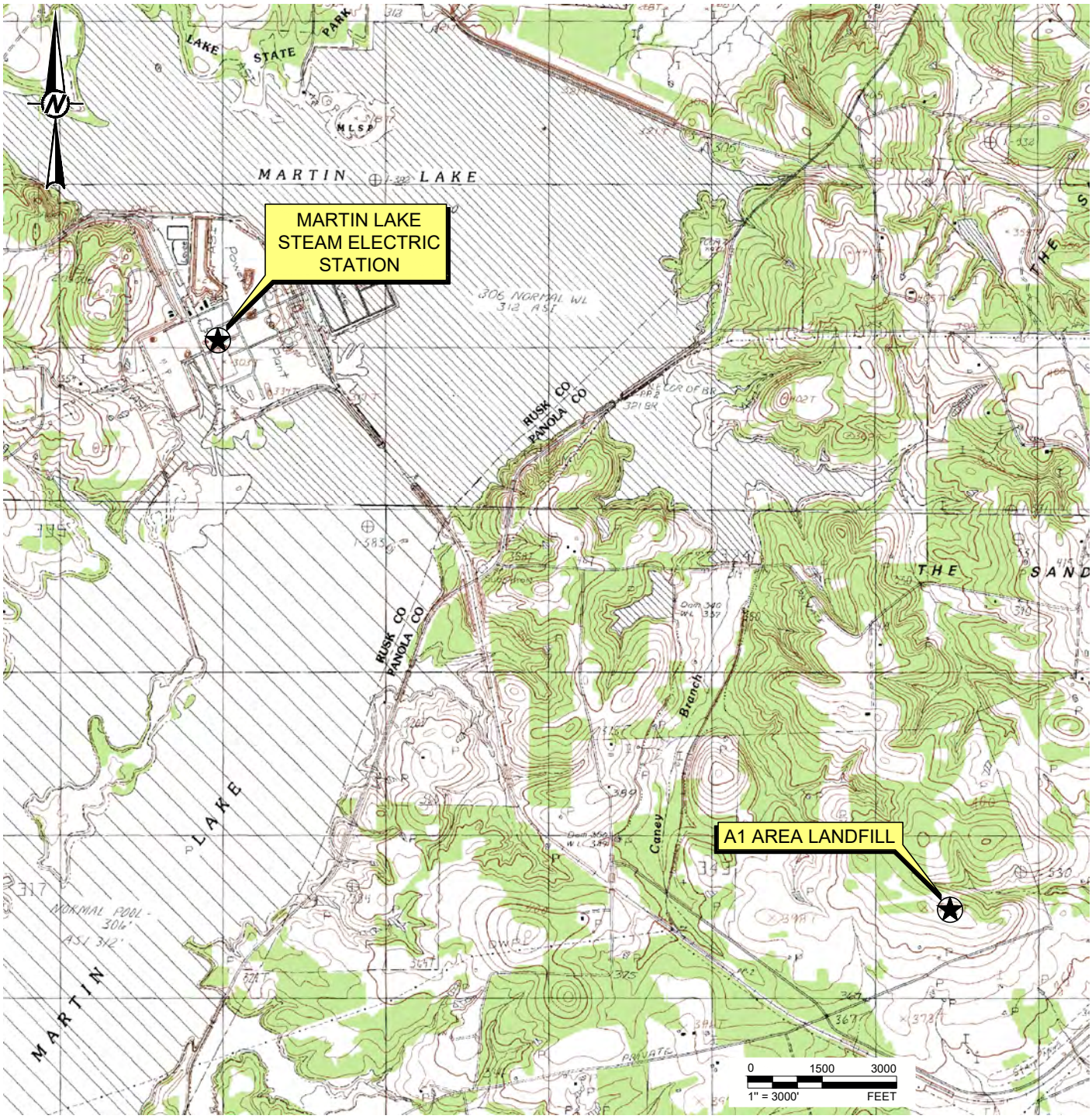
Table 1
Statistical Background Values
MLSES A1 Area Landfill

Parameter	Statistical Background Value
Boron (mg/L)	0.55
Calcium (mg/L)	280
Chloride (mg/L)	35
Fluoride (mg/L)	0.40
field pH (s.u.)	5.9 7.4
Sulfate (mg/L)	1,100
Total Dissolved Solids (mg/L)	2,800

Table 2
Groundwater Protection Standards
MLSES A1 Area Landfill

Parameter	Groundwater Protection Standard
Antimony (mg/L)	0.0060
Arsenic (mg/L)	0.016
Barium (mg/L)	2.0
Beryllium (mg/L)	0.0040
Cadmium (mg/L)	0.0050
Chromium (mg/L)	0.10
Cobalt (mg/L)	0.012
Fluoride (mg/L)	4.0
Lead (mg/L)	0.015
Lithium (mg/L)	0.10
Mercury (mg/L)	0.0020
Molybdenum (mg/L)	0.10
Selenium (mg/L)	0.050
Thallium (mg/L)	0.0020
Radium 226+228 (pCi/L)	11

FIGURES



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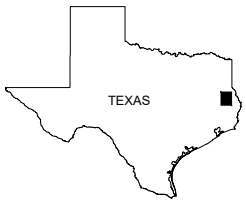


QUADRANGLE LOCATION

LUMINANT

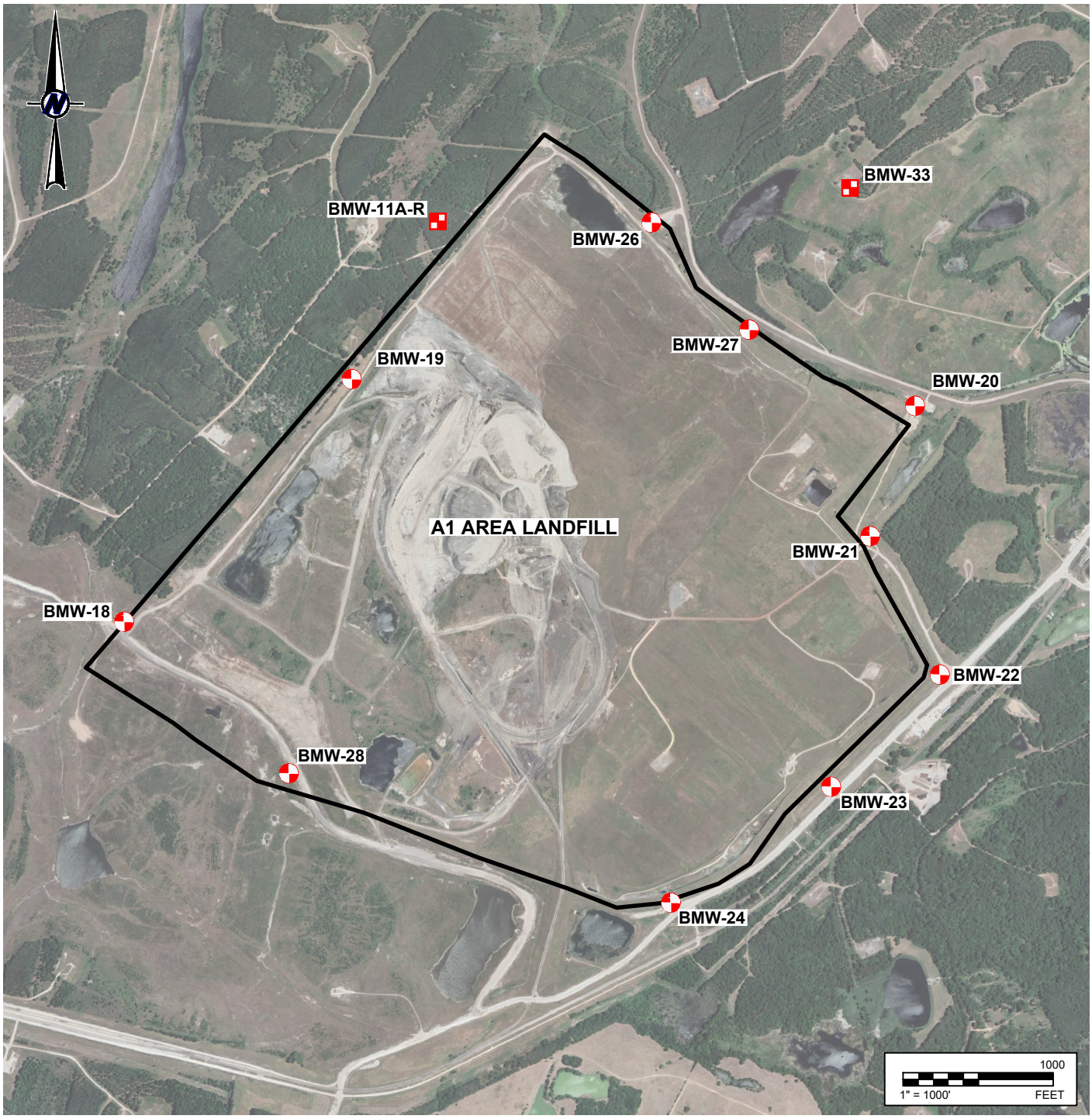
MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

Figure 1

SITE LOCATION MAP

PROJECT: 23643.01	BY: SLB	DATE: 12/14/2023	CHECKED: WV

Bullock, Bennett & Associates, LLC
Engineering and Geoscience
Texas Registrations: Engineering F-8542, Geoscience 50127



LEGEND

- DOWNGRADIENT CCR MONITORING WELL
- UPGRADIENT CCR MONITORING WELL
- DEED RECORDED A1 AREA LANDFILL BOUNDARY

REFERENCE(S)

BASE MAP TAKEN FROM GOOGLE EARTH, IMAGERY DATE JANUARY 2021

LUMINANT

MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

Figure 2

A1 AREA LANDFILL
CCR GROUNDWATER MONITORING NETWORK

PROJECT: 23643.03	BY: SLB	DATE: 12/19/2023	CHECKED: WV

Bullock, Bennett & Associates, LLC
Engineering and Geoscience
Texas Registrations: Engineering F-8542, Geoscience 50127

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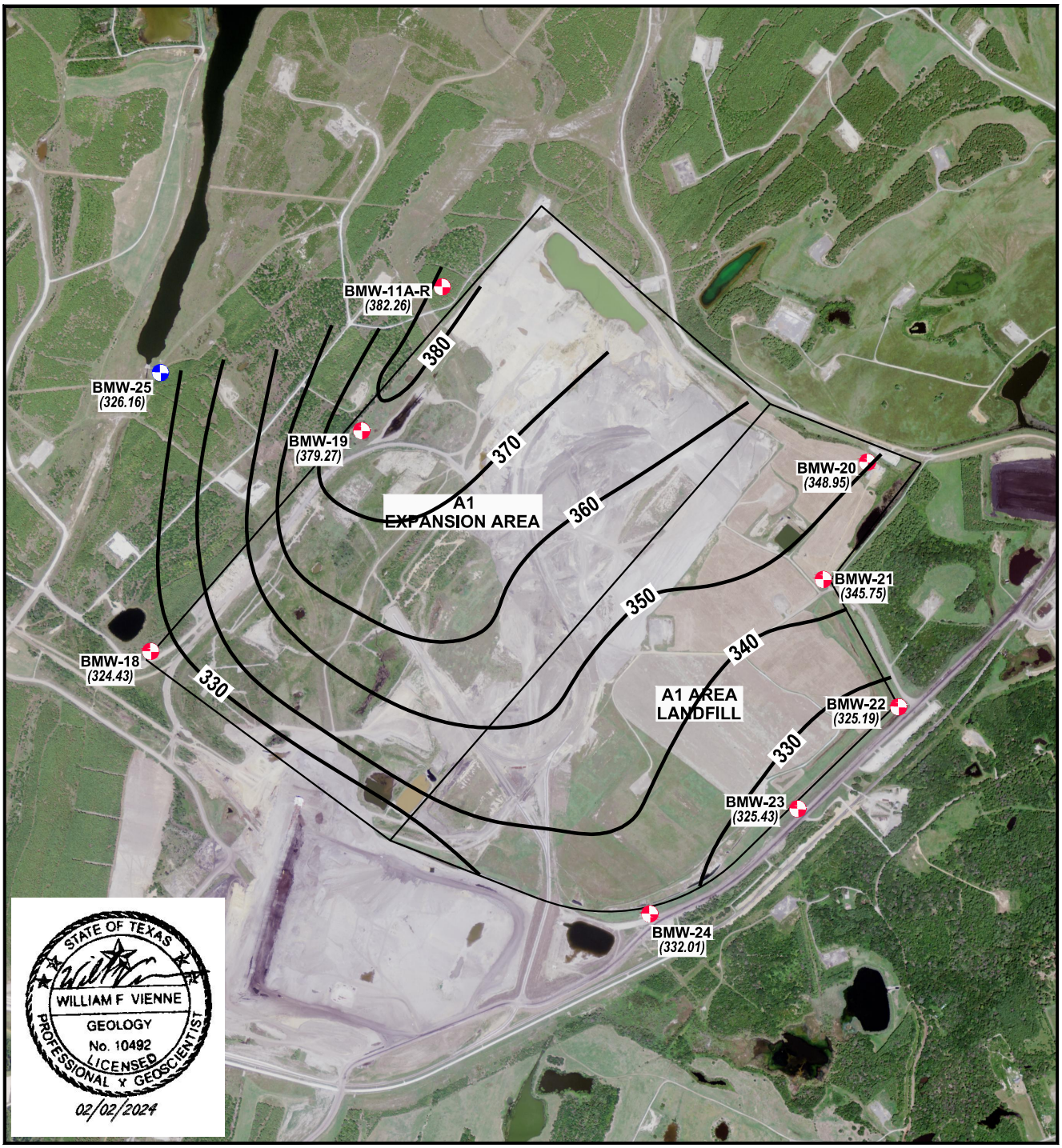
APPENDIX A

Groundwater Potentiometric Surface Maps



EXPLANATION

- CCR Monitoring Well Location
- Non-CCR Monitoring Well Used to Further Evaluate Groundwater Flow Direction
- (358.02) Groundwater Potentiometric Surface (ft. MSL)
- — 360 — Groundwater Potentiometric Surface Contour (C.I. = 10 ft.)

N

Scale in Feet

0 900 1800

SOURCE:
Imagery from www.tnris.gov, Rusk County, aerial photographs, 2012.

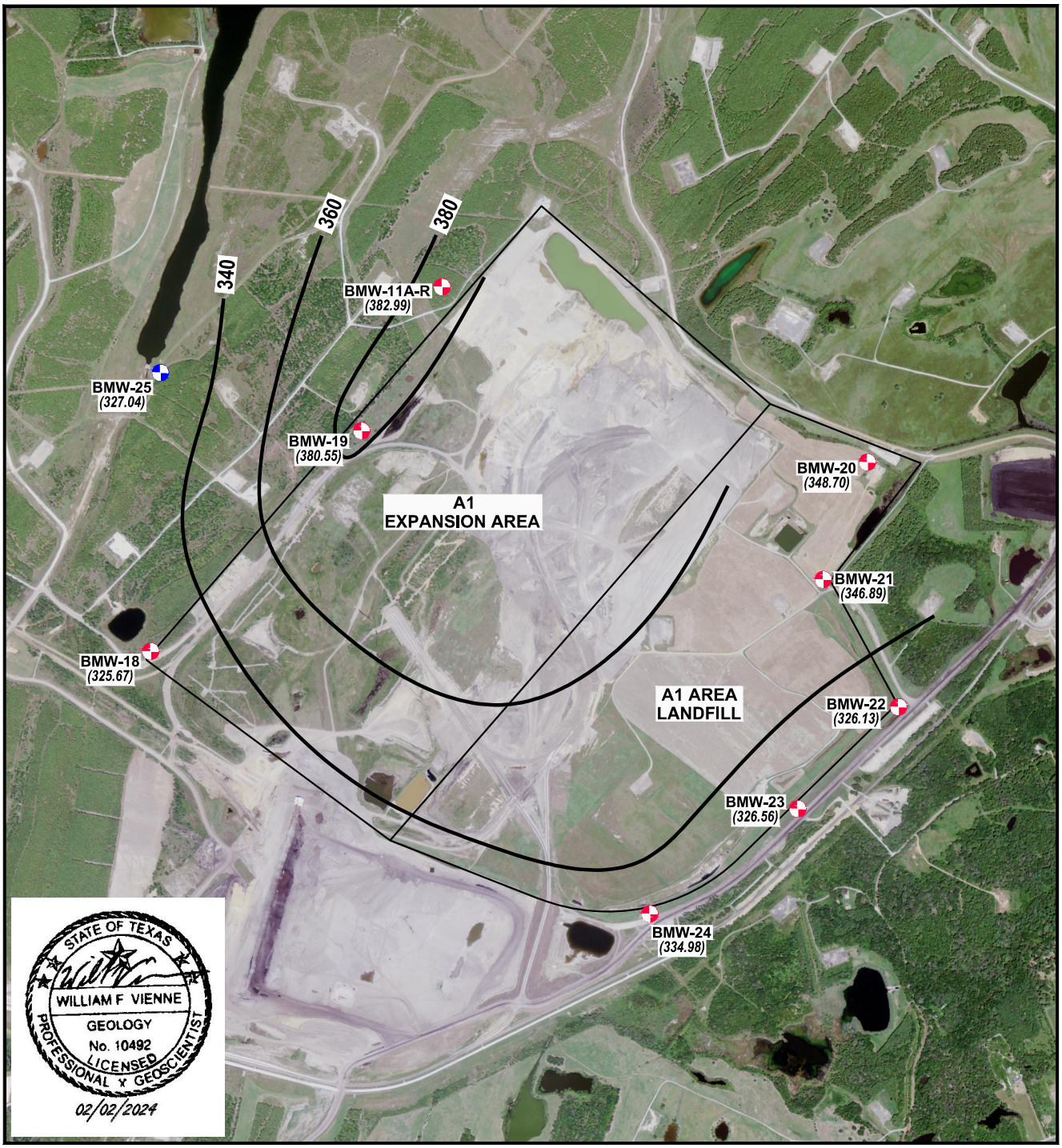
MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

Figure 1

A1 AREA LANDFILL GROUNDWATER POTENTIOMETRIC SURFACE MAP OCTOBER 30, 2015

PROJECT: 5164B	BY: AJD	REVISIONS
DATE: SEPT., 2017	CHECKED: PJB	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS



EXPLANATION

- CCR Monitoring Well Location
- Non-CCR Monitoring Well Used to Further Evaluate Groundwater Flow Direction
- (358.02) Groundwater Potentiometric Surface (ft. MSL)
- — 360 — Groundwater Potentiometric Surface Contour (C.I. = 20 ft.)

N

Scale in Feet

0 900 1800

SOURCE:
Imagery from www.tnris.gov, Rusk County, aerial photographs, 2012.

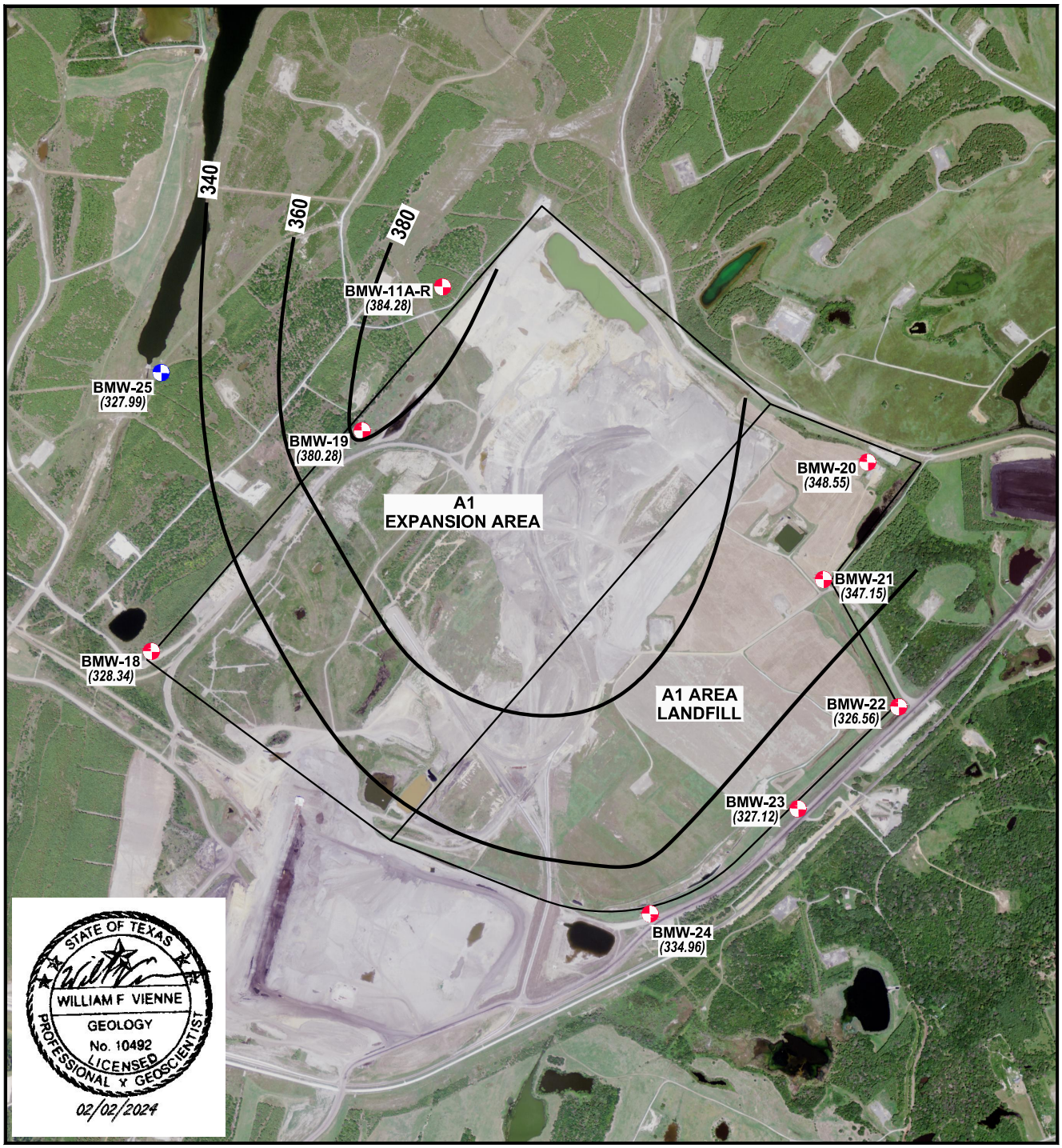
MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

Figure 2

A1 AREA LANDFILL GROUNDWATER POTENTIOMETRIC SURFACE MAP DEC. 30, 2015

PROJECT: 5164B	BY: AJD	REVISIONS
DATE: SEPT., 2017	CHECKED: PJB	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS



EXPLANATION

- CCR Monitoring Well Location
- Non-CCR Monitoring Well Used to Further Evaluate Groundwater Flow Direction
- (358.02) Groundwater Potentiometric Surface (ft. MSL)
- — 360 — Groundwater Potentiometric Surface Contour (C.I. = 20 ft.)

N

Scale in Feet

0 900 1800

SOURCE:
Imagery from www.tnris.gov, Rusk County, aerial photographs, 2012.

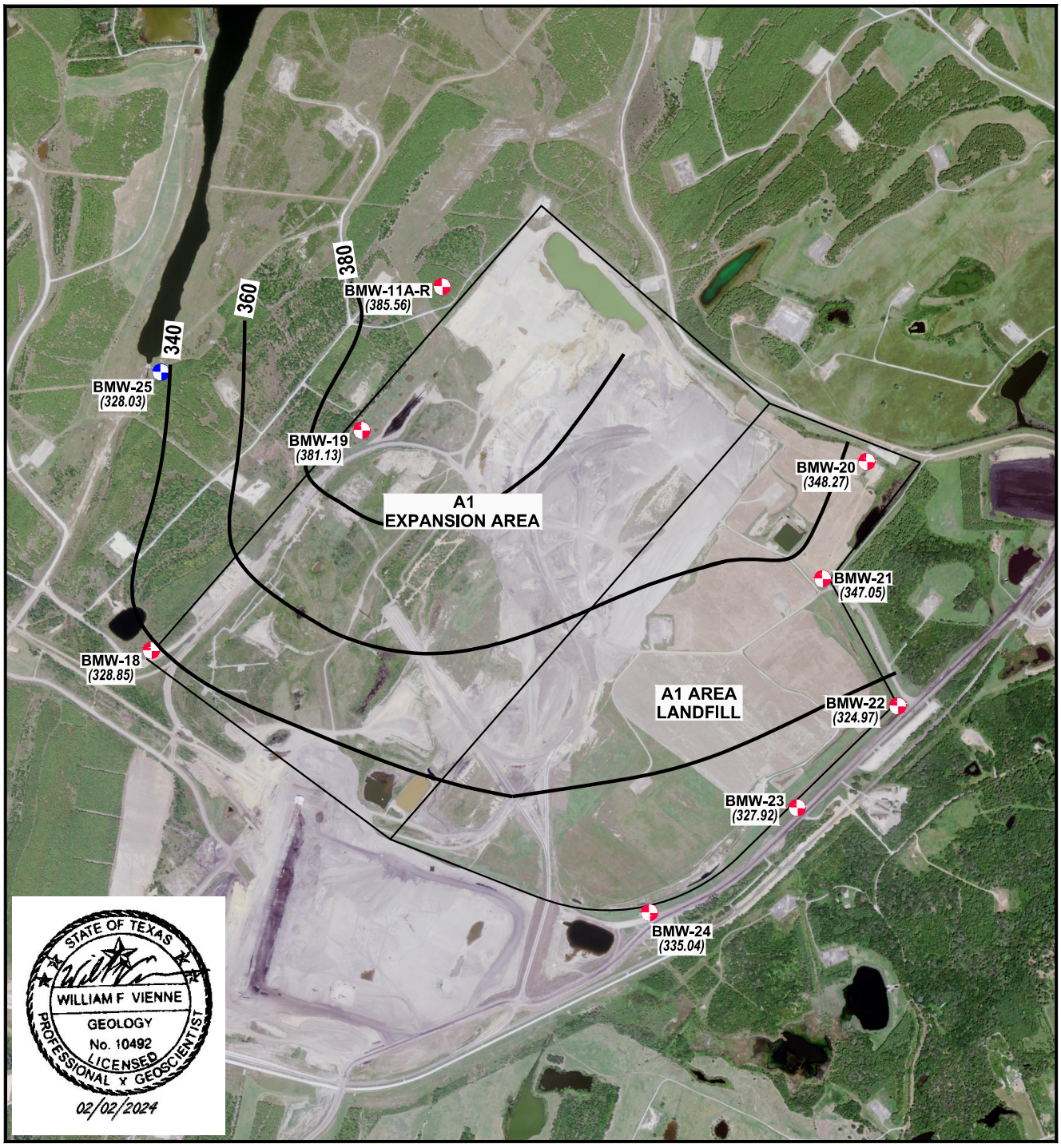
MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

Figure 3

A1 AREA LANDFILL GROUNDWATER POTENTIOMETRIC SURFACE MAP FEB. 24, 2016

PROJECT: 5164B	BY: AJD	REVISIONS
DATE: SEPT., 2017	CHECKED: PJB	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS



EXPLANATION

- CCR Monitoring Well Location
- Non-CCR Monitoring Well Used to Further Evaluate Groundwater Flow Direction
- (358.02) Groundwater Potentiometric Surface (ft. MSL)
- — 360 — Groundwater Potentiometric Surface Contour (C.I. = 20 ft.)

N

Scale in Feet

0 900 1800

SOURCE:
Imagery from www.tnris.gov, Rusk County, aerial photographs, 2012.

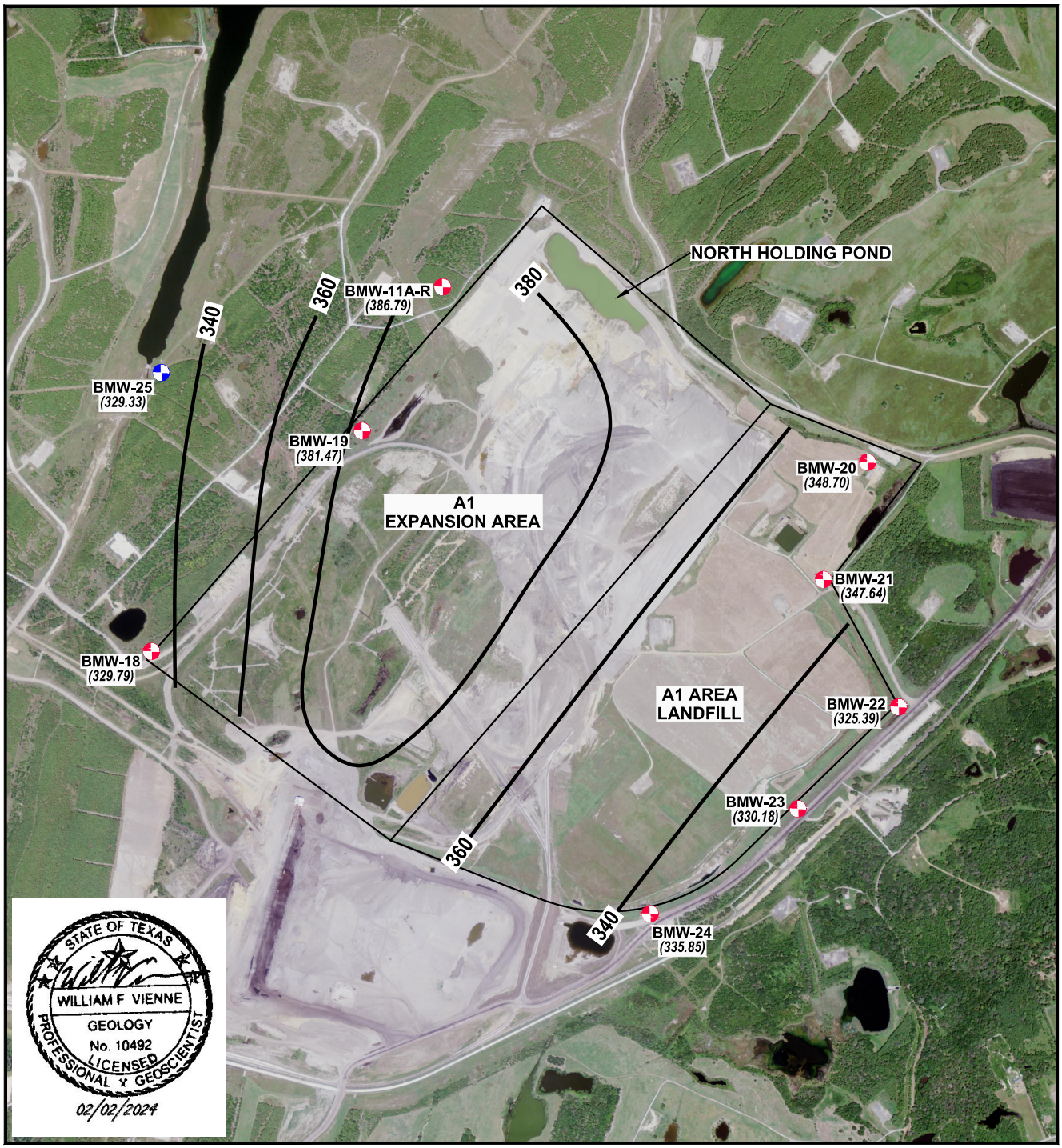
MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

Figure 4

A1 AREA LANDFILL GROUNDWATER POTENTIOMETRIC SURFACE MAP APRIL 7, 2016

PROJECT: 5164B	BY: AJD	REVISIONS
DATE: SEPT., 2017	CHECKED: PJB	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS



EXPLANATION

- CCR Monitoring Well Location
- Non-CCR Monitoring Well Used to Further Evaluate Groundwater Flow Direction
- (358.02) Groundwater Potentiometric Surface (ft. MSL)
- — 360 — Groundwater Potentiometric Surface Contour (C.I. = 20 ft.)

N

Scale in Feet

0 900 1800

SOURCE:
Imagery from www.tnris.gov, Rusk County, aerial photographs, 2012.

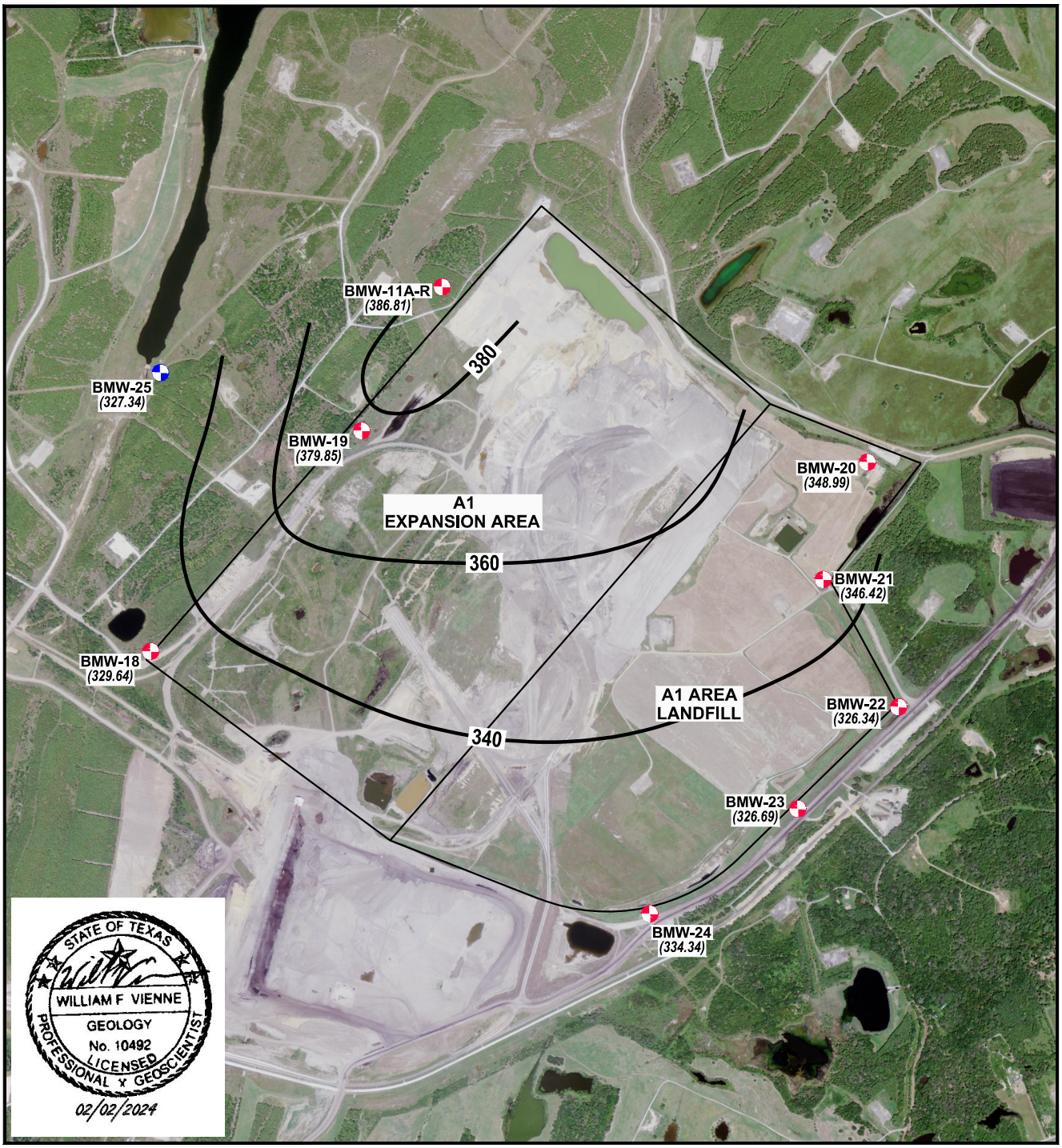
MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

Figure 5

A1 AREA LANDFILL GROUNDWATER POTENTIOMETRIC SURFACE MAP JUNE 6, 2016

PROJECT: 5164B	BY: AJD	REVISIONS
DATE: SEPT., 2017	CHECKED: PJB	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS



EXPLANATION

- CCR Monitoring Well Location
- Non-CCR Monitoring Well Used to Further Evaluate Groundwater Flow Direction
- (358.02) Groundwater Potentiometric Surface (ft. MSL)
- — 360 — Groundwater Potentiometric Surface Contour (C.I. = 20 ft.)

N

Scale in Feet

0 900 1800

SOURCE:
Imagery from www.tnris.gov, Rusk County, aerial photographs, 2012.

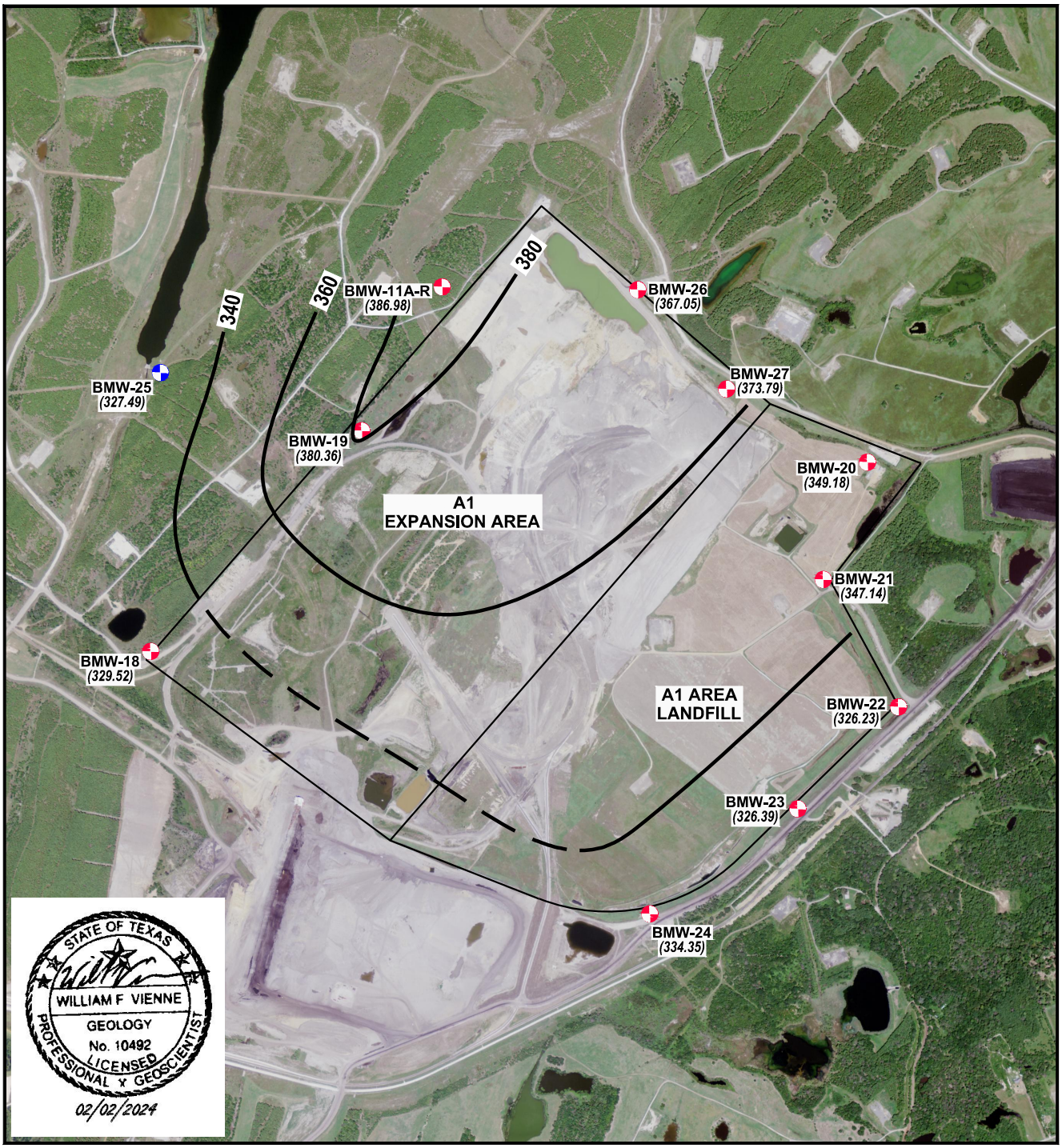
MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

Figure 6

A1 AREA LANDFILL GROUNDWATER POTENTIOMETRIC SURFACE MAP AUGUST 11, 2016

PROJECT: 5164B	BY: AJD	REVISIONS
DATE: SEPT., 2017	CHECKED: PJB	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS



EXPLANATION

- CCR Monitoring Well Location
- Non-CCR Monitoring Well Used to Further Evaluate Groundwater Flow Direction
- (358.02) Groundwater Potentiometric Surface (ft. MSL)
- — 360 — Groundwater Potentiometric Surface Contour (C.I. = 20 ft.)

N

Scale in Feet

0 900 1800

SOURCE:
Imagery from www.tnris.gov, Rusk County, aerial photographs, 2012.

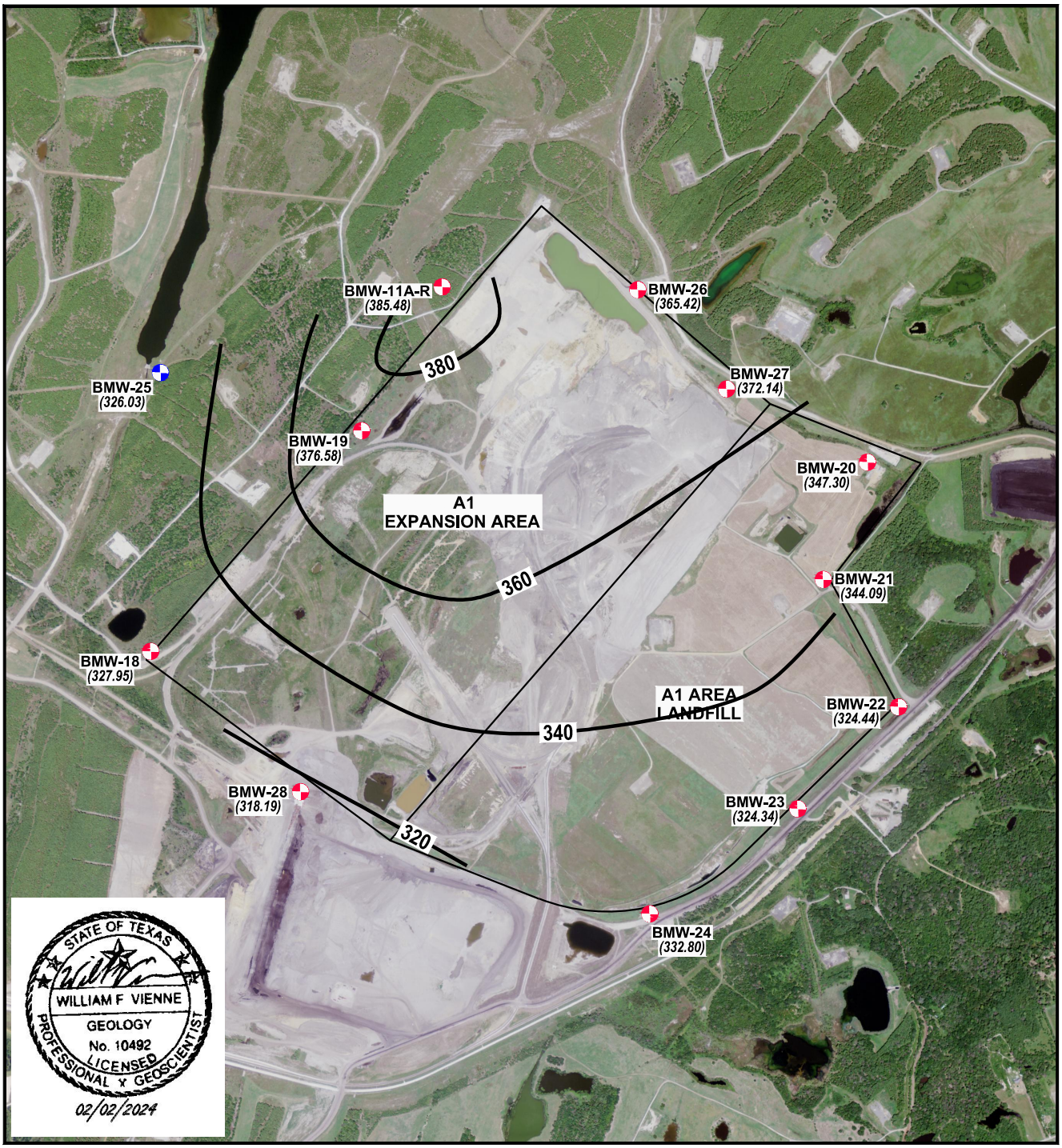
MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

Figure 7

A1 AREA LANDFILL GROUNDWATER POTENTIOMETRIC SURFACE MAP OCTOBER 25, 2016

PROJECT: 5164B	BY: AJD	REVISIONS
DATE: SEPT., 2017	CHECKED: PJB	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS



EXPLANATION

- CCR Monitoring Well Location
- Non-CCR Monitoring Well Used to Further Evaluate Groundwater Flow Direction
- (358.02) Groundwater Potentiometric Surface (ft. MSL)
- — 360 — Groundwater Potentiometric Surface Contour (C.I. = 20 ft.)

N

Scale in Feet

0 900 1800

SOURCE:
Imagery from www.tnris.gov, Rusk County, aerial photographs, 2012.

MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

Figure 8

A1 AREA LANDFILL GROUNDWATER POTENTIOMETRIC SURFACE MAP DECEMBER 13, 2016

PROJECT: 5164B	BY: AJD	REVISIONS
DATE: SEPT., 2017	CHECKED: PJB	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS

APPENDIX B

Laboratory Analytical Reports

November 27, 2015

Will Vienne
Pastor, Behling & Wheeler
2201 Double Creek Dr #4004
Round Rock, Texas 78664
TEL: (512) 671-3434
FAX (512) 671-3446

Order No.: 1510228

RE: Luminant -Beckville

Dear Will Vienne:

DHL Analytical, Inc. received 5 sample(s) on 10/24/2015 for the analyses presented in the following report.

There were no problems with the analyses and all data met requirements of NELAC except where noted in the Case Narrative. All non-NELAC methods will be identified accordingly in the case narrative and all estimated uncertainties of test results are within method or EPA specifications.

If you have any questions regarding these tests results, please feel free to call. Thank you for using DHL Analytical.

Sincerely,

John DuPont
General Manager

This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211-15-15

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DHL ANALYTICAL
2300 Double Creek Dr. ■ Round Rock, TX 78664
Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

CHAIN-OF-CUSTODY

№ 68685

CLIENT: PBW
ADDRESS: 2201 DOUBLE CREEK DR ROUND ROCK, TX 78664
PHONE: 512-671-3434 FAX/E-MAIL: 512-671-3446
DATA REPORTED TO: WILL VIENNE
ADDITIONAL REPORT COPIES TO:

DATE: 10-23-15 PAGE 1 OF 1
PO #: 5164-B DHL WORK ORDER #: 1510228
PROJECT LOCATION OR NAME: LUMINANT - BECKVILLE
CLENT PROJECT #: 5164-B COLLECTOR: J. BRAXTON

Authorize 5% surcharge for TRRP Report? ❑ Yes ❑ No

S=SOIL W=WATER A=AIR L=LIQUID SE=SEDIMENT P=PAINT SL=SLUDGE O=OTHER SO=SOLID

PRESERVATION: HCl | HNO_3 | H_2SO_4 ❑ NaOH ❑ | ICE | UNPRESERVED

ANALYSES: BTEX ❑ MTBE ❑ [METHOD 8021] | TPH 1005 ❑ TPH 1006 ❑ HOLD 1006 ❑ | GRO [METHOD 8015] ❑ DRO [METHOD 8105] ❑ | VOC 8260 ❑ VOC 624 ❑ VOC 8260/5035 ❑ | SVOC 8270 ❑ PAH 8270 ❑ HOLD PAH ❑ SVOC 625 ❑ | 8270 PEST ❑ 625 PEST/PCB ❑ 608 PCB ❑ | 8270 O-P PEST ❑ 8082 PCB ❑ 8270 PCB ❑ | 8321 HERB ❑ T PHOS, AMMONIA ❑ | METALS 6020 ❑ METALS 200.8 ❑ DISS. METALS ❑ | RCRA ❑ TX11 ❑ _____ ❑ | PH ❑ HEX CHROM ❑ ALKALINITY ❑ COD ❑ | CHLORIDE ❑ ANIONS _____ ❑ | TCLP-SVOC ❑ VOC ❑ PEST ❑ HERB ❑ | TCLP-METALS ❑ RCRA 8 ❑ TX-11 ❑ Pb ❑ | RCI ❑ FLASHPOINT ❑ DGAS ❑ | TDS ❑ TSS ❑ % MOISTURE ❑ CYANIDE ❑ | SEE ATTACHED | FIELD NOTES

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	HCl	HNO_3	H_2SO_4 ❑ NaOH ❑	ICE	UNPRESERVED	SEE ATTACHED	FIELD NOTES
BMW-22	01	10-23-15	0830	W		4						X	
BMW-23	02	"	0920	W		4						X	
BMW-24	03	"	1010	W		4						X	
BMW-20	04	"	1100	W		4						X	
BMW-21	05	"	1150	W		4						X	

RELINQUISHED BY: (Signature) DATE/TIME 10-23-15 1800 RECEIVED BY: (Signature) FEDEX
RELINQUISHED BY: (Signature) DATE/TIME 10/24/15 1100 RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature) DATE/TIME RECEIVED BY: (Signature)

TURN AROUND TIME
RUSH ❑ CALL FIRST
1 DAY ❑ CALL FIRST
2 DAY ❑
NORMAL ☒
OTHER ❑ _____

LABORATORY USE ONLY:
RECEIVING TEMP: 3.1 THERM #: 78
CUSTODY SEALS: ❑ BROKEN ❑ INTACT ☒ NOT USED
CARRIER: ❑ LONE STAR ☒ FEDEX ❑ UPS ❑ OTHER
❑ COURIER DELIVERY
❑ HAND DELIVERED

❑ DHL DISPOSAL @ $5.00 each ❑ Return

John Dupont

From: Sara Taube [Sara.Taube@pbwllc.com]
Sent: Wednesday, July 22, 2015 12:05 PM
To: John Dupont
Subject: CCR Appendix III and IV
Follow Up Flag: Follow up
Flag Status: Completed

Hi John,

Here are the Appendix III and Appendix IV constituents that we will need to have analyzed under the CCR Rule.

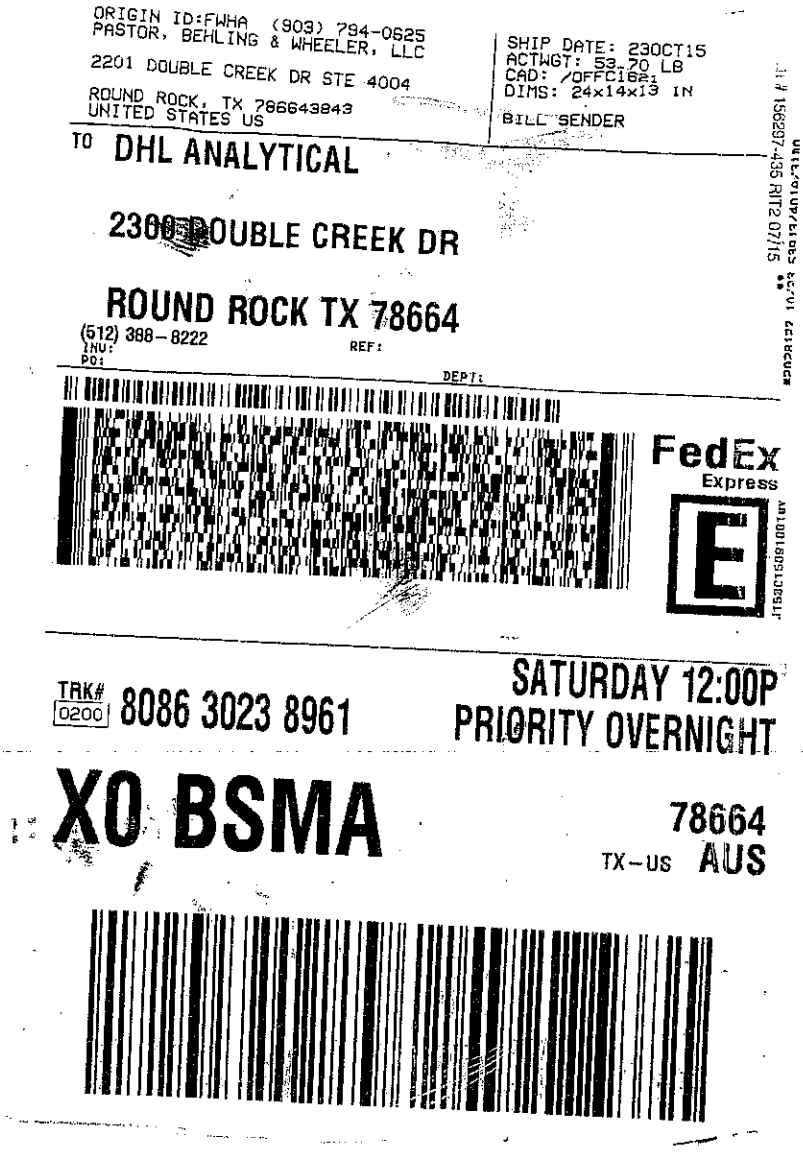
Appendix III
Boron
Calcium
Chloride
Fluoride
pH
sulfate
TDS

Appendix IV
Antimony
Arsenic
Barium
Beryllium
Cadmium
Chromium
Cobalt
Fluoride
Lead
Lithium
Mercury
Molybdenum
Selenium
Thallium
Radium 226 and 228

We are looking to have approximately 74 wells sampled 8 times over the course of the next two years. Please let me know if there is any more information you might need.

Cheers,

Sara


ORIGIN ID:FWHA (903) 794-0625
PASTOR, BEHLING & WHEELER, LLC
2201 DOUBLE CREEK DR STE 4004
ROUND ROCK, TX 786643843
UNITED STATES US
SHIP DATE: 230CT15
ACTWGT: 53.70 LB
CAD: /OFFC1621
DIMS: 24x14x13 IN
BILL SENDER
TO DHL ANALYTICAL
2300 DOUBLE CREEK DR
ROUND ROCK TX 78664
(512) 388-8222
INV:
PO:
REF:
DEPT:
FedEx
Express
TRK# 0200 8086 3023 8961
SATURDAY 12:00P
PRIORITY OVERNIGHT
XO BSMA
78664
TX-US AUS

DHL Analytical, Inc.

Sample Receipt Checklist

Client Name **Pastor, Behling & Wheeler** Date Received: **10/24/2015**

Work Order Number **1510228** Received by **MB**

Checklist completed by: _____ 10/26/2015 Reviewed by _____ 10/26/2015
Signature | Date — Initials | Date

Carrier name FedEx 1day

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	**3.1** °C
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH<2 acceptable upon receipt?	Yes ☑	No ☐	NA ☐ LOT # 8086
	Adjusted? NO		Checked by MB
Water - ph>9 (S) or ph>12 (CN) acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted? _____		Checked by _____

Any No response must be detailed in the comments section below.

Client contacted _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding _____

Comments: _____

Corrective Action _____

DHL Analytical, Inc. **Date:** *27-Nov-15*

CLIENT: Pastor, Behling & Wheeler
Project: Luminant -Beckville
Lab Order: 1510228

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Method SW6020A - Metals Analysis
Method SW7470A - Mercury Analysis
Method E300 - Anions Analysis
Method M4500-H+ B - pH of a Water Analysis
Method M2540C - TDS Analysis

LOG IN

The samples were received and log-in performed on 10/24/15. A total of 5 samples were received. The samples arrived in good condition and were properly packaged.

METALS ANALYSIS

For Metals analysis performed on 11/3/15 the matrix spike and matrix spike duplicate recoveries were out of control limits for Antimony and/or Calcium. In addition, the matrix spike and matrix spike duplicate had the RPD above control limits for Antimony. These are flagged accordingly in the QC summary report. The sample selected for the matrix spike and matrix spike duplicate was not from this work order. The LCS was within control limits for these analytes. No further corrective actions were taken.

For Metals analysis performed on 11/3/15 CCV3-151103 and LCVL3-151103 were above control limits for Boron and Calcium. This was due to sample carryover. The affected samples were the matrix spike and matrix spike duplicate. No further corrective actions were taken.

MERCURY ANALYSIS

For Mercury analysis performed on 10/29/15 the PDS recovery was slightly below control limits. This is flagged accordingly in the QC summary report. The serial dilution was within control limits. No further corrective actions were taken.

DHL Analytical, Inc.

Date: *27-Nov-15*

CLIENT: Pastor, Behling & Wheeler
Project: Luminant -Beckville
Lab Order: 1510228

Work Order Sample Summary

Lab Smp ID	Client Sample ID	Tag Number	Date Collected	Date Recved
1510228-01	BMW-22		10/23/15 08:30 AM	10/24/2015
1510228-02	BMW-23		10/23/15 09:20 AM	10/24/2015
1510228-03	BMW-24		10/23/15 10:10 AM	10/24/2015
1510228-04	BMW-20		10/23/15 11:00 AM	10/24/2015
1510228-05	BMW-21		10/23/15 11:50 AM	10/24/2015

Lab Order: 1510228
Client: Pastor, Behling & Wheeler
Project: Luminant -Beckville

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1510228-01A	BMW-22	10/23/15 08:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/28/15 08:56 AM	72050
	BMW-22	10/23/15 08:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/28/15 08:56 AM	72050
	BMW-22	10/23/15 08:30 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	10/28/15 11:22 AM	72064
1510228-01D	BMW-22	10/23/15 08:30 AM	Aqueous	E300	Anion Preparation	10/30/15 11:19 AM	72099
	BMW-22	10/23/15 08:30 AM	Aqueous	E300	Anion Preparation	10/30/15 11:19 AM	72099
	BMW-22	10/23/15 08:30 AM	Aqueous	M4500-H+ B	pH Preparation	10/26/15 10:43 AM	72020
	BMW-22	10/23/15 08:30 AM	Aqueous	M2540C	TDS Preparation	10/29/15 09:51 AM	72083
1510228-02A	BMW-23	10/23/15 09:20 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/28/15 08:56 AM	72050
	BMW-23	10/23/15 09:20 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/28/15 08:56 AM	72050
	BMW-23	10/23/15 09:20 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	10/28/15 11:22 AM	72064
1510228-02D	BMW-23	10/23/15 09:20 AM	Aqueous	E300	Anion Preparation	10/30/15 11:19 AM	72099
	BMW-23	10/23/15 09:20 AM	Aqueous	E300	Anion Preparation	10/30/15 11:19 AM	72099
	BMW-23	10/23/15 09:20 AM	Aqueous	M4500-H+ B	pH Preparation	10/26/15 10:43 AM	72020
	BMW-23	10/23/15 09:20 AM	Aqueous	M2540C	TDS Preparation	10/29/15 09:51 AM	72083
1510228-03A	BMW-24	10/23/15 10:10 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/28/15 08:56 AM	72050
	BMW-24	10/23/15 10:10 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/28/15 08:56 AM	72050
	BMW-24	10/23/15 10:10 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	10/28/15 11:22 AM	72064
1510228-03D	BMW-24	10/23/15 10:10 AM	Aqueous	E300	Anion Preparation	10/30/15 11:19 AM	72099
	BMW-24	10/23/15 10:10 AM	Aqueous	E300	Anion Preparation	10/30/15 11:19 AM	72099
	BMW-24	10/23/15 10:10 AM	Aqueous	M4500-H+ B	pH Preparation	10/26/15 10:43 AM	72020
	BMW-24	10/23/15 10:10 AM	Aqueous	M2540C	TDS Preparation	10/29/15 09:51 AM	72083
1510228-04A	BMW-20	10/23/15 11:00 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/28/15 08:56 AM	72050
	BMW-20	10/23/15 11:00 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/28/15 08:56 AM	72050
	BMW-20	10/23/15 11:00 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	10/28/15 11:22 AM	72064
1510228-04D	BMW-20	10/23/15 11:00 AM	Aqueous	E300	Anion Preparation	10/30/15 11:19 AM	72099
	BMW-20	10/23/15 11:00 AM	Aqueous	E300	Anion Preparation	10/30/15 11:19 AM	72099
	BMW-20	10/23/15 11:00 AM	Aqueous	M4500-H+ B	pH Preparation	10/26/15 10:43 AM	72020
	BMW-20	10/23/15 11:00 AM	Aqueous	M2540C	TDS Preparation	10/29/15 09:51 AM	72083

Lab Order: 1510228
Client: Pastor, Behling & Wheeler
Project: Luminant -Beckville

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1510228-05A	BMW-21	10/23/15 11:50 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/28/15 08:56 AM	72050
	BMW-21	10/23/15 11:50 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/28/15 08:56 AM	72050
	BMW-21	10/23/15 11:50 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	10/28/15 11:22 AM	72064
1510228-05D	BMW-21	10/23/15 11:50 AM	Aqueous	E300	Anion Preparation	10/30/15 11:19 AM	72099
	BMW-21	10/23/15 11:50 AM	Aqueous	E300	Anion Preparation	10/30/15 11:19 AM	72099
	BMW-21	10/23/15 11:50 AM	Aqueous	M4500-H+ B	pH Preparation	10/26/15 10:43 AM	72020
	BMW-21	10/23/15 11:50 AM	Aqueous	M2540C	TDS Preparation	10/29/15 09:51 AM	72083

Lab Order: 1510228
Client: Pastor, Behling & Wheeler
Project: Luminant -Beckville

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1510228-01A	BMW-22	Aqueous	SW7470A	Mercury Total: Aqueous	72064	1	10/29/15 02:23 PM	CETAC2_HG_151029B
	BMW-22	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72050	10	11/03/15 12:42 PM	ICP-MS3_151103A
	BMW-22	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72050	1	11/03/15 03:49 PM	ICP-MS3_151103A
1510228-01D	BMW-22	Aqueous	E300	Anions by IC method - Water	72099	1	10/30/15 12:39 PM	IC2_151030B
	BMW-22	Aqueous	E300	Anions by IC method - Water	72099	100	10/30/15 01:59 PM	IC2_151030B
	BMW-22	Aqueous	M4500-H+ B	pH	72020	1	10/26/15 11:26 AM	TITRATOR_151026A
	BMW-22	Aqueous	M2540C	Total Dissolved Solids	72083	1	10/30/15 08:30 AM	WC_151029C
1510228-02A	BMW-23	Aqueous	SW7470A	Mercury Total: Aqueous	72064	1	10/29/15 02:25 PM	CETAC2_HG_151029B
	BMW-23	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72050	10	11/03/15 12:48 PM	ICP-MS3_151103A
	BMW-23	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72050	1	11/03/15 03:55 PM	ICP-MS3_151103A
1510228-02D	BMW-23	Aqueous	E300	Anions by IC method - Water	72099	1	10/30/15 12:54 PM	IC2_151030B
	BMW-23	Aqueous	E300	Anions by IC method - Water	72099	100	10/30/15 02:14 PM	IC2_151030B
	BMW-23	Aqueous	M4500-H+ B	pH	72020	1	10/26/15 11:28 AM	TITRATOR_151026A
	BMW-23	Aqueous	M2540C	Total Dissolved Solids	72083	1	10/30/15 08:30 AM	WC_151029C
1510228-03A	BMW-24	Aqueous	SW7470A	Mercury Total: Aqueous	72064	1	10/29/15 02:28 PM	CETAC2_HG_151029B
	BMW-24	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72050	1	11/03/15 04:01 PM	ICP-MS3_151103A
	BMW-24	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72050	5	11/03/15 12:54 PM	ICP-MS3_151103A
1510228-03D	BMW-24	Aqueous	E300	Anions by IC method - Water	72099	1	10/30/15 01:12 PM	IC2_151030B
	BMW-24	Aqueous	E300	Anions by IC method - Water	72099	100	10/30/15 02:28 PM	IC2_151030B
	BMW-24	Aqueous	M4500-H+ B	pH	72020	1	10/26/15 11:29 AM	TITRATOR_151026A
	BMW-24	Aqueous	M2540C	Total Dissolved Solids	72083	1	10/30/15 08:30 AM	WC_151029C
1510228-04A	BMW-20	Aqueous	SW7470A	Mercury Total: Aqueous	72064	1	10/29/15 02:30 PM	CETAC2_HG_151029B
	BMW-20	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72050	1	11/03/15 02:06 PM	ICP-MS3_151103A
	BMW-20	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72050	5	11/03/15 02:18 PM	ICP-MS3_151103A
1510228-04D	BMW-20	Aqueous	E300	Anions by IC method - Water	72099	10	10/30/15 02:43 PM	IC2_151030B
	BMW-20	Aqueous	E300	Anions by IC method - Water	72099	1	10/30/15 01:27 PM	IC2_151030B

Lab Order: 1510228
Client: Pastor, Behling & Wheeler
Project: Luminant -Beckville

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1510228-04D	BMW-20	Aqueous	M4500-H+ B	pH	72020	1	10/26/15 11:30 AM	TITRATOR_151026A
	BMW-20	Aqueous	M2540C	Total Dissolved Solids	72083	1	10/30/15 08:30 AM	WC_151029C
1510228-05A	BMW-21	Aqueous	SW7470A	Mercury Total: Aqueous	72064	1	10/29/15 02:32 PM	CETAC2_HG_151029B
	BMW-21	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72050	1	11/03/15 02:12 PM	ICP-MS3_151103A
	BMW-21	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72050	10	11/03/15 02:24 PM	ICP-MS3_151103A
1510228-05D	BMW-21	Aqueous	E300	Anions by IC method - Water	72099	1	10/30/15 01:41 PM	IC2_151030B
	BMW-21	Aqueous	E300	Anions by IC method - Water	72099	100	10/30/15 02:57 PM	IC2_151030B
	BMW-21	Aqueous	M4500-H+ B	pH	72020	1	10/26/15 11:33 AM	TITRATOR_151026A
	BMW-21	Aqueous	M2540C	Total Dissolved Solids	72083	1	10/30/15 08:30 AM	WC_151029C

DHL Analytical, Inc.

Date: *27-Nov-15*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	BMW-22
Project:	Luminant -Beckville	**Lab ID:**	1510228-01
Project No:	5164-B	**Collection Date:**	10/23/15 08:30 AM
Lab Order:	1510228	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **ABO**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	10/29/15 02:23 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **SW**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	11/03/15 03:49 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	11/03/15 03:49 PM
Barium	0.106	0.00300	0.0100		mg/L	1	11/03/15 03:49 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	11/03/15 03:49 PM
Boron	2.76	0.100	0.300		mg/L	10	11/03/15 12:42 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	11/03/15 03:49 PM
Calcium	209	1.00	3.00		mg/L	10	11/03/15 12:42 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	11/03/15 03:49 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	11/03/15 03:49 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	11/03/15 03:49 PM
Lithium	0.0675	0.00500	0.0100		mg/L	1	11/03/15 03:49 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	11/03/15 03:49 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	11/03/15 03:49 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	11/03/15 03:49 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	377	30.0	100		mg/L	100	10/30/15 01:59 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	10/30/15 12:39 PM
Sulfate	927	100	300		mg/L	100	10/30/15 01:59 PM
PH		**M4500-H+ B**					Analyst: **LM**
pH	6.76	0	0		pH Units@16.7℃	1	10/26/15 11:26 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **BJT**
Total Dissolved Solids (Residue, Filterable)	2720	50.0	50.0		mg/L	1	10/30/15 08:30 AM

Qualifiers:					
	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *27-Nov-15*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	BMW-23
Project:	Luminant -Beckville	**Lab ID:**	1510228-02
Project No:	5164-B	**Collection Date:**	10/23/15 09:20 AM
Lab Order:	1510228	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **ABO**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	10/29/15 02:25 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **SW**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	11/03/15 03:55 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	11/03/15 03:55 PM
Barium	0.0519	0.00300	0.0100		mg/L	1	11/03/15 03:55 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	11/03/15 03:55 PM
Boron	1.19	0.100	0.300		mg/L	10	11/03/15 12:48 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	11/03/15 03:55 PM
Calcium	102	1.00	3.00		mg/L	10	11/03/15 12:48 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	11/03/15 03:55 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	11/03/15 03:55 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	11/03/15 03:55 PM
Lithium	0.0802	0.00500	0.0100		mg/L	1	11/03/15 03:55 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	11/03/15 03:55 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	11/03/15 03:55 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	11/03/15 03:55 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	287	30.0	100		mg/L	100	10/30/15 02:14 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	10/30/15 12:54 PM
Sulfate	577	100	300		mg/L	100	10/30/15 02:14 PM
PH		**M4500-H+ B**					Analyst: **LM**
pH	6.64	0	0		pH Units@16.3℃	1	10/26/15 11:28 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **BJT**
Total Dissolved Solids (Residue, Filterable)	1980	50.0	50.0		mg/L	1	10/30/15 08:30 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *27-Nov-15*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	BMW-24
Project:	Luminant -Beckville	**Lab ID:**	1510228-03
Project No:	5164-B	**Collection Date:**	10/23/15 10:10 AM
Lab Order:	1510228	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **ABO**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	10/29/15 02:28 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **SW**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	11/03/15 04:01 PM
Arsenic	0.00494	0.00200	0.00500	J	mg/L	1	11/03/15 04:01 PM
Barium	1.87	0.00300	0.0100		mg/L	1	11/03/15 04:01 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	11/03/15 04:01 PM
Boron	0.144	0.0500	0.150	J	mg/L	5	11/03/15 12:54 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	11/03/15 04:01 PM
Calcium	61.6	0.500	1.50		mg/L	5	11/03/15 12:54 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	11/03/15 04:01 PM
Cobalt	0.00802	0.00300	0.00500		mg/L	1	11/03/15 04:01 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	11/03/15 04:01 PM
Lithium	<0.00500	0.00500	0.0100		mg/L	1	11/03/15 04:01 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	11/03/15 04:01 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	11/03/15 04:01 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	11/03/15 04:01 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	633	30.0	100		mg/L	100	10/30/15 02:28 PM
Fluoride	0.247	0.100	0.400	J	mg/L	1	10/30/15 01:12 PM
Sulfate	44.8	1.00	3.00		mg/L	1	10/30/15 01:12 PM
PH		**M4500-H+ B**					Analyst: **LM**
pH	6.49	0	0		pH Units@16.7℃	1	10/26/15 11:29 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **BJT**
Total Dissolved Solids (Residue, Filterable)	1510	50.0	50.0		mg/L	1	10/30/15 08:30 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *27-Nov-15*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	BMW-20
Project:	Luminant -Beckville	**Lab ID:**	1510228-04
Project No:	5164-B	**Collection Date:**	10/23/15 11:00 AM
Lab Order:	1510228	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **ABO**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	10/29/15 02:30 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **SW**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	11/03/15 02:06 PM
Arsenic	0.00236	0.00200	0.00500	J	mg/L	1	11/03/15 02:06 PM
Barium	0.0778	0.00300	0.0100		mg/L	1	11/03/15 02:06 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	11/03/15 02:06 PM
Boron	0.139	0.0500	0.150	J	mg/L	5	11/03/15 02:18 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	11/03/15 02:06 PM
Calcium	71.2	0.500	1.50		mg/L	5	11/03/15 02:18 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	11/03/15 02:06 PM
Cobalt	0.0256	0.00300	0.00500		mg/L	1	11/03/15 02:06 PM
Lead	0.000501	0.000300	0.00100	J	mg/L	1	11/03/15 02:06 PM
Lithium	<0.00500	0.00500	0.0100		mg/L	1	11/03/15 02:06 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	11/03/15 02:06 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	11/03/15 02:06 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	11/03/15 02:06 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	64.8	3.00	10.0		mg/L	10	10/30/15 02:43 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	10/30/15 01:27 PM
Sulfate	223	10.0	30.0		mg/L	10	10/30/15 02:43 PM
PH		**M4500-H+ B**					Analyst: **LM**
pH	5.96	0	0		pH Units@16.5℃	1	10/26/15 11:30 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **BJT**
Total Dissolved Solids (Residue, Filterable)	804	10.0	10.0		mg/L	1	10/30/15 08:30 AM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *27-Nov-15*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	BMW-21
Project:	Luminant -Beckville	**Lab ID:**	1510228-05
Project No:	5164-B	**Collection Date:**	10/23/15 11:50 AM
Lab Order:	1510228	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **ABO**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	10/29/15 02:32 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **SW**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	11/03/15 02:12 PM
Arsenic	0.00324	0.00200	0.00500	J	mg/L	1	11/03/15 02:12 PM
Barium	0.0703	0.00300	0.0100		mg/L	1	11/03/15 02:12 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	11/03/15 02:12 PM
Boron	0.973	0.100	0.300		mg/L	10	11/03/15 02:24 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	11/03/15 02:12 PM
Calcium	157	1.00	3.00		mg/L	10	11/03/15 02:24 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	11/03/15 02:12 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	11/03/15 02:12 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	11/03/15 02:12 PM
Lithium	0.0623	0.00500	0.0100		mg/L	1	11/03/15 02:12 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	11/03/15 02:12 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	11/03/15 02:12 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	11/03/15 02:12 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	496	30.0	100		mg/L	100	10/30/15 02:57 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	10/30/15 01:41 PM
Sulfate	484	100	300		mg/L	100	10/30/15 02:57 PM
PH		**M4500-H+ B**					Analyst: **LM**
pH	7.24	0	0		pH Units@17.3℃	1	10/26/15 11:33 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **BJT**
Total Dissolved Solids (Residue, Filterable)	2510	50.0	50.0		mg/L	1	10/30/15 08:30 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT: Pastor, Behling & Wheeler
Work Order: 1510228
Project: Luminant -Beckville

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_151029B

The QC data in batch 72064 applies to the following samples: 1510228-01A, 1510228-02A, 1510228-03A, 1510228-04A, 1510228-05A

Sample ID **MB-72064** Batch ID: **72064** TestNo: **SW7470A** Units: **mg/L**
SampType: **MBLK** Run ID: **CETAC2_HG_151029B** Analysis Date: **10/29/2015 1:31:41 PM** Prep Date: **10/28/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.0000800	0.000200								

Sample ID **LCS-72064** Batch ID: **72064** TestNo: **SW7470A** Units: **mg/L**
SampType: **LCS** Run ID: **CETAC2_HG_151029B** Analysis Date: **10/29/2015 1:33:59 PM** Prep Date: **10/28/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00222	0.000200	0.00200	0	111	85	115			

Sample ID **LCSD-72064** Batch ID: **72064** TestNo: **SW7470A** Units: **mg/L**
SampType: **LCSD** Run ID: **CETAC2_HG_151029B** Analysis Date: **10/29/2015 1:36:16 PM** Prep Date: **10/28/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00202	0.000200	0.00200	0	101	85	115	9.43	15	

Sample ID **1510154-01A SD** Batch ID: **72064** TestNo: **SW7470A** Units: **mg/L**
SampType: **SD** Run ID: **CETAC2_HG_151029B** Analysis Date: **10/29/2015 1:40:52 PM** Prep Date: **10/28/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.000400	0.00100	0	0				0	10	

Sample ID **1510154-01A PDS** Batch ID: **72064** TestNo: **SW7470A** Units: **mg/L**
SampType: **PDS** Run ID: **CETAC2_HG_151029B** Analysis Date: **10/29/2015 1:43:10 PM** Prep Date: **10/28/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00190	0.000200	0.00250	0	76.0	85	115			S

Sample ID **1510154-01A MS** Batch ID: **72064** TestNo: **SW7470A** Units: **mg/L**
SampType: **MS** Run ID: **CETAC2_HG_151029B** Analysis Date: **10/29/2015 1:45:28 PM** Prep Date: **10/28/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00170	0.000200	0.00200	0	85.0	80	120			

Sample ID **1510154-01A MSD** Batch ID: **72064** TestNo: **SW7470A** Units: **mg/L**
SampType: **MSD** Run ID: **CETAC2_HG_151029B** Analysis Date: **10/29/2015 1:47:46 PM** Prep Date: **10/28/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00182	0.000200	0.00200	0	91.0	80	120	6.82	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1510228
Project: Luminant -Beckville

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_151029B

Sample ID **ICV-151029**	Batch ID: **R82414**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **ICV**	Run ID: **CETAC2_HG_151029B**	Analysis Date: **10/29/2015 11:25:42 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00406	0.000200	0.00400	0	102	90	110			

Sample ID **CCV3-151029**	Batch ID: **R82414**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_151029B**	Analysis Date: **10/29/2015 1:24:47 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00201	0.000200	0.00200	0	101	90	110			

Sample ID **CCV4-151029**	Batch ID: **R82414**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_151029B**	Analysis Date: **10/29/2015 2:12:20 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00202	0.000200	0.00200	0	101	90	110			

Sample ID **CCV5-151029**	Batch ID: **R82414**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_151029B**	Analysis Date: **10/29/2015 2:35:04 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00203	0.000200	0.00200	0	102	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1510228
Project: Luminant -Beckville

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS3_151103A

The QC data in batch 72050 applies to the following samples: 1510228-01A, 1510228-02A, 1510228-03A, 1510228-04A, 1510228-05A

Sample ID **MB-72050** Batch ID: **72050** TestNo: **SW6020A** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS3_151103A** Analysis Date: **11/3/2015 11:29:00 AM** Prep Date: **10/28/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.000800	0.00250								
Arsenic	<0.00200	0.00500								
Barium	<0.00300	0.0100								
Beryllium	<0.000300	0.00100								
Boron	<0.0100	0.0300								
Cadmium	<0.000300	0.00100								
Calcium	<0.100	0.300								
Chromium	<0.00200	0.00500								
Cobalt	<0.00300	0.00500								
Lead	<0.000300	0.00100								
Lithium	<0.00500	0.0100								
Molybdenum	<0.00200	0.00500								
Selenium	<0.00200	0.00500								
Thallium	<0.000500	0.00150								

Sample ID **LCS-72050** Batch ID: **72050** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS3_151103A** Analysis Date: **11/3/2015 11:35:00 AM** Prep Date: **10/28/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.181	0.00250	0.200	0	90.4	80	120			
Arsenic	0.199	0.00500	0.200	0	99.4	80	120			
Barium	0.193	0.0100	0.200	0	96.6	80	120			
Beryllium	0.202	0.00100	0.200	0	101	80	120			
Boron	0.182	0.0300	0.200	0	91.0	80	120			
Cadmium	0.189	0.00100	0.200	0	94.6	80	120			
Calcium	4.80	0.300	5.00	0	96.0	80	120			
Chromium	0.197	0.00500	0.200	0	98.6	80	120			
Cobalt	0.194	0.00500	0.200	0	97.2	80	120			
Lead	0.191	0.00100	0.200	0	95.7	80	120			
Lithium	0.185	0.0100	0.200	0	92.6	80	120			
Molybdenum	0.179	0.00500	0.200	0	89.3	80	120			
Selenium	0.200	0.00500	0.200	0	100	80	120			
Thallium	0.205	0.00150	0.200	0	102	80	120			

Sample ID **LCSD-72050** Batch ID: **72050** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS3_151103A** Analysis Date: **11/3/2015 11:41:00 AM** Prep Date: **10/28/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.178	0.00250	0.200	0	89.0	80	120	1.50	15	
Arsenic	0.195	0.00500	0.200	0	97.6	80	120	1.93	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS3_151103A

Sample ID **LCSD-72050** Batch ID: **72050** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS3_151103A** Analysis Date: **11/3/2015 11:41:00 AM** Prep Date: **10/28/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.186	0.0100	0.200	0	93.2	80	120	3.53	15	
Beryllium	0.199	0.00100	0.200	0	99.5	80	120	1.45	15	
Boron	0.181	0.0300	0.200	0	90.6	80	120	0.386	15	
Cadmium	0.186	0.00100	0.200	0	93.2	80	120	1.49	15	
Calcium	4.64	0.300	5.00	0	92.8	80	120	3.43	15	
Chromium	0.192	0.00500	0.200	0	96.2	80	120	2.57	15	
Cobalt	0.193	0.00500	0.200	0	96.4	80	120	0.826	15	
Lead	0.187	0.00100	0.200	0	93.4	80	120	2.38	15	
Lithium	0.186	0.0100	0.200	0	93.0	80	120	0.485	15	
Molybdenum	0.175	0.00500	0.200	0	87.4	80	120	2.09	15	
Selenium	0.197	0.00500	0.200	0	98.6	80	120	1.61	15	
Thallium	0.195	0.00150	0.200	0	97.3	80	120	5.06	15	

Sample ID **1510154-01A SD** Batch ID: **72050** TestNo: **SW6020A** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS3_151103A** Analysis Date: **11/3/2015 11:59:00 AM** Prep Date: **10/28/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.0400	0.125	0	0				0	10	
Arsenic	<0.100	0.250	0	0				0	10	
Barium	<0.150	0.500	0	0.0922				0	10	
Beryllium	<0.0150	0.0500	0	0				0	10	
Boron	2.21	1.50	0	2.38				7.21	10	
Cadmium	<0.0150	0.0500	0	0				0	10	
Calcium	124	15.0	0	124				0.565	10	
Chromium	<0.100	0.250	0	0				0	10	
Cobalt	<0.150	0.250	0	0.134				0	10	
Lead	<0.0150	0.0500	0	0				0	10	
Lithium	<0.250	0.500	0	0				0	10	
Molybdenum	<0.100	0.250	0	0				0	10	
Selenium	<0.100	0.250	0	0				0	10	
Thallium	<0.0250	0.0750	0	0				0	10	

Sample ID **1510154-01A PDS** Batch ID: **72050** TestNo: **SW6020A** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS3_151103A** Analysis Date: **11/3/2015 1:24:00 PM** Prep Date: **10/28/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	2.15	0.0250	2.00	0	107	80	120			
Arsenic	2.05	0.0500	2.00	0	103	80	120			
Barium	2.01	0.100	2.00	0.0922	95.7	80	120			
Beryllium	2.10	0.0100	2.00	0	105	80	120			
Boron	4.32	0.300	2.00	2.38	97.1	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1510228
Project: Luminant -Beckville

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS3_151103A

Sample ID **1510154-01A PDS** Batch ID: **72050** TestNo: **SW6020A** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS3_151103A** Analysis Date: **11/3/2015 1:24:00 PM** Prep Date: **10/28/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cadmium	1.93	0.0100	2.00	0	96.5	80	120			
Calcium	169	3.00	50.0	124	89.8	80	120			
Chromium	2.03	0.0500	2.00	0	102	80	120			
Cobalt	2.12	0.0500	2.00	0.134	99.0	80	120			
Lead	2.00	0.0100	2.00	0	100	80	120			
Lithium	1.90	0.100	2.00	0	95.2	80	120			
Molybdenum	1.83	0.0500	2.00	0	91.4	80	120			
Selenium	2.05	0.0500	2.00	0	102	80	120			
Thallium	2.05	0.0150	2.00	0	103	80	120			

Sample ID **1510154-01A MS** Batch ID: **72050** TestNo: **SW6020A** Units: **mg/L**
SampType: **MS** Run ID: **ICP-MS3_151103A** Analysis Date: **11/3/2015 4:07:00 PM** Prep Date: **10/28/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.191	0.00250	0.200	0	95.3	80	120			
Arsenic	0.224	0.00500	0.200	0.0156	104	80	120			
Barium	0.303	0.0100	0.200	0.0960	103	80	120			
Beryllium	0.189	0.00100	0.200	0	94.7	80	120			
Boron	2.48	0.0300	0.200	2.28	99.0	80	120			
Cadmium	0.193	0.00100	0.200	0	96.4	80	120			
Calcium	136	0.300	5.00	122	280	80	120			S
Chromium	0.193	0.00500	0.200	0	96.6	80	120			
Cobalt	0.331	0.00500	0.200	0.128	102	80	120			
Lead	0.196	0.00100	0.200	0	98.0	80	120			
Lithium	0.177	0.0100	0.200	0.00740	85.0	80	120			
Molybdenum	0.196	0.00500	0.200	0.00301	96.6	80	120			
Selenium	0.207	0.00500	0.200	0	103	80	120			
Thallium	0.208	0.00150	0.200	0	104	80	120			

Sample ID **1510154-01A MSD** Batch ID: **72050** TestNo: **SW6020A** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS3_151103A** Analysis Date: **11/3/2015 4:13:00 PM** Prep Date: **10/28/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.136	0.00250	0.200	0	68.0	80	120	33.5	15	SR
Arsenic	0.223	0.00500	0.200	0.0156	104	80	120	0.268	15	
Barium	0.297	0.0100	0.200	0.0960	100	80	120	2.13	15	
Beryllium	0.188	0.00100	0.200	0	94.2	80	120	0.476	15	
Boron	2.45	0.0300	0.200	2.28	83.0	80	120	1.30	15	
Cadmium	0.193	0.00100	0.200	0	96.6	80	120	0.311	15	
Calcium	136	0.300	5.00	122	280	80	120	0	15	S
Chromium	0.196	0.00500	0.200	0	98.1	80	120	1.49	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1510228
Project: Luminant -Beckville

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS3_151103A

Sample ID **1510154-01A MSD** Batch ID: **72050** TestNo: **SW6020A** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS3_151103A** Analysis Date: **11/3/2015 4:13:00 PM** Prep Date: **10/28/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cobalt	0.334	0.00500	0.200	0.128	103	80	120	0.662	15	
Lead	0.195	0.00100	0.200	0	97.6	80	120	0.409	15	
Lithium	0.174	0.0100	0.200	0.00740	83.5	80	120	1.65	15	
Molybdenum	0.200	0.00500	0.200	0.00301	98.2	80	120	1.67	15	
Selenium	0.206	0.00500	0.200	0	103	80	120	0.194	15	
Thallium	0.208	0.00150	0.200	0	104	80	120	0.048	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1510228
Project: Luminant -Beckville

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS3_151103A

Sample ID **ICV1-151103**	Batch ID: **R82492**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS3_151103A**	Analysis Date: **11/3/2015 11:04:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.0976	0.00250	0.100	0	97.6	90	110			
Arsenic	0.101	0.00500	0.100	0	101	90	110			
Barium	0.101	0.0100	0.100	0	101	90	110			
Beryllium	0.103	0.00100	0.100	0	103	90	110			
Boron	0.0900	0.0300	0.100	0	90.0	90	110			
Cadmium	0.100	0.00100	0.100	0	100	90	110			
Calcium	2.35	0.300	2.50	0	93.8	90	110			
Chromium	0.109	0.00500	0.100	0	109	90	110			
Cobalt	0.106	0.00500	0.100	0	106	90	110			
Lead	0.103	0.00100	0.100	0	103	90	110			
Lithium	0.0911	0.0100	0.100	0	91.1	90	110			
Molybdenum	0.0932	0.00500	0.100	0	93.2	90	110			
Selenium	0.0981	0.00500	0.100	0	98.1	90	110			
Thallium	0.0999	0.00150	0.100	0	99.9	90	110			

Sample ID **ILCVL-151103**	Batch ID: **R82492**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS3_151103A**	Analysis Date: **11/3/2015 11:16:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00197	0.00250	0.00200	0	98.7	70	130			
Arsenic	0.00540	0.00500	0.00500	0	108	70	130			
Barium	0.00528	0.0100	0.00500	0	106	70	130			
Beryllium	0.00111	0.00100	0.00100	0	111	70	130			
Boron	0.0179	0.0300	0.0200	0	89.4	70	130			
Cadmium	0.00104	0.00100	0.00100	0	104	70	130			
Calcium	0.107	0.300	0.100	0	107	70	130			
Chromium	0.00559	0.00500	0.00500	0	112	70	130			
Cobalt	0.00546	0.00500	0.00500	0	109	70	130			
Lead	0.00113	0.00100	0.00100	0	113	70	130			
Lithium	0.00920	0.0100	0.0100	0	92.0	70	130			
Molybdenum	0.00494	0.00500	0.00500	0	98.9	70	130			
Selenium	0.00604	0.00500	0.00500	0	121	70	130			
Thallium	0.00111	0.00150	0.00100	0	111	70	130			

Sample ID **CCV1-151103**	Batch ID: **R82492**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS3_151103A**	Analysis Date: **11/3/2015 1:30:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.201	0.00250	0.200	0	101	90	110			
Arsenic	0.214	0.00500	0.200	0	107	90	110			
Barium	0.204	0.0100	0.200	0	102	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1510228
Project: Luminant -Beckville

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS3_151103A

Sample ID **CCV1-151103** Batch ID: **R82492** TestNo: **SW6020A** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS3_151103A** Analysis Date: **11/3/2015 1:30:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.218	0.00100	0.200	0	109	90	110			
Boron	0.204	0.0300	0.200	0	102	90	110			
Cadmium	0.202	0.00100	0.200	0	101	90	110			
Calcium	5.43	0.300	5.00	0	109	90	110			
Chromium	0.204	0.00500	0.200	0	102	90	110			
Cobalt	0.207	0.00500	0.200	0	104	90	110			
Lead	0.204	0.00100	0.200	0	102	90	110			
Lithium	0.198	0.0100	0.200	0	99.2	90	110			
Molybdenum	0.198	0.00500	0.200	0	98.8	90	110			
Selenium	0.217	0.00500	0.200	0	109	90	110			
Thallium	0.211	0.00150	0.200	0	106	90	110			

Sample ID **LCVL1-151103** Batch ID: **R82492** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS3_151103A** Analysis Date: **11/3/2015 1:54:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00193	0.00250	0.00200	0	96.5	70	130			
Arsenic	0.00532	0.00500	0.00500	0	106	70	130			
Barium	0.00520	0.0100	0.00500	0	104	70	130			
Beryllium	0.00112	0.00100	0.00100	0	112	70	130			
Boron	0.0193	0.0300	0.0200	0	96.6	70	130			
Cadmium	0.000985	0.00100	0.00100	0	98.5	70	130			
Calcium	0.0999	0.300	0.100	0	99.9	70	130			
Chromium	0.00526	0.00500	0.00500	0	105	70	130			
Cobalt	0.00525	0.00500	0.00500	0	105	70	130			
Lead	0.00106	0.00100	0.00100	0	106	70	130			
Lithium	0.0105	0.0100	0.0100	0	104	70	130			
Molybdenum	0.00479	0.00500	0.00500	0	95.8	70	130			
Selenium	0.00541	0.00500	0.00500	0	108	70	130			
Thallium	0.00104	0.00150	0.00100	0	104	70	130			

Sample ID **CCV2-151103** Batch ID: **R82492** TestNo: **SW6020A** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS3_151103A** Analysis Date: **11/3/2015 2:30:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.194	0.00250	0.200	0	96.8	90	110			
Arsenic	0.209	0.00500	0.200	0	104	90	110			
Barium	0.197	0.0100	0.200	0	98.4	90	110			
Beryllium	0.210	0.00100	0.200	0	105	90	110			
Boron	0.194	0.0300	0.200	0	97.1	90	110			
Cadmium	0.198	0.00100	0.200	0	98.8	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1510228
Project: Luminant -Beckville

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS3_151103A

Sample ID **CCV2-151103**	Batch ID: **R82492**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS3_151103A**	Analysis Date: **11/3/2015 2:30:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	5.36	0.300	5.00	0	107	90	110			
Chromium	0.200	0.00500	0.200	0	100	90	110			
Cobalt	0.203	0.00500	0.200	0	102	90	110			
Lead	0.201	0.00100	0.200	0	100	90	110			
Lithium	0.193	0.0100	0.200	0	96.4	90	110			
Molybdenum	0.191	0.00500	0.200	0	95.5	90	110			
Selenium	0.215	0.00500	0.200	0	107	90	110			
Thallium	0.211	0.00150	0.200	0	105	90	110			

Sample ID **LCVL2-151103**	Batch ID: **R82492**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS3_151103A**	Analysis Date: **11/3/2015 2:49:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00190	0.00250	0.00200	0	95.0	70	130			
Arsenic	0.00535	0.00500	0.00500	0	107	70	130			
Barium	0.00495	0.0100	0.00500	0	99.0	70	130			
Beryllium	0.00106	0.00100	0.00100	0	106	70	130			
Boron	0.0195	0.0300	0.0200	0	97.6	70	130			
Cadmium	0.00104	0.00100	0.00100	0	104	70	130			
Calcium	0.108	0.300	0.100	0	108	70	130			
Chromium	0.00509	0.00500	0.00500	0	102	70	130			
Cobalt	0.00520	0.00500	0.00500	0	104	70	130			
Lead	0.00103	0.00100	0.00100	0	103	70	130			
Lithium	0.00999	0.0100	0.0100	0	99.9	70	130			
Molybdenum	0.00470	0.00500	0.00500	0	94.0	70	130			
Selenium	0.00584	0.00500	0.00500	0	117	70	130			
Thallium	0.00102	0.00150	0.00100	0	102	70	130			

Sample ID **CCV3-151103**	Batch ID: **R82492**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS3_151103A**	Analysis Date: **11/3/2015 4:19:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.200	0.00250	0.200	0	100	90	110			
Arsenic	0.216	0.00500	0.200	0	108	90	110			
Barium	0.202	0.0100	0.200	0	101	90	110			
Beryllium	0.205	0.00100	0.200	0	102	90	110			
Boron	0.242	0.0300	0.200	0	121	90	110			S
Cadmium	0.202	0.00100	0.200	0	101	90	110			
Calcium	5.64	0.300	5.00	0	113	90	110			S
Chromium	0.211	0.00500	0.200	0	105	90	110			
Cobalt	0.211	0.00500	0.200	0	106	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1510228
Project: Luminant -Beckville

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS3_151103A

Sample ID **CCV3-151103**	Batch ID: **R82492**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS3_151103A**	Analysis Date: **11/3/2015 4:19:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.203	0.00100	0.200	0	102	90	110			
Lithium	0.182	0.0100	0.200	0	91.2	90	110			
Molybdenum	0.196	0.00500	0.200	0	98.2	90	110			
Selenium	0.216	0.00500	0.200	0	108	90	110			
Thallium	0.214	0.00150	0.200	0	107	90	110			

Sample ID **LCVL3-151103**	Batch ID: **R82492**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS3_151103A**	Analysis Date: **11/3/2015 4:55:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00201	0.00250	0.00200	0	100	70	130			
Arsenic	0.00551	0.00500	0.00500	0	110	70	130			
Barium	0.00535	0.0100	0.00500	0	107	70	130			
Beryllium	0.00112	0.00100	0.00100	0	112	70	130			
Boron	0.0309	0.0300	0.0200	0	154	70	130			S
Cadmium	0.00103	0.00100	0.00100	0	103	70	130			
Calcium	0.144	0.300	0.100	0	144	70	130			S
Chromium	0.00538	0.00500	0.00500	0	108	70	130			
Cobalt	0.00549	0.00500	0.00500	0	110	70	130			
Lead	0.00106	0.00100	0.00100	0	106	70	130			
Lithium	0.0106	0.0100	0.0100	0	106	70	130			
Molybdenum	0.00514	0.00500	0.00500	0	103	70	130			
Selenium	0.00548	0.00500	0.00500	0	110	70	130			
Thallium	0.00105	0.00150	0.00100	0	105	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1510228
Project: Luminant -Beckville

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_151030B

The QC data in batch 72099 applies to the following samples: 1510228-01D, 1510228-02D, 1510228-03D, 1510228-04D, 1510228-05D

Sample ID **MB-72099** Batch ID: **72099** TestNo: **E300** Units: **mg/L**
SampType: **MBLK** Run ID: **IC2_151030B** Analysis Date: **10/30/2015 11:54:38 A** Prep Date: **10/30/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00								
Fluoride	<0.100	0.400								
Sulfate	<1.00	3.00								

Sample ID **LCS-72099** Batch ID: **72099** TestNo: **E300** Units: **mg/L**
SampType: **LCS** Run ID: **IC2_151030B** Analysis Date: **10/30/2015 12:09:13 P** Prep Date: **10/30/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.2	1.00	10.00	0	102	90	110			
Fluoride	4.01	0.400	4.000	0	100	90	110			
Sulfate	31.2	3.00	30.00	0	104	90	110			

Sample ID **LCSD-72099** Batch ID: **72099** TestNo: **E300** Units: **mg/L**
SampType: **LCSD** Run ID: **IC2_151030B** Analysis Date: **10/30/2015 12:23:47 P** Prep Date: **10/30/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.92	1.00	10.00	0	99.2	90	110	2.44	20	
Fluoride	3.97	0.400	4.000	0	99.2	90	110	0.972	20	
Sulfate	31.0	3.00	30.00	0	103	90	110	0.927	20	

Sample ID **1510228-02DMS** Batch ID: **72099** TestNo: **E300** Units: **mg/L**
SampType: **MS** Run ID: **IC2_151030B** Analysis Date: **10/30/2015 3:16:00 PM** Prep Date: **10/30/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	2380	100	2000	287.2	105	90	110			
Fluoride	2040	40.0	2000	0	102	90	110			
Sulfate	2720	300	2000	577.5	107	90	110			

Sample ID **1510228-02DMSD** Batch ID: **72099** TestNo: **E300** Units: **mg/L**
SampType: **MSD** Run ID: **IC2_151030B** Analysis Date: **10/30/2015 3:30:35 PM** Prep Date: **10/30/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	2370	100	2000	287.2	104	90	110	0.511	20	
Fluoride	2050	40.0	2000	0	103	90	110	0.736	20	
Sulfate	2740	300	2000	577.5	108	90	110	0.759	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1510228
Project: Luminant -Beckville

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_151030B

Sample ID **ICV-151030**	Batch ID: **R82439**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC2_151030B**	Analysis Date: **10/30/2015 9:14:16 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	24.3	1.00	25.00	0	97.0	90	110			
Fluoride	9.61	0.400	10.00	0	96.1	90	110			
Sulfate	76.1	3.00	75.00	0	101	90	110			

Sample ID **CCV1-151030**	Batch ID: **R82439**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_151030B**	Analysis Date: **10/30/2015 11:17:45 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.90	1.00	10.00	0	99.0	90	110			
Fluoride	3.86	0.400	4.000	0	96.5	90	110			
Sulfate	30.7	3.00	30.00	0	102	90	110			

Sample ID **CCV2-151030**	Batch ID: **R82439**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_151030B**	Analysis Date: **10/30/2015 3:45:09 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.97	1.00	10.00	0	99.7	90	110			
Fluoride	4.03	0.400	4.000	0	101	90	110			
Sulfate	31.2	3.00	30.00	0	104	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1510228
Project: Luminant -Beckville

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_151026A

The QC data in batch 72020 applies to the following samples: 1510228-01D, 1510228-02D, 1510228-03D, 1510228-04D, 1510228-05D

Sample ID **1510228-05D DUP** Batch ID: **72020** TestNo: **M4500-H+ B** Units: **pH Units@17.2℃**
SampType: **DUP** Run ID: **TITRATOR_151026A** Analysis Date: **10/26/2015 11:35:00 A** Prep Date: **10/26/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	7.20	0	0	7.240				0.554	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1510228
Project: Luminant -Beckville

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_151026A

Sample ID	**ICV-151026**	Batch ID:	**R82372**	TestNo:	**M4500-H+ B**	Units:	**pH Units@22℃**
SampType:	**ICV**	Run ID:	**TITRATOR_151026A**	Analysis Date:	**10/26/2015 11:19:00 A**	Prep Date:	**10/26/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	9.97	0	10.00	0	99.7	99	101			

Sample ID	**CCV1-151026**	Batch ID:	**R82372**	TestNo:	**M4500-H+ B**	Units:	**pH Units@21.6℃**
SampType:	**CCV**	Run ID:	**TITRATOR_151026A**	Analysis Date:	**10/26/2015 11:36:00 A**	Prep Date:	**10/26/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	6.98	0	7.000	0	99.7	97.1	102.9			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1510228
Project: Luminant -Beckville

ANALYTICAL QC SUMMARY REPORT

RunID: WC_151029C

The QC data in batch 72083 applies to the following samples: 1510228-01D, 1510228-02D, 1510228-03D, 1510228-04D, 1510228-05D

Sample ID	**MB-72083**	Batch ID:	**72083**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**WC_151029C**	Analysis Date:	**10/30/2015 8:30:00 AM**	Prep Date:	**10/29/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	<10.0	10.0								

Sample ID	**LCS-72083**	Batch ID:	**72083**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**WC_151029C**	Analysis Date:	**10/30/2015 8:30:00 AM**	Prep Date:	**10/29/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	764	10.0	745.6	0	102	90	113			

Sample ID	**1510273-01D-DUP**	Batch ID:	**72083**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**DUP**	Run ID:	**WC_151029C**	Analysis Date:	**10/30/2015 8:30:00 AM**	Prep Date:	**10/29/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	184	10.0	0	185.0				0.542	5	

Sample ID	**1510228-01D-DUP**	Batch ID:	**72083**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**DUP**	Run ID:	**WC_151029C**	Analysis Date:	**10/30/2015 8:30:00 AM**	Prep Date:	**10/29/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	2710	50.0	0	2725				0.368	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

GEL Laboratories LLC
a member of The GEL Group INC

PO Box 30712 Charleston, SC 29417
2040 Savage Road Charleston, SC 29407
P 843.556.8171
F 843.766.1178

gel.com

November 12, 2015

Mr. John DuPont
DHL Analytical
2300 Double Creek Drive
Round Rock, Texas 78664

Re: Routine Analysis
Work Order: 384305
SDG: 1510228

Dear Mr. DuPont:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on October 29, 2015. This original data report has been prepared and reviewed in accordance with GEL's standard operating procedures.

Our policy is to provide high quality, personalized analytical services to enable you to meet your analytical needs on time every time. We trust that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at (843) 556-8171, ext. 4707.

Sincerely,

Anna C Day

Anna Day
Project Manager

Enclosures

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 − (843) 556−8171 − www.gel.com

Certificate of Analysis Report
for

DHLA002 DHL Analytical

Client SDG: 1510228 GEL Work Order: 384305

The Qualifiers in this report are defined as follows:

* A quality control analyte recovery is outside of specified acceptance criteria

** Analyte is a Tracer compound

** Analyte is a surrogate compound

U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the Certificate of Analysis.

The designation ND, if present, appears in the result column when the analyte concentration is not detected above the limit as defined in the 'U' qualifier above.

This data report has been prepared and reviewed in accordance with GEL Laboratories LLC standard operating procedures. Please direct any questions to your Project Manager, Anna Day.

Reviewed by Anna C Day

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: November 12, 2015

Company : DHL Analytical
Address : 2300 Double Creek Drive

Round Rock, Texas 78664
Contact: Mr. John DuPont
Project: Routine Analysis

Client Sample ID: BMW-22
Sample ID: 384305001
Matrix: Water
Collect Date: 23-OCT-15 08:30
Receive Date: 29-OCT-15
Collector: Client

Project: DHLA00112
Client ID: DHLA002

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228		2.11	+/-1.27	1.96	3.00	pCi/L		AXM6	11/11/15	1506	1519753	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226		1.59	+/-0.435	0.401	1.00	pCi/L		CXP3	11/12/15	0615	1519135	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			90.3	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: November 12, 2015

Company :	DHL Analytical
Address :	2300 Double Creek Drive
	Round Rock, Texas 78664
Contact:	Mr. John DuPont
Project:	Routine Analysis

Client Sample ID:	BMW-23	Project:	DHLA00112
Sample ID:	384305002	Client ID:	DHLA002
Matrix:	Water		
Collect Date:	23-OCT-15 09:20		
Receive Date:	29-OCT-15		
Collector:	Client		

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228	U	1.65	+/-1.19	1.91	3.00	pCi/L		AXM6	11/11/15	1507	1519753	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226		1.19	+/-0.366	0.363	1.00	pCi/L		CXP3	11/12/15	0615	1519135	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			107	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: November 12, 2015

Company :	DHL Analytical
Address :	2300 Double Creek Drive
	Round Rock, Texas 78664
Contact:	Mr. John DuPont
Project:	Routine Analysis

Client Sample ID:	BMW-24	Project:	DHLA00112
Sample ID:	384305003	Client ID:	DHLA002
Matrix:	Water		
Collect Date:	23-OCT-15 10:10		
Receive Date:	29-OCT-15		
Collector:	Client		

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228		3.32	+/-1.30	1.81	3.00	pCi/L		AXM6	11/11/15	1507	1519753	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226		1.83	+/-0.448	0.383	1.00	pCi/L		CXP3	11/12/15	0700	1519135	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			91.1	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: November 12, 2015

Company :	DHL Analytical
Address :	2300 Double Creek Drive
	Round Rock, Texas 78664
Contact:	Mr. John DuPont
Project:	Routine Analysis

Client Sample ID:	BMW-20	Project:	DHLA00112
Sample ID:	384305004	Client ID:	DHLA002
Matrix:	Water		
Collect Date:	23-OCT-15 11:00		
Receive Date:	29-OCT-15		
Collector:	Client		

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228	U	1.84	+/-1.20	1.89	3.00	pCi/L		AXM6	11/11/15	1507	1519753	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226		1.18	+/-0.424	0.463	1.00	pCi/L		CXP3	11/12/15	0700	1519135	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			103	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Certificate of Analysis

Report Date: November 12, 2015

Company :	DHL Analytical
Address :	2300 Double Creek Drive
	Round Rock, Texas 78664
Contact:	Mr. John DuPont
Project:	Routine Analysis

Client Sample ID:	BMW-21	Project:	DHLA00112
Sample ID:	384305005	Client ID:	DHLA002
Matrix:	Water		
Collect Date:	23-OCT-15 11:50		
Receive Date:	29-OCT-15		
Collector:	Client		

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228	U	0.843	+/-0.631	0.948	3.00	pCi/L		AXM6	11/11/15	1507	1519753	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226	U	0.297	+/-0.275	0.436	1.00	pCi/L		CXP3	11/12/15	0700	1519135	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			93.5	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

QC Summary

Report Date: November 12, 2015

DHL Analytical
2300 Double Creek Drive
Round Rock, Texas

Contact: **Mr. John DuPont**

Workorder: **384305**

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Rad Gas Flow										
Batch 1519753										
QC1203424141 383809004 DUP										
Radium-228		1.86	U	1.60	pCi/L	15		(0% - 100%)	AXM6	11/11/15 15:07
	Uncertainty	+/-1.07		+/-1.10						
QC1203424142 LCS										
Radium-228	29.4			30.9	pCi/L		105	(75%-125%)		11/11/15 15:09
	Uncertainty			+/-2.63						
QC1203424140 MB										
Radium-228			U	-0.132	pCi/L					11/11/15 15:07
	Uncertainty			+/-0.626						
Rad Ra-226										
Batch 1519135										
QC1203422475 384278001 DUP										
Radium-226		1.82		2.90	pCi/L	45.9*		(0%-20%)	CXP3	11/12/15 09:20
	Uncertainty	+/-0.484		+/-0.658						
QC1203422477 LCS										
Radium-226	24.4			23.3	pCi/L		95.7	(75%-125%)		11/12/15 10:00
	Uncertainty			+/-1.48						
QC1203422474 MB										
Radium-226			U	0.356	pCi/L					11/12/15 09:20
	Uncertainty			+/-0.289						
QC1203422476 384278001 MS										
Radium-226	122	1.82		122	pCi/L		98.2	(75%-125%)		11/12/15 09:20
	Uncertainty	+/-0.484		+/-7.46						

Notes:

Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

The Qualifiers in this report are defined as follows:

**	Analyte is a Tracer compound
<	Result is less than value reported
>	Result is greater than value reported
BD	Results are either below the MDC or tracer recovery is low
FA	Failed analysis.
H	Analytical holding time was exceeded
J	Value is estimated
K	Analyte present. Reported value may be biased high. Actual value is expected to be lower.
L	Analyte present. Reported value may be biased low. Actual value is expected to be higher.
M	M if above MDC and less than LLD
M	REMP Result > MDC/CL and < RDL
N/A	RPD or %Recovery limits do not apply.

QC Summary

Workorder: **384305**

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time

N1 See case narrative

ND Analyte concentration is not detected above the detection limit

NJ Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier

Q One or more quality control criteria have not been met. Refer to the applicable narrative or DER.

R Sample results are rejected

U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.

UI Gamma Spectroscopy--Uncertain identification

UJ Gamma Spectroscopy--Uncertain identification

UL Not considered detected. The associated number is the reported concentration, which may be inaccurate due to a low bias.

X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier

Y Other specific qualifiers were required to properly define the results. Consult case narrative.

^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.

h Preparation or preservation holding time was exceeded

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.
^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.
* Indicates that a Quality Control parameter was not within specifications.
For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.

There are no "Data Exception Reports" associated with this analytical report.

DHL Analytical, Inc.
2300 Double Creek Drive
Round Rock, TX 78664
TEL: *(512) 388-8222* FAX: *(512) 388-8229*

Work Order: 1510228

CHAIN-OF-CUSTODY RECORD

384305

Subcontractor:

GEL Laboratories
PO Box 30712
Charleston, SC 29417

TEL: (843) 556-8171
FAX:
Acct #:

26-Oct-15

Sample Id	Matrix	DHL#	Date Collected	Bottle Type	Requested Tests: 226 E903.1	228 E904.0				
BMW-22	Aqueous	-01B	10/23/15 08:30 AM	500HDPEHNO3		1				
BMW-22	Aqueous	-01C	10/23/15 08:30 AM	500HDPEHNO3	1					
BMW-23	Aqueous	-02B	10/23/15 09:20 AM	500HDPEHNO3		1				
BMW-23	Aqueous	-02C	10/23/15 09:20 AM	500HDPEHNO3	1					
BMW-24	Aqueous	-03B	10/23/15 10:10 AM	500HDPEHNO3		1				
BMW-24	Aqueous	-03C	10/23/15 10:10 AM	500HDPEHNO3	1					
BMW-2D	Aqueous	-04B	10/23/15 11:00 AM	500HDPEHNO3		1				
BMW-2D	Aqueous	-04C	10/23/15 11:00 AM	500HDPEHNO3	1					
BMW-21	Aqueous	-05B	10/23/15 11:50 AM	500HDPEHNO3		1				
BMW-21	Aqueous	-05C	10/23/15 11:50 AM	500HDPEHNO3	1					

General Comments:

Please analyze these samples with a Standard Turnaround Time.
Call John DuPont if you have questions.
Quality Control Package Needed: Standard / _____
EMAIL report to both cac@dhlanalytical.com & dupont@dhlanalytical.com

		Date/Time			Date/Time
Relinquished by:	[signature]	10/24/15 1730	Received by:	[signature]	10/24/15 1730
Relinquished by:			Received by:	B. Luthman	10/29/15 0900

GEL Laboratories LLC

SAMPLE RECEIPT & REVIEW FORM

Client: DHLA	**SDG/AR/COC/Work Order:** 394305
Received By: Brielle Luthman	**Date Received:** 10/29/15 0900

Suspected Hazard Information	Yes	No	*If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation.
COC/Samples marked as radioactive?		/	Maximum Net Counts Observed* (Observed Counts - Area Background Counts): 0
Classified Radioactive II or III by RSO?		/	If yes, Were swipes taken of sample containers < action levels?
COC/Samples marked containing PCBs?		/	
Package, COC, and/or Samples marked as beryllium or asbestos containing?		/	If yes, samples are to be segregated as Safety Controlled Samples, and opened by the GEL Safety Group.
Shipped as a DOT Hazardous?		/	Hazard Class Shipped: UN#:
Samples identified as Foreign Soil?		/	

	Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (Required for Non-Conforming Items)
1	Shipping containers received intact and sealed?	/			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
2	Samples requiring cold preservation within (0 ≤ 6 deg. C)?*		/		Preservation Method: Ice bags Blue ice Dry ice (None) Other (describe) *all temperatures are recorded in Celsius 20°
2a	Daily check performed and passed on IR temperature gun?	/			Temperature Device Serial #: Secondary Temperature Device Serial # (If Applicable): 150340071
3	Chain of custody documents included with shipment?	/			
4	Sample containers intact and sealed?	/			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
5	Samples requiring chemical preservation at proper pH?	/			Sample ID's, containers affected and observed pH: If Preservation added, Lot#:
6	Do Low Level Perchlorate samples have headspace as required?		/		Sample ID's and containers affected:
7	VOA vials contain acid preservation?		/		(If unknown, select No)
8	VOA vials free of headspace (defined as < 6mm bubble)?		/		Sample ID's and containers affected:
9	Are Encore containers present?			/	(If yes, immediately deliver to Volatiles laboratory)
10	Samples received within holding time?	/			ID's and tests affected:
11	Sample ID's on COC match ID's on bottles?	/			Sample ID's and containers affected:
12	Date & time on COC match date & time on bottles?	/			Sample ID's affected:
13	Number of containers received match number indicated on COC?	/			Sample ID's affected:
14	Are sample containers identifiable as GEL provided?			/	
15	COC form is properly signed in relinquished/received sections?	/			
16	Carrier and tracking number.				Circle Applicable: FedEx Air FedEx Ground UPS Field Services Courier Other 7748 2175 9252

Comments (Use Continuation Form if needed):

PM (or PMA) review: Initials AVD Date 10/29/15 Page 1 of 1 GL-CHL-SR-001 Rev 2

List of current GEL Certifications as of 12 November 2015

State	Certification
Alaska	UST−110
Arkansas	88−0651
CLIA	42D0904046
California	2940 Interim
Colorado	SC00012
Connecticut	PH−0169
Delaware	SC000122013−10
DoD ELAP/ ISO17025 A2LA	2567.01
Florida NELAP	E87156
Foreign Soils Permit	P330−15−00283, P330−15−00253
Georgia	SC00012
Georgia SDWA	967
Hawaii	SC000122013−10
Idaho Chemistry	SC00012
Idaho Radiochemistry	SC00012
Illinois NELAP	200029
Indiana	C−SC−01
Kansas NELAP	E−10332
Kentucky SDWA	90129
Kentucky Wastewater	90129
Louisiana NELAP	03046 (AI33904)
Louisiana SDWA	LA150001
Maryland	270
Massachusetts	M−SC012
Michigan	9976
Mississippi	SC000122013−10
Nebraska	NE−OS−26−13
Nevada	SC000122016−1
New Hampshire NELAP	2054
New Jersey NELAP	SC002
New Mexico	SC00012
New York NELAP	11501
North Carolina	233
North Carolina SDWA	45709
Oklahoma	9904
Pennsylvania NELAP	68−00485
S.Carolina Radchem	10120002
South Carolina Chemistry	10120001
Tennessee	TN 02934
Texas NELAP	T104704235−15−10
Utah NELAP	SC000122015−19
Vermont	VT87156
Virginia NELAP	460202
Washington	C780
West Virginia	997404

December 04, 2015

Will Vienne
Pastor, Behling & Wheeler
2201 Double Creek Dr #4004
Round Rock, Texas 78664
TEL: (512) 671-3434
FAX (512) 671-3446

Order No.: 1511007

RE: Luminant - Martin Lake

Dear Will Vienne:

DHL Analytical, Inc. received 4 sample(s) on 11/2/2015 for the analyses presented in the following report.

There were no problems with the analyses and all data met requirements of NELAC except where noted in the Case Narrative. All non-NELAC methods will be identified accordingly in the case narrative and all estimated uncertainties of test results are within method or EPA specifications.

If you have any questions regarding these tests results, please feel free to call. Thank you for using DHL Analytical.

Sincerely,

John DuPont
General Manager

This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211-15-15

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DHL ANALYTICAL
2300 Double Creek Dr. ■ Round Rock, TX 78664
Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

nelap

№ 68684

CHAIN-OF-CUSTODY

CLIENT: PBW
ADDRESS: 2201 DOUBLE CREEK DR ROUND ROCK, TX 78664
PHONE: 512-671-3434 FAX/E-MAIL: 512-671-3446
DATA REPORTED TO: WILL VIENNE
ADDITIONAL REPORT COPIES TO:

DATE: 11-2-15 PAGE 1 OF 1
PO #: 5164-B DHL WORK ORDER #: 1511007
PROJECT LOCATION OR NAME: LUMINANT - MARTIN LAKE
CLENT PROJECT #: 5164-B COLLECTOR: J. BRAYTON

Authorize 5% surcharge for TRRP Report? ☐ Yes ☐ No

S=SOIL P=PAINT W=WATER SL=SLUDGE A=AIR O=OTHER L=LIQUID SO=SOLID SE=SEDIMENT

PRESERVATION: HCl, HNO_3, H_2SO_4 ☐ NaOH ☐, ICE, UNPRESERVED

ANALYSES: BTEX ☐ MTBE ☐ [METHOD 8021] TPH 1005 ☐ TPH 1006 ☐ HOLD 1006 ☐ GRO [METHOD 8015] ☐ DRO [METHOD 8105] ☐ VOC 8260 ☐ VOC 624 ☐ VOC 8260/5035 ☐ SVOC 8270 ☐ PAH 8270 ☐ HOLD PAH ☐ SVOC 625 ☐ 8270 PEST ☐ 625 PEST/PCB ☐ 608 PCB ☐ 8270 O-P PEST ☐ 8082 PCB ☐ 8270 PCB ☐ 8321 HERB ☐ T PHOS, AMMONIA ☐ METALS 6020 ☐ METALS 200.8 ☐ DISS. METALS ☐ RCRA ☐ TX11 ☐ PH ☐ HEX CHROM ☐ ALKALINITY ☐ COD ☐ CHLORIDE ☐ ANIONS ☐ TCLP-SVOC ☐ VOC ☐ PEST ☐ HERB ☐ TCLP-METALS ☐ RCRA 8 ☐ TX-11 ☐ Pb ☐ RCI ☐ FLASHPOINT ☐ DGAS ☐ TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐ SEE ATTACHED

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	HCl	HNO_3	H_2SO_4 ☐ NaOH ☐	ICE	UNPRESERVED	ANALYSES	FIELD NOTES
BMW-19	01	10-29-15	1420	W	P	4						X	
BMW-11AR	02	↓	1525	W	P	4						X	
MW-18A	03	↓	1725	W	P	4						X	
BMW-18	04	10-30-15	0945	W	P	4						X	

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
[signature]	11-2-15 1155	[signature]
RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)

APPENDIX F-Revision 2 Februar 21, 2014 ☐ DHL DISPOSAL @ $2.00 each ☐ Return

TURN AROUND TIME
RUSH ☐ CALL FIRST
1 DAY ☐ CALL FIRST
2 DAY ☐
NORMAL ☒
OTHER ☐

LABORATORY USE ONLY:
RECEIVING TEMP: 2.8 THERM #: 78
CUSTODY SEALS: ☐ BROKEN ☐ INTACT ☒ NOT USED
CARRIER: ☐ LONE STAR ☐ FEDEX ☐ UPS ☐ OTHER
☐ COURIER DELIVERY
☒ HAND DELIVERED

ATTACHMENT 1
CCR ANALYTE SUMMARY

Appendix III Constituents	Appendix IV Constituents
Boron	Arsenic
Calcium	Barium
Chloride	Beryllium
Fluoride	Cadmium
pH	Chromium
Sulfate	Cobalt
Total Dissolved Solids	Fluoride
	Lead
	Lithium
	Mercury
	Molybdenum
	Selenium
	Thallium
	Radium 226 and 228 combined

DHL Analytical, Inc.

Sample Receipt Checklist

Client Name **Pastor, Behling & Wheeler** Date Received: **11/2/2015**

Work Order Number **1511007** Received by **JB**

Checklist completed by: _____ 11/2/2015 Reviewed by _____ 11/2/2015
Signature Date Initials Date

Carrier name Hand Delivered

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	**2.8** °C
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH<2 acceptable upon receipt?	Yes ☑	No ☐	NA ☐ LOT # 8086
	Adjusted? WJ		Checked by
Water - ph>9 (S) or ph>12 (CN) acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted?		Checked by

Any No response must be detailed in the comments section below.

Client contacted _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding _____

Comments: _____

Corrective Action _____

DHL Analytical, Inc. **Date:** *04-Dec-15*

CLIENT: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake
Lab Order: 1511007

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Method SW6020A - Metals Analysis
Method SW7470A - Mercury Analysis
Method E300 - Anions Analysis
Method M4500-H+ B - pH of a Water Analysis
Method M2540C - TDS Analysis

LOG IN

The samples were received and log-in performed on 11/2/15. A total of 4 samples were received. The samples arrived in good condition and were properly packaged.

METALS ANALYSIS

For Metals analysis performed on 119/15 Boron was detected below the reporting limit in the method blank (MB-72211). All samples were detected greater than 10 times the amount in the blank for this analyte. No further corrective actions were taken.

For Metals analysis sample BMW-19 and BMW-18 had low responses for the internal standards Indium and/or Bismuth. All associated analytes (Barium, Cadmium, Molybdenum and/Lead) were not reported from this analytical run and were re-analyzed.

For Metals analysis performed on 11/9/15 the matrix spike and matrix spike duplicate recoveries were out of control limits for Calcium. These are flagged accordingly in the QC summary report. The sample selected for the matrix spike and matrix spike duplicate was not from this work order. The LCS was within control limits for this analyte. No further corrective actions were taken.

For Metals analysis performed on 11/9/15 LCVL2-151109 was slightly above control limits for Calcium. This is flagged accordingly. The associated CCV2-151109 was within control limits for this analyte. No further corrective actions were taken.

MERCURY ANALYSIS

For Mercury analysis the matrix spike and matrix spike duplicate was re-prepped and re-analyzed on 11/10/15. This was due to a prep error. This exceeded the 24 hour prep window.

DHL Analytical, Inc.

Date: *04-Dec-15*

CLIENT: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake
Lab Order: 1511007

Work Order Sample Summary

Lab Smp ID	Client Sample ID	Tag Number	Date Collected	Date Recved
1511007-01	BMW-19		10/29/15 02:20 PM	11/2/2015
1511007-02	BMW-11AR		10/29/15 03:25 PM	11/2/2015
1511007-03	MW-18A		10/29/15 05:25 PM	11/2/2015
1511007-04	BMW-18		10/30/15 09:45 AM	11/2/2015

Lab Order: 1511007
Client: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1511007-01A	BMW-19	10/29/15 02:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	11/06/15 09:55 AM	72211
	BMW-19	10/29/15 02:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	11/06/15 09:55 AM	72211
	BMW-19	10/29/15 02:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	11/06/15 09:55 AM	72211
	BMW-19	10/29/15 02:20 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	11/05/15 06:10 AM	72178
1511007-01D	BMW-19	10/29/15 02:20 PM	Aqueous	E300	Anion Preparation	11/09/15 09:25 AM	72221
	BMW-19	10/29/15 02:20 PM	Aqueous	E300	Anion Preparation	11/09/15 09:25 AM	72221
	BMW-19	10/29/15 02:20 PM	Aqueous	M4500-H+ B	pH Preparation	11/02/15 02:37 PM	72128
	BMW-19	10/29/15 02:20 PM	Aqueous	M2540C	TDS Preparation	11/03/15 02:01 PM	72150
1511007-02A	BMW-11AR	10/29/15 03:25 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	11/06/15 09:55 AM	72211
	BMW-11AR	10/29/15 03:25 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	11/06/15 09:55 AM	72211
	BMW-11AR	10/29/15 03:25 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	11/06/15 09:55 AM	72211
	BMW-11AR	10/29/15 03:25 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	11/05/15 06:10 AM	72178
1511007-02D	BMW-11AR	10/29/15 03:25 PM	Aqueous	E300	Anion Preparation	11/09/15 09:25 AM	72221
	BMW-11AR	10/29/15 03:25 PM	Aqueous	E300	Anion Preparation	11/09/15 09:25 AM	72221
	BMW-11AR	10/29/15 03:25 PM	Aqueous	M4500-H+ B	pH Preparation	11/02/15 02:37 PM	72128
	BMW-11AR	10/29/15 03:25 PM	Aqueous	M2540C	TDS Preparation	11/03/15 02:01 PM	72150
1511007-03A	MW-18A	10/29/15 05:25 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	11/06/15 09:55 AM	72211
	MW-18A	10/29/15 05:25 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	11/06/15 09:55 AM	72211
	MW-18A	10/29/15 05:25 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	11/05/15 06:10 AM	72178
1511007-03D	MW-18A	10/29/15 05:25 PM	Aqueous	E300	Anion Preparation	11/09/15 09:25 AM	72221
	MW-18A	10/29/15 05:25 PM	Aqueous	M4500-H+ B	pH Preparation	11/02/15 02:37 PM	72128
	MW-18A	10/29/15 05:25 PM	Aqueous	M2540C	TDS Preparation	11/03/15 02:01 PM	72150
1511007-04A	BMW-18	10/30/15 09:45 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	11/06/15 09:55 AM	72211
	BMW-18	10/30/15 09:45 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	11/06/15 09:55 AM	72211
	BMW-18	10/30/15 09:45 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	11/05/15 06:10 AM	72178
1511007-04D	BMW-18	10/30/15 09:45 AM	Aqueous	E300	Anion Preparation	11/09/15 09:25 AM	72221
	BMW-18	10/30/15 09:45 AM	Aqueous	M4500-H+ B	pH Preparation	11/02/15 02:37 PM	72128
	BMW-18	10/30/15 09:45 AM	Aqueous	M2540C	TDS Preparation	11/03/15 02:01 PM	72150

Lab Order: 1511007
Client: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1511007-01A	BMW-19	Aqueous	SW7470A	Mercury Total: Aqueous	72178	1	11/09/15 12:51 PM	CETAC2_HG_151109B
	BMW-19	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72211	1	11/09/15 06:36 PM	ICP-MS3_151109A
	BMW-19	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72211	100	11/10/15 01:24 PM	ICP-MS4_151110B
	BMW-19	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72211	1	11/10/15 01:45 PM	ICP-MS4_151110B
1511007-01D	BMW-19	Aqueous	E300	Anions by IC method - Water	72221	1	11/09/15 11:38 AM	IC2_151109A
	BMW-19	Aqueous	E300	Anions by IC method - Water	72221	100	11/09/15 02:32 PM	IC2_151109A
	BMW-19	Aqueous	M4500-H+ B	pH	72128	1	11/02/15 04:13 PM	TITRATOR_151102A
	BMW-19	Aqueous	M2540C	Total Dissolved Solids	72150	1	11/04/15 07:20 AM	WC_151103B
1511007-02A	BMW-11AR	Aqueous	SW7470A	Mercury Total: Aqueous	72178	1	11/09/15 12:53 PM	CETAC2_HG_151109B
	BMW-11AR	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72211	1	11/09/15 06:42 PM	ICP-MS3_151109A
	BMW-11AR	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72211	10	11/10/15 01:26 PM	ICP-MS4_151110B
	BMW-11AR	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72211	1	11/10/15 01:47 PM	ICP-MS4_151110B
1511007-02D	BMW-11AR	Aqueous	E300	Anions by IC method - Water	72221	10	11/09/15 03:05 PM	IC2_151109A
	BMW-11AR	Aqueous	E300	Anions by IC method - Water	72221	1	11/09/15 12:01 PM	IC2_151109A
	BMW-11AR	Aqueous	M4500-H+ B	pH	72128	1	11/02/15 04:14 PM	TITRATOR_151102A
	BMW-11AR	Aqueous	M2540C	Total Dissolved Solids	72150	1	11/04/15 07:20 AM	WC_151103B
1511007-03A	MW-18A	Aqueous	SW7470A	Mercury Total: Aqueous	72178	1	11/09/15 12:55 PM	CETAC2_HG_151109B
	MW-18A	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72211	1	11/09/15 06:54 PM	ICP-MS3_151109A
	MW-18A	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72211	1	11/10/15 01:49 PM	ICP-MS4_151110B
1511007-03D	MW-18A	Aqueous	E300	Anions by IC method - Water	72221	1	11/09/15 12:15 PM	IC2_151109A
	MW-18A	Aqueous	M4500-H+ B	pH	72128	1	11/02/15 04:17 PM	TITRATOR_151102A
	MW-18A	Aqueous	M2540C	Total Dissolved Solids	72150	1	11/04/15 07:20 AM	WC_151103B
1511007-04A	BMW-18	Aqueous	SW7470A	Mercury Total: Aqueous	72178	1	11/09/15 01:02 PM	CETAC2_HG_151109B
	BMW-18	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72211	1	11/09/15 07:00 PM	ICP-MS3_151109A
	BMW-18	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72211	1	11/10/15 01:51 PM	ICP-MS4_151110B
1511007-04D	BMW-18	Aqueous	E300	Anions by IC method - Water	72221	1	11/09/15 01:34 PM	IC2_151109A

Lab Order: 1511007
Client: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1511007-04D	BMW-18	Aqueous	M4500-H+ B	pH	72128	1	11/02/15 04:19 PM	TITRATOR_151102A
	BMW-18	Aqueous	M2540C	Total Dissolved Solids	72150	1	11/04/15 07:20 AM	WC_151103B

DHL Analytical, Inc.

Date: *04-Dec-15*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	BMW-19
Project:	Luminant - Martin Lake	**Lab ID:**	1511007-01
Project No:	5164-B	**Collection Date:**	10/29/15 02:20 PM
Lab Order:	1511007	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **ABO**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	11/09/15 12:51 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	11/10/15 01:45 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	11/09/15 06:36 PM
Barium	0.0231	0.00300	0.0100		mg/L	1	11/10/15 01:45 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	11/10/15 01:45 PM
Boron	0.385	0.0100	0.0300		mg/L	1	11/09/15 06:36 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	11/10/15 01:45 PM
Calcium	417	10.0	30.0		mg/L	100	11/10/15 01:24 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	11/09/15 06:36 PM
Cobalt	0.0161	0.00300	0.00500		mg/L	1	11/10/15 01:45 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	11/10/15 01:45 PM
Lithium	0.0545	0.00500	0.0100		mg/L	1	11/09/15 06:36 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	11/10/15 01:45 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	11/09/15 06:36 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	11/10/15 01:45 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	16.2	0.300	1.00		mg/L	1	11/09/15 11:38 AM
Fluoride	<0.100	0.100	0.400		mg/L	1	11/09/15 11:38 AM
Sulfate	2070	100	300		mg/L	100	11/09/15 02:32 PM
PH		**M4500-H+ B**					Analyst: **LM**
pH	6.75	0	0		pH Units@10.2℃	1	11/02/15 04:13 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **BJT**
Total Dissolved Solids (Residue, Filterable)	4060	50.0	50.0		mg/L	1	11/04/15 07:20 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *04-Dec-15*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	BMW-11AR
Project:	Luminant - Martin Lake	**Lab ID:**	1511007-02
Project No:	5164-B	**Collection Date:**	10/29/15 03:25 PM
Lab Order:	1511007	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **ABO**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	11/09/15 12:53 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	11/10/15 01:47 PM
Arsenic	0.0116	0.00200	0.00500		mg/L	1	11/09/15 06:42 PM
Barium	0.0659	0.00300	0.0100		mg/L	1	11/09/15 06:42 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	11/10/15 01:47 PM
Boron	0.332	0.0100	0.0300		mg/L	1	11/09/15 06:42 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	11/09/15 06:42 PM
Calcium	91.5	1.00	3.00		mg/L	10	11/10/15 01:26 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	11/09/15 06:42 PM
Cobalt	0.0124	0.00300	0.00500		mg/L	1	11/10/15 01:47 PM
Lead	0.000391	0.000300	0.00100	J	mg/L	1	11/09/15 06:42 PM
Lithium	0.0594	0.00500	0.0100		mg/L	1	11/09/15 06:42 PM
Molybdenum	0.00496	0.00200	0.00500	J	mg/L	1	11/09/15 06:42 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	11/09/15 06:42 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	11/10/15 01:47 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	11.3	0.300	1.00		mg/L	1	11/09/15 12:01 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	11/09/15 12:01 PM
Sulfate	243	10.0	30.0		mg/L	10	11/09/15 03:05 PM
PH		**M4500-H+ B**					Analyst: **LM**
pH	7.01	0	0		pH Units@10.6℃	1	11/02/15 04:14 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **BJT**
Total Dissolved Solids (Residue, Filterable)	923	10.0	10.0		mg/L	1	11/04/15 07:20 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *04-Dec-15*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	MW-18A
Project:	Luminant - Martin Lake	**Lab ID:**	1511007-03
Project No:	5164-B	**Collection Date:**	10/29/15 05:25 PM
Lab Order:	1511007	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **ABO**
Mercury	0.00350	0.0000800	0.000200		mg/L	1	11/09/15 12:55 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	11/10/15 01:49 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	11/09/15 06:54 PM
Barium	0.0630	0.00300	0.0100		mg/L	1	11/09/15 06:54 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	11/10/15 01:49 PM
Boron	0.158	0.0100	0.0300		mg/L	1	11/09/15 06:54 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	11/09/15 06:54 PM
Calcium	1.75	0.100	0.300		mg/L	1	11/10/15 01:49 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	11/09/15 06:54 PM
Cobalt	0.00321	0.00300	0.00500	J	mg/L	1	11/10/15 01:49 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	11/09/15 06:54 PM
Lithium	0.00901	0.00500	0.0100	J	mg/L	1	11/09/15 06:54 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	11/09/15 06:54 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	11/09/15 06:54 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	11/10/15 01:49 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	9.34	0.300	1.00		mg/L	1	11/09/15 12:15 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	11/09/15 12:15 PM
Sulfate	7.59	1.00	3.00		mg/L	1	11/09/15 12:15 PM
PH		**M4500-H+ B**					Analyst: **LM**
pH	5.45	0	0		pH Units@10.9℃	1	11/02/15 04:17 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **BJT**
Total Dissolved Solids (Residue, Filterable)	83.0	10.0	10.0		mg/L	1	11/04/15 07:20 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *04-Dec-15*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	BMW-18
Project:	Luminant - Martin Lake	**Lab ID:**	1511007-04
Project No:	5164-B	**Collection Date:**	10/30/15 09:45 AM
Lab Order:	1511007	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **ABO**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	11/09/15 01:02 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	11/10/15 01:51 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	11/09/15 07:00 PM
Barium	0.0401	0.00300	0.0100		mg/L	1	11/09/15 07:00 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	11/10/15 01:51 PM
Boron	0.410	0.0100	0.0300		mg/L	1	11/09/15 07:00 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	11/09/15 07:00 PM
Calcium	7.20	0.100	0.300		mg/L	1	11/10/15 01:51 PM
Chromium	0.00944	0.00200	0.00500		mg/L	1	11/09/15 07:00 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	11/10/15 01:51 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	11/10/15 01:51 PM
Lithium	0.140	0.00500	0.0100		mg/L	1	11/09/15 07:00 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	11/09/15 07:00 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	11/09/15 07:00 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	11/10/15 01:51 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	26.6	0.300	1.00		mg/L	1	11/09/15 01:34 PM
Fluoride	0.148	0.100	0.400	J	mg/L	1	11/09/15 01:34 PM
Sulfate	97.3	1.00	3.00		mg/L	1	11/09/15 01:34 PM
PH		**M4500-H+ B**					Analyst: **LM**
pH	10.4	0	0		pH Units@11.6℃	1	11/02/15 04:19 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **BJT**
Total Dissolved Solids (Residue, Filterable)	768	10.0	10.0		mg/L	1	11/04/15 07:20 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT: Pastor, Behling & Wheeler
Work Order: 1511007
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_151109B

The QC data in batch 72178 applies to the following samples: 1511007-01A, 1511007-02A, 1511007-03A, 1511007-04A

Sample ID	**MB-72178**	Batch ID:	**72178**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**CETAC2_HG_151109B**	Analysis Date:	**11/9/2015 12:21:59 PM**	Prep Date:	**11/5/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.0000800	0.000200								

Sample ID	**LCS-72178**	Batch ID:	**72178**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**CETAC2_HG_151109B**	Analysis Date:	**11/9/2015 12:24:15 PM**	Prep Date:	**11/5/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00196	0.000200	0.00200	0	98.0	85	115			

Sample ID	**LCSD-72178**	Batch ID:	**72178**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**LCSD**	Run ID:	**CETAC2_HG_151109B**	Analysis Date:	**11/9/2015 12:26:31 PM**	Prep Date:	**11/5/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00211	0.000200	0.00200	0	106	85	115	7.37	15	

Sample ID	**1510306-01A SD**	Batch ID:	**72178**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**SD**	Run ID:	**CETAC2_HG_151109B**	Analysis Date:	**11/9/2015 12:31:04 PM**	Prep Date:	**11/5/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.000400	0.00100	0	0				0	10	

Sample ID	**1510306-01A PDS**	Batch ID:	**72178**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**PDS**	Run ID:	**CETAC2_HG_151109B**	Analysis Date:	**11/9/2015 12:33:19 PM**	Prep Date:	**11/5/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00246	0.000200	0.00250	0	98.4	85	115			

Sample ID	**1510306-01A MS**	Batch ID:	**72178**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**MS**	Run ID:	**CETAC2_HG_151109B**	Analysis Date:	**11/10/2015 4:29:45 PM**	Prep Date:	**11/5/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00207	0.000200	0.00200	0	104	80	120			

Sample ID	**1510306-01A MSD**	Batch ID:	**72178**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**MSD**	Run ID:	**CETAC2_HG_151109B**	Analysis Date:	**11/10/2015 4:32:01 PM**	Prep Date:	**11/5/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00207	0.000200	0.00200	0	104	80	120	0	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_151109B

Sample ID	**ICV-151109**	Batch ID:	**R82564**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**ICV**	Run ID:	**CETAC2_HG_151109B**	Analysis Date:	**11/9/2015 10:48:31 AM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00393	0.000200	0.00400	0	98.2	90	110			

Sample ID	**CCV2-151109**	Batch ID:	**R82564**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**CETAC2_HG_151109B**	Analysis Date:	**11/9/2015 12:17:26 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00204	0.000200	0.00200	0	102	90	110			

Sample ID	**CCV3-151109**	Batch ID:	**R82564**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**CETAC2_HG_151109B**	Analysis Date:	**11/9/2015 12:58:16 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00204	0.000200	0.00200	0	102	90	110			

Sample ID	**CCV4-151109**	Batch ID:	**R82564**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**CETAC2_HG_151109B**	Analysis Date:	**11/9/2015 1:14:13 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00202	0.000200	0.00200	0	101	90	110			

Sample ID	**CCV5-151109**	Batch ID:	**R82564**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**CETAC2_HG_151109B**	Analysis Date:	**11/9/2015 1:33:14 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00200	0.000200	0.00200	0	100	90	110			

Sample ID	**ICV-151110**	Batch ID:	**R82564**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**ICV**	Run ID:	**CETAC2_HG_151109B**	Analysis Date:	**11/10/2015 3:36:25 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00396	0.000200	0.00400	0	99.0	90	110			

Sample ID	**CCV1-151110**	Batch ID:	**R82564**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**CETAC2_HG_151109B**	Analysis Date:	**11/10/2015 4:20:38 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00206	0.000200	0.00200	0	103	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1511007
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_151109B

Sample ID **CCV2-151110** Batch ID: **R82564** TestNo: **SW7470A** Units: **mg/L**
SampType: **CCV** Run ID: **CETAC2_HG_151109B** Analysis Date: **11/10/2015 4:36:35 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00204	0.000200	0.00200	0	102	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1511007
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS3_151109A

The QC data in batch 72211 applies to the following samples: 1511007-01A, 1511007-02A, 1511007-03A, 1511007-04A

Sample ID **MB-72211** Batch ID: **72211** TestNo: **SW6020A** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS3_151109A** Analysis Date: **11/9/2015 4:35:00 PM** Prep Date: **11/6/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.000800	0.00250								
Arsenic	<0.00200	0.00500								
Barium	<0.00300	0.0100								
Beryllium	<0.000300	0.00100								
Boron	0.0135	0.0300								
Cadmium	<0.000300	0.00100								
Calcium	<0.100	0.300								
Chromium	<0.00200	0.00500								
Cobalt	<0.00300	0.00500								
Lead	<0.000300	0.00100								
Lithium	<0.00500	0.0100								
Molybdenum	<0.00200	0.00500								
Selenium	<0.00200	0.00500								
Thallium	<0.000500	0.00150								

Sample ID **LCS-72211** Batch ID: **72211** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS3_151109A** Analysis Date: **11/9/2015 4:41:00 PM** Prep Date: **11/6/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.177	0.00250	0.200	0	88.3	80	120			
Arsenic	0.178	0.00500	0.200	0	89.0	80	120			
Barium	0.177	0.0100	0.200	0	88.3	80	120			
Beryllium	0.187	0.00100	0.200	0	93.6	80	120			
Boron	0.185	0.0300	0.200	0	92.6	80	120			
Cadmium	0.172	0.00100	0.200	0	86.2	80	120			
Calcium	4.48	0.300	5.00	0	89.7	80	120			
Chromium	0.178	0.00500	0.200	0	88.9	80	120			
Cobalt	0.188	0.00500	0.200	0	94.1	80	120			
Lead	0.178	0.00100	0.200	0	89.2	80	120			
Lithium	0.182	0.0100	0.200	0	91.2	80	120			
Molybdenum	0.169	0.00500	0.200	0	84.4	80	120			
Selenium	0.178	0.00500	0.200	0	89.2	80	120			
Thallium	0.187	0.00150	0.200	0	93.4	80	120			

Sample ID **LCSD-72211** Batch ID: **72211** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS3_151109A** Analysis Date: **11/9/2015 4:47:00 PM** Prep Date: **11/6/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.181	0.00250	0.200	0	90.4	80	120	2.35	15	
Arsenic	0.178	0.00500	0.200	0	88.8	80	120	0.281	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1511007
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS3_151109A

Sample ID **LCSD-72211**	Batch ID: **72211**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCSD**	Run ID: **ICP-MS3_151109A**	Analysis Date: **11/9/2015 4:47:00 PM**	Prep Date: **11/6/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.177	0.0100	0.200	0	88.6	80	120	0.396	15	
Beryllium	0.189	0.00100	0.200	0	94.4	80	120	0.851	15	
Boron	0.190	0.0300	0.200	0	95.0	80	120	2.56	15	
Cadmium	0.174	0.00100	0.200	0	86.8	80	120	0.694	15	
Calcium	4.60	0.300	5.00	0	92.0	80	120	2.53	15	
Chromium	0.178	0.00500	0.200	0	88.8	80	120	0.113	15	
Cobalt	0.186	0.00500	0.200	0	93.2	80	120	1.01	15	
Lead	0.181	0.00100	0.200	0	90.6	80	120	1.45	15	
Lithium	0.183	0.0100	0.200	0	91.6	80	120	0.492	15	
Molybdenum	0.170	0.00500	0.200	0	85.2	80	120	1.00	15	
Selenium	0.179	0.00500	0.200	0	89.4	80	120	0.168	15	
Thallium	0.187	0.00150	0.200	0	93.4	80	120	0	15	

Sample ID **1510306-01A SD**	Batch ID: **72211**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS3_151109A**	Analysis Date: **11/9/2015 5:06:00 PM**	Prep Date: **11/6/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.00400	0.0125	0	0				0	10	
Arsenic	<0.0100	0.0250	0	0				0	10	
Barium	0.274	0.0500	0	0.273				0.238	10	
Beryllium	<0.00150	0.00500	0	0				0	10	
Boron	0.114	0.150	0	0.112				1.28	10	
Cadmium	<0.00150	0.00500	0	0				0	10	
Chromium	<0.0100	0.0250	0	0				0	10	
Cobalt	<0.0150	0.0250	0	0.0106				0	10	
Lead	<0.00150	0.00500	0	0				0	10	
Lithium	<0.0250	0.0500	0	0				0	10	
Molybdenum	<0.0100	0.0250	0	0				0	10	
Selenium	<0.0100	0.0250	0	0				0	10	
Thallium	<0.00250	0.00750	0	0				0	10	

Sample ID **1510306-01A PDS**	Batch ID: **72211**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS3_151109A**	Analysis Date: **11/9/2015 5:36:00 PM**	Prep Date: **11/6/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.191	0.00250	0.200	0	95.5	80	120			
Arsenic	0.193	0.00500	0.200	0	96.4	80	120			
Barium	0.462	0.0100	0.200	0.273	94.4	80	120			
Beryllium	0.202	0.00100	0.200	0	101	80	120			
Boron	0.299	0.0300	0.200	0.112	93.5	80	120			
Cadmium	0.182	0.00100	0.200	0	91.2	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1511007
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS3_151109A

Sample ID **1510306-01A PDS**	Batch ID: **72211**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS3_151109A**	Analysis Date: **11/9/2015 5:36:00 PM**	Prep Date: **11/6/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chromium	0.194	0.00500	0.200	0	97.0	80	120			
Cobalt	0.209	0.00500	0.200	0.0106	99.1	80	120			
Lead	0.196	0.00100	0.200	0	98.2	80	120			
Lithium	0.192	0.0100	0.200	0	96.0	80	120			
Molybdenum	0.185	0.00500	0.200	0	92.6	80	120			
Selenium	0.185	0.00500	0.200	0	92.6	80	120			
Thallium	0.205	0.00150	0.200	0	102	80	120			

Sample ID **1510306-01A MS**	Batch ID: **72211**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS3_151109A**	Analysis Date: **11/9/2015 5:42:00 PM**	Prep Date: **11/6/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.196	0.00250	0.200	0	98.2	80	120			
Arsenic	0.193	0.00500	0.200	0	96.4	80	120			
Barium	0.475	0.0100	0.200	0.273	101	80	120			
Beryllium	0.200	0.00100	0.200	0	99.8	80	120			
Boron	0.301	0.0300	0.200	0.112	94.2	80	120			
Cadmium	0.183	0.00100	0.200	0	91.4	80	120			
Calcium	84.0	0.300	5.00	77.0	140	80	120			S
Chromium	0.187	0.00500	0.200	0	93.4	80	120			
Cobalt	0.201	0.00500	0.200	0.0106	95.1	80	120			
Lead	0.189	0.00100	0.200	0	94.3	80	120			
Lithium	0.190	0.0100	0.200	0	94.8	80	120			
Molybdenum	0.186	0.00500	0.200	0	93.0	80	120			
Selenium	0.185	0.00500	0.200	0	92.4	80	120			
Thallium	0.199	0.00150	0.200	0	99.4	80	120			

Sample ID **1510306-01A MSD**	Batch ID: **72211**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS3_151109A**	Analysis Date: **11/9/2015 5:48:00 PM**	Prep Date: **11/6/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.185	0.00250	0.200	0	92.5	80	120	6.03	15	
Arsenic	0.188	0.00500	0.200	0	93.8	80	120	2.79	15	
Barium	0.448	0.0100	0.200	0.273	87.5	80	120	5.79	15	
Beryllium	0.190	0.00100	0.200	0	95.0	80	120	4.93	15	
Boron	0.287	0.0300	0.200	0.112	87.3	80	120	4.73	15	
Cadmium	0.176	0.00100	0.200	0	87.8	80	120	4.13	15	
Calcium	79.5	0.300	5.00	77.0	51.6	80	120	5.41	15	S
Chromium	0.181	0.00500	0.200	0	90.4	80	120	3.26	15	
Cobalt	0.196	0.00500	0.200	0.0106	92.5	80	120	2.67	15	
Lead	0.178	0.00100	0.200	0	89.2	80	120	5.50	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1511007
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS3_151109A

Sample ID **1510306-01A MSD** Batch ID: **72211** TestNo: **SW6020A** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS3_151109A** Analysis Date: **11/9/2015 5:48:00 PM** Prep Date: **11/6/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lithium	0.182	0.0100	0.200	0	91.2	80	120	3.82	15	
Molybdenum	0.176	0.00500	0.200	0	88.2	80	120	5.24	15	
Selenium	0.182	0.00500	0.200	0	91.0	80	120	1.53	15	
Thallium	0.189	0.00150	0.200	0	94.4	80	120	5.26	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1511007
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS3_151109A

Sample ID **ICV1-151109**	Batch ID: **R82588**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS3_151109A**	Analysis Date: **11/9/2015 12:27:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.100	0.00250	0.100	0	100	90	110			
Arsenic	0.0973	0.00500	0.100	0	97.3	90	110			
Barium	0.0998	0.0100	0.100	0	99.8	90	110			
Beryllium	0.105	0.00100	0.100	0	105	90	110			
Boron	0.0945	0.0300	0.100	0	94.5	90	110			
Cadmium	0.0970	0.00100	0.100	0	97.0	90	110			
Calcium	2.34	0.300	2.50	0	93.5	90	110			
Chromium	0.106	0.00500	0.100	0	106	90	110			
Cobalt	0.108	0.00500	0.100	0	108	90	110			
Lead	0.103	0.00100	0.100	0	103	90	110			
Lithium	0.0997	0.0100	0.100	0	99.7	90	110			
Molybdenum	0.0926	0.00500	0.100	0	92.6	90	110			
Selenium	0.0940	0.00500	0.100	0	94.0	90	110			
Thallium	0.101	0.00150	0.100	0	101	90	110			

Sample ID **ILCVL-151109**	Batch ID: **R82588**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS3_151109A**	Analysis Date: **11/9/2015 12:39:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00189	0.00250	0.00200	0	94.4	70	130			
Arsenic	0.00477	0.00500	0.00500	0	95.3	70	130			
Barium	0.00497	0.0100	0.00500	0	99.5	70	130			
Beryllium	0.00110	0.00100	0.00100	0	110	70	130			
Boron	0.0197	0.0300	0.0200	0	98.4	70	130			
Cadmium	0.00101	0.00100	0.00100	0	101	70	130			
Calcium	0.102	0.300	0.100	0	102	70	130			
Chromium	0.00505	0.00500	0.00500	0	101	70	130			
Cobalt	0.00525	0.00500	0.00500	0	105	70	130			
Lead	0.00108	0.00100	0.00100	0	108	70	130			
Lithium	0.0101	0.0100	0.0100	0	101	70	130			
Molybdenum	0.00482	0.00500	0.00500	0	96.3	70	130			
Selenium	0.00513	0.00500	0.00500	0	103	70	130			
Thallium	0.00106	0.00150	0.00100	0	106	70	130			

Sample ID **CCV1-151109**	Batch ID: **R82588**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS3_151109A**	Analysis Date: **11/9/2015 3:35:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.201	0.00250	0.200	0	100	90	110			
Arsenic	0.192	0.00500	0.200	0	95.8	90	110			
Barium	0.194	0.0100	0.200	0	97.2	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1511007
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS3_151109A

Sample ID **CCV1-151109** Batch ID: **R82588** TestNo: **SW6020A** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS3_151109A** Analysis Date: **11/9/2015 3:35:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.205	0.00100	0.200	0	102	90	110			
Boron	0.194	0.0300	0.200	0	97.0	90	110			
Cadmium	0.191	0.00100	0.200	0	95.4	90	110			
Calcium	5.15	0.300	5.00	0	103	90	110			
Chromium	0.194	0.00500	0.200	0	97.0	90	110			
Cobalt	0.202	0.00500	0.200	0	101	90	110			
Lead	0.201	0.00100	0.200	0	101	90	110			
Lithium	0.194	0.0100	0.200	0	96.9	90	110			
Molybdenum	0.187	0.00500	0.200	0	93.6	90	110			
Selenium	0.192	0.00500	0.200	0	96.2	90	110			
Thallium	0.207	0.00150	0.200	0	103	90	110			

Sample ID **LCVL1-151109** Batch ID: **R82588** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS3_151109A** Analysis Date: **11/9/2015 3:53:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00186	0.00250	0.00200	0	93.1	70	130			
Arsenic	0.00461	0.00500	0.00500	0	92.3	70	130			
Barium	0.00485	0.0100	0.00500	0	97.1	70	130			
Beryllium	0.00102	0.00100	0.00100	0	102	70	130			
Boron	0.0190	0.0300	0.0200	0	95.1	70	130			
Cadmium	0.000956	0.00100	0.00100	0	95.6	70	130			
Calcium	0.113	0.300	0.100	0	113	70	130			
Chromium	0.00470	0.00500	0.00500	0	94.0	70	130			
Cobalt	0.00495	0.00500	0.00500	0	99.0	70	130			
Lead	0.00102	0.00100	0.00100	0	102	70	130			
Lithium	0.00951	0.0100	0.0100	0	95.1	70	130			
Molybdenum	0.00445	0.00500	0.00500	0	89.0	70	130			
Selenium	0.00483	0.00500	0.00500	0	96.6	70	130			
Thallium	0.00100	0.00150	0.00100	0	100	70	130			

Sample ID **CCV2-151109** Batch ID: **R82588** TestNo: **SW6020A** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS3_151109A** Analysis Date: **11/9/2015 5:54:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.202	0.00250	0.200	0	101	90	110			
Arsenic	0.200	0.00500	0.200	0	99.8	90	110			
Barium	0.201	0.0100	0.200	0	100	90	110			
Beryllium	0.215	0.00100	0.200	0	108	90	110			
Boron	0.198	0.0300	0.200	0	99.2	90	110			
Cadmium	0.192	0.00100	0.200	0	96.1	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1511007
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS3_151109A

Sample ID **CCV2-151109** Batch ID: **R82588** TestNo: **SW6020A** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS3_151109A** Analysis Date: **11/9/2015 5:54:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	5.44	0.300	5.00	0	109	90	110			
Chromium	0.200	0.00500	0.200	0	99.8	90	110			
Cobalt	0.210	0.00500	0.200	0	105	90	110			
Lead	0.204	0.00100	0.200	0	102	90	110			
Lithium	0.208	0.0100	0.200	0	104	90	110			
Molybdenum	0.192	0.00500	0.200	0	96.2	90	110			
Selenium	0.200	0.00500	0.200	0	100	90	110			
Thallium	0.212	0.00150	0.200	0	106	90	110			

Sample ID **LCVL2-151109** Batch ID: **R82588** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS3_151109A** Analysis Date: **11/9/2015 6:12:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00192	0.00250	0.00200	0	96.0	70	130			
Arsenic	0.00484	0.00500	0.00500	0	96.7	70	130			
Barium	0.00493	0.0100	0.00500	0	98.7	70	130			
Beryllium	0.00103	0.00100	0.00100	0	103	70	130			
Boron	0.0200	0.0300	0.0200	0	100	70	130			
Cadmium	0.00101	0.00100	0.00100	0	101	70	130			
Calcium	0.131	0.300	0.100	0	131	70	130			S
Chromium	0.00482	0.00500	0.00500	0	96.4	70	130			
Cobalt	0.00508	0.00500	0.00500	0	102	70	130			
Lead	0.00103	0.00100	0.00100	0	103	70	130			
Lithium	0.00992	0.0100	0.0100	0	99.2	70	130			
Molybdenum	0.00456	0.00500	0.00500	0	91.2	70	130			
Selenium	0.00499	0.00500	0.00500	0	99.7	70	130			
Thallium	0.00101	0.00150	0.00100	0	101	70	130			

Sample ID **CCV3-151105** Batch ID: **R82588** TestNo: **SW6020A** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS3_151109A** Analysis Date: **11/9/2015 7:42:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.216	0.00500	0.200	0	108	90	110			
Barium	0.217	0.0100	0.200	0	109	90	110			
Boron	0.204	0.0300	0.200	0	102	90	110			
Cadmium	0.210	0.00100	0.200	0	105	90	110			
Chromium	0.219	0.00500	0.200	0	109	90	110			
Lead	0.219	0.00100	0.200	0	109	90	110			
Lithium	0.216	0.0100	0.200	0	108	90	110			
Molybdenum	0.212	0.00500	0.200	0	106	90	110			
Selenium	0.208	0.00500	0.200	0	104	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1511007
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS3_151109A

Sample ID **LCVL3-151105** Batch ID: **R82588** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS3_151109A** Analysis Date: **11/9/2015 8:13:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.00506	0.00500	0.00500	0	101	70	130			
Barium	0.00534	0.0100	0.00500	0	107	70	130			
Boron	0.0193	0.0300	0.0200	0	96.4	70	130			
Cadmium	0.00105	0.00100	0.00100	0	105	70	130			
Chromium	0.00534	0.00500	0.00500	0	107	70	130			
Lead	0.00105	0.00100	0.00100	0	105	70	130			
Lithium	0.0106	0.0100	0.0100	0	106	70	130			
Molybdenum	0.00512	0.00500	0.00500	0	103	70	130			
Selenium	0.00526	0.00500	0.00500	0	105	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1511007
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_151110B

The QC data in batch 72211 applies to the following samples: 1511007-01A, 1511007-02A, 1511007-03A, 1511007-04A

Sample ID **1510306-01A SD**	Batch ID: **72211**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS4_151110B**	Analysis Date: **11/10/2015 1:12:00 PM**	Prep Date: **11/6/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	75.5	15.0	0	76.3				1.05	10	

Sample ID **1510306-01A PDS**	Batch ID: **72211**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_151110B**	Analysis Date: **11/10/2015 1:32:00 PM**	Prep Date: **11/6/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	117	3.00	50.0	76.3	81.6	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

Sample ID **ICV-151110**	Batch ID: **R82595**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_151110B**	Analysis Date: **11/10/2015 10:51:00 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.103	0.00250	0.100	0	103	90	110			
Barium	0.103	0.0100	0.100	0	103	90	110			
Beryllium	0.102	0.00100	0.100	0	102	90	110			
Cadmium	0.102	0.00100	0.100	0	102	90	110			
Calcium	2.25	0.300	2.50	0	90.0	90	110			
Cobalt	0.110	0.00500	0.100	0	110	90	110			
Lead	0.103	0.00100	0.100	0	103	90	110			
Molybdenum	0.0983	0.00500	0.100	0	98.3	90	110			
Thallium	0.102	0.00150	0.100	0	102	90	110			

Sample ID **LCVL-151110**	Batch ID: **R82595**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_151110B**	Analysis Date: **11/10/2015 10:59:00 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00206	0.00250	0.00200	0	103	70	130			
Barium	0.00519	0.0100	0.00500	0	104	70	130			
Beryllium	0.00126	0.00100	0.00100	0	126	70	130			
Cadmium	0.00106	0.00100	0.00100	0	106	70	130			
Calcium	0.0951	0.300	0.100	0	95.1	70	130			
Cobalt	0.00546	0.00500	0.00500	0	109	70	130			
Lead	0.00103	0.00100	0.00100	0	103	70	130			
Molybdenum	0.00507	0.00500	0.00500	0	101	70	130			
Thallium	0.00104	0.00150	0.00100	0	104	70	130			

Sample ID **CCV4-151110**	Batch ID: **R82595**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_151110B**	Analysis Date: **11/10/2015 12:58:00 P**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.84	0.300	5.00	0	96.8	90	110			

Sample ID **LCVL4-151110**	Batch ID: **R82595**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_151110B**	Analysis Date: **11/10/2015 1:05:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.101	0.300	0.100	0	101	70	130			

Sample ID **CCV5-151110**	Batch ID: **R82595**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_151110B**	Analysis Date: **11/10/2015 1:34:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.201	0.00250	0.200	0	100	90	110			

Sample ID **CCV5-151110**	Batch ID: **R82595**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_151110B**	Analysis Date: **11/10/2015 1:34:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.192	0.0100	0.200	0	96.2	90	110			
Beryllium	0.200	0.00100	0.200	0	99.9	90	110			
Cadmium	0.192	0.00100	0.200	0	96.2	90	110			
Calcium	4.80	0.300	5.00	0	96.0	90	110			
Cobalt	0.203	0.00500	0.200	0	102	90	110			
Lead	0.191	0.00100	0.200	0	95.7	90	110			
Molybdenum	0.187	0.00500	0.200	0	93.3	90	110			
Thallium	0.197	0.00150	0.200	0	98.3	90	110			

Sample ID **LCVL5-151110**	Batch ID: **R82595**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_151110B**	Analysis Date: **11/10/2015 1:38:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00234	0.00250	0.00200	0	117	70	130			
Barium	0.00504	0.0100	0.00500	0	101	70	130			
Beryllium	0.000933	0.00100	0.00100	0	93.3	70	130			
Cadmium	0.00100	0.00100	0.00100	0	100	70	130			
Calcium	0.0950	0.300	0.100	0	95.0	70	130			
Cobalt	0.00538	0.00500	0.00500	0	108	70	130			
Lead	0.00100	0.00100	0.00100	0	100	70	130			
Molybdenum	0.00492	0.00500	0.00500	0	98.4	70	130			
Thallium	0.00101	0.00150	0.00100	0	101	70	130			

Sample ID **CCV6-151110**	Batch ID: **R82595**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_151110B**	Analysis Date: **11/10/2015 2:01:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.201	0.00250	0.200	0	100	90	110			
Barium	0.195	0.0100	0.200	0	97.7	90	110			
Beryllium	0.204	0.00100	0.200	0	102	90	110			
Cadmium	0.194	0.00100	0.200	0	96.8	90	110			
Calcium	5.46	0.300	5.00	0	109	90	110			
Cobalt	0.203	0.00500	0.200	0	101	90	110			
Lead	0.191	0.00100	0.200	0	95.7	90	110			
Molybdenum	0.187	0.00500	0.200	0	93.7	90	110			
Thallium	0.196	0.00150	0.200	0	97.8	90	110			

Sample ID **LCVL6-151110**	Batch ID: **R82595**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_151110B**	Analysis Date: **11/10/2015 2:05:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

CLIENT: Pastor, Behling & Wheeler
Work Order: 1511007
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_151110B

Sample ID **LCVL6-151110** Batch ID: **R82595** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_151110B** Analysis Date: **11/10/2015 2:05:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00209	0.00250	0.00200	0	104	70	130			
Barium	0.00500	0.0100	0.00500	0	100	70	130			
Beryllium	0.000981	0.00100	0.00100	0	98.1	70	130			
Cadmium	0.000986	0.00100	0.00100	0	98.6	70	130			
Calcium	0.107	0.300	0.100	0	107	70	130			
Cobalt	0.00531	0.00500	0.00500	0	106	70	130			
Lead	0.00101	0.00100	0.00100	0	101	70	130			
Molybdenum	0.00485	0.00500	0.00500	0	96.9	70	130			
Thallium	0.00101	0.00150	0.00100	0	101	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1511007
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_151109A

The QC data in batch 72221 applies to the following samples: 1511007-01D, 1511007-02D, 1511007-03D, 1511007-04D

Sample ID	**MB-72221**	Batch ID:	**72221**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**IC2_151109A**	Analysis Date:	**11/9/2015 9:45:32 AM**	Prep Date:	**11/9/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00								
Fluoride	<0.100	0.400								
Sulfate	<1.00	3.00								

Sample ID	**LCSD-72221**	Batch ID:	**72221**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**LCSD**	Run ID:	**IC2_151109A**	Analysis Date:	**11/9/2015 10:14:41 AM**	Prep Date:	**11/9/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.0	1.00	10.00	0	100	90	110	1.05	20	
Fluoride	3.62	0.400	4.000	0	90.6	90	110	1.96	20	
Sulfate	29.6	3.00	30.00	0	98.8	90	110	1.44	20	

Sample ID	**LCS-72221**	Batch ID:	**72221**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**IC2_151109A**	Analysis Date:	**11/9/2015 10:30:26 AM**	Prep Date:	**11/9/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.1	1.00	10.00	0	101	90	110			
Fluoride	3.69	0.400	4.000	0	92.3	90	110			
Sulfate	30.1	3.00	30.00	0	100	90	110			

Sample ID	**1511077-02AMS**	Batch ID:	**72221**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**MS**	Run ID:	**IC2_151109A**	Analysis Date:	**11/9/2015 11:09:31 AM**	Prep Date:	**11/9/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	2280	100	2000	151.0	106	90	110			
Fluoride	1950	40.0	2000	0	97.5	90	110			
Sulfate	4000	300	2000	1839	108	90	110			

Sample ID	**1511077-02AMSD**	Batch ID:	**72221**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**MSD**	Run ID:	**IC2_151109A**	Analysis Date:	**11/9/2015 11:24:06 AM**	Prep Date:	**11/9/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	2280	100	2000	151.0	106	90	110	0.029	20	
Fluoride	2000	40.0	2000	0	100	90	110	2.62	20	
Sulfate	3940	300	2000	1839	105	90	110	1.50	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1511007
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_151109A

Sample ID **ICV-151109**	Batch ID: **R82596**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC2_151109A**	Analysis Date: **11/9/2015 9:08:45 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	24.7	1.00	25.00	0	98.9	90	110			
Fluoride	9.76	0.400	10.00	0	97.6	90	110			
Sulfate	75.5	3.00	75.00	0	101	90	110			

Sample ID **CCV1-151109**	Batch ID: **R82596**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_151109A**	Analysis Date: **11/9/2015 1:57:13 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.0	1.00	10.00	0	100	90	110			
Fluoride	3.88	0.400	4.000	0	96.9	90	110			
Sulfate	30.1	3.00	30.00	0	100	90	110			

Sample ID **CCV2-151109**	Batch ID: **R82596**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_151109A**	Analysis Date: **11/9/2015 4:08:45 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.94	1.00	10.00	0	99.4	90	110			
Fluoride	3.89	0.400	4.000	0	97.3	90	110			
Sulfate	29.8	3.00	30.00	0	99.2	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1511007
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_151102A

The QC data in batch 72128 applies to the following samples: 1511007-01D, 1511007-02D, 1511007-03D, 1511007-04D

Sample ID **1511009-03B DUP** Batch ID: **72128** TestNo: **M4500-H+ B** Units: **pH Units@15.7℃**
SampType: **DUP** Run ID: **TITRATOR_151102A** Analysis Date: **11/2/2015 4:29:00 PM** Prep Date: **11/2/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	8.35	0	0	8.320				0.360	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1511007
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_151102A

Sample ID	**ICV-151102**	Batch ID:	**R82474**	TestNo:	**M4500-H+ B**	Units:	**pH Units@22.3℃**
SampType:	**ICV**	Run ID:	**TITRATOR_151102A**	Analysis Date:	**11/2/2015 10:28:00 AM**	Prep Date:	**11/2/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	10.0	0	10.00	0	100	99	101			

Sample ID	**CCV1-151102**	Batch ID:	**R82474**	TestNo:	**M4500-H+ B**	Units:	**pH Units@22.3℃**
SampType:	**CCV**	Run ID:	**TITRATOR_151102A**	Analysis Date:	**11/2/2015 4:44:00 PM**	Prep Date:	**11/2/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	7.01	0	7.000	0	100	97.1	102.9			

Sample ID	**CCV-151102-PH12**	Batch ID:	**R82474**	TestNo:	**M4500-H+ B**	Units:	**pH Units@22.5℃**
SampType:	**CCV**	Run ID:	**TITRATOR_151102A**	Analysis Date:	**11/2/2015 4:46:00 PM**	Prep Date:	**11/2/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	11.9	0	12.00	0	99.3	97.1	102.9			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1511007
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: WC_151103B

The QC data in batch 72150 applies to the following samples: 1511007-01D, 1511007-02D, 1511007-03D, 1511007-04D

Sample ID	**MB-72150**	Batch ID:	**72150**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**WC_151103B**	Analysis Date:	**11/4/2015 7:20:00 AM**	Prep Date:	**11/3/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	<10.0	10.0								

Sample ID	**LCS-72150**	Batch ID:	**72150**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**WC_151103B**	Analysis Date:	**11/4/2015 7:20:00 AM**	Prep Date:	**11/3/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	759	10.0	745.6	0	102	90	113			

Sample ID	**1510306-01D-DUP**	Batch ID:	**72150**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**DUP**	Run ID:	**WC_151103B**	Analysis Date:	**11/4/2015 7:20:00 AM**	Prep Date:	**11/3/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	1650	50.0	0	1640				0.608	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

GEL Laboratories LLC
a member of The GEL Group INC

PO Box 30712 Charleston, SC 29417
2040 Savage Road Charleston, SC 29407
P 843.556.8171
F 843.766.1178

gel.com

December 03, 2015

Mr. John DuPont
DHL Analytical
2300 Double Creek Drive
Round Rock, Texas 78664

Re: Routine Analysis
Work Order: 384834

Dear Mr. DuPont:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on November 05, 2015. This original data report has been prepared and reviewed in accordance with GEL's standard operating procedures.

Our policy is to provide high quality, personalized analytical services to enable you to meet your analytical needs on time every time. We trust that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at (843) 556-8171, ext. 4707.

Sincerely,

Anna C Day

Anna Day
Project Manager

Purchase Order: 13986
Enclosures

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 − (843) 556−8171 − www.gel.com

Certificate of Analysis Report
for

DHLA002 DHL Analytical

Client SDG: 384834 GEL Work Order: 384834

The Qualifiers in this report are defined as follows:

* A quality control analyte recovery is outside of specified acceptance criteria

** Analyte is a Tracer compound

** Analyte is a surrogate compound

U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the Certificate of Analysis.

The designation ND, if present, appears in the result column when the analyte concentration is not detected above the limit as defined in the 'U' qualifier above.

This data report has been prepared and reviewed in accordance with GEL Laboratories LLC standard operating procedures. Please direct any questions to your Project Manager, Anna Day.

Reviewed by Anna C Day

There are no "Data Exception Reports" associated with this analytical report.

DHL Analytical, Inc.
2300 Double Creek Drive
Round Rock, TX 78664
TEL: *(512) 388-8222* FAX: *(512) 388-8229*

3804834

CHAIN-OF-CUSTODY RECORD

Work Order: 1511007

Subcontractor:

GEL Laboratories
PO Box 30712
Charleston, SC 29417

TEL: (843) 556-8171
FAX:
Acct #:

02-Nov-15

Sample Id	Matrix	DHL#	Date Collected	Bottle Type	Requested Tests					
					E903.1	E904.0				
BMW-19	Aqueous	-01B	10/29/15 02:20 PM	500HDPEHNO3		1				
BMW-19	Aqueous	-01C	10/29/15 02:20 PM	500HDPEHNO3	1					
BMW-11AR	Aqueous	-02B	10/29/15 03:25 PM	500HDPEHNO3		1				
BMW-11AR	Aqueous	-02C	10/29/15 03:25 PM	500HDPEHNO3	1					
MW-18A	Aqueous	-03B	10/29/15 05:25 PM	500HDPEHNO3		1				
MW-18A	Aqueous	-03C	10/29/15 05:25 PM	500HDPEHNO3	1					
BMW-18	Aqueous	-04B	10/30/15 09:45 AM	500HDPEHNO3		1				
BMW-18	Aqueous	-04C	10/30/15 09:45 AM	500HDPEHNO3	1					

General Comments:

Please analyze these samples with a ~~Standard~~ Turnaround Time.
Call John DuPont if you have questions.
Quality Control Package Needed: Standard / _____
EMAIL report to both cac@dhlanalytical.com & dupont@dhlanalytical.com

		Date/Time			Date/Time
Relinquished by:	[signature]	11/2/15 1730	**Received by:**	[signature]	11/2/15 1730
Relinquished by:			**Received by:**	B Luthman	11/5/15 920

GEL Laboratories LLC

SAMPLE RECEIPT & REVIEW FORM

Client: DHLA		**SDG/AR/COC/Work Order:** 300834	
Received By: Brielle Luthman		**Date Received:** 11/5/15 0920	
Suspected Hazard Information	**Yes** / **No**	*If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation.	
COC/Samples marked as radioactive?		No	Maximum Net Counts Observed* (Observed Counts - Area Background Counts): 0
Classified Radioactive II or III by RSO?		No	If yes, Were swipes taken of sample containers < action levels?
COC/Samples marked containing PCBs?		No	
Package, COC, and/or Samples marked as beryllium or asbestos containing?		No	If yes, samples are to be segregated as Safety Controlled Samples, and opened by the GEL Safety Group.
Shipped as a DOT Hazardous?		No	Hazard Class Shipped: UN#:
Samples identified as Foreign Soil?		No	

	Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (Required for Non-Conforming Items)
1	Shipping containers received intact and sealed?	✓			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
2	Samples requiring cold preservation within (0 ≤ 6 deg. C)?*			✓	Preservation Method: Ice bags Blue ice Dry ice (None) Other (describe) *all temperatures are recorded in Celsius 20° C
2a	Daily check performed and passed on IR temperature gun?	✓			Temperature Device Serial #: Secondary Temperature Device Serial # (If Applicable): 150340071
3	Chain of custody documents included with shipment?	✓			
4	Sample containers intact and sealed?	✓			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
5	Samples requiring chemical preservation at proper pH?	✓			Sample ID's, containers affected and observed pH: If Preservation added, Lot#:
6	Do Low Level Perchlorate samples have headspace as required?			✓	Sample ID's and containers affected:
7	VOA vials contain acid preservation?			✓	(If unknown, select No)
8	VOA vials free of headspace (defined as < 6mm bubble)?			✓	Sample ID's and containers affected:
9	Are Encore containers present?			✓	(If yes, immediately deliver to Volatiles laboratory)
10	Samples received within holding time?	✓			ID's and tests affected:
11	Sample ID's on COC match ID's on bottles?	✓			Sample ID's and containers affected: Client emailed 3rd chain.
12	Date & time on COC match date & time on bottles?	✓			Sample ID's affected:
13	Number of containers received match number indicated on COC?	✓			Sample ID's affected:
14	Are sample containers identifiable as GEL provided?			✓	
15	COC form is properly signed in relinquished/received sections?	✓			
16	Carrier and tracking number.				Circle Applicable: FedEx Air (FedEx Ground) UPS Field Services Courier Other 7748 7750 1368 7748 7751 0226

Comments (Use Continuation Form if needed):

PM (or PMA) review: Initials AEW Date 11/6/15 Page 1 of 1 GL-CHL-SR-001 Rev 2

List of current GEL Certifications as of 03 December 2015

State	Certification
Alaska	UST−110
Arkansas	88−0651
CLIA	42D0904046
California	2940 Interim
Colorado	SC00012
Connecticut	PH−0169
Delaware	SC000122013−10
DoD ELAP/ ISO17025 A2LA	2567.01
Florida NELAP	E87156
Foreign Soils Permit	P330−15−00283, P330−15−00253
Georgia	SC00012
Georgia SDWA	967
Hawaii	SC000122013−10
Idaho Chemistry	SC00012
Idaho Radiochemistry	SC00012
Illinois NELAP	200029
Indiana	C−SC−01
Kansas NELAP	E−10332
Kentucky SDWA	90129
Kentucky Wastewater	90129
Louisiana NELAP	03046 (AI33904)
Louisiana SDWA	LA150001
Maryland	270
Massachusetts	M−SC012
Michigan	9976
Mississippi	SC000122013−10
Nebraska	NE−OS−26−13
Nevada	SC000122016−1
New Hampshire NELAP	2054
New Jersey NELAP	SC002
New Mexico	SC00012
New York NELAP	11501
North Carolina	233
North Carolina SDWA	45709
North Dakota	R−158
Oklahoma	9904
Pennsylvania NELAP	68−00485
S.Carolina Radchem	10120002
South Carolina Chemistry	10120001
Tennessee	TN 02934
Texas NELAP	T104704235−15−10
Utah NELAP	SC000122015−19
Vermont	VT87156
Virginia NELAP	460202
Washington	C780
West Virginia	997404

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: December 3, 2015

Company : DHL Analytical
Address : 2300 Double Creek Drive

Round Rock, Texas 78664
Contact: Mr. John DuPont
Project: Routine Analysis

Client Sample ID: BMW-19
Sample ID: 384834001
Matrix: Water
Collect Date: 29-OCT-15 14:20
Receive Date: 05-NOV-15
Collector: Client

Project: DHLA00112
Client ID: DHLA002

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228	U	1.55	+/-1.02	1.56	3.00	pCi/L		AXM6	12/01/15	1233	1525004	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226		0.395	+/-0.262	0.375	1.00	pCi/L		CXP3	11/19/15	0845	1521083	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			89.3	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: December 3, 2015

Company :	DHL Analytical
Address :	2300 Double Creek Drive
	Round Rock, Texas 78664
Contact:	Mr. John DuPont
Project:	Routine Analysis

Client Sample ID:	BMW-11AR	Project:	DHLA00112
Sample ID:	384834002	Client ID:	DHLA002
Matrix:	Water		
Collect Date:	29-OCT-15 15:25		
Receive Date:	05-NOV-15		
Collector:	Client		

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228		4.75	+/-1.63	2.20	3.00	pCi/L		AXM6	12/01/15	1413	1525004	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226		1.60	+/-0.374	0.207	1.00	pCi/L		CXP3	11/19/15	0845	1521083	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			92.3	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: December 3, 2015

Company :	DHL Analytical
Address :	2300 Double Creek Drive
	Round Rock, Texas 78664
Contact:	Mr. John DuPont
Project:	Routine Analysis

Client Sample ID:	MW-18A	Project:	DHLA00112
Sample ID:	384834003	Client ID:	DHLA002
Matrix:	Water		
Collect Date:	29-OCT-15 17:25		
Receive Date:	05-NOV-15		
Collector:	Client		

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228	U	-0.863	+/-1.23	2.39	3.00	pCi/L		AXM6	12/01/15	1233	1525004	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226		0.659	+/-0.322	0.409	1.00	pCi/L		CXP3	11/19/15	0845	1521083	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			89.1	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: December 3, 2015

Company : DHL Analytical
Address : 2300 Double Creek Drive

Round Rock, Texas 78664
Contact: Mr. John DuPont
Project: Routine Analysis

Client Sample ID: BMW-18
Sample ID: 384834004
Matrix: Water
Collect Date: 30-OCT-15 09:45
Receive Date: 05-NOV-15
Collector: Client

Project: DHLA00112
Client ID: DHLA002

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228	U	0.836	+/-0.906	1.51	3.00	pCi/L		AXM6	12/01/15	1234	1525004	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226		0.526	+/-0.258	0.316	1.00	pCi/L		CXP3	11/19/15	0845	1521083	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			91.7	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

QC Summary

Report Date: December 3, 2015

DHL Analytical
2300 Double Creek Drive
Round Rock, Texas

Contact: **Mr. John DuPont**

Workorder: **384834**

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Rad Gas Flow										
Batch 1525004										
QC1203437787 384909008 DUP										
Radium-228		3.27		2.74	pCi/L	17.7		(0% - 100%)	AXM6	12/01/15 12:37
	Uncertainty	+/-1.27		+/-1.24						
QC1203437788 LCS										
Radium-228	29.2			28.8	pCi/L		98.6	(75%-125%)		12/01/15 12:37
	Uncertainty			+/-2.49						
QC1203437786 MB										
Radium-228			U	-1.35	pCi/L					12/01/15 12:37
	Uncertainty			+/-0.883						
Rad Ra-226										
Batch 1521083										
QC1203427692 384798001 DUP										
Radium-226		1.63		1.72	pCi/L	5.29		(0% - 100%)	CXP3	11/19/15 09:15
	Uncertainty	+/-0.480		+/-0.548						
QC1203427694 LCS										
Radium-226	24.4			26.1	pCi/L		107	(75%-125%)		11/23/15 10:30
	Uncertainty			+/-1.79						
QC1203427691 MB										
Radium-226			U	-0.057	pCi/L					11/23/15 11:05
	Uncertainty			+/-0.177						
QC1203427693 384798001 MS										
Radium-226	122	1.63		115	pCi/L		92.6	(75%-125%)		11/19/15 09:15
	Uncertainty	+/-0.480		+/-7.74						

Notes:

Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

The Qualifiers in this report are defined as follows:

**	Analyte is a Tracer compound
<	Result is less than value reported
>	Result is greater than value reported
BD	Results are either below the MDC or tracer recovery is low
FA	Failed analysis.
H	Analytical holding time was exceeded
J	Value is estimated
K	Analyte present. Reported value may be biased high. Actual value is expected to be lower.
L	Analyte present. Reported value may be biased low. Actual value is expected to be higher.
M	M if above MDC and less than LLD
M	REMP Result > MDC/CL and < RDL
N/A	RPD or %Recovery limits do not apply.

QC Summary

Workorder: **384834**

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time

N1	See case narrative
ND	Analyte concentration is not detected above the detection limit
NJ	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
Q	One or more quality control criteria have not been met. Refer to the applicable narrative or DER.
R	Sample results are rejected
U	Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
UI	Gamma Spectroscopy--Uncertain identification
UJ	Gamma Spectroscopy--Uncertain identification
UL	Not considered detected. The associated number is the reported concentration, which may be inaccurate due to a low bias.
X	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
Y	Other specific qualifiers were required to properly define the results. Consult case narrative.
^	RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.
h	Preparation or preservation holding time was exceeded

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.
^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.
* Indicates that a Quality Control parameter was not within specifications.
For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.

February 03, 2016

Will Vienne
Pastor, Behling & Wheeler
2201 Double Creek Dr #4004
Round Rock, Texas 78664
TEL: (512) 671-3434
FAX (512) 671-3446

Order No.: 1512359

RE: Luminant - Martin Lake

Dear Will Vienne:

DHL Analytical, Inc. received 8 sample(s) on 12/31/2015 for the analyses presented in the following report.

There were no problems with the analyses and all data met requirements of NELAC except where noted in the Case Narrative. All non-NELAC methods will be identified accordingly in the case narrative and all estimated uncertainties of test results are within method or EPA specifications.

If you have any questions regarding these tests results, please feel free to call. Thank you for using DHL Analytical.

Sincerely,

John DuPont
General Manager

This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211-15-15

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DHL ANALYTICAL
2300 Double Creek Dr. ■ Round Rock, TX 78664
Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

CHAIN-OF-CUSTODY

№ 69639

CLIENT: PBW
ADDRESS: 2201 DOUBLE CREEK DR ROUND ROCK TX 78664
PHONE: 512-671-3434 FAX/E-MAIL: 512-671-3446
DATA REPORTED TO: WILL VIENNE
ADDITIONAL REPORT COPIES TO:

DATE: 12-30-15 PAGE 1 OF 1
PO #: 5164-B DHL WORK ORDER #: 1572359
PROJECT LOCATION OR NAME: LUMINANT - MARTIN LAKE
CLENT PROJECT #: 5164-B COLLECTOR: J. BRAUTON

Authorize 5% surcharge for TRRP Report? ❑ Yes ❑ No

S=SOIL W=WATER A=AIR L=LIQUID SE=SEDIMENT P=PAINT SL=SLUDGE O=OTHER SO=SOLID

PRESERVATION: HCl | HNO_3 | H_2SO_4 ❑ NaOH ❑ | ICE | UNPRESERVED

ANALYSES: BTEX ❑ MTBE ❑ [METHOD 8021] | TPH 1005 ❑ TPH 1006 ❑ HOLD 1006 ❑ | GRO [METHOD 8015] ❑ DRO [METHOD 8105] ❑ | VOC 8260 ❑ VOC 624 ❑ VOC 8260/5035 ❑ | SVOC 8270 ❑ PAH 8270 ❑ HOLD PAH ❑ SVOC 625 ❑ | 8270 PEST ❑ 625 PEST/PCB ❑ 608 PCB ❑ 8270 PCB ❑ | 8270 O-P PEST ❑ 8082 PCB ❑ T PHOS, AMMONIA ❑ | 8321 HERB ❑ T PHOS, AMMONIA ❑ | METALS 6020 ❑ METALS 200.8 ❑ DISS. METALS ❑ ____ ❑ | RCRA ❑ TX11 ❑ ____ | PH ❑ HEX CHROM ❑ ALKALINITY ❑ COD ❑ | CHLORIDE ❑ ANIONS ____ ❑ | TCLP-SVOC ❑ VOC ❑ PEST ❑ HERB ❑ | TCLP-METALS ❑ RCRA 8 ❑ TX-11 ❑ Pb ❑ | RCI ❑ FLASHPOINT ❑ DGAS ❑ | TDS ❑ TSS ❑ % MOISTURE ❑ CYANIDE ❑ | SEE ATTACHED

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	HCl	HNO_3	H_2SO_4 ❑ NaOH ❑	ICE	UNPRESERVED	SEE ATTACHED	FIELD NOTES
BMW-20	01	12-30-15	1020	W	P	4						X	
BMW-21	02		1110	W	P	4						X	
BMW-22	03		1200	W	P	4						X	
BMW-23	04		1250	W	P	4						X	
BMW-24	05		1345	W	P	4						X	
BMW-11AR	06		1455	W	P	4						X	
BMW-18	07	1715	1615	W	P	4						X	
BMW-19	08	↓ 1615	1715	W	P	4						X	

RELINQUISHED BY: (Signature) DATE/TIME 12-30-15 1845 RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature) DATE/TIME 12/31/15 845 RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature) DATE/TIME RECEIVED BY: (Signature)

TURN AROUND TIME
RUSH ❑ CALL FIRST
1 DAY ❑ CALL FIRST
2 DAY ❑
NORMAL ☒
OTHER ❑ ____

LABORATORY USE ONLY:
RECEIVING TEMP: 33.1 THERM #: 73
CUSTODY SEALS: ❑ BROKEN ☒ INTACT ☒ NOT USED
CARRIER: ❑ LONE STAR ☒ FEDEX ❑ UPS ❑ OTHER
❑ COURIER DELIVERY
❑ HAND DELIVERED

APPENDIX F-Revision 2 February 27, 2004 ❑ DHL DISPOSAL @ $5.00 each ❑ Return

John Dupont

From: Sara Taube [Sara.Taube@pbwllc.com]
Sent: Wednesday, July 22, 2015 12:05 PM
To: John Dupont
Subject: CCR Appendix III and IV
Follow Up Flag: Follow up
Flag Status: Completed

Hi John,

Here are the Appendix III and Appendix IV constituents that we will need to have analyzed under the CCR Rule.

Appendix III
Boron
Calcium
Chloride
Fluoride
pH
sulfate
TDS

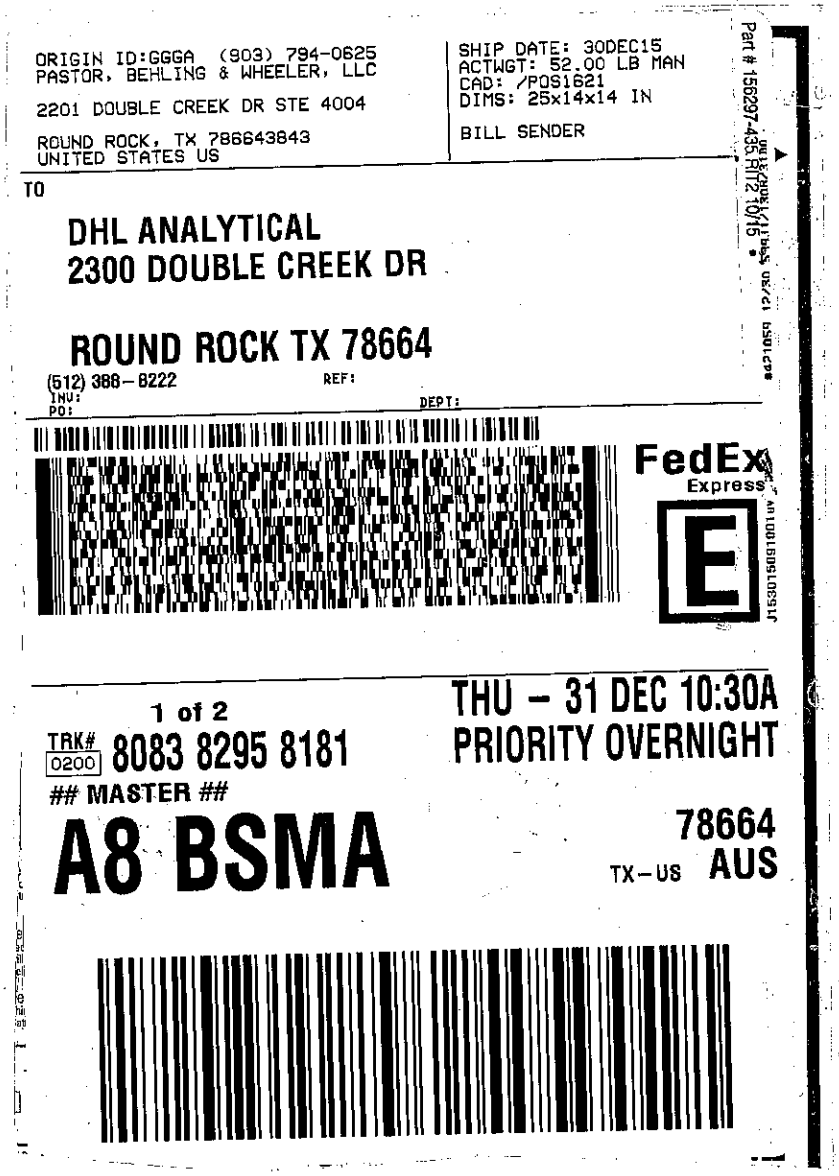
Appendix IV
Antimony
Arsenic
Barium
Beryllium
Cadmium
Chromium
Cobalt
Fluoride
Lead
Lithium
Mercury
Molybdenum
Selenium
Thallium
Radium 226 and 228

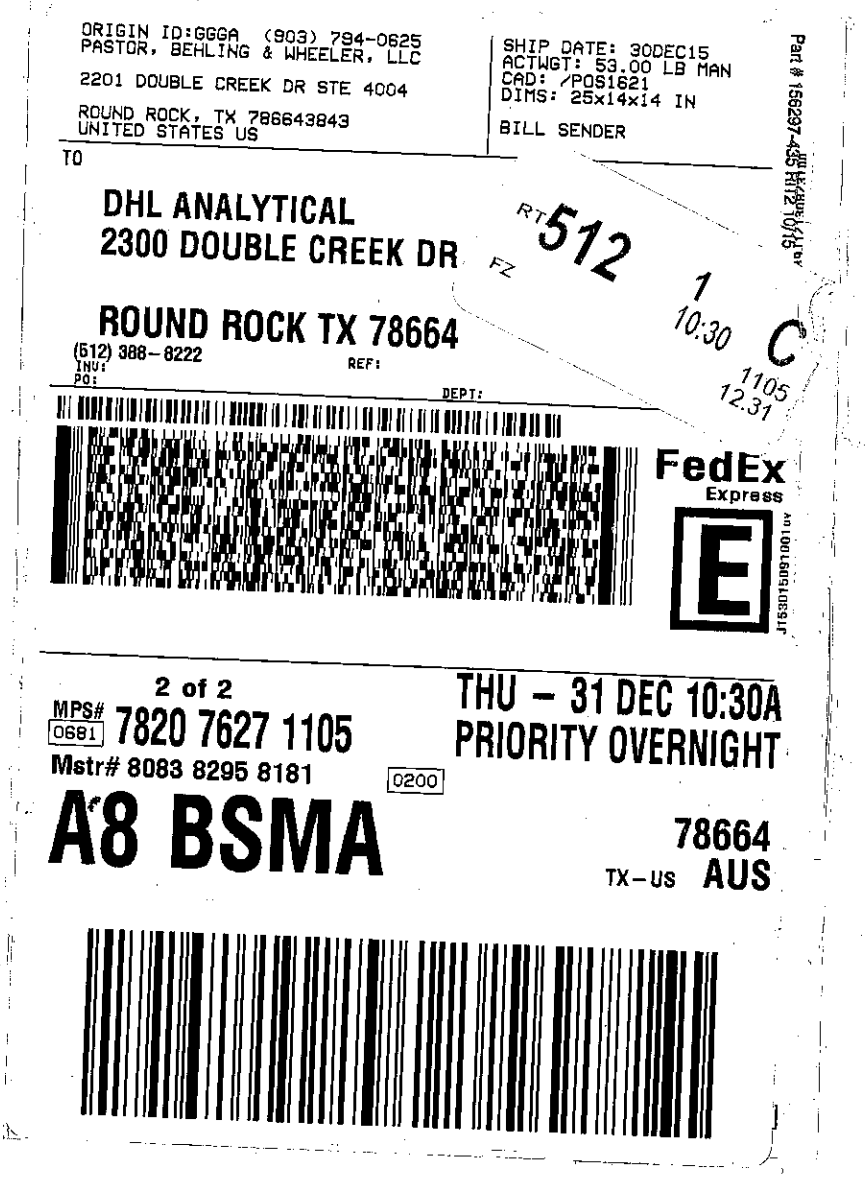
We are looking to have approximately 74 wells sampled 8 times over the course of the next two years. Please let me know if there is any more information you might need.

Cheers,

Sara

10/26/2015


ORIGIN ID:GGGA (903) 794-0625
PASTOR, BEHLING & WHEELER, LLC
2201 DOUBLE CREEK DR STE 4004
ROUND ROCK, TX 786643843
UNITED STATES US
SHIP DATE: 30DEC15
ACTWGT: 52.00 LB MAN
CAD: /POS1621
DIMS: 25x14x14 IN
BILL SENDER
TO
DHL ANALYTICAL
2300 DOUBLE CREEK DR
ROUND ROCK TX 78664
(512) 388-8222
REF:
INV:
PO:
DEPT:
FedEx
Express
1 of 2
TRK# 0200 8083 8295 8181
MASTER
THU - 31 DEC 10:30A
PRIORITY OVERNIGHT
A8 BSMA
78664
TX-US AUS



ORIGIN ID:GGGA (903) 794-0625
PASTOR, BEHLING & WHEELER, LLC
2201 DOUBLE CREEK DR STE 4004
ROUND ROCK, TX 786643843
UNITED STATES US

SHIP DATE: 30DEC15
ACTWGT: 53.00 LB MAN
CAD: /POS1621
DIMS: 25x14x14 IN
BILL SENDER

TO
DHL ANALYTICAL
2300 DOUBLE CREEK DR
ROUND ROCK TX 78664
(512) 388-8222
INV:
PO:
REF:
DEPT:

RT 512 FZ
1
10:30
C
1105
12.31

FedEx Express

2 of 2
MPS# 0681 7820 7627 1105
Mstr# 8083 8295 8181
0200

THU - 31 DEC 10:30A
PRIORITY OVERNIGHT

A8 BSMA

78664
TX-US AUS

DHL Analytical, Inc.

Sample Receipt Checklist

Client Name **Pastor, Behling & Wheeler** Date Received: **12/31/2015**

Work Order Number **1512359** Received by **JB**

Checklist completed by: _____ 12/31/2015 Reviewed by _____ 12/31/2015
Signature Date Initials Date

Carrier name FedEx 1day

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	3.3 °C 1.4
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH<2 acceptable upon receipt?	Yes ☑	No ☐	NA ☐ LOT # 8086
	Adjusted? no		Checked by JB
Water - ph>9 (S) or ph>12 (CN) acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted?		Checked by

Any No response must be detailed in the comments section below.

Client contacted _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding _____

Comments: _____

Corrective Action _____

DHL Analytical, Inc. **Date:** *03-Feb-16*

CLIENT: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake
Lab Order: 1512359

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Method SW6020A - Metals Analysis
Method SW7470A - Mercury Analysis
Method E300 - Anions Analysis
Method M4500-H+ B - pH of a Water Analysis
Method M2540C - TDS Analysis
Sub-contract - Radium-228 and Radium-226 analyses by methods E904.0/SW8469320 Modified and E903.1 Modified. Analyzed at GEL Laboratory.

LOG IN

The samples were received and log-in performed on 12/31/15. A total of 8 samples were received. For samples BMW-18 and BMW-19 the Time of Collections were corrected to 1750 and 1615 respectively per client instruction. The samples arrived in good condition and were properly packaged.

METALS ANALYSIS

For Metals analysis performed on 1/11/16 and 1/14/16 (batches 73059 & 73098) the matrix spikes and matrix spike duplicate recoveries were out of control limits for Calcium or Boron. These are flagged accordingly in the QC summary report. The sample selected for the matrix spike and matrix spike duplicate was not from this work order. The LCSs were within control limits for these analytes. No further corrective actions were taken.

MERCURY ANALYSIS

For Mercury analysis performed on 1/5/16 the matrix spike and matrix spike duplicate recoveries were slightly below control limits. These are flagged accordingly in the QC summary report. The sample selected for the matrix spike and matrix spike duplicate was from this work order. The LCS was within control limits. No further corrective actions were taken.

For Mercury analysis performed on 1/5/16 the PDS recovery was below control limits. This is flagged accordingly. The serial dilution was within control limits. No further corrective actions were taken.

DHL Analytical, Inc.

Date: *03-Feb-16*

CLIENT: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake
Lab Order: 1512359

Work Order Sample Summary

Lab Smp ID	Client Sample ID	Tag Number	Date Collected	Date Recved
1512359-01	BMW-20		12/30/15 10:20 AM	12/31/2015
1512359-02	BMW-21		12/30/15 11:10 AM	12/31/2015
1512359-03	BMW-22		12/30/15 12:00 PM	12/31/2015
1512359-04	BMW-23		12/30/15 12:50 PM	12/31/2015
1512359-05	BMW-24		12/30/15 01:45 PM	12/31/2015
1512359-06	BMW-11AR		12/30/15 02:55 PM	12/31/2015
1512359-07	BMW-18		12/30/15 05:15 PM	12/31/2015
1512359-08	BMW-19		12/30/15 04:15 PM	12/31/2015

Lab Order: 1512359
Client: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1512359-01A	BMW-20	12/30/15 10:20 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	01/07/16 08:56 AM	73059
	BMW-20	12/30/15 10:20 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	01/12/16 09:16 AM	73098
	BMW-20	12/30/15 10:20 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	01/12/16 09:16 AM	73098
	BMW-20	12/30/15 10:20 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	01/12/16 09:16 AM	73098
	BMW-20	12/30/15 10:20 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	01/04/16 01:35 PM	73017
1512359-01D	BMW-20	12/30/15 10:20 AM	Aqueous	E300	Anion Preparation	01/05/16 10:13 AM	73028
	BMW-20	12/30/15 10:20 AM	Aqueous	E300	Anion Preparation	01/05/16 10:13 AM	73028
	BMW-20	12/30/15 10:20 AM	Aqueous	M4500-H+ B	pH Preparation	01/04/16 08:46 AM	72998
	BMW-20	12/30/15 10:20 AM	Aqueous	M2540C	TDS Preparation	01/05/16 01:09 PM	73034
1512359-02A	BMW-21	12/30/15 11:10 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	01/07/16 08:56 AM	73059
	BMW-21	12/30/15 11:10 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	01/12/16 09:16 AM	73098
	BMW-21	12/30/15 11:10 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	01/12/16 09:16 AM	73098
	BMW-21	12/30/15 11:10 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	01/12/16 09:16 AM	73098
	BMW-21	12/30/15 11:10 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	01/04/16 01:35 PM	73017
1512359-02D	BMW-21	12/30/15 11:10 AM	Aqueous	E300	Anion Preparation	01/05/16 10:13 AM	73028
	BMW-21	12/30/15 11:10 AM	Aqueous	E300	Anion Preparation	01/05/16 10:13 AM	73028
	BMW-21	12/30/15 11:10 AM	Aqueous	M4500-H+ B	pH Preparation	01/04/16 08:46 AM	72998
	BMW-21	12/30/15 11:10 AM	Aqueous	M2540C	TDS Preparation	01/05/16 01:09 PM	73034
1512359-03A	BMW-22	12/30/15 12:00 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	01/07/16 08:56 AM	73059
	BMW-22	12/30/15 12:00 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	01/12/16 09:16 AM	73098
	BMW-22	12/30/15 12:00 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	01/12/16 09:16 AM	73098
	BMW-22	12/30/15 12:00 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	01/12/16 09:16 AM	73098
	BMW-22	12/30/15 12:00 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	01/04/16 01:35 PM	73017
1512359-03D	BMW-22	12/30/15 12:00 PM	Aqueous	E300	Anion Preparation	01/05/16 10:13 AM	73028
	BMW-22	12/30/15 12:00 PM	Aqueous	E300	Anion Preparation	01/05/16 10:13 AM	73028
	BMW-22	12/30/15 12:00 PM	Aqueous	M4500-H+ B	pH Preparation	01/04/16 08:46 AM	72998
	BMW-22	12/30/15 12:00 PM	Aqueous	M2540C	TDS Preparation	01/05/16 01:09 PM	73034
1512359-04A	BMW-23	12/30/15 12:50 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	01/07/16 08:56 AM	73059

Lab Order: 1512359
Client: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1512359-04A	BMW-23	12/30/15 12:50 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	01/12/16 09:16 AM	73098
	BMW-23	12/30/15 12:50 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	01/12/16 09:16 AM	73098
	BMW-23	12/30/15 12:50 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	01/12/16 09:16 AM	73098
	BMW-23	12/30/15 12:50 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	01/04/16 01:35 PM	73017
1512359-04D	BMW-23	12/30/15 12:50 PM	Aqueous	E300	Anion Preparation	01/05/16 10:13 AM	73028
	BMW-23	12/30/15 12:50 PM	Aqueous	E300	Anion Preparation	01/05/16 10:13 AM	73028
	BMW-23	12/30/15 12:50 PM	Aqueous	M4500-H+ B	pH Preparation	01/04/16 08:46 AM	72998
	BMW-23	12/30/15 12:50 PM	Aqueous	M2540C	TDS Preparation	01/05/16 01:09 PM	73034
1512359-05A	BMW-24	12/30/15 01:45 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	01/07/16 08:56 AM	73059
	BMW-24	12/30/15 01:45 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	01/12/16 09:16 AM	73098
	BMW-24	12/30/15 01:45 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	01/12/16 09:16 AM	73098
	BMW-24	12/30/15 01:45 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	01/12/16 09:16 AM	73098
	BMW-24	12/30/15 01:45 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	01/04/16 01:35 PM	73017
1512359-05D	BMW-24	12/30/15 01:45 PM	Aqueous	E300	Anion Preparation	01/05/16 10:13 AM	73028
	BMW-24	12/30/15 01:45 PM	Aqueous	E300	Anion Preparation	01/05/16 10:13 AM	73028
	BMW-24	12/30/15 01:45 PM	Aqueous	M4500-H+ B	pH Preparation	01/04/16 08:46 AM	72998
	BMW-24	12/30/15 01:45 PM	Aqueous	M2540C	TDS Preparation	01/05/16 01:09 PM	73034
1512359-06A	BMW-11AR	12/30/15 02:55 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	01/12/16 09:16 AM	73098
	BMW-11AR	12/30/15 02:55 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	01/12/16 09:16 AM	73098
	BMW-11AR	12/30/15 02:55 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	01/12/16 09:16 AM	73098
	BMW-11AR	12/30/15 02:55 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	01/07/16 08:56 AM	73059
	BMW-11AR	12/30/15 02:55 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	01/04/16 01:35 PM	73017
1512359-06D	BMW-11AR	12/30/15 02:55 PM	Aqueous	E300	Anion Preparation	01/05/16 10:13 AM	73028
	BMW-11AR	12/30/15 02:55 PM	Aqueous	M4500-H+ B	pH Preparation	01/04/16 08:46 AM	72998
	BMW-11AR	12/30/15 02:55 PM	Aqueous	M2540C	TDS Preparation	01/05/16 01:09 PM	73034
1512359-07A	BMW-18	12/30/15 05:15 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	01/12/16 09:16 AM	73098
	BMW-18	12/30/15 05:15 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	01/12/16 09:16 AM	73098
	BMW-18	12/30/15 05:15 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	01/07/16 08:56 AM	73059

Lab Order: 1512359
Client: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1512359-07A	BMW-18	12/30/15 05:15 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	01/12/16 09:16 AM	73098
	BMW-18	12/30/15 05:15 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	01/04/16 01:35 PM	73017
1512359-07D	BMW-18	12/30/15 05:15 PM	Aqueous	E300	Anion Preparation	01/05/16 10:13 AM	73028
	BMW-18	12/30/15 05:15 PM	Aqueous	E300	Anion Preparation	01/05/16 10:13 AM	73028
	BMW-18	12/30/15 05:15 PM	Aqueous	M4500-H+ B	pH Preparation	01/04/16 08:46 AM	72998
	BMW-18	12/30/15 05:15 PM	Aqueous	M2540C	TDS Preparation	01/05/16 01:09 PM	73034
1512359-08A	BMW-19	12/30/15 04:15 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	01/07/16 08:56 AM	73059
	BMW-19	12/30/15 04:15 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	01/12/16 09:16 AM	73098
	BMW-19	12/30/15 04:15 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	01/12/16 09:16 AM	73098
	BMW-19	12/30/15 04:15 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	01/12/16 09:16 AM	73098
	BMW-19	12/30/15 04:15 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	01/04/16 01:35 PM	73017
1512359-08D	BMW-19	12/30/15 04:15 PM	Aqueous	E300	Anion Preparation	01/05/16 10:13 AM	73028
	BMW-19	12/30/15 04:15 PM	Aqueous	E300	Anion Preparation	01/05/16 10:13 AM	73028
	BMW-19	12/30/15 04:15 PM	Aqueous	M4500-H+ B	pH Preparation	01/04/16 08:46 AM	72998
	BMW-19	12/30/15 04:15 PM	Aqueous	M2540C	TDS Preparation	01/05/16 01:09 PM	73034

Lab Order: 1512359
Client: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1512359-01A	BMW-20	Aqueous	SW7470A	Mercury Total: Aqueous	73017	1	01/05/16 10:46 AM	CETAC2_HG_160105C
	BMW-20	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73059	1	01/11/16 02:48 PM	ICP-MS4_160111D
	BMW-20	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73098	10	01/13/16 12:22 PM	ICP-MS4_160113A
	BMW-20	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73098	1	01/13/16 01:35 PM	ICP-MS4_160113B
	BMW-20	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73098	1	01/14/16 12:25 PM	ICP-MS4_160114A
1512359-01D	BMW-20	Aqueous	E300	Anions by IC method - Water	73028	1	01/05/16 12:13 PM	IC3_160105A
	BMW-20	Aqueous	E300	Anions by IC method - Water	73028	10	01/05/16 05:04 PM	IC3_160105A
	BMW-20	Aqueous	M4500-H+ B	pH	72998	1	01/04/16 09:36 AM	TITRATOR_160104A
	BMW-20	Aqueous	M2540C	Total Dissolved Solids	73034	1	01/06/16 08:10 AM	WC_160105C
1512359-02A	BMW-21	Aqueous	SW7470A	Mercury Total: Aqueous	73017	1	01/05/16 10:57 AM	CETAC2_HG_160105C
	BMW-21	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73059	1	01/11/16 02:50 PM	ICP-MS4_160111D
	BMW-21	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73098	10	01/13/16 12:24 PM	ICP-MS4_160113A
	BMW-21	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73098	1	01/13/16 01:37 PM	ICP-MS4_160113B
	BMW-21	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73098	1	01/14/16 12:27 PM	ICP-MS4_160114A
1512359-02D	BMW-21	Aqueous	E300	Anions by IC method - Water	73028	1	01/05/16 12:33 PM	IC3_160105A
	BMW-21	Aqueous	E300	Anions by IC method - Water	73028	100	01/05/16 05:25 PM	IC3_160105A
	BMW-21	Aqueous	M4500-H+ B	pH	72998	1	01/04/16 09:39 AM	TITRATOR_160104A
	BMW-21	Aqueous	M2540C	Total Dissolved Solids	73034	1	01/06/16 08:10 AM	WC_160105C
1512359-03A	BMW-22	Aqueous	SW7470A	Mercury Total: Aqueous	73017	1	01/05/16 11:00 AM	CETAC2_HG_160105C
	BMW-22	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73059	1	01/11/16 02:52 PM	ICP-MS4_160111D
	BMW-22	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73098	10	01/13/16 12:26 PM	ICP-MS4_160113A
	BMW-22	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73098	1	01/13/16 01:39 PM	ICP-MS4_160113B
	BMW-22	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73098	5	01/14/16 12:29 PM	ICP-MS4_160114A
1512359-03D	BMW-22	Aqueous	E300	Anions by IC method - Water	73028	1	01/05/16 12:54 PM	IC3_160105A
	BMW-22	Aqueous	E300	Anions by IC method - Water	73028	100	01/05/16 05:45 PM	IC3_160105A
	BMW-22	Aqueous	M4500-H+ B	pH	72998	1	01/04/16 09:42 AM	TITRATOR_160104A

Lab Order: 1512359
Client: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1512359-03D	BMW-22	Aqueous	M2540C	Total Dissolved Solids	73034	1	01/06/16 08:10 AM	WC_160105C
1512359-04A	BMW-23	Aqueous	SW7470A	Mercury Total: Aqueous	73017	1	01/05/16 11:02 AM	CETAC2_HG_160105C
	BMW-23	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73059	1	01/11/16 02:54 PM	ICP-MS4_160111D
	BMW-23	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73098	10	01/13/16 12:28 PM	ICP-MS4_160113A
	BMW-23	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73098	1	01/13/16 01:41 PM	ICP-MS4_160113B
	BMW-23	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73098	1	01/14/16 12:31 PM	ICP-MS4_160114A
1512359-04D	BMW-23	Aqueous	E300	Anions by IC method - Water	73028	1	01/05/16 01:15 PM	IC3_160105A
	BMW-23	Aqueous	E300	Anions by IC method - Water	73028	100	01/05/16 06:06 PM	IC3_160105A
	BMW-23	Aqueous	M4500-H+ B	pH	72998	1	01/04/16 09:43 AM	TITRATOR_160104A
	BMW-23	Aqueous	M2540C	Total Dissolved Solids	73034	1	01/06/16 08:10 AM	WC_160105C
1512359-05A	BMW-24	Aqueous	SW7470A	Mercury Total: Aqueous	73017	1	01/05/16 11:04 AM	CETAC2_HG_160105C
	BMW-24	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73059	1	01/11/16 02:56 PM	ICP-MS4_160111D
	BMW-24	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73098	10	01/13/16 12:30 PM	ICP-MS4_160113A
	BMW-24	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73098	1	01/13/16 01:43 PM	ICP-MS4_160113B
	BMW-24	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73098	1	01/14/16 12:33 PM	ICP-MS4_160114A
1512359-05D	BMW-24	Aqueous	E300	Anions by IC method - Water	73028	1	01/05/16 01:35 PM	IC3_160105A
	BMW-24	Aqueous	E300	Anions by IC method - Water	73028	100	01/05/16 06:26 PM	IC3_160105A
	BMW-24	Aqueous	M4500-H+ B	pH	72998	1	01/04/16 09:45 AM	TITRATOR_160104A
	BMW-24	Aqueous	M2540C	Total Dissolved Solids	73034	1	01/06/16 08:10 AM	WC_160105C
1512359-06A	BMW-11AR	Aqueous	SW7470A	Mercury Total: Aqueous	73017	1	01/05/16 11:07 AM	CETAC2_HG_160105C
	BMW-11AR	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73059	1	01/11/16 02:58 PM	ICP-MS4_160111D
	BMW-11AR	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73098	10	01/13/16 12:58 PM	ICP-MS4_160113A
	BMW-11AR	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73098	1	01/13/16 01:45 PM	ICP-MS4_160113B
	BMW-11AR	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73098	1	01/14/16 12:35 PM	ICP-MS4_160114A
1512359-06D	BMW-11AR	Aqueous	E300	Anions by IC method - Water	73028	1	01/05/16 01:56 PM	IC3_160105A
	BMW-11AR	Aqueous	M4500-H+ B	pH	72998	1	01/04/16 09:48 AM	TITRATOR_160104A

Lab Order: 1512359
Client: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1512359-06D	BMW-11AR	Aqueous	M2540C	Total Dissolved Solids	73034	1	01/06/16 08:10 AM	WC_160105C
1512359-07A	BMW-18	Aqueous	SW7470A	Mercury Total: Aqueous	73017	1	01/05/16 11:09 AM	CETAC2_HG_160105C
	BMW-18	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73059	1	01/11/16 03:00 PM	ICP-MS4_160111D
	BMW-18	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73098	50	01/13/16 01:00 PM	ICP-MS4_160113A
	BMW-18	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73098	1	01/13/16 01:47 PM	ICP-MS4_160113B
	BMW-18	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73098	1	01/14/16 12:37 PM	ICP-MS4_160114A
1512359-07D	BMW-18	Aqueous	E300	Anions by IC method - Water	73028	1	01/05/16 02:16 PM	IC3_160105A
	BMW-18	Aqueous	E300	Anions by IC method - Water	73028	100	01/05/16 07:28 PM	IC3_160105A
	BMW-18	Aqueous	M4500-H+ B	pH	72998	1	01/04/16 09:49 AM	TITRATOR_160104A
	BMW-18	Aqueous	M2540C	Total Dissolved Solids	73034	1	01/06/16 08:10 AM	WC_160105C
1512359-08A	BMW-19	Aqueous	SW7470A	Mercury Total: Aqueous	73017	1	01/05/16 11:11 AM	CETAC2_HG_160105C
	BMW-19	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73098	50	01/13/16 01:02 PM	ICP-MS4_160113A
	BMW-19	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73098	1	01/13/16 01:49 PM	ICP-MS4_160113B
	BMW-19	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73098	1	01/14/16 12:39 PM	ICP-MS4_160114A
	BMW-19	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73059	1	01/11/16 03:02 PM	ICP-MS4_160111D
1512359-08D	BMW-19	Aqueous	E300	Anions by IC method - Water	73028	1	01/05/16 02:37 PM	IC3_160105A
	BMW-19	Aqueous	E300	Anions by IC method - Water	73028	100	01/05/16 07:49 PM	IC3_160105A
	BMW-19	Aqueous	M4500-H+ B	pH	72998	1	01/04/16 09:51 AM	TITRATOR_160104A
	BMW-19	Aqueous	M2540C	Total Dissolved Solids	73034	1	01/06/16 08:10 AM	WC_160105C

DHL Analytical, Inc.

Date: *03-Feb-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	BMW-20
Project:	Luminant - Martin Lake	**Lab ID:**	1512359-01
Project No:	5164-B	**Collection Date:**	12/30/15 10:20 AM
Lab Order:	1512359	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **ABO**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	01/05/16 10:46 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	01/11/16 02:48 PM
Arsenic	0.00344	0.00200	0.00500	J	mg/L	1	01/11/16 02:48 PM
Barium	0.0777	0.00300	0.0100		mg/L	1	01/11/16 02:48 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	01/11/16 02:48 PM
Boron	0.144	0.0100	0.0300		mg/L	1	01/14/16 12:25 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	01/11/16 02:48 PM
Calcium	96.0	1.00	3.00		mg/L	10	01/13/16 12:22 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	01/13/16 01:35 PM
Cobalt	0.0510	0.00300	0.00500		mg/L	1	01/11/16 02:48 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	01/11/16 02:48 PM
Lithium	<0.00500	0.00500	0.0100		mg/L	1	01/11/16 02:48 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	01/11/16 02:48 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	01/11/16 02:48 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	01/11/16 02:48 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	36.4	0.300	1.00		mg/L	1	01/05/16 12:13 PM
Fluoride	0.120	0.100	0.400	J	mg/L	1	01/05/16 12:13 PM
Sulfate	443	10.0	30.0		mg/L	10	01/05/16 05:04 PM
PH		**M4500-H+ B**					Analyst: **LM**
pH	5.97	0	0		pH Units@13.7℃	1	01/04/16 09:36 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **BJT**
Total Dissolved Solids (Residue, Filterable)	987	10.0	10.0		mg/L	1	01/06/16 08:10 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *03-Feb-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	BMW-21
Project:	Luminant - Martin Lake	**Lab ID:**	1512359-02
Project No:	5164-B	**Collection Date:**	12/30/15 11:10 AM
Lab Order:	1512359	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **ABO**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	01/05/16 10:57 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	01/11/16 02:50 PM
Arsenic	0.00247	0.00200	0.00500	J	mg/L	1	01/11/16 02:50 PM
Barium	0.0478	0.00300	0.0100		mg/L	1	01/11/16 02:50 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	01/11/16 02:50 PM
Boron	0.951	0.0100	0.0300		mg/L	1	01/14/16 12:27 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	01/11/16 02:50 PM
Calcium	142	1.00	3.00		mg/L	10	01/13/16 12:24 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	01/13/16 01:37 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	01/11/16 02:50 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	01/11/16 02:50 PM
Lithium	0.0602	0.00500	0.0100		mg/L	1	01/11/16 02:50 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	01/11/16 02:50 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	01/11/16 02:50 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	01/11/16 02:50 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	365	30.0	100		mg/L	100	01/05/16 05:25 PM
Fluoride	0.126	0.100	0.400	J	mg/L	1	01/05/16 12:33 PM
Sulfate	444	100	300		mg/L	100	01/05/16 05:25 PM
PH		**M4500-H+ B**					Analyst: **LM**
pH	7.21	0	0		pH Units@14.4℃	1	01/04/16 09:39 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **BJT**
Total Dissolved Solids (Residue, Filterable)	2020	50.0	50.0		mg/L	1	01/06/16 08:10 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *03-Feb-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	BMW-22
Project:	Luminant - Martin Lake	**Lab ID:**	1512359-03
Project No:	5164-B	**Collection Date:**	12/30/15 12:00 PM
Lab Order:	1512359	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **ABO**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	01/05/16 11:00 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	01/11/16 02:52 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	01/11/16 02:52 PM
Barium	0.0840	0.00300	0.0100		mg/L	1	01/11/16 02:52 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	01/11/16 02:52 PM
Boron	2.54	0.0500	0.150		mg/L	5	01/14/16 12:29 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	01/11/16 02:52 PM
Calcium	150	1.00	3.00		mg/L	10	01/13/16 12:26 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	01/13/16 01:39 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	01/11/16 02:52 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	01/11/16 02:52 PM
Lithium	0.0594	0.00500	0.0100		mg/L	1	01/11/16 02:52 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	01/11/16 02:52 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	01/11/16 02:52 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	01/11/16 02:52 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	215	30.0	100		mg/L	100	01/05/16 05:45 PM
Fluoride	0.186	0.100	0.400	J	mg/L	1	01/05/16 12:54 PM
Sulfate	670	100	300		mg/L	100	01/05/16 05:45 PM
PH		**M4500-H+ B**					Analyst: **LM**
pH	7.34	0	0		pH Units@14.9℃	1	01/04/16 09:42 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **BJT**
Total Dissolved Solids (Residue, Filterable)	1870	50.0	50.0		mg/L	1	01/06/16 08:10 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *03-Feb-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	BMW-23
Project:	Luminant - Martin Lake	**Lab ID:**	1512359-04
Project No:	5164-B	**Collection Date:**	12/30/15 12:50 PM
Lab Order:	1512359	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **ABO**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	01/05/16 11:02 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	01/11/16 02:54 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	01/11/16 02:54 PM
Barium	0.0462	0.00300	0.0100		mg/L	1	01/11/16 02:54 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	01/11/16 02:54 PM
Boron	1.25	0.0100	0.0300		mg/L	1	01/14/16 12:31 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	01/11/16 02:54 PM
Calcium	95.2	1.00	3.00		mg/L	10	01/13/16 12:28 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	01/13/16 01:41 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	01/11/16 02:54 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	01/11/16 02:54 PM
Lithium	0.0897	0.00500	0.0100		mg/L	1	01/11/16 02:54 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	01/11/16 02:54 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	01/11/16 02:54 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	01/11/16 02:54 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	214	30.0	100		mg/L	100	01/05/16 06:06 PM
Fluoride	0.122	0.100	0.400	J	mg/L	1	01/05/16 01:15 PM
Sulfate	529	100	300		mg/L	100	01/05/16 06:06 PM
PH		**M4500-H+ B**					Analyst: **LM**
pH	6.62	0	0		pH Units@14.8℃	1	01/04/16 09:43 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **BJT**
Total Dissolved Solids (Residue, Filterable)	1500	50.0	50.0		mg/L	1	01/06/16 08:10 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *03-Feb-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	BMW-24
Project:	Luminant - Martin Lake	**Lab ID:**	1512359-05
Project No:	5164-B	**Collection Date:**	12/30/15 01:45 PM
Lab Order:	1512359	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **ABO**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	01/05/16 11:04 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	01/11/16 02:56 PM
Arsenic	0.00579	0.00200	0.00500		mg/L	1	01/11/16 02:56 PM
Barium	0.801	0.00300	0.0100		mg/L	1	01/11/16 02:56 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	01/11/16 02:56 PM
Boron	0.347	0.0100	0.0300		mg/L	1	01/14/16 12:33 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	01/11/16 02:56 PM
Calcium	58.8	1.00	3.00		mg/L	10	01/13/16 12:30 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	01/13/16 01:43 PM
Cobalt	0.0146	0.00300	0.00500		mg/L	1	01/11/16 02:56 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	01/11/16 02:56 PM
Lithium	0.0161	0.00500	0.0100		mg/L	1	01/11/16 02:56 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	01/11/16 02:56 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	01/11/16 02:56 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	01/11/16 02:56 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	404	30.0	100		mg/L	100	01/05/16 06:26 PM
Fluoride	0.391	0.100	0.400	J	mg/L	1	01/05/16 01:35 PM
Sulfate	125	1.00	3.00		mg/L	1	01/05/16 01:35 PM
PH		**M4500-H+ B**					Analyst: **LM**
pH	6.35	0	0		pH Units@14.3℃	1	01/04/16 09:45 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **BJT**
Total Dissolved Solids (Residue, Filterable)	1210	50.0	50.0		mg/L	1	01/06/16 08:10 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *03-Feb-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	BMW-11AR
Project:	Luminant - Martin Lake	**Lab ID:**	1512359-06
Project No:	5164-B	**Collection Date:**	12/30/15 02:55 PM
Lab Order:	1512359	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **ABO**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	01/05/16 11:07 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	01/11/16 02:58 PM
Arsenic	0.00362	0.00200	0.00500	J	mg/L	1	01/11/16 02:58 PM
Barium	0.0433	0.00300	0.0100		mg/L	1	01/11/16 02:58 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	01/11/16 02:58 PM
Boron	0.285	0.0100	0.0300		mg/L	1	01/14/16 12:35 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	01/11/16 02:58 PM
Calcium	92.3	1.00	3.00		mg/L	10	01/13/16 12:58 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	01/13/16 01:45 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	01/11/16 02:58 PM
Lead	0.000362	0.000300	0.00100	J	mg/L	1	01/11/16 02:58 PM
Lithium	0.0589	0.00500	0.0100		mg/L	1	01/11/16 02:58 PM
Molybdenum	0.00384	0.00200	0.00500	J	mg/L	1	01/11/16 02:58 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	01/11/16 02:58 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	01/11/16 02:58 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	2.39	0.300	1.00		mg/L	1	01/05/16 01:56 PM
Fluoride	0.260	0.100	0.400	J	mg/L	1	01/05/16 01:56 PM
Sulfate	114	1.00	3.00		mg/L	1	01/05/16 01:56 PM
PH		**M4500-H+ B**					Analyst: **LM**
pH	6.92	0	0		pH Units@14.7℃	1	01/04/16 09:48 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **BJT**
Total Dissolved Solids (Residue, Filterable)	642	10.0	10.0		mg/L	1	01/06/16 08:10 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *03-Feb-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	BMW-18
Project:	Luminant - Martin Lake	**Lab ID:**	1512359-07
Project No:	5164-B	**Collection Date:**	12/30/15 05:15 PM
Lab Order:	1512359	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **ABO**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	01/05/16 11:09 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	01/11/16 03:00 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	01/11/16 03:00 PM
Barium	0.0168	0.00300	0.0100		mg/L	1	01/11/16 03:00 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	01/11/16 03:00 PM
Boron	0.322	0.0100	0.0300		mg/L	1	01/14/16 12:37 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	01/11/16 03:00 PM
Calcium	346	5.00	15.0		mg/L	50	01/13/16 01:00 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	01/13/16 01:47 PM
Cobalt	0.0129	0.00300	0.00500		mg/L	1	01/11/16 03:00 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	01/11/16 03:00 PM
Lithium	0.0415	0.00500	0.0100		mg/L	1	01/11/16 03:00 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	01/11/16 03:00 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	01/11/16 03:00 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	01/11/16 03:00 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	7.14	0.300	1.00		mg/L	1	01/05/16 02:16 PM
Fluoride	0.101	0.100	0.400	J	mg/L	1	01/05/16 02:16 PM
Sulfate	1570	100	300		mg/L	100	01/05/16 07:28 PM
PH		**M4500-H+ B**					Analyst: **LM**
pH	6.71	0	0		pH Units@14.7℃	1	01/04/16 09:49 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **BJT**
Total Dissolved Solids (Residue, Filterable)	2470	50.0	50.0		mg/L	1	01/06/16 08:10 AM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *03-Feb-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	BMW-19
Project:	Luminant - Martin Lake	**Lab ID:**	1512359-08
Project No:	5164-B	**Collection Date:**	12/30/15 04:15 PM
Lab Order:	1512359	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **ABO**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	01/05/16 11:11 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	01/11/16 03:02 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	01/11/16 03:02 PM
Barium	0.0222	0.00300	0.0100		mg/L	1	01/11/16 03:02 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	01/11/16 03:02 PM
Boron	0.400	0.0100	0.0300		mg/L	1	01/14/16 12:39 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	01/11/16 03:02 PM
Calcium	441	5.00	15.0		mg/L	50	01/13/16 01:02 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	01/13/16 01:49 PM
Cobalt	0.0166	0.00300	0.00500		mg/L	1	01/11/16 03:02 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	01/11/16 03:02 PM
Lithium	0.0506	0.00500	0.0100		mg/L	1	01/11/16 03:02 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	01/11/16 03:02 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	01/11/16 03:02 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	01/11/16 03:02 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	11.4	0.300	1.00		mg/L	1	01/05/16 02:37 PM
Fluoride	0.127	0.100	0.400	J	mg/L	1	01/05/16 02:37 PM
Sulfate	2100	100	300		mg/L	100	01/05/16 07:49 PM
PH		**M4500-H+ B**					Analyst: **LM**
pH	6.63	0	0		pH Units@15.3℃	1	01/04/16 09:51 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **BJT**
Total Dissolved Solids (Residue, Filterable)	3260	50.0	50.0		mg/L	1	01/06/16 08:10 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT: Pastor, Behling & Wheeler
Work Order: 1512359
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_160105C

The QC data in batch 73017 applies to the following samples: 1512359-01A, 1512359-02A, 1512359-03A, 1512359-04A, 1512359-05A, 1512359-06A, 1512359-07A, 1512359-08A

Sample ID	**MB-73017**	Batch ID:	**73017**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**CETAC2_HG_160105C**	Analysis Date:	**1/5/2016 10:19:00 AM**	Prep Date:	**1/4/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.0000800	0.000200								

Sample ID	**1512359-01A SD**	Batch ID:	**73017**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**SD**	Run ID:	**CETAC2_HG_160105C**	Analysis Date:	**1/5/2016 10:48:49 AM**	Prep Date:	**1/4/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.000400	0.00100	0	0				0	10	

Sample ID	**1512359-01A PDS**	Batch ID:	**73017**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**PDS**	Run ID:	**CETAC2_HG_160105C**	Analysis Date:	**1/5/2016 10:51:05 AM**	Prep Date:	**1/4/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00152	0.000200	0.00250	0	60.8	85	115			S

Sample ID	**LCS-73017**	Batch ID:	**73017**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**CETAC2_HG_160105C**	Analysis Date:	**1/5/2016 1:11:24 PM**	Prep Date:	**1/4/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00210	0.000200	0.00200	0	105	85	115			

Sample ID	**LCSD-73017**	Batch ID:	**73017**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**LCSD**	Run ID:	**CETAC2_HG_160105C**	Analysis Date:	**1/5/2016 1:13:40 PM**	Prep Date:	**1/4/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00214	0.000200	0.00200	0	107	85	115	1.89	15	

Sample ID	**1512359-01A MS**	Batch ID:	**73017**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**MS**	Run ID:	**CETAC2_HG_160105C**	Analysis Date:	**1/5/2016 1:18:35 PM**	Prep Date:	**1/4/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00151	0.000200	0.00200	0	75.5	80	120			S

Sample ID	**1512359-01A MSD**	Batch ID:	**73017**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**MSD**	Run ID:	**CETAC2_HG_160105C**	Analysis Date:	**1/5/2016 1:20:52 PM**	Prep Date:	**1/4/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00154	0.000200	0.00200	0	77.0	80	120	1.97	15	S

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1512359
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_160105C

Sample ID **ICV-160105**	Batch ID: **R83468**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **ICV**	Run ID: **CETAC2_HG_160105C**	Analysis Date: **1/5/2016 9:54:02 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00405	0.000200	0.00400	0	101	90	110			

Sample ID **CCV1-160105**	Batch ID: **R83468**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_160105C**	Analysis Date: **1/5/2016 10:33:39 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00200	0.000200	0.00200	0	100	90	110			

Sample ID **CCV2-160105**	Batch ID: **R83468**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_160105C**	Analysis Date: **1/5/2016 10:53:23 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00200	0.000200	0.00200	0	100	90	110			

Sample ID **CCV3-160105**	Batch ID: **R83468**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_160105C**	Analysis Date: **1/5/2016 11:13:54 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00201	0.000200	0.00200	0	101	90	110			

Sample ID **CCV4-160105**	Batch ID: **R83468**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_160105C**	Analysis Date: **1/5/2016 1:06:50 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00208	0.000200	0.00200	0	104	90	110			

Sample ID **CCV5-160105**	Batch ID: **R83468**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_160105C**	Analysis Date: **1/5/2016 1:23:10 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00207	0.000200	0.00200	0	104	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1512359
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160111D

The QC data in batch 73059 applies to the following samples: 1512359-01A, 1512359-02A, 1512359-03A, 1512359-04A, 1512359-05A, 1512359-06A, 1512359-07A, 1512359-08A

Sample ID **MB-73059** Batch ID: **73059** TestNo: **SW6020A** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_160111D** Analysis Date: **1/11/2016 2:32:00 PM** Prep Date: **1/7/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.000800	0.00250								
Arsenic	<0.00200	0.00500								
Barium	<0.00300	0.0100								
Beryllium	<0.000300	0.00100								
Cadmium	<0.000300	0.00100								
Calcium	<0.100	0.300								
Cobalt	<0.00300	0.00500								
Lead	<0.000300	0.00100								
Lithium	<0.00500	0.0100								
Molybdenum	<0.00200	0.00500								
Selenium	<0.00200	0.00500								
Thallium	<0.000500	0.00150								

Sample ID **LCS-73059** Batch ID: **73059** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_160111D** Analysis Date: **1/11/2016 2:34:00 PM** Prep Date: **1/7/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.189	0.00250	0.200	0	94.3	80	120			
Arsenic	0.200	0.00500	0.200	0	99.8	80	120			
Barium	0.192	0.0100	0.200	0	96.0	80	120			
Beryllium	0.208	0.00100	0.200	0	104	80	120			
Cadmium	0.192	0.00100	0.200	0	96.0	80	120			
Calcium	4.41	0.300	5.00	0	88.1	80	120			
Cobalt	0.205	0.00500	0.200	0	102	80	120			
Lead	0.188	0.00100	0.200	0	94.0	80	120			
Lithium	0.211	0.0100	0.200	0	105	80	120			
Molybdenum	0.185	0.00500	0.200	0	92.5	80	120			
Selenium	0.196	0.00500	0.200	0	98.2	80	120			
Thallium	0.197	0.00150	0.200	0	98.6	80	120			

Sample ID **LCSD-73059** Batch ID: **73059** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_160111D** Analysis Date: **1/11/2016 2:36:00 PM** Prep Date: **1/7/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.190	0.00250	0.200	0	94.9	80	120	0.620	15	
Arsenic	0.201	0.00500	0.200	0	101	80	120	0.909	15	
Barium	0.194	0.0100	0.200	0	97.2	80	120	1.17	15	
Beryllium	0.215	0.00100	0.200	0	107	80	120	3.16	15	
Cadmium	0.193	0.00100	0.200	0	96.4	80	120	0.461	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1512359
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160111D

Sample ID **LCSD-73059** Batch ID: **73059** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_160111D** Analysis Date: **1/11/2016 2:36:00 PM** Prep Date: **1/7/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.48	0.300	5.00	0	89.7	80	120	1.75	15	
Cobalt	0.207	0.00500	0.200	0	103	80	120	0.890	15	
Lead	0.188	0.00100	0.200	0	94.0	80	120	0.021	15	
Lithium	0.216	0.0100	0.200	0	108	80	120	2.26	15	
Molybdenum	0.188	0.00500	0.200	0	93.9	80	120	1.53	15	
Selenium	0.201	0.00500	0.200	0	101	80	120	2.30	15	
Thallium	0.197	0.00150	0.200	0	98.4	80	120	0.204	15	

Sample ID **1512358-01A SD** Batch ID: **73059** TestNo: **SW6020A** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS4_160111D** Analysis Date: **1/11/2016 2:44:00 PM** Prep Date: **1/7/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.00400	0.0125	0	0				0	10	
Arsenic	<0.0100	0.0250	0	0				0	10	
Barium	0.0421	0.0500	0	0.0432				2.40	10	
Beryllium	<0.00150	0.00500	0	0				0	10	
Cadmium	<0.00150	0.00500	0	0				0	10	
Cobalt	<0.0150	0.0250	0	0				0	10	
Lead	<0.00150	0.00500	0	0				0	10	
Lithium	<0.0250	0.0500	0	0.00515				0	10	
Molybdenum	0.0897	0.0250	0	0.0917				2.17	10	
Selenium	0.0205	0.0250	0	0.0223				8.54	10	
Thallium	<0.00250	0.00750	0	0				0	10	

Sample ID **1512358-01A PDS** Batch ID: **73059** TestNo: **SW6020A** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS4_160111D** Analysis Date: **1/11/2016 3:04:00 PM** Prep Date: **1/7/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.180	0.00250	0.200	0	89.9	80	120			
Arsenic	0.204	0.00500	0.200	0	102	80	120			
Barium	0.229	0.0100	0.200	0.0432	93.0	80	120			
Beryllium	0.202	0.00100	0.200	0	101	80	120			
Cadmium	0.184	0.00100	0.200	0	92.2	80	120			
Cobalt	0.201	0.00500	0.200	0	101	80	120			
Lead	0.192	0.00100	0.200	0	95.9	80	120			
Lithium	0.202	0.0100	0.200	0.00515	98.2	80	120			
Molybdenum	0.267	0.00500	0.200	0.0917	87.7	80	120			
Selenium	0.218	0.00500	0.200	0.0223	98.1	80	120			
Thallium	0.191	0.00150	0.200	0	95.4	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1512359
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160111D

Sample ID **1512358-01A MS**	Batch ID: **73059**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS4_160111D**	Analysis Date: **1/11/2016 3:06:00 PM**	Prep Date: **1/7/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.191	0.00250	0.200	0	95.4	80	120			
Arsenic	0.204	0.00500	0.200	0	102	80	120			
Barium	0.234	0.0100	0.200	0.0432	95.2	80	120			
Beryllium	0.200	0.00100	0.200	0	100	80	120			
Cadmium	0.186	0.00100	0.200	0	92.8	80	120			
Calcium	146	0.300	5.00	143	53.2	80	120			S
Cobalt	0.197	0.00500	0.200	0	98.3	80	120			
Lead	0.183	0.00100	0.200	0	91.7	80	120			
Lithium	0.201	0.0100	0.200	0.00515	97.8	80	120			
Molybdenum	0.279	0.00500	0.200	0.0917	93.5	80	120			
Selenium	0.219	0.00500	0.200	0.0223	98.4	80	120			
Thallium	0.186	0.00150	0.200	0	92.9	80	120			

Sample ID **1512358-01A MSD**	Batch ID: **73059**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS4_160111D**	Analysis Date: **1/11/2016 3:08:00 PM**	Prep Date: **1/7/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.189	0.00250	0.200	0	94.7	80	120	0.732	15	
Arsenic	0.206	0.00500	0.200	0	103	80	120	0.647	15	
Barium	0.234	0.0100	0.200	0.0432	95.4	80	120	0.157	15	
Beryllium	0.196	0.00100	0.200	0	98.2	80	120	1.94	15	
Cadmium	0.185	0.00100	0.200	0	92.3	80	120	0.502	15	
Calcium	143	0.300	5.00	143	-5.27	80	120	2.02	15	S
Cobalt	0.197	0.00500	0.200	0	98.5	80	120	0.267	15	
Lead	0.187	0.00100	0.200	0	93.6	80	120	2.11	15	
Lithium	0.199	0.0100	0.200	0.00515	97.1	80	120	0.645	15	
Molybdenum	0.276	0.00500	0.200	0.0917	92.1	80	120	1.07	15	
Selenium	0.221	0.00500	0.200	0.0223	99.5	80	120	1.06	15	
Thallium	0.189	0.00150	0.200	0	94.6	80	120	1.75	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1512359
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160111D

Sample ID **ICV-160111**	Batch ID: **R83551**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_160111D**	Analysis Date: **1/11/2016 10:49:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.0973	0.00250	0.100	0	97.3	90	110			
Arsenic	0.102	0.00500	0.100	0	102	90	110			
Barium	0.0990	0.0100	0.100	0	99.0	90	110			
Beryllium	0.102	0.00100	0.100	0	102	90	110			
Cadmium	0.100	0.00100	0.100	0	100	90	110			
Calcium	2.33	0.300	2.50	0	93.2	90	110			
Chromium	0.106	0.00500	0.100	0	106	90	110			
Cobalt	0.107	0.00500	0.100	0	107	90	110			
Lead	0.102	0.00100	0.100	0	102	90	110			
Lithium	0.102	0.0100	0.100	0	102	90	110			
Molybdenum	0.0958	0.00500	0.100	0	95.8	90	110			
Selenium	0.102	0.00500	0.100	0	102	90	110			
Thallium	0.100	0.00150	0.100	0	100	90	110			

Sample ID **LCVL-160111**	Batch ID: **R83551**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160111D**	Analysis Date: **1/11/2016 10:55:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00192	0.00250	0.00200	0	96.2	70	130			
Arsenic	0.00501	0.00500	0.00500	0	100	70	130			
Barium	0.00489	0.0100	0.00500	0	97.8	70	130			
Beryllium	0.000903	0.00100	0.00100	0	90.3	70	130			
Cadmium	0.00101	0.00100	0.00100	0	101	70	130			
Calcium	0.105	0.300	0.100	0	105	70	130			
Chromium	0.00507	0.00500	0.00500	0	101	70	130			
Cobalt	0.00526	0.00500	0.00500	0	105	70	130			
Lead	0.00103	0.00100	0.00100	0	103	70	130			
Lithium	0.0111	0.0100	0.0100	0	111	70	130			
Molybdenum	0.00470	0.00500	0.00500	0	94.1	70	130			
Selenium	0.00477	0.00500	0.00500	0	95.3	70	130			
Thallium	0.000974	0.00150	0.00100	0	97.4	70	130			

Sample ID **CCV5-160111**	Batch ID: **R83551**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160111D**	Analysis Date: **1/11/2016 2:10:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.192	0.00250	0.200	0	96.2	90	110			
Arsenic	0.209	0.00500	0.200	0	105	90	110			
Barium	0.196	0.0100	0.200	0	98.1	90	110			
Beryllium	0.213	0.00100	0.200	0	106	90	110			
Cadmium	0.196	0.00100	0.200	0	98.0	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1512359
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160111D

Sample ID **CCV5-160111**	Batch ID: **R83551**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160111D**	Analysis Date: **1/11/2016 2:10:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.83	0.300	5.00	0	96.5	90	110			
Chromium	0.208	0.00500	0.200	0	104	90	110			
Cobalt	0.213	0.00500	0.200	0	106	90	110			
Lead	0.199	0.00100	0.200	0	99.4	90	110			
Lithium	0.217	0.0100	0.200	0	109	90	110			
Molybdenum	0.191	0.00500	0.200	0	95.4	90	110			
Selenium	0.204	0.00500	0.200	0	102	90	110			
Thallium	0.209	0.00150	0.200	0	104	90	110			

Sample ID **LCVL5-160111**	Batch ID: **R83551**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160111D**	Analysis Date: **1/11/2016 2:24:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00184	0.00250	0.00200	0	92.0	70	130			
Arsenic	0.00501	0.00500	0.00500	0	100	70	130			
Barium	0.00475	0.0100	0.00500	0	95.0	70	130			
Beryllium	0.00108	0.00100	0.00100	0	108	70	130			
Cadmium	0.000993	0.00100	0.00100	0	99.3	70	130			
Calcium	0.0996	0.300	0.100	0	99.6	70	130			
Chromium	0.00499	0.00500	0.00500	0	99.8	70	130			
Cobalt	0.00523	0.00500	0.00500	0	105	70	130			
Lead	0.000903	0.00100	0.00100	0	90.3	70	130			
Lithium	0.0108	0.0100	0.0100	0	108	70	130			
Molybdenum	0.00459	0.00500	0.00500	0	91.8	70	130			
Selenium	0.00502	0.00500	0.00500	0	100	70	130			
Thallium	0.000948	0.00150	0.00100	0	94.8	70	130			

Sample ID **CCV6-160111**	Batch ID: **R83551**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160111D**	Analysis Date: **1/11/2016 3:18:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.194	0.00250	0.200	0	97.0	90	110			
Arsenic	0.209	0.00500	0.200	0	105	90	110			
Barium	0.197	0.0100	0.200	0	98.6	90	110			
Beryllium	0.213	0.00100	0.200	0	106	90	110			
Cadmium	0.194	0.00100	0.200	0	97.1	90	110			
Calcium	4.70	0.300	5.00	0	94.0	90	110			
Cobalt	0.208	0.00500	0.200	0	104	90	110			
Lead	0.194	0.00100	0.200	0	97.2	90	110			
Lithium	0.204	0.0100	0.200	0	102	90	110			
Molybdenum	0.189	0.00500	0.200	0	94.5	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1512359
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160111D

Sample ID **CCV6-160111**	Batch ID: **R83551**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160111D**	Analysis Date: **1/11/2016 3:18:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.207	0.00500	0.200	0	103	90	110			
Thallium	0.207	0.00150	0.200	0	104	90	110			

Sample ID **LCVL6-160111**	Batch ID: **R83551**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160111D**	Analysis Date: **1/11/2016 3:25:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00189	0.00250	0.00200	0	94.4	70	130			
Arsenic	0.00505	0.00500	0.00500	0	101	70	130			
Barium	0.00477	0.0100	0.00500	0	95.5	70	130			
Beryllium	0.000866	0.00100	0.00100	0	86.6	70	130			
Cadmium	0.000940	0.00100	0.00100	0	94.0	70	130			
Calcium	0.102	0.300	0.100	0	102	70	130			
Cobalt	0.00509	0.00500	0.00500	0	102	70	130			
Lead	0.000884	0.00100	0.00100	0	88.4	70	130			
Lithium	0.0105	0.0100	0.0100	0	105	70	130			
Molybdenum	0.00456	0.00500	0.00500	0	91.2	70	130			
Selenium	0.00522	0.00500	0.00500	0	104	70	130			
Thallium	0.000950	0.00150	0.00100	0	95.0	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1512359
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160113A

The QC data in batch 73098 applies to the following samples: 1512359-01A, 1512359-02A, 1512359-03A, 1512359-04A, 1512359-05A, 1512359-06A, 1512359-07A, 1512359-08A

Sample ID	**MB-73098**	Batch ID:	**73098**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**ICP-MS4_160113A**	Analysis Date:	**1/13/2016 12:08:00 PM**	Prep Date:	**1/12/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chromium	<0.00200	0.00500								

Sample ID	**LCS-73098**	Batch ID:	**73098**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**ICP-MS4_160113A**	Analysis Date:	**1/13/2016 12:10:00 PM**	Prep Date:	**1/12/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chromium	0.199	0.00500	0.200	0	99.7	80	120			

Sample ID	**LCSD-73098**	Batch ID:	**73098**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**LCSD**	Run ID:	**ICP-MS4_160113A**	Analysis Date:	**1/13/2016 12:12:00 PM**	Prep Date:	**1/12/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chromium	0.199	0.00500	0.200	0	99.3	80	120	0.436	15	

Sample ID	**1512358-01A SD**	Batch ID:	**73098**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**SD**	Run ID:	**ICP-MS4_160113A**	Analysis Date:	**1/13/2016 12:18:00 PM**	Prep Date:	**1/12/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	151	15.0	0	152				0.731	10	

Sample ID	**1512358-01A PDS**	Batch ID:	**73098**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**PDS**	Run ID:	**ICP-MS4_160113A**	Analysis Date:	**1/13/2016 12:38:00 PM**	Prep Date:	**1/12/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	197	3.00	50.0	152	89.0	80	120			

Sample ID	**1512358-01A MS**	Batch ID:	**73098**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**MS**	Run ID:	**ICP-MS4_160113A**	Analysis Date:	**1/13/2016 12:40:00 PM**	Prep Date:	**1/12/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chromium	0.203	0.0500	0.200	0	101	80	120			

Sample ID	**1512358-01A MSD**	Batch ID:	**73098**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**MSD**	Run ID:	**ICP-MS4_160113A**	Analysis Date:	**1/13/2016 12:43:00 PM**	Prep Date:	**1/12/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chromium	0.216	0.0500	0.200	0	108	80	120	6.18	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1512359
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160113A

Sample ID **ICV-160113**	Batch ID: **R83584**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_160113A**	Analysis Date: **1/13/2016 10:49:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	2.31	0.300	2.50	0	92.5	90	110			
Chromium	0.106	0.00500	0.100	0	106	90	110			

Sample ID **LCVL-160113**	Batch ID: **R83584**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160113A**	Analysis Date: **1/13/2016 10:54:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.0992	0.300	0.100	0	99.2	70	130			
Chromium	0.00532	0.00500	0.00500	0	106	70	130			

Sample ID **CCV1-160113**	Batch ID: **R83584**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160113A**	Analysis Date: **1/13/2016 11:45:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.83	0.300	5.00	0	96.6	90	110			
Chromium	0.202	0.00500	0.200	0	101	90	110			

Sample ID **LCVL1-160113**	Batch ID: **R83584**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160113A**	Analysis Date: **1/13/2016 12:04:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.0971	0.300	0.100	0	97.1	70	130			
Chromium	0.00514	0.00500	0.00500	0	103	70	130			

Sample ID **CCV2-160113**	Batch ID: **R83584**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160113A**	Analysis Date: **1/13/2016 12:45:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.84	0.300	5.00	0	96.9	90	110			
Chromium	0.204	0.00500	0.200	0	102	90	110			

Sample ID **LCVL2-160113**	Batch ID: **R83584**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160113A**	Analysis Date: **1/13/2016 12:52:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.0976	0.300	0.100	0	97.6	70	130			
Chromium	0.00522	0.00500	0.00500	0	104	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank
J	Analyte detected between MDL and RL
ND	Not Detected at the Method Detection Limit
RL	Reporting Limit
J	Analyte detected between SDL and RL
DF	Dilution Factor
MDL	Method Detection Limit
R	RPD outside accepted control limits
S	Spike Recovery outside control limits
N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1512359
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160113A

Sample ID **CCV3-160113**	Batch ID: **R83584**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160113A**	Analysis Date: **1/13/2016 1:14:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.81	0.300	5.00	0	96.2	90	110			

Sample ID **LCVL3-160113**	Batch ID: **R83584**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160113A**	Analysis Date: **1/13/2016 1:19:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.101	0.300	0.100	0	101	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler

Work Order: 1512359

Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160113B

The QC data in batch 73098 applies to the following samples: 1512359-01A, 1512359-02A, 1512359-03A, 1512359-04A, 1512359-05A, 1512359-06A, 1512359-07A, 1512359-08A

Sample ID	**1512358-01A SD**	Batch ID:	**73098**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**SD**	Run ID:	**ICP-MS4_160113B**	Analysis Date:	**1/13/2016 1:31:00 PM**	Prep Date:	**1/12/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chromium	<0.0100	0.0250	0	0				0	10	

Sample ID	**1512358-01A PDS**	Batch ID:	**73098**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**PDS**	Run ID:	**ICP-MS4_160113B**	Analysis Date:	**1/13/2016 1:51:00 PM**	Prep Date:	**1/12/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chromium	0.205	0.00500	0.200	0	103	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1512359
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160113B

Sample ID	**ICV-160113**	Batch ID:	**R83590**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**ICV**	Run ID:	**ICP-MS4_160113B**	Analysis Date:	**1/13/2016 10:49:00 AM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chromium	0.106	0.00500	0.100	0	106	90	110			

Sample ID	**LCVL-160113**	Batch ID:	**R83590**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**LCVL**	Run ID:	**ICP-MS4_160113B**	Analysis Date:	**1/13/2016 10:54:00 AM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chromium	0.00532	0.00500	0.00500	0	106	70	130			

Sample ID	**CCV3-160113**	Batch ID:	**R83590**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**ICP-MS4_160113B**	Analysis Date:	**1/13/2016 1:14:00 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chromium	0.204	0.00500	0.200	0	102	90	110			

Sample ID	**LCVL3-160113**	Batch ID:	**R83590**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**LCVL**	Run ID:	**ICP-MS4_160113B**	Analysis Date:	**1/13/2016 1:19:00 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chromium	0.00523	0.00500	0.00500	0	105	70	130			

Sample ID	**CCV4-160113**	Batch ID:	**R83590**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**ICP-MS4_160113B**	Analysis Date:	**1/13/2016 1:52:00 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chromium	0.201	0.00500	0.200	0	101	90	110			

Sample ID	**LCVL4-160113**	Batch ID:	**R83590**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**LCVL**	Run ID:	**ICP-MS4_160113B**	Analysis Date:	**1/13/2016 1:57:00 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chromium	0.00517	0.00500	0.00500	0	103	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1512359
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160114A

The QC data in batch 73098 applies to the following samples: 1512359-01A, 1512359-02A, 1512359-03A, 1512359-04A, 1512359-05A, 1512359-06A, 1512359-07A, 1512359-08A

Sample ID	**MB-73098**	Batch ID:	**73098**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**ICP-MS4_160114A**	Analysis Date:	**1/14/2016 12:11:00 PM**	Prep Date:	**1/12/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	<0.0100	0.0300								

Sample ID	**LCS-73098**	Batch ID:	**73098**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**ICP-MS4_160114A**	Analysis Date:	**1/14/2016 12:13:00 PM**	Prep Date:	**1/12/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.199	0.0300	0.200	0	99.7	80	120			

Sample ID	**LCSD-73098**	Batch ID:	**73098**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**LCSD**	Run ID:	**ICP-MS4_160114A**	Analysis Date:	**1/14/2016 12:15:00 PM**	Prep Date:	**1/12/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.208	0.0300	0.200	0	104	80	120	4.16	15	

Sample ID	**1512358-01A SD**	Batch ID:	**73098**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**SD**	Run ID:	**ICP-MS4_160114A**	Analysis Date:	**1/14/2016 12:21:00 PM**	Prep Date:	**1/12/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	2.25	0.750	0	2.15				4.53	10	

Sample ID	**1512358-01A PDS**	Batch ID:	**73098**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**PDS**	Run ID:	**ICP-MS4_160114A**	Analysis Date:	**1/14/2016 12:41:00 PM**	Prep Date:	**1/12/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	3.25	0.150	1.00	2.15	111	80	120			

Sample ID	**1512358-01A MS**	Batch ID:	**73098**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**MS**	Run ID:	**ICP-MS4_160114A**	Analysis Date:	**1/14/2016 12:43:00 PM**	Prep Date:	**1/12/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	2.45	0.150	0.200	2.15	153	80	120			S

Sample ID	**1512358-01A MSD**	Batch ID:	**73098**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**MSD**	Run ID:	**ICP-MS4_160114A**	Analysis Date:	**1/14/2016 12:45:00 PM**	Prep Date:	**1/12/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	2.44	0.150	0.200	2.15	146	80	120	0.611	15	S

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1512359
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160114A

Sample ID	**ICV-160114**	Batch ID:	**R83608**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**ICV**	Run ID:	**ICP-MS4_160114A**	Analysis Date:	**1/14/2016 11:55:00 AM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0967	0.0300	0.100	0	96.7	90	110			

Sample ID	**LCVL-160114**	Batch ID:	**R83608**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**LCVL**	Run ID:	**ICP-MS4_160114A**	Analysis Date:	**1/14/2016 12:05:00 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0250	0.0300	0.0200	0	125	70	130			

Sample ID	**CCV1-160114**	Batch ID:	**R83608**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**ICP-MS4_160114A**	Analysis Date:	**1/14/2016 12:56:00 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.204	0.0300	0.200	0	102	90	110			

Sample ID	**LCVL1-160114**	Batch ID:	**R83608**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**LCVL**	Run ID:	**ICP-MS4_160114A**	Analysis Date:	**1/14/2016 1:06:00 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0194	0.0300	0.0200	0	97.1	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1512359
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: IC3_160105A

The QC data in batch 73028 applies to the following samples: 1512359-01D, 1512359-02D, 1512359-03D, 1512359-04D, 1512359-05D, 1512359-06D, 1512359-07D, 1512359-08D

Sample ID **MB-73028**	Batch ID: **73028**	TestNo: **E300**	Units: **mg/L**
SampType: **MBLK**	Run ID: **IC3_160105A**	Analysis Date: **1/5/2016 10:19:28 AM**	Prep Date: **1/5/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00								
Fluoride	<0.100	0.400								
Sulfate	<1.00	3.00								

Sample ID **LCS-73028**	Batch ID: **73028**	TestNo: **E300**	Units: **mg/L**
SampType: **LCS**	Run ID: **IC3_160105A**	Analysis Date: **1/5/2016 10:42:58 AM**	Prep Date: **1/5/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.63	1.00	10.00	0	96.3	90	110			
Fluoride	4.22	0.400	4.000	0	105	90	110			
Sulfate	31.4	3.00	30.00	0	105	90	110			

Sample ID **LCSD-73028**	Batch ID: **73028**	TestNo: **E300**	Units: **mg/L**
SampType: **LCSD**	Run ID: **IC3_160105A**	Analysis Date: **1/5/2016 11:03:37 AM**	Prep Date: **1/5/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.63	1.00	10.00	0	96.3	90	110	0.021	20	
Fluoride	4.17	0.400	4.000	0	104	90	110	1.21	20	
Sulfate	31.1	3.00	30.00	0	104	90	110	0.827	20	

Sample ID **1512359-05DMS**	Batch ID: **73028**	TestNo: **E300**	Units: **mg/L**
SampType: **MS**	Run ID: **IC3_160105A**	Analysis Date: **1/5/2016 6:47:32 PM**	Prep Date: **1/5/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	2350	100	2000	403.8	97.3	90	110			
Fluoride	1940	40.0	2000	0	96.9	90	110			
Sulfate	2140	300	2000	139.9	100	90	110			

Sample ID **1512359-05DMSD**	Batch ID: **73028**	TestNo: **E300**	Units: **mg/L**
SampType: **MSD**	Run ID: **IC3_160105A**	Analysis Date: **1/5/2016 7:08:12 PM**	Prep Date: **1/5/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	2350	100	2000	403.8	97.2	90	110	0.119	20	
Fluoride	1950	40.0	2000	0	97.7	90	110	0.892	20	
Sulfate	2190	300	2000	139.9	102	90	110	2.01	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1512359
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: IC3_160105A

Sample ID **ICV-160105**	Batch ID: **R83479**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC3_160105A**	Analysis Date: **1/5/2016 9:26:37 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	24.3	1.00	25.00	0	97.2	90	110			
Fluoride	10.1	0.400	10.00	0	101	90	110			
Sulfate	76.0	3.00	75.00	0	101	90	110			

Sample ID **CCV1-160105**	Batch ID: **R83479**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC3_160105A**	Analysis Date: **1/5/2016 3:23:36 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.69	1.00	10.00	0	96.9	90	110			
Fluoride	4.15	0.400	4.000	0	104	90	110			
Sulfate	31.3	3.00	30.00	0	104	90	110			

Sample ID **CCV2-160105**	Batch ID: **R83479**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC3_160105A**	Analysis Date: **1/5/2016 8:30:45 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.66	1.00	10.00	0	96.6	90	110			
Fluoride	4.08	0.400	4.000	0	102	90	110			
Sulfate	30.7	3.00	30.00	0	102	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler

Work Order: 1512359

Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: **TITRATOR_160104A**

The QC data in batch 72998 applies to the following samples: 1512359-01D, 1512359-02D, 1512359-03D, 1512359-04D, 1512359-05D, 1512359-06D, 1512359-07D, 1512359-08D

Sample ID	**1512359-08D DUP**	Batch ID:	**72998**	TestNo:	**M4500-H+ B**	Units:	**pH Units@16℃**
SampType:	**DUP**	Run ID:	**TITRATOR_160104A**	Analysis Date:	**1/4/2016 9:55:00 AM**	Prep Date:	**1/4/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	6.66	0	0	6.630				0.451	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1512359
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_160104A

Sample ID	**ICV-160104**	Batch ID:	**R83452**	TestNo:	**M4500-H+ B**	Units:	**pH Units@20.4℃**
SampType:	**ICV**	Run ID:	**TITRATOR_160104A**	Analysis Date:	**1/4/2016 9:22:00 AM**	Prep Date:	**1/4/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	9.95	0	10.00	0	99.5	99	101			

Sample ID	**CCV1-160104**	Batch ID:	**R83452**	TestNo:	**M4500-H+ B**	Units:	**pH Units@19.4℃**
SampType:	**CCV**	Run ID:	**TITRATOR_160104A**	Analysis Date:	**1/4/2016 9:52:00 AM**	Prep Date:	**1/4/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	6.96	0	7.000	0	99.4	97.1	102.9			

Sample ID	**CCV2-160104**	Batch ID:	**R83452**	TestNo:	**M4500-H+ B**	Units:	**pH Units@20.7℃**
SampType:	**CCV**	Run ID:	**TITRATOR_160104A**	Analysis Date:	**1/4/2016 10:36:00 AM**	Prep Date:	**1/4/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	6.96	0	7.000	0	99.4	97.1	102.9			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1512359
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: WC_160105C

The QC data in batch 73034 applies to the following samples: 1512359-01D, 1512359-02D, 1512359-03D, 1512359-04D, 1512359-05D, 1512359-06D, 1512359-07D, 1512359-08D

Sample ID	**MB-73034**	Batch ID:	**73034**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**WC_160105C**	Analysis Date:	**1/6/2016 8:10:00 AM**	Prep Date:	**1/5/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	<10.0	10.0								

Sample ID	**LCS-73034**	Batch ID:	**73034**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**WC_160105C**	Analysis Date:	**1/6/2016 8:10:00 AM**	Prep Date:	**1/5/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	740	10.0	745.6	0	99.2	90	113			

Sample ID	**1512359-02D-DUP**	Batch ID:	**73034**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**DUP**	Run ID:	**WC_160105C**	Analysis Date:	**1/6/2016 8:10:00 AM**	Prep Date:	**1/5/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	2000	50.0	0	2015				0.747	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

GEL Laboratories LLC
a member of The GEL Group INC

PO Box 30712 Charleston, SC 29417
2040 Savage Road Charleston, SC 29407
P 843.556.8171
F 843.766.1178

gel.com

February 02, 2016

Mr. John DuPont
DHL Analytical
2300 Double Creek Drive
Round Rock, Texas 78664

Re: Routine Analysis
Work Order: 388806

Dear Mr. DuPont:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on January 07, 2016. This original data report has been prepared and reviewed in accordance with GEL's standard operating procedures.

Our policy is to provide high quality, personalized analytical services to enable you to meet your analytical needs on time every time. We trust that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at (843) 556-8171, ext. 4707.

Sincerely,

Anna C Day

Anna Day
Project Manager

Purchase Order: 14120
Enclosures

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 − (843) 556−8171 − www.gel.com

Certificate of Analysis Report
for

DHLA002 DHL Analytical

Client SDG: 388806 GEL Work Order: 388806

The Qualifiers in this report are defined as follows:

* A quality control analyte recovery is outside of specified acceptance criteria

** Analyte is a Tracer compound

** Analyte is a surrogate compound

U Analyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the Certificate of Analysis.

The designation ND, if present, appears in the result column when the analyte concentration is not detected above the limit as defined in the 'U' qualifier above.

This data report has been prepared and reviewed in accordance with GEL Laboratories LLC standard operating procedures. Please direct any questions to your Project Manager, Anna Day.

Reviewed by Anna C Day

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: February 2, 2016

Company : DHL Analytical
Address : 2300 Double Creek Drive

Round Rock, Texas 78664
Contact: Mr. John DuPont
Project: Routine Analysis

Client Sample ID: BMW-20
Sample ID: 388806001
Matrix: Water
Collect Date: 30-DEC-15 10:20
Receive Date: 07-JAN-16
Collector: Client

Project: DHLA00112
Client ID: DHLA002

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228	U	-0.316	+/-1.28	2.41	3.00	pCi/L		AXM6	01/14/16	1119	1536346	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226		0.816	+/-0.361	0.420	1.00	pCi/L		CXP3	01/20/16	0735	1536500	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			81.2	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: February 2, 2016

Company : DHL Analytical
Address : 2300 Double Creek Drive

Round Rock, Texas 78664
Contact: Mr. John DuPont
Project: Routine Analysis

Client Sample ID: BMW-21
Sample ID: 388806002
Matrix: Water
Collect Date: 30-DEC-15 11:10
Receive Date: 07-JAN-16
Collector: Client

Project: DHLA00112
Client ID: DHLA002

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228	U	1.61	+/-1.24	2.00	3.00	pCi/L		AXM6	01/14/16	1119	1536346	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226		0.584	+/-0.280	0.280	1.00	pCi/L		CXP3	01/20/16	0735	1536500	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			96.6	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: February 2, 2016

Company : DHL Analytical
Address : 2300 Double Creek Drive

Round Rock, Texas 78664
Contact: Mr. John DuPont
Project: Routine Analysis

Client Sample ID: BMW-22
Sample ID: 388806003
Matrix: Water
Collect Date: 30-DEC-15 12:00
Receive Date: 07-JAN-16
Collector: Client

Project: DHLA00112
Client ID: DHLA002

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228	U	1.34	+/-0.991	1.55	3.00	pCi/L		AXM6	01/14/16	1119	1536346	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226		0.973	+/-0.413	0.491	1.00	pCi/L		CXP3	01/20/16	0735	1536500	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			88.5	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: February 2, 2016

Company : DHL Analytical
Address : 2300 Double Creek Drive

Round Rock, Texas 78664
Contact: Mr. John DuPont
Project: Routine Analysis

Client Sample ID: BMW-23
Sample ID: 388806004
Matrix: Water
Collect Date: 30-DEC-15 12:50
Receive Date: 07-JAN-16
Collector: Client

Project: DHLA00112
Client ID: DHLA002

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228	U	2.27	+/-1.63	2.62	3.00	pCi/L		AXM6	01/14/16	1119	1536346	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226		0.711	+/-0.367	0.479	1.00	pCi/L		CXP3	01/20/16	0735	1536500	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			84.3	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: February 2, 2016

Company : DHL Analytical
Address : 2300 Double Creek Drive

Round Rock, Texas 78664
Contact: Mr. John DuPont
Project: Routine Analysis

Client Sample ID: BMW-24
Sample ID: 388806005
Matrix: Water
Collect Date: 30-DEC-15 13:45
Receive Date: 07-JAN-16
Collector: Client

Project: DHLA00112
Client ID: DHLA002

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228	U	0.935	+/-0.994	1.66	3.00	pCi/L		AXM6	01/14/16	1119	1536346	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226		0.485	+/-0.321	0.461	1.00	pCi/L		CXP3	01/20/16	0735	1536500	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			96.5	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: February 2, 2016

Company : DHL Analytical
Address : 2300 Double Creek Drive

Round Rock, Texas 78664
Contact: Mr. John DuPont
Project: Routine Analysis

Client Sample ID: BMW-11AR
Sample ID: 388806006
Matrix: Water
Collect Date: 30-DEC-15 14:55
Receive Date: 07-JAN-16
Collector: Client

Project: DHLA00112
Client ID: DHLA002

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228		3.19	+/-1.97	2.92	3.00	pCi/L		AXM6	01/14/16	1119	1536346	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226		1.66	+/-0.530	0.538	1.00	pCi/L		CXP3	01/20/16	0805	1536500	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			42.7	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: February 2, 2016

Company : DHL Analytical
Address : 2300 Double Creek Drive

Round Rock, Texas 78664
Contact: Mr. John DuPont
Project: Routine Analysis

Client Sample ID: BMW-18
Sample ID: 388806007
Matrix: Water
Collect Date: 30-DEC-15 17:15
Receive Date: 07-JAN-16
Collector: Client

Project: DHLA00112
Client ID: DHLA002

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228	U	0.789	+/-1.19	2.04	3.00	pCi/L		AXM6	01/14/16	1122	1536346	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226	U	0.0844	+/-0.214	0.405	1.00	pCi/L		CXP3	01/20/16	0805	1536500	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			82.7	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: February 2, 2016

Company :	DHL Analytical
Address :	2300 Double Creek Drive
	Round Rock, Texas 78664
Contact:	Mr. John DuPont
Project:	Routine Analysis

Client Sample ID:	BMW-19	Project:	DHLA00112
Sample ID:	388806008	Client ID:	DHLA002
Matrix:	Water		
Collect Date:	30-DEC-15 16:15		
Receive Date:	07-JAN-16		
Collector:	Client		

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228	U	0.814	+/-1.63	2.89	3.00	pCi/L		AXM6	01/14/16	1303	1536346	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226		0.598	+/-0.328	0.439	1.00	pCi/L		CXP3	01/20/16	0805	1536500	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			84.8	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

QC Summary

Report Date: February 2, 2016

DHL Analytical
2300 Double Creek Drive
Round Rock, Texas

Contact: **Mr. John DuPont**

Workorder: **388806**

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Rad Gas Flow										
Batch 1536346										
QC1203466262 388806008 DUP										
Radium-228	U	0.814	U	2.28	pCi/L	N/A		N/A	AXM6	01/14/16 11:23
	Uncertainty	+/-1.63		+/-1.66						
QC1203466263 LCS										
Radium-228	28.7			28.2	pCi/L		98.3	(75%-125%)		01/14/16 11:23
	Uncertainty			+/-2.69						
QC1203466261 MB										
Radium-228				1.67	pCi/L					01/14/16 11:22
	Uncertainty			+/-0.872						
Rad Ra-226										
Batch 1536500										
QC1203466565 389276001 DUP										
Radium-226		2.60		3.74	pCi/L	36.1*		(0%-20%)	CXP3	01/20/16 09:45
	Uncertainty	+/-0.648		+/-0.773						
QC1203466567 LCS										
Radium-226	24.4			22.2	pCi/L		91	(75%-125%)		01/20/16 09:45
	Uncertainty			+/-1.49						
QC1203466564 MB										
Radium-226			U	0.0515	pCi/L					01/20/16 09:10
	Uncertainty			+/-0.214						
QC1203466566 389276001 MS										
Radium-226	122	2.60		128	pCi/L		102	(75%-125%)		01/20/16 09:45
	Uncertainty	+/-0.648		+/-8.93						

Notes:

Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

The Qualifiers in this report are defined as follows:

**	Analyte is a Tracer compound
<	Result is less than value reported
>	Result is greater than value reported
BD	Results are either below the MDC or tracer recovery is low
FA	Failed analysis.
H	Analytical holding time was exceeded
J	Value is estimated
K	Analyte present. Reported value may be biased high. Actual value is expected to be lower.
L	Analyte present. Reported value may be biased low. Actual value is expected to be higher.
M	M if above MDC and less than LLD
M	REMP Result > MDC/CL and < RDL
N/A	RPD or %Recovery limits do not apply.

QC Summary

Workorder: **388806**

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time

N1	See case narrative
ND	Analyte concentration is not detected above the detection limit
NJ	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
Q	One or more quality control criteria have not been met. Refer to the applicable narrative or DER.
R	Sample results are rejected
U	Analyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD.
UI	Gamma Spectroscopy--Uncertain identification
UJ	Gamma Spectroscopy--Uncertain identification
UL	Not considered detected. The associated number is the reported concentration, which may be inaccurate due to a low bias.
X	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
Y	Other specific qualifiers were required to properly define the results. Consult case narrative.
^	RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.
h	Preparation or preservation holding time was exceeded

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.
^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.
* Indicates that a Quality Control parameter was not within specifications.
For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.

There are no "Data Exception Reports" associated with this analytical report.

DHL Analytical, Inc.
2300 Double Creek Drive
Round Rock, TX 78664
TEL: *(512) 388-8222* FAX: *(512) 388-8229*

388806

CHAIN-OF-CUSTODY RECORD

Work Order: 1512359

Subcontractor:

GEL Laboratories
PO Box 30712
Charleston, SC 29417

TEL: (843) 556-8171
FAX:
Acct #:

31-Dec-15

					224	223	Requested Tests			
Sample Id	**Matrix**	**DHL#**	**Date Collected**	**Bottle Type**	**E903.1**	**E904.0**				
BMW-20	Aqueous	-01B	12/30/15 10:20 AM	500HDPEHNO3		1				
BMW-20	Aqueous	-01C	12/30/15 10:20 AM	500HDPEHNO3	1					
BMW-21	Aqueous	-02B	12/30/15 11:10 AM	500HDPEHNO3		1				
BMW-21	Aqueous	-02C	12/30/15 11:10 AM	500HDPEHNO3	1					
BMW-22	Aqueous	-03B	12/30/15 12:00 PM	500HDPEHNO3		1				
BMW-22	Aqueous	-03C	12/30/15 12:00 PM	500HDPEHNO3	1					
BMW-23	Aqueous	-04B	12/30/15 12:50 PM	500HDPEHNO3		1				
BMW-23	Aqueous	-04C	12/30/15 12:50 PM	500HDPEHNO3	1					
BMW-24	Aqueous	-05B	12/30/15 01:45 PM	500HDPEHNO3		1				
BMW-24	Aqueous	-05C	12/30/15 01:45 PM	500HDPEHNO3	1					
BMW-11AR	Aqueous	-06B	12/30/15 02:55 PM	500HDPEHNO3		1				
BMW-11AR	Aqueous	-06C	12/30/15 02:55 PM	500HDPEHNO3	1					
BMW-18	Aqueous	-07B	12/30/15 04:15 PM	500HDPEHNO3		1				
BMW-18	Aqueous	-07C	12/30/15 04:15 PM	500HDPEHNO3	1					
BMW-19	Aqueous	-08B	12/30/15 05:15 PM	500HDPEHNO3		1				
BMW-19	Aqueous	-08C	12/30/15 05:15 PM	500HDPEHNO3	1					

General Comments:

Please analyze these samples with a Standard Turnaround Time.
Call John DuPont if you have questions.
Quality Control Package Needed: Standard / _____
EMAIL report to both cac@dhlanalytical.com & dupont@dhlanalytical.com

		Date/Time			Date/Time
Relinquished by:	J Barker	12/31/15 1730	**Received by:**	Fed ex	12/31/15 1733
Relinquished by:			**Received by:**	mark	1/7/16 10:15

GEL Laboratories LLC

SAMPLE RECEIPT & REVIEW FORM

Client: DHLA			**SDG/AR/COC/Work Order:** 388806
Received By: Shanta mack			**Date Received:** 1/7/16 10:15
Suspected Hazard Information	**Yes**	**No**	*If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation.
COC/Samples marked as radioactive?		—	Maximum Net Counts Observed* (Observed Counts - Area Background Counts): 0 cpm
Classified Radioactive II or III by RSO?		—	If yes, Were swipes taken of sample containers < action levels?
COC/Samples marked containing PCBs?		—	
Package, COC, and/or Samples marked as beryllium or asbestos containing?		—	If yes, samples are to be segregated as Safety Controlled Samples, and opened by the GEL Safety Group.
Shipped as a DOT Hazardous?		—	Hazard Class Shipped: UN#:
Samples identified as Foreign Soil?		—	

	Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (Required for Non-Conforming Items)
1	Shipping containers received intact and sealed?	✓			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
2	Samples requiring cold preservation within (0 ≤ 6 deg. C)?*		✓		Preservation Method: Ice bags Blue ice Dry ice None Other (describe) *all temperatures are recorded in Celsius 8 C
2a	Daily check performed and passed on IR temperature gun?	✓			Temperature Device Serial #: Secondary Temperature Device Serial # (If Applicable): ES320:15835
3	Chain of custody documents included with shipment?	✓			
4	Sample containers intact and sealed?	✓			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
5	Samples requiring chemical preservation at proper pH?	✓			Sample ID's, containers affected and observed pH: If Preservation added, Lot#:
6	Do Low Level Perchlorate samples have headspace as required?		✓		Sample ID's and containers affected:
7	VOA vials contain acid preservation?		✓		(If unknown, select No)
8	VOA vials free of headspace (defined as < 6mm bubble)?		✓		Sample ID's and containers affected:
9	Are Encore containers present?			✓	(If yes, immediately deliver to Volatiles laboratory)
10	Samples received within holding time?	✓			ID's and tests affected:
11	Sample ID's on COC match ID's on bottles?	✓			Sample ID's and containers affected:
12	Date & time on COC match date & time on bottles?			✓	Sample ID's affected: BMW-19 has 16:15 on container BMW-18 has 17:15 on container *
13	Number of containers received match number indicated on COC?	✓			Sample ID's affected:
14	Are sample containers identifiable as GEL provided?			✓	
15	COC form is properly signed in relinquished/received sections?	✓			
16	Carrier and tracking number.				Circle Applicable: FedEx Air FedEx Ground UPS Field Services Courier Other 7753 2343 4429

Comments (Use Continuation Form if needed):

*chain sent an updated chain. ACD 1/8/16

PM (or PMA) review: Initials ACD Date 1/8/16 Page 1 of 1 GL-CHL-SR-001 Rev 2

List of current GEL Certifications as of 02 February 2016

State	Certification
Alaska	UST−110
Arkansas	88−0651
CLIA	42D0904046
California	2940 Interim
Colorado	SC00012
Connecticut	PH−0169
Delaware	SC000122013−10
DoD ELAP/ ISO17025 A2LA	2567.01
Florida NELAP	E87156
Foreign Soils Permit	P330−15−00283, P330−15−00253
Georgia	SC00012
Georgia SDWA	967
Hawaii	SC000122013−10
Idaho Chemistry	SC00012
Idaho Radiochemistry	SC00012
Illinois NELAP	200029
Indiana	C−SC−01
Kansas NELAP	E−10332
Kentucky SDWA	90129
Kentucky Wastewater	90129
Louisiana NELAP	03046 (AI33904)
Louisiana SDWA	LA150001
Maryland	270
Massachusetts	M−SC012
Michigan	9976
Mississippi	SC000122013−10
Nebraska	NE−OS−26−13
Nevada	SC000122016−1
New Hampshire NELAP	2054
New Jersey NELAP	SC002
New Mexico	SC00012
New York NELAP	11501
North Carolina	233
North Carolina SDWA	45709
North Dakota	R−158
Oklahoma	9904
Pennsylvania NELAP	68−00485
S.Carolina Radchem	10120002
South Carolina Chemistry	10120001
Tennessee	TN 02934
Texas NELAP	T104704235−15−10
Utah NELAP	SC000122015−19
Vermont	VT87156
Virginia NELAP	460202
Washington	C780
West Virginia	997404

March 30, 2016

Will Vienne
Pastor, Behling & Wheeler
2201 Double Creek Dr #4004
Round Rock, Texas 78664
TEL: (512) 671-3434
FAX (512) 671-3446

Order No.: 1602289

RE: Luminant - MLSES

Dear Will Vienne:

DHL Analytical, Inc. received 8 sample(s) on 2/26/2016 for the analyses presented in the following report.

There were no problems with the analyses and all data met requirements of NELAC except where noted in the Case Narrative. All non-NELAC methods will be identified accordingly in the case narrative and all estimated uncertainties of test results are within method or EPA specifications.

If you have any questions regarding these tests results, please feel free to call. Thank you for using DHL Analytical.

Sincerely,

John DuPont
General Manager

This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211-15-15

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AnalyticalQCSummaryReport 1602289 ..... **22**

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DHL ANALYTICAL
2300 Double Creek Dr. ■ Round Rock, TX 78664
Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

№ 70422 CHAIN-OF-CUSTODY

CLIENT: PBW
ADDRESS: 2201 Double Creek Dr. Round Rock TX 78664
PHONE: 512 671 3434 FAX/E-MAIL: 512 671 3446
DATA REPORTED TO: Will Vienne
ADDITIONAL REPORT COPIES TO:

DATE: 2-26-16 PAGE 1 OF 1
PO #: 5164-B DHL WORK ORDER #: 1602289
PROJECT LOCATION OR NAME: Luminant MLDES
CLENT PROJECT #: 5164-B COLLECTOR: CK/JTB

Authorize 5% surcharge for TRRP Report? ❑ Yes ❑ No

S=SOIL W=WATER A=AIR L=LIQUID SE=SEDIMENT P=PAINT SL=SLUDGE O=OTHER SO=SOLID

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	PRESERVATION: HCl	HNO_3	H_2SO_4 ❑ NaOH ❑	ICE	UNPRESERVED	ANALYSES: * SEE ATTACHED	FIELD NOTES
BMW-22	01	2-25-16	945	W	P	4		3			1	X	
BMW-23	02	"	1035	W	P	4		3			1	X	
BMW-24	03	"	1115	W	P	4		3			1	X	
BMW-19	04	"	1215	W	P	4		3			1	X	
BMW-20	05	"	1430	W	P	4		3			1	X	
BMW-21	06	"	1510	W	P	4		3			1	X	
BMW-11AR	07	"	1620	W	P	4		3			1	X	
BMW-18	08	2-26-16	1015	W	P	4		3			1	X	

ANALYSES: BTEX ❑ MTBE ❑ [METHOD 8021] TPH 1005 ❑ TPH 1006 ❑ HOLD 1006 ❑ GRO [METHOD 8015] ❑ DRO [METHOD 8105] ❑ VOC 8260 ❑ VOC 624 ❑ VOC 8260/5035 ❑ SVOC 8270 ❑ PAH 8270 ❑ HOLD PAH ❑ SVOC 625 ❑ 8270 PEST ❑ 625 PEST/PCB ❑ 608 PCB ❑ 8270 PCB ❑ 8270 O-P PEST ❑ 8082 PCB ❑ 8270 PCB ❑ 8321 HERB ❑ T PHOS, AMMONIA ❑ METALS 6020 ❑ METALS 200.8 ❑ DISS. METALS ❑ RCRA ❑ TX11 ❑ _____ ❑ PH ❑ HEX CHROM ❑ ALKALINITY ❑ COD ❑ CHLORIDE ❑ ANIONS _____ ❑ TCLP-SVOC ❑ VOC ❑ PEST ❑ HERB ❑ TCLP-METALS ❑ RCRA 8 ❑ TX-11 ❑ Pb ❑ RCI ❑ FLASHPOINT ❑ DGAS ❑ TDS ❑ TSS ❑ % MOISTURE ❑ CYANIDE ❑

RELINQUISHED BY: (Signature) DATE/TIME 2/26/16 17:18 RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature) DATE/TIME RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature) DATE/TIME RECEIVED BY: (Signature)

TURN AROUND TIME
RUSH ❑ CALL FIRST
1 DAY ❑ CALL FIRST
2 DAY ❑
NORMAL ☒
OTHER ❑ _____

LABORATORY USE ONLY:
RECEIVING TEMP: 3.4 THERM #: 78
CUSTODY SEALS: ❑ BROKEN ❑ INTACT ☒ NOT USED
CARRIER: ❑ LONE STAR ❑ FEDEX ❑ UPS ❑ OTHER
❑ COURIER DELIVERY
☒ HAND DELIVERED

John Dupont

From: Sara Taube [Sara.Taube@pbwllc.com]
Sent: Wednesday, July 22, 2015 12:05 PM
To: John Dupont
Subject: CCR Appendix III and IV
Follow Up Flag: Follow up
Flag Status: Completed

Hi John,

Here are the Appendix III and Appendix IV constituents that we will need to have analyzed under the CCR Rule.

Appendix III
Boron
Calcium
Chloride
Fluoride
pH
sulfate
TDS

Appendix IV
Antimony
Arsenic
Barium
Beryllium
Cadmium
Chromium
Cobalt
Fluoride
Lead
Lithium
Mercury
Molybdenum
Selenium
Thallium
Radium 226 and 228

We are looking to have approximately 74 wells sampled 8 times over the course of the next two years. Please let me know if there is any more information you might need.

Cheers,

Sara

10/26/2015

DHL Analytical, Inc.

Sample Receipt Checklist

Client Name **Pastor, Behling & Wheeler** Date Received: **2/26/2016**

Work Order Number **1602289** Received by **JB**

Checklist completed by: _____ 2/29/2016 Reviewed by _____ 2/29/2016
Signature Date Initials Date

Carrier name Hand Delivered

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	**3.4** °C
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH<2 acceptable upon receipt?	Yes ☑	No ☐	NA ☐ LOT # 8086
	Adjusted? NO		Checked by _____
Water - ph>9 (S) or ph>12 (CN) acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted? _____		Checked by _____

Any No response must be detailed in the comments section below.

Client contacted _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments: _____

Corrective Action _____

DHL Analytical, Inc. **Date:** *30-Mar-16*

CLIENT: Pastor, Behling & Wheeler
Project: Luminant - MLSES
Lab Order: 1602289

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Method SW6020A - Metals Analysis
Method SW7470A - Mercury Analysis
Method E300 - Anions Analysis
Method M4500-H+ B - pH of a Water Analysis
Method M2540C - TDS Analysis
Sub-contract - Radium-228 and Radium-226 analyses by methods E904.0/SW8469320 Modified and E903.1 Modified. Analyzed at GEL Laboratory.

LOG IN

The samples were received and log-in performed on 2/26/16. A total of 8 samples were received. The samples arrived in good condition and were properly packaged.

METALS ANALYSIS

For Metals analysis performed on 3/7/16 (batch 73907) Boron was detected below the reporting limit in the method blanks (MB-73907). All associated samples were detected greater than 10 times the amount in the blank for this analyte. No further corrective actions were taken.

For Metals analysis performed on 3/7/16 (batch 73938) the matrix spike duplicate recovery was above control limits for Boron. This is flagged accordingly in the QC summary report. The sample selected for the matrix spike and matrix spike duplicate was not from this work order. The LCS was within control limits for this analyte. No further corrective actions were taken.

MERCURY ANALYSIS

For Mercury analysis performed on 3/8/16 (batch 73953) the LCS/LCSD had the RPD slightly above control limits. This is flagged accordingly in the QC summary report. The percent recoveries were within control limits. No further corrective actions were taken.

DHL Analytical, Inc.

Date: *30-Mar-16*

CLIENT: Pastor, Behling & Wheeler
Project: Luminant - MLSES
Lab Order: 1602289

Work Order Sample Summary

Lab Smp ID	Client Sample ID	Tag Number	Date Collected	Date Recved
1602289-01	BMW-22		02/25/16 09:45 AM	2/26/2016
1602289-02	BMW-23		02/25/16 10:35 AM	2/26/2016
1602289-03	BMW-24		02/25/16 11:15 AM	2/26/2016
1602289-04	BMW-19		02/25/16 12:15 PM	2/26/2016
1602289-05	BMW-20		02/25/16 02:30 PM	2/26/2016
1602289-06	BMW-21		02/25/16 03:10 PM	2/26/2016
1602289-07	BMW-11AR		02/25/16 04:20 PM	2/26/2016
1602289-08	BMW-18		02/26/16 10:15 AM	2/26/2016

Lab Order: 1602289
Client: Pastor, Behling & Wheeler
Project: Luminant - MLSES

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1602289-01A	BMW-22	02/25/16 09:45 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/29/16 12:43 PM	73907
	BMW-22	02/25/16 09:45 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/29/16 12:43 PM	73907
	BMW-22	02/25/16 09:45 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/29/16 12:43 PM	73907
	BMW-22	02/25/16 09:45 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	03/02/16 01:57 PM	73953
1602289-01D	BMW-22	02/25/16 09:45 AM	Aqueous	E300	Anion Preparation	03/07/16 09:06 AM	74004
	BMW-22	02/25/16 09:45 AM	Aqueous	E300	Anion Preparation	03/07/16 09:06 AM	74004
	BMW-22	02/25/16 09:45 AM	Aqueous	M4500-H+ B	pH Preparation	03/01/16 09:00 AM	73915
	BMW-22	02/25/16 09:45 AM	Aqueous	M2540C	TDS Preparation	03/02/16 01:49 PM	73952
1602289-02A	BMW-23	02/25/16 10:35 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/29/16 12:43 PM	73907
	BMW-23	02/25/16 10:35 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/29/16 12:43 PM	73907
	BMW-23	02/25/16 10:35 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/29/16 12:43 PM	73907
	BMW-23	02/25/16 10:35 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	03/02/16 09:00 AM	73940
1602289-02D	BMW-23	02/25/16 10:35 AM	Aqueous	E300	Anion Preparation	03/07/16 09:06 AM	74004
	BMW-23	02/25/16 10:35 AM	Aqueous	E300	Anion Preparation	03/07/16 09:06 AM	74004
	BMW-23	02/25/16 10:35 AM	Aqueous	M4500-H+ B	pH Preparation	03/01/16 09:00 AM	73915
	BMW-23	02/25/16 10:35 AM	Aqueous	M2540C	TDS Preparation	03/02/16 01:49 PM	73952
1602289-03A	BMW-24	02/25/16 11:15 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/29/16 12:43 PM	73907
	BMW-24	02/25/16 11:15 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/29/16 12:43 PM	73907
	BMW-24	02/25/16 11:15 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/29/16 12:43 PM	73907
	BMW-24	02/25/16 11:15 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	03/02/16 09:00 AM	73940
1602289-03D	BMW-24	02/25/16 11:15 AM	Aqueous	E300	Anion Preparation	03/07/16 09:06 AM	74004
	BMW-24	02/25/16 11:15 AM	Aqueous	E300	Anion Preparation	03/07/16 09:06 AM	74004
	BMW-24	02/25/16 11:15 AM	Aqueous	M4500-H+ B	pH Preparation	03/01/16 09:00 AM	73915
	BMW-24	02/25/16 11:15 AM	Aqueous	M2540C	TDS Preparation	03/02/16 01:49 PM	73952
1602289-04A	BMW-19	02/25/16 12:15 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	03/02/16 08:58 AM	73938
	BMW-19	02/25/16 12:15 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	03/02/16 08:58 AM	73938
	BMW-19	02/25/16 12:15 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	03/02/16 08:58 AM	73938
	BMW-19	02/25/16 12:15 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	03/02/16 09:00 AM	73940

Lab Order: 1602289
Client: Pastor, Behling & Wheeler
Project: Luminant - MLSES

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1602289-04D	BMW-19	02/25/16 12:15 PM	Aqueous	E300	Anion Preparation	03/07/16 09:06 AM	74004
	BMW-19	02/25/16 12:15 PM	Aqueous	E300	Anion Preparation	03/07/16 09:06 AM	74004
	BMW-19	02/25/16 12:15 PM	Aqueous	M4500-H+ B	pH Preparation	03/01/16 09:00 AM	73915
	BMW-19	02/25/16 12:15 PM	Aqueous	M2540C	TDS Preparation	03/02/16 01:49 PM	73952
1602289-05A	BMW-20	02/25/16 02:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	03/02/16 08:58 AM	73938
	BMW-20	02/25/16 02:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	03/02/16 08:58 AM	73938
	BMW-20	02/25/16 02:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	03/02/16 08:58 AM	73938
	BMW-20	02/25/16 02:30 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	03/02/16 09:00 AM	73940
1602289-05D	BMW-20	02/25/16 02:30 PM	Aqueous	E300	Anion Preparation	03/07/16 09:06 AM	74004
	BMW-20	02/25/16 02:30 PM	Aqueous	M4500-H+ B	pH Preparation	03/01/16 09:00 AM	73915
	BMW-20	02/25/16 02:30 PM	Aqueous	M2540C	TDS Preparation	03/02/16 01:49 PM	73952
1602289-06A	BMW-21	02/25/16 03:10 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	03/02/16 08:58 AM	73938
	BMW-21	02/25/16 03:10 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	03/02/16 08:58 AM	73938
	BMW-21	02/25/16 03:10 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	03/02/16 08:58 AM	73938
	BMW-21	02/25/16 03:10 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	03/02/16 09:00 AM	73940
1602289-06D	BMW-21	02/25/16 03:10 PM	Aqueous	E300	Anion Preparation	03/07/16 09:06 AM	74004
	BMW-21	02/25/16 03:10 PM	Aqueous	E300	Anion Preparation	03/07/16 09:06 AM	74004
	BMW-21	02/25/16 03:10 PM	Aqueous	M4500-H+ B	pH Preparation	03/01/16 09:00 AM	73915
	BMW-21	02/25/16 03:10 PM	Aqueous	M2540C	TDS Preparation	03/02/16 01:49 PM	73952
1602289-07A	BMW-11AR	02/25/16 04:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	03/02/16 08:58 AM	73938
	BMW-11AR	02/25/16 04:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	03/02/16 08:58 AM	73938
	BMW-11AR	02/25/16 04:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	03/02/16 08:58 AM	73938
	BMW-11AR	02/25/16 04:20 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	03/02/16 09:00 AM	73940
1602289-07D	BMW-11AR	02/25/16 04:20 PM	Aqueous	E300	Anion Preparation	03/07/16 09:06 AM	74004
	BMW-11AR	02/25/16 04:20 PM	Aqueous	E300	Anion Preparation	03/07/16 09:06 AM	74004
	BMW-11AR	02/25/16 04:20 PM	Aqueous	M4500-H+ B	pH Preparation	03/01/16 10:35 AM	73927
	BMW-11AR	02/25/16 04:20 PM	Aqueous	M2540C	TDS Preparation	03/02/16 01:49 PM	73952
1602289-08A	BMW-18	02/26/16 10:15 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	03/02/16 08:58 AM	73938

Lab Order: 1602289
Client: Pastor, Behling & Wheeler
Project: Luminant - MLSES

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1602289-08A	BMW-18	02/26/16 10:15 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	03/02/16 08:58 AM	73938
	BMW-18	02/26/16 10:15 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	03/02/16 09:00 AM	73940
1602289-08D	BMW-18	02/26/16 10:15 AM	Aqueous	E300	Anion Preparation	03/07/16 09:06 AM	74004
	BMW-18	02/26/16 10:15 AM	Aqueous	M4500-H+ B	pH Preparation	03/01/16 10:35 AM	73927
	BMW-18	02/26/16 10:15 AM	Aqueous	M2540C	TDS Preparation	03/02/16 01:49 PM	73952

Lab Order: 1602289
Client: Pastor, Behling & Wheeler
Project: Luminant - MLSES

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1602289-01A	BMW-22	Aqueous	SW7470A	Mercury Total: Aqueous	73953	1	03/08/16 11:29 AM	CETAC2_HG_160308C
	BMW-22	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73907	1	03/01/16 02:34 PM	ICP-MS4_160301A
	BMW-22	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73907	10	03/07/16 01:57 PM	ICP-MS4_160307A
	BMW-22	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73907	1	03/07/16 02:07 PM	ICP-MS4_160307A
1602289-01D	BMW-22	Aqueous	E300	Anions by IC method - Water	74004	1	03/07/16 10:34 AM	IC2_160307A
	BMW-22	Aqueous	E300	Anions by IC method - Water	74004	100	03/07/16 02:35 PM	IC2_160307A
	BMW-22	Aqueous	M4500-H+ B	pH	73915	1	03/01/16 10:12 AM	TITRATOR_160301A
	BMW-22	Aqueous	M2540C	Total Dissolved Solids	73952	1	03/03/16 09:05 AM	WC_160302B
1602289-02A	BMW-23	Aqueous	SW7470A	Mercury Total: Aqueous	73940	1	03/03/16 12:40 PM	CETAC2_HG_160303A
	BMW-23	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73907	1	03/01/16 02:36 PM	ICP-MS4_160301A
	BMW-23	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73907	10	03/07/16 01:59 PM	ICP-MS4_160307A
	BMW-23	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73907	1	03/07/16 02:09 PM	ICP-MS4_160307A
1602289-02D	BMW-23	Aqueous	E300	Anions by IC method - Water	74004	1	03/07/16 10:48 AM	IC2_160307A
	BMW-23	Aqueous	E300	Anions by IC method - Water	74004	10	03/07/16 03:33 PM	IC2_160307A
	BMW-23	Aqueous	M4500-H+ B	pH	73915	1	03/01/16 10:13 AM	TITRATOR_160301A
	BMW-23	Aqueous	M2540C	Total Dissolved Solids	73952	1	03/03/16 09:05 AM	WC_160302B
1602289-03A	BMW-24	Aqueous	SW7470A	Mercury Total: Aqueous	73940	1	03/03/16 12:42 PM	CETAC2_HG_160303A
	BMW-24	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73907	1	03/01/16 02:38 PM	ICP-MS4_160301A
	BMW-24	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73907	10	03/07/16 02:01 PM	ICP-MS4_160307A
	BMW-24	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73907	1	03/07/16 02:11 PM	ICP-MS4_160307A
1602289-03D	BMW-24	Aqueous	E300	Anions by IC method - Water	74004	1	03/07/16 11:03 AM	IC2_160307A
	BMW-24	Aqueous	E300	Anions by IC method - Water	74004	100	03/07/16 03:48 PM	IC2_160307A
	BMW-24	Aqueous	M4500-H+ B	pH	73915	1	03/01/16 10:15 AM	TITRATOR_160301A
	BMW-24	Aqueous	M2540C	Total Dissolved Solids	73952	1	03/03/16 09:05 AM	WC_160302B
1602289-04A	BMW-19	Aqueous	SW7470A	Mercury Total: Aqueous	73940	1	03/03/16 12:44 PM	CETAC2_HG_160303A
	BMW-19	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73938	1	03/03/16 06:33 PM	ICP-MS4_160303F

Lab Order: 1602289
Client: Pastor, Behling & Wheeler
Project: Luminant - MLSES

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1602289-04A	BMW-19	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73938	50	03/07/16 05:40 PM	ICP-MS4_160307A
	BMW-19	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73938	1	03/11/16 06:08 PM	ICP-MS4_160311B
1602289-04D	BMW-19	Aqueous	E300	Anions by IC method - Water	74004	100	03/07/16 04:02 PM	IC2_160307A
	BMW-19	Aqueous	E300	Anions by IC method - Water	74004	1	03/07/16 11:17 AM	IC2_160307A
	BMW-19	Aqueous	M4500-H+ B	pH	73915	1	03/01/16 10:19 AM	TITRATOR_160301A
	BMW-19	Aqueous	M2540C	Total Dissolved Solids	73952	1	03/03/16 09:05 AM	WC_160302B
1602289-05A	BMW-20	Aqueous	SW7470A	Mercury Total: Aqueous	73940	1	03/03/16 12:46 PM	CETAC2_HG_160303A
	BMW-20	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73938	1	03/03/16 06:35 PM	ICP-MS4_160303F
	BMW-20	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73938	10	03/07/16 05:42 PM	ICP-MS4_160307A
	BMW-20	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73938	1	03/11/16 06:10 PM	ICP-MS4_160311B
1602289-05D	BMW-20	Aqueous	E300	Anions by IC method - Water	74004	1	03/07/16 11:32 AM	IC2_160307A
	BMW-20	Aqueous	M4500-H+ B	pH	73915	1	03/01/16 10:37 AM	TITRATOR_160301A
	BMW-20	Aqueous	M2540C	Total Dissolved Solids	73952	1	03/03/16 09:05 AM	WC_160302B
1602289-06A	BMW-21	Aqueous	SW7470A	Mercury Total: Aqueous	73940	1	03/03/16 12:49 PM	CETAC2_HG_160303A
	BMW-21	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73938	1	03/03/16 06:37 PM	ICP-MS4_160303F
	BMW-21	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73938	10	03/07/16 05:44 PM	ICP-MS4_160307A
	BMW-21	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73938	1	03/11/16 06:12 PM	ICP-MS4_160311B
1602289-06D	BMW-21	Aqueous	E300	Anions by IC method - Water	74004	10	03/07/16 04:17 PM	IC2_160307A
	BMW-21	Aqueous	E300	Anions by IC method - Water	74004	1	03/07/16 11:47 AM	IC2_160307A
	BMW-21	Aqueous	M4500-H+ B	pH	73915	1	03/01/16 10:40 AM	TITRATOR_160301A
	BMW-21	Aqueous	M2540C	Total Dissolved Solids	73952	1	03/03/16 09:05 AM	WC_160302B
1602289-07A	BMW-11AR	Aqueous	SW7470A	Mercury Total: Aqueous	73940	1	03/03/16 12:51 PM	CETAC2_HG_160303A
	BMW-11AR	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73938	1	03/03/16 06:39 PM	ICP-MS4_160303F
	BMW-11AR	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73938	10	03/07/16 05:47 PM	ICP-MS4_160307A
	BMW-11AR	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73938	1	03/11/16 06:14 PM	ICP-MS4_160311B
1602289-07D	BMW-11AR	Aqueous	E300	Anions by IC method - Water	74004	10	03/07/16 05:03 PM	IC2_160307A

Lab Order: 1602289
Client: Pastor, Behling & Wheeler
Project: Luminant - MLSES

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1602289-07D	BMW-11AR	Aqueous	E300	Anions by IC method - Water	74004	1	03/07/16 12:01 PM	IC2_160307A
	BMW-11AR	Aqueous	M4500-H+ B	pH	73927	1	03/01/16 10:41 AM	TITRATOR_160301B
	BMW-11AR	Aqueous	M2540C	Total Dissolved Solids	73952	1	03/03/16 09:05 AM	WC_160302B
1602289-08A	BMW-18	Aqueous	SW7470A	Mercury Total: Aqueous	73940	1	03/03/16 12:53 PM	CETAC2_HG_160303A
	BMW-18	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73938	1	03/03/16 06:41 PM	ICP-MS4_160303F
	BMW-18	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73938	1	03/07/16 05:49 PM	ICP-MS4_160307A
1602289-08D	BMW-18	Aqueous	E300	Anions by IC method - Water	74004	1	03/07/16 12:16 PM	IC2_160307A
	BMW-18	Aqueous	M4500-H+ B	pH	73927	1	03/01/16 10:44 AM	TITRATOR_160301B
	BMW-18	Aqueous	M2540C	Total Dissolved Solids	73952	1	03/03/16 09:05 AM	WC_160302B

DHL Analytical, Inc.

Date: *30-Mar-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	BMW-22
Project:	Luminant - MLSES	**Lab ID:**	1602289-01
Project No:	5164-B	**Collection Date:**	02/25/16 09:45 AM
Lab Order:	1602289	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	03/08/16 11:29 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	03/01/16 02:34 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	03/01/16 02:34 PM
Barium	0.0761	0.00300	0.0100		mg/L	1	03/01/16 02:34 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	03/01/16 02:34 PM
Boron	3.18	0.100	0.300		mg/L	10	03/07/16 01:57 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	03/01/16 02:34 PM
Calcium	209	1.00	3.00		mg/L	10	03/07/16 01:57 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	03/01/16 02:34 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	03/01/16 02:34 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	03/01/16 02:34 PM
Lithium	0.0801	0.00500	0.0100		mg/L	1	03/07/16 02:07 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	03/01/16 02:34 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	03/01/16 02:34 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	03/01/16 02:34 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	295	30.0	100		mg/L	100	03/07/16 02:35 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	03/07/16 10:34 AM
Sulfate	949	100	300		mg/L	100	03/07/16 02:35 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.88	0	0		pH Units@17.2℃	1	03/01/16 10:12 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	2430	50.0	50.0		mg/L	1	03/03/16 09:05 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *30-Mar-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	BMW-23
Project:	Luminant - MLSES	**Lab ID:**	1602289-02
Project No:	5164-B	**Collection Date:**	02/25/16 10:35 AM
Lab Order:	1602289	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **KL**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	03/03/16 12:40 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	03/01/16 02:36 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	03/01/16 02:36 PM
Barium	0.0488	0.00300	0.0100		mg/L	1	03/01/16 02:36 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	03/01/16 02:36 PM
Boron	1.31	0.0100	0.0300		mg/L	1	03/07/16 02:09 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	03/01/16 02:36 PM
Calcium	97.7	1.00	3.00		mg/L	10	03/07/16 01:59 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	03/01/16 02:36 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	03/01/16 02:36 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	03/01/16 02:36 PM
Lithium	0.0959	0.00500	0.0100		mg/L	1	03/07/16 02:09 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	03/01/16 02:36 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	03/01/16 02:36 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	03/01/16 02:36 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	225	3.00	10.0		mg/L	10	03/07/16 03:33 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	03/07/16 10:48 AM
Sulfate	527	10.0	30.0		mg/L	10	03/07/16 03:33 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.74	0	0		pH Units@17.2℃	1	03/01/16 10:13 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	1520	50.0	50.0		mg/L	1	03/03/16 09:05 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *30-Mar-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	BMW-24
Project:	Luminant - MLSES	**Lab ID:**	1602289-03
Project No:	5164-B	**Collection Date:**	02/25/16 11:15 AM
Lab Order:	1602289	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **KL**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	03/03/16 12:42 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	03/01/16 02:38 PM
Arsenic	0.00442	0.00200	0.00500	J	mg/L	1	03/01/16 02:38 PM
Barium	0.645	0.00300	0.0100		mg/L	1	03/01/16 02:38 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	03/01/16 02:38 PM
Boron	0.431	0.0100	0.0300		mg/L	1	03/07/16 02:11 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	03/01/16 02:38 PM
Calcium	61.6	1.00	3.00		mg/L	10	03/07/16 02:01 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	03/01/16 02:38 PM
Cobalt	0.0137	0.00300	0.00500		mg/L	1	03/01/16 02:38 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	03/01/16 02:38 PM
Lithium	0.0267	0.00500	0.0100		mg/L	1	03/07/16 02:11 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	03/01/16 02:38 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	03/01/16 02:38 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	03/01/16 02:38 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	332	30.0	100		mg/L	100	03/07/16 03:48 PM
Fluoride	0.236	0.100	0.400	J	mg/L	1	03/07/16 11:03 AM
Sulfate	184	100	300	J	mg/L	100	03/07/16 03:48 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.38	0	0		pH Units@17.5℃	1	03/01/16 10:15 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	1210	50.0	50.0		mg/L	1	03/03/16 09:05 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *30-Mar-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	BMW-19
Project:	Luminant - MLSES	**Lab ID:**	1602289-04
Project No:	5164-B	**Collection Date:**	02/25/16 12:15 PM
Lab Order:	1602289	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **KL**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	03/03/16 12:44 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	03/03/16 06:33 PM
Arsenic	0.00235	0.00200	0.00500	J	mg/L	1	03/03/16 06:33 PM
Barium	0.0169	0.00300	0.0100		mg/L	1	03/03/16 06:33 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	03/03/16 06:33 PM
Boron	0.458	0.0100	0.0300		mg/L	1	03/11/16 06:08 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	03/03/16 06:33 PM
Calcium	504	5.00	15.0		mg/L	50	03/07/16 05:40 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	03/03/16 06:33 PM
Cobalt	0.0149	0.00300	0.00500		mg/L	1	03/03/16 06:33 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	03/03/16 06:33 PM
Lithium	0.0711	0.00500	0.0100		mg/L	1	03/03/16 06:33 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	03/03/16 06:33 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	03/03/16 06:33 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	03/03/16 06:33 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	8.40	0.300	1.00		mg/L	1	03/07/16 11:17 AM
Fluoride	<0.100	0.100	0.400		mg/L	1	03/07/16 11:17 AM
Sulfate	2330	100	300		mg/L	100	03/07/16 04:02 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.76	0	0		pH Units@18.3℃	1	03/01/16 10:19 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	2960	50.0	50.0		mg/L	1	03/03/16 09:05 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *30-Mar-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	BMW-20
Project:	Luminant - MLSES	**Lab ID:**	1602289-05
Project No:	5164-B	**Collection Date:**	02/25/16 02:30 PM
Lab Order:	1602289	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **KL**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	03/03/16 12:46 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	03/03/16 06:35 PM
Arsenic	0.00474	0.00200	0.00500	J	mg/L	1	03/03/16 06:35 PM
Barium	0.0989	0.00300	0.0100		mg/L	1	03/03/16 06:35 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	03/03/16 06:35 PM
Boron	0.202	0.0100	0.0300		mg/L	1	03/11/16 06:10 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	03/03/16 06:35 PM
Calcium	157	1.00	3.00		mg/L	10	03/07/16 05:42 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	03/03/16 06:35 PM
Cobalt	0.0220	0.00300	0.00500		mg/L	1	03/03/16 06:35 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	03/03/16 06:35 PM
Lithium	<0.00500	0.00500	0.0100		mg/L	1	03/03/16 06:35 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	03/03/16 06:35 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	03/03/16 06:35 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	03/03/16 06:35 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	30.7	0.300	1.00		mg/L	1	03/07/16 11:32 AM
Fluoride	<0.100	0.100	0.400		mg/L	1	03/07/16 11:32 AM
Sulfate	131	1.00	3.00		mg/L	1	03/07/16 11:32 AM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.33	0	0		pH Units@15.3℃	1	03/01/16 10:37 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	888	10.0	10.0		mg/L	1	03/03/16 09:05 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *30-Mar-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	BMW-21
Project:	Luminant - MLSES	**Lab ID:**	1602289-06
Project No:	5164-B	**Collection Date:**	02/25/16 03:10 PM
Lab Order:	1602289	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **KL**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	03/03/16 12:49 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	03/03/16 06:37 PM
Arsenic	0.00327	0.00200	0.00500	J	mg/L	1	03/03/16 06:37 PM
Barium	0.0471	0.00300	0.0100		mg/L	1	03/03/16 06:37 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	03/03/16 06:37 PM
Boron	1.01	0.0100	0.0300		mg/L	1	03/11/16 06:12 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	03/03/16 06:37 PM
Calcium	148	1.00	3.00		mg/L	10	03/07/16 05:44 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	03/03/16 06:37 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	03/03/16 06:37 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	03/03/16 06:37 PM
Lithium	0.0602	0.00500	0.0100		mg/L	1	03/03/16 06:37 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	03/03/16 06:37 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	03/03/16 06:37 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	03/03/16 06:37 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	393	3.00	10.0		mg/L	10	03/07/16 04:17 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	03/07/16 11:47 AM
Sulfate	462	10.0	30.0		mg/L	10	03/07/16 04:17 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	7.27	0	0		pH Units@16.2℃	1	03/01/16 10:40 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	1990	50.0	50.0		mg/L	1	03/03/16 09:05 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *30-Mar-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	BMW-11AR
Project:	Luminant - MLSES	**Lab ID:**	1602289-07
Project No:	5164-B	**Collection Date:**	02/25/16 04:20 PM
Lab Order:	1602289	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **KL**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	03/03/16 12:51 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	03/03/16 06:39 PM
Arsenic	0.00608	0.00200	0.00500		mg/L	1	03/03/16 06:39 PM
Barium	0.0724	0.00300	0.0100		mg/L	1	03/03/16 06:39 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	03/03/16 06:39 PM
Boron	0.440	0.0100	0.0300		mg/L	1	03/11/16 06:14 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	03/03/16 06:39 PM
Calcium	136	1.00	3.00		mg/L	10	03/07/16 05:47 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	03/03/16 06:39 PM
Cobalt	0.00486	0.00300	0.00500	J	mg/L	1	03/03/16 06:39 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	03/03/16 06:39 PM
Lithium	0.0276	0.00500	0.0100		mg/L	1	03/03/16 06:39 PM
Molybdenum	0.00597	0.00200	0.00500		mg/L	1	03/03/16 06:39 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	03/03/16 06:39 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	03/03/16 06:39 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	18.8	0.300	1.00		mg/L	1	03/07/16 12:01 PM
Fluoride	0.123	0.100	0.400	J	mg/L	1	03/07/16 12:01 PM
Sulfate	382	10.0	30.0		mg/L	10	03/07/16 05:03 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	7.00	0	0		pH Units@15.3℃	1	03/01/16 10:41 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	1450	50.0	50.0		mg/L	1	03/03/16 09:05 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *30-Mar-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	BMW-18
Project:	Luminant - MLSES	**Lab ID:**	1602289-08
Project No:	5164-B	**Collection Date:**	02/26/16 10:15 AM
Lab Order:	1602289	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **KL**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	03/03/16 12:53 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	03/03/16 06:41 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	03/03/16 06:41 PM
Barium	0.0446	0.00300	0.0100		mg/L	1	03/03/16 06:41 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	03/03/16 06:41 PM
Boron	0.406	0.0100	0.0300		mg/L	1	03/07/16 05:49 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	03/03/16 06:41 PM
Calcium	9.49	0.100	0.300		mg/L	1	03/03/16 06:41 PM
Chromium	0.00214	0.00200	0.00500	J	mg/L	1	03/03/16 06:41 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	03/03/16 06:41 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	03/03/16 06:41 PM
Lithium	0.0156	0.00500	0.0100		mg/L	1	03/03/16 06:41 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	03/03/16 06:41 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	03/03/16 06:41 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	03/03/16 06:41 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	17.1	0.300	1.00		mg/L	1	03/07/16 12:16 PM
Fluoride	0.164	0.100	0.400	J	mg/L	1	03/07/16 12:16 PM
Sulfate	90.0	1.00	3.00		mg/L	1	03/07/16 12:16 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	8.68	0	0		pH Units@15.9℃	1	03/01/16 10:44 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	508	10.0	10.0		mg/L	1	03/03/16 09:05 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT: Pastor, Behling & Wheeler
Work Order: 1602289
Project: Luminant - MLSES

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_160303A

The QC data in batch 73940 applies to the following samples: 1602289-02A, 1602289-03A, 1602289-04A, 1602289-05A, 1602289-06A, 1602289-07A, 1602289-08A

Sample ID **MB-73940** Batch ID: **73940** TestNo: **SW7470A** Units: **mg/L**
SampType: **MBLK** Run ID: **CETAC2_HG_160303A** Analysis Date: **3/3/2016 11:52:24 AM** Prep Date: **3/2/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.0000800	0.000200								

Sample ID **LCS-73940** Batch ID: **73940** TestNo: **SW7470A** Units: **mg/L**
SampType: **LCS** Run ID: **CETAC2_HG_160303A** Analysis Date: **3/3/2016 11:54:39 AM** Prep Date: **3/2/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00198	0.000200	0.00200	0	99.0	85	115			

Sample ID **LCSD-73940** Batch ID: **73940** TestNo: **SW7470A** Units: **mg/L**
SampType: **LCSD** Run ID: **CETAC2_HG_160303A** Analysis Date: **3/3/2016 11:56:55 AM** Prep Date: **3/2/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00201	0.000200	0.00200	0	101	85	115	1.50	15	

Sample ID **1602269-02A SD** Batch ID: **73940** TestNo: **SW7470A** Units: **mg/L**
SampType: **SD** Run ID: **CETAC2_HG_160303A** Analysis Date: **3/3/2016 12:01:28 PM** Prep Date: **3/2/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.000400	0.00100	0	0				0	10	

Sample ID **1602269-02A PDS** Batch ID: **73940** TestNo: **SW7470A** Units: **mg/L**
SampType: **PDS** Run ID: **CETAC2_HG_160303A** Analysis Date: **3/3/2016 12:03:43 PM** Prep Date: **3/2/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00218	0.000200	0.00250	0	87.2	85	115			

Sample ID **1602269-02A MS** Batch ID: **73940** TestNo: **SW7470A** Units: **mg/L**
SampType: **MS** Run ID: **CETAC2_HG_160303A** Analysis Date: **3/3/2016 12:05:59 PM** Prep Date: **3/2/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00177	0.000200	0.00200	0	88.5	80	120			

Sample ID **1602269-02A MSD** Batch ID: **73940** TestNo: **SW7470A** Units: **mg/L**
SampType: **MSD** Run ID: **CETAC2_HG_160303A** Analysis Date: **3/3/2016 12:08:14 PM** Prep Date: **3/2/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00181	0.000200	0.00200	0	90.5	80	120	2.23	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1602289
Project: Luminant - MLSES

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_160303A

Sample ID	**ICV-160303**	Batch ID:	**R84495**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**ICV**	Run ID:	**CETAC2_HG_160303A**	Analysis Date:	**3/3/2016 10:37:24 AM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00395	0.000200	0.00400	0	98.8	90	110			

Sample ID	**CCV2-160303**	Batch ID:	**R84495**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**CETAC2_HG_160303A**	Analysis Date:	**3/3/2016 11:47:50 AM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00199	0.000200	0.00200	0	99.5	90	110			

Sample ID	**CCV3-160303**	Batch ID:	**R84495**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**CETAC2_HG_160303A**	Analysis Date:	**3/3/2016 12:30:56 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00202	0.000200	0.00200	0	101	90	110			

Sample ID	**CCV4-160303**	Batch ID:	**R84495**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**CETAC2_HG_160303A**	Analysis Date:	**3/3/2016 12:58:15 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00202	0.000200	0.00200	0	101	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1602289
Project: Luminant - MLSES

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_160308C

The QC data in batch 73953 applies to the following samples: 1602289-01A

Sample ID	**MB-73953**	Batch ID:	**73953**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**CETAC2_HG_160308C**	Analysis Date:	**3/8/2016 10:47:52 AM**	Prep Date:	**3/2/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.0000800	0.000200								

Sample ID	**LCS-73953**	Batch ID:	**73953**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**CETAC2_HG_160308C**	Analysis Date:	**3/8/2016 10:50:07 AM**	Prep Date:	**3/2/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00172	0.000200	0.00200	0	86.0	85	115			

Sample ID	**LCSD-73953**	Batch ID:	**73953**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**LCSD**	Run ID:	**CETAC2_HG_160308C**	Analysis Date:	**3/8/2016 10:52:23 AM**	Prep Date:	**3/2/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00207	0.000200	0.00200	0	104	85	115	18.5	15	R

Sample ID	**1603013-04C SD**	Batch ID:	**73953**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**SD**	Run ID:	**CETAC2_HG_160308C**	Analysis Date:	**3/8/2016 11:47:35 AM**	Prep Date:	**3/2/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.000400	0.00100	0	0				0	10	

Sample ID	**1603013-04C PDS**	Batch ID:	**73953**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**PDS**	Run ID:	**CETAC2_HG_160308C**	Analysis Date:	**3/8/2016 11:49:52 AM**	Prep Date:	**3/2/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00238	0.000200	0.00250	0	95.2	85	115			

Sample ID	**1603013-04C MS**	Batch ID:	**73953**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**MS**	Run ID:	**CETAC2_HG_160308C**	Analysis Date:	**3/8/2016 11:52:09 AM**	Prep Date:	**3/2/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00210	0.000200	0.00200	0	105	80	120			

Sample ID	**1603013-04C MSD**	Batch ID:	**73953**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**MSD**	Run ID:	**CETAC2_HG_160308C**	Analysis Date:	**3/8/2016 11:54:26 AM**	Prep Date:	**3/2/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00201	0.000200	0.00200	0	101	80	120	4.38	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

Sample ID **ICV-160308**	Batch ID: **R84579**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **ICV**	Run ID: **CETAC2_HG_160308C**	Analysis Date: **3/8/2016 10:11:57 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00394	0.000200	0.00400	0	98.5	90	110			

Sample ID **CCV1-160308**	Batch ID: **R84579**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_160308C**	Analysis Date: **3/8/2016 10:43:17 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00192	0.000200	0.00200	0	96.0	90	110			

Sample ID **CCV2-160308**	Batch ID: **R84579**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_160308C**	Analysis Date: **3/8/2016 11:17:58 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00188	0.000200	0.00200	0	94.0	90	110			

Sample ID **CCV3-160308**	Batch ID: **R84579**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_160308C**	Analysis Date: **3/8/2016 11:59:01 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00195	0.000200	0.00200	0	97.5	90	110			

CLIENT: Pastor, Behling & Wheeler
Work Order: 1602289
Project: Luminant - MLSES

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160301A

The QC data in batch 73907 applies to the following samples: 1602289-01A, 1602289-02A, 1602289-03A

Sample ID	**MB-73907**	Batch ID:	**73907**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**ICP-MS4_160301A**	Analysis Date:	**3/1/2016 1:37:00 PM**	Prep Date:	**2/29/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.000800	0.00250								
Arsenic	<0.00200	0.00500								
Barium	<0.00300	0.0100								
Beryllium	<0.000300	0.00100								
Cadmium	<0.000300	0.00100								
Calcium	<0.100	0.300								
Chromium	<0.00200	0.00500								
Cobalt	<0.00300	0.00500								
Lead	<0.000300	0.00100								
Molybdenum	<0.00200	0.00500								
Selenium	<0.00200	0.00500								
Thallium	<0.000500	0.00150								

Sample ID	**LCS-73907**	Batch ID:	**73907**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**ICP-MS4_160301A**	Analysis Date:	**3/1/2016 1:39:00 PM**	Prep Date:	**2/29/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.192	0.00250	0.200	0	96.1	80	120			
Arsenic	0.197	0.00500	0.200	0	98.7	80	120			
Barium	0.192	0.0100	0.200	0	95.9	80	120			
Beryllium	0.207	0.00100	0.200	0	104	80	120			
Cadmium	0.193	0.00100	0.200	0	96.7	80	120			
Calcium	4.74	0.300	5.00	0	94.8	80	120			
Chromium	0.199	0.00500	0.200	0	99.4	80	120			
Cobalt	0.205	0.00500	0.200	0	102	80	120			
Lead	0.202	0.00100	0.200	0	101	80	120			
Molybdenum	0.187	0.00500	0.200	0	93.3	80	120			
Selenium	0.193	0.00500	0.200	0	96.5	80	120			
Thallium	0.201	0.00150	0.200	0	101	80	120			

Sample ID	**LCSD-73907**	Batch ID:	**73907**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**LCSD**	Run ID:	**ICP-MS4_160301A**	Analysis Date:	**3/1/2016 1:41:00 PM**	Prep Date:	**2/29/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.196	0.00250	0.200	0	98.1	80	120	2.03	15	
Arsenic	0.192	0.00500	0.200	0	96.2	80	120	2.49	15	
Barium	0.197	0.0100	0.200	0	98.3	80	120	2.46	15	
Beryllium	0.208	0.00100	0.200	0	104	80	120	0.347	15	
Cadmium	0.199	0.00100	0.200	0	99.3	80	120	2.65	15	
Calcium	4.63	0.300	5.00	0	92.5	80	120	2.40	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1602289
Project: Luminant - MLSES

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160301A

Sample ID **LCSD-73907**	Batch ID: **73907**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCSD**	Run ID: **ICP-MS4_160301A**	Analysis Date: **3/1/2016 1:41:00 PM**	Prep Date: **2/29/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chromium	0.197	0.00500	0.200	0	98.6	80	120	0.798	15	
Cobalt	0.201	0.00500	0.200	0	101	80	120	1.95	15	
Lead	0.196	0.00100	0.200	0	97.9	80	120	3.00	15	
Molybdenum	0.190	0.00500	0.200	0	95.2	80	120	2.06	15	
Selenium	0.196	0.00500	0.200	0	98.0	80	120	1.52	15	
Thallium	0.195	0.00150	0.200	0	97.6	80	120	3.00	15	

Sample ID **1602283-17A SD**	Batch ID: **73907**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS4_160301A**	Analysis Date: **3/1/2016 1:47:00 PM**	Prep Date: **2/29/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.00400	0.0125	0	0				0	10	
Arsenic	<0.0100	0.0250	0	0				0	10	
Barium	<0.0150	0.0500	0	0				0	10	
Beryllium	<0.00150	0.00500	0	0				0	10	
Cadmium	<0.00150	0.00500	0	0				0	10	
Calcium	<0.500	1.50	0	0				0	10	
Chromium	<0.0100	0.0250	0	0				0	10	
Cobalt	<0.0150	0.0250	0	0				0	10	
Lead	0.00405	0.00500	0	0.00384				5.22	10	
Molybdenum	<0.0100	0.0250	0	0				0	10	
Selenium	<0.0100	0.0250	0	0				0	10	
Thallium	<0.00250	0.00750	0	0				0	10	

Sample ID **1602283-17A PDS**	Batch ID: **73907**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_160301A**	Analysis Date: **3/1/2016 2:07:00 PM**	Prep Date: **2/29/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.199	0.00250	0.200	0	99.3	80	120			
Arsenic	0.191	0.00500	0.200	0	95.3	80	120			
Barium	0.196	0.0100	0.200	0	97.8	80	120			
Beryllium	0.208	0.00100	0.200	0	104	80	120			
Cadmium	0.193	0.00100	0.200	0	96.4	80	120			
Calcium	4.58	0.300	5.00	0	91.5	80	120			
Chromium	0.201	0.00500	0.200	0	101	80	120			
Cobalt	0.202	0.00500	0.200	0	101	80	120			
Lead	0.199	0.00100	0.200	0.00384	97.5	80	120			
Molybdenum	0.187	0.00500	0.200	0	93.4	80	120			
Selenium	0.192	0.00500	0.200	0	96.1	80	120			
Thallium	0.195	0.00150	0.200	0	97.3	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1602289
Project: Luminant - MLSES

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160301A

Sample ID **1602283-17A MS**	Batch ID: **73907**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS4_160301A**	Analysis Date: **3/1/2016 2:09:00 PM**	Prep Date: **2/29/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.193	0.00250	0.200	0	96.3	80	120			
Arsenic	0.193	0.00500	0.200	0	96.7	80	120			
Barium	0.192	0.0100	0.200	0	96.1	80	120			
Beryllium	0.207	0.00100	0.200	0	104	80	120			
Cadmium	0.193	0.00100	0.200	0	96.4	80	120			
Calcium	4.69	0.300	5.00	0	93.7	80	120			
Chromium	0.198	0.00500	0.200	0	98.9	80	120			
Cobalt	0.202	0.00500	0.200	0	101	80	120			
Lead	0.202	0.00100	0.200	0.00384	99.2	80	120			
Molybdenum	0.185	0.00500	0.200	0	92.5	80	120			
Selenium	0.192	0.00500	0.200	0	96.1	80	120			
Thallium	0.198	0.00150	0.200	0	98.8	80	120			

Sample ID **1602283-17A MSD**	Batch ID: **73907**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS4_160301A**	Analysis Date: **3/1/2016 2:11:00 PM**	Prep Date: **2/29/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.193	0.00250	0.200	0	96.4	80	120	0.089	15	
Arsenic	0.193	0.00500	0.200	0	96.4	80	120	0.281	15	
Barium	0.195	0.0100	0.200	0	97.7	80	120	1.71	15	
Beryllium	0.212	0.00100	0.200	0	106	80	120	2.14	15	
Cadmium	0.194	0.00100	0.200	0	97.1	80	120	0.748	15	
Calcium	4.79	0.300	5.00	0	95.9	80	120	2.26	15	
Chromium	0.199	0.00500	0.200	0	99.5	80	120	0.595	15	
Cobalt	0.203	0.00500	0.200	0	102	80	120	0.828	15	
Lead	0.205	0.00100	0.200	0.00384	100	80	120	1.17	15	
Molybdenum	0.188	0.00500	0.200	0	94.2	80	120	1.83	15	
Selenium	0.195	0.00500	0.200	0	97.4	80	120	1.32	15	
Thallium	0.200	0.00150	0.200	0	100	80	120	1.44	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

Sample ID **ICV-160301**	Batch ID: **R84456**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_160301A**	Analysis Date: **3/1/2016 12:37:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.101	0.00250	0.100	0	101	90	110			
Arsenic	0.100	0.00500	0.100	0	100	90	110			
Barium	0.100	0.0100	0.100	0	100	90	110			
Beryllium	0.101	0.00100	0.100	0	101	90	110			
Cadmium	0.0988	0.00100	0.100	0	98.8	90	110			
Calcium	2.30	0.300	2.50	0	91.8	90	110			
Chromium	0.104	0.00500	0.100	0	104	90	110			
Cobalt	0.104	0.00500	0.100	0	104	90	110			
Lead	0.101	0.00100	0.100	0	101	90	110			
Molybdenum	0.0952	0.00500	0.100	0	95.2	90	110			
Selenium	0.102	0.00500	0.100	0	102	90	110			
Thallium	0.0997	0.00150	0.100	0	99.7	90	110			

Sample ID **LCVL-160301**	Batch ID: **R84456**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160301A**	Analysis Date: **3/1/2016 12:44:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00212	0.00250	0.00200	0	106	70	130			
Arsenic	0.00500	0.00500	0.00500	0	100	70	130			
Barium	0.00522	0.0100	0.00500	0	104	70	130			
Beryllium	0.00112	0.00100	0.00100	0	112	70	130			
Cadmium	0.00102	0.00100	0.00100	0	102	70	130			
Calcium	0.105	0.300	0.100	0	105	70	130			
Chromium	0.00500	0.00500	0.00500	0	100	70	130			
Cobalt	0.00526	0.00500	0.00500	0	105	70	130			
Lead	0.00108	0.00100	0.00100	0	108	70	130			
Molybdenum	0.00498	0.00500	0.00500	0	99.6	70	130			
Selenium	0.00548	0.00500	0.00500	0	110	70	130			
Thallium	0.00104	0.00150	0.00100	0	104	70	130			

Sample ID **CCV1-160301**	Batch ID: **R84456**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160301A**	Analysis Date: **3/1/2016 1:16:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.202	0.00250	0.200	0	101	90	110			
Arsenic	0.199	0.00500	0.200	0	99.5	90	110			
Barium	0.201	0.0100	0.200	0	100	90	110			
Beryllium	0.209	0.00100	0.200	0	105	90	110			
Cadmium	0.202	0.00100	0.200	0	101	90	110			
Calcium	4.81	0.300	5.00	0	96.1	90	110			
Chromium	0.202	0.00500	0.200	0	101	90	110			

Sample ID **CCV1-160301**	Batch ID: **R84456**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160301A**	Analysis Date: **3/1/2016 1:16:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cobalt	0.205	0.00500	0.200	0	103	90	110			
Lead	0.200	0.00100	0.200	0	99.8	90	110			
Molybdenum	0.195	0.00500	0.200	0	97.5	90	110			
Selenium	0.201	0.00500	0.200	0	100	90	110			
Thallium	0.201	0.00150	0.200	0	101	90	110			

Sample ID **LCVL1-160301**	Batch ID: **R84456**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160301A**	Analysis Date: **3/1/2016 1:33:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00213	0.00250	0.00200	0	107	70	130			
Arsenic	0.00511	0.00500	0.00500	0	102	70	130			
Barium	0.00516	0.0100	0.00500	0	103	70	130			
Beryllium	0.00106	0.00100	0.00100	0	106	70	130			
Cadmium	0.00100	0.00100	0.00100	0	100	70	130			
Calcium	0.109	0.300	0.100	0	109	70	130			
Chromium	0.00485	0.00500	0.00500	0	97.0	70	130			
Cobalt	0.00533	0.00500	0.00500	0	107	70	130			
Lead	0.00102	0.00100	0.00100	0	102	70	130			
Molybdenum	0.00501	0.00500	0.00500	0	100	70	130			
Selenium	0.00502	0.00500	0.00500	0	100	70	130			
Thallium	0.00102	0.00150	0.00100	0	102	70	130			

Sample ID **CCV2-160301**	Batch ID: **R84456**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160301A**	Analysis Date: **3/1/2016 2:13:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.201	0.00250	0.200	0	101	90	110			
Arsenic	0.196	0.00500	0.200	0	98.2	90	110			
Barium	0.200	0.0100	0.200	0	100	90	110			
Beryllium	0.214	0.00100	0.200	0	107	90	110			
Cadmium	0.202	0.00100	0.200	0	101	90	110			
Calcium	4.83	0.300	5.00	0	96.6	90	110			
Chromium	0.204	0.00500	0.200	0	102	90	110			
Cobalt	0.207	0.00500	0.200	0	103	90	110			
Lead	0.203	0.00100	0.200	0	101	90	110			
Molybdenum	0.195	0.00500	0.200	0	97.3	90	110			
Selenium	0.198	0.00500	0.200	0	99.2	90	110			
Thallium	0.202	0.00150	0.200	0	101	90	110			

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160301A

Sample ID **LCVL2-160301** Batch ID: **R84456** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_160301A** Analysis Date: **3/1/2016 2:18:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00215	0.00250	0.00200	0	107	70	130			
Arsenic	0.00498	0.00500	0.00500	0	99.5	70	130			
Barium	0.00526	0.0100	0.00500	0	105	70	130			
Beryllium	0.00107	0.00100	0.00100	0	107	70	130			
Cadmium	0.00100	0.00100	0.00100	0	100	70	130			
Calcium	0.102	0.300	0.100	0	102	70	130			
Chromium	0.00489	0.00500	0.00500	0	97.7	70	130			
Cobalt	0.00528	0.00500	0.00500	0	106	70	130			
Lead	0.00111	0.00100	0.00100	0	110	70	130			
Molybdenum	0.00498	0.00500	0.00500	0	99.6	70	130			
Selenium	0.00572	0.00500	0.00500	0	114	70	130			
Thallium	0.00105	0.00150	0.00100	0	105	70	130			

Sample ID **CCV3-160301** Batch ID: **R84456** TestNo: **SW6020A** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_160301A** Analysis Date: **3/1/2016 2:42:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.200	0.00250	0.200	0	99.8	90	110			
Arsenic	0.197	0.00500	0.200	0	98.6	90	110			
Barium	0.201	0.0100	0.200	0	101	90	110			
Beryllium	0.220	0.00100	0.200	0	110	90	110			
Cadmium	0.202	0.00100	0.200	0	101	90	110			
Chromium	0.205	0.00500	0.200	0	103	90	110			
Cobalt	0.207	0.00500	0.200	0	104	90	110			
Lead	0.203	0.00100	0.200	0	102	90	110			
Molybdenum	0.193	0.00500	0.200	0	96.4	90	110			
Selenium	0.196	0.00500	0.200	0	98.0	90	110			
Thallium	0.204	0.00150	0.200	0	102	90	110			

Sample ID **LCVL3-160301** Batch ID: **R84456** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_160301A** Analysis Date: **3/1/2016 2:46:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00213	0.00250	0.00200	0	106	70	130			
Arsenic	0.00502	0.00500	0.00500	0	100	70	130			
Barium	0.00518	0.0100	0.00500	0	104	70	130			
Beryllium	0.00107	0.00100	0.00100	0	107	70	130			
Cadmium	0.00101	0.00100	0.00100	0	101	70	130			
Chromium	0.00484	0.00500	0.00500	0	96.7	70	130			
Cobalt	0.00536	0.00500	0.00500	0	107	70	130			
Lead	0.00105	0.00100	0.00100	0	105	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank
J	Analyte detected between MDL and RL
ND	Not Detected at the Method Detection Limit
RL	Reporting Limit
J	Analyte detected between SDL and RL
DF	Dilution Factor
MDL	Method Detection Limit
R	RPD outside accepted control limits
S	Spike Recovery outside control limits
N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1602289
Project: Luminant - MLSES

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160301A

Sample ID **LCVL3-160301** Batch ID: **R84456** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_160301A** Analysis Date: **3/1/2016 2:46:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Molybdenum	0.00502	0.00500	0.00500	0	100	70	130			
Selenium	0.00497	0.00500	0.00500	0	99.3	70	130			
Thallium	0.00103	0.00150	0.00100	0	103	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1602289
Project: Luminant - MLSES

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160303F

The QC data in batch 73938 applies to the following samples: 1602289-04A, 1602289-05A, 1602289-06A, 1602289-07A, 1602289-08A

Sample ID **MB-73938** Batch ID: **73938** TestNo: **SW6020A** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_160303F** Analysis Date: **3/3/2016 6:17:00 PM** Prep Date: **3/2/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.000800	0.00250								
Arsenic	<0.00200	0.00500								
Barium	<0.00300	0.0100								
Beryllium	<0.000300	0.00100								
Cadmium	<0.000300	0.00100								
Calcium	<0.100	0.300								
Chromium	<0.00200	0.00500								
Cobalt	<0.00300	0.00500								
Lead	<0.000300	0.00100								
Lithium	<0.00500	0.0100								
Molybdenum	<0.00200	0.00500								
Selenium	<0.00200	0.00500								
Thallium	<0.000500	0.00150								

Sample ID **LCS-73938** Batch ID: **73938** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_160303F** Analysis Date: **3/3/2016 6:19:00 PM** Prep Date: **3/2/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.198	0.00250	0.200	0	99.2	80	120			
Arsenic	0.196	0.00500	0.200	0	98.2	80	120			
Barium	0.201	0.0100	0.200	0	101	80	120			
Beryllium	0.194	0.00100	0.200	0	96.9	80	120			
Cadmium	0.203	0.00100	0.200	0	101	80	120			
Calcium	4.75	0.300	5.00	0	95.0	80	120			
Chromium	0.201	0.00500	0.200	0	101	80	120			
Cobalt	0.198	0.00500	0.200	0	98.8	80	120			
Lead	0.203	0.00100	0.200	0	102	80	120			
Lithium	0.195	0.0100	0.200	0	97.5	80	120			
Molybdenum	0.198	0.00500	0.200	0	98.8	80	120			
Selenium	0.198	0.00500	0.200	0	99.0	80	120			
Thallium	0.202	0.00150	0.200	0	101	80	120			

Sample ID **LCSD-73938** Batch ID: **73938** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_160303F** Analysis Date: **3/3/2016 6:21:00 PM** Prep Date: **3/2/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.198	0.00250	0.200	0	99.2	80	120	0.023	15	
Arsenic	0.195	0.00500	0.200	0	97.6	80	120	0.629	15	
Barium	0.201	0.0100	0.200	0	100	80	120	0.303	15	
Beryllium	0.193	0.00100	0.200	0	96.6	80	120	0.363	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1602289
Project: Luminant - MLSES

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160303F

Sample ID **LCSD-73938**	Batch ID: **73938**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCSD**	Run ID: **ICP-MS4_160303F**	Analysis Date: **3/3/2016 6:21:00 PM**	Prep Date: **3/2/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cadmium	0.199	0.00100	0.200	0	99.7	80	120	1.75	15	
Calcium	4.84	0.300	5.00	0	96.7	80	120	1.81	15	
Chromium	0.202	0.00500	0.200	0	101	80	120	0.274	15	
Cobalt	0.197	0.00500	0.200	0	98.3	80	120	0.474	15	
Lead	0.203	0.00100	0.200	0	101	80	120	0.270	15	
Lithium	0.198	0.0100	0.200	0	98.8	80	120	1.30	15	
Molybdenum	0.196	0.00500	0.200	0	98.0	80	120	0.810	15	
Selenium	0.194	0.00500	0.200	0	97.1	80	120	1.97	15	
Thallium	0.201	0.00150	0.200	0	101	80	120	0.359	15	

Sample ID **1603013-05B SD**	Batch ID: **73938**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS4_160303F**	Analysis Date: **3/3/2016 6:27:00 PM**	Prep Date: **3/2/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.00400	0.0125	0	0				0	10	
Arsenic	0.112	0.0250	0	0.112				0.218	10	
Barium	0.0248	0.0500	0	0.0250				0.868	10	
Beryllium	<0.00150	0.00500	0	0				0	10	
Cadmium	<0.00150	0.00500	0	0.000371				0	10	
Calcium	5.94	1.50	0	5.71				3.90	10	
Chromium	<0.0100	0.0250	0	0				0	10	
Cobalt	<0.0150	0.0250	0	0				0	10	
Lead	<0.00150	0.00500	0	0.00149				0	10	
Lithium	0.116	0.0500	0	0.110				5.09	10	
Molybdenum	0.348	0.0250	0	0.358				2.79	10	
Selenium	<0.0100	0.0250	0	0				0	10	
Thallium	<0.00250	0.00750	0	0				0	10	

Sample ID **1603013-05B PDS**	Batch ID: **73938**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_160303F**	Analysis Date: **3/3/2016 6:47:00 PM**	Prep Date: **3/2/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.201	0.00250	0.200	0	100	80	120			
Arsenic	0.297	0.00500	0.200	0.112	92.9	80	120			
Barium	0.221	0.0100	0.200	0.0250	98.1	80	120			
Beryllium	0.183	0.00100	0.200	0	91.4	80	120			
Cadmium	0.191	0.00100	0.200	0.000371	95.3	80	120			
Calcium	9.90	0.300	5.00	5.71	83.8	80	120			
Chromium	0.195	0.00500	0.200	0	97.7	80	120			
Cobalt	0.187	0.00500	0.200	0	93.5	80	120			
Lead	0.202	0.00100	0.200	0.00149	100	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

Sample ID **1603013-05B PDS**	Batch ID: **73938**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_160303F**	Analysis Date: **3/3/2016 6:47:00 PM**	Prep Date: **3/2/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lithium	0.282	0.0100	0.200	0.110	86.0	80	120			
Molybdenum	0.527	0.00500	0.200	0.358	84.6	80	120			
Selenium	0.187	0.00500	0.200	0	93.4	80	120			
Thallium	0.198	0.00150	0.200	0	99.0	80	120			

Sample ID **1603013-05B MS**	Batch ID: **73938**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS4_160303F**	Analysis Date: **3/3/2016 6:49:00 PM**	Prep Date: **3/2/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.203	0.00250	0.200	0	101	80	120			
Arsenic	0.308	0.00500	0.200	0.112	98.4	80	120			
Barium	0.230	0.0100	0.200	0.0250	102	80	120			
Beryllium	0.188	0.00100	0.200	0	94.1	80	120			
Cadmium	0.195	0.00100	0.200	0.000371	97.2	80	120			
Calcium	10.5	0.300	5.00	5.71	96.4	80	120			
Chromium	0.196	0.00500	0.200	0	98.1	80	120			
Cobalt	0.190	0.00500	0.200	0	94.9	80	120			
Lead	0.205	0.00100	0.200	0.00149	102	80	120			
Lithium	0.298	0.0100	0.200	0.110	93.6	80	120			
Molybdenum	0.557	0.00500	0.200	0.358	99.6	80	120			
Selenium	0.188	0.00500	0.200	0	94.2	80	120			
Thallium	0.201	0.00150	0.200	0	100	80	120			

Sample ID **1603013-05B MSD**	Batch ID: **73938**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS4_160303F**	Analysis Date: **3/3/2016 6:51:00 PM**	Prep Date: **3/2/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.205	0.00250	0.200	0	102	80	120	1.01	15	
Arsenic	0.313	0.00500	0.200	0.112	101	80	120	1.45	15	
Barium	0.232	0.0100	0.200	0.0250	104	80	120	1.08	15	
Beryllium	0.191	0.00100	0.200	0	95.4	80	120	1.41	15	
Cadmium	0.199	0.00100	0.200	0.000371	99.4	80	120	2.18	15	
Calcium	10.6	0.300	5.00	5.71	97.5	80	120	0.526	15	
Chromium	0.197	0.00500	0.200	0	98.7	80	120	0.581	15	
Cobalt	0.192	0.00500	0.200	0	96.1	80	120	1.23	15	
Lead	0.207	0.00100	0.200	0.00149	103	80	120	1.28	15	
Lithium	0.298	0.0100	0.200	0.110	93.7	80	120	0.076	15	
Molybdenum	0.565	0.00500	0.200	0.358	104	80	120	1.49	15	
Selenium	0.190	0.00500	0.200	0	94.9	80	120	0.775	15	
Thallium	0.205	0.00150	0.200	0	103	80	120	2.22	15	

CLIENT: Pastor, Behling & Wheeler
Work Order: 1602289
Project: Luminant - MLSES

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160303F

Sample ID **ICV-160303**	Batch ID: **R84524**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_160303F**	Analysis Date: **3/3/2016 11:22:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.0989	0.00250	0.100	0	98.9	90	110			
Arsenic	0.0988	0.00500	0.100	0	98.8	90	110			
Barium	0.0991	0.0100	0.100	0	99.1	90	110			
Beryllium	0.0997	0.00100	0.100	0	99.7	90	110			
Cadmium	0.0995	0.00100	0.100	0	99.5	90	110			
Calcium	2.32	0.300	2.50	0	92.8	90	110			
Chromium	0.105	0.00500	0.100	0	105	90	110			
Cobalt	0.102	0.00500	0.100	0	102	90	110			
Lead	0.102	0.00100	0.100	0	102	90	110			
Lithium	0.0978	0.0100	0.100	0	97.8	90	110			
Molybdenum	0.0976	0.00500	0.100	0	97.6	90	110			
Selenium	0.101	0.00500	0.100	0	101	90	110			
Thallium	0.101	0.00150	0.100	0	101	90	110			

Sample ID **LCVL-160303**	Batch ID: **R84524**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160303F**	Analysis Date: **3/3/2016 11:29:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00209	0.00250	0.00200	0	105	70	130			
Arsenic	0.00531	0.00500	0.00500	0	106	70	130			
Barium	0.00531	0.0100	0.00500	0	106	70	130			
Beryllium	0.000991	0.00100	0.00100	0	99.1	70	130			
Cadmium	0.00109	0.00100	0.00100	0	109	70	130			
Calcium	0.107	0.300	0.100	0	107	70	130			
Chromium	0.00539	0.00500	0.00500	0	108	70	130			
Cobalt	0.00533	0.00500	0.00500	0	107	70	130			
Lead	0.00103	0.00100	0.00100	0	103	70	130			
Lithium	0.0104	0.0100	0.0100	0	104	70	130			
Molybdenum	0.00523	0.00500	0.00500	0	105	70	130			
Selenium	0.00567	0.00500	0.00500	0	113	70	130			
Thallium	0.00106	0.00150	0.00100	0	106	70	130			

Sample ID **CCV7-160303**	Batch ID: **R84524**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160303F**	Analysis Date: **3/3/2016 6:09:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.208	0.00250	0.200	0	104	90	110			
Arsenic	0.201	0.00500	0.200	0	101	90	110			
Barium	0.212	0.0100	0.200	0	106	90	110			
Beryllium	0.195	0.00100	0.200	0	97.4	90	110			
Cadmium	0.211	0.00100	0.200	0	105	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1602289
Project: Luminant - MLSES

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160303F

Sample ID **CCV7-160303**	Batch ID: **R84524**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160303F**	Analysis Date: **3/3/2016 6:09:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.91	0.300	5.00	0	98.2	90	110			
Chromium	0.207	0.00500	0.200	0	104	90	110			
Cobalt	0.200	0.00500	0.200	0	100	90	110			
Lead	0.209	0.00100	0.200	0	105	90	110			
Lithium	0.199	0.0100	0.200	0	99.4	90	110			
Molybdenum	0.206	0.00500	0.200	0	103	90	110			
Selenium	0.204	0.00500	0.200	0	102	90	110			
Thallium	0.208	0.00150	0.200	0	104	90	110			

Sample ID **LCVL7-160303**	Batch ID: **R84524**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160303F**	Analysis Date: **3/3/2016 6:13:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00215	0.00250	0.00200	0	107	70	130			
Arsenic	0.00507	0.00500	0.00500	0	101	70	130			
Barium	0.00518	0.0100	0.00500	0	104	70	130			
Beryllium	0.00108	0.00100	0.00100	0	108	70	130			
Cadmium	0.00105	0.00100	0.00100	0	105	70	130			
Calcium	0.102	0.300	0.100	0	102	70	130			
Chromium	0.00509	0.00500	0.00500	0	102	70	130			
Cobalt	0.00507	0.00500	0.00500	0	101	70	130			
Lead	0.00103	0.00100	0.00100	0	103	70	130			
Lithium	0.0106	0.0100	0.0100	0	106	70	130			
Molybdenum	0.00499	0.00500	0.00500	0	99.8	70	130			
Selenium	0.00596	0.00500	0.00500	0	119	70	130			
Thallium	0.00107	0.00150	0.00100	0	107	70	130			

Sample ID **CCV8-160303**	Batch ID: **R84524**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160303F**	Analysis Date: **3/3/2016 6:53:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.208	0.00250	0.200	0	104	90	110			
Arsenic	0.202	0.00500	0.200	0	101	90	110			
Barium	0.211	0.0100	0.200	0	105	90	110			
Beryllium	0.199	0.00100	0.200	0	99.5	90	110			
Cadmium	0.210	0.00100	0.200	0	105	90	110			
Calcium	4.90	0.300	5.00	0	98.1	90	110			
Chromium	0.209	0.00500	0.200	0	104	90	110			
Cobalt	0.203	0.00500	0.200	0	101	90	110			
Lead	0.212	0.00100	0.200	0	106	90	110			
Lithium	0.204	0.0100	0.200	0	102	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1602289
Project: Luminant - MLSES

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160303F

Sample ID **CCV8-160303**	Batch ID: **R84524**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160303F**	Analysis Date: **3/3/2016 6:53:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Molybdenum	0.204	0.00500	0.200	0	102	90	110			
Selenium	0.207	0.00500	0.200	0	104	90	110			
Thallium	0.211	0.00150	0.200	0	105	90	110			

Sample ID **LCVL8-160303**	Batch ID: **R84524**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160303F**	Analysis Date: **3/3/2016 6:57:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00217	0.00250	0.00200	0	108	70	130			
Arsenic	0.00509	0.00500	0.00500	0	102	70	130			
Barium	0.00521	0.0100	0.00500	0	104	70	130			
Beryllium	0.00106	0.00100	0.00100	0	106	70	130			
Cadmium	0.00109	0.00100	0.00100	0	109	70	130			
Calcium	0.105	0.300	0.100	0	105	70	130			
Chromium	0.00509	0.00500	0.00500	0	102	70	130			
Cobalt	0.00509	0.00500	0.00500	0	102	70	130			
Lead	0.00101	0.00100	0.00100	0	101	70	130			
Lithium	0.0107	0.0100	0.0100	0	107	70	130			
Molybdenum	0.00500	0.00500	0.00500	0	99.9	70	130			
Selenium	0.00608	0.00500	0.00500	0	122	70	130			
Thallium	0.00106	0.00150	0.00100	0	106	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler

Work Order: 1602289

Project: Luminant - MLSES

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160307A

The QC data in batch 73907 applies to the following samples: 1602289-01A, 1602289-02A, 1602289-03A

Sample ID	**MB-73907**	Batch ID:	**73907**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**ICP-MS4_160307A**	Analysis Date:	**3/7/2016 1:43:00 PM**	Prep Date:	**2/29/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0205	0.0300								
Lithium	<0.00500	0.0100								

Sample ID	**LCS-73907**	Batch ID:	**73907**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**ICP-MS4_160307A**	Analysis Date:	**3/7/2016 1:45:00 PM**	Prep Date:	**2/29/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.211	0.0300	0.200	0	105	80	120			
Lithium	0.205	0.0100	0.200	0	102	80	120			

Sample ID	**LCSD-73907**	Batch ID:	**73907**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**LCSD**	Run ID:	**ICP-MS4_160307A**	Analysis Date:	**3/7/2016 1:47:00 PM**	Prep Date:	**2/29/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.214	0.0300	0.200	0	107	80	120	1.44	15	
Lithium	0.202	0.0100	0.200	0	101	80	120	1.05	15	

Sample ID	**1602283-17A SD**	Batch ID:	**73907**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**SD**	Run ID:	**ICP-MS4_160307A**	Analysis Date:	**3/7/2016 1:53:00 PM**	Prep Date:	**2/29/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	<0.0500	0.150	0	0				0	10	
Lithium	<0.0250	0.0500	0	0				0	10	

Sample ID	**1602283-17A PDS**	Batch ID:	**73907**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**PDS**	Run ID:	**ICP-MS4_160307A**	Analysis Date:	**3/7/2016 2:13:00 PM**	Prep Date:	**2/29/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.214	0.0300	0.200	0	107	80	120			
Lithium	0.200	0.0100	0.200	0	100	80	120			

Sample ID	**1602283-17A MS**	Batch ID:	**73907**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**MS**	Run ID:	**ICP-MS4_160307A**	Analysis Date:	**3/7/2016 2:15:00 PM**	Prep Date:	**2/29/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.218	0.0300	0.200	0	109	80	120			
Lithium	0.199	0.0100	0.200	0	99.5	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1602289
Project: Luminant - MLSES

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160307A

Sample ID **1602283-17A MSD** Batch ID: **73907** TestNo: **SW6020A** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS4_160307A** Analysis Date: **3/7/2016 2:17:00 PM** Prep Date: **2/29/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.214	0.0300	0.200	0	107	80	120	1.96	15	
Lithium	0.205	0.0100	0.200	0	103	80	120	2.97	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1602289
Project: Luminant - MLSES

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160307A

The QC data in batch 73938 applies to the following samples: 1602289-04A, 1602289-05A, 1602289-06A, 1602289-07A, 1602289-08A

Sample ID	**MB-73938**	Batch ID:	**73938**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**ICP-MS4_160307A**	Analysis Date:	**3/7/2016 5:28:00 PM**	Prep Date:	**3/2/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	<0.0100	0.0300								

Sample ID	**LCS-73938**	Batch ID:	**73938**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**ICP-MS4_160307A**	Analysis Date:	**3/7/2016 5:30:00 PM**	Prep Date:	**3/2/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.188	0.0300	0.200	0	93.9	80	120			

Sample ID	**LCSD-73938**	Batch ID:	**73938**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**LCSD**	Run ID:	**ICP-MS4_160307A**	Analysis Date:	**3/7/2016 5:32:00 PM**	Prep Date:	**3/2/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.200	0.0300	0.200	0	100	80	120	6.37	15	

Sample ID	**1603013-05B SD**	Batch ID:	**73938**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**SD**	Run ID:	**ICP-MS4_160307A**	Analysis Date:	**3/7/2016 5:38:00 PM**	Prep Date:	**3/2/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	<2.50	7.50	0	2.16				0	10	

Sample ID	**1603013-05B PDS**	Batch ID:	**73938**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**PDS**	Run ID:	**ICP-MS4_160307A**	Analysis Date:	**3/7/2016 5:59:00 PM**	Prep Date:	**3/2/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	11.7	1.50	10.0	2.16	95.6	80	120			

Sample ID	**1603013-05B MS**	Batch ID:	**73938**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**MS**	Run ID:	**ICP-MS4_160307A**	Analysis Date:	**3/7/2016 6:01:00 PM**	Prep Date:	**3/2/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	2.36	1.50	0.200	2.16	99.4	80	120			

Sample ID	**1603013-05B MSD**	Batch ID:	**73938**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**MSD**	Run ID:	**ICP-MS4_160307A**	Analysis Date:	**3/7/2016 6:03:00 PM**	Prep Date:	**3/2/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	2.59	1.50	0.200	2.16	213	80	120	9.17	15	S

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160307A

Sample ID **ICV-160307**	Batch ID: **R84569**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_160307A**	Analysis Date: **3/7/2016 11:53:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.103	0.0300	0.100	0	103	90	110			
Calcium	2.32	0.300	2.50	0	93.0	90	110			
Lithium	0.100	0.0100	0.100	0	100	90	110			

Sample ID **LCVL-160307**	Batch ID: **R84569**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160307A**	Analysis Date: **3/7/2016 11:58:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0240	0.0300	0.0200	0	120	70	130			
Calcium	0.101	0.300	0.100	0	101	70	130			
Lithium	0.0108	0.0100	0.0100	0	108	70	130			

Sample ID **CCV2-160307**	Batch ID: **R84569**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160307A**	Analysis Date: **3/7/2016 1:26:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.205	0.0300	0.200	0	102	90	110			
Calcium	4.74	0.300	5.00	0	94.7	90	110			
Lithium	0.206	0.0100	0.200	0	103	90	110			

Sample ID **LCVL2-160307**	Batch ID: **R84569**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160307A**	Analysis Date: **3/7/2016 1:38:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0226	0.0300	0.0200	0	113	70	130			
Calcium	0.0952	0.300	0.100	0	95.2	70	130			
Lithium	0.0110	0.0100	0.0100	0	110	70	130			

Sample ID **CCV3-160307**	Batch ID: **R84569**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160307A**	Analysis Date: **3/7/2016 2:27:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.190	0.0300	0.200	0	95.0	90	110			
Calcium	4.70	0.300	5.00	0	94.0	90	110			
Lithium	0.199	0.0100	0.200	0	99.4	90	110			

Sample ID **LCVL3-160307**	Batch ID: **R84569**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160307A**	Analysis Date: **3/7/2016 2:41:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0246	0.0300	0.0200	0	123	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1602289
Project: Luminant - MLSES

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160307A

Sample ID **LCVL3-160307**	Batch ID: **R84569**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160307A**	Analysis Date: **3/7/2016 2:41:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.0986	0.300	0.100	0	98.6	70	130			
Lithium	0.0109	0.0100	0.0100	0	109	70	130			

Sample ID **CCV5-160307**	Batch ID: **R84569**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160307A**	Analysis Date: **3/7/2016 5:10:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.195	0.0300	0.200	0	97.6	90	110			
Calcium	4.76	0.300	5.00	0	95.1	90	110			

Sample ID **LCVL5-160307**	Batch ID: **R84569**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160307A**	Analysis Date: **3/7/2016 5:24:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0202	0.0300	0.0200	0	101	70	130			
Calcium	0.103	0.300	0.100	0	103	70	130			

Sample ID **CCV6-160307**	Batch ID: **R84569**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160307A**	Analysis Date: **3/7/2016 6:17:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.204	0.0300	0.200	0	102	90	110			
Calcium	4.87	0.300	5.00	0	97.5	90	110			

Sample ID **LCVL6-160307**	Batch ID: **R84569**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160307A**	Analysis Date: **3/7/2016 6:31:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0211	0.0300	0.0200	0	106	70	130			
Calcium	0.100	0.300	0.100	0	100	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

Sample ID	**ICV2-160311**	Batch ID:	**R84666**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**ICV**	Run ID:	**ICP-MS4_160311B**	Analysis Date:	**3/11/2016 4:25:00 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.106	0.0300	0.100	0	106	90	110			

Sample ID	**ILCVL2-160311**	Batch ID:	**R84666**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**LCVL**	Run ID:	**ICP-MS4_160311B**	Analysis Date:	**3/11/2016 4:44:00 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0220	0.0300	0.0200	0	110	70	130			

Sample ID	**CCV1-160311**	Batch ID:	**R84666**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**ICP-MS4_160311B**	Analysis Date:	**3/11/2016 5:27:00 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.211	0.0300	0.200	0	106	90	110			

Sample ID	**LCVL1-160311**	Batch ID:	**R84666**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**LCVL**	Run ID:	**ICP-MS4_160311B**	Analysis Date:	**3/11/2016 5:49:00 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0255	0.0300	0.0200	0	128	70	130			

Sample ID	**CCV2-160311**	Batch ID:	**R84666**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**ICP-MS4_160311B**	Analysis Date:	**3/11/2016 6:48:00 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.212	0.0300	0.200	0	106	90	110			

Sample ID	**LCVL2-160311**	Batch ID:	**R84666**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**LCVL**	Run ID:	**ICP-MS4_160311B**	Analysis Date:	**3/11/2016 7:06:00 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0237	0.0300	0.0200	0	119	70	130			

CLIENT: Pastor, Behling & Wheeler
Work Order: 1602289
Project: Luminant - MLSES

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_160307A

The QC data in batch 74004 applies to the following samples: 1602289-01D, 1602289-02D, 1602289-03D, 1602289-04D, 1602289-05D, 1602289-06D, 1602289-07D, 1602289-08D

Sample ID **MB-74004** Batch ID: **74004** TestNo: **E300** Units: **mg/L**
SampType: **MBLK** Run ID: **IC2_160307A** Analysis Date: **3/7/2016 9:28:25 AM** Prep Date: **3/7/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00								
Fluoride	<0.100	0.400								
Sulfate	<1.00	3.00								

Sample ID **LCS-74004** Batch ID: **74004** TestNo: **E300** Units: **mg/L**
SampType: **LCS** Run ID: **IC2_160307A** Analysis Date: **3/7/2016 9:43:02 AM** Prep Date: **3/7/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.60	1.00	10.00	0	96.0	90	110			
Fluoride	3.79	0.400	4.000	0	94.7	90	110			
Sulfate	30.8	3.00	30.00	0	103	90	110			

Sample ID **LCSD-74004** Batch ID: **74004** TestNo: **E300** Units: **mg/L**
SampType: **LCSD** Run ID: **IC2_160307A** Analysis Date: **3/7/2016 9:57:38 AM** Prep Date: **3/7/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.56	1.00	10.00	0	95.6	90	110	0.366	20	
Fluoride	3.83	0.400	4.000	0	95.8	90	110	1.17	20	
Sulfate	30.5	3.00	30.00	0	102	90	110	0.833	20	

Sample ID **1602289-01DMS** Batch ID: **74004** TestNo: **E300** Units: **mg/L**
SampType: **MS** Run ID: **IC2_160307A** Analysis Date: **3/7/2016 2:50:23 PM** Prep Date: **3/7/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	2290	100	2000	294.5	99.6	90	110			
Fluoride	2000	40.0	2000	0	99.8	90	110			
Sulfate	3060	300	2000	949.5	106	90	110			

Sample ID **1602289-01DMSD** Batch ID: **74004** TestNo: **E300** Units: **mg/L**
SampType: **MSD** Run ID: **IC2_160307A** Analysis Date: **3/7/2016 3:19:05 PM** Prep Date: **3/7/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	2290	100	2000	294.5	100	90	110	0.327	20	
Fluoride	2000	40.0	2000	0	100	90	110	0.335	20	
Sulfate	3060	300	2000	949.5	106	90	110	0.001	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1602289
Project: Luminant - MLSES

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_160307A

Sample ID **1603032-01BMS**	Batch ID: **74004**	TestNo: **E300**	Units: **mg/L**
SampType: **MS**	Run ID: **IC2_160307A**	Analysis Date: **3/7/2016 5:33:05 PM**	Prep Date: **3/7/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	2400	100	2000	371.6	102	90	110			
Fluoride	2030	40.0	2000	0	101	90	110			
Sulfate	3800	300	2000	1615	109	90	110			

Sample ID **1603032-01BMSD**	Batch ID: **74004**	TestNo: **E300**	Units: **mg/L**
SampType: **MSD**	Run ID: **IC2_160307A**	Analysis Date: **3/7/2016 5:47:42 PM**	Prep Date: **3/7/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	2410	100	2000	371.6	102	90	110	0.280	20	
Fluoride	2040	40.0	2000	0	102	90	110	0.651	20	
Sulfate	3790	300	2000	1615	109	90	110	0.309	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1602289
Project: Luminant - MLSES

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_160307A

Sample ID **ICV-160307**	Batch ID: **R84582**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC2_160307A**	Analysis Date: **3/7/2016 8:39:01 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	24.4	1.00	25.00	0	97.6	90	110			
Fluoride	9.66	0.400	10.00	0	96.6	90	110			
Sulfate	76.8	3.00	75.00	0	102	90	110			

Sample ID **CCV1-160307**	Batch ID: **R84582**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_160307A**	Analysis Date: **3/7/2016 12:48:14 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.49	1.00	10.00	0	94.9	90	110			
Fluoride	3.91	0.400	4.000	0	97.7	90	110			
Sulfate	30.5	3.00	30.00	0	102	90	110			

Sample ID **CCV2-160307**	Batch ID: **R84582**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_160307A**	Analysis Date: **3/7/2016 4:32:08 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.56	1.00	10.00	0	95.6	90	110			
Fluoride	3.97	0.400	4.000	0	99.2	90	110			
Sulfate	30.4	3.00	30.00	0	101	90	110			

Sample ID **CCV3-160307**	Batch ID: **R84582**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_160307A**	Analysis Date: **3/7/2016 6:02:18 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.63	1.00	10.00	0	96.3	90	110			
Fluoride	4.04	0.400	4.000	0	101	90	110			
Sulfate	30.9	3.00	30.00	0	103	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1602289
Project: Luminant - MLSES

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_160301A

The QC data in batch 73915 applies to the following samples: 1602289-01D, 1602289-02D, 1602289-03D, 1602289-04D, 1602289-05D, 1602289-06D

Sample ID	**1602284-02D-DUP**	Batch ID:	**73915**	TestNo:	**M4500-H+ B**	Units:	**pH Units@12.6℃**
SampType:	**DUP**	Run ID:	**TITRATOR_160301A**	Analysis Date:	**3/1/2016 9:39:00 AM**	Prep Date:	**3/1/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	7.45	0	0	7.360				1.22	5	

Sample ID	**1602288-08B-DUP**	Batch ID:	**73915**	TestNo:	**M4500-H+ B**	Units:	**pH Units@15.3℃**
SampType:	**DUP**	Run ID:	**TITRATOR_160301A**	Analysis Date:	**3/1/2016 10:03:00 AM**	Prep Date:	**3/1/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	6.79	0	0	6.800				0.147	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1602289
Project: Luminant - MLSES

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_160301A

Sample ID	**ICV-160301**	Batch ID:	**R84431**	TestNo:	**M4500-H+ B**	Units:	**pH Units@22℃**
SampType:	**ICV**	Run ID:	**TITRATOR_160301A**	Analysis Date:	**3/1/2016 9:04:00 AM**	Prep Date:	**3/1/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	9.99	0	10.00	0	99.9	99	101			

Sample ID	**CCV1-160301**	Batch ID:	**R84431**	TestNo:	**M4500-H+ B**	Units:	**pH Units@21.2℃**
SampType:	**CCV**	Run ID:	**TITRATOR_160301A**	Analysis Date:	**3/1/2016 9:58:00 AM**	Prep Date:	**3/1/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	7.02	0	7.000	0	100	97.1	102.9			

Sample ID	**CCV2-160301**	Batch ID:	**R84431**	TestNo:	**M4500-H+ B**	Units:	**pH Units@21℃**
SampType:	**CCV**	Run ID:	**TITRATOR_160301A**	Analysis Date:	**3/1/2016 10:20:00 AM**	Prep Date:	**3/1/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	7.02	0	7.000	0	100	97.1	102.9			

Sample ID	**CCV3-160301**	Batch ID:	**R84431**	TestNo:	**M4500-H+ B**	Units:	**pH Units@21.6℃**
SampType:	**CCV**	Run ID:	**TITRATOR_160301A**	Analysis Date:	**3/1/2016 10:45:00 AM**	Prep Date:	**3/1/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	7.02	0	7.000	0	100	97.1	102.9			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1602289
Project: Luminant - MLSES

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_160301B

The QC data in batch 73927 applies to the following samples: 1602289-07D, 1602289-08D

Sample ID	**1602289-07D-DUP**	Batch ID:	**73927**	TestNo:	**M4500-H+ B**	Units:	**pH Units@14.9℃**
SampType:	**DUP**	Run ID:	**TITRATOR_160301B**	Analysis Date:	**3/1/2016 10:42:00 AM**	Prep Date:	**3/1/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	6.97	0	0	7.000				0.429	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1602289
Project: Luminant - MLSES

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_160301B

Sample ID	**ICV-160301**	Batch ID:	**R84436**	TestNo:	**M4500-H+ B**	Units:	**pH Units@22℃**
SampType:	**ICV**	Run ID:	**TITRATOR_160301B**	Analysis Date:	**3/1/2016 9:04:00 AM**	Prep Date:	**3/1/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	9.99	0	10.00	0	99.9	99	101			

Sample ID	**CCV3-160301**	Batch ID:	**R84436**	TestNo:	**M4500-H+ B**	Units:	**pH Units@21.6℃**
SampType:	**CCV**	Run ID:	**TITRATOR_160301B**	Analysis Date:	**3/1/2016 10:45:00 AM**	Prep Date:	**3/1/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	7.02	0	7.000	0	100	97.1	102.9			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler

Work Order: 1602289

Project: Luminant - MLSES

ANALYTICAL QC SUMMARY REPORT

RunID: WC_160302B

The QC data in batch 73952 applies to the following samples: 1602289-01D, 1602289-02D, 1602289-03D, 1602289-04D, 1602289-05D, 1602289-06D, 1602289-07D, 1602289-08D

Sample ID	**MB-73952**	Batch ID:	**73952**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**WC_160302B**	Analysis Date:	**3/3/2016 9:05:00 AM**	Prep Date:	**3/2/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	<10.0	10.0								

Sample ID	**LCS-73952**	Batch ID:	**73952**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**WC_160302B**	Analysis Date:	**3/3/2016 9:05:00 AM**	Prep Date:	**3/2/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	765	10.0	745.6	0	103	90	113			

Sample ID	**1602289-01D-DUP**	Batch ID:	**73952**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**DUP**	Run ID:	**WC_160302B**	Analysis Date:	**3/3/2016 9:05:00 AM**	Prep Date:	**3/2/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	2530	50.0	0	2430				4.03	5	

Sample ID	**1603011-01C-DUP**	Batch ID:	**73952**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**DUP**	Run ID:	**WC_160302B**	Analysis Date:	**3/3/2016 9:05:00 AM**	Prep Date:	**3/2/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	2830	50.0	0	2885				1.92	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

GEL Laboratories LLC
a member of The GEL Group INC

PO Box 30712 Charleston, SC 29417
2040 Savage Road Charleston, SC 29407
P 843.556.8171
F 843.766.1178

gel.com

March 29, 2016

Mr. John DuPont
DHL Analytical
2300 Double Creek Drive
Round Rock, Texas 78664

Re: Routine Analysis
Work Order: 392401
SDG: 1602289

Dear Mr. DuPont:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on March 03, 2016. This original data report has been prepared and reviewed in accordance with GEL's standard operating procedures.

Our policy is to provide high quality, personalized analytical services to enable you to meet your analytical needs on time every time. We trust that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at (843) 556-8171, ext. 4707.

Sincerely,

Linda Pullano for
Anna Day
Project Manager

Purchase Order: 14279
Chain of Custody: 1602289
Enclosures

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 − (843) 556−8171 − www.gel.com

Certificate of Analysis Report
for

DHLA002 DHL Analytical

Client SDG: 1602289 GEL Work Order: 392401

The Qualifiers in this report are defined as follows:

* A quality control analyte recovery is outside of specified acceptance criteria

** Analyte is a Tracer compound

** Analyte is a surrogate compound

U Analyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the Certificate of Analysis.

The designation ND, if present, appears in the result column when the analyte concentration is not detected above the limit as defined in the 'U' qualifier above.

This data report has been prepared and reviewed in accordance with GEL Laboratories LLC standard operating procedures. Please direct any questions to your Project Manager, Anna Day.

Reviewed by Linda O. Pullen

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: March 29, 2016

Company : DHL Analytical
Address : 2300 Double Creek Drive

Round Rock, Texas 78664
Contact: Mr. John DuPont
Project: Routine Analysis

Client Sample ID: BMW-22
Sample ID: 392401001
Matrix: Water
Collect Date: 25-FEB-16 09:45
Receive Date: 03-MAR-16
Collector: Client

Project: DHLA00112
Client ID: DHLA002

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228	U	1.35	+/-1.19	1.93	3.00	pCi/L		AXM6	03/28/16	1218	1551172	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226		0.594	+/-0.372	0.487	1.00	pCi/L		CXP3	03/17/16	0835	1550120	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			75.8	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: March 29, 2016

Company : DHL Analytical
Address : 2300 Double Creek Drive

Round Rock, Texas 78664
Contact: Mr. John DuPont
Project: Routine Analysis

Client Sample ID: BMW-23
Sample ID: 392401002
Matrix: Water
Collect Date: 25-FEB-16 10:35
Receive Date: 03-MAR-16
Collector: Client

Project: DHLA00112
Client ID: DHLA002

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228	U	1.42	+/-1.11	1.78	3.00	pCi/L		AXM6	03/28/16	1220	1551172	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226		0.604	+/-0.331	0.362	1.00	pCi/L		CXP3	03/17/16	0835	1550120	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			88.4	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: March 29, 2016

Company : DHL Analytical
Address : 2300 Double Creek Drive

Round Rock, Texas 78664
Contact: Mr. John DuPont
Project: Routine Analysis

Client Sample ID: BMW-24
Sample ID: 392401003
Matrix: Water
Collect Date: 25-FEB-16 11:15
Receive Date: 03-MAR-16
Collector: Client

Project: DHLA00112
Client ID: DHLA002

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228	U	1.22	+/-1.18	1.93	3.00	pCi/L		AXM6	03/28/16	1218	1551172	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226		1.20	+/-0.570	0.716	1.00	pCi/L		CXP3	03/17/16	0835	1550120	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			75.3	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: March 29, 2016

Company : DHL Analytical
Address : 2300 Double Creek Drive

Round Rock, Texas 78664
Contact: Mr. John DuPont
Project: Routine Analysis

Client Sample ID: BMW-19
Sample ID: 392401004
Matrix: Water
Collect Date: 25-FEB-16 12:15
Receive Date: 03-MAR-16
Collector: Client

Project: DHLA00112
Client ID: DHLA002

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228		1.94	+/-1.16	1.77	3.00	pCi/L		AXM6	03/28/16	1220	1551172	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226		0.571	+/-0.313	0.342	1.00	pCi/L		CXP3	03/17/16	0835	1550120	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			89.3	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: March 29, 2016

Company : DHL Analytical
Address : 2300 Double Creek Drive

Round Rock, Texas 78664
Contact: Mr. John DuPont
Project: Routine Analysis

Client Sample ID: BMW-20
Sample ID: 392401005
Matrix: Water
Collect Date: 25-FEB-16 14:30
Receive Date: 03-MAR-16
Collector: Client

Project: DHLA00112
Client ID: DHLA002

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228		2.85	+/-1.31	1.83	3.00	pCi/L		AXM6	03/28/16	1218	1551172	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226	U	0.604	+/-0.418	0.610	1.00	pCi/L		CXP3	03/17/16	0835	1550120	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			74.4	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: March 29, 2016

Company : DHL Analytical
Address : 2300 Double Creek Drive

Round Rock, Texas 78664
Contact: Mr. John DuPont
Project: Routine Analysis

Client Sample ID: BMW-21
Sample ID: 392401006
Matrix: Water
Collect Date: 25-FEB-16 15:10
Receive Date: 03-MAR-16
Collector: Client

Project: DHLA00112
Client ID: DHLA002

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228		2.13	+/-1.15	1.68	3.00	pCi/L		AXM6	03/28/16	1654	1551925	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226		0.735	+/-0.467	0.660	1.00	pCi/L		CXP3	03/17/16	0905	1550120	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			75.4	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: March 29, 2016

Company : DHL Analytical
Address : 2300 Double Creek Drive

Round Rock, Texas 78664
Contact: Mr. John DuPont
Project: Routine Analysis

Client Sample ID: BMW-11AR
Sample ID: 392401007
Matrix: Water
Collect Date: 25-FEB-16 16:20
Receive Date: 03-MAR-16
Collector: Client

Project: DHLA00112
Client ID: DHLA002

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228		3.80	+/-1.34	1.55	3.00	pCi/L		AXM6	03/28/16	1218	1551172	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226		2.43	+/-0.672	0.432	1.00	pCi/L		CXP3	03/17/16	0905	1550120	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			66.6	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: March 29, 2016

Company : DHL Analytical
Address : 2300 Double Creek Drive

Round Rock, Texas 78664
Contact: Mr. John DuPont
Project: Routine Analysis

Client Sample ID: BMW-18
Sample ID: 392401008
Matrix: Water
Collect Date: 26-FEB-16 10:15
Receive Date: 03-MAR-16
Collector: Client

Project: DHLA00112
Client ID: DHLA002

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228	U	0.928	+/-1.12	1.90	3.00	pCi/L		AXM6	03/28/16	1218	1551172	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226	U	0.297	+/-0.276	0.406	1.00	pCi/L		CXP3	03/17/16	0905	1550120	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			77.6	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

GEL LABORATORIES LLC
2040 Savage Road Charleston, SC 29407 - (843) 556-8171 - www.gel.com

QC Summary

Report Date: March 29, 2016

DHL Analytical
2300 Double Creek Drive
Round Rock, Texas

Contact: **Mr. John DuPont**

Workorder: **392401**

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Rad Gas Flow											
Batch 1551172											
QC1203505415 392332001 DUP											
Radium-228	U	0.113	U	-0.00228	pCi/L	N/A		N/A	AXM6	03/28/16	12:20
	Uncertainty	+/-1.01		+/-0.996							
QC1203505416 LCS											
Radium-228	46.9			37.6	pCi/L		80.2	(75%-125%)		03/28/16	12:18
	Uncertainty			+/-3.35							
QC1203505414 MB											
Radium-228			U	1.01	pCi/L					03/28/16	12:17
	Uncertainty			+/-1.09							
Batch 1551925											
QC1203507508 392603008 DUP											
Radium-228		1.87	U	0.504	pCi/L	115*		(0% - 100%)	AXM6	03/28/16	16:54
	Uncertainty	+/-1.04		+/-0.939							
QC1203507509 LCS											
Radium-228	46.9			36.6	pCi/L		77.9	(75%-125%)		03/28/16	16:52
	Uncertainty			+/-2.89							
QC1203507507 MB											
Radium-228			U	-0.538	pCi/L					03/28/16	16:54
	Uncertainty			+/-0.828							
Rad Ra-226											
Batch 1550120											
QC1203502884 392405001 DUP											
Radium-226		3.30		2.85	pCi/L	14.5		(0% - 100%)	CXP3	03/17/16	09:05
	Uncertainty	+/-0.864		+/-0.847							
QC1203502886 LCS											
Radium-226	24.4			21.9	pCi/L		89.8	(75%-125%)		03/17/16	09:40
	Uncertainty			+/-2.04							
QC1203502883 MB											
Radium-226			U	0.262	pCi/L					03/17/16	09:05
	Uncertainty			+/-0.352							
QC1203502885 392405001 MS											
Radium-226	122	3.30		136	pCi/L		109	(75%-125%)		03/17/16	09:40
	Uncertainty	+/-0.864		+/-11.4							

Notes:

Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

The Qualifiers in this report are defined as follows:

- ** Analyte is a Tracer compound
- < Result is less than value reported
- > Result is greater than value reported
- BD Results are either below the MDC or tracer recovery is low

QC Summary

Workorder: **392401**

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time

FA	Failed analysis.
H	Analytical holding time was exceeded
J	Value is estimated
K	Analyte present. Reported value may be biased high. Actual value is expected to be lower.
L	Analyte present. Reported value may be biased low. Actual value is expected to be higher.
M	M if above MDC and less than LLD
M	REMP Result > MDC/CL and < RDL
N/A	RPD or %Recovery limits do not apply.
N1	See case narrative
ND	Analyte concentration is not detected above the detection limit
NJ	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
Q	One or more quality control criteria have not been met. Refer to the applicable narrative or DER.
R	Sample results are rejected
U	Analyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD.
UI	Gamma Spectroscopy--Uncertain identification
UJ	Gamma Spectroscopy--Uncertain identification
UL	Not considered detected. The associated number is the reported concentration, which may be inaccurate due to a low bias.
X	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
Y	Other specific qualifiers were required to properly define the results. Consult case narrative.
^	RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.
h	Preparation or preservation holding time was exceeded

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.
^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.
* Indicates that a Quality Control parameter was not within specifications.
For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.

There are no "Data Exception Reports" associated with this analytical report.

DHL Analytical, Inc.
2300 Double Creek Drive
Round Rock, TX 78664
TEL: *(512) 388-8222* FAX: *(512) 388-8229*

CHAIN-OF-CUSTODY RECORD

392401 392401

Work Order: 1602289

Subcontractor:

GEL Laboratories
PO Box 30712
Charleston, SC 29417

TEL: (843) 556-8171
FAX:
Acct #:

29-Feb-16

Sample Id	Matrix	DHL#	Date Collected	Bottle Type	Requested Tests E903.1	E904.0				
BMW-22	Aqueous	-01B	02/25/16 09:45 AM	500HDPEHNO3		1				
BMW-22	Aqueous	-01C	02/25/16 09:45 AM	500HDPEHNO3	1					
BMW-23	Aqueous	-02B	02/25/16 10:35 AM	500HDPEHNO3		1				
BMW-23	Aqueous	-02C	02/25/16 10:35 AM	500HDPEHNO3	1					
BMW-24	Aqueous	-03B	02/25/16 11:15 AM	500HDPEHNO3		1				
BMW-24	Aqueous	-03C	02/25/16 11:15 AM	500HDPEHNO3	1					
BMW-19	Aqueous	-04B	02/25/16 12:15 PM	500HDPEHNO3		1				
BMW-19	Aqueous	-04C	02/25/16 12:15 PM	500HDPEHNO3	1					
BMW-20	Aqueous	-05B	02/25/16 02:30 PM	500HDPEHNO3		1				
BMW-20	Aqueous	-05C	02/25/16 02:30 PM	500HDPEHNO3	1					
BMW-21	Aqueous	-06B	02/25/16 03:10 PM	500HDPEHNO3		1				
BMW-21	Aqueous	-06C	02/25/16 03:10 PM	500HDPEHNO3	1					
BMW-11AR	Aqueous	-07B	02/25/16 04:20 PM	500HDPEHNO3		1				
BMW-11AR	Aqueous	-07C	02/25/16 04:20 PM	500HDPEHNO3	1					
BMW-18	Aqueous	-08B	02/26/16 10:15 AM	500HDPEHNO3		1				
BMW-18	Aqueous	-08C	02/26/16 10:15 AM	500HDPEHNO3	1					

General Comments:

Please analyze these samples with a Standard Turnaround Time.
Call John DuPont if you have questions.
Quality Control Package Needed: Standard / _____
EMAIL report to both cac@dhlanalytical.com & dupont@dhlanalytical.com

		Date/Time			Date/Time
Relinquished by:		2/29/16 1730	**Received by:**		2/29/16 1730
Relinquished by:			**Received by:**		3/3/16 0850

GEL Laboratories LLC

SAMPLE RECEIPT & REVIEW FORM

Client: DHLA	**SDG/AR/COC/Work Order:** 392396 / 392401
Received By: Sara Trimble	**Date Received:** 3/3/16

Suspected Hazard Information	Yes	No
COC/Samples marked as radioactive?		✓
Classified Radioactive II or III by RSO?		✓
COC/Samples marked containing PCBs?		✓
Package, COC, and/or Samples marked as beryllium or asbestos containing?		✓
Shipped as a DOT Hazardous?		✓
Samples identified as Foreign Soil?		✓

*If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation.

Maximum Net Counts Observed* (Observed Counts - Area Background Counts): 0cpm

If yes, Were swipes taken of sample containers < action levels?

If yes, samples are to be segregated as Safety Controlled Samples, and opened by the GEL Safety Group.

Hazard Class Shipped: UN#:

	Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (Required for Non-Conforming Items)
1	Shipping containers received intact and sealed?	✓			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
2	Samples requiring cold preservation within (0 ≤ 6 deg. C)?*		✓		Preservation Method: Ice bags Blue ice Dry ice (None) Other (describe) *all temperatures are recorded in Celsius 15°C
2a	Daily check performed and passed on IR temperature gun?	✓			Temperature Device Serial #: Secondary Temperature Device Serial # (If Applicable): ES03201583O
3	Chain of custody documents included with shipment?	✓			
4	Sample containers intact and sealed?	✓			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
5	Samples requiring chemical preservation at proper pH?	✓			Sample ID's, containers affected and observed pH: If Preservation added, Lot#:
6	Do Low Level Perchlorate samples have headspace as required?		✓		Sample ID's and containers affected:
7	VOA vials contain acid preservation?		✓		(If unknown, select No)
8	VOA vials free of headspace (defined as < 6mm bubble)?		✓		Sample ID's and containers affected:
9	Are Encore containers present?			✓	(If yes, immediately deliver to Volatiles laboratory)
10	Samples received within holding time?	✓			ID's and tests affected:
11	Sample ID's on COC match ID's on bottles?	✓			Sample ID's and containers affected:
12	Date & time on COC match date & time on bottles?	✓			Sample ID's affected:
13	Number of containers received match number indicated on COC?	✓			Sample ID's affected:
14	Are sample containers identifiable as GEL provided?			✓	
15	COC form is properly signed in relinquished/received sections?	✓			
16	Carrier and tracking number.				Circle Applicable: FedEx Air (FedEx Ground) UPS Field Services Courier Other 7757 5484 5817

Comments (Use Continuation Form if needed):

PM (or PMA) review: Initials KDP Date 3/3/16 Page 1 of 1 GL-CHL-SR-001 Rev 2

List of current GEL Certifications as of 29 March 2016

State	Certification
Alaska	UST−0110
Arkansas	88−0651
CLIA	42D0904046
California	2940
Colorado	SC00012
Connecticut	PH−0169
Delaware	SC00012
DoD ELAP/ ISO17025 A2LA	2567.01
Florida NELAP	E87156
Foreign Soils Permit	P330−15−00283, P330−15−00253
Georgia	SC00012
Georgia SDWA	967
Hawaii	SC00012
Idaho Chemistry	SC00012
Idaho Radiochemistry	SC00012
Illinois NELAP	200029
Indiana	C−SC−01
Kansas NELAP	E−10332
Kentucky SDWA	90129
Kentucky Wastewater	90129
Louisiana NELAP	03046 (AI33904)
Louisiana SDWA	LA160006
Maryland	270
Massachusetts	M−SC012
Michigan	9976
Mississippi	SC00012
Nebraska	NE−OS−26−13
Nevada	SC000122016−1
New Hampshire NELAP	205415
New Jersey NELAP	SC002
New Mexico	SC00012
New York NELAP	11501
North Carolina	233
North Carolina SDWA	45709
North Dakota	R−158
Oklahoma	9904
Pennsylvania NELAP	68−00485
S.Carolina Radchem	10120002
South Carolina Chemistry	10120001
Tennessee	TN 02934
Texas NELAP	T104704235−16−11
Utah NELAP	SC000122016−20
Vermont	VT87156
Virginia NELAP	460202
Washington	C780
West Virginia	997404

May 20, 2016

Will Vienne
Pastor, Behling & Wheeler
2201 Double Creek Dr #4004
Round Rock, Texas 78664
TEL: (512) 671-3434
FAX (512) 671-3446

Order No.: 1604102

RE: Luminant-Martin Lake

Dear Will Vienne:

DHL Analytical, Inc. received 8 sample(s) on 4/9/2016 for the analyses presented in the following report.

There were no problems with the analyses and all data met requirements of NELAC except where noted in the Case Narrative. All non-NELAC methods will be identified accordingly in the case narrative and all estimated uncertainties of test results are within method or EPA specifications.

If you have any questions regarding these tests results, please feel free to call. Thank you for using DHL Analytical.

Sincerely,

John DuPont
General Manager

This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211-16-16

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DHL ANALYTICAL
2300 Double Creek Dr. ■ Round Rock, TX 78664
Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

CHAIN-OF-CUSTODY

№ 70846

CLIENT: PBW
ADDRESS: 2201 DOUBLE CREEK DR ROUND ROCK, TX 78664
PHONE: 512-671-3434 FAX/E-MAIL: 512-671-3446
DATA REPORTED TO: WILL VIENNE
ADDITIONAL REPORT COPIES TO:

DATE: 4-8-16 PAGE 1 OF 1
PO #: 5164-B DHL WORK ORDER #: 1604102
PROJECT LOCATION OR NAME: LUMINANT - MARTIN LAKE
CLENT PROJECT #: 5164-B COLLECTOR: J. BRAYTON

Authorize 5% surcharge for TRRP Report? ❑ Yes ❑ No

S=SOIL W=WATER A=AIR L=LIQUID SE=SEDIMENT P=PAINT SL=SLUDGE O=OTHER SO=SOLID

PRESERVATION: HCl | HNO_3 | H_2SO_4 ❑ NaOH ❑ | ICE | UNPRESERVED

ANALYSES: BTEX ❑ MTBE ❑ [METHOD 8021] | TPH 1005 ❑ TPH 1006 ❑ HOLD 1006 ❑ | GRO [METHOD 8015] ❑ DRO [METHOD 8105] ❑ | VOC 8260 ❑ VOC 624 ❑ VOC 8260/5035 ❑ | SVOC 8270 ❑ PAH 8270 ❑ HOLD PAH ❑ SVOC 625 ❑ | 8270 PEST ❑ 625 PEST/PCB ❑ 608 PCB ❑ | 8270 O-P PEST ❑ 8082 PCB ❑ 8270 PCB ❑ | 8321 HERB ❑ T PHOS, AMMONIA ❑ | METALS 6020 ❑ METALS 200.8 ❑ DISS. METALS ❑ | RCRA ❑ TX11 ❑ ____ ❑ | PH ❑ HEX CHROM ❑ ALKALINITY ❑ COD ❑ | CHLORIDE ❑ ANIONS ____ ❑ | TCLP-SVOC ❑ VOC ❑ PEST ❑ HERB ❑ | TCLP-METALS ❑ RCRA 8 ❑ TX-11 ❑ Pb ❑ | RCI ❑ FLASHPOINT ❑ DGAS ❑ | TDS ❑ TSS ❑ % MOISTURE ❑ CYANIDE ❑ | SEE ATTACHED

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	HCl	HNO_3	H_2SO_4 ❑ NaOH ❑	ICE	UNPRESERVED	SEE ATTACHED	FIELD NOTES
BMW-24	01	4-7-16	0750	W	P	4						X	
BMW-23	02		0840	W	P	4						X	
BMW-22	03		0925	W	P	4						X	
BMW-20	04		1015	W	P	4						X	
BMW-21	05		1115	W	P	4						X	
BMW-11AR	06		1215	W	P	4						X	
BMW-19	07		1305	W	P	4						X	
BMW-18	08	↓	1350	W	P	4						X	

RELINQUISHED BY: (Signature) DATE/TIME 4-8-16 1730 RECEIVED BY: (Signature) Fedex
RELINQUISHED BY: (Signature) DATE/TIME 4/9/16 8:30 RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature) DATE/TIME RECEIVED BY: (Signature)

❑ DHL DISPOSAL @ $5.00 each ❑ Return

TURN AROUND TIME
RUSH ❑ CALL FIRST
1 DAY ❑ CALL FIRST
2 DAY ❑
NORMAL ☒
OTHER ❑ ____

LABORATORY USE ONLY: 4.3
RECEIVING TEMP: 3.4 THERM #: 78
CUSTODY SEALS: ❑ BROKEN ❑ INTACT ☒ NOT USED
CARRIER: ❑ LONE STAR ☒ FEDEX ❑ UPS ❑ OTHER
❑ COURIER DELIVERY
❑ HAND DELIVERED

John Dupont

From:	Sara Taube [Sara.Taube@pbwllc.com]
Sent:	Wednesday, July 22, 2015 12:05 PM
To:	John Dupont
Subject:	CCR Appendix III and IV
Follow Up Flag:	Follow up
Flag Status:	Completed

Hi John,

Here are the Appendix III and Appendix IV constituents that we will need to have analyzed under the CCR Rule.

Appendix III
Boron
Calcium
Chloride
Fluoride
pH
sulfate
TDS

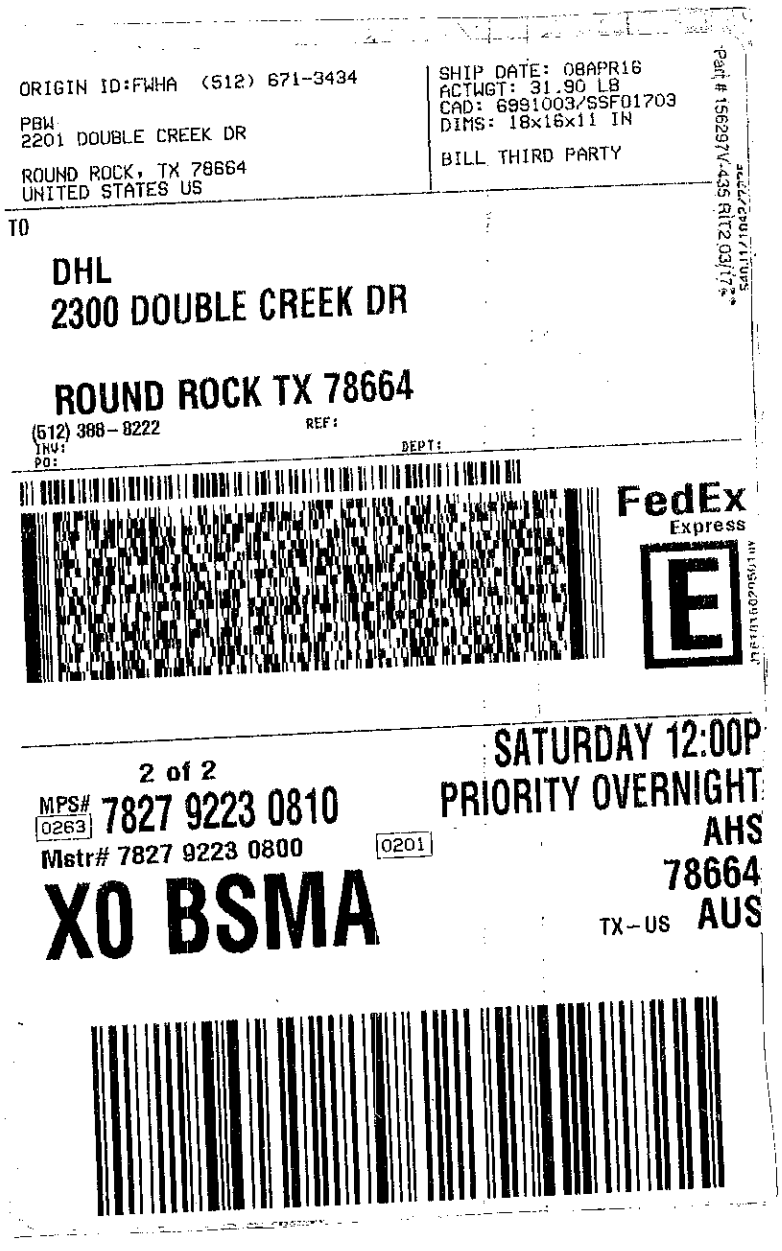
Appendix IV
Antimony
Arsenic
Barium
Beryllium
Cadmium
Chromium
Cobalt
Fluoride
Lead
Lithium
Mercury
Molybdenum
Selenium
Thallium
Radium 226 and 228

We are looking to have approximately 74 wells sampled 8 times over the course of the next two years. Please let me know if there is any more information you might need.

Cheers,

Sara

10/26/2015



ORIGIN ID:FWHA (512) 671-3434
PBW
2201 DOUBLE CREEK DR
ROUND ROCK, TX 78664
UNITED STATES US

SHIP DATE: 08APR16
ACTWGT: 31.90 LB
CAD: 6991003/SSF01703
DIMS: 18x16x11 IN
BILL THIRD PARTY

Part # 156297V-435 RIT2 03/17*

TO
DHL
2300 DOUBLE CREEK DR

ROUND ROCK TX 78664
(512) 388-8222 REF:
INV: DEPT:
PO:

FedEx Express

2 of 2
MPS# 0263 7827 9223 0810
Mstr# 7827 9223 0800
0201

SATURDAY 12:00P
PRIORITY OVERNIGHT
AHS
78664
TX-US AUS

XO BSMA

ORIGIN ID:FWHA (512) 671-3434
PBW
2201 DOUBLE CREEK DR
ROUND ROCK, TX 78664
UNITED STATES US

SHIP DATE: 08APR16
ACTWGT: 53.90 LB
CAD: 6991003/SSF01703
DIMS: 22x15x16 IN
BILL THIRD PARTY

Part # 156297V-435 RIT2 03/17*

TO
DHL
2300 DOUBLE CREEK DR

ROUND ROCK TX 78664
(512) 388-8222 REF:
INV: DEPT:
PO:

FedEx Express

1 of 2
TRK# 0201 7827 9223 0800
MASTER

SATURDAY 12:00P
PRIORITY OVERNIGHT
AHS
78664
TX-US AUS

XO BSMA

DHL Analytical, Inc.

Sample Receipt Checklist

Client Name **Pastor, Behling & Wheeler** Date Received: **4/11/2016**

Work Order Number **1604102** Received by **JT**

Checklist completed by: Signature 4/11/2016 Date Reviewed by Initials 4/11/2016 Date

Carrier name FedEx 1day

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	3.4 °C, 4.3
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH<2 acceptable upon receipt?	Yes ☑	No ☐	NA ☐ LOT # 8086
	Adjusted? NO		Checked by JT
Water - ph>9 (S) or ph>12 (CN) acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted?		Checked by

Any No response must be detailed in the comments section below.

Client contacted _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments: _____

Corrective Action _____

CLIENT: Pastor, Behling & Wheeler
Project: Luminant-Martin Lake
Lab Order: 1604102

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Method SW6020A - Metals Analysis
Method SW7470A - Mercury Analysis
Method E300 - Anions Analysis
Method M4500-H+ B - pH of a Water Analysis
Method M2540C - TDS Analysis
Sub-contract - Radium-228 and Radium-226 analyses by methods E904/9320 and SM 7500 Ra B M. Analyzed at ESC Lab Sciences.

LOG IN

The samples were received and log-in performed on 4/9/16. A total of 8 samples were received. The samples arrived in good condition and were properly packaged.

METALS ANALYSIS

For Metals analysis performed on 4/22/16 the matrix spike duplicate recovery was above control limits for Boron. This is flagged accordingly in the QC summary report. The sample selected for the matrix spike and matrix spike duplicate was not from this work order. The LCS was within control limits for this analyte. No further corrective actions were taken.

For Metals analysis performed on 4/22/16 the RPD for the serial dilution was slightly above control limits for Boron. This is flagged accordingly. The PDS was within control limits for this analyte. No further corrective actions were taken.

For Metals analysis performed on 4/22/16 LCVL1-160422 was above control limits for Boron. This is flagged accordingly. The associated CCV1-160422 was within control limits for this analyte. No further corrective actions were taken.

ANIONS ANALYSIS

For Anions analysis performed on 4/19/16 the matrix spikes and matrix spike duplicate recoveries (1604102-04 MS/MSD & 1604102-05 MS/MSD) were below control limits for Sulfate. These are flagged accordingly in the QC summary report. The samples selected for the matrix spikes and matrix spike duplicates were from this work order. The LCS was within control limits for this analyte. No further corrective actions were taken.

MERCURY ANALYSIS

CLIENT:	Pastor, Behling & Wheeler
Project:	Luminant-Martin Lake
Lab Order:	1604102

CASE NARRATIVE

For Mercury analysis performed on 4/12/16 the matrix spike and matrix spike duplicate recoveries were below control limits. These are flagged accordingly in the QC summary report. The sample selected for the matrix spike and matrix spike duplicate was from this work order. The LCS was within control limits. No further corrective actions were taken.

For Mercury analysis performed on 4/12/16 the PDS recovery was below control limits. This is flagged accordingly. The serial dilution was within control limits. No further corrective actions were taken.

DHL Analytical, Inc.

Date: *20-May-16*

CLIENT: Pastor, Behling & Wheeler
Project: Luminant-Martin Lake
Lab Order: 1604102

Work Order Sample Summary

Lab Smp ID	Client Sample ID	Tag Number	Date Collected	Date Recved
1604102-01	BMW-24		04/07/16 07:50 AM	4/9/2016
1604102-02	BMW-23		04/07/16 08:40 AM	4/9/2016
1604102-03	BMW-22		04/07/16 09:25 AM	4/9/2016
1604102-04	BMW-20		04/07/16 10:15 AM	4/9/2016
1604102-05	BMW-21		04/07/16 11:15 AM	4/9/2016
1604102-06	BMW-11AR		04/07/16 12:15 PM	4/9/2016
1604102-07	BMW-19		04/07/16 01:05 PM	4/9/2016
1604102-08	BMW-18		04/07/16 01:50 PM	4/9/2016

Lab Order: 1604102
Client: Pastor, Behling & Wheeler
Project: Luminant-Martin Lake

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1604102-01A	BMW-24	04/07/16 07:50 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/12/16 08:44 AM	74547
	BMW-24	04/07/16 07:50 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/12/16 08:44 AM	74547
	BMW-24	04/07/16 07:50 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/12/16 08:44 AM	74547
	BMW-24	04/07/16 07:50 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	04/11/16 02:23 PM	74544
1604102-01D	BMW-24	04/07/16 07:50 AM	Aqueous	E300	Anion Preparation	04/19/16 09:20 AM	74666
	BMW-24	04/07/16 07:50 AM	Aqueous	E300	Anion Preparation	04/19/16 09:20 AM	74666
	BMW-24	04/07/16 07:50 AM	Aqueous	M4500-H+ B	pH Preparation	04/13/16 08:22 AM	74564
	BMW-24	04/07/16 07:50 AM	Aqueous	M2540C	TDS Preparation	04/12/16 10:57 AM	74560
1604102-02A	BMW-23	04/07/16 08:40 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/12/16 08:44 AM	74547
	BMW-23	04/07/16 08:40 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/12/16 08:44 AM	74547
	BMW-23	04/07/16 08:40 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/12/16 08:44 AM	74547
	BMW-23	04/07/16 08:40 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	04/11/16 02:23 PM	74544
1604102-02D	BMW-23	04/07/16 08:40 AM	Aqueous	E300	Anion Preparation	04/19/16 09:20 AM	74666
	BMW-23	04/07/16 08:40 AM	Aqueous	E300	Anion Preparation	04/19/16 09:20 AM	74666
	BMW-23	04/07/16 08:40 AM	Aqueous	M4500-H+ B	pH Preparation	04/13/16 08:22 AM	74564
	BMW-23	04/07/16 08:40 AM	Aqueous	M2540C	TDS Preparation	04/12/16 10:57 AM	74560
1604102-03A	BMW-22	04/07/16 09:25 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/12/16 08:44 AM	74547
	BMW-22	04/07/16 09:25 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/12/16 08:44 AM	74547
	BMW-22	04/07/16 09:25 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	04/11/16 02:23 PM	74544
1604102-03D	BMW-22	04/07/16 09:25 AM	Aqueous	E300	Anion Preparation	04/19/16 09:20 AM	74666
	BMW-22	04/07/16 09:25 AM	Aqueous	E300	Anion Preparation	04/19/16 09:20 AM	74666
	BMW-22	04/07/16 09:25 AM	Aqueous	M4500-H+ B	pH Preparation	04/13/16 08:22 AM	74564
	BMW-22	04/07/16 09:25 AM	Aqueous	M2540C	TDS Preparation	04/12/16 10:57 AM	74560
1604102-04A	BMW-20	04/07/16 10:15 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/12/16 08:44 AM	74547
	BMW-20	04/07/16 10:15 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/12/16 08:44 AM	74547
	BMW-20	04/07/16 10:15 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/12/16 08:44 AM	74547
	BMW-20	04/07/16 10:15 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/12/16 08:44 AM	74547
	BMW-20	04/07/16 10:15 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	04/11/16 02:23 PM	74544

Lab Order: 1604102
Client: Pastor, Behling & Wheeler
Project: Luminant-Martin Lake

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1604102-04D	BMW-20	04/07/16 10:15 AM	Aqueous	E300	Anion Preparation	04/19/16 09:20 AM	74666
	BMW-20	04/07/16 10:15 AM	Aqueous	E300	Anion Preparation	04/19/16 09:20 AM	74666
	BMW-20	04/07/16 10:15 AM	Aqueous	M4500-H+ B	pH Preparation	04/13/16 08:22 AM	74564
	BMW-20	04/07/16 10:15 AM	Aqueous	M2540C	TDS Preparation	04/12/16 10:57 AM	74560
1604102-05A	BMW-21	04/07/16 11:15 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/12/16 08:44 AM	74547
	BMW-21	04/07/16 11:15 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/12/16 08:44 AM	74547
	BMW-21	04/07/16 11:15 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/12/16 08:44 AM	74547
	BMW-21	04/07/16 11:15 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	04/11/16 02:23 PM	74544
1604102-05D	BMW-21	04/07/16 11:15 AM	Aqueous	E300	Anion Preparation	04/19/16 09:20 AM	74666
	BMW-21	04/07/16 11:15 AM	Aqueous	E300	Anion Preparation	04/19/16 09:20 AM	74666
	BMW-21	04/07/16 11:15 AM	Aqueous	M4500-H+ B	pH Preparation	04/13/16 08:22 AM	74564
	BMW-21	04/07/16 11:15 AM	Aqueous	M2540C	TDS Preparation	04/12/16 10:57 AM	74560
1604102-06A	BMW-11AR	04/07/16 12:15 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/12/16 08:44 AM	74547
	BMW-11AR	04/07/16 12:15 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/12/16 08:44 AM	74547
	BMW-11AR	04/07/16 12:15 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/12/16 08:44 AM	74547
	BMW-11AR	04/07/16 12:15 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	04/11/16 02:23 PM	74544
1604102-06D	BMW-11AR	04/07/16 12:15 PM	Aqueous	E300	Anion Preparation	04/19/16 09:20 AM	74666
	BMW-11AR	04/07/16 12:15 PM	Aqueous	E300	Anion Preparation	04/19/16 09:20 AM	74666
	BMW-11AR	04/07/16 12:15 PM	Aqueous	M4500-H+ B	pH Preparation	04/13/16 08:22 AM	74564
	BMW-11AR	04/07/16 12:15 PM	Aqueous	M2540C	TDS Preparation	04/12/16 10:57 AM	74560
1604102-07A	BMW-19	04/07/16 01:05 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/12/16 08:44 AM	74547
	BMW-19	04/07/16 01:05 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/12/16 08:44 AM	74547
	BMW-19	04/07/16 01:05 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/12/16 08:44 AM	74547
	BMW-19	04/07/16 01:05 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/12/16 08:44 AM	74547
	BMW-19	04/07/16 01:05 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	04/11/16 02:23 PM	74544
1604102-07D	BMW-19	04/07/16 01:05 PM	Aqueous	E300	Anion Preparation	04/19/16 09:20 AM	74666
	BMW-19	04/07/16 01:05 PM	Aqueous	E300	Anion Preparation	04/19/16 09:20 AM	74666
	BMW-19	04/07/16 01:05 PM	Aqueous	M4500-H+ B	pH Preparation	04/13/16 08:22 AM	74564

Lab Order: 1604102
Client: Pastor, Behling & Wheeler
Project: Luminant-Martin Lake

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1604102-07D	BMW-19	04/07/16 01:05 PM	Aqueous	M2540C	TDS Preparation	04/12/16 10:57 AM	74560
1604102-08A	BMW-18	04/07/16 01:50 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/12/16 08:44 AM	74547
	BMW-18	04/07/16 01:50 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/12/16 08:44 AM	74547
	BMW-18	04/07/16 01:50 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/12/16 08:44 AM	74547
	BMW-18	04/07/16 01:50 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	04/11/16 02:23 PM	74544
1604102-08D	BMW-18	04/07/16 01:50 PM	Aqueous	E300	Anion Preparation	04/19/16 09:20 AM	74666
	BMW-18	04/07/16 01:50 PM	Aqueous	M4500-H+ B	pH Preparation	04/13/16 08:22 AM	74564
	BMW-18	04/07/16 01:50 PM	Aqueous	M2540C	TDS Preparation	04/12/16 10:57 AM	74560

Lab Order: 1604102
Client: Pastor, Behling & Wheeler
Project: Luminant-Martin Lake

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1604102-01A	BMW-24	Aqueous	SW7470A	Mercury Total: Aqueous	74544	1	04/12/16 10:46 AM	CETAC2_HG_160412A
	BMW-24	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	74547	1	04/13/16 02:24 PM	ICP-MS4_160413A
	BMW-24	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	74547	1	04/22/16 02:41 PM	ICP-MS4_160422C
	BMW-24	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	74547	10	04/22/16 02:57 PM	ICP-MS4_160422C
1604102-01D	BMW-24	Aqueous	E300	Anions by IC method - Water	74666	1	04/19/16 11:00 AM	IC2_160419A
	BMW-24	Aqueous	E300	Anions by IC method - Water	74666	10	04/19/16 02:26 PM	IC2_160419A
	BMW-24	Aqueous	M4500-H+ B	pH	74564	1	04/13/16 09:33 AM	TITRATOR_160413A
	BMW-24	Aqueous	M2540C	Total Dissolved Solids	74560	1	04/13/16 08:45 AM	WC_160412B
1604102-02A	BMW-23	Aqueous	SW7470A	Mercury Total: Aqueous	74544	1	04/12/16 10:58 AM	CETAC2_HG_160412A
	BMW-23	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	74547	1	04/22/16 02:43 PM	ICP-MS4_160422C
	BMW-23	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	74547	10	04/22/16 03:29 PM	ICP-MS4_160422C
	BMW-23	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	74547	1	04/13/16 02:26 PM	ICP-MS4_160413A
1604102-02D	BMW-23	Aqueous	E300	Anions by IC method - Water	74666	1	04/19/16 11:15 AM	IC2_160419A
	BMW-23	Aqueous	E300	Anions by IC method - Water	74666	10	04/19/16 02:41 PM	IC2_160419A
	BMW-23	Aqueous	M4500-H+ B	pH	74564	1	04/13/16 09:37 AM	TITRATOR_160413A
	BMW-23	Aqueous	M2540C	Total Dissolved Solids	74560	1	04/13/16 08:45 AM	WC_160412B
1604102-03A	BMW-22	Aqueous	SW7470A	Mercury Total: Aqueous	74544	1	04/12/16 11:00 AM	CETAC2_HG_160412A
	BMW-22	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	74547	10	04/22/16 02:45 PM	ICP-MS4_160422C
	BMW-22	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	74547	1	04/13/16 02:28 PM	ICP-MS4_160413A
1604102-03D	BMW-22	Aqueous	E300	Anions by IC method - Water	74666	1	04/19/16 11:34 AM	IC2_160419A
	BMW-22	Aqueous	E300	Anions by IC method - Water	74666	10	04/19/16 02:55 PM	IC2_160419A
	BMW-22	Aqueous	M4500-H+ B	pH	74564	1	04/13/16 09:39 AM	TITRATOR_160413A
	BMW-22	Aqueous	M2540C	Total Dissolved Solids	74560	1	04/13/16 08:45 AM	WC_160412B
1604102-04A	BMW-20	Aqueous	SW7470A	Mercury Total: Aqueous	74544	1	04/12/16 11:02 AM	CETAC2_HG_160412A
	BMW-20	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	74547	1	04/25/16 11:55 AM	ICP-MS4_160425D
	BMW-20	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	74547	10	04/22/16 03:31 PM	ICP-MS4_160422C

Lab Order: 1604102
Client: Pastor, Behling & Wheeler
Project: Luminant-Martin Lake

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1604102-04A	BMW-20	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	74547	1	04/13/16 02:30 PM	ICP-MS4_160413A
	BMW-20	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	74547	1	04/22/16 02:47 PM	ICP-MS4_160422C
1604102-04D	BMW-20	Aqueous	E300	Anions by IC method - Water	74666	1	04/19/16 11:48 AM	IC2_160419A
	BMW-20	Aqueous	E300	Anions by IC method - Water	74666	10	04/19/16 03:10 PM	IC2_160419A
	BMW-20	Aqueous	M4500-H+ B	pH	74564	1	04/13/16 09:41 AM	TITRATOR_160413A
	BMW-20	Aqueous	M2540C	Total Dissolved Solids	74560	1	04/13/16 08:45 AM	WC_160412B
1604102-05A	BMW-21	Aqueous	SW7470A	Mercury Total: Aqueous	74544	1	04/12/16 11:05 AM	CETAC2_HG_160412A
	BMW-21	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	74547	1	04/13/16 02:32 PM	ICP-MS4_160413A
	BMW-21	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	74547	1	04/22/16 02:49 PM	ICP-MS4_160422C
	BMW-21	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	74547	10	04/22/16 03:33 PM	ICP-MS4_160422C
1604102-05D	BMW-21	Aqueous	E300	Anions by IC method - Water	74666	1	04/19/16 12:03 PM	IC2_160419A
	BMW-21	Aqueous	E300	Anions by IC method - Water	74666	100	04/19/16 03:24 PM	IC2_160419A
	BMW-21	Aqueous	M4500-H+ B	pH	74564	1	04/13/16 09:44 AM	TITRATOR_160413A
	BMW-21	Aqueous	M2540C	Total Dissolved Solids	74560	1	04/13/16 08:45 AM	WC_160412B
1604102-06A	BMW-11AR	Aqueous	SW7470A	Mercury Total: Aqueous	74544	1	04/12/16 11:07 AM	CETAC2_HG_160412A
	BMW-11AR	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	74547	1	04/22/16 02:51 PM	ICP-MS4_160422C
	BMW-11AR	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	74547	10	04/22/16 03:35 PM	ICP-MS4_160422C
	BMW-11AR	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	74547	1	04/13/16 02:34 PM	ICP-MS4_160413A
1604102-06D	BMW-11AR	Aqueous	E300	Anions by IC method - Water	74666	1	04/19/16 12:17 PM	IC2_160419A
	BMW-11AR	Aqueous	E300	Anions by IC method - Water	74666	10	04/19/16 03:39 PM	IC2_160419A
	BMW-11AR	Aqueous	M4500-H+ B	pH	74564	1	04/13/16 09:47 AM	TITRATOR_160413A
	BMW-11AR	Aqueous	M2540C	Total Dissolved Solids	74560	1	04/13/16 08:45 AM	WC_160412B
1604102-07A	BMW-19	Aqueous	SW7470A	Mercury Total: Aqueous	74544	1	04/12/16 11:09 AM	CETAC2_HG_160412A
	BMW-19	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	74547	1	04/13/16 02:36 PM	ICP-MS4_160413A
	BMW-19	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	74547	1	04/22/16 02:53 PM	ICP-MS4_160422C
	BMW-19	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	74547	10	04/22/16 03:37 PM	ICP-MS4_160422C

Lab Order: 1604102
Client: Pastor, Behling & Wheeler
Project: Luminant-Martin Lake

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1604102-07A	BMW-19	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	74547	50	04/25/16 02:45 PM	ICP-MS4_160425E
1604102-07D	BMW-19	Aqueous	E300	Anions by IC method - Water	74666	1	04/19/16 12:32 PM	IC2_160419A
	BMW-19	Aqueous	E300	Anions by IC method - Water	74666	100	04/19/16 03:54 PM	IC2_160419A
	BMW-19	Aqueous	M4500-H+ B	pH	74564	1	04/13/16 09:50 AM	TITRATOR_160413A
	BMW-19	Aqueous	M2540C	Total Dissolved Solids	74560	1	04/13/16 08:45 AM	WC_160412B
1604102-08A	BMW-18	Aqueous	SW7470A	Mercury Total: Aqueous	74544	1	04/12/16 11:11 AM	CETAC2_HG_160412A
	BMW-18	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	74547	1	04/13/16 02:38 PM	ICP-MS4_160413A
	BMW-18	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	74547	1	04/22/16 02:55 PM	ICP-MS4_160422C
	BMW-18	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	74547	10	04/22/16 03:39 PM	ICP-MS4_160422C
1604102-08D	BMW-18	Aqueous	E300	Anions by IC method - Water	74666	1	04/19/16 12:47 PM	IC2_160419A
	BMW-18	Aqueous	M4500-H+ B	pH	74564	1	04/13/16 09:51 AM	TITRATOR_160413A
	BMW-18	Aqueous	M2540C	Total Dissolved Solids	74560	1	04/13/16 08:45 AM	WC_160412B

DHL Analytical, Inc.

Date: *20-May-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	BMW-24
Project:	Luminant-Martin Lake	**Lab ID:**	1604102-01
Project No:	5164-B	**Collection Date:**	04/07/16 07:50 AM
Lab Order:	1604102	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	04/12/16 10:46 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	04/13/16 02:24 PM
Arsenic	0.00376	0.00200	0.00500	J	mg/L	1	04/13/16 02:24 PM
Barium	0.202	0.00300	0.0100		mg/L	1	04/13/16 02:24 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	04/13/16 02:24 PM
Boron	0.532	0.0100	0.0300		mg/L	1	04/22/16 02:41 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	04/13/16 02:24 PM
Calcium	63.4	1.00	3.00		mg/L	10	04/22/16 02:57 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	04/13/16 02:24 PM
Cobalt	0.0238	0.00300	0.00500		mg/L	1	04/13/16 02:24 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	04/13/16 02:24 PM
Lithium	0.0415	0.00500	0.0100		mg/L	1	04/13/16 02:24 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	04/13/16 02:24 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	04/13/16 02:24 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	04/13/16 02:24 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	224	3.00	10.0		mg/L	10	04/19/16 02:26 PM
Fluoride	0.109	0.100	0.400	J	mg/L	1	04/19/16 11:00 AM
Sulfate	240	10.0	30.0		mg/L	10	04/19/16 02:26 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.56	0	0		pH Units@19.4℃	1	04/13/16 09:33 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	1100	10.0	10.0		mg/L	1	04/13/16 08:45 AM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *20-May-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	BMW-23
Project:	Luminant-Martin Lake	**Lab ID:**	1604102-02
Project No:	5164-B	**Collection Date:**	04/07/16 08:40 AM
Lab Order:	1604102	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	04/12/16 10:58 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	04/13/16 02:26 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	04/13/16 02:26 PM
Barium	0.0472	0.00300	0.0100		mg/L	1	04/13/16 02:26 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	04/13/16 02:26 PM
Boron	1.22	0.0100	0.0300		mg/L	1	04/22/16 02:43 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	04/13/16 02:26 PM
Calcium	95.1	1.00	3.00		mg/L	10	04/22/16 03:29 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	04/13/16 02:26 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	04/13/16 02:26 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	04/13/16 02:26 PM
Lithium	0.0950	0.00500	0.0100		mg/L	1	04/13/16 02:26 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	04/13/16 02:26 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	04/13/16 02:26 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	04/13/16 02:26 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	221	3.00	10.0		mg/L	10	04/19/16 02:41 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	04/19/16 11:15 AM
Sulfate	503	10.0	30.0		mg/L	10	04/19/16 02:41 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.89	0	0		pH Units@19.3℃	1	04/13/16 09:37 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	1510	50.0	50.0		mg/L	1	04/13/16 08:45 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *20-May-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	BMW-22
Project:	Luminant-Martin Lake	**Lab ID:**	1604102-03
Project No:	5164-B	**Collection Date:**	04/07/16 09:25 AM
Lab Order:	1604102	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	04/12/16 11:00 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	04/13/16 02:28 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	04/13/16 02:28 PM
Barium	0.0720	0.00300	0.0100		mg/L	1	04/13/16 02:28 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	04/13/16 02:28 PM
Boron	3.34	0.100	0.300		mg/L	10	04/22/16 02:45 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	04/13/16 02:28 PM
Calcium	202	1.00	3.00		mg/L	10	04/22/16 02:45 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	04/13/16 02:28 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	04/13/16 02:28 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	04/13/16 02:28 PM
Lithium	0.0773	0.00500	0.0100		mg/L	1	04/13/16 02:28 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	04/13/16 02:28 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	04/13/16 02:28 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	04/13/16 02:28 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	256	3.00	10.0		mg/L	10	04/19/16 02:55 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	04/19/16 11:34 AM
Sulfate	839	10.0	30.0		mg/L	10	04/19/16 02:55 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	7.11	0	0		pH Units@20.2℃	1	04/13/16 09:39 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	2230	50.0	50.0		mg/L	1	04/13/16 08:45 AM

Qualifiers:					
	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *20-May-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	BMW-20
Project:	Luminant-Martin Lake	**Lab ID:**	1604102-04
Project No:	5164-B	**Collection Date:**	04/07/16 10:15 AM
Lab Order:	1604102	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	04/12/16 11:02 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	04/13/16 02:30 PM
Arsenic	0.00411	0.00200	0.00500	J	mg/L	1	04/13/16 02:30 PM
Barium	0.0912	0.00300	0.0100		mg/L	1	04/13/16 02:30 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	04/13/16 02:30 PM
Boron	0.0787	0.0100	0.0300		mg/L	1	04/25/16 11:55 AM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	04/13/16 02:30 PM
Calcium	80.0	1.00	3.00		mg/L	10	04/22/16 03:31 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	04/13/16 02:30 PM
Cobalt	0.0276	0.00300	0.00500		mg/L	1	04/13/16 02:30 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	04/13/16 02:30 PM
Lithium	<0.00500	0.00500	0.0100		mg/L	1	04/13/16 02:30 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	04/13/16 02:30 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	04/13/16 02:30 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	04/13/16 02:30 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	30.0	0.300	1.00		mg/L	1	04/19/16 11:48 AM
Fluoride	<0.100	0.100	0.400		mg/L	1	04/19/16 11:48 AM
Sulfate	219	10.0	30.0		mg/L	10	04/19/16 03:10 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.13	0	0		pH Units@19.4℃	1	04/13/16 09:41 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	600	10.0	10.0		mg/L	1	04/13/16 08:45 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *20-May-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	BMW-21
Project:	Luminant-Martin Lake	**Lab ID:**	1604102-05
Project No:	5164-B	**Collection Date:**	04/07/16 11:15 AM
Lab Order:	1604102	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	04/12/16 11:05 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	04/13/16 02:32 PM
Arsenic	0.00337	0.00200	0.00500	J	mg/L	1	04/13/16 02:32 PM
Barium	0.0472	0.00300	0.0100		mg/L	1	04/13/16 02:32 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	04/13/16 02:32 PM
Boron	0.990	0.0100	0.0300		mg/L	1	04/22/16 02:49 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	04/13/16 02:32 PM
Calcium	158	1.00	3.00		mg/L	10	04/22/16 03:33 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	04/13/16 02:32 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	04/13/16 02:32 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	04/13/16 02:32 PM
Lithium	0.0653	0.00500	0.0100		mg/L	1	04/13/16 02:32 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	04/13/16 02:32 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	04/13/16 02:32 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	04/13/16 02:32 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	373	30.0	100		mg/L	100	04/19/16 03:24 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	04/19/16 12:03 PM
Sulfate	454	100	300		mg/L	100	04/19/16 03:24 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	7.50	0	0		pH Units@19.7℃	1	04/13/16 09:44 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	2190	50.0	50.0		mg/L	1	04/13/16 08:45 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *20-May-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	BMW-11AR
Project:	Luminant-Martin Lake	**Lab ID:**	1604102-06
Project No:	5164-B	**Collection Date:**	04/07/16 12:15 PM
Lab Order:	1604102	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	04/12/16 11:07 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	04/13/16 02:34 PM
Arsenic	0.00614	0.00200	0.00500		mg/L	1	04/13/16 02:34 PM
Barium	0.0929	0.00300	0.0100		mg/L	1	04/13/16 02:34 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	04/13/16 02:34 PM
Boron	0.391	0.0100	0.0300		mg/L	1	04/22/16 02:51 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	04/13/16 02:34 PM
Calcium	151	1.00	3.00		mg/L	10	04/22/16 03:35 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	04/13/16 02:34 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	04/13/16 02:34 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	04/13/16 02:34 PM
Lithium	0.0195	0.00500	0.0100		mg/L	1	04/13/16 02:34 PM
Molybdenum	0.00444	0.00200	0.00500	J	mg/L	1	04/13/16 02:34 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	04/13/16 02:34 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	04/13/16 02:34 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	17.5	0.300	1.00		mg/L	1	04/19/16 12:17 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	04/19/16 12:17 PM
Sulfate	334	10.0	30.0		mg/L	10	04/19/16 03:39 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	7.33	0	0		pH Units@19.8℃	1	04/13/16 09:47 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	1290	50.0	50.0		mg/L	1	04/13/16 08:45 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *20-May-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	BMW-19
Project:	Luminant-Martin Lake	**Lab ID:**	1604102-07
Project No:	5164-B	**Collection Date:**	04/07/16 01:05 PM
Lab Order:	1604102	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	04/12/16 11:09 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	04/13/16 02:36 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	04/13/16 02:36 PM
Barium	0.0178	0.00300	0.0100		mg/L	1	04/13/16 02:36 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	04/13/16 02:36 PM
Boron	0.424	0.0100	0.0300		mg/L	1	04/22/16 02:53 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	04/13/16 02:36 PM
Calcium	480	5.00	15.0		mg/L	50	04/25/16 02:45 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	04/13/16 02:36 PM
Cobalt	0.0137	0.00300	0.00500		mg/L	1	04/13/16 02:36 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	04/13/16 02:36 PM
Lithium	0.0591	0.00500	0.0100		mg/L	1	04/13/16 02:36 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	04/13/16 02:36 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	04/13/16 02:36 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	04/13/16 02:36 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	8.46	0.300	1.00		mg/L	1	04/19/16 12:32 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	04/19/16 12:32 PM
Sulfate	2270	100	300		mg/L	100	04/19/16 03:54 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	7.18	0	0		pH Units@20.4℃	1	04/13/16 09:50 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	3740	50.0	50.0		mg/L	1	04/13/16 08:45 AM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *20-May-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	BMW-18
Project:	Luminant-Martin Lake	**Lab ID:**	1604102-08
Project No:	5164-B	**Collection Date:**	04/07/16 01:50 PM
Lab Order:	1604102	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	04/12/16 11:11 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	04/13/16 02:38 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	04/13/16 02:38 PM
Barium	0.0306	0.00300	0.0100		mg/L	1	04/13/16 02:38 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	04/13/16 02:38 PM
Boron	0.423	0.0100	0.0300		mg/L	1	04/22/16 02:55 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	04/13/16 02:38 PM
Calcium	7.08	1.00	3.00		mg/L	10	04/22/16 03:39 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	04/13/16 02:38 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	04/13/16 02:38 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	04/13/16 02:38 PM
Lithium	0.0171	0.00500	0.0100		mg/L	1	04/13/16 02:38 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	04/13/16 02:38 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	04/13/16 02:38 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	04/13/16 02:38 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	16.3	0.300	1.00		mg/L	1	04/19/16 12:47 PM
Fluoride	0.117	0.100	0.400	J	mg/L	1	04/19/16 12:47 PM
Sulfate	87.4	1.00	3.00		mg/L	1	04/19/16 12:47 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	8.59	0	0		pH Units@20.6℃	1	04/13/16 09:51 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	489	10.0	10.0		mg/L	1	04/13/16 08:45 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT: Pastor, Behling & Wheeler
Work Order: 1604102
Project: Luminant-Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_160412A

The QC data in batch 74544 applies to the following samples: 1604102-01A, 1604102-02A, 1604102-03A, 1604102-04A, 1604102-05A, 1604102-06A, 1604102-07A, 1604102-08A

Sample ID	**MB-74544**	Batch ID:	**74544**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**CETAC2_HG_160412A**	Analysis Date:	**4/12/2016 10:35:37 AM**	Prep Date:	**4/11/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.0000800	0.000200								

Sample ID	**LCS-74544**	Batch ID:	**74544**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**CETAC2_HG_160412A**	Analysis Date:	**4/12/2016 10:40:09 AM**	Prep Date:	**4/11/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00203	0.000200	0.00200	0	102	85	115			

Sample ID	**LCSD-74544**	Batch ID:	**74544**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**LCSD**	Run ID:	**CETAC2_HG_160412A**	Analysis Date:	**4/12/2016 10:42:25 AM**	Prep Date:	**4/11/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00189	0.000200	0.00200	0	94.5	85	115	7.14	15	

Sample ID	**1604102-01A SD**	Batch ID:	**74544**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**SD**	Run ID:	**CETAC2_HG_160412A**	Analysis Date:	**4/12/2016 10:49:12 AM**	Prep Date:	**4/11/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.000400	0.00100	0	0				0	10	

Sample ID	**1604102-01A PDS**	Batch ID:	**74544**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**PDS**	Run ID:	**CETAC2_HG_160412A**	Analysis Date:	**4/12/2016 10:51:28 AM**	Prep Date:	**4/11/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00147	0.000200	0.00250	0	58.8	85	115			S

Sample ID	**1604102-01A MS**	Batch ID:	**74544**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**MS**	Run ID:	**CETAC2_HG_160412A**	Analysis Date:	**4/12/2016 10:53:44 AM**	Prep Date:	**4/11/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00113	0.000200	0.00200	0	56.5	80	120			S

Sample ID	**1604102-01A MSD**	Batch ID:	**74544**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**MSD**	Run ID:	**CETAC2_HG_160412A**	Analysis Date:	**4/12/2016 10:56:00 AM**	Prep Date:	**4/11/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00111	0.000200	0.00200	0	55.5	80	120	1.79	15	S

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1604102
Project: Luminant-Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_160412A

Sample ID **ICV-160412**	Batch ID: **R85189**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **ICV**	Run ID: **CETAC2_HG_160412A**	Analysis Date: **4/12/2016 10:31:03 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00395	0.000200	0.00400	0	98.8	90	110			

Sample ID **CCV1-160412**	Batch ID: **R85189**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_160412A**	Analysis Date: **4/12/2016 11:14:10 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00201	0.000200	0.00200	0	101	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1604102
Project: Luminant-Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160413A

The QC data in batch 74547 applies to the following samples: 1604102-01A, 1604102-02A, 1604102-03A, 1604102-04A, 1604102-05A, 1604102-06A, 1604102-07A, 1604102-08A

Sample ID **MB-74547** Batch ID: **74547** TestNo: **SW6020A** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_160413A** Analysis Date: **4/13/2016 2:12:00 PM** Prep Date: **4/12/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.000800	0.00250								
Arsenic	<0.00200	0.00500								
Barium	<0.00300	0.0100								
Beryllium	<0.000300	0.00100								
Cadmium	<0.000300	0.00100								
Calcium	<0.100	0.300								
Chromium	<0.00200	0.00500								
Cobalt	<0.00300	0.00500								
Lead	<0.000300	0.00100								
Lithium	<0.00500	0.0100								
Molybdenum	<0.00200	0.00500								
Selenium	<0.00200	0.00500								
Thallium	<0.000500	0.00150								

Sample ID **LCS-74547** Batch ID: **74547** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_160413A** Analysis Date: **4/13/2016 2:14:00 PM** Prep Date: **4/12/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.199	0.00250	0.200	0	99.7	80	120			
Arsenic	0.197	0.00500	0.200	0	98.7	80	120			
Barium	0.199	0.0100	0.200	0	99.6	80	120			
Beryllium	0.203	0.00100	0.200	0	101	80	120			
Cadmium	0.199	0.00100	0.200	0	99.7	80	120			
Calcium	4.85	0.300	5.00	0	96.9	80	120			
Chromium	0.200	0.00500	0.200	0	100	80	120			
Cobalt	0.201	0.00500	0.200	0	100	80	120			
Lead	0.198	0.00100	0.200	0	99.0	80	120			
Lithium	0.207	0.0100	0.200	0	104	80	120			
Molybdenum	0.196	0.00500	0.200	0	98.1	80	120			
Selenium	0.198	0.00500	0.200	0	99.0	80	120			
Thallium	0.198	0.00150	0.200	0	99.0	80	120			

Sample ID **LCSD-74547** Batch ID: **74547** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_160413A** Analysis Date: **4/13/2016 2:16:00 PM** Prep Date: **4/12/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.200	0.00250	0.200	0	100	80	120	0.499	15	
Arsenic	0.199	0.00500	0.200	0	99.4	80	120	0.632	15	
Barium	0.200	0.0100	0.200	0	99.8	80	120	0.173	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1604102
Project: Luminant-Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160413A

Sample ID **LCSD-74547**	Batch ID: **74547**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCSD**	Run ID: **ICP-MS4_160413A**	Analysis Date: **4/13/2016 2:16:00 PM**	Prep Date: **4/12/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.204	0.00100	0.200	0	102	80	120	0.354	15	
Cadmium	0.203	0.00100	0.200	0	101	80	120	1.69	15	
Calcium	4.85	0.300	5.00	0	97.0	80	120	0.067	15	
Chromium	0.200	0.00500	0.200	0	100	80	120	0.070	15	
Cobalt	0.201	0.00500	0.200	0	100	80	120	0.042	15	
Lead	0.198	0.00100	0.200	0	98.8	80	120	0.182	15	
Lithium	0.204	0.0100	0.200	0	102	80	120	1.46	15	
Molybdenum	0.196	0.00500	0.200	0	97.9	80	120	0.227	15	
Selenium	0.196	0.00500	0.200	0	98.2	80	120	0.749	15	
Thallium	0.196	0.00150	0.200	0	97.8	80	120	1.29	15	

Sample ID **1604103-01A SD**	Batch ID: **74547**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS4_160413A**	Analysis Date: **4/13/2016 2:22:00 PM**	Prep Date: **4/12/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.00400	0.0125	0	0				0	10	
Arsenic	<0.0100	0.0250	0	0				0	10	
Barium	0.0627	0.0500	0	0.0616				1.68	10	
Beryllium	<0.00150	0.00500	0	0				0	10	
Cadmium	<0.00150	0.00500	0	0				0	10	
Chromium	0.0113	0.0250	0	0.0111				1.92	10	
Cobalt	<0.0150	0.0250	0	0				0	10	
Lead	<0.00150	0.00500	0	0.000338				0	10	
Lithium	<0.0250	0.0500	0	0.0106				0	10	
Molybdenum	0.321	0.0250	0	0.320				0.281	10	
Selenium	0.0345	0.0250	0	0.0333				3.54	10	
Thallium	<0.00250	0.00750	0	0				0	10	

Sample ID **1604103-01A PDS**	Batch ID: **74547**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_160413A**	Analysis Date: **4/13/2016 2:42:00 PM**	Prep Date: **4/12/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.199	0.00250	0.200	0	99.6	80	120			
Arsenic	0.196	0.00500	0.200	0	97.8	80	120			
Barium	0.252	0.0100	0.200	0.0616	95.4	80	120			
Beryllium	0.191	0.00100	0.200	0	95.3	80	120			
Cadmium	0.186	0.00100	0.200	0	93.2	80	120			
Chromium	0.208	0.00500	0.200	0.0111	98.3	80	120			
Cobalt	0.192	0.00500	0.200	0	96.0	80	120			
Lead	0.191	0.00100	0.200	0.000338	95.1	80	120			
Lithium	0.196	0.0100	0.200	0.0106	92.5	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1604102
Project: Luminant-Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160413A

Sample ID **1604103-01A PDS**	Batch ID: **74547**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_160413A**	Analysis Date: **4/13/2016 2:42:00 PM**	Prep Date: **4/12/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Molybdenum	0.500	0.00500	0.200	0.320	89.6	80	120			
Selenium	0.226	0.00500	0.200	0.0333	96.1	80	120			
Thallium	0.188	0.00150	0.200	0	93.9	80	120			

Sample ID **1604103-01A MS**	Batch ID: **74547**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS4_160413A**	Analysis Date: **4/13/2016 2:44:00 PM**	Prep Date: **4/12/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.198	0.00250	0.200	0	99.0	80	120			
Arsenic	0.201	0.00500	0.200	0	101	80	120			
Barium	0.254	0.0100	0.200	0.0616	96.3	80	120			
Beryllium	0.195	0.00100	0.200	0	97.6	80	120			
Cadmium	0.190	0.00100	0.200	0	95.0	80	120			
Calcium	209	0.300	5.00	204	103	80	120			
Chromium	0.193	0.00500	0.200	0.0111	90.8	80	120			
Cobalt	0.195	0.00500	0.200	0	97.3	80	120			
Lead	0.195	0.00100	0.200	0.000338	97.4	80	120			
Lithium	0.199	0.0100	0.200	0.0106	94.2	80	120			
Molybdenum	0.514	0.00500	0.200	0.320	97.0	80	120			
Selenium	0.235	0.00500	0.200	0.0333	101	80	120			
Thallium	0.194	0.00150	0.200	0	97.2	80	120			

Sample ID **1604103-01A MSD**	Batch ID: **74547**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS4_160413A**	Analysis Date: **4/13/2016 2:46:00 PM**	Prep Date: **4/12/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.202	0.00250	0.200	0	101	80	120	1.84	15	
Arsenic	0.201	0.00500	0.200	0	101	80	120	0.088	15	
Barium	0.258	0.0100	0.200	0.0616	98.0	80	120	1.32	15	
Beryllium	0.189	0.00100	0.200	0	94.5	80	120	3.18	15	
Cadmium	0.192	0.00100	0.200	0	96.0	80	120	0.987	15	
Calcium	210	0.300	5.00	204	110	80	120	0.170	15	
Chromium	0.192	0.00500	0.200	0.0111	90.6	80	120	0.187	15	
Cobalt	0.192	0.00500	0.200	0	96.1	80	120	1.28	15	
Lead	0.195	0.00100	0.200	0.000338	97.5	80	120	0.121	15	
Lithium	0.202	0.0100	0.200	0.0106	95.8	80	120	1.52	15	
Molybdenum	0.521	0.00500	0.200	0.320	100	80	120	1.27	15	
Selenium	0.233	0.00500	0.200	0.0333	99.7	80	120	1.12	15	
Thallium	0.195	0.00150	0.200	0	97.7	80	120	0.499	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1604102
Project: Luminant-Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160413A

Sample ID **ICV-160413**	Batch ID: **R85219**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_160413A**	Analysis Date: **4/13/2016 10:50:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.0999	0.00250	0.100	0	99.9	90	110			
Arsenic	0.0990	0.00500	0.100	0	99.0	90	110			
Barium	0.0998	0.0100	0.100	0	99.8	90	110			
Beryllium	0.0947	0.00100	0.100	0	94.7	90	110			
Cadmium	0.0994	0.00100	0.100	0	99.4	90	110			
Calcium	2.34	0.300	2.50	0	93.7	90	110			
Chromium	0.103	0.00500	0.100	0	103	90	110			
Cobalt	0.103	0.00500	0.100	0	103	90	110			
Lead	0.100	0.00100	0.100	0	100	90	110			
Lithium	0.0945	0.0100	0.100	0	94.5	90	110			
Molybdenum	0.0980	0.00500	0.100	0	98.0	90	110			
Selenium	0.100	0.00500	0.100	0	100	90	110			
Thallium	0.0981	0.00150	0.100	0	98.1	90	110			

Sample ID **LCVL-160413**	Batch ID: **R85219**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160413A**	Analysis Date: **4/13/2016 10:56:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00186	0.00250	0.00200	0	93.0	70	130			
Arsenic	0.00481	0.00500	0.00500	0	96.2	70	130			
Barium	0.00478	0.0100	0.00500	0	95.7	70	130			
Beryllium	0.000836	0.00100	0.00100	0	83.6	70	130			
Cadmium	0.000938	0.00100	0.00100	0	93.8	70	130			
Calcium	0.0872	0.300	0.100	0	87.2	70	130			
Chromium	0.00519	0.00500	0.00500	0	104	70	130			
Cobalt	0.00495	0.00500	0.00500	0	99.0	70	130			
Lead	0.000984	0.00100	0.00100	0	98.4	70	130			
Lithium	0.00998	0.0100	0.0100	0	99.8	70	130			
Molybdenum	0.00476	0.00500	0.00500	0	95.3	70	130			
Selenium	0.00483	0.00500	0.00500	0	96.5	70	130			
Thallium	0.000942	0.00150	0.00100	0	94.2	70	130			

Sample ID **CCV4-160413**	Batch ID: **R85219**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160413A**	Analysis Date: **4/13/2016 1:59:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.196	0.00250	0.200	0	98.0	90	110			
Arsenic	0.194	0.00500	0.200	0	97.1	90	110			
Barium	0.193	0.0100	0.200	0	96.6	90	110			
Beryllium	0.196	0.00100	0.200	0	97.8	90	110			
Cadmium	0.194	0.00100	0.200	0	97.1	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

Sample ID **CCV4-160413**	Batch ID: **R85219**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160413A**	Analysis Date: **4/13/2016 1:59:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.68	0.300	5.00	0	93.6	90	110			
Chromium	0.196	0.00500	0.200	0	98.1	90	110			
Cobalt	0.197	0.00500	0.200	0	98.5	90	110			
Lead	0.193	0.00100	0.200	0	96.3	90	110			
Lithium	0.200	0.0100	0.200	0	99.8	90	110			
Molybdenum	0.192	0.00500	0.200	0	96.0	90	110			
Selenium	0.196	0.00500	0.200	0	98.1	90	110			
Thallium	0.192	0.00150	0.200	0	95.9	90	110			

Sample ID **LCVL4-160413**	Batch ID: **R85219**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160413A**	Analysis Date: **4/13/2016 2:03:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00194	0.00250	0.00200	0	97.0	70	130			
Arsenic	0.00485	0.00500	0.00500	0	97.0	70	130			
Barium	0.00477	0.0100	0.00500	0	95.3	70	130			
Beryllium	0.000825	0.00100	0.00100	0	82.5	70	130			
Cadmium	0.000962	0.00100	0.00100	0	96.2	70	130			
Calcium	0.0864	0.300	0.100	0	86.4	70	130			
Chromium	0.00501	0.00500	0.00500	0	100	70	130			
Cobalt	0.00483	0.00500	0.00500	0	96.6	70	130			
Lead	0.000893	0.00100	0.00100	0	89.3	70	130			
Lithium	0.0106	0.0100	0.0100	0	106	70	130			
Molybdenum	0.00466	0.00500	0.00500	0	93.1	70	130			
Selenium	0.00438	0.00500	0.00500	0	87.6	70	130			
Thallium	0.000934	0.00150	0.00100	0	93.4	70	130			

Sample ID **CCV5-160413**	Batch ID: **R85219**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160413A**	Analysis Date: **4/13/2016 2:48:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.200	0.00250	0.200	0	99.9	90	110			
Arsenic	0.195	0.00500	0.200	0	97.5	90	110			
Barium	0.195	0.0100	0.200	0	97.7	90	110			
Beryllium	0.198	0.00100	0.200	0	98.8	90	110			
Cadmium	0.194	0.00100	0.200	0	97.2	90	110			
Calcium	4.76	0.300	5.00	0	95.1	90	110			
Chromium	0.197	0.00500	0.200	0	98.3	90	110			
Cobalt	0.198	0.00500	0.200	0	98.8	90	110			
Lead	0.193	0.00100	0.200	0	96.3	90	110			
Lithium	0.202	0.0100	0.200	0	101	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1604102
Project: Luminant-Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160413A

Sample ID **CCV5-160413**	Batch ID: **R85219**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160413A**	Analysis Date: **4/13/2016 2:48:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Molybdenum	0.191	0.00500	0.200	0	95.5	90	110			
Selenium	0.196	0.00500	0.200	0	97.8	90	110			
Thallium	0.192	0.00150	0.200	0	95.8	90	110			

Sample ID **LCVL5-160413**	Batch ID: **R85219**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160413A**	Analysis Date: **4/13/2016 2:53:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00198	0.00250	0.00200	0	98.9	70	130			
Arsenic	0.00483	0.00500	0.00500	0	96.6	70	130			
Barium	0.00481	0.0100	0.00500	0	96.2	70	130			
Beryllium	0.000931	0.00100	0.00100	0	93.1	70	130			
Cadmium	0.000962	0.00100	0.00100	0	96.2	70	130			
Calcium	0.0937	0.300	0.100	0	93.7	70	130			
Chromium	0.00506	0.00500	0.00500	0	101	70	130			
Cobalt	0.00490	0.00500	0.00500	0	97.9	70	130			
Lead	0.000923	0.00100	0.00100	0	92.3	70	130			
Lithium	0.0115	0.0100	0.0100	0	115	70	130			
Molybdenum	0.00476	0.00500	0.00500	0	95.2	70	130			
Selenium	0.00463	0.00500	0.00500	0	92.6	70	130			
Thallium	0.000956	0.00150	0.00100	0	95.6	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1604102
Project: Luminant-Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160422C

The QC data in batch 74547 applies to the following samples: 1604102-01A, 1604102-02A, 1604102-03A, 1604102-04A, 1604102-05A, 1604102-06A, 1604102-07A, 1604102-08A

Sample ID **MB-74547** Batch ID: **74547** TestNo: **SW6020A** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_160422C** Analysis Date: **4/22/2016 2:29:00 PM** Prep Date: **4/12/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	<0.0100	0.0300								

Sample ID **LCS-74547** Batch ID: **74547** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_160422C** Analysis Date: **4/22/2016 2:31:00 PM** Prep Date: **4/12/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.189	0.0300	0.200	0	94.4	80	120			

Sample ID **LCSD-74547** Batch ID: **74547** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_160422C** Analysis Date: **4/22/2016 2:33:00 PM** Prep Date: **4/12/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.199	0.0300	0.200	0	99.4	80	120	5.09	15	

Sample ID **1604103-01A SD** Batch ID: **74547** TestNo: **SW6020A** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS4_160422C** Analysis Date: **4/22/2016 2:39:00 PM** Prep Date: **4/12/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	5.94	1.50	0	5.31				11.2	10	R
Calcium	209	15.0	0	209				0.068	10	

Sample ID **1604103-01A PDS** Batch ID: **74547** TestNo: **SW6020A** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS4_160422C** Analysis Date: **4/22/2016 3:03:00 PM** Prep Date: **4/12/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	7.30	0.300	2.00	5.31	99.5	80	120			
Calcium	252	3.00	50.0	209	87.0	80	120			

Sample ID **1604103-01A MS** Batch ID: **74547** TestNo: **SW6020A** Units: **mg/L**
SampType: **MS** Run ID: **ICP-MS4_160422C** Analysis Date: **4/22/2016 3:05:00 PM** Prep Date: **4/12/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	5.54	0.300	0.200	5.31	116	80	120			

Sample ID **1604103-01A MSD** Batch ID: **74547** TestNo: **SW6020A** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS4_160422C** Analysis Date: **4/22/2016 3:07:00 PM** Prep Date: **4/12/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	5.64	0.300	0.200	5.31	166	80	120	1.80	15	S

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1604102
Project: Luminant-Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160422C

Sample ID **ICV-160422**	Batch ID: **R85415**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_160422C**	Analysis Date: **4/22/2016 2:16:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0981	0.0300	0.100	0	98.1	90	110			
Calcium	2.33	0.300	2.50	0	93.3	90	110			

Sample ID **LCVL-160422**	Batch ID: **R85415**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160422C**	Analysis Date: **4/22/2016 2:23:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0163	0.0300	0.0200	0	81.7	70	130			
Calcium	0.0875	0.300	0.100	0	87.5	70	130			

Sample ID **CCV1-160422**	Batch ID: **R85415**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160422C**	Analysis Date: **4/22/2016 3:15:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.191	0.0300	0.200	0	95.6	90	110			
Calcium	4.80	0.300	5.00	0	96.0	90	110			

Sample ID **LCVL1-160422**	Batch ID: **R85415**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160422C**	Analysis Date: **4/22/2016 3:25:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0310	0.0300	0.0200	0	155	70	130			S
Calcium	0.0895	0.300	0.100	0	89.5	70	130			

Sample ID **CCV2-160422**	Batch ID: **R85415**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160422C**	Analysis Date: **4/22/2016 3:43:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.87	0.300	5.00	0	97.3	90	110			

Sample ID **LCVL2-160422**	Batch ID: **R85415**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160422C**	Analysis Date: **4/22/2016 3:47:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.0920	0.300	0.100	0	92.0	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1604102
Project: Luminant-Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160425D

Sample ID **ICV-160425**	Batch ID: **R85420**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_160425D**	Analysis Date: **4/25/2016 10:36:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.104	0.0300	0.100	0	104	90	110			

Sample ID **LCVL-160425**	Batch ID: **R85420**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160425D**	Analysis Date: **4/25/2016 10:47:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0164	0.0300	0.0200	0	81.8	70	130			

Sample ID **CCV1-160425**	Batch ID: **R85420**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160425D**	Analysis Date: **4/25/2016 11:37:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.217	0.0300	0.200	0	109	90	110			

Sample ID **LCVL1-160425**	Batch ID: **R85420**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160425D**	Analysis Date: **4/25/2016 11:48:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0225	0.0300	0.0200	0	112	70	130			

Sample ID **CCV2-160425**	Batch ID: **R85420**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160425D**	Analysis Date: **4/25/2016 12:28:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.200	0.0300	0.200	0	99.9	90	110			

Sample ID **LCVL2-160425**	Batch ID: **R85420**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160425D**	Analysis Date: **4/25/2016 12:34:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0166	0.0300	0.0200	0	83.0	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1604102
Project: Luminant-Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160425E

Sample ID **ICV-160425**	Batch ID: **R85434**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_160425E**	Analysis Date: **4/25/2016 10:36:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	2.37	0.300	2.50	0	94.9	90	110			

Sample ID **LCVL-160425**	Batch ID: **R85434**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160425E**	Analysis Date: **4/25/2016 10:47:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.0899	0.300	0.100	0	89.9	70	130			

Sample ID **CCV5-160425**	Batch ID: **R85434**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160425E**	Analysis Date: **4/25/2016 2:28:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.94	0.300	5.00	0	98.8	90	110			

Sample ID **LCVL5-160425**	Batch ID: **R85434**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160425E**	Analysis Date: **4/25/2016 2:32:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.0971	0.300	0.100	0	97.1	70	130			

Sample ID **CCV6-160425**	Batch ID: **R85434**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160425E**	Analysis Date: **4/25/2016 2:59:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.94	0.300	5.00	0	98.8	90	110			

Sample ID **LCVL6-160425**	Batch ID: **R85434**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160425E**	Analysis Date: **4/25/2016 3:13:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.0911	0.300	0.100	0	91.1	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1604102
Project: Luminant-Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_160419A

The QC data in batch 74666 applies to the following samples: 1604102-01D, 1604102-02D, 1604102-03D, 1604102-04D, 1604102-05D, 1604102-06D, 1604102-07D, 1604102-08D

Sample ID **MB-74666** Batch ID: **74666** TestNo: **E300** Units: **mg/L**
SampType: **MBLK** Run ID: **IC2_160419A** Analysis Date: **4/19/2016 9:55:13 AM** Prep Date: **4/19/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00								
Fluoride	<0.100	0.400								
Sulfate	<1.00	3.00								

Sample ID **LCS-74666** Batch ID: **74666** TestNo: **E300** Units: **mg/L**
SampType: **LCS** Run ID: **IC2_160419A** Analysis Date: **4/19/2016 10:09:50 AM** Prep Date: **4/19/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.30	1.00	10.00	0	93.0	90	110			
Fluoride	3.70	0.400	4.000	0	92.4	90	110			
Sulfate	29.6	3.00	30.00	0	98.7	90	110			

Sample ID **LCSD-74666** Batch ID: **74666** TestNo: **E300** Units: **mg/L**
SampType: **LCSD** Run ID: **IC2_160419A** Analysis Date: **4/19/2016 10:24:26 AM** Prep Date: **4/19/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.29	1.00	10.00	0	92.9	90	110	0.159	20	
Fluoride	3.72	0.400	4.000	0	93.1	90	110	0.787	20	
Sulfate	29.6	3.00	30.00	0	98.7	90	110	0.053	20	

Sample ID **1604102-04DMS** Batch ID: **74666** TestNo: **E300** Units: **mg/L**
SampType: **MS** Run ID: **IC2_160419A** Analysis Date: **4/19/2016 4:12:09 PM** Prep Date: **4/19/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	224	10.0	200.0	29.44	97.2	90	110			
Fluoride	197	4.00	200.0	0	98.3	90	110			
Sulfate	378	30.0	200.0	219.3	79.1	90	110			S

Sample ID **1604102-04DMSD** Batch ID: **74666** TestNo: **E300** Units: **mg/L**
SampType: **MSD** Run ID: **IC2_160419A** Analysis Date: **4/19/2016 4:26:45 PM** Prep Date: **4/19/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	225	10.0	200.0	29.44	97.7	90	110	0.454	20	
Fluoride	197	4.00	200.0	0	98.7	90	110	0.483	20	
Sulfate	379	30.0	200.0	219.3	80.0	90	110	0.459	20	S

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1604102
Project: Luminant-Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_160419A

Sample ID **1604102-05DMS**	Batch ID: **74666**	TestNo: **E300**	Units: **mg/L**
SampType: **MS**	Run ID: **IC2_160419A**	Analysis Date: **4/19/2016 4:41:22 PM**	Prep Date: **4/19/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	2350	100	2000	373.4	98.8	90	110			
Fluoride	1970	40.0	2000	0	98.7	90	110			
Sulfate	2210	300	2000	454.0	87.7	90	110			S

Sample ID **1604102-05DMSD**	Batch ID: **74666**	TestNo: **E300**	Units: **mg/L**
SampType: **MSD**	Run ID: **IC2_160419A**	Analysis Date: **4/19/2016 4:55:58 PM**	Prep Date: **4/19/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	2350	100	2000	373.4	98.8	90	110	0.060	20	
Fluoride	1970	40.0	2000	0	98.7	90	110	0.003	20	
Sulfate	2220	300	2000	454.0	88.1	90	110	0.400	20	S

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1604102
Project: Luminant-Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_160419A

Sample ID **ICV-160419**	Batch ID: **R85331**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC2_160419A**	Analysis Date: **4/19/2016 9:14:43 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	23.4	1.00	25.00	0	93.5	90	110			
Fluoride	9.35	0.400	10.00	0	93.5	90	110			
Sulfate	73.8	3.00	75.00	0	98.4	90	110			

Sample ID **CCV1-160419**	Batch ID: **R85331**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_160419A**	Analysis Date: **4/19/2016 1:34:20 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.28	1.00	10.00	0	92.8	90	110			
Fluoride	3.82	0.400	4.000	0	95.4	90	110			
Sulfate	30.1	3.00	30.00	0	100	90	110			

Sample ID **CCV2-160419**	Batch ID: **R85331**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_160419A**	Analysis Date: **4/19/2016 5:10:35 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.30	1.00	10.00	0	93.0	90	110			
Fluoride	3.88	0.400	4.000	0	97.1	90	110			
Sulfate	29.6	3.00	30.00	0	98.8	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1604102
Project: Luminant-Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_160413A

The QC data in batch 74564 applies to the following samples: 1604102-01D, 1604102-02D, 1604102-03D, 1604102-04D, 1604102-05D, 1604102-06D, 1604102-07D, 1604102-08D

Sample ID **1604102-01D-DUP** Batch ID: **74564** TestNo: **M4500-H+ B** Units: **pH Units@19℃**
SampType: **DUP** Run ID: **TITRATOR_160413A** Analysis Date: **4/13/2016 9:34:00 AM** Prep Date: **4/13/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	6.51	0	0	6.560				0.765	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1604102
Project: Luminant-Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_160413A

Sample ID **ICV-160413**	Batch ID: **R85205**	TestNo: **M4500-H+ B**	Units: **pH Units@21.9℃**
SampType: **ICV**	Run ID: **TITRATOR_160413A**	Analysis Date: **4/13/2016 8:46:00 AM**	Prep Date: **4/13/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	10.0	0	10.00	0	100	99	101			

Sample ID **CCV-160413**	Batch ID: **R85205**	TestNo: **M4500-H+ B**	Units: **pH Units@21.7℃**
SampType: **CCV**	Run ID: **TITRATOR_160413A**	Analysis Date: **4/13/2016 9:53:00 AM**	Prep Date: **4/13/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	7.03	0	7.000	0	100	97.1	102.9			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1604102
Project: Luminant-Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: WC_160412B

The QC data in batch 74560 applies to the following samples: 1604102-01D, 1604102-02D, 1604102-03D, 1604102-04D, 1604102-05D, 1604102-06D, 1604102-07D, 1604102-08D

Sample ID	**MB-74560**	Batch ID:	**74560**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**WC_160412B**	Analysis Date:	**4/13/2016 8:45:00 AM**	Prep Date:	**4/12/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	<10.0	10.0								

Sample ID	**LCS-74560**	Batch ID:	**74560**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**WC_160412B**	Analysis Date:	**4/13/2016 8:45:00 AM**	Prep Date:	**4/12/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	758	10.0	745.6	0	102	90	113			

Sample ID	**1604108-01C-DUP**	Batch ID:	**74560**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**DUP**	Run ID:	**WC_160412B**	Analysis Date:	**4/13/2016 8:45:00 AM**	Prep Date:	**4/12/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	1200	10.0	0	1149				3.92	5	

Sample ID	**1604108-06C-DUP**	Batch ID:	**74560**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**DUP**	Run ID:	**WC_160412B**	Analysis Date:	**4/13/2016 8:45:00 AM**	Prep Date:	**4/12/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	680	10.0	0	684.0				0.587	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

Case Narrative

Lab No: 20160352

This report contains the analytical results for the 8 sample(s) received under chain of custody by ESC Lab Sciences on 04/13/16 13:53:12. These samples are associated with your 1604102 project.

The analytical results included in this report meet all applicable quality control procedure requirements except as noted below:

The test results in this report meet all NELAC requirements unless noted below:

This report shall not be reproduced, except in full, without the written approval of ESC Lab Sciences.

All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client.

Results have been reviewed by the Director of Radiochemistry or their designees and is approved for release.

Observations / Nonconformances

OUTREACH LABORATORY, A Divsion of ESC Lab Sciences
Address: 311 North Aspen Avenue, Broken Arrow, OK, 74012 EMail: outreach@esclabsciences.com - Tel: (918) 251-2515

Analytical Report

	Method	Result	DL	Units	Qual	Prep Date	Analysis Date	Analyst
Lab ID : **20160352-01**								
Client ID : **BMW-24**								
Date Sampled : **04/07/16 07:50:00**								
Matrix : **NPW**								
Radiochemical Analyses								
Combined Radium		0.242 +/- 1.05	1.92	pCi/l				
Radium-226	SM 7500 Ra B M*	0.243 +/- 0.251	0.349	pCi/l		04/20/16	04/22/16	AK
Radium-228	EPA 904*/9320*	-0.065 +/- 0.799	1.58	pCi/l		05/03/16	05/11/16	JR
Lab ID : **20160352-02**								
Client ID : **BMW-23**								
Date Sampled : **04/07/16 08:40:00**								
Matrix : **NPW**								
Radiochemical Analyses								
Combined Radium		2.70 +/- 1.14	1.36	pCi/l				
Radium-226	SM 7500 Ra B M*	0.723 +/- 0.355	0.310	pCi/l		04/20/16	04/22/16	AK
Radium-228	EPA 904*/9320*	1.98 +/- 0.784	1.05	pCi/l		05/03/16	05/11/16	JR
Lab ID : **20160352-03**								
Client ID : **BMW-22**								
Date Sampled : **04/07/16 09:25:00**								
Matrix : **NPW**								
Radiochemical Analyses								
Combined Radium		1.94 +/- 0.95	1.19	pCi/l				
Radium-226	SM 7500 Ra B M*	0.480 +/- 0.229	0.247	pCi/l		04/20/16	04/22/16	AK
Radium-228	EPA 904*/9320*	1.46 +/- 0.72	0.947	pCi/l		05/03/16	05/17/16	JR
Lab ID : **20160352-04**								
Client ID : **BMW-20**								
Date Sampled : **04/07/16 10:15:00**								
Matrix : **NPW**								
Radiochemical Analyses								
Combined Radium		1.30 +/- 1.16	1.92	pCi/l				
Radium-226	SM 7500 Ra B M*	0.221 +/- 0.161	0.212	pCi/l		04/20/16	04/22/16	AK
Radium-228	EPA 904*/9320*	1.08 +/- 0.997	1.71	pCi/l		05/03/16	05/11/16	JR

Analytical Report

	Method	Result	DL	Units	Qual	Prep Date	Analysis Date	Analyst
Lab ID : **20160352-05**								
Client ID : **BMW-21**								
Date Sampled : **04/07/16 11:15:00**								
Matrix : **NPW**								
Radiochemical Analyses								
Combined Radium		1.44 +/- 2.15	3.06	pCi/l				
Radium-226	SM 7500 Ra B M*	0.470 +/- 0.234	0.283	pCi/l		04/20/16	04/22/16	AK
Radium-228	EPA 904*/9320*	0.967 +/- 1.92	2.78	pCi/l		05/03/16	05/17/16	JR
Lab ID : **20160352-06**								
Client ID : **BMW-11AR**								
Date Sampled : **04/07/16 12:15:00**								
Matrix : **NPW**								
Radiochemical Analyses								
Combined Radium		2.37 +/- 0.880	0.932	pCi/l				
Radium-226	SM 7500 Ra B M*	0.885 +/- 0.245	0.143	pCi/l		04/20/16	04/22/16	AK
Radium-228	EPA 904*/9320*	1.48 +/- 0.635	0.789	pCi/l		05/03/16	05/11/16	JR
Lab ID : **20160352-07**								
Client ID : **BMW-19**								
Date Sampled : **04/07/16 13:05:00**								
Matrix : **NPW**								
Radiochemical Analyses								
Combined Radium		0.403 +/- 0.667	0.900	pCi/l				
Radium-226	SM 7500 Ra B M*	0.061 +/- 0.116	0.185	pCi/l		04/20/16	04/22/16	AK
Radium-228	EPA 904*/9320*	0.342 +/- 0.551	0.715	pCi/l		05/03/16	05/11/16	JR
Lab ID : **20160352-08**								
Client ID : **BMW-18**								
Date Sampled : **04/07/16 01:50:00**								
Matrix : **NPW**								
Radiochemical Analyses								
Combined Radium		0.873 +/- 0.861	1.11	pCi/l				
Radium-226	SM 7500 Ra B M*	0.088 +/- 0.082	0.109	pCi/l		04/20/16	04/22/16	AK
Radium-228	EPA 904*/9320*	0.785 +/- 0.779	1.00	pCi/l		05/03/16	05/11/16	JR

*NELAC Certified Parameter BDL = Below Detection Limit

QC Report

Parameter	Blank	LCS %REC	LCSD %REC	LCSD RPD	DUP RPD	RER, NAD or DER	MS %REC	MSD %REC	MSD RPD	Date
Radium-226	0.00	108.0			NC	0.621	84.0	85.5	1.8	04/22/16
Radium-228	-0.090	115.0			NC	0.006	103.0	118.0	13.5	05/11/16

Lab Approval:

OUTREACH LABORATORY, A Divsion of ESC Lab Sciences
Address: 311 North Aspen Avenue, Broken Arrow, OK, 74012 EMail: outreach@esclabsciences.com - Tel: (918) 251-2515

DHL Analytical, Inc.
2300 Double Creek Drive
Round Rock, TX 78664
TEL: *(512) 388-8222* FAX: *(512) 388-8229*

CHAIN-OF-CUSTODY RECORD

Work Order: 1604102

Subcontractor:

ESC Laboratory
311 North Aspen
Broken Arrow, Oklahoma 74012

TEL: (918) 251-2515
FAX:
Acct #: DHLRRTX

11-Apr-16

Sample Id	Matrix	DHL#	Date Collected	Bottle Type	Requested Tests					
					E904.0	SM7500Ra-B M				
BMW-24	Aqueous	-01B	04/07/16 07:50 AM	500HDPEHNO3	1					
BMW-24	Aqueous	-01C	04/07/16 07:50 AM	500HDPEHNO3		1				
BMW-23	Aqueous	-02B	04/07/16 08:40 AM	500HDPEHNO3	1					
BMW-23	Aqueous	-02C	04/07/16 08:40 AM	500HDPEHNO3		1				
BMW-22	Aqueous	-03B	04/07/16 09:25 AM	500HDPEHNO3	1					
BMW-22	Aqueous	-03C	04/07/16 09:25 AM	500HDPEHNO3		1				
BMW-20	Aqueous	-04B	04/07/16 10:15 AM	500HDPEHNO3	1					
BMW-20	Aqueous	-04C	04/07/16 10:15 AM	500HDPEHNO3		1				
BMW-21	Aqueous	-05B	04/07/16 11:15 AM	500HDPEHNO3	1					
BMW-21	Aqueous	-05C	04/07/16 11:15 AM	500HDPEHNO3		1				
BMW-11AR	Aqueous	-06B	04/07/16 12:15 PM	500HDPEHNO3	1					
BMW-11AR	Aqueous	-06C	04/07/16 12:15 PM	500HDPEHNO3		1				
BMW-19	Aqueous	-07B	04/07/16 01:05 PM	500HDPEHNO3	1					
BMW-19	Aqueous	-07C	04/07/16 01:05 PM	500HDPEHNO3		1				
BMW-18	Aqueous	-08B	04/07/16 01:50 PM	500HDPEHNO3	1					
BMW-18	Aqueous	-08C	04/07/16 01:50 PM	500HDPEHNO3		1				

General Comments:

Please analyze these samples with Normal Turnaround Time.
Report RA-226, Ra-228 & Combined per Specs DHLRRTX033116S.
Quality Control Package Needed: Standard - NELAC Rad Test compliant
Email to cac@dhlanalytical.com & dupont@dhlanalytical.com

L829716

		Date/Time		Date/Time
Relinquished by:		4/11/16 17:30	Received by: Lonestar	4/11/16 17:30
Relinquished by:			Received by:	4/12/16 13:42

SAMPLE LOGIN

Date Received: *04/13/16 13:53:12* **Lab Number:** 20160352 **Due:** 05/11/16

Sample Number	Client Sample ID	Matrix	Date Sampled	Container Type	Container Size	Preservation	Preserved Upon Receipt	Custody Seal	Seal Intact
20160352-01 B	BMW-24	NPW	04/07/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
20160352-01 A	BMW-24	NPW	04/07/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160352-02 A	BMW-23	NPW	04/07/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
20160352-02 B	BMW-23	NPW	04/07/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160352-03 A	BMW-22	NPW	04/07/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
20160352-03 B	BMW-22	NPW	04/07/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160352-04 B	BMW-20	NPW	04/07/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
20160352-04 A	BMW-20	NPW	04/07/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160352-05 B	BMW-21	NPW	04/07/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
20160352-05 A	BMW-21	NPW	04/07/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160352-06 A	BMW-11AR	NPW	04/07/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
20160352-06 B	BMW-11AR	NPW	04/07/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160352-07 A	BMW-19	NPW	04/07/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
20160352-07 B	BMW-19	NPW	04/07/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160352-08 B	BMW-18	NPW	04/07/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes

20160352-08 A	BMW-18	NPW	04/07/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						

CONTAINER INSPECTION

 # Coolers 1 **Custody Seals Broken** NO **Temperature:** C NA **Ice** **Radiation Survey:** <300 cpm NA

SAMPLE INSPECTION

Sample Seal Broken NO **Chain of Custody Record** ☑ **Labels in Tact** ☑ **Radiation Survey Complete** ☐

Anomalies

Inspected By: _____ **DATE** 4/13/16

QA or Designee Review: Raymond Thomas **DATE** 04/13/16

Sample Custodian Review: _____ **DATE** _____

Project Notes:

July 25, 2016

Will Vienne
Pastor, Behling & Wheeler
2201 Double Creek Dr #4004
Round Rock, Texas 78664
TEL: (512) 671-3434
FAX (512) 671-3446

Order No.: 1606122

RE: Luminant - MLSES

Dear Will Vienne:

DHL Analytical, Inc. received 8 sample(s) on 6/11/2016 for the analyses presented in the following report.

There were no problems with the analyses and all data met requirements of NELAC except where noted in the Case Narrative. All non-NELAC methods will be identified accordingly in the case narrative and all estimated uncertainties of test results are within method or EPA specifications.

If you have any questions regarding these tests results, please feel free to call. Thank you for using DHL Analytical.

Sincerely,

John DuPont
General Manager

This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211-16-16

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Subcontract Report 1606122 ..... **44**

DHL ANALYTICAL
2300 Double Creek Dr. ■ Round Rock, TX 78664
Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

№ 71537

CHAIN-OF-CUSTODY

CLIENT: PBW
ADDRESS: 2201 DOUBLE CREEK DR ROUND ROCK, TX 78664
PHONE: 512-671-3434 FAX/E-MAIL: 512-671-3446
DATA REPORTED TO: WILL VIENNE
ADDITIONAL REPORT COPIES TO:

DATE: 6-10-16 PAGE 1 OF 1
PO #: 5164-B DHL WORK ORDER #: 1600e122
PROJECT LOCATION OR NAME: LUMINANT - MLSES
CLENT PROJECT #: 5164-B COLLECTOR: J. BEAUTON

Authorize 5% surcharge for TRRP Report? ❑ Yes ❑ No

S=SOIL W=WATER A=AIR L=LIQUID SE=SEDIMENT P=PAINT SL=SLUDGE O=OTHER SO=SOLID

PRESERVATION: HCl, HNO_3, H_2SO_4 ❑ NaOH ❑, ICE, UNPRESERVED

ANALYSES: BTEX ❑ MTBE ❑ [METHOD 8021] | TPH 1005 ❑ TPH 1006 ❑ HOLD 1006 ❑ | GRO [METHOD 8015] ❑ DRO [METHOD 8105] ❑ | VOC 8260 ❑ VOC 624 ❑ VOC 8260/5035 ❑ | SVOC 8270 ❑ PAH 8270 ❑ HOLD PAH ❑ SVOC 625 ❑ | 8270 PEST ❑ 625 PEST/PCB ❑ 608 PCB ❑ 8270 PCB ❑ | 8270 O-P PEST ❑ 8082 PCB ❑ 8270 PCB ❑ | 8321 HERB ❑ T PHOS, AMMONIA ❑ | METALS 6020 ❑ METALS 200.8 ❑ DISS. METALS ❑ | RCRA ❑ TX11 ❑ ____ ❑ | PH ❑ HEX CHROM ❑ ALKALINITY ❑ COD ❑ | CHLORIDE ❑ ANIONS ____ ❑ | TCLP-SVOC ❑ VOC ❑ PEST ❑ HERB ❑ | TCLP-METALS ❑ RCRA 8 ❑ TX-11 ❑ Pb ❑ | RCI ❑ FLASHPOINT ❑ DGAS ❑ | TDS ❑ TSS ❑ % MOISTURE ❑ CYANIDE ❑ | SEE ATTACHED

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	HCl	HNO_3	H_2SO_4 ❑ NaOH ❑	ICE	UNPRESERVED	SEE ATTACHED	FIELD NOTES
BMW-24	01	6-8-16	1515	W	P	4				X		X	
BMW-23	02	"	1605	W	P	4				X		X	
BMW-22	03	"	1700	W	P	4				X		X	
BMW-20	04	6-9-16	0815	W	P	4				X		X	
BMW-21	05	"	0905	W	P	4				X		X	
BMW-11AR	06	"	1005	W	P	4				X		X	
BMW-19	07	"	1100	W	P	4				X		X	
BMW-18	08	"	1215	W	P	4				X		X	

RELINQUISHED BY: (Signature) DATE/TIME 6-10-16 1730 RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature) DATE/TIME 6-10-16 1215 RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature) DATE/TIME RECEIVED BY: (Signature)

TURN AROUND TIME
RUSH ❑ CALL FIRST
1 DAY ❑ CALL FIRST
2 DAY ❑
NORMAL ☒
OTHER ❑ ____

LABORATORY USE ONLY:
RECEIVING TEMP: 4.4, 4.2, 4.2 THERM #: 28
CUSTODY SEALS: ❑ BROKEN ❑ INTACT ☒ NOT USED
CARRIER: ❑ LONE STAR ☒ FEDEX ❑ UPS ❑ OTHER
❑ COURIER DELIVERY
❑ HAND DELIVERED

John Dupont

From: Sara Taube [Sara.Taube@pbwllc.com]
Sent: Wednesday, July 22, 2015 12:05 PM
To: John Dupont
Subject: CCR Appendix III and IV
Follow Up Flag: Follow up
Flag Status: Completed

Hi John,

Here are the Appendix III and Appendix IV constituents that we will need to have analyzed under the CCR Rule.

Appendix III
Boron
Calcium
Chloride
Fluoride
pH
sulfate
TDS

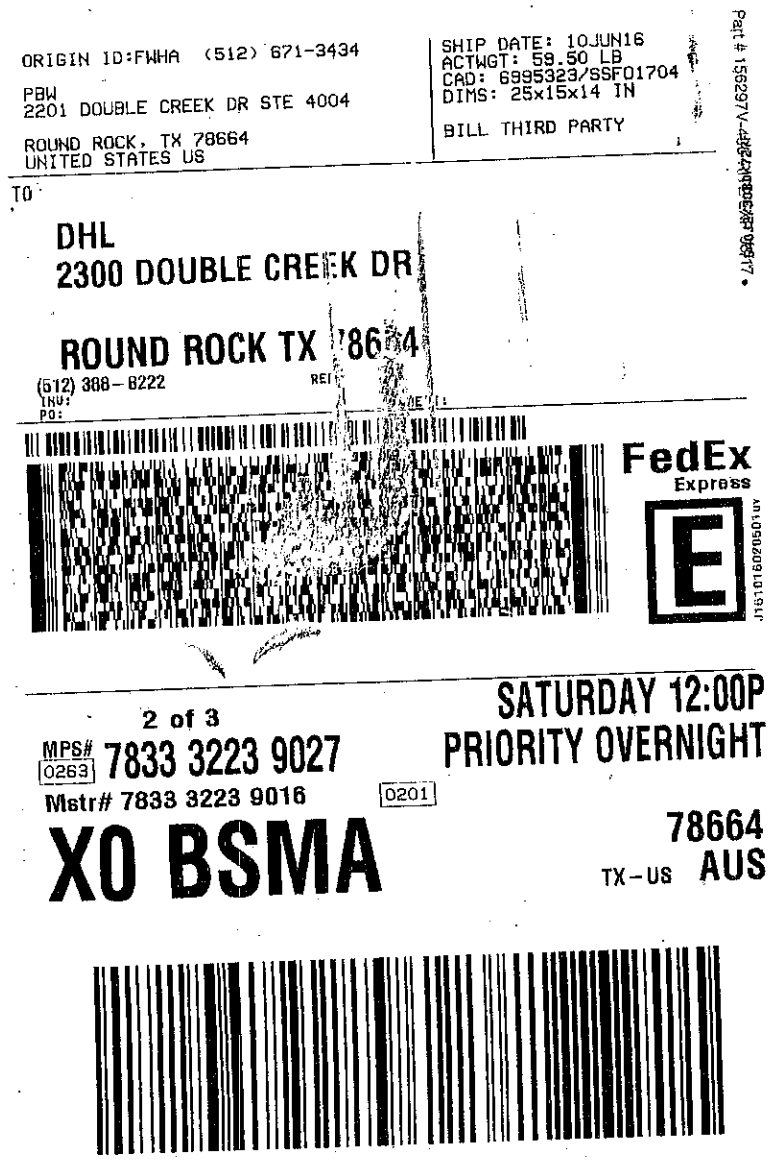
Appendix IV
Antimony
Arsenic
Barium
Beryllium
Cadmium
Chromium
Cobalt
Fluoride
Lead
Lithium
Mercury
Molybdenum
Selenium
Thallium
Radium 226 and 228

We are looking to have approximately 74 wells sampled 8 times over the course of the next two years. Please let me know if there is any more information you might need.

Cheers,

Sara

10/26/2015


ORIGIN ID:FWHA (512) 671-3434

PBW
2201 DOUBLE CREEK DR STE 4004

ROUND ROCK, TX 78664
UNITED STATES US

SHIP DATE: 10JUN16
ACTWGT: 59.50 LB
CAD: 6995323/SSF01704
DIMS: 25x15x14 IN

BILL THIRD PARTY

TO

DHL
2300 DOUBLE CREEK DR

ROUND ROCK TX 78664
(512) 388-8222

REF:
INV:
PO:
DEPT:

FedEx
Express

2 of 3

MPS# 0263 7833 3223 9027

Mstr# 7833 3223 9016 0201

SATURDAY 12:00P
PRIORITY OVERNIGHT

XO BSMA

78664
TX-US AUS

ORIGIN ID:FWHA (512) 671-3434

PBW
2201 DOUBLE CREEK DR STE 4004

ROUND ROCK, TX 78664
UNITED STATES US

SHIP DATE: 10JUN16
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TO

DHL
2300 DOUBLE CREEK DR

ROUND ROCK TX 78664
(512) 388-8222

REF:
INV:
PO:
DEPT:

FedEx
Express

1 of 3

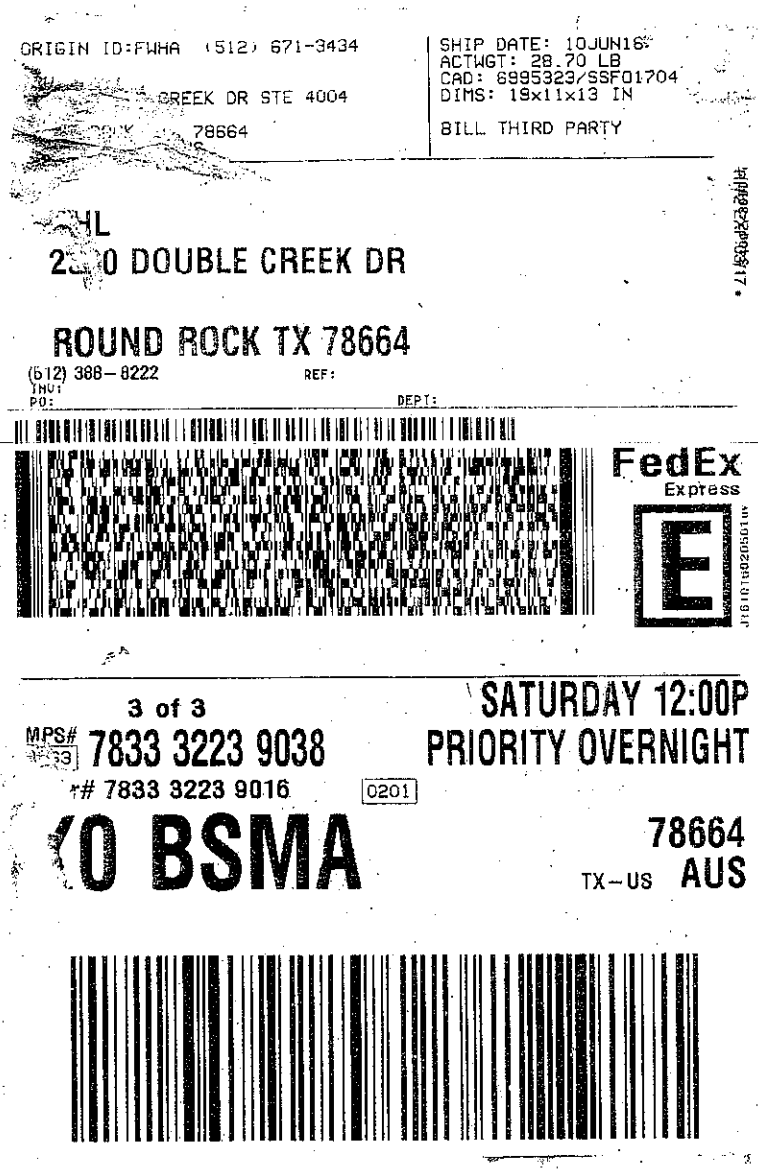
TRK# 0201 7833 3223 9016

MASTER

SATURDAY 12:00P
PRIORITY OVERNIGHT

XO BSMA

78664
TX-US AUS



ORIGIN ID:FWHA (512) 671-3434
[illegible] CREEK DR STE 4004
[illegible] 78664

SHIP DATE: 10JUN16
ACTWGT: 28.70 LB
CAD: 6995323/SSF01704
DIMS: 19x11x13 IN

BILL THIRD PARTY

[illegible]HL
2[illegible]0 DOUBLE CREEK DR

ROUND ROCK TX 78664
(512) 388-8222 REF:
INV:
PO: DEPT:

FedEx
Express

3 of 3
MPS# [illegible]33 7833 3223 9038
T# 7833 3223 9016 0201

SATURDAY 12:00P
PRIORITY OVERNIGHT

[illegible]O BSMA

78664
TX-US AUS

DHL Analytical, Inc.

Sample Receipt Checklist

Client Name **Pastor, Behling & Wheeler** Date Received: **6/11/2016**

Work Order Number **1606122** Received by **JB**

Checklist completed by: Signature 6/13/2016 Date Reviewed by Initials 6/13/2016 Date

Carrier name FedEx 1day

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	4.4 °C 4.2.1.2
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH<2 acceptable upon receipt?	Yes ☑	No ☐	NA ☐ LOT # 8086
	Adjusted? NO		Checked by
Water - ph>9 (S) or ph>12 (CN) acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted?		Checked by

Any No response must be detailed in the comments section below.

Client contacted _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments: _____

Corrective Action _____

DHL Analytical, Inc. **Date:** *25-Jul-16*

CLIENT: Pastor, Behling & Wheeler
Project: Luminant - MLSES
Lab Order: 1606122

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Method SW6020A - Metals Analysis
Method SW7470A - Mercury Analysis
Method E300 - Anions Analysis
Method M4500-H+ B - pH of a Water Analysis
Method M2540C - TDS Analysis
Sub-contract - Radium-228 and Radium-226 analyses by methods E904/9320 and SM 7500 Ra B M. Analyzed at ESC Lab Sciences.

LOG IN

The samples were received and log-in performed on 6/11/16. A total of 8 samples were received. The samples arrived in good condition and were properly packaged.

METALS ANALYSIS

For Metals analysis performed on 6/17/16 and 6/23/16 the matrix spike and matrix spike duplicate recoveries were out of control limits for four analytes. These are flagged accordingly in the QC summary report. The sample selected for the matrix spike and matrix spike duplicate was not from this work order. The LCS was within control limits for these analytes. No further corrective actions were taken.

For Metals analysis performed on 6/17/16 the PDS recovery was below control limits for Molybdenum. This is flagged accordingly. The serial dilution was within control limits for this analyte. No further corrective actions were taken.

DHL Analytical, Inc.

Date: *25-Jul-16*

CLIENT: Pastor, Behling & Wheeler
Project: Luminant - MLSES
Lab Order: 1606122

Work Order Sample Summary

Lab Smp ID	Client Sample ID	Tag Number	Date Collected	Date Recved
1606122-01	BMW-24		06/08/16 03:15 PM	6/11/2016
1606122-02	BMW-23		06/08/16 04:05 PM	6/11/2016
1606122-03	BMW-22		06/08/16 05:00 PM	6/11/2016
1606122-04	BMW-20		06/09/16 08:15 AM	6/11/2016
1606122-05	BMW-21		06/09/16 09:05 AM	6/11/2016
1606122-06	BMW-11AR		06/09/16 10:05 AM	6/11/2016
1606122-07	BMW-19		06/09/16 11:00 AM	6/11/2016
1606122-08	BMW-18		06/09/16 12:15 PM	6/11/2016

Lab Order: 1606122
Client: Pastor, Behling & Wheeler
Project: Luminant - MLSES

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1606122-01A	BMW-24	06/08/16 03:15 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/16/16 11:00 AM	75691
	BMW-24	06/08/16 03:15 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/16/16 11:00 AM	75691
	BMW-24	06/08/16 03:15 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	06/17/16 11:52 AM	75718
1606122-01D	BMW-24	06/08/16 03:15 PM	Aqueous	E300	Anion Preparation	06/16/16 10:03 AM	75689
	BMW-24	06/08/16 03:15 PM	Aqueous	E300	Anion Preparation	06/16/16 10:03 AM	75689
	BMW-24	06/08/16 03:15 PM	Aqueous	M4500-H+ B	pH Preparation	06/14/16 08:22 AM	75614
	BMW-24	06/08/16 03:15 PM	Aqueous	M2540C	TDS Preparation	06/14/16 02:06 PM	75640
1606122-02A	BMW-23	06/08/16 04:05 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/16/16 11:00 AM	75691
	BMW-23	06/08/16 04:05 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/16/16 11:00 AM	75691
	BMW-23	06/08/16 04:05 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	06/17/16 11:52 AM	75718
1606122-02D	BMW-23	06/08/16 04:05 PM	Aqueous	E300	Anion Preparation	06/16/16 10:03 AM	75689
	BMW-23	06/08/16 04:05 PM	Aqueous	E300	Anion Preparation	06/16/16 10:03 AM	75689
	BMW-23	06/08/16 04:05 PM	Aqueous	M4500-H+ B	pH Preparation	06/14/16 08:22 AM	75614
	BMW-23	06/08/16 04:05 PM	Aqueous	M2540C	TDS Preparation	06/14/16 02:06 PM	75640
1606122-03A	BMW-22	06/08/16 05:00 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/16/16 11:00 AM	75691
	BMW-22	06/08/16 05:00 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/16/16 11:00 AM	75691
	BMW-22	06/08/16 05:00 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	06/17/16 11:52 AM	75718
1606122-03D	BMW-22	06/08/16 05:00 PM	Aqueous	E300	Anion Preparation	06/16/16 10:03 AM	75689
	BMW-22	06/08/16 05:00 PM	Aqueous	E300	Anion Preparation	06/16/16 10:03 AM	75689
	BMW-22	06/08/16 05:00 PM	Aqueous	M4500-H+ B	pH Preparation	06/14/16 08:22 AM	75614
	BMW-22	06/08/16 05:00 PM	Aqueous	M2540C	TDS Preparation	06/14/16 02:06 PM	75640
1606122-04A	BMW-20	06/09/16 08:15 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/16/16 11:00 AM	75691
	BMW-20	06/09/16 08:15 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/16/16 11:00 AM	75691
	BMW-20	06/09/16 08:15 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/16/16 11:00 AM	75691
	BMW-20	06/09/16 08:15 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/16/16 11:00 AM	75691
	BMW-20	06/09/16 08:15 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	06/17/16 11:52 AM	75718
1606122-04D	BMW-20	06/09/16 08:15 AM	Aqueous	E300	Anion Preparation	06/16/16 10:03 AM	75689
	BMW-20	06/09/16 08:15 AM	Aqueous	E300	Anion Preparation	06/16/16 10:03 AM	75689

Lab Order: 1606122
Client: Pastor, Behling & Wheeler
Project: Luminant - MLSES

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1606122-04D	BMW-20	06/09/16 08:15 AM	Aqueous	M4500-H+ B	pH Preparation	06/14/16 08:22 AM	75614
	BMW-20	06/09/16 08:15 AM	Aqueous	M2540C	TDS Preparation	06/14/16 02:06 PM	75640
1606122-05A	BMW-21	06/09/16 09:05 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/16/16 11:00 AM	75691
	BMW-21	06/09/16 09:05 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/16/16 11:00 AM	75691
	BMW-21	06/09/16 09:05 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/16/16 11:00 AM	75691
	BMW-21	06/09/16 09:05 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	06/17/16 11:52 AM	75718
1606122-05D	BMW-21	06/09/16 09:05 AM	Aqueous	E300	Anion Preparation	06/16/16 10:03 AM	75689
	BMW-21	06/09/16 09:05 AM	Aqueous	E300	Anion Preparation	06/16/16 10:03 AM	75689
	BMW-21	06/09/16 09:05 AM	Aqueous	M4500-H+ B	pH Preparation	06/14/16 08:22 AM	75614
	BMW-21	06/09/16 09:05 AM	Aqueous	M2540C	TDS Preparation	06/14/16 02:06 PM	75640
1606122-06A	BMW-11AR	06/09/16 10:05 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/16/16 11:00 AM	75691
	BMW-11AR	06/09/16 10:05 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/16/16 11:00 AM	75691
	BMW-11AR	06/09/16 10:05 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/16/16 11:00 AM	75691
	BMW-11AR	06/09/16 10:05 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/16/16 11:00 AM	75691
	BMW-11AR	06/09/16 10:05 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	06/17/16 11:52 AM	75718
1606122-06D	BMW-11AR	06/09/16 10:05 AM	Aqueous	E300	Anion Preparation	06/16/16 10:03 AM	75689
	BMW-11AR	06/09/16 10:05 AM	Aqueous	E300	Anion Preparation	06/16/16 10:03 AM	75689
	BMW-11AR	06/09/16 10:05 AM	Aqueous	M4500-H+ B	pH Preparation	06/14/16 08:22 AM	75614
	BMW-11AR	06/09/16 10:05 AM	Aqueous	M2540C	TDS Preparation	06/14/16 02:06 PM	75640
1606122-07A	BMW-19	06/09/16 11:00 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/16/16 11:00 AM	75691
	BMW-19	06/09/16 11:00 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/16/16 11:00 AM	75691
	BMW-19	06/09/16 11:00 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/16/16 11:00 AM	75691
	BMW-19	06/09/16 11:00 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/16/16 11:00 AM	75691
	BMW-19	06/09/16 11:00 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	06/17/16 11:52 AM	75718
1606122-07D	BMW-19	06/09/16 11:00 AM	Aqueous	E300	Anion Preparation	06/16/16 10:03 AM	75689
	BMW-19	06/09/16 11:00 AM	Aqueous	E300	Anion Preparation	06/16/16 10:03 AM	75689
	BMW-19	06/09/16 11:00 AM	Aqueous	M4500-H+ B	pH Preparation	06/14/16 08:22 AM	75614
	BMW-19	06/09/16 11:00 AM	Aqueous	M2540C	TDS Preparation	06/14/16 02:06 PM	75640

Lab Order: 1606122
Client: Pastor, Behling & Wheeler
Project: Luminant - MLSES

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1606122-08A	BMW-18	06/09/16 12:15 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/16/16 11:00 AM	75691
	BMW-18	06/09/16 12:15 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/16/16 11:00 AM	75691
	BMW-18	06/09/16 12:15 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	06/17/16 11:52 AM	75718
1606122-08D	BMW-18	06/09/16 12:15 PM	Aqueous	E300	Anion Preparation	06/16/16 10:03 AM	75689
	BMW-18	06/09/16 12:15 PM	Aqueous	M4500-H+ B	pH Preparation	06/14/16 08:22 AM	75614
	BMW-18	06/09/16 12:15 PM	Aqueous	M2540C	TDS Preparation	06/14/16 02:06 PM	75640

Lab Order: 1606122
Client: Pastor, Behling & Wheeler
Project: Luminant - MLSES

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1606122-01A	BMW-24	Aqueous	SW7470A	Mercury Total: Aqueous	75718	1	06/17/16 03:25 PM	CETAC2_HG_160617A
	BMW-24	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	75691	1	06/17/16 01:25 PM	ICP-MS4_160617B
	BMW-24	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	75691	10	06/23/16 12:35 PM	ICP-MS4_160623A
1606122-01D	BMW-24	Aqueous	E300	Anions by IC method - Water	75689	1	06/16/16 11:49 AM	IC4_160616A
	BMW-24	Aqueous	E300	Anions by IC method - Water	75689	10	06/16/16 03:35 PM	IC4_160616A
	BMW-24	Aqueous	M4500-H+ B	pH	75614	1	06/14/16 09:46 AM	TITRATOR_160614A
	BMW-24	Aqueous	M2540C	Total Dissolved Solids	75640	1	06/15/16 08:55 AM	WC_160614C
1606122-02A	BMW-23	Aqueous	SW7470A	Mercury Total: Aqueous	75718	1	06/17/16 03:27 PM	CETAC2_HG_160617A
	BMW-23	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	75691	1	06/17/16 01:27 PM	ICP-MS4_160617B
	BMW-23	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	75691	10	06/23/16 12:37 PM	ICP-MS4_160623A
1606122-02D	BMW-23	Aqueous	E300	Anions by IC method - Water	75689	1	06/16/16 12:04 PM	IC4_160616A
	BMW-23	Aqueous	E300	Anions by IC method - Water	75689	10	06/16/16 03:50 PM	IC4_160616A
	BMW-23	Aqueous	M4500-H+ B	pH	75614	1	06/14/16 09:49 AM	TITRATOR_160614A
	BMW-23	Aqueous	M2540C	Total Dissolved Solids	75640	1	06/15/16 08:55 AM	WC_160614C
1606122-03A	BMW-22	Aqueous	SW7470A	Mercury Total: Aqueous	75718	1	06/17/16 03:30 PM	CETAC2_HG_160617A
	BMW-22	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	75691	1	06/17/16 01:29 PM	ICP-MS4_160617B
	BMW-22	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	75691	10	06/23/16 12:39 PM	ICP-MS4_160623A
1606122-03D	BMW-22	Aqueous	E300	Anions by IC method - Water	75689	1	06/16/16 12:19 PM	IC4_160616A
	BMW-22	Aqueous	E300	Anions by IC method - Water	75689	10	06/16/16 04:05 PM	IC4_160616A
	BMW-22	Aqueous	M4500-H+ B	pH	75614	1	06/14/16 09:53 AM	TITRATOR_160614A
	BMW-22	Aqueous	M2540C	Total Dissolved Solids	75640	1	06/15/16 08:55 AM	WC_160614C
1606122-04A	BMW-20	Aqueous	SW7470A	Mercury Total: Aqueous	75718	1	06/17/16 03:32 PM	CETAC2_HG_160617A
	BMW-20	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	75691	1	06/17/16 01:45 PM	ICP-MS4_160617B
	BMW-20	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	75691	1	06/27/16 02:13 PM	ICP-MS4_160627A
	BMW-20	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	75691	10	06/23/16 12:41 PM	ICP-MS4_160623A
	BMW-20	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	75691	1	06/23/16 02:28 PM	ICP-MS4_160623A

Lab Order: 1606122
Client: Pastor, Behling & Wheeler
Project: Luminant - MLSES

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1606122-04D	BMW-20	Aqueous	E300	Anions by IC method - Water	75689	1	06/16/16 12:34 PM	IC4_160616A
	BMW-20	Aqueous	E300	Anions by IC method - Water	75689	10	06/16/16 04:20 PM	IC4_160616A
	BMW-20	Aqueous	M4500-H+ B	pH	75614	1	06/14/16 09:55 AM	TITRATOR_160614A
	BMW-20	Aqueous	M2540C	Total Dissolved Solids	75640	1	06/15/16 08:55 AM	WC_160614C
1606122-05A	BMW-21	Aqueous	SW7470A	Mercury Total: Aqueous	75718	1	06/17/16 03:34 PM	CETAC2_HG_160617A
	BMW-21	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	75691	10	06/23/16 12:43 PM	ICP-MS4_160623A
	BMW-21	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	75691	1	06/23/16 02:34 PM	ICP-MS4_160623A
	BMW-21	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	75691	1	06/17/16 01:47 PM	ICP-MS4_160617B
1606122-05D	BMW-21	Aqueous	E300	Anions by IC method - Water	75689	1	06/16/16 12:49 PM	IC4_160616A
	BMW-21	Aqueous	E300	Anions by IC method - Water	75689	10	06/16/16 05:05 PM	IC4_160616A
	BMW-21	Aqueous	M4500-H+ B	pH	75614	1	06/14/16 09:58 AM	TITRATOR_160614A
	BMW-21	Aqueous	M2540C	Total Dissolved Solids	75640	1	06/15/16 08:55 AM	WC_160614C
1606122-06A	BMW-11AR	Aqueous	SW7470A	Mercury Total: Aqueous	75718	1	06/17/16 03:36 PM	CETAC2_HG_160617A
	BMW-11AR	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	75691	1	06/17/16 01:49 PM	ICP-MS4_160617B
	BMW-11AR	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	75691	10	06/23/16 12:45 PM	ICP-MS4_160623A
	BMW-11AR	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	75691	1	06/23/16 02:30 PM	ICP-MS4_160623A
	BMW-11AR	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	75691	1	06/27/16 02:48 PM	ICP-MS4_160627A
1606122-06D	BMW-11AR	Aqueous	E300	Anions by IC method - Water	75689	1	06/16/16 01:04 PM	IC4_160616A
	BMW-11AR	Aqueous	E300	Anions by IC method - Water	75689	10	06/16/16 05:20 PM	IC4_160616A
	BMW-11AR	Aqueous	M4500-H+ B	pH	75614	1	06/14/16 10:01 AM	TITRATOR_160614A
	BMW-11AR	Aqueous	M2540C	Total Dissolved Solids	75640	1	06/15/16 08:55 AM	WC_160614C
1606122-07A	BMW-19	Aqueous	SW7470A	Mercury Total: Aqueous	75718	1	06/17/16 03:39 PM	CETAC2_HG_160617A
	BMW-19	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	75691	1	06/17/16 01:51 PM	ICP-MS4_160617B
	BMW-19	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	75691	10	06/23/16 12:47 PM	ICP-MS4_160623A
	BMW-19	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	75691	1	06/23/16 02:32 PM	ICP-MS4_160623A
	BMW-19	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	75691	1	06/27/16 02:50 PM	ICP-MS4_160627A

Lab Order: 1606122
Client: Pastor, Behling & Wheeler
Project: Luminant - MLSES

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1606122-07D	BMW-19	Aqueous	E300	Anions by IC method - Water	75689	100	06/16/16 05:35 PM	IC4_160616A
	BMW-19	Aqueous	E300	Anions by IC method - Water	75689	1	06/16/16 01:19 PM	IC4_160616A
	BMW-19	Aqueous	M4500-H+ B	pH	75614	1	06/14/16 10:03 AM	TITRATOR_160614A
	BMW-19	Aqueous	M2540C	Total Dissolved Solids	75640	1	06/15/16 08:55 AM	WC_160614C
1606122-08A	BMW-18	Aqueous	SW7470A	Mercury Total: Aqueous	75718	1	06/17/16 03:41 PM	CETAC2_HG_160617A
	BMW-18	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	75691	1	06/17/16 01:53 PM	ICP-MS4_160617B
	BMW-18	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	75691	1	06/23/16 12:49 PM	ICP-MS4_160623A
1606122-08D	BMW-18	Aqueous	E300	Anions by IC method - Water	75689	1	06/16/16 01:34 PM	IC4_160616A
	BMW-18	Aqueous	M4500-H+ B	pH	75614	1	06/14/16 10:05 AM	TITRATOR_160614A
	BMW-18	Aqueous	M2540C	Total Dissolved Solids	75640	1	06/15/16 08:55 AM	WC_160614C

DHL Analytical, Inc.

Date: *25-Jul-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	BMW-24
Project:	Luminant - MLSES	**Lab ID:**	1606122-01
Project No:	5164-B	**Collection Date:**	06/08/16 03:15 PM
Lab Order:	1606122	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **KL**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/17/16 03:25 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	06/17/16 01:25 PM
Arsenic	0.00481	0.00200	0.00500	J	mg/L	1	06/17/16 01:25 PM
Barium	0.181	0.00300	0.0100		mg/L	1	06/17/16 01:25 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	06/17/16 01:25 PM
Boron	0.612	0.100	0.300		mg/L	10	06/23/16 12:35 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	06/17/16 01:25 PM
Calcium	60.1	1.00	3.00		mg/L	10	06/23/16 12:35 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	06/17/16 01:25 PM
Cobalt	0.0227	0.00300	0.00500		mg/L	1	06/17/16 01:25 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	06/17/16 01:25 PM
Lithium	0.0475	0.00500	0.0100		mg/L	1	06/17/16 01:25 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	06/17/16 01:25 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	06/17/16 01:25 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	06/17/16 01:25 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	201	3.00	10.0		mg/L	10	06/16/16 03:35 PM
Fluoride	0.147	0.100	0.400	J	mg/L	1	06/16/16 11:49 AM
Sulfate	259	10.0	30.0		mg/L	10	06/16/16 03:35 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.19	0	0		pH Units@17.8℃	1	06/14/16 09:46 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	984	10.0	10.0		mg/L	1	06/15/16 08:55 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *25-Jul-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	BMW-23
Project:	Luminant - MLSES	**Lab ID:**	1606122-02
Project No:	5164-B	**Collection Date:**	06/08/16 04:05 PM
Lab Order:	1606122	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **KL**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/17/16 03:27 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	06/17/16 01:27 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	06/17/16 01:27 PM
Barium	0.0497	0.00300	0.0100		mg/L	1	06/17/16 01:27 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	06/17/16 01:27 PM
Boron	1.31	0.100	0.300		mg/L	10	06/23/16 12:37 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	06/17/16 01:27 PM
Calcium	102	1.00	3.00		mg/L	10	06/23/16 12:37 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	06/17/16 01:27 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	06/17/16 01:27 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	06/17/16 01:27 PM
Lithium	0.103	0.00500	0.0100		mg/L	1	06/17/16 01:27 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	06/17/16 01:27 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	06/17/16 01:27 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	06/17/16 01:27 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	254	3.00	10.0		mg/L	10	06/16/16 03:50 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	06/16/16 12:04 PM
Sulfate	558	10.0	30.0		mg/L	10	06/16/16 03:50 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.73	0	0		pH Units@18.7℃	1	06/14/16 09:49 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	1720	50.0	50.0		mg/L	1	06/15/16 08:55 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *25-Jul-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	BMW-22
Project:	Luminant - MLSES	**Lab ID:**	1606122-03
Project No:	5164-B	**Collection Date:**	06/08/16 05:00 PM
Lab Order:	1606122	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **KL**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/17/16 03:30 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	06/17/16 01:29 PM
Arsenic	0.00206	0.00200	0.00500	J	mg/L	1	06/17/16 01:29 PM
Barium	0.0667	0.00300	0.0100		mg/L	1	06/17/16 01:29 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	06/17/16 01:29 PM
Boron	3.53	0.100	0.300		mg/L	10	06/23/16 12:39 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	06/17/16 01:29 PM
Calcium	193	1.00	3.00		mg/L	10	06/23/16 12:39 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	06/17/16 01:29 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	06/17/16 01:29 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	06/17/16 01:29 PM
Lithium	0.0847	0.00500	0.0100		mg/L	1	06/17/16 01:29 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	06/17/16 01:29 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	06/17/16 01:29 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	06/17/16 01:29 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	279	3.00	10.0		mg/L	10	06/16/16 04:05 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	06/16/16 12:19 PM
Sulfate	890	10.0	30.0		mg/L	10	06/16/16 04:05 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.77	0	0		pH Units@18.6℃	1	06/14/16 09:53 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	2340	50.0	50.0		mg/L	1	06/15/16 08:55 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *25-Jul-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	BMW-20
Project:	Luminant - MLSES	**Lab ID:**	1606122-04
Project No:	5164-B	**Collection Date:**	06/09/16 08:15 AM
Lab Order:	1606122	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **KL**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/17/16 03:32 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	06/17/16 01:45 PM
Arsenic	0.0103	0.00200	0.00500		mg/L	1	06/17/16 01:45 PM
Barium	0.0776	0.00300	0.0100		mg/L	1	06/17/16 01:45 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	06/17/16 01:45 PM
Boron	0.129	0.0100	0.0300		mg/L	1	06/27/16 02:13 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	06/17/16 01:45 PM
Calcium	128	1.00	3.00		mg/L	10	06/23/16 12:41 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	06/17/16 01:45 PM
Cobalt	0.0540	0.00300	0.00500		mg/L	1	06/17/16 01:45 PM
Lead	0.000696	0.000300	0.00100	J	mg/L	1	06/17/16 01:45 PM
Lithium	<0.00500	0.00500	0.0100		mg/L	1	06/23/16 02:28 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	06/17/16 01:45 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	06/17/16 01:45 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	06/17/16 01:45 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	37.5	0.300	1.00		mg/L	1	06/16/16 12:34 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	06/16/16 12:34 PM
Sulfate	557	10.0	30.0		mg/L	10	06/16/16 04:20 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.34	0	0		pH Units@18.5℃	1	06/14/16 09:55 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	1220	10.0	10.0		mg/L	1	06/15/16 08:55 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *25-Jul-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	BMW-21
Project:	Luminant - MLSES	**Lab ID:**	1606122-05
Project No:	5164-B	**Collection Date:**	06/09/16 09:05 AM
Lab Order:	1606122	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **KL**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/17/16 03:34 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	06/17/16 01:47 PM
Arsenic	0.00340	0.00200	0.00500	J	mg/L	1	06/17/16 01:47 PM
Barium	0.0457	0.00300	0.0100		mg/L	1	06/17/16 01:47 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	06/17/16 01:47 PM
Boron	1.17	0.100	0.300		mg/L	10	06/23/16 12:43 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	06/17/16 01:47 PM
Calcium	155	1.00	3.00		mg/L	10	06/23/16 12:43 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	06/17/16 01:47 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	06/17/16 01:47 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	06/17/16 01:47 PM
Lithium	0.0675	0.00500	0.0100		mg/L	1	06/23/16 02:34 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	06/17/16 01:47 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	06/17/16 01:47 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	06/17/16 01:47 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	415	3.00	10.0		mg/L	10	06/16/16 05:05 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	06/16/16 12:49 PM
Sulfate	477	10.0	30.0		mg/L	10	06/16/16 05:05 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	7.20	0	0		pH Units@18.7℃	1	06/14/16 09:58 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	2230	50.0	50.0		mg/L	1	06/15/16 08:55 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *25-Jul-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	BMW-11AR
Project:	Luminant - MLSES	**Lab ID:**	1606122-06
Project No:	5164-B	**Collection Date:**	06/09/16 10:05 AM
Lab Order:	1606122	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **KL**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/17/16 03:36 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	06/17/16 01:49 PM
Arsenic	0.00532	0.00200	0.00500		mg/L	1	06/17/16 01:49 PM
Barium	0.0891	0.00300	0.0100		mg/L	1	06/17/16 01:49 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	06/17/16 01:49 PM
Boron	0.417	0.0100	0.0300		mg/L	1	06/27/16 02:48 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	06/17/16 01:49 PM
Calcium	182	1.00	3.00		mg/L	10	06/23/16 12:45 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	06/17/16 01:49 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	06/17/16 01:49 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	06/17/16 01:49 PM
Lithium	0.0187	0.00500	0.0100		mg/L	1	06/23/16 02:30 PM
Molybdenum	0.00355	0.00200	0.00500	J	mg/L	1	06/17/16 01:49 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	06/17/16 01:49 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	06/17/16 01:49 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	19.8	0.300	1.00		mg/L	1	06/16/16 01:04 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	06/16/16 01:04 PM
Sulfate	603	10.0	30.0		mg/L	10	06/16/16 05:20 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	7.15	0	0		pH Units@19℃	1	06/14/16 10:01 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	1700	50.0	50.0		mg/L	1	06/15/16 08:55 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *25-Jul-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	BMW-19
Project:	Luminant - MLSES	**Lab ID:**	1606122-07
Project No:	5164-B	**Collection Date:**	06/09/16 11:00 AM
Lab Order:	1606122	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **KL**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/17/16 03:39 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	06/17/16 01:51 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	06/17/16 01:51 PM
Barium	0.0158	0.00300	0.0100		mg/L	1	06/17/16 01:51 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	06/17/16 01:51 PM
Boron	0.444	0.0100	0.0300		mg/L	1	06/27/16 02:50 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	06/17/16 01:51 PM
Calcium	489	1.00	3.00		mg/L	10	06/23/16 12:47 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	06/17/16 01:51 PM
Cobalt	0.0141	0.00300	0.00500		mg/L	1	06/17/16 01:51 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	06/17/16 01:51 PM
Lithium	0.0644	0.00500	0.0100		mg/L	1	06/23/16 02:32 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	06/17/16 01:51 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	06/17/16 01:51 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	06/17/16 01:51 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	8.04	0.300	1.00		mg/L	1	06/16/16 01:19 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	06/16/16 01:19 PM
Sulfate	2390	100	300		mg/L	100	06/16/16 05:35 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.87	0	0		pH Units@18.8℃	1	06/14/16 10:03 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	4180	50.0	50.0		mg/L	1	06/15/16 08:55 AM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *25-Jul-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	BMW-18
Project:	Luminant - MLSES	**Lab ID:**	1606122-08
Project No:	5164-B	**Collection Date:**	06/09/16 12:15 PM
Lab Order:	1606122	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **KL**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/17/16 03:41 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	06/17/16 01:53 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	06/17/16 01:53 PM
Barium	0.0283	0.00300	0.0100		mg/L	1	06/17/16 01:53 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	06/17/16 01:53 PM
Boron	0.429	0.0100	0.0300		mg/L	1	06/23/16 12:49 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	06/17/16 01:53 PM
Calcium	7.32	0.100	0.300		mg/L	1	06/17/16 01:53 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	06/17/16 01:53 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	06/17/16 01:53 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	06/17/16 01:53 PM
Lithium	0.0152	0.00500	0.0100		mg/L	1	06/23/16 12:49 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	06/17/16 01:53 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	06/17/16 01:53 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	06/17/16 01:53 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	18.7	0.300	1.00		mg/L	1	06/16/16 01:34 PM
Fluoride	0.128	0.100	0.400	J	mg/L	1	06/16/16 01:34 PM
Sulfate	101	1.00	3.00		mg/L	1	06/16/16 01:34 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	8.54	0	0		pH Units@19℃	1	06/14/16 10:05 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	498	10.0	10.0		mg/L	1	06/15/16 08:55 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT: Pastor, Behling & Wheeler
Work Order: 1606122
Project: Luminant - MLSES

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_160617A

The QC data in batch 75718 applies to the following samples: 1606122-01A, 1606122-02A, 1606122-03A, 1606122-04A, 1606122-05A, 1606122-06A, 1606122-07A, 1606122-08A

Sample ID **MB-75718** Batch ID: **75718** TestNo: **SW7470A** Units: **mg/L**
SampType: **MBLK** Run ID: **CETAC2_HG_160617A** Analysis Date: **6/17/2016 3:05:11 PM** Prep Date: **6/17/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.0000800	0.000200								

Sample ID **LCS-75718** Batch ID: **75718** TestNo: **SW7470A** Units: **mg/L**
SampType: **LCS** Run ID: **CETAC2_HG_160617A** Analysis Date: **6/17/2016 3:09:43 PM** Prep Date: **6/17/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00202	0.000200	0.00200	0	101	85	115			

Sample ID **LCSD-75718** Batch ID: **75718** TestNo: **SW7470A** Units: **mg/L**
SampType: **LCSD** Run ID: **CETAC2_HG_160617A** Analysis Date: **6/17/2016 3:11:59 PM** Prep Date: **6/17/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00198	0.000200	0.00200	0	99.0	85	115			

Sample ID **1606101-32B SD** Batch ID: **75718** TestNo: **SW7470A** Units: **mg/L**
SampType: **SD** Run ID: **CETAC2_HG_160617A** Analysis Date: **6/17/2016 3:16:31 PM** Prep Date: **6/17/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.0000800	0.000200	0	0				0	10	

Sample ID **1606101-32B PDS** Batch ID: **75718** TestNo: **SW7470A** Units: **mg/L**
SampType: **PDS** Run ID: **CETAC2_HG_160617A** Analysis Date: **6/17/2016 3:18:46 PM** Prep Date: **6/17/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00236	0.000200	0.00250	0	94.4	85	115			

Sample ID **1606101-32B MS** Batch ID: **75718** TestNo: **SW7470A** Units: **mg/L**
SampType: **MS** Run ID: **CETAC2_HG_160617A** Analysis Date: **6/17/2016 3:21:02 PM** Prep Date: **6/17/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00190	0.000200	0.00200	0	95.0	80	120			

Sample ID **1606101-32B MSD** Batch ID: **75718** TestNo: **SW7470A** Units: **mg/L**
SampType: **MSD** Run ID: **CETAC2_HG_160617A** Analysis Date: **6/17/2016 3:23:18 PM** Prep Date: **6/17/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00193	0.000200	0.00200	0	96.5	80	120	1.57	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1606122
Project: Luminant - MLSES

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_160617A

Sample ID	**ICV-160617**	Batch ID:	**R86398**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**ICV**	Run ID:	**CETAC2_HG_160617A**	Analysis Date:	**6/17/2016 10:17:36 AM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00406	0.000200	0.00400	0	102	90	110			

Sample ID	**CCV8-160617**	Batch ID:	**R86398**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**CETAC2_HG_160617A**	Analysis Date:	**6/17/2016 3:00:37 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00211	0.000200	0.00200	0	106	90	110			

Sample ID	**CCV9-160617**	Batch ID:	**R86398**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**CETAC2_HG_160617A**	Analysis Date:	**6/17/2016 3:52:14 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00212	0.000200	0.00200	0	106	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1606122
Project: Luminant - MLSES

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160617B

The QC data in batch 75691 applies to the following samples: 1606122-01A, 1606122-02A, 1606122-03A, 1606122-04A, 1606122-05A, 1606122-06A, 1606122-07A, 1606122-08A

Sample ID **MB-75691** Batch ID: **75691** TestNo: **SW6020A** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_160617B** Analysis Date: **6/17/2016 1:01:00 PM** Prep Date: **6/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.000800	0.00250								
Arsenic	<0.00200	0.00500								
Barium	<0.00300	0.0100								
Beryllium	<0.000300	0.00100								
Cadmium	<0.000300	0.00100								
Calcium	<0.100	0.300								
Chromium	<0.00200	0.00500								
Cobalt	<0.00300	0.00500								
Lead	<0.000300	0.00100								
Lithium	<0.00500	0.0100								
Molybdenum	<0.00200	0.00500								
Selenium	<0.00200	0.00500								
Thallium	<0.000500	0.00150								

Sample ID **LCS-75691** Batch ID: **75691** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_160617B** Analysis Date: **6/17/2016 1:03:00 PM** Prep Date: **6/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.201	0.00250	0.200	0	100	80	120			
Arsenic	0.203	0.00500	0.200	0	101	80	120			
Barium	0.202	0.0100	0.200	0	101	80	120			
Beryllium	0.211	0.00100	0.200	0	105	80	120			
Cadmium	0.202	0.00100	0.200	0	101	80	120			
Calcium	4.79	0.300	5.00	0	95.7	80	120			
Chromium	0.207	0.00500	0.200	0	104	80	120			
Cobalt	0.210	0.00500	0.200	0	105	80	120			
Lead	0.200	0.00100	0.200	0	100	80	120			
Lithium	0.226	0.0100	0.200	0	113	80	120			
Molybdenum	0.200	0.00500	0.200	0	100	80	120			
Selenium	0.206	0.00500	0.200	0	103	80	120			
Thallium	0.205	0.00150	0.200	0	102	80	120			

Sample ID **LCSD-75691** Batch ID: **75691** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_160617B** Analysis Date: **6/17/2016 1:05:00 PM** Prep Date: **6/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.200	0.00250	0.200	0	100	80	120	0.276	15	
Arsenic	0.202	0.00500	0.200	0	101	80	120	0.489	15	
Barium	0.202	0.0100	0.200	0	101	80	120	0.031	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1606122
Project: Luminant - MLSES

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160617B

Sample ID **LCSD-75691** Batch ID: **75691** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_160617B** Analysis Date: **6/17/2016 1:05:00 PM** Prep Date: **6/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.214	0.00100	0.200	0	107	80	120	1.50	15	
Cadmium	0.202	0.00100	0.200	0	101	80	120	0.137	15	
Calcium	4.82	0.300	5.00	0	96.5	80	120	0.815	15	
Chromium	0.205	0.00500	0.200	0	103	80	120	0.800	15	
Cobalt	0.208	0.00500	0.200	0	104	80	120	0.679	15	
Lead	0.200	0.00100	0.200	0	100	80	120	0.177	15	
Lithium	0.215	0.0100	0.200	0	107	80	120	5.18	15	
Molybdenum	0.198	0.00500	0.200	0	99.0	80	120	1.14	15	
Selenium	0.203	0.00500	0.200	0	101	80	120	1.44	15	
Thallium	0.206	0.00150	0.200	0	103	80	120	0.579	15	

Sample ID **1606142-07A SD** Batch ID: **75691** TestNo: **SW6020A** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS4_160617B** Analysis Date: **6/17/2016 1:11:00 PM** Prep Date: **6/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.00400	0.0125	0	0				0	10	
Arsenic	0.0147	0.0250	0	0.0148				1.02	10	
Barium	0.0245	0.0500	0	0.0247				0.963	10	
Beryllium	<0.00150	0.00500	0	0				0	10	
Cadmium	<0.00150	0.00500	0	0.000432				0	10	
Chromium	<0.0100	0.0250	0	0				0	10	
Cobalt	0.0449	0.0250	0	0.0423				5.90	10	
Lead	<0.00150	0.00500	0	0				0	10	
Molybdenum	0.809	0.0250	0	0.813				0.480	10	
Selenium	<0.0100	0.0250	0	0.00263				0	10	
Thallium	<0.00250	0.00750	0	0				0	10	

Sample ID **1606142-07A PDS** Batch ID: **75691** TestNo: **SW6020A** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS4_160617B** Analysis Date: **6/17/2016 1:31:00 PM** Prep Date: **6/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.194	0.00250	0.200	0	97.1	80	120			
Arsenic	0.218	0.00500	0.200	0.0148	102	80	120			
Barium	0.214	0.0100	0.200	0.0247	94.8	80	120			
Beryllium	0.163	0.00100	0.200	0	81.6	80	120			
Cadmium	0.176	0.00100	0.200	0.000432	87.8	80	120			
Chromium	0.183	0.00500	0.200	0	91.3	80	120			
Cobalt	0.232	0.00500	0.200	0.0423	94.8	80	120			
Lead	0.202	0.00100	0.200	0	101	80	120			
Molybdenum	0.942	0.00500	0.200	0.813	64.6	80	120			S
Selenium	0.235	0.00500	0.200	0.00263	116	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1606122
Project: Luminant - MLSES

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160617B

Sample ID **1606142-07A PDS**	Batch ID: **75691**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_160617B**	Analysis Date: **6/17/2016 1:31:00 PM**	Prep Date: **6/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Thallium	0.202	0.00150	0.200	0	101	80	120			

Sample ID **1606142-07A MS**	Batch ID: **75691**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS4_160617B**	Analysis Date: **6/17/2016 1:33:00 PM**	Prep Date: **6/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.191	0.00250	0.200	0	95.6	80	120			
Arsenic	0.219	0.00500	0.200	0.0148	102	80	120			
Barium	0.217	0.0100	0.200	0.0247	96.0	80	120			
Beryllium	0.155	0.00100	0.200	0	77.6	80	120			S
Cadmium	0.177	0.00100	0.200	0.000432	88.4	80	120			
Calcium	378	0.300	5.00	368	211	80	120			S
Chromium	0.176	0.00500	0.200	0	87.9	80	120			
Cobalt	0.230	0.00500	0.200	0.0423	94.0	80	120			
Lead	0.198	0.00100	0.200	0	99.0	80	120			
Lithium	0.212	0.0100	0.200	0.0731	69.4	80	120			S
Molybdenum	0.997	0.00500	0.200	0.813	92.0	80	120			
Selenium	0.238	0.00500	0.200	0.00263	118	80	120			
Thallium	0.202	0.00150	0.200	0	101	80	120			

Sample ID **1606142-07A MSD**	Batch ID: **75691**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS4_160617B**	Analysis Date: **6/17/2016 1:35:00 PM**	Prep Date: **6/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.196	0.00250	0.200	0	97.9	80	120	2.33	15	
Arsenic	0.219	0.00500	0.200	0.0148	102	80	120	0.093	15	
Barium	0.220	0.0100	0.200	0.0247	97.7	80	120	1.56	15	
Beryllium	0.156	0.00100	0.200	0	77.9	80	120	0.395	15	S
Cadmium	0.179	0.00100	0.200	0.000432	89.3	80	120	0.962	15	
Calcium	376	0.300	5.00	368	158	80	120	0.702	15	S
Chromium	0.177	0.00500	0.200	0	88.6	80	120	0.876	15	
Cobalt	0.230	0.00500	0.200	0.0423	93.7	80	120	0.257	15	
Lead	0.202	0.00100	0.200	0	101	80	120	2.10	15	
Lithium	0.205	0.0100	0.200	0.0731	66.0	80	120	3.27	15	S
Molybdenum	1.01	0.00500	0.200	0.813	96.4	80	120	0.878	15	
Selenium	0.242	0.00500	0.200	0.00263	120	80	120	1.68	15	
Thallium	0.204	0.00150	0.200	0	102	80	120	0.915	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1606122
Project: Luminant - MLSES

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160617B

Sample ID **ICV-160617**	Batch ID: **R86404**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_160617B**	Analysis Date: **6/17/2016 10:43:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.101	0.00250	0.100	0	101	90	110			
Arsenic	0.0990	0.00500	0.100	0	99.0	90	110			
Barium	0.0982	0.0100	0.100	0	98.2	90	110			
Beryllium	0.0990	0.00100	0.100	0	99.0	90	110			
Cadmium	0.0981	0.00100	0.100	0	98.1	90	110			
Calcium	2.33	0.300	2.50	0	93.3	90	110			
Chromium	0.103	0.00500	0.100	0	103	90	110			
Cobalt	0.102	0.00500	0.100	0	102	90	110			
Lead	0.0976	0.00100	0.100	0	97.6	90	110			
Lithium	0.0940	0.0100	0.100	0	94.0	90	110			
Molybdenum	0.0945	0.00500	0.100	0	94.5	90	110			
Selenium	0.102	0.00500	0.100	0	102	90	110			
Thallium	0.0979	0.00150	0.100	0	97.9	90	110			

Sample ID **LCVL-160617**	Batch ID: **R86404**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160617B**	Analysis Date: **6/17/2016 10:47:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00199	0.00250	0.00200	0	99.6	70	130			
Arsenic	0.00512	0.00500	0.00500	0	102	70	130			
Barium	0.00522	0.0100	0.00500	0	104	70	130			
Beryllium	0.000870	0.00100	0.00100	0	87.0	70	130			
Cadmium	0.00100	0.00100	0.00100	0	100	70	130			
Calcium	0.110	0.300	0.100	0	110	70	130			
Chromium	0.00533	0.00500	0.00500	0	107	70	130			
Cobalt	0.00519	0.00500	0.00500	0	104	70	130			
Lead	0.000918	0.00100	0.00100	0	91.8	70	130			
Lithium	0.0100	0.0100	0.0100	0	100	70	130			
Molybdenum	0.00500	0.00500	0.00500	0	100	70	130			
Selenium	0.00530	0.00500	0.00500	0	106	70	130			
Thallium	0.00103	0.00150	0.00100	0	103	70	130			

Sample ID **CCV2-160617**	Batch ID: **R86404**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160617B**	Analysis Date: **6/17/2016 12:42:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.198	0.00250	0.200	0	99.2	90	110			
Arsenic	0.201	0.00500	0.200	0	101	90	110			
Barium	0.196	0.0100	0.200	0	98.0	90	110			
Beryllium	0.214	0.00100	0.200	0	107	90	110			
Cadmium	0.195	0.00100	0.200	0	97.5	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1606122
Project: Luminant - MLSES

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160617B

Sample ID **CCV2-160617**	Batch ID: **R86404**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160617B**	Analysis Date: **6/17/2016 12:42:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.72	0.300	5.00	0	94.5	90	110			
Chromium	0.203	0.00500	0.200	0	101	90	110			
Cobalt	0.208	0.00500	0.200	0	104	90	110			
Lead	0.200	0.00100	0.200	0	100	90	110			
Lithium	0.216	0.0100	0.200	0	108	90	110			
Molybdenum	0.193	0.00500	0.200	0	96.5	90	110			
Selenium	0.204	0.00500	0.200	0	102	90	110			
Thallium	0.204	0.00150	0.200	0	102	90	110			

Sample ID **LCVL2-160617**	Batch ID: **R86404**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160617B**	Analysis Date: **6/17/2016 12:47:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00200	0.00250	0.00200	0	99.8	70	130			
Arsenic	0.00529	0.00500	0.00500	0	106	70	130			
Barium	0.00505	0.0100	0.00500	0	101	70	130			
Beryllium	0.000756	0.00100	0.00100	0	75.6	70	130			
Cadmium	0.00102	0.00100	0.00100	0	102	70	130			
Calcium	0.107	0.300	0.100	0	107	70	130			
Chromium	0.00525	0.00500	0.00500	0	105	70	130			
Cobalt	0.00528	0.00500	0.00500	0	106	70	130			
Lead	0.000861	0.00100	0.00100	0	86.1	70	130			
Lithium	0.0129	0.0100	0.0100	0	129	70	130			
Molybdenum	0.00499	0.00500	0.00500	0	99.7	70	130			
Selenium	0.00573	0.00500	0.00500	0	115	70	130			
Thallium	0.00102	0.00150	0.00100	0	102	70	130			

Sample ID **CCV3-160617**	Batch ID: **R86404**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160617B**	Analysis Date: **6/17/2016 1:37:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.204	0.00250	0.200	0	102	90	110			
Arsenic	0.201	0.00500	0.200	0	101	90	110			
Barium	0.199	0.0100	0.200	0	99.7	90	110			
Beryllium	0.197	0.00100	0.200	0	98.5	90	110			
Cadmium	0.199	0.00100	0.200	0	99.7	90	110			
Calcium	5.10	0.300	5.00	0	102	90	110			
Chromium	0.196	0.00500	0.200	0	98.1	90	110			
Cobalt	0.202	0.00500	0.200	0	101	90	110			
Lead	0.200	0.00100	0.200	0	100	90	110			
Lithium	0.198	0.0100	0.200	0	98.8	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1606122
Project: Luminant - MLSES

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160617B

Sample ID **CCV3-160617**	Batch ID: **R86404**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160617B**	Analysis Date: **6/17/2016 1:37:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Molybdenum	0.197	0.00500	0.200	0	98.6	90	110			
Selenium	0.210	0.00500	0.200	0	105	90	110			
Thallium	0.206	0.00150	0.200	0	103	90	110			

Sample ID **LCVL3-160617**	Batch ID: **R86404**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160617B**	Analysis Date: **6/17/2016 1:41:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00207	0.00250	0.00200	0	104	70	130			
Arsenic	0.00526	0.00500	0.00500	0	105	70	130			
Barium	0.00527	0.0100	0.00500	0	105	70	130			
Beryllium	0.00116	0.00100	0.00100	0	116	70	130			
Cadmium	0.00100	0.00100	0.00100	0	100	70	130			
Calcium	0.112	0.300	0.100	0	112	70	130			
Chromium	0.00526	0.00500	0.00500	0	105	70	130			
Cobalt	0.00534	0.00500	0.00500	0	107	70	130			
Lead	0.000882	0.00100	0.00100	0	88.2	70	130			
Lithium	0.0113	0.0100	0.0100	0	113	70	130			
Molybdenum	0.00514	0.00500	0.00500	0	103	70	130			
Selenium	0.00562	0.00500	0.00500	0	112	70	130			
Thallium	0.00104	0.00150	0.00100	0	104	70	130			

Sample ID **CCV4-160617**	Batch ID: **R86404**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160617B**	Analysis Date: **6/17/2016 2:05:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.200	0.00250	0.200	0	99.9	90	110			
Arsenic	0.200	0.00500	0.200	0	100	90	110			
Barium	0.197	0.0100	0.200	0	98.7	90	110			
Beryllium	0.211	0.00100	0.200	0	106	90	110			
Cadmium	0.197	0.00100	0.200	0	98.6	90	110			
Calcium	4.88	0.300	5.00	0	97.7	90	110			
Chromium	0.201	0.00500	0.200	0	100	90	110			
Cobalt	0.205	0.00500	0.200	0	102	90	110			
Lead	0.198	0.00100	0.200	0	99.2	90	110			
Molybdenum	0.193	0.00500	0.200	0	96.3	90	110			
Selenium	0.206	0.00500	0.200	0	103	90	110			
Thallium	0.204	0.00150	0.200	0	102	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1606122
Project: Luminant - MLSES

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160617B

Sample ID **LCVL4-160617** Batch ID: **R86404** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_160617B** Analysis Date: **6/17/2016 2:09:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00201	0.00250	0.00200	0	101	70	130			
Arsenic	0.00529	0.00500	0.00500	0	106	70	130			
Barium	0.00510	0.0100	0.00500	0	102	70	130			
Beryllium	0.00101	0.00100	0.00100	0	101	70	130			
Cadmium	0.000909	0.00100	0.00100	0	90.9	70	130			
Calcium	0.110	0.300	0.100	0	110	70	130			
Chromium	0.00530	0.00500	0.00500	0	106	70	130			
Cobalt	0.00536	0.00500	0.00500	0	107	70	130			
Lead	0.000862	0.00100	0.00100	0	86.2	70	130			
Molybdenum	0.00493	0.00500	0.00500	0	98.5	70	130			
Selenium	0.00535	0.00500	0.00500	0	107	70	130			
Thallium	0.00102	0.00150	0.00100	0	102	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1606122
Project: Luminant - MLSES

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160623A

The QC data in batch 75691 applies to the following samples: 1606122-01A, 1606122-02A, 1606122-03A, 1606122-04A, 1606122-05A, 1606122-06A, 1606122-07A, 1606122-08A

Sample ID **MB-75691** Batch ID: **75691** TestNo: **SW6020A** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_160623A** Analysis Date: **6/23/2016 12:23:00 PM** Prep Date: **6/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	<0.0100	0.0300								

Sample ID **LCS-75691** Batch ID: **75691** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_160623A** Analysis Date: **6/23/2016 12:25:00 PM** Prep Date: **6/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.211	0.0300	0.200	0	105	80	120			

Sample ID **LCSD-75691** Batch ID: **75691** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_160623A** Analysis Date: **6/23/2016 12:27:00 PM** Prep Date: **6/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.211	0.0300	0.200	0	106	80	120	0.445	15	

Sample ID **1606142-07A SD** Batch ID: **75691** TestNo: **SW6020A** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS4_160623A** Analysis Date: **6/23/2016 12:33:00 PM** Prep Date: **6/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	1.91	1.50	0	1.79				6.67	10	
Lithium	<0.250	0.500	0	0.0936				0	10	

Sample ID **1606142-07A PDS** Batch ID: **75691** TestNo: **SW6020A** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS4_160623A** Analysis Date: **6/23/2016 12:53:00 PM** Prep Date: **6/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	3.87	0.300	2.00	1.79	104	80	120			
Lithium	2.01	0.100	2.00	0.0936	95.8	80	120			

Sample ID **1606142-07A MS** Batch ID: **75691** TestNo: **SW6020A** Units: **mg/L**
SampType: **MS** Run ID: **ICP-MS4_160623A** Analysis Date: **6/23/2016 12:55:00 PM** Prep Date: **6/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	2.16	0.300	0.200	1.79	183	80	120			S

Sample ID **1606142-07A MSD** Batch ID: **75691** TestNo: **SW6020A** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS4_160623A** Analysis Date: **6/23/2016 12:57:00 PM** Prep Date: **6/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	2.09	0.300	0.200	1.79	149	80	120	3.18	15	S

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1606122
Project: Luminant - MLSES

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160623A

Sample ID **1606142-07A SD**	Batch ID: **75691**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS4_160623A**	Analysis Date: **6/23/2016 1:43:00 PM**	Prep Date: **6/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	376	75.0	0	369				1.91	10	

Sample ID **1606142-07A PDS**	Batch ID: **75691**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_160623A**	Analysis Date: **6/23/2016 1:45:00 PM**	Prep Date: **6/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	608	15.0	250	369	95.6	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160623A

Sample ID **ICV-160623**	Batch ID: **R86514**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_160623A**	Analysis Date: **6/23/2016 11:37:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.107	0.0300	0.100	0	107	90	110			
Calcium	2.37	0.300	2.50	0	94.6	90	110			
Lithium	0.104	0.0100	0.100	0	104	90	110			

Sample ID **LCVL-160623**	Batch ID: **R86514**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160623A**	Analysis Date: **6/23/2016 11:48:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0213	0.0300	0.0200	0	107	70	130			
Calcium	0.0946	0.300	0.100	0	94.6	70	130			
Lithium	0.0114	0.0100	0.0100	0	114	70	130			

Sample ID **CCV1-160623**	Batch ID: **R86514**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160623A**	Analysis Date: **6/23/2016 12:12:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.196	0.0300	0.200	0	97.8	90	110			
Calcium	4.74	0.300	5.00	0	94.7	90	110			
Lithium	0.201	0.0100	0.200	0	100	90	110			

Sample ID **LCVL1-160623**	Batch ID: **R86514**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160623A**	Analysis Date: **6/23/2016 12:19:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0234	0.0300	0.0200	0	117	70	130			
Calcium	0.0953	0.300	0.100	0	95.3	70	130			
Lithium	0.0106	0.0100	0.0100	0	106	70	130			

Sample ID **CCV2-160623**	Batch ID: **R86514**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160623A**	Analysis Date: **6/23/2016 12:59:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.211	0.0300	0.200	0	105	90	110			
Calcium	4.81	0.300	5.00	0	96.1	90	110			
Lithium	0.202	0.0100	0.200	0	101	90	110			

Sample ID **LCVL2-160623**	Batch ID: **R86514**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160623A**	Analysis Date: **6/23/2016 1:37:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0184	0.0300	0.0200	0	92.2	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

Sample ID **LCVL2-160623**	Batch ID: **R86514**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160623A**	Analysis Date: **6/23/2016 1:37:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.0925	0.300	0.100	0	92.5	70	130			
Lithium	0.00975	0.0100	0.0100	0	97.5	70	130			

Sample ID **CCV3-160623**	Batch ID: **R86514**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160623A**	Analysis Date: **6/23/2016 2:03:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.90	0.300	5.00	0	97.9	90	110			
Lithium	0.214	0.0100	0.200	0	107	90	110			

Sample ID **LCVL3-160623**	Batch ID: **R86514**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160623A**	Analysis Date: **6/23/2016 2:22:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.0933	0.300	0.100	0	93.3	70	130			
Lithium	0.0110	0.0100	0.0100	0	110	70	130			

Sample ID **CCV4-160623**	Batch ID: **R86514**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160623A**	Analysis Date: **6/23/2016 2:48:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lithium	0.212	0.0100	0.200	0	106	90	110			

Sample ID **LCVL4-160623**	Batch ID: **R86514**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160623A**	Analysis Date: **6/23/2016 2:55:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lithium	0.0105	0.0100	0.0100	0	105	70	130			

Sample ID **CCV6-160623**	Batch ID: **R86514**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160623A**	Analysis Date: **6/23/2016 4:11:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.78	0.300	5.00	0	95.6	90	110			

Sample ID **LCVL6-160623**	Batch ID: **R86514**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160623A**	Analysis Date: **6/23/2016 4:31:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.0980	0.300	0.100	0	98.0	70	130			

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160627A

Sample ID **ICV-160627**	Batch ID: **R86563**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_160627A**	Analysis Date: **6/27/2016 12:26:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0994	0.0300	0.100	0	99.4	90	110			

Sample ID **LCVL-160627**	Batch ID: **R86563**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160627A**	Analysis Date: **6/27/2016 12:32:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0231	0.0300	0.0200	0	115	70	130			

Sample ID **CCV1-160627**	Batch ID: **R86563**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160627A**	Analysis Date: **6/27/2016 1:27:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.213	0.0300	0.200	0	107	90	110			

Sample ID **LCVL1-160627**	Batch ID: **R86563**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160627A**	Analysis Date: **6/27/2016 1:45:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0244	0.0300	0.0200	0	122	70	130			

Sample ID **CCV2-160627**	Batch ID: **R86563**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160627A**	Analysis Date: **6/27/2016 2:23:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.212	0.0300	0.200	0	106	90	110			

Sample ID **LCVL2-160627**	Batch ID: **R86563**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160627A**	Analysis Date: **6/27/2016 2:41:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0208	0.0300	0.0200	0	104	70	130			

Sample ID **CCV3-160627**	Batch ID: **R86563**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160627A**	Analysis Date: **6/27/2016 3:20:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.212	0.0300	0.200	0	106	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1606122
Project: Luminant - MLSES

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160627A

Sample ID **LCVL3-160627** Batch ID: **R86563** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_160627A** Analysis Date: **6/27/2016 3:36:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0219	0.0300	0.0200	0	109	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1606122
Project: Luminant - MLSES

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_160616A

The QC data in batch 75689 applies to the following samples: 1606122-01D, 1606122-02D, 1606122-03D, 1606122-04D, 1606122-05D, 1606122-06D, 1606122-07D, 1606122-08D

Sample ID **MB-75689** Batch ID: **75689** TestNo: **E300** Units: **mg/L**
SampType: **MBLK** Run ID: **IC4_160616A** Analysis Date: **6/16/2016 10:52:51 AM** Prep Date: **6/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00								
Fluoride	<0.100	0.400								
Sulfate	<1.00	3.00								

Sample ID **LCS-75689** Batch ID: **75689** TestNo: **E300** Units: **mg/L**
SampType: **LCS** Run ID: **IC4_160616A** Analysis Date: **6/16/2016 11:07:51 AM** Prep Date: **6/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.3	1.00	10.00	0	103	90	110			
Fluoride	4.05	0.400	4.000	0	101	90	110			
Sulfate	31.4	3.00	30.00	0	105	90	110			

Sample ID **LCSD-75689** Batch ID: **75689** TestNo: **E300** Units: **mg/L**
SampType: **LCSD** Run ID: **IC4_160616A** Analysis Date: **6/16/2016 11:22:51 AM** Prep Date: **6/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.4	1.00	10.00	0	104	90	110	0.815	20	
Fluoride	4.07	0.400	4.000	0	102	90	110	0.403	20	
Sulfate	31.6	3.00	30.00	0	105	90	110	0.449	20	

Sample ID **1606122-04DMS** Batch ID: **75689** TestNo: **E300** Units: **mg/L**
SampType: **MS** Run ID: **IC4_160616A** Analysis Date: **6/16/2016 4:35:41 PM** Prep Date: **6/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	246	10.0	200.0	36.01	105	90	110			
Fluoride	206	4.00	200.0	0	103	90	110			
Sulfate	777	30.0	200.0	556.8	110	90	110			

Sample ID **1606122-04DMSD** Batch ID: **75689** TestNo: **E300** Units: **mg/L**
SampType: **MSD** Run ID: **IC4_160616A** Analysis Date: **6/16/2016 4:50:41 PM** Prep Date: **6/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	244	10.0	200.0	36.01	104	90	110	0.817	20	
Fluoride	205	4.00	200.0	0	102	90	110	0.722	20	
Sulfate	775	30.0	200.0	556.8	109	90	110	0.277	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1606122
Project: Luminant - MLSES

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_160616A

Sample ID **ICV-160616**	Batch ID: **R86383**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC4_160616A**	Analysis Date: **6/16/2016 10:13:44 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	25.7	1.00	25.00	0	103	90	110			
Fluoride	10.1	0.400	10.00	0	101	90	110			
Sulfate	78.9	3.00	75.00	0	105	90	110			

Sample ID **CCV1-160616**	Batch ID: **R86383**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC4_160616A**	Analysis Date: **6/16/2016 2:48:53 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.5	1.00	10.00	0	105	90	110			
Fluoride	4.15	0.400	4.000	0	104	90	110			
Sulfate	32.1	3.00	30.00	0	107	90	110			

Sample ID **CCV2-160616**	Batch ID: **R86383**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC4_160616A**	Analysis Date: **6/16/2016 6:35:41 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.6	1.00	10.00	0	106	90	110			
Fluoride	4.19	0.400	4.000	0	105	90	110			
Sulfate	32.0	3.00	30.00	0	107	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1606122
Project: Luminant - MLSES

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_160614A

The QC data in batch 75614 applies to the following samples: 1606122-01D, 1606122-02D, 1606122-03D, 1606122-04D, 1606122-05D, 1606122-06D, 1606122-07D, 1606122-08D

Sample ID	**1606121-01D-DUP**	Batch ID:	**75614**	TestNo:	**M4500-H+ B**	Units:	**pH Units@17.8℃**
SampType:	**DUP**	Run ID:	**TITRATOR_160614A**	Analysis Date:	**6/14/2016 9:31:00 AM**	Prep Date:	**6/14/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	6.30	0	0	6.330				0.475	5	

Sample ID	**1606132-01A-DUP**	Batch ID:	**75614**	TestNo:	**M4500-H+ B**	Units:	**pH Units@19.5℃**
SampType:	**DUP**	Run ID:	**TITRATOR_160614A**	Analysis Date:	**6/14/2016 10:13:00 AM**	Prep Date:	**6/14/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	7.38	0	0	7.370				0.136	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1606122
Project: Luminant - MLSES

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_160614A

Sample ID	**ICV-160614**	Batch ID:	**R86296**	TestNo:	**M4500-H+ B**	Units:	**pH Units@22℃**
SampType:	**ICV**	Run ID:	**TITRATOR_160614A**	Analysis Date:	**6/14/2016 8:36:00 AM**	Prep Date:	**6/14/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	9.93	0	10.00	0	99.3	99	101			

Sample ID	**CCV1-160614**	Batch ID:	**R86296**	TestNo:	**M4500-H+ B**	Units:	**pH Units@21.2℃**
SampType:	**CCV**	Run ID:	**TITRATOR_160614A**	Analysis Date:	**6/14/2016 9:50:00 AM**	Prep Date:	**6/14/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	6.98	0	7.000	0	99.7	97.1	102.9			

Sample ID	**CCV2-160614**	Batch ID:	**R86296**	TestNo:	**M4500-H+ B**	Units:	**pH Units@21℃**
SampType:	**CCV**	Run ID:	**TITRATOR_160614A**	Analysis Date:	**6/14/2016 10:15:00 AM**	Prep Date:	**6/14/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	6.99	0	7.000	0	99.9	97.1	102.9			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1606122
Project: Luminant - MLSES

ANALYTICAL QC SUMMARY REPORT

RunID: WC_160614C

The QC data in batch 75640 applies to the following samples: 1606122-01D, 1606122-02D, 1606122-03D, 1606122-04D, 1606122-05D, 1606122-06D, 1606122-07D, 1606122-08D

Sample ID	**MB-75640**	Batch ID:	**75640**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**WC_160614C**	Analysis Date:	**6/15/2016 8:55:00 AM**	Prep Date:	**6/14/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	<10.0	10.0								

Sample ID	**LCS-75640**	Batch ID:	**75640**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**WC_160614C**	Analysis Date:	**6/15/2016 8:55:00 AM**	Prep Date:	**6/14/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	769	10.0	745.6	0	103	90	113			

Sample ID	**1606122-03D-DUP**	Batch ID:	**75640**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**DUP**	Run ID:	**WC_160614C**	Analysis Date:	**6/15/2016 8:55:00 AM**	Prep Date:	**6/14/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	2380	50.0	0	2345				1.48	5	

Sample ID	**1606123-01D-DUP**	Batch ID:	**75640**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**DUP**	Run ID:	**WC_160614C**	Analysis Date:	**6/15/2016 8:55:00 AM**	Prep Date:	**6/14/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	1450	50.0	0	1385				4.59	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

Case Narrative

Lab No: 20160577

This report contains the analytical results for the 16 sample(s) received under chain of custody by ESC Lab Sciences on 6/15/2016 11:00:09 AM. These samples are associated with your 1606122-123 project.

The analytical results included in this report meet all applicable quality control procedure requirements except as noted below:

The test results in this report meet all NELAC requirements unless noted below:

This report shall not be reproduced, except in full, without the written approval of ESC Lab Sciences.

All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client.

Results have been reviewed by the Director of Radiochemistry or their designees and is approved for release.

Observations / Nonconformances

Analytical Report

	Method	Result	DL	Units	Qual	Prep Date	Analysis Date	Analyst
Lab ID : 20160577-01								
Client ID : BMW-24								
Date Sampled : 6/8/2016 3:15:00 PM								
Matrix : NPW								
		Radiochemical Analyses						
Combined Radium		1.62 +/- 0.900	1.07	pCi/l				
Radium-226	SM 7500 Ra B M*	0.360 +/- 0.153	0.138	pCi/l		06/22/16	06/23/16	AK
Radium-228	EPA 904*/9320*	1.26 +/- 0.747	0.927	pCi/l		07/11/16	07/19/16	JR
Lab ID : 20160577-02								
Client ID : BMW-23								
Date Sampled : 6/8/2016 4:05:00 PM								
Matrix : NPW								
		Radiochemical Analyses						
Combined Radium		1.94 +/- 0.978	1.12	pCi/l				
Radium-226	SM 7500 Ra B M*	0.654 +/- 0.225	0.185	pCi/l		06/22/16	06/23/16	AK
Radium-228	EPA 904*/9320*	1.29 +/- 0.753	0.931	pCi/l		07/11/16	07/20/16	JR
Lab ID : 20160577-03								
Client ID : BMW-22								
Date Sampled : 6/8/2016 5:00:00 PM								
Matrix : NPW								
		Radiochemical Analyses						
Combined Radium		2.77 +/- 0.866	0.928	pCi/l				
Radium-226	SM 7500 Ra B M*	0.888 +/- 0.243	0.196	pCi/l		06/22/16	06/23/16	AK
Radium-228	EPA 904*/9320*	1.88 +/- 0.623	0.732	pCi/l		07/11/16	07/20/16	JR
Lab ID : 20160577-04								
Client ID : BMW-20								
Date Sampled : 6/9/2016 8:15:00 AM								
Matrix : NPW								
		Radiochemical Analyses						
Combined Radium		1.07 +/- 0.708	0.803	pCi/l				
Radium-226	SM 7500 Ra B M*	0.512 +/- 0.173	0.087	pCi/l		06/22/16	06/23/16	AK
Radium-228	EPA 904*/9320*	0.554 +/- 0.535	0.716	pCi/l		07/11/16	07/20/16	JR

Analytical Report

	Method	Result	DL	Units	Qual	Prep Date	Analysis Date	Analyst
Lab ID : 20160577-05								
Client ID : BMW-21								
Date Sampled : 6/9/2016 9:05:00 AM								
Matrix : NPW								
		Radiochemical Analyses						
Combined Radium		1.09 +/- 0.893	1.09	pCi/l				
Radium-226	SM 7500 Ra B M*	0.319 +/- 0.169	0.171	pCi/l		06/22/16	06/23/16	AK
Radium-228	EPA 904*/9320*	0.773 +/- 0.724	0.917	pCi/l		07/11/16	07/20/16	JR
Lab ID : 20160577-06								
Client ID : BMW-11AR								
Date Sampled : 6/9/2016 10:05:00 AM								
Matrix : NPW								
		Radiochemical Analyses						
Combined Radium		0.650 +/- 0.683	0.815	pCi/l				
Radium-226	SM 7500 Ra B M*	0.465 +/- 0.173	0.141	pCi/l		06/22/16	06/26/16	AK
Radium-228	EPA 904*/9320*	0.185 +/- 0.510	0.674	pCi/l		07/11/16	07/20/16	JR
Lab ID : 20160577-07								
Client ID : BMW-19								
Date Sampled : 6/9/2016 11:00:00 AM								
Matrix : NPW								
		Radiochemical Analyses						
Combined Radium		2.05 +/- 0.789	1.35	pCi/l				
Radium-226	SM 7500 Ra B M*	0.074 +/- 0.093	0.142	pCi/l		06/22/16	06/26/16	AK
Radium-228	EPA 904*/9320*	1.98 +/- 0.696	1.21	pCi/l		07/11/16	07/20/16	JR
Lab ID : 20160577-08								
Client ID : BMW-18								
Date Sampled : 6/9/2016 12:15:00 PM								
Matrix : NPW								
		Radiochemical Analyses						
Combined Radium		0.914 +/- 0.721	0.952	pCi/l				
Radium-226	SM 7500 Ra B M*	0.057 +/- 0.089	0.143	pCi/l		06/22/16	06/26/16	AK
Radium-228	EPA 904*/9320*	0.857 +/- 0.632	0.809	pCi/l		07/11/16	07/20/16	JR

QC Report

Parameter	Blank	LCS %REC	LCSD %REC	LCSD RPD	DUP RPD	RER, NAD or DER	MS %REC	MSD %REC	MSD RPD	Batch ID
Radium-226	0.004	89.8			NC	0.121	97.5	96.5	1.0	R1100
Radium-228	-0.283	104.0			145.0	1.580	101.0	96.6	4.3	R3830

Lab Approval:

DHL Analytical, Inc.
2300 Double Creek Drive
Round Rock, TX 78664
TEL: *(512) 388-8222* FAX: *(512) 388-8229*

CHAIN-OF-CUSTODY RECORD

Work Order: 1606122

Subcontractor:

ESC Laboratory
311 North Aspen
Broken Arrow, Oklahoma 74012

TEL: (918) 251-2515
FAX:
Acct #: DHLRRTX

11-Jun-16

Sample Id	Matrix	DHL#	Date Collected	Bottle Type	Requested Tests					
					E904.0	SM7500Ra-B M				
BMW-24	Aqueous	-01B	06/08/16 03:15 PM	500HDPEHNO3	1					
BMW-24	Aqueous	-01C	06/08/16 03:15 PM	500HDPEHNO3		1				
BMW-23	Aqueous	-02B	06/08/16 04:05 PM	500HDPEHNO3	1					
BMW-23	Aqueous	-02C	06/08/16 04:05 PM	500HDPEHNO3		1				
BMW-22	Aqueous	-03B	06/08/16 05:00 PM	500HDPEHNO3	1					
BMW-22	Aqueous	-03C	06/08/16 05:00 PM	500HDPEHNO3		1				
BMW-20	Aqueous	-04B	06/09/16 08:15 AM	500HDPEHNO3	1					
BMW-20	Aqueous	-04C	06/09/16 08:15 AM	500HDPEHNO3		1				
BMW-21	Aqueous	-05B	06/09/16 09:05 AM	500HDPEHNO3	1					
BMW-21	Aqueous	-05C	06/09/16 09:05 AM	500HDPEHNO3		1				
BMW-11AR	Aqueous	-06B	06/09/16 10:05 AM	500HDPEHNO3	1					
BMW-11AR	Aqueous	-06C	06/09/16 10:05 AM	500HDPEHNO3		1				
BMW-19	Aqueous	-07B	06/09/16 11:00 AM	500HDPEHNO3	1					
BMW-19	Aqueous	-07C	06/09/16 11:00 AM	500HDPEHNO3		1				
BMW-18	Aqueous	-08B	06/09/16 12:15 PM	500HDPEHNO3	1					
BMW-18	Aqueous	-08C	06/09/16 12:15 PM	500HDPEHNO3		1				

General Comments:

Please analyze these samples with Normal Turnaround Time.
Report RA-226, Ra-228 & Combined per Specs DHLRRTX033116S.
Quality Control Package Needed: Standard - NELAC Rad Test compliant
Email to cac@dhlanalytical.com & dupont@dhlanalytical.com

L 841699
2016077

		Date/Time			Date/Time
Relinquished by:		6/13/16 1730	**Received by:**		6/13/16 1730
Relinquished by:			**Received by:**		6/15/16 1100

SAMPLE LOGIN

Date Received: *06/15/16 11:00:09* **Lab Number:** 20160577 **Due:** 07/13/16

Sample Number	Client Sample ID	Matrix	Date Sampled	Container Type	Container Size	Preservation	Preserved Upon Receipt	Custody Seal	Seal Intact
20160577-01 B	BMW-24	NPW	06/08/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
20160577-01 A	BMW-24	NPW	06/08/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160577-02 A	BMW-23	NPW	06/08/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
20160577-02 B	BMW-23	NPW	06/08/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160577-03 A	BMW-22	NPW	06/08/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
20160577-03 B	BMW-22	NPW	06/08/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160577-04 B	BMW-20	NPW	06/09/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
20160577-04 A	BMW-20	NPW	06/09/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160577-05 A	BMW-21	NPW	06/09/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
20160577-05 B	BMW-21	NPW	06/09/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160577-06 A	BMW-11AR	NPW	06/09/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
20160577-06 B	BMW-11AR	NPW	06/09/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160577-07 A	BMW-19	NPW	06/09/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
20160577-07 B	BMW-19	NPW	06/09/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						

20160577-08 A	BMW-18	NPW	06/09/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
20160577-08 B	BMW-18	NPW	06/09/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160577-09 B	AMW-13	NPW	06/10/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
20160577-09 A	AMW-13	NPW	06/10/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160577-10 A	AMW-14	NPW	06/10/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
20160577-10 B	AMW-14	NPW	06/10/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160577-11 A	AMW-23	NPW	06/10/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
20160577-11 B	AMW-23	NPW	06/10/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160577-12 B	AMW-22	NPW	06/10/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
20160577-12 A	AMW-22	NPW	06/10/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160577-13 A	AMW-20	NPW	06/10/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
20160577-13 B	AMW-20	NPW	06/10/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160577-14 A	AMW-10	NPW	06/10/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
20160577-14 B	AMW-10	NPW	06/10/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160577-15 A	AMW-21	NPW	06/10/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
20160577-15 B	AMW-21	NPW	06/10/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160577-16 B	A-1 POND	NPW	06/10/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
20160577-16 A	A-1 POND	NPW	06/10/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes

Radium-226	SM 7500 Ra B M*
Radium-228	EPA 904*/9320*

CONTAINER INSPECTION

 # Coolers **Custody Seals Broken** No **Temperature:** NA °C **Ice** **Radiation Survey:** <300 cpm

SAMPLE INSPECTION

Sample Seal Broken No **Chain of Custody Record** ☑ **Labels in Tact** ☑ mostly **Radiation Survey Complete** ☑ NA

Anomalies

Inspected By: _____ **DATE** 6/15/16

QA or Designee Review: Raymond Thomas **DATE** 06/15/16

Sample Custodian Review: _____ **DATE** _____

Project Notes: Sample -15, AMW-21, was not preserved. 06/15/16 m

September 14, 2016

Will Vienne
Pastor, Behling & Wheeler
2201 Double Creek Dr #4004
Round Rock, Texas 78664
TEL: (512) 671-3434
FAX (512) 671-3446

Order No.: 1608133

RE: Luminant - Martin Lake

Dear Will Vienne:

DHL Analytical, Inc. received 27 sample(s) on 8/11/2016 for the analyses presented in the following report.

There were no problems with the analyses and all data met requirements of NELAC except where noted in the Case Narrative. All non-NELAC methods will be identified accordingly in the case narrative and all estimated uncertainties of test results are within method or EPA specifications.

If you have any questions regarding these tests results, please feel free to call. Thank you for using DHL Analytical.

Sincerely,

John DuPont
General Manager

This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211-16-16

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DHL ANALYTICAL
2300 Double Creek Dr. ■ Round Rock, TX 78664
Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

№ 72291

CHAIN-OF-CUSTODY

CLIENT: DBW
ADDRESS: 2201 Double Creek Dr Ste 4004 Round Rock TX 78664
PHONE: 512 671 3434 FAX/E-MAIL: 512 671 3446
DATA REPORTED TO: WILL VIENNE
ADDITIONAL REPORT COPIES TO:

DATE: 8/9/16 PAGE ____ OF ____
PO #: 5164-B DHL WORK ORDER #: 1100833
PROJECT LOCATION OR NAME: Luminant - Martin Lake
CLENT PROJECT #: 5164-B COLLECTOR: C KAKOLEWSKI

Authorize 5% surcharge for TRRP Report? ☐ Yes ☐ No

S=SOIL W=WATER A=AIR L=LIQUID SE=SEDIMENT P=PAINT SL=SLUDGE O=OTHER SO=SOLID

PRESERVATION: HCl | HNO_3 | H_2SO_4 ☐ NaOH ☐ | ICE | UNPRESERVED

ANALYSES: BTEX ☐ MTBE ☐ [METHOD 8021] | TPH 1005 ☐ TPH 1006 ☐ HOLD 1006 ☐ | GRO [METHOD 8015] ☐ DRO [METHOD 8105] ☐ | VOC 8260 ☐ VOC 624 ☐ VOC 8260/5035 ☐ | SVOC 8270 ☐ PAH 8270 ☐ HOLD PAH ☐ SVOC 625 ☐ | 8270 PEST ☐ 625 PEST/PCB ☐ 608 PCB ☐ | 8270 O-P PEST ☐ 8082 PCB ☐ 8270 PCB ☐ | 8321 HERB ☐ T PHOS, AMMONIA ☐ | METALS 6020 ☐ METALS 200.8 ☐ DISS. METALS ☐ | RCRA ☐ TX11 ☐ _____ ☐ | PH ☐ HEX CHROM ☐ ALKALINITY ☐ COD ☐ | CHLORIDE ☐ ANIONS _____ ☐ | TCLP-SVOC ☐ VOC ☐ PEST ☐ HERB ☐ | TCLP-METALS ☐ RCRA 8 ☐ TX-11 ☐ Pb ☐ | RCI ☐ FLASHPOINT ☐ DGAS ☐ | TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐ | SEE ATTACHED

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	HCl	HNO_3	H_2SO_4 ☐ NaOH ☐	ICE	UNPRESERVED	FIELD NOTES
H-28	01	8/9/16	0903 8/12/16 0904	W	P	4		3		X	1	9:30
H-29	02		1003									10:35
H-31	03		1115									11:50
H-30	04		1219									12:45
H-32	05		1325									13:50
H-27	06		1421									14:50
H-33	07		1531									15:55
H-26	08		1614								X	16:45
DUP-01	09	8/9/16	1438	W	P	4		3		X	1	14:30
PDP-25	10	8/10/16	1330	W	P	4		3		X	1	13:30
PDP-24	11		1100									11:00
MW-17A	12		1020									10:20
PDP-23	13		910									9:10
MW-19	14		1500									15:00
MW-20A	15		1410									14:10

per chris 8/12/16 gg

RELINQUISHED BY: (Signature) 17:20 DATE/TIME 8/11/16 RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature) DATE/TIME RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature) DATE/TIME RECEIVED BY: (Signature)

TURN AROUND TIME
RUSH ☐ CALL FIRST
1 DAY ☐ CALL FIRST
2 DAY ☐
NORMAL ☒
OTHER ☐ _____

LABORATORY USE ONLY:
RECEIVING TEMP: 3.1 | 0.2 | 0.6 THERM #: 78
CUSTODY SEALS: ☐ BROKEN ☐ INTACT ☒ NOT USED
CARRIER: ☐ LONE STAR ☐ FEDEX ☐ UPS ☐ OTHER
☐ COURIER DELIVERY
☒ HAND DELIVERED

APPENDIX F-Revision 2 February 27, 2014 ☐ DHL DISPOSAL @ $5.00 each ☐ Return

DHL ANALYTICAL
2300 Double Creek Dr. ■ Round Rock, TX 78664
Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

№ 72452

CHAIN-OF-CUSTODY

CLIENT: PBW
ADDRESS: 2201 DOUBLE CREEK DR ROUND ROCK, TX 78664
PHONE: 512-671-3434 FAX/E-MAIL: 512-671-3446
DATA REPORTED TO: WILL VIENNE
ADDITIONAL REPORT COPIES TO:

DATE: 8-11-16 PAGE 1 OF 1
PO #: 5164-B DHL WORK ORDER #: 1608133
PROJECT LOCATION OR NAME: LUMINANT - MCSES
CLENT PROJECT #: 5164-B COLLECTOR: J. BRAYTON

Authorize 5% surcharge for TRRP Report? ❑ Yes ❑ No

S=SOIL P=PAINT
W=WATER SL=SLUDGE
A=AIR O=OTHER
L=LIQUID SO=SOLID
SE=SEDIMENT

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	PRESERVATION: HCl	HNO_3	H_2SO_4 ❑ NaOH ❑	ICE	UNPRESERVED	ANALYSES: BTEX ❑ MTBE ❑ [METHOD 8021] ❑ TPH 1005 ❑ TPH 1006 ❑ HOLD 1006 ❑ GRO [METHOD 8015] ❑ DRO [METHOD 8105] ❑ VOC 8260 ❑ VOC 624 ❑ VOC 8260/5035 ❑ SVOC 8270 ❑ PAH 8270 ❑ HOLD PAH ❑ SVOC 625 ❑ 8270 PEST ❑ 625 PEST/PCB ❑ 608 PCB ❑ 8270 PCB ❑ 8270 O-P PEST ❑ 8082 PCB ❑ 8270 PCB ❑ 8321 HERB ❑ T PHOS, AMMONIA ❑ METALS 6020 ❑ METALS 200.8 ❑ DISS. METALS ❑ ____ ❑ RCRA ❑ TX11 ❑ ____ PH ❑ HEX CHROM ❑ ALKALINITY ❑ COD ❑ CHLORIDE ❑ ANIONS ____ ❑ TCLP-SVOC ❑ VOC ❑ PEST ❑ HERB ❑ TCLP-METALS ❑ RCRA 8 ❑ TX-11 ❑ Pb ❑ RCI ❑ FLASHPOINT ❑ DGAS ❑ TDS ❑ TSS ❑ % MOISTURE ❑ CYANIDE ❑ SEE ATTACHED	FIELD NOTES
PDP-22	16	8-10-16	0920	W	P	4		X		X	X		
PDP-26	17		1030	W	P	4		X		X	X		
MW-18A	18		1130	W	P	4		X		X	X		
EB-1	19		1145	W	P	4		X		X	X		
BMW-11AR	20	8-11-16	0825	W	P	4		X		X	X		
BMW-19	21		0920	W	P	4		X		X	X		
BMW-18	22		1015	W	P	4		X		X	X		
BMW-20	23		1050	W	P	4		X		X	X		

RELINQUISHED BY: (Signature) DATE/TIME 8-11-16 17:20 RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature) DATE/TIME 8-11-16 17:20 RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature) DATE/TIME RECEIVED BY: (Signature)

APPENDIX F-Revision 2 February 27, 2024 ❑ EMAIL RESULTS @ $5.00 each ❑ Return

TURN AROUND TIME
RUSH ❑ CALL FIRST
1 DAY ❑ CALL FIRST
2 DAY ❑
NORMAL ☒
OTHER ❑ ____

LABORATORY USE ONLY:
RECEIVING TEMP: 3.1 | 0.2 | 0.6 THERM #: 78
CUSTODY SEALS: 2@ ❑ BROKEN ❑ INTACT ☒ NOT USED
CARRIER: ❑ LONE STAR ❑ FEDEX ❑ UPS ❑ OTHER
❑ COURIER DELIVERY
☒ HAND DELIVERED

DHL ANALYTICAL
2300 Double Creek Dr. ■ Round Rock, TX 78664
Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

№ 72290

CHAIN-OF-CUSTODY

CLIENT: PBW
ADDRESS: 2301 Double Creek Dr. Ste 4004 Round Rock, TX 78664
PHONE: 512 671 3434 FAX/E-MAIL: 512 671 3446
DATA REPORTED TO: Will Vienne
ADDITIONAL REPORT COPIES TO:

DATE: 8/11/16 PAGE ___ OF ___
PO #: 5164-B DHL WORK ORDER #: 1608133
PROJECT LOCATION OR NAME: Luminant - Martin Lake
CLENT PROJECT #: 5164-B COLLECTOR: C Kakolewski

Authorize 5% surcharge for TRRP Report? ☐ Yes ☐ No

S=SOIL P=PAINT
W=WATER SL=SLUDGE
A=AIR O=OTHER
L=LIQUID SO=SOLID
SE=SEDIMENT

PRESERVATION: HCl | HNO_3 | H_2SO_4 ☐ NaOH ☐ | ICE | UNPRESERVED

ANALYSES: BTEX ☐ MTBE ☐ [METHOD 8021] | TPH 1005 ☐ TPH 1006 ☐ HOLD 1006 ☐ | GRO [METHOD 8015] ☐ DRO [METHOD 8105] ☐ | VOC 8260 ☐ VOC 624 ☐ VOC 8260/5035 ☐ | SVOC 8270 ☐ PAH 8270 ☐ HOLD PAH ☐ SVOC 625 ☐ | 8270 PEST ☐ 625 PEST/PCB ☐ 608 PCB ☐ | 8270 O-P PEST ☐ 8082 PCB ☐ 8270 PCB ☐ | 8321 HERB ☐ T PHOS, AMMONIA ☐ | METALS 6020 ☐ METALS 200.8 ☐ DISS. METALS ☐ | RCRA ☐ TX11 ☐ ___ ☐ | PH ☐ HEX CHROM ☐ ALKALINITY ☐ COD ☐ | CHLORIDE ☐ ANIONS ___ ☐ | TCLP-SVOC ☐ VOC ☐ PEST ☐ HERB ☐ | TCLP-METALS ☐ RCRA 8 ☐ TX-11 ☐ Pb ☐ | RCI ☐ FLASHPOINT ☐ DGAS ☐ | TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐ | see Attached

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	HCl	HNO_3	H_2SO_4 ☐ NaOH ☐	ICE	UNPRESERVED	FIELD NOTES
BMW-24	24	8/11/16	850 EST	W	P	4		3		X	1	X
BMW-23	25		920									
BMW-22	26		1000									
BMW-21	27		1030									

RELINQUISHED BY: (Signature) DATE/TIME RECEIVED BY: (Signature)
[signature] 17:20 8/11/16 5:20 [signature]
RELINQUISHED BY: (Signature) DATE/TIME RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature) DATE/TIME RECEIVED BY: (Signature)

☐ DHL DISPOSAL @ $5.00 each ☐ Return

TURN AROUND TIME
RUSH ☐ CALL FIRST
1 DAY ☐ CALL FIRST
2 DAY ☐
NORMAL ☒
OTHER ☐ ___

LABORATORY USE ONLY:
RECEIVING TEMP: 3.1 | 0.2 | 0.4 THERM #: 78
CUSTODY SEALS: ☐ BROKEN ☐ INTACT ☒ NOT USED
CARRIER: ☐ LONE STAR ☐ FEDEX ☐ UPS ☐ OTHER
☐ COURIER DELIVERY
☒ HAND DELIVERED

John Dupont

From:	Sara Taube [Sara.Taube@pbwllc.com]
Sent:	Wednesday, July 22, 2015 12:06 PM
To:	John Dupont
Subject:	CCR Appendix III and IV
Follow Up Flag:	Follow up
Flag Status:	Completed

Hi John,

Here are the Appendix III and Appendix IV constituents that we will need to have analyzed under the CCR Rule.

Appendix III
Boron
Calcium
Chloride
Fluoride
pH
sulfate
TDS

Appendix IV
Antimony
Arsenic
Barium
Beryllium
Cadmium
Chromium
Cobalt
Fluoride
Lead
Lithium
Mercury
Molybdenum
Selenium
Thallium
Radium 226 and 228

We are looking to have approximately 74 wells sampled 8 times over the course of the next two years. Please let me know if there is any more information you might need.

Cheers,

Sara

10/26/2015

DHL Analytical, Inc.

Sample Receipt Checklist

Client Name **Pastor, Behling & Wheeler** Date Received: **8/11/2016**

Work Order Number **1608133** Received by **JT**

Checklist completed by: Signature 8/12/2016 Date Reviewed by Initials 8/12/2016 Date

Carrier name Hand Delivered

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	3.1 °C 10.2.16
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH<2 acceptable upon receipt?	Yes ☑	No ☐	NA ☐ LOT # 8086
	Adjusted? NO		Checked by
Water - ph>9 (S) or ph>12 (CN) acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted?		Checked by

Any No response must be detailed in the comments section below.

Client contacted _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments: _____

Corrective Action _____

DHL Analytical, Inc. **Date:** *14-Sep-16*

CLIENT: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake
Lab Order: 1608133

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Method SW6020A - Metals Analysis
Method SW7470A - Mercury Analysis
Method E300 - Anions Analysis
Method M4500-H+ B - pH of a Water Analysis
Method M2540C - TDS Analysis
Sub-contract - Radium-228 and Radium-226 analyses by methods E904/9320 and SM 7500 Ra B M. Analyzed at ESC Lab Sciences.

LOG IN

The samples were received and log-in performed on 8/11/16. A total of 27 samples were received. The samples arrived in good condition and were properly packaged.

METALS ANALYSIS

For Metals analysis (batch 76817) the matrix spike and matrix spike duplicate had low responses for the internal standard Bismuth. The associated analyte (Lead) was within control limits. No further corrective actions were taken.

For Metals analysis performed on 8/17/16, 8/19/16, 8/22/16, 8/23/16 and 8/24/16 (batches 76816, 76817, 76893 and 76895) the matrix spikes and matrix spike duplicate recoveries were out of control limits for a total of nine analytes. In addition, the matrix spikes and matrix spike duplicates (batches 76893 & 76895) had the RPD slightly above control limits for Boron or Selenium. These are flagged accordingly in the QC summary report. The samples selected for the matrix spikes and matrix spike duplicates were not from this work order. The LCSs were within control limits for these analytes. No further corrective actions were taken.

For Metals analysis performed on 8/22/16 and 8/24/16 (batches 76817 & 76893) the RPDs for the serial dilutions were slightly above control limits for Boron. These are flagged accordingly. The PDSs were within control limits for this analyte. No further corrective actions were taken.

For Metals analysis performed on 8/19/16 and 8/23/16 (batches 76817 & 76893) the PDS recoveries were below control limits for Molybdenum or Lithium. These are flagged accordingly. The serial dilutions were within control limits for these analytes. No further corrective actions were taken.

For Metals analysis performed on 8/18/16 and 8/22/16 LCVL3-160818 and LCVL2-160822 were out of control limits for Boron or Beryllium. These are flagged accordingly. The associated CCV3-160818

and CCV2-160822 were within control limits for these analytes. No further corrective actions were taken.

DHL Analytical, Inc.

Date: *14-Sep-16*

CLIENT: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake
Lab Order: 1608133

Work Order Sample Summary

Lab Smp ID	Client Sample ID	Tag Number	Date Collected	Date Recved
1608133-01	H-28		08/09/16 09:30 AM	8/11/2016
1608133-02	H-29		08/09/16 10:35 AM	8/11/2016
1608133-03	H-31		08/09/16 11:50 AM	8/11/2016
1608133-04	H-30		08/09/16 12:45 PM	8/11/2016
1608133-05	H-32		08/09/16 01:50 PM	8/11/2016
1608133-06	H-27		08/09/16 02:50 PM	8/11/2016
1608133-07	H-33		08/09/16 03:55 PM	8/11/2016
1608133-08	H-26		08/09/16 04:45 PM	8/11/2016
1608133-09	DUP-01		08/09/16 02:38 PM	8/11/2016
1608133-10	PDP-25		08/10/16 01:30 PM	8/11/2016
1608133-11	PDP-24		08/10/16 11:00 AM	8/11/2016
1608133-12	MW-17A		08/10/16 10:20 AM	8/11/2016
1608133-13	PDP-23		08/10/16 09:10 AM	8/11/2016
1608133-14	MW-19		08/10/16 03:00 PM	8/11/2016
1608133-15	MW-20A		08/10/16 02:10 PM	8/11/2016
1608133-16	PDP-22		08/10/16 09:20 AM	8/11/2016
1608133-17	PDP-26		08/10/16 10:30 AM	8/11/2016
1608133-18	MW-18A		08/10/16 11:30 AM	8/11/2016
1608133-19	EB-1		08/10/16 11:45 AM	8/11/2016
1608133-20	BMW-11AR		08/11/16 08:25 AM	8/11/2016
1608133-21	BMW-19		08/11/16 09:20 AM	8/11/2016
1608133-22	BMW-18		08/11/16 10:15 AM	8/11/2016
1608133-23	BMW-20		08/11/16 10:50 AM	8/11/2016
1608133-24	BMW-24		08/11/16 08:50 AM	8/11/2016
1608133-25	BMW-23		08/11/16 09:20 AM	8/11/2016
1608133-26	BMW-22		08/11/16 10:00 AM	8/11/2016
1608133-27	BMW-21		08/11/16 10:30 AM	8/11/2016

Lab Order: 1608133
Client: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1608133-01A	H-28	08/09/16 09:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:53 AM	76816
	H-28	08/09/16 09:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:53 AM	76816
	H-28	08/09/16 09:30 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	08/17/16 09:07 AM	76835
1608133-01D	H-28	08/09/16 09:30 AM	Aqueous	E300	Anion Preparation	08/15/16 10:13 AM	76808
	H-28	08/09/16 09:30 AM	Aqueous	E300	Anion Preparation	08/15/16 10:13 AM	76808
	H-28	08/09/16 09:30 AM	Aqueous	M4500-H+ B	pH Preparation	08/16/16 08:41 AM	76818
	H-28	08/09/16 09:30 AM	Aqueous	M2540C	TDS Preparation	08/15/16 03:45 PM	76803
1608133-02A	H-29	08/09/16 10:35 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:53 AM	76816
	H-29	08/09/16 10:35 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:53 AM	76816
	H-29	08/09/16 10:35 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:53 AM	76816
	H-29	08/09/16 10:35 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	08/17/16 09:07 AM	76835
1608133-02D	H-29	08/09/16 10:35 AM	Aqueous	E300	Anion Preparation	08/15/16 10:13 AM	76808
	H-29	08/09/16 10:35 AM	Aqueous	E300	Anion Preparation	08/15/16 10:13 AM	76808
	H-29	08/09/16 10:35 AM	Aqueous	M4500-H+ B	pH Preparation	08/16/16 08:41 AM	76818
	H-29	08/09/16 10:35 AM	Aqueous	M2540C	TDS Preparation	08/15/16 03:45 PM	76803
1608133-03A	H-31	08/09/16 11:50 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:58 AM	76817
	H-31	08/09/16 11:50 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:58 AM	76817
	H-31	08/09/16 11:50 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:58 AM	76817
	H-31	08/09/16 11:50 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	08/17/16 09:07 AM	76835
1608133-03D	H-31	08/09/16 11:50 AM	Aqueous	E300	Anion Preparation	08/15/16 10:13 AM	76808
	H-31	08/09/16 11:50 AM	Aqueous	E300	Anion Preparation	08/15/16 10:13 AM	76808
	H-31	08/09/16 11:50 AM	Aqueous	M4500-H+ B	pH Preparation	08/16/16 08:41 AM	76818
	H-31	08/09/16 11:50 AM	Aqueous	M2540C	TDS Preparation	08/15/16 03:45 PM	76803
1608133-04A	H-30	08/09/16 12:45 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:58 AM	76817
	H-30	08/09/16 12:45 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:58 AM	76817
	H-30	08/09/16 12:45 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:58 AM	76817
	H-30	08/09/16 12:45 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	08/17/16 09:07 AM	76835
1608133-04D	H-30	08/09/16 12:45 PM	Aqueous	E300	Anion Preparation	08/15/16 10:13 AM	76808

Lab Order: 1608133
Client: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1608133-04D	H-30	08/09/16 12:45 PM	Aqueous	E300	Anion Preparation	08/15/16 10:13 AM	76808
	H-30	08/09/16 12:45 PM	Aqueous	M4500-H+ B	pH Preparation	08/16/16 08:41 AM	76818
	H-30	08/09/16 12:45 PM	Aqueous	M2540C	TDS Preparation	08/15/16 03:45 PM	76803
1608133-05A	H-32	08/09/16 01:50 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:58 AM	76817
	H-32	08/09/16 01:50 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:58 AM	76817
	H-32	08/09/16 01:50 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:58 AM	76817
	H-32	08/09/16 01:50 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	08/17/16 09:07 AM	76835
1608133-05D	H-32	08/09/16 01:50 PM	Aqueous	E300	Anion Preparation	08/15/16 10:13 AM	76808
	H-32	08/09/16 01:50 PM	Aqueous	E300	Anion Preparation	08/15/16 10:13 AM	76808
	H-32	08/09/16 01:50 PM	Aqueous	M4500-H+ B	pH Preparation	08/16/16 08:41 AM	76818
	H-32	08/09/16 01:50 PM	Aqueous	M2540C	TDS Preparation	08/15/16 03:45 PM	76803
1608133-06A	H-27	08/09/16 02:50 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:58 AM	76817
	H-27	08/09/16 02:50 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:58 AM	76817
	H-27	08/09/16 02:50 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:58 AM	76817
	H-27	08/09/16 02:50 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	08/17/16 09:07 AM	76835
1608133-06D	H-27	08/09/16 02:50 PM	Aqueous	E300	Anion Preparation	08/15/16 10:13 AM	76808
	H-27	08/09/16 02:50 PM	Aqueous	E300	Anion Preparation	08/15/16 10:13 AM	76808
	H-27	08/09/16 02:50 PM	Aqueous	M4500-H+ B	pH Preparation	08/16/16 08:41 AM	76818
	H-27	08/09/16 02:50 PM	Aqueous	M2540C	TDS Preparation	08/16/16 02:51 PM	76831
1608133-07A	H-33	08/09/16 03:55 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:58 AM	76817
	H-33	08/09/16 03:55 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:58 AM	76817
	H-33	08/09/16 03:55 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:58 AM	76817
	H-33	08/09/16 03:55 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	08/17/16 09:07 AM	76835
1608133-07D	H-33	08/09/16 03:55 PM	Aqueous	E300	Anion Preparation	08/15/16 10:13 AM	76808
	H-33	08/09/16 03:55 PM	Aqueous	E300	Anion Preparation	08/15/16 10:13 AM	76808
	H-33	08/09/16 03:55 PM	Aqueous	M4500-H+ B	pH Preparation	08/16/16 08:41 AM	76818
	H-33	08/09/16 03:55 PM	Aqueous	M2540C	TDS Preparation	08/16/16 02:51 PM	76831
1608133-08A	H-26	08/09/16 04:45 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:58 AM	76817

Lab Order: 1608133
Client: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1608133-08A	H-26	08/09/16 04:45 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:58 AM	76817
	H-26	08/09/16 04:45 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:58 AM	76817
	H-26	08/09/16 04:45 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	08/17/16 09:07 AM	76835
1608133-08D	H-26	08/09/16 04:45 PM	Aqueous	E300	Anion Preparation	08/15/16 10:13 AM	76808
	H-26	08/09/16 04:45 PM	Aqueous	E300	Anion Preparation	08/15/16 10:13 AM	76808
	H-26	08/09/16 04:45 PM	Aqueous	M4500-H+ B	pH Preparation	08/16/16 08:41 AM	76818
	H-26	08/09/16 04:45 PM	Aqueous	M2540C	TDS Preparation	08/16/16 02:51 PM	76831
1608133-09A	DUP-01	08/09/16 02:38 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:58 AM	76817
	DUP-01	08/09/16 02:38 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:58 AM	76817
	DUP-01	08/09/16 02:38 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:58 AM	76817
	DUP-01	08/09/16 02:38 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	08/17/16 09:07 AM	76835
1608133-09D	DUP-01	08/09/16 02:38 PM	Aqueous	E300	Anion Preparation	08/15/16 10:13 AM	76808
	DUP-01	08/09/16 02:38 PM	Aqueous	E300	Anion Preparation	08/15/16 10:13 AM	76808
	DUP-01	08/09/16 02:38 PM	Aqueous	M4500-H+ B	pH Preparation	08/16/16 08:41 AM	76818
	DUP-01	08/09/16 02:38 PM	Aqueous	M2540C	TDS Preparation	08/16/16 02:51 PM	76831
1608133-10A	PDP-25	08/10/16 01:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:58 AM	76817
	PDP-25	08/10/16 01:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:58 AM	76817
	PDP-25	08/10/16 01:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:58 AM	76817
	PDP-25	08/10/16 01:30 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	08/17/16 09:07 AM	76835
1608133-10D	PDP-25	08/10/16 01:30 PM	Aqueous	E300	Anion Preparation	08/16/16 09:28 AM	76820
	PDP-25	08/10/16 01:30 PM	Aqueous	E300	Anion Preparation	08/16/16 09:28 AM	76820
	PDP-25	08/10/16 01:30 PM	Aqueous	M4500-H+ B	pH Preparation	08/16/16 08:41 AM	76818
	PDP-25	08/10/16 01:30 PM	Aqueous	M2540C	TDS Preparation	08/16/16 02:51 PM	76831
1608133-11A	PDP-24	08/10/16 11:00 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:58 AM	76817
	PDP-24	08/10/16 11:00 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:58 AM	76817
	PDP-24	08/10/16 11:00 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:58 AM	76817
	PDP-24	08/10/16 11:00 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:58 AM	76817
	PDP-24	08/10/16 11:00 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	08/23/16 08:44 AM	76918

Lab Order: 1608133
Client: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1608133-11D	PDP-24	08/10/16 11:00 AM	Aqueous	E300	Anion Preparation	08/16/16 09:28 AM	76820
	PDP-24	08/10/16 11:00 AM	Aqueous	E300	Anion Preparation	08/16/16 09:28 AM	76820
	PDP-24	08/10/16 11:00 AM	Aqueous	M4500-H+ B	pH Preparation	08/17/16 10:19 AM	76839
	PDP-24	08/10/16 11:00 AM	Aqueous	M2540C	TDS Preparation	08/16/16 02:51 PM	76831
1608133-12A	MW-17A	08/10/16 10:20 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:58 AM	76817
	MW-17A	08/10/16 10:20 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:58 AM	76817
	MW-17A	08/10/16 10:20 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	08/23/16 08:44 AM	76918
1608133-12D	MW-17A	08/10/16 10:20 AM	Aqueous	E300	Anion Preparation	08/16/16 09:28 AM	76820
	MW-17A	08/10/16 10:20 AM	Aqueous	M4500-H+ B	pH Preparation	08/17/16 10:19 AM	76839
	MW-17A	08/10/16 10:20 AM	Aqueous	M2540C	TDS Preparation	08/16/16 02:51 PM	76831
1608133-13A	PDP-23	08/10/16 09:10 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:58 AM	76817
	PDP-23	08/10/16 09:10 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:58 AM	76817
	PDP-23	08/10/16 09:10 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	08/23/16 08:44 AM	76918
1608133-13D	PDP-23	08/10/16 09:10 AM	Aqueous	E300	Anion Preparation	08/16/16 09:28 AM	76820
	PDP-23	08/10/16 09:10 AM	Aqueous	M4500-H+ B	pH Preparation	08/17/16 10:19 AM	76839
	PDP-23	08/10/16 09:10 AM	Aqueous	M2540C	TDS Preparation	08/16/16 02:51 PM	76831
1608133-14A	MW-19	08/10/16 03:00 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:58 AM	76817
	MW-19	08/10/16 03:00 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:58 AM	76817
	MW-19	08/10/16 03:00 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	08/23/16 08:44 AM	76918
1608133-14D	MW-19	08/10/16 03:00 PM	Aqueous	E300	Anion Preparation	08/16/16 09:28 AM	76820
	MW-19	08/10/16 03:00 PM	Aqueous	M4500-H+ B	pH Preparation	08/17/16 10:19 AM	76839
	MW-19	08/10/16 03:00 PM	Aqueous	M2540C	TDS Preparation	08/16/16 02:51 PM	76831
1608133-15A	MW-20A	08/10/16 02:10 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:58 AM	76817
	MW-20A	08/10/16 02:10 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:58 AM	76817
	MW-20A	08/10/16 02:10 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:58 AM	76817
	MW-20A	08/10/16 02:10 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	08/23/16 08:44 AM	76918
1608133-15D	MW-20A	08/10/16 02:10 PM	Aqueous	E300	Anion Preparation	08/16/16 09:28 AM	76820
	MW-20A	08/10/16 02:10 PM	Aqueous	M4500-H+ B	pH Preparation	08/17/16 10:19 AM	76839

Lab Order: 1608133
Client: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1608133-15D	MW-20A	08/10/16 02:10 PM	Aqueous	M2540C	TDS Preparation	08/16/16 02:51 PM	76831
1608133-16A	PDP-22	08/10/16 09:20 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/22/16 08:54 AM	76893
	PDP-22	08/10/16 09:20 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/22/16 08:54 AM	76893
	PDP-22	08/10/16 09:20 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/22/16 08:54 AM	76893
	PDP-22	08/10/16 09:20 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	08/23/16 08:44 AM	76918
1608133-16D	PDP-22	08/10/16 09:20 AM	Aqueous	E300	Anion Preparation	08/16/16 09:28 AM	76820
	PDP-22	08/10/16 09:20 AM	Aqueous	E300	Anion Preparation	08/16/16 09:28 AM	76820
	PDP-22	08/10/16 09:20 AM	Aqueous	M4500-H+ B	pH Preparation	08/17/16 10:19 AM	76839
	PDP-22	08/10/16 09:20 AM	Aqueous	M2540C	TDS Preparation	08/16/16 02:51 PM	76831
1608133-17A	PDP-26	08/10/16 10:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/22/16 08:54 AM	76893
	PDP-26	08/10/16 10:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/22/16 08:54 AM	76893
	PDP-26	08/10/16 10:30 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	08/23/16 08:44 AM	76918
1608133-17D	PDP-26	08/10/16 10:30 AM	Aqueous	E300	Anion Preparation	08/16/16 09:28 AM	76820
	PDP-26	08/10/16 10:30 AM	Aqueous	M4500-H+ B	pH Preparation	08/17/16 10:19 AM	76839
	PDP-26	08/10/16 10:30 AM	Aqueous	M2540C	TDS Preparation	08/16/16 02:51 PM	76831
1608133-18A	MW-18A	08/10/16 11:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/22/16 08:54 AM	76893
	MW-18A	08/10/16 11:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/22/16 08:54 AM	76893
	MW-18A	08/10/16 11:30 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	08/23/16 08:44 AM	76918
	MW-18A	08/10/16 11:30 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	08/23/16 08:44 AM	76918
1608133-18D	MW-18A	08/10/16 11:30 AM	Aqueous	E300	Anion Preparation	08/16/16 09:28 AM	76820
	MW-18A	08/10/16 11:30 AM	Aqueous	M4500-H+ B	pH Preparation	08/17/16 10:19 AM	76839
	MW-18A	08/10/16 11:30 AM	Aqueous	M2540C	TDS Preparation	08/16/16 02:51 PM	76831
1608133-19A	EB-1	08/10/16 11:45 AM	Equip Blank	SW3005A	Aq Prep Metals : ICP-MS	08/22/16 08:54 AM	76893
	EB-1	08/10/16 11:45 AM	Equip Blank	SW3005A	Aq Prep Metals : ICP-MS	08/22/16 08:54 AM	76893
	EB-1	08/10/16 11:45 AM	Equip Blank	SW7470A	Mercury Aq Prep, Total	08/23/16 08:44 AM	76918
1608133-19D	EB-1	08/10/16 11:45 AM	Equip Blank	E300	Anion Preparation	08/17/16 09:55 AM	76838
	EB-1	08/10/16 11:45 AM	Equip Blank	M4500-H+ B	pH Preparation	08/17/16 10:19 AM	76839
	EB-1	08/10/16 11:45 AM	Equip Blank	M2540C	TDS Preparation	08/16/16 02:51 PM	76831

Lab Order: 1608133
Client: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1608133-20A	BMW-11AR	08/11/16 08:25 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/22/16 08:54 AM	76893
	BMW-11AR	08/11/16 08:25 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/22/16 08:54 AM	76893
	BMW-11AR	08/11/16 08:25 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/22/16 08:54 AM	76893
	BMW-11AR	08/11/16 08:25 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	08/23/16 08:44 AM	76918
1608133-20D	BMW-11AR	08/11/16 08:25 AM	Aqueous	E300	Anion Preparation	08/17/16 09:55 AM	76838
	BMW-11AR	08/11/16 08:25 AM	Aqueous	E300	Anion Preparation	08/17/16 09:55 AM	76838
	BMW-11AR	08/11/16 08:25 AM	Aqueous	M4500-H+ B	pH Preparation	08/17/16 10:19 AM	76839
	BMW-11AR	08/11/16 08:25 AM	Aqueous	M2540C	TDS Preparation	08/16/16 02:51 PM	76831
1608133-21A	BMW-19	08/11/16 09:20 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/22/16 08:54 AM	76893
	BMW-19	08/11/16 09:20 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/22/16 08:54 AM	76893
	BMW-19	08/11/16 09:20 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/22/16 08:54 AM	76893
	BMW-19	08/11/16 09:20 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/22/16 08:54 AM	76893
	BMW-19	08/11/16 09:20 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	08/23/16 08:44 AM	76918
1608133-21D	BMW-19	08/11/16 09:20 AM	Aqueous	E300	Anion Preparation	08/17/16 09:55 AM	76838
	BMW-19	08/11/16 09:20 AM	Aqueous	E300	Anion Preparation	08/17/16 09:55 AM	76838
	BMW-19	08/11/16 09:20 AM	Aqueous	M4500-H+ B	pH Preparation	08/17/16 10:19 AM	76839
	BMW-19	08/11/16 09:20 AM	Aqueous	M2540C	TDS Preparation	08/16/16 02:51 PM	76831
1608133-22A	BMW-18	08/11/16 10:15 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/22/16 08:54 AM	76893
	BMW-18	08/11/16 10:15 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/22/16 08:54 AM	76893
	BMW-18	08/11/16 10:15 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	08/23/16 08:44 AM	76918
1608133-22D	BMW-18	08/11/16 10:15 AM	Aqueous	E300	Anion Preparation	08/17/16 09:55 AM	76838
	BMW-18	08/11/16 10:15 AM	Aqueous	M4500-H+ B	pH Preparation	08/17/16 10:19 AM	76839
	BMW-18	08/11/16 10:15 AM	Aqueous	M2540C	TDS Preparation	08/16/16 02:51 PM	76831
1608133-23A	BMW-20	08/11/16 10:50 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/22/16 08:57 AM	76895
	BMW-20	08/11/16 10:50 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/22/16 08:57 AM	76895
	BMW-20	08/11/16 10:50 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/22/16 08:57 AM	76895
	BMW-20	08/11/16 10:50 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/22/16 08:57 AM	76895
	BMW-20	08/11/16 10:50 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	08/23/16 08:44 AM	76918

Lab Order: 1608133
Client: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1608133-23D	BMW-20	08/11/16 10:50 AM	Aqueous	E300	Anion Preparation	08/17/16 09:55 AM	76838
	BMW-20	08/11/16 10:50 AM	Aqueous	E300	Anion Preparation	08/17/16 09:55 AM	76838
	BMW-20	08/11/16 10:50 AM	Aqueous	M4500-H+ B	pH Preparation	08/17/16 10:19 AM	76839
	BMW-20	08/11/16 10:50 AM	Aqueous	M2540C	TDS Preparation	08/16/16 02:51 PM	76831
1608133-24A	BMW-24	08/11/16 08:50 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/22/16 08:57 AM	76895
	BMW-24	08/11/16 08:50 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/22/16 08:57 AM	76895
	BMW-24	08/11/16 08:50 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/22/16 08:57 AM	76895
	BMW-24	08/11/16 08:50 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/22/16 08:57 AM	76895
	BMW-24	08/11/16 08:50 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	08/23/16 08:44 AM	76918
1608133-24D	BMW-24	08/11/16 08:50 AM	Aqueous	E300	Anion Preparation	08/17/16 09:55 AM	76838
	BMW-24	08/11/16 08:50 AM	Aqueous	E300	Anion Preparation	08/17/16 09:55 AM	76838
	BMW-24	08/11/16 08:50 AM	Aqueous	M4500-H+ B	pH Preparation	08/17/16 10:19 AM	76839
	BMW-24	08/11/16 08:50 AM	Aqueous	M2540C	TDS Preparation	08/16/16 02:51 PM	76831
1608133-25A	BMW-23	08/11/16 09:20 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/22/16 08:57 AM	76895
	BMW-23	08/11/16 09:20 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/22/16 08:57 AM	76895
	BMW-23	08/11/16 09:20 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/22/16 08:57 AM	76895
	BMW-23	08/11/16 09:20 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	08/23/16 08:44 AM	76918
1608133-25D	BMW-23	08/11/16 09:20 AM	Aqueous	E300	Anion Preparation	08/17/16 09:55 AM	76838
	BMW-23	08/11/16 09:20 AM	Aqueous	E300	Anion Preparation	08/17/16 09:55 AM	76838
	BMW-23	08/11/16 09:20 AM	Aqueous	M4500-H+ B	pH Preparation	08/17/16 10:19 AM	76839
	BMW-23	08/11/16 09:20 AM	Aqueous	M2540C	TDS Preparation	08/18/16 08:44 AM	76858
1608133-26A	BMW-22	08/11/16 10:00 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/22/16 08:57 AM	76895
	BMW-22	08/11/16 10:00 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/22/16 08:57 AM	76895
	BMW-22	08/11/16 10:00 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/22/16 08:57 AM	76895
	BMW-22	08/11/16 10:00 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	08/23/16 08:44 AM	76918
1608133-26D	BMW-22	08/11/16 10:00 AM	Aqueous	E300	Anion Preparation	08/17/16 09:55 AM	76838
	BMW-22	08/11/16 10:00 AM	Aqueous	E300	Anion Preparation	08/17/16 09:55 AM	76838
	BMW-22	08/11/16 10:00 AM	Aqueous	M4500-H+ B	pH Preparation	08/17/16 10:19 AM	76839

Lab Order: 1608133
Client: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1608133-26D	BMW-22	08/11/16 10:00 AM	Aqueous	M2540C	TDS Preparation	08/18/16 08:44 AM	76858
1608133-27A	BMW-21	08/11/16 10:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/22/16 08:57 AM	76895
	BMW-21	08/11/16 10:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/22/16 08:57 AM	76895
	BMW-21	08/11/16 10:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/22/16 08:57 AM	76895
	BMW-21	08/11/16 10:30 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	08/23/16 08:44 AM	76918
1608133-27D	BMW-21	08/11/16 10:30 AM	Aqueous	E300	Anion Preparation	08/17/16 09:55 AM	76838
	BMW-21	08/11/16 10:30 AM	Aqueous	E300	Anion Preparation	08/17/16 09:55 AM	76838
	BMW-21	08/11/16 10:30 AM	Aqueous	M4500-H+ B	pH Preparation	08/17/16 10:19 AM	76839
	BMW-21	08/11/16 10:30 AM	Aqueous	M2540C	TDS Preparation	08/18/16 08:44 AM	76858

Lab Order: 1608133
Client: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1608133-01A	H-28	Aqueous	SW7470A	Mercury Total: Aqueous	76835	1	08/18/16 10:36 AM	CETAC2_HG_160818B
	H-28	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76816	1	08/17/16 02:05 PM	ICP-MS4_160817A
	H-28	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76816	50	08/18/16 03:36 PM	ICP-MS4_160818B
1608133-01D	H-28	Aqueous	E300	Anions by IC method - Water	76808	1	08/15/16 12:24 PM	IC4_160815A
	H-28	Aqueous	E300	Anions by IC method - Water	76808	10	08/15/16 03:58 PM	IC4_160815A
	H-28	Aqueous	M4500-H+ B	pH	76818	1	08/16/16 10:17 AM	TITRATOR_160816A
	H-28	Aqueous	M2540C	Total Dissolved Solids	76803	1	08/16/16 08:42 AM	WC_160815A
1608133-02A	H-29	Aqueous	SW7470A	Mercury Total: Aqueous	76835	1	08/18/16 10:43 AM	CETAC2_HG_160818B
	H-29	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76816	1	08/17/16 02:07 PM	ICP-MS4_160817A
	H-29	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76816	10	08/18/16 03:38 PM	ICP-MS4_160818B
	H-29	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76816	1	08/18/16 03:40 PM	ICP-MS4_160818B
1608133-02D	H-29	Aqueous	E300	Anions by IC method - Water	76808	1	08/15/16 12:39 PM	IC4_160815A
	H-29	Aqueous	E300	Anions by IC method - Water	76808	10	08/15/16 04:28 PM	IC4_160815A
	H-29	Aqueous	M4500-H+ B	pH	76818	1	08/16/16 10:20 AM	TITRATOR_160816A
	H-29	Aqueous	M2540C	Total Dissolved Solids	76803	1	08/16/16 08:42 AM	WC_160815A
1608133-03A	H-31	Aqueous	SW7470A	Mercury Total: Aqueous	76835	1	08/18/16 10:45 AM	CETAC2_HG_160818B
	H-31	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76817	1	08/19/16 05:50 PM	ICP-MS4_160819A
	H-31	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76817	100	08/22/16 02:05 PM	ICP-MS4_160822B
	H-31	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76817	1	08/22/16 03:22 PM	ICP-MS4_160822B
1608133-03D	H-31	Aqueous	E300	Anions by IC method - Water	76808	1	08/15/16 12:54 PM	IC4_160815A
	H-31	Aqueous	E300	Anions by IC method - Water	76808	100	08/15/16 04:43 PM	IC4_160815A
	H-31	Aqueous	M4500-H+ B	pH	76818	1	08/16/16 10:23 AM	TITRATOR_160816A
	H-31	Aqueous	M2540C	Total Dissolved Solids	76803	1	08/16/16 08:42 AM	WC_160815A
1608133-04A	H-30	Aqueous	SW7470A	Mercury Total: Aqueous	76835	1	08/18/16 10:48 AM	CETAC2_HG_160818B
	H-30	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76817	1	08/19/16 05:52 PM	ICP-MS4_160819A
	H-30	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76817	1	08/22/16 03:24 PM	ICP-MS4_160822B

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Client: Pastor, Behling & Wheeler
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ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1608133-04A	H-30	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76817	10	08/22/16 02:07 PM	ICP-MS4_160822B
1608133-04D	H-30	Aqueous	E300	Anions by IC method - Water	76808	1	08/15/16 01:09 PM	IC4_160815A
	H-30	Aqueous	E300	Anions by IC method - Water	76808	10	08/15/16 04:58 PM	IC4_160815A
	H-30	Aqueous	M4500-H+ B	pH	76818	1	08/16/16 10:25 AM	TITRATOR_160816A
	H-30	Aqueous	M2540C	Total Dissolved Solids	76803	1	08/16/16 08:42 AM	WC_160815A
1608133-05A	H-32	Aqueous	SW7470A	Mercury Total: Aqueous	76835	1	08/18/16 10:50 AM	CETAC2_HG_160818B
	H-32	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76817	1	08/19/16 05:54 PM	ICP-MS4_160819A
	H-32	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76817	10	08/22/16 02:09 PM	ICP-MS4_160822B
	H-32	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76817	1	08/22/16 03:26 PM	ICP-MS4_160822B
1608133-05D	H-32	Aqueous	E300	Anions by IC method - Water	76808	1	08/15/16 01:24 PM	IC4_160815A
	H-32	Aqueous	E300	Anions by IC method - Water	76808	10	08/15/16 05:28 PM	IC4_160815A
	H-32	Aqueous	M4500-H+ B	pH	76818	1	08/16/16 10:27 AM	TITRATOR_160816A
	H-32	Aqueous	M2540C	Total Dissolved Solids	76803	1	08/16/16 08:42 AM	WC_160815A
1608133-06A	H-27	Aqueous	SW7470A	Mercury Total: Aqueous	76835	1	08/18/16 10:52 AM	CETAC2_HG_160818B
	H-27	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76817	1	08/19/16 06:10 PM	ICP-MS4_160819A
	H-27	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76817	10	08/22/16 02:11 PM	ICP-MS4_160822B
	H-27	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76817	1	08/22/16 02:59 PM	ICP-MS4_160822B
1608133-06D	H-27	Aqueous	E300	Anions by IC method - Water	76808	1	08/15/16 01:39 PM	IC4_160815A
	H-27	Aqueous	E300	Anions by IC method - Water	76808	10	08/15/16 05:43 PM	IC4_160815A
	H-27	Aqueous	M4500-H+ B	pH	76818	1	08/16/16 10:29 AM	TITRATOR_160816A
	H-27	Aqueous	M2540C	Total Dissolved Solids	76831	1	08/17/16 08:42 AM	WC_160816D
1608133-07A	H-33	Aqueous	SW7470A	Mercury Total: Aqueous	76835	1	08/18/16 10:54 AM	CETAC2_HG_160818B
	H-33	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76817	1	08/22/16 02:13 PM	ICP-MS4_160822B
	H-33	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76817	1	08/24/16 05:45 PM	ICP-MS3_160824B
	H-33	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76817	1	08/19/16 06:12 PM	ICP-MS4_160819A
1608133-07D	H-33	Aqueous	E300	Anions by IC method - Water	76808	10	08/15/16 05:58 PM	IC4_160815A

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Client: Pastor, Behling & Wheeler
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ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1608133-07D	H-33	Aqueous	E300	Anions by IC method - Water	76808	1	08/15/16 01:54 PM	IC4_160815A
	H-33	Aqueous	M4500-H+ B	pH	76818	1	08/16/16 10:32 AM	TITRATOR_160816A
	H-33	Aqueous	M2540C	Total Dissolved Solids	76831	1	08/17/16 08:42 AM	WC_160816D
1608133-08A	H-26	Aqueous	SW7470A	Mercury Total: Aqueous	76835	1	08/18/16 10:57 AM	CETAC2_HG_160818B
	H-26	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76817	1	08/24/16 05:51 PM	ICP-MS3_160824B
	H-26	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76817	1	08/19/16 06:14 PM	ICP-MS4_160819A
	H-26	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76817	1	08/22/16 02:15 PM	ICP-MS4_160822B
1608133-08D	H-26	Aqueous	E300	Anions by IC method - Water	76808	1	08/15/16 02:09 PM	IC4_160815A
	H-26	Aqueous	E300	Anions by IC method - Water	76808	10	08/15/16 07:28 PM	IC4_160815A
	H-26	Aqueous	M4500-H+ B	pH	76818	1	08/16/16 10:34 AM	TITRATOR_160816A
	H-26	Aqueous	M2540C	Total Dissolved Solids	76831	1	08/17/16 08:42 AM	WC_160816D
1608133-09A	DUP-01	Aqueous	SW7470A	Mercury Total: Aqueous	76835	1	08/18/16 10:59 AM	CETAC2_HG_160818B
	DUP-01	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76817	10	08/22/16 02:17 PM	ICP-MS4_160822B
	DUP-01	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76817	1	08/22/16 03:28 PM	ICP-MS4_160822B
	DUP-01	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76817	1	08/19/16 06:17 PM	ICP-MS4_160819A
1608133-09D	DUP-01	Aqueous	E300	Anions by IC method - Water	76808	1	08/15/16 02:24 PM	IC4_160815A
	DUP-01	Aqueous	E300	Anions by IC method - Water	76808	10	08/15/16 07:43 PM	IC4_160815A
	DUP-01	Aqueous	M4500-H+ B	pH	76818	1	08/16/16 10:36 AM	TITRATOR_160816A
	DUP-01	Aqueous	M2540C	Total Dissolved Solids	76831	1	08/17/16 08:42 AM	WC_160816D
1608133-10A	PDP-25	Aqueous	SW7470A	Mercury Total: Aqueous	76835	1	08/18/16 11:01 AM	CETAC2_HG_160818B
	PDP-25	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76817	1	08/19/16 06:19 PM	ICP-MS4_160819A
	PDP-25	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76817	10	08/22/16 02:19 PM	ICP-MS4_160822B
	PDP-25	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76817	1	08/22/16 03:01 PM	ICP-MS4_160822B
1608133-10D	PDP-25	Aqueous	E300	Anions by IC method - Water	76820	1	08/16/16 11:27 AM	IC4_160816A
	PDP-25	Aqueous	E300	Anions by IC method - Water	76820	10	08/16/16 02:52 PM	IC4_160816A
	PDP-25	Aqueous	M4500-H+ B	pH	76818	1	08/16/16 10:53 AM	TITRATOR_160816A

Lab Order: 1608133
Client: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1608133-10D	PDP-25	Aqueous	M2540C	Total Dissolved Solids	76831	1	08/17/16 08:42 AM	WC_160816D
1608133-11A	PDP-24	Aqueous	SW7470A	Mercury Total: Aqueous	76918	1	08/24/16 10:23 AM	CETAC2_HG_160824B
	PDP-24	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76817	1	08/24/16 05:57 PM	ICP-MS3_160824B
	PDP-24	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76817	1	08/19/16 06:21 PM	ICP-MS4_160819A
	PDP-24	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76817	10	08/22/16 02:21 PM	ICP-MS4_160822B
	PDP-24	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76817	1	08/22/16 03:30 PM	ICP-MS4_160822B
1608133-11D	PDP-24	Aqueous	E300	Anions by IC method - Water	76820	1	08/16/16 11:42 AM	IC4_160816A
	PDP-24	Aqueous	E300	Anions by IC method - Water	76820	10	08/16/16 03:37 PM	IC4_160816A
	PDP-24	Aqueous	M4500-H+ B	pH	76839	1	08/17/16 11:15 AM	TITRATOR_160817B
	PDP-24	Aqueous	M2540C	Total Dissolved Solids	76831	1	08/17/16 08:42 AM	WC_160816D
1608133-12A	MW-17A	Aqueous	SW7470A	Mercury Total: Aqueous	76918	1	08/24/16 10:26 AM	CETAC2_HG_160824B
	MW-17A	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76817	1	08/19/16 06:23 PM	ICP-MS4_160819A
	MW-17A	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76817	1	08/22/16 02:51 PM	ICP-MS4_160822B
1608133-12D	MW-17A	Aqueous	E300	Anions by IC method - Water	76820	1	08/16/16 11:57 AM	IC4_160816A
	MW-17A	Aqueous	M4500-H+ B	pH	76839	1	08/17/16 11:19 AM	TITRATOR_160817B
	MW-17A	Aqueous	M2540C	Total Dissolved Solids	76831	1	08/17/16 08:42 AM	WC_160816D
1608133-13A	PDP-23	Aqueous	SW7470A	Mercury Total: Aqueous	76918	1	08/24/16 10:28 AM	CETAC2_HG_160824B
	PDP-23	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76817	1	08/19/16 06:25 PM	ICP-MS4_160819A
	PDP-23	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76817	1	08/22/16 02:53 PM	ICP-MS4_160822B
1608133-13D	PDP-23	Aqueous	E300	Anions by IC method - Water	76820	1	08/16/16 12:12 PM	IC4_160816A
	PDP-23	Aqueous	M4500-H+ B	pH	76839	1	08/17/16 11:21 AM	TITRATOR_160817B
	PDP-23	Aqueous	M2540C	Total Dissolved Solids	76831	1	08/17/16 08:42 AM	WC_160816D
1608133-14A	MW-19	Aqueous	SW7470A	Mercury Total: Aqueous	76918	1	08/24/16 10:30 AM	CETAC2_HG_160824B
	MW-19	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76817	1	08/22/16 02:55 PM	ICP-MS4_160822B
	MW-19	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76817	1	08/19/16 06:27 PM	ICP-MS4_160819A
1608133-14D	MW-19	Aqueous	E300	Anions by IC method - Water	76820	1	08/16/16 12:27 PM	IC4_160816A

Lab Order: 1608133
Client: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1608133-14D	MW-19	Aqueous	M4500-H+ B	pH	76839	1	08/17/16 11:24 AM	TITRATOR_160817B
	MW-19	Aqueous	M2540C	Total Dissolved Solids	76831	1	08/17/16 08:42 AM	WC_160816D
1608133-15A	MW-20A	Aqueous	SW7470A	Mercury Total: Aqueous	76918	1	08/24/16 10:32 AM	CETAC2_HG_160824B
	MW-20A	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76817	1	08/19/16 06:29 PM	ICP-MS4_160819A
	MW-20A	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76817	1	08/22/16 02:57 PM	ICP-MS4_160822B
	MW-20A	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76817	1	08/26/16 12:27 PM	ICP-MS4_160826B
1608133-15D	MW-20A	Aqueous	E300	Anions by IC method - Water	76820	1	08/16/16 12:42 PM	IC4_160816A
	MW-20A	Aqueous	M4500-H+ B	pH	76839	1	08/17/16 11:26 AM	TITRATOR_160817B
	MW-20A	Aqueous	M2540C	Total Dissolved Solids	76831	1	08/17/16 08:42 AM	WC_160816D
1608133-16A	PDP-22	Aqueous	SW7470A	Mercury Total: Aqueous	76918	1	08/24/16 10:35 AM	CETAC2_HG_160824B
	PDP-22	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76893	1	08/24/16 04:31 PM	ICP-MS4_160824B
	PDP-22	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76893	1	08/23/16 12:40 PM	ICP-MS4_160823B
	PDP-22	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76893	10	08/24/16 03:46 PM	ICP-MS4_160824B
1608133-16D	PDP-22	Aqueous	E300	Anions by IC method - Water	76820	1	08/16/16 12:57 PM	IC4_160816A
	PDP-22	Aqueous	E300	Anions by IC method - Water	76820	10	08/16/16 03:52 PM	IC4_160816A
	PDP-22	Aqueous	M4500-H+ B	pH	76839	1	08/17/16 11:28 AM	TITRATOR_160817B
	PDP-22	Aqueous	M2540C	Total Dissolved Solids	76831	1	08/17/16 08:42 AM	WC_160816D
1608133-17A	PDP-26	Aqueous	SW7470A	Mercury Total: Aqueous	76918	1	08/24/16 10:46 AM	CETAC2_HG_160824B
	PDP-26	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76893	1	08/23/16 01:14 PM	ICP-MS4_160823B
	PDP-26	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76893	1	08/24/16 04:33 PM	ICP-MS4_160824B
1608133-17D	PDP-26	Aqueous	E300	Anions by IC method - Water	76820	1	08/16/16 01:12 PM	IC4_160816A
	PDP-26	Aqueous	M4500-H+ B	pH	76839	1	08/17/16 11:31 AM	TITRATOR_160817B
	PDP-26	Aqueous	M2540C	Total Dissolved Solids	76831	1	08/17/16 08:42 AM	WC_160816D
1608133-18A	MW-18A	Aqueous	SW7470A	Mercury Total: Aqueous	76918	20	08/24/16 11:31 AM	CETAC2_HG_160824B
	MW-18A	Aqueous	SW7470A	Mercury Total: Aqueous	76918	1	08/24/16 10:48 AM	CETAC2_HG_160824B
	MW-18A	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76893	1	08/23/16 01:16 PM	ICP-MS4_160823B

Lab Order: 1608133
Client: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1608133-18A	MW-18A	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76893	1	08/24/16 05:29 PM	ICP-MS4_160824B
1608133-18D	MW-18A	Aqueous	E300	Anions by IC method - Water	76820	1	08/16/16 01:27 PM	IC4_160816A
	MW-18A	Aqueous	M4500-H+ B	pH	76839	1	08/17/16 11:34 AM	TITRATOR_160817B
	MW-18A	Aqueous	M2540C	Total Dissolved Solids	76831	1	08/17/16 08:42 AM	WC_160816D
1608133-19A	EB-1	Equip Blank	SW7470A	Mercury Total: Aqueous	76918	1	08/24/16 10:53 AM	CETAC2_HG_160824B
	EB-1	Equip Blank	SW6020A	Trace Metals: ICP-MS - Water	76893	1	08/23/16 01:18 PM	ICP-MS4_160823B
	EB-1	Equip Blank	SW6020A	Trace Metals: ICP-MS - Water	76893	1	08/24/16 05:31 PM	ICP-MS4_160824B
1608133-19D	EB-1	Equip Blank	E300	Anions by IC method - Water	76838	1	08/17/16 11:24 AM	IC4_160817A
	EB-1	Equip Blank	M4500-H+ B	pH	76839	1	08/17/16 11:36 AM	TITRATOR_160817B
	EB-1	Equip Blank	M2540C	Total Dissolved Solids	76831	1	08/17/16 08:42 AM	WC_160816D
1608133-20A	BMW-11AR	Aqueous	SW7470A	Mercury Total: Aqueous	76918	1	08/24/16 10:56 AM	CETAC2_HG_160824B
	BMW-11AR	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76893	10	08/24/16 05:33 PM	ICP-MS4_160824B
	BMW-11AR	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76893	1	08/24/16 05:35 PM	ICP-MS4_160824B
	BMW-11AR	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76893	1	08/23/16 01:20 PM	ICP-MS4_160823B
1608133-20D	BMW-11AR	Aqueous	E300	Anions by IC method - Water	76838	1	08/17/16 11:39 AM	IC4_160817A
	BMW-11AR	Aqueous	E300	Anions by IC method - Water	76838	10	08/17/16 02:41 PM	IC4_160817A
	BMW-11AR	Aqueous	M4500-H+ B	pH	76839	1	08/17/16 11:40 AM	TITRATOR_160817B
	BMW-11AR	Aqueous	M2540C	Total Dissolved Solids	76831	1	08/17/16 08:42 AM	WC_160816D
1608133-21A	BMW-19	Aqueous	SW7470A	Mercury Total: Aqueous	76918	1	08/24/16 11:04 AM	CETAC2_HG_160824B
	BMW-19	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76893	50	08/25/16 02:49 PM	ICP-MS4_160825A
	BMW-19	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76893	1	08/23/16 01:22 PM	ICP-MS4_160823B
	BMW-19	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76893	10	08/24/16 05:37 PM	ICP-MS4_160824B
	BMW-19	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76893	1	08/24/16 05:39 PM	ICP-MS4_160824B
1608133-21D	BMW-19	Aqueous	E300	Anions by IC method - Water	76838	100	08/17/16 02:56 PM	IC4_160817A
	BMW-19	Aqueous	E300	Anions by IC method - Water	76838	1	08/17/16 11:54 AM	IC4_160817A
	BMW-19	Aqueous	M4500-H+ B	pH	76839	1	08/17/16 11:42 AM	TITRATOR_160817B

Lab Order: 1608133
Client: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1608133-21D	BMW-19	Aqueous	M2540C	Total Dissolved Solids	76831	1	08/17/16 08:42 AM	WC_160816D
1608133-22A	BMW-18	Aqueous	SW7470A	Mercury Total: Aqueous	76918	1	08/24/16 11:06 AM	CETAC2_HG_160824B
	BMW-18	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76893	1	08/23/16 01:24 PM	ICP-MS4_160823B
	BMW-18	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76893	1	08/24/16 05:41 PM	ICP-MS4_160824B
1608133-22D	BMW-18	Aqueous	E300	Anions by IC method - Water	76838	1	08/17/16 12:09 PM	IC4_160817A
	BMW-18	Aqueous	M4500-H+ B	pH	76839	1	08/17/16 11:46 AM	TITRATOR_160817B
	BMW-18	Aqueous	M2540C	Total Dissolved Solids	76831	1	08/17/16 08:42 AM	WC_160816D
1608133-23A	BMW-20	Aqueous	SW7470A	Mercury Total: Aqueous	76918	1	08/24/16 11:08 AM	CETAC2_HG_160824B
	BMW-20	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76895	10	08/24/16 07:14 PM	ICP-MS4_160824B
	BMW-20	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76895	1	08/24/16 08:48 PM	ICP-MS4_160824B
	BMW-20	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76895	1	08/23/16 02:11 PM	ICP-MS4_160823B
	BMW-20	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76895	1	08/25/16 02:51 PM	ICP-MS4_160825A
1608133-23D	BMW-20	Aqueous	E300	Anions by IC method - Water	76838	1	08/17/16 12:24 PM	IC4_160817A
	BMW-20	Aqueous	E300	Anions by IC method - Water	76838	10	08/17/16 03:11 PM	IC4_160817A
	BMW-20	Aqueous	M4500-H+ B	pH	76839	1	08/17/16 11:48 AM	TITRATOR_160817B
	BMW-20	Aqueous	M2540C	Total Dissolved Solids	76831	1	08/17/16 08:42 AM	WC_160816D
1608133-24A	BMW-24	Aqueous	SW7470A	Mercury Total: Aqueous	76918	1	08/24/16 11:10 AM	CETAC2_HG_160824B
	BMW-24	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76895	1	08/23/16 02:13 PM	ICP-MS4_160823B
	BMW-24	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76895	10	08/24/16 07:16 PM	ICP-MS4_160824B
	BMW-24	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76895	1	08/24/16 08:50 PM	ICP-MS4_160824B
	BMW-24	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76895	1	08/25/16 02:53 PM	ICP-MS4_160825A
1608133-24D	BMW-24	Aqueous	E300	Anions by IC method - Water	76838	100	08/17/16 03:26 PM	IC4_160817A
	BMW-24	Aqueous	E300	Anions by IC method - Water	76838	1	08/17/16 12:39 PM	IC4_160817A
	BMW-24	Aqueous	M4500-H+ B	pH	76839	1	08/17/16 11:50 AM	TITRATOR_160817B
	BMW-24	Aqueous	M2540C	Total Dissolved Solids	76831	1	08/17/16 08:42 AM	WC_160816D
1608133-25A	BMW-23	Aqueous	SW7470A	Mercury Total: Aqueous	76918	1	08/24/16 11:13 AM	CETAC2_HG_160824B

Lab Order: 1608133
Client: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1608133-25A	BMW-23	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76895	1	08/23/16 02:15 PM	ICP-MS4_160823B
	BMW-23	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76895	10	08/24/16 07:18 PM	ICP-MS4_160824B
	BMW-23	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76895	1	08/25/16 02:55 PM	ICP-MS4_160825A
1608133-25D	BMW-23	Aqueous	E300	Anions by IC method - Water	76838	1	08/17/16 12:54 PM	IC4_160817A
	BMW-23	Aqueous	E300	Anions by IC method - Water	76838	10	08/17/16 03:41 PM	IC4_160817A
	BMW-23	Aqueous	M4500-H+ B	pH	76839	1	08/17/16 11:52 AM	TITRATOR_160817B
	BMW-23	Aqueous	M2540C	Total Dissolved Solids	76858	1	08/22/16 08:40 AM	WC_160818B
1608133-26A	BMW-22	Aqueous	SW7470A	Mercury Total: Aqueous	76918	1	08/24/16 11:15 AM	CETAC2_HG_160824B
	BMW-22	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76895	10	08/24/16 07:20 PM	ICP-MS4_160824B
	BMW-22	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76895	1	08/25/16 02:57 PM	ICP-MS4_160825A
	BMW-22	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76895	1	08/23/16 02:17 PM	ICP-MS4_160823B
1608133-26D	BMW-22	Aqueous	E300	Anions by IC method - Water	76838	100	08/17/16 03:56 PM	IC4_160817A
	BMW-22	Aqueous	E300	Anions by IC method - Water	76838	1	08/17/16 01:09 PM	IC4_160817A
	BMW-22	Aqueous	M4500-H+ B	pH	76839	1	08/17/16 11:53 AM	TITRATOR_160817B
	BMW-22	Aqueous	M2540C	Total Dissolved Solids	76858	1	08/22/16 08:40 AM	WC_160818B
1608133-27A	BMW-21	Aqueous	SW7470A	Mercury Total: Aqueous	76918	1	08/24/16 11:17 AM	CETAC2_HG_160824B
	BMW-21	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76895	1	08/23/16 02:19 PM	ICP-MS4_160823B
	BMW-21	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76895	10	08/24/16 07:22 PM	ICP-MS4_160824B
	BMW-21	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76895	1	08/25/16 02:58 PM	ICP-MS4_160825A
1608133-27D	BMW-21	Aqueous	E300	Anions by IC method - Water	76838	1	08/17/16 01:24 PM	IC4_160817A
	BMW-21	Aqueous	E300	Anions by IC method - Water	76838	100	08/17/16 04:11 PM	IC4_160817A
	BMW-21	Aqueous	M4500-H+ B	pH	76839	1	08/17/16 11:56 AM	TITRATOR_160817B
	BMW-21	Aqueous	M2540C	Total Dissolved Solids	76858	1	08/22/16 08:40 AM	WC_160818B

DHL Analytical, Inc.

Date: *14-Sep-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	H-28
Project:	Luminant - Martin Lake	**Lab ID:**	1608133-01
Project No:	5164-B	**Collection Date:**	08/09/16 09:30 AM
Lab Order:	1608133	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	08/18/16 10:36 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	08/17/16 02:05 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	08/17/16 02:05 PM
Barium	0.0155	0.00300	0.0100		mg/L	1	08/17/16 02:05 PM
Beryllium	0.00275	0.000300	0.00100		mg/L	1	08/17/16 02:05 PM
Boron	9.29	0.500	1.50		mg/L	50	08/18/16 03:36 PM
Cadmium	0.00160	0.000300	0.00100		mg/L	1	08/17/16 02:05 PM
Calcium	116	5.00	15.0		mg/L	50	08/18/16 03:36 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	08/17/16 02:05 PM
Cobalt	0.195	0.00300	0.00500		mg/L	1	08/17/16 02:05 PM
Lead	0.000774	0.000300	0.00100	J	mg/L	1	08/17/16 02:05 PM
Lithium	0.155	0.00500	0.0100		mg/L	1	08/17/16 02:05 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	08/17/16 02:05 PM
Selenium	0.00286	0.00200	0.00500	J	mg/L	1	08/17/16 02:05 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	08/17/16 02:05 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	98.4	3.00	10.0		mg/L	10	08/15/16 03:58 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	08/15/16 12:24 PM
Sulfate	1080	10.0	30.0		mg/L	10	08/15/16 03:58 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	5.29	0	0		pH Units@19.6℃	1	08/16/16 10:17 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	2100	50.0	50.0		mg/L	1	08/16/16 08:42 AM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *14-Sep-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	H-29
Project:	Luminant - Martin Lake	**Lab ID:**	1608133-02
Project No:	5164-B	**Collection Date:**	08/09/16 10:35 AM
Lab Order:	1608133	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	08/18/16 10:43 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	08/17/16 02:07 PM
Arsenic	0.00995	0.00200	0.00500		mg/L	1	08/17/16 02:07 PM
Barium	0.315	0.00300	0.0100		mg/L	1	08/17/16 02:07 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	08/17/16 02:07 PM
Boron	0.172	0.0100	0.0300		mg/L	1	08/18/16 03:40 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	08/17/16 02:07 PM
Calcium	64.6	1.00	3.00		mg/L	10	08/18/16 03:38 PM
Chromium	0.00297	0.00200	0.00500	J	mg/L	1	08/17/16 02:07 PM
Cobalt	0.00473	0.00300	0.00500	J	mg/L	1	08/17/16 02:07 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	08/17/16 02:07 PM
Lithium	0.0143	0.00500	0.0100		mg/L	1	08/17/16 02:07 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	08/17/16 02:07 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	08/17/16 02:07 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	08/17/16 02:07 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	53.1	3.00	10.0		mg/L	10	08/15/16 04:28 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	08/15/16 12:39 PM
Sulfate	124	1.00	3.00		mg/L	1	08/15/16 12:39 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.75	0	0		pH Units@19.7℃	1	08/16/16 10:20 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	575	10.0	10.0		mg/L	1	08/16/16 08:42 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *14-Sep-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	H-31
Project:	Luminant - Martin Lake	**Lab ID:**	1608133-03
Project No:	5164-B	**Collection Date:**	08/09/16 11:50 AM
Lab Order:	1608133	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	08/18/16 10:45 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **CVD**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	08/19/16 05:50 PM
Arsenic	0.00886	0.00200	0.00500		mg/L	1	08/19/16 05:50 PM
Barium	0.0191	0.00300	0.0100		mg/L	1	08/19/16 05:50 PM
Beryllium	0.00734	0.000300	0.00100		mg/L	1	08/22/16 03:22 PM
Boron	24.1	1.00	3.00		mg/L	100	08/22/16 02:05 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	08/19/16 05:50 PM
Calcium	251	10.0	30.0		mg/L	100	08/22/16 02:05 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	08/19/16 05:50 PM
Cobalt	0.286	0.00300	0.00500		mg/L	1	08/19/16 05:50 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	08/19/16 05:50 PM
Lithium	0.170	0.00500	0.0100		mg/L	1	08/22/16 03:22 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	08/19/16 05:50 PM
Selenium	0.0202	0.00200	0.00500		mg/L	1	08/19/16 05:50 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	08/19/16 05:50 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	217	30.0	100		mg/L	100	08/15/16 04:43 PM
Fluoride	0.216	0.100	0.400	J	mg/L	1	08/15/16 12:54 PM
Sulfate	2730	100	300		mg/L	100	08/15/16 04:43 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.07	0	0		pH Units@19.7℃	1	08/16/16 10:23 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	4440	50.0	50.0		mg/L	1	08/16/16 08:42 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *14-Sep-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	H-30
Project:	Luminant - Martin Lake	**Lab ID:**	1608133-04
Project No:	5164-B	**Collection Date:**	08/09/16 12:45 PM
Lab Order:	1608133	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	08/18/16 10:48 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **CVD**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	08/19/16 05:52 PM
Arsenic	0.00447	0.00200	0.00500	J	mg/L	1	08/19/16 05:52 PM
Barium	0.0233	0.00300	0.0100		mg/L	1	08/19/16 05:52 PM
Beryllium	0.00483	0.000300	0.00100		mg/L	1	08/22/16 03:24 PM
Boron	6.75	0.100	0.300		mg/L	10	08/22/16 02:07 PM
Cadmium	0.000380	0.000300	0.00100	J	mg/L	1	08/19/16 05:52 PM
Calcium	139	1.00	3.00		mg/L	10	08/22/16 02:07 PM
Chromium	0.00282	0.00200	0.00500	J	mg/L	1	08/19/16 05:52 PM
Cobalt	0.162	0.00300	0.00500		mg/L	1	08/19/16 05:52 PM
Lead	0.00363	0.000300	0.00100		mg/L	1	08/19/16 05:52 PM
Lithium	0.0819	0.00500	0.0100		mg/L	1	08/22/16 03:24 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	08/19/16 05:52 PM
Selenium	0.0195	0.00200	0.00500		mg/L	1	08/19/16 05:52 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	08/19/16 05:52 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	109	3.00	10.0		mg/L	10	08/15/16 04:58 PM
Fluoride	0.152	0.100	0.400	J	mg/L	1	08/15/16 01:09 PM
Sulfate	1230	10.0	30.0		mg/L	10	08/15/16 04:58 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	5.22	0	0		pH Units@19.7℃	1	08/16/16 10:25 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	2160	50.0	50.0		mg/L	1	08/16/16 08:42 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *14-Sep-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	H-32
Project:	Luminant - Martin Lake	**Lab ID:**	1608133-05
Project No:	5164-B	**Collection Date:**	08/09/16 01:50 PM
Lab Order:	1608133	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	08/18/16 10:50 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **CVD**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	08/19/16 05:54 PM
Arsenic	0.00344	0.00200	0.00500	J	mg/L	1	08/19/16 05:54 PM
Barium	0.0234	0.00300	0.0100		mg/L	1	08/19/16 05:54 PM
Beryllium	0.00548	0.000300	0.00100		mg/L	1	08/22/16 03:26 PM
Boron	1.69	0.100	0.300		mg/L	10	08/22/16 02:09 PM
Cadmium	0.000713	0.000300	0.00100	J	mg/L	1	08/19/16 05:54 PM
Calcium	45.4	1.00	3.00		mg/L	10	08/22/16 02:09 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	08/19/16 05:54 PM
Cobalt	0.190	0.00300	0.00500		mg/L	1	08/19/16 05:54 PM
Lead	0.00115	0.000300	0.00100		mg/L	1	08/19/16 05:54 PM
Lithium	0.0774	0.00500	0.0100		mg/L	1	08/22/16 03:26 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	08/19/16 05:54 PM
Selenium	0.00281	0.00200	0.00500	J	mg/L	1	08/19/16 05:54 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	08/19/16 05:54 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	132	3.00	10.0		mg/L	10	08/15/16 05:28 PM
Fluoride	0.680	0.100	0.400		mg/L	1	08/15/16 01:24 PM
Sulfate	342	10.0	30.0		mg/L	10	08/15/16 05:28 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	5.46	0	0		pH Units@20℃	1	08/16/16 10:27 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	839	10.0	10.0		mg/L	1	08/16/16 08:42 AM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *14-Sep-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	H-27
Project:	Luminant - Martin Lake	**Lab ID:**	1608133-06
Project No:	5164-B	**Collection Date:**	08/09/16 02:50 PM
Lab Order:	1608133	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	08/18/16 10:52 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **CVD**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	08/19/16 06:10 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	08/19/16 06:10 PM
Barium	0.0241	0.00300	0.0100		mg/L	1	08/19/16 06:10 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	08/22/16 02:59 PM
Boron	0.462	0.0100	0.0300		mg/L	1	08/22/16 02:59 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	08/19/16 06:10 PM
Calcium	54.3	1.00	3.00		mg/L	10	08/22/16 02:11 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	08/19/16 06:10 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	08/19/16 06:10 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	08/19/16 06:10 PM
Lithium	0.0616	0.00500	0.0100		mg/L	1	08/22/16 02:59 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	08/19/16 06:10 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	08/19/16 06:10 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	08/19/16 06:10 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	124	3.00	10.0		mg/L	10	08/15/16 05:43 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	08/15/16 01:39 PM
Sulfate	365	10.0	30.0		mg/L	10	08/15/16 05:43 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.10	0	0		pH Units@20.2℃	1	08/16/16 10:29 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	854	10.0	10.0		mg/L	1	08/17/16 08:42 AM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *14-Sep-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	H-33
Project:	Luminant - Martin Lake	**Lab ID:**	1608133-07
Project No:	5164-B	**Collection Date:**	08/09/16 03:55 PM
Lab Order:	1608133	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	08/18/16 10:54 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **CVD**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	08/19/16 06:12 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	08/19/16 06:12 PM
Barium	0.0424	0.00300	0.0100		mg/L	1	08/19/16 06:12 PM
Beryllium	0.000519	0.000300	0.00100	J	mg/L	1	08/24/16 05:45 PM
Boron	0.0431	0.0100	0.0300		mg/L	1	08/22/16 02:13 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	08/19/16 06:12 PM
Calcium	11.2	0.100	0.300		mg/L	1	08/19/16 06:12 PM
Chromium	0.00291	0.00200	0.00500	J	mg/L	1	08/19/16 06:12 PM
Cobalt	0.0284	0.00300	0.00500		mg/L	1	08/19/16 06:12 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	08/19/16 06:12 PM
Lithium	0.102	0.00500	0.0100		mg/L	1	08/22/16 02:13 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	08/19/16 06:12 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	08/19/16 06:12 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	08/19/16 06:12 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	64.9	3.00	10.0		mg/L	10	08/15/16 05:58 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	08/15/16 01:54 PM
Sulfate	120	10.0	30.0		mg/L	10	08/15/16 05:58 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.04	0	0		pH Units@20.5℃	1	08/16/16 10:32 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	442	10.0	10.0		mg/L	1	08/17/16 08:42 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *14-Sep-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	H-26
Project:	Luminant - Martin Lake	**Lab ID:**	1608133-08
Project No:	5164-B	**Collection Date:**	08/09/16 04:45 PM
Lab Order:	1608133	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	08/18/16 10:57 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **CVD**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	08/19/16 06:14 PM
Arsenic	0.00290	0.00200	0.00500	J	mg/L	1	08/19/16 06:14 PM
Barium	0.0431	0.00300	0.0100		mg/L	1	08/19/16 06:14 PM
Beryllium	0.00136	0.000300	0.00100		mg/L	1	08/24/16 05:51 PM
Boron	0.569	0.0100	0.0300		mg/L	1	08/22/16 02:15 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	08/19/16 06:14 PM
Calcium	14.0	0.100	0.300		mg/L	1	08/19/16 06:14 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	08/19/16 06:14 PM
Cobalt	0.0352	0.00300	0.00500		mg/L	1	08/19/16 06:14 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	08/19/16 06:14 PM
Lithium	0.0155	0.00500	0.0100		mg/L	1	08/22/16 02:15 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	08/19/16 06:14 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	08/19/16 06:14 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	08/19/16 06:14 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	70.0	3.00	10.0		mg/L	10	08/15/16 07:28 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	08/15/16 02:09 PM
Sulfate	90.9	1.00	3.00		mg/L	1	08/15/16 02:09 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	5.60	0	0		pH Units@20.7℃	1	08/16/16 10:34 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	354	10.0	10.0		mg/L	1	08/17/16 08:42 AM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *14-Sep-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	DUP-01
Project:	Luminant - Martin Lake	**Lab ID:**	1608133-09
Project No:	5164-B	**Collection Date:**	08/09/16 02:38 PM
Lab Order:	1608133	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	08/18/16 10:59 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **CVD**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	08/19/16 06:17 PM
Arsenic	0.00437	0.00200	0.00500	J	mg/L	1	08/19/16 06:17 PM
Barium	0.0212	0.00300	0.0100		mg/L	1	08/19/16 06:17 PM
Beryllium	0.00543	0.000300	0.00100		mg/L	1	08/22/16 03:28 PM
Boron	7.04	0.100	0.300		mg/L	10	08/22/16 02:17 PM
Cadmium	0.000367	0.000300	0.00100	J	mg/L	1	08/19/16 06:17 PM
Calcium	138	1.00	3.00		mg/L	10	08/22/16 02:17 PM
Chromium	0.00210	0.00200	0.00500	J	mg/L	1	08/19/16 06:17 PM
Cobalt	0.165	0.00300	0.00500		mg/L	1	08/19/16 06:17 PM
Lead	0.00341	0.000300	0.00100		mg/L	1	08/19/16 06:17 PM
Lithium	0.0809	0.00500	0.0100		mg/L	1	08/22/16 03:28 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	08/19/16 06:17 PM
Selenium	0.0166	0.00200	0.00500		mg/L	1	08/19/16 06:17 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	08/19/16 06:17 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	112	3.00	10.0		mg/L	10	08/15/16 07:43 PM
Fluoride	0.180	0.100	0.400	J	mg/L	1	08/15/16 02:24 PM
Sulfate	1260	10.0	30.0		mg/L	10	08/15/16 07:43 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	5.11	0	0		pH Units@21℃	1	08/16/16 10:36 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	2080	50.0	50.0		mg/L	1	08/17/16 08:42 AM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *14-Sep-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	PDP-25
Project:	Luminant - Martin Lake	**Lab ID:**	1608133-10
Project No:	5164-B	**Collection Date:**	08/10/16 01:30 PM
Lab Order:	1608133	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	08/18/16 11:01 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **CVD**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	08/19/16 06:19 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	08/19/16 06:19 PM
Barium	0.193	0.00300	0.0100		mg/L	1	08/19/16 06:19 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	08/22/16 03:01 PM
Boron	0.119	0.0100	0.0300		mg/L	1	08/22/16 03:01 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	08/19/16 06:19 PM
Calcium	37.7	1.00	3.00		mg/L	10	08/22/16 02:19 PM
Chromium	0.00527	0.00200	0.00500		mg/L	1	08/19/16 06:19 PM
Cobalt	0.0109	0.00300	0.00500		mg/L	1	08/19/16 06:19 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	08/19/16 06:19 PM
Lithium	0.120	0.00500	0.0100		mg/L	1	08/22/16 03:01 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	08/19/16 06:19 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	08/19/16 06:19 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	08/19/16 06:19 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	136	3.00	10.0		mg/L	10	08/16/16 02:52 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	08/16/16 11:27 AM
Sulfate	110	1.00	3.00		mg/L	1	08/16/16 11:27 AM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.19	0	0		pH Units@17.4℃	1	08/16/16 10:53 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	612	10.0	10.0		mg/L	1	08/17/16 08:42 AM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *14-Sep-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	PDP-24
Project:	Luminant - Martin Lake	**Lab ID:**	1608133-11
Project No:	5164-B	**Collection Date:**	08/10/16 11:00 AM
Lab Order:	1608133	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	0.00214	0.0000800	0.000200		mg/L	1	08/24/16 10:23 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **CVD**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	08/19/16 06:21 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	08/19/16 06:21 PM
Barium	0.0206	0.00300	0.0100		mg/L	1	08/19/16 06:21 PM
Beryllium	0.00427	0.000300	0.00100		mg/L	1	08/22/16 03:30 PM
Boron	3.80	0.100	0.300		mg/L	10	08/22/16 02:21 PM
Cadmium	0.00185	0.000300	0.00100		mg/L	1	08/19/16 06:21 PM
Calcium	32.6	1.00	3.00		mg/L	10	08/22/16 02:21 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	08/19/16 06:21 PM
Cobalt	0.0826	0.00300	0.00500		mg/L	1	08/19/16 06:21 PM
Lead	0.00121	0.000300	0.00100		mg/L	1	08/19/16 06:21 PM
Lithium	0.0241	0.00500	0.0100		mg/L	1	08/22/16 03:30 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	08/19/16 06:21 PM
Selenium	0.00377	0.00200	0.00500	J	mg/L	1	08/19/16 06:21 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	08/19/16 06:21 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	21.4	0.300	1.00		mg/L	1	08/16/16 11:42 AM
Fluoride	0.693	0.100	0.400		mg/L	1	08/16/16 11:42 AM
Sulfate	432	10.0	30.0		mg/L	10	08/16/16 03:37 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	4.53	0	0		pH Units@20℃	1	08/17/16 11:15 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	747	10.0	10.0		mg/L	1	08/17/16 08:42 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *14-Sep-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	MW-17A
Project:	Luminant - Martin Lake	**Lab ID:**	1608133-12
Project No:	5164-B	**Collection Date:**	08/10/16 10:20 AM
Lab Order:	1608133	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	0.000114	0.0000800	0.000200	J	mg/L	1	08/24/16 10:26 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **CVD**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	08/19/16 06:23 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	08/19/16 06:23 PM
Barium	0.108	0.00300	0.0100		mg/L	1	08/19/16 06:23 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	08/22/16 02:51 PM
Boron	0.410	0.0100	0.0300		mg/L	1	08/22/16 02:51 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	08/19/16 06:23 PM
Calcium	4.46	0.100	0.300		mg/L	1	08/19/16 06:23 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	08/19/16 06:23 PM
Cobalt	0.00795	0.00300	0.00500		mg/L	1	08/19/16 06:23 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	08/19/16 06:23 PM
Lithium	0.0153	0.00500	0.0100		mg/L	1	08/22/16 02:51 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	08/19/16 06:23 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	08/19/16 06:23 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	08/19/16 06:23 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	9.52	0.300	1.00		mg/L	1	08/16/16 11:57 AM
Fluoride	<0.100	0.100	0.400		mg/L	1	08/16/16 11:57 AM
Sulfate	42.9	1.00	3.00		mg/L	1	08/16/16 11:57 AM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	5.57	0	0		pH Units@20℃	1	08/17/16 11:19 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	143	10.0	10.0		mg/L	1	08/17/16 08:42 AM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *14-Sep-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	PDP-23
Project:	Luminant - Martin Lake	**Lab ID:**	1608133-13
Project No:	5164-B	**Collection Date:**	08/10/16 09:10 AM
Lab Order:	1608133	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	08/24/16 10:28 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **CVD**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	08/19/16 06:25 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	08/19/16 06:25 PM
Barium	0.0449	0.00300	0.0100		mg/L	1	08/19/16 06:25 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	08/22/16 02:53 PM
Boron	0.0357	0.0100	0.0300		mg/L	1	08/22/16 02:53 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	08/19/16 06:25 PM
Calcium	1.77	0.100	0.300		mg/L	1	08/19/16 06:25 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	08/19/16 06:25 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	08/19/16 06:25 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	08/19/16 06:25 PM
Lithium	0.0124	0.00500	0.0100		mg/L	1	08/22/16 02:53 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	08/19/16 06:25 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	08/19/16 06:25 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	08/19/16 06:25 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	6.61	0.300	1.00		mg/L	1	08/16/16 12:12 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	08/16/16 12:12 PM
Sulfate	2.37	1.00	3.00	J	mg/L	1	08/16/16 12:12 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	5.91	0	0		pH Units@20.1℃	1	08/17/16 11:21 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	99.0	10.0	10.0		mg/L	1	08/17/16 08:42 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *14-Sep-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	MW-19
Project:	Luminant - Martin Lake	**Lab ID:**	1608133-14
Project No:	5164-B	**Collection Date:**	08/10/16 03:00 PM
Lab Order:	1608133	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	08/24/16 10:30 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **CVD**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	08/19/16 06:27 PM
Arsenic	0.00286	0.00200	0.00500	J	mg/L	1	08/19/16 06:27 PM
Barium	0.0188	0.00300	0.0100		mg/L	1	08/19/16 06:27 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	08/22/16 02:55 PM
Boron	0.0539	0.0100	0.0300		mg/L	1	08/22/16 02:55 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	08/19/16 06:27 PM
Calcium	8.62	0.100	0.300		mg/L	1	08/19/16 06:27 PM
Chromium	0.00346	0.00200	0.00500	J	mg/L	1	08/19/16 06:27 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	08/19/16 06:27 PM
Lead	0.000807	0.000300	0.00100	J	mg/L	1	08/19/16 06:27 PM
Lithium	0.0144	0.00500	0.0100		mg/L	1	08/22/16 02:55 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	08/19/16 06:27 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	08/19/16 06:27 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	08/19/16 06:27 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	30.8	0.300	1.00		mg/L	1	08/16/16 12:27 PM
Fluoride	0.152	0.100	0.400	J	mg/L	1	08/16/16 12:27 PM
Sulfate	31.6	1.00	3.00		mg/L	1	08/16/16 12:27 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.24	0	0		pH Units@20.1℃	1	08/17/16 11:24 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	323	10.0	10.0		mg/L	1	08/17/16 08:42 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *14-Sep-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	MW-20A
Project:	Luminant - Martin Lake	**Lab ID:**	1608133-15
Project No:	5164-B	**Collection Date:**	08/10/16 02:10 PM
Lab Order:	1608133	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	0.000325	0.0000800	0.000200		mg/L	1	08/24/16 10:32 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **CVD**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	08/19/16 06:29 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	08/19/16 06:29 PM
Barium	0.0313	0.00300	0.0100		mg/L	1	08/19/16 06:29 PM
Beryllium	0.000502	0.000300	0.00100	J	mg/L	1	08/26/16 12:27 PM
Boron	0.123	0.0100	0.0300		mg/L	1	08/22/16 02:57 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	08/19/16 06:29 PM
Calcium	12.7	0.100	0.300		mg/L	1	08/19/16 06:29 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	08/19/16 06:29 PM
Cobalt	0.00427	0.00300	0.00500	J	mg/L	1	08/19/16 06:29 PM
Lead	0.00141	0.000300	0.00100		mg/L	1	08/19/16 06:29 PM
Lithium	0.0166	0.00500	0.0100		mg/L	1	08/22/16 02:57 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	08/19/16 06:29 PM
Selenium	0.00518	0.00200	0.00500		mg/L	1	08/19/16 06:29 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	08/19/16 06:29 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	11.2	0.300	1.00		mg/L	1	08/16/16 12:42 PM
Fluoride	0.389	0.100	0.400	J	mg/L	1	08/16/16 12:42 PM
Sulfate	77.8	1.00	3.00		mg/L	1	08/16/16 12:42 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	4.91	0	0		pH Units@20.1℃	1	08/17/16 11:26 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	210	10.0	10.0		mg/L	1	08/17/16 08:42 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *14-Sep-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	PDP-22
Project:	Luminant - Martin Lake	**Lab ID:**	1608133-16
Project No:	5164-B	**Collection Date:**	08/10/16 09:20 AM
Lab Order:	1608133	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	08/24/16 10:35 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	08/23/16 12:40 PM
Arsenic	0.00488	0.00200	0.00500	J	mg/L	1	08/23/16 12:40 PM
Barium	0.141	0.00300	0.0100		mg/L	1	08/23/16 12:40 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	08/23/16 12:40 PM
Boron	0.255	0.0100	0.0300		mg/L	1	08/24/16 04:31 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	08/23/16 12:40 PM
Calcium	104	1.00	3.00		mg/L	10	08/24/16 03:46 PM
Chromium	0.0121	0.00200	0.00500		mg/L	1	08/23/16 12:40 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	08/23/16 12:40 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	08/23/16 12:40 PM
Lithium	0.0219	0.00500	0.0100		mg/L	1	08/23/16 12:40 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 12:40 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 12:40 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	08/23/16 12:40 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	15.2	0.300	1.00		mg/L	1	08/16/16 12:57 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	08/16/16 12:57 PM
Sulfate	216	10.0	30.0		mg/L	10	08/16/16 03:52 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	7.08	0	0		pH Units@20.3℃	1	08/17/16 11:28 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	750	10.0	10.0		mg/L	1	08/17/16 08:42 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *14-Sep-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	PDP-26
Project:	Luminant - Martin Lake	**Lab ID:**	1608133-17
Project No:	5164-B	**Collection Date:**	08/10/16 10:30 AM
Lab Order:	1608133	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	08/24/16 10:46 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	08/23/16 01:14 PM
Arsenic	0.00589	0.00200	0.00500		mg/L	1	08/23/16 01:14 PM
Barium	0.0355	0.00300	0.0100		mg/L	1	08/23/16 01:14 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	08/23/16 01:14 PM
Boron	0.0671	0.0100	0.0300		mg/L	1	08/24/16 04:33 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	08/23/16 01:14 PM
Calcium	3.04	0.100	0.300		mg/L	1	08/23/16 01:14 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 01:14 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	08/23/16 01:14 PM
Lead	0.000675	0.000300	0.00100	J	mg/L	1	08/23/16 01:14 PM
Lithium	0.0151	0.00500	0.0100		mg/L	1	08/23/16 01:14 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 01:14 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 01:14 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	08/23/16 01:14 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	5.62	0.300	1.00		mg/L	1	08/16/16 01:12 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	08/16/16 01:12 PM
Sulfate	7.79	1.00	3.00		mg/L	1	08/16/16 01:12 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.97	0	0		pH Units@20.4℃	1	08/17/16 11:31 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	114	10.0	10.0		mg/L	1	08/17/16 08:42 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *14-Sep-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	MW-18A
Project:	Luminant - Martin Lake	**Lab ID:**	1608133-18
Project No:	5164-B	**Collection Date:**	08/10/16 11:30 AM
Lab Order:	1608133	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	0.0312	0.00160	0.00400		mg/L	20	08/24/16 11:31 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	08/23/16 01:16 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 01:16 PM
Barium	0.0447	0.00300	0.0100		mg/L	1	08/23/16 01:16 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	08/23/16 01:16 PM
Boron	0.0755	0.0100	0.0300		mg/L	1	08/24/16 05:29 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	08/23/16 01:16 PM
Calcium	1.13	0.100	0.300		mg/L	1	08/23/16 01:16 PM
Chromium	0.00251	0.00200	0.00500	J	mg/L	1	08/23/16 01:16 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	08/23/16 01:16 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	08/23/16 01:16 PM
Lithium	0.00806	0.00500	0.0100	J	mg/L	1	08/23/16 01:16 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 01:16 PM
Selenium	0.00292	0.00200	0.00500	J	mg/L	1	08/23/16 01:16 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	08/23/16 01:16 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	7.04	0.300	1.00		mg/L	1	08/16/16 01:27 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	08/16/16 01:27 PM
Sulfate	4.78	1.00	3.00		mg/L	1	08/16/16 01:27 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	5.86	0	0		pH Units@20.6℃	1	08/17/16 11:34 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	62.0	10.0	10.0		mg/L	1	08/17/16 08:42 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *14-Sep-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	EB-1
Project:	Luminant - Martin Lake	**Lab ID:**	1608133-19
Project No:	5164-B	**Collection Date:**	08/10/16 11:45 AM
Lab Order:	1608133	**Matrix:**	EQUIP BLANK

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	08/24/16 10:53 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	08/23/16 01:18 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 01:18 PM
Barium	<0.00300	0.00300	0.0100		mg/L	1	08/23/16 01:18 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	08/23/16 01:18 PM
Boron	0.0375	0.0100	0.0300		mg/L	1	08/24/16 05:31 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	08/23/16 01:18 PM
Calcium	5.33	0.100	0.300		mg/L	1	08/23/16 01:18 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 01:18 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	08/23/16 01:18 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	08/23/16 01:18 PM
Lithium	<0.00500	0.00500	0.0100		mg/L	1	08/23/16 01:18 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 01:18 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 01:18 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	08/23/16 01:18 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	11.4	0.300	1.00		mg/L	1	08/17/16 11:24 AM
Fluoride	<0.100	0.100	0.400		mg/L	1	08/17/16 11:24 AM
Sulfate	24.7	1.00	3.00		mg/L	1	08/17/16 11:24 AM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.97	0	0		pH Units@20.7℃	1	08/17/16 11:36 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	<10.0	10.0	10.0		mg/L	1	08/17/16 08:42 AM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *14-Sep-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	BMW-11AR
Project:	Luminant - Martin Lake	**Lab ID:**	1608133-20
Project No:	5164-B	**Collection Date:**	08/11/16 08:25 AM
Lab Order:	1608133	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	08/24/16 10:56 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	08/23/16 01:20 PM
Arsenic	0.00271	0.00200	0.00500	J	mg/L	1	08/23/16 01:20 PM
Barium	0.0772	0.00300	0.0100		mg/L	1	08/23/16 01:20 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	08/23/16 01:20 PM
Boron	0.389	0.0100	0.0300		mg/L	1	08/24/16 05:35 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	08/23/16 01:20 PM
Calcium	170	1.00	3.00		mg/L	10	08/24/16 05:33 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 01:20 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	08/23/16 01:20 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	08/23/16 01:20 PM
Lithium	0.0147	0.00500	0.0100		mg/L	1	08/23/16 01:20 PM
Molybdenum	0.00346	0.00200	0.00500	J	mg/L	1	08/23/16 01:20 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 01:20 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	08/23/16 01:20 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	20.8	0.300	1.00		mg/L	1	08/17/16 11:39 AM
Fluoride	<0.100	0.100	0.400		mg/L	1	08/17/16 11:39 AM
Sulfate	682	10.0	30.0		mg/L	10	08/17/16 02:41 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	7.24	0	0		pH Units@20.8℃	1	08/17/16 11:40 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	1790	50.0	50.0		mg/L	1	08/17/16 08:42 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *14-Sep-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	BMW-19
Project:	Luminant - Martin Lake	**Lab ID:**	1608133-21
Project No:	5164-B	**Collection Date:**	08/11/16 09:20 AM
Lab Order:	1608133	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	08/24/16 11:04 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	08/23/16 01:22 PM
Arsenic	0.00711	0.00200	0.00500		mg/L	1	08/23/16 01:22 PM
Barium	0.0158	0.00300	0.0100		mg/L	1	08/23/16 01:22 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	08/23/16 01:22 PM
Boron	0.419	0.0100	0.0300		mg/L	1	08/24/16 05:39 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	08/23/16 01:22 PM
Calcium	458	5.00	15.0		mg/L	50	08/25/16 02:49 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 01:22 PM
Cobalt	0.0128	0.00300	0.00500		mg/L	1	08/23/16 01:22 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	08/23/16 01:22 PM
Lithium	0.0568	0.00500	0.0100		mg/L	1	08/23/16 01:22 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 01:22 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 01:22 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	08/23/16 01:22 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	8.26	0.300	1.00		mg/L	1	08/17/16 11:54 AM
Fluoride	<0.100	0.100	0.400		mg/L	1	08/17/16 11:54 AM
Sulfate	2370	100	300		mg/L	100	08/17/16 02:56 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.75	0	0		pH Units@20.7℃	1	08/17/16 11:42 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	3780	50.0	50.0		mg/L	1	08/17/16 08:42 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *14-Sep-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	BMW-18
Project:	Luminant - Martin Lake	**Lab ID:**	1608133-22
Project No:	5164-B	**Collection Date:**	08/11/16 10:15 AM
Lab Order:	1608133	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	08/24/16 11:06 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	08/23/16 01:24 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 01:24 PM
Barium	0.0291	0.00300	0.0100		mg/L	1	08/23/16 01:24 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	08/23/16 01:24 PM
Boron	0.415	0.0100	0.0300		mg/L	1	08/24/16 05:41 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	08/23/16 01:24 PM
Calcium	7.02	0.100	0.300		mg/L	1	08/23/16 01:24 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 01:24 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	08/23/16 01:24 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	08/23/16 01:24 PM
Lithium	0.0147	0.00500	0.0100		mg/L	1	08/23/16 01:24 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 01:24 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 01:24 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	08/23/16 01:24 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	18.5	0.300	1.00		mg/L	1	08/17/16 12:09 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	08/17/16 12:09 PM
Sulfate	100	1.00	3.00		mg/L	1	08/17/16 12:09 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	8.48	0	0		pH Units@20.8℃	1	08/17/16 11:46 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	493	10.0	10.0		mg/L	1	08/17/16 08:42 AM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *14-Sep-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	BMW-20
Project:	Luminant - Martin Lake	**Lab ID:**	1608133-23
Project No:	5164-B	**Collection Date:**	08/11/16 10:50 AM
Lab Order:	1608133	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	08/24/16 11:08 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	08/23/16 02:11 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 02:11 PM
Barium	0.0637	0.00300	0.0100		mg/L	1	08/23/16 02:11 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	08/23/16 02:11 PM
Boron	0.106	0.0100	0.0300		mg/L	1	08/24/16 08:48 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	08/23/16 02:11 PM
Calcium	107	1.00	3.00		mg/L	10	08/24/16 07:14 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 02:11 PM
Cobalt	0.0513	0.00300	0.00500		mg/L	1	08/23/16 02:11 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	08/23/16 02:11 PM
Lithium	<0.00500	0.00500	0.0100		mg/L	1	08/25/16 02:51 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 02:11 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 02:11 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	08/23/16 02:11 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	39.4	0.300	1.00		mg/L	1	08/17/16 12:24 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	08/17/16 12:24 PM
Sulfate	602	10.0	30.0		mg/L	10	08/17/16 03:11 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.38	0	0		pH Units@20.8℃	1	08/17/16 11:48 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	1310	50.0	50.0		mg/L	1	08/17/16 08:42 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *14-Sep-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	BMW-24
Project:	Luminant - Martin Lake	**Lab ID:**	1608133-24
Project No:	5164-B	**Collection Date:**	08/11/16 08:50 AM
Lab Order:	1608133	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	08/24/16 11:10 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	08/23/16 02:13 PM
Arsenic	0.00414	0.00200	0.00500	J	mg/L	1	08/23/16 02:13 PM
Barium	1.26	0.00300	0.0100		mg/L	1	08/23/16 02:13 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	08/23/16 02:13 PM
Boron	0.248	0.0100	0.0300		mg/L	1	08/24/16 08:50 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	08/23/16 02:13 PM
Calcium	58.5	1.00	3.00		mg/L	10	08/24/16 07:16 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 02:13 PM
Cobalt	0.00707	0.00300	0.00500		mg/L	1	08/23/16 02:13 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	08/23/16 02:13 PM
Lithium	0.00938	0.00500	0.0100	J	mg/L	1	08/25/16 02:53 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 02:13 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 02:13 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	08/23/16 02:13 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	481	30.0	100		mg/L	100	08/17/16 03:26 PM
Fluoride	0.225	0.100	0.400	J	mg/L	1	08/17/16 12:39 PM
Sulfate	97.8	1.00	3.00		mg/L	1	08/17/16 12:39 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.52	0	0		pH Units@20.9℃	1	08/17/16 11:50 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	1150	50.0	50.0		mg/L	1	08/17/16 08:42 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *14-Sep-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	BMW-23
Project:	Luminant - Martin Lake	**Lab ID:**	1608133-25
Project No:	5164-B	**Collection Date:**	08/11/16 09:20 AM
Lab Order:	1608133	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	08/24/16 11:13 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	08/23/16 02:15 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 02:15 PM
Barium	0.0458	0.00300	0.0100		mg/L	1	08/23/16 02:15 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	08/23/16 02:15 PM
Boron	1.28	0.100	0.300		mg/L	10	08/24/16 07:18 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	08/23/16 02:15 PM
Calcium	90.4	1.00	3.00		mg/L	10	08/24/16 07:18 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 02:15 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	08/23/16 02:15 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	08/23/16 02:15 PM
Lithium	0.0770	0.00500	0.0100		mg/L	1	08/25/16 02:55 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 02:15 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 02:15 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	08/23/16 02:15 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	242	3.00	10.0		mg/L	10	08/17/16 03:41 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	08/17/16 12:54 PM
Sulfate	539	10.0	30.0		mg/L	10	08/17/16 03:41 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.69	0	0		pH Units@21℃	1	08/17/16 11:52 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	1430	50.0	50.0		mg/L	1	08/22/16 08:40 AM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *14-Sep-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	BMW-22
Project:	Luminant - Martin Lake	**Lab ID:**	1608133-26
Project No:	5164-B	**Collection Date:**	08/11/16 10:00 AM
Lab Order:	1608133	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	08/24/16 11:15 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	08/23/16 02:17 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 02:17 PM
Barium	0.0679	0.00300	0.0100		mg/L	1	08/23/16 02:17 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	08/23/16 02:17 PM
Boron	3.18	0.100	0.300		mg/L	10	08/24/16 07:20 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	08/23/16 02:17 PM
Calcium	198	1.00	3.00		mg/L	10	08/24/16 07:20 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 02:17 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	08/23/16 02:17 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	08/23/16 02:17 PM
Lithium	0.0675	0.00500	0.0100		mg/L	1	08/25/16 02:57 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 02:17 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 02:17 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	08/23/16 02:17 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	311	30.0	100		mg/L	100	08/17/16 03:56 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	08/17/16 01:09 PM
Sulfate	946	100	300		mg/L	100	08/17/16 03:56 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.78	0	0		pH Units@21.1℃	1	08/17/16 11:53 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	2520	50.0	50.0		mg/L	1	08/22/16 08:40 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *14-Sep-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	BMW-21
Project:	Luminant - Martin Lake	**Lab ID:**	1608133-27
Project No:	5164-B	**Collection Date:**	08/11/16 10:30 AM
Lab Order:	1608133	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	08/24/16 11:17 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	08/23/16 02:19 PM
Arsenic	0.00373	0.00200	0.00500	J	mg/L	1	08/23/16 02:19 PM
Barium	0.0445	0.00300	0.0100		mg/L	1	08/23/16 02:19 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	08/23/16 02:19 PM
Boron	1.04	0.100	0.300		mg/L	10	08/24/16 07:22 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	08/23/16 02:19 PM
Calcium	143	1.00	3.00		mg/L	10	08/24/16 07:22 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 02:19 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	08/23/16 02:19 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	08/23/16 02:19 PM
Lithium	0.0527	0.00500	0.0100		mg/L	1	08/25/16 02:58 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 02:19 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 02:19 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	08/23/16 02:19 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	425	30.0	100		mg/L	100	08/17/16 04:11 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	08/17/16 01:24 PM
Sulfate	484	100	300		mg/L	100	08/17/16 04:11 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	7.28	0	0		pH Units@21.7℃	1	08/17/16 11:56 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	1860	50.0	50.0		mg/L	1	08/22/16 08:40 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_160818B

The QC data in batch 76835 applies to the following samples: 1608133-01A, 1608133-02A, 1608133-03A, 1608133-04A, 1608133-05A, 1608133-06A, 1608133-07A, 1608133-08A, 1608133-09A, 1608133-10A

Sample ID **MB-76835**	Batch ID: **76835**		TestNo: **SW7470A**				Units: **mg/L**				
SampType: **MBLK**	Run ID: **CETAC2_HG_160818B**		Analysis Date: **8/18/2016 9:58:12 AM**				Prep Date: **8/17/2016**				
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Mercury	<0.0000800	0.000200									

Sample ID **LCS-76835**	Batch ID: **76835**		TestNo: **SW7470A**				Units: **mg/L**				
SampType: **LCS**	Run ID: **CETAC2_HG_160818B**		Analysis Date: **8/18/2016 10:02:44 AM**				Prep Date: **8/17/2016**				
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Mercury	0.00192	0.000200	0.00200	0	96.0	85	115				

Sample ID **LCSD-76835**	Batch ID: **76835**		TestNo: **SW7470A**				Units: **mg/L**				
SampType: **LCSD**	Run ID: **CETAC2_HG_160818B**		Analysis Date: **8/18/2016 10:05:00 AM**				Prep Date: **8/17/2016**				
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Mercury	0.00197	0.000200	0.00200	0	98.5	85	115	2.57	15		

Sample ID **1608119-02A SD**	Batch ID: **76835**		TestNo: **SW7470A**				Units: **mg/L**				
SampType: **SD**	Run ID: **CETAC2_HG_160818B**		Analysis Date: **8/18/2016 10:11:47 AM**				Prep Date: **8/17/2016**				
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Mercury	<0.000400	0.00100	0	0				0	10		

Sample ID **1608119-02A PDS**	Batch ID: **76835**		TestNo: **SW7470A**				Units: **mg/L**				
SampType: **PDS**	Run ID: **CETAC2_HG_160818B**		Analysis Date: **8/18/2016 10:14:03 AM**				Prep Date: **8/17/2016**				
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Mercury	0.00235	0.000200	0.00250	0	94.0	85	115				

Sample ID **1608119-02A MS**	Batch ID: **76835**		TestNo: **SW7470A**				Units: **mg/L**				
SampType: **MS**	Run ID: **CETAC2_HG_160818B**		Analysis Date: **8/18/2016 10:16:19 AM**				Prep Date: **8/17/2016**				
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Mercury	0.00199	0.000200	0.00200	0	99.5	80	120				

Sample ID **1608119-02A MSD**	Batch ID: **76835**		TestNo: **SW7470A**				Units: **mg/L**				
SampType: **MSD**	Run ID: **CETAC2_HG_160818B**		Analysis Date: **8/18/2016 10:18:35 AM**				Prep Date: **8/17/2016**				
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Mercury	0.00199	0.000200	0.00200	0	99.5	80	120	0	15		

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_160818B

Sample ID	**ICV-160818**	Batch ID:	**R87672**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**ICV**	Run ID:	**CETAC2_HG_160818B**	Analysis Date:	**8/18/2016 9:53:38 AM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00388	0.000200	0.00400	0	97.0	90	110			

Sample ID	**CCV1-160818**	Batch ID:	**R87672**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**CETAC2_HG_160818B**	Analysis Date:	**8/18/2016 10:39:00 AM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00190	0.000200	0.00200	0	95.0	90	110			

Sample ID	**CCV2-160818**	Batch ID:	**R87672**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**CETAC2_HG_160818B**	Analysis Date:	**8/18/2016 11:06:20 AM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00193	0.000200	0.00200	0	96.5	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_160824B

The QC data in batch 76918 applies to the following samples: 1608133-11A, 1608133-12A, 1608133-13A, 1608133-14A, 1608133-15A, 1608133-16A, 1608133-17A, 1608133-18A, 1608133-19A , 1608133-20A, 1608133-21A, 1608133-22A, 1608133-23A, 1608133-24A, 1608133-25A, 1608133-26A, 1608133-27A

Sample ID **MB-76918** Batch ID: **76918** TestNo: **SW7470A** Units: **mg/L**
SampType: **MBLK** Run ID: **CETAC2_HG_160824B** Analysis Date: **8/24/2016 10:14:50 AM** Prep Date: **8/23/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.0000800	0.000200								

Sample ID **LCS-76918** Batch ID: **76918** TestNo: **SW7470A** Units: **mg/L**
SampType: **LCS** Run ID: **CETAC2_HG_160824B** Analysis Date: **8/24/2016 10:19:22 AM** Prep Date: **8/23/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00201	0.000200	0.00200	0	101	85	115			

Sample ID **LCSD-76918** Batch ID: **76918** TestNo: **SW7470A** Units: **mg/L**
SampType: **LCSD** Run ID: **CETAC2_HG_160824B** Analysis Date: **8/24/2016 10:21:38 AM** Prep Date: **8/23/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00207	0.000200	0.00200	0	104	85	115	2.94	15	

Sample ID **1608133-16A SD** Batch ID: **76918** TestNo: **SW7470A** Units: **mg/L**
SampType: **SD** Run ID: **CETAC2_HG_160824B** Analysis Date: **8/24/2016 10:37:29 AM** Prep Date: **8/23/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.000400	0.00100	0	0				0	10	

Sample ID **1608133-16A PDS** Batch ID: **76918** TestNo: **SW7470A** Units: **mg/L**
SampType: **PDS** Run ID: **CETAC2_HG_160824B** Analysis Date: **8/24/2016 10:39:45 AM** Prep Date: **8/23/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00228	0.000200	0.00250	0	91.2	85	115			

Sample ID **1608133-16A MS** Batch ID: **76918** TestNo: **SW7470A** Units: **mg/L**
SampType: **MS** Run ID: **CETAC2_HG_160824B** Analysis Date: **8/24/2016 10:42:01 AM** Prep Date: **8/23/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00186	0.000200	0.00200	0	93.0	80	120			

Sample ID **1608133-16A MSD** Batch ID: **76918** TestNo: **SW7470A** Units: **mg/L**
SampType: **MSD** Run ID: **CETAC2_HG_160824B** Analysis Date: **8/24/2016 10:44:17 AM** Prep Date: **8/23/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00186	0.000200	0.00200	0	93.0	80	120	0	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_160824B

Sample ID **ICV-160824**	Batch ID: **R87769**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **ICV**	Run ID: **CETAC2_HG_160824B**	Analysis Date: **8/24/2016 10:10:16 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00395	0.000200	0.00400	0	98.8	90	110			

Sample ID **CCV1-160824**	Batch ID: **R87769**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_160824B**	Analysis Date: **8/24/2016 10:58:25 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00201	0.000200	0.00200	0	101	90	110			

Sample ID **CCV2-160824**	Batch ID: **R87769**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_160824B**	Analysis Date: **8/24/2016 11:26:52 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00198	0.000200	0.00200	0	99.0	90	110			

Sample ID **CCV3-160824**	Batch ID: **R87769**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_160824B**	Analysis Date: **8/24/2016 11:33:45 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00198	0.000200	0.00200	0	99.0	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS3_160824B

Sample ID **ICV1-160824**	Batch ID: **R87792**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS3_160824B**	Analysis Date: **8/24/2016 1:49:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.103	0.00100	0.100	0	103	90	110			

Sample ID **ILCVL-160824**	Batch ID: **R87792**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS3_160824B**	Analysis Date: **8/24/2016 1:55:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.00108	0.00100	0.00100	0	108	70	130			

Sample ID **CCV1-160824**	Batch ID: **R87792**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS3_160824B**	Analysis Date: **8/24/2016 4:35:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.217	0.00100	0.200	0	108	90	110			

Sample ID **LCVL1-160824**	Batch ID: **R87792**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS3_160824B**	Analysis Date: **8/24/2016 4:47:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.00107	0.00100	0.00100	0	107	70	130			

Sample ID **CCV2-160824**	Batch ID: **R87792**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS3_160824B**	Analysis Date: **8/24/2016 6:51:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.203	0.00100	0.200	0	102	90	110			

Sample ID **LCVL2-160824**	Batch ID: **R87792**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS3_160824B**	Analysis Date: **8/24/2016 7:02:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.00112	0.00100	0.00100	0	112	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160817A

The QC data in batch 76816 applies to the following samples: 1608133-01A, 1608133-02A

Sample ID **MB-76816** Batch ID: **76816** TestNo: **SW6020A** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_160817A** Analysis Date: **8/17/2016 12:55:00 PM** Prep Date: **8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.000800	0.00250								
Arsenic	<0.00200	0.00500								
Barium	<0.00300	0.0100								
Beryllium	<0.000300	0.00100								
Cadmium	<0.000300	0.00100								
Calcium	<0.100	0.300								
Chromium	<0.00200	0.00500								
Cobalt	<0.00300	0.00500								
Lead	<0.000300	0.00100								
Lithium	<0.00500	0.0100								
Molybdenum	<0.00200	0.00500								
Selenium	<0.00200	0.00500								
Thallium	<0.000500	0.00150								

Sample ID **LCS-76816** Batch ID: **76816** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_160817A** Analysis Date: **8/17/2016 12:57:00 PM** Prep Date: **8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.209	0.00250	0.200	0	105	80	120			
Arsenic	0.184	0.00500	0.200	0	91.9	80	120			
Barium	0.197	0.0100	0.200	0	98.5	80	120			
Beryllium	0.200	0.00100	0.200	0	100	80	120			
Cadmium	0.200	0.00100	0.200	0	99.8	80	120			
Calcium	4.73	0.300	5.00	0	94.5	80	120			
Chromium	0.198	0.00500	0.200	0	99.1	80	120			
Cobalt	0.180	0.00500	0.200	0	89.8	80	120			
Lead	0.196	0.00100	0.200	0	97.9	80	120			
Lithium	0.199	0.0100	0.200	0	99.4	80	120			
Molybdenum	0.194	0.00500	0.200	0	96.9	80	120			
Selenium	0.180	0.00500	0.200	0	90.0	80	120			
Thallium	0.202	0.00150	0.200	0	101	80	120			

Sample ID **LCSD-76816** Batch ID: **76816** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_160817A** Analysis Date: **8/17/2016 12:59:00 PM** Prep Date: **8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.210	0.00250	0.200	0	105	80	120	0.364	15	
Arsenic	0.192	0.00500	0.200	0	96.2	80	120	4.61	15	
Barium	0.194	0.0100	0.200	0	97.2	80	120	1.39	15	
Beryllium	0.199	0.00100	0.200	0	99.6	80	120	0.495	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

Sample ID **LCSD-76816**	Batch ID: **76816**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCSD**	Run ID: **ICP-MS4_160817A**	Analysis Date: **8/17/2016 12:59:00 PM**	Prep Date: **8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cadmium	0.197	0.00100	0.200	0	98.5	80	120	1.30	15	
Calcium	4.70	0.300	5.00	0	94.0	80	120	0.549	15	
Chromium	0.196	0.00500	0.200	0	98.2	80	120	0.920	15	
Cobalt	0.186	0.00500	0.200	0	93.0	80	120	3.45	15	
Lead	0.191	0.00100	0.200	0	95.5	80	120	2.54	15	
Lithium	0.197	0.0100	0.200	0	98.5	80	120	0.885	15	
Molybdenum	0.193	0.00500	0.200	0	96.6	80	120	0.298	15	
Selenium	0.189	0.00500	0.200	0	94.3	80	120	4.76	15	
Thallium	0.194	0.00150	0.200	0	96.9	80	120	4.14	15	

Sample ID **1608135-04A SD**	Batch ID: **76816**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS4_160817A**	Analysis Date: **8/17/2016 1:05:00 PM**	Prep Date: **8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.0400	0.125	0	0				0	10	
Arsenic	0.667	0.250	0	0.668				0.086	10	
Barium	<0.150	0.500	0	0				0	10	
Beryllium	<0.0150	0.0500	0	0				0	10	
Cadmium	<0.0150	0.0500	0	0				0	10	
Calcium	5.38	15.0	0	5.68				5.39	10	
Chromium	<0.100	0.250	0	0				0	10	
Cobalt	<0.150	0.250	0	0				0	10	
Lead	<0.0150	0.0500	0	0				0	10	
Lithium	<0.250	0.500	0	0				0	10	
Molybdenum	1.25	0.250	0	1.21				3.01	10	
Selenium	<0.100	0.250	0	0				0	10	
Thallium	<0.0250	0.0750	0	0				0	10	

Sample ID **1608135-04A PDS**	Batch ID: **76816**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_160817A**	Analysis Date: **8/17/2016 1:25:00 PM**	Prep Date: **8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	2.10	0.0250	2.00	0	105	80	120			
Arsenic	2.66	0.0500	2.00	0.668	99.7	80	120			
Barium	1.97	0.100	2.00	0	98.6	80	120			
Beryllium	1.86	0.0100	2.00	0	93.2	80	120			
Cadmium	1.87	0.0100	2.00	0	93.7	80	120			
Calcium	50.3	3.00	50.0	5.68	89.2	80	120			
Chromium	1.93	0.0500	2.00	0	96.7	80	120			
Cobalt	1.90	0.0500	2.00	0	95.1	80	120			
Lead	1.97	0.0100	2.00	0	98.7	80	120			

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160817A

Sample ID **1608135-04A PDS** Batch ID: **76816** TestNo: **SW6020A** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS4_160817A** Analysis Date: **8/17/2016 1:25:00 PM** Prep Date: **8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lithium	1.81	0.100	2.00	0	90.4	80	120			
Molybdenum	3.08	0.0500	2.00	1.21	93.4	80	120			
Selenium	1.94	0.0500	2.00	0	96.8	80	120			
Thallium	1.97	0.0150	2.00	0	98.3	80	120			

Sample ID **1608135-04A MS** Batch ID: **76816** TestNo: **SW6020A** Units: **mg/L**
SampType: **MS** Run ID: **ICP-MS4_160817A** Analysis Date: **8/17/2016 1:27:00 PM** Prep Date: **8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.219	0.0250	0.200	0	110	80	120			
Arsenic	0.891	0.0500	0.200	0.668	112	80	120			
Barium	0.215	0.100	0.200	0	107	80	120			
Beryllium	0.186	0.0100	0.200	0	92.9	80	120			
Cadmium	0.196	0.0100	0.200	0	97.9	80	120			
Calcium	10.3	3.00	5.00	5.68	92.9	80	120			
Chromium	0.191	0.0500	0.200	0	95.6	80	120			
Cobalt	0.195	0.0500	0.200	0	97.4	80	120			
Lead	0.204	0.0100	0.200	0	102	80	120			
Lithium	0.215	0.100	0.200	0	108	80	120			
Molybdenum	1.48	0.0500	0.200	1.21	135	80	120			S
Selenium	0.175	0.0500	0.200	0	87.3	80	120			
Thallium	0.199	0.0150	0.200	0	99.5	80	120			

Sample ID **1608135-04A MSD** Batch ID: **76816** TestNo: **SW6020A** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS4_160817A** Analysis Date: **8/17/2016 1:29:00 PM** Prep Date: **8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.213	0.0250	0.200	0	106	80	120	3.19	15	
Arsenic	0.873	0.0500	0.200	0.668	103	80	120	2.08	15	
Barium	0.213	0.100	0.200	0	106	80	120	0.965	15	
Beryllium	0.184	0.0100	0.200	0	91.8	80	120	1.18	15	
Cadmium	0.192	0.0100	0.200	0	95.9	80	120	2.08	15	
Calcium	10.3	3.00	5.00	5.68	91.6	80	120	0.674	15	
Chromium	0.189	0.0500	0.200	0	94.7	80	120	0.972	15	
Cobalt	0.192	0.0500	0.200	0	95.8	80	120	1.70	15	
Lead	0.199	0.0100	0.200	0	99.4	80	120	2.38	15	
Lithium	0.206	0.100	0.200	0	103	80	120	4.42	15	
Molybdenum	1.48	0.0500	0.200	1.21	134	80	120	0.179	15	S
Selenium	0.164	0.0500	0.200	0	82.1	80	120	6.17	15	
Thallium	0.200	0.0150	0.200	0	99.8	80	120	0.341	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160817A

Sample ID **ICV-160817**	Batch ID: **R87663**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_160817A**	Analysis Date: **8/17/2016 10:42:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.104	0.00250	0.100	0	104	90	110			
Arsenic	0.101	0.00500	0.100	0	101	90	110			
Barium	0.0993	0.0100	0.100	0	99.3	90	110			
Beryllium	0.100	0.00100	0.100	0	100	90	110			
Cadmium	0.0985	0.00100	0.100	0	98.5	90	110			
Calcium	2.34	0.300	2.50	0	93.8	90	110			
Chromium	0.104	0.00500	0.100	0	104	90	110			
Cobalt	0.103	0.00500	0.100	0	103	90	110			
Lead	0.101	0.00100	0.100	0	101	90	110			
Lithium	0.0976	0.0100	0.100	0	97.6	90	110			
Molybdenum	0.0952	0.00500	0.100	0	95.2	90	110			
Selenium	0.101	0.00500	0.100	0	101	90	110			
Thallium	0.101	0.00150	0.100	0	101	90	110			

Sample ID **LCVL-160817**	Batch ID: **R87663**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160817A**	Analysis Date: **8/17/2016 10:46:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00221	0.00250	0.00200	0	110	70	130			
Arsenic	0.00526	0.00500	0.00500	0	105	70	130			
Barium	0.00513	0.0100	0.00500	0	103	70	130			
Beryllium	0.000783	0.00100	0.00100	0	78.3	70	130			
Cadmium	0.00104	0.00100	0.00100	0	104	70	130			
Calcium	0.105	0.300	0.100	0	105	70	130			
Chromium	0.00526	0.00500	0.00500	0	105	70	130			
Cobalt	0.00522	0.00500	0.00500	0	104	70	130			
Lead	0.00111	0.00100	0.00100	0	110	70	130			
Lithium	0.0100	0.0100	0.0100	0	100	70	130			
Molybdenum	0.00524	0.00500	0.00500	0	105	70	130			
Selenium	0.00555	0.00500	0.00500	0	111	70	130			
Thallium	0.00105	0.00150	0.00100	0	105	70	130			

Sample ID **CCV2-160817**	Batch ID: **R87663**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160817A**	Analysis Date: **8/17/2016 12:28:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.205	0.00250	0.200	0	103	90	110			
Arsenic	0.214	0.00500	0.200	0	107	90	110			
Barium	0.204	0.0100	0.200	0	102	90	110			
Beryllium	0.210	0.00100	0.200	0	105	90	110			
Cadmium	0.208	0.00100	0.200	0	104	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160817A

Sample ID **CCV2-160817** Batch ID: **R87663** TestNo: **SW6020A** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_160817A** Analysis Date: **8/17/2016 12:28:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.66	0.300	5.00	0	93.1	90	110			
Chromium	0.208	0.00500	0.200	0	104	90	110			
Cobalt	0.211	0.00500	0.200	0	106	90	110			
Lead	0.210	0.00100	0.200	0	105	90	110			
Lithium	0.215	0.0100	0.200	0	107	90	110			
Molybdenum	0.207	0.00500	0.200	0	103	90	110			
Selenium	0.212	0.00500	0.200	0	106	90	110			
Thallium	0.217	0.00150	0.200	0	108	90	110			

Sample ID **LCVL2-160817** Batch ID: **R87663** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_160817A** Analysis Date: **8/17/2016 12:38:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00214	0.00250	0.00200	0	107	70	130			
Arsenic	0.00520	0.00500	0.00500	0	104	70	130			
Barium	0.00517	0.0100	0.00500	0	103	70	130			
Beryllium	0.00109	0.00100	0.00100	0	109	70	130			
Cadmium	0.00104	0.00100	0.00100	0	104	70	130			
Calcium	0.0990	0.300	0.100	0	99.0	70	130			
Chromium	0.00514	0.00500	0.00500	0	103	70	130			
Cobalt	0.00494	0.00500	0.00500	0	98.9	70	130			
Lead	0.00103	0.00100	0.00100	0	103	70	130			
Lithium	0.0104	0.0100	0.0100	0	104	70	130			
Molybdenum	0.00489	0.00500	0.00500	0	97.8	70	130			
Selenium	0.00491	0.00500	0.00500	0	98.1	70	130			
Thallium	0.00105	0.00150	0.00100	0	105	70	130			

Sample ID **CCV3-160817** Batch ID: **R87663** TestNo: **SW6020A** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_160817A** Analysis Date: **8/17/2016 1:39:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.203	0.00250	0.200	0	102	90	110			
Arsenic	0.210	0.00500	0.200	0	105	90	110			
Barium	0.203	0.0100	0.200	0	102	90	110			
Beryllium	0.209	0.00100	0.200	0	104	90	110			
Cadmium	0.206	0.00100	0.200	0	103	90	110			
Calcium	4.76	0.300	5.00	0	95.3	90	110			
Chromium	0.209	0.00500	0.200	0	105	90	110			
Cobalt	0.206	0.00500	0.200	0	103	90	110			
Lead	0.202	0.00100	0.200	0	101	90	110			
Lithium	0.217	0.0100	0.200	0	109	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160817A

Sample ID **CCV3-160817**	Batch ID: **R87663**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160817A**	Analysis Date: **8/17/2016 1:39:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Molybdenum	0.202	0.00500	0.200	0	101	90	110			
Selenium	0.205	0.00500	0.200	0	103	90	110			
Thallium	0.208	0.00150	0.200	0	104	90	110			

Sample ID **LCVL3-160817**	Batch ID: **R87663**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160817A**	Analysis Date: **8/17/2016 1:46:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00226	0.00250	0.00200	0	113	70	130			
Arsenic	0.00537	0.00500	0.00500	0	107	70	130			
Barium	0.00514	0.0100	0.00500	0	103	70	130			
Beryllium	0.000885	0.00100	0.00100	0	88.5	70	130			
Cadmium	0.00103	0.00100	0.00100	0	103	70	130			
Calcium	0.103	0.300	0.100	0	103	70	130			
Chromium	0.00517	0.00500	0.00500	0	103	70	130			
Cobalt	0.00528	0.00500	0.00500	0	106	70	130			
Lead	0.000995	0.00100	0.00100	0	99.5	70	130			
Lithium	0.0101	0.0100	0.0100	0	101	70	130			
Molybdenum	0.00491	0.00500	0.00500	0	98.2	70	130			
Selenium	0.00497	0.00500	0.00500	0	99.5	70	130			
Thallium	0.00101	0.00150	0.00100	0	101	70	130			

Sample ID **CCV4-160817**	Batch ID: **R87663**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160817A**	Analysis Date: **8/17/2016 2:11:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.207	0.00250	0.200	0	103	90	110			
Arsenic	0.209	0.00500	0.200	0	105	90	110			
Barium	0.208	0.0100	0.200	0	104	90	110			
Beryllium	0.207	0.00100	0.200	0	103	90	110			
Cadmium	0.208	0.00100	0.200	0	104	90	110			
Chromium	0.207	0.00500	0.200	0	103	90	110			
Cobalt	0.208	0.00500	0.200	0	104	90	110			
Lead	0.204	0.00100	0.200	0	102	90	110			
Lithium	0.214	0.0100	0.200	0	107	90	110			
Molybdenum	0.205	0.00500	0.200	0	103	90	110			
Selenium	0.203	0.00500	0.200	0	101	90	110			
Thallium	0.210	0.00150	0.200	0	105	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160817A

Sample ID **LCVL4-160817**	Batch ID: **R87663**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160817A**	Analysis Date: **8/17/2016 2:15:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00226	0.00250	0.00200	0	113	70	130			
Arsenic	0.00509	0.00500	0.00500	0	102	70	130			
Barium	0.00516	0.0100	0.00500	0	103	70	130			
Beryllium	0.00123	0.00100	0.00100	0	123	70	130			
Cadmium	0.00108	0.00100	0.00100	0	108	70	130			
Chromium	0.00521	0.00500	0.00500	0	104	70	130			
Cobalt	0.00503	0.00500	0.00500	0	101	70	130			
Lead	0.00103	0.00100	0.00100	0	103	70	130			
Lithium	0.0104	0.0100	0.0100	0	104	70	130			
Molybdenum	0.00495	0.00500	0.00500	0	99.0	70	130			
Selenium	0.00460	0.00500	0.00500	0	91.9	70	130			
Thallium	0.00104	0.00150	0.00100	0	104	70	130			

Sample ID **CCV6-160817**	Batch ID: **R87663**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160817A**	Analysis Date: **8/17/2016 3:33:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.203	0.00250	0.200	0	102	90	110			
Arsenic	0.204	0.00500	0.200	0	102	90	110			
Barium	0.208	0.0100	0.200	0	104	90	110			
Beryllium	0.202	0.00100	0.200	0	101	90	110			
Cadmium	0.202	0.00100	0.200	0	101	90	110			
Chromium	0.201	0.00500	0.200	0	101	90	110			
Cobalt	0.195	0.00500	0.200	0	97.7	90	110			
Lead	0.206	0.00100	0.200	0	103	90	110			
Molybdenum	0.200	0.00500	0.200	0	99.8	90	110			
Selenium	0.198	0.00500	0.200	0	99.2	90	110			
Thallium	0.210	0.00150	0.200	0	105	90	110			

Sample ID **LCVL6-160817**	Batch ID: **R87663**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160817A**	Analysis Date: **8/17/2016 3:38:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00230	0.00250	0.00200	0	115	70	130			
Arsenic	0.00526	0.00500	0.00500	0	105	70	130			
Barium	0.00533	0.0100	0.00500	0	107	70	130			
Beryllium	0.00128	0.00100	0.00100	0	128	70	130			
Cadmium	0.000952	0.00100	0.00100	0	95.2	70	130			
Chromium	0.00519	0.00500	0.00500	0	104	70	130			
Cobalt	0.00517	0.00500	0.00500	0	103	70	130			
Lead	0.00101	0.00100	0.00100	0	101	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160817A

Sample ID **LCVL6-160817** Batch ID: **R87663** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_160817A** Analysis Date: **8/17/2016 3:38:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Molybdenum	0.00482	0.00500	0.00500	0	96.4	70	130			
Selenium	0.00483	0.00500	0.00500	0	96.7	70	130			
Thallium	0.00102	0.00150	0.00100	0	102	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: **ICP-MS4_160818B**

The QC data in batch 76816 applies to the following samples: 1608133-01A, 1608133-02A

Sample ID	**MB-76816**	Batch ID:	**76816**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**ICP-MS4_160818B**	Analysis Date:	**8/18/2016 2:32:00 PM**	Prep Date:	**8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	<0.0100	0.0300								

Sample ID	**LCS-76816**	Batch ID:	**76816**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**ICP-MS4_160818B**	Analysis Date:	**8/18/2016 2:34:00 PM**	Prep Date:	**8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.193	0.0300	0.200	0	96.3	80	120			

Sample ID	**LCSD-76816**	Batch ID:	**76816**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**LCSD**	Run ID:	**ICP-MS4_160818B**	Analysis Date:	**8/18/2016 2:36:00 PM**	Prep Date:	**8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.185	0.0300	0.200	0	92.7	80	120	3.82	15	

Sample ID	**1608135-04A SD**	Batch ID:	**76816**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**SD**	Run ID:	**ICP-MS4_160818B**	Analysis Date:	**8/18/2016 2:42:00 PM**	Prep Date:	**8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	1.97	1.50	0	1.87				5.13	10	

Sample ID	**1608135-04A PDS**	Batch ID:	**76816**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**PDS**	Run ID:	**ICP-MS4_160818B**	Analysis Date:	**8/18/2016 2:44:00 PM**	Prep Date:	**8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	3.60	0.300	2.00	1.87	86.7	80	120			

Sample ID	**1608135-04A MS**	Batch ID:	**76816**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**MS**	Run ID:	**ICP-MS4_160818B**	Analysis Date:	**8/18/2016 3:04:00 PM**	Prep Date:	**8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	2.18	0.300	0.200	1.87	158	80	120			S

Sample ID	**1608135-04A MSD**	Batch ID:	**76816**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**MSD**	Run ID:	**ICP-MS4_160818B**	Analysis Date:	**8/18/2016 3:06:00 PM**	Prep Date:	**8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	2.07	0.300	0.200	1.87	102	80	120	5.26	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160818B

Sample ID **ICV2-160818**	Batch ID: **R87690**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_160818B**	Analysis Date: **8/18/2016 2:06:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0920	0.0300	0.100	0	92.0	90	110			
Calcium	2.39	0.300	2.50	0	95.8	90	110			

Sample ID **ILCVL2-160818**	Batch ID: **R87690**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160818B**	Analysis Date: **8/18/2016 2:11:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0190	0.0300	0.0200	0	95.0	70	130			
Calcium	0.102	0.300	0.100	0	102	70	130			

Sample ID **CCV2-160818**	Batch ID: **R87690**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160818B**	Analysis Date: **8/18/2016 3:08:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.195	0.0300	0.200	0	97.6	90	110			
Calcium	4.88	0.300	5.00	0	97.6	90	110			

Sample ID **LCVL2-160818**	Batch ID: **R87690**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160818B**	Analysis Date: **8/18/2016 3:16:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0176	0.0300	0.0200	0	87.8	70	130			
Calcium	0.0995	0.300	0.100	0	99.5	70	130			

Sample ID **CCV3-160818**	Batch ID: **R87690**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160818B**	Analysis Date: **8/18/2016 3:42:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.193	0.0300	0.200	0	96.6	90	110			
Calcium	4.89	0.300	5.00	0	97.8	90	110			

Sample ID **LCVL3-160818**	Batch ID: **R87690**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160818B**	Analysis Date: **8/18/2016 3:54:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.00902	0.0300	0.0200	0	45.1	70	130			S
Calcium	0.100	0.300	0.100	0	100	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160819A

The QC data in batch 76817 applies to the following samples: 1608133-03A, 1608133-04A, 1608133-05A, 1608133-06A, 1608133-07A, 1608133-08A, 1608133-09A, 1608133-10A, 1608133-11A, 1608133-12A, 1608133-13A, 1608133-14A, 1608133-15A

Sample ID **MB-76817** Batch ID: **76817** TestNo: **SW6020A** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_160819A** Analysis Date: **8/19/2016 5:26:00 PM** Prep Date: **8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.000800	0.00250								
Arsenic	<0.00200	0.00500								
Barium	<0.00300	0.0100								
Cadmium	<0.000300	0.00100								
Calcium	<0.100	0.300								
Chromium	<0.00200	0.00500								
Cobalt	<0.00300	0.00500								
Lead	<0.000300	0.00100								
Molybdenum	<0.00200	0.00500								
Selenium	<0.00200	0.00500								
Thallium	<0.000500	0.00150								

Sample ID **LCS-76817** Batch ID: **76817** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_160819A** Analysis Date: **8/19/2016 5:28:00 PM** Prep Date: **8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.199	0.00250	0.200	0	99.6	80	120			
Arsenic	0.200	0.00500	0.200	0	100	80	120			
Barium	0.194	0.0100	0.200	0	97.1	80	120			
Cadmium	0.190	0.00100	0.200	0	95.2	80	120			
Calcium	4.76	0.300	5.00	0	95.3	80	120			
Chromium	0.196	0.00500	0.200	0	97.9	80	120			
Cobalt	0.200	0.00500	0.200	0	100	80	120			
Lead	0.200	0.00100	0.200	0	99.8	80	120			
Molybdenum	0.186	0.00500	0.200	0	93.2	80	120			
Selenium	0.203	0.00500	0.200	0	102	80	120			
Thallium	0.200	0.00150	0.200	0	100	80	120			

Sample ID **LCSD-76817** Batch ID: **76817** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_160819A** Analysis Date: **8/19/2016 5:30:00 PM** Prep Date: **8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.200	0.00250	0.200	0	100	80	120	0.615	15	
Arsenic	0.201	0.00500	0.200	0	100	80	120	0.198	15	
Barium	0.195	0.0100	0.200	0	97.3	80	120	0.243	15	
Cadmium	0.192	0.00100	0.200	0	96.0	80	120	0.767	15	
Calcium	4.81	0.300	5.00	0	96.2	80	120	0.929	15	
Chromium	0.196	0.00500	0.200	0	97.8	80	120	0.039	15	
Cobalt	0.201	0.00500	0.200	0	100	80	120	0.213	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160819A

Sample ID **LCSD-76817**	Batch ID: **76817**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCSD**	Run ID: **ICP-MS4_160819A**	Analysis Date: **8/19/2016 5:30:00 PM**	Prep Date: **8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.199	0.00100	0.200	0	99.3	80	120	0.462	15	
Molybdenum	0.189	0.00500	0.200	0	94.5	80	120	1.31	15	
Selenium	0.203	0.00500	0.200	0	102	80	120	0.159	15	
Thallium	0.199	0.00150	0.200	0	99.3	80	120	0.824	15	

Sample ID **1608136-06A SD**	Batch ID: **76817**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS4_160819A**	Analysis Date: **8/19/2016 5:36:00 PM**	Prep Date: **8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.00400	0.0125	0	0				0	10	
Arsenic	0.190	0.0250	0	0.193				1.47	10	
Barium	0.0413	0.0500	0	0.0412				0.187	10	
Cadmium	<0.00150	0.00500	0	0				0	10	
Calcium	5.17	1.50	0	5.22				0.967	10	
Chromium	<0.0100	0.0250	0	0				0	10	
Cobalt	<0.0150	0.0250	0	0.00742				0	10	
Lead	<0.00150	0.00500	0	0.000484				0	10	
Molybdenum	0.364	0.0250	0	0.374				2.56	10	
Selenium	<0.0100	0.0250	0	0.00282				0	10	
Thallium	<0.00250	0.00750	0	0				0	10	

Sample ID **1608136-06A PDS**	Batch ID: **76817**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_160819A**	Analysis Date: **8/19/2016 5:56:00 PM**	Prep Date: **8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.209	0.00250	0.200	0	104	80	120			
Arsenic	0.386	0.00500	0.200	0.193	96.6	80	120			
Barium	0.238	0.0100	0.200	0.0412	98.6	80	120			
Cadmium	0.177	0.00100	0.200	0	88.4	80	120			
Calcium	9.50	0.300	5.00	5.22	85.7	80	120			
Chromium	0.186	0.00500	0.200	0	93.0	80	120			
Cobalt	0.197	0.00500	0.200	0.00742	94.6	80	120			
Lead	0.202	0.00100	0.200	0.000484	101	80	120			
Molybdenum	0.524	0.00500	0.200	0.374	74.9	80	120			S
Selenium	0.210	0.00500	0.200	0.00282	103	80	120			
Thallium	0.201	0.00150	0.200	0	101	80	120			

Sample ID **1608136-06A MS**	Batch ID: **76817**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS4_160819A**	Analysis Date: **8/19/2016 5:58:00 PM**	Prep Date: **8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160819A

Sample ID **1608136-06A MS**	Batch ID: **76817**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS4_160819A**	Analysis Date: **8/19/2016 5:58:00 PM**	Prep Date: **8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.204	0.00250	0.200	0	102	80	120			
Arsenic	0.633	0.00500	0.200	0.193	220	80	120			S
Barium	0.535	0.0100	0.200	0.0412	247	80	120			S
Cadmium	0.173	0.00100	0.200	0	86.5	80	120			
Calcium	5.64	0.300	5.00	5.22	8.36	80	120			S
Chromium	0.174	0.00500	0.200	0	87.1	80	120			
Cobalt	0.181	0.00500	0.200	0.00742	86.7	80	120			
Lead	0.201	0.00100	0.200	0.000484	100	80	120			
Molybdenum	2.66	0.00500	0.200	0.374	1140	80	120			S
Selenium	0.206	0.00500	0.200	0.00282	102	80	120			
Thallium	0.201	0.00150	0.200	0	101	80	120			

Sample ID **1608136-06A MSD**	Batch ID: **76817**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS4_160819A**	Analysis Date: **8/19/2016 6:00:00 PM**	Prep Date: **8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.198	0.00250	0.200	0	99.2	80	120	2.74	15	
Arsenic	0.612	0.00500	0.200	0.193	210	80	120	3.36	15	S
Barium	0.506	0.0100	0.200	0.0412	232	80	120	5.57	15	S
Cadmium	0.167	0.00100	0.200	0	83.7	80	120	3.24	15	
Calcium	5.63	0.300	5.00	5.22	8.09	80	120	0.238	15	S
Chromium	0.171	0.00500	0.200	0	85.6	80	120	1.72	15	
Cobalt	0.178	0.00500	0.200	0.00742	85.3	80	120	1.57	15	
Lead	0.199	0.00100	0.200	0.000484	99.2	80	120	1.03	15	
Molybdenum	2.51	0.00500	0.200	0.374	1070	80	120	5.76	15	S
Selenium	0.207	0.00500	0.200	0.00282	102	80	120	0.267	15	
Thallium	0.198	0.00150	0.200	0	98.9	80	120	1.84	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160819A

Sample ID **ICV-160819**	Batch ID: **R87706**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_160819A**	Analysis Date: **8/19/2016 12:09:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.104	0.00250	0.100	0	104	90	110			
Arsenic	0.101	0.00500	0.100	0	101	90	110			
Barium	0.101	0.0100	0.100	0	101	90	110			
Cadmium	0.0995	0.00100	0.100	0	99.5	90	110			
Calcium	2.40	0.300	2.50	0	96.1	90	110			
Chromium	0.105	0.00500	0.100	0	105	90	110			
Cobalt	0.105	0.00500	0.100	0	105	90	110			
Lead	0.0999	0.00100	0.100	0	99.9	90	110			
Molybdenum	0.0938	0.00500	0.100	0	93.8	90	110			
Selenium	0.103	0.00500	0.100	0	103	90	110			
Thallium	0.0989	0.00150	0.100	0	98.9	90	110			

Sample ID **LCVL-160819**	Batch ID: **R87706**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160819A**	Analysis Date: **8/19/2016 12:13:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00224	0.00250	0.00200	0	112	70	130			
Arsenic	0.00546	0.00500	0.00500	0	109	70	130			
Barium	0.00533	0.0100	0.00500	0	107	70	130			
Cadmium	0.00105	0.00100	0.00100	0	105	70	130			
Calcium	0.103	0.300	0.100	0	103	70	130			
Chromium	0.00543	0.00500	0.00500	0	109	70	130			
Cobalt	0.00554	0.00500	0.00500	0	111	70	130			
Lead	0.00113	0.00100	0.00100	0	113	70	130			
Molybdenum	0.00515	0.00500	0.00500	0	103	70	130			
Selenium	0.00608	0.00500	0.00500	0	122	70	130			
Thallium	0.00106	0.00150	0.00100	0	106	70	130			

Sample ID **CCV5-160819**	Batch ID: **R87706**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160819A**	Analysis Date: **8/19/2016 5:18:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.208	0.00250	0.200	0	104	90	110			
Arsenic	0.206	0.00500	0.200	0	103	90	110			
Barium	0.201	0.0100	0.200	0	100	90	110			
Cadmium	0.195	0.00100	0.200	0	97.3	90	110			
Calcium	4.99	0.300	5.00	0	99.9	90	110			
Chromium	0.202	0.00500	0.200	0	101	90	110			
Cobalt	0.204	0.00500	0.200	0	102	90	110			
Lead	0.203	0.00100	0.200	0	102	90	110			
Molybdenum	0.193	0.00500	0.200	0	96.7	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160819A

Sample ID **CCV5-160819**	Batch ID: **R87706**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160819A**	Analysis Date: **8/19/2016 5:18:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.207	0.00500	0.200	0	104	90	110			
Thallium	0.207	0.00150	0.200	0	104	90	110			

Sample ID **LCVL5-160819**	Batch ID: **R87706**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160819A**	Analysis Date: **8/19/2016 5:22:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00232	0.00250	0.00200	0	116	70	130			
Arsenic	0.00549	0.00500	0.00500	0	110	70	130			
Barium	0.00536	0.0100	0.00500	0	107	70	130			
Cadmium	0.00103	0.00100	0.00100	0	103	70	130			
Calcium	0.108	0.300	0.100	0	108	70	130			
Chromium	0.00549	0.00500	0.00500	0	110	70	130			
Cobalt	0.00548	0.00500	0.00500	0	110	70	130			
Lead	0.00113	0.00100	0.00100	0	113	70	130			
Molybdenum	0.00488	0.00500	0.00500	0	97.5	70	130			
Selenium	0.00563	0.00500	0.00500	0	113	70	130			
Thallium	0.00111	0.00150	0.00100	0	111	70	130			

Sample ID **CCV6-160819**	Batch ID: **R87706**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160819A**	Analysis Date: **8/19/2016 6:02:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.205	0.00250	0.200	0	103	90	110			
Arsenic	0.207	0.00500	0.200	0	103	90	110			
Barium	0.196	0.0100	0.200	0	97.9	90	110			
Cadmium	0.185	0.00100	0.200	0	92.6	90	110			
Calcium	5.07	0.300	5.00	0	101	90	110			
Chromium	0.188	0.00500	0.200	0	93.9	90	110			
Cobalt	0.196	0.00500	0.200	0	97.9	90	110			
Lead	0.202	0.00100	0.200	0	101	90	110			
Molybdenum	0.189	0.00500	0.200	0	94.5	90	110			
Selenium	0.215	0.00500	0.200	0	108	90	110			
Thallium	0.203	0.00150	0.200	0	102	90	110			

Sample ID **LCVL6-160819**	Batch ID: **R87706**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160819A**	Analysis Date: **8/19/2016 6:06:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00238	0.00250	0.00200	0	119	70	130			
Arsenic	0.00547	0.00500	0.00500	0	109	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160819A

Sample ID **LCVL6-160819** Batch ID: **R87706** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_160819A** Analysis Date: **8/19/2016 6:06:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.00542	0.0100	0.00500	0	108	70	130			
Cadmium	0.00101	0.00100	0.00100	0	101	70	130			
Calcium	0.109	0.300	0.100	0	109	70	130			
Chromium	0.00524	0.00500	0.00500	0	105	70	130			
Cobalt	0.00530	0.00500	0.00500	0	106	70	130			
Lead	0.00109	0.00100	0.00100	0	109	70	130			
Molybdenum	0.00510	0.00500	0.00500	0	102	70	130			
Selenium	0.00645	0.00500	0.00500	0	129	70	130			
Thallium	0.00111	0.00150	0.00100	0	111	70	130			

Sample ID **CCV7-160819** Batch ID: **R87706** TestNo: **SW6020A** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_160819A** Analysis Date: **8/19/2016 6:31:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.205	0.00250	0.200	0	102	90	110			
Arsenic	0.208	0.00500	0.200	0	104	90	110			
Barium	0.198	0.0100	0.200	0	99.0	90	110			
Cadmium	0.190	0.00100	0.200	0	94.9	90	110			
Calcium	4.94	0.300	5.00	0	98.8	90	110			
Chromium	0.200	0.00500	0.200	0	99.8	90	110			
Cobalt	0.205	0.00500	0.200	0	102	90	110			
Lead	0.204	0.00100	0.200	0	102	90	110			
Molybdenum	0.189	0.00500	0.200	0	94.3	90	110			
Selenium	0.208	0.00500	0.200	0	104	90	110			
Thallium	0.204	0.00150	0.200	0	102	90	110			

Sample ID **LCVL7-160819** Batch ID: **R87706** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_160819A** Analysis Date: **8/19/2016 6:35:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00228	0.00250	0.00200	0	114	70	130			
Arsenic	0.00552	0.00500	0.00500	0	110	70	130			
Barium	0.00510	0.0100	0.00500	0	102	70	130			
Cadmium	0.000970	0.00100	0.00100	0	97.0	70	130			
Calcium	0.104	0.300	0.100	0	104	70	130			
Chromium	0.00536	0.00500	0.00500	0	107	70	130			
Cobalt	0.00541	0.00500	0.00500	0	108	70	130			
Lead	0.00108	0.00100	0.00100	0	108	70	130			
Molybdenum	0.00480	0.00500	0.00500	0	96.1	70	130			
Selenium	0.00607	0.00500	0.00500	0	121	70	130			
Thallium	0.00111	0.00150	0.00100	0	111	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160822B

The QC data in batch 76817 applies to the following samples: 1608133-03A, 1608133-04A, 1608133-05A, 1608133-06A, 1608133-07A, 1608133-08A, 1608133-09A, 1608133-10A, 1608133-11A, 1608133-12A, 1608133-13A, 1608133-14A, 1608133-15A

Sample ID **MB-76817** Batch ID: **76817** TestNo: **SW6020A** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_160822B** Analysis Date: **8/22/2016 1:51:00 PM** Prep Date: **8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	<0.000300	0.00100								
Boron	<0.0100	0.0300								
Lithium	<0.00500	0.0100								

Sample ID **LCS-76817** Batch ID: **76817** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_160822B** Analysis Date: **8/22/2016 1:53:00 PM** Prep Date: **8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.200	0.00100	0.200	0	99.8	80	120			
Boron	0.196	0.0300	0.200	0	98.2	80	120			
Lithium	0.200	0.0100	0.200	0	100	80	120			

Sample ID **LCSD-76817** Batch ID: **76817** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_160822B** Analysis Date: **8/22/2016 1:55:00 PM** Prep Date: **8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.201	0.00100	0.200	0	100	80	120	0.617	15	
Boron	0.199	0.0300	0.200	0	99.4	80	120	1.23	15	
Lithium	0.207	0.0100	0.200	0	104	80	120	3.27	15	

Sample ID **1608136-06A SD** Batch ID: **76817** TestNo: **SW6020A** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS4_160822B** Analysis Date: **8/22/2016 2:01:00 PM** Prep Date: **8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	<0.0150	0.0500	0	0				0	10	
Boron	1.40	1.50	0	1.19				16.8	10	R
Lithium	<0.250	0.500	0	0				0	10	

Sample ID **1608136-06A PDS** Batch ID: **76817** TestNo: **SW6020A** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS4_160822B** Analysis Date: **8/22/2016 2:03:00 PM** Prep Date: **8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	1.86	0.0100	2.00	0	93.0	80	120			
Boron	3.08	0.300	2.00	1.19	94.9	80	120			
Lithium	1.82	0.100	2.00	0	91.1	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160822B

Sample ID **1608136-06A MS**	Batch ID: **76817**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS4_160822B**	Analysis Date: **8/22/2016 2:23:00 PM**	Prep Date: **8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.171	0.0100	0.200	0	85.3	80	120			
Boron	1.15	0.300	0.200	1.19	-18.0	80	120			S
Lithium	0.189	0.100	0.200	0	94.3	80	120			

Sample ID **1608136-06A MSD**	Batch ID: **76817**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS4_160822B**	Analysis Date: **8/22/2016 2:25:00 PM**	Prep Date: **8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.174	0.0100	0.200	0	87.2	80	120	2.20	15	
Boron	1.15	0.300	0.200	1.19	-18.1	80	120	0.025	15	S
Lithium	0.176	0.100	0.200	0	87.9	80	120	7.03	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160822B

Sample ID **ICV2-160822**	Batch ID: **R87729**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_160822B**	Analysis Date: **8/22/2016 1:35:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.100	0.00100	0.100	0	100	90	110			
Boron	0.0948	0.0300	0.100	0	94.8	90	110			
Calcium	2.32	0.300	2.50	0	92.9	90	110			
Lithium	0.0966	0.0100	0.100	0	96.6	90	110			

Sample ID **ILCVL2-160822**	Batch ID: **R87729**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160822B**	Analysis Date: **8/22/2016 1:44:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.00125	0.00100	0.00100	0	125	70	130			
Boron	0.0215	0.0300	0.0200	0	108	70	130			
Calcium	0.106	0.300	0.100	0	106	70	130			
Lithium	0.0114	0.0100	0.0100	0	114	70	130			

Sample ID **CCV2-160822**	Batch ID: **R87729**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160822B**	Analysis Date: **8/22/2016 2:35:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.209	0.00100	0.200	0	105	90	110			
Boron	0.213	0.0300	0.200	0	106	90	110			
Calcium	4.78	0.300	5.00	0	95.5	90	110			
Lithium	0.213	0.0100	0.200	0	107	90	110			

Sample ID **LCVL2-160822**	Batch ID: **R87729**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160822B**	Analysis Date: **8/22/2016 2:46:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.00131	0.00100	0.00100	0	131	70	130			S
Boron	0.0245	0.0300	0.0200	0	123	70	130			
Calcium	0.0981	0.300	0.100	0	98.1	70	130			
Lithium	0.0113	0.0100	0.0100	0	113	70	130			

Sample ID **CCV3-160822**	Batch ID: **R87729**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160822B**	Analysis Date: **8/22/2016 3:07:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.208	0.00100	0.200	0	104	90	110			
Boron	0.220	0.0300	0.200	0	110	90	110			
Lithium	0.219	0.0100	0.200	0	110	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160822B

Sample ID **LCVL3-160822**	Batch ID: **R87729**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160822B**	Analysis Date: **8/22/2016 3:17:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.00108	0.00100	0.00100	0	108	70	130			
Boron	0.0214	0.0300	0.0200	0	107	70	130			
Lithium	0.0113	0.0100	0.0100	0	113	70	130			

Sample ID **CCV4-160822**	Batch ID: **R87729**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160822B**	Analysis Date: **8/22/2016 3:35:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.192	0.00100	0.200	0	96.0	90	110			
Lithium	0.202	0.0100	0.200	0	101	90	110			

Sample ID **LCVL4-160822**	Batch ID: **R87729**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160822B**	Analysis Date: **8/22/2016 3:46:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.00104	0.00100	0.00100	0	104	70	130			
Lithium	0.0101	0.0100	0.0100	0	101	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: **ICP-MS4_160823B**

The QC data in batch 76893 applies to the following samples: 1608133-16A, 1608133-17A, 1608133-18A, 1608133-19A, 1608133-20A, 1608133-21A, 1608133-22A

Sample ID **MB-76893** Batch ID: **76893** TestNo: **SW6020A** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_160823B** Analysis Date: **8/23/2016 12:12:00 PM** Prep Date: **8/22/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.000800	0.00250								
Arsenic	<0.00200	0.00500								
Barium	<0.00300	0.0100								
Beryllium	<0.000300	0.00100								
Cadmium	<0.000300	0.00100								
Calcium	<0.100	0.300								
Chromium	<0.00200	0.00500								
Cobalt	<0.00300	0.00500								
Lead	<0.000300	0.00100								
Lithium	<0.00500	0.0100								
Molybdenum	<0.00200	0.00500								
Selenium	<0.00200	0.00500								
Thallium	<0.000500	0.00150								

Sample ID **LCS-76893** Batch ID: **76893** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_160823B** Analysis Date: **8/23/2016 12:14:00 PM** Prep Date: **8/22/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.203	0.00250	0.200	0	101	80	120			
Arsenic	0.199	0.00500	0.200	0	99.5	80	120			
Barium	0.196	0.0100	0.200	0	97.8	80	120			
Beryllium	0.201	0.00100	0.200	0	101	80	120			
Cadmium	0.203	0.00100	0.200	0	101	80	120			
Calcium	4.82	0.300	5.00	0	96.4	80	120			
Chromium	0.203	0.00500	0.200	0	101	80	120			
Cobalt	0.202	0.00500	0.200	0	101	80	120			
Lead	0.196	0.00100	0.200	0	98.2	80	120			
Lithium	0.199	0.0100	0.200	0	99.6	80	120			
Molybdenum	0.201	0.00500	0.200	0	100	80	120			
Selenium	0.197	0.00500	0.200	0	98.5	80	120			
Thallium	0.196	0.00150	0.200	0	98.0	80	120			

Sample ID **LCSD-76893** Batch ID: **76893** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_160823B** Analysis Date: **8/23/2016 12:16:00 PM** Prep Date: **8/22/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.208	0.00250	0.200	0	104	80	120	2.52	15	
Arsenic	0.199	0.00500	0.200	0	99.3	80	120	0.240	15	
Barium	0.196	0.0100	0.200	0	98.1	80	120	0.297	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160823B

Sample ID **LCSD-76893**	Batch ID: **76893**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCSD**	Run ID: **ICP-MS4_160823B**	Analysis Date: **8/23/2016 12:16:00 PM**	Prep Date: **8/22/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.198	0.00100	0.200	0	98.9	80	120	1.69	15	
Cadmium	0.202	0.00100	0.200	0	101	80	120	0.195	15	
Calcium	4.79	0.300	5.00	0	95.9	80	120	0.478	15	
Chromium	0.201	0.00500	0.200	0	101	80	120	0.842	15	
Cobalt	0.203	0.00500	0.200	0	101	80	120	0.425	15	
Lead	0.200	0.00100	0.200	0	99.8	80	120	1.66	15	
Lithium	0.197	0.0100	0.200	0	98.4	80	120	1.20	15	
Molybdenum	0.202	0.00500	0.200	0	101	80	120	0.688	15	
Selenium	0.198	0.00500	0.200	0	98.9	80	120	0.390	15	
Thallium	0.197	0.00150	0.200	0	98.4	80	120	0.336	15	

Sample ID **1608181-05A SD**	Batch ID: **76893**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS4_160823B**	Analysis Date: **8/23/2016 12:22:00 PM**	Prep Date: **8/22/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00722	0.0125	0	0.00670				7.61	10	
Arsenic	0.0275	0.0250	0	0.0274				0.353	10	
Barium	0.0761	0.0500	0	0.0743				2.38	10	
Beryllium	<0.00150	0.00500	0	0.000692				0	10	
Cadmium	<0.00150	0.00500	0	0.000325				0	10	
Chromium	<0.0100	0.0250	0	0.00533				0	10	
Cobalt	<0.0150	0.0250	0	0.00556				0	10	
Lead	0.00462	0.00500	0	0.00469				1.55	10	
Lithium	0.267	0.0500	0	0.242				9.42	10	
Molybdenum	<0.0100	0.0250	0	0.00903				0	10	
Selenium	<0.0100	0.0250	0	0				0	10	
Thallium	<0.00250	0.00750	0	0				0	10	

Sample ID **1608181-05A PDS**	Batch ID: **76893**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_160823B**	Analysis Date: **8/23/2016 12:42:00 PM**	Prep Date: **8/22/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.219	0.00250	0.200	0.00670	106	80	120			
Arsenic	0.235	0.00500	0.200	0.0274	104	80	120			
Barium	0.267	0.0100	0.200	0.0743	96.4	80	120			
Beryllium	0.174	0.00100	0.200	0.000692	86.7	80	120			
Cadmium	0.185	0.00100	0.200	0.000325	92.6	80	120			
Chromium	0.193	0.00500	0.200	0.00533	93.6	80	120			
Cobalt	0.191	0.00500	0.200	0.00556	92.9	80	120			
Lead	0.203	0.00100	0.200	0.00469	99.3	80	120			
Lithium	0.368	0.0100	0.200	0.243	63.0	80	120			S

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160823B

Sample ID **1608181-05A PDS** Batch ID: **76893** TestNo: **SW6020A** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS4_160823B** Analysis Date: **8/23/2016 12:42:00 PM** Prep Date: **8/22/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Molybdenum	0.197	0.00500	0.200	0.00903	93.9	80	120			
Selenium	0.210	0.00500	0.200	0	105	80	120			
Thallium	0.198	0.00150	0.200	0	98.8	80	120			

Sample ID **1608181-05A MS** Batch ID: **76893** TestNo: **SW6020A** Units: **mg/L**
SampType: **MS** Run ID: **ICP-MS4_160823B** Analysis Date: **8/23/2016 12:44:00 PM** Prep Date: **8/22/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.207	0.00250	0.200	0.00670	100	80	120			
Arsenic	0.241	0.00500	0.200	0.0274	107	80	120			
Barium	0.269	0.0100	0.200	0.0743	97.2	80	120			
Beryllium	0.178	0.00100	0.200	0.000692	88.7	80	120			
Cadmium	0.188	0.00100	0.200	0.000325	93.6	80	120			
Calcium	587	0.300	5.00	573	282	80	120			S
Chromium	0.191	0.00500	0.200	0.00533	92.6	80	120			
Cobalt	0.192	0.00500	0.200	0.00556	93.0	80	120			
Lead	0.203	0.00100	0.200	0.00469	99.1	80	120			
Lithium	0.388	0.0100	0.200	0.243	72.5	80	120			S
Molybdenum	0.207	0.00500	0.200	0.00903	98.8	80	120			
Selenium	0.210	0.00500	0.200	0	105	80	120			
Thallium	0.198	0.00150	0.200	0	98.8	80	120			

Sample ID **1608181-05A MSD** Batch ID: **76893** TestNo: **SW6020A** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS4_160823B** Analysis Date: **8/23/2016 12:46:00 PM** Prep Date: **8/22/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.209	0.00250	0.200	0.00670	101	80	120	0.721	15	
Arsenic	0.240	0.00500	0.200	0.0274	106	80	120	0.404	15	
Barium	0.270	0.0100	0.200	0.0743	97.9	80	120	0.517	15	
Beryllium	0.175	0.00100	0.200	0.000692	86.9	80	120	1.95	15	
Cadmium	0.185	0.00100	0.200	0.000325	92.5	80	120	1.27	15	
Calcium	591	0.300	5.00	573	357	80	120	0.637	15	S
Chromium	0.190	0.00500	0.200	0.00533	92.1	80	120	0.519	15	
Cobalt	0.191	0.00500	0.200	0.00556	92.9	80	120	0.044	15	
Lead	0.206	0.00100	0.200	0.00469	100	80	120	1.30	15	
Lithium	0.392	0.0100	0.200	0.243	74.9	80	120	1.21	15	S
Molybdenum	0.205	0.00500	0.200	0.00903	98.2	80	120	0.647	15	
Selenium	0.218	0.00500	0.200	0	109	80	120	3.68	15	
Thallium	0.200	0.00150	0.200	0	100	80	120	1.23	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160823B

The QC data in batch 76895 applies to the following samples: 1608133-23A, 1608133-24A, 1608133-25A, 1608133-26A, 1608133-27A

Sample ID **MB-76895** Batch ID: **76895** TestNo: **SW6020A** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_160823B** Analysis Date: **8/23/2016 2:47:00 PM** Prep Date: **8/22/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.000800	0.00250								
Barium	<0.00300	0.0100								
Beryllium	<0.000300	0.00100								
Cadmium	<0.000300	0.00100								
Calcium	<0.100	0.300								
Chromium	<0.00200	0.00500								
Cobalt	<0.00300	0.00500								
Lead	<0.000300	0.00100								
Lithium	<0.00500	0.0100								
Molybdenum	<0.00200	0.00500								
Thallium	<0.000500	0.00150								

Sample ID **LCS-76895** Batch ID: **76895** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_160823B** Analysis Date: **8/23/2016 2:49:00 PM** Prep Date: **8/22/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.211	0.00250	0.200	0	106	80	120			
Barium	0.199	0.0100	0.200	0	99.7	80	120			
Beryllium	0.195	0.00100	0.200	0	97.6	80	120			
Cadmium	0.200	0.00100	0.200	0	100	80	120			
Calcium	4.95	0.300	5.00	0	98.9	80	120			
Chromium	0.200	0.00500	0.200	0	99.8	80	120			
Cobalt	0.199	0.00500	0.200	0	99.6	80	120			
Lead	0.199	0.00100	0.200	0	99.3	80	120			
Lithium	0.193	0.0100	0.200	0	96.7	80	120			
Molybdenum	0.195	0.00500	0.200	0	97.6	80	120			
Thallium	0.197	0.00150	0.200	0	98.5	80	120			

Sample ID **LCSD-76895** Batch ID: **76895** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_160823B** Analysis Date: **8/23/2016 2:51:00 PM** Prep Date: **8/22/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.210	0.00250	0.200	0	105	80	120	0.404	15	
Barium	0.199	0.0100	0.200	0	99.6	80	120	0.096	15	
Beryllium	0.194	0.00100	0.200	0	97.1	80	120	0.534	15	
Cadmium	0.200	0.00100	0.200	0	99.8	80	120	0.137	15	
Calcium	4.83	0.300	5.00	0	96.7	80	120	2.29	15	
Chromium	0.196	0.00500	0.200	0	98.2	80	120	1.60	15	
Cobalt	0.200	0.00500	0.200	0	99.9	80	120	0.293	15	
Lead	0.198	0.00100	0.200	0	98.8	80	120	0.463	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160823B

Sample ID **LCSD-76895**	Batch ID: **76895**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCSD**	Run ID: **ICP-MS4_160823B**	Analysis Date: **8/23/2016 2:51:00 PM**	Prep Date: **8/22/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lithium	0.195	0.0100	0.200	0	97.5	80	120	0.771	15	
Molybdenum	0.196	0.00500	0.200	0	98.2	80	120	0.676	15	
Thallium	0.197	0.00150	0.200	0	98.4	80	120	0.125	15	

Sample ID **1608210-05A MS**	Batch ID: **76895**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS4_160823B**	Analysis Date: **8/23/2016 3:18:00 PM**	Prep Date: **8/22/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.186	0.00250	0.200	0.00110	92.5	80	120			
Barium	0.366	0.0100	0.200	0.175	95.9	80	120			
Beryllium	0.123	0.00100	0.200	0.00194	60.3	80	120			S
Cadmium	0.177	0.00100	0.200	0.000340	88.5	80	120			
Calcium	1100	0.300	5.00	1070	657	80	120			S
Chromium	0.329	0.00500	0.200	0.191	68.8	80	120			S
Cobalt	0.190	0.00500	0.200	0.0273	81.1	80	120			
Lead	0.225	0.00100	0.200	0.0238	101	80	120			
Lithium	1.82	0.0100	0.200	1.98	-80.3	80	120			S
Molybdenum	0.197	0.00500	0.200	0.00359	96.6	80	120			
Thallium	0.201	0.00150	0.200	0	100	80	120			

Sample ID **1608210-05A MSD**	Batch ID: **76895**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS4_160823B**	Analysis Date: **8/23/2016 3:20:00 PM**	Prep Date: **8/22/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.175	0.00250	0.200	0.00110	87.1	80	120	6.01	15	
Barium	0.364	0.0100	0.200	0.175	94.5	80	120	0.800	15	
Beryllium	0.118	0.00100	0.200	0.00194	58.0	80	120	3.79	15	S
Cadmium	0.178	0.00100	0.200	0.000340	88.9	80	120	0.375	15	
Calcium	1090	0.300	5.00	1070	503	80	120	0.700	15	S
Chromium	0.318	0.00500	0.200	0.191	63.1	80	120	3.49	15	S
Cobalt	0.189	0.00500	0.200	0.0273	80.6	80	120	0.584	15	
Lead	0.224	0.00100	0.200	0.0238	100	80	120	0.170	15	
Lithium	1.70	0.0100	0.200	1.98	-138	80	120	6.61	15	S
Molybdenum	0.195	0.00500	0.200	0.00359	95.6	80	120	0.984	15	
Thallium	0.202	0.00150	0.200	0	101	80	120	0.458	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160823B

Sample ID **ICV-160823**	Batch ID: **R87756**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_160823B**	Analysis Date: **8/23/2016 11:07:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.104	0.00250	0.100	0	104	90	110			
Arsenic	0.0998	0.00500	0.100	0	99.8	90	110			
Barium	0.0969	0.0100	0.100	0	96.9	90	110			
Beryllium	0.0994	0.00100	0.100	0	99.4	90	110			
Cadmium	0.0990	0.00100	0.100	0	99.0	90	110			
Calcium	2.36	0.300	2.50	0	94.3	90	110			
Chromium	0.105	0.00500	0.100	0	105	90	110			
Cobalt	0.104	0.00500	0.100	0	104	90	110			
Lead	0.101	0.00100	0.100	0	101	90	110			
Lithium	0.0931	0.0100	0.100	0	93.1	90	110			
Molybdenum	0.0962	0.00500	0.100	0	96.2	90	110			
Selenium	0.0991	0.00500	0.100	0	99.1	90	110			
Thallium	0.0984	0.00150	0.100	0	98.4	90	110			

Sample ID **LCVL-160823**	Batch ID: **R87756**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160823B**	Analysis Date: **8/23/2016 11:11:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00222	0.00250	0.00200	0	111	70	130			
Arsenic	0.00516	0.00500	0.00500	0	103	70	130			
Barium	0.00518	0.0100	0.00500	0	104	70	130			
Beryllium	0.00109	0.00100	0.00100	0	109	70	130			
Cadmium	0.00103	0.00100	0.00100	0	103	70	130			
Calcium	0.105	0.300	0.100	0	105	70	130			
Chromium	0.00544	0.00500	0.00500	0	109	70	130			
Cobalt	0.00534	0.00500	0.00500	0	107	70	130			
Lead	0.00107	0.00100	0.00100	0	107	70	130			
Lithium	0.0102	0.0100	0.0100	0	102	70	130			
Molybdenum	0.00527	0.00500	0.00500	0	105	70	130			
Selenium	0.00562	0.00500	0.00500	0	112	70	130			
Thallium	0.00104	0.00150	0.00100	0	104	70	130			

Sample ID **CCV1-160823**	Batch ID: **R87756**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160823B**	Analysis Date: **8/23/2016 11:55:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.203	0.00250	0.200	0	102	90	110			
Arsenic	0.207	0.00500	0.200	0	103	90	110			
Barium	0.204	0.0100	0.200	0	102	90	110			
Beryllium	0.205	0.00100	0.200	0	103	90	110			
Cadmium	0.209	0.00100	0.200	0	104	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160823B

Sample ID **CCV1-160823**	Batch ID: **R87756**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160823B**	Analysis Date: **8/23/2016 11:55:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.78	0.300	5.00	0	95.6	90	110			
Chromium	0.209	0.00500	0.200	0	105	90	110			
Cobalt	0.211	0.00500	0.200	0	106	90	110			
Lead	0.207	0.00100	0.200	0	104	90	110			
Lithium	0.205	0.0100	0.200	0	102	90	110			
Molybdenum	0.210	0.00500	0.200	0	105	90	110			
Selenium	0.203	0.00500	0.200	0	101	90	110			
Thallium	0.205	0.00150	0.200	0	103	90	110			

Sample ID **LCVL1-160823**	Batch ID: **R87756**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160823B**	Analysis Date: **8/23/2016 12:00:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00243	0.00250	0.00200	0	121	70	130			
Arsenic	0.00524	0.00500	0.00500	0	105	70	130			
Barium	0.00523	0.0100	0.00500	0	105	70	130			
Beryllium	0.000968	0.00100	0.00100	0	96.8	70	130			
Cadmium	0.00105	0.00100	0.00100	0	105	70	130			
Calcium	0.0995	0.300	0.100	0	99.5	70	130			
Chromium	0.00534	0.00500	0.00500	0	107	70	130			
Cobalt	0.00537	0.00500	0.00500	0	107	70	130			
Lead	0.00104	0.00100	0.00100	0	104	70	130			
Lithium	0.00961	0.0100	0.0100	0	96.1	70	130			
Molybdenum	0.00520	0.00500	0.00500	0	104	70	130			
Selenium	0.00528	0.00500	0.00500	0	106	70	130			
Thallium	0.00102	0.00150	0.00100	0	102	70	130			

Sample ID **CCV2-160823**	Batch ID: **R87756**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160823B**	Analysis Date: **8/23/2016 12:56:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.210	0.00250	0.200	0	105	90	110			
Arsenic	0.220	0.00500	0.200	0	110	90	110			
Barium	0.210	0.0100	0.200	0	105	90	110			
Beryllium	0.207	0.00100	0.200	0	103	90	110			
Cadmium	0.209	0.00100	0.200	0	105	90	110			
Calcium	4.92	0.300	5.00	0	98.4	90	110			
Chromium	0.206	0.00500	0.200	0	103	90	110			
Cobalt	0.207	0.00500	0.200	0	104	90	110			
Lead	0.208	0.00100	0.200	0	104	90	110			
Lithium	0.214	0.0100	0.200	0	107	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160823B

Sample ID **CCV2-160823**	Batch ID: **R87756**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160823B**	Analysis Date: **8/23/2016 12:56:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Molybdenum	0.205	0.00500	0.200	0	103	90	110			
Selenium	0.216	0.00500	0.200	0	108	90	110			
Thallium	0.206	0.00150	0.200	0	103	90	110			

Sample ID **LCVL2-160823**	Batch ID: **R87756**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160823B**	Analysis Date: **8/23/2016 1:10:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00218	0.00250	0.00200	0	109	70	130			
Arsenic	0.00551	0.00500	0.00500	0	110	70	130			
Barium	0.00522	0.0100	0.00500	0	104	70	130			
Beryllium	0.00101	0.00100	0.00100	0	101	70	130			
Cadmium	0.00106	0.00100	0.00100	0	106	70	130			
Calcium	0.106	0.300	0.100	0	106	70	130			
Chromium	0.00524	0.00500	0.00500	0	105	70	130			
Cobalt	0.00534	0.00500	0.00500	0	107	70	130			
Lead	0.00106	0.00100	0.00100	0	106	70	130			
Lithium	0.00967	0.0100	0.0100	0	96.7	70	130			
Molybdenum	0.00483	0.00500	0.00500	0	96.5	70	130			
Selenium	0.00610	0.00500	0.00500	0	122	70	130			
Thallium	0.00102	0.00150	0.00100	0	102	70	130			

Sample ID **CCV3-160823**	Batch ID: **R87756**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160823B**	Analysis Date: **8/23/2016 1:48:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.210	0.00250	0.200	0	105	90	110			
Arsenic	0.214	0.00500	0.200	0	107	90	110			
Barium	0.211	0.0100	0.200	0	105	90	110			
Beryllium	0.211	0.00100	0.200	0	106	90	110			
Cadmium	0.211	0.00100	0.200	0	106	90	110			
Calcium	4.87	0.300	5.00	0	97.4	90	110			
Chromium	0.211	0.00500	0.200	0	105	90	110			
Cobalt	0.209	0.00500	0.200	0	105	90	110			
Lead	0.208	0.00100	0.200	0	104	90	110			
Lithium	0.213	0.0100	0.200	0	107	90	110			
Molybdenum	0.212	0.00500	0.200	0	106	90	110			
Selenium	0.211	0.00500	0.200	0	105	90	110			
Thallium	0.206	0.00150	0.200	0	103	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160823B

Sample ID **LCVL3-160823**	Batch ID: **R87756**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160823B**	Analysis Date: **8/23/2016 1:58:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00218	0.00250	0.00200	0	109	70	130			
Arsenic	0.00574	0.00500	0.00500	0	115	70	130			
Barium	0.00526	0.0100	0.00500	0	105	70	130			
Beryllium	0.00110	0.00100	0.00100	0	110	70	130			
Cadmium	0.00107	0.00100	0.00100	0	107	70	130			
Calcium	0.104	0.300	0.100	0	104	70	130			
Chromium	0.00545	0.00500	0.00500	0	109	70	130			
Cobalt	0.00536	0.00500	0.00500	0	107	70	130			
Lead	0.00106	0.00100	0.00100	0	106	70	130			
Lithium	0.0114	0.0100	0.0100	0	114	70	130			
Molybdenum	0.00520	0.00500	0.00500	0	104	70	130			
Selenium	0.00575	0.00500	0.00500	0	115	70	130			
Thallium	0.00103	0.00150	0.00100	0	103	70	130			

Sample ID **CCV4-160823**	Batch ID: **R87756**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160823B**	Analysis Date: **8/23/2016 2:23:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.208	0.00250	0.200	0	104	90	110			
Arsenic	0.215	0.00500	0.200	0	108	90	110			
Barium	0.209	0.0100	0.200	0	104	90	110			
Beryllium	0.202	0.00100	0.200	0	101	90	110			
Cadmium	0.207	0.00100	0.200	0	103	90	110			
Calcium	4.84	0.300	5.00	0	96.9	90	110			
Chromium	0.204	0.00500	0.200	0	102	90	110			
Cobalt	0.206	0.00500	0.200	0	103	90	110			
Lead	0.205	0.00100	0.200	0	103	90	110			
Lithium	0.206	0.0100	0.200	0	103	90	110			
Molybdenum	0.204	0.00500	0.200	0	102	90	110			
Selenium	0.214	0.00500	0.200	0	107	90	110			
Thallium	0.203	0.00150	0.200	0	101	90	110			

Sample ID **LCVL4-160823**	Batch ID: **R87756**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160823B**	Analysis Date: **8/23/2016 2:42:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00221	0.00250	0.00200	0	111	70	130			
Arsenic	0.00570	0.00500	0.00500	0	114	70	130			
Barium	0.00543	0.0100	0.00500	0	109	70	130			
Beryllium	0.00108	0.00100	0.00100	0	108	70	130			
Cadmium	0.00105	0.00100	0.00100	0	105	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

Sample ID **LCVL4-160823** Batch ID: **R87756** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_160823B** Analysis Date: **8/23/2016 2:42:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.110	0.300	0.100	0	110	70	130			
Chromium	0.00543	0.00500	0.00500	0	109	70	130			
Cobalt	0.00541	0.00500	0.00500	0	108	70	130			
Lead	0.00109	0.00100	0.00100	0	109	70	130			
Lithium	0.0103	0.0100	0.0100	0	103	70	130			
Molybdenum	0.00510	0.00500	0.00500	0	102	70	130			
Selenium	0.00616	0.00500	0.00500	0	123	70	130			
Thallium	0.00103	0.00150	0.00100	0	103	70	130			

Sample ID **CCV5-160823** Batch ID: **R87756** TestNo: **SW6020A** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_160823B** Analysis Date: **8/23/2016 3:42:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.212	0.00250	0.200	0	106	90	110			
Barium	0.213	0.0100	0.200	0	106	90	110			
Beryllium	0.194	0.00100	0.200	0	97.1	90	110			
Cadmium	0.207	0.00100	0.200	0	103	90	110			
Calcium	4.86	0.300	5.00	0	97.1	90	110			
Chromium	0.202	0.00500	0.200	0	101	90	110			
Cobalt	0.200	0.00500	0.200	0	99.8	90	110			
Lead	0.206	0.00100	0.200	0	103	90	110			
Lithium	0.190	0.0100	0.200	0	94.8	90	110			
Molybdenum	0.201	0.00500	0.200	0	101	90	110			
Thallium	0.204	0.00150	0.200	0	102	90	110			

Sample ID **LCVL5-160823** Batch ID: **R87756** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_160823B** Analysis Date: **8/23/2016 3:52:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00221	0.00250	0.00200	0	111	70	130			
Barium	0.00522	0.0100	0.00500	0	104	70	130			
Beryllium	0.00102	0.00100	0.00100	0	102	70	130			
Cadmium	0.00105	0.00100	0.00100	0	105	70	130			
Calcium	0.111	0.300	0.100	0	111	70	130			
Chromium	0.00518	0.00500	0.00500	0	104	70	130			
Cobalt	0.00517	0.00500	0.00500	0	103	70	130			
Lead	0.00103	0.00100	0.00100	0	103	70	130			
Lithium	0.0111	0.0100	0.0100	0	111	70	130			
Molybdenum	0.00497	0.00500	0.00500	0	99.4	70	130			
Thallium	0.00100	0.00150	0.00100	0	100	70	130			

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160824B

The QC data in batch 76893 applies to the following samples: 1608133-16A, 1608133-17A, 1608133-18A, 1608133-19A, 1608133-20A, 1608133-21A, 1608133-22A

Sample ID **MB-76893** Batch ID: **76893** TestNo: **SW6020A** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_160824B** Analysis Date: **8/24/2016 3:18:00 PM** Prep Date: **8/22/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	<0.0100	0.0300								

Sample ID **LCS-76893** Batch ID: **76893** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_160824B** Analysis Date: **8/24/2016 3:20:00 PM** Prep Date: **8/22/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.206	0.0300	0.200	0	103	80	120			

Sample ID **LCSD-76893** Batch ID: **76893** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_160824B** Analysis Date: **8/24/2016 3:22:00 PM** Prep Date: **8/22/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.195	0.0300	0.200	0	97.3	80	120	5.62	15	

Sample ID **1608181-05A SD** Batch ID: **76893** TestNo: **SW6020A** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS4_160824B** Analysis Date: **8/24/2016 3:28:00 PM** Prep Date: **8/22/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	548	150	0	544				0.634	10	

Sample ID **1608181-05A PDS** Batch ID: **76893** TestNo: **SW6020A** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS4_160824B** Analysis Date: **8/24/2016 3:49:00 PM** Prep Date: **8/22/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	1010	30.0	500	544	92.7	80	120			

Sample ID **1608181-05A MS** Batch ID: **76893** TestNo: **SW6020A** Units: **mg/L**
SampType: **MS** Run ID: **ICP-MS4_160824B** Analysis Date: **8/24/2016 3:51:00 PM** Prep Date: **8/22/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	1.18	3.00	0.200	1.11	36.1	80	120			S

Sample ID **1608181-05A MSD** Batch ID: **76893** TestNo: **SW6020A** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS4_160824B** Analysis Date: **8/24/2016 3:53:00 PM** Prep Date: **8/22/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	1.43	3.00	0.200	1.11	161	80	120	19.1	15	SR

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160824B

Sample ID **1608181-05A SD**	Batch ID: **76893**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS4_160824B**	Analysis Date: **8/24/2016 4:14:00 PM**	Prep Date: **8/22/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.669	0.300	0	0.596				11.6	10	R

Sample ID **1608181-05A PDS**	Batch ID: **76893**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_160824B**	Analysis Date: **8/24/2016 4:16:00 PM**	Prep Date: **8/22/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.979	0.0600	0.400	0.596	95.8	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160824B

The QC data in batch 76895 applies to the following samples: 1608133-23A, 1608133-24A, 1608133-25A, 1608133-26A, 1608133-27A

Sample ID **MB-76895** Batch ID: **76895** TestNo: **SW6020A** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_160824B** Analysis Date: **8/24/2016 6:11:00 PM** Prep Date: **8/22/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	<0.00200	0.00500								
Boron	<0.0100	0.0300								
Selenium	<0.00200	0.00500								

Sample ID **LCS-76895** Batch ID: **76895** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_160824B** Analysis Date: **8/24/2016 6:13:00 PM** Prep Date: **8/22/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.191	0.00500	0.200	0	95.6	80	120			
Boron	0.206	0.0300	0.200	0	103	80	120			
Selenium	0.196	0.00500	0.200	0	97.9	80	120			

Sample ID **LCSD-76895** Batch ID: **76895** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_160824B** Analysis Date: **8/24/2016 6:15:00 PM** Prep Date: **8/22/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.190	0.00500	0.200	0	95.1	80	120	0.519	15	
Boron	0.205	0.0300	0.200	0	103	80	120	0.554	15	
Selenium	0.194	0.00500	0.200	0	97.1	80	120	0.779	15	

Sample ID **1608210-05A SD** Batch ID: **76895** TestNo: **SW6020A** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS4_160824B** Analysis Date: **8/24/2016 7:51:00 PM** Prep Date: **8/22/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	1020	150	0	1020				0.169	10	
Lithium	3.35	5.00	0	3.44				2.39	10	

Sample ID **1608210-05A PDS** Batch ID: **76895** TestNo: **SW6020A** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS4_160824B** Analysis Date: **8/24/2016 8:11:00 PM** Prep Date: **8/22/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	1500	30.0	500	1020	96.1	80	120			
Lithium	24.0	1.00	20.0	3.44	103	80	120			

Sample ID **1608210-05A MS** Batch ID: **76895** TestNo: **SW6020A** Units: **mg/L**
SampType: **MS** Run ID: **ICP-MS4_160824B** Analysis Date: **8/24/2016 8:13:00 PM** Prep Date: **8/22/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.238	0.500	0.200	0	119	80	120			
Boron	5.34	3.00	0.200	4.69	326	80	120			S

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160824B

Sample ID **1608210-05A MS**	Batch ID: **76895**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS4_160824B**	Analysis Date: **8/24/2016 8:13:00 PM**	Prep Date: **8/22/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.266	0.500	0.200	0	133	80	120			S

Sample ID **1608210-05A MSD**	Batch ID: **76895**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS4_160824B**	Analysis Date: **8/24/2016 8:15:00 PM**	Prep Date: **8/22/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.216	0.500	0.200	0	108	80	120	9.91	15	
Boron	5.41	3.00	0.200	4.69	357	80	120	1.18	15	S
Selenium	0.211	0.500	0.200	0	105	80	120	23.1	15	R

Sample ID **1608210-05A SD**	Batch ID: **76895**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS4_160824B**	Analysis Date: **8/24/2016 8:41:00 PM**	Prep Date: **8/22/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.0400	0.125	0	0				0	10	
Arsenic	<0.100	0.250	0	0				0	10	
Barium	0.170	0.500	0	0.164				3.63	10	
Beryllium	<0.0150	0.0500	0	0				0	10	
Boron	4.57	1.50	0	4.16				9.40	10	
Cadmium	<0.0150	0.0500	0	0				0	10	
Chromium	0.224	0.250	0	0.220				2.14	10	
Cobalt	<0.150	0.250	0	0.0308				0	10	
Lead	0.0218	0.0500	0	0.0219				0.137	10	
Molybdenum	<0.100	0.250	0	0				0	10	
Selenium	<0.100	0.250	0	0				0	10	
Thallium	<0.0250	0.0750	0	0				0	10	

Sample ID **1608210-05A PDS**	Batch ID: **76895**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_160824B**	Analysis Date: **8/24/2016 8:51:00 PM**	Prep Date: **8/22/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	1.97	0.0250	2.00	0	98.3	80	120			
Arsenic	2.00	0.0500	2.00	0	100	80	120			
Barium	2.07	0.100	2.00	0.164	95.2	80	120			
Beryllium	1.84	0.0100	2.00	0	92.0	80	120			
Boron	5.78	0.300	2.00	4.16	80.9	80	120			
Cadmium	1.73	0.0100	2.00	0	86.5	80	120			
Chromium	2.08	0.0500	2.00	0.220	93.0	80	120			
Cobalt	1.90	0.0500	2.00	0.0308	93.6	80	120			
Lead	1.84	0.0100	2.00	0.0219	90.7	80	120			
Molybdenum	1.79	0.0500	2.00	0	89.5	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160824B

Sample ID **1608210-05A PDS** Batch ID: **76895** TestNo: **SW6020A** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS4_160824B** Analysis Date: **8/24/2016 8:51:00 PM** Prep Date: **8/22/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	2.00	0.0500	2.00	0	99.9	80	120			
Thallium	1.82	0.0150	2.00	0	90.8	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank
J	Analyte detected between MDL and RL
ND	Not Detected at the Method Detection Limit
RL	Reporting Limit
J	Analyte detected between SDL and RL
DF	Dilution Factor
MDL	Method Detection Limit
R	RPD outside accepted control limits
S	Spike Recovery outside control limits
N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160824B

Sample ID **ICV2-160824**	Batch ID: **R87787**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_160824B**	Analysis Date: **8/24/2016 1:09:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.105	0.00250	0.100	0	105	90	110			
Arsenic	0.102	0.00500	0.100	0	102	90	110			
Barium	0.101	0.0100	0.100	0	101	90	110			
Beryllium	0.102	0.00100	0.100	0	102	90	110			
Boron	0.0984	0.0300	0.100	0	98.4	90	110			
Cadmium	0.0993	0.00100	0.100	0	99.3	90	110			
Calcium	2.41	0.300	2.50	0	96.5	90	110			
Chromium	0.107	0.00500	0.100	0	107	90	110			
Cobalt	0.105	0.00500	0.100	0	105	90	110			
Lead	0.100	0.00100	0.100	0	100	90	110			
Lithium	0.0948	0.0100	0.100	0	94.8	90	110			
Molybdenum	0.0973	0.00500	0.100	0	97.3	90	110			
Selenium	0.101	0.00500	0.100	0	101	90	110			
Thallium	0.0998	0.00150	0.100	0	99.8	90	110			

Sample ID **ILCVL2-160824**	Batch ID: **R87787**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160824B**	Analysis Date: **8/24/2016 1:23:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00205	0.00250	0.00200	0	103	70	130			
Arsenic	0.00513	0.00500	0.00500	0	103	70	130			
Barium	0.00491	0.0100	0.00500	0	98.2	70	130			
Beryllium	0.00105	0.00100	0.00100	0	105	70	130			
Boron	0.0223	0.0300	0.0200	0	111	70	130			
Cadmium	0.000996	0.00100	0.00100	0	99.6	70	130			
Calcium	0.0954	0.300	0.100	0	95.4	70	130			
Chromium	0.00509	0.00500	0.00500	0	102	70	130			
Cobalt	0.00515	0.00500	0.00500	0	103	70	130			
Lead	0.000995	0.00100	0.00100	0	99.5	70	130			
Lithium	0.00919	0.0100	0.0100	0	91.9	70	130			
Molybdenum	0.00496	0.00500	0.00500	0	99.2	70	130			
Selenium	0.00548	0.00500	0.00500	0	110	70	130			
Thallium	0.000998	0.00150	0.00100	0	99.8	70	130			

Sample ID **CCV3-140402**	Batch ID: **R87787**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160824B**	Analysis Date: **8/24/2016 2:50:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.207	0.0300	0.200	0	103	90	110			
Calcium	4.75	0.300	5.00	0	95.0	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160824B

Sample ID **LCVL3-140402**	Batch ID: **R87787**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160824B**	Analysis Date: **8/24/2016 3:05:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0234	0.0300	0.0200	0	117	70	130			
Calcium	0.0955	0.300	0.100	0	95.5	70	130			

Sample ID **CCV4-160824**	Batch ID: **R87787**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160824B**	Analysis Date: **8/24/2016 3:55:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.209	0.0300	0.200	0	104	90	110			
Calcium	4.79	0.300	5.00	0	95.8	90	110			

Sample ID **LCVL4-160824**	Batch ID: **R87787**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160824B**	Analysis Date: **8/24/2016 4:03:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0229	0.0300	0.0200	0	115	70	130			
Calcium	0.0911	0.300	0.100	0	91.1	70	130			

Sample ID **CCV5-160824**	Batch ID: **R87787**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160824B**	Analysis Date: **8/24/2016 5:12:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.217	0.0300	0.200	0	109	90	110			
Calcium	4.74	0.300	5.00	0	94.7	90	110			

Sample ID **LCVL5-160824**	Batch ID: **R87787**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160824B**	Analysis Date: **8/24/2016 5:24:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0246	0.0300	0.0200	0	123	70	130			
Calcium	0.0910	0.300	0.100	0	91.0	70	130			

Sample ID **CCV6-160824**	Batch ID: **R87787**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160824B**	Analysis Date: **8/24/2016 5:57:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.193	0.00500	0.200	0	96.6	90	110			
Boron	0.211	0.0300	0.200	0	105	90	110			
Calcium	4.75	0.300	5.00	0	95.0	90	110			
Selenium	0.196	0.00500	0.200	0	98.1	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160824B

Sample ID **LCVL6-160824** Batch ID: **R87787** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_160824B** Analysis Date: **8/24/2016 6:07:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.00490	0.00500	0.00500	0	98.1	70	130			
Boron	0.0223	0.0300	0.0200	0	111	70	130			
Calcium	0.0897	0.300	0.100	0	89.7	70	130			
Selenium	0.00526	0.00500	0.00500	0	105	70	130			

Sample ID **CCV7-160824** Batch ID: **R87787** TestNo: **SW6020A** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_160824B** Analysis Date: **8/24/2016 6:52:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.192	0.00500	0.200	0	96.2	90	110			
Boron	0.210	0.0300	0.200	0	105	90	110			
Calcium	4.77	0.300	5.00	0	95.4	90	110			
Selenium	0.199	0.00500	0.200	0	99.3	90	110			

Sample ID **LCVL7-160824** Batch ID: **R87787** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_160824B** Analysis Date: **8/24/2016 7:02:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.00485	0.00500	0.00500	0	97.0	70	130			
Boron	0.0239	0.0300	0.0200	0	120	70	130			
Calcium	0.0928	0.300	0.100	0	92.8	70	130			
Selenium	0.00478	0.00500	0.00500	0	95.6	70	130			

Sample ID **CCV8-160824** Batch ID: **R87787** TestNo: **SW6020A** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_160824B** Analysis Date: **8/24/2016 7:35:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.190	0.00500	0.200	0	95.2	90	110			
Boron	0.206	0.0300	0.200	0	103	90	110			
Calcium	4.69	0.300	5.00	0	93.9	90	110			
Lithium	0.216	0.0100	0.200	0	108	90	110			
Selenium	0.194	0.00500	0.200	0	97.1	90	110			

Sample ID **LCVL8-160824** Batch ID: **R87787** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_160824B** Analysis Date: **8/24/2016 7:45:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.00499	0.00500	0.00500	0	99.7	70	130			
Boron	0.0223	0.0300	0.0200	0	111	70	130			
Calcium	0.0958	0.300	0.100	0	95.8	70	130			
Lithium	0.0105	0.0100	0.0100	0	105	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160824B

Sample ID **LCVL8-160824**	Batch ID: **R87787**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160824B**	Analysis Date: **8/24/2016 7:45:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.00528	0.00500	0.00500	0	106	70	130			

Sample ID **CCV9-160824**	Batch ID: **R87787**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160824B**	Analysis Date: **8/24/2016 8:25:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.193	0.00250	0.200	0	96.7	90	110			
Arsenic	0.194	0.00500	0.200	0	96.8	90	110			
Barium	0.193	0.0100	0.200	0	96.5	90	110			
Beryllium	0.203	0.00100	0.200	0	101	90	110			
Boron	0.212	0.0300	0.200	0	106	90	110			
Cadmium	0.187	0.00100	0.200	0	93.4	90	110			
Calcium	4.81	0.300	5.00	0	96.2	90	110			
Chromium	0.193	0.00500	0.200	0	96.6	90	110			
Cobalt	0.194	0.00500	0.200	0	97.1	90	110			
Lead	0.185	0.00100	0.200	0	92.6	90	110			
Lithium	0.219	0.0100	0.200	0	110	90	110			
Molybdenum	0.188	0.00500	0.200	0	94.0	90	110			
Selenium	0.200	0.00500	0.200	0	99.9	90	110			
Thallium	0.185	0.00150	0.200	0	92.7	90	110			

Sample ID **LCVL9-160824**	Batch ID: **R87787**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160824B**	Analysis Date: **8/24/2016 8:35:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00200	0.00250	0.00200	0	100	70	130			
Arsenic	0.00502	0.00500	0.00500	0	100	70	130			
Barium	0.00491	0.0100	0.00500	0	98.2	70	130			
Beryllium	0.000978	0.00100	0.00100	0	97.8	70	130			
Boron	0.0235	0.0300	0.0200	0	117	70	130			
Cadmium	0.00100	0.00100	0.00100	0	100	70	130			
Calcium	0.101	0.300	0.100	0	101	70	130			
Chromium	0.00504	0.00500	0.00500	0	101	70	130			
Cobalt	0.00506	0.00500	0.00500	0	101	70	130			
Lead	0.000944	0.00100	0.00100	0	94.4	70	130			
Lithium	0.0103	0.0100	0.0100	0	103	70	130			
Molybdenum	0.00456	0.00500	0.00500	0	91.1	70	130			
Selenium	0.00508	0.00500	0.00500	0	102	70	130			
Thallium	0.000931	0.00150	0.00100	0	93.1	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160824B

Sample ID **CCV10-160824**	Batch ID: **R87787**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160824B**	Analysis Date: **8/24/2016 9:02:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.191	0.00250	0.200	0	95.4	90	110			
Arsenic	0.195	0.00500	0.200	0	97.3	90	110			
Barium	0.193	0.0100	0.200	0	96.5	90	110			
Beryllium	0.204	0.00100	0.200	0	102	90	110			
Boron	0.213	0.0300	0.200	0	106	90	110			
Cadmium	0.185	0.00100	0.200	0	92.4	90	110			
Chromium	0.193	0.00500	0.200	0	96.4	90	110			
Cobalt	0.193	0.00500	0.200	0	96.7	90	110			
Lead	0.184	0.00100	0.200	0	92.1	90	110			
Molybdenum	0.185	0.00500	0.200	0	92.6	90	110			
Selenium	0.201	0.00500	0.200	0	100	90	110			
Thallium	0.185	0.00150	0.200	0	92.7	90	110			

Sample ID **LCVL10-160824**	Batch ID: **R87787**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160824B**	Analysis Date: **8/24/2016 9:12:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00192	0.00250	0.00200	0	96.2	70	130			
Arsenic	0.00497	0.00500	0.00500	0	99.4	70	130			
Barium	0.00487	0.0100	0.00500	0	97.5	70	130			
Beryllium	0.00120	0.00100	0.00100	0	120	70	130			
Boron	0.0213	0.0300	0.0200	0	107	70	130			
Cadmium	0.000888	0.00100	0.00100	0	88.8	70	130			
Chromium	0.00499	0.00500	0.00500	0	99.7	70	130			
Cobalt	0.00504	0.00500	0.00500	0	101	70	130			
Lead	0.000929	0.00100	0.00100	0	92.9	70	130			
Molybdenum	0.00454	0.00500	0.00500	0	90.7	70	130			
Selenium	0.00556	0.00500	0.00500	0	111	70	130			
Thallium	0.000937	0.00150	0.00100	0	93.7	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160825A

Sample ID **ICV-160825**	Batch ID: **R87816**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_160825A**	Analysis Date: **8/25/2016 2:28:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	2.34	0.300	2.50	0	93.6	90	110			
Lithium	0.100	0.0100	0.100	0	100	90	110			

Sample ID **LCVL-160825**	Batch ID: **R87816**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160825A**	Analysis Date: **8/25/2016 2:33:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.0943	0.300	0.100	0	94.3	70	130			
Lithium	0.0110	0.0100	0.0100	0	110	70	130			

Sample ID **CCV1-160825**	Batch ID: **R87816**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160825A**	Analysis Date: **8/25/2016 3:19:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.63	0.300	5.00	0	92.5	90	110			
Lithium	0.187	0.0100	0.200	0	93.3	90	110			

Sample ID **LCVL1-160825**	Batch ID: **R87816**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160825A**	Analysis Date: **8/25/2016 3:34:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.0931	0.300	0.100	0	93.1	70	130			
Lithium	0.00905	0.0100	0.0100	0	90.5	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

Sample ID **ICV-160826**	Batch ID: **R87821**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_160826B**	Analysis Date: **8/26/2016 11:10:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.100	0.00100	0.100	0	100	90	110			

Sample ID **LCVL-160826**	Batch ID: **R87821**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160826B**	Analysis Date: **8/26/2016 11:15:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.000927	0.00100	0.00100	0	92.7	70	130			

Sample ID **CCV1-160826**	Batch ID: **R87821**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160826B**	Analysis Date: **8/26/2016 11:41:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.197	0.00100	0.200	0	98.7	90	110			

Sample ID **LCVL1-160826**	Batch ID: **R87821**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160826B**	Analysis Date: **8/26/2016 11:52:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.000948	0.00100	0.00100	0	94.8	70	130			

Sample ID **CCV2-160826**	Batch ID: **R87821**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160826B**	Analysis Date: **8/26/2016 12:36:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.207	0.00100	0.200	0	103	90	110			

Sample ID **LCVL2-160826**	Batch ID: **R87821**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160826B**	Analysis Date: **8/26/2016 12:41:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.00119	0.00100	0.00100	0	119	70	130			

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_160815A

The QC data in batch 76808 applies to the following samples: 1608133-01D, 1608133-02D, 1608133-03D, 1608133-04D, 1608133-05D, 1608133-06D, 1608133-07D, 1608133-08D, 1608133-09D

Sample ID **MB-76808** Batch ID: **76808** TestNo: **E300** Units: **mg/L**
SampType: **MBLK** Run ID: **IC4_160815A** Analysis Date: **8/15/2016 10:51:35 AM** Prep Date: **8/15/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00								
Fluoride	<0.100	0.400								
Sulfate	<1.00	3.00								

Sample ID **LCS-76808** Batch ID: **76808** TestNo: **E300** Units: **mg/L**
SampType: **LCS** Run ID: **IC4_160815A** Analysis Date: **8/15/2016 11:06:35 AM** Prep Date: **8/15/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.2	1.00	10.00	0	102	90	110			
Fluoride	3.99	0.400	4.000	0	99.7	90	110			
Sulfate	31.4	3.00	30.00	0	105	90	110			

Sample ID **LCSD-76808** Batch ID: **76808** TestNo: **E300** Units: **mg/L**
SampType: **LCSD** Run ID: **IC4_160815A** Analysis Date: **8/15/2016 11:21:35 AM** Prep Date: **8/15/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.2	1.00	10.00	0	102	90	110	0.064	20	
Fluoride	4.00	0.400	4.000	0	99.9	90	110	0.229	20	
Sulfate	31.5	3.00	30.00	0	105	90	110	0.566	20	

Sample ID **1608133-07DMS** Batch ID: **76808** TestNo: **E300** Units: **mg/L**
SampType: **MS** Run ID: **IC4_160815A** Analysis Date: **8/15/2016 6:13:34 PM** Prep Date: **8/15/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	278	10.0	200.0	64.88	107	90	110			
Fluoride	202	4.00	200.0	0	101	90	110			
Sulfate	334	30.0	200.0	119.9	107	90	110			

Sample ID **1608133-07DMSD** Batch ID: **76808** TestNo: **E300** Units: **mg/L**
SampType: **MSD** Run ID: **IC4_160815A** Analysis Date: **8/15/2016 6:28:34 PM** Prep Date: **8/15/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	280	10.0	200.0	64.88	107	90	110	0.468	20	
Fluoride	203	4.00	200.0	0	101	90	110	0.428	20	
Sulfate	335	30.0	200.0	119.9	107	90	110	0.194	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_160815A

Sample ID **ICV-160815**	Batch ID: **R87629**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC4_160815A**	Analysis Date: **8/15/2016 10:15:59 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	25.6	1.00	25.00	0	102	90	110			
Fluoride	9.79	0.400	10.00	0	97.9	90	110			
Sulfate	78.7	3.00	75.00	0	105	90	110			

Sample ID **CCV1-160815**	Batch ID: **R87629**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC4_160815A**	Analysis Date: **8/15/2016 2:54:08 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.5	1.00	10.00	0	105	90	110			
Fluoride	4.05	0.400	4.000	0	101	90	110			
Sulfate	32.5	3.00	30.00	0	108	90	110			

Sample ID **CCV2-160815**	Batch ID: **R87629**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC4_160815A**	Analysis Date: **8/15/2016 6:58:34 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.5	1.00	10.00	0	105	90	110			
Fluoride	4.07	0.400	4.000	0	102	90	110			
Sulfate	32.1	3.00	30.00	0	107	90	110			

Sample ID **CCV3-160815**	Batch ID: **R87629**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC4_160815A**	Analysis Date: **8/15/2016 8:28:34 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.5	1.00	10.00	0	105	90	110			
Fluoride	4.09	0.400	4.000	0	102	90	110			
Sulfate	32.1	3.00	30.00	0	107	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_160816A

The QC data in batch 76820 applies to the following samples: 1608133-10D, 1608133-11D, 1608133-12D, 1608133-13D, 1608133-14D, 1608133-15D, 1608133-16D, 1608133-17D, 1608133-18D

Sample ID	**MB-76820**	Batch ID:	**76820**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**IC4_160816A**	Analysis Date:	**8/16/2016 10:21:13 AM**	Prep Date:	**8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00								
Fluoride	<0.100	0.400								
Sulfate	<1.00	3.00								

Sample ID	**LCS-76820**	Batch ID:	**76820**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**IC4_160816A**	Analysis Date:	**8/16/2016 10:36:13 AM**	Prep Date:	**8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.5	1.00	10.00	0	105	90	110			
Fluoride	4.00	0.400	4.000	0	99.9	90	110			
Sulfate	32.1	3.00	30.00	0	107	90	110			

Sample ID	**LCSD-76820**	Batch ID:	**76820**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**LCSD**	Run ID:	**IC4_160816A**	Analysis Date:	**8/16/2016 10:51:13 AM**	Prep Date:	**8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.5	1.00	10.00	0	105	90	110	0.125	20	
Fluoride	4.02	0.400	4.000	0	100	90	110	0.579	20	
Sulfate	32.1	3.00	30.00	0	107	90	110	0.230	20	

Sample ID	**1608133-10DMS**	Batch ID:	**76820**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**MS**	Run ID:	**IC4_160816A**	Analysis Date:	**8/16/2016 3:07:33 PM**	Prep Date:	**8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	345	10.0	200.0	135.6	105	90	110			
Fluoride	201	4.00	200.0	0	101	90	110			
Sulfate	321	30.0	200.0	104.7	108	90	110			

Sample ID	**1608133-10DMSD**	Batch ID:	**76820**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**MSD**	Run ID:	**IC4_160816A**	Analysis Date:	**8/16/2016 3:22:33 PM**	Prep Date:	**8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	346	10.0	200.0	135.6	105	90	110	0.130	20	
Fluoride	202	4.00	200.0	0	101	90	110	0.556	20	
Sulfate	322	30.0	200.0	104.7	109	90	110	0.536	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_160816A

Sample ID **ICV-160816**	Batch ID: **R87647**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC4_160816A**	Analysis Date: **8/16/2016 9:44:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	26.1	1.00	25.00	0	104	90	110			
Fluoride	9.82	0.400	10.00	0	98.2	90	110			
Sulfate	80.4	3.00	75.00	0	107	90	110			

Sample ID **CCV1-160816**	Batch ID: **R87647**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC4_160816A**	Analysis Date: **8/16/2016 1:57:44 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.5	1.00	10.00	0	105	90	110			
Fluoride	4.06	0.400	4.000	0	102	90	110			
Sulfate	32.3	3.00	30.00	0	108	90	110			

Sample ID **CCV2-160816**	Batch ID: **R87647**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC4_160816A**	Analysis Date: **8/16/2016 4:22:33 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.6	1.00	10.00	0	106	90	110			
Fluoride	4.06	0.400	4.000	0	102	90	110			
Sulfate	32.4	3.00	30.00	0	108	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_160817A

The QC data in batch 76838 applies to the following samples: 1608133-19D, 1608133-20D, 1608133-21D, 1608133-22D, 1608133-23D, 1608133-24D, 1608133-25D, 1608133-26D, 1608133-27D

Sample ID **MB-76838** Batch ID: **76838** TestNo: **E300** Units: **mg/L**
SampType: **MBLK** Run ID: **IC4_160817A** Analysis Date: **8/17/2016 10:32:13 AM** Prep Date: **8/17/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00								
Fluoride	<0.100	0.400								
Sulfate	<1.00	3.00								

Sample ID **LCS-76838** Batch ID: **76838** TestNo: **E300** Units: **mg/L**
SampType: **LCS** Run ID: **IC4_160817A** Analysis Date: **8/17/2016 10:47:13 AM** Prep Date: **8/17/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.4	1.00	10.00	0	104	90	110			
Fluoride	3.90	0.400	4.000	0	97.4	90	110			
Sulfate	31.7	3.00	30.00	0	106	90	110			

Sample ID **LCSD-76838** Batch ID: **76838** TestNo: **E300** Units: **mg/L**
SampType: **LCSD** Run ID: **IC4_160817A** Analysis Date: **8/17/2016 11:02:13 AM** Prep Date: **8/17/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.5	1.00	10.00	0	105	90	110	0.354	20	
Fluoride	4.04	0.400	4.000	0	101	90	110	3.66	20	
Sulfate	31.8	3.00	30.00	0	106	90	110	0.411	20	

Sample ID **1608133-27DMS** Batch ID: **76838** TestNo: **E300** Units: **mg/L**
SampType: **MS** Run ID: **IC4_160817A** Analysis Date: **8/17/2016 4:26:31 PM** Prep Date: **8/17/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	2540	100	2000	424.7	106	90	110			
Fluoride	1990	40.0	2000	0	99.5	90	110			
Sulfate	2600	300	2000	483.6	106	90	110			

Sample ID **1608133-27DMSD** Batch ID: **76838** TestNo: **E300** Units: **mg/L**
SampType: **MSD** Run ID: **IC4_160817A** Analysis Date: **8/17/2016 4:41:31 PM** Prep Date: **8/17/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	2570	100	2000	424.7	107	90	110	1.18	20	
Fluoride	2020	40.0	2000	0	101	90	110	1.31	20	
Sulfate	2630	300	2000	483.6	107	90	110	1.16	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_160817A

Sample ID **ICV-160817**	Batch ID: **R87682**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC4_160817A**	Analysis Date: **8/17/2016 9:50:02 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	26.1	1.00	25.00	0	104	90	110			
Fluoride	9.78	0.400	10.00	0	97.8	90	110			
Sulfate	80.2	3.00	75.00	0	107	90	110			

Sample ID **CCV1-160817**	Batch ID: **R87682**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC4_160817A**	Analysis Date: **8/17/2016 2:01:29 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.6	1.00	10.00	0	106	90	110			
Fluoride	3.95	0.400	4.000	0	98.6	90	110			
Sulfate	32.3	3.00	30.00	0	108	90	110			

Sample ID **CCV2-160817**	Batch ID: **R87682**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC4_160817A**	Analysis Date: **8/17/2016 5:11:31 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.5	1.00	10.00	0	105	90	110			
Fluoride	3.97	0.400	4.000	0	99.2	90	110			
Sulfate	32.1	3.00	30.00	0	107	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_160816A

The QC data in batch 76818 applies to the following samples: 1608133-01D, 1608133-02D, 1608133-03D, 1608133-04D, 1608133-05D, 1608133-06D, 1608133-07D, 1608133-08D, 1608133-09D, 1608133-10D

Sample ID	**1608119-02D-DUP**	Batch ID:	**76818**	TestNo:	**M4500-H+ B**	Units:	**pH Units@18.9℃**
SampType:	**DUP**	Run ID:	**TITRATOR_160816A**	Analysis Date:	**8/16/2016 9:53:00 AM**	Prep Date:	**8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	7.34	0	0	7.360				0.272	5	

Sample ID	**1608133-10D-DUP**	Batch ID:	**76818**	TestNo:	**M4500-H+ B**	Units:	**pH Units@17.7℃**
SampType:	**DUP**	Run ID:	**TITRATOR_160816A**	Analysis Date:	**8/16/2016 10:55:00 AM**	Prep Date:	**8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	6.18	0	0	6.190				0.162	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_160816A

Sample ID	**ICV-160816**	Batch ID:	**R87635**	TestNo:	**M4500-H+ B**	Units:	**pH Units@22℃**
SampType:	**ICV**	Run ID:	**TITRATOR_160816A**	Analysis Date:	**8/16/2016 8:52:00 AM**	Prep Date:	**8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	9.93	0	10.00	0	99.3	99	101			

Sample ID	**CCV1-160816**	Batch ID:	**R87635**	TestNo:	**M4500-H+ B**	Units:	**pH Units@20.6℃**
SampType:	**CCV**	Run ID:	**TITRATOR_160816A**	Analysis Date:	**8/16/2016 10:11:00 AM**	Prep Date:	**8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	6.97	0	7.000	0	99.6	97.1	102.9			

Sample ID	**CCV2-160816**	Batch ID:	**R87635**	TestNo:	**M4500-H+ B**	Units:	**pH Units@21℃**
SampType:	**CCV**	Run ID:	**TITRATOR_160816A**	Analysis Date:	**8/16/2016 10:45:00 AM**	Prep Date:	**8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	6.96	0	7.000	0	99.4	97.1	102.9			

Sample ID	**CCV3-160816**	Batch ID:	**R87635**	TestNo:	**M4500-H+ B**	Units:	**pH Units@21.4℃**
SampType:	**CCV**	Run ID:	**TITRATOR_160816A**	Analysis Date:	**8/16/2016 10:56:00 AM**	Prep Date:	**8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	6.96	0	7.000	0	99.4	97.1	102.9			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_160817B

The QC data in batch 76839 applies to the following samples: 1608133-11D, 1608133-12D, 1608133-13D, 1608133-14D, 1608133-15D, 1608133-16D, 1608133-17D, 1608133-18D, 1608133-19D, 1608133-20D, 1608133-21D, 1608133-22D, 1608133-23D, 1608133-24D, 1608133-25D, 1608133-26D, 1608133-27D

Sample ID **1608133-11D-DUP** Batch ID: **76839** TestNo: **M4500-H+ B** Units: **pH Units@20℃**
SampType: **DUP** Run ID: **TITRATOR_160817B** Analysis Date: **8/17/2016 11:16:00 AM** Prep Date: **8/17/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	4.54	0	0	4.530				0.221	5	

Sample ID **1608133-21D-DUP** Batch ID: **76839** TestNo: **M4500-H+ B** Units: **pH Units@20.7℃**
SampType: **DUP** Run ID: **TITRATOR_160817B** Analysis Date: **8/17/2016 11:43:00 AM** Prep Date: **8/17/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	6.77	0	0	6.750				0.296	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_160817B

Sample ID	**ICV-160817**	Batch ID:	**R87653**	TestNo:	**M4500-H+ B**	Units:	**pH Units@22.2℃**
SampType:	**ICV**	Run ID:	**TITRATOR_160817B**	Analysis Date:	**8/17/2016 9:01:00 AM**	Prep Date:	**8/17/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	9.93	0	10.00	0	99.3	99	101			

Sample ID	**CCV1-160817**	Batch ID:	**R87653**	TestNo:	**M4500-H+ B**	Units:	**pH Units@22.3℃**
SampType:	**CCV**	Run ID:	**TITRATOR_160817B**	Analysis Date:	**8/17/2016 10:30:00 AM**	Prep Date:	**8/17/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	6.98	0	7.000	0	99.7	97.1	102.9			

Sample ID	**CCV2-160817**	Batch ID:	**R87653**	TestNo:	**M4500-H+ B**	Units:	**pH Units@21.7℃**
SampType:	**CCV**	Run ID:	**TITRATOR_160817B**	Analysis Date:	**8/17/2016 11:37:00 AM**	Prep Date:	**8/17/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	6.96	0	7.000	0	99.4	97.1	102.9			

Sample ID	**CCV3-160817**	Batch ID:	**R87653**	TestNo:	**M4500-H+ B**	Units:	**pH Units@22℃**
SampType:	**CCV**	Run ID:	**TITRATOR_160817B**	Analysis Date:	**8/17/2016 11:58:00 AM**	Prep Date:	**8/17/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	6.97	0	7.000	0	99.6	97.1	102.9			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: WC_160815A

The QC data in batch 76803 applies to the following samples: 1608133-01D, 1608133-02D, 1608133-03D, 1608133-04D, 1608133-05D

Sample ID **MB-76803**	Batch ID: **76803**	TestNo: **M2540C**	Units: **mg/L**
SampType: **MBLK**	Run ID: **WC_160815A**	Analysis Date: **8/16/2016 8:42:00 AM**	Prep Date: **8/15/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	<10.0	10.0								

Sample ID **LCS-76803**	Batch ID: **76803**	TestNo: **M2540C**	Units: **mg/L**
SampType: **LCS**	Run ID: **WC_160815A**	Analysis Date: **8/16/2016 8:42:00 AM**	Prep Date: **8/15/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	761	10.0	745.6	0	102	90	113			

Sample ID **1608117-05C-DUP**	Batch ID: **76803**	TestNo: **M2540C**	Units: **mg/L**
SampType: **DUP**	Run ID: **WC_160815A**	Analysis Date: **8/16/2016 8:42:00 AM**	Prep Date: **8/15/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	782	10.0	0	801.0				2.40	5	

Sample ID **1608117-06C-DUP**	Batch ID: **76803**	TestNo: **M2540C**	Units: **mg/L**
SampType: **DUP**	Run ID: **WC_160815A**	Analysis Date: **8/16/2016 8:42:00 AM**	Prep Date: **8/15/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	1590	50.0	0	1600				0.627	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: WC_160816D

The QC data in batch 76831 applies to the following samples: 1608133-06D, 1608133-07D, 1608133-08D, 1608133-09D, 1608133-10D, 1608133-11D, 1608133-12D, 1608133-13D, 1608133-14D, 1608133-15D, 1608133-16D, 1608133-17D, 1608133-18D, 1608133-19D, 1608133-20D, 1608133-21D, 1608133-22D, 1608133-23D, 1608133-24D

Sample ID **MB-76831** Batch ID: **76831** TestNo: **M2540C** Units: **mg/L**
SampType: **MBLK** Run ID: **WC_160816D** Analysis Date: **8/17/2016 8:42:00 AM** Prep Date: **8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	<10.0	10.0								

Sample ID **LCS-76831** Batch ID: **76831** TestNo: **M2540C** Units: **mg/L**
SampType: **LCS** Run ID: **WC_160816D** Analysis Date: **8/17/2016 8:42:00 AM** Prep Date: **8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	741	10.0	745.6	0	99.4	90	113			

Sample ID **1608133-21D-DUP** Batch ID: **76831** TestNo: **M2540C** Units: **mg/L**
SampType: **DUP** Run ID: **WC_160816D** Analysis Date: **8/17/2016 8:42:00 AM** Prep Date: **8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	3640	50.0	0	3780				3.77	5	

Sample ID **1608133-24D-DUP** Batch ID: **76831** TestNo: **M2540C** Units: **mg/L**
SampType: **DUP** Run ID: **WC_160816D** Analysis Date: **8/17/2016 8:42:00 AM** Prep Date: **8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	1120	50.0	0	1150				3.09	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: WC_160818B

The QC data in batch 76858 applies to the following samples: 1608133-25D, 1608133-26D, 1608133-27D

Sample ID **MB-76858**	Batch ID: **76858**	TestNo: **M2540C**	Units: **mg/L**
SampType: **MBLK**	Run ID: **WC_160818B**	Analysis Date: **8/22/2016 8:40:00 AM**	Prep Date: **8/18/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	<10.0	10.0								

Sample ID **LCS-76858**	Batch ID: **76858**	TestNo: **M2540C**	Units: **mg/L**
SampType: **LCS**	Run ID: **WC_160818B**	Analysis Date: **8/22/2016 8:40:00 AM**	Prep Date: **8/18/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	747	10.0	745.6	0	100	90	113			

Sample ID **1608133-25D-DUP**	Batch ID: **76858**	TestNo: **M2540C**	Units: **mg/L**
SampType: **DUP**	Run ID: **WC_160818B**	Analysis Date: **8/22/2016 8:40:00 AM**	Prep Date: **8/18/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	1380	50.0	0	1430				3.56	5	

Sample ID **1608181-01B-DUP**	Batch ID: **76858**	TestNo: **M2540C**	Units: **mg/L**
SampType: **DUP**	Run ID: **WC_160818B**	Analysis Date: **8/22/2016 8:40:00 AM**	Prep Date: **8/18/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	22900	200	0	22720				0.702	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

Case Narrative

Lab No: 20160784

This report contains the analytical results for the 27 sample(s) received under chain of custody by ESC Lab Sciences on 8/16/2016 10:12:00 AM. These samples are associated with your 1608133 project.

The analytical results included in this report meet all applicable quality control procedure requirements except as noted below:

The test results in this report meet all NELAC requirements unless noted below:

This report shall not be reproduced, except in full, without the written approval of ESC Lab Sciences.

All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client.

Results have been reviewed by the Director of Radiochemistry or their designees and is approved for release.

Observations / Nonconformances

Analytical Report

	Method	Result	DL	Units	Qual	Prep Date	Analysis Date	Analyst
Lab ID : **20160784-01**								
Client ID : **H-28**								
Date Sampled : **8/9/2016 9:30:00 AM**								
Matrix : **NPW**								
		Radiochemical Analyses						
Combined Radium		1.68 +/- 0.969	0.847	pCi/l				
Radium-226	SM 7500 Ra B M*	0.265 +/- 0.306	0.451	pCi/l		08/24/16	08/26/16	AK
Radium-228	EPA 904*/9320*	1.41 +/- 0.663	0.396	pCi/l		09/07/16	09/10/16	JR
Lab ID : **20160784-02**								
Client ID : **H-29**								
Date Sampled : **8/9/2016 10:35:00 AM**								
Matrix : **NPW**								
		Radiochemical Analyses						
Combined Radium		0.261 +/- 1.12	0.752	pCi/l				
Radium-226	SM 7500 Ra B M*	0.261 +/- 0.150	0.174	pCi/l		08/24/16	08/31/16	AK
Radium-228	EPA 904*/9320*	-0.009 +/- 0.967	0.578	pCi/l		09/07/16	09/10/16	JR
Lab ID : **20160784-03**								
Client ID : **H-31**								
Date Sampled : **8/9/2016 11:50:00 AM**								
Matrix : **NPW**								
		Radiochemical Analyses						
Combined Radium		2.21 +/- 0.942	0.523	pCi/l				
Radium-226	SM 7500 Ra B M*	1.31 +/- 0.276	0.135	pCi/l		08/24/16	08/31/16	AK
Radium-228	EPA 904*/9320*	0.900 +/- 0.666	0.388	pCi/l		09/07/16	09/10/16	JR
Lab ID : **20160784-04**								
Client ID : **H-30**								
Date Sampled : **8/9/2016 12:45:00 PM**								
Matrix : **NPW**								
		Radiochemical Analyses						
Combined Radium		0.927 +/- 1.00	0.813	pCi/l				
Radium-226	SM 7500 Ra B M*	0.203 +/- 0.140	0.171	pCi/l		08/24/16	08/31/16	AK
Radium-228	EPA 904*/9320*	0.724 +/- 0.860	0.642	pCi/l		09/07/16	09/10/16	JR

Analytical Report

	Method	Result	DL	Units	Qual	Prep Date	Analysis Date	Analyst
Lab ID : **20160784-05**								
Client ID : **H-32**								
Date Sampled : **8/9/2016 1:50:00 PM**								
Matrix : **NPW**								
Radiochemical Analyses								
Combined Radium		2.56 +/- 1.35	0.870	pCi/l				
Radium-226	SM 7500 Ra B M*	2.56 +/- 0.576	0.424	pCi/l		08/24/16	08/31/16	AK
Radium-228	EPA 904*/9320*	-0.008 +/- 0.769	0.446	pCi/l		09/07/16	09/10/16	JR
Lab ID : **20160784-06**								
Client ID : **H-27**								
Date Sampled : **8/9/2016 2:50:00 PM**								
Matrix : **NPW**								
Radiochemical Analyses								
Combined Radium		0.952 +/- 1.23	0.797	pCi/l				
Radium-226	SM 7500 Ra B M*	0.408 +/- 0.217	0.165	pCi/l		08/24/16	08/31/16	AK
Radium-228	EPA 904*/9320*	0.544 +/- 1.01	0.632	pCi/l		09/07/16	09/10/16	JR
Lab ID : **20160784-07**								
Client ID : **H-33**								
Date Sampled : **8/9/2016 3:55:00 PM**								
Matrix : **NPW**								
Radiochemical Analyses								
Combined Radium		0.759 +/- 0.958	0.660	pCi/l				
Radium-226	SM 7500 Ra B M*	0.110 +/- 0.106	0.149	pCi/l		08/24/16	08/31/16	AK
Radium-228	EPA 904*/9320*	0.649 +/- 0.852	0.511	pCi/l		09/07/16	09/10/16	JR
Lab ID : **20160784-08**								
Client ID : **H-26**								
Date Sampled : **8/9/2016 4:45:00 PM**								
Matrix : **NPW**								
Radiochemical Analyses								
Combined Radium		0.172 +/- 1.68	1.13	pCi/l				
Radium-226	SM 7500 Ra B M*	0.172 +/- 0.145	0.200	pCi/l		08/24/16	08/31/16	AK
Radium-228	EPA 904*/9320*	-0.529 +/- 1.53	0.932	pCi/l		09/07/16	09/10/16	JR

Analytical Report

	Method	Result	DL	Units	Qual	Prep Date	Analysis Date	Analyst
Lab ID : **20160784-09**								
Client ID : **DUP-01**								
Date Sampled : **8/9/2016 2:38:00 PM**								
Matrix : **NPW**								
		Radiochemical Analyses						
Combined Radium		2.61 +/- 0.977	0.641	pCi/l				
Radium-226	SM 7500 Ra B M*	0.685 +/- 0.229	0.208	pCi/l		08/24/16	08/31/16	AK
Radium-228	EPA 904*/9320*	1.92 +/- 0.748	0.433	pCi/l		09/07/16	09/10/16	JR
Lab ID : **20160784-10**								
Client ID : **PDP-25**								
Date Sampled : **8/10/2016 1:30:00 PM**								
Matrix : **NPW**								
		Radiochemical Analyses						
Combined Radium		0.658 +/- 0.998	0.657	pCi/l				
Radium-226	SM 7500 Ra B M*	0.417 +/- 0.199	0.170	pCi/l		08/24/16	08/31/16	AK
Radium-228	EPA 904*/9320*	0.241 +/- 0.799	0.487	pCi/l		09/07/16	09/10/16	JR
Lab ID : **20160784-11**								
Client ID : **PDP-24**								
Date Sampled : **8/10/2016 11:00:00 AM**								
Matrix : **NPW**								
		Radiochemical Analyses						
Combined Radium		3.10 +/- 1.26	0.825	pCi/l				
Radium-226	SM 7500 Ra B M*	0.735 +/- 0.219	0.197	pCi/l		08/24/16	08/31/16	AK
Radium-228	EPA 904*/9320*	2.36 +/- 1.04	0.628	pCi/l		09/07/16	09/10/16	JR
Lab ID : **20160784-12**								
Client ID : **MW-17A**								
Date Sampled : **8/10/2016 10:20:00 AM**								
Matrix : **NPW**								
		Radiochemical Analyses						
Combined Radium		0.871 +/- 1.25	0.827	pCi/l				
Radium-226	SM 7500 Ra B M*	0.343 +/- 0.158	0.120	pCi/l		08/24/16	08/31/16	AK
Radium-228	EPA 904*/9320*	0.528 +/- 1.09	0.707	pCi/l		09/07/16	09/10/16	JR

Analytical Report

	Method	Result	DL	Units	Qual	Prep Date	Analysis Date	Analyst
Lab ID : **20160784-13**								
Client ID : **PDP-23**								
Date Sampled : **8/10/2016 9:10:00 AM**								
Matrix : **NPW**								
		Radiochemical Analyses						
Combined Radium		0.670 +/- 1.90	1.42	pCi/l				
Radium-226	SM 7500 Ra B M*	-0.105 +/- 0.115	0.267	pCi/l		08/24/16	08/31/16	AK
Radium-228	EPA 904*/9320*	0.670 +/- 1.78	1.15	pCi/l		09/07/16	09/10/16	JR
Lab ID : **20160784-14**								
Client ID : **MW-19**								
Date Sampled : **8/10/2016 3:00:00 PM**								
Matrix : **NPW**								
		Radiochemical Analyses						
Combined Radium		0.304 +/- 1.183	0.767	pCi/l				
Radium-226	SM 7500 Ra B M*	0.223 +/- 0.133	0.144	pCi/l		08/24/16	08/31/16	AK
Radium-228	EPA 904*/9320*	0.081 +/- 1.05	0.623	pCi/l		09/07/16	09/12/16	JR
Lab ID : **20160784-15**								
Client ID : **MW-20A**								
Date Sampled : **8/10/2016 2:10:00 PM**								
Matrix : **NPW**								
		Radiochemical Analyses						
Combined Radium		1.66 +/- 1.16	0.715	pCi/l				
Radium-226	SM 7500 Ra B M*	0.607 +/- 0.242	0.200	pCi/l		08/24/16	08/31/16	AK
Radium-228	EPA 904*/9320*	1.05 +/- 0.918	0.515	pCi/l		09/07/16	09/12/16	JR
Lab ID : **20160784-16**								
Client ID : **PDP-22**								
Date Sampled : **8/10/2016 9:20:00 AM**								
Matrix : **NPW**								
		Radiochemical Analyses						
Combined Radium		1.42 +/- 1.04	0.567	pCi/l				
Radium-226	SM 7500 Ra B M*	0.793 +/- 0.221	0.092	pCi/l		08/24/16	08/31/16	AK
Radium-228	EPA 904*/9320*	0.628 +/- 0.817	0.475	pCi/l		09/07/16	09/12/16	JR

OUTREACH LABORATORY, A Divsion of ESC Lab Sciences
Address: 311 North Aspen Avenue, Broken Arrow, OK, 74012 EMail: outreach@esclabsciences.com - Tel: (918) 251-2515

Analytical Report

	Method	Result	DL	Units	Qual	Prep Date	Analysis Date	Analyst
Lab ID : **20160784-17**								
Client ID : **PDP-26**								
Date Sampled : **8/10/2016 10:30:00 AM**								
Matrix : **NPW**								
		Radiochemical Analyses						
Combined Radium		0.581 +/- 0.935	0.617	pCi/l				
Radium-226	SM 7500 Ra B M*	0.133 +/- 0.104	0.133	pCi/l		08/24/16	08/31/16	AK
Radium-228	EPA 904*/9320*	0.448 +/- 0.831	0.484	pCi/l		09/07/16	09/12/16	JR
Lab ID : **20160784-18**								
Client ID : **MW-18A**								
Date Sampled : **8/10/2016 11:30:00 AM**								
Matrix : **NPW**								
		Radiochemical Analyses						
Combined Radium		0.742 +/- 1.22	0.771	pCi/l				
Radium-226	SM 7500 Ra B M*	0.288 +/- 0.149	0.164	pCi/l		08/24/16	08/31/16	AK
Radium-228	EPA 904*/9320*	0.454 +/- 1.07	0.607	pCi/l		09/07/16	09/12/16	JR
Lab ID : **20160784-19**								
Client ID : **EB-1**								
Date Sampled : **8/10/2016 11:45:00 AM**								
Matrix : **NPW**								
		Radiochemical Analyses						
Combined Radium		1.45 +/- 0.992	0.729	pCi/l				
Radium-226	SM 7500 Ra B M*	0.000 +/- 0.115	0.239	pCi/l		08/24/16	08/31/16	AK
Radium-228	EPA 904*/9320*	1.45 +/- 0.877	0.490	pCi/l		09/07/16	09/12/16	JR
Lab ID : **20160784-20**								
Client ID : **BMW-11AR**								
Date Sampled : **8/11/2016 8:25:00 AM**								
Matrix : **NPW**								
		Radiochemical Analyses						
Combined Radium		3.23 +/- 1.45	0.838	pCi/l				
Radium-226	SM 7500 Ra B M*	0.810 +/- 0.204	0.116	pCi/l		08/24/16	08/31/16	AK
Radium-228	EPA 904*/9320*	2.42 +/- 1.25	0.722	pCi/l		09/07/16	09/12/16	JR

Analytical Report

	Method	Result	DL	Units	Qual	Prep Date	Analysis Date	Analyst
Lab ID : **20160784-21**								
Client ID : **BMW-19**								
Date Sampled : **8/11/2016 9:20:00 AM**								
Matrix : **NPW**								
		Radiochemical Analyses						
Combined Radium		1.19 +/- 1.17	0.933	pCi/l				
Radium-226	SM 7500 Ra B M*	0.927 +/- 0.200	0.118	pCi/l		08/25/16	08/29/16	AK
Radium-228	EPA 904*/9320*	0.262 +/- 0.695	0.815	pCi/l		09/02/16	09/08/16	JR
Lab ID : **20160784-22**								
Client ID : **BMW-18**								
Date Sampled : **8/11/2016 10:15:00 AM**								
Matrix : **NPW**								
		Radiochemical Analyses						
Combined Radium		0.117 +/- 0.983	1.29	pCi/l				
Radium-226	SM 7500 Ra B M*	0.117 +/- 0.146	0.220	pCi/l		08/25/16	08/29/16	AK
Radium-228	EPA 904*/9320*	-0.353 +/- 0.837	1.07	pCi/l		09/02/16	09/08/16	JR
Lab ID : **20160784-23**								
Client ID : **BMW-20**								
Date Sampled : **8/11/2016 10:50:00 AM**								
Matrix : **NPW**								
		Radiochemical Analyses						
Combined Radium		1.72 +/- 0.838	0.980	pCi/l				
Radium-226	SM 7500 Ra B M*	0.322 +/- 0.140	0.147	pCi/l		08/25/16	08/29/16	AK
Radium-228	EPA 904*/9320*	1.40 +/- 0.698	0.833	pCi/l		09/02/16	09/08/16	JR
Lab ID : **20160784-24**								
Client ID : **BMW-24**								
Date Sampled : **8/11/2016 8:50:00 AM**								
Matrix : **NPW**								
		Radiochemical Analyses						
Combined Radium		1.36 +/- 0.937	1.06	pCi/l				
Radium-226	SM 7500 Ra B M*	0.564 +/- 0.185	0.116	pCi/l		08/25/16	08/29/16	AK
Radium-228	EPA 904*/9320*	0.791 +/- 0.752	0.942	pCi/l		09/02/16	09/08/16	JR

Analytical Report

	Method	Result	DL	Units	Qual	Prep Date	Analysis Date	Analyst
Lab ID : **20160784-25**								
Client ID : **BMW-23**								
Date Sampled : **8/11/2016 9:20:00 AM**								
Matrix : **NPW**								
		Radiochemical Analyses						
Combined Radium		2.90 +/- 0.992	1.07	pCi/l				
Radium-226	SM 7500 Ra B M*	0.963 +/- 0.218	0.164	pCi/l		08/25/16	08/29/16	AK
Radium-228	EPA 904*/9320*	1.94 +/- 0.774	0.904	pCi/l		09/02/16	09/08/16	JR
Lab ID : **20160784-26**								
Client ID : **BMW-22**								
Date Sampled : **8/11/2016 10:00:00 AM**								
Matrix : **NPW**								
		Radiochemical Analyses						
Combined Radium		2.54 +/- 0.798	0.823	pCi/l				
Radium-226	SM 7500 Ra B M*	0.607 +/- 0.190	0.104	pCi/l		08/25/16	08/29/16	AK
Radium-228	EPA 904*/9320*	1.93 +/- 0.608	0.719	pCi/l		09/02/16	09/08/16	JR
Lab ID : **20160784-27**								
Client ID : **BMW-21**								
Date Sampled : **8/11/2016 10:30:00 AM**								
Matrix : **NPW**								
		Radiochemical Analyses						
Combined Radium		1.25 +/- 0.875	1.04	pCi/l				
Radium-226	SM 7500 Ra B M*	0.655 +/- 0.290	0.312	pCi/l		08/25/16	08/29/16	AK
Radium-228	EPA 904*/9320*	0.632 +/- 0.585	0.728	pCi/l		09/02/16	09/08/16	JR

QC Report

Parameter	Blank	LCS %REC	LCSD %REC	LCSD RPD	DUP RPD	RER, NAD or DER	MS %REC	MSD %REC	MSD RPD	Batch ID
Radium-226	-0.024	94.7			NC	0.923	108.0	101.0	6.5	R1125
Radium-226	-0.021	108.0			0.6	0.022	95.6	101.0	5.2	R1126
Radium-228	0.406	95.4			NC	0.159	95.1	98.8	3.8	R3850
Radium-228	0.402	84.4			NC	0.580	84.3	87.6	3.8	R3851

Lab Approval:

Ron Eidson
Director of Radiochemistry

*NELAC Certified Parameter BDL = Below Detection Limit

OUTREACH LABORATORY, A Divsion of ESC Lab Sciences
Address: 311 North Aspen Avenue, Broken Arrow, OK, 74012 EMail: outreach@esclabsciences.com - Tel: (918) 251-2515

DHL Analytical, Inc.
2300 Double Creek Drive
Round Rock, TX 78664
TEL: *(512) 388-8222* FAX: *(512) 388-8229*

CHAIN-OF-CUSTODY RECORD

Work Order: 1608133

Subcontractor:

ESC Laboratory
311 North Aspen
Broken Arrow, Oklahoma 74012

TEL: (918) 251-2515
FAX:
Acct #: DHLRRTX

12-Aug-16

Sample Id	Matrix	DHL#	Date Collected	Bottle Type	Requested Tests					
					E904.0	SM7500Ra-B M				
H-28	Aqueous	-01B	08/09/16 09:30 AM	500HDPEHNO3	1					
H-28	Aqueous	-01C	08/09/16 09:30 AM	500HDPEHNO3		1				
H-29	Aqueous	-02B	08/09/16 10:35 AM	500HDPEHNO3	1					
H-29	Aqueous	-02C	08/09/16 10:35 AM	500HDPEHNO3		1				
H-31	Aqueous	-03B	08/09/16 11:50 AM	500HDPEHNO3	1					
H-31	Aqueous	-03C	08/09/16 11:50 AM	500HDPEHNO3		1				
H-30	Aqueous	-04B	08/09/16 12:45 PM	500HDPEHNO3	1					
H-30	Aqueous	-04C	08/09/16 12:45 PM	500HDPEHNO3		1				
H-32	Aqueous	-05B	08/09/16 01:50 PM	500HDPEHNO3	1					
H-32	Aqueous	-05C	08/09/16 01:50 PM	500HDPEHNO3		1				
H-27	Aqueous	-06B	08/09/16 02:50 PM	500HDPEHNO3	1					
H-27	Aqueous	-06C	08/09/16 02:50 PM	500HDPEHNO3		1				
H-33	Aqueous	-07B	08/09/16 03:55 PM	500HDPEHNO3	1					
H-33	Aqueous	-07C	08/09/16 03:55 PM	500HDPEHNO3		1				
H-26	Aqueous	-08B	08/09/16 04:45 PM	500HDPEHNO3	1					
H-26	Aqueous	-08C	08/09/16 04:45 PM	500HDPEHNO3		1				
DUP-01	Aqueous	-09B	08/09/16 02:38 PM	500HDPEHNO3	1					
DUP-01	Aqueous	-09C	08/09/16 02:38 PM	500HDPEHNO3		1				

General Comments:

Please analyze these samples with Normal Turnaround Time.
Report RA-226, Ra-228 & Combined per Specs DHLRRTX033116S.
Quality Control Package Needed: Standard - NELAC Rad Test compliant
Email to cac@dhlanalytical.com & dupont@dhlanalytical.com

1608078
L854111

	Date/Time		Date/Time
Relinquished by:	8/12/16 17:30	**Received by:**	8/12/16 17:30
Relinquished by:		**Received by:**	8/12/16 1012

DHL Analytical, Inc.
2300 Double Creek Drive
Round Rock, TX 78664
TEL: *(512) 388-8222* FAX: *(512) 388-8229*

CHAIN-OF-CUSTODY RECORD

Work Order: 1608133

Subcontractor:

ESC Laboratory
311 North Aspen
Broken Arrow, Oklahoma 74012

TEL: (918) 251-2515
FAX:
Acct #: DHLRRTX

12-Aug-16

Sample Id	Matrix	DHL#	Date Collected	Bottle Type	Requested Tests					
					E904.0	SM7500Ra-B M				
PDP-25	Aqueous	-10B	08/10/16 01:30 PM	500HDPEHNO3	1					
PDP-25	Aqueous	-10C	08/10/16 01:30 PM	500HDPEHNO3		1				
PDP-24	Aqueous	-11B	08/10/16 11:00 AM	500HDPEHNO3	1					
PDP-24	Aqueous	-11C	08/10/16 11:00 AM	500HDPEHNO3		1				
MW-17A	Aqueous	-12B	08/10/16 10:20 AM	500HDPEHNO3	1					
MW-17A	Aqueous	-12C	08/10/16 10:20 AM	500HDPEHNO3		1				
PDP-23	Aqueous	-13B	08/10/16 09:10 AM	500HDPEHNO3	1					
PDP-23	Aqueous	-13C	08/10/16 09:10 AM	500HDPEHNO3		1				
MW-19	Aqueous	-14B	08/10/16 03:00 PM	500HDPEHNO3	1					
MW-19	Aqueous	-14C	08/10/16 03:00 PM	500HDPEHNO3		1				
MW-20A	Aqueous	-15B	08/10/16 02:10 PM	500HDPEHNO3	1					
MW-20A	Aqueous	-15C	08/10/16 02:10 PM	500HDPEHNO3		1				
PDP-22	Aqueous	-16B	08/10/16 09:20 AM	500HDPEHNO3	1					
PDP-22	Aqueous	-16C	08/10/16 09:20 AM	500HDPEHNO3		1				
PDP-26	Aqueous	-17B	08/10/16 10:30 AM	500HDPEHNO3	1					
PDP-26	Aqueous	-17C	08/10/16 10:30 AM	500HDPEHNO3		1				
MW-18A	Aqueous	-18B	08/10/16 11:30 AM	500HDPEHNO3	1					
MW-18A	Aqueous	-18C	08/10/16 11:30 AM	500HDPEHNO3		1				

General Comments:

Please analyze these samples with Normal Turnaround Time.
Report RA-226, Ra-228 & Combined per Specs DHLRRTX033116S.
Quality Control Package Needed: Standard - NELAC Rad Test compliant
Email to cac@dhlanalytical.com & dupont@dhlanalytical.com

		Date/Time			Date/Time
Relinquished by:	[signature]	8/12/16 17:30	**Received by:**	[signature]	8/12/16 17:30
Relinquished by:			**Received by:**	Amber Taylor	8/16/16 1012

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2300 Double Creek Drive
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CHAIN-OF-CUSTODY RECORD

Work Order: 1608133

Subcontractor:

ESC Laboratory
311 North Aspen
Broken Arrow, Oklahoma 74012

TEL: (918) 251-2515
FAX:
Acct #: DHLRRTX

12-Aug-16

Sample Id	Matrix	DHL#	Date Collected	Bottle Type	Requested Tests					
					E904.0	SM7500Ra-B M				
EB-1	Aqueous	-19B	08/10/16 11:45 AM	500HDPEHNO3	1					
EB-1	Aqueous	-19C	08/10/16 11:45 AM	500HDPEHNO3		1				
BMW-11AR	Aqueous	-20B	08/11/16 08:25 AM	500HDPEHNO3	1					
BMW-11AR	Aqueous	-20C	08/11/16 08:25 AM	500HDPEHNO3		1				
BMW-19	Aqueous	-21B	08/11/16 09:20 AM	500HDPEHNO3	1					
BMW-19	Aqueous	-21C	08/11/16 09:20 AM	500HDPEHNO3		1				
BMW-18	Aqueous	-22B	08/11/16 10:15 AM	500HDPEHNO3	1					
BMW-18	Aqueous	-22C	08/11/16 10:15 AM	500HDPEHNO3		1				
BMW-20	Aqueous	-23B	08/11/16 10:50 AM	500HDPEHNO3	1					
BMW-20	Aqueous	-23C	08/11/16 10:50 AM	500HDPEHNO3		1				
BMW-24	Aqueous	-24B	08/11/16 08:50 AM	500HDPEHNO3	1					
BMW-24	Aqueous	-24C	08/11/16 08:50 AM	500HDPEHNO3		1				
BMW-23	Aqueous	-25B	08/11/16 09:20 AM	500HDPEHNO3	1					
BMW-23	Aqueous	-25C	08/11/16 09:20 AM	500HDPEHNO3		1				
BMW-22	Aqueous	-26B	08/11/16 10:00 AM	500HDPEHNO3	1					
BMW-22	Aqueous	-26C	08/11/16 10:00 AM	500HDPEHNO3		1				
BMW-21	Aqueous	-27B	08/11/16 10:30 AM	500HDPEHNO3	1					
BMW-21	Aqueous	-27C	08/11/16 10:30 AM	500HDPEHNO3		1				

General Comments:

Please analyze these samples with Normal Turnaround Time.
Report RA-226, Ra-228 & Combined per Specs DHLRRTX033116S.
Quality Control Package Needed: Standard - NELAC Rad Test compliant
Email to cac@dhlanalytical.com & dupont@dhlanalytical.com

		Date/Time			Date/Time
Relinquished by:	Jtorrar	8/12/16 17:30	**Received by:**	FedEx	8/12/16 17:30
Relinquished by:			**Received by:**	Amber Taylor	8/16/16 1012

SAMPLE LOGIN

Date Received: *8/16/2016 10:12:0* **Lab Number:** 20160784 **Due:** 9/13/2016

Sample Number	Client Sample ID	Matrix	Date Sampled	Container Type	Container Size	Preservation	Preserved Upon Receipt	Custody Seal	Seal Intact
20160784-01 B	H-28	NPW	08/09/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
20160784-01 A	H-28	NPW	08/09/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160784-02 A	H-29	NPW	08/09/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
20160784-02 B	H-29	NPW	08/09/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160784-03 A	H-31	NPW	08/09/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
20160784-03 B	H-31	NPW	08/09/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160784-04 A	H-30	NPW	08/09/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
20160784-04 B	H-30	NPW	08/09/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160784-05 A	H-32	NPW	08/09/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
20160784-05 B	H-32	NPW	08/09/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160784-06 A	H-27	NPW	08/09/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
20160784-06 B	H-27	NPW	08/09/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160784-07 A	H-33	NPW	08/09/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
20160784-07 B	H-33	NPW	08/09/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						

20160784-08 B	H-26	NPW	08/09/16	Plastic	500 ml	HNO3, pH < 2	✓	Yes	Yes
20160784-08 A	H-26	NPW	08/09/16	Plastic	500 ml	HNO3, pH < 2	✓	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160784-09 A	DUP-01	NPW	08/09/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
20160784-09 B	DUP-01	NPW	08/09/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160784-10 A	PDP-25	NPW	08/10/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
20160784-10 B	PDP-25	NPW	08/10/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160784-11 A	PDP-24	NPW	08/10/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
20160784-11 B	PDP-24	NPW	08/10/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160784-12 A	MW-17A	NPW	08/10/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
20160784-12 B	MW-17A	NPW	08/10/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160784-13 A	PDP-23	NPW	08/10/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
20160784-13 B	PDP-23	NPW	08/10/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160784-14 B	MW-19	NPW	08/10/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
20160784-14 A	MW-19	NPW	08/10/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160784-15 A	MW-20A	NPW	08/10/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
20160784-15 B	MW-20A	NPW	08/10/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160784-16 A	PDP-22	NPW	08/10/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
20160784-16 B	PDP-22	NPW	08/10/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes

Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160784-17 A	PDP-26	NPW	08/10/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
20160784-17 B	PDP-26	NPW	08/10/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160784-18 A	MW-18A	NPW	08/10/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
20160784-18 B	MW-18A	NPW	08/10/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160784-19 A	EB-1	NPW	08/10/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
20160784-19 B	EB-1	NPW	08/10/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160784-20 B	BMW-11AR	NPW	08/11/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
20160784-20 A	BMW-11AR	NPW	08/11/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160784-21 A	BMW-19	NPW	08/11/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
20160784-21 B	BMW-19	NPW	08/11/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160784-22 A	BMW-18	NPW	08/11/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
20160784-22 B	BMW-18	NPW	08/11/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160784-23 A	BMW-20	NPW	08/11/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
20160784-23 B	BMW-20	NPW	08/11/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160784-24 A	BMW-24	NPW	08/11/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
20160784-24 B	BMW-24	NPW	08/11/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes

Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160784-25 A	BMW-23	NPW	08/11/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
20160784-25 B	BMW-23	NPW	08/11/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160784-26 A	BMW-22	NPW	08/11/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
20160784-26 B	BMW-22	NPW	08/11/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160784-27 B	BMW-21	NPW	08/11/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
20160784-27 A	BMW-21	NPW	08/11/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						

CONTAINER INSPECTION

 # Coolers 2 **Custody Seals Broken** ☑ **Temperature:** AMB °C **Ice** **Radiation Survey:** <300 cpm

SAMPLE INSPECTION

Sample Seal Broken ☑ **Chain of Custody Record** ☑ **Labels in Tact** ☑ **Radiation Survey Complete** N/A

Anomalies

Inspected By: Amber Taylor **DATE** 8/16/16

QA or Designee Review: Raymond Thomas **DATE** 08/16/16

Sample Custodian Review: Stan Ur **DATE** 8/16/16

Project Notes:

October 21, 2016

Will Vienne
Pastor, Behling & Wheeler
2201 Double Creek Dr #4004
Round Rock, Texas 78664
TEL: (512) 671-3434
FAX (512) 671-3446

Order No.: 1609136

RE: A-1 Landfill (Luminant)

Dear Will Vienne:

DHL Analytical, Inc. received 2 sample(s) on 9/15/2016 for the analyses presented in the following report.

There were no problems with the analyses and all data met requirements of NELAC except where noted in the Case Narrative. All non-NELAC methods will be identified accordingly in the case narrative and all estimated uncertainties of test results are within method or EPA specifications.

If you have any questions regarding these tests results, please feel free to call. Thank you for using DHL Analytical.

Sincerely,

John DuPont
General Manager

This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211-16-16

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DHL ANALYTICAL
2300 Double Creek Dr. ■ Round Rock, TX 78664
Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

№ 70719

CHAIN-OF-CUSTODY

CLIENT: PBW
ADDRESS: 5416 PLAZA DR. TEXARKANA, TX 75503
PHONE: (512) 671-3434 FAX/E-MAIL: will.vienne@pbwllc.com
DATA REPORTED TO: WILL VIENNE
ADDITIONAL REPORT COPIES TO:

DATE: 9/13/16 PAGE 1 OF 1
PO #: DHL WORK ORDER #: 1609136
PROJECT LOCATION OR NAME: A-1 CANDFILL (LUMINANT)
CLENT PROJECT #: 5764-B COLLECTOR: G. HARRIS

Authorize 5% surcharge for TRRP Report? ☐ Yes ☐ No

S=SOIL W=WATER A=AIR L=LIQUID SE=SEDIMENT P=PAINT SL=SLUDGE O=OTHER SO=SOLID

PRESERVATION: HCl | HNO_3 | H_2SO_4 ☐ NaOH ☐ | ICE | UNPRESERVED

ANALYSES: BTEX ☐ MTBE ☐ (METHOD 8021) | TPH 1005 ☐ TPH 1006 ☐ HOLD 1006 ☐ | GRO (METHOD 8015) ☐ DRO (METHOD 8105) ☐ | VOC 8260 ☐ VOC 624 ☐ VOC 8260/5035 ☐ | SVOC 8270 ☐ PAH 8270 ☐ HOLD PAH ☐ SVOC 625 ☐ | 8270 PEST ☐ 625 PEST/PCB ☐ 608 PCB ☐ | 8270 ☐ P PEST ☐ 8082 PCB ☐ 8270 PCB ☐ | 8321 HERB ☐ T PHOS, AMMONIA ☐ | METALS 6020 ☐ METALS 200.8 ☐ DISS. METALS ☐ | RCRA ☐ TX11 ☐ ☐ | PH ☐ HEX CHROM ☐ ALKALINITY ☐ COD ☐ | CHLORIDE ☐ ANIONS ☐ | TCLP-SVOC ☐ VOC ☐ PEST ☐ HERB ☐ | TCLP-METALS ☐ RCRA 8 ☐ TX-11 ☐ Pb ☐ | RCI ☐ FLASHPOINT ☐ DGAS ☐ | TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐ | SEE ATTACHED CCR LIST

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	HCl	HNO_3	H_2SO_4 ☐ NaOH ☐	ICE	UNPRESERVED	ANALYSES	FIELD NOTES
BMW-26	01	9/13/16	1230	W	P	4		X		X	X		
BMW-27	02	9/13/16	1330	W	P	4		X		X	X		

RELINQUISHED BY: (Signature) DATE/TIME 9/14/16/1660 RECEIVED BY: (Signature) Fedex
RELINQUISHED BY: (Signature) DATE/TIME RECEIVED BY: (Signature)
Fedex 9/15/16 1000 Bark
RELINQUISHED BY: (Signature) DATE/TIME RECEIVED BY: (Signature)

☐ DHL DISPOSAL @ $5.00 each ☐ Return

TURN AROUND TIME
RUSH ☐ CALL FIRST
1 DAY ☐ CALL FIRST
2 DAY ☐
NORMAL ☒
OTHER ☐ _____

LABORATORY USE ONLY:
RECEIVING TEMP: 0.8 THERM #: 78
CUSTODY SEALS: ☐ BROKEN ☒ INTACT ☐ NOT USED
CARRIER: ☐ LONE STAR ☒ FEDEX ☐ UPS ☐ OTHER
☐ COURIER DELIVERY
☐ HAND DELIVERED

John Dupont

From: Sara Taube [Sara.Taube@pbwllc.com]
Sent: Wednesday, July 22, 2015 12:06 PM
To: John Dupont
Subject: CCR Appendix III and IV
Follow Up Flag: Follow up
Flag Status: Completed

Hi John,

Here are the Appendix III and Appendix IV constituents that we will need to have analyzed under the CCR Rule.

Appendix III
Boron
Calcium
Chloride
Fluoride
pH
sulfate
TDS

Appendix IV
Antimony
Arsenic
Barium
Beryllium
Cadmium
Chromium
Cobalt
Fluoride
Lead
Lithium
Mercury
Molybdenum
Selenium
Thallium
Radium 226 and 228

We are looking to have approximately 74 wells sampled 8 times over the course of the next two years. Please let me know if there is any more information you might need.

Cheers,

Sara

10/26/2015

ORIGIN ID:TXKA (903) 794-0625
GARRETT HARRIS
PASTOR, BEHLING & WHEELER, LLC
5416 PLAZA DRIVE

TEXARKANA, TX 75503
UNITED STATES US

SHIP DATE: 13SEP16
ACTWGT: 25.00 LB
CAD: 2026420/INET3790
DIMS: 14x12x12 IN

BILL SENDER

TO RECEIVING DEPARTMENT
DHL ANALYTICAL
2300 DOUBLE CREEK DRIVE

ROUND ROCK TX 78664
(512) 388-8222 REF 2240
INV
PO DEPT

FedEx Express

FedEx
TRK# 0201 7772 0961 4120

THU – 15 SEP 3:00P
STANDARD OVERNIGHT

A8 BSMA

78664
TX-US AUS

#76416 09/14 544J1/A053/14E8

QEC
Quality Environmental Containers
800-255-3950 • 304-255-3900

CUSTODY SEAL
DATE 9/14/16
SIGNATURE

DHL Analytical, Inc.

Sample Receipt Checklist

Client Name Pastor, Behling & Wheeler | Date Received: 9/15/2016

Work Order Number 1609136 | Received by JB

Checklist completed by: Signature 9/15/2016 Date | Reviewed by Initials 9/15/2016 Date

Carrier name FedEx 1day

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	0.8 °C
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH<2 acceptable upon receipt?	Yes ☑	No ☐	NA ☐ LOT # 8086
	Adjusted? NO		Checked by
Water - ph>9 (S) or ph>12 (CN) acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted?		Checked by

Any No response must be detailed in the comments section below.

Client contacted _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments: _____

Corrective Action _____

DHL Analytical, Inc. **Date:** *21-Oct-16*

CLIENT: Pastor, Behling & Wheeler
Project: A-1 Landfill (Luminant)
Lab Order: 1609136

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Method SW6020A - Metals Analysis
Method SW7470A - Mercury Analysis
Method E300 - Anions Analysis
Method M4500-H+ B - pH of a Water Analysis
Method M2540C - TDS Analysis
Sub-contract - Radium-228 and Radium-226 analyses by methods E904/9320 and SM 7500 Ra B M. Analyzed at ESC Lab Sciences.

LOG IN

The samples were received and log-in performed on 9/15/16. A total of 2 samples were received. The samples arrived in good condition and were properly packaged.

METALS ANALYSIS

For Metals analysis performed on 9/21/16 the matrix spike and matrix spike duplicate recoveries were out of control limits for Calcium or Boron. These are flagged accordingly in the QC summary report. The sample selected for the matrix spike and matrix spike duplicate was not from this work order. The LCS was within control limits for these analytes. No further corrective actions were taken.

For Metals analysis performed on 9/21/16 the RPD for the serial dilution was above control limits for Boron. This is flagged accordingly. The PDS was within control limits for this analyte. No further corrective actions were taken.

For Metals analysis performed on 9/21/16 the PDS recovery was out of control limits for Calcium. This is flagged accordingly. The serial dilution was within control limits for this analyte. No further corrective actions were taken.

MERCURY ANALYSIS

For Mercury analysis performed on 9/20/16 the matrix spike and matrix spike duplicate recoveries were below control limits. These are flagged accordingly in the QC summary report. The sample selected for the matrix spike and matrix spike duplicate was not from this work order. The LCS was within control limits. No further corrective actions were taken.

ANIONS ANALYSIS

CLIENT:	Pastor, Behling & Wheeler
Project:	A-1 Landfill (Luminant)
Lab Order:	1609136

CASE NARRATIVE

For Anions analysis performed on 9/15/16 the LCSD recovery was slightly above control limits for Chloride. This is flagged accordingly in the QC summary report. No further corrective actions were taken.

DHL Analytical, Inc.

Date: *21-Oct-16*

CLIENT: Pastor, Behling & Wheeler
Project: A-1 Landfill (Luminant)
Lab Order: 1609136

Work Order Sample Summary

Lab Smp ID	Client Sample ID	Tag Number	Date Collected	Date Recved
1609136-01	BMW-26		09/13/16 12:30 PM	9/15/2016
1609136-02	BMW-27		09/13/16 01:30 PM	9/15/2016

Lab Order: 1609136
Client: Pastor, Behling & Wheeler
Project: A-1 Landfill (Luminant)

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1609136-01A	BMW-26	09/13/16 12:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/19/16 08:42 AM	77250
	BMW-26	09/13/16 12:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/19/16 08:42 AM	77250
	BMW-26	09/13/16 12:30 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	09/19/16 12:58 PM	77266
1609136-01D	BMW-26	09/13/16 12:30 PM	Aqueous	E300	Anion Preparation	09/15/16 11:06 AM	77226
	BMW-26	09/13/16 12:30 PM	Aqueous	E300	Anion Preparation	09/15/16 11:06 AM	77226
	BMW-26	09/13/16 12:30 PM	Aqueous	M4500-H+ B	pH Preparation	09/19/16 08:15 AM	77247
	BMW-26	09/13/16 12:30 PM	Aqueous	M2540C	TDS Preparation	09/19/16 08:46 AM	77252
1609136-02A	BMW-27	09/13/16 01:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/19/16 08:42 AM	77250
	BMW-27	09/13/16 01:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/19/16 08:42 AM	77250
	BMW-27	09/13/16 01:30 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	09/19/16 12:58 PM	77266
1609136-02D	BMW-27	09/13/16 01:30 PM	Aqueous	E300	Anion Preparation	09/15/16 11:06 AM	77226
	BMW-27	09/13/16 01:30 PM	Aqueous	E300	Anion Preparation	09/15/16 11:06 AM	77226
	BMW-27	09/13/16 01:30 PM	Aqueous	M4500-H+ B	pH Preparation	09/19/16 08:15 AM	77247
	BMW-27	09/13/16 01:30 PM	Aqueous	M2540C	TDS Preparation	09/19/16 08:46 AM	77252

Lab Order: 1609136
Client: Pastor, Behling & Wheeler
Project: A-1 Landfill (Luminant)

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1609136-01A	BMW-26	Aqueous	SW7470A	Mercury Total: Aqueous	77266	1	09/20/16 03:00 PM	CETAC2_HG_160920A
	BMW-26	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	77250	1	09/22/16 01:26 PM	ICP-MS4_160922A
	BMW-26	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	77250	1	09/21/16 01:46 PM	ICP-MS4_160921B
1609136-01D	BMW-26	Aqueous	E300	Anions by IC method - Water	77226	10	09/15/16 02:20 PM	IC3_160915A
	BMW-26	Aqueous	E300	Anions by IC method - Water	77226	1	09/15/16 12:28 PM	IC3_160915A
	BMW-26	Aqueous	M4500-H+ B	pH	77247	1	09/19/16 10:04 AM	TITRATOR_160919A
	BMW-26	Aqueous	M2540C	Total Dissolved Solids	77252	1	09/20/16 08:41 AM	WC_160919A
1609136-02A	BMW-27	Aqueous	SW7470A	Mercury Total: Aqueous	77266	1	09/20/16 03:02 PM	CETAC2_HG_160920A
	BMW-27	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	77250	1	09/22/16 01:28 PM	ICP-MS4_160922A
	BMW-27	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	77250	1	09/21/16 01:49 PM	ICP-MS4_160921B
1609136-02D	BMW-27	Aqueous	E300	Anions by IC method - Water	77226	10	09/15/16 02:41 PM	IC3_160915A
	BMW-27	Aqueous	E300	Anions by IC method - Water	77226	1	09/15/16 12:48 PM	IC3_160915A
	BMW-27	Aqueous	M4500-H+ B	pH	77247	1	09/19/16 10:07 AM	TITRATOR_160919A
	BMW-27	Aqueous	M2540C	Total Dissolved Solids	77252	1	09/20/16 08:41 AM	WC_160919A

DHL Analytical, Inc.

Date: *21-Oct-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	BMW-26
Project:	A-1 Landfill (Luminant)	**Lab ID:**	1609136-01
Project No:	5164-B	**Collection Date:**	09/13/16 12:30 PM
Lab Order:	1609136	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **RO**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	09/20/16 03:00 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **CVD**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	09/21/16 01:46 PM
Arsenic	0.0170	0.00200	0.00500		mg/L	1	09/21/16 01:46 PM
Barium	0.0425	0.00300	0.0100		mg/L	1	09/21/16 01:46 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	09/21/16 01:46 PM
Boron	0.457	0.0100	0.0300		mg/L	1	09/22/16 01:26 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	09/21/16 01:46 PM
Calcium	234	0.100	0.300		mg/L	1	09/21/16 01:46 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	09/21/16 01:46 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	09/21/16 01:46 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	09/21/16 01:46 PM
Lithium	0.0944	0.00500	0.0100		mg/L	1	09/21/16 01:46 PM
Molybdenum	0.00215	0.00200	0.00500	J	mg/L	1	09/21/16 01:46 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	09/21/16 01:46 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	09/21/16 01:46 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	97.8	3.00	10.0		mg/L	10	09/15/16 02:20 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	09/15/16 12:28 PM
Sulfate	671	10.0	30.0		mg/L	10	09/15/16 02:20 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	7.16	0	0		pH Units@19.5℃	1	09/19/16 10:04 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	2120	50.0	50.0		mg/L	1	09/20/16 08:41 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *21-Oct-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	BMW-27
Project:	A-1 Landfill (Luminant)	**Lab ID:**	1609136-02
Project No:	5164-B	**Collection Date:**	09/13/16 01:30 PM
Lab Order:	1609136	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **RO**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	09/20/16 03:02 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **CVD**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	09/21/16 01:49 PM
Arsenic	0.00536	0.00200	0.00500		mg/L	1	09/21/16 01:49 PM
Barium	0.0434	0.00300	0.0100		mg/L	1	09/21/16 01:49 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	09/21/16 01:49 PM
Boron	0.486	0.0100	0.0300		mg/L	1	09/22/16 01:28 PM
Cadmium	0.000615	0.000300	0.00100	J	mg/L	1	09/21/16 01:49 PM
Calcium	160	0.100	0.300		mg/L	1	09/21/16 01:49 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	09/21/16 01:49 PM
Cobalt	0.150	0.00300	0.00500		mg/L	1	09/21/16 01:49 PM
Lead	0.000432	0.000300	0.00100	J	mg/L	1	09/21/16 01:49 PM
Lithium	0.0541	0.00500	0.0100		mg/L	1	09/21/16 01:49 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	09/21/16 01:49 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	09/21/16 01:49 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	09/21/16 01:49 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	133	3.00	10.0		mg/L	10	09/15/16 02:41 PM
Fluoride	0.668	0.100	0.400		mg/L	1	09/15/16 12:48 PM
Sulfate	1150	10.0	30.0		mg/L	10	09/15/16 02:41 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.49	0	0		pH Units@19.8℃	1	09/19/16 10:07 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	2750	50.0	50.0		mg/L	1	09/20/16 08:41 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT: Pastor, Behling & Wheeler
Work Order: 1609136
Project: A-1 Landfill (Luminant)

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_160920A

The QC data in batch 77266 applies to the following samples: 1609136-01A, 1609136-02A

Sample ID	**MB-77266**	Batch ID:	**77266**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**CETAC2_HG_160920A**	Analysis Date:	**9/20/2016 2:39:45 PM**	Prep Date:	**9/19/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.0000800	0.000200								

Sample ID	**LCS-77266**	Batch ID:	**77266**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**CETAC2_HG_160920A**	Analysis Date:	**9/20/2016 2:42:01 PM**	Prep Date:	**9/19/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00208	0.000200	0.00200	0	104	85	115			

Sample ID	**LCSD-77266**	Batch ID:	**77266**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**LCSD**	Run ID:	**CETAC2_HG_160920A**	Analysis Date:	**9/20/2016 2:44:17 PM**	Prep Date:	**9/19/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00201	0.000200	0.00200	0	101	85	115	3.42	15	

Sample ID	**1609137-01A MS**	Batch ID:	**77266**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**MS**	Run ID:	**CETAC2_HG_160920A**	Analysis Date:	**9/20/2016 2:53:21 PM**	Prep Date:	**9/19/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.000405	0.000200	0.00200	0	20.2	80	120			S

Sample ID	**1609137-01A MSD**	Batch ID:	**77266**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**MSD**	Run ID:	**CETAC2_HG_160920A**	Analysis Date:	**9/20/2016 2:55:36 PM**	Prep Date:	**9/19/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.000386	0.000200	0.00200	0	19.3	80	120	4.80	15	S

Sample ID	**1609150-01A SD**	Batch ID:	**77266**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**SD**	Run ID:	**CETAC2_HG_160920A**	Analysis Date:	**9/20/2016 3:28:38 PM**	Prep Date:	**9/19/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.000400	0.00100	0	0				0	10	

Sample ID	**1609150-01A PDS**	Batch ID:	**77266**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**PDS**	Run ID:	**CETAC2_HG_160920A**	Analysis Date:	**9/20/2016 3:30:55 PM**	Prep Date:	**9/19/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00242	0.000200	0.00250	0	96.8	85	115			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1609136
Project: A-1 Landfill (Luminant)

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_160920A

Sample ID	**ICV-160920**	Batch ID:	**R88218**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**ICV**	Run ID:	**CETAC2_HG_160920A**	Analysis Date:	**9/20/2016 2:35:11 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00391	0.000200	0.00400	0	97.8	90	110			

Sample ID	**CCV1-160920**	Batch ID:	**R88218**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**CETAC2_HG_160920A**	Analysis Date:	**9/20/2016 3:24:03 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00201	0.000200	0.00200	0	101	90	110			

Sample ID	**CCV2-160920**	Batch ID:	**R88218**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**CETAC2_HG_160920A**	Analysis Date:	**9/20/2016 3:40:01 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00200	0.000200	0.00200	0	100	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1609136
Project: A-1 Landfill (Luminant)

ANALYTICAL QC SUMMARY REPORT

RunID: **ICP-MS4_160921B**

The QC data in batch 77250 applies to the following samples: 1609136-01A, 1609136-02A

Sample ID **MB-77250** Batch ID: **77250** TestNo: **SW6020A** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_160921B** Analysis Date: **9/21/2016 1:22:00 PM** Prep Date: **9/19/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.000800	0.00250								
Arsenic	<0.00200	0.00500								
Barium	<0.00300	0.0100								
Beryllium	<0.000300	0.00100								
Boron	<0.0100	0.0300								
Cadmium	<0.000300	0.00100								
Calcium	<0.100	0.300								
Chromium	<0.00200	0.00500								
Cobalt	<0.00300	0.00500								
Lead	<0.000300	0.00100								
Lithium	<0.00500	0.0100								
Molybdenum	<0.00200	0.00500								
Selenium	<0.00200	0.00500								
Thallium	<0.000500	0.00150								

Sample ID **LCS-77250** Batch ID: **77250** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_160921B** Analysis Date: **9/21/2016 1:25:00 PM** Prep Date: **9/19/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.202	0.00250	0.200	0	101	80	120			
Arsenic	0.199	0.00500	0.200	0	99.4	80	120			
Barium	0.198	0.0100	0.200	0	99.1	80	120			
Beryllium	0.204	0.00100	0.200	0	102	80	120			
Boron	0.193	0.0300	0.200	0	96.4	80	120			
Cadmium	0.200	0.00100	0.200	0	100	80	120			
Calcium	4.92	0.300	5.00	0	98.3	80	120			
Chromium	0.205	0.00500	0.200	0	102	80	120			
Cobalt	0.201	0.00500	0.200	0	100	80	120			
Lead	0.195	0.00100	0.200	0	97.7	80	120			
Lithium	0.198	0.0100	0.200	0	99.0	80	120			
Molybdenum	0.196	0.00500	0.200	0	98.2	80	120			
Selenium	0.199	0.00500	0.200	0	99.3	80	120			
Thallium	0.194	0.00150	0.200	0	97.2	80	120			

Sample ID **LCSD-77250** Batch ID: **77250** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_160921B** Analysis Date: **9/21/2016 1:28:00 PM** Prep Date: **9/19/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.203	0.00250	0.200	0	101	80	120	0.425	15	
Arsenic	0.199	0.00500	0.200	0	99.5	80	120	0.167	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1609136
Project: A-1 Landfill (Luminant)

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160921B

Sample ID **LCSD-77250**	Batch ID: **77250**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCSD**	Run ID: **ICP-MS4_160921B**	Analysis Date: **9/21/2016 1:28:00 PM**	Prep Date: **9/19/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.200	0.0100	0.200	0	99.9	80	120	0.820	15	
Beryllium	0.204	0.00100	0.200	0	102	80	120	0.145	15	
Boron	0.190	0.0300	0.200	0	95.0	80	120	1.48	15	
Cadmium	0.199	0.00100	0.200	0	99.6	80	120	0.551	15	
Calcium	4.88	0.300	5.00	0	97.7	80	120	0.672	15	
Chromium	0.204	0.00500	0.200	0	102	80	120	0.533	15	
Cobalt	0.202	0.00500	0.200	0	101	80	120	0.851	15	
Lead	0.196	0.00100	0.200	0	98.1	80	120	0.374	15	
Lithium	0.198	0.0100	0.200	0	99.0	80	120	0.053	15	
Molybdenum	0.197	0.00500	0.200	0	98.6	80	120	0.406	15	
Selenium	0.198	0.00500	0.200	0	99.2	80	120	0.083	15	
Thallium	0.194	0.00150	0.200	0	97.0	80	120	0.207	15	

Sample ID **1609148-25B PDS**	Batch ID: **77250**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_160921B**	Analysis Date: **9/21/2016 2:11:00 PM**	Prep Date: **9/19/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.208	0.00250	0.200	0	104	80	120			
Arsenic	0.200	0.00500	0.200	0.00278	98.6	80	120			
Barium	0.338	0.0100	0.200	0.148	95.0	80	120			
Beryllium	0.199	0.00100	0.200	0	99.4	80	120			
Boron	0.572	0.0300	0.200	0.361	105	80	120			
Cadmium	0.190	0.00100	0.200	0	95.1	80	120			
Calcium	97.9	0.300	5.00	98.7	-16.6	80	120			S
Chromium	0.205	0.00500	0.200	0	103	80	120			
Cobalt	0.196	0.00500	0.200	0	98.2	80	120			
Lead	0.200	0.00100	0.200	0	99.8	80	120			
Lithium	0.259	0.0100	0.200	0.0733	93.0	80	120			
Molybdenum	0.200	0.00500	0.200	0.0112	94.4	80	120			
Selenium	0.198	0.00500	0.200	0	99.1	80	120			
Thallium	0.198	0.00150	0.200	0	99.1	80	120			

Sample ID **1609148-25B MS**	Batch ID: **77250**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS4_160921B**	Analysis Date: **9/21/2016 2:14:00 PM**	Prep Date: **9/19/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.205	0.00250	0.200	0	102	80	120			
Arsenic	0.202	0.00500	0.200	0.00278	99.7	80	120			
Barium	0.349	0.0100	0.200	0.148	100	80	120			
Beryllium	0.196	0.00100	0.200	0	98.0	80	120			
Boron	0.597	0.0300	0.200	0.361	118	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160921B

Sample ID **1609148-25B MS** Batch ID: **77250** TestNo: **SW6020A** Units: **mg/L**
SampType: **MS** Run ID: **ICP-MS4_160921B** Analysis Date: **9/21/2016 2:14:00 PM** Prep Date: **9/19/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cadmium	0.196	0.00100	0.200	0	97.9	80	120			
Calcium	101	0.300	5.00	98.7	52.8	80	120			S
Chromium	0.200	0.00500	0.200	0	100	80	120			
Cobalt	0.195	0.00500	0.200	0	97.5	80	120			
Lead	0.197	0.00100	0.200	0	98.4	80	120			
Lithium	0.271	0.0100	0.200	0.0733	98.9	80	120			
Molybdenum	0.209	0.00500	0.200	0.0112	98.7	80	120			
Selenium	0.198	0.00500	0.200	0	98.9	80	120			
Thallium	0.196	0.00150	0.200	0	97.8	80	120			

Sample ID **1609148-25B MSD** Batch ID: **77250** TestNo: **SW6020A** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS4_160921B** Analysis Date: **9/21/2016 2:17:00 PM** Prep Date: **9/19/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.212	0.00250	0.200	0	106	80	120	3.52	15	
Arsenic	0.207	0.00500	0.200	0.00278	102	80	120	2.48	15	
Barium	0.359	0.0100	0.200	0.148	105	80	120	2.90	15	
Beryllium	0.204	0.00100	0.200	0	102	80	120	4.05	15	
Boron	0.606	0.0300	0.200	0.361	122	80	120	1.37	15	S
Cadmium	0.202	0.00100	0.200	0	101	80	120	3.14	15	
Calcium	103	0.300	5.00	98.7	82.9	80	120	1.47	15	
Chromium	0.205	0.00500	0.200	0	102	80	120	2.26	15	
Cobalt	0.199	0.00500	0.200	0	99.6	80	120	2.17	15	
Lead	0.204	0.00100	0.200	0	102	80	120	3.36	15	
Lithium	0.273	0.0100	0.200	0.0733	99.9	80	120	0.792	15	
Molybdenum	0.216	0.00500	0.200	0.0112	102	80	120	3.52	15	
Selenium	0.202	0.00500	0.200	0	101	80	120	2.14	15	
Thallium	0.202	0.00150	0.200	0	101	80	120	3.26	15	

Sample ID **1609148-25B SD** Batch ID: **77250** TestNo: **SW6020A** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS4_160921B** Analysis Date: **9/21/2016 2:56:00 PM** Prep Date: **9/19/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.00400	0.0125	0	0				0	10	
Arsenic	<0.0100	0.0250	0	0.00278				0	10	
Barium	0.151	0.0500	0	0.148				1.82	10	
Beryllium	<0.00150	0.00500	0	0				0	10	
Boron	0.525	0.150	0	0.361				36.9	10	R
Cadmium	<0.00150	0.00500	0	0				0	10	
Calcium	99.7	1.50	0	98.7				0.996	10	
Chromium	<0.0100	0.0250	0	0				0	10	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1609136
Project: A-1 Landfill (Luminant)

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160921B

Sample ID **1609148-25B SD**	Batch ID: **77250**	TestNo: **SW6020A**	Units: **mg/L**		
SampType: **SD**	Run ID: **ICP-MS4_160921B**	Analysis Date: **9/21/2016 2:56:00 PM**	Prep Date: **9/19/2016**		

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cobalt	<0.0150	0.0250	0	0				0	10	
Lead	<0.00150	0.00500	0	0				0	10	
Lithium	0.0799	0.0500	0	0.0733				8.52	10	
Molybdenum	0.0122	0.0250	0	0.0112				8.27	10	
Selenium	<0.0100	0.0250	0	0				0	10	
Thallium	<0.00250	0.00750	0	0				0	10	

Qualifiers:

B	Analyte detected in the associated Method Blank
J	Analyte detected between MDL and RL
ND	Not Detected at the Method Detection Limit
RL	Reporting Limit
J	Analyte detected between SDL and RL
DF	Dilution Factor
MDL	Method Detection Limit
R	RPD outside accepted control limits
S	Spike Recovery outside control limits
N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1609136
Project: A-1 Landfill (Luminant)

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160921B

Sample ID **ICV-160921**	Batch ID: **R88235**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_160921B**	Analysis Date: **9/21/2016 1:03:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.105	0.00250	0.100	0	105	90	110			
Arsenic	0.0993	0.00500	0.100	0	99.3	90	110			
Barium	0.101	0.0100	0.100	0	101	90	110			
Beryllium	0.101	0.00100	0.100	0	101	90	110			
Boron	0.101	0.0300	0.100	0	101	90	110			
Cadmium	0.0997	0.00100	0.100	0	99.7	90	110			
Calcium	2.47	0.300	2.50	0	98.9	90	110			
Chromium	0.106	0.00500	0.100	0	106	90	110			
Cobalt	0.102	0.00500	0.100	0	102	90	110			
Lead	0.0985	0.00100	0.100	0	98.5	90	110			
Lithium	0.0966	0.0100	0.100	0	96.6	90	110			
Molybdenum	0.0967	0.00500	0.100	0	96.7	90	110			
Selenium	0.101	0.00500	0.100	0	101	90	110			
Thallium	0.0956	0.00150	0.100	0	95.6	90	110			

Sample ID **LCVL-160921**	Batch ID: **R88235**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160921B**	Analysis Date: **9/21/2016 1:18:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00204	0.00250	0.00200	0	102	70	130			
Arsenic	0.00518	0.00500	0.00500	0	104	70	130			
Barium	0.00517	0.0100	0.00500	0	103	70	130			
Beryllium	0.000966	0.00100	0.00100	0	96.6	70	130			
Boron	0.0245	0.0300	0.0200	0	122	70	130			
Cadmium	0.000994	0.00100	0.00100	0	99.4	70	130			
Calcium	0.0993	0.300	0.100	0	99.3	70	130			
Chromium	0.00533	0.00500	0.00500	0	107	70	130			
Cobalt	0.00525	0.00500	0.00500	0	105	70	130			
Lead	0.00101	0.00100	0.00100	0	101	70	130			
Lithium	0.0104	0.0100	0.0100	0	104	70	130			
Molybdenum	0.00495	0.00500	0.00500	0	99.1	70	130			
Selenium	0.00520	0.00500	0.00500	0	104	70	130			
Thallium	0.000979	0.00150	0.00100	0	97.9	70	130			

Sample ID **LCVL1-160921**	Batch ID: **R88235**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160921B**	Analysis Date: **9/21/2016 4:48:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00210	0.00250	0.00200	0	105	70	130			
Arsenic	0.00506	0.00500	0.00500	0	101	70	130			
Barium	0.00525	0.0100	0.00500	0	105	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1609136
Project: A-1 Landfill (Luminant)

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160921B

Sample ID **LCVL1-160921** Batch ID: **R88235** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_160921B** Analysis Date: **9/21/2016 4:48:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.00101	0.00100	0.00100	0	101	70	130			
Boron	0.0248	0.0300	0.0200	0	124	70	130			
Cadmium	0.00105	0.00100	0.00100	0	105	70	130			
Calcium	0.101	0.300	0.100	0	101	70	130			
Chromium	0.00522	0.00500	0.00500	0	104	70	130			
Cobalt	0.00513	0.00500	0.00500	0	103	70	130			
Lead	0.000939	0.00100	0.00100	0	93.9	70	130			
Lithium	0.0104	0.0100	0.0100	0	104	70	130			
Molybdenum	0.00487	0.00500	0.00500	0	97.4	70	130			
Selenium	0.00540	0.00500	0.00500	0	108	70	130			
Thallium	0.000966	0.00150	0.00100	0	96.6	70	130			

Sample ID **CCV1-160921** Batch ID: **R88235** TestNo: **SW6020A** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_160921B** Analysis Date: **9/21/2016 3:16:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.203	0.00250	0.200	0	101	90	110			
Arsenic	0.203	0.00500	0.200	0	101	90	110			
Barium	0.205	0.0100	0.200	0	103	90	110			
Beryllium	0.205	0.00100	0.200	0	103	90	110			
Boron	0.213	0.0300	0.200	0	107	90	110			
Cadmium	0.201	0.00100	0.200	0	101	90	110			
Calcium	5.01	0.300	5.00	0	100	90	110			
Chromium	0.209	0.00500	0.200	0	104	90	110			
Cobalt	0.206	0.00500	0.200	0	103	90	110			
Lead	0.201	0.00100	0.200	0	100	90	110			
Lithium	0.207	0.0100	0.200	0	104	90	110			
Molybdenum	0.199	0.00500	0.200	0	99.7	90	110			
Selenium	0.205	0.00500	0.200	0	102	90	110			
Thallium	0.199	0.00150	0.200	0	99.6	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1609136
Project: A-1 Landfill (Luminant)

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160922A

Sample ID **ICV-160922**	Batch ID: **R88233**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_160922A**	Analysis Date: **9/22/2016 1:04:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0941	0.0300	0.100	0	94.1	90	110			

Sample ID **LCVL-160922**	Batch ID: **R88233**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160922A**	Analysis Date: **9/22/2016 1:10:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0236	0.0300	0.0200	0	118	70	130			

Sample ID **CCV1-160922**	Batch ID: **R88233**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160922A**	Analysis Date: **9/22/2016 1:31:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.215	0.0300	0.200	0	108	90	110			

Sample ID **LCVL1-160922**	Batch ID: **R88233**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160922A**	Analysis Date: **9/22/2016 1:50:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0210	0.0300	0.0200	0	105	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1609136
Project: A-1 Landfill (Luminant)

ANALYTICAL QC SUMMARY REPORT

RunID: IC3_160915A

The QC data in batch 77226 applies to the following samples: 1609136-01D, 1609136-02D

Sample ID **MB-77226** Batch ID: **77226** TestNo: **E300** Units: **mg/L**
SampType: **MBLK** Run ID: **IC3_160915A** Analysis Date: **9/15/2016 10:35:02 AM** Prep Date: **9/15/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00								
Fluoride	<0.100	0.400								
Sulfate	<1.00	3.00								

Sample ID **LCS-77226** Batch ID: **77226** TestNo: **E300** Units: **mg/L**
SampType: **LCS** Run ID: **IC3_160915A** Analysis Date: **9/15/2016 10:55:41 AM** Prep Date: **9/15/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.59	1.00	10.00	0	95.9	90	110			
Fluoride	4.19	0.400	4.000	0	105	90	110			
Sulfate	29.8	3.00	30.00	0	99.3	90	110			

Sample ID **LCSD-77226** Batch ID: **77226** TestNo: **E300** Units: **mg/L**
SampType: **LCSD** Run ID: **IC3_160915A** Analysis Date: **9/15/2016 11:16:20 AM** Prep Date: **9/15/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	11.1	1.00	10.00	0	111	90	110	14.7	20	S
Fluoride	4.09	0.400	4.000	0	102	90	110	2.34	20	
Sulfate	29.7	3.00	30.00	0	99.1	90	110	0.158	20	

Sample ID **1609141-01CMS** Batch ID: **77226** TestNo: **E300** Units: **mg/L**
SampType: **MS** Run ID: **IC3_160915A** Analysis Date: **9/15/2016 1:36:09 PM** Prep Date: **9/15/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	248	10.0	200.0	48.73	99.6	90	110			
Fluoride	195	4.00	200.0	0	97.5	90	110			
Sulfate	226	30.0	200.0	31.51	97.1	90	110			

Sample ID **1609141-01CMSD** Batch ID: **77226** TestNo: **E300** Units: **mg/L**
SampType: **MSD** Run ID: **IC3_160915A** Analysis Date: **9/15/2016 1:59:43 PM** Prep Date: **9/15/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	248	10.0	200.0	48.73	99.5	90	110	0.052	20	
Fluoride	196	4.00	200.0	0	98.1	90	110	0.593	20	
Sulfate	228	30.0	200.0	31.51	98.2	90	110	0.983	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1609136
Project: A-1 Landfill (Luminant)

ANALYTICAL QC SUMMARY REPORT

RunID: IC3_160915A

Sample ID **ICV-160915**	Batch ID: **R88157**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC3_160915A**	Analysis Date: **9/15/2016 9:49:31 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	24.6	1.00	25.00	0	98.4	90	110			
Fluoride	9.91	0.400	10.00	0	99.1	90	110			
Sulfate	74.1	3.00	75.00	0	98.8	90	110			

Sample ID **CCV1-160915**	Batch ID: **R88157**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC3_160915A**	Analysis Date: **9/15/2016 3:44:33 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.63	1.00	10.00	0	96.3	90	110			
Fluoride	4.03	0.400	4.000	0	101	90	110			
Sulfate	29.9	3.00	30.00	0	99.5	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1609136
Project: A-1 Landfill (Luminant)

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_160919A

The QC data in batch 77247 applies to the following samples: 1609136-01D, 1609136-02D

Sample ID **1609136-01D-DUP** Batch ID: **77247** TestNo: **M4500-H+ B** Units: **pH Units@19.7℃**
SampType: **DUP** Run ID: **TITRATOR_160919A** Analysis Date: **9/19/2016 10:05:00 AM** Prep Date: **9/19/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	7.19	0	0	7.160				0.418	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1609136
Project: A-1 Landfill (Luminant)

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_160919A

Sample ID **ICV-160919**	Batch ID: **R88188**	TestNo: **M4500-H+ B**	Units: **pH Units@21.9℃**
SampType: **ICV**	Run ID: **TITRATOR_160919A**	Analysis Date: **9/19/2016 9:10:00 AM**	Prep Date: **9/19/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	10.0	0	10.00	0	100	99	101			

Sample ID **CCV1-160919**	Batch ID: **R88188**	TestNo: **M4500-H+ B**	Units: **pH Units@21.5℃**
SampType: **CCV**	Run ID: **TITRATOR_160919A**	Analysis Date: **9/19/2016 10:13:00 AM**	Prep Date: **9/19/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	7.06	0	7.000	0	101	97.1	102.9			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler

Work Order: 1609136

Project: A-1 Landfill (Luminant)

ANALYTICAL QC SUMMARY REPORT

RunID: WC_160919A

The QC data in batch 77252 applies to the following samples: 1609136-01D, 1609136-02D

Sample ID	**MB-77252**	Batch ID:	**77252**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**WC_160919A**	Analysis Date:	**9/20/2016 8:41:00 AM**	Prep Date:	**9/19/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	<10.0	10.0								

Sample ID	**LCS-77252**	Batch ID:	**77252**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**WC_160919A**	Analysis Date:	**9/20/2016 8:41:00 AM**	Prep Date:	**9/19/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	739	10.0	745.6	0	99.1	90	113			

Sample ID	**1609137-01B-DUP**	Batch ID:	**77252**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**DUP**	Run ID:	**WC_160919A**	Analysis Date:	**9/20/2016 8:41:00 AM**	Prep Date:	**9/19/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	5060	50.0	0	4905				3.01	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

Case Narrative

Lab No: 20160901

This report contains the analytical results for the 2 sample(s) received under chain of custody by ESC Lab Sciences on 9/19/2016 3:40:01 PM. These samples are associated with your 1609136 project.

The analytical results included in this report meet all applicable quality control procedure requirements except as noted below:

The test results in this report meet all NELAC requirements unless noted below:

This report shall not be reproduced, except in full, without the written approval of ESC Lab Sciences.

All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client.

Results have been reviewed by the Director of Radiochemistry or their designees and is approved for release.

Observations / Nonconformances

The LCS and MS/D were not spiked for the Radium-228 analysis batch R3860 containing samples 20160901-01 and -02. Barium for the batch was discarded before recovery so all samples were set to be re-prepped. Samples 20160901-01 and -02 were consumed during the first analysis therefore no sample remained to re-prep.
Average Barium recovery for the last three months for Ra-228 waters prepped under normal conditions is approximately 108%, with no recovery lower than 84.2%.
Conservatively, the Barium recovery for 20160901-01 and -02 has been set to 75.0%. Even with this conservative high bias, sample results were still 5X lower than the reporting limit.
The results of samples in the batch with sufficient volume to be re-prepped were confirmed with the initial run using 75.0% Barium yield.

Client	:	DHL Analytical, Inc.
Client Project	:	1609136
Lab Number	:	20160901
Date Reported	:	10/21/16
Date Received	:	09/19/16
Page Number	:	2 of 2

Analytical Report

	Method	Result	DL	Units	Qual	Prep Date	Analysis Date	Analyst
Lab ID : **20160901-01**								
Client ID : **BMW-26**								
Date Sampled : **9/13/2016 12:30:00 PM**								
Matrix : **NPW**								
Radiochemical Analyses								
Combined Radium		1.06 +/- 0.731	1.16	pCi/l				
Radium-226	SM 7500 Ra B M*	0.154 +/- 0.113	0.137	pCi/l		09/28/16	10/02/16	AK
Radium-228	EPA 904*/9320*	0.908 +/- 0.618	1.02	pCi/l		09/22/16	09/26/16	JR
Lab ID : **20160901-02**								
Client ID : **BMW-27**								
Date Sampled : **9/13/2016 1:30:00 PM**								
Matrix : **NPW**								
Radiochemical Analyses								
Combined Radium		0.981 +/- 0.821	1.29	pCi/l				
Radium-226	SM 7500 Ra B M*	0.308 +/- 0.150	0.151	pCi/l		09/28/16	10/02/16	AK
Radium-228	EPA 904*/9320*	0.673 +/- 0.671	1.14	pCi/l		09/22/16	09/26/16	JR

QC Report

Parameter	Blank	LCS %REC	LCSD %REC	LCSD RPD	DUP RPD	RER, NAD or DER	MS %REC	MSD %REC	MSD RPD	Batch ID
Radium-226	0.004	93.0			NC	0.365	119.0			R1138
Radium-228	-0.242	-1.9			NC	0.069	-7.2	-9.8		R3860

Lab Approval:

Ron Eidson
Director of Radiochemistry

*NELAC Certified Parameter BDL = Below Detection Limit

DHL Analytical, Inc.
2300 Double Creek Drive
Round Rock, TX 78664
TEL: *(512) 388-8222* FAX: *(512) 388-8229*

CHAIN-OF-CUSTODY RECORD

Work Order: 1609136

Subcontractor:

ESC Laboratory
311 North Aspen
Broken Arrow, Oklahoma 74012

TEL: (918) 251-2515
FAX:
Acct #: DHLRRTX

15-Sep-16

Sample Id	Matrix	DHL#	Date Collected	Bottle Type	Requested Tests					
					E904.0	SM7500Ra-B M				
BMW-26	Aqueous	-01B	09/13/16 12:30 PM	500HDPEHNO3	1					
BMW-26	Aqueous	-01C	09/13/16 12:30 PM	500HDPEHNO3		1				
BMW-27	Aqueous	-02B	09/13/16 01:30 PM	500HDPEHNO3	1					
BMW-27	Aqueous	-02C	09/13/16 01:30 PM	500HDPEHNO3		1				

General Comments:

Please analyze these samples with Normal Turnaround Time.
Report RA-226, Ra-228 & Combined per Specs DHLRRTX033116S.
Quality Control Package Needed: Standard - NELAC Rad Test compliant
Email to cac@dhlanalytical.com & dupont@dhlanalytical.com

20160901
L860955

		Date/Time			Date/Time
Relinquished by:		9/15/16 1730	Received by:		9/15/16 1730
Relinquished by:			Received by:		9/19/16 1540

SAMPLE LOGIN

Date Received: *9/19/2016 3:40:01* **Lab Number:** 20160901 **Due:** 10/17/2016

Sample Number	Client Sample ID	Matrix	Date Sampled	Container Type	Container Size	Preservation	Preserved Upon Receipt	Custody Seal	Seal Intact
20160901-01 B	BMW-26	NPW	09/13/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
20160901-01 A	BMW-26	NPW	09/13/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160901-02 B	BMW-27	NPW	09/13/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
20160901-02 A	BMW-27	NPW	09/13/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						

CONTAINER INSPECTION

 # Coolers BOX **Custody Seals Broken** Ø **Temperature:** Amb **Ice** **Radiation Survey:** <300 cpm

SAMPLE INSPECTION

Sample Seal Broken Ø **Chain of Custody Record** ☑ **Labels in Tact** ☑ **Radiation Survey Complete** N/A

Anomalies

Inspected By: Amber Taylor **DATE** 9/19/16

QA or Designee Review: Raymond Thomas **DATE** 09/19/16

Sample Custodian Review: [illegible] **DATE** 9/19/16

Project Notes:

November 18, 2016

Will Vienne
Pastor, Behling & Wheeler
2201 Double Creek Dr #4004
Round Rock, Texas 78664
TEL: (512) 671-3434
FAX (512) 671-3446

Order No.: 1610230

RE: MLSES A1 Area Landfill

Dear Will Vienne:

DHL Analytical, Inc. received 7 sample(s) on 10/27/2016 for the analyses presented in the following report.

There were no problems with the analyses and all data met requirements of NELAC except where noted in the Case Narrative. All non-NELAC methods will be identified accordingly in the case narrative and all estimated uncertainties of test results are within method or EPA specifications.

If you have any questions regarding these tests results, please feel free to call. Thank you for using DHL Analytical.

Sincerely,

John DuPont
General Manager

This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211-16-17

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Subcontract Report 1610230 ..... **48**

DHL ANALYTICAL
2300 Double Creek Dr. ■ Round Rock, TX 78664
Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

nelap

№ 72942

CHAIN-OF-CUSTODY

CLIENT: PBW
ADDRESS: 2201 DOUBLE CREEK DR ROUND ROCK, TX 78664
PHONE: 512-671-3434 FAX/E-MAIL: 512-671-3446
DATA REPORTED TO: WILL VIENNE
ADDITIONAL REPORT COPIES TO:

DATE: 10-26-16 PAGE 1 OF 1
PO #: 5164-B DHL WORK ORDER #: 1610230
PROJECT LOCATION OR NAME: MLSES - A1 AREA LANDFILL
CLENT PROJECT #: 5164-B COLLECTOR: J. BRAYTON

Authorize 5% surcharge for TRRP Report? ☐ Yes ☐ No

S=SOIL W=WATER A=AIR L=LIQUID SE=SEDIMENT P=PAINT SL=SLUDGE O=OTHER SO=SOLID

ANALYSES: BTEX ☐ MTBE ☐ [METHOD 8021] TPH 1005 ☐ TPH 1006 ☐ HOLD 1006 ☐ GRO [METHOD 8015] ☐ DRO [METHOD 8105] ☐ VOC 8260 ☐ VOC 624 ☐ VOC 8260/5035 ☐ SVOC 8270 ☐ PAH 8270 ☐ HOLD PAH ☐ SVOC 625 ☐ 8270 PEST ☐ 625 PEST/PCB ☐ 608 PCB ☐ 8270 PCB ☐ 8270 O-P PEST ☐ 8082 PCB ☐ 8270 PCB ☐ 8321 HERB ☐ T PHOS, AMMONIA ☐ METALS 6020 ☐ METALS 200.8 ☐ DISS. METALS ☐ RCRA ☐ TX11 ☐ PH ☐ HEX CHROM ☐ ALKALINITY ☐ COD ☐ CHLORIDE ☐ ANIONS ☐ TCLP-SVOC ☐ VOC ☐ PEST ☐ HERB ☐ TCLP-METALS ☐ RCRA 8 ☐ TX-11 ☐ Pb ☐ RCI ☐ FLASHPOINT ☐ DGAS ☐ TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐ CCR SAMPLES

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	HCl	HNO_3	H_2SO_4 ☒ NaOH ☐	ICE	UNPRESERVED	CCR SAMPLES	FIELD NOTES
BMW-24	01	10-25-16	1420	W	P	4		X	X	X	X	X	
BMW-23	02	↓	1510	W	P	4		X	X	X	X	X	
BMW-22	03	↓	1605	W	P	4		X	X	X	X	X	
BMW-20	04	10-26-16	0815	W	P	4		X	X	X	X	X	
BMW-21	05	↓	0910	W	P	4		X	X	X	X	X	
BMW-11AR	06	↓	1015	W	P	4		X	X	X	X	X	
BMW-19	07	↓	1120	W	P	4		X	X	X	X	X	

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
[signature]	10-26-16 1730	Fedex
Fedex	10-27-16 9:25	[signature]

TURN AROUND TIME
RUSH ☐ CALL FIRST
1 DAY ☐ CALL FIRST
2 DAY ☐
NORMAL ☒
OTHER ☐

LABORATORY USE ONLY:
RECEIVING TEMP: 1.6 THERM #: 78
CUSTODY SEALS: ☐ BROKEN ☒ INTACT ☒ NOT USED
CARRIER: ☐ LONE STAR ☒ FEDEX ☐ UPS ☐ OTHER
☐ COURIER DELIVERY
☐ HAND DELIVERED

☐ DHL DISPOSAL @ $5.00 each ☐ Return

John Dupont

From: Sara Taube [Sara.Taube@pbwtic.com]
Sent: Wednesday, July 22, 2015 12:05 PM
To: John Dupont
Subject: CCR Appendix III and IV
Follow Up Flag: Follow up
Flag Status: Completed

Hi John,

Here are the Appendix III and Appendix IV constituents that we will need to have analyzed under the CCR Rule.

Appendix III
Boron
Calcium
Chloride
Fluoride
pH
sulfate
TDS

Appendix IV
Antimony
Arsenic
Barium
Beryllium
Cadmium
Chromium
Cobalt
Fluoride
Lead
Lithium
Mercury
Molybdenum
Selenium
Thallium
Radium 226 and 228

We are looking to have approximately 74 wells sampled 8 times over the course of the next two years. Please let me know if there is any more information you might need.

Cheers,

Sara

10/26/2015

ORIGIN ID:GGGA (512) 671-3434
JOHN BRAYTON
2201 DOUBLE CREEK DR
2201 DOUBLE CREEK DR STE 4004
ROUND ROCK, TX 78664
UNITED STATES US
SHIP DATE: 26OCT16
ACTWGT: 61.70 LB
CAD: 006994167/SSFE1722
DIMS: 23x13x14 IN
BILL THIRD PARTY
TO DHL
2300 DOUBLE CREEK DR
ROUND ROCK TX 78664
(512) 388-8222
REF:
INV:
PO:
DEPT:
FedEx
Express
THU - 27 OCT 10:30A
TRK# 0201 7844 6998 1611
PRIORITY OVERNIGHT
A8 BSMA
78664
TX-US AUS

DHL Analytical, Inc.

Sample Receipt Checklist

Client Name Pastor, Behling & Wheeler | Date Received: 10/27/2016

Work Order Number 1610230 | Received by JT

Checklist completed by: _____ 10/27/2016 (Signature / Date) | Reviewed by _____ 10/27/2016 (Initials / Date)

Carrier name FedEx 1day

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	1.6 °C
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH<2 acceptable upon receipt?	Yes ☑	No ☐	NA ☐ LOT # 8086
	Adjusted? N-2		Checked by _____
Water - ph>9 (S) or ph>12 (CN) acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted? _____		Checked by _____

Any No response must be detailed in the comments section below.

Client contacted _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments: _____

Corrective Action _____

DHL Analytical, Inc. **Date:** *18-Nov-16*

CLIENT: Pastor, Behling & Wheeler
Project: MLSES A1 Area Landfill
Lab Order: 1610230

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Method SW6020A - Metals Analysis
Method SW7470A - Mercury Analysis
Method E300 - Anions Analysis
Method M4500-H+ B - pH of a Water Analysis
Method M2540C - TDS Analysis
Sub-contract - Radium-228 and Radium-226 analyses by methods E904/9320 and SM 7500 Ra B M. Analyzed at ESC Lab Sciences.

LOG IN

The samples were received and log-in performed on 10/27/16. A total of 7 samples were received. The samples arrived in good condition and were properly packaged.

METALS ANALYSIS

For Metals analysis performed on 11/4/16 the matrix spike and matrix spike duplicate recoveries were above control limits for a total of three analytes. In addition, the matrix spike and matrix spike duplicate had the RPD above control limits for Antimony and Boron. These are flagged accordingly in the QC summary report. The sample selected for the matrix spike and matrix spike duplicate was not from this work order. The LCS was within control limits for these analytes. No further corrective actions were taken.

For Metals analysis performed on 11/8/16 the RPD for the serial dilution was above control limits for Boron. This is flagged accordingly. The PDS was within control limits for this analyte. No further corrective actions were taken.

DHL Analytical, Inc.

Date: *18-Nov-16*

CLIENT: Pastor, Behling & Wheeler
Project: MLSES A1 Area Landfill
Lab Order: 1610230

Work Order Sample Summary

Lab Smp ID	Client Sample ID	Tag Number	Date Collected	Date Recved
1610230-01	BMW-24		10/25/16 02:20 PM	10/27/2016
1610230-02	BMW-23		10/25/16 03:10 PM	10/27/2016
1610230-03	BMW-22		10/25/16 04:05 PM	10/27/2016
1610230-04	BMW-20		10/26/16 08:15 AM	10/27/2016
1610230-05	BMW-21		10/26/16 09:10 AM	10/27/2016
1610230-06	BMW-11AR		10/26/16 10:15 AM	10/27/2016
1610230-07	BMW-19		10/26/16 11:20 AM	10/27/2016

Lab Order: 1610230
Client: Pastor, Behling & Wheeler
Project: MLSES A1 Area Landfill

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1610230-01A	BMW-24	10/25/16 02:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	11/03/16 08:39 AM	77776
	BMW-24	10/25/16 02:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	11/03/16 08:39 AM	77776
	BMW-24	10/25/16 02:20 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	11/01/16 11:40 AM	77749
1610230-01D	BMW-24	10/25/16 02:20 PM	Aqueous	E300	Anion Preparation	10/31/16 08:51 AM	77728
	BMW-24	10/25/16 02:20 PM	Aqueous	E300	Anion Preparation	10/31/16 08:51 AM	77728
	BMW-24	10/25/16 02:20 PM	Aqueous	M4500-H+ B	pH Preparation	10/27/16 10:27 AM	77694
	BMW-24	10/25/16 02:20 PM	Aqueous	M2540C	TDS Preparation	10/31/16 02:26 PM	77739
1610230-02A	BMW-23	10/25/16 03:10 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	11/03/16 08:39 AM	77776
	BMW-23	10/25/16 03:10 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	11/03/16 08:39 AM	77776
	BMW-23	10/25/16 03:10 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	11/01/16 11:40 AM	77749
1610230-02D	BMW-23	10/25/16 03:10 PM	Aqueous	E300	Anion Preparation	10/31/16 08:51 AM	77728
	BMW-23	10/25/16 03:10 PM	Aqueous	E300	Anion Preparation	10/31/16 08:51 AM	77728
	BMW-23	10/25/16 03:10 PM	Aqueous	M4500-H+ B	pH Preparation	10/27/16 10:27 AM	77694
	BMW-23	10/25/16 03:10 PM	Aqueous	M2540C	TDS Preparation	10/31/16 02:26 PM	77739
1610230-03A	BMW-22	10/25/16 04:05 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	11/03/16 08:39 AM	77776
	BMW-22	10/25/16 04:05 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	11/03/16 08:39 AM	77776
	BMW-22	10/25/16 04:05 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	11/01/16 11:40 AM	77749
1610230-03D	BMW-22	10/25/16 04:05 PM	Aqueous	E300	Anion Preparation	10/31/16 08:51 AM	77728
	BMW-22	10/25/16 04:05 PM	Aqueous	E300	Anion Preparation	10/31/16 08:51 AM	77728
	BMW-22	10/25/16 04:05 PM	Aqueous	M4500-H+ B	pH Preparation	10/27/16 10:27 AM	77694
	BMW-22	10/25/16 04:05 PM	Aqueous	M2540C	TDS Preparation	10/31/16 02:26 PM	77739
1610230-04A	BMW-20	10/26/16 08:15 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	11/03/16 08:39 AM	77776
	BMW-20	10/26/16 08:15 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	11/03/16 08:39 AM	77776
	BMW-20	10/26/16 08:15 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	11/01/16 11:40 AM	77749
1610230-04D	BMW-20	10/26/16 08:15 AM	Aqueous	E300	Anion Preparation	11/10/16 08:40 AM	77847
	BMW-20	10/26/16 08:15 AM	Aqueous	E300	Anion Preparation	11/10/16 08:40 AM	77847
	BMW-20	10/26/16 08:15 AM	Aqueous	E300	Anion Preparation	10/31/16 08:51 AM	77728
	BMW-20	10/26/16 08:15 AM	Aqueous	M4500-H+ B	pH Preparation	10/27/16 10:27 AM	77694

Lab Order: 1610230
Client: Pastor, Behling & Wheeler
Project: MLSES A1 Area Landfill

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1610230-04D	BMW-20	10/26/16 08:15 AM	Aqueous	M2540C	TDS Preparation	10/31/16 02:26 PM	77739
1610230-05A	BMW-21	10/26/16 09:10 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	11/03/16 08:39 AM	77776
	BMW-21	10/26/16 09:10 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	11/03/16 08:39 AM	77776
	BMW-21	10/26/16 09:10 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	11/02/16 10:55 AM	77769
1610230-05D	BMW-21	10/26/16 09:10 AM	Aqueous	E300	Anion Preparation	10/31/16 08:51 AM	77728
	BMW-21	10/26/16 09:10 AM	Aqueous	E300	Anion Preparation	10/31/16 08:51 AM	77728
	BMW-21	10/26/16 09:10 AM	Aqueous	M4500-H+ B	pH Preparation	10/27/16 10:27 AM	77694
	BMW-21	10/26/16 09:10 AM	Aqueous	M2540C	TDS Preparation	10/31/16 02:26 PM	77739
1610230-06A	BMW-11AR	10/26/16 10:15 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	11/03/16 08:39 AM	77776
	BMW-11AR	10/26/16 10:15 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	11/03/16 08:39 AM	77776
	BMW-11AR	10/26/16 10:15 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	11/02/16 10:55 AM	77769
1610230-06D	BMW-11AR	10/26/16 10:15 AM	Aqueous	E300	Anion Preparation	10/31/16 08:51 AM	77728
	BMW-11AR	10/26/16 10:15 AM	Aqueous	E300	Anion Preparation	10/31/16 08:51 AM	77728
	BMW-11AR	10/26/16 10:15 AM	Aqueous	M4500-H+ B	pH Preparation	10/27/16 10:27 AM	77694
	BMW-11AR	10/26/16 10:15 AM	Aqueous	M2540C	TDS Preparation	10/31/16 02:26 PM	77739
1610230-07A	BMW-19	10/26/16 11:20 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	11/03/16 08:39 AM	77776
	BMW-19	10/26/16 11:20 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	11/03/16 08:39 AM	77776
	BMW-19	10/26/16 11:20 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	11/02/16 10:55 AM	77769
1610230-07D	BMW-19	10/26/16 11:20 AM	Aqueous	E300	Anion Preparation	10/31/16 08:51 AM	77728
	BMW-19	10/26/16 11:20 AM	Aqueous	E300	Anion Preparation	10/31/16 08:51 AM	77728
	BMW-19	10/26/16 11:20 AM	Aqueous	M4500-H+ B	pH Preparation	10/27/16 10:27 AM	77694
	BMW-19	10/26/16 11:20 AM	Aqueous	M2540C	TDS Preparation	10/31/16 02:26 PM	77739

Lab Order: 1610230
Client: Pastor, Behling & Wheeler
Project: MLSES A1 Area Landfill

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1610230-01A	BMW-24	Aqueous	SW7470A	Mercury Total: Aqueous	77749	1	11/02/16 10:31 AM	CETAC2_HG_161102A
	BMW-24	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	77776	1	11/04/16 11:52 AM	ICP-MS4_161104A
	BMW-24	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	77776	5	11/04/16 02:08 PM	ICP-MS4_161104B
1610230-01D	BMW-24	Aqueous	E300	Anions by IC method - Water	77728	1	10/31/16 10:18 AM	IC2_161031A
	BMW-24	Aqueous	E300	Anions by IC method - Water	77728	100	10/31/16 01:05 PM	IC2_161031A
	BMW-24	Aqueous	M4500-H+ B	pH	77694	1	10/27/16 10:56 AM	TITRATOR_161027A
	BMW-24	Aqueous	M2540C	Total Dissolved Solids	77739	1	11/01/16 08:43 AM	WC_161031A
1610230-02A	BMW-23	Aqueous	SW7470A	Mercury Total: Aqueous	77749	1	11/02/16 10:33 AM	CETAC2_HG_161102A
	BMW-23	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	77776	10	11/04/16 11:54 AM	ICP-MS4_161104A
	BMW-23	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	77776	1	11/04/16 03:01 PM	ICP-MS4_161104B
1610230-02D	BMW-23	Aqueous	E300	Anions by IC method - Water	77728	100	10/31/16 01:19 PM	IC2_161031A
	BMW-23	Aqueous	E300	Anions by IC method - Water	77728	1	10/31/16 10:33 AM	IC2_161031A
	BMW-23	Aqueous	M4500-H+ B	pH	77694	1	10/27/16 10:59 AM	TITRATOR_161027A
	BMW-23	Aqueous	M2540C	Total Dissolved Solids	77739	1	11/01/16 08:43 AM	WC_161031A
1610230-03A	BMW-22	Aqueous	SW7470A	Mercury Total: Aqueous	77749	1	11/02/16 10:40 AM	CETAC2_HG_161102A
	BMW-22	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	77776	10	11/04/16 11:56 AM	ICP-MS4_161104A
	BMW-22	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	77776	1	11/04/16 03:03 PM	ICP-MS4_161104B
1610230-03D	BMW-22	Aqueous	E300	Anions by IC method - Water	77728	1	10/31/16 10:47 AM	IC2_161031A
	BMW-22	Aqueous	E300	Anions by IC method - Water	77728	100	10/31/16 01:34 PM	IC2_161031A
	BMW-22	Aqueous	M4500-H+ B	pH	77694	1	10/27/16 11:01 AM	TITRATOR_161027A
	BMW-22	Aqueous	M2540C	Total Dissolved Solids	77739	1	11/01/16 08:43 AM	WC_161031A
1610230-04A	BMW-20	Aqueous	SW7470A	Mercury Total: Aqueous	77749	1	11/02/16 10:42 AM	CETAC2_HG_161102A
	BMW-20	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	77776	1	11/04/16 11:58 AM	ICP-MS4_161104A
	BMW-20	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	77776	5	11/04/16 02:10 PM	ICP-MS4_161104B
1610230-04D	BMW-20	Aqueous	E300	Anions by IC method - Water	77847	1	11/10/16 10:06 AM	IC2_161110A
	BMW-20	Aqueous	E300	Anions by IC method - Water	77847	10	11/10/16 10:21 AM	IC2_161110A

Lab Order: 1610230
Client: Pastor, Behling & Wheeler
Project: MLSES A1 Area Landfill

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1610230-04D	BMW-20	Aqueous	E300	Anions by IC method - Water	77728	1	10/31/16 11:02 AM	IC2_161031A
	BMW-20	Aqueous	M4500-H+ B	pH	77694	1	10/27/16 11:03 AM	TITRATOR_161027A
	BMW-20	Aqueous	M2540C	Total Dissolved Solids	77739	1	11/01/16 08:43 AM	WC_161031A
1610230-05A	BMW-21	Aqueous	SW7470A	Mercury Total: Aqueous	77769	1	11/03/16 12:41 PM	CETAC2_HG_161103A
	BMW-21	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	77776	10	11/04/16 12:00 PM	ICP-MS4_161104A
	BMW-21	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	77776	1	11/04/16 03:05 PM	ICP-MS4_161104B
1610230-05D	BMW-21	Aqueous	E300	Anions by IC method - Water	77728	1	10/31/16 11:16 AM	IC2_161031A
	BMW-21	Aqueous	E300	Anions by IC method - Water	77728	100	10/31/16 01:49 PM	IC2_161031A
	BMW-21	Aqueous	M4500-H+ B	pH	77694	1	10/27/16 11:06 AM	TITRATOR_161027A
	BMW-21	Aqueous	M2540C	Total Dissolved Solids	77739	1	11/01/16 08:43 AM	WC_161031A
1610230-06A	BMW-11AR	Aqueous	SW7470A	Mercury Total: Aqueous	77769	1	11/03/16 12:18 PM	CETAC2_HG_161103A
	BMW-11AR	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	77776	1	11/04/16 12:02 PM	ICP-MS4_161104A
	BMW-11AR	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	77776	5	11/04/16 02:12 PM	ICP-MS4_161104B
1610230-06D	BMW-11AR	Aqueous	E300	Anions by IC method - Water	77728	1	10/31/16 11:31 AM	IC2_161031A
	BMW-11AR	Aqueous	E300	Anions by IC method - Water	77728	10	10/31/16 02:03 PM	IC2_161031A
	BMW-11AR	Aqueous	M4500-H+ B	pH	77694	1	10/27/16 11:07 AM	TITRATOR_161027A
	BMW-11AR	Aqueous	M2540C	Total Dissolved Solids	77739	1	11/01/16 08:43 AM	WC_161031A
1610230-07A	BMW-19	Aqueous	SW7470A	Mercury Total: Aqueous	77769	1	11/03/16 12:44 PM	CETAC2_HG_161103A
	BMW-19	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	77776	1	11/04/16 12:04 PM	ICP-MS4_161104A
	BMW-19	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	77776	5	11/04/16 03:57 PM	ICP-MS4_161104B
1610230-07D	BMW-19	Aqueous	E300	Anions by IC method - Water	77728	1	10/31/16 11:46 AM	IC2_161031A
	BMW-19	Aqueous	E300	Anions by IC method - Water	77728	100	10/31/16 02:23 PM	IC2_161031A
	BMW-19	Aqueous	M4500-H+ B	pH	77694	1	10/27/16 11:09 AM	TITRATOR_161027A
	BMW-19	Aqueous	M2540C	Total Dissolved Solids	77739	1	11/01/16 08:43 AM	WC_161031A

DHL Analytical, Inc.

Date: *18-Nov-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	BMW-24
Project:	MLSES A1 Area Landfill	**Lab ID:**	1610230-01
Project No:	5164-B	**Collection Date:**	10/25/16 02:20 PM
Lab Order:	1610230	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **RO**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	11/02/16 10:31 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **CVD**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	11/04/16 11:52 AM
Arsenic	0.00364	0.00200	0.00500	J	mg/L	1	11/04/16 11:52 AM
Barium	1.88	0.00300	0.0100		mg/L	1	11/04/16 11:52 AM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	11/04/16 11:52 AM
Boron	0.225	0.0100	0.0300		mg/L	1	11/04/16 11:52 AM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	11/04/16 11:52 AM
Calcium	59.2	0.500	1.50		mg/L	5	11/04/16 02:08 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	11/04/16 11:52 AM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	11/04/16 11:52 AM
Lead	<0.000300	0.000300	0.00100		mg/L	1	11/04/16 11:52 AM
Lithium	0.00767	0.00500	0.0100	J	mg/L	1	11/04/16 11:52 AM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	11/04/16 11:52 AM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	11/04/16 11:52 AM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	11/04/16 11:52 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	518	30.0	100		mg/L	100	10/31/16 01:05 PM
Fluoride	0.305	0.100	0.400	J	mg/L	1	10/31/16 10:18 AM
Sulfate	34.2	1.00	3.00		mg/L	1	10/31/16 10:18 AM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.45	0	0		pH Units@18.8℃	1	10/27/16 10:56 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	1490	50.0	50.0		mg/L	1	11/01/16 08:43 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *18-Nov-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	BMW-23
Project:	MLSES A1 Area Landfill	**Lab ID:**	1610230-02
Project No:	5164-B	**Collection Date:**	10/25/16 03:10 PM
Lab Order:	1610230	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **RO**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	11/02/16 10:33 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **CVD**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	11/04/16 03:01 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	11/04/16 03:01 PM
Barium	0.0437	0.00300	0.0100		mg/L	1	11/04/16 03:01 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	11/04/16 03:01 PM
Boron	1.22	0.100	0.300		mg/L	10	11/04/16 11:54 AM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	11/04/16 03:01 PM
Calcium	86.8	1.00	3.00		mg/L	10	11/04/16 11:54 AM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	11/04/16 03:01 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	11/04/16 03:01 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	11/04/16 03:01 PM
Lithium	0.0856	0.00500	0.0100		mg/L	1	11/04/16 03:01 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	11/04/16 03:01 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	11/04/16 03:01 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	11/04/16 03:01 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	219	30.0	100		mg/L	100	10/31/16 01:19 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	10/31/16 10:33 AM
Sulfate	467	100	300		mg/L	100	10/31/16 01:19 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.68	0	0		pH Units@19.3℃	1	10/27/16 10:59 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	1700	50.0	50.0		mg/L	1	11/01/16 08:43 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *18-Nov-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	BMW-22
Project:	MLSES A1 Area Landfill	**Lab ID:**	1610230-03
Project No:	5164-B	**Collection Date:**	10/25/16 04:05 PM
Lab Order:	1610230	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **RO**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	11/02/16 10:40 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **CVD**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	11/04/16 03:03 PM
Arsenic	0.00216	0.00200	0.00500	J	mg/L	1	11/04/16 03:03 PM
Barium	0.0645	0.00300	0.0100		mg/L	1	11/04/16 03:03 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	11/04/16 03:03 PM
Boron	3.38	0.100	0.300		mg/L	10	11/04/16 11:56 AM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	11/04/16 03:03 PM
Calcium	183	1.00	3.00		mg/L	10	11/04/16 11:56 AM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	11/04/16 03:03 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	11/04/16 03:03 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	11/04/16 03:03 PM
Lithium	0.0753	0.00500	0.0100		mg/L	1	11/04/16 03:03 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	11/04/16 03:03 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	11/04/16 03:03 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	11/04/16 03:03 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	241	30.0	100		mg/L	100	10/31/16 01:34 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	10/31/16 10:47 AM
Sulfate	803	100	300		mg/L	100	10/31/16 01:34 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.75	0	0		pH Units@19.3℃	1	10/27/16 11:01 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	2600	50.0	50.0		mg/L	1	11/01/16 08:43 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *18-Nov-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	BMW-20
Project:	MLSES A1 Area Landfill	**Lab ID:**	1610230-04
Project No:	5164-B	**Collection Date:**	10/26/16 08:15 AM
Lab Order:	1610230	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **RO**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	11/02/16 10:42 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **CVD**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	11/04/16 11:58 AM
Arsenic	0.00444	0.00200	0.00500	J	mg/L	1	11/04/16 11:58 AM
Barium	0.0421	0.00300	0.0100		mg/L	1	11/04/16 11:58 AM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	11/04/16 11:58 AM
Boron	0.113	0.0100	0.0300		mg/L	1	11/04/16 11:58 AM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	11/04/16 11:58 AM
Calcium	93.5	0.500	1.50		mg/L	5	11/04/16 02:10 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	11/04/16 11:58 AM
Cobalt	0.0786	0.00300	0.00500		mg/L	1	11/04/16 11:58 AM
Lead	<0.000300	0.000300	0.00100		mg/L	1	11/04/16 11:58 AM
Lithium	<0.00500	0.00500	0.0100		mg/L	1	11/04/16 11:58 AM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	11/04/16 11:58 AM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	11/04/16 11:58 AM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	11/04/16 11:58 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	48.2	0.300	1.00		mg/L	1	11/10/16 10:06 AM
Fluoride	<0.100	0.100	0.400		mg/L	1	11/10/16 10:06 AM
Sulfate	801	10.0	30.0		mg/L	10	11/10/16 10:21 AM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	5.69	0	0		pH Units@18.6℃	1	10/27/16 11:03 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	1610	50.0	50.0		mg/L	1	11/01/16 08:43 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *18-Nov-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	BMW-21
Project:	MLSES A1 Area Landfill	**Lab ID:**	1610230-05
Project No:	5164-B	**Collection Date:**	10/26/16 09:10 AM
Lab Order:	1610230	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **RO**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	11/03/16 12:41 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **CVD**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	11/04/16 03:05 PM
Arsenic	0.00370	0.00200	0.00500	J	mg/L	1	11/04/16 03:05 PM
Barium	0.0443	0.00300	0.0100		mg/L	1	11/04/16 03:05 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	11/04/16 03:05 PM
Boron	1.14	0.100	0.300		mg/L	10	11/04/16 12:00 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	11/04/16 03:05 PM
Calcium	145	1.00	3.00		mg/L	10	11/04/16 12:00 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	11/04/16 03:05 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	11/04/16 03:05 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	11/04/16 03:05 PM
Lithium	0.0611	0.00500	0.0100		mg/L	1	11/04/16 03:05 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	11/04/16 03:05 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	11/04/16 03:05 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	11/04/16 03:05 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	399	30.0	100		mg/L	100	10/31/16 01:49 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	10/31/16 11:16 AM
Sulfate	434	100	300		mg/L	100	10/31/16 01:49 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	7.16	0	0		pH Units@18.6℃	1	10/27/16 11:06 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	2170	50.0	50.0		mg/L	1	11/01/16 08:43 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *18-Nov-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	BMW-11AR
Project:	MLSES A1 Area Landfill	**Lab ID:**	1610230-06
Project No:	5164-B	**Collection Date:**	10/26/16 10:15 AM
Lab Order:	1610230	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **RO**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	11/03/16 12:18 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **CVD**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	11/04/16 12:02 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	11/04/16 12:02 PM
Barium	0.0429	0.00300	0.0100		mg/L	1	11/04/16 12:02 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	11/04/16 12:02 PM
Boron	0.316	0.0100	0.0300		mg/L	1	11/04/16 12:02 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	11/04/16 12:02 PM
Calcium	99.7	0.500	1.50		mg/L	5	11/04/16 02:12 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	11/04/16 12:02 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	11/04/16 12:02 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	11/04/16 12:02 PM
Lithium	0.0508	0.00500	0.0100		mg/L	1	11/04/16 12:02 PM
Molybdenum	0.00363	0.00200	0.00500	J	mg/L	1	11/04/16 12:02 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	11/04/16 12:02 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	11/04/16 12:02 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	15.8	0.300	1.00		mg/L	1	10/31/16 11:31 AM
Fluoride	<0.100	0.100	0.400		mg/L	1	10/31/16 11:31 AM
Sulfate	495	10.0	30.0		mg/L	10	10/31/16 02:03 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.98	0	0		pH Units@18.5℃	1	10/27/16 11:07 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	1590	50.0	50.0		mg/L	1	11/01/16 08:43 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *18-Nov-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	BMW-19
Project:	MLSES A1 Area Landfill	**Lab ID:**	1610230-07
Project No:	5164-B	**Collection Date:**	10/26/16 11:20 AM
Lab Order:	1610230	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **RO**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	11/03/16 12:44 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **CVD**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	11/04/16 12:04 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	11/04/16 12:04 PM
Barium	0.0144	0.00300	0.0100		mg/L	1	11/04/16 12:04 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	11/04/16 12:04 PM
Boron	0.417	0.0100	0.0300		mg/L	1	11/04/16 12:04 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	11/04/16 12:04 PM
Calcium	443	0.500	1.50		mg/L	5	11/04/16 03:57 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	11/04/16 12:04 PM
Cobalt	0.0104	0.00300	0.00500		mg/L	1	11/04/16 12:04 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	11/04/16 12:04 PM
Lithium	0.0495	0.00500	0.0100		mg/L	1	11/04/16 12:04 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	11/04/16 12:04 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	11/04/16 12:04 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	11/04/16 12:04 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	8.26	0.300	1.00		mg/L	1	10/31/16 11:46 AM
Fluoride	<0.100	0.100	0.400		mg/L	1	10/31/16 11:46 AM
Sulfate	2210	100	300		mg/L	100	10/31/16 02:23 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.81	0	0		pH Units@18.8℃	1	10/27/16 11:09 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	4410	50.0	50.0		mg/L	1	11/01/16 08:43 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT: Pastor, Behling & Wheeler
Work Order: 1610230
Project: MLSES A1 Area Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_161102A

The QC data in batch 77749 applies to the following samples: 1610230-01A, 1610230-02A, 1610230-03A, 1610230-04A

Sample ID	**MB-77749**	Batch ID:	**77749**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**CETAC2_HG_161102A**	Analysis Date:	**11/2/2016 9:57:24 AM**	Prep Date:	**11/1/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.0000800	0.000200								

Sample ID	**LCS-77749**	Batch ID:	**77749**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**CETAC2_HG_161102A**	Analysis Date:	**11/2/2016 9:59:40 AM**	Prep Date:	**11/1/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00220	0.000200	0.00200	0	110	85	115			

Sample ID	**LCSD-77749**	Batch ID:	**77749**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**LCSD**	Run ID:	**CETAC2_HG_161102A**	Analysis Date:	**11/2/2016 10:01:56 AM**	Prep Date:	**11/1/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00218	0.000200	0.00200	0	109	85	115	0.913	15	

Sample ID	**1610202-14C SD**	Batch ID:	**77749**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**SD**	Run ID:	**CETAC2_HG_161102A**	Analysis Date:	**11/2/2016 10:06:29 AM**	Prep Date:	**11/1/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.000400	0.00100	0	0				0	10	

Sample ID	**1610202-14C PDS**	Batch ID:	**77749**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**PDS**	Run ID:	**CETAC2_HG_161102A**	Analysis Date:	**11/2/2016 10:08:44 AM**	Prep Date:	**11/1/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00251	0.000200	0.00250	0	100	85	115			

Sample ID	**1610202-14C MS**	Batch ID:	**77749**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**MS**	Run ID:	**CETAC2_HG_161102A**	Analysis Date:	**11/2/2016 10:11:00 AM**	Prep Date:	**11/1/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00221	0.000200	0.00200	0	110	80	120			

Sample ID	**1610202-14C MSD**	Batch ID:	**77749**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**MSD**	Run ID:	**CETAC2_HG_161102A**	Analysis Date:	**11/2/2016 10:13:16 AM**	Prep Date:	**11/1/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00218	0.000200	0.00200	0	109	80	120	1.37	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1610230
Project: MLSES A1 Area Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_161102A

Sample ID	**ICV-161102**	Batch ID:	**R88813**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**ICV**	Run ID:	**CETAC2_HG_161102A**	Analysis Date:	**11/2/2016 9:52:50 AM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00410	0.000200	0.00400	0	103	90	110			

Sample ID	**CCV1-161102**	Batch ID:	**R88813**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**CETAC2_HG_161102A**	Analysis Date:	**11/2/2016 10:35:57 AM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00201	0.000200	0.00200	0	101	90	110			

Sample ID	**CCV2-161102**	Batch ID:	**R88813**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**CETAC2_HG_161102A**	Analysis Date:	**11/2/2016 11:03:16 AM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00199	0.000200	0.00200	0	99.5	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1610230
Project: MLSES A1 Area Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_161103A

The QC data in batch 77769 applies to the following samples: 1610230-05A, 1610230-06A, 1610230-07A

Sample ID **MB-77769**	Batch ID: **77769**			TestNo: **SW7470A**				Units: **mg/L**			
SampType: **MBLK**	Run ID: **CETAC2_HG_161103A**			Analysis Date: **11/3/2016 12:11:16 PM**				Prep Date: **11/2/2016**			
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Mercury	<0.0000800	0.000200									

Sample ID **LCS-77769**	Batch ID: **77769**			TestNo: **SW7470A**				Units: **mg/L**			
SampType: **LCS**	Run ID: **CETAC2_HG_161103A**			Analysis Date: **11/3/2016 12:13:32 PM**				Prep Date: **11/2/2016**			
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Mercury	0.00208	0.000200	0.00200	0	104	85	115				

Sample ID **LCSD-77769**	Batch ID: **77769**			TestNo: **SW7470A**				Units: **mg/L**			
SampType: **LCSD**	Run ID: **CETAC2_HG_161103A**			Analysis Date: **11/3/2016 12:15:48 PM**				Prep Date: **11/2/2016**			
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Mercury	0.00209	0.000200	0.00200	0	104	85	115	0.480	15		

Sample ID **1610230-06A SD**	Batch ID: **77769**			TestNo: **SW7470A**				Units: **mg/L**			
SampType: **SD**	Run ID: **CETAC2_HG_161103A**			Analysis Date: **11/3/2016 12:20:21 PM**				Prep Date: **11/2/2016**			
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Mercury	<0.000400	0.00100	0	0				0	10		

Sample ID **1610230-06A PDS**	Batch ID: **77769**			TestNo: **SW7470A**				Units: **mg/L**			
SampType: **PDS**	Run ID: **CETAC2_HG_161103A**			Analysis Date: **11/3/2016 12:22:36 PM**				Prep Date: **11/2/2016**			
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Mercury	0.00241	0.000200	0.00250	0	96.4	85	115				

Sample ID **1610230-06A MS**	Batch ID: **77769**			TestNo: **SW7470A**				Units: **mg/L**			
SampType: **MS**	Run ID: **CETAC2_HG_161103A**			Analysis Date: **11/3/2016 12:24:51 PM**				Prep Date: **11/2/2016**			
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Mercury	0.00210	0.000200	0.00200	0	105	80	120				

Sample ID **1610230-06A MSD**	Batch ID: **77769**			TestNo: **SW7470A**				Units: **mg/L**			
SampType: **MSD**	Run ID: **CETAC2_HG_161103A**			Analysis Date: **11/3/2016 12:27:07 PM**				Prep Date: **11/2/2016**			
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Mercury	0.00211	0.000200	0.00200	0	106	80	120	0.475	15		

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1610230
Project: MLSES A1 Area Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_161103A

Sample ID **ICV-161103**	Batch ID: **R88836**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **ICV**	Run ID: **CETAC2_HG_161103A**	Analysis Date: **11/3/2016 12:06:42 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00383	0.000200	0.00400	0	95.8	90	110			

Sample ID **CCV1-161103**	Batch ID: **R88836**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_161103A**	Analysis Date: **11/3/2016 12:59:56 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00201	0.000200	0.00200	0	101	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1610230
Project: MLSES A1 Area Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161104A

The QC data in batch 77776 applies to the following samples: 1610230-01A, 1610230-02A, 1610230-03A, 1610230-04A, 1610230-05A, 1610230-06A, 1610230-07A

Sample ID **MB-77776** Batch ID: **77776** TestNo: **SW6020A** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_161104A** Analysis Date: **11/4/2016 11:40:00 AM** Prep Date: **11/3/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.000800	0.00250								
Arsenic	<0.00200	0.00500								
Barium	<0.00300	0.0100								
Beryllium	<0.000300	0.00100								
Boron	<0.0100	0.0300								
Cadmium	<0.000300	0.00100								
Calcium	<0.100	0.300								
Chromium	<0.00200	0.00500								
Cobalt	<0.00300	0.00500								
Lead	<0.000300	0.00100								
Lithium	<0.00500	0.0100								
Molybdenum	<0.00200	0.00500								
Selenium	<0.00200	0.00500								
Thallium	<0.000500	0.00150								

Sample ID **LCS-77776** Batch ID: **77776** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_161104A** Analysis Date: **11/4/2016 11:42:00 AM** Prep Date: **11/3/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.198	0.00250	0.200	0	98.8	80	120			
Arsenic	0.200	0.00500	0.200	0	100	80	120			
Barium	0.199	0.0100	0.200	0	99.4	80	120			
Beryllium	0.197	0.00100	0.200	0	98.6	80	120			
Boron	0.188	0.0300	0.200	0	94.1	80	120			
Cadmium	0.202	0.00100	0.200	0	101	80	120			
Calcium	4.75	0.300	5.00	0	95.0	80	120			
Chromium	0.201	0.00500	0.200	0	101	80	120			
Cobalt	0.204	0.00500	0.200	0	102	80	120			
Lead	0.195	0.00100	0.200	0	97.5	80	120			
Lithium	0.188	0.0100	0.200	0	93.8	80	120			
Molybdenum	0.198	0.00500	0.200	0	98.8	80	120			
Selenium	0.202	0.00500	0.200	0	101	80	120			
Thallium	0.196	0.00150	0.200	0	98.0	80	120			

Sample ID **LCSD-77776** Batch ID: **77776** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_161104A** Analysis Date: **11/4/2016 11:44:00 AM** Prep Date: **11/3/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.198	0.00250	0.200	0	99.1	80	120	0.331	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1610230
Project: MLSES A1 Area Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161104A

Sample ID **LCSD-77776**	Batch ID: **77776**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCSD**	Run ID: **ICP-MS4_161104A**	Analysis Date: **11/4/2016 11:44:00 AM**	Prep Date: **11/3/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.200	0.00500	0.200	0	99.8	80	120	0.343	15	
Barium	0.198	0.0100	0.200	0	99.2	80	120	0.184	15	
Beryllium	0.201	0.00100	0.200	0	100	80	120	1.77	15	
Boron	0.200	0.0300	0.200	0	99.8	80	120	5.93	15	
Cadmium	0.202	0.00100	0.200	0	101	80	120	0.139	15	
Calcium	4.76	0.300	5.00	0	95.3	80	120	0.305	15	
Chromium	0.203	0.00500	0.200	0	101	80	120	0.677	15	
Cobalt	0.204	0.00500	0.200	0	102	80	120	0.291	15	
Lead	0.196	0.00100	0.200	0	98.0	80	120	0.459	15	
Lithium	0.193	0.0100	0.200	0	96.3	80	120	2.62	15	
Molybdenum	0.198	0.00500	0.200	0	99.0	80	120	0.229	15	
Selenium	0.202	0.00500	0.200	0	101	80	120	0.200	15	
Thallium	0.197	0.00150	0.200	0	98.7	80	120	0.799	15	

Sample ID **1611004-07B SD**	Batch ID: **77776**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS4_161104A**	Analysis Date: **11/4/2016 11:50:00 AM**	Prep Date: **11/3/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	114	75.0	0	110				3.19	10	

Sample ID **1611004-07B PDS**	Batch ID: **77776**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_161104A**	Analysis Date: **11/4/2016 12:10:00 PM**	Prep Date: **11/3/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	328	15.0	250	110	87.2	80	120			

Sample ID **1611004-07B MS**	Batch ID: **77776**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS4_161104A**	Analysis Date: **11/4/2016 12:12:00 PM**	Prep Date: **11/3/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.352	0.125	0.200	0	176	80	120			S
Arsenic	0.214	0.250	0.200	0	107	80	120			
Barium	0.395	0.500	0.200	0.191	102	80	120			
Beryllium	0.203	0.0500	0.200	0	101	80	120			
Boron	1.40	1.50	0.200	0.743	330	80	120			S
Cadmium	0.203	0.0500	0.200	0	102	80	120			
Calcium	115	15.0	5.00	110	106	80	120			
Chromium	0.210	0.250	0.200	0	105	80	120			
Cobalt	0.207	0.250	0.200	0	104	80	120			
Lead	0.198	0.0500	0.200	0	99.0	80	120			
Molybdenum	0.239	0.250	0.200	0	119	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1610230
Project: MLSES A1 Area Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161104A

Sample ID **1611004-07B MS**	Batch ID: **77776**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS4_161104A**	Analysis Date: **11/4/2016 12:12:00 PM**	Prep Date: **11/3/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.250	0.250	0.200	0	125	80	120			S
Thallium	0.200	0.0750	0.200	0	100	80	120			

Sample ID **1611004-07B MSD**	Batch ID: **77776**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS4_161104A**	Analysis Date: **11/4/2016 12:14:00 PM**	Prep Date: **11/3/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.243	0.125	0.200	0	121	80	120	36.6	15	SR
Arsenic	0.208	0.250	0.200	0	104	80	120	3.20	15	
Barium	0.386	0.500	0.200	0.191	97.3	80	120	2.42	15	
Beryllium	0.203	0.0500	0.200	0	101	80	120	0.074	15	
Boron	0.937	1.50	0.200	0.743	97.1	80	120	39.7	15	R
Cadmium	0.203	0.0500	0.200	0	102	80	120	0.049	15	
Calcium	115	15.0	5.00	110	100	80	120	0.259	15	
Chromium	0.205	0.250	0.200	0	102	80	120	2.65	15	
Cobalt	0.200	0.250	0.200	0	100	80	120	3.36	15	
Lead	0.199	0.0500	0.200	0	99.6	80	120	0.579	15	
Molybdenum	0.212	0.250	0.200	0	106	80	120	12.0	15	
Selenium	0.227	0.250	0.200	0	114	80	120	9.31	15	
Thallium	0.197	0.0750	0.200	0	98.5	80	120	1.66	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1610230
Project: MLSES A1 Area Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161104A

Sample ID **ICV-161104** Batch ID: **R88852** TestNo: **SW6020A** Units: **mg/L**
SampType: **ICV** Run ID: **ICP-MS4_161104A** Analysis Date: **11/4/2016 11:30:00 AM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.101	0.00250	0.100	0	101	90	110			
Arsenic	0.0997	0.00500	0.100	0	99.7	90	110			
Barium	0.100	0.0100	0.100	0	100	90	110			
Beryllium	0.0997	0.00100	0.100	0	99.7	90	110			
Boron	0.100	0.0300	0.100	0	100	90	110			
Cadmium	0.100	0.00100	0.100	0	100	90	110			
Calcium	2.31	0.300	2.50	0	92.3	90	110			
Chromium	0.105	0.00500	0.100	0	105	90	110			
Cobalt	0.103	0.00500	0.100	0	103	90	110			
Lead	0.0994	0.00100	0.100	0	99.4	90	110			
Lithium	0.0969	0.0100	0.100	0	96.9	90	110			
Molybdenum	0.0976	0.00500	0.100	0	97.6	90	110			
Selenium	0.101	0.00500	0.100	0	101	90	110			
Thallium	0.0997	0.00150	0.100	0	99.7	90	110			

Sample ID **LCVL-161104** Batch ID: **R88852** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_161104A** Analysis Date: **11/4/2016 11:34:00 AM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00199	0.00250	0.00200	0	99.7	70	130			
Arsenic	0.00516	0.00500	0.00500	0	103	70	130			
Barium	0.00508	0.0100	0.00500	0	102	70	130			
Beryllium	0.000964	0.00100	0.00100	0	96.4	70	130			
Boron	0.0260	0.0300	0.0200	0	130	70	130			
Cadmium	0.00102	0.00100	0.00100	0	102	70	130			
Calcium	0.0973	0.300	0.100	0	97.3	70	130			
Chromium	0.00530	0.00500	0.00500	0	106	70	130			
Cobalt	0.00523	0.00500	0.00500	0	105	70	130			
Lead	0.00106	0.00100	0.00100	0	106	70	130			
Lithium	0.00982	0.0100	0.0100	0	98.2	70	130			
Molybdenum	0.00528	0.00500	0.00500	0	106	70	130			
Selenium	0.00552	0.00500	0.00500	0	110	70	130			
Thallium	0.00102	0.00150	0.00100	0	102	70	130			

Sample ID **CCV1-161104** Batch ID: **R88852** TestNo: **SW6020A** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_161104A** Analysis Date: **11/4/2016 12:18:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.201	0.00250	0.200	0	101	90	110			
Arsenic	0.205	0.00500	0.200	0	103	90	110			
Barium	0.206	0.0100	0.200	0	103	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1610230
Project: MLSES A1 Area Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161104A

Sample ID **CCV1-161104**	Batch ID: **R88852**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_161104A**	Analysis Date: **11/4/2016 12:18:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.206	0.00100	0.200	0	103	90	110			
Boron	0.213	0.0300	0.200	0	106	90	110			
Cadmium	0.206	0.00100	0.200	0	103	90	110			
Calcium	4.76	0.300	5.00	0	95.3	90	110			
Chromium	0.206	0.00500	0.200	0	103	90	110			
Cobalt	0.206	0.00500	0.200	0	103	90	110			
Lead	0.200	0.00100	0.200	0	100	90	110			
Lithium	0.199	0.0100	0.200	0	99.7	90	110			
Molybdenum	0.203	0.00500	0.200	0	101	90	110			
Selenium	0.205	0.00500	0.200	0	103	90	110			
Thallium	0.203	0.00150	0.200	0	102	90	110			

Sample ID **LCVL1-161104**	Batch ID: **R88852**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_161104A**	Analysis Date: **11/4/2016 12:34:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00199	0.00250	0.00200	0	99.4	70	130			
Arsenic	0.00502	0.00500	0.00500	0	100	70	130			
Barium	0.00508	0.0100	0.00500	0	102	70	130			
Beryllium	0.00101	0.00100	0.00100	0	101	70	130			
Boron	0.0246	0.0300	0.0200	0	123	70	130			
Cadmium	0.00101	0.00100	0.00100	0	101	70	130			
Calcium	0.0954	0.300	0.100	0	95.4	70	130			
Chromium	0.00524	0.00500	0.00500	0	105	70	130			
Cobalt	0.00515	0.00500	0.00500	0	103	70	130			
Lead	0.000962	0.00100	0.00100	0	96.2	70	130			
Lithium	0.00949	0.0100	0.0100	0	94.9	70	130			
Molybdenum	0.00489	0.00500	0.00500	0	97.7	70	130			
Selenium	0.00555	0.00500	0.00500	0	111	70	130			
Thallium	0.00101	0.00150	0.00100	0	101	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1610230
Project: MLSES A1 Area Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161104B

Sample ID **ICV-161104**	Batch ID: **R88864**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_161104B**	Analysis Date: **11/4/2016 11:30:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.101	0.00250	0.100	0	101	90	110			
Arsenic	0.0997	0.00500	0.100	0	99.7	90	110			
Barium	0.100	0.0100	0.100	0	100	90	110			
Beryllium	0.0997	0.00100	0.100	0	99.7	90	110			
Cadmium	0.100	0.00100	0.100	0	100	90	110			
Calcium	2.31	0.300	2.50	0	92.3	90	110			
Chromium	0.105	0.00500	0.100	0	105	90	110			
Cobalt	0.103	0.00500	0.100	0	103	90	110			
Lead	0.0994	0.00100	0.100	0	99.4	90	110			
Lithium	0.0969	0.0100	0.100	0	96.9	90	110			
Molybdenum	0.0976	0.00500	0.100	0	97.6	90	110			
Selenium	0.101	0.00500	0.100	0	101	90	110			
Thallium	0.0997	0.00150	0.100	0	99.7	90	110			

Sample ID **LCVL-161104**	Batch ID: **R88864**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_161104B**	Analysis Date: **11/4/2016 11:34:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00199	0.00250	0.00200	0	99.7	70	130			
Arsenic	0.00516	0.00500	0.00500	0	103	70	130			
Barium	0.00508	0.0100	0.00500	0	102	70	130			
Beryllium	0.000964	0.00100	0.00100	0	96.4	70	130			
Cadmium	0.00102	0.00100	0.00100	0	102	70	130			
Calcium	0.0973	0.300	0.100	0	97.3	70	130			
Chromium	0.00530	0.00500	0.00500	0	106	70	130			
Cobalt	0.00523	0.00500	0.00500	0	105	70	130			
Lead	0.00106	0.00100	0.00100	0	106	70	130			
Lithium	0.00982	0.0100	0.0100	0	98.2	70	130			
Molybdenum	0.00528	0.00500	0.00500	0	106	70	130			
Selenium	0.00552	0.00500	0.00500	0	110	70	130			
Thallium	0.00102	0.00150	0.00100	0	102	70	130			

Sample ID **CCV3-161104**	Batch ID: **R88864**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_161104B**	Analysis Date: **11/4/2016 1:49:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.99	0.300	5.00	0	99.8	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

Sample ID **LCVL3-161104**	Batch ID: **R88864**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_161104B**	Analysis Date: **11/4/2016 1:53:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.118	0.300	0.100	0	118	70	130			

Sample ID **CCV4-161104**	Batch ID: **R88864**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_161104B**	Analysis Date: **11/4/2016 2:16:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.73	0.300	5.00	0	94.6	90	110			

Sample ID **LCVL4-161104**	Batch ID: **R88864**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_161104B**	Analysis Date: **11/4/2016 2:20:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.105	0.300	0.100	0	105	70	130			

Sample ID **CCV5-161104**	Batch ID: **R88864**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_161104B**	Analysis Date: **11/4/2016 2:49:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.203	0.00250	0.200	0	101	90	110			
Arsenic	0.214	0.00500	0.200	0	107	90	110			
Barium	0.207	0.0100	0.200	0	103	90	110			
Beryllium	0.205	0.00100	0.200	0	103	90	110			
Cadmium	0.209	0.00100	0.200	0	104	90	110			
Calcium	4.75	0.300	5.00	0	94.9	90	110			
Chromium	0.201	0.00500	0.200	0	101	90	110			
Cobalt	0.210	0.00500	0.200	0	105	90	110			
Lead	0.197	0.00100	0.200	0	98.7	90	110			
Lithium	0.206	0.0100	0.200	0	103	90	110			
Molybdenum	0.203	0.00500	0.200	0	102	90	110			
Selenium	0.214	0.00500	0.200	0	107	90	110			
Thallium	0.200	0.00150	0.200	0	100	90	110			

Sample ID **LCVL5-161104**	Batch ID: **R88864**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_161104B**	Analysis Date: **11/4/2016 2:53:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00204	0.00250	0.00200	0	102	70	130			
Arsenic	0.00542	0.00500	0.00500	0	108	70	130			
Barium	0.00521	0.0100	0.00500	0	104	70	130			
Beryllium	0.00107	0.00100	0.00100	0	107	70	130			
Cadmium	0.000999	0.00100	0.00100	0	99.9	70	130			

CLIENT: Pastor, Behling & Wheeler
Work Order: 1610230
Project: MLSES A1 Area Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161104B

Sample ID **LCVL5-161104** Batch ID: **R88864** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_161104B** Analysis Date: **11/4/2016 2:53:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.102	0.300	0.100	0	102	70	130			
Chromium	0.00517	0.00500	0.00500	0	103	70	130			
Cobalt	0.00524	0.00500	0.00500	0	105	70	130			
Lead	0.000918	0.00100	0.00100	0	91.8	70	130			
Lithium	0.0107	0.0100	0.0100	0	107	70	130			
Molybdenum	0.00508	0.00500	0.00500	0	102	70	130			
Selenium	0.00549	0.00500	0.00500	0	110	70	130			
Thallium	0.000995	0.00150	0.00100	0	99.5	70	130			

Sample ID **CCV6-161104** Batch ID: **R88864** TestNo: **SW6020A** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_161104B** Analysis Date: **11/4/2016 3:09:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.199	0.00250	0.200	0	99.4	90	110			
Arsenic	0.216	0.00500	0.200	0	108	90	110			
Barium	0.203	0.0100	0.200	0	102	90	110			
Beryllium	0.210	0.00100	0.200	0	105	90	110			
Cadmium	0.205	0.00100	0.200	0	102	90	110			
Calcium	4.78	0.300	5.00	0	95.6	90	110			
Chromium	0.205	0.00500	0.200	0	103	90	110			
Cobalt	0.212	0.00500	0.200	0	106	90	110			
Lead	0.199	0.00100	0.200	0	99.5	90	110			
Lithium	0.203	0.0100	0.200	0	101	90	110			
Molybdenum	0.201	0.00500	0.200	0	101	90	110			
Selenium	0.214	0.00500	0.200	0	107	90	110			
Thallium	0.201	0.00150	0.200	0	100	90	110			

Sample ID **LCVL6-161104** Batch ID: **R88864** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_161104B** Analysis Date: **11/4/2016 3:30:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00189	0.00250	0.00200	0	94.7	70	130			
Arsenic	0.00539	0.00500	0.00500	0	108	70	130			
Barium	0.00526	0.0100	0.00500	0	105	70	130			
Beryllium	0.000943	0.00100	0.00100	0	94.3	70	130			
Cadmium	0.000990	0.00100	0.00100	0	99.0	70	130			
Calcium	0.0940	0.300	0.100	0	94.0	70	130			
Chromium	0.00518	0.00500	0.00500	0	104	70	130			
Cobalt	0.00527	0.00500	0.00500	0	105	70	130			
Lead	0.000879	0.00100	0.00100	0	87.9	70	130			
Lithium	0.0111	0.0100	0.0100	0	111	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1610230
Project: MLSES A1 Area Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161104B

Sample ID **LCVL6-161104**	Batch ID: **R88864**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_161104B**	Analysis Date: **11/4/2016 3:30:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Molybdenum	0.00491	0.00500	0.00500	0	98.1	70	130			
Selenium	0.00580	0.00500	0.00500	0	116	70	130			
Thallium	0.000996	0.00150	0.00100	0	99.6	70	130			

Sample ID **CCV7-161104**	Batch ID: **R88864**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_161104B**	Analysis Date: **11/4/2016 4:09:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.79	0.300	5.00	0	95.8	90	110			

Sample ID **LCVL7-161104**	Batch ID: **R88864**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_161104B**	Analysis Date: **11/4/2016 4:13:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.0948	0.300	0.100	0	94.8	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1610230
Project: MLSES A1 Area Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161107D

The QC data in batch 77776 applies to the following samples: 1610230-01A, 1610230-02A, 1610230-03A, 1610230-04A, 1610230-05A, 1610230-06A, 1610230-07A

Sample ID **1611004-07B SD** Batch ID: **77776** TestNo: **SW6020A** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS4_161107D** Analysis Date: **11/7/2016 12:12:00 PM** Prep Date: **11/3/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.00400	0.0125	0	0				0	10	
Arsenic	<0.0100	0.0250	0	0				0	10	
Barium	0.186	0.0500	0	0.185				0.248	10	
Beryllium	<0.00150	0.00500	0	0				0	10	
Cadmium	<0.00150	0.00500	0	0				0	10	
Chromium	<0.0100	0.0250	0	0				0	10	
Cobalt	<0.0150	0.0250	0	0				0	10	
Lead	<0.00150	0.00500	0	0				0	10	
Lithium	<0.0250	0.0500	0	0.0177				0	10	
Molybdenum	<0.0100	0.0250	0	0				0	10	
Selenium	<0.0100	0.0250	0	0.00739				0	10	
Thallium	<0.00250	0.00750	0	0				0	10	

Sample ID **1611004-07B PDS** Batch ID: **77776** TestNo: **SW6020A** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS4_161107D** Analysis Date: **11/7/2016 12:16:00 PM** Prep Date: **11/3/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.183	0.00250	0.200	0	91.7	80	120			
Arsenic	0.201	0.00500	0.200	0	100	80	120			
Barium	0.377	0.0100	0.200	0.185	95.7	80	120			
Beryllium	0.205	0.00100	0.200	0	102	80	120			
Cadmium	0.193	0.00100	0.200	0	96.6	80	120			
Chromium	0.205	0.00500	0.200	0	102	80	120			
Cobalt	0.199	0.00500	0.200	0	99.4	80	120			
Lead	0.195	0.00100	0.200	0	97.5	80	120			
Lithium	0.210	0.0100	0.200	0.0177	96.0	80	120			
Molybdenum	0.192	0.00500	0.200	0	96.2	80	120			
Selenium	0.201	0.00500	0.200	0.00739	96.9	80	120			
Thallium	0.193	0.00150	0.200	0	96.7	80	120			

Sample ID **1611004-07B MS** Batch ID: **77776** TestNo: **SW6020A** Units: **mg/L**
SampType: **MS** Run ID: **ICP-MS4_161107D** Analysis Date: **11/7/2016 12:18:00 PM** Prep Date: **11/3/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lithium	0.216	0.0100	0.200	0.0177	99.0	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1610230
Project: MLSES A1 Area Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161107D

Sample ID **1611004-07B MSD** Batch ID: **77776** TestNo: **SW6020A** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS4_161107D** Analysis Date: **11/7/2016 12:20:00 PM** Prep Date: **11/3/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lithium	0.214	0.0100	0.200	0.0177	98.1	80	120	0.819	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

Sample ID **ICV-161107**	Batch ID: **R88883**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_161107D**	Analysis Date: **11/7/2016 10:52:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.104	0.00250	0.100	0	104	90	110			
Arsenic	0.100	0.00500	0.100	0	100	90	110			
Barium	0.104	0.0100	0.100	0	104	90	110			
Beryllium	0.103	0.00100	0.100	0	103	90	110			
Cadmium	0.104	0.00100	0.100	0	104	90	110			
Chromium	0.108	0.00500	0.100	0	108	90	110			
Cobalt	0.106	0.00500	0.100	0	106	90	110			
Lead	0.102	0.00100	0.100	0	102	90	110			
Lithium	0.0983	0.0100	0.100	0	98.3	90	110			
Molybdenum	0.101	0.00500	0.100	0	101	90	110			
Selenium	0.101	0.00500	0.100	0	101	90	110			
Thallium	0.101	0.00150	0.100	0	101	90	110			

Sample ID **LCVL-161107**	Batch ID: **R88883**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_161107D**	Analysis Date: **11/7/2016 11:00:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00200	0.00250	0.00200	0	100	70	130			
Arsenic	0.00513	0.00500	0.00500	0	103	70	130			
Barium	0.00514	0.0100	0.00500	0	103	70	130			
Beryllium	0.000956	0.00100	0.00100	0	95.6	70	130			
Cadmium	0.00102	0.00100	0.00100	0	102	70	130			
Chromium	0.00536	0.00500	0.00500	0	107	70	130			
Cobalt	0.00529	0.00500	0.00500	0	106	70	130			
Lead	0.00110	0.00100	0.00100	0	110	70	130			
Lithium	0.0108	0.0100	0.0100	0	108	70	130			
Molybdenum	0.00516	0.00500	0.00500	0	103	70	130			
Selenium	0.00553	0.00500	0.00500	0	111	70	130			
Thallium	0.00103	0.00150	0.00100	0	103	70	130			

Sample ID **CCV1-161107**	Batch ID: **R88883**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_161107D**	Analysis Date: **11/7/2016 11:34:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.197	0.00250	0.200	0	98.6	90	110			
Arsenic	0.205	0.00500	0.200	0	103	90	110			
Barium	0.201	0.0100	0.200	0	100	90	110			
Beryllium	0.199	0.00100	0.200	0	99.3	90	110			
Cadmium	0.205	0.00100	0.200	0	102	90	110			
Chromium	0.203	0.00500	0.200	0	102	90	110			
Cobalt	0.206	0.00500	0.200	0	103	90	110			

Sample ID **CCV1-161107**	Batch ID: **R88883**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_161107D**	Analysis Date: **11/7/2016 11:34:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.205	0.00100	0.200	0	103	90	110			
Lithium	0.189	0.0100	0.200	0	94.3	90	110			
Molybdenum	0.203	0.00500	0.200	0	101	90	110			
Selenium	0.203	0.00500	0.200	0	102	90	110			
Thallium	0.204	0.00150	0.200	0	102	90	110			

Sample ID **LCVL1-161107**	Batch ID: **R88883**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_161107D**	Analysis Date: **11/7/2016 11:38:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00207	0.00250	0.00200	0	103	70	130			
Arsenic	0.00530	0.00500	0.00500	0	106	70	130			
Barium	0.00521	0.0100	0.00500	0	104	70	130			
Beryllium	0.00109	0.00100	0.00100	0	109	70	130			
Cadmium	0.00100	0.00100	0.00100	0	100	70	130			
Chromium	0.00521	0.00500	0.00500	0	104	70	130			
Cobalt	0.00536	0.00500	0.00500	0	107	70	130			
Lead	0.00103	0.00100	0.00100	0	103	70	130			
Lithium	0.0121	0.0100	0.0100	0	121	70	130			
Molybdenum	0.00530	0.00500	0.00500	0	106	70	130			
Selenium	0.00577	0.00500	0.00500	0	115	70	130			
Thallium	0.00107	0.00150	0.00100	0	107	70	130			

Sample ID **CCV2-161107**	Batch ID: **R88883**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_161107D**	Analysis Date: **11/7/2016 12:22:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.197	0.00250	0.200	0	98.6	90	110			
Arsenic	0.207	0.00500	0.200	0	103	90	110			
Barium	0.200	0.0100	0.200	0	100	90	110			
Beryllium	0.207	0.00100	0.200	0	103	90	110			
Cadmium	0.200	0.00100	0.200	0	100	90	110			
Chromium	0.204	0.00500	0.200	0	102	90	110			
Cobalt	0.207	0.00500	0.200	0	104	90	110			
Lead	0.203	0.00100	0.200	0	101	90	110			
Lithium	0.205	0.0100	0.200	0	103	90	110			
Molybdenum	0.199	0.00500	0.200	0	99.4	90	110			
Selenium	0.205	0.00500	0.200	0	102	90	110			
Thallium	0.203	0.00150	0.200	0	101	90	110			

CLIENT: Pastor, Behling & Wheeler
Work Order: 1610230
Project: MLSES A1 Area Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161107D

Sample ID **LCVL2-161107** Batch ID: **R88883** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_161107D** Analysis Date: **11/7/2016 12:45:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00191	0.00250	0.00200	0	95.6	70	130			
Arsenic	0.00518	0.00500	0.00500	0	104	70	130			
Barium	0.00488	0.0100	0.00500	0	97.6	70	130			
Beryllium	0.000869	0.00100	0.00100	0	86.9	70	130			
Cadmium	0.000961	0.00100	0.00100	0	96.1	70	130			
Chromium	0.00523	0.00500	0.00500	0	105	70	130			
Cobalt	0.00530	0.00500	0.00500	0	106	70	130			
Lead	0.000944	0.00100	0.00100	0	94.4	70	130			
Lithium	0.0107	0.0100	0.0100	0	107	70	130			
Molybdenum	0.00477	0.00500	0.00500	0	95.4	70	130			
Selenium	0.00550	0.00500	0.00500	0	110	70	130			
Thallium	0.00101	0.00150	0.00100	0	101	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1610230
Project: MLSES A1 Area Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161108A

The QC data in batch 77776 applies to the following samples: 1610230-01A, 1610230-02A, 1610230-03A, 1610230-04A, 1610230-05A, 1610230-06A, 1610230-07A

Sample ID **1611004-07B SD** Batch ID: **77776** TestNo: **SW6020A** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS4_161108A** Analysis Date: **11/8/2016 1:52:00 PM** Prep Date: **11/3/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.388	0.150	0	0.256				41.1	10	R

Sample ID **1611004-07B PDS** Batch ID: **77776** TestNo: **SW6020A** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS4_161108A** Analysis Date: **11/8/2016 1:54:00 PM** Prep Date: **11/3/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.426	0.0300	0.200	0.256	84.9	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

Sample ID **ICV-161108**	Batch ID: **R88885**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_161108A**	Analysis Date: **11/8/2016 12:31:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.100	0.0300	0.100	0	100	90	110			

Sample ID **LCVL-161108**	Batch ID: **R88885**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_161108A**	Analysis Date: **11/8/2016 12:33:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0246	0.0300	0.0200	0	123	70	130			

Sample ID **CCV1-161108**	Batch ID: **R88885**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_161108A**	Analysis Date: **11/8/2016 12:59:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.206	0.0300	0.200	0	103	90	110			

Sample ID **LCVL1-161108**	Batch ID: **R88885**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_161108A**	Analysis Date: **11/8/2016 1:26:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0249	0.0300	0.0200	0	124	70	130			

Sample ID **CCV2-161108**	Batch ID: **R88885**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_161108A**	Analysis Date: **11/8/2016 2:06:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.220	0.0300	0.200	0	110	90	110			

Sample ID **LCVL2-161108**	Batch ID: **R88885**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_161108A**	Analysis Date: **11/8/2016 2:28:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0250	0.0300	0.0200	0	125	70	130			

CLIENT: Pastor, Behling & Wheeler
Work Order: 1610230
Project: MLSES A1 Area Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_161031A

The QC data in batch 77728 applies to the following samples: 1610230-01D, 1610230-02D, 1610230-03D, 1610230-04D, 1610230-05D, 1610230-06D, 1610230-07D

Sample ID **MB-77728** Batch ID: **77728** TestNo: **E300** Units: **mg/L**
SampType: **MBLK** Run ID: **IC2_161031A** Analysis Date: **10/31/2016 9:28:33 AM** Prep Date: **10/31/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00								
Fluoride	<0.100	0.400								
Sulfate	<1.00	3.00								

Sample ID **LCS-77728** Batch ID: **77728** TestNo: **E300** Units: **mg/L**
SampType: **LCS** Run ID: **IC2_161031A** Analysis Date: **10/31/2016 9:43:09 AM** Prep Date: **10/31/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.90	1.00	10.00	0	99.0	90	110			
Fluoride	3.64	0.400	4.000	0	90.9	90	110			
Sulfate	30.1	3.00	30.00	0	100	90	110			

Sample ID **LCSD-77728** Batch ID: **77728** TestNo: **E300** Units: **mg/L**
SampType: **LCSD** Run ID: **IC2_161031A** Analysis Date: **10/31/2016 9:57:49 AM** Prep Date: **10/31/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.99	1.00	10.00	0	99.9	90	110	0.883	20	
Fluoride	3.78	0.400	4.000	0	94.5	90	110	3.86	20	
Sulfate	30.1	3.00	30.00	0	100	90	110	0.040	20	

Sample ID **1610239-01BMS** Batch ID: **77728** TestNo: **E300** Units: **mg/L**
SampType: **MS** Run ID: **IC2_161031A** Analysis Date: **10/31/2016 3:22:23 PM** Prep Date: **10/31/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	2650	100	2000	529.4	106	90	110			
Fluoride	2010	40.0	2000	0	100	90	110			
Sulfate	2190	300	2000	175.8	101	90	110			

Sample ID **1610239-01BMSD** Batch ID: **77728** TestNo: **E300** Units: **mg/L**
SampType: **MSD** Run ID: **IC2_161031A** Analysis Date: **10/31/2016 3:36:59 PM** Prep Date: **10/31/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	2670	100	2000	529.4	107	90	110	0.483	20	
Fluoride	2040	40.0	2000	0	102	90	110	1.27	20	
Sulfate	2210	300	2000	175.8	102	90	110	0.789	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1610230
Project: MLSES A1 Area Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_161031A

Sample ID **ICV-161031**	Batch ID: **R88800**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC2_161031A**	Analysis Date: **10/31/2016 8:49:58 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	24.6	1.00	25.00	0	98.3	90	110			
Fluoride	9.34	0.400	10.00	0	93.4	90	110			
Sulfate	75.9	3.00	75.00	0	101	90	110			

Sample ID **CCV1-161031**	Batch ID: **R88800**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_161031A**	Analysis Date: **10/31/2016 12:32:51 P**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.0	1.00	10.00	0	100	90	110			
Fluoride	3.94	0.400	4.000	0	98.4	90	110			
Sulfate	30.6	3.00	30.00	0	102	90	110			

Sample ID **CCV2-161031**	Batch ID: **R88800**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_161031A**	Analysis Date: **10/31/2016 3:51:36 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.2	1.00	10.00	0	102	90	110			
Fluoride	4.07	0.400	4.000	0	102	90	110			
Sulfate	30.8	3.00	30.00	0	103	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1610230
Project: MLSES A1 Area Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_161110A

The QC data in batch 77847 applies to the following samples: 1610230-04D

Sample ID	**MB-77847**	Batch ID:	**77847**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**IC2_161110A**	Analysis Date:	**11/10/2016 9:15:33 AM**	Prep Date:	**11/10/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00								
Fluoride	<0.100	0.400								
Sulfate	<1.00	3.00								

Sample ID	**LCS-77847**	Batch ID:	**77847**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**IC2_161110A**	Analysis Date:	**11/10/2016 9:30:09 AM**	Prep Date:	**11/10/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.3	1.00	10.00	0	103	90	110			
Fluoride	3.80	0.400	4.000	0	94.9	90	110			
Sulfate	31.1	3.00	30.00	0	104	90	110			

Sample ID	**LCSD-77847**	Batch ID:	**77847**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**LCSD**	Run ID:	**IC2_161110A**	Analysis Date:	**11/10/2016 9:44:46 AM**	Prep Date:	**11/10/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.1	1.00	10.00	0	101	90	110	1.16	20	
Fluoride	3.84	0.400	4.000	0	96.0	90	110	1.15	20	
Sulfate	30.9	3.00	30.00	0	103	90	110	0.685	20	

Sample ID	**1610230-04DMS**	Batch ID:	**77847**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**MS**	Run ID:	**IC2_161110A**	Analysis Date:	**11/10/2016 3:11:11 PM**	Prep Date:	**11/10/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	251	10.0	200.0	46.57	102	90	110			
Fluoride	197	4.00	200.0	0	98.4	90	110			
Sulfate	996	30.0	200.0	801.3	97.3	90	110			

Sample ID	**1610230-04DMSD**	Batch ID:	**77847**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**MSD**	Run ID:	**IC2_161110A**	Analysis Date:	**11/10/2016 3:25:48 PM**	Prep Date:	**11/10/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	252	10.0	200.0	46.57	103	90	110	0.125	20	
Fluoride	198	4.00	200.0	0	99.0	90	110	0.632	20	
Sulfate	997	30.0	200.0	801.3	97.9	90	110	0.129	20	

Sample ID	**1611091-01CMS**	Batch ID:	**77847**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**MS**	Run ID:	**IC2_161110A**	Analysis Date:	**11/10/2016 3:40:24 PM**	Prep Date:	**11/10/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1610230
Project: MLSES A1 Area Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_161110A

Sample ID **1611091-01CMS**	Batch ID: **77847**	TestNo: **E300**	Units: **mg/L**
SampType: **MS**	Run ID: **IC2_161110A**	Analysis Date: **11/10/2016 3:40:24 PM**	Prep Date: **11/10/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	37.4	1.00	20.00	17.36	100	90	110			
Fluoride	20.2	0.400	20.00	0	101	90	110			
Sulfate	37.9	3.00	20.00	17.21	103	90	110			

Sample ID **1611091-01CMSD**	Batch ID: **77847**	TestNo: **E300**	Units: **mg/L**
SampType: **MSD**	Run ID: **IC2_161110A**	Analysis Date: **11/10/2016 3:55:01 PM**	Prep Date: **11/10/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	37.6	1.00	20.00	17.36	101	90	110	0.468	20	
Fluoride	20.3	0.400	20.00	0	102	90	110	0.292	20	
Sulfate	38.2	3.00	20.00	17.21	105	90	110	0.710	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1610230
Project: MLSES A1 Area Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_161110A

Sample ID **ICV-161110**	Batch ID: **R88929**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC2_161110A**	Analysis Date: **11/10/2016 8:38:18 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	25.3	1.00	25.00	0	101	90	110			
Fluoride	9.65	0.400	10.00	0	96.5	90	110			
Sulfate	77.8	3.00	75.00	0	104	90	110			

Sample ID **CCV1-161110**	Batch ID: **R88929**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_161110A**	Analysis Date: **11/10/2016 12:54:03 P**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.0	1.00	10.00	0	100	90	110			
Fluoride	3.96	0.400	4.000	0	98.9	90	110			
Sulfate	30.6	3.00	30.00	0	102	90	110			

Sample ID **CCV2-161110**	Batch ID: **R88929**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_161110A**	Analysis Date: **11/10/2016 4:09:37 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.0	1.00	10.00	0	100	90	110			
Fluoride	4.06	0.400	4.000	0	102	90	110			
Sulfate	30.5	3.00	30.00	0	102	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1610230
Project: MLSES A1 Area Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_161027A

The QC data in batch 77694 applies to the following samples: 1610230-01D, 1610230-02D, 1610230-03D, 1610230-04D, 1610230-05D, 1610230-06D, 1610230-07D

Sample ID	**1610202-11D-DUP**	Batch ID:	**77694**	TestNo:	**M4500-H+ B**	Units:	**pH Units@20.8℃**
SampType:	**DUP**	Run ID:	**TITRATOR_161027A**	Analysis Date:	**10/27/2016 10:48:00 A**	Prep Date:	**10/27/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	8.02	0	0	8.000				0.250	5	

Sample ID	**1610230-01D-DUP**	Batch ID:	**77694**	TestNo:	**M4500-H+ B**	Units:	**pH Units@18.8℃**
SampType:	**DUP**	Run ID:	**TITRATOR_161027A**	Analysis Date:	**10/27/2016 10:58:00 A**	Prep Date:	**10/27/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	6.57	0	0	6.450				1.84	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1610230
Project: MLSES A1 Area Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_161027A

Sample ID	**ICV-161027**	Batch ID:	**R88729**	TestNo:	**M4500-H+ B**	Units:	**pH Units@21.9℃**
SampType:	**ICV**	Run ID:	**TITRATOR_161027A**	Analysis Date:	**10/27/2016 9:58:00 AM**	Prep Date:	**10/27/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	9.91	0	10.00	0	99.1	99	101			

Sample ID	**CCV1-161027**	Batch ID:	**R88729**	TestNo:	**M4500-H+ B**	Units:	**pH Units@22.1℃**
SampType:	**CCV**	Run ID:	**TITRATOR_161027A**	Analysis Date:	**10/27/2016 10:55:00 A**	Prep Date:	**10/27/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	6.97	0	7.000	0	99.6	97.1	102.9			

Sample ID	**CCV2-161027**	Batch ID:	**R88729**	TestNo:	**M4500-H+ B**	Units:	**pH Units@21.9℃**
SampType:	**CCV**	Run ID:	**TITRATOR_161027A**	Analysis Date:	**10/27/2016 11:10:00 A**	Prep Date:	**10/27/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	6.97	0	7.000	0	99.6	97.1	102.9			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler

Work Order: 1610230

Project: MLSES A1 Area Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: WC_161031A

The QC data in batch 77739 applies to the following samples: 1610230-01D, 1610230-02D, 1610230-03D, 1610230-04D, 1610230-05D, 1610230-06D, 1610230-07D

Sample ID	**MB-77739**	Batch ID:	**77739**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**WC_161031A**	Analysis Date:	**11/1/2016 8:43:00 AM**	Prep Date:	**10/31/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	<10.0	10.0								

Sample ID	**LCS-77739**	Batch ID:	**77739**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**WC_161031A**	Analysis Date:	**11/1/2016 8:43:00 AM**	Prep Date:	**10/31/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	747	10.0	745.6	0	100	90	113			

Sample ID	**1610230-01D-DUP**	Batch ID:	**77739**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**DUP**	Run ID:	**WC_161031A**	Analysis Date:	**11/1/2016 8:43:00 AM**	Prep Date:	**10/31/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	1490	50.0	0	1495				0.335	5	

Sample ID	**1610230-07D-DUP**	Batch ID:	**77739**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**DUP**	Run ID:	**WC_161031A**	Analysis Date:	**11/1/2016 8:43:00 AM**	Prep Date:	**10/31/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	4310	50.0	0	4410				2.29	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

Case Narrative

Lab No: 20161055

This report contains the analytical results for the 7 sample(s) received under chain of custody by ESC Lab Sciences on 10/31/2016 8:56:40 AM. These samples are associated with your 1610230 project.

The analytical results included in this report meet all applicable quality control procedure requirements except as noted below:

The test results in this report meet all NELAC requirements unless noted below:

This report shall not be reproduced, except in full, without the written approval of ESC Lab Sciences.

All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client.

Results have been reviewed by the Director of Radiochemistry or their designees and is approved for release.

Observations / Nonconformances

Analytical Report

	Method	Result	DL	Units	Qual	Prep Date	Analysis Date	Analyst
Lab ID : 20161055-01								
Client ID : BMW-24								
Date Sampled : 10/25/2016 2:20:00 PM								
Matrix : NPW								
Radiochemical Analyses								
Combined Radium		2.68 +/- 1.21	0.692	pCi/l				
Radium-226	SM 7500 Ra B M*	1.37 +/- 0.306	0.102	pCi/l		11/10/16	11/14/16	AK
Radium-228	EPA 904*/9320*	1.31 +/- 0.906	0.590	pCi/l		11/07/16	11/10/16	JR
Lab ID : 20161055-02								
Client ID : BMW-23								
Date Sampled : 10/25/2016 3:10:00 PM								
Matrix : NPW								
Radiochemical Analyses								
Combined Radium		2.23 +/- 1.03	0.668	pCi/l				
Radium-226	SM 7500 Ra B M*	0.472 +/- 0.177	0.132	pCi/l		11/10/16	11/14/16	AK
Radium-228	EPA 904*/9320*	1.76 +/- 0.856	0.536	pCi/l		11/07/16	11/10/16	JR
Lab ID : 20161055-03								
Client ID : BMW-22								
Date Sampled : 10/25/2016 4:05:00 PM								
Matrix : NPW								
Radiochemical Analyses								
Combined Radium		1.65 +/- 0.907	0.539	pCi/l				
Radium-226	SM 7500 Ra B M*	0.633 +/- 0.182	0.110	pCi/l		11/10/16	11/14/16	AK
Radium-228	EPA 904*/9320*	1.02 +/- 0.725	0.429	pCi/l		11/07/16	11/10/16	JR
Lab ID : 20161055-04								
Client ID : BMW-20								
Date Sampled : 10/26/2016 8:15:00 AM								
Matrix : NPW								
Radiochemical Analyses								
Combined Radium		1.20 +/- 1.17	0.718	pCi/l				
Radium-226	SM 7500 Ra B M*	0.347 +/- 0.137	0.080	pCi/l		11/10/16	11/14/16	AK
Radium-228	EPA 904*/9320*	0.848 +/- 1.03	0.638	pCi/l		11/07/16	11/10/16	JR

Analytical Report

	Method	Result	DL	Units	Qual	Prep Date	Analysis Date	Analyst
Lab ID : **20161055-05**								
Client ID : **BMW-21**								
Date Sampled : **10/26/2016 9:10:00 AM**								
Matrix : **NPW**								
		Radiochemical Analyses						
Combined Radium		1.99 +/- 0.877	0.536	pCi/l				
Radium-226	SM 7500 Ra B M*	0.383 +/- 0.151	0.088	pCi/l		11/10/16	11/14/16	AK
Radium-228	EPA 904*/9320*	1.61 +/- 0.726	0.448	pCi/l		11/07/16	11/10/16	JR
Lab ID : **20161055-06**								
Client ID : **BMW-11AR**								
Date Sampled : **10/26/2016 10:15:00 AM**								
Matrix : **NPW**								
		Radiochemical Analyses						
Combined Radium		1.55 +/- 0.973	0.650	pCi/l				
Radium-226	SM 7500 Ra B M*	0.631 +/- 0.183	0.154	pCi/l		11/10/16	11/14/16	AK
Radium-228	EPA 904*/9320*	0.922 +/- 0.790	0.496	pCi/l		11/07/16	11/10/16	JR
Lab ID : **20161055-07**								
Client ID : **BMW-19**								
Date Sampled : **10/26/2016 11:20:00 AM**								
Matrix : **NPW**								
		Radiochemical Analyses						
Combined Radium		0.403 +/- 0.827	0.632	pCi/l				
Radium-226	SM 7500 Ra B M*	0.141 +/- 0.113	0.152	pCi/l		11/10/16	11/14/16	AK
Radium-228	EPA 904*/9320*	0.262 +/- 0.714	0.480	pCi/l		11/07/16	11/10/16	JR

QC Report

Parameter	Blank	LCS %REC	LCSD %REC	LCSD RPD	DUP RPD	RER, NAD or DER	MS %REC	MSD %REC	MSD RPD	Batch ID
Radium-226	-0.021	114.0			NC	0.292	115.0	107.0	7.3	R1159
Radium-228	-0.240	84.4			NC	0.272	99.6	111.0	10.1	R3878

Lab Approval:

Ron Eidson
Director of Radiochemistry

DHL Analytical, Inc.
2300 Double Creek Drive
Round Rock, TX 78664
TEL: *(512) 388-8222* FAX: *(512) 388-8229*

CHAIN-OF-CUSTODY RECORD

Work Order: 1610230

Subcontractor:

ESC Laboratory
311 North Aspen
Broken Arrow, Oklahoma 74012

TEL: (918) 251-2515
FAX:
Acct #: DHLRRTX

27-Oct-16

	Sample Id	Matrix	DHL#	Date Collected	Bottle Type	Requested Tests					
						E904.0	SM7500Ra-B M				
1	BMW-24	Aqueous	-01B	10/25/16 02:20 PM	500HDPEHNO3	1					
	BMW-24	Aqueous	-01C	10/25/16 02:20 PM	500HDPEHNO3		1				
2	BMW-23	Aqueous	-02B	10/25/16 03:10 PM	500HDPEHNO3	1					
	BMW-23	Aqueous	-02C	10/25/16 03:10 PM	500HDPEHNO3		1				
3	BMW-22	Aqueous	-03B	10/25/16 04:05 PM	500HDPEHNO3	1					
	BMW-22	Aqueous	-03C	10/25/16 04 05 PM	500HDPEHNO3		1				
4	BMW-20	Aqueous	-04B	10/26/16 08 15 AM	500HDPEHNO3	1					
	BMW-20	Aqueous	-04C	10/26/16 08 15 AM	500HDPEHNO3		1				
5	BMW-21	Aqueous	-05B	10/26/16 09.10 AM	500HDPEHNO3	1					
	BMW-21	Aqueous	-05C	10/26/16 09:10 AM	500HDPEHNO3		1				
6	BMW-11AR	Aqueous	-06B	10/26/16 10:15 AM	500HDPEHNO3	1					
	BMW-11AR	Aqueous	-06C	10/26/16 10:15 AM	500HDPEHNO3		1				
7	BMW-19	Aqueous	-07B	10/26/16 11:20 AM	500HDPEHNO3	1					
	BMW-19	Aqueous	-07C	10/26/16 11:20 AM	500HDPEHNO3		1				

General Comments:

Please analyze these samples with Normal Turnaround Time.
Report RA-226, Ra-228 & Combined per Specs DHLRRTX033116S.
Quality Control Package Needed: Standard - NELAC Rad Test compliant
Email to cac@dhlanalytical.com & dupont@dhlanalytical.com

20161055 L829493

		Date/Time			Date/Time
Relinquished by:		10/27/16 1730	**Received by:**	Lonestar	10/27/16 1730
Relinquished by:			**Received by:**		10/31/16 0856

20161055

SAMPLE LOGIN

Date Received: *10/31/2016 8:56:4* Lab Number: 20161055 Due: 11/28/2016

Sample Number	Client Sample ID	Matrix	Date Sampled	Container Type	Container Size	Preservation	Preserved Upon Receipt	Custody Seal	Seal Intact
20161055-01 B	BMW-24	NPW	10/25/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
20161055-01 A	BMW-24	NPW	10/25/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20161055-02 B	BMW-23	NPW	10/25/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
20161055-02 A	BMW-23	NPW	10/25/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20161055-03 B	BMW-22	NPW	10/25/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
20161055-03 A	BMW-22	NPW	10/25/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20161055-04 B	BMW-20	NPW	10/26/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
20161055-04 A	BMW-20	NPW	10/26/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20161055-05 B	BMW-21	NPW	10/26/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
20161055-05 A	BMW-21	NPW	10/26/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20161055-06 B	BMW-11AR	NPW	10/26/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
20161055-06 A	BMW-11AR	NPW	10/26/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20161055-07 B	BMW-19	NPW	10/26/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
20161055-07 A	BMW-19	NPW	10/26/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						

CONTAINER INSPECTION

Coolers 1 Custody Seals Broken Ø Temperature: 4.6 C Ice Radiation Survey: <300 cpm

SAMPLE INSPECTION

Sample Seal Broken Ø Chain of Custody Record ✓ Labels in Tact ✓ Radiation Survey Complete N/A

Anomalies ~~Sample 06 sample time descrimpancy ; COC has "10:15" and container label has~~ 10/31/16 ET

Inspected By: _____ DATE ~~10/31~~ 10/31/16

QA or Designee Review: Raymond Thomas DATE 10/31/16

Sample Custodian Review: Dustin Lewis DATE 10/31/16

Project Notes:

November 28, 2016

Will Vienne
Pastor, Behling & Wheeler
2201 Double Creek Dr #4004
Round Rock, Texas 78664
TEL: (512) 671-3434
FAX (512) 671-3446

Order No.: 1610240

RE: MLSES A1 Area Landfill

Dear Will Vienne:

DHL Analytical, Inc. received 3 sample(s) on 10/28/2016 for the analyses presented in the following report.

There were no problems with the analyses and all data met requirements of NELAC except where noted in the Case Narrative. All non-NELAC methods will be identified accordingly in the case narrative and all estimated uncertainties of test results are within method or EPA specifications.

If you have any questions regarding these tests results, please feel free to call. Thank you for using DHL Analytical.

Sincerely,

John DuPont
General Manager

This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211-16-17

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DHL ANALYTICAL
2300 Double Creek Dr. ■ Round Rock, TX 78664
Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

№ 69947

CHAIN-OF-CUSTODY

CLIENT: PBW
ADDRESS: 2201 DOUBLE CREEK DR ROUND ROCK, TX 78664
PHONE: 512-671-3434 FAX/E-MAIL: 512-671-3446
DATA REPORTED TO: WILL VIENVIVE
ADDITIONAL REPORT COPIES TO:

DATE: 10/26/16 PAGE 1 OF 1
PO #: 5164-B DHL WORK ORDER #: 1610240
PROJECT LOCATION OR NAME: MLSES - A1 AREA LANDFILL
CLENT PROJECT #: 5164-B COLLECTOR: J. BRAYTON

Authorize 5% surcharge for TRRP Report? ☐ Yes ☐ No

S=SOIL W=WATER A=AIR L=LIQUID SE=SEDIMENT P=PAINT SL=SLUDGE O=OTHER SO=SOLID

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	PRESERVATION HCl	HNO_3	H_2SO_4	NaOH ☐	ICE	UNPRESERVED	ANALYSES	FIELD NOTES
BMW-18	01	10-26-16	1235	W	P	4		X	X		X	X	CCR	
BMW-26	02		1446	W	P	4		X	X		X	X	CCR	
BMW-27	03		1540	W	P	4		X			X	X	CCR	

ANALYSES: BTEX ☐ MTBE ☐ [METHOD 8021] TPH 1005 ☐ TPH 1006 ☐ HOLD 1006 ☐ GRO [METHOD 8015] ☐ DRO [METHOD 8105] ☐ VOC 8260/5035 ☐ VOC 8260 ☐ VOC 624 ☐ VOC 8260/5035 ☐ SVOC 8270 ☐ PAH 8270 ☐ HOLD PAH ☐ SVOC 625 ☐ 8270 PEST ☐ 625 PEST/PCB ☐ 608 PCB ☐ 8270 PCB ☐ 8270 O-P PEST ☐ 8082 PCB ☐ 8270 PCB ☐ 8321 HERB ☐ T PHOS, AMMONIA ☐ METALS 6020 ☐ METALS 200.8 ☐ DISS. METALS ☐ RCRA ☐ TX11 ☐ PH ☐ HEX CHROM ☐ ALKALINITY ☐ COD ☐ CHLORIDE ☐ ANIONS ☐ TCLP-SVOC ☐ VOC ☐ PEST ☐ HERB ☐ TCLP-METALS ☐ RCRA 8 ☐ TX-11 ☐ Pb ☐ RCI ☐ FLASHPOINT ☐ DGAS ☐ TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐

RELINQUISHED BY: (Signature) DHL DATE/TIME 10/27/16 1745 RECEIVED BY: (Signature) Fedex
RELINQUISHED BY: (Signature) Fedex DATE/TIME 10/28/16 9:00 RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature) DATE/TIME RECEIVED BY: (Signature)

☐ DHL DISPOSAL @ $5.00 each ☐ Return

TURN AROUND TIME
RUSH ☐ CALL FIRST
1 DAY ☐ CALL FIRST
2 DAY ☐
NORMAL ☒
OTHER ☐ _____

LABORATORY USE ONLY:
RECEIVING TEMP: 6.0 THERM #: 78
CUSTODY SEALS: ☐ BROKEN ☒ INTACT ☐ NOT USED
CARRIER: ☐ LONE STAR ☒ FEDEX ☐ UPS ☐ OTHER
☐ COURIER DELIVERY
☐ HAND DELIVERED

John Dupont

From: Sara Taube [Sara.Taube@pbwllc.com]
Sent: Wednesday, July 22, 2015 12:05 PM
To: John Dupont
Subject: CCR Appendix III and IV
Follow Up Flag: Follow up
Flag Status: Completed

Hi John,

Here are the Appendix III and Appendix IV constituents that we will need to have analyzed under the CCR Rule.

Appendix III
Boron
Calcium
Chloride
Fluoride
pH
sulfate
TDS

Appendix IV
Antimony
Arsenic
Barium
Beryllium
Cadmium
Chromium
Cobalt
Fluorids
Lead
Lithium
Mercury
Molybdenum
Selenium
Thallium
Radium 226 and 228

We are looking to have approximately 74 wells sampled 8 times over the course of the next two years. Please let me know if there is any more information you might need.

Cheers,

Sara

10/26/2015

ORIGIN ID:TIKA (512) 671-3434
JOHN BRAYTON

2201 DOUBLE CREEK DR STE 4004

ROUND ROCK, TX 78664
UNITED STATES US

SHIP DATE: 27OCT16
ACTWGT: 30.00 LB
CAD: 6992679/SSF01722
DIMS: 17x15x12 IN

BILL THIRD PARTY

Part # 156297V-436 RIT2 APV EXP 08/17

TO

DHL
2300 DOUBLE CREEK DRIVE

ROUND ROCK TX 78664

(512) 388-8222
INV:
PO:
REF:
DEPT:

FedEx
Express

E

J162016101201sv

TRK# 0201 7844 8170 2682

FRI - 28 OCT 10:30A
PRIORITY OVERNIGHT

A8 BSMA

78664
TX-US AUS

DHL Analytical, Inc.

Sample Receipt Checklist

Client Name Pastor, Behling & Wheeler

Date Received: 10/28/2016

Work Order Number 1610240

Received by JT

Checklist completed by: [signature] 10/28/2016 (Signature / Date)

Reviewed by [initials] 10/28/2016 (Initials / Date)

Carrier name FedEx 1day

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	6.0 °C
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH<2 acceptable upon receipt?	Yes ☑	No ☐	NA ☐ LOT # 8086
	Adjusted? NO		Checked by [signature]
Water - ph>9 (S) or ph>12 (CN) acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted?		Checked by

Any No response must be detailed in the comments section below.

Client contacted _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments: _____

Corrective Action _____

DHL Analytical, Inc. **Date:** *28-Nov-16*

CLIENT: Pastor, Behling & Wheeler
Project: MLSES A1 Area Landfill
Lab Order: 1610240

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Method SW6020A - Metals Analysis
Method SW7470A - Mercury Analysis
Method E300 - Anions Analysis
Method M4500-H+ B - pH of a Water Analysis
Method M2540C - TDS Analysis
Sub-contract - Radium-228 and Radium-226 analyses by methods E904/9320 and SM 7500 Ra B M. Analyzed at ESC Lab Sciences.

LOG IN

The samples were received and log-in performed on 10/28/16. A total of 3 samples were received. The samples arrived in good condition and were properly packaged.

METALS ANALYSIS

For Metals analysis performed on 11/9/16 (batch 77818) Calcium was detected above the reporting limit in the method blank (MB-77818). All samples were detected greater than 10 times the amount in the blank for this analyte. No further corrective actions were taken.

For Metals analysis performed on 11/9/16 (batch 77828) the RPD for the serial dilution was above control limits for Boron. This is flagged accordingly. The PDS was within control limits for this analyte. No further corrective actions were taken.

DHL Analytical, Inc.

Date: *28-Nov-16*

CLIENT: Pastor, Behling & Wheeler
Project: MLSES A1 Area Landfill
Lab Order: 1610240

Work Order Sample Summary

Lab Smp ID	Client Sample ID	Tag Number	Date Collected	Date Recved
1610240-01	BMW-18		10/26/16 12:35 PM	10/28/2016
1610240-02	BMW-26		10/26/16 02:40 PM	10/28/2016
1610240-03	BMW-27		10/26/16 03:40 PM	10/28/2016

Lab Order: 1610240
Client: Pastor, Behling & Wheeler
Project: MLSES A1 Area Landfill

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1610240-01A	BMW-18	10/26/16 12:35 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	11/08/16 08:28 AM	77818
	BMW-18	10/26/16 12:35 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	11/09/16 08:02 AM	77828
	BMW-18	10/26/16 12:35 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	11/02/16 10:55 AM	77769
1610240-01D	BMW-18	10/26/16 12:35 PM	Aqueous	E300	Anion Preparation	11/01/16 09:04 AM	77744
	BMW-18	10/26/16 12:35 PM	Aqueous	M4500-H+ B	pH Preparation	10/28/16 01:10 PM	77718
	BMW-18	10/26/16 12:35 PM	Aqueous	M2540C	TDS Preparation	10/31/16 02:26 PM	77739
1610240-02A	BMW-26	10/26/16 02:40 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	11/09/16 08:02 AM	77828
	BMW-26	10/26/16 02:40 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	11/08/16 08:28 AM	77818
	BMW-26	10/26/16 02:40 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	11/08/16 08:28 AM	77818
	BMW-26	10/26/16 02:40 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	11/02/16 10:55 AM	77769
1610240-02D	BMW-26	10/26/16 02:40 PM	Aqueous	E300	Anion Preparation	11/01/16 09:04 AM	77744
	BMW-26	10/26/16 02:40 PM	Aqueous	M4500-H+ B	pH Preparation	10/28/16 01:10 PM	77718
	BMW-26	10/26/16 02:40 PM	Aqueous	M2540C	TDS Preparation	10/31/16 02:26 PM	77739
1610240-03A	BMW-27	10/26/16 03:40 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	11/08/16 08:28 AM	77818
	BMW-27	10/26/16 03:40 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	11/08/16 08:28 AM	77818
	BMW-27	10/26/16 03:40 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	11/09/16 08:02 AM	77828
	BMW-27	10/26/16 03:40 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	11/09/16 08:02 AM	77828
	BMW-27	10/26/16 03:40 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	11/02/16 10:55 AM	77769
1610240-03D	BMW-27	10/26/16 03:40 PM	Aqueous	E300	Anion Preparation	11/01/16 09:04 AM	77744
	BMW-27	10/26/16 03:40 PM	Aqueous	E300	Anion Preparation	11/01/16 09:04 AM	77744
	BMW-27	10/26/16 03:40 PM	Aqueous	M4500-H+ B	pH Preparation	10/28/16 01:10 PM	77718
	BMW-27	10/26/16 03:40 PM	Aqueous	M2540C	TDS Preparation	10/31/16 02:26 PM	77739

Lab Order: 1610240
Client: Pastor, Behling & Wheeler
Project: MLSES A1 Area Landfill

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1610240-01A	BMW-18	Aqueous	SW7470A	Mercury Total: Aqueous	77769	1	11/03/16 12:46 PM	CETAC2_HG_161103A
	BMW-18	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	77818	1	11/08/16 03:05 PM	ICP-MS4_161108B
	BMW-18	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	77828	1	11/09/16 03:09 PM	ICP-MS4_161109A
1610240-01D	BMW-18	Aqueous	E300	Anions by IC method - Water	77744	1	11/01/16 10:30 AM	IC2_161101A
	BMW-18	Aqueous	M4500-H+ B	pH	77718	1	10/28/16 02:12 PM	TITRATOR_161028A
	BMW-18	Aqueous	M2540C	Total Dissolved Solids	77739	1	11/01/16 08:43 AM	WC_161031A
1610240-02A	BMW-26	Aqueous	SW7470A	Mercury Total: Aqueous	77769	1	11/03/16 12:48 PM	CETAC2_HG_161103A
	BMW-26	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	77828	1	11/09/16 03:11 PM	ICP-MS4_161109A
	BMW-26	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	77818	1	11/08/16 03:19 PM	ICP-MS4_161108B
	BMW-26	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	77818	5	11/08/16 03:54 PM	ICP-MS4_161108B
1610240-02D	BMW-26	Aqueous	E300	Anions by IC method - Water	77744	1	11/01/16 10:45 AM	IC2_161101A
	BMW-26	Aqueous	M4500-H+ B	pH	77718	1	10/28/16 02:15 PM	TITRATOR_161028A
	BMW-26	Aqueous	M2540C	Total Dissolved Solids	77739	1	11/01/16 08:43 AM	WC_161031A
1610240-03A	BMW-27	Aqueous	SW7470A	Mercury Total: Aqueous	77769	1	11/03/16 12:50 PM	CETAC2_HG_161103A
	BMW-27	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	77818	1	11/08/16 03:21 PM	ICP-MS4_161108B
	BMW-27	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	77818	10	11/08/16 03:56 PM	ICP-MS4_161108B
	BMW-27	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	77828	1	11/09/16 03:13 PM	ICP-MS4_161109A
	BMW-27	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	77828	2	11/09/16 03:31 PM	ICP-MS4_161109A
1610240-03D	BMW-27	Aqueous	E300	Anions by IC method - Water	77744	1	11/01/16 10:59 AM	IC2_161101A
	BMW-27	Aqueous	E300	Anions by IC method - Water	77744	10	11/01/16 12:05 PM	IC2_161101A
	BMW-27	Aqueous	M4500-H+ B	pH	77718	1	10/28/16 02:18 PM	TITRATOR_161028A
	BMW-27	Aqueous	M2540C	Total Dissolved Solids	77739	1	11/01/16 08:43 AM	WC_161031A

DHL Analytical, Inc.

Date: *28-Nov-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	BMW-18
Project:	MLSES A1 Area Landfill	**Lab ID:**	1610240-01
Project No:	5164-B	**Collection Date:**	10/26/16 12:35 PM
Lab Order:	1610240	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **RO**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	11/03/16 12:46 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **CVD**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	11/08/16 03:05 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	11/08/16 03:05 PM
Barium	0.0290	0.00300	0.0100		mg/L	1	11/08/16 03:05 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	11/08/16 03:05 PM
Boron	0.450	0.0100	0.0300		mg/L	1	11/09/16 03:09 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	11/08/16 03:05 PM
Calcium	6.55	0.100	0.300		mg/L	1	11/08/16 03:05 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	11/08/16 03:05 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	11/08/16 03:05 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	11/08/16 03:05 PM
Lithium	0.0156	0.00500	0.0100		mg/L	1	11/08/16 03:05 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	11/08/16 03:05 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	11/08/16 03:05 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	11/08/16 03:05 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	18.1	0.300	1.00		mg/L	1	11/01/16 10:30 AM
Fluoride	0.158	0.100	0.400	J	mg/L	1	11/01/16 10:30 AM
Sulfate	94.3	1.00	3.00		mg/L	1	11/01/16 10:30 AM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	8.49	0	0		pH Units@20.9℃	1	10/28/16 02:12 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	534	10.0	10.0		mg/L	1	11/01/16 08:43 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *28-Nov-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	BMW-26
Project:	MLSES A1 Area Landfill	**Lab ID:**	1610240-02
Project No:	5164-B	**Collection Date:**	10/26/16 02:40 PM
Lab Order:	1610240	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **RO**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	11/03/16 12:48 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **CVD**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	11/08/16 03:19 PM
Arsenic	0.00318	0.00200	0.00500	J	mg/L	1	11/08/16 03:19 PM
Barium	0.0731	0.00300	0.0100		mg/L	1	11/08/16 03:19 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	11/08/16 03:19 PM
Boron	0.127	0.0100	0.0300		mg/L	1	11/09/16 03:11 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	11/08/16 03:19 PM
Calcium	44.3	0.500	1.50		mg/L	5	11/08/16 03:54 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	11/08/16 03:19 PM
Cobalt	0.00402	0.00300	0.00500	J	mg/L	1	11/08/16 03:19 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	11/08/16 03:19 PM
Lithium	<0.00500	0.00500	0.0100		mg/L	1	11/08/16 03:19 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	11/08/16 03:19 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	11/08/16 03:19 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	11/08/16 03:19 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	16.2	0.300	1.00		mg/L	1	11/01/16 10:45 AM
Fluoride	<0.100	0.100	0.400		mg/L	1	11/01/16 10:45 AM
Sulfate	140	1.00	3.00		mg/L	1	11/01/16 10:45 AM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.14	0	0		pH Units@20.7℃	1	10/28/16 02:15 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	414	10.0	10.0		mg/L	1	11/01/16 08:43 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *28-Nov-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	BMW-27
Project:	MLSES A1 Area Landfill	**Lab ID:**	1610240-03
Project No:	5164-B	**Collection Date:**	10/26/16 03:40 PM
Lab Order:	1610240	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **RO**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	11/03/16 12:50 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **CVD**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	11/08/16 03:21 PM
Arsenic	0.00625	0.00200	0.00500		mg/L	1	11/08/16 03:21 PM
Barium	0.0339	0.00300	0.0100		mg/L	1	11/08/16 03:21 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	11/08/16 03:21 PM
Boron	0.548	0.0200	0.0600		mg/L	2	11/09/16 03:31 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	11/08/16 03:21 PM
Calcium	196	1.00	3.00		mg/L	10	11/08/16 03:56 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	11/08/16 03:21 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	11/08/16 03:21 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	11/08/16 03:21 PM
Lithium	0.0933	0.00500	0.0100		mg/L	1	11/08/16 03:21 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	11/08/16 03:21 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	11/08/16 03:21 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	11/08/16 03:21 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	102	3.00	10.0		mg/L	10	11/01/16 12:05 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	11/01/16 10:59 AM
Sulfate	700	10.0	30.0		mg/L	10	11/01/16 12:05 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	7.39	0	0		pH Units@20.5℃	1	10/28/16 02:18 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	2020	50.0	50.0		mg/L	1	11/01/16 08:43 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT: Pastor, Behling & Wheeler
Work Order: 1610240
Project: MLSES A1 Area Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_161103A

The QC data in batch 77769 applies to the following samples: 1610240-01A, 1610240-02A, 1610240-03A

Sample ID	**MB-77769**	Batch ID:	**77769**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**CETAC2_HG_161103A**	Analysis Date:	**11/3/2016 12:11:16 PM**	Prep Date:	**11/2/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.0000800	0.000200								

Sample ID	**LCS-77769**	Batch ID:	**77769**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**CETAC2_HG_161103A**	Analysis Date:	**11/3/2016 12:13:32 PM**	Prep Date:	**11/2/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00208	0.000200	0.00200	0	104	85	115			

Sample ID	**LCSD-77769**	Batch ID:	**77769**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**LCSD**	Run ID:	**CETAC2_HG_161103A**	Analysis Date:	**11/3/2016 12:15:48 PM**	Prep Date:	**11/2/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00209	0.000200	0.00200	0	104	85	115	0.480	15	

Sample ID	**1610230-06A SD**	Batch ID:	**77769**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**SD**	Run ID:	**CETAC2_HG_161103A**	Analysis Date:	**11/3/2016 12:20:21 PM**	Prep Date:	**11/2/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.000400	0.00100	0	0				0	10	

Sample ID	**1610230-06A PDS**	Batch ID:	**77769**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**PDS**	Run ID:	**CETAC2_HG_161103A**	Analysis Date:	**11/3/2016 12:22:36 PM**	Prep Date:	**11/2/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00241	0.000200	0.00250	0	96.4	85	115			

Sample ID	**1610230-06A MS**	Batch ID:	**77769**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**MS**	Run ID:	**CETAC2_HG_161103A**	Analysis Date:	**11/3/2016 12:24:51 PM**	Prep Date:	**11/2/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00210	0.000200	0.00200	0	105	80	120			

Sample ID	**1610230-06A MSD**	Batch ID:	**77769**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**MSD**	Run ID:	**CETAC2_HG_161103A**	Analysis Date:	**11/3/2016 12:27:07 PM**	Prep Date:	**11/2/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00211	0.000200	0.00200	0	106	80	120	0.475	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1610240
Project: MLSES A1 Area Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_161103A

Sample ID **ICV-161103**	Batch ID: **R88836**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **ICV**	Run ID: **CETAC2_HG_161103A**	Analysis Date: **11/3/2016 12:06:42 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00383	0.000200	0.00400	0	95.8	90	110			

Sample ID **CCV1-161103**	Batch ID: **R88836**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_161103A**	Analysis Date: **11/3/2016 12:59:56 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00201	0.000200	0.00200	0	101	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1610240
Project: MLSES A1 Area Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161108B

The QC data in batch 77818 applies to the following samples: 1610240-01A, 1610240-02A, 1610240-03A

Sample ID **MB-77818** Batch ID: **77818** TestNo: **SW6020A** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_161108B** Analysis Date: **11/8/2016 2:59:00 PM** Prep Date: **11/8/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.000800	0.00250								
Arsenic	<0.00200	0.00500								
Barium	<0.00300	0.0100								
Beryllium	<0.000300	0.00100								
Cadmium	<0.000300	0.00100								
Calcium	0.358	0.300								
Chromium	<0.00200	0.00500								
Cobalt	<0.00300	0.00500								
Lead	<0.000300	0.00100								
Lithium	<0.00500	0.0100								
Molybdenum	<0.00200	0.00500								
Selenium	<0.00200	0.00500								
Thallium	<0.000500	0.00150								

Sample ID **LCS-77818** Batch ID: **77818** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_161108B** Analysis Date: **11/8/2016 3:01:00 PM** Prep Date: **11/8/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.193	0.00250	0.200	0	96.7	80	120			
Arsenic	0.200	0.00500	0.200	0	99.8	80	120			
Barium	0.198	0.0100	0.200	0	99.0	80	120			
Beryllium	0.200	0.00100	0.200	0	99.8	80	120			
Cadmium	0.194	0.00100	0.200	0	97.1	80	120			
Calcium	5.29	0.300	5.00	0	106	80	120			
Chromium	0.200	0.00500	0.200	0	100	80	120			
Cobalt	0.198	0.00500	0.200	0	98.8	80	120			
Lead	0.190	0.00100	0.200	0	94.9	80	120			
Lithium	0.192	0.0100	0.200	0	96.2	80	120			
Molybdenum	0.191	0.00500	0.200	0	95.7	80	120			
Selenium	0.198	0.00500	0.200	0	98.9	80	120			
Thallium	0.192	0.00150	0.200	0	95.8	80	120			

Sample ID **LCSD-77818** Batch ID: **77818** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_161108B** Analysis Date: **11/8/2016 3:03:00 PM** Prep Date: **11/8/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.194	0.00250	0.200	0	96.9	80	120	0.169	15	
Arsenic	0.199	0.00500	0.200	0	99.5	80	120	0.339	15	
Barium	0.198	0.0100	0.200	0	99.0	80	120	0.071	15	
Beryllium	0.197	0.00100	0.200	0	98.6	80	120	1.21	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1610240
Project: MLSES A1 Area Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161108B

Sample ID **LCSD-77818**	Batch ID: **77818**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCSD**	Run ID: **ICP-MS4_161108B**	Analysis Date: **11/8/2016 3:03:00 PM**	Prep Date: **11/8/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cadmium	0.196	0.00100	0.200	0	97.8	80	120	0.738	15	
Calcium	5.49	0.300	5.00	0	110	80	120	3.68	15	
Chromium	0.200	0.00500	0.200	0	99.8	80	120	0.146	15	
Cobalt	0.198	0.00500	0.200	0	98.8	80	120	0.028	15	
Lead	0.190	0.00100	0.200	0	95.1	80	120	0.218	15	
Lithium	0.196	0.0100	0.200	0	97.9	80	120	1.78	15	
Molybdenum	0.193	0.00500	0.200	0	96.5	80	120	0.861	15	
Selenium	0.199	0.00500	0.200	0	99.7	80	120	0.831	15	
Thallium	0.190	0.00150	0.200	0	95.2	80	120	0.699	15	

Sample ID **1610240-01A SD**	Batch ID: **77818**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS4_161108B**	Analysis Date: **11/8/2016 3:07:00 PM**	Prep Date: **11/8/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.00400	0.0125	0	0				0	10	
Arsenic	<0.0100	0.0250	0	0				0	10	
Barium	0.0286	0.0500	0	0.0290				1.18	10	
Beryllium	<0.00150	0.00500	0	0				0	10	
Cadmium	<0.00150	0.00500	0	0				0	10	
Calcium	6.76	1.50	0	6.55				3.04	10	
Chromium	<0.0100	0.0250	0	0				0	10	
Cobalt	<0.0150	0.0250	0	0				0	10	
Lead	<0.00150	0.00500	0	0				0	10	
Lithium	<0.0250	0.0500	0	0.0156				0	10	
Molybdenum	<0.0100	0.0250	0	0				0	10	
Selenium	<0.0100	0.0250	0	0				0	10	
Thallium	<0.00250	0.00750	0	0				0	10	

Sample ID **1610240-01A PDS**	Batch ID: **77818**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_161108B**	Analysis Date: **11/8/2016 3:27:00 PM**	Prep Date: **11/8/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.182	0.00250	0.200	0	90.9	80	120			
Arsenic	0.199	0.00500	0.200	0	99.3	80	120			
Barium	0.227	0.0100	0.200	0.0290	99.0	80	120			
Beryllium	0.196	0.00100	0.200	0	98.0	80	120			
Cadmium	0.190	0.00100	0.200	0	95.1	80	120			
Calcium	10.8	0.300	5.00	6.55	84.3	80	120			
Chromium	0.202	0.00500	0.200	0	101	80	120			
Cobalt	0.196	0.00500	0.200	0	97.8	80	120			
Lead	0.193	0.00100	0.200	0	96.4	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

Sample ID **1610240-01A PDS** Batch ID: **77818** TestNo: **SW6020A** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS4_161108B** Analysis Date: **11/8/2016 3:27:00 PM** Prep Date: **11/8/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lithium	0.198	0.0100	0.200	0.0156	91.3	80	120			
Molybdenum	0.188	0.00500	0.200	0	93.9	80	120			
Selenium	0.194	0.00500	0.200	0	96.9	80	120			
Thallium	0.190	0.00150	0.200	0	95.0	80	120			

Sample ID **1610240-01A MS** Batch ID: **77818** TestNo: **SW6020A** Units: **mg/L**
SampType: **MS** Run ID: **ICP-MS4_161108B** Analysis Date: **11/8/2016 3:29:00 PM** Prep Date: **11/8/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.197	0.00250	0.200	0	98.4	80	120			
Arsenic	0.197	0.00500	0.200	0	98.3	80	120			
Barium	0.225	0.0100	0.200	0.0290	97.9	80	120			
Beryllium	0.194	0.00100	0.200	0	96.8	80	120			
Cadmium	0.192	0.00100	0.200	0	96.1	80	120			
Calcium	11.7	0.300	5.00	6.55	104	80	120			
Chromium	0.193	0.00500	0.200	0	96.5	80	120			
Cobalt	0.192	0.00500	0.200	0	95.9	80	120			
Lead	0.189	0.00100	0.200	0	94.6	80	120			
Lithium	0.202	0.0100	0.200	0.0156	93.0	80	120			
Molybdenum	0.194	0.00500	0.200	0	97.1	80	120			
Selenium	0.192	0.00500	0.200	0	96.1	80	120			
Thallium	0.189	0.00150	0.200	0	94.3	80	120			

Sample ID **1610240-01A MSD** Batch ID: **77818** TestNo: **SW6020A** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS4_161108B** Analysis Date: **11/8/2016 3:31:00 PM** Prep Date: **11/8/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.198	0.00250	0.200	0	99.2	80	120	0.745	15	
Arsenic	0.199	0.00500	0.200	0	99.5	80	120	1.21	15	
Barium	0.227	0.0100	0.200	0.0290	99.1	80	120	1.10	15	
Beryllium	0.199	0.00100	0.200	0	99.3	80	120	2.50	15	
Cadmium	0.193	0.00100	0.200	0	96.3	80	120	0.196	15	
Calcium	11.4	0.300	5.00	6.55	96.0	80	120	3.40	15	
Chromium	0.198	0.00500	0.200	0	98.9	80	120	2.51	15	
Cobalt	0.193	0.00500	0.200	0	96.4	80	120	0.545	15	
Lead	0.190	0.00100	0.200	0	95.2	80	120	0.578	15	
Lithium	0.201	0.0100	0.200	0.0156	92.8	80	120	0.230	15	
Molybdenum	0.195	0.00500	0.200	0	97.6	80	120	0.504	15	
Selenium	0.194	0.00500	0.200	0	97.2	80	120	1.09	15	
Thallium	0.190	0.00150	0.200	0	95.2	80	120	0.977	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1610240
Project: MLSES A1 Area Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161108B

Sample ID **ICV-161108** Batch ID: **R88896** TestNo: **SW6020A** Units: **mg/L**
SampType: **ICV** Run ID: **ICP-MS4_161108B** Analysis Date: **11/8/2016 12:31:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.101	0.00250	0.100	0	101	90	110			
Arsenic	0.102	0.00500	0.100	0	102	90	110			
Barium	0.105	0.0100	0.100	0	105	90	110			
Beryllium	0.105	0.00100	0.100	0	105	90	110			
Cadmium	0.104	0.00100	0.100	0	104	90	110			
Calcium	2.40	0.300	2.50	0	96.0	90	110			
Chromium	0.108	0.00500	0.100	0	108	90	110			
Cobalt	0.106	0.00500	0.100	0	106	90	110			
Lead	0.101	0.00100	0.100	0	101	90	110			
Lithium	0.0999	0.0100	0.100	0	99.9	90	110			
Molybdenum	0.101	0.00500	0.100	0	101	90	110			
Selenium	0.103	0.00500	0.100	0	103	90	110			
Thallium	0.101	0.00150	0.100	0	101	90	110			

Sample ID **LCVL-161108** Batch ID: **R88896** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_161108B** Analysis Date: **11/8/2016 12:33:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00224	0.00250	0.00200	0	112	70	130			
Arsenic	0.00528	0.00500	0.00500	0	106	70	130			
Barium	0.00524	0.0100	0.00500	0	105	70	130			
Beryllium	0.00111	0.00100	0.00100	0	111	70	130			
Cadmium	0.00104	0.00100	0.00100	0	104	70	130			
Calcium	0.0970	0.300	0.100	0	97.0	70	130			
Chromium	0.00532	0.00500	0.00500	0	106	70	130			
Cobalt	0.00534	0.00500	0.00500	0	107	70	130			
Lead	0.00112	0.00100	0.00100	0	112	70	130			
Lithium	0.0103	0.0100	0.0100	0	103	70	130			
Molybdenum	0.00529	0.00500	0.00500	0	106	70	130			
Selenium	0.00589	0.00500	0.00500	0	118	70	130			
Thallium	0.00108	0.00150	0.00100	0	108	70	130			

Sample ID **CCV2-161108** Batch ID: **R88896** TestNo: **SW6020A** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_161108B** Analysis Date: **11/8/2016 2:06:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.198	0.00250	0.200	0	99.2	90	110			
Arsenic	0.208	0.00500	0.200	0	104	90	110			
Barium	0.205	0.0100	0.200	0	102	90	110			
Beryllium	0.207	0.00100	0.200	0	104	90	110			
Cadmium	0.199	0.00100	0.200	0	99.3	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1610240
Project: MLSES A1 Area Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161108B

Sample ID **CCV2-161108** Batch ID: **R88896** TestNo: **SW6020A** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_161108B** Analysis Date: **11/8/2016 2:06:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.84	0.300	5.00	0	96.7	90	110			
Chromium	0.208	0.00500	0.200	0	104	90	110			
Cobalt	0.207	0.00500	0.200	0	104	90	110			
Lead	0.198	0.00100	0.200	0	99.1	90	110			
Lithium	0.205	0.0100	0.200	0	103	90	110			
Molybdenum	0.196	0.00500	0.200	0	98.1	90	110			
Selenium	0.210	0.00500	0.200	0	105	90	110			
Thallium	0.197	0.00150	0.200	0	98.6	90	110			

Sample ID **LCVL2-161108** Batch ID: **R88896** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_161108B** Analysis Date: **11/8/2016 2:28:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00209	0.00250	0.00200	0	105	70	130			
Arsenic	0.00527	0.00500	0.00500	0	105	70	130			
Barium	0.00535	0.0100	0.00500	0	107	70	130			
Beryllium	0.00106	0.00100	0.00100	0	106	70	130			
Cadmium	0.00105	0.00100	0.00100	0	105	70	130			
Calcium	0.104	0.300	0.100	0	104	70	130			
Chromium	0.00535	0.00500	0.00500	0	107	70	130			
Cobalt	0.00527	0.00500	0.00500	0	105	70	130			
Lead	0.00102	0.00100	0.00100	0	102	70	130			
Lithium	0.0106	0.0100	0.0100	0	106	70	130			
Molybdenum	0.00510	0.00500	0.00500	0	102	70	130			
Selenium	0.00578	0.00500	0.00500	0	116	70	130			
Thallium	0.00101	0.00150	0.00100	0	101	70	130			

Sample ID **CCV3-161108** Batch ID: **R88896** TestNo: **SW6020A** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_161108B** Analysis Date: **11/8/2016 4:00:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.198	0.00250	0.200	0	99.1	90	110			
Arsenic	0.210	0.00500	0.200	0	105	90	110			
Barium	0.204	0.0100	0.200	0	102	90	110			
Beryllium	0.209	0.00100	0.200	0	104	90	110			
Cadmium	0.202	0.00100	0.200	0	101	90	110			
Calcium	4.87	0.300	5.00	0	97.5	90	110			
Chromium	0.206	0.00500	0.200	0	103	90	110			
Cobalt	0.207	0.00500	0.200	0	103	90	110			
Lead	0.198	0.00100	0.200	0	98.9	90	110			
Lithium	0.198	0.0100	0.200	0	99.2	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1610240
Project: MLSES A1 Area Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161108B

Sample ID **CCV3-161108**	Batch ID: **R88896**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_161108B**	Analysis Date: **11/8/2016 4:00:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Molybdenum	0.197	0.00500	0.200	0	98.6	90	110			
Selenium	0.210	0.00500	0.200	0	105	90	110			
Thallium	0.200	0.00150	0.200	0	100	90	110			

Sample ID **LCVL3-161108**	Batch ID: **R88896**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_161108B**	Analysis Date: **11/8/2016 4:32:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00202	0.00250	0.00200	0	101	70	130			
Arsenic	0.00545	0.00500	0.00500	0	109	70	130			
Barium	0.00520	0.0100	0.00500	0	104	70	130			
Beryllium	0.00109	0.00100	0.00100	0	109	70	130			
Cadmium	0.00103	0.00100	0.00100	0	103	70	130			
Calcium	0.104	0.300	0.100	0	104	70	130			
Chromium	0.00540	0.00500	0.00500	0	108	70	130			
Cobalt	0.00530	0.00500	0.00500	0	106	70	130			
Lead	0.000965	0.00100	0.00100	0	96.5	70	130			
Lithium	0.0107	0.0100	0.0100	0	107	70	130			
Molybdenum	0.00503	0.00500	0.00500	0	101	70	130			
Selenium	0.00572	0.00500	0.00500	0	114	70	130			
Thallium	0.00100	0.00150	0.00100	0	100	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1610240
Project: MLSES A1 Area Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161109A

The QC data in batch 77828 applies to the following samples: 1610240-01A, 1610240-02A, 1610240-03A

Sample ID **MB-77828**	Batch ID: **77828**		TestNo: **SW6020A**				Units: **mg/L**				
SampType: **MBLK**	Run ID: **ICP-MS4_161109A**		Analysis Date: **11/9/2016 2:53:00 PM**				Prep Date: **11/9/2016**				
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Boron	<0.0100	0.0300									

Sample ID **LCS-77828**	Batch ID: **77828**		TestNo: **SW6020A**				Units: **mg/L**				
SampType: **LCS**	Run ID: **ICP-MS4_161109A**		Analysis Date: **11/9/2016 2:55:00 PM**				Prep Date: **11/9/2016**				
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Boron	0.196	0.0300	0.200	0	97.8	80	120				

Sample ID **LCSD-77828**	Batch ID: **77828**		TestNo: **SW6020A**				Units: **mg/L**				
SampType: **LCSD**	Run ID: **ICP-MS4_161109A**		Analysis Date: **11/9/2016 2:57:00 PM**				Prep Date: **11/9/2016**				
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Boron	0.208	0.0300	0.200	0	104	80	120	6.25	15		

Sample ID **1610262-04A MS**	Batch ID: **77828**		TestNo: **SW6020A**				Units: **mg/L**				
SampType: **MS**	Run ID: **ICP-MS4_161109A**		Analysis Date: **11/9/2016 3:17:00 PM**				Prep Date: **11/9/2016**				
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Boron	0.597	0.0300	0.200	0.403	96.6	80	120				

Sample ID **1610262-04A MSD**	Batch ID: **77828**		TestNo: **SW6020A**				Units: **mg/L**				
SampType: **MSD**	Run ID: **ICP-MS4_161109A**		Analysis Date: **11/9/2016 3:19:00 PM**				Prep Date: **11/9/2016**				
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Boron	0.613	0.0300	0.200	0.403	105	80	120	2.77	15		

Sample ID **1610262-04A SD**	Batch ID: **77828**		TestNo: **SW6020A**				Units: **mg/L**				
SampType: **SD**	Run ID: **ICP-MS4_161109A**		Analysis Date: **11/9/2016 3:27:00 PM**				Prep Date: **11/9/2016**				
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Boron	0.727	0.750	0	0.477				41.6	10	R	

Sample ID **1610262-04A PDS**	Batch ID: **77828**		TestNo: **SW6020A**				Units: **mg/L**				
SampType: **PDS**	Run ID: **ICP-MS4_161109A**		Analysis Date: **11/9/2016 3:29:00 PM**				Prep Date: **11/9/2016**				
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Boron	1.52	0.150	1.00	0.477	104	80	120				

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1610240
Project: MLSES A1 Area Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161109A

Sample ID **ICV-161109**	Batch ID: **R88915**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_161109A**	Analysis Date: **11/9/2016 12:41:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.109	0.0300	0.100	0	109	90	110			

Sample ID **LCVL-161109**	Batch ID: **R88915**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_161109A**	Analysis Date: **11/9/2016 12:45:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0237	0.0300	0.0200	0	119	70	130			

Sample ID **CCV1-161109**	Batch ID: **R88915**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_161109A**	Analysis Date: **11/9/2016 1:26:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.215	0.0300	0.200	0	107	90	110			

Sample ID **LCVL1-161109**	Batch ID: **R88915**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_161109A**	Analysis Date: **11/9/2016 2:16:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0256	0.0300	0.0200	0	128	70	130			

Sample ID **CCV2-161109**	Batch ID: **R88915**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_161109A**	Analysis Date: **11/9/2016 3:55:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.217	0.0300	0.200	0	108	90	110			

Sample ID **LCVL2-161109**	Batch ID: **R88915**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_161109A**	Analysis Date: **11/9/2016 4:26:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0260	0.0300	0.0200	0	130	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1610240
Project: MLSES A1 Area Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_161101A

The QC data in batch 77744 applies to the following samples: 1610240-01D, 1610240-02D, 1610240-03D

Sample ID **MB-77744** Batch ID: **77744** TestNo: **E300** Units: **mg/L**
SampType: **MBLK** Run ID: **IC2_161101A** Analysis Date: **11/1/2016 9:41:33 AM** Prep Date: **11/1/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00								
Fluoride	<0.100	0.400								
Sulfate	<1.00	3.00								

Sample ID **LCS-77744** Batch ID: **77744** TestNo: **E300** Units: **mg/L**
SampType: **LCS** Run ID: **IC2_161101A** Analysis Date: **11/1/2016 9:56:09 AM** Prep Date: **11/1/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.0	1.00	10.00	0	100	90	110			
Fluoride	3.84	0.400	4.000	0	95.9	90	110			
Sulfate	30.4	3.00	30.00	0	101	90	110			

Sample ID **LCSD-77744** Batch ID: **77744** TestNo: **E300** Units: **mg/L**
SampType: **LCSD** Run ID: **IC2_161101A** Analysis Date: **11/1/2016 10:10:45 AM** Prep Date: **11/1/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.0	1.00	10.00	0	100	90	110	0.214	20	
Fluoride	3.90	0.400	4.000	0	97.4	90	110	1.53	20	
Sulfate	30.6	3.00	30.00	0	102	90	110	0.621	20	

Sample ID **1610256-02BMS** Batch ID: **77744** TestNo: **E300** Units: **mg/L**
SampType: **MS** Run ID: **IC2_161101A** Analysis Date: **11/1/2016 1:04:59 PM** Prep Date: **11/1/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	2760	100	2000	705.3	103	90	110			
Fluoride	1960	40.0	2000	0	97.9	90	110			
Sulfate	3820	300	2000	1813	100	90	110			

Sample ID **1610256-02BMSD** Batch ID: **77744** TestNo: **E300** Units: **mg/L**
SampType: **MSD** Run ID: **IC2_161101A** Analysis Date: **11/1/2016 1:19:35 PM** Prep Date: **11/1/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	2770	100	2000	705.3	103	90	110	0.628	20	
Fluoride	1990	40.0	2000	0	99.6	90	110	1.70	20	
Sulfate	3830	300	2000	1813	101	90	110	0.106	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1610240
Project: MLSES A1 Area Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_161101A

Sample ID **ICV-161101**	Batch ID: **R88808**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC2_161101A**	Analysis Date: **11/1/2016 9:01:43 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	25.6	1.00	25.00	0	102	90	110			
Fluoride	9.72	0.400	10.00	0	97.2	90	110			
Sulfate	78.0	3.00	75.00	0	104	90	110			

Sample ID **CCV1-161101**	Batch ID: **R88808**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_161101A**	Analysis Date: **11/1/2016 1:53:14 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.0	1.00	10.00	0	100	90	110			
Fluoride	3.95	0.400	4.000	0	98.7	90	110			
Sulfate	30.3	3.00	30.00	0	101	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1610240
Project: MLSES A1 Area Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_161028A

The QC data in batch 77718 applies to the following samples: 1610240-01D, 1610240-02D, 1610240-03D

Sample ID **1610236-01D-DUP** Batch ID: **77718** TestNo: **M4500-H+ B** Units: **pH Units@19.9℃**
SampType: **DUP** Run ID: **TITRATOR_161028A** Analysis Date: **10/28/2016 11:22:00 A** Prep Date: **10/28/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	7.20	0	0	7.030				2.39	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1610240
Project: MLSES A1 Area Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_161028A

Sample ID	**ICV-161028**	Batch ID:	**R88755**	TestNo:	**M4500-H+ B**	Units:	**pH Units@22.2℃**
SampType:	**ICV**	Run ID:	**TITRATOR_161028A**	Analysis Date:	**10/28/2016 10:42:00 A**	Prep Date:	**10/28/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	9.93	0	10.00	0	99.3	99	101			

Sample ID	**CCV1-161028**	Batch ID:	**R88755**	TestNo:	**M4500-H+ B**	Units:	**pH Units@22.1℃**
SampType:	**CCV**	Run ID:	**TITRATOR_161028A**	Analysis Date:	**10/28/2016 11:26:00 A**	Prep Date:	**10/28/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	6.98	0	7.000	0	99.7	97.1	102.9			

Sample ID	**CCV2-161028**	Batch ID:	**R88755**	TestNo:	**M4500-H+ B**	Units:	**pH Units@22.2℃**
SampType:	**CCV**	Run ID:	**TITRATOR_161028A**	Analysis Date:	**10/28/2016 2:19:00 PM**	Prep Date:	**10/28/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	6.98	0	7.000	0	99.7	97.1	102.9			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1610240
Project: MLSES A1 Area Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: WC_161031A

The QC data in batch 77739 applies to the following samples: 1610240-01D, 1610240-02D, 1610240-03D

Sample ID **MB-77739**	Batch ID: **77739**	TestNo: **M2540C**	Units: **mg/L**
SampType: **MBLK**	Run ID: **WC_161031A**	Analysis Date: **11/1/2016 8:43:00 AM**	Prep Date: **10/31/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	<10.0	10.0								

Sample ID **LCS-77739**	Batch ID: **77739**	TestNo: **M2540C**	Units: **mg/L**
SampType: **LCS**	Run ID: **WC_161031A**	Analysis Date: **11/1/2016 8:43:00 AM**	Prep Date: **10/31/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	747	10.0	745.6	0	100	90	113			

Sample ID **1610230-01D-DUP**	Batch ID: **77739**	TestNo: **M2540C**	Units: **mg/L**
SampType: **DUP**	Run ID: **WC_161031A**	Analysis Date: **11/1/2016 8:43:00 AM**	Prep Date: **10/31/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	1490	50.0	0	1495				0.335	5	

Sample ID **1610230-07D-DUP**	Batch ID: **77739**	TestNo: **M2540C**	Units: **mg/L**
SampType: **DUP**	Run ID: **WC_161031A**	Analysis Date: **11/1/2016 8:43:00 AM**	Prep Date: **10/31/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	4310	50.0	0	4410				2.29	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

Case Narrative

Lab No: 20161060

This report contains the analytical results for the 3 sample(s) received under chain of custody by ESC Lab Sciences on 11/1/2016 8:45:34 AM. These samples are associated with your 1610240 project.

The analytical results included in this report meet all applicable quality control procedure requirements except as noted below:

The test results in this report meet all NELAC requirements unless noted below:

This report shall not be reproduced, except in full, without the written approval of ESC Lab Sciences.

All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client.

Results have been reviewed by the Director of Radiochemistry or their designees and is approved for release.

Observations / Nonconformances

L869802

Analytical Report

	Method	Result	DL	Units	Qual	Prep Date	Analysis Date	Analyst
Lab ID : **20161060-01**								
Client ID : **BMW-18**								
Date Sampled : **10/26/2016 12:35:00 PM**								
Matrix : **NPW**								
		Radiochemical Analyses						
Combined Radium		0.316 +/- 0.979	0.666	pCi/l				
Radium-226	SM 7500 Ra B M*	0.091 +/- 0.094	0.132	pCi/l		11/10/16	11/14/16	AK
Radium-228	EPA 904*/9320*	0.225 +/- 0.885	0.534	pCi/l		11/15/16	11/21/16	JR
Lab ID : **20161060-02**								
Client ID : **BMW-26**								
Date Sampled : **10/26/2016 2:40:00 PM**								
Matrix : **NPW**								
		Radiochemical Analyses						
Combined Radium		0.680 +/- 1.23	0.868	pCi/l				
Radium-226	SM 7500 Ra B M*	0.175 +/- 0.129	0.173	pCi/l		11/10/16	11/14/16	AK
Radium-228	EPA 904*/9320*	0.505 +/- 1.10	0.695	pCi/l		11/15/16	11/21/16	JR
Lab ID : **20161060-03**								
Client ID : **BMW-27**								
Date Sampled : **10/26/2016 3:40:00 PM**								
Matrix : **NPW**								
		Radiochemical Analyses						
Combined Radium		2.10 +/- 0.972	0.611	pCi/l				
Radium-226	SM 7500 Ra B M*	0.156 +/- 0.096	0.092	pCi/l		11/10/16	11/14/16	AK
Radium-228	EPA 904*/9320*	1.94 +/- 0.876	0.519	pCi/l		11/15/16	11/21/16	JR

QC Report

Parameter	Blank	LCS %REC	LCSD %REC	LCSD RPD	DUP RPD	RER, NAD or DER	MS %REC	MSD %REC	MSD RPD	Batch ID
Radium-226	-0.021	114.0			NC	0.292	115.0	107.0	7.3	R1159
Radium-228	-0.161	92.3			29.9	0.334	96.3	88.6	7.4	R3882

Lab Approval:

Ron Eidson
Director of Radiochemistry

*NELAC Certified Parameter BDL = Below Detection Limit

OUTREACH LABORATORY, A Divsion of ESC Lab Sciences
Address: 311 North Aspen Avenue, Broken Arrow, OK, 74012 EMail: outreach@esclabsciences.com - Tel: (918) 251-2515

DHL Analytical, Inc.
2300 Double Creek Drive
Round Rock, TX 78664
TEL: *(512) 388-8222* FAX: *(512) 388-8229*

CHAIN-OF-CUSTODY RECORD

Work Order: 1610240

Subcontractor:

ESC Laboratory
311 North Aspen
Broken Arrow, Oklahoma 74012

TEL: (918) 251-2515
FAX:
Acct #: DHLRRTX

28-Oct-16

Sample Id	Matrix	DHL#	Date Collected	Bottle Type	Requested Tests					
					E904.0	SM7500Ra-B M				
BMW-18	Aqueous	-01B	10/26/16 12:35 PM	500HDPEHNO3	1					
BMW-18	Aqueous	-01C	10/26/16 12:35 PM	500HDPEHNO3		1				
BMW-26	Aqueous	-02B	10/26/16 02:40 PM	500HDPEHNO3	1					
BMW-26	Aqueous	-02C	10/26/16 02:40 PM	500HDPEHNO3		1				
BMW-27	Aqueous	-03B	10/26/16 03:40 PM	500HDPEHNO3	1					
BMW-27	Aqueous	-03C	10/26/16 03:40 PM	500HDPEHNO3		1				

General Comments:

Please analyze these samples with Normal Turnaround Time.
Report RA-226, Ra-228 & Combined per Specs.
Quality Control Package Needed: Standard - NELAC Rad Test compliant
Email to cac@dhlanalytical.com & dupont@dhlanalytical.com

201610760
L869802

		Date/Time			Date/Time
Relinquished by:	Barlow	10/28/16 1730	**Received by:**	Lonestar	10/28/16 1730
Relinquished by:			**Received by:**		10/1/16 0830 11/1/16 0845

SAMPLE LOGIN

Date Received: 11/1/2016 8:45:34 Lab Number: 20161060 Due: 11/29/2016

Sample Number	Client Sample ID	Matrix	Date Sampled	Container Type	Container Size	Preservation	Preserved Upon Receipt	Custody Seal	Seal Intact
20161060-01 B	BMW-18	NPW	10/26/16	Plastic	500 ml	HNO3, pH < 2	✓	Yes	Yes
20161060-01 A	BMW-18	NPW	10/26/16	Plastic	500 ml	HNO3, pH < 2	✓	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20161060-02 B	BMW-26	NPW	10/26/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
20161060-02 A	BMW-26	NPW	10/26/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20161060-03 B	BMW-27	NPW	10/26/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
20161060-03 A	BMW-27	NPW	10/26/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						

CONTAINER INSPECTION

Coolers 1 Custody Seals Broken Ø Temperature: Amb C Ice Radiation Survey: <300 cpm

SAMPLE INSPECTION

Sample Seal Broken Ø Chain of Custody Record ✓ Labels in Tact ☑ Radiation Survey Complete ☑ N/A

Anomalies

Inspected By: _____ DATE 11/1/16

QA or Designee Review: Raymond Thomas DATE 11/01/16

Sample Custodian Review: _____ DATE 11/1/16

Project Notes:

January 30, 2017

Will Vienne
Pastor, Behling & Wheeler
2201 Double Creek Dr #4004
Round Rock, Texas 78664
TEL: (512) 671-3434
FAX (512) 671-3446

Order No.: 1612207

RE: MLSES - A1 Area Landill

Dear Will Vienne:

DHL Analytical, Inc. received 7 sample(s) on 12/17/2016 for the analyses presented in the following report.

There were no problems with the analyses and all data met requirements of NELAC except where noted in the Case Narrative. All non-NELAC methods will be identified accordingly in the case narrative and all estimated uncertainties of test results are within method or EPA specifications.

If you have any questions regarding these tests results, please feel free to call. Thank you for using DHL Analytical.

Sincerely,

John DuPont
General Manager

This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211-16-17

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DHL ANALYTICAL
2300 Double Creek Dr. ■ Round Rock, TX 78664
Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

№ 73498

CHAIN-OF-CUSTODY

CLIENT: PBW
ADDRESS: 2201 DOUBLE CREEK DR ROUND ROCK, TX 78664
PHONE: 512-671-3434 FAX/E-MAIL: 512-671-3446
DATA REPORTED TO: WILL VIENNE
ADDITIONAL REPORT COPIES TO:

DATE: 12-16-16 PAGE 1 OF 1
PO #: 5164-B DHL WORK ORDER #: 1612707
PROJECT LOCATION OR NAME: MLSES - A1 AREA LANDFILL
CLENT PROJECT #: 5164-B COLLECTOR: J. BRAYTON

Authorize 5% surcharge for TRRP Report? ☐ Yes ☐ No

S=SOIL W=WATER A=AIR L=LIQUID SE=SEDIMENT P=PAINT SL=SLUDGE O=OTHER SO=SOLID

PRESERVATION: HCl | HNO_3 | H_2SO_4 ☐ NaOH ☐ | ICE | UNPRESERVED

ANALYSES: BTEX ☐ MTBE ☐ [METHOD 8021] | TPH 1005 ☐ TPH 1006 ☐ HOLD 1006 ☐ | GRO [METHOD 8015] ☐ DRO [METHOD 8105] ☐ | VOC 8260 ☐ VOC 624 ☐ VOC 8260/5035 ☐ | SVOC 8270 ☐ PAH 8270 ☐ HOLD PAH ☐ SVOC 625 ☐ | 8270 PEST ☐ 625 PEST/PCB ☐ 8082 PCB ☐ 608 PCB ☐ | 8270 O-P PEST ☐ 8270 PCB ☐ | 8321 HERB ☐ T PHOS, AMMONIA ☐ | METALS 6020 ☐ METALS 200.8 ☐ DISS. METALS ☐ | RCRA ☐ TX11 ☐ | PH ☐ HEX CHROM ☐ ALKALINITY ☐ COD ☐ | CHLORIDE ☐ ANIONS ☐ | TCLP-SVOC ☐ VOC ☐ PEST ☐ HERB ☐ | TCLP-METALS ☐ RCRA 8 ☐ TX-11 ☐ Pb ☐ | RCI ☐ FLASHPOINT ☐ DGAS ☐ | TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐ | CCR

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	HCl	HNO_3	H_2SO_4 ☐ NaOH ☐	ICE	UNPRESERVED	ANALYSES	CCR	FIELD NOTES
BMW-19	01	12-14-16	0720	W	P	4		X					X	
BMW-18	02		0820	W	P	4		X					X	
BMW-28	03		0915	W	P	4		X					X	
BMW-27	04		1020	W	P	4		X					X	
BMW-26	05		1125	W	P	4		X					X	
EB-1	06		1145	W	P	4		X					X	
BMW-11AR	07		1015	W	P	4		X					X	

RELINQUISHED BY: (Signature) DATE/TIME 12-16-16 RECEIVED BY: (Signature) 1730 Fedex
RELINQUISHED BY: (Signature) Fedex DATE/TIME 12/17/16 RECEIVED BY: (Signature) 11:00
RELINQUISHED BY: (Signature) DATE/TIME RECEIVED BY: (Signature)

☐ DHL DISPOSAL @ $5.00 each ☐ Return

TURN AROUND TIME
RUSH ☐ CALL FIRST
1 DAY ☐ CALL FIRST
2 DAY ☐
NORMAL ☒
OTHER ☐ _____

LABORATORY USE ONLY:
RECEIVING TEMP: 3.8 | 4.0 | 3.0 | 2.4 THERM #: 78
CUSTODY SEALS: ☐ BROKEN ☐ INTACT ☒ NOT USED
CARRIER: ☐ LONE STAR ☒ FEDEX ☐ UPS ☐ OTHER
☐ COURIER DELIVERY
☐ HAND DELIVERED

John Dupont

From: Sara Taube [Sara.Taube@pbwllc.com]
Sent: Wednesday, July 22, 2015 12:05 PM
To: John Dupont
Subject: CCR Appendix III and IV
Follow Up Flag: Follow up
Flag Status: Completed

Hi John,

Here are the Appendix III and Appendix IV constituents that we will need to have analyzed under the CCR Rule.

Appendix III
Boron
Calcium
Chloride
Fluoride
pH
sulfate
TDS

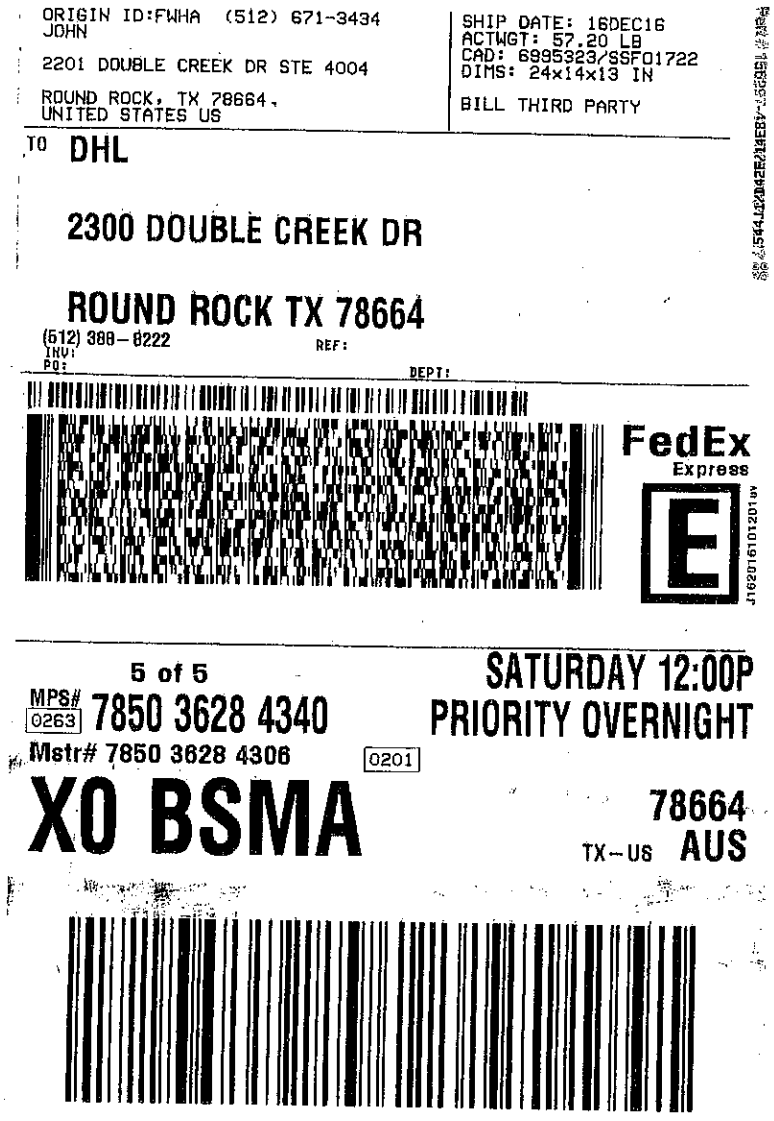
Appendix IV
Antimony
Arsenic
Barium
Beryllium
Cadmium
Chromium
Cobalt
Fluoride
Lead
Lithium
Mercury
Molybdenum
Selenium
Thallium
Radium 226 and 228

We are looking to have approximately 74 wells sampled 8 times over the course of the next two years. Please let me know if there is any more information you might need.

Cheers,

Sara

10/26/2015



ORIGIN ID:FWHA (512) 671-3434
JOHN

2201 DOUBLE CREEK DR STE 4004

ROUND ROCK, TX 78664
UNITED STATES US

SHIP DATE: 16DEC16
ACTWGT: 57.20 LB
CAD: 6995323/SSF01722
DIMS: 24x14x13 IN

BILL THIRD PARTY

TO DHL

2300 DOUBLE CREEK DR

ROUND ROCK TX 78664

(512) 388-0222 REF:
INV:
PO: DEPT:

FedEx Express

J162016101201uv

5 of 5

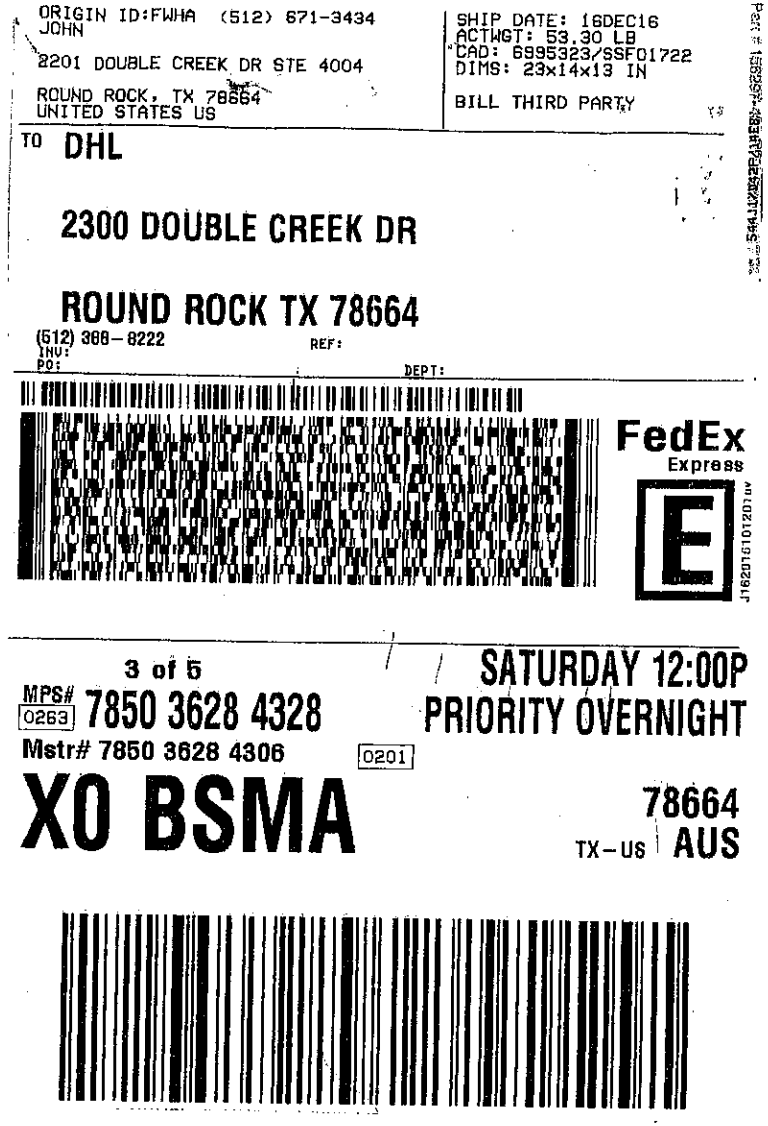
MPS# 0263 7850 3628 4340

Mstr# 7850 3628 4306 0201

SATURDAY 12:00P
PRIORITY OVERNIGHT

XO BSMA

78664
TX-US AUS



ORIGIN ID:FWHA (512) 671-3434
JOHN

2201 DOUBLE CREEK DR STE 4004

ROUND ROCK, TX 78664
UNITED STATES US

SHIP DATE: 16DEC16
ACTWGT: 53.30 LB
CAD: 6995323/SSF01722
DIMS: 23x14x13 IN

BILL THIRD PARTY

TO DHL

2300 DOUBLE CREEK DR

ROUND ROCK TX 78664

(512) 388-0222 REF:
INV:
PO: DEPT:

FedEx Express

J162016101201uv

3 of 5

MPS# 0263 7850 3628 4328

Mstr# 7850 3628 4306 0201

SATURDAY 12:00P
PRIORITY OVERNIGHT

XO BSMA

78664
TX-US AUS

ORIGIN ID:FWHA (512) 671-3434
JOHN

2201 DOUBLE CREEK DR STE 4004

ROUND ROCK, TX 78664
UNITED STATES US

SHIP DATE: 16DEC16
ACTWGT: 59.40 LB
CAD: 6995323/SSF01722
DIMS: 23x14x14 IN

BILL THIRD PARTY

TO DHL

2300 DOUBLE CREEK DR

ROUND ROCK TX 78664

(512) 388-8222 REF:
INV:
PO: DEPT:

FedEx Express

J162016101201uv

4 of 5

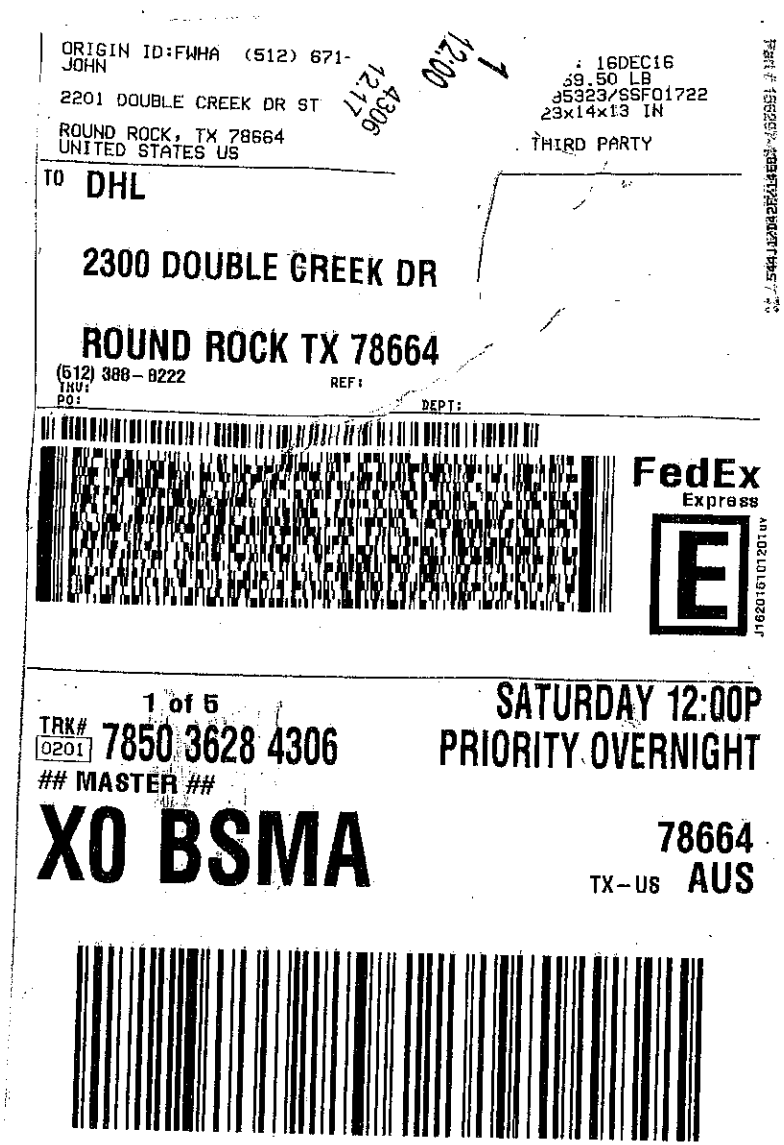
MPS# 0263 7850 3628 4339

Mstr# 7850 3628 4306 0201

SATURDAY 12:00P
PRIORITY OVERNIGHT

XO BSMA

78664
TX-US AUS



ORIGIN ID:FWHA (512) 671-
JOHN

2201 DOUBLE CREEK DR ST

ROUND ROCK, TX 78664
UNITED STATES US

: 16DEC16
59.50 LB
95323/SSF01722
23x14x13 IN

THIRD PARTY

TO DHL

2300 DOUBLE CREEK DR

ROUND ROCK TX 78664

(512) 388-8222 REF:
INV:
PO: DEPT:

FedEx Express

J162016101201uv

1 of 5

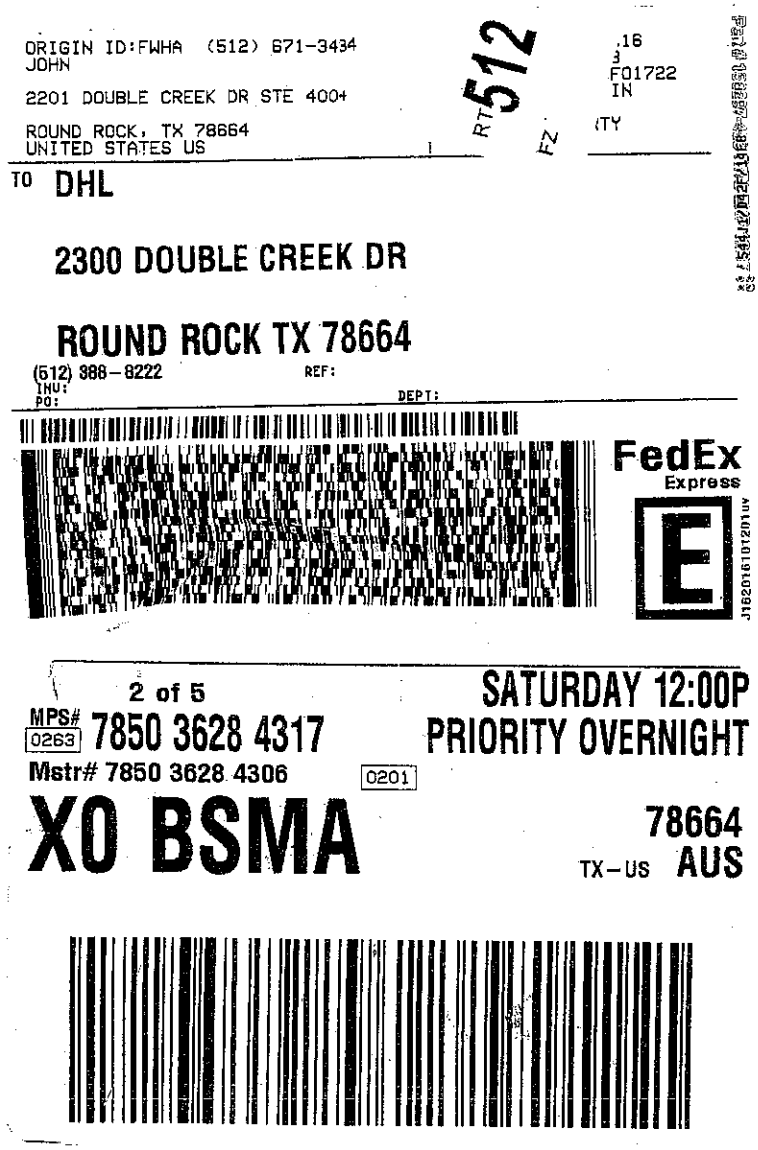
TRK# 0201 7850 3628 4306

MASTER

SATURDAY 12:00P
PRIORITY OVERNIGHT

XO BSMA

78664
TX-US AUS



ORIGIN ID:FWHA (512) 671-3434
JOHN
2201 DOUBLE CREEK DR STE 400
ROUND ROCK, TX 78664
UNITED STATES US

RT 512 FZ

,16
3
F01722
IN
ITY

TO DHL

2300 DOUBLE CREEK DR

ROUND ROCK TX 78664

(512) 388-8222 REF:
INV:
PO: DEPT:

FedEx
Express

J162016101201uv

2 of 5

MPS# 0263 7850 3628 4317

Mstr# 7850 3628 4306 0201

SATURDAY 12:00P
PRIORITY OVERNIGHT

XO BSMA

78664
TX-US AUS

DHL Analytical, Inc.

Sample Receipt Checklist

Client Name **Pastor, Behling & Wheeler** Date Received: **12/17/2016**

Work Order Number **1612207** Received by **JT**

Checklist completed by: _____ 12/19/2016 Reviewed by: _____ 12/19/2016
Signature Date Initials Date

Carrier name FedEx 1day

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	4.0 °C |3.8|3.0|2.4
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH<2 acceptable upon receipt?	Yes ☑	No ☐	NA ☐ LOT # 8086
	Adjusted? NO		Checked by CA
Water - ph>9 (S) or ph>12 (CN) acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted?		Checked by

Any No response must be detailed in the comments section below.

Client contacted _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments: _____

Corrective Action _____

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Method SW6020A - Metals Analysis
Method SW7470A - Mercury Analysis
Method E300 - Anions Analysis
Method M4500-H+ B - pH of a Water Analysis
Method M2540C - TDS Analysis
Sub-contract - Radium-228 and Radium-226 analyses by methods E904/9320 and SM 7500 Ra B M. Analyzed at ESC Lab Sciences.

LOG IN

The samples were received and log-in performed on 12/17/16. A total of 7 samples were received. The samples arrived in good condition and were properly packaged.

METALS ANALYSIS

For Metals analysis performed on 12/29/16 the matrix spike and matrix spike duplicate recoveries were out of control limits for Boron and/or Calcium. These are flagged accordingly in the QC summary report. The sample selected for the matrix spike and matrix spike duplicate was not from this work order. The LCS was within control limits for these analytes. No further corrective actions were taken.

For Metals analysis performed on 12/29/16 the RPD for the serial dilution was above control limits for three analytes. These are flagged accordingly. The PDS was within control limits for these analytes. No further corrective actions were taken.

For Metals analysis performed on 12/29/16 LCVL7-161229 was above control limits for Calcium. This is flagged accordingly. The associated CCV was within control limits for this analyte. No further corrective actions were taken.

MERCURY ANALYSIS

For Mercury analysis performed on 12/22/16 the matrix spike and matrix spike duplicate recoveries were below control limits. In addition, the matrix spike and matrix spike duplicate had the RPD slightly above control limits. These are flagged accordingly in the QC summary report. The sample selected for the matrix spike and matrix spike duplicate was not from this work order. The LCS was within control limits. No further corrective actions were taken.

ANIONS ANALYSIS

CLIENT:	Pastor, Behling & Wheeler
Project:	MLSES - A1 Area Landill
Lab Order:	1612207

CASE NARRATIVE

For Anions analysis performed on 12/29/16 the matrix spikes and/or matrix spike duplicate recoveries (162207-01 MS/MSD & 162274-04 MSD) were slightly above control limits for Sulfate. These are flagged accordingly in the QC summary report. The sample selected for the matrix spike and matrix spike duplicate (1612274-04 MSD) was not from this work order. The sample selected for the matrix spike and matrix spike duplicate (1612207-01 MS/MSD) was from this work order. The LCS was within control limits for this analyte. No further corrective actions were taken.

DHL Analytical, Inc.

Date: *30-Jan-17*

CLIENT: Pastor, Behling & Wheeler
Project: MLSES - A1 Area Landill
Lab Order: 1612207

Work Order Sample Summary

Lab Smp ID	Client Sample ID	Tag Number	Date Collected	Date Recved
1612207-01	BMW-19		12/14/16 07:20 AM	12/19/2016
1612207-02	BMW-18		12/14/16 08:20 AM	12/19/2016
1612207-03	BMW-28		12/14/16 09:15 AM	12/19/2016
1612207-04	BMW-27		12/14/16 10:20 AM	12/19/2016
1612207-05	BMW-26		12/14/16 11:25 AM	12/19/2016
1612207-06	EB-1		12/14/16 11:45 AM	12/19/2016
1612207-07	BMW-11AR		12/14/16 10:15 AM	12/19/2016

Lab Order: 1612207
Client: Pastor, Behling & Wheeler
Project: MLSES - A1 Area Landill

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1612207-01A	BMW-19	12/14/16 07:20 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/21/16 08:32 AM	78405
	BMW-19	12/14/16 07:20 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/21/16 08:32 AM	78405
	BMW-19	12/14/16 07:20 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/21/16 08:32 AM	78405
	BMW-19	12/14/16 07:20 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	12/21/16 10:13 AM	78414
1612207-01D	BMW-19	12/14/16 07:20 AM	Aqueous	E300	Anion Preparation	12/29/16 08:35 AM	78511
	BMW-19	12/14/16 07:20 AM	Aqueous	E300	Anion Preparation	12/29/16 08:35 AM	78511
	BMW-19	12/14/16 07:20 AM	Aqueous	M4500-H+ B	pH Preparation	12/21/16 01:44 PM	78421
	BMW-19	12/14/16 07:20 AM	Aqueous	M2540C	TDS Preparation	12/21/16 08:41 AM	78407
1612207-02A	BMW-18	12/14/16 08:20 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/21/16 08:32 AM	78405
	BMW-18	12/14/16 08:20 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/21/16 08:32 AM	78405
	BMW-18	12/14/16 08:20 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	12/21/16 10:13 AM	78414
1612207-02D	BMW-18	12/14/16 08:20 AM	Aqueous	E300	Anion Preparation	12/29/16 08:35 AM	78511
	BMW-18	12/14/16 08:20 AM	Aqueous	M4500-H+ B	pH Preparation	12/21/16 01:44 PM	78421
	BMW-18	12/14/16 08:20 AM	Aqueous	M2540C	TDS Preparation	12/21/16 08:41 AM	78407
1612207-03A	BMW-28	12/14/16 09:15 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/21/16 08:32 AM	78405
	BMW-28	12/14/16 09:15 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/21/16 08:32 AM	78405
	BMW-28	12/14/16 09:15 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/21/16 08:32 AM	78405
	BMW-28	12/14/16 09:15 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	12/21/16 10:13 AM	78414
1612207-03D	BMW-28	12/14/16 09:15 AM	Aqueous	E300	Anion Preparation	12/29/16 08:35 AM	78511
	BMW-28	12/14/16 09:15 AM	Aqueous	E300	Anion Preparation	12/29/16 08:35 AM	78511
	BMW-28	12/14/16 09:15 AM	Aqueous	M4500-H+ B	pH Preparation	12/21/16 01:44 PM	78421
	BMW-28	12/14/16 09:15 AM	Aqueous	M2540C	TDS Preparation	12/21/16 08:41 AM	78407
1612207-04A	BMW-27	12/14/16 10:20 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/21/16 08:32 AM	78405
	BMW-27	12/14/16 10:20 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/21/16 08:32 AM	78405
	BMW-27	12/14/16 10:20 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/21/16 08:32 AM	78405
	BMW-27	12/14/16 10:20 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/21/16 08:32 AM	78405
	BMW-27	12/14/16 10:20 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	12/21/16 10:13 AM	78414
1612207-04D	BMW-27	12/14/16 10:20 AM	Aqueous	E300	Anion Preparation	12/29/16 08:35 AM	78511

Lab Order: 1612207
Client: Pastor, Behling & Wheeler
Project: MLSES - A1 Area Landill

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1612207-04D	BMW-27	12/14/16 10:20 AM	Aqueous	E300	Anion Preparation	12/29/16 08:35 AM	78511
	BMW-27	12/14/16 10:20 AM	Aqueous	M4500-H+ B	pH Preparation	12/21/16 01:44 PM	78421
	BMW-27	12/14/16 10:20 AM	Aqueous	M2540C	TDS Preparation	12/21/16 08:41 AM	78407
1612207-05A	BMW-26	12/14/16 11:25 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/21/16 08:32 AM	78405
	BMW-26	12/14/16 11:25 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/21/16 08:32 AM	78405
	BMW-26	12/14/16 11:25 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/21/16 08:32 AM	78405
	BMW-26	12/14/16 11:25 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	12/21/16 10:13 AM	78414
1612207-05D	BMW-26	12/14/16 11:25 AM	Aqueous	E300	Anion Preparation	12/29/16 08:35 AM	78511
	BMW-26	12/14/16 11:25 AM	Aqueous	E300	Anion Preparation	12/29/16 08:35 AM	78511
	BMW-26	12/14/16 11:25 AM	Aqueous	M4500-H+ B	pH Preparation	12/21/16 01:44 PM	78421
	BMW-26	12/14/16 11:25 AM	Aqueous	M2540C	TDS Preparation	12/21/16 08:41 AM	78407
1612207-06A	EB-1	12/14/16 11:45 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/21/16 08:32 AM	78405
	EB-1	12/14/16 11:45 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/21/16 08:32 AM	78405
	EB-1	12/14/16 11:45 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	12/21/16 10:13 AM	78414
1612207-06D	EB-1	12/14/16 11:45 AM	Aqueous	E300	Anion Preparation	12/29/16 08:35 AM	78511
	EB-1	12/14/16 11:45 AM	Aqueous	M4500-H+ B	pH Preparation	12/21/16 01:44 PM	78421
	EB-1	12/14/16 11:45 AM	Aqueous	M2540C	TDS Preparation	12/21/16 08:41 AM	78407
1612207-07A	BMW-11AR	12/14/16 10:15 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/21/16 08:32 AM	78405
	BMW-11AR	12/14/16 10:15 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/21/16 08:32 AM	78405
	BMW-11AR	12/14/16 10:15 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/21/16 08:32 AM	78405
	BMW-11AR	12/14/16 10:15 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	12/21/16 10:13 AM	78414
1612207-07D	BMW-11AR	12/14/16 10:15 AM	Aqueous	E300	Anion Preparation	12/29/16 08:35 AM	78511
	BMW-11AR	12/14/16 10:15 AM	Aqueous	E300	Anion Preparation	12/29/16 08:35 AM	78511
	BMW-11AR	12/14/16 10:15 AM	Aqueous	M4500-H+ B	pH Preparation	12/21/16 01:44 PM	78421
	BMW-11AR	12/14/16 10:15 AM	Aqueous	M2540C	TDS Preparation	12/21/16 08:41 AM	78407

Lab Order: 1612207
Client: Pastor, Behling & Wheeler
Project: MLSES - A1 Area Landill

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1612207-01A	BMW-19	Aqueous	SW7470A	Mercury Total: Aqueous	78414	1	12/22/16 02:41 PM	CETAC2_HG_161222B
	BMW-19	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	78405	1	12/29/16 06:13 PM	ICP-MS4_161229D
	BMW-19	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	78405	100	01/07/17 02:50 PM	ICP-MS4_170107D
	BMW-19	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	78405	1	01/07/17 02:52 PM	ICP-MS4_170107D
1612207-01D	BMW-19	Aqueous	E300	Anions by IC method - Water	78511	1	12/29/16 10:03 AM	IC2_161229A
	BMW-19	Aqueous	E300	Anions by IC method - Water	78511	100	12/29/16 01:22 PM	IC2_161229A
	BMW-19	Aqueous	M4500-H+ B	pH	78421	1	12/21/16 02:06 PM	TITRATOR_161221A
	BMW-19	Aqueous	M2540C	Total Dissolved Solids	78407	1	12/22/16 08:41 AM	WC_161221B
1612207-02A	BMW-18	Aqueous	SW7470A	Mercury Total: Aqueous	78414	1	12/22/16 02:43 PM	CETAC2_HG_161222B
	BMW-18	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	78405	1	12/29/16 06:15 PM	ICP-MS4_161229D
	BMW-18	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	78405	1	01/07/17 03:48 PM	ICP-MS4_170107D
1612207-02D	BMW-18	Aqueous	E300	Anions by IC method - Water	78511	1	12/29/16 10:18 AM	IC2_161229A
	BMW-18	Aqueous	M4500-H+ B	pH	78421	1	12/21/16 02:10 PM	TITRATOR_161221A
	BMW-18	Aqueous	M2540C	Total Dissolved Solids	78407	1	12/22/16 08:41 AM	WC_161221B
1612207-03A	BMW-28	Aqueous	SW7470A	Mercury Total: Aqueous	78414	1	12/22/16 02:45 PM	CETAC2_HG_161222B
	BMW-28	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	78405	1	12/29/16 06:17 PM	ICP-MS4_161229D
	BMW-28	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	78405	100	01/07/17 03:50 PM	ICP-MS4_170107D
	BMW-28	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	78405	10	01/07/17 03:52 PM	ICP-MS4_170107D
1612207-03D	BMW-28	Aqueous	E300	Anions by IC method - Water	78511	1	12/29/16 10:33 AM	IC2_161229A
	BMW-28	Aqueous	E300	Anions by IC method - Water	78511	10	12/29/16 01:37 PM	IC2_161229A
	BMW-28	Aqueous	M4500-H+ B	pH	78421	1	12/21/16 02:11 PM	TITRATOR_161221A
	BMW-28	Aqueous	M2540C	Total Dissolved Solids	78407	1	12/22/16 08:41 AM	WC_161221B
1612207-04A	BMW-27	Aqueous	SW7470A	Mercury Total: Aqueous	78414	1	12/22/16 02:47 PM	CETAC2_HG_161222B
	BMW-27	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	78405	2	01/08/17 01:28 PM	ICP-MS4_170108C
	BMW-27	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	78405	1	12/29/16 06:33 PM	ICP-MS4_161229D
	BMW-27	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	78405	100	01/07/17 03:54 PM	ICP-MS4_170107D

Lab Order: 1612207
Client: Pastor, Behling & Wheeler
Project: MLSES - A1 Area Landill

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1612207-04A	BMW-27	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	78405	1	01/07/17 03:56 PM	ICP-MS4_170107D
1612207-04D	BMW-27	Aqueous	E300	Anions by IC method - Water	78511	1	12/29/16 10:47 AM	IC2_161229A
	BMW-27	Aqueous	E300	Anions by IC method - Water	78511	10	12/29/16 01:51 PM	IC2_161229A
	BMW-27	Aqueous	M4500-H+ B	pH	78421	1	12/21/16 02:13 PM	TITRATOR_161221A
	BMW-27	Aqueous	M2540C	Total Dissolved Solids	78407	1	12/22/16 08:41 AM	WC_161221B
1612207-05A	BMW-26	Aqueous	SW7470A	Mercury Total: Aqueous	78414	1	12/22/16 02:50 PM	CETAC2_HG_161222B
	BMW-26	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	78405	1	12/29/16 06:35 PM	ICP-MS4_161229D
	BMW-26	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	78405	100	01/07/17 03:58 PM	ICP-MS4_170107D
	BMW-26	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	78405	1	01/07/17 04:00 PM	ICP-MS4_170107D
1612207-05D	BMW-26	Aqueous	E300	Anions by IC method - Water	78511	1	12/29/16 11:02 AM	IC2_161229A
	BMW-26	Aqueous	E300	Anions by IC method - Water	78511	10	12/29/16 02:06 PM	IC2_161229A
	BMW-26	Aqueous	M4500-H+ B	pH	78421	1	12/21/16 02:15 PM	TITRATOR_161221A
	BMW-26	Aqueous	M2540C	Total Dissolved Solids	78407	1	12/22/16 08:41 AM	WC_161221B
1612207-06A	EB-1	Aqueous	SW7470A	Mercury Total: Aqueous	78414	1	12/22/16 02:52 PM	CETAC2_HG_161222B
	EB-1	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	78405	1	01/07/17 04:02 PM	ICP-MS4_170107D
	EB-1	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	78405	1	12/29/16 06:37 PM	ICP-MS4_161229D
1612207-06D	EB-1	Aqueous	E300	Anions by IC method - Water	78511	1	12/29/16 11:16 AM	IC2_161229A
	EB-1	Aqueous	M4500-H+ B	pH	78421	1	12/21/16 02:18 PM	TITRATOR_161221A
	EB-1	Aqueous	M2540C	Total Dissolved Solids	78407	1	12/22/16 08:41 AM	WC_161221B
1612207-07A	BMW-11AR	Aqueous	SW7470A	Mercury Total: Aqueous	78414	1	12/22/16 02:54 PM	CETAC2_HG_161222B
	BMW-11AR	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	78405	1	12/29/16 06:39 PM	ICP-MS4_161229D
	BMW-11AR	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	78405	100	01/07/17 04:04 PM	ICP-MS4_170107D
	BMW-11AR	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	78405	1	01/07/17 04:06 PM	ICP-MS4_170107D
1612207-07D	BMW-11AR	Aqueous	E300	Anions by IC method - Water	78511	1	12/29/16 11:31 AM	IC2_161229A
	BMW-11AR	Aqueous	E300	Anions by IC method - Water	78511	10	12/29/16 02:20 PM	IC2_161229A
	BMW-11AR	Aqueous	M4500-H+ B	pH	78421	1	12/21/16 02:21 PM	TITRATOR_161221A

Lab Order: 1612207
Client: Pastor, Behling & Wheeler
Project: MLSES - A1 Area Landill

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1612207-07D	BMW-11AR	Aqueous	M2540C	Total Dissolved Solids	78407	1	12/22/16 08:41 AM	WC_161221B

DHL Analytical, Inc.

Date: *30-Jan-17*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	BMW-19
Project:	MLSES - A1 Area Landill	**Lab ID:**	1612207-01
Project No:	5164-B	**Collection Date:**	12/14/16 07:20 AM
Lab Order:	1612207	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/22/16 02:41 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **CVD**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	12/29/16 06:13 PM
Arsenic	0.00369	0.00200	0.00500	J	mg/L	1	12/29/16 06:13 PM
Barium	0.0171	0.00300	0.0100		mg/L	1	12/29/16 06:13 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	12/29/16 06:13 PM
Boron	0.427	0.0100	0.0300		mg/L	1	01/07/17 02:52 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	12/29/16 06:13 PM
Calcium	481	10.0	30.0		mg/L	100	01/07/17 02:50 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	12/29/16 06:13 PM
Cobalt	0.0125	0.00300	0.00500		mg/L	1	12/29/16 06:13 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	12/29/16 06:13 PM
Lithium	0.0584	0.00500	0.0100		mg/L	1	12/29/16 06:13 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	12/29/16 06:13 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	12/29/16 06:13 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	12/29/16 06:13 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	7.20	0.300	1.00		mg/L	1	12/29/16 10:03 AM
Fluoride	<0.100	0.100	0.400		mg/L	1	12/29/16 10:03 AM
Sulfate	2220	100	300		mg/L	100	12/29/16 01:22 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.51	0	0		pH Units@20.8℃	1	12/21/16 02:06 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	3660	50.0	50.0		mg/L	1	12/22/16 08:41 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *30-Jan-17*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	BMW-18
Project:	MLSES - A1 Area Landill	**Lab ID:**	1612207-02
Project No:	5164-B	**Collection Date:**	12/14/16 08:20 AM
Lab Order:	1612207	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/22/16 02:43 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **CVD**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	12/29/16 06:15 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	12/29/16 06:15 PM
Barium	0.0384	0.00300	0.0100		mg/L	1	12/29/16 06:15 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	12/29/16 06:15 PM
Boron	0.411	0.0100	0.0300		mg/L	1	01/07/17 03:48 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	12/29/16 06:15 PM
Calcium	9.26	0.100	0.300		mg/L	1	12/29/16 06:15 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	12/29/16 06:15 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	12/29/16 06:15 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	12/29/16 06:15 PM
Lithium	0.0158	0.00500	0.0100		mg/L	1	12/29/16 06:15 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	12/29/16 06:15 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	12/29/16 06:15 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	12/29/16 06:15 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	17.6	0.300	1.00		mg/L	1	12/29/16 10:18 AM
Fluoride	0.134	0.100	0.400	J	mg/L	1	12/29/16 10:18 AM
Sulfate	94.1	1.00	3.00		mg/L	1	12/29/16 10:18 AM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	8.38	0	0		pH Units@20.3℃	1	12/21/16 02:10 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	493	10.0	10.0		mg/L	1	12/22/16 08:41 AM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *30-Jan-17*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	BMW-28
Project:	MLSES - A1 Area Landill	**Lab ID:**	1612207-03
Project No:	5164-B	**Collection Date:**	12/14/16 09:15 AM
Lab Order:	1612207	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/22/16 02:45 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **CVD**
Antimony	0.00117	0.000800	0.00250	J	mg/L	1	12/29/16 06:17 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	12/29/16 06:17 PM
Barium	0.0509	0.00300	0.0100		mg/L	1	12/29/16 06:17 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	12/29/16 06:17 PM
Boron	1.22	0.100	0.300		mg/L	10	01/07/17 03:52 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	12/29/16 06:17 PM
Calcium	234	10.0	30.0		mg/L	100	01/07/17 03:50 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	12/29/16 06:17 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	12/29/16 06:17 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	12/29/16 06:17 PM
Lithium	0.110	0.00500	0.0100		mg/L	1	12/29/16 06:17 PM
Molybdenum	0.0103	0.00200	0.00500		mg/L	1	12/29/16 06:17 PM
Selenium	0.00445	0.00200	0.00500	J	mg/L	1	12/29/16 06:17 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	12/29/16 06:17 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	111	3.00	10.0		mg/L	10	12/29/16 01:37 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	12/29/16 10:33 AM
Sulfate	1280	10.0	30.0		mg/L	10	12/29/16 01:37 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	7.13	0	0		pH Units@20.3℃	1	12/21/16 02:11 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	2360	50.0	50.0		mg/L	1	12/22/16 08:41 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *30-Jan-17*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	BMW-27
Project:	MLSES - A1 Area Landill	**Lab ID:**	1612207-04
Project No:	5164-B	**Collection Date:**	12/14/16 10:20 AM
Lab Order:	1612207	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/22/16 02:47 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **CVD**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	12/29/16 06:33 PM
Arsenic	0.00510	0.00200	0.00500		mg/L	1	12/29/16 06:33 PM
Barium	0.0342	0.00300	0.0100		mg/L	1	12/29/16 06:33 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	12/29/16 06:33 PM
Boron	0.529	0.0200	0.0600		mg/L	2	01/08/17 01:28 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	12/29/16 06:33 PM
Calcium	211	10.0	30.0		mg/L	100	01/07/17 03:54 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	12/29/16 06:33 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	12/29/16 06:33 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	12/29/16 06:33 PM
Lithium	0.0932	0.00500	0.0100		mg/L	1	12/29/16 06:33 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	12/29/16 06:33 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	12/29/16 06:33 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	12/29/16 06:33 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	101	3.00	10.0		mg/L	10	12/29/16 01:51 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	12/29/16 10:47 AM
Sulfate	674	10.0	30.0		mg/L	10	12/29/16 01:51 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	7.12	0	0		pH Units@20.6℃	1	12/21/16 02:13 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	1810	50.0	50.0		mg/L	1	12/22/16 08:41 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *30-Jan-17*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	BMW-26
Project:	MLSES - A1 Area Landill	**Lab ID:**	1612207-05
Project No:	5164-B	**Collection Date:**	12/14/16 11:25 AM
Lab Order:	1612207	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/22/16 02:50 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **CVD**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	12/29/16 06:35 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	12/29/16 06:35 PM
Barium	0.0424	0.00300	0.0100		mg/L	1	12/29/16 06:35 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	12/29/16 06:35 PM
Boron	0.251	0.0100	0.0300		mg/L	1	01/07/17 04:00 PM
Cadmium	0.000823	0.000300	0.00100	J	mg/L	1	12/29/16 06:35 PM
Calcium	130	10.0	30.0		mg/L	100	01/07/17 03:58 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	12/29/16 06:35 PM
Cobalt	0.236	0.00300	0.00500		mg/L	1	12/29/16 06:35 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	12/29/16 06:35 PM
Lithium	0.0527	0.00500	0.0100		mg/L	1	12/29/16 06:35 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	12/29/16 06:35 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	12/29/16 06:35 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	12/29/16 06:35 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	152	3.00	10.0		mg/L	10	12/29/16 02:06 PM
Fluoride	0.344	0.100	0.400	J	mg/L	1	12/29/16 11:02 AM
Sulfate	1210	10.0	30.0		mg/L	10	12/29/16 02:06 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.09	0	0		pH Units@20.6℃	1	12/21/16 02:15 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	2050	50.0	50.0		mg/L	1	12/22/16 08:41 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *30-Jan-17*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	EB-1
Project:	MLSES - A1 Area Landill	**Lab ID:**	1612207-06
Project No:	5164-B	**Collection Date:**	12/14/16 11:45 AM
Lab Order:	1612207	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/22/16 02:52 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **CVD**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	12/29/16 06:37 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	12/29/16 06:37 PM
Barium	<0.00300	0.00300	0.0100		mg/L	1	12/29/16 06:37 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	12/29/16 06:37 PM
Boron	0.0222	0.0100	0.0300	J	mg/L	1	01/07/17 04:02 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	12/29/16 06:37 PM
Calcium	<0.100	0.100	0.300		mg/L	1	12/29/16 06:37 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	12/29/16 06:37 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	12/29/16 06:37 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	12/29/16 06:37 PM
Lithium	<0.00500	0.00500	0.0100		mg/L	1	12/29/16 06:37 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	12/29/16 06:37 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	12/29/16 06:37 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	12/29/16 06:37 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	<0.300	0.300	1.00		mg/L	1	12/29/16 11:16 AM
Fluoride	<0.100	0.100	0.400		mg/L	1	12/29/16 11:16 AM
Sulfate	<1.00	1.00	3.00		mg/L	1	12/29/16 11:16 AM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.91	0	0		pH Units@21℃	1	12/21/16 02:18 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	<10.0	10.0	10.0		mg/L	1	12/22/16 08:41 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *30-Jan-17*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	BMW-11AR
Project:	MLSES - A1 Area Landill	**Lab ID:**	1612207-07
Project No:	5164-B	**Collection Date:**	12/14/16 10:15 AM
Lab Order:	1612207	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/22/16 02:54 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **CVD**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	12/29/16 06:39 PM
Arsenic	0.00610	0.00200	0.00500		mg/L	1	12/29/16 06:39 PM
Barium	0.0740	0.00300	0.0100		mg/L	1	12/29/16 06:39 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	12/29/16 06:39 PM
Boron	0.409	0.0100	0.0300		mg/L	1	01/07/17 04:06 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	12/29/16 06:39 PM
Calcium	201	10.0	30.0		mg/L	100	01/07/17 04:04 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	12/29/16 06:39 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	12/29/16 06:39 PM
Lead	0.00347	0.000300	0.00100		mg/L	1	12/29/16 06:39 PM
Lithium	0.0139	0.00500	0.0100		mg/L	1	12/29/16 06:39 PM
Molybdenum	0.00303	0.00200	0.00500	J	mg/L	1	12/29/16 06:39 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	12/29/16 06:39 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	12/29/16 06:39 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	19.8	0.300	1.00		mg/L	1	12/29/16 11:31 AM
Fluoride	<0.100	0.100	0.400		mg/L	1	12/29/16 11:31 AM
Sulfate	665	10.0	30.0		mg/L	10	12/29/16 02:20 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.92	0	0		pH Units@21.2℃	1	12/21/16 02:21 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	1970	50.0	50.0		mg/L	1	12/22/16 08:41 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT: Pastor, Behling & Wheeler
Work Order: 1612207
Project: MLSES - A1 Area Landill

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_161222B

The QC data in batch 78414 applies to the following samples: 1612207-01A, 1612207-02A, 1612207-03A, 1612207-04A, 1612207-05A, 1612207-06A, 1612207-07A

Sample ID **MB-78414** Batch ID: **78414** TestNo: **SW7470A** Units: **mg/L**
SampType: **MBLK** Run ID: **CETAC2_HG_161222B** Analysis Date: **12/22/2016 1:17:18 PM** Prep Date: **12/21/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.0000800	0.000200								

Sample ID **LCS-78414** Batch ID: **78414** TestNo: **SW7470A** Units: **mg/L**
SampType: **LCS** Run ID: **CETAC2_HG_161222B** Analysis Date: **12/22/2016 1:19:33 PM** Prep Date: **12/21/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00203	0.000200	0.00200	0	102	85	115			

Sample ID **LCSD-78414** Batch ID: **78414** TestNo: **SW7470A** Units: **mg/L**
SampType: **LCSD** Run ID: **CETAC2_HG_161222B** Analysis Date: **12/22/2016 1:21:50 PM** Prep Date: **12/21/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00198	0.000200	0.00200	0	99.0	85	115	2.49	15	

Sample ID **1612145-01A MS** Batch ID: **78414** TestNo: **SW7470A** Units: **mg/L**
SampType: **MS** Run ID: **CETAC2_HG_161222B** Analysis Date: **12/22/2016 1:51:23 PM** Prep Date: **12/21/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.000230	0.000200	0.00200	0	11.5	80	120			S

Sample ID **1612145-01A MSD** Batch ID: **78414** TestNo: **SW7470A** Units: **mg/L**
SampType: **MSD** Run ID: **CETAC2_HG_161222B** Analysis Date: **12/22/2016 1:53:39 PM** Prep Date: **12/21/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.000183	0.000200	0.00200	0	9.15	80	120	22.8	15	SR

Sample ID **1612205-01A SD** Batch ID: **78414** TestNo: **SW7470A** Units: **mg/L**
SampType: **SD** Run ID: **CETAC2_HG_161222B** Analysis Date: **12/22/2016 2:04:44 PM** Prep Date: **12/21/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.000400	0.00100	0	0				0	10	

Sample ID **1612205-01A PDS** Batch ID: **78414** TestNo: **SW7470A** Units: **mg/L**
SampType: **PDS** Run ID: **CETAC2_HG_161222B** Analysis Date: **12/22/2016 2:06:59 PM** Prep Date: **12/21/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00240	0.000200	0.00250	0	96.0	85	115			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1612207
Project: MLSES - A1 Area Landill

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_161222B

Sample ID	**ICV-161222**	Batch ID:	**R89600**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**ICV**	Run ID:	**CETAC2_HG_161222B**	Analysis Date:	**12/22/2016 10:43:02 A**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00397	0.000200	0.00400	0	99.2	90	110			

Sample ID	**CCV3-161222**	Batch ID:	**R89600**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**CETAC2_HG_161222B**	Analysis Date:	**12/22/2016 12:41:08 P**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00202	0.000200	0.00200	0	101	90	110			

Sample ID	**CCV-161222**	Batch ID:	**R89600**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**CETAC2_HG_161222B**	Analysis Date:	**12/22/2016 2:00:08 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00213	0.000200	0.00200	0	106	90	110			

Sample ID	**CCV4-161222**	Batch ID:	**R89600**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**CETAC2_HG_161222B**	Analysis Date:	**12/22/2016 2:29:41 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00209	0.000200	0.00200	0	104	90	110			

Sample ID	**CCV5-161222**	Batch ID:	**R89600**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**CETAC2_HG_161222B**	Analysis Date:	**12/22/2016 2:56:59 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00211	0.000200	0.00200	0	106	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1612207
Project: MLSES - A1 Area Landill

ANALYTICAL QC SUMMARY REPORT

RunID: **ICP-MS4_161229D**

The QC data in batch 78405 applies to the following samples: 1612207-01A, 1612207-02A, 1612207-03A, 1612207-04A, 1612207-05A, 1612207-06A, 1612207-07A

Sample ID **MB-78405** Batch ID: **78405** TestNo: **SW6020A** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_161229D** Analysis Date: **12/29/2016 5:11:00 PM** Prep Date: **12/21/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.000800	0.00250								
Arsenic	<0.00200	0.00500								
Barium	<0.00300	0.0100								
Beryllium	<0.000300	0.00100								
Boron	<0.0100	0.0300								
Cadmium	<0.000300	0.00100								
Calcium	<0.100	0.300								
Chromium	<0.00200	0.00500								
Cobalt	<0.00300	0.00500								
Lead	<0.000300	0.00100								
Lithium	<0.00500	0.0100								
Molybdenum	<0.00200	0.00500								
Selenium	<0.00200	0.00500								
Thallium	<0.000500	0.00150								

Sample ID **LCS-78405** Batch ID: **78405** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_161229D** Analysis Date: **12/29/2016 5:13:00 PM** Prep Date: **12/21/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.203	0.00250	0.200	0	101	80	120			
Arsenic	0.212	0.00500	0.200	0	106	80	120			
Barium	0.204	0.0100	0.200	0	102	80	120			
Beryllium	0.214	0.00100	0.200	0	107	80	120			
Boron	0.201	0.0300	0.200	0	101	80	120			
Cadmium	0.203	0.00100	0.200	0	102	80	120			
Calcium	4.88	0.300	5.00	0	97.5	80	120			
Chromium	0.210	0.00500	0.200	0	105	80	120			
Cobalt	0.210	0.00500	0.200	0	105	80	120			
Lead	0.195	0.00100	0.200	0	97.7	80	120			
Lithium	0.205	0.0100	0.200	0	102	80	120			
Molybdenum	0.193	0.00500	0.200	0	96.7	80	120			
Selenium	0.213	0.00500	0.200	0	107	80	120			
Thallium	0.198	0.00150	0.200	0	98.8	80	120			

Sample ID **LCSD-78405** Batch ID: **78405** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_161229D** Analysis Date: **12/29/2016 5:15:00 PM** Prep Date: **12/21/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.206	0.00250	0.200	0	103	80	120	1.65	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1612207
Project: MLSES - A1 Area Landill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161229D

Sample ID **LCSD-78405**	Batch ID: **78405**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCSD**	Run ID: **ICP-MS4_161229D**	Analysis Date: **12/29/2016 5:15:00 PM**	Prep Date: **12/21/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.215	0.00500	0.200	0	107	80	120	1.12	15	
Barium	0.208	0.0100	0.200	0	104	80	120	2.07	15	
Beryllium	0.218	0.00100	0.200	0	109	80	120	1.59	15	
Boron	0.209	0.0300	0.200	0	104	80	120	3.85	15	
Cadmium	0.207	0.00100	0.200	0	103	80	120	1.85	15	
Calcium	4.85	0.300	5.00	0	96.9	80	120	0.610	15	
Chromium	0.210	0.00500	0.200	0	105	80	120	0.150	15	
Cobalt	0.211	0.00500	0.200	0	105	80	120	0.431	15	
Lead	0.196	0.00100	0.200	0	98.1	80	120	0.382	15	
Lithium	0.205	0.0100	0.200	0	102	80	120	0.105	15	
Molybdenum	0.196	0.00500	0.200	0	98.2	80	120	1.58	15	
Selenium	0.213	0.00500	0.200	0	106	80	120	0.300	15	
Thallium	0.199	0.00150	0.200	0	99.7	80	120	0.968	15	

Sample ID **1612145-04A SD**	Batch ID: **78405**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS4_161229D**	Analysis Date: **12/29/2016 5:21:00 PM**	Prep Date: **12/21/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.649	1.50	0	0.993				41.8	10	R
Calcium	150	15.0	0	149				0.809	10	

Sample ID **1612145-04A PDS**	Batch ID: **78405**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_161229D**	Analysis Date: **12/29/2016 5:41:00 PM**	Prep Date: **12/21/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	2.91	0.300	2.00	0.993	95.8	80	120			
Calcium	192	3.00	50.0	149	86.4	80	120			

Sample ID **1612145-04A MS**	Batch ID: **78405**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS4_161229D**	Analysis Date: **12/29/2016 5:43:00 PM**	Prep Date: **12/21/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	1.21	0.300	0.200	0.993	110	80	120			
Calcium	152	3.00	5.00	149	60.8	80	120			S

Sample ID **1612145-04A MSD**	Batch ID: **78405**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS4_161229D**	Analysis Date: **12/29/2016 5:45:00 PM**	Prep Date: **12/21/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	1.25	0.300	0.200	0.993	128	80	120	2.91	15	S
Calcium	156	3.00	5.00	149	139	80	120	2.54	15	S

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161229D

Sample ID **1612145-04A SD** Batch ID: **78405** TestNo: **SW6020A** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS4_161229D** Analysis Date: **12/29/2016 5:59:00 PM** Prep Date: **12/21/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.00400	0.0125	0	0				0	10	
Arsenic	<0.0100	0.0250	0	0.00217				0	10	
Barium	0.0245	0.0500	0	0.0438				56.3	10	R
Beryllium	<0.00150	0.00500	0	0				0	10	
Cadmium	<0.00150	0.00500	0	0				0	10	
Chromium	<0.0100	0.0250	0	0				0	10	
Cobalt	<0.0150	0.0250	0	0				0	10	
Lead	<0.00150	0.00500	0	0				0	10	
Lithium	0.0382	0.0500	0	0.0631				49.1	10	R
Molybdenum	<0.0100	0.0250	0	0				0	10	
Selenium	<0.0100	0.0250	0	0				0	10	
Thallium	<0.00250	0.00750	0	0				0	10	

Sample ID **1612145-04A PDS** Batch ID: **78405** TestNo: **SW6020A** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS4_161229D** Analysis Date: **12/29/2016 6:19:00 PM** Prep Date: **12/21/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.204	0.00250	0.200	0	102	80	120			
Arsenic	0.209	0.00500	0.200	0.00217	103	80	120			
Barium	0.240	0.0100	0.200	0.0438	98.0	80	120			
Beryllium	0.190	0.00100	0.200	0	95.0	80	120			
Cadmium	0.186	0.00100	0.200	0	92.9	80	120			
Chromium	0.195	0.00500	0.200	0	97.4	80	120			
Cobalt	0.192	0.00500	0.200	0	95.8	80	120			
Lead	0.190	0.00100	0.200	0	95.1	80	120			
Lithium	0.238	0.0100	0.200	0.0631	87.5	80	120			
Molybdenum	0.186	0.00500	0.200	0	93.1	80	120			
Selenium	0.201	0.00500	0.200	0	100	80	120			
Thallium	0.193	0.00150	0.200	0	96.4	80	120			

Sample ID **1612145-04A MS** Batch ID: **78405** TestNo: **SW6020A** Units: **mg/L**
SampType: **MS** Run ID: **ICP-MS4_161229D** Analysis Date: **12/29/2016 6:21:00 PM** Prep Date: **12/21/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.205	0.00250	0.200	0	102	80	120			
Arsenic	0.218	0.00500	0.200	0.00217	108	80	120			
Barium	0.249	0.0100	0.200	0.0438	103	80	120			
Beryllium	0.199	0.00100	0.200	0	99.3	80	120			
Cadmium	0.195	0.00100	0.200	0	97.4	80	120			
Chromium	0.196	0.00500	0.200	0	97.9	80	120			
Cobalt	0.196	0.00500	0.200	0	97.8	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1612207
Project: MLSES - A1 Area Landill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161229D

Sample ID **1612145-04A MS**	Batch ID: **78405**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS4_161229D**	Analysis Date: **12/29/2016 6:21:00 PM**	Prep Date: **12/21/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.197	0.00100	0.200	0	98.7	80	120			
Lithium	0.245	0.0100	0.200	0.0631	90.8	80	120			
Molybdenum	0.200	0.00500	0.200	0	100	80	120			
Selenium	0.213	0.00500	0.200	0	107	80	120			
Thallium	0.202	0.00150	0.200	0	101	80	120			

Sample ID **1612145-04A MSD**	Batch ID: **78405**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS4_161229D**	Analysis Date: **12/29/2016 6:23:00 PM**	Prep Date: **12/21/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.204	0.00250	0.200	0	102	80	120	0.234	15	
Arsenic	0.219	0.00500	0.200	0.00217	109	80	120	0.527	15	
Barium	0.250	0.0100	0.200	0.0438	103	80	120	0.305	15	
Beryllium	0.192	0.00100	0.200	0	95.8	80	120	3.62	15	
Cadmium	0.194	0.00100	0.200	0	97.2	80	120	0.164	15	
Chromium	0.197	0.00500	0.200	0	98.4	80	120	0.493	15	
Cobalt	0.200	0.00500	0.200	0	99.8	80	120	2.05	15	
Lead	0.199	0.00100	0.200	0	99.3	80	120	0.543	15	
Lithium	0.249	0.0100	0.200	0.0631	93.0	80	120	1.81	15	
Molybdenum	0.199	0.00500	0.200	0	99.6	80	120	0.484	15	
Selenium	0.216	0.00500	0.200	0	108	80	120	1.15	15	
Thallium	0.202	0.00150	0.200	0	101	80	120	0.022	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1612207
Project: MLSES - A1 Area Landill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161229D

Sample ID **ICV-161229**	Batch ID: **R89722**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_161229D**	Analysis Date: **12/29/2016 12:28:00 P**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.100	0.00250	0.100	0	100	90	110			
Arsenic	0.103	0.00500	0.100	0	103	90	110			
Barium	0.102	0.0100	0.100	0	102	90	110			
Beryllium	0.105	0.00100	0.100	0	105	90	110			
Boron	0.0957	0.0300	0.100	0	95.7	90	110			
Cadmium	0.102	0.00100	0.100	0	102	90	110			
Calcium	2.29	0.300	2.50	0	91.7	90	110			
Chromium	0.108	0.00500	0.100	0	108	90	110			
Cobalt	0.108	0.00500	0.100	0	108	90	110			
Lead	0.0994	0.00100	0.100	0	99.4	90	110			
Lithium	0.0994	0.0100	0.100	0	99.4	90	110			
Molybdenum	0.0958	0.00500	0.100	0	95.8	90	110			
Selenium	0.104	0.00500	0.100	0	104	90	110			
Thallium	0.101	0.00150	0.100	0	101	90	110			

Sample ID **LCVL-161229**	Batch ID: **R89722**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_161229D**	Analysis Date: **12/29/2016 12:34:00 P**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00207	0.00250	0.00200	0	104	70	130			
Arsenic	0.00545	0.00500	0.00500	0	109	70	130			
Barium	0.00541	0.0100	0.00500	0	108	70	130			
Beryllium	0.00116	0.00100	0.00100	0	116	70	130			
Boron	0.0175	0.0300	0.0200	0	87.3	70	130			
Cadmium	0.00108	0.00100	0.00100	0	108	70	130			
Calcium	0.107	0.300	0.100	0	107	70	130			
Chromium	0.00562	0.00500	0.00500	0	112	70	130			
Cobalt	0.00551	0.00500	0.00500	0	110	70	130			
Lead	0.00114	0.00100	0.00100	0	114	70	130			
Lithium	0.0106	0.0100	0.0100	0	106	70	130			
Molybdenum	0.00529	0.00500	0.00500	0	106	70	130			
Selenium	0.00594	0.00500	0.00500	0	119	70	130			
Thallium	0.00105	0.00150	0.00100	0	105	70	130			

Sample ID **CCV4-161229**	Batch ID: **R89722**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_161229D**	Analysis Date: **12/29/2016 4:51:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.207	0.00250	0.200	0	103	90	110			
Arsenic	0.217	0.00500	0.200	0	108	90	110			
Barium	0.212	0.0100	0.200	0	106	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1612207
Project: MLSES - A1 Area Landill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161229D

Sample ID **CCV4-161229** Batch ID: **R89722** TestNo: **SW6020A** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_161229D** Analysis Date: **12/29/2016 4:51:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.214	0.00100	0.200	0	107	90	110			
Boron	0.217	0.0300	0.200	0	109	90	110			
Cadmium	0.211	0.00100	0.200	0	106	90	110			
Calcium	4.88	0.300	5.00	0	97.7	90	110			
Chromium	0.211	0.00500	0.200	0	105	90	110			
Cobalt	0.214	0.00500	0.200	0	107	90	110			
Lead	0.199	0.00100	0.200	0	99.6	90	110			
Lithium	0.208	0.0100	0.200	0	104	90	110			
Molybdenum	0.202	0.00500	0.200	0	101	90	110			
Selenium	0.217	0.00500	0.200	0	108	90	110			
Thallium	0.204	0.00150	0.200	0	102	90	110			

Sample ID **LCVL4-161229** Batch ID: **R89722** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_161229D** Analysis Date: **12/29/2016 5:05:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00202	0.00250	0.00200	0	101	70	130			
Arsenic	0.00562	0.00500	0.00500	0	112	70	130			
Barium	0.00544	0.0100	0.00500	0	109	70	130			
Beryllium	0.00102	0.00100	0.00100	0	102	70	130			
Boron	0.0228	0.0300	0.0200	0	114	70	130			
Cadmium	0.00104	0.00100	0.00100	0	104	70	130			
Calcium	0.125	0.300	0.100	0	125	70	130			
Chromium	0.00536	0.00500	0.00500	0	107	70	130			
Cobalt	0.00554	0.00500	0.00500	0	111	70	130			
Lead	0.000998	0.00100	0.00100	0	99.8	70	130			
Lithium	0.0105	0.0100	0.0100	0	105	70	130			
Molybdenum	0.00495	0.00500	0.00500	0	99.1	70	130			
Selenium	0.00614	0.00500	0.00500	0	123	70	130			
Thallium	0.00103	0.00150	0.00100	0	103	70	130			

Sample ID **CCV5-161229** Batch ID: **R89722** TestNo: **SW6020A** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_161229D** Analysis Date: **12/29/2016 5:47:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.199	0.00250	0.200	0	99.5	90	110			
Arsenic	0.212	0.00500	0.200	0	106	90	110			
Barium	0.204	0.0100	0.200	0	102	90	110			
Beryllium	0.207	0.00100	0.200	0	104	90	110			
Boron	0.196	0.0300	0.200	0	97.8	90	110			
Cadmium	0.202	0.00100	0.200	0	101	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank
J	Analyte detected between MDL and RL
ND	Not Detected at the Method Detection Limit
RL	Reporting Limit
J	Analyte detected between SDL and RL
DF	Dilution Factor
MDL	Method Detection Limit
R	RPD outside accepted control limits
S	Spike Recovery outside control limits
N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1612207
Project: MLSES - A1 Area Landill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161229D

Sample ID **CCV5-161229**	Batch ID: **R89722**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_161229D**	Analysis Date: **12/29/2016 5:47:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.81	0.300	5.00	0	96.2	90	110			
Chromium	0.206	0.00500	0.200	0	103	90	110			
Cobalt	0.207	0.00500	0.200	0	104	90	110			
Lead	0.196	0.00100	0.200	0	98.0	90	110			
Lithium	0.199	0.0100	0.200	0	99.6	90	110			
Molybdenum	0.193	0.00500	0.200	0	96.7	90	110			
Selenium	0.211	0.00500	0.200	0	105	90	110			
Thallium	0.200	0.00150	0.200	0	99.8	90	110			

Sample ID **LCVL5-161229**	Batch ID: **R89722**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_161229D**	Analysis Date: **12/29/2016 5:51:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00214	0.00250	0.00200	0	107	70	130			
Arsenic	0.00577	0.00500	0.00500	0	115	70	130			
Barium	0.00535	0.0100	0.00500	0	107	70	130			
Beryllium	0.00108	0.00100	0.00100	0	108	70	130			
Boron	0.0194	0.0300	0.0200	0	96.8	70	130			
Cadmium	0.00104	0.00100	0.00100	0	104	70	130			
Calcium	0.107	0.300	0.100	0	107	70	130			
Chromium	0.00553	0.00500	0.00500	0	111	70	130			
Cobalt	0.00557	0.00500	0.00500	0	111	70	130			
Lead	0.00104	0.00100	0.00100	0	104	70	130			
Lithium	0.0101	0.0100	0.0100	0	101	70	130			
Molybdenum	0.00520	0.00500	0.00500	0	104	70	130			
Selenium	0.00626	0.00500	0.00500	0	125	70	130			
Thallium	0.00111	0.00150	0.00100	0	111	70	130			

Sample ID **CCV6-161229**	Batch ID: **R89722**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_161229D**	Analysis Date: **12/29/2016 6:25:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.201	0.00250	0.200	0	100	90	110			
Arsenic	0.211	0.00500	0.200	0	105	90	110			
Barium	0.205	0.0100	0.200	0	103	90	110			
Beryllium	0.202	0.00100	0.200	0	101	90	110			
Cadmium	0.200	0.00100	0.200	0	100	90	110			
Chromium	0.201	0.00500	0.200	0	101	90	110			
Cobalt	0.204	0.00500	0.200	0	102	90	110			
Lead	0.192	0.00100	0.200	0	96.0	90	110			
Lithium	0.197	0.0100	0.200	0	98.4	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1612207
Project: MLSES - A1 Area Landill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161229D

Sample ID **CCV6-161229**	Batch ID: **R89722**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_161229D**	Analysis Date: **12/29/2016 6:25:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Molybdenum	0.193	0.00500	0.200	0	96.4	90	110			
Selenium	0.216	0.00500	0.200	0	108	90	110			
Thallium	0.196	0.00150	0.200	0	98.0	90	110			

Sample ID **LCVL6-161229**	Batch ID: **R89722**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_161229D**	Analysis Date: **12/29/2016 6:29:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00208	0.00250	0.00200	0	104	70	130			
Arsenic	0.00578	0.00500	0.00500	0	116	70	130			
Barium	0.00545	0.0100	0.00500	0	109	70	130			
Beryllium	0.00105	0.00100	0.00100	0	104	70	130			
Cadmium	0.00100	0.00100	0.00100	0	100	70	130			
Chromium	0.00544	0.00500	0.00500	0	109	70	130			
Cobalt	0.00556	0.00500	0.00500	0	111	70	130			
Lead	0.00105	0.00100	0.00100	0	105	70	130			
Lithium	0.0108	0.0100	0.0100	0	108	70	130			
Molybdenum	0.00510	0.00500	0.00500	0	102	70	130			
Selenium	0.00606	0.00500	0.00500	0	121	70	130			
Thallium	0.00108	0.00150	0.00100	0	108	70	130			

Sample ID **CCV7-161229**	Batch ID: **R89722**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_161229D**	Analysis Date: **12/29/2016 6:53:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.195	0.00250	0.200	0	97.5	90	110			
Arsenic	0.209	0.00500	0.200	0	105	90	110			
Barium	0.202	0.0100	0.200	0	101	90	110			
Beryllium	0.189	0.00100	0.200	0	94.5	90	110			
Cadmium	0.194	0.00100	0.200	0	97.1	90	110			
Calcium	4.75	0.300	5.00	0	95.0	90	110			
Chromium	0.197	0.00500	0.200	0	98.6	90	110			
Cobalt	0.201	0.00500	0.200	0	101	90	110			
Lead	0.191	0.00100	0.200	0	95.3	90	110			
Lithium	0.187	0.0100	0.200	0	93.7	90	110			
Molybdenum	0.186	0.00500	0.200	0	93.0	90	110			
Selenium	0.211	0.00500	0.200	0	106	90	110			
Thallium	0.191	0.00150	0.200	0	95.7	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1612207
Project: MLSES - A1 Area Landill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161229D

Sample ID **LCVL7-161229** Batch ID: **R89722** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_161229D** Analysis Date: **12/29/2016 6:57:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00207	0.00250	0.00200	0	104	70	130			
Arsenic	0.00566	0.00500	0.00500	0	113	70	130			
Barium	0.00562	0.0100	0.00500	0	112	70	130			
Beryllium	0.00104	0.00100	0.00100	0	104	70	130			
Cadmium	0.00107	0.00100	0.00100	0	107	70	130			
Calcium	0.145	0.300	0.100	0	145	70	130			S
Chromium	0.00527	0.00500	0.00500	0	105	70	130			
Cobalt	0.00539	0.00500	0.00500	0	108	70	130			
Lead	0.00101	0.00100	0.00100	0	101	70	130			
Lithium	0.0118	0.0100	0.0100	0	118	70	130			
Molybdenum	0.00506	0.00500	0.00500	0	101	70	130			
Selenium	0.00594	0.00500	0.00500	0	119	70	130			
Thallium	0.00104	0.00150	0.00100	0	104	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_170107D

Sample ID **ICV-170107**	Batch ID: **R89825**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_170107D**	Analysis Date: **1/7/2017 12:28:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.100	0.0300	0.100	0	100	90	110			
Calcium	2.32	0.300	2.50	0	92.7	90	110			

Sample ID **LCVL-170107**	Batch ID: **R89825**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_170107D**	Analysis Date: **1/7/2017 12:32:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0210	0.0300	0.0200	0	105	70	130			
Calcium	0.105	0.300	0.100	0	105	70	130			

Sample ID **CCV1-170107**	Batch ID: **R89825**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_170107D**	Analysis Date: **1/7/2017 1:36:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.216	0.0300	0.200	0	108	90	110			
Calcium	4.93	0.300	5.00	0	98.5	90	110			

Sample ID **LCVL1-170107**	Batch ID: **R89825**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_170107D**	Analysis Date: **1/7/2017 2:28:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0253	0.0300	0.0200	0	127	70	130			
Calcium	0.0989	0.300	0.100	0	98.9	70	130			

Sample ID **CCV2-170107**	Batch ID: **R89825**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_170107D**	Analysis Date: **1/7/2017 2:54:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.210	0.0300	0.200	0	105	90	110			
Calcium	5.18	0.300	5.00	0	104	90	110			

Sample ID **LCVL2-170107**	Batch ID: **R89825**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_170107D**	Analysis Date: **1/7/2017 3:42:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0243	0.0300	0.0200	0	121	70	130			
Calcium	0.0985	0.300	0.100	0	98.5	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank
J	Analyte detected between MDL and RL
ND	Not Detected at the Method Detection Limit
RL	Reporting Limit
J	Analyte detected between SDL and RL
DF	Dilution Factor
MDL	Method Detection Limit
R	RPD outside accepted control limits
S	Spike Recovery outside control limits
N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1612207
Project: MLSES - A1 Area Landill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_170107D

Sample ID **CCV3-170107**	Batch ID: **R89825**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_170107D**	Analysis Date: **1/7/2017 4:08:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.212	0.0300	0.200	0	106	90	110			
Calcium	4.99	0.300	5.00	0	99.8	90	110			

Sample ID **LCVL3-170107**	Batch ID: **R89825**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_170107D**	Analysis Date: **1/7/2017 4:37:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0219	0.0300	0.0200	0	110	70	130			
Calcium	0.102	0.300	0.100	0	102	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1612207
Project: MLSES - A1 Area Landill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_170108C

Sample ID **ICV-170108**	Batch ID: **R89833**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_170108C**	Analysis Date: **1/8/2017 11:44:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.104	0.0300	0.100	0	104	90	110			

Sample ID **LCVL-170108**	Batch ID: **R89833**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_170108C**	Analysis Date: **1/8/2017 11:49:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0195	0.0300	0.0200	0	97.3	70	130			

Sample ID **CCV2-170108**	Batch ID: **R89833**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_170108C**	Analysis Date: **1/8/2017 1:02:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.212	0.0300	0.200	0	106	90	110			

Sample ID **LCVL2-170108**	Batch ID: **R89833**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_170108C**	Analysis Date: **1/8/2017 1:06:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0189	0.0300	0.0200	0	94.3	70	130			

Sample ID **CCV3-170108**	Batch ID: **R89833**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_170108C**	Analysis Date: **1/8/2017 1:41:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.207	0.0300	0.200	0	103	90	110			

Sample ID **LCVL3-170108**	Batch ID: **R89833**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_170108C**	Analysis Date: **1/8/2017 1:45:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0151	0.0300	0.0200	0	75.3	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1612207
Project: MLSES - A1 Area Landill

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_161229A

The QC data in batch 78511 applies to the following samples: 1612207-01D, 1612207-02D, 1612207-03D, 1612207-04D, 1612207-05D, 1612207-06D, 1612207-07D

Sample ID **MB-78511** Batch ID: **78511** TestNo: **E300** Units: **mg/L**
SampType: **MBLK** Run ID: **IC2_161229A** Analysis Date: **12/29/2016 9:13:49 AM** Prep Date: **12/29/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00								
Fluoride	<0.100	0.400								
Sulfate	<1.00	3.00								

Sample ID **LCS-78511** Batch ID: **78511** TestNo: **E300** Units: **mg/L**
SampType: **LCS** Run ID: **IC2_161229A** Analysis Date: **12/29/2016 9:28:26 AM** Prep Date: **12/29/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.1	1.00	10.00	0	101	90	110			
Fluoride	3.87	0.400	4.000	0	96.8	90	110			
Sulfate	30.7	3.00	30.00	0	102	90	110			

Sample ID **LCSD-78511** Batch ID: **78511** TestNo: **E300** Units: **mg/L**
SampType: **LCSD** Run ID: **IC2_161229A** Analysis Date: **12/29/2016 9:43:02 AM** Prep Date: **12/29/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.0	1.00	10.00	0	100	90	110	0.022	20	
Fluoride	3.92	0.400	4.000	0	97.9	90	110	1.21	20	
Sulfate	30.5	3.00	30.00	0	102	90	110	0.572	20	

Sample ID **1612274-04BMS** Batch ID: **78511** TestNo: **E300** Units: **mg/L**
SampType: **MS** Run ID: **IC2_161229A** Analysis Date: **12/29/2016 3:06:22 PM** Prep Date: **12/29/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	3790	100	2000	1711	104	90	110			
Fluoride	2040	40.0	2000	14.87	101	90	110			
Sulfate	4810	300	2000	2637	109	90	110			

Sample ID **1612274-04BMSD** Batch ID: **78511** TestNo: **E300** Units: **mg/L**
SampType: **MSD** Run ID: **IC2_161229A** Analysis Date: **12/29/2016 3:20:59 PM** Prep Date: **12/29/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	3810	100	2000	1711	105	90	110	0.624	20	
Fluoride	2080	40.0	2000	14.87	103	90	110	1.51	20	
Sulfate	4860	300	2000	2637	111	90	110	1.07	20	S

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1612207
Project: MLSES - A1 Area Landill

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_161229A

Sample ID **1612207-01DMS** Batch ID: **78511** TestNo: **E300** Units: **mg/L**
SampType: **MS** Run ID: **IC2_161229A** Analysis Date: **12/29/2016 3:35:35 PM** Prep Date: **12/29/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	2150	100	2000	0	108	90	110			
Fluoride	2070	40.0	2000	0	103	90	110			
Sulfate	4460	300	2000	2216	112	90	110			S

Sample ID **1612207-01DMSD** Batch ID: **78511** TestNo: **E300** Units: **mg/L**
SampType: **MSD** Run ID: **IC2_161229A** Analysis Date: **12/29/2016 3:50:12 PM** Prep Date: **12/29/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	2160	100	2000	0	108	90	110	0.641	20	
Fluoride	2090	40.0	2000	0	105	90	110	1.19	20	
Sulfate	4510	300	2000	2216	115	90	110	1.07	20	S

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1612207
Project: MLSES - A1 Area Landill

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_161229A

Sample ID **ICV-161229**	Batch ID: **R89717**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC2_161229A**	Analysis Date: **12/29/2016 8:40:05 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	25.8	1.00	25.00	0	103	90	110			
Fluoride	10.1	0.400	10.00	0	101	90	110			
Sulfate	79.5	3.00	75.00	0	106	90	110			

Sample ID **CCV1-161229**	Batch ID: **R89717**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_161229A**	Analysis Date: **12/29/2016 12:31:49 P**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.1	1.00	10.00	0	101	90	110			
Fluoride	3.97	0.400	4.000	0	99.3	90	110			
Sulfate	31.1	3.00	30.00	0	104	90	110			

Sample ID **CCV2-161229**	Batch ID: **R89717**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_161229A**	Analysis Date: **12/29/2016 4:04:48 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.2	1.00	10.00	0	102	90	110			
Fluoride	4.10	0.400	4.000	0	103	90	110			
Sulfate	31.3	3.00	30.00	0	104	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler

Work Order: 1612207

Project: MLSES - A1 Area Landill

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_161221A

The QC data in batch 78421 applies to the following samples: 1612207-01D, 1612207-02D, 1612207-03D, 1612207-04D, 1612207-05D, 1612207-06D, 1612207-07D

Sample ID	**1612207-01D-DUP**	Batch ID:	**78421**	TestNo:	**M4500-H+ B**	Units:	**pH Units@20.7℃**
SampType:	**DUP**	Run ID:	**TITRATOR_161221A**	Analysis Date:	**12/21/2016 2:08:00 PM**	Prep Date:	**12/21/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	6.62	0	0	6.510				1.68	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1612207
Project: MLSES - A1 Area Landill

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_161221A

Sample ID	**ICV-161221**	Batch ID:	**R89586**	TestNo:	**M4500-H+ B**	Units:	**pH Units@21℃**
SampType:	**ICV**	Run ID:	**TITRATOR_161221A**	Analysis Date:	**12/21/2016 8:19:00 AM**	Prep Date:	**12/21/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	9.90	0	10.00	0	99.0	99	101			

Sample ID	**CCV2-161221**	Batch ID:	**R89586**	TestNo:	**M4500-H+ B**	Units:	**pH Units@20.7℃**
SampType:	**CCV**	Run ID:	**TITRATOR_161221A**	Analysis Date:	**12/21/2016 9:37:00 AM**	Prep Date:	**12/21/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	6.96	0	7.000	0	99.4	97.1	102.9			

Sample ID	**CCV3-161221**	Batch ID:	**R89586**	TestNo:	**M4500-H+ B**	Units:	**pH Units@21.3℃**
SampType:	**CCV**	Run ID:	**TITRATOR_161221A**	Analysis Date:	**12/21/2016 2:28:00 PM**	Prep Date:	**12/21/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	6.97	0	7.000	0	99.6	97.1	102.9			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1612207
Project: MLSES - A1 Area Landill

ANALYTICAL QC SUMMARY REPORT

RunID: WC_161221B

The QC data in batch 78407 applies to the following samples: 1612207-01D, 1612207-02D, 1612207-03D, 1612207-04D, 1612207-05D, 1612207-06D, 1612207-07D

Sample ID	**MB-78407**	Batch ID:	**78407**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**WC_161221B**	Analysis Date:	**12/22/2016 8:41:00 AM**	Prep Date:	**12/21/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	<10.0	10.0								

Sample ID	**LCS-78407**	Batch ID:	**78407**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**WC_161221B**	Analysis Date:	**12/22/2016 8:41:00 AM**	Prep Date:	**12/21/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	748	10.0	745.6	0	100	90	113			

Sample ID	**1612207-01D-DUP**	Batch ID:	**78407**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**DUP**	Run ID:	**WC_161221B**	Analysis Date:	**12/22/2016 8:41:00 AM**	Prep Date:	**12/21/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	3710	50.0	0	3660				1.22	5	

Sample ID	**1612207-05D-DUP**	Batch ID:	**78407**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**DUP**	Run ID:	**WC_161221B**	Analysis Date:	**12/22/2016 8:41:00 AM**	Prep Date:	**12/21/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	2150	50.0	0	2050				4.76	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

Case Narrative

Lab No: 20161257

This report contains the analytical results for the 7 sample(s) received under chain of custody by ESC Lab Sciences on 12/20/2016 11:11:44 AM. These samples are associated with your 1612207 project.

The analytical results included in this report meet all applicable quality control procedure requirements except as noted below:

The test results in this report meet all NELAC requirements unless noted below:

This report shall not be reproduced, except in full, without the written approval of ESC Lab Sciences.

All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client.

Results have been reviewed by the Director of Radiochemistry or their designees and is approved for release.

Observations / Nonconformances

L880001

Analytical Report

	Method	Result	DL	Units	Qual	Prep Date	Analysis Date	Analyst
Lab ID : **20161257-01**								
Client ID : **BMW-19**								
Date Sampled : **12/14/2016 7:20:00 AM**								
Matrix : **NPW**								
		Radiochemical Analyses						
Combined Radium		0.666 +/- 0.656	1.14	pCi/l				
Radium-226	SM 7500 Ra B M*	-0.153 +/- 0.157	0.309	pCi/l		01/07/17	01/09/17	AK
Radium-228	EPA 904*/9320*	0.666 +/- 0.499	0.827	pCi/l		01/17/17	01/24/17	JR
Lab ID : **20161257-02**								
Client ID : **BMW-18**								
Date Sampled : **12/14/2016 8:20:00 AM**								
Matrix : **NPW**								
		Radiochemical Analyses						
Combined Radium		2.07 +/- 0.602	0.945	pCi/l				
Radium-226	SM 7500 Ra B M*	0.084 +/- 0.095	0.140	pCi/l		01/07/17	01/09/17	AK
Radium-228	EPA 904*/9320*	1.99 +/- 0.507	0.805	pCi/l		01/17/17	01/24/17	JR
Lab ID : **20161257-03**								
Client ID : **BMW-28**								
Date Sampled : **12/14/2016 9:15:00 AM**								
Matrix : **NPW**								
		Radiochemical Analyses						
Combined Radium		2.79 +/- 0.780	1.10	pCi/l				
Radium-226	SM 7500 Ra B M*	0.566 +/- 0.209	0.193	pCi/l		01/07/17	01/09/17	AK
Radium-228	EPA 904*/9320*	2.22 +/- 0.571	0.910	pCi/l		01/17/17	01/24/17	JR
Lab ID : **20161257-04**								
Client ID : **BMW-27**								
Date Sampled : **12/14/2016 10:20:00 AM**								
Matrix : **NPW**								
		Radiochemical Analyses						
Combined Radium		1.17 +/- 0.572	1.02	pCi/l				
Radium-226	SM 7500 Ra B M*	0.120 +/- 0.099	0.108	pCi/l		01/07/17	01/09/17	AK
Radium-228	EPA 904*/9320*	1.05 +/- 0.473	0.907	pCi/l		01/17/17	01/24/17	JR

Analytical Report

	Method	Result	DL	Units	Qual	Prep Date	Analysis Date	Analyst
Lab ID : **20161257-05**								
Client ID : **BMW-26**								
Date Sampled : **12/14/2016 11:25:00 AM**								
Matrix : **NPW**								
Radiochemical Analyses								
Combined Radium		1.45 +/- 0.705	1.22	pCi/l				
Radium-226	SM 7500 Ra B M*	0.161 +/- 0.136	0.177	pCi/l		01/07/17	01/09/17	AK
Radium-228	EPA 904*/9320*	1.29 +/- 0.569	1.04	pCi/l		01/17/17	01/24/17	JR
Lab ID : **20161257-06**								
Client ID : **EB-1**								
Date Sampled : **12/14/2016 11:45:00 AM**								
Matrix : **NPW**								
Radiochemical Analyses								
Combined Radium		0.914 +/- 0.533	0.938	pCi/l				
Radium-226	SM 7500 Ra B M*	-0.064 +/- 0.077	0.192	pCi/l		01/07/17	01/09/17	AK
Radium-228	EPA 904*/9320*	0.914 +/- 0.456	0.746	pCi/l		01/17/17	01/24/17	JR
Lab ID : **20161257-07**								
Client ID : **BMW-11AR**								
Date Sampled : **12/14/2016 10:15:00 AM**								
Matrix : **NPW**								
Radiochemical Analyses								
Combined Radium		2.55 +/- 0.719	1.24	pCi/l				
Radium-226	SM 7500 Ra B M*	0.821 +/- 0.248	0.203	pCi/l		01/07/17	01/09/17	AK
Radium-228	EPA 904*/9320*	1.73 +/- 0.471	1.04	pCi/l		01/17/17	01/24/17	JR

QC Report

Parameter	Blank	LCS %REC	LCSD %REC	LCSD RPD	DUP RPD	RER, NAD or DER	MS %REC	MSD %REC	MSD RPD	Batch ID
Radium-226	0.016	105.0			NC	0.688	108.0	111.0	1.7	R1177
Radium-228	-0.097	109.0			NC	0.385	82.1	74.8	8.9	R3909

Lab Approval:

Ron Eidson
Director of Radiochemistry

DHL Analytical, Inc.
2300 Double Creek Drive
Round Rock, TX 78664

TEL: *(512) 388-8222* FAX: *(512) 388-8229*

Work Order: 1612207

CHAIN-OF-CUSTODY RECORD

Subcontractor:

ESC Laboratory
311 North Aspen
Broken Arrow, Oklahoma 74012

TEL: (918) 251-2515
FAX:
Acct #: DHLRRTX

19-Dec-16

	Sample Id	Matrix	DHL#	Date Collected	Bottle Type	Requested Tests E904.0	SM7500Ra-B M				
1	BMW-19	Aqueous	-01B	12/14/16 07:20 AM	1LHDPEHNO3	1					
	BMW-19	Aqueous	-01C	12/14/16 07:20 AM	500HDPEHNO3		1				
2	BMW-18	Aqueous	-02B	12/14/16 08:20 AM	1LHDPEHNO3	1					
	BMW-18	Aqueous	-02C	12/14/16 08:20 AM	500HDPEHNO3		1				
3	BMW-28	Aqueous	-03B	12/14/16 09:15 AM	1LHDPEHNO3	1					
	BMW-28	Aqueous	-03C	12/14/16 09:15 AM	500HDPEHNO3		1				
4	BMW-27	Aqueous	-04B	12/14/16 10:20 AM	1LHDPEHNO3	1					
	BMW-27	Aqueous	-04C	12/14/16 10:20 AM	500HDPEHNO3		1				
5	BMW-26	Aqueous	-05B	12/14/16 11:25 AM	1LHDPEHNO3	1					
	BMW-26	Aqueous	-05C	12/14/16 11:25 AM	500HDPEHNO3		1				
6	EB-1	Aqueous	-06B	12/14/16 11:45 AM	1LHDPEHNO3	1					
	EB-1	Aqueous	-06C	12/14/16 11:45 AM	500HDPEHNO3		1				
7	BMW-11AR	Aqueous	-07B	12/14/16 10:15 AM	1LHDPEHNO3	1					
	BMW-11AR	Aqueous	-07C	12/14/16 10:15 AM	500HDPEHNO3		1				

General Comments:

Please analyze these samples with Normal Turnaround Time.
Report RA-226, Ra-228 & Combined per Specs.
Quality Control Package Needed: Standard - NELAC Rad Test compliant
Email to cac@dhlanalytical.com & dupont@dhlanalytical.com

L 850001

		Date/Time			Date/Time
Relinquished by:		12/19/16 17:30	**Received by:**		12/19/16 17:30
Relinquished by:			**Received by:**		12/20/16 11 11

20161257

SAMPLE LOGIN

Date Received: *12/20/2016 11:11:* **Lab Number:** 20161257 **Due:** 1/19/2017

Sample Number	Client Sample ID	Matrix	Date Sampled	Container Type	Container Size	Preservation	Preserved Upon Receipt	Custody Seal	Seal Intact
20161257-01 B	BMW-19	NPW	12/14/16	Plastic	1 L	HNO3, pH < 2	☑	Yes	Yes
20161257-01 A	BMW-19	NPW	12/14/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20161257-02 B	BMW-18	NPW	12/14/16	Plastic	1 L	HNO3, pH < 2	☑	Yes	Yes
20161257-02 A	BMW-18	NPW	12/14/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20161257-03 B	BMW-28	NPW	12/14/16	Plastic	1 L	HNO3, pH < 2	☑	Yes	Yes
20161257-03 A	BMW-28	NPW	12/14/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20161257-04 B	BMW-27	NPW	12/14/16	Plastic	1 L	HNO3, pH < 2	☑	Yes	Yes
20161257-04 A	BMW-27	NPW	12/14/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20161257-05 B	BMW-26	NPW	12/14/16	Plastic	1 L	HNO3, pH < 2	☑	Yes	Yes
20161257-05 A	BMW-26	NPW	12/14/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20161257-06 B	EB-1	NPW	12/14/16	Plastic	1 L	HNO3, pH < 2	☑	Yes	Yes
20161257-06 A	EB-1	NPW	12/14/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20161257-07 B	BMW-11AR	NPW	12/14/16	Plastic	1 L	HNO3, pH < 2	☑	Yes	Yes
20161257-07 A	BMW-11AR	NPW	12/14/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						

CONTAINER INSPECTION

 # Coolers 3 **Custody Seals Broken** ☒ **Temperature:** Amb C **Ice** **Radiation Survey:** <300 cpm

SAMPLE INSPECTION

Sample Seal Broken ☒ **Chain of Custody Record** ☑ **Labels in Tact** ☑ **Radiation Survey Complete** N/A

Anomalies

Inspected By: [signature] **DATE** 12/20/16

QA or Designee Review: Raymond Thomas **DATE** 12/20/16

Sample Custodian Review: [signature] **DATE** 12/20/16

Project Notes:

January 26, 2017

Will Vienne
Pastor, Behling & Wheeler
2201 Double Creek Dr #4004
Round Rock, Texas 78664
TEL: (512) 671-3434
FAX (512) 671-3446

Order No.: 1612145

RE: MLSES - A1 Area Landfill

Dear Will Vienne:

DHL Analytical, Inc. received 5 sample(s) on 12/14/2016 for the analyses presented in the following report.

There were no problems with the analyses and all data met requirements of NELAC except where noted in the Case Narrative. All non-NELAC methods will be identified accordingly in the case narrative and all estimated uncertainties of test results are within method or EPA specifications.

If you have any questions regarding these tests results, please feel free to call. Thank you for using DHL Analytical.

Sincerely,

John DuPont
General Manager

This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211-16-17

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DHL ANALYTICAL
2300 Double Creek Dr. ■ Round Rock, TX 78664
Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

№ 73582

CHAIN-OF-CUSTODY

CLIENT: PBW
ADDRESS: 2201 DOUBLE CREEK DR ROUND ROCK, TX 78664
PHONE: 512-671-3434 FAX/E-MAIL: 512-671-3446
DATA REPORTED TO: WILL VIENNE
ADDITIONAL REPORT COPIES TO:

DATE: 12-13-16 PAGE 1 OF 1
PO #: 5164-B DHL WORK ORDER #: 1612145
PROJECT LOCATION OR NAME: MLSES - A1 AREA LANDFILL
CLENT PROJECT #: 5164-B COLLECTOR: J. BRAYTON

Authorize 5% surcharge for TRRP Report? ❑ Yes ❑ No

S=SOIL W=WATER A=AIR L=LIQUID SE=SEDIMENT P=PAINT SL=SLUDGE O=OTHER SO=SOLID

PRESERVATION: HCl | HNO_3 | H_2SO_4 ❑ NaOH ❑ | ICE | UNPRESERVED

ANALYSES: BTEX ❑ MTBE ❑ [METHOD 8021] | TPH 1005 ❑ TPH 1006 ❑ HOLD 1006 ❑ | GRO [METHOD 8015] ❑ DRO [METHOD 8105] ❑ | VOC 8260 ❑ VOC 624 ❑ VOC 8260/5035 ❑ | SVOC 8270 ❑ PAH 8270 ❑ HOLD PAH ❑ SVOC 625 ❑ | 8270 PEST ❑ 625 PEST/PCB ❑ 608 PCB ❑ | 8270 O-P PEST ❑ 8082 PCB ❑ 8270 PCB ❑ | 8321 HERB ❑ T PHOS, AMMONIA ❑ | METALS 6020 ❑ METALS 200.8 ❑ DISS. METALS ❑ | RCRA ❑ TX11 ❑ ____ ❑ | PH ❑ HEX CHROM ❑ ALKALINITY ❑ COD ❑ | CHLORIDE ❑ ANIONS ____ ❑ | TCLP-SVOC ❑ VOC ❑ PEST ❑ HERB ❑ | TCLP-METALS ❑ RCRA 8 ❑ TX-11 ❑ Pb ❑ | RCI ❑ FLASHPOINT ❑ DGAS ❑ | TDS ❑ TSS ❑ % MOISTURE ❑ CYANIDE ❑ | CCR | FIELD NOTES

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	HCl	HNO_3	H_2SO_4 ❑ NaOH ❑	ICE	UNPRESERVED	CCR	FIELD NOTES
BMW-24	01	12-13-16	1310	W	P	4		X				X	
BMW-23	02		1410	W	P	4		X				X	
BMW-22	03		1505	W	P	4		X				X	
BMW-21	04		1600	W	P	4		X				X	
BMW-20	05		1650	W	P	4		X				X	

RELINQUISHED BY: (Signature) DATE/TIME 12-13-16 1800 RECEIVED BY: (Signature) FedEx
RELINQUISHED BY: (Signature) FedEx DATE/TIME 12/14/16 1010 RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature) DATE/TIME RECEIVED BY: (Signature)

APPENDIX F Revision 2 February 27, 2024

❑ DHL DISPOSAL @ $5.00 each ❑ Return

TURN AROUND TIME
RUSH ❑ CALL FIRST
1 DAY ❑ CALL FIRST
2 DAY ❑
NORMAL ☒
OTHER ❑ ____

LABORATORY USE ONLY:
RECEIVING TEMP: 3.4 THERM #: 78
CUSTODY SEALS: ❑ BROKEN ~~❑ INTACT~~ ☒ NOT USED 4P 12/14/16
CARRIER: ❑ LONE STAR ☒ FEDEX ❑ UPS ❑ OTHER
❑ COURIER DELIVERY
❑ HAND DELIVERED

John Dupont

From: Sara Taube [Sara.Taube@pbwllc.com]
Sent: Wednesday, July 22, 2015 12:06 PM
To: John Dupont
Subject: CCR Appendix III and IV
Follow Up Flag: Follow up
Flag Status: Completed

Hi John,

Here are the Appendix III and Appendix IV constituents that we will need to have analyzed under the CCR Rule.

Appendix III
Boron
Calcium
Chloride
Fluoride
pH
sulfate
TDS

Appendix IV
Antimony
Arsenic
Barium
Beryllium
Cadmium
Chromium
Cobalt
Fluoride
Lead
Lithium
Mercury
Molybdenum
Selenium
Thallium
Radium 226 and 228

We are looking to have approximately 74 wells sampled 8 times over the course of the next two years. Please let me know if there is any more information you might need.

Cheers,

Sara

10/26/2015

ORIGIN ID:GGGA (512) 671-3434
PBW
2201 DOUBLE CREEK DR STE 4004
ROUND ROCK, TX 78664
UNITED STATES US
SHIP DATE: 13DEC16
ACTWGT: 58.00 LB
CAD: 006994167/SSFE1722
DIMS: 24x14x14 IN
BILL THIRD PARTY
TO DHL
2300 DOUBLE CREEK DR
ROUND ROCK TX 78664
(512) 388-8222
REF:
INV:
PO:
DEPT:
FedEx
Express
1 of 2
TRK# 0201 7849 8448 6554
MASTER
A8 BSMA
WED - 14 DEC 10:30A
PRIORITY OVERNIGHT
78664
TX-US AUS

DHL Analytical, Inc.

Sample Receipt Checklist

Client Name **Pastor, Behling & Wheeler** Date Received: **12/14/2016**

Work Order Number **1612145** Received by **JT**

Checklist completed by: _____ 12/14/2016 Reviewed by _____ 12/14/2016
Signature Date Initials Date

Carrier name FedEx 1day

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	3.4 °C
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH<2 acceptable upon receipt?	Yes ☑	No ☐	NA ☐ LOT # 8086
	Adjusted? ND		Checked by
Water - ph>9 (S) or ph>12 (CN) acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted?		Checked by

Any No response must be detailed in the comments section below.

Client contacted _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments: _____

Corrective Action _____

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Method SW6020A - Metals Analysis
Method SW7470A - Mercury Analysis
Method E300 - Anions Analysis
Method M4500-H+ B - pH of a Water Analysis
Method M2540C - TDS Analysis
Sub-contract - Radium-228 and Radium-226 analyses by methods E904/9320 and SM 7500 Ra B M. Analyzed at ESC Lab Sciences.

LOG IN

The samples were received and log-in performed on 12/14/16. A total of 5 samples were received. The samples arrived in good condition and were properly packaged.

METALS ANALYSIS

For Metals analysis performed on 12/29/16 the matrix spike and matrix spike duplicate recoveries were out of control limits for Boron and/or Calcium. These are flagged accordingly in the QC summary report. The sample selected for the matrix spike and matrix spike duplicate was from this work order. The LCS was within control limits for these analytes. No further corrective actions were taken.

For Metals analysis performed on 12/29/16 the RPD for the serial dilution was above control limits for three analytes. These are flagged accordingly. The PDS was within control limits for these analytes. No further corrective actions were taken.

MERCURY ANALYSIS

For Mercury analysis performed on 12/22/16 the matrix spike and matrix spike duplicate recoveries were below control limits. In addition, the matrix spike and matrix spike duplicate had the RPD slightly above control limits. These are flagged accordingly in the QC summary report. The sample selected for the matrix spike and matrix spike duplicate was from this work order. The LCS was within control limits. No further corrective actions were taken.

ANIONS ANALYSIS

For Anions analysis performed on 12/23/16 the matrix spike and matrix spike duplicate recoveries were below control limits for Chloride. These are flagged accordingly in the QC summary report. The sample selected for the matrix spike and matrix spike duplicate was from this work order. The LCS

was within control limits for this analyte. No further corrective actions were taken.

DHL Analytical, Inc.

Date: *26-Jan-17*

CLIENT: Pastor, Behling & Wheeler
Project: MLSES - A1 Area Landfill
Lab Order: 1612145

Work Order Sample Summary

Lab Smp ID	Client Sample ID	Tag Number	Date Collected	Date Recved
1612145-01	BMW-24		12/13/16 01:10 PM	12/14/2016
1612145-02	BMW-23		12/13/16 02:10 PM	12/14/2016
1612145-03	BMW-22		12/13/16 03:05 PM	12/14/2016
1612145-04	BMW-21		12/13/16 04:00 PM	12/14/2016
1612145-05	BMW-20		12/13/16 04:50 PM	12/14/2016

Lab Order: 1612145
Client: Pastor, Behling & Wheeler
Project: MLSES - A1 Area Landfill

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1612145-01A	BMW-24	12/13/16 01:10 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/21/16 08:32 AM	78405
	BMW-24	12/13/16 01:10 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/21/16 08:32 AM	78405
	BMW-24	12/13/16 01:10 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	12/21/16 10:13 AM	78414
1612145-01D	BMW-24	12/13/16 01:10 PM	Aqueous	E300	Anion Preparation	12/23/16 08:12 AM	78450
	BMW-24	12/13/16 01:10 PM	Aqueous	E300	Anion Preparation	12/23/16 08:12 AM	78450
	BMW-24	12/13/16 01:10 PM	Aqueous	E300	Anion Preparation	12/27/16 09:48 AM	78477
	BMW-24	12/13/16 01:10 PM	Aqueous	M4500-H+ B	pH Preparation	12/15/16 07:51 AM	78292
	BMW-24	12/13/16 01:10 PM	Aqueous	M2540C	TDS Preparation	12/20/16 02:57 PM	78399
1612145-02A	BMW-23	12/13/16 02:10 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/21/16 08:32 AM	78405
	BMW-23	12/13/16 02:10 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/21/16 08:32 AM	78405
	BMW-23	12/13/16 02:10 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	12/21/16 10:13 AM	78414
1612145-02D	BMW-23	12/13/16 02:10 PM	Aqueous	E300	Anion Preparation	12/23/16 08:12 AM	78450
	BMW-23	12/13/16 02:10 PM	Aqueous	E300	Anion Preparation	12/23/16 08:12 AM	78450
	BMW-23	12/13/16 02:10 PM	Aqueous	M4500-H+ B	pH Preparation	12/15/16 07:51 AM	78292
	BMW-23	12/13/16 02:10 PM	Aqueous	M2540C	TDS Preparation	12/20/16 02:57 PM	78399
1612145-03A	BMW-22	12/13/16 03:05 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/21/16 08:32 AM	78405
	BMW-22	12/13/16 03:05 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/21/16 08:32 AM	78405
	BMW-22	12/13/16 03:05 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	12/21/16 10:13 AM	78414
1612145-03D	BMW-22	12/13/16 03:05 PM	Aqueous	E300	Anion Preparation	12/23/16 08:12 AM	78450
	BMW-22	12/13/16 03:05 PM	Aqueous	E300	Anion Preparation	12/23/16 08:12 AM	78450
	BMW-22	12/13/16 03:05 PM	Aqueous	M4500-H+ B	pH Preparation	12/15/16 07:51 AM	78292
	BMW-22	12/13/16 03:05 PM	Aqueous	M2540C	TDS Preparation	12/20/16 02:57 PM	78399
1612145-04A	BMW-21	12/13/16 04:00 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/21/16 08:32 AM	78405
	BMW-21	12/13/16 04:00 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/21/16 08:32 AM	78405
	BMW-21	12/13/16 04:00 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	12/21/16 10:13 AM	78414
1612145-04D	BMW-21	12/13/16 04:00 PM	Aqueous	E300	Anion Preparation	12/23/16 08:12 AM	78450
	BMW-21	12/13/16 04:00 PM	Aqueous	E300	Anion Preparation	12/23/16 08:12 AM	78450
	BMW-21	12/13/16 04:00 PM	Aqueous	M4500-H+ B	pH Preparation	12/15/16 07:51 AM	78292

Lab Order: 1612145
Client: Pastor, Behling & Wheeler
Project: MLSES - A1 Area Landfill

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1612145-04D	BMW-21	12/13/16 04:00 PM	Aqueous	M2540C	TDS Preparation	12/20/16 02:57 PM	78399
1612145-05A	BMW-20	12/13/16 04:50 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/21/16 08:32 AM	78405
	BMW-20	12/13/16 04:50 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/21/16 08:32 AM	78405
	BMW-20	12/13/16 04:50 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	12/21/16 10:13 AM	78414
1612145-05D	BMW-20	12/13/16 04:50 PM	Aqueous	E300	Anion Preparation	12/23/16 08:12 AM	78450
	BMW-20	12/13/16 04:50 PM	Aqueous	E300	Anion Preparation	12/23/16 08:12 AM	78450
	BMW-20	12/13/16 04:50 PM	Aqueous	M4500-H+ B	pH Preparation	12/15/16 07:51 AM	78292
	BMW-20	12/13/16 04:50 PM	Aqueous	M2540C	TDS Preparation	12/20/16 02:57 PM	78399

Lab Order: 1612145
Client: Pastor, Behling & Wheeler
Project: MLSES - A1 Area Landfill

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1612145-01A	BMW-24	Aqueous	SW7470A	Mercury Total: Aqueous	78414	1	12/22/16 01:24 PM	CETAC2_HG_161222B
	BMW-24	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	78405	5	12/29/16 05:23 PM	ICP-MS4_161229D
	BMW-24	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	78405	1	12/29/16 05:25 PM	ICP-MS4_161229D
1612145-01D	BMW-24	Aqueous	E300	Anions by IC method - Water	78450	1	12/23/16 10:27 AM	IC2_161223A
	BMW-24	Aqueous	E300	Anions by IC method - Water	78450	10	12/23/16 11:58 AM	IC2_161223A
	BMW-24	Aqueous	E300	Anions by IC method - Water	78477	100	12/27/16 11:35 AM	IC3_161227A
	BMW-24	Aqueous	M4500-H+ B	pH	78292	1	12/15/16 09:25 AM	TITRATOR_161215A
	BMW-24	Aqueous	M2540C	Total Dissolved Solids	78399	1	12/21/16 08:45 AM	WC_161220A
1612145-02A	BMW-23	Aqueous	SW7470A	Mercury Total: Aqueous	78414	1	12/22/16 02:09 PM	CETAC2_HG_161222B
	BMW-23	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	78405	10	12/29/16 05:27 PM	ICP-MS4_161229D
	BMW-23	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	78405	1	12/30/16 02:58 PM	ICP-MS4_161230A
1612145-02D	BMW-23	Aqueous	E300	Anions by IC method - Water	78450	1	12/23/16 10:41 AM	IC2_161223A
	BMW-23	Aqueous	E300	Anions by IC method - Water	78450	10	12/23/16 12:42 PM	IC2_161223A
	BMW-23	Aqueous	M4500-H+ B	pH	78292	1	12/15/16 09:27 AM	TITRATOR_161215A
	BMW-23	Aqueous	M2540C	Total Dissolved Solids	78399	1	12/21/16 08:45 AM	WC_161220A
1612145-03A	BMW-22	Aqueous	SW7470A	Mercury Total: Aqueous	78414	1	12/22/16 02:11 PM	CETAC2_HG_161222B
	BMW-22	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	78405	10	12/29/16 05:29 PM	ICP-MS4_161229D
	BMW-22	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	78405	1	12/30/16 02:54 PM	ICP-MS4_161230A
1612145-03D	BMW-22	Aqueous	E300	Anions by IC method - Water	78450	10	12/23/16 12:58 PM	IC2_161223A
	BMW-22	Aqueous	E300	Anions by IC method - Water	78450	1	12/23/16 10:56 AM	IC2_161223A
	BMW-22	Aqueous	M4500-H+ B	pH	78292	1	12/15/16 09:31 AM	TITRATOR_161215A
	BMW-22	Aqueous	M2540C	Total Dissolved Solids	78399	1	12/21/16 08:45 AM	WC_161220A
1612145-04A	BMW-21	Aqueous	SW7470A	Mercury Total: Aqueous	78414	1	12/22/16 02:13 PM	CETAC2_HG_161222B
	BMW-21	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	78405	10	12/29/16 05:19 PM	ICP-MS4_161229D
	BMW-21	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	78405	1	12/29/16 05:57 PM	ICP-MS4_161229D
1612145-04D	BMW-21	Aqueous	E300	Anions by IC method - Water	78450	10	12/23/16 01:15 PM	IC2_161223A

Lab Order: 1612145
Client: Pastor, Behling & Wheeler
Project: MLSES - A1 Area Landfill

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1612145-04D	BMW-21	Aqueous	E300	Anions by IC method - Water	78450	1	12/23/16 11:14 AM	IC2_161223A
	BMW-21	Aqueous	M4500-H+ B	pH	78292	1	12/15/16 09:34 AM	TITRATOR_161215A
	BMW-21	Aqueous	M2540C	Total Dissolved Solids	78399	1	12/21/16 08:45 AM	WC_161220A
1612145-05A	BMW-20	Aqueous	SW7470A	Mercury Total: Aqueous	78414	1	12/22/16 02:16 PM	CETAC2_HG_161222B
	BMW-20	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	78405	5	12/29/16 05:31 PM	ICP-MS4_161229D
	BMW-20	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	78405	1	12/29/16 05:33 PM	ICP-MS4_161229D
1612145-05D	BMW-20	Aqueous	E300	Anions by IC method - Water	78450	1	12/23/16 11:36 AM	IC2_161223A
	BMW-20	Aqueous	E300	Anions by IC method - Water	78450	10	12/23/16 01:30 PM	IC2_161223A
	BMW-20	Aqueous	M4500-H+ B	pH	78292	1	12/15/16 09:36 AM	TITRATOR_161215A
	BMW-20	Aqueous	M2540C	Total Dissolved Solids	78399	1	12/21/16 08:45 AM	WC_161220A

DHL Analytical, Inc.

Date: *26-Jan-17*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	BMW-24
Project:	MLSES - A1 Area Landfill	**Lab ID:**	1612145-01
Project No:	5164-B	**Collection Date:**	12/13/16 01:10 PM
Lab Order:	1612145	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/22/16 01:24 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **CVD**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	12/29/16 05:25 PM
Arsenic	0.00498	0.00200	0.00500	J	mg/L	1	12/29/16 05:25 PM
Barium	1.96	0.0150	0.0500		mg/L	5	12/29/16 05:23 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	12/29/16 05:25 PM
Boron	0.225	0.0100	0.0300		mg/L	1	12/29/16 05:25 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	12/29/16 05:25 PM
Calcium	62.5	0.500	1.50		mg/L	5	12/29/16 05:23 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	12/29/16 05:25 PM
Cobalt	0.00326	0.00300	0.00500	J	mg/L	1	12/29/16 05:25 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	12/29/16 05:25 PM
Lithium	0.00914	0.00500	0.0100	J	mg/L	1	12/29/16 05:25 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	12/29/16 05:25 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	12/29/16 05:25 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	12/29/16 05:25 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	518	30.0	100		mg/L	100	12/27/16 11:35 AM
Fluoride	0.300	0.100	0.400	J	mg/L	1	12/23/16 10:27 AM
Sulfate	33.0	1.00	3.00		mg/L	1	12/23/16 10:27 AM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.62	0	0		pH Units@20.6℃	1	12/15/16 09:25 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	1480	50.0	50.0		mg/L	1	12/21/16 08:45 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *26-Jan-17*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	BMW-23
Project:	MLSES - A1 Area Landfill	**Lab ID:**	1612145-02
Project No:	5164-B	**Collection Date:**	12/13/16 02:10 PM
Lab Order:	1612145	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/22/16 02:09 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **CVD**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	12/30/16 02:58 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	12/30/16 02:58 PM
Barium	0.0407	0.00300	0.0100		mg/L	1	12/30/16 02:58 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	12/30/16 02:58 PM
Boron	1.25	0.100	0.300		mg/L	10	12/29/16 05:27 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	12/30/16 02:58 PM
Calcium	91.8	1.00	3.00		mg/L	10	12/29/16 05:27 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	12/30/16 02:58 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	12/30/16 02:58 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	12/30/16 02:58 PM
Lithium	0.0817	0.00500	0.0100		mg/L	1	12/30/16 02:58 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	12/30/16 02:58 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	12/30/16 02:58 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	12/30/16 02:58 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **BJT**
Chloride	237	3.00	10.0		mg/L	10	12/23/16 12:42 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	12/23/16 10:41 AM
Sulfate	510	10.0	30.0		mg/L	10	12/23/16 12:42 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.70	0	0		pH Units@20.5℃	1	12/15/16 09:27 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	1870	50.0	50.0		mg/L	1	12/21/16 08:45 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *26-Jan-17*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	BMW-22
Project:	MLSES - A1 Area Landfill	**Lab ID:**	1612145-03
Project No:	5164-B	**Collection Date:**	12/13/16 03:05 PM
Lab Order:	1612145	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/22/16 02:11 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **CVD**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	12/30/16 02:54 PM
Arsenic	0.00232	0.00200	0.00500	J	mg/L	1	12/30/16 02:54 PM
Barium	0.0655	0.00300	0.0100		mg/L	1	12/30/16 02:54 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	12/30/16 02:54 PM
Boron	3.45	0.100	0.300		mg/L	10	12/29/16 05:29 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	12/30/16 02:54 PM
Calcium	191	1.00	3.00		mg/L	10	12/29/16 05:29 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	12/30/16 02:54 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	12/30/16 02:54 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	12/30/16 02:54 PM
Lithium	0.0689	0.00500	0.0100		mg/L	1	12/30/16 02:54 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	12/30/16 02:54 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	12/30/16 02:54 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	12/30/16 02:54 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **BJT**
Chloride	281	3.00	10.0		mg/L	10	12/23/16 12:58 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	12/23/16 10:56 AM
Sulfate	896	10.0	30.0		mg/L	10	12/23/16 12:58 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.86	0	0		pH Units@20.9℃	1	12/15/16 09:31 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	2370	50.0	50.0		mg/L	1	12/21/16 08:45 AM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *26-Jan-17*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	BMW-21
Project:	MLSES - A1 Area Landfill	**Lab ID:**	1612145-04
Project No:	5164-B	**Collection Date:**	12/13/16 04:00 PM
Lab Order:	1612145	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/22/16 02:13 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **CVD**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	12/29/16 05:57 PM
Arsenic	0.00217	0.00200	0.00500	J	mg/L	1	12/29/16 05:57 PM
Barium	0.0438	0.00300	0.0100		mg/L	1	12/29/16 05:57 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	12/29/16 05:57 PM
Boron	0.993	0.100	0.300		mg/L	10	12/29/16 05:19 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	12/29/16 05:57 PM
Calcium	149	1.00	3.00		mg/L	10	12/29/16 05:19 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	12/29/16 05:57 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	12/29/16 05:57 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	12/29/16 05:57 PM
Lithium	0.0631	0.00500	0.0100		mg/L	1	12/29/16 05:57 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	12/29/16 05:57 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	12/29/16 05:57 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	12/29/16 05:57 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **BJT**
Chloride	426	3.00	10.0		mg/L	10	12/23/16 01:15 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	12/23/16 11:14 AM
Sulfate	483	10.0	30.0		mg/L	10	12/23/16 01:15 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	7.41	0	0		pH Units@21℃	1	12/15/16 09:34 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	2170	50.0	50.0		mg/L	1	12/21/16 08:45 AM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *26-Jan-17*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	BMW-20
Project:	MLSES - A1 Area Landfill	**Lab ID:**	1612145-05
Project No:	5164-B	**Collection Date:**	12/13/16 04:50 PM
Lab Order:	1612145	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/22/16 02:16 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **CVD**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	12/29/16 05:33 PM
Arsenic	0.00483	0.00200	0.00500	J	mg/L	1	12/29/16 05:33 PM
Barium	0.0377	0.00300	0.0100		mg/L	1	12/29/16 05:33 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	12/29/16 05:33 PM
Boron	0.0687	0.0100	0.0300		mg/L	1	12/29/16 05:33 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	12/29/16 05:33 PM
Calcium	62.8	0.500	1.50		mg/L	5	12/29/16 05:31 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	12/29/16 05:33 PM
Cobalt	0.0451	0.00300	0.00500		mg/L	1	12/29/16 05:33 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	12/29/16 05:33 PM
Lithium	<0.00500	0.00500	0.0100		mg/L	1	12/29/16 05:33 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	12/29/16 05:33 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	12/29/16 05:33 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	12/29/16 05:33 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **BJT**
Chloride	42.8	0.300	1.00		mg/L	1	12/23/16 11:36 AM
Fluoride	<0.100	0.100	0.400		mg/L	1	12/23/16 11:36 AM
Sulfate	335	10.0	30.0		mg/L	10	12/23/16 01:30 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	5.67	0	0		pH Units@21.3℃	1	12/15/16 09:36 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	757	10.0	10.0		mg/L	1	12/21/16 08:45 AM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

CLIENT: Pastor, Behling & Wheeler
Work Order: 1612145
Project: MLSES - A1 Area Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_161222B

The QC data in batch 78414 applies to the following samples: 1612145-01A, 1612145-02A, 1612145-03A, 1612145-04A, 1612145-05A

Sample ID **MB-78414** Batch ID: **78414** TestNo: **SW7470A** Units: **mg/L**
SampType: **MBLK** Run ID: **CETAC2_HG_161222B** Analysis Date: **12/22/2016 1:17:18 PM** Prep Date: **12/21/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.0000800	0.000200								

Sample ID **LCS-78414** Batch ID: **78414** TestNo: **SW7470A** Units: **mg/L**
SampType: **LCS** Run ID: **CETAC2_HG_161222B** Analysis Date: **12/22/2016 1:19:33 PM** Prep Date: **12/21/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00203	0.000200	0.00200	0	102	85	115			

Sample ID **LCSD-78414** Batch ID: **78414** TestNo: **SW7470A** Units: **mg/L**
SampType: **LCSD** Run ID: **CETAC2_HG_161222B** Analysis Date: **12/22/2016 1:21:50 PM** Prep Date: **12/21/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00198	0.000200	0.00200	0	99.0	85	115	2.49	15	

Sample ID **1612145-01A MS** Batch ID: **78414** TestNo: **SW7470A** Units: **mg/L**
SampType: **MS** Run ID: **CETAC2_HG_161222B** Analysis Date: **12/22/2016 1:51:23 PM** Prep Date: **12/21/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.000230	0.000200	0.00200	0	11.5	80	120			S

Sample ID **1612145-01A MSD** Batch ID: **78414** TestNo: **SW7470A** Units: **mg/L**
SampType: **MSD** Run ID: **CETAC2_HG_161222B** Analysis Date: **12/22/2016 1:53:39 PM** Prep Date: **12/21/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.000183	0.000200	0.00200	0	9.15	80	120	22.8	15	SR

Sample ID **1612205-01A SD** Batch ID: **78414** TestNo: **SW7470A** Units: **mg/L**
SampType: **SD** Run ID: **CETAC2_HG_161222B** Analysis Date: **12/22/2016 2:04:44 PM** Prep Date: **12/21/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.000400	0.00100	0	0				0	10	

Sample ID **1612205-01A PDS** Batch ID: **78414** TestNo: **SW7470A** Units: **mg/L**
SampType: **PDS** Run ID: **CETAC2_HG_161222B** Analysis Date: **12/22/2016 2:06:59 PM** Prep Date: **12/21/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00240	0.000200	0.00250	0	96.0	85	115			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1612145
Project: MLSES - A1 Area Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_161222B

Sample ID **ICV-161222**	Batch ID: **R89600**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **ICV**	Run ID: **CETAC2_HG_161222B**	Analysis Date: **12/22/2016 10:43:02 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00397	0.000200	0.00400	0	99.2	90	110			

Sample ID **CCV3-161222**	Batch ID: **R89600**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_161222B**	Analysis Date: **12/22/2016 12:41:08 P**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00202	0.000200	0.00200	0	101	90	110			

Sample ID **CCV-161222**	Batch ID: **R89600**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_161222B**	Analysis Date: **12/22/2016 2:00:08 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00213	0.000200	0.00200	0	106	90	110			

Sample ID **CCV4-161222**	Batch ID: **R89600**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_161222B**	Analysis Date: **12/22/2016 2:29:41 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00209	0.000200	0.00200	0	104	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1612145
Project: MLSES - A1 Area Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161229D

The QC data in batch 78405 applies to the following samples: 1612145-01A, 1612145-02A, 1612145-03A, 1612145-04A, 1612145-05A

Sample ID **MB-78405** Batch ID: **78405** TestNo: **SW6020A** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_161229D** Analysis Date: **12/29/2016 5:11:00 PM** Prep Date: **12/21/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.000800	0.00250								
Arsenic	<0.00200	0.00500								
Barium	<0.00300	0.0100								
Beryllium	<0.000300	0.00100								
Boron	<0.0100	0.0300								
Cadmium	<0.000300	0.00100								
Calcium	<0.100	0.300								
Chromium	<0.00200	0.00500								
Cobalt	<0.00300	0.00500								
Lead	<0.000300	0.00100								
Lithium	<0.00500	0.0100								
Molybdenum	<0.00200	0.00500								
Selenium	<0.00200	0.00500								
Thallium	<0.000500	0.00150								

Sample ID **LCS-78405** Batch ID: **78405** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_161229D** Analysis Date: **12/29/2016 5:13:00 PM** Prep Date: **12/21/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.203	0.00250	0.200	0	101	80	120			
Arsenic	0.212	0.00500	0.200	0	106	80	120			
Barium	0.204	0.0100	0.200	0	102	80	120			
Beryllium	0.214	0.00100	0.200	0	107	80	120			
Boron	0.201	0.0300	0.200	0	101	80	120			
Cadmium	0.203	0.00100	0.200	0	102	80	120			
Calcium	4.88	0.300	5.00	0	97.5	80	120			
Chromium	0.210	0.00500	0.200	0	105	80	120			
Cobalt	0.210	0.00500	0.200	0	105	80	120			
Lead	0.195	0.00100	0.200	0	97.7	80	120			
Lithium	0.205	0.0100	0.200	0	102	80	120			
Molybdenum	0.193	0.00500	0.200	0	96.7	80	120			
Selenium	0.213	0.00500	0.200	0	107	80	120			
Thallium	0.198	0.00150	0.200	0	98.8	80	120			

Sample ID **LCSD-78405** Batch ID: **78405** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_161229D** Analysis Date: **12/29/2016 5:15:00 PM** Prep Date: **12/21/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.206	0.00250	0.200	0	103	80	120	1.65	15	
Arsenic	0.215	0.00500	0.200	0	107	80	120	1.12	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1612145
Project: MLSES - A1 Area Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161229D

Sample ID **LCSD-78405**	Batch ID: **78405**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCSD**	Run ID: **ICP-MS4_161229D**	Analysis Date: **12/29/2016 5:15:00 PM**	Prep Date: **12/21/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.208	0.0100	0.200	0	104	80	120	2.07	15	
Beryllium	0.218	0.00100	0.200	0	109	80	120	1.59	15	
Boron	0.209	0.0300	0.200	0	104	80	120	3.85	15	
Cadmium	0.207	0.00100	0.200	0	103	80	120	1.85	15	
Calcium	4.85	0.300	5.00	0	96.9	80	120	0.610	15	
Chromium	0.210	0.00500	0.200	0	105	80	120	0.150	15	
Cobalt	0.211	0.00500	0.200	0	105	80	120	0.431	15	
Lead	0.196	0.00100	0.200	0	98.1	80	120	0.382	15	
Lithium	0.205	0.0100	0.200	0	102	80	120	0.105	15	
Molybdenum	0.196	0.00500	0.200	0	98.2	80	120	1.58	15	
Selenium	0.213	0.00500	0.200	0	106	80	120	0.300	15	
Thallium	0.199	0.00150	0.200	0	99.7	80	120	0.968	15	

Sample ID **1612145-04A SD**	Batch ID: **78405**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS4_161229D**	Analysis Date: **12/29/2016 5:21:00 PM**	Prep Date: **12/21/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.649	1.50	0	0.993				41.8	10	R
Calcium	150	15.0	0	149				0.809	10	

Sample ID **1612145-04A PDS**	Batch ID: **78405**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_161229D**	Analysis Date: **12/29/2016 5:41:00 PM**	Prep Date: **12/21/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	2.91	0.300	2.00	0.993	95.8	80	120			
Calcium	192	3.00	50.0	149	86.4	80	120			

Sample ID **1612145-04A MS**	Batch ID: **78405**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS4_161229D**	Analysis Date: **12/29/2016 5:43:00 PM**	Prep Date: **12/21/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	1.21	0.300	0.200	0.993	110	80	120			
Calcium	152	3.00	5.00	149	60.8	80	120			S

Sample ID **1612145-04A MSD**	Batch ID: **78405**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS4_161229D**	Analysis Date: **12/29/2016 5:45:00 PM**	Prep Date: **12/21/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	1.25	0.300	0.200	0.993	128	80	120	2.91	15	S
Calcium	156	3.00	5.00	149	139	80	120	2.54	15	S

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

Sample ID **1612145-04A SD**	Batch ID: **78405**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS4_161229D**	Analysis Date: **12/29/2016 5:59:00 PM**	Prep Date: **12/21/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.00400	0.0125	0	0				0	10	
Arsenic	<0.0100	0.0250	0	0.00217				0	10	
Barium	0.0245	0.0500	0	0.0438				56.3	10	R
Beryllium	<0.00150	0.00500	0	0				0	10	
Cadmium	<0.00150	0.00500	0	0				0	10	
Chromium	<0.0100	0.0250	0	0				0	10	
Cobalt	<0.0150	0.0250	0	0				0	10	
Lead	<0.00150	0.00500	0	0				0	10	
Lithium	0.0382	0.0500	0	0.0631				49.1	10	R
Molybdenum	<0.0100	0.0250	0	0				0	10	
Selenium	<0.0100	0.0250	0	0				0	10	
Thallium	<0.00250	0.00750	0	0				0	10	

Sample ID **1612145-04A PDS**	Batch ID: **78405**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_161229D**	Analysis Date: **12/29/2016 6:19:00 PM**	Prep Date: **12/21/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.204	0.00250	0.200	0	102	80	120			
Arsenic	0.209	0.00500	0.200	0.00217	103	80	120			
Barium	0.240	0.0100	0.200	0.0438	98.0	80	120			
Beryllium	0.190	0.00100	0.200	0	95.0	80	120			
Cadmium	0.186	0.00100	0.200	0	92.9	80	120			
Chromium	0.195	0.00500	0.200	0	97.4	80	120			
Cobalt	0.192	0.00500	0.200	0	95.8	80	120			
Lead	0.190	0.00100	0.200	0	95.1	80	120			
Lithium	0.238	0.0100	0.200	0.0631	87.5	80	120			
Molybdenum	0.186	0.00500	0.200	0	93.1	80	120			
Selenium	0.201	0.00500	0.200	0	100	80	120			
Thallium	0.193	0.00150	0.200	0	96.4	80	120			

Sample ID **1612145-04A MS**	Batch ID: **78405**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS4_161229D**	Analysis Date: **12/29/2016 6:21:00 PM**	Prep Date: **12/21/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.205	0.00250	0.200	0	102	80	120			
Arsenic	0.218	0.00500	0.200	0.00217	108	80	120			
Barium	0.249	0.0100	0.200	0.0438	103	80	120			
Beryllium	0.199	0.00100	0.200	0	99.3	80	120			
Cadmium	0.195	0.00100	0.200	0	97.4	80	120			
Chromium	0.196	0.00500	0.200	0	97.9	80	120			
Cobalt	0.196	0.00500	0.200	0	97.8	80	120			

CLIENT: Pastor, Behling & Wheeler
Work Order: 1612145
Project: MLSES - A1 Area Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161229D

Sample ID **1612145-04A MS**	Batch ID: **78405**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS4_161229D**	Analysis Date: **12/29/2016 6:21:00 PM**	Prep Date: **12/21/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.197	0.00100	0.200	0	98.7	80	120			
Lithium	0.245	0.0100	0.200	0.0631	90.8	80	120			
Molybdenum	0.200	0.00500	0.200	0	100	80	120			
Selenium	0.213	0.00500	0.200	0	107	80	120			
Thallium	0.202	0.00150	0.200	0	101	80	120			

Sample ID **1612145-04A MSD**	Batch ID: **78405**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS4_161229D**	Analysis Date: **12/29/2016 6:23:00 PM**	Prep Date: **12/21/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.204	0.00250	0.200	0	102	80	120	0.234	15	
Arsenic	0.219	0.00500	0.200	0.00217	109	80	120	0.527	15	
Barium	0.250	0.0100	0.200	0.0438	103	80	120	0.305	15	
Beryllium	0.192	0.00100	0.200	0	95.8	80	120	3.62	15	
Cadmium	0.194	0.00100	0.200	0	97.2	80	120	0.164	15	
Chromium	0.197	0.00500	0.200	0	98.4	80	120	0.493	15	
Cobalt	0.200	0.00500	0.200	0	99.8	80	120	2.05	15	
Lead	0.199	0.00100	0.200	0	99.3	80	120	0.543	15	
Lithium	0.249	0.0100	0.200	0.0631	93.0	80	120	1.81	15	
Molybdenum	0.199	0.00500	0.200	0	99.6	80	120	0.484	15	
Selenium	0.216	0.00500	0.200	0	108	80	120	1.15	15	
Thallium	0.202	0.00150	0.200	0	101	80	120	0.022	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1612145
Project: MLSES - A1 Area Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161229D

Sample ID **ICV-161229**	Batch ID: **R89722**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_161229D**	Analysis Date: **12/29/2016 12:28:00 P**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.100	0.00250	0.100	0	100	90	110			
Arsenic	0.103	0.00500	0.100	0	103	90	110			
Barium	0.102	0.0100	0.100	0	102	90	110			
Beryllium	0.105	0.00100	0.100	0	105	90	110			
Boron	0.0957	0.0300	0.100	0	95.7	90	110			
Cadmium	0.102	0.00100	0.100	0	102	90	110			
Calcium	2.29	0.300	2.50	0	91.7	90	110			
Chromium	0.108	0.00500	0.100	0	108	90	110			
Cobalt	0.108	0.00500	0.100	0	108	90	110			
Lead	0.0994	0.00100	0.100	0	99.4	90	110			
Lithium	0.0994	0.0100	0.100	0	99.4	90	110			
Molybdenum	0.0958	0.00500	0.100	0	95.8	90	110			
Selenium	0.104	0.00500	0.100	0	104	90	110			
Thallium	0.101	0.00150	0.100	0	101	90	110			

Sample ID **LCVL-161229**	Batch ID: **R89722**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_161229D**	Analysis Date: **12/29/2016 12:34:00 P**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00207	0.00250	0.00200	0	104	70	130			
Arsenic	0.00545	0.00500	0.00500	0	109	70	130			
Barium	0.00541	0.0100	0.00500	0	108	70	130			
Beryllium	0.00116	0.00100	0.00100	0	116	70	130			
Boron	0.0175	0.0300	0.0200	0	87.3	70	130			
Cadmium	0.00108	0.00100	0.00100	0	108	70	130			
Calcium	0.107	0.300	0.100	0	107	70	130			
Chromium	0.00562	0.00500	0.00500	0	112	70	130			
Cobalt	0.00551	0.00500	0.00500	0	110	70	130			
Lead	0.00114	0.00100	0.00100	0	114	70	130			
Lithium	0.0106	0.0100	0.0100	0	106	70	130			
Molybdenum	0.00529	0.00500	0.00500	0	106	70	130			
Selenium	0.00594	0.00500	0.00500	0	119	70	130			
Thallium	0.00105	0.00150	0.00100	0	105	70	130			

Sample ID **CCV4-161229**	Batch ID: **R89722**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_161229D**	Analysis Date: **12/29/2016 4:51:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.207	0.00250	0.200	0	103	90	110			
Arsenic	0.217	0.00500	0.200	0	108	90	110			
Barium	0.212	0.0100	0.200	0	106	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

Sample ID **CCV4-161229** Batch ID: **R89722** TestNo: **SW6020A** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_161229D** Analysis Date: **12/29/2016 4:51:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.214	0.00100	0.200	0	107	90	110			
Boron	0.217	0.0300	0.200	0	109	90	110			
Cadmium	0.211	0.00100	0.200	0	106	90	110			
Calcium	4.88	0.300	5.00	0	97.7	90	110			
Chromium	0.211	0.00500	0.200	0	105	90	110			
Cobalt	0.214	0.00500	0.200	0	107	90	110			
Lead	0.199	0.00100	0.200	0	99.6	90	110			
Lithium	0.208	0.0100	0.200	0	104	90	110			
Molybdenum	0.202	0.00500	0.200	0	101	90	110			
Selenium	0.217	0.00500	0.200	0	108	90	110			
Thallium	0.204	0.00150	0.200	0	102	90	110			

Sample ID **LCVL4-161229** Batch ID: **R89722** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_161229D** Analysis Date: **12/29/2016 5:05:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00202	0.00250	0.00200	0	101	70	130			
Arsenic	0.00562	0.00500	0.00500	0	112	70	130			
Barium	0.00544	0.0100	0.00500	0	109	70	130			
Beryllium	0.00102	0.00100	0.00100	0	102	70	130			
Boron	0.0228	0.0300	0.0200	0	114	70	130			
Cadmium	0.00104	0.00100	0.00100	0	104	70	130			
Calcium	0.125	0.300	0.100	0	125	70	130			
Chromium	0.00536	0.00500	0.00500	0	107	70	130			
Cobalt	0.00554	0.00500	0.00500	0	111	70	130			
Lead	0.000998	0.00100	0.00100	0	99.8	70	130			
Lithium	0.0105	0.0100	0.0100	0	105	70	130			
Molybdenum	0.00495	0.00500	0.00500	0	99.1	70	130			
Selenium	0.00614	0.00500	0.00500	0	123	70	130			
Thallium	0.00103	0.00150	0.00100	0	103	70	130			

Sample ID **CCV5-161229** Batch ID: **R89722** TestNo: **SW6020A** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_161229D** Analysis Date: **12/29/2016 5:47:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.199	0.00250	0.200	0	99.5	90	110			
Arsenic	0.212	0.00500	0.200	0	106	90	110			
Barium	0.204	0.0100	0.200	0	102	90	110			
Beryllium	0.207	0.00100	0.200	0	104	90	110			
Boron	0.196	0.0300	0.200	0	97.8	90	110			
Cadmium	0.202	0.00100	0.200	0	101	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1612145
Project: MLSES - A1 Area Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161229D

Sample ID **CCV5-161229** Batch ID: **R89722** TestNo: **SW6020A** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_161229D** Analysis Date: **12/29/2016 5:47:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.81	0.300	5.00	0	96.2	90	110			
Chromium	0.206	0.00500	0.200	0	103	90	110			
Cobalt	0.207	0.00500	0.200	0	104	90	110			
Lead	0.196	0.00100	0.200	0	98.0	90	110			
Lithium	0.199	0.0100	0.200	0	99.6	90	110			
Molybdenum	0.193	0.00500	0.200	0	96.7	90	110			
Selenium	0.211	0.00500	0.200	0	105	90	110			
Thallium	0.200	0.00150	0.200	0	99.8	90	110			

Sample ID **LCVL5-161229** Batch ID: **R89722** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_161229D** Analysis Date: **12/29/2016 5:51:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00214	0.00250	0.00200	0	107	70	130			
Arsenic	0.00577	0.00500	0.00500	0	115	70	130			
Barium	0.00535	0.0100	0.00500	0	107	70	130			
Beryllium	0.00108	0.00100	0.00100	0	108	70	130			
Boron	0.0194	0.0300	0.0200	0	96.8	70	130			
Cadmium	0.00104	0.00100	0.00100	0	104	70	130			
Calcium	0.107	0.300	0.100	0	107	70	130			
Chromium	0.00553	0.00500	0.00500	0	111	70	130			
Cobalt	0.00557	0.00500	0.00500	0	111	70	130			
Lead	0.00104	0.00100	0.00100	0	104	70	130			
Lithium	0.0101	0.0100	0.0100	0	101	70	130			
Molybdenum	0.00520	0.00500	0.00500	0	104	70	130			
Selenium	0.00626	0.00500	0.00500	0	125	70	130			
Thallium	0.00111	0.00150	0.00100	0	111	70	130			

Sample ID **CCV6-161229** Batch ID: **R89722** TestNo: **SW6020A** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_161229D** Analysis Date: **12/29/2016 6:25:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.201	0.00250	0.200	0	100	90	110			
Arsenic	0.211	0.00500	0.200	0	105	90	110			
Barium	0.205	0.0100	0.200	0	103	90	110			
Beryllium	0.202	0.00100	0.200	0	101	90	110			
Cadmium	0.200	0.00100	0.200	0	100	90	110			
Chromium	0.201	0.00500	0.200	0	101	90	110			
Cobalt	0.204	0.00500	0.200	0	102	90	110			
Lead	0.192	0.00100	0.200	0	96.0	90	110			
Lithium	0.197	0.0100	0.200	0	98.4	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1612145
Project: MLSES - A1 Area Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161229D

Sample ID **CCV6-161229**	Batch ID: **R89722**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_161229D**	Analysis Date: **12/29/2016 6:25:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Molybdenum	0.193	0.00500	0.200	0	96.4	90	110			
Selenium	0.216	0.00500	0.200	0	108	90	110			
Thallium	0.196	0.00150	0.200	0	98.0	90	110			

Sample ID **LCVL6-161229**	Batch ID: **R89722**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_161229D**	Analysis Date: **12/29/2016 6:29:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00208	0.00250	0.00200	0	104	70	130			
Arsenic	0.00578	0.00500	0.00500	0	116	70	130			
Barium	0.00545	0.0100	0.00500	0	109	70	130			
Beryllium	0.00105	0.00100	0.00100	0	104	70	130			
Cadmium	0.00100	0.00100	0.00100	0	100	70	130			
Chromium	0.00544	0.00500	0.00500	0	109	70	130			
Cobalt	0.00556	0.00500	0.00500	0	111	70	130			
Lead	0.00105	0.00100	0.00100	0	105	70	130			
Lithium	0.0108	0.0100	0.0100	0	108	70	130			
Molybdenum	0.00510	0.00500	0.00500	0	102	70	130			
Selenium	0.00606	0.00500	0.00500	0	121	70	130			
Thallium	0.00108	0.00150	0.00100	0	108	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1612145
Project: MLSES - A1 Area Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161230A

Sample ID **ICV-161230** Batch ID: **R89729** TestNo: **SW6020A** Units: **mg/L**
SampType: **ICV** Run ID: **ICP-MS4_161230A** Analysis Date: **12/30/2016 12:40:00 P** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.0998	0.00250	0.100	0	99.8	90	110			
Arsenic	0.101	0.00500	0.100	0	101	90	110			
Barium	0.103	0.0100	0.100	0	103	90	110			
Beryllium	0.0989	0.00100	0.100	0	98.9	90	110			
Cadmium	0.102	0.00100	0.100	0	102	90	110			
Chromium	0.105	0.00500	0.100	0	105	90	110			
Cobalt	0.104	0.00500	0.100	0	104	90	110			
Lead	0.0995	0.00100	0.100	0	99.5	90	110			
Lithium	0.0981	0.0100	0.100	0	98.1	90	110			
Molybdenum	0.101	0.00500	0.100	0	101	90	110			
Selenium	0.0992	0.00500	0.100	0	99.2	90	110			
Thallium	0.0996	0.00150	0.100	0	99.6	90	110			

Sample ID **LCVL-161230** Batch ID: **R89729** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_161230A** Analysis Date: **12/30/2016 12:50:00 P** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00184	0.00250	0.00200	0	92.0	70	130			
Arsenic	0.00480	0.00500	0.00500	0	96.1	70	130			
Barium	0.00484	0.0100	0.00500	0	96.8	70	130			
Beryllium	0.00103	0.00100	0.00100	0	103	70	130			
Cadmium	0.00101	0.00100	0.00100	0	101	70	130			
Chromium	0.00500	0.00500	0.00500	0	100	70	130			
Cobalt	0.00500	0.00500	0.00500	0	99.9	70	130			
Lead	0.00107	0.00100	0.00100	0	107	70	130			
Lithium	0.00969	0.0100	0.0100	0	96.9	70	130			
Molybdenum	0.00495	0.00500	0.00500	0	98.9	70	130			
Selenium	0.00463	0.00500	0.00500	0	92.7	70	130			
Thallium	0.00102	0.00150	0.00100	0	102	70	130			

Sample ID **LCVL2-161230** Batch ID: **R89729** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_161230A** Analysis Date: **12/30/2016 2:42:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00195	0.00250	0.00200	0	97.6	70	130			
Arsenic	0.00518	0.00500	0.00500	0	104	70	130			
Barium	0.00487	0.0100	0.00500	0	97.3	70	130			
Beryllium	0.00111	0.00100	0.00100	0	111	70	130			
Cadmium	0.00100	0.00100	0.00100	0	100	70	130			
Chromium	0.00481	0.00500	0.00500	0	96.2	70	130			
Cobalt	0.00506	0.00500	0.00500	0	101	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

Sample ID **LCVL2-161230**	Batch ID: **R89729**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_161230A**	Analysis Date: **12/30/2016 2:42:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.000931	0.00100	0.00100	0	93.1	70	130			
Lithium	0.00970	0.0100	0.0100	0	97.0	70	130			
Molybdenum	0.00481	0.00500	0.00500	0	96.2	70	130			
Selenium	0.00503	0.00500	0.00500	0	101	70	130			
Thallium	0.000981	0.00150	0.00100	0	98.1	70	130			

Sample ID **CCV2-161230**	Batch ID: **R89729**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_161230A**	Analysis Date: **12/30/2016 2:46:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.194	0.00250	0.200	0	97.0	90	110			
Arsenic	0.209	0.00500	0.200	0	104	90	110			
Barium	0.196	0.0100	0.200	0	98.1	90	110			
Beryllium	0.192	0.00100	0.200	0	95.8	90	110			
Cadmium	0.197	0.00100	0.200	0	98.3	90	110			
Chromium	0.195	0.00500	0.200	0	97.3	90	110			
Cobalt	0.200	0.00500	0.200	0	100	90	110			
Lead	0.192	0.00100	0.200	0	95.8	90	110			
Lithium	0.185	0.0100	0.200	0	92.4	90	110			
Molybdenum	0.195	0.00500	0.200	0	97.6	90	110			
Selenium	0.204	0.00500	0.200	0	102	90	110			
Thallium	0.194	0.00150	0.200	0	97.2	90	110			

Sample ID **CCV3-161230**	Batch ID: **R89729**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_161230A**	Analysis Date: **12/30/2016 3:04:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.191	0.00250	0.200	0	95.6	90	110			
Arsenic	0.210	0.00500	0.200	0	105	90	110			
Barium	0.194	0.0100	0.200	0	96.8	90	110			
Beryllium	0.197	0.00100	0.200	0	98.5	90	110			
Cadmium	0.200	0.00100	0.200	0	99.8	90	110			
Chromium	0.197	0.00500	0.200	0	98.6	90	110			
Cobalt	0.202	0.00500	0.200	0	101	90	110			
Lead	0.194	0.00100	0.200	0	97.2	90	110			
Lithium	0.183	0.0100	0.200	0	91.3	90	110			
Molybdenum	0.195	0.00500	0.200	0	97.5	90	110			
Selenium	0.204	0.00500	0.200	0	102	90	110			
Thallium	0.197	0.00150	0.200	0	98.7	90	110			

CLIENT: Pastor, Behling & Wheeler
Work Order: 1612145
Project: MLSES - A1 Area Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161230A

Sample ID **LCVL3-161230** Batch ID: **R89729** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_161230A** Analysis Date: **12/30/2016 3:06:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00207	0.00250	0.00200	0	103	70	130			
Arsenic	0.00543	0.00500	0.00500	0	109	70	130			
Barium	0.00491	0.0100	0.00500	0	98.3	70	130			
Beryllium	0.00101	0.00100	0.00100	0	101	70	130			
Cadmium	0.00107	0.00100	0.00100	0	107	70	130			
Chromium	0.00495	0.00500	0.00500	0	99.0	70	130			
Cobalt	0.00510	0.00500	0.00500	0	102	70	130			
Lead	0.00101	0.00100	0.00100	0	101	70	130			
Lithium	0.00902	0.0100	0.0100	0	90.2	70	130			
Molybdenum	0.00535	0.00500	0.00500	0	107	70	130			
Selenium	0.00565	0.00500	0.00500	0	113	70	130			
Thallium	0.00111	0.00150	0.00100	0	111	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1612145
Project: MLSES - A1 Area Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_161223A

The QC data in batch 78450 applies to the following samples: 1612145-01D, 1612145-02D, 1612145-03D, 1612145-04D, 1612145-05D

Sample ID **MB-78450** Batch ID: **78450** TestNo: **E300** Units: **mg/L**
SampType: **MBLK** Run ID: **IC2_161223A** Analysis Date: **12/23/2016 9:26:15 AM** Prep Date: **12/23/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00								
Fluoride	<0.100	0.400								
Sulfate	<1.00	3.00								

Sample ID **LCS-78450** Batch ID: **78450** TestNo: **E300** Units: **mg/L**
SampType: **LCS** Run ID: **IC2_161223A** Analysis Date: **12/23/2016 9:40:52 AM** Prep Date: **12/23/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.3	1.00	10.00	0	103	90	110			
Fluoride	4.01	0.400	4.000	0	100	90	110			
Sulfate	31.0	3.00	30.00	0	103	90	110			

Sample ID **LCSD-78450** Batch ID: **78450** TestNo: **E300** Units: **mg/L**
SampType: **LCSD** Run ID: **IC2_161223A** Analysis Date: **12/23/2016 10:00:27 A** Prep Date: **12/23/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.2	1.00	10.00	0	102	90	110	0.773	20	
Fluoride	4.02	0.400	4.000	0	101	90	110	0.334	20	
Sulfate	31.0	3.00	30.00	0	103	90	110	0.041	20	

Sample ID **1612145-01DMS** Batch ID: **78450** TestNo: **E300** Units: **mg/L**
SampType: **MS** Run ID: **IC2_161223A** Analysis Date: **12/23/2016 12:13:20 P** Prep Date: **12/23/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	700	10.0	200.0	557.5	71.1	90	110			S
Fluoride	201	4.00	200.0	0	100	90	110			
Sulfate	236	30.0	200.0	33.30	101	90	110			

Sample ID **1612145-01DMSD** Batch ID: **78450** TestNo: **E300** Units: **mg/L**
SampType: **MSD** Run ID: **IC2_161223A** Analysis Date: **12/23/2016 12:27:57 P** Prep Date: **12/23/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	698	10.0	200.0	557.5	70.2	90	110	0.263	20	S
Fluoride	201	4.00	200.0	0	100	90	110	0.044	20	
Sulfate	233	30.0	200.0	33.30	99.6	90	110	1.32	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1612145
Project: MLSES - A1 Area Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_161223A

Sample ID **ICV-161222**	Batch ID: **R89626**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC2_161223A**	Analysis Date: **12/23/2016 8:35:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	26.0	1.00	25.00	0	104	90	110			
Fluoride	9.87	0.400	10.00	0	98.7	90	110			
Sulfate	79.8	3.00	75.00	0	106	90	110			

Sample ID **CCV1-161223**	Batch ID: **R89626**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_161223A**	Analysis Date: **12/23/2016 1:44:44 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.4	1.00	10.00	0	104	90	110			
Fluoride	4.11	0.400	4.000	0	103	90	110			
Sulfate	31.2	3.00	30.00	0	104	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1612145
Project: MLSES - A1 Area Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: IC3_161227A

The QC data in batch 78477 applies to the following samples: 1612145-01D

Sample ID **MB-78477**	Batch ID: **78477**			TestNo: **E300**				Units: **mg/L**			
SampType: **MBLK**	Run ID: **IC3_161227A**			Analysis Date: **12/27/2016 10:28:10 A**				Prep Date: **12/27/2016**			
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Chloride	<0.300	1.00									

Sample ID **LCS-78477**	Batch ID: **78477**			TestNo: **E300**				Units: **mg/L**			
SampType: **LCS**	Run ID: **IC3_161227A**			Analysis Date: **12/27/2016 10:48:48 A**				Prep Date: **12/27/2016**			
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Chloride	9.59	1.00	10.00	0	95.9	90	110				

Sample ID **LCSD-78477**	Batch ID: **78477**			TestNo: **E300**				Units: **mg/L**			
SampType: **LCSD**	Run ID: **IC3_161227A**			Analysis Date: **12/27/2016 11:09:27 A**				Prep Date: **12/27/2016**			
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Chloride	9.57	1.00	10.00	0	95.7	90	110	0.198	20		

Sample ID **1612145-01DMS**	Batch ID: **78477**			TestNo: **E300**				Units: **mg/L**			
SampType: **MS**	Run ID: **IC3_161227A**			Analysis Date: **12/27/2016 11:59:14 A**				Prep Date: **12/27/2016**			
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Chloride	2460	100	2000	518.1	97.2	90	110				

Sample ID **1612145-01DMSD**	Batch ID: **78477**			TestNo: **E300**				Units: **mg/L**			
SampType: **MSD**	Run ID: **IC3_161227A**			Analysis Date: **12/27/2016 12:19:53 P**				Prep Date: **12/27/2016**			
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Chloride	2450	100	2000	518.1	96.8	90	110	0.342	20		

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1612145
Project: MLSES - A1 Area Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: IC3_161227A

Sample ID **ICV-161227**	Batch ID: **R89679**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC3_161227A**	Analysis Date: **12/27/2016 9:20:09 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	24.5	1.00	25.00	0	97.9	90	110			

Sample ID **CCV1-161227**	Batch ID: **R89679**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC3_161227A**	Analysis Date: **12/27/2016 4:39:54 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.60	1.00	10.00	0	96.0	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1612145
Project: MLSES - A1 Area Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_161215A

The QC data in batch 78292 applies to the following samples: 1612145-01D, 1612145-02D, 1612145-03D, 1612145-04D, 1612145-05D

Sample ID	**1612144-01D-DUP**	Batch ID:	**78292**	TestNo:	**M4500-H+ B**	Units:	**pH Units@19.8℃**
SampType:	**DUP**	Run ID:	**TITRATOR_161215A**	Analysis Date:	**12/15/2016 9:11:00 AM**	Prep Date:	**12/15/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	6.18	0	0	6.160				0.324	5	

Sample ID	**1612145-01D-DUP**	Batch ID:	**78292**	TestNo:	**M4500-H+ B**	Units:	**pH Units@20.2℃**
SampType:	**DUP**	Run ID:	**TITRATOR_161215A**	Analysis Date:	**12/15/2016 9:26:00 AM**	Prep Date:	**12/15/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	6.62	0	0	6.620				0	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1612145
Project: MLSES - A1 Area Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_161215A

Sample ID	**ICV-161215**	Batch ID:	**R89460**	TestNo:	**M4500-H+ B**	Units:	**pH Units@21.6℃**
SampType:	**ICV**	Run ID:	**TITRATOR_161215A**	Analysis Date:	**12/15/2016 8:14:00 AM**	Prep Date:	**12/15/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	9.91	0	10.00	0	99.1	99	101			

Sample ID	**CCV1-161215**	Batch ID:	**R89460**	TestNo:	**M4500-H+ B**	Units:	**pH Units@21.6℃**
SampType:	**CCV**	Run ID:	**TITRATOR_161215A**	Analysis Date:	**12/15/2016 9:28:00 AM**	Prep Date:	**12/15/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	6.98	0	7.000	0	99.7	97.1	102.9			

Sample ID	**CCV2-161215**	Batch ID:	**R89460**	TestNo:	**M4500-H+ B**	Units:	**pH Units@21.8℃**
SampType:	**CCV**	Run ID:	**TITRATOR_161215A**	Analysis Date:	**12/15/2016 9:39:00 AM**	Prep Date:	**12/15/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	6.97	0	7.000	0	99.6	97.1	102.9			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1612145
Project: MLSES - A1 Area Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: WC_161220A

The QC data in batch 78399 applies to the following samples: 1612145-01D, 1612145-02D, 1612145-03D, 1612145-04D, 1612145-05D

Sample ID **MB-78399**	Batch ID: **78399**	TestNo: **M2540C**	Units: **mg/L**
SampType: **MBLK**	Run ID: **WC_161220A**	Analysis Date: **12/21/2016 8:45:00 AM**	Prep Date: **12/20/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	<10.0	10.0								

Sample ID **LCS-78399**	Batch ID: **78399**	TestNo: **M2540C**	Units: **mg/L**
SampType: **LCS**	Run ID: **WC_161220A**	Analysis Date: **12/21/2016 8:45:00 AM**	Prep Date: **12/20/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	757	10.0	745.6	0	102	90	113			

Sample ID **1612145-01D-DUP**	Batch ID: **78399**	TestNo: **M2540C**	Units: **mg/L**
SampType: **DUP**	Run ID: **WC_161220A**	Analysis Date: **12/21/2016 8:45:00 AM**	Prep Date: **12/20/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	1520	50.0	0	1475				3.33	5	

Sample ID **1612198-01C-DUP**	Batch ID: **78399**	TestNo: **M2540C**	Units: **mg/L**
SampType: **DUP**	Run ID: **WC_161220A**	Analysis Date: **12/21/2016 8:45:00 AM**	Prep Date: **12/20/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	568	10.0	0	543.0				4.50	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

Case Narrative

Lab No: 20161249

This report contains the analytical results for the 5 sample(s) received under chain of custody by ESC Lab Sciences on 12/16/2016 11:25:26 AM. These samples are associated with your 1612145 project.

The analytical results included in this report meet all applicable quality control procedure requirements except as noted below:

The test results in this report meet all NELAC requirements unless noted below:

This report shall not be reproduced, except in full, without the written approval of ESC Lab Sciences.

All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client.

Results have been reviewed by the Director of Radiochemistry or their designees and is approved for release.

Observations / Nonconformances

L879376

Analytical Report

	Method	Result	DL	Units	Qual	Prep Date	Analysis Date	Analyst
Lab ID : 20161249-01								
Client ID : BMW-24								
Date Sampled : 12/13/2016 1:10:00 PM								
Matrix : NPW								
		Radiochemical Analyses						
Combined Radium		2.95 +/- 0.849	1.43	pCi/l				
Radium-226	SM 7500 Ra B M*	0.596 +/- 0.264	0.270	pCi/l		01/07/17	01/10/17	AK
Radium-228	EPA 904*/9320*	2.35 +/- 0.585	1.16	pCi/l		01/13/17	01/23/17	JR
Lab ID : 20161249-02								
Client ID : BMW-23								
Date Sampled : 12/13/2016 2:10:00 PM								
Matrix : NPW								
		Radiochemical Analyses						
Combined Radium		1.88 +/- 0.717	0.922	pCi/l				
Radium-226	SM 7500 Ra B M*	0.605 +/- 0.225	0.218	pCi/l		01/07/17	01/10/17	AK
Radium-228	EPA 904*/9320*	1.27 +/- 0.492	0.704	pCi/l		01/13/17	01/23/17	JR
Lab ID : 20161249-03								
Client ID : BMW-22								
Date Sampled : 12/13/2016 3:05:00 PM								
Matrix : NPW								
		Radiochemical Analyses						
Combined Radium		1.65 +/- 0.815	1.24	pCi/l				
Radium-226	SM 7500 Ra B M*	0.633 +/- 0.209	0.191	pCi/l		01/07/17	01/10/17	AK
Radium-228	EPA 904*/9320*	1.02 +/- 0.606	1.05	pCi/l		01/13/17	01/23/17	JR
Lab ID : 20161249-04								
Client ID : BMW-21								
Date Sampled : 12/13/2016 4:00:00 PM								
Matrix : NPW								
		Radiochemical Analyses						
Combined Radium		0.271 +/- 0.728	1.21	pCi/l				
Radium-226	SM 7500 Ra B M*	0.232 +/- 0.170	0.213	pCi/l		01/07/17	01/10/17	AK
Radium-228	EPA 904*/9320*	0.039 +/- 0.558	1.00	pCi/l		01/13/17	01/23/17	JR

Client	:	DHL Analytical, Inc.
Client Project	:	1612145
Lab Number	:	20161249
Date Reported	:	01/25/17
Date Received	:	12/16/16
Page Number	:	3 of 3

Analytical Report

	Method	Result	DL	Units	Qual	Prep Date	Analysis Date	Analyst
Lab ID :	**20161249-05**							
Client ID :	**BMW-20**							
Date Sampled :	**12/13/2016 4:50:00 PM**							
Matrix :	**NPW**							
	Radiochemical Analyses							
Combined Radium		1.55 +/- 0.826	1.40	pCi/l				
Radium-226	SM 7500 Ra B M*	0.133 +/- 0.165	0.246	pCi/l		01/07/17	01/10/17	AK
Radium-228	EPA 904*/9320*	1.42 +/- 0.661	1.15	pCi/l		01/13/17	01/23/17	JR

QC Report

Parameter	Blank	LCS %REC	LCSD %REC	LCSD RPD	DUP RPD	RER, NAD or DER	MS %REC	MSD %REC	MSD RPD	Batch ID
Radium-226	0.016	105.0			NC	0.688	108.0	111.0	1.7	R1177
Radium-228	0.421	85.6			NC	0.720	74.0	82.2	8.7	R3907

Lab Approval:

Ron Eidson
Director of Radiochemistry

DHL Analytical, Inc.
2300 Double Creek Drive
Round Rock, TX 78664
TEL: *(512) 388-8222* FAX: *(512) 388-8229*

CHAIN-OF-CUSTODY RECORD

Work Order: 1612145

Subcontractor:

ESC Laboratory
311 North Aspen
Broken Arrow, Oklahoma 74012

TEL: (918) 251-2515
FAX:
Acct #: DHLRRTX

14-Dec-16

	Sample Id	Matrix	DHL#	Date Collected	Bottle Type	Requested Tests					
						E904.0	SM7500Ra-B M				
1	BMW-24	Aqueous	-01B	12/13/16 01:10 PM	1LHDPEHNO3	1					
	BMW-24	Aqueous	-01C	12/13/16 01:10 PM	500HDPEHNO3		1				
2	BMW-23	Aqueous	-02B	12/13/16 02:10 PM	1LHDPEHNO3	1					
	BMW-23	Aqueous	-02C	12/13/16 02:10 PM	500HDPEHNO3		1				
3	BMW-22	Aqueous	-03B	12/13/16 03:05 PM	1LHDPEHNO3	1					
	BMW-22	Aqueous	-03C	12/13/16 03:05 PM	500HDPEHNO3		1				
4	BMW-21	Aqueous	-04B	12/13/16 04:00 PM	1LHDPEHNO3	1					
	BMW-21	Aqueous	-04C	12/13/16 04:00 PM	500HDPEHNO3		1				
5	BMW-20	Aqueous	-05B	12/13/16 04:50 PM	1LHDPEHNO3	1					
	BMW-20	Aqueous	-05C	12/13/16 04:50 PM	500HDPEHNO3		1				

General Comments:

Please analyze these samples with Normal Turnaround Time.
Report RA-226, Ra-228 & Combined per Specs.
Quality Control Package Needed: Standard - NELAC Rad Test compliant
Email to cac@dhlanalytical.com & dupont@dhlanalytical.com

20161249
L879376

		Date/Time			Date/Time
Relinquished by:	J Barker	12/14/16 1730	**Received by:**	Loreto	12/14/16 1730
Relinquished by:			**Received by:**		12/16/16 1125

SAMPLE LOGIN

Date Received: *12/16/2016 11:25:* **Lab Number:** 20161249 **Due:** 1/17/2017

Sample Number	Client Sample ID	Matrix	Date Sampled	Container Type	Container Size	Preservation	Preserved Upon Receipt	Custody Seal	Seal Intact
20161249-01 B	BMW-24	NPW	12/13/16	Plastic	1 L	HNO3, pH < 2	☑	Yes	Yes
20161249-01 A	BMW-24	NPW	12/13/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20161249-02 B	BMW-23	NPW	12/13/16	Plastic	1 L	HNO3, pH < 2	☑	Yes	Yes
20161249-02 A	BMW-23	NPW	12/13/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20161249-03 B	BMW-22	NPW	12/13/16	Plastic	1 L	HNO3, pH < 2	☑	Yes	Yes
20161249-03 A	BMW-22	NPW	12/13/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20161249-04 B	BMW-21	NPW	12/13/16	Plastic	1 L	HNO3, pH < 2	☑	Yes	Yes
20161249-04 A	BMW-21	NPW	12/13/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20161249-05 B	BMW-20	NPW	12/13/16	Plastic	1 L	HNO3, pH < 2	☑	Yes	Yes
20161249-05 A	BMW-20	NPW	12/13/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						

CONTAINER INSPECTION

 # Coolers 1 **Custody Seals Broken** ☒ **Temperature:** Ambc **Ice** **Radiation Survey:** <300 cpm

SAMPLE INSPECTION

Sample Seal Broken ☒ **Chain of Custody Record** ☑ **Labels in Tact** ☑ **Radiation Survey Complete** N/A

Anomalies

Inspected By: _____ **DATE** 12/16/16

QA or Designee Review: Raymond Thomas **DATE** 12/16/16

Sample Custodian Review: Valentine Nonaka **DATE** 12/16/16

Project Notes:

February 28, 2017

Will Vienne
Pastor, Behling & Wheeler
2201 Double Creek Dr #4004
Round Rock, Texas 78664
TEL: (512) 671-3434
FAX (512) 671-3446

Order No.: 1701222

RE: MLSES CCR (A-1 Landfill)

Dear Will Vienne:

DHL Analytical, Inc. received 3 sample(s) on 1/25/2017 for the analyses presented in the following report.

There were no problems with the analyses and all data met requirements of NELAC except where noted in the Case Narrative. All non-NELAC methods will be identified accordingly in the case narrative and all estimated uncertainties of test results are within method or EPA specifications.

If you have any questions regarding these tests results, please feel free to call. Thank you for using DHL Analytical.

Sincerely,

John DuPont
General Manager

This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211-16-17

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DHL ANALYTICAL
2300 Double Creek Dr. ■ Round Rock, TX 78664
Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

№ 73929

CHAIN-OF-CUSTODY

CLIENT: PBW 78664
ADDRESS: 2201 DOUBLE CREEK DR. STE. 4004 ROUND ROCK, TX
PHONE: (512) 671-3434 FAX/E-MAIL: (512) 671-3446
DATA REPORTED TO: WILL VIENNE
ADDITIONAL REPORT COPIES TO: SARA TAUBE

DATE: 1-23-17 PAGE 1 OF 1
PO #: DHL WORK ORDER #: 1701222
PROJECT LOCATION OR NAME: MESES CCR (A-1 LANDFILL)
CLENT PROJECT #: 5164 D COLLECTOR: GARRETT HARRIS

Authorize 5% surcharge for TRRP Report? ☐ Yes ☐ No

S=SOIL P=PAINT
W=WATER SL=SLUDGE
A=AIR O=OTHER
L=LIQUID SO=SOLID
SE=SEDIMENT

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	PRESERVATION: HCl	HNO_3	H_2SO_4 ☐ NaOH ☐	ICE	UNPRESERVED	ANALYSES: BTEX ☐ MTBE ☐ [METHOD 80211	TPH 1005 ☐ TPH 1006 ☐ HOLD 1006 ☐	GRO (METHOD 8015) ☐ DRO (METHOD 8105) ☐	VOC 8260 ☐ VOC 624 ☐ VOC 8260/5035 ☐	SVOC 8270 ☐ PAH 8270 ☐ HOLD PAH ☐ SVOC 625 ☐	8270 PEST ☐ 625 PEST/PCB ☐ 608 PCB ☐ 8270 PCB ☐	8270 O-P PEST ☐ 8082 PCB ☐ 8270 PCB ☐	8321 HERB ☐ T PHOS, AMMONIA ☐	METALS 6020 ☐ METALS 200.8 ☐ DISS. METALS ☐	RCRA ☐ TX11 ☐	PH ☐ HEX CHROM ☐ ALKALINITY ☐ COD ☐	CHLORIDE ☐ ANIONS ☐	TCLP-SVOC ☐ VOC ☐ PEST ☐ HERB ☐	TCLP-METALS ☐ RCRA 8 ☐ TX-11 ☐ Pb ☐	RCI ☐ FLASHPOINT ☐ DGAS ☐	TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐	ATTACHED CCR LIST	FIELD NOTES
BMW-26	01	1/23/17	1345	W	P	4		X		X	X																X	PER ATTACHED CCR
BMW-27	02	1/23/17	1245	W	P	4		X		X	X																X	LIST
BMW-28	03	1/23/17	1455	W	P	4		X		X	X																X	

RELINQUISHED BY: (Signature) DATE/TIME 1/24/17 1600 RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature) DATE/TIME 1/25/17 1000 RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature) DATE/TIME RECEIVED BY: (Signature)

☐ DHL DISPOSAL @ $5.00 each ☐ Return

TURN AROUND TIME
RUSH ☐ CALL FIRST
1 DAY ☐ CALL FIRST
2 DAY ☐
NORMAL ☒
OTHER ☐ _____

LABORATORY USE ONLY:
RECEIVING TEMP: 0.6 THERM #: 78
CUSTODY SEALS: ☐ BROKEN ☒ INTACT ☐ NOT USED
CARRIER: ☐ LONE STAR ☒ FEDEX ☐ UPS ☐ OTHER
☐ COURIER DELIVERY
☐ HAND DELIVERED

John Dupont

From: Sara Taube [Sara.Taube@pbwllc.com]
Sent: Wednesday, July 22, 2015 12:05 PM
To: John Dupont
Subject: CCR Appendix III and IV
Follow Up Flag: Follow up
Flag Status: Completed

Hi John,

Here are the Appendix III and Appendix IV constituents that we will need to have analyzed under the CCR Rule.

Appendix III
Boron
Calcium
Chloride
Fluoride
pH
sulfate
TDS

Appendix IV
Antimony
Arsenic
Barium
Beryllium
Cadmium
Chromium
Cobalt
Fluoride
Lead
Lithium
Mercury
Molybdenum
Selenium
Thallium
Radium 226 and 228

We are looking to have approximately 74 wells sampled 8 times over the course of the next two years. Please let me know if there is any more information you might need.

Cheers,

Sara

10/26/2015

ORIGIN
GAR
PAS
541

TEX
UNI

HARRIS (903) 794-0625
OR, BEHLING & WHEELER, LLC
6 PLAZA DRIVE

ARKANA, TX 75503
TED STATES US

SHIP DATE: 24JAN17
ACTWGT: 30.00 LB
CAD: 2026420/INET3850
DIMS: 12x18x14 IN

BILL SENDER

RECEIVING DEPARTMENT
DHL ANALYTICAL
2300 DOUBLE CREEK DRIVE

ROUNDROCK TX 78664
) 388-822 REF 5164D & 2101E

546J1/1997/63CI

DEPT

FedEx Express

E

J1710170106 1uv

WED - 25 JAN 3:00P
480 8290 STANDARD OVERNIGHT

A 78664
TX-US AUS

QEC
Quality Environmental Containers
0-255-3950 • 304-255-3900

CUSTODY SEAL
DATE 1/24/17
SIGNATURE

DHL Analytical, Inc.

Sample Receipt Checklist

Client Name **Pastor, Behling & Wheeler** Date Received: **1/25/2017**

Work Order Number **1701222** Received by **JB**

Checklist completed by: _____ 1/25/2017 Reviewed by _____ 1/25/2017
Signature Date Initials Date

Carrier name FedEx 1day

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	0.6 °C
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH<2 acceptable upon receipt?	Yes ☑	No ☐	NA ☐ LOT # 8086
	Adjusted? NO		Checked by
Water - ph>9 (S) or ph>12 (CN) acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted?		Checked by

Any No response must be detailed in the comments section below.

Client contacted _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments: _____

Corrective Action _____

CLIENT: Pastor, Behling & Wheeler
Project: MLSES CCR (A-1 Landfill)
Lab Order: 1701222

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Method SW6020A - Metals Analysis
Method SW7470A - Mercury Analysis
Method E300 - Anions Analysis
Method M4500-H+ B - pH of a Water Analysis
Method M2540C - TDS Analysis
Sub-contract - Radium-228 and Radium-226 analyses by methods E904/9320 and SM 7500 Ra B M. Analyzed at ESC Lab Sciences.

LOG IN

The samples were received and log-in performed on 1/25/17. A total of 3 samples were received. The samples arrived in good condition and were properly packaged.

METALS ANALYSIS

For Metals analysis performed on 2/7/17 the matrix spike and matrix spike duplicate recoveries were out of control limits for a total of three analytes. These are flagged accordingly in the QC summary report. The sample selected for the matrix spike and matrix spike duplicate was not from this work order. The LCS was within control limits for these analytes. No further corrective actions were taken.

For Metals analysis performed on 2/7/17 the PDS recovery was out of control limits for three analytes. These are flagged accordingly. The serial dilution was within control limits for these analytes. No further corrective actions were taken.

MERCURY ANALYSIS

For Mercury analysis performed on 2/1/17 the matrix spike and matrix spike duplicate recoveries were below control limits. This was due to matrix effect. These are flagged accordingly in the QC summary report. The sample selected for the matrix spike and matrix spike duplicate was from this work order. The LCS was within control limits. No further corrective actions were taken.

For Mercury analysis performed on 2/1/17 the PDS recovery was below control limits. This was due to matrix effect. This is flagged accordingly. The serial dilution was within control limits. No further corrective actions were taken.

DHL Analytical, Inc.

Date: *28-Feb-17*

CLIENT: Pastor, Behling & Wheeler
Project: MLSES CCR (A-1 Landfill)
Lab Order: 1701222

Work Order Sample Summary

Lab Smp ID	Client Sample ID	Tag Number	Date Collected	Date Recved
1701222-01	BMW-26		01/23/17 01:45 PM	1/25/2017
1701222-02	BMW-27		01/23/17 12:45 PM	1/25/2017
1701222-03	BMW-28		01/23/17 02:55 PM	1/25/2017

Lab Order: 1701222
Client: Pastor, Behling & Wheeler
Project: MLSES CCR (A-1 Landfill)

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1701222-01A	BMW-26	01/23/17 01:45 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/06/17 08:19 AM	79042
	BMW-26	01/23/17 01:45 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/06/17 08:19 AM	79042
	BMW-26	01/23/17 01:45 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	01/31/17 11:43 AM	78975
1701222-01D	BMW-26	01/23/17 01:45 PM	Aqueous	E300	Anion Preparation	01/26/17 10:02 AM	78907
	BMW-26	01/23/17 01:45 PM	Aqueous	E300	Anion Preparation	01/26/17 10:02 AM	78907
	BMW-26	01/23/17 01:45 PM	Aqueous	M4500-H+ B	pH Preparation	01/25/17 12:50 PM	78883
	BMW-26	01/23/17 01:45 PM	Aqueous	M2540C	TDS Preparation	01/30/17 08:42 AM	78944
1701222-02A	BMW-27	01/23/17 12:45 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/06/17 08:19 AM	79042
	BMW-27	01/23/17 12:45 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/06/17 08:19 AM	79042
	BMW-27	01/23/17 12:45 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	01/31/17 11:43 AM	78975
1701222-02D	BMW-27	01/23/17 12:45 PM	Aqueous	E300	Anion Preparation	01/26/17 10:02 AM	78907
	BMW-27	01/23/17 12:45 PM	Aqueous	E300	Anion Preparation	01/26/17 10:02 AM	78907
	BMW-27	01/23/17 12:45 PM	Aqueous	M4500-H+ B	pH Preparation	01/25/17 12:50 PM	78883
	BMW-27	01/23/17 12:45 PM	Aqueous	M2540C	TDS Preparation	01/30/17 08:42 AM	78944
1701222-03A	BMW-28	01/23/17 02:55 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/06/17 08:19 AM	79042
	BMW-28	01/23/17 02:55 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/06/17 08:19 AM	79042
	BMW-28	01/23/17 02:55 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	01/31/17 11:43 AM	78975
1701222-03D	BMW-28	01/23/17 02:55 PM	Aqueous	E300	Anion Preparation	01/26/17 10:02 AM	78907
	BMW-28	01/23/17 02:55 PM	Aqueous	E300	Anion Preparation	01/26/17 10:02 AM	78907
	BMW-28	01/23/17 02:55 PM	Aqueous	M4500-H+ B	pH Preparation	01/25/17 12:50 PM	78883
	BMW-28	01/23/17 02:55 PM	Aqueous	M2540C	TDS Preparation	01/30/17 08:42 AM	78944

Lab Order: 1701222
Client: Pastor, Behling & Wheeler
Project: MLSES CCR (A-1 Landfill)

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1701222-01A	BMW-26	Aqueous	SW7470A	Mercury Total: Aqueous	78975	1	02/01/17 11:14 AM	CETAC2_HG_170201C
	BMW-26	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	79042	1	02/07/17 01:29 PM	ICP-MS5_170207A
	BMW-26	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	79042	10	02/07/17 02:07 PM	ICP-MS5_170207A
1701222-01D	BMW-26	Aqueous	E300	Anions by IC method - Water	78907	1	01/26/17 01:17 PM	IC4_170126A
	BMW-26	Aqueous	E300	Anions by IC method - Water	78907	10	01/26/17 06:27 PM	IC4_170126A
	BMW-26	Aqueous	M4500-H+ B	pH	78883	1	01/25/17 01:15 PM	TITRATOR_170125A
	BMW-26	Aqueous	M2540C	Total Dissolved Solids	78944	1	01/31/17 08:40 AM	WC_170130A
1701222-02A	BMW-27	Aqueous	SW7470A	Mercury Total: Aqueous	78975	1	02/01/17 11:16 AM	CETAC2_HG_170201C
	BMW-27	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	79042	10	02/07/17 02:09 PM	ICP-MS5_170207A
	BMW-27	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	79042	1	02/07/17 01:31 PM	ICP-MS5_170207A
1701222-02D	BMW-27	Aqueous	E300	Anions by IC method - Water	78907	10	01/26/17 06:43 PM	IC4_170126A
	BMW-27	Aqueous	E300	Anions by IC method - Water	78907	1	01/26/17 01:33 PM	IC4_170126A
	BMW-27	Aqueous	M4500-H+ B	pH	78883	1	01/25/17 01:17 PM	TITRATOR_170125A
	BMW-27	Aqueous	M2540C	Total Dissolved Solids	78944	1	01/31/17 08:40 AM	WC_170130A
1701222-03A	BMW-28	Aqueous	SW7470A	Mercury Total: Aqueous	78975	1	02/01/17 11:28 AM	CETAC2_HG_170201C
	BMW-28	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	79042	1	02/07/17 01:33 PM	ICP-MS5_170207A
	BMW-28	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	79042	10	02/07/17 02:11 PM	ICP-MS5_170207A
1701222-03D	BMW-28	Aqueous	E300	Anions by IC method - Water	78907	1	01/26/17 01:49 PM	IC4_170126A
	BMW-28	Aqueous	E300	Anions by IC method - Water	78907	10	01/26/17 07:15 PM	IC4_170126A
	BMW-28	Aqueous	M4500-H+ B	pH	78883	1	01/25/17 01:18 PM	TITRATOR_170125A
	BMW-28	Aqueous	M2540C	Total Dissolved Solids	78944	1	01/31/17 08:40 AM	WC_170130A

DHL Analytical, Inc.

Date: *28-Feb-17*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	BMW-26
Project:	MLSES CCR (A-1 Landfill)	**Lab ID:**	1701222-01
Project No:	5164-D	**Collection Date:**	01/23/17 01:45 PM
Lab Order:	1701222	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **CVD**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	02/07/17 01:29 PM
Arsenic	0.0325	0.00200	0.00500		mg/L	1	02/07/17 01:29 PM
Barium	0.0446	0.00300	0.0100		mg/L	1	02/07/17 01:29 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	02/07/17 01:29 PM
Boron	0.478	0.0100	0.0300		mg/L	1	02/07/17 01:29 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	02/07/17 01:29 PM
Calcium	224	1.00	3.00		mg/L	10	02/07/17 02:07 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	02/07/17 01:29 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	02/07/17 01:29 PM
Lead	0.000594	0.000300	0.00100	J	mg/L	1	02/07/17 01:29 PM
Lithium	0.0977	0.00500	0.0100		mg/L	1	02/07/17 01:29 PM
Molybdenum	0.00350	0.00200	0.00500	J	mg/L	1	02/07/17 01:29 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	02/07/17 01:29 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	02/07/17 01:29 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	02/01/17 11:14 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	126	3.00	10.0		mg/L	10	01/26/17 06:27 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	01/26/17 01:17 PM
Sulfate	669	10.0	30.0		mg/L	10	01/26/17 06:27 PM
PH		**M4500-H+ B**					Analyst: **BTJ**
pH	6.96	0	0		pH Units@20℃	1	01/25/17 01:15 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	1950	50.0	50.0		mg/L	1	01/31/17 08:40 AM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *28-Feb-17*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	BMW-27
Project:	MLSES CCR (A-1 Landfill)	**Lab ID:**	1701222-02
Project No:	5164-D	**Collection Date:**	01/23/17 12:45 PM
Lab Order:	1701222	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **CVD**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	02/07/17 01:31 PM
Arsenic	0.00845	0.00200	0.00500		mg/L	1	02/07/17 01:31 PM
Barium	0.0333	0.00300	0.0100		mg/L	1	02/07/17 01:31 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	02/07/17 01:31 PM
Boron	0.393	0.0100	0.0300		mg/L	1	02/07/17 01:31 PM
Cadmium	0.000707	0.000300	0.00100	J	mg/L	1	02/07/17 01:31 PM
Calcium	152	1.00	3.00		mg/L	10	02/07/17 02:09 PM
Chromium	0.00278	0.00200	0.00500	J	mg/L	1	02/07/17 01:31 PM
Cobalt	0.195	0.00300	0.00500		mg/L	1	02/07/17 01:31 PM
Lead	0.000323	0.000300	0.00100	J	mg/L	1	02/07/17 01:31 PM
Lithium	0.0484	0.00500	0.0100		mg/L	1	02/07/17 01:31 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	02/07/17 01:31 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	02/07/17 01:31 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	02/07/17 01:31 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	02/01/17 11:16 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	143	3.00	10.0		mg/L	10	01/26/17 06:43 PM
Fluoride	0.573	0.100	0.400		mg/L	1	01/26/17 01:33 PM
Sulfate	1280	10.0	30.0		mg/L	10	01/26/17 06:43 PM
PH		**M4500-H+ B**					Analyst: **BTJ**
pH	6.12	0	0		pH Units@18.4℃	1	01/25/17 01:17 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	2260	50.0	50.0		mg/L	1	01/31/17 08:40 AM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *28-Feb-17*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	BMW-28
Project:	MLSES CCR (A-1 Landfill)	**Lab ID:**	1701222-03
Project No:	5164-D	**Collection Date:**	01/23/17 02:55 PM
Lab Order:	1701222	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **CVD**
Antimony	0.00101	0.000800	0.00250	J	mg/L	1	02/07/17 01:33 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	02/07/17 01:33 PM
Barium	0.0518	0.00300	0.0100		mg/L	1	02/07/17 01:33 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	02/07/17 01:33 PM
Boron	1.18	0.0100	0.0300		mg/L	1	02/07/17 01:33 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	02/07/17 01:33 PM
Calcium	221	1.00	3.00		mg/L	10	02/07/17 02:11 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	02/07/17 01:33 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	02/07/17 01:33 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	02/07/17 01:33 PM
Lithium	0.116	0.00500	0.0100		mg/L	1	02/07/17 01:33 PM
Molybdenum	0.00881	0.00200	0.00500		mg/L	1	02/07/17 01:33 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	02/07/17 01:33 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	02/07/17 01:33 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	02/01/17 11:28 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	122	3.00	10.0		mg/L	10	01/26/17 07:15 PM
Fluoride	0.104	0.100	0.400	J	mg/L	1	01/26/17 01:49 PM
Sulfate	1370	10.0	30.0		mg/L	10	01/26/17 07:15 PM
PH		**M4500-H+ B**					Analyst: **BTJ**
pH	7.40	0	0		pH Units@20.1℃	1	01/25/17 01:18 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	2810	50.0	50.0		mg/L	1	01/31/17 08:40 AM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

CLIENT: Pastor, Behling & Wheeler
Work Order: 1701222
Project: MLSES CCR (A-1 Landfill)

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_170201C

The QC data in batch 78975 applies to the following samples: 1701222-01A, 1701222-02A, 1701222-03A

Sample ID	**MB-78975**	Batch ID:	**78975**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**CETAC2_HG_170201**	Analysis Date:	**2/1/2017 10:56:31 AM**	Prep Date:	**1/31/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.0000800	0.000200								

Sample ID	**LCS-78975**	Batch ID:	**78975**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**CETAC2_HG_170201**	Analysis Date:	**2/1/2017 11:01:03 AM**	Prep Date:	**1/31/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00213	0.000200	0.00200	0	106	85	115			

Sample ID	**LCSD-78975**	Batch ID:	**78975**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**LCSD**	Run ID:	**CETAC2_HG_170201**	Analysis Date:	**2/1/2017 11:03:19 AM**	Prep Date:	**1/31/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00212	0.000200	0.00200	0	106	85	115	0.471	15	

Sample ID	**1701222-02A SD**	Batch ID:	**78975**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**SD**	Run ID:	**CETAC2_HG_170201**	Analysis Date:	**2/1/2017 11:19:12 AM**	Prep Date:	**1/31/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.000400	0.00100	0	0				0	10	

Sample ID	**1701222-02A PDS**	Batch ID:	**78975**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**PDS**	Run ID:	**CETAC2_HG_170201**	Analysis Date:	**2/1/2017 11:21:29 AM**	Prep Date:	**1/31/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00167	0.000200	0.00250	0	66.8	85	115			S

Sample ID	**1701222-02A MS**	Batch ID:	**78975**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**MS**	Run ID:	**CETAC2_HG_170201**	Analysis Date:	**2/1/2017 11:23:45 AM**	Prep Date:	**1/31/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00136	0.000200	0.00200	0	68.0	80	120			S

Sample ID	**1701222-02A MSD**	Batch ID:	**78975**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**MSD**	Run ID:	**CETAC2_HG_170201**	Analysis Date:	**2/1/2017 11:26:01 AM**	Prep Date:	**1/31/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00134	0.000200	0.00200	0	67.0	80	120	1.48	15	S

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1701222
Project: MLSES CCR (A-1 Landfill)

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_170201C

Sample ID	**ICV-170201**	Batch ID:	**R90270**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**ICV**	Run ID:	**CETAC2_HG_170201**	Analysis Date:	**2/1/2017 10:05:30 AM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00401	0.000200	0.00400	0	100	90	110			

Sample ID	**CCV1-170201**	Batch ID:	**R90270**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**CETAC2_HG_170201**	Analysis Date:	**2/1/2017 10:51:57 AM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00197	0.000200	0.00200	0	98.5	90	110			

Sample ID	**CCV2-170201**	Batch ID:	**R90270**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**CETAC2_HG_170201**	Analysis Date:	**2/1/2017 11:37:25 AM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00199	0.000200	0.00200	0	99.5	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1701222
Project: MLSES CCR (A-1 Landfill)

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_170207A

The QC data in batch 79042 applies to the following samples: 1701222-01A, 1701222-02A, 1701222-03A

Sample ID **MB-79042** Batch ID: **79042** TestNo: **SW6020A** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS5_170207A** Analysis Date: **2/7/2017 12:20:00 PM** Prep Date: **2/6/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.000800	0.00250								
Arsenic	<0.00200	0.00500								
Barium	<0.00300	0.0100								
Beryllium	<0.000300	0.00100								
Boron	<0.0100	0.0300								
Cadmium	<0.000300	0.00100								
Calcium	<0.100	0.300								
Chromium	<0.00200	0.00500								
Cobalt	<0.00300	0.00500								
Lead	<0.000300	0.00100								
Lithium	<0.00500	0.0100								
Molybdenum	<0.00200	0.00500								
Selenium	<0.00200	0.00500								
Thallium	<0.000500	0.00150								

Sample ID **LCS-79042** Batch ID: **79042** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS5_170207A** Analysis Date: **2/7/2017 12:21:00 PM** Prep Date: **2/6/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.202	0.00250	0.200	0	101	80	120			
Arsenic	0.207	0.00500	0.200	0	103	80	120			
Barium	0.207	0.0100	0.200	0	104	80	120			
Beryllium	0.204	0.00100	0.200	0	102	80	120			
Boron	0.205	0.0300	0.200	0	102	80	120			
Cadmium	0.208	0.00100	0.200	0	104	80	120			
Calcium	5.11	0.300	5.00	0	102	80	120			
Chromium	0.208	0.00500	0.200	0	104	80	120			
Cobalt	0.210	0.00500	0.200	0	105	80	120			
Lead	0.205	0.00100	0.200	0	103	80	120			
Lithium	0.210	0.0100	0.200	0	105	80	120			
Molybdenum	0.203	0.00500	0.200	0	101	80	120			
Selenium	0.205	0.00500	0.200	0	103	80	120			
Thallium	0.205	0.00150	0.200	0	102	80	120			

Sample ID **LCSD-79042** Batch ID: **79042** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS5_170207A** Analysis Date: **2/7/2017 12:23:00 PM** Prep Date: **2/6/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.203	0.00250	0.200	0	101	80	120	0.254	15	
Arsenic	0.208	0.00500	0.200	0	104	80	120	0.531	15	

Qualifiers:

B	Analyte detected in the associated Method Blank
J	Analyte detected between MDL and RL
ND	Not Detected at the Method Detection Limit
RL	Reporting Limit
J	Analyte detected between SDL and RL
DF	Dilution Factor
MDL	Method Detection Limit
R	RPD outside accepted control limits
S	Spike Recovery outside control limits
N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1701222
Project: MLSES CCR (A-1 Landfill)

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_170207A

Sample ID **LCSD-79042**	Batch ID: **79042**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCSD**	Run ID: **ICP-MS5_170207A**	Analysis Date: **2/7/2017 12:23:00 PM**	Prep Date: **2/6/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.207	0.0100	0.200	0	103	80	120	0.249	15	
Beryllium	0.206	0.00100	0.200	0	103	80	120	0.770	15	
Boron	0.198	0.0300	0.200	0	99.0	80	120	3.48	15	
Cadmium	0.210	0.00100	0.200	0	105	80	120	0.792	15	
Calcium	5.11	0.300	5.00	0	102	80	120	0.031	15	
Chromium	0.209	0.00500	0.200	0	104	80	120	0.251	15	
Cobalt	0.211	0.00500	0.200	0	106	80	120	0.554	15	
Lead	0.205	0.00100	0.200	0	103	80	120	0.096	15	
Lithium	0.209	0.0100	0.200	0	105	80	120	0.433	15	
Molybdenum	0.203	0.00500	0.200	0	102	80	120	0.413	15	
Selenium	0.206	0.00500	0.200	0	103	80	120	0.339	15	
Thallium	0.205	0.00150	0.200	0	103	80	120	0.149	15	

Sample ID **1702034-13A SD**	Batch ID: **79042**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS5_170207A**	Analysis Date: **2/7/2017 12:27:00 PM**	Prep Date: **2/6/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.00400	0.0125	0	0				0	10	
Arsenic	<0.0100	0.0250	0	0.00406				0	10	
Barium	0.155	0.0500	0	0.153				0.938	10	
Beryllium	<0.00150	0.00500	0	0				0	10	
Boron	2.45	0.150	0	2.25				8.76	10	
Cadmium	<0.00150	0.00500	0	0				0	10	
Calcium	355	1.50	0	356				0.380	10	
Chromium	<0.0100	0.0250	0	0				0	10	
Cobalt	<0.0150	0.0250	0	0				0	10	
Lead	0.00410	0.00500	0	0.00410				0.097	10	
Lithium	0.122	0.0500	0	0.120				1.91	10	
Molybdenum	<0.0100	0.0250	0	0.00444				0	10	
Selenium	<0.0100	0.0250	0	0				0	10	
Thallium	<0.00250	0.00750	0	0				0	10	

Sample ID **1702034-13A PDS**	Batch ID: **79042**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS5_170207A**	Analysis Date: **2/7/2017 12:44:00 PM**	Prep Date: **2/6/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.187	0.00250	0.200	0	93.7	80	120			
Arsenic	0.199	0.00500	0.200	0.00406	97.3	80	120			
Barium	0.329	0.0100	0.200	0.153	87.8	80	120			
Beryllium	0.167	0.00100	0.200	0	83.3	80	120			
Boron	2.25	0.0300	0.200	2.25	3.69	80	120			S

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1701222
Project: MLSES CCR (A-1 Landfill)

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_170207A

Sample ID **1702034-13A PDS**	Batch ID: **79042**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS5_170207A**	Analysis Date: **2/7/2017 12:44:00 PM**	Prep Date: **2/6/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cadmium	0.179	0.00100	0.200	0	89.4	80	120			
Calcium	346	0.300	5.00	356	-195	80	120			S
Chromium	0.186	0.00500	0.200	0	93.1	80	120			
Cobalt	0.186	0.00500	0.200	0	92.9	80	120			
Lead	0.198	0.00100	0.200	0.00410	97.1	80	120			
Lithium	0.264	0.0100	0.200	0.120	72.2	80	120			S
Molybdenum	0.192	0.00500	0.200	0.00444	93.7	80	120			
Selenium	0.194	0.00500	0.200	0	97.2	80	120			
Thallium	0.195	0.00150	0.200	0	97.5	80	120			

Sample ID **1702034-13A MS**	Batch ID: **79042**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS5_170207A**	Analysis Date: **2/7/2017 12:46:00 PM**	Prep Date: **2/6/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.194	0.00250	0.200	0	97.1	80	120			
Arsenic	0.206	0.00500	0.200	0.00406	101	80	120			
Barium	0.343	0.0100	0.200	0.153	94.9	80	120			
Beryllium	0.168	0.00100	0.200	0	84.2	80	120			
Boron	2.38	0.0300	0.200	2.25	65.8	80	120			S
Cadmium	0.184	0.00100	0.200	0	91.8	80	120			
Calcium	379	0.300	5.00	356	455	80	120			S
Chromium	0.189	0.00500	0.200	0	94.3	80	120			
Cobalt	0.192	0.00500	0.200	0	96.0	80	120			
Lead	0.205	0.00100	0.200	0.00410	100	80	120			
Lithium	0.272	0.0100	0.200	0.120	76.2	80	120			S
Molybdenum	0.203	0.00500	0.200	0.00444	99.4	80	120			
Selenium	0.206	0.00500	0.200	0	103	80	120			
Thallium	0.201	0.00150	0.200	0	101	80	120			

Sample ID **1702034-13A MSD**	Batch ID: **79042**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS5_170207A**	Analysis Date: **2/7/2017 12:48:00 PM**	Prep Date: **2/6/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.195	0.00250	0.200	0	97.4	80	120	0.313	15	
Arsenic	0.203	0.00500	0.200	0.00406	99.6	80	120	1.49	15	
Barium	0.341	0.0100	0.200	0.153	94.1	80	120	0.479	15	
Beryllium	0.168	0.00100	0.200	0	83.8	80	120	0.464	15	
Boron	2.36	0.0300	0.200	2.25	58.3	80	120	0.635	15	S
Cadmium	0.186	0.00100	0.200	0	92.8	80	120	1.05	15	
Calcium	378	0.300	5.00	356	438	80	120	0.227	15	S
Chromium	0.188	0.00500	0.200	0	93.8	80	120	0.466	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1701222
Project: MLSES CCR (A-1 Landfill)

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_170207A

Sample ID **1702034-13A MSD** Batch ID: **79042** TestNo: **SW6020A** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS5_170207A** Analysis Date: **2/7/2017 12:48:00 PM** Prep Date: **2/6/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cobalt	0.191	0.00500	0.200	0	95.3	80	120	0.715	15	
Lead	0.203	0.00100	0.200	0.00410	99.5	80	120	0.769	15	
Lithium	0.274	0.0100	0.200	0.120	77.1	80	120	0.638	15	S
Molybdenum	0.203	0.00500	0.200	0.00444	99.3	80	120	0.118	15	
Selenium	0.203	0.00500	0.200	0	101	80	120	1.42	15	
Thallium	0.200	0.00150	0.200	0	100	80	120	0.642	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1701222
Project: MLSES CCR (A-1 Landfill)

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_170207A

Sample ID **ICV-170207**	Batch ID: **R90363**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS5_170207A**	Analysis Date: **2/7/2017 9:59:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.0985	0.00250	0.100	0	98.5	90	110			
Arsenic	0.102	0.00500	0.100	0	102	90	110			
Barium	0.100	0.0100	0.100	0	100	90	110			
Beryllium	0.0952	0.00100	0.100	0	95.2	90	110			
Boron	0.105	0.0300	0.100	0	105	90	110			
Cadmium	0.101	0.00100	0.100	0	101	90	110			
Calcium	2.59	0.300	2.50	0	104	90	110			
Chromium	0.102	0.00500	0.100	0	102	90	110			
Cobalt	0.103	0.00500	0.100	0	103	90	110			
Lead	0.0986	0.00100	0.100	0	98.6	90	110			
Lithium	0.0941	0.0100	0.100	0	94.1	90	110			
Molybdenum	0.0954	0.00500	0.100	0	95.4	90	110			
Selenium	0.100	0.00500	0.100	0	100	90	110			
Thallium	0.0971	0.00150	0.100	0	97.1	90	110			

Sample ID **LCVL-170207**	Batch ID: **R90363**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_170207A**	Analysis Date: **2/7/2017 10:02:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00193	0.00250	0.00200	0	96.4	70	130			
Arsenic	0.00504	0.00500	0.00500	0	101	70	130			
Barium	0.00494	0.0100	0.00500	0	98.7	70	130			
Beryllium	0.000950	0.00100	0.00100	0	95.0	70	130			
Boron	0.0224	0.0300	0.0200	0	112	70	130			
Cadmium	0.00104	0.00100	0.00100	0	104	70	130			
Calcium	0.0966	0.300	0.100	0	96.6	70	130			
Chromium	0.00510	0.00500	0.00500	0	102	70	130			
Cobalt	0.00516	0.00500	0.00500	0	103	70	130			
Lead	0.00107	0.00100	0.00100	0	107	70	130			
Lithium	0.0100	0.0100	0.0100	0	100	70	130			
Molybdenum	0.00493	0.00500	0.00500	0	98.6	70	130			
Selenium	0.00505	0.00500	0.00500	0	101	70	130			
Thallium	0.00103	0.00150	0.00100	0	103	70	130			

Sample ID **CCV4-170207**	Batch ID: **R90363**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_170207A**	Analysis Date: **2/7/2017 12:12:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.196	0.00250	0.200	0	98.0	90	110			
Arsenic	0.200	0.00500	0.200	0	100	90	110			
Barium	0.199	0.0100	0.200	0	99.7	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_170207A

Sample ID **CCV4-170207** Batch ID: **R90363** TestNo: **SW6020A** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS5_170207A** Analysis Date: **2/7/2017 12:12:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.204	0.00100	0.200	0	102	90	110			
Boron	0.199	0.0300	0.200	0	99.7	90	110			
Cadmium	0.203	0.00100	0.200	0	102	90	110			
Calcium	4.96	0.300	5.00	0	99.1	90	110			
Chromium	0.203	0.00500	0.200	0	101	90	110			
Cobalt	0.205	0.00500	0.200	0	103	90	110			
Lead	0.200	0.00100	0.200	0	100	90	110			
Lithium	0.204	0.0100	0.200	0	102	90	110			
Molybdenum	0.197	0.00500	0.200	0	98.7	90	110			
Selenium	0.199	0.00500	0.200	0	99.5	90	110			
Thallium	0.200	0.00150	0.200	0	100	90	110			

Sample ID **LCVL4-170207** Batch ID: **R90363** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS5_170207A** Analysis Date: **2/7/2017 12:16:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00199	0.00250	0.00200	0	99.2	70	130			
Arsenic	0.00502	0.00500	0.00500	0	100	70	130			
Barium	0.00493	0.0100	0.00500	0	98.5	70	130			
Beryllium	0.000955	0.00100	0.00100	0	95.5	70	130			
Boron	0.0252	0.0300	0.0200	0	126	70	130			
Cadmium	0.00101	0.00100	0.00100	0	101	70	130			
Calcium	0.102	0.300	0.100	0	102	70	130			
Chromium	0.00526	0.00500	0.00500	0	105	70	130			
Cobalt	0.00512	0.00500	0.00500	0	102	70	130			
Lead	0.00102	0.00100	0.00100	0	102	70	130			
Lithium	0.00984	0.0100	0.0100	0	98.4	70	130			
Molybdenum	0.00482	0.00500	0.00500	0	96.5	70	130			
Selenium	0.00502	0.00500	0.00500	0	100	70	130			
Thallium	0.000986	0.00150	0.00100	0	98.6	70	130			

Sample ID **CCV5-170207** Batch ID: **R90363** TestNo: **SW6020A** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS5_170207A** Analysis Date: **2/7/2017 12:52:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.187	0.00250	0.200	0	93.5	90	110			
Arsenic	0.198	0.00500	0.200	0	99.2	90	110			
Barium	0.190	0.0100	0.200	0	95.0	90	110			
Beryllium	0.184	0.00100	0.200	0	92.0	90	110			
Boron	0.215	0.0300	0.200	0	107	90	110			
Cadmium	0.190	0.00100	0.200	0	95.0	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1701222
Project: MLSES CCR (A-1 Landfill)

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_170207A

Sample ID **CCV5-170207**	Batch ID: **R90363**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_170207A**	Analysis Date: **2/7/2017 12:52:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	5.17	0.300	5.00	0	103	90	110			
Chromium	0.193	0.00500	0.200	0	96.3	90	110			
Cobalt	0.200	0.00500	0.200	0	100	90	110			
Lead	0.194	0.00100	0.200	0	96.9	90	110			
Lithium	0.187	0.0100	0.200	0	93.4	90	110			
Molybdenum	0.186	0.00500	0.200	0	92.9	90	110			
Selenium	0.203	0.00500	0.200	0	101	90	110			
Thallium	0.193	0.00150	0.200	0	96.3	90	110			

Sample ID **LCVL5-170207**	Batch ID: **R90363**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_170207A**	Analysis Date: **2/7/2017 1:21:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00190	0.00250	0.00200	0	95.2	70	130			
Arsenic	0.00515	0.00500	0.00500	0	103	70	130			
Barium	0.00514	0.0100	0.00500	0	103	70	130			
Beryllium	0.00126	0.00100	0.00100	0	126	70	130			
Boron	0.0232	0.0300	0.0200	0	116	70	130			
Cadmium	0.000994	0.00100	0.00100	0	99.4	70	130			
Calcium	0.0802	0.300	0.100	0	80.2	70	130			
Chromium	0.00510	0.00500	0.00500	0	102	70	130			
Cobalt	0.00510	0.00500	0.00500	0	102	70	130			
Lead	0.000957	0.00100	0.00100	0	95.7	70	130			
Lithium	0.0111	0.0100	0.0100	0	111	70	130			
Molybdenum	0.00475	0.00500	0.00500	0	95.1	70	130			
Selenium	0.00503	0.00500	0.00500	0	101	70	130			
Thallium	0.000960	0.00150	0.00100	0	96.0	70	130			

Sample ID **CCV6-170207**	Batch ID: **R90363**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_170207A**	Analysis Date: **2/7/2017 1:40:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.191	0.00250	0.200	0	95.7	90	110			
Arsenic	0.197	0.00500	0.200	0	98.5	90	110			
Barium	0.197	0.0100	0.200	0	98.4	90	110			
Beryllium	0.197	0.00100	0.200	0	98.5	90	110			
Boron	0.217	0.0300	0.200	0	108	90	110			
Cadmium	0.195	0.00100	0.200	0	97.5	90	110			
Calcium	4.97	0.300	5.00	0	99.4	90	110			
Chromium	0.200	0.00500	0.200	0	100	90	110			
Cobalt	0.202	0.00500	0.200	0	101	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_170207A

Sample ID **CCV6-170207**	Batch ID: **R90363**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_170207A**	Analysis Date: **2/7/2017 1:40:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.196	0.00100	0.200	0	98.2	90	110			
Lithium	0.204	0.0100	0.200	0	102	90	110			
Molybdenum	0.189	0.00500	0.200	0	94.4	90	110			
Selenium	0.198	0.00500	0.200	0	98.9	90	110			
Thallium	0.209	0.00150	0.200	0	104	90	110			

Sample ID **LCVL6-170207**	Batch ID: **R90363**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_170207A**	Analysis Date: **2/7/2017 2:01:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00188	0.00250	0.00200	0	94.0	70	130			
Arsenic	0.00506	0.00500	0.00500	0	101	70	130			
Barium	0.00484	0.0100	0.00500	0	96.8	70	130			
Beryllium	0.000992	0.00100	0.00100	0	99.2	70	130			
Boron	0.0218	0.0300	0.0200	0	109	70	130			
Cadmium	0.000957	0.00100	0.00100	0	95.7	70	130			
Calcium	0.0821	0.300	0.100	0	82.1	70	130			
Chromium	0.00518	0.00500	0.00500	0	104	70	130			
Cobalt	0.00508	0.00500	0.00500	0	102	70	130			
Lead	0.000953	0.00100	0.00100	0	95.3	70	130			
Lithium	0.0110	0.0100	0.0100	0	110	70	130			
Molybdenum	0.00475	0.00500	0.00500	0	95.0	70	130			
Selenium	0.00469	0.00500	0.00500	0	93.8	70	130			
Thallium	0.000951	0.00150	0.00100	0	95.1	70	130			

Sample ID **CCV7-170207**	Batch ID: **R90363**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_170207A**	Analysis Date: **2/7/2017 2:12:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.79	0.300	5.00	0	95.8	90	110			

Sample ID **LCVL7-170207**	Batch ID: **R90363**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_170207A**	Analysis Date: **2/7/2017 2:16:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.0936	0.300	0.100	0	93.6	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1701222
Project: MLSES CCR (A-1 Landfill)

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_170126A

The QC data in batch 78907 applies to the following samples: 1701222-01D, 1701222-02D, 1701222-03D

Sample ID	**MB-78907**	Batch ID:	**78907**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**IC4_170126A**	Analysis Date:	**1/26/2017 10:46:16 AM**	Prep Date:	**1/26/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00								
Fluoride	<0.100	0.400								
Sulfate	<1.00	3.00								

Sample ID	**LCS-78907**	Batch ID:	**78907**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**IC4_170126A**	Analysis Date:	**1/26/2017 11:02:16 AM**	Prep Date:	**1/26/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.1	1.00	10.00	0	101	90	110			
Fluoride	4.01	0.400	4.000	0	100	90	110			
Sulfate	30.2	3.00	30.00	0	101	90	110			

Sample ID	**LCSD-78907**	Batch ID:	**78907**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**LCSD**	Run ID:	**IC4_170126A**	Analysis Date:	**1/26/2017 11:18:16 AM**	Prep Date:	**1/26/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.1	1.00	10.00	0	101	90	110	0.681	20	
Fluoride	4.04	0.400	4.000	0	101	90	110	0.569	20	
Sulfate	30.4	3.00	30.00	0	101	90	110	0.822	20	

Sample ID	**1701241-01CMS**	Batch ID:	**78907**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**MS**	Run ID:	**IC4_170126A**	Analysis Date:	**1/26/2017 4:35:26 PM**	Prep Date:	**1/26/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	287	10.0	200.0	68.51	109	90	110			
Fluoride	211	4.00	200.0	1.028	105	90	110			
Sulfate	356	30.0	200.0	138.2	109	90	110			

Sample ID	**1701241-01CMSD**	Batch ID:	**78907**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**MSD**	Run ID:	**IC4_170126A**	Analysis Date:	**1/26/2017 4:51:26 PM**	Prep Date:	**1/26/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	285	10.0	200.0	68.51	108	90	110	0.607	20	
Fluoride	211	4.00	200.0	1.028	105	90	110	0.310	20	
Sulfate	356	30.0	200.0	138.2	109	90	110	0.094	20	

Sample ID	**1701218-01DMS**	Batch ID:	**78907**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**MS**	Run ID:	**IC4_170126A**	Analysis Date:	**1/26/2017 5:55:26 PM**	Prep Date:	**1/26/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1701222
Project: MLSES CCR (A-1 Landfill)

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_170126A

Sample ID **1701218-01DMS**	Batch ID: **78907**	TestNo: **E300**	Units: **mg/L**
SampType: **MS**	Run ID: **IC4_170126A**	Analysis Date: **1/26/2017 5:55:26 PM**	Prep Date: **1/26/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	343	10.0	200.0	124.9	109	90	110			
Fluoride	212	4.00	200.0	1.074	105	90	110			
Sulfate	211	30.0	200.0	0	106	90	110			

Sample ID **1701218-01DMSD**	Batch ID: **78907**	TestNo: **E300**	Units: **mg/L**
SampType: **MSD**	Run ID: **IC4_170126A**	Analysis Date: **1/26/2017 6:11:26 PM**	Prep Date: **1/26/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	343	10.0	200.0	124.9	109	90	110	0.009	20	
Fluoride	212	4.00	200.0	1.074	106	90	110	0.149	20	
Sulfate	212	30.0	200.0	0	106	90	110	0.511	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1701222
Project: MLSES CCR (A-1 Landfill)

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_170126A

Sample ID **ICV-170126**	Batch ID: **R90191**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC4_170126A**	Analysis Date: **1/26/2017 10:01:58 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	25.5	1.00	25.00	0	102	90	110			
Fluoride	10.0	0.400	10.00	0	100	90	110			
Sulfate	76.3	3.00	75.00	0	102	90	110			

Sample ID **CCV1-170126**	Batch ID: **R90191**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC4_170126A**	Analysis Date: **1/26/2017 2:37:56 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.5	1.00	10.00	0	105	90	110			
Fluoride	4.14	0.400	4.000	0	103	90	110			
Sulfate	31.7	3.00	30.00	0	106	90	110			

Sample ID **CCV2-170126**	Batch ID: **R90191**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC4_170126A**	Analysis Date: **1/26/2017 8:03:26 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.7	1.00	10.00	0	107	90	110			
Fluoride	4.25	0.400	4.000	0	106	90	110			
Sulfate	32.0	3.00	30.00	0	107	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1701222
Project: MLSES CCR (A-1 Landfill)

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_170125A

The QC data in batch 78883 applies to the following samples: 1701222-01D, 1701222-02D, 1701222-03D

Sample ID **1701214-01C_DUP** Batch ID: **78883** TestNo: **M4500-H+ B** Units: **pH Units@21.5℃**
SampType: **DUP** Run ID: **TITRATOR_170125A** Analysis Date: **1/25/2017 9:46:00 AM** Prep Date: **1/25/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	8.67	0	0	8.670				0	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1701222
Project: MLSES CCR (A-1 Landfill)

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_170125A

Sample ID	**ICV-170125**	Batch ID:	**R90149**	TestNo:	**M4500-H+ B**	Units:	**pH Units@21.8℃**
SampType:	**ICV**	Run ID:	**TITRATOR_170125A**	Analysis Date:	**1/25/2017 8:48:00 AM**	Prep Date:	**1/25/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	9.94	0	10.00	0	99.4	99	101			

Sample ID	**CCV1-170125**	Batch ID:	**R90149**	TestNo:	**M4500-H+ B**	Units:	**pH Units@21.7℃**
SampType:	**CCV**	Run ID:	**TITRATOR_170125A**	Analysis Date:	**1/25/2017 9:47:00 AM**	Prep Date:	**1/25/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	6.97	0	7.000	0	99.6	97.1	102.9			

Sample ID	**CCV2-170125**	Batch ID:	**R90149**	TestNo:	**M4500-H+ B**	Units:	**pH Units@21.7℃**
SampType:	**CCV**	Run ID:	**TITRATOR_170125A**	Analysis Date:	**1/25/2017 12:44:00 PM**	Prep Date:	**1/25/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	6.97	0	7.000	0	99.6	97.1	102.9			

Sample ID	**CCV3-170125**	Batch ID:	**R90149**	TestNo:	**M4500-H+ B**	Units:	**pH Units@21.7℃**
SampType:	**CCV**	Run ID:	**TITRATOR_170125A**	Analysis Date:	**1/25/2017 1:19:00 PM**	Prep Date:	**1/25/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	6.97	0	7.000	0	99.6	97.1	102.9			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1701222
Project: MLSES CCR (A-1 Landfill)

ANALYTICAL QC SUMMARY REPORT

RunID: WC_170130A

The QC data in batch 78944 applies to the following samples: 1701222-01D, 1701222-02D, 1701222-03D

Sample ID **MB-78944**	Batch ID: **78944**	TestNo: **M2540C**	Units: **mg/L**
SampType: **MBLK**	Run ID: **WC_170130A**	Analysis Date: **1/31/2017 8:40:00 AM**	Prep Date: **1/30/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	<10.0	10.0								

Sample ID **LCS-78944**	Batch ID: **78944**	TestNo: **M2540C**	Units: **mg/L**
SampType: **LCS**	Run ID: **WC_170130A**	Analysis Date: **1/31/2017 8:40:00 AM**	Prep Date: **1/30/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	747	10.0	745.6	0	100	90	113			

Sample ID **1701213-01C-DUP**	Batch ID: **78944**	TestNo: **M2540C**	Units: **mg/L**
SampType: **DUP**	Run ID: **WC_170130A**	Analysis Date: **1/31/2017 8:40:00 AM**	Prep Date: **1/30/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	8580	200	0	8940				4.11	5	

Sample ID **1701249-06C-DUP**	Batch ID: **78944**	TestNo: **M2540C**	Units: **mg/L**
SampType: **DUP**	Run ID: **WC_170130A**	Analysis Date: **1/31/2017 8:40:00 AM**	Prep Date: **1/30/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	292	10.0	0	305.0				4.36	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

NJ OK001

Case Narrative

Lab No: 20170062

This report contains the analytical results for the 3 sample(s) received under chain of custody by ESC Lab Sciences on 1/27/2017 1:59:02 PM. These samples are associated with your 1701222 project.

The analytical results included in this report meet all applicable quality control procedure requirements except as noted below:

The test results in this report meet all NELAC requirements unless noted below:

This report shall not be reproduced, except in full, without the written approval of ESC Lab Sciences.

All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client.

Results have been reviewed by the Director of Radiochemistry or their designees and is approved for release.

Observations / Nonconformances

L887049

OUTREACH LABORATORY, A Divsion of ESC Lab Sciences
Address: 311 North Aspen Avenue, Broken Arrow, OK, 74012 - EMail: outreach@esclabsciences.com - Tel: (918) 251-2515

Analytical Report

	Method	Result	DL	Units	Qual	Prep Date	Analysis Date	Analyst
Lab ID : 20170062-01								
Client ID : BMW-26								
Date Sampled : 1/23/2017 1:45:00 PM								
Matrix : NPW								
		Radiochemical Analyses						
Combined Radium		1.29 +/- 0.698	0.845	pCi/l				
Radium-226	SM 7500 Ra B M*	0.351 +/- 0.253	0.334	pCi/l		02/15/17	02/18/17	SD
Radium-228	EPA 904*/9320*	0.936 +/- 0.445	0.511	pCi/l		02/07/17	02/13/17	JR
Lab ID : 20170062-02								
Client ID : BMW-27								
Date Sampled : 1/23/2017 12:45:00 PM								
Matrix : NPW								
		Radiochemical Analyses						
Combined Radium		1.30 +/- 0.611	0.659	pCi/l				
Radium-226	SM 7500 Ra B M*	0.369 +/- 0.177	0.161	pCi/l		02/15/17	02/19/17	SD
Radium-228	EPA 904*/9320*	0.934 +/- 0.434	0.498	pCi/l		02/07/17	02/13/17	JR
Lab ID : 20170062-03								
Client ID : BMW-28								
Date Sampled : 1/23/2017 2:55:00 PM								
Matrix : NPW								
		Radiochemical Analyses						
Combined Radium		1.75 +/- 0.585	0.623	pCi/l				
Radium-226	SM 7500 Ra B M*	0.626 +/- 0.218	0.200	pCi/l		02/15/17	02/19/17	SD
Radium-228	EPA 904*/9320*	1.12 +/- 0.367	0.423	pCi/l		02/07/17	02/13/17	JR

Client : DHL Analytical, Inc.
Client Project : 1701222
Lab Number : 20170062
Date Reported : 02/23/17
Date Received : 01/27/17
Page Number : 3 of 3

QC Report

Parameter	Blank	LCS %REC	LCSD %REC	LCSD RPD	DUP RPD	RER, NAD or DER	MS %REC	MSD %REC	MSD RPD	Batch ID
Radium-226	0.010	106.0			NC	1.080	99.2	102.0	2.9	R1192
Radium-228	-0.017	110.0			NC	1.660	91.1	101.0	10.0	R3920

Lab Approval:

Ron Eidson
Director of Radiochemistry

SAMPLE LOGIN

Date Received: *1/27/2017 1:59:02* **Lab Number:** 20170062 **Due:** 2/24/2017

Sample Number	Client Sample ID	Matrix	Date Sampled	Container Type	Container Size	Preservation	Preserved Upon Receipt	Custody Seal	Seal Intact
20170062-01 B	BMW-26	NPW	01/23/17	Plastic	1 L	HNO3, pH < 2	☑	Yes	Yes
20170062-01 A	BMW-26	NPW	01/23/17	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20170062-02 B	BMW-27	NPW	01/23/17	Plastic	1 L	HNO3, pH < 2	☑	Yes	Yes
20170062-02 A	BMW-27	NPW	01/23/17	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20170062-03 B	BMW-28	NPW	01/23/17	Plastic	1 L	HNO3, pH < 2	☑	Yes	Yes
20170062-03 A	BMW-28	NPW	01/23/17	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						

CONTAINER INSPECTION

 # Coolers 1 **Custody Seals Broken** ☒ **Temperature:** Amb C **Ice** **Radiation Survey:** <300 cpm

SAMPLE INSPECTION

Sample Seal Broken ☒ **Chain of Custody Record** ☑ **Labels in Tact** ☑ **Radiation Survey Complete** N/A

Anomalies No time on containers for -02.

Inspected By: [signature] **DATE** 1/27/17

QA or Designee Review: Raymond Thomas **DATE** 01/27/17

Sample Custodian Review: [signature] **DATE** 1/27/17

Project Notes:

DHL Analytical, Inc.
2300 Double Creek Drive
Round Rock, TX 78664
TEL: *(512) 388-8222* FAX: *(512) 388-8229*

CHAIN-OF-CUSTODY RECORD

Work Order: 1701222

Subcontractor:

ESC Laboratory
311 North Aspen
Broken Arrow, Oklahoma 74012

TEL: (918) 251-2515
FAX:
Acct #: DHLRRTX

25-Jan-17

Sample Id	Matrix	DHL#	Date Collected	Bottle Type	Requested Tests					
					E904.0	SM7500Ra-B M				
BMW-26	Aqueous	-01B	01/23/17 01:45 PM	1LHDPEHNO3	1					
BMW-26	Aqueous	-01C	01/23/17 01:45 PM	500HDPEHNO3		1				
BMW-27	Aqueous	-02B	01/23/17 12:45 PM	1LHDPEHNO3	1					
BMW-27	Aqueous	-02C	01/23/17 12:45 PM	500HDPEHNO3		1				
BMW-28	Aqueous	-03B	01/23/17 02:55 PM	1LHDPEHNO3	1					
BMW-28	Aqueous	-03C	01/23/17 02:55 PM	500HDPEHNO3		1				

General Comments:

Please analyze these samples with Normal Turnaround Time.
Report RA-226, Ra-228 & Combined per Specs.
Quality Control Package Needed: Standard - NELAC Rad Test compliant
Email to cac@dhlanalytical.com & dupont@dhlanalytical.com

20170062
L 887049

		Date/Time			Date/Time
Relinquished by:	[signature]	1/25/17 17:30	**Received by:**	[signature]	1/25/17 17:30
Relinquished by:			**Received by:**	[signature]	1/27/17 1359

March 28, 2017

Will Vienne
Pastor, Behling & Wheeler
2201 Double Creek Dr #4004
Round Rock, Texas 78664
TEL: (512) 671-3434
FAX (512) 671-3446

Order No.: 1702267

RE: MLSES - A-1 Landfill

Dear Will Vienne:

DHL Analytical, Inc. received 3 sample(s) on 2/27/2017 for the analyses presented in the following report.

There were no problems with the analyses and all data met requirements of NELAC except where noted in the Case Narrative. All non-NELAC methods will be identified accordingly in the case narrative and all estimated uncertainties of test results are within method or EPA specifications.

If you have any questions regarding these tests results, please feel free to call. Thank you for using DHL Analytical.

Sincerely,

John DuPont
General Manager

This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211-17-18

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DHL ANALYTICAL
2300 Double Creek Dr. ■ Round Rock, TX 78664
Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

№ 74417

CHAIN-OF-CUSTODY

CLIENT: PBW
ADDRESS: 2201 DOUBLE CREEK DR ROUND ROCK TX 78664
PHONE: 512-671-3434 FAX/E-MAIL: 512-671-3446
DATA REPORTED TO: WILL VIENNE
ADDITIONAL REPORT COPIES TO:

DATE: 2-24-17 PAGE 1 OF 1
PO #: 5164-F DHL WORK ORDER #: 1702267
PROJECT LOCATION OR NAME: MLSES- A-1 LANDFILL
CLENT PROJECT #: 5164-F COLLECTOR: J. BEATTON

Authorize 5% surcharge for TRRP Report? ☐ Yes ☐ No

S=SOIL W=WATER A=AIR L=LIQUID SE=SEDIMENT P=PAINT SL=SLUDGE O=OTHER SO=SOLID

PRESERVATION: HCl | HNO_3 | H_2SO_4 ☐ NaOH ☐ | ICE | UNPRESERVED

ANALYSES: BTEX ☐ MTBE ☐ [METHOD 8021] | TPH 1005 ☐ TPH 1006 ☐ HOLD 1006 ☐ | GRO [METHOD 8015] ☐ DRO [METHOD 8105] ☐ | VOC 8260 ☐ VOC 624 ☐ VOC 8260/5035 ☐ | SVOC 8270 ☐ PAH 8270 ☐ HOLD PAH ☐ SVOC 625 ☐ | 8270 PEST ☐ 625 PEST/PCB ☐ 608 PCB ☐ | 8270 O-P PEST ☐ 8082 PCB ☐ 8270 PCB ☐ | 8321 HERB ☐ T PHOS, AMMONIA ☐ | METALS 6020 ☐ METALS 200.8 ☐ DISS. METALS ☐ | RCRA ☐ TX11 ☐ _____ ☐ | PH ☐ HEX CHROM ☐ ALKALINITY ☐ COD ☐ | CHLORIDE ☐ ANIONS _____ ☐ | TCLP-SVOC ☐ VOC ☐ PEST ☐ HERB ☐ | TCLP-METALS ☐ RCRA 8 ☐ TX-11 ☐ Pb ☐ | RCI ☐ FLASHPOINT ☐ DGAS ☐ | TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐ | CCR

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	HCl	HNO_3	H_2SO_4 ☐ NaOH ☐	ICE	UNPRESERVED	CCR	FIELD NOTES
BMW-26	01	2-23-17	1215	W	P	4		X		X	X	X	
BMW-27	02	1	1315	W	P	4		X		X	X	X	
BMW-28	03	1	1420	W	P	4		X		X	X	X	

RELINQUISHED BY: (Signature) DATE/TIME 2-24-17 1700 RECEIVED BY: (Signature) fedex
RELINQUISHED BY: (Signature) fedex DATE/TIME 2/27/17 10:15 RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature) DATE/TIME RECEIVED BY: (Signature)

APPENDIX F Revision 2 February 27, 2024

☐ DHL DISPOSAL @ $5.00 each ☐ Return

TURN AROUND TIME
RUSH ☐ CALL FIRST
1 DAY ☐ CALL FIRST
2 DAY ☐
NORMAL ☒
OTHER ☐ _____

LABORATORY USE ONLY:
RECEIVING TEMP: 1.5 THERM #: 78
CUSTODY SEALS: ☐ BROKEN ☐ INTACT ☒ NOT USED
CARRIER: ☐ LONE STAR ☒ FEDEX ☐ UPS ☐ OTHER
☐ COURIER DELIVERY
☐ HAND DELIVERED

John Dupont

From:	Sara Taube [Sara.Taube@pbwllc.com]
Sent:	Wednesday, July 22, 2015 12:06 PM
To:	John Dupont
Subject:	CCR Appendix III and IV
Follow Up Flag:	Follow up
Flag Status:	Completed

Hi John,

Here are the Appendix III and Appendix IV constituents that we will need to have analyzed under the CCR Rule.

Appendix III
Boron
Calcium
Chloride
Fluoride
pH
sulfate
TDS

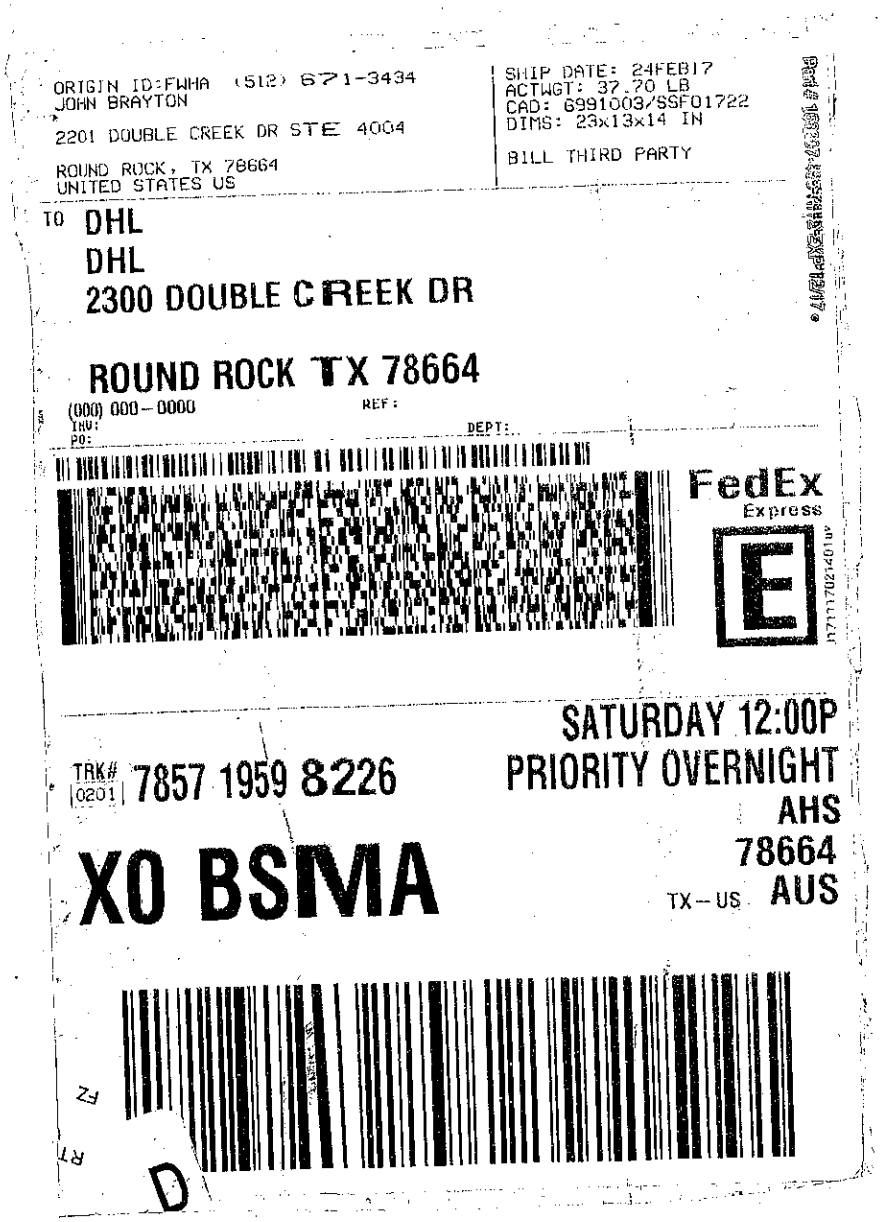
Appendix IV
Antimony
Arsenic
Barium
Beryllium
Cadmium
Chromium
Cobalt
Fluoride
Lead
Lithium
Mercury
Molybdenum
Selenium
Thallium
Radium 226 and 228

We are looking to have approximately 74 wells sampled 8 times over the course of the next two years. Please let me know if there is any more information you might need.

Cheers,

Sara

10/26/2015


ORIGIN ID:FWHA (512) 671-3434
JOHN BRAYTON
2201 DOUBLE CREEK DR STE 4004
ROUND ROCK, TX 78664
UNITED STATES US
SHIP DATE: 24FEB17
ACTWGT: 37.70 LB
CAD: 6991003/SSFO1722
DIMS: 23x13x14 IN
BILL THIRD PARTY
TO DHL
DHL
2300 DOUBLE CREEK DR
ROUND ROCK TX 78664
(000) 000-0000
REF:
INV:
PO:
DEPT:
FedEx
Express
E
TRK# 0201 7857 1959 8226
SATURDAY 12:00P
PRIORITY OVERNIGHT
AHS
78664
TX-US AUS
XO BSMA
FZ
RT
D

DHL Analytical, Inc.

Sample Receipt Checklist

Client Name **Pastor, Behling & Wheeler**

Date Received: **2/27/2017**

Work Order Number **1702267**

Received by **JT**

Checklist completed by: _____ 2/27/2017
Signature | Date

Reviewed by _____ 2/27/2017
Initials | Date

Carrier name FedEx 1day

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	1.5 °C
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH<2 acceptable upon receipt?	Yes ☑	No ☐	NA ☐ LOT # 8086
	Adjusted? NO		Checked by _____
Water - ph>9 (S) or ph>12 (CN) acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted? _____		Checked by _____

Any No response must be detailed in the comments section below.

Client contacted _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments: _____

Corrective Action _____

DHL Analytical, Inc. **Date:** *28-Mar-17*

CLIENT: Pastor, Behling & Wheeler
Project: MLSES - A-1 Landfill
Lab Order: 1702267

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Method SW6020A - Metals Analysis
Method SW7470A - Mercury Analysis
Method E300 - Anions Analysis
Method M4500-H+ B - pH of a Water Analysis
Method M2540C - TDS Analysis
Sub-contract - Radium-228 and Radium-226 analyses by methods E904/9320 and SM 7500 Ra B M. Analyzed at ESC Lab Sciences.

LOG IN

The samples were received and log-in performed on 2/27/17. A total of 3 samples were received. The samples arrived in good condition and were properly packaged.

METALS ANALYSIS

For Metals analysis performed on 3/2/17 and 3/3/17 the matrix spike and PDS had low responses for the internal standard Bismuth. The associated analyte (Lead) was within control limits. No further corrective actions were taken.

For Metals analysis performed on 3/2/17 and 3/3/17 the matrix spike and matrix spike duplicate recoveries were out of control limits for a total of nine analytes. In addition, the matrix spike and matrix spike duplicate had the RPD above control limits for Antimony and Molybdenum. These are flagged accordingly in the QC summary report. The sample selected for the matrix spike and matrix spike duplicate was not from this work order. The LCS was within control limits for these analytes. No further corrective actions were taken.

For Metals analysis performed on 3/3/17 the RPD for the serial dilution was slightly above control limits for Arsenic and Selenium. These are flagged accordingly. The PDS was within control limits for these analytes. No further corrective actions were taken.

ANIONS ANALYSIS

For Anions analysis performed on 3/2/17 the matrix spikes and matrix spike duplicate recoveries (1702267-01 MS/MSD & 1702267-02 MS/MSD) were slightly below control limits for Chloride. These are flagged accordingly in the QC summary report. The samples selected for the matrix spikes and matrix spike duplicates were from this work order. The LCS was within control limits for this analyte. No further corrective actions were taken.

DHL Analytical, Inc.

Date: *28-Mar-17*

CLIENT: Pastor, Behling & Wheeler
Project: MLSES - A-1 Landfill
Lab Order: 1702267

Work Order Sample Summary

Lab Smp ID	Client Sample ID	Tag Number	Date Collected	Date Recved
1702267-01	BMW-26		02/23/17 12:15 PM	2/27/2017
1702267-02	BMW-27		02/23/17 01:15 PM	2/27/2017
1702267-03	BMW-28		02/23/17 02:20 PM	2/27/2017

Lab Order: 1702267
Client: Pastor, Behling & Wheeler
Project: MLSES - A-1 Landfill

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1702267-01A	BMW-26	02/23/17 12:15 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	03/01/17 09:51 AM	79390
	BMW-26	02/23/17 12:15 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	03/01/17 09:51 AM	79390
	BMW-26	02/23/17 12:15 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	03/01/17 09:51 AM	79390
	BMW-26	02/23/17 12:15 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	03/03/17 08:46 AM	79420
1702267-01D	BMW-26	02/23/17 12:15 PM	Aqueous	E300	Anion Preparation	03/02/17 08:25 AM	79398
	BMW-26	02/23/17 12:15 PM	Aqueous	M4500-H+ B	pH Preparation	02/27/17 01:06 PM	79353
	BMW-26	02/23/17 12:15 PM	Aqueous	M2540C	TDS Preparation	03/01/17 03:38 PM	79394
1702267-02A	BMW-27	02/23/17 01:15 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	03/01/17 09:51 AM	79390
	BMW-27	02/23/17 01:15 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	03/01/17 09:51 AM	79390
	BMW-27	02/23/17 01:15 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	03/01/17 09:51 AM	79390
	BMW-27	02/23/17 01:15 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	03/03/17 08:46 AM	79420
1702267-02D	BMW-27	02/23/17 01:15 PM	Aqueous	E300	Anion Preparation	03/02/17 08:25 AM	79398
	BMW-27	02/23/17 01:15 PM	Aqueous	M4500-H+ B	pH Preparation	02/27/17 01:06 PM	79353
	BMW-27	02/23/17 01:15 PM	Aqueous	M2540C	TDS Preparation	03/01/17 03:38 PM	79394
1702267-03A	BMW-28	02/23/17 02:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	03/01/17 09:51 AM	79390
	BMW-28	02/23/17 02:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	03/01/17 09:51 AM	79390
	BMW-28	02/23/17 02:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	03/01/17 09:51 AM	79390
	BMW-28	02/23/17 02:20 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	03/03/17 08:46 AM	79420
1702267-03D	BMW-28	02/23/17 02:20 PM	Aqueous	E300	Anion Preparation	03/02/17 08:25 AM	79398
	BMW-28	02/23/17 02:20 PM	Aqueous	M4500-H+ B	pH Preparation	02/27/17 01:06 PM	79353
	BMW-28	02/23/17 02:20 PM	Aqueous	M2540C	TDS Preparation	03/02/17 03:22 PM	79412

Lab Order: 1702267
Client: Pastor, Behling & Wheeler
Project: MLSES - A-1 Landfill

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1702267-01A	BMW-26	Aqueous	SW7470A	Mercury Total: Aqueous	79420	1	03/07/17 11:11 AM	CETAC2_HG_170307C
	BMW-26	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	79390	1	03/02/17 12:46 PM	ICP-MS4_170302A
	BMW-26	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	79390	10	03/03/17 01:52 PM	ICP-MS4_170303B
	BMW-26	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	79390	1	03/03/17 01:54 PM	ICP-MS4_170303B
1702267-01D	BMW-26	Aqueous	E300	Anions by IC method - Water	79398	1	03/02/17 01:13 PM	IC2_170302A
	BMW-26	Aqueous	M4500-H+ B	pH	79353	1	02/27/17 02:15 PM	TITRATOR_170227A
	BMW-26	Aqueous	M2540C	Total Dissolved Solids	79394	1	03/02/17 08:40 AM	WC_170301B
1702267-02A	BMW-27	Aqueous	SW7470A	Mercury Total: Aqueous	79420	1	03/07/17 11:13 AM	CETAC2_HG_170307C
	BMW-27	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	79390	1	03/03/17 01:58 PM	ICP-MS4_170303B
	BMW-27	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	79390	1	03/02/17 12:48 PM	ICP-MS4_170302A
	BMW-27	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	79390	10	03/03/17 01:56 PM	ICP-MS4_170303B
1702267-02D	BMW-27	Aqueous	E300	Anions by IC method - Water	79398	1	03/02/17 01:28 PM	IC2_170302A
	BMW-27	Aqueous	M4500-H+ B	pH	79353	1	02/27/17 02:18 PM	TITRATOR_170227A
	BMW-27	Aqueous	M2540C	Total Dissolved Solids	79394	1	03/02/17 08:40 AM	WC_170301B
1702267-03A	BMW-28	Aqueous	SW7470A	Mercury Total: Aqueous	79420	1	03/07/17 11:24 AM	CETAC2_HG_170307C
	BMW-28	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	79390	1	03/02/17 12:50 PM	ICP-MS4_170302A
	BMW-28	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	79390	10	03/03/17 02:00 PM	ICP-MS4_170303B
	BMW-28	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	79390	1	03/03/17 02:19 PM	ICP-MS4_170303B
1702267-03D	BMW-28	Aqueous	E300	Anions by IC method - Water	79398	1	03/02/17 01:42 PM	IC2_170302A
	BMW-28	Aqueous	M4500-H+ B	pH	79353	1	02/27/17 02:20 PM	TITRATOR_170227A
	BMW-28	Aqueous	M2540C	Total Dissolved Solids	79412	1	03/03/17 08:40 AM	WC_170302B

DHL Analytical, Inc.

Date: *28-Mar-17*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	BMW-26
Project:	MLSES - A-1 Landfill	**Lab ID:**	1702267-01
Project No:	5164-F	**Collection Date:**	02/23/17 12:15 PM
Lab Order:	1702267	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	03/03/17 01:54 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	03/02/17 12:46 PM
Barium	0.0705	0.00300	0.0100		mg/L	1	03/02/17 12:46 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	03/02/17 12:46 PM
Boron	0.0683	0.0100	0.0300		mg/L	1	03/03/17 01:54 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	03/02/17 12:46 PM
Calcium	52.0	1.00	3.00		mg/L	10	03/03/17 01:52 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	03/02/17 12:46 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	03/02/17 12:46 PM
Lead	0.000726	0.000300	0.00100	J	mg/L	1	03/02/17 12:46 PM
Lithium	0.00520	0.00500	0.0100	J	mg/L	1	03/02/17 12:46 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	03/02/17 12:46 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	03/02/17 12:46 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	03/02/17 12:46 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	03/07/17 11:11 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	23.9	0.300	1.00		mg/L	1	03/02/17 01:13 PM
Fluoride	0.106	0.100	0.400	J	mg/L	1	03/02/17 01:13 PM
Sulfate	20.4	1.00	3.00		mg/L	1	03/02/17 01:13 PM
PH		**M4500-H+ B**					Analyst: **BTJ**
pH	8.13	0	0		pH Units@18.3℃	1	02/27/17 02:15 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	209	10.0	10.0		mg/L	1	03/02/17 08:40 AM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *28-Mar-17*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	BMW-27
Project:	MLSES - A-1 Landfill	**Lab ID:**	1702267-02
Project No:	5164-F	**Collection Date:**	02/23/17 01:15 PM
Lab Order:	1702267	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	03/03/17 01:58 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	03/02/17 12:48 PM
Barium	0.0704	0.00300	0.0100		mg/L	1	03/02/17 12:48 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	03/02/17 12:48 PM
Boron	0.0832	0.0100	0.0300		mg/L	1	03/03/17 01:58 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	03/02/17 12:48 PM
Calcium	52.4	1.00	3.00		mg/L	10	03/03/17 01:56 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	03/02/17 12:48 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	03/02/17 12:48 PM
Lead	0.000736	0.000300	0.00100	J	mg/L	1	03/02/17 12:48 PM
Lithium	<0.00500	0.00500	0.0100		mg/L	1	03/02/17 12:48 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	03/02/17 12:48 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	03/02/17 12:48 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	03/02/17 12:48 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	03/07/17 11:13 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	24.0	0.300	1.00		mg/L	1	03/02/17 01:28 PM
Fluoride	0.252	0.100	0.400	J	mg/L	1	03/02/17 01:28 PM
Sulfate	20.6	1.00	3.00		mg/L	1	03/02/17 01:28 PM
PH		**M4500-H+ B**					Analyst: **BTJ**
pH	8.18	0	0		pH Units@18.4℃	1	02/27/17 02:18 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	239	10.0	10.0		mg/L	1	03/02/17 08:40 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *28-Mar-17*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	BMW-28
Project:	MLSES - A-1 Landfill	**Lab ID:**	1702267-03
Project No:	5164-F	**Collection Date:**	02/23/17 02:20 PM
Lab Order:	1702267	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	03/03/17 02:19 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	03/02/17 12:50 PM
Barium	0.0734	0.00300	0.0100		mg/L	1	03/02/17 12:50 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	03/02/17 12:50 PM
Boron	0.0776	0.0100	0.0300		mg/L	1	03/03/17 02:19 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	03/02/17 12:50 PM
Calcium	53.3	1.00	3.00		mg/L	10	03/03/17 02:00 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	03/02/17 12:50 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	03/02/17 12:50 PM
Lead	0.000965	0.000300	0.00100	J	mg/L	1	03/02/17 12:50 PM
Lithium	0.00514	0.00500	0.0100	J	mg/L	1	03/02/17 12:50 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	03/02/17 12:50 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	03/02/17 12:50 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	03/02/17 12:50 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	03/07/17 11:24 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	24.0	0.300	1.00		mg/L	1	03/02/17 01:42 PM
Fluoride	0.110	0.100	0.400	J	mg/L	1	03/02/17 01:42 PM
Sulfate	20.3	1.00	3.00		mg/L	1	03/02/17 01:42 PM
PH		**M4500-H+ B**					Analyst: **BTJ**
pH	8.23	0	0		pH Units@19.1℃	1	02/27/17 02:20 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	203	10.0	10.0		mg/L	1	03/03/17 08:40 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT: Pastor, Behling & Wheeler
Work Order: 1702267
Project: MLSES - A-1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_170307C

The QC data in batch 79420 applies to the following samples: 1702267-01A, 1702267-02A, 1702267-03A

Sample ID **MB-79420**	Batch ID: **79420**		TestNo: **SW7470A**				Units: **mg/L**				
SampType: **MBLK**	Run ID: **CETAC2_HG_170307**		Analysis Date: **3/7/2017 11:04:17 AM**				Prep Date: **3/3/2017**				
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Mercury	<0.0000800	0.000200									

Sample ID **LCS-79420**	Batch ID: **79420**		TestNo: **SW7470A**				Units: **mg/L**				
SampType: **LCS**	Run ID: **CETAC2_HG_170307**		Analysis Date: **3/7/2017 11:06:33 AM**				Prep Date: **3/3/2017**				
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Mercury	0.00209	0.000200	0.00200	0	104	85	115				

Sample ID **LCSD-79420**	Batch ID: **79420**		TestNo: **SW7470A**				Units: **mg/L**				
SampType: **LCSD**	Run ID: **CETAC2_HG_170307**		Analysis Date: **3/7/2017 11:08:49 AM**				Prep Date: **3/3/2017**				
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Mercury	0.00207	0.000200	0.00200	0	104	85	115	0.962	15		

Sample ID **1702267-02A SD**	Batch ID: **79420**		TestNo: **SW7470A**				Units: **mg/L**				
SampType: **SD**	Run ID: **CETAC2_HG_170307**		Analysis Date: **3/7/2017 11:15:38 AM**				Prep Date: **3/3/2017**				
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Mercury	<0.000400	0.00100	0	0				0	10		

Sample ID **1702267-02A PDS**	Batch ID: **79420**		TestNo: **SW7470A**				Units: **mg/L**				
SampType: **PDS**	Run ID: **CETAC2_HG_170307**		Analysis Date: **3/7/2017 11:17:54 AM**				Prep Date: **3/3/2017**				
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Mercury	0.00240	0.000200	0.00250	0	96.0	85	115				

Sample ID **1702267-02A MS**	Batch ID: **79420**		TestNo: **SW7470A**				Units: **mg/L**				
SampType: **MS**	Run ID: **CETAC2_HG_170307**		Analysis Date: **3/7/2017 11:20:11 AM**				Prep Date: **3/3/2017**				
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Mercury	0.00208	0.000200	0.00200	0	104	80	120				

Sample ID **1702267-02A MSD**	Batch ID: **79420**		TestNo: **SW7470A**				Units: **mg/L**				
SampType: **MSD**	Run ID: **CETAC2_HG_170307**		Analysis Date: **3/7/2017 11:22:28 AM**				Prep Date: **3/3/2017**				
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Mercury	0.00209	0.000200	0.00200	0	104	80	120	0.480	15		

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1702267
Project: MLSES - A-1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_170307C

Sample ID	**ICV-170307**	Batch ID:	**R90826**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**ICV**	Run ID:	**CETAC2_HG_170307**	Analysis Date:	**3/7/2017 10:14:19 AM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00395	0.000200	0.00400	0	98.8	90	110			

Sample ID	**CCV1-170307**	Batch ID:	**R90826**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**CETAC2_HG_170307**	Analysis Date:	**3/7/2017 10:57:26 AM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00200	0.000200	0.00200	0	100	90	110			

Sample ID	**CCV2-170307**	Batch ID:	**R90826**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**CETAC2_HG_170307**	Analysis Date:	**3/7/2017 11:31:35 AM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00202	0.000200	0.00200	0	101	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1702267
Project: MLSES - A-1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_170302A

The QC data in batch 79390 applies to the following samples: 1702267-01A, 1702267-02A, 1702267-03A

Sample ID **MB-79390** Batch ID: **79390** TestNo: **SW6020A** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_170302A** Analysis Date: **3/2/2017 11:47:00 AM** Prep Date: **3/1/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.000800	0.00250								
Arsenic	<0.00200	0.00500								
Barium	<0.00300	0.0100								
Beryllium	<0.000300	0.00100								
Cadmium	<0.000300	0.00100								
Calcium	<0.100	0.300								
Chromium	<0.00200	0.00500								
Cobalt	<0.00300	0.00500								
Lead	<0.000300	0.00100								
Lithium	<0.00500	0.0100								
Molybdenum	<0.00200	0.00500								
Selenium	<0.00200	0.00500								
Thallium	<0.000500	0.00150								

Sample ID **LCS-79390** Batch ID: **79390** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_170302A** Analysis Date: **3/2/2017 11:49:00 AM** Prep Date: **3/1/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.196	0.00250	0.200	0	97.9	80	120			
Arsenic	0.203	0.00500	0.200	0	101	80	120			
Barium	0.204	0.0100	0.200	0	102	80	120			
Beryllium	0.206	0.00100	0.200	0	103	80	120			
Cadmium	0.200	0.00100	0.200	0	99.8	80	120			
Calcium	4.99	0.300	5.00	0	99.7	80	120			
Chromium	0.210	0.00500	0.200	0	105	80	120			
Cobalt	0.204	0.00500	0.200	0	102	80	120			
Lead	0.204	0.00100	0.200	0	102	80	120			
Lithium	0.192	0.0100	0.200	0	96.2	80	120			
Molybdenum	0.201	0.00500	0.200	0	100	80	120			
Selenium	0.198	0.00500	0.200	0	99.2	80	120			
Thallium	0.203	0.00150	0.200	0	101	80	120			

Sample ID **LCSD-79390** Batch ID: **79390** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_170302A** Analysis Date: **3/2/2017 11:52:00 AM** Prep Date: **3/1/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.201	0.00250	0.200	0	101	80	120	2.76	15	
Arsenic	0.205	0.00500	0.200	0	102	80	120	1.00	15	
Barium	0.207	0.0100	0.200	0	103	80	120	1.34	15	
Beryllium	0.210	0.00100	0.200	0	105	80	120	1.81	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1702267
Project: MLSES - A-1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_170302A

Sample ID **LCSD-79390**	Batch ID: **79390**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCSD**	Run ID: **ICP-MS4_170302A**	Analysis Date: **3/2/2017 11:52:00 AM**	Prep Date: **3/1/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cadmium	0.201	0.00100	0.200	0	101	80	120	0.774	15	
Calcium	5.27	0.300	5.00	0	105	80	120	5.54	15	
Chromium	0.212	0.00500	0.200	0	106	80	120	0.883	15	
Cobalt	0.203	0.00500	0.200	0	102	80	120	0.380	15	
Lead	0.203	0.00100	0.200	0	101	80	120	0.394	15	
Lithium	0.190	0.0100	0.200	0	94.8	80	120	1.52	15	
Molybdenum	0.203	0.00500	0.200	0	101	80	120	1.10	15	
Selenium	0.200	0.00500	0.200	0	99.8	80	120	0.563	15	
Thallium	0.200	0.00150	0.200	0	100	80	120	1.05	15	

Sample ID **1702186-07A MS**	Batch ID: **79390**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS4_170302A**	Analysis Date: **3/2/2017 12:19:00 PM**	Prep Date: **3/1/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.197	0.00250	0.200	0	98.6	80	120			
Arsenic	0.229	0.00500	0.200	0.0342	97.2	80	120			
Barium	0.224	0.0100	0.200	0.0175	103	80	120			
Beryllium	0.346	0.00100	0.200	0.222	62.1	80	120			S
Cadmium	0.212	0.00100	0.200	0.0364	87.6	80	120			
Calcium	729	0.300	5.00	713	314	80	120			S
Chromium	0.182	0.00500	0.200	0.00305	89.7	80	120			
Cobalt	0.771	0.00500	0.200	0.610	80.5	80	120			
Lead	0.214	0.00100	0.200	0.000666	107	80	120			
Lithium	0.636	0.0100	0.200	0.534	51.2	80	120			S
Molybdenum	0.206	0.00500	0.200	0	103	80	120			
Selenium	0.405	0.00500	0.200	0.198	104	80	120			
Thallium	0.226	0.00150	0.200	0.00307	112	80	120			

Sample ID **1702186-07A MSD**	Batch ID: **79390**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS4_170302A**	Analysis Date: **3/2/2017 12:21:00 PM**	Prep Date: **3/1/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.195	0.00250	0.200	0	97.6	80	120	1.02	15	
Arsenic	0.227	0.00500	0.200	0.0342	96.4	80	120	0.648	15	
Barium	0.220	0.0100	0.200	0.0175	101	80	120	1.69	15	
Beryllium	0.348	0.00100	0.200	0.222	63.1	80	120	0.590	15	S
Cadmium	0.209	0.00100	0.200	0.0364	86.4	80	120	1.13	15	
Calcium	726	0.300	5.00	713	258	80	120	0.380	15	S
Chromium	0.184	0.00500	0.200	0.00305	90.6	80	120	0.985	15	
Cobalt	0.770	0.00500	0.200	0.610	80.0	80	120	0.144	15	
Lead	0.215	0.00100	0.200	0.000666	107	80	120	0.539	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1702267
Project: MLSES - A-1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_170302A

Sample ID **1702186-07A MSD** Batch ID: **79390** TestNo: **SW6020A** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS4_170302A** Analysis Date: **3/2/2017 12:21:00 PM** Prep Date: **3/1/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lithium	0.645	0.0100	0.200	0.534	55.6	80	120	1.37	15	S
Molybdenum	0.204	0.00500	0.200	0	102	80	120	0.843	15	
Selenium	0.404	0.00500	0.200	0.198	103	80	120	0.245	15	
Thallium	0.228	0.00150	0.200	0.00307	112	80	120	0.717	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1702267
Project: MLSES - A-1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_170302A

Sample ID **ICV-170302**	Batch ID: **R90771**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_170302A**	Analysis Date: **3/2/2017 10:05:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.100	0.00250	0.100	0	100	90	110			
Arsenic	0.0994	0.00500	0.100	0	99.4	90	110			
Barium	0.101	0.0100	0.100	0	101	90	110			
Beryllium	0.103	0.00100	0.100	0	103	90	110			
Cadmium	0.0991	0.00100	0.100	0	99.1	90	110			
Calcium	2.58	0.300	2.50	0	103	90	110			
Chromium	0.106	0.00500	0.100	0	106	90	110			
Cobalt	0.101	0.00500	0.100	0	101	90	110			
Lead	0.101	0.00100	0.100	0	101	90	110			
Lithium	0.0932	0.0100	0.100	0	93.2	90	110			
Molybdenum	0.0973	0.00500	0.100	0	97.3	90	110			
Selenium	0.0973	0.00500	0.100	0	97.3	90	110			
Thallium	0.102	0.00150	0.100	0	102	90	110			

Sample ID **LCVL-170302**	Batch ID: **R90771**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_170302A**	Analysis Date: **3/2/2017 10:10:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00197	0.00250	0.00200	0	98.4	70	130			
Arsenic	0.00510	0.00500	0.00500	0	102	70	130			
Barium	0.00489	0.0100	0.00500	0	97.7	70	130			
Beryllium	0.00101	0.00100	0.00100	0	101	70	130			
Cadmium	0.000987	0.00100	0.00100	0	98.7	70	130			
Calcium	0.107	0.300	0.100	0	107	70	130			
Chromium	0.00525	0.00500	0.00500	0	105	70	130			
Cobalt	0.00526	0.00500	0.00500	0	105	70	130			
Lead	0.00103	0.00100	0.00100	0	103	70	130			
Lithium	0.00971	0.0100	0.0100	0	97.1	70	130			
Molybdenum	0.00515	0.00500	0.00500	0	103	70	130			
Selenium	0.00445	0.00500	0.00500	0	89.0	70	130			
Thallium	0.00100	0.00150	0.00100	0	100	70	130			

Sample ID **CCV2-170302**	Batch ID: **R90771**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_170302A**	Analysis Date: **3/2/2017 11:26:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.204	0.00250	0.200	0	102	90	110			
Arsenic	0.205	0.00500	0.200	0	103	90	110			
Barium	0.212	0.0100	0.200	0	106	90	110			
Beryllium	0.205	0.00100	0.200	0	102	90	110			
Cadmium	0.205	0.00100	0.200	0	102	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1702267
Project: MLSES - A-1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_170302A

Sample ID **CCV2-170302** Batch ID: **R90771** TestNo: **SW6020A** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_170302A** Analysis Date: **3/2/2017 11:26:00 AM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	5.21	0.300	5.00	0	104	90	110			
Chromium	0.212	0.00500	0.200	0	106	90	110			
Cobalt	0.207	0.00500	0.200	0	103	90	110			
Lead	0.213	0.00100	0.200	0	107	90	110			
Lithium	0.192	0.0100	0.200	0	96.2	90	110			
Molybdenum	0.206	0.00500	0.200	0	103	90	110			
Selenium	0.203	0.00500	0.200	0	101	90	110			
Thallium	0.213	0.00150	0.200	0	106	90	110			

Sample ID **LCVL2-170302** Batch ID: **R90771** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_170302A** Analysis Date: **3/2/2017 11:32:00 AM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00195	0.00250	0.00200	0	97.4	70	130			
Arsenic	0.00490	0.00500	0.00500	0	98.1	70	130			
Barium	0.00509	0.0100	0.00500	0	102	70	130			
Beryllium	0.00103	0.00100	0.00100	0	103	70	130			
Cadmium	0.000985	0.00100	0.00100	0	98.5	70	130			
Calcium	0.118	0.300	0.100	0	118	70	130			
Chromium	0.00525	0.00500	0.00500	0	105	70	130			
Cobalt	0.00513	0.00500	0.00500	0	103	70	130			
Lead	0.00102	0.00100	0.00100	0	102	70	130			
Lithium	0.0103	0.0100	0.0100	0	103	70	130			
Molybdenum	0.00482	0.00500	0.00500	0	96.5	70	130			
Selenium	0.00526	0.00500	0.00500	0	105	70	130			
Thallium	0.00106	0.00150	0.00100	0	106	70	130			

Sample ID **CCV3-170302** Batch ID: **R90771** TestNo: **SW6020A** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_170302A** Analysis Date: **3/2/2017 12:27:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.198	0.00250	0.200	0	99.2	90	110			
Arsenic	0.201	0.00500	0.200	0	101	90	110			
Barium	0.209	0.0100	0.200	0	104	90	110			
Beryllium	0.191	0.00100	0.200	0	95.4	90	110			
Cadmium	0.197	0.00100	0.200	0	98.6	90	110			
Calcium	5.27	0.300	5.00	0	105	90	110			
Chromium	0.206	0.00500	0.200	0	103	90	110			
Cobalt	0.197	0.00500	0.200	0	98.5	90	110			
Lead	0.210	0.00100	0.200	0	105	90	110			
Lithium	0.190	0.0100	0.200	0	94.9	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1702267
Project: MLSES - A-1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_170302A

Sample ID **CCV3-170302**	Batch ID: **R90771**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_170302A**	Analysis Date: **3/2/2017 12:27:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Molybdenum	0.194	0.00500	0.200	0	97.1	90	110			
Selenium	0.206	0.00500	0.200	0	103	90	110			
Thallium	0.211	0.00150	0.200	0	105	90	110			

Sample ID **LCVL3-170302**	Batch ID: **R90771**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_170302A**	Analysis Date: **3/2/2017 12:34:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00195	0.00250	0.00200	0	97.5	70	130			
Arsenic	0.00515	0.00500	0.00500	0	103	70	130			
Barium	0.00530	0.0100	0.00500	0	106	70	130			
Beryllium	0.00100	0.00100	0.00100	0	100	70	130			
Cadmium	0.000989	0.00100	0.00100	0	98.9	70	130			
Calcium	0.115	0.300	0.100	0	115	70	130			
Chromium	0.00520	0.00500	0.00500	0	104	70	130			
Cobalt	0.00505	0.00500	0.00500	0	101	70	130			
Lead	0.00102	0.00100	0.00100	0	102	70	130			
Lithium	0.0115	0.0100	0.0100	0	115	70	130			
Molybdenum	0.00482	0.00500	0.00500	0	96.3	70	130			
Selenium	0.00479	0.00500	0.00500	0	95.8	70	130			
Thallium	0.00104	0.00150	0.00100	0	104	70	130			

Sample ID **CCV4-170302**	Batch ID: **R90771**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_170302A**	Analysis Date: **3/2/2017 1:00:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.206	0.00500	0.200	0	103	90	110			
Barium	0.213	0.0100	0.200	0	106	90	110			
Beryllium	0.186	0.00100	0.200	0	93.0	90	110			
Cadmium	0.196	0.00100	0.200	0	98.0	90	110			
Chromium	0.210	0.00500	0.200	0	105	90	110			
Cobalt	0.197	0.00500	0.200	0	98.7	90	110			
Lead	0.206	0.00100	0.200	0	103	90	110			
Lithium	0.182	0.0100	0.200	0	90.9	90	110			
Molybdenum	0.196	0.00500	0.200	0	97.8	90	110			
Selenium	0.209	0.00500	0.200	0	104	90	110			
Thallium	0.205	0.00150	0.200	0	102	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1702267
Project: MLSES - A-1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_170302A

Sample ID **LCVL4-170302** Batch ID: **R90771** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_170302A** Analysis Date: **3/2/2017 1:10:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.00523	0.00500	0.00500	0	105	70	130			
Barium	0.00510	0.0100	0.00500	0	102	70	130			
Beryllium	0.000911	0.00100	0.00100	0	91.1	70	130			
Cadmium	0.000978	0.00100	0.00100	0	97.8	70	130			
Chromium	0.00522	0.00500	0.00500	0	104	70	130			
Cobalt	0.00498	0.00500	0.00500	0	99.6	70	130			
Lead	0.00102	0.00100	0.00100	0	102	70	130			
Lithium	0.00981	0.0100	0.0100	0	98.1	70	130			
Molybdenum	0.00473	0.00500	0.00500	0	94.5	70	130			
Selenium	0.00529	0.00500	0.00500	0	106	70	130			
Thallium	0.00104	0.00150	0.00100	0	104	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1702267
Project: MLSES - A-1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: **ICP-MS4_170303B**

The QC data in batch 79390 applies to the following samples: 1702267-01A, 1702267-02A, 1702267-03A

Sample ID	**1702186-07A SD**	Batch ID:	**79390**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**SD**	Run ID:	**ICP-MS4_170303B**	Analysis Date:	**3/3/2017 12:58:00 PM**	Prep Date:	**3/1/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.284	0.500	0	0.279				1.88	10	
Boron	53.9	15.0	0	50.4				6.65	10	
Calcium	777	150	0	752				3.16	10	
Cobalt	<1.50	2.50	0	0.713				0	10	

Sample ID	**1702186-07A PDS**	Batch ID:	**79390**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**PDS**	Run ID:	**ICP-MS4_170303B**	Analysis Date:	**3/3/2017 1:19:00 PM**	Prep Date:	**3/1/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	20.0	0.100	20.0	0.279	98.7	80	120			
Boron	70.5	3.00	20.0	50.4	100	80	120			
Calcium	1230	30.0	500	752	94.7	80	120			
Cobalt	20.7	0.500	20.0	0.713	100	80	120			

Sample ID	**1702186-07A MS**	Batch ID:	**79390**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**MS**	Run ID:	**ICP-MS4_170303B**	Analysis Date:	**3/3/2017 1:21:00 PM**	Prep Date:	**3/1/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.327	0.250	0.200	0	164	80	120			S
Arsenic	0.251	0.500	0.200	0	126	80	120			S
Barium	<0.300	1.00	0.200	0	0	80	120			S
Beryllium	0.452	0.100	0.200	0.279	86.7	80	120			
Boron	51.8	3.00	0.200	50.4	682	80	120			S
Cadmium	0.249	0.100	0.200	0.0409	104	80	120			
Calcium	761	30.0	5.00	752	171	80	120			S
Chromium	0.214	0.500	0.200	0	107	80	120			
Cobalt	0.914	0.500	0.200	0.713	101	80	120			
Lead	0.216	0.100	0.200	0	108	80	120			
Lithium	0.957	1.00	0.200	0.763	97.0	80	120			
Molybdenum	0.249	0.500	0.200	0	125	80	120			S
Selenium	0.451	0.500	0.200	0	225	80	120			S
Thallium	0.212	0.150	0.200	0	106	80	120			

Sample ID	**1702186-07A MSD**	Batch ID:	**79390**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**MSD**	Run ID:	**ICP-MS4_170303B**	Analysis Date:	**3/3/2017 1:23:00 PM**	Prep Date:	**3/1/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.233	0.250	0.200	0	116	80	120	33.8	15	R
Arsenic	0.240	0.500	0.200	0	120	80	120	4.77	15	
Barium	<0.300	1.00	0.200	0	0	80	120	0	15	S

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_170303B

Sample ID **1702186-07A MSD** Batch ID: **79390** TestNo: **SW6020A** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS4_170303B** Analysis Date: **3/3/2017 1:23:00 PM** Prep Date: **3/1/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.455	0.100	0.200	0.279	88.3	80	120	0.705	15	
Boron	52.0	3.00	0.200	50.4	786	80	120	0.399	15	S
Cadmium	0.233	0.100	0.200	0.0409	96.0	80	120	6.56	15	
Calcium	755	30.0	5.00	752	48.6	80	120	0.805	15	S
Chromium	0.208	0.500	0.200	0	104	80	120	2.70	15	
Cobalt	0.913	0.500	0.200	0.713	100	80	120	0.098	15	
Lead	0.210	0.100	0.200	0	105	80	120	2.72	15	
Lithium	0.912	1.00	0.200	0.763	74.5	80	120	4.81	15	S
Molybdenum	0.205	0.500	0.200	0	102	80	120	19.7	15	R
Selenium	0.426	0.500	0.200	0	213	80	120	5.68	15	S
Thallium	0.210	0.150	0.200	0	105	80	120	0.950	15	

Sample ID **MB-79390** Batch ID: **79390** TestNo: **SW6020A** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_170303B** Analysis Date: **3/3/2017 2:31:00 PM** Prep Date: **3/1/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.000800	0.00250								
Arsenic	<0.00200	0.00500								
Barium	<0.00300	0.0100								
Beryllium	<0.000300	0.00100								
Boron	<0.0100	0.0300								
Cadmium	<0.000300	0.00100								
Calcium	<0.100	0.300								
Chromium	<0.00200	0.00500								
Cobalt	<0.00300	0.00500								
Lead	<0.000300	0.00100								
Lithium	<0.00500	0.0100								
Molybdenum	<0.00200	0.00500								
Selenium	<0.00200	0.00500								
Thallium	<0.000500	0.00150								

Sample ID **LCS-79390** Batch ID: **79390** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_170303B** Analysis Date: **3/3/2017 2:33:00 PM** Prep Date: **3/1/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.195	0.00250	0.200	0	97.5	80	120			
Arsenic	0.197	0.00500	0.200	0	98.7	80	120			
Barium	0.195	0.0100	0.200	0	97.4	80	120			
Beryllium	0.207	0.00100	0.200	0	104	80	120			
Boron	0.201	0.0300	0.200	0	101	80	120			
Cadmium	0.203	0.00100	0.200	0	101	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1702267
Project: MLSES - A-1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_170303B

Sample ID **LCS-79390**	Batch ID: **79390**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCS**	Run ID: **ICP-MS4_170303B**	Analysis Date: **3/3/2017 2:33:00 PM**	Prep Date: **3/1/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.92	0.300	5.00	0	98.4	80	120			
Chromium	0.204	0.00500	0.200	0	102	80	120			
Cobalt	0.206	0.00500	0.200	0	103	80	120			
Lead	0.213	0.00100	0.200	0	106	80	120			
Lithium	0.194	0.0100	0.200	0	97.1	80	120			
Molybdenum	0.196	0.00500	0.200	0	98.0	80	120			
Selenium	0.202	0.00500	0.200	0	101	80	120			
Thallium	0.213	0.00150	0.200	0	107	80	120			

Sample ID **LCSD-79390**	Batch ID: **79390**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCSD**	Run ID: **ICP-MS4_170303B**	Analysis Date: **3/3/2017 2:35:00 PM**	Prep Date: **3/1/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.201	0.00250	0.200	0	100	80	120	2.85	15	
Arsenic	0.200	0.00500	0.200	0	100	80	120	1.37	15	
Barium	0.200	0.0100	0.200	0	100	80	120	2.64	15	
Beryllium	0.208	0.00100	0.200	0	104	80	120	0.111	15	
Boron	0.202	0.0300	0.200	0	101	80	120	0.482	15	
Cadmium	0.204	0.00100	0.200	0	102	80	120	0.870	15	
Calcium	5.22	0.300	5.00	0	104	80	120	5.93	15	
Chromium	0.209	0.00500	0.200	0	105	80	120	2.20	15	
Cobalt	0.208	0.00500	0.200	0	104	80	120	1.39	15	
Lead	0.218	0.00100	0.200	0	109	80	120	2.47	15	
Lithium	0.198	0.0100	0.200	0	98.8	80	120	1.75	15	
Molybdenum	0.200	0.00500	0.200	0	100	80	120	2.07	15	
Selenium	0.205	0.00500	0.200	0	102	80	120	1.33	15	
Thallium	0.218	0.00150	0.200	0	109	80	120	2.22	15	

Sample ID **1702186-07A SD**	Batch ID: **79390**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS4_170303B**	Analysis Date: **3/3/2017 2:42:00 PM**	Prep Date: **3/1/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.00400	0.0125	0	0				0	10	
Arsenic	0.0362	0.0250	0	0.0300				18.6	10	R
Barium	0.0175	0.0500	0	0.0169				3.21	10	
Cadmium	0.0393	0.00500	0	0.0366				7.03	10	
Chromium	<0.0100	0.0250	0	0.00304				0	10	
Lead	<0.00150	0.00500	0	0.000731				0	10	
Molybdenum	<0.0100	0.0250	0	0				0	10	
Selenium	0.191	0.0250	0	0.169				12.1	10	R
Thallium	0.00307	0.00750	0	0.00315				2.48	10	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1702267
Project: MLSES - A-1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_170303B

Sample ID **1702186-07A PDS**	Batch ID: **79390**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_170303B**	Analysis Date: **3/3/2017 3:01:00 PM**	Prep Date: **3/1/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.188	0.00250	0.200	0	94.1	80	120			
Arsenic	0.214	0.00500	0.200	0.0300	92.1	80	120			
Barium	0.204	0.0100	0.200	0.0169	93.8	80	120			
Cadmium	0.203	0.00100	0.200	0.0366	83.2	80	120			
Chromium	0.180	0.00500	0.200	0.00304	88.6	80	120			
Lead	0.208	0.00100	0.200	0.000731	103	80	120			
Molybdenum	0.189	0.00500	0.200	0	94.3	80	120			
Selenium	0.371	0.00500	0.200	0.169	101	80	120			
Thallium	0.214	0.00150	0.200	0.00315	105	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1702267
Project: MLSES - A-1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_170303B

Sample ID **ICV-170303B**	Batch ID: **R90786**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_170303B**	Analysis Date: **3/3/2017 12:45:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.0991	0.00250	0.100	0	99.1	90	110			
Arsenic	0.0981	0.00500	0.100	0	98.1	90	110			
Barium	0.0995	0.0100	0.100	0	99.5	90	110			
Beryllium	0.0993	0.00100	0.100	0	99.3	90	110			
Boron	0.0976	0.0300	0.100	0	97.6	90	110			
Cadmium	0.100	0.00100	0.100	0	100	90	110			
Calcium	2.52	0.300	2.50	0	101	90	110			
Chromium	0.105	0.00500	0.100	0	105	90	110			
Cobalt	0.103	0.00500	0.100	0	103	90	110			
Lead	0.102	0.00100	0.100	0	102	90	110			
Lithium	0.0958	0.0100	0.100	0	95.8	90	110			
Molybdenum	0.0965	0.00500	0.100	0	96.5	90	110			
Selenium	0.0991	0.00500	0.100	0	99.1	90	110			
Thallium	0.102	0.00150	0.100	0	102	90	110			

Sample ID **LCVL-170303B**	Batch ID: **R90786**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_170303B**	Analysis Date: **3/3/2017 12:50:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00195	0.00250	0.00200	0	97.7	70	130			
Arsenic	0.00498	0.00500	0.00500	0	99.6	70	130			
Barium	0.00498	0.0100	0.00500	0	99.7	70	130			
Beryllium	0.000943	0.00100	0.00100	0	94.3	70	130			
Boron	0.0216	0.0300	0.0200	0	108	70	130			
Cadmium	0.00106	0.00100	0.00100	0	106	70	130			
Calcium	0.109	0.300	0.100	0	109	70	130			
Chromium	0.00518	0.00500	0.00500	0	104	70	130			
Cobalt	0.00515	0.00500	0.00500	0	103	70	130			
Lead	0.00103	0.00100	0.00100	0	103	70	130			
Lithium	0.00974	0.0100	0.0100	0	97.4	70	130			
Molybdenum	0.00501	0.00500	0.00500	0	100	70	130			
Selenium	0.00495	0.00500	0.00500	0	99.0	70	130			
Thallium	0.00103	0.00150	0.00100	0	103	70	130			

Sample ID **CCV3-170303**	Batch ID: **R90786**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_170303B**	Analysis Date: **3/3/2017 1:29:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.198	0.00250	0.200	0	99.0	90	110			
Arsenic	0.199	0.00500	0.200	0	99.6	90	110			
Barium	0.201	0.0100	0.200	0	101	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_170303B

Sample ID **CCV3-170303**	Batch ID: **R90786**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_170303B**	Analysis Date: **3/3/2017 1:29:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.207	0.00100	0.200	0	104	90	110			
Boron	0.212	0.0300	0.200	0	106	90	110			
Cadmium	0.203	0.00100	0.200	0	102	90	110			
Calcium	5.25	0.300	5.00	0	105	90	110			
Chromium	0.210	0.00500	0.200	0	105	90	110			
Cobalt	0.207	0.00500	0.200	0	104	90	110			
Lead	0.214	0.00100	0.200	0	107	90	110			
Lithium	0.199	0.0100	0.200	0	99.7	90	110			
Molybdenum	0.199	0.00500	0.200	0	99.6	90	110			
Selenium	0.202	0.00500	0.200	0	101	90	110			
Thallium	0.209	0.00150	0.200	0	104	90	110			

Sample ID **LCVL3-170303**	Batch ID: **R90786**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_170303B**	Analysis Date: **3/3/2017 1:35:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00197	0.00250	0.00200	0	98.2	70	130			
Arsenic	0.00487	0.00500	0.00500	0	97.4	70	130			
Barium	0.00486	0.0100	0.00500	0	97.1	70	130			
Beryllium	0.000830	0.00100	0.00100	0	83.0	70	130			
Boron	0.0242	0.0300	0.0200	0	121	70	130			
Cadmium	0.00100	0.00100	0.00100	0	100	70	130			
Calcium	0.106	0.300	0.100	0	106	70	130			
Chromium	0.00516	0.00500	0.00500	0	103	70	130			
Cobalt	0.00518	0.00500	0.00500	0	104	70	130			
Lead	0.00104	0.00100	0.00100	0	104	70	130			
Lithium	0.00983	0.0100	0.0100	0	98.3	70	130			
Molybdenum	0.00484	0.00500	0.00500	0	96.7	70	130			
Selenium	0.00491	0.00500	0.00500	0	98.1	70	130			
Thallium	0.00102	0.00150	0.00100	0	102	70	130			

Sample ID **CCV4-170303**	Batch ID: **R90786**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_170303B**	Analysis Date: **3/3/2017 2:06:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.201	0.00250	0.200	0	101	90	110			
Boron	0.208	0.0300	0.200	0	104	90	110			
Calcium	5.29	0.300	5.00	0	106	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1702267
Project: MLSES - A-1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_170303B

Sample ID **LCVL4-170303**	Batch ID: **R90786**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_170303B**	Analysis Date: **3/3/2017 2:15:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00195	0.00250	0.00200	0	97.7	70	130			
Boron	0.0177	0.0300	0.0200	0	88.7	70	130			
Calcium	0.106	0.300	0.100	0	106	70	130			

Sample ID **CCV5-170303**	Batch ID: **R90786**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_170303B**	Analysis Date: **3/3/2017 2:21:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.199	0.00250	0.200	0	99.7	90	110			
Arsenic	0.198	0.00500	0.200	0	99.2	90	110			
Barium	0.200	0.0100	0.200	0	100	90	110			
Beryllium	0.206	0.00100	0.200	0	103	90	110			
Boron	0.204	0.0300	0.200	0	102	90	110			
Cadmium	0.204	0.00100	0.200	0	102	90	110			
Calcium	5.23	0.300	5.00	0	105	90	110			
Chromium	0.210	0.00500	0.200	0	105	90	110			
Cobalt	0.206	0.00500	0.200	0	103	90	110			
Lead	0.214	0.00100	0.200	0	107	90	110			
Lithium	0.197	0.0100	0.200	0	98.4	90	110			
Molybdenum	0.200	0.00500	0.200	0	99.9	90	110			
Selenium	0.201	0.00500	0.200	0	100	90	110			
Thallium	0.208	0.00150	0.200	0	104	90	110			

Sample ID **LCVL5-170303**	Batch ID: **R90786**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_170303B**	Analysis Date: **3/3/2017 2:25:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00190	0.00250	0.00200	0	95.2	70	130			
Arsenic	0.00503	0.00500	0.00500	0	101	70	130			
Barium	0.00492	0.0100	0.00500	0	98.4	70	130			
Beryllium	0.00112	0.00100	0.00100	0	112	70	130			
Boron	0.0190	0.0300	0.0200	0	94.8	70	130			
Cadmium	0.000986	0.00100	0.00100	0	98.6	70	130			
Calcium	0.103	0.300	0.100	0	103	70	130			
Chromium	0.00517	0.00500	0.00500	0	103	70	130			
Cobalt	0.00523	0.00500	0.00500	0	105	70	130			
Lead	0.00104	0.00100	0.00100	0	104	70	130			
Lithium	0.00957	0.0100	0.0100	0	95.7	70	130			
Molybdenum	0.00479	0.00500	0.00500	0	95.7	70	130			
Selenium	0.00507	0.00500	0.00500	0	101	70	130			
Thallium	0.00104	0.00150	0.00100	0	104	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1702267
Project: MLSES - A-1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_170303B

Sample ID **CCV6-170303** Batch ID: **R90786** TestNo: **SW6020A** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_170303B** Analysis Date: **3/3/2017 3:09:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.196	0.00250	0.200	0	98.0	90	110			
Arsenic	0.199	0.00500	0.200	0	99.7	90	110			
Barium	0.203	0.0100	0.200	0	101	90	110			
Cadmium	0.199	0.00100	0.200	0	99.3	90	110			
Chromium	0.204	0.00500	0.200	0	102	90	110			
Lead	0.214	0.00100	0.200	0	107	90	110			
Molybdenum	0.193	0.00500	0.200	0	96.4	90	110			
Selenium	0.211	0.00500	0.200	0	105	90	110			
Thallium	0.209	0.00150	0.200	0	105	90	110			

Sample ID **LCVL6-170303** Batch ID: **R90786** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_170303B** Analysis Date: **3/3/2017 3:17:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00189	0.00250	0.00200	0	94.4	70	130			
Arsenic	0.00500	0.00500	0.00500	0	100	70	130			
Barium	0.00492	0.0100	0.00500	0	98.5	70	130			
Cadmium	0.000975	0.00100	0.00100	0	97.5	70	130			
Chromium	0.00509	0.00500	0.00500	0	102	70	130			
Lead	0.00101	0.00100	0.00100	0	101	70	130			
Molybdenum	0.00456	0.00500	0.00500	0	91.2	70	130			
Selenium	0.00546	0.00500	0.00500	0	109	70	130			
Thallium	0.00102	0.00150	0.00100	0	102	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1702267
Project: MLSES - A-1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: **ICP-MS5_170306C**

The QC data in batch 79390 applies to the following samples: 1702267-01A, 1702267-02A, 1702267-03A

Sample ID	**1702186-07A SD**	Batch ID:	**79390**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**SD**	Run ID:	**ICP-MS5_170306C**	Analysis Date:	**3/6/2017 12:49:00 PM**	Prep Date:	**3/1/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lithium	0.764	0.250	0	0.742				3.03	10	

Sample ID	**1702186-07A PDS**	Batch ID:	**79390**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**PDS**	Run ID:	**ICP-MS5_170306C**	Analysis Date:	**3/6/2017 12:50:00 PM**	Prep Date:	**3/1/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lithium	1.67	0.0500	1.00	0.742	92.8	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1702267
Project: MLSES - A-1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_170306C

Sample ID	**ICV-170306**	Batch ID:	**R90798**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**ICV**	Run ID:	**ICP-MS5_170306C**	Analysis Date:	**3/6/2017 9:59:00 AM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lithium	0.0917	0.0100	0.100	0	91.7	90	110			

Sample ID	**LCVL-170306**	Batch ID:	**R90798**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**LCVL**	Run ID:	**ICP-MS5_170306C**	Analysis Date:	**3/6/2017 10:04:00 AM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lithium	0.00901	0.0100	0.0100	0	90.1	70	130			

Sample ID	**CCV5-170306**	Batch ID:	**R90798**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**ICP-MS5_170306C**	Analysis Date:	**3/6/2017 12:33:00 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lithium	0.203	0.0100	0.200	0	102	90	110			

Sample ID	**LCVL5-170306**	Batch ID:	**R90798**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**LCVL**	Run ID:	**ICP-MS5_170306C**	Analysis Date:	**3/6/2017 12:39:00 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lithium	0.0110	0.0100	0.0100	0	110	70	130			

Sample ID	**CCV6-170306**	Batch ID:	**R90798**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**ICP-MS5_170306C**	Analysis Date:	**3/6/2017 12:52:00 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lithium	0.201	0.0100	0.200	0	100	90	110			

Sample ID	**LCVL6-170306**	Batch ID:	**R90798**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**LCVL**	Run ID:	**ICP-MS5_170306C**	Analysis Date:	**3/6/2017 1:00:00 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lithium	0.0107	0.0100	0.0100	0	107	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1702267
Project: MLSES - A-1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_170302A

The QC data in batch 79398 applies to the following samples: 1702267-01D, 1702267-02D, 1702267-03D

Sample ID **MB-79398** Batch ID: **79398** TestNo: **E300** Units: **mg/L**
SampType: **MBLK** Run ID: **IC2_170302A** Analysis Date: **3/2/2017 9:00:42 AM** Prep Date: **3/2/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00								
Fluoride	<0.100	0.400								
Sulfate	<1.00	3.00								

Sample ID **LCS-79398** Batch ID: **79398** TestNo: **E300** Units: **mg/L**
SampType: **LCS** Run ID: **IC2_170302A** Analysis Date: **3/2/2017 9:15:18 AM** Prep Date: **3/2/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.68	1.00	10.00	0	96.8	90	110			
Fluoride	3.63	0.400	4.000	0	90.7	90	110			
Sulfate	29.4	3.00	30.00	0	98.0	90	110			

Sample ID **LCSD-79398** Batch ID: **79398** TestNo: **E300** Units: **mg/L**
SampType: **LCSD** Run ID: **IC2_170302A** Analysis Date: **3/2/2017 9:29:55 AM** Prep Date: **3/2/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.73	1.00	10.00	0	97.3	90	110	0.462	20	
Fluoride	3.70	0.400	4.000	0	92.4	90	110	1.92	20	
Sulfate	29.2	3.00	30.00	0	97.3	90	110	0.733	20	

Sample ID **1702267-01DMS** Batch ID: **79398** TestNo: **E300** Units: **mg/L**
SampType: **MS** Run ID: **IC2_170302A** Analysis Date: **3/2/2017 2:00:47 PM** Prep Date: **3/2/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	41.4	1.00	20.00	23.89	87.6	90	110			S
Fluoride	19.9	0.400	20.00	0.1060	99.0	90	110			
Sulfate	40.3	3.00	20.00	20.41	99.5	90	110			

Sample ID **1702267-01DMSD** Batch ID: **79398** TestNo: **E300** Units: **mg/L**
SampType: **MSD** Run ID: **IC2_170302A** Analysis Date: **3/2/2017 2:15:23 PM** Prep Date: **3/2/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	41.5	1.00	20.00	23.89	87.8	90	110	0.093	20	S
Fluoride	20.0	0.400	20.00	0.1060	99.3	90	110	0.243	20	
Sulfate	40.3	3.00	20.00	20.41	99.4	90	110	0.048	20	

Sample ID **1702267-02DMS** Batch ID: **79398** TestNo: **E300** Units: **mg/L**
SampType: **MS** Run ID: **IC2_170302A** Analysis Date: **3/2/2017 2:30:00 PM** Prep Date: **3/2/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1702267
Project: MLSES - A-1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_170302A

Sample ID **1702267-02DMS**	Batch ID: **79398**	TestNo: **E300**	Units: **mg/L**
SampType: **MS**	Run ID: **IC2_170302A**	Analysis Date: **3/2/2017 2:30:00 PM**	Prep Date: **3/2/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	41.9	1.00	20.00	24.02	89.2	90	110			S
Fluoride	20.7	0.400	20.00	0.2525	102	90	110			
Sulfate	40.7	3.00	20.00	20.59	100	90	110			

Sample ID **1702267-02DMSD**	Batch ID: **79398**	TestNo: **E300**	Units: **mg/L**
SampType: **MSD**	Run ID: **IC2_170302A**	Analysis Date: **3/2/2017 2:44:36 PM**	Prep Date: **3/2/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	41.6	1.00	20.00	24.02	87.7	90	110	0.752	20	S
Fluoride	20.2	0.400	20.00	0.2525	99.6	90	110	2.78	20	
Sulfate	40.4	3.00	20.00	20.59	99.2	90	110	0.627	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1702267
Project: MLSES - A-1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_170302A

Sample ID **ICV-170302**	Batch ID: **R90774**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC2_170302A**	Analysis Date: **3/2/2017 8:23:38 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	24.9	1.00	25.00	0	99.6	90	110			
Fluoride	9.55	0.400	10.00	0	95.5	90	110			
Sulfate	75.2	3.00	75.00	0	100	90	110			

Sample ID **CCV1-170302**	Batch ID: **R90774**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_170302A**	Analysis Date: **3/2/2017 12:25:47 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.85	1.00	10.00	0	98.5	90	110			
Fluoride	4.02	0.400	4.000	0	100	90	110			
Sulfate	29.6	3.00	30.00	0	98.8	90	110			

Sample ID **CCV2-170302**	Batch ID: **R90774**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_170302A**	Analysis Date: **3/2/2017 2:59:13 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.75	1.00	10.00	0	97.5	90	110			
Fluoride	3.97	0.400	4.000	0	99.4	90	110			
Sulfate	29.3	3.00	30.00	0	97.8	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1702267
Project: MLSES - A-1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_170227A

The QC data in batch 79353 applies to the following samples: 1702267-01D, 1702267-02D, 1702267-03D

Sample ID **1702229-01A-DUP** Batch ID: **79353** TestNo: **M4500-H+ B** Units: **pH Units@18.3℃**
SampType: **DUP** Run ID: **TITRATOR_170227A** Analysis Date: **2/27/2017 2:02:00 PM** Prep Date: **2/27/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	8.98	0	0	9.040				0.666	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1702267
Project: MLSES - A-1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_170227A

Sample ID **ICV-170227**	Batch ID: **R90725**	TestNo: **M4500-H+ B**	Units: **pH Units@21.2℃**
SampType: **ICV**	Run ID: **TITRATOR_170227A**	Analysis Date: **2/27/2017 1:21:00 PM**	Prep Date: **2/27/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	9.92	0	10.00	0	99.2	99	101			

Sample ID **CCV1-170227**	Batch ID: **R90725**	TestNo: **M4500-H+ B**	Units: **pH Units@21.1℃**
SampType: **CCV**	Run ID: **TITRATOR_170227A**	Analysis Date: **2/27/2017 2:22:00 PM**	Prep Date: **2/27/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	6.95	0	7.000	0	99.3	97.1	102.9			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1702267
Project: MLSES - A-1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: WC_170301B

The QC data in batch 79394 applies to the following samples: 1702267-01D, 1702267-02D

Sample ID	**MB-79394**	Batch ID:	**79394**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**WC_170301B**	Analysis Date:	**3/2/2017 8:40:00 AM**	Prep Date:	**3/1/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	<10.0	10.0								

Sample ID	**LCS-79394**	Batch ID:	**79394**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**WC_170301B**	Analysis Date:	**3/2/2017 8:40:00 AM**	Prep Date:	**3/1/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	753	10.0	745.6	0	101	90	113			

Sample ID	**1702258-09C-DUP**	Batch ID:	**79394**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**DUP**	Run ID:	**WC_170301B**	Analysis Date:	**3/2/2017 8:40:00 AM**	Prep Date:	**3/1/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	2770	50.0	0	2670				3.50	5	

Sample ID	**1702275-01E-DUP**	Batch ID:	**79394**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**DUP**	Run ID:	**WC_170301B**	Analysis Date:	**3/2/2017 8:40:00 AM**	Prep Date:	**3/1/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	423	10.0	0	414.0				2.15	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1702267
Project: MLSES - A-1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: WC_170302B

The QC data in batch 79412 applies to the following samples: 1702267-03D

Sample ID **MB-79412**	Batch ID: **79412**	TestNo: **M2540C**	Units: **mg/L**
SampType: **MBLK**	Run ID: **WC_170302B**	Analysis Date: **3/3/2017 8:40:00 AM**	Prep Date: **3/2/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	<10.0	10.0								

Sample ID **LCS-79412**	Batch ID: **79412**	TestNo: **M2540C**	Units: **mg/L**
SampType: **LCS**	Run ID: **WC_170302B**	Analysis Date: **3/3/2017 8:40:00 AM**	Prep Date: **3/2/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	739	10.0	745.6	0	99.1	90	113			

Sample ID **1702267-03D-DUP**	Batch ID: **79412**	TestNo: **M2540C**	Units: **mg/L**
SampType: **DUP**	Run ID: **WC_170302B**	Analysis Date: **3/3/2017 8:40:00 AM**	Prep Date: **3/2/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	209	10.0	0	203.0				2.91	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

ESC
L·A·B S·C·I·E·N·C·E·S
YOUR LAB OF CHOICE

ACCREDITED IN ACCORDANCE WITH nelac
NJ OK001

Case Narrative

Lab No: 20170165

This report contains the analytical results for the 3 sample(s) received under chain of custody by ESC Lab Sciences on 3/1/2017 2:12:51 PM. These samples are associated with your 1702267 project.

The analytical results included in this report meet all applicable quality control procedure requirements except as noted below:

The test results in this report meet all NELAC requirements unless noted below:

This report shall not be reproduced, except in full, without the written approval of ESC Lab Sciences.

All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client.

Results have been reviewed by the Director of Radiochemistry or their designees and is approved for release.

Observations / Nonconformances

L893585

OUTREACH LABORATORY, A Divsion of ESC Lab Sciences
Address: 311 North Aspen Avenue, Broken Arrow, OK, 74012 - EMail: outreach@esclabsciences.com - Tel: (918) 251-2515

Analytical Report

	Method	Result	DL	Units	Qual	Prep Date	Analysis Date	Analyst
Lab ID : 20170165-01								
Client ID : BMW-26								
Date Sampled : 2/23/2017 12:15:00 PM								
Matrix : NPW								
		Radiochemical Analyses						
Combined Radium		1.26 +/- 0.718	0.858	pCi/l				
Radium-226	SM 7500 Ra B M*	0.306 +/- 0.236	0.207	pCi/l		03/16/17	03/20/17	SD
Radium-228	EPA 904*/9320*	0.951 +/- 0.482	0.651	pCi/l		03/09/17	03/16/17	JR
Lab ID : 20170165-02								
Client ID : BMW-27								
Date Sampled : 2/23/2017 1:15:00 PM								
Matrix : NPW								
		Radiochemical Analyses						
Combined Radium		0.684 +/- 0.514	0.762	pCi/l				
Radium-226	SM 7500 Ra B M*	0.024 +/- 0.092	0.209	pCi/l		03/16/17	03/20/17	SD
Radium-228	EPA 904*/9320*	0.660 +/- 0.422	0.553	pCi/l		03/09/17	03/16/17	JR
Lab ID : 20170165-03								
Client ID : BMW-28								
Date Sampled : 2/23/2017 2:20:00 PM								
Matrix : NPW								
		Radiochemical Analyses						
Combined Radium		1.00 +/- 0.517	0.618	pCi/l				
Radium-226	SM 7500 Ra B M*	0.168 +/- 0.156	0.161	pCi/l		03/16/17	03/20/17	SD
Radium-228	EPA 904*/9320*	0.835 +/- 0.361	0.457	pCi/l		03/09/17	03/16/17	JR

QC Report

Parameter	Blank	LCS %REC	LCSD %REC	LCSD RPD	DUP RPD	RER, NAD or DER	MS %REC	MSD %REC	MSD RPD	Batch ID
Radium-226	0.009	105.0			NC	0.272	92.9	99.3	6.5	R1203
Radium-228	0.655	88.3			NC	0.657	99.5	87.0	11.0	R3933

Lab Approval:

Ron Eidson
Director of Radiochemistry

SAMPLE LOGIN

Date Received: *3/1/2017 2:12:51* **Lab Number:** **20170165** **Due:** **3/29/2017**

Sample Number	Client Sample ID	Matrix	Date Sampled	Container Type	Container Size	Preservation	Preserved Upon Receipt	Custody Seal	Seal Intact
20170165-01 B	BMW-26	NPW	02/23/17	Plastic	1 L	HNO3, pH < 2	☐	Yes	Yes
20170165-01 A	BMW-26	NPW	02/23/17	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20170165-02 B	BMW-27	NPW	02/23/17	Plastic	1 L	HNO3, pH < 2	☐	Yes	Yes
20170165-02 A	BMW-27	NPW	02/23/17	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20170165-03 B	BMW-28	NPW	02/23/17	Plastic	1 L	HNO3, pH < 2	☐	Yes	Yes
20170165-03 A	BMW-28	NPW	02/23/17	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						

CONTAINER INSPECTION

 # Coolers 1 **Custody Seals Broken** Ø **Temperature:** 4.0 C **Ice** **Radiation Survey:** <300 cpm

SAMPLE INSPECTION

Sample Seal Broken Ø **Chain of Custody Record** ☑ **Labels in Tact** ☑ **Radiation Survey Complete** N/A

Anomalies

Inspected By: _____ **DATE** 3/1/17

QA or Designee Review: Raymond Thomas **DATE** 03/01/17

Sample Custodian Review: _____ **DATE** 3/1/17

Project Notes:

DHL Analytical, Inc.
2300 Double Creek Drive
Round Rock, TX 78664
TEL: *(512) 388-8222* FAX: *(512) 388-8229*

CHAIN-OF-CUSTODY RECORD

Work Order: 1702267

Subcontractor:
ESC Laboratory
311 North Aspen
Broken Arrow, Oklahoma 74012

TEL: (918) 251-2515
FAX:
Acct #: DHLRRTX

27-Feb-17

Sample Id	Matrix	DHL#	Date Collected	Bottle Type	Requested Tests					
					E904.0	SM7500Ra-B M				
BMW-26	Aqueous	-01B	02/23/17 12:15 PM	1LHDPEHNO3	1					
BMW-26	Aqueous	-01C	02/23/17 12:15 PM	500HDPEHNO3		1				
BMW-27	Aqueous	-02B	02/23/17 01:15 PM	1LHDPEHNO3	1					
BMW-27	Aqueous	-02C	02/23/17 01:15 PM	500HDPEHNO3		1				
BMW-28	Aqueous	-03B	02/23/17 02:20 PM	1LHDPEHNO3	1					
BMW-28	Aqueous	-03C	02/23/17 02:20 PM	500HDPEHNO3		1				

General Comments:
Please analyze these samples with Normal Turnaround Time.
Report RA-226, Ra-228 & Combined per Specs.
Quality Control Package Needed: Standard - NELAC Rad Test compliant
Email to cac@dhlanalytical.com & dupont@dhlanalytical.com

		Date/Time			Date/Time
Relinquished by:		2/27/17 1733	**Received by:**		2/27/17 1733
Relinquished by:			**Received by:**		3/1/17 1412

CP 93585 20170165

April 25, 2017

Will Vienne
Pastor, Behling & Wheeler
2201 Double Creek Dr #4004
Round Rock, Texas 78664
TEL: (512) 671-3434
FAX (512) 671-3446

Order No.: 1703205

RE: Luminant - A-1 Landfill

Dear Will Vienne:

DHL Analytical, Inc. received 3 sample(s) on 3/25/2017 for the analyses presented in the following report.

There were no problems with the analyses and all data met requirements of NELAC except where noted in the Case Narrative. All non-NELAC methods will be identified accordingly in the case narrative and all estimated uncertainties of test results are within method or EPA specifications.

If you have any questions regarding these tests results, please feel free to call. Thank you for using DHL Analytical.

Sincerely,

John DuPont
General Manager

This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211-17-18

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DHL ANALYTICAL
2300 Double Creek Dr. ■ Round Rock, TX 78664
Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

№ 68892

CHAIN-OF-CUSTODY

CLIENT: PBW
ADDRESS: 2201 DOUBLE CREEK DR ROUND ROCK TX 78664
PHONE: 512-671-3434 FAX/E-MAIL: 512-671-3446
DATA REPORTED TO: WILL VIENNE
ADDITIONAL REPORT COPIES TO:

DATE: 3-24-17 PAGE 1 OF 1
PO #: 5164-F DHL WORK ORDER #: 1703205
PROJECT LOCATION OR NAME: LUMINANT - A-1 LANDFILL
CLENT PROJECT #: 5164-F COLLECTOR: J. BRAUTIGAM

Authorize 5% surcharge for TRRP Report? ☐ Yes ☐ No

S=SOIL W=WATER A=AIR L=LIQUID SE=SEDIMENT P=PAINT SL=SLUDGE O=OTHER SO=SOLID

PRESERVATION: HCl, HNO_3, H_2SO_4 ☐ NaOH ☐, ICE, UNPRESERVED

ANALYSES: BTEX ☐ MTBE ☐ [METHOD 8021] | TPH 1005 ☐ TPH 1006 ☐ HOLD 1006 ☐ | GRO [METHOD 8015] ☐ DRO [METHOD 8105] ☐ | VOC 8260 ☐ VOC 624 ☐ VOC 8260/5035 ☐ | SVOC 8270 ☐ PAH 8270 ☐ HOLD PAH ☐ SVOC 625 ☐ | 8270 PEST ☐ 625 PEST/PCB ☐ 608 PCB ☐ 8082 PCB ☐ 8270 PCB ☐ | 8270 O-P PEST ☐ 8321 HERB ☐ T PHOS, AMMONIA ☐ | METALS 6020 ☐ METALS 200.8 ☐ DISS. METALS ☐ | RCRA ☐ TX11 ☐ ___ | PH ☐ HEX CHROM ☐ ALKALINITY ☐ COD ☐ | CHLORIDE ☐ ANIONS ☐ | TCLP-SVOC ☐ VOC ☐ PEST ☐ HERB ☐ | TCLP-METALS ☐ RCRA 8 ☐ TX-11 ☐ Pb ☐ | RCI ☐ FLASHPOINT ☐ DGAS ☐ | TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐ | SEE ATTACHED

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	HCl	HNO_3	H_2SO_4 ☐ NaOH ☐	ICE	UNPRESERVED	SEE ATTACHED	FIELD NOTES
BMW-26	01	3-24-17	0930	W		4						X	
BMW-27	02	3-24-17	1020	W		4						X	
BMW-28	03	3-24-17	1135	W		4						X	

RELINQUISHED BY: (Signature) DATE/TIME 3-24-17 1730 RECEIVED BY: (Signature) FEDEX
RELINQUISHED BY: (Signature) DATE/TIME 3/25/17 10:00am RECEIVED BY: (Signature)
FEDEX
RELINQUISHED BY: (Signature) DATE/TIME RECEIVED BY: (Signature)

APPENDIX F-Revision 2 Effective 2/20/2024 ☐ Dispose @ $5.00 each ☐ Return

TURN AROUND TIME
RUSH ☐ CALL FIRST
1 DAY ☐ CALL FIRST
2 DAY ☐
NORMAL ☒
OTHER ☐ _____

LABORATORY USE ONLY:
RECEIVING TEMP: 2.5 THERM #: 78
CUSTODY SEALS: ☐ BROKEN ☐ INTACT ☐ NOT USED
CARRIER: ☐ LONE STAR ☐ FEDEX ☐ UPS ☐ OTHER
☐ COURIER DELIVERY
☐ HAND DELIVERED

John Dupont

From: Sara Taube [Sara.Taube@pbwllc.com]
Sent: Wednesday, July 22, 2015 12:05 PM
To: John Dupont
Subject: CCR Appendix III and IV
Follow Up Flag: Follow up
Flag Status: Completed

Hi John,

Here are the Appendix III and Appendix IV constituents that we will need to have analyzed under the CCR Rule.

Appendix III
Boron
Calcium
Chloride
Fluoride
pH
sulfate
TDS

Appendix IV
Antimony
Arsenic
Barium
Beryllium
Cadmium
Chromium
Cobalt
Fluoride
Lead
Lithium
Mercury
Molybdenum
Selenium
Thallium
Radium 226 and 228

We are looking to have approximately 74 wells sampled 8 times over the course of the next two years. Please let me know if there is any more information you might need.

Cheers,

Sara

10/26/2015

151966 10/04 MWI
ORIGIN ID:FWHA (512) 671-4434
JOHN BRAYTON
2201 DOUBLE CREEK DR STE 4004
ROUND ROCK, TX 78664
UNITED STATES US
SHIP DATE: 24MAR17
ACTWGT: 46.70 LB
CAD: 6995323/SSFD1722
DIMS: 23x14x14 IN
BILL THIRD PARTY
TO DHL
2300 DOUBLE CREEK DR
ROUND ROCK TX 78664
(512) 388-8222
REF:
INV:
PO:
DEPT:
FedEx
Express
SATURDAY 12:00P
TRK# 0201 7860 2282 3778
PRIORITY OVERNIGHT
XO BSMA
78664
TX-US AUS

DHL Analytical, Inc.

Sample Receipt Checklist

Client Name Pastor, Behling & Wheeler | Date Received: 3/25/2017

Work Order Number 1703205 | Received by AH

Checklist completed by: [signature] 3/27/2017 (Signature / Date) | Reviewed by [KC] 3/27/2017 (Initials / Date)

Carrier name FedEx 1day

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	2.9 °C
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH<2 acceptable upon receipt?	Yes ☑	No ☐	NA ☐ LOT # 8086
	Adjusted? No		Checked by [signature]
Water - ph>9 (S) or ph>12 (CN) acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted?		Checked by

Any No response must be detailed in the comments section below.

Client contacted _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments: _____

Corrective Action _____

DHL Analytical, Inc. **Date:** *25-Apr-17*

CLIENT: Pastor, Behling & Wheeler
Project: Luminant - A-1 Landfill
Lab Order: 1703205

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Method SW6020A - Metals Analysis
Method SW7470A - Mercury Analysis
Method E300 - Anions Analysis
Method M4500-H+ B - pH of a Water Analysis
Method M2540C - TDS Analysis
Sub-contract - Radium-228 and Radium-226 analyses by methods E904/9320 and SM 7500 Ra B M. Analyzed at ESC Lab Sciences.

LOG IN

The samples were received and log-in performed on 3/25/17. A total of 3 samples were received. The samples arrived in good condition and were properly packaged.

METALS ANALYSIS

For Metals analysis performed on 3/29/17 the matrix spike recovery was slightly below control limits for Lithium. This is flagged accordingly in the QC summary report. The sample selected for the matrix spike and matrix spike duplicate was from this work order. The LCS was within control limits for this analyte. No further corrective actions were taken.

For Metals analysis performed on 3/29/17 the PDS recovery was slightly below control limits for Lithium. This is flagged accordingly. The serial dilution was within control limits for this analyte. No further corrective actions were taken.

ANIONS ANALYSIS

For Anions analysis performed on 3/27/17 the matrix spike and matrix spike duplicate recoveries were slightly above control limits for Sulfate. These are flagged accordingly in the QC summary report. The sample selected for the matrix spike and matrix spike duplicate was from this work order. The LCS was within control limits for this analyte. No further corrective actions were taken.

DHL Analytical, Inc.

Date: *25-Apr-17*

CLIENT: Pastor, Behling & Wheeler
Project: Luminant - A-1 Landfill
Lab Order: 1703205

Work Order Sample Summary

Lab Smp ID	Client Sample ID	Tag Number	Date Collected	Date Recved
1703205-01	BMW-26		03/24/17 09:30 AM	3/25/2017
1703205-02	BMW-27		03/24/17 10:20 AM	3/25/2017
1703205-03	BMW-28		03/24/17 11:35 AM	3/25/2017

Lab Order: 1703205
Client: Pastor, Behling & Wheeler
Project: Luminant - A-1 Landfill

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1703205-01A	BMW-26	03/24/17 09:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	03/27/17 09:31 AM	79714
	BMW-26	03/24/17 09:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	03/27/17 09:31 AM	79714
	BMW-26	03/24/17 09:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	03/27/17 09:31 AM	79714
	BMW-26	03/24/17 09:30 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	03/27/17 11:49 AM	79718
1703205-01D	BMW-26	03/24/17 09:30 AM	Aqueous	E300	Anion Preparation	03/27/17 11:42 AM	79708
	BMW-26	03/24/17 09:30 AM	Aqueous	E300	Anion Preparation	03/27/17 11:42 AM	79708
	BMW-26	03/24/17 09:30 AM	Aqueous	M4500-H+ B	pH Preparation	03/27/17 11:00 AM	79716
	BMW-26	03/24/17 09:30 AM	Aqueous	M2540C	TDS Preparation	03/29/17 03:42 PM	79764
1703205-02A	BMW-27	03/24/17 10:20 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	03/27/17 09:31 AM	79714
	BMW-27	03/24/17 10:20 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	03/27/17 09:31 AM	79714
	BMW-27	03/24/17 10:20 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	03/27/17 09:31 AM	79714
	BMW-27	03/24/17 10:20 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	03/27/17 11:49 AM	79718
1703205-02D	BMW-27	03/24/17 10:20 AM	Aqueous	E300	Anion Preparation	03/27/17 11:42 AM	79708
	BMW-27	03/24/17 10:20 AM	Aqueous	E300	Anion Preparation	03/27/17 11:42 AM	79708
	BMW-27	03/24/17 10:20 AM	Aqueous	M4500-H+ B	pH Preparation	03/27/17 11:00 AM	79716
	BMW-27	03/24/17 10:20 AM	Aqueous	M2540C	TDS Preparation	03/29/17 03:42 PM	79764
1703205-03A	BMW-28	03/24/17 11:35 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	03/27/17 09:31 AM	79714
	BMW-28	03/24/17 11:35 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	03/27/17 09:31 AM	79714
	BMW-28	03/24/17 11:35 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	03/27/17 09:31 AM	79714
	BMW-28	03/24/17 11:35 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	03/27/17 11:49 AM	79718
1703205-03D	BMW-28	03/24/17 11:35 AM	Aqueous	E300	Anion Preparation	03/27/17 11:42 AM	79708
	BMW-28	03/24/17 11:35 AM	Aqueous	E300	Anion Preparation	03/27/17 11:42 AM	79708
	BMW-28	03/24/17 11:35 AM	Aqueous	M4500-H+ B	pH Preparation	03/27/17 11:00 AM	79716
	BMW-28	03/24/17 11:35 AM	Aqueous	M2540C	TDS Preparation	03/29/17 03:42 PM	79764

Lab Order: 1703205
Client: Pastor, Behling & Wheeler
Project: Luminant - A-1 Landfill

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1703205-01A	BMW-26	Aqueous	SW7470A	Mercury Total: Aqueous	79718	1	03/28/17 01:43 PM	CETAC2_HG_170328B
	BMW-26	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	79714	1	03/29/17 12:15 PM	ICP-MS5_170329C
	BMW-26	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	79714	1	03/31/17 11:26 AM	ICP-MS5_170331B
	BMW-26	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	79714	50	03/31/17 11:46 AM	ICP-MS5_170331B
1703205-01D	BMW-26	Aqueous	E300	Anions by IC method - Water	79708	1	03/27/17 12:03 PM	IC2_170327A
	BMW-26	Aqueous	E300	Anions by IC method - Water	79708	10	03/27/17 01:38 PM	IC2_170327A
	BMW-26	Aqueous	M4500-H+ B	pH	79716	1	03/27/17 12:21 PM	TITRATOR_170327A
	BMW-26	Aqueous	M2540C	Total Dissolved Solids	79764	1	03/30/17 08:46 AM	WC_170329D
1703205-02A	BMW-27	Aqueous	SW7470A	Mercury Total: Aqueous	79718	1	03/28/17 01:45 PM	CETAC2_HG_170328B
	BMW-27	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	79714	50	03/31/17 11:49 AM	ICP-MS5_170331B
	BMW-27	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	79714	1	03/29/17 12:49 PM	ICP-MS5_170329C
	BMW-27	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	79714	1	03/31/17 11:35 AM	ICP-MS5_170331B
1703205-02D	BMW-27	Aqueous	E300	Anions by IC method - Water	79708	10	03/27/17 01:53 PM	IC2_170327A
	BMW-27	Aqueous	E300	Anions by IC method - Water	79708	1	03/27/17 12:18 PM	IC2_170327A
	BMW-27	Aqueous	M4500-H+ B	pH	79716	1	03/27/17 12:26 PM	TITRATOR_170327A
	BMW-27	Aqueous	M2540C	Total Dissolved Solids	79764	1	03/30/17 08:46 AM	WC_170329D
1703205-03A	BMW-28	Aqueous	SW7470A	Mercury Total: Aqueous	79718	1	03/28/17 01:48 PM	CETAC2_HG_170328B
	BMW-28	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	79714	1	03/29/17 12:51 PM	ICP-MS5_170329C
	BMW-28	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	79714	1	03/31/17 11:37 AM	ICP-MS5_170331B
	BMW-28	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	79714	50	03/31/17 11:51 AM	ICP-MS5_170331B
1703205-03D	BMW-28	Aqueous	E300	Anions by IC method - Water	79708	1	03/27/17 12:32 PM	IC2_170327A
	BMW-28	Aqueous	E300	Anions by IC method - Water	79708	10	03/27/17 02:08 PM	IC2_170327A
	BMW-28	Aqueous	M4500-H+ B	pH	79716	1	03/27/17 12:28 PM	TITRATOR_170327A
	BMW-28	Aqueous	M2540C	Total Dissolved Solids	79764	1	03/30/17 08:46 AM	WC_170329D

DHL Analytical, Inc.

Date: *25-Apr-17*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	BMW-26
Project:	Luminant - A-1 Landfill	**Lab ID:**	1703205-01
Project No:	5164-F	**Collection Date:**	03/24/17 09:30 AM
Lab Order:	1703205	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **SP**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	03/29/17 12:15 PM
Arsenic	0.0107	0.00200	0.00500		mg/L	1	03/29/17 12:15 PM
Barium	0.0371	0.00300	0.0100		mg/L	1	03/29/17 12:15 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	03/31/17 11:26 AM
Boron	0.440	0.0100	0.0300		mg/L	1	03/31/17 11:26 AM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	03/29/17 12:15 PM
Calcium	215	5.00	15.0		mg/L	50	03/31/17 11:46 AM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	03/29/17 12:15 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	03/29/17 12:15 PM
Lead	0.000742	0.000300	0.00100	J	mg/L	1	03/29/17 12:15 PM
Lithium	0.0964	0.00500	0.0100		mg/L	1	03/29/17 12:15 PM
Molybdenum	0.00461	0.00200	0.00500	J	mg/L	1	03/29/17 12:15 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	03/29/17 12:15 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	03/29/17 12:15 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	03/28/17 01:43 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	112	3.00	10.0		mg/L	10	03/27/17 01:38 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	03/27/17 12:03 PM
Sulfate	610	10.0	30.0		mg/L	10	03/27/17 01:38 PM
PH		**M4500-H+ B**					Analyst: **BTJ**
pH	7.42	0	0		pH Units@20.6℃	1	03/27/17 12:21 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	1690	50.0	50.0		mg/L	1	03/30/17 08:46 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *25-Apr-17*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	BMW-27
Project:	Luminant - A-1 Landfill	**Lab ID:**	1703205-02
Project No:	5164-F	**Collection Date:**	03/24/17 10:20 AM
Lab Order:	1703205	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **SP**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	03/29/17 12:49 PM
Arsenic	0.00319	0.00200	0.00500	J	mg/L	1	03/29/17 12:49 PM
Barium	0.0296	0.00300	0.0100		mg/L	1	03/29/17 12:49 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	03/31/17 11:35 AM
Boron	0.304	0.0100	0.0300		mg/L	1	03/31/17 11:35 AM
Cadmium	0.000776	0.000300	0.00100	J	mg/L	1	03/29/17 12:49 PM
Calcium	120	5.00	15.0		mg/L	50	03/31/17 11:49 AM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	03/29/17 12:49 PM
Cobalt	0.222	0.00300	0.00500		mg/L	1	03/29/17 12:49 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	03/29/17 12:49 PM
Lithium	0.0474	0.00500	0.0100		mg/L	1	03/29/17 12:49 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	03/29/17 12:49 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	03/29/17 12:49 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	03/29/17 12:49 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	03/28/17 01:45 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	132	3.00	10.0		mg/L	10	03/27/17 01:53 PM
Fluoride	0.738	0.100	0.400		mg/L	1	03/27/17 12:18 PM
Sulfate	1190	10.0	30.0		mg/L	10	03/27/17 01:53 PM
PH		**M4500-H+ B**					Analyst: **BTJ**
pH	6.28	0	0		pH Units@20.8℃	1	03/27/17 12:26 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	2100	50.0	50.0		mg/L	1	03/30/17 08:46 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *25-Apr-17*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	BMW-28
Project:	Luminant - A-1 Landfill	**Lab ID:**	1703205-03
Project No:	5164-F	**Collection Date:**	03/24/17 11:35 AM
Lab Order:	1703205	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **SP**
Antimony	0.00121	0.000800	0.00250	J	mg/L	1	03/29/17 12:51 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	03/29/17 12:51 PM
Barium	0.0460	0.00300	0.0100		mg/L	1	03/29/17 12:51 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	03/31/17 11:37 AM
Boron	1.14	0.0100	0.0300		mg/L	1	03/31/17 11:37 AM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	03/29/17 12:51 PM
Calcium	242	5.00	15.0		mg/L	50	03/31/17 11:51 AM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	03/29/17 12:51 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	03/29/17 12:51 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	03/29/17 12:51 PM
Lithium	0.100	0.00500	0.0100		mg/L	1	03/29/17 12:51 PM
Molybdenum	0.00773	0.00200	0.00500		mg/L	1	03/29/17 12:51 PM
Selenium	0.00208	0.00200	0.00500	J	mg/L	1	03/29/17 12:51 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	03/29/17 12:51 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	03/28/17 01:48 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	121	3.00	10.0		mg/L	10	03/27/17 02:08 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	03/27/17 12:32 PM
Sulfate	1350	10.0	30.0		mg/L	10	03/27/17 02:08 PM
PH		**M4500-H+ B**					Analyst: **BTJ**
pH	7.51	0	0		pH Units@20.8℃	1	03/27/17 12:28 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	2580	50.0	50.0		mg/L	1	03/30/17 08:46 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT: Pastor, Behling & Wheeler
Work Order: 1703205
Project: Luminant - A-1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_170328B

The QC data in batch 79718 applies to the following samples: 1703205-01A, 1703205-02A, 1703205-03A

Sample ID	**MB-79718**	Batch ID:	**79718**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**CETAC2_HG_170328**	Analysis Date:	**3/28/2017 12:44:31 PM**	Prep Date:	**3/27/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.0000800	0.000200								

Sample ID	**LCS-79718**	Batch ID:	**79718**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**CETAC2_HG_170328**	Analysis Date:	**3/28/2017 12:46:47 PM**	Prep Date:	**3/27/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00206	0.000200	0.00200	0	103	85	115			

Sample ID	**LCSD-79718**	Batch ID:	**79718**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**LCSD**	Run ID:	**CETAC2_HG_170328**	Analysis Date:	**3/28/2017 12:49:03 PM**	Prep Date:	**3/27/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00201	0.000200	0.00200	0	101	85	115	2.46	15	

Sample ID	**1703157-29C SD**	Batch ID:	**79718**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**SD**	Run ID:	**CETAC2_HG_170328**	Analysis Date:	**3/28/2017 1:00:22 PM**	Prep Date:	**3/27/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.000400	0.00100	0	0				0	10	

Sample ID	**1703157-29C PDS**	Batch ID:	**79718**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**PDS**	Run ID:	**CETAC2_HG_170328**	Analysis Date:	**3/28/2017 1:02:38 PM**	Prep Date:	**3/27/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00243	0.000200	0.00250	0	97.2	85	115			

Sample ID	**1703157-29C MS**	Batch ID:	**79718**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**MS**	Run ID:	**CETAC2_HG_170328**	Analysis Date:	**3/28/2017 1:04:54 PM**	Prep Date:	**3/27/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00221	0.000200	0.00200	0	110	80	120			

Sample ID	**1703157-29C MSD**	Batch ID:	**79718**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**MSD**	Run ID:	**CETAC2_HG_170328**	Analysis Date:	**3/28/2017 1:07:10 PM**	Prep Date:	**3/27/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00219	0.000200	0.00200	0	110	80	120	0.909	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1703205
Project: Luminant - A-1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_170328B

Sample ID	**ICV-170328**	Batch ID:	**R91128**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**ICV**	Run ID:	**CETAC2_HG_170328**	Analysis Date:	**3/28/2017 12:39:57 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00395	0.000200	0.00400	0	98.8	90	110			

Sample ID	**CCV1-170328**	Batch ID:	**R91128**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**CETAC2_HG_170328**	Analysis Date:	**3/28/2017 1:25:20 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00203	0.000200	0.00200	0	102	90	110			

Sample ID	**CCV2-170328**	Batch ID:	**R91128**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**CETAC2_HG_170328**	Analysis Date:	**3/28/2017 1:50:22 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00198	0.000200	0.00200	0	99.0	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1703205
Project: Luminant - A-1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: **ICP-MS5_170329C**

The QC data in batch 79714 applies to the following samples: 1703205-01A, 1703205-02A, 1703205-03A

Sample ID **MB-79714** Batch ID: **79714** TestNo: **SW6020A** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS5_170329C** Analysis Date: **3/29/2017 12:08:00 PM** Prep Date: **3/27/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.000800	0.00250								
Arsenic	<0.00200	0.00500								
Barium	<0.00300	0.0100								
Cadmium	<0.000300	0.00100								
Calcium	<0.100	0.300								
Chromium	<0.00200	0.00500								
Cobalt	<0.00300	0.00500								
Lead	<0.000300	0.00100								
Lithium	<0.00500	0.0100								
Molybdenum	<0.00200	0.00500								
Selenium	<0.00200	0.00500								
Thallium	<0.000500	0.00150								

Sample ID **LCS-79714** Batch ID: **79714** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS5_170329C** Analysis Date: **3/29/2017 12:10:00 PM** Prep Date: **3/27/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.193	0.00250	0.200	0	96.7	80	120			
Arsenic	0.205	0.00500	0.200	0	103	80	120			
Barium	0.197	0.0100	0.200	0	98.4	80	120			
Cadmium	0.202	0.00100	0.200	0	101	80	120			
Calcium	5.06	0.300	5.00	0	101	80	120			
Chromium	0.203	0.00500	0.200	0	102	80	120			
Cobalt	0.211	0.00500	0.200	0	106	80	120			
Lead	0.198	0.00100	0.200	0	98.9	80	120			
Lithium	0.189	0.0100	0.200	0	94.3	80	120			
Molybdenum	0.199	0.00500	0.200	0	99.6	80	120			
Selenium	0.208	0.00500	0.200	0	104	80	120			
Thallium	0.195	0.00150	0.200	0	97.7	80	120			

Sample ID **LCSD-79714** Batch ID: **79714** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS5_170329C** Analysis Date: **3/29/2017 12:12:00 PM** Prep Date: **3/27/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.190	0.00250	0.200	0	95.0	80	120	1.77	15	
Arsenic	0.199	0.00500	0.200	0	99.7	80	120	2.81	15	
Barium	0.197	0.0100	0.200	0	98.5	80	120	0.143	15	
Cadmium	0.198	0.00100	0.200	0	99.1	80	120	1.85	15	
Calcium	4.95	0.300	5.00	0	99.0	80	120	2.18	15	
Chromium	0.199	0.00500	0.200	0	99.6	80	120	1.94	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1703205
Project: Luminant - A-1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_170329C

Sample ID **LCSD-79714**	Batch ID: **79714**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCSD**	Run ID: **ICP-MS5_170329C**	Analysis Date: **3/29/2017 12:12:00 PM**	Prep Date: **3/27/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cobalt	0.207	0.00500	0.200	0	103	80	120	2.19	15	
Lead	0.195	0.00100	0.200	0	97.4	80	120	1.54	15	
Lithium	0.178	0.0100	0.200	0	89.0	80	120	5.79	15	
Molybdenum	0.195	0.00500	0.200	0	97.6	80	120	1.99	15	
Selenium	0.201	0.00500	0.200	0	101	80	120	3.59	15	
Thallium	0.195	0.00150	0.200	0	97.5	80	120	0.163	15	

Sample ID **1703205-01A SD**	Batch ID: **79714**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS5_170329C**	Analysis Date: **3/29/2017 12:17:00 PM**	Prep Date: **3/27/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.00400	0.0125	0	0				0	10	
Arsenic	<0.0100	0.0250	0	0.0107				0	10	
Barium	0.0377	0.0500	0	0.0371				1.74	10	
Cadmium	<0.00150	0.00500	0	0				0	10	
Chromium	<0.0100	0.0250	0	0				0	10	
Cobalt	<0.0150	0.0250	0	0				0	10	
Lead	<0.00150	0.00500	0	0.000742				0	10	
Lithium	0.101	0.0500	0	0.0964				4.32	10	
Molybdenum	<0.0100	0.0250	0	0.00461				0	10	
Selenium	<0.0100	0.0250	0	0				0	10	
Thallium	<0.00250	0.00750	0	0				0	10	

Sample ID **1703205-01A PDS**	Batch ID: **79714**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS5_170329C**	Analysis Date: **3/29/2017 12:35:00 PM**	Prep Date: **3/27/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.188	0.00250	0.200	0	94.1	80	120			
Arsenic	0.195	0.00500	0.200	0.0107	92.2	80	120			
Barium	0.222	0.0100	0.200	0.0371	92.6	80	120			
Cadmium	0.179	0.00100	0.200	0	89.5	80	120			
Chromium	0.184	0.00500	0.200	0	91.9	80	120			
Cobalt	0.182	0.00500	0.200	0	91.2	80	120			
Lead	0.191	0.00100	0.200	0.000742	95.0	80	120			
Lithium	0.240	0.0100	0.200	0.0964	71.6	80	120			S
Molybdenum	0.184	0.00500	0.200	0.00461	89.6	80	120			
Selenium	0.190	0.00500	0.200	0	94.8	80	120			
Thallium	0.186	0.00150	0.200	0	93.0	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1703205
Project: Luminant - A-1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_170329C

Sample ID **1703205-01A MS**	Batch ID: **79714**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS5_170329C**	Analysis Date: **3/29/2017 12:37:00 PM**	Prep Date: **3/27/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.189	0.00250	0.200	0	94.3	80	120			
Arsenic	0.198	0.00500	0.200	0.0107	93.8	80	120			
Barium	0.231	0.0100	0.200	0.0371	97.1	80	120			
Cadmium	0.182	0.00100	0.200	0	91.0	80	120			
Calcium	229	0.300	5.00	224	109	80	120			
Chromium	0.186	0.00500	0.200	0	92.9	80	120			
Cobalt	0.186	0.00500	0.200	0	93.1	80	120			
Lead	0.194	0.00100	0.200	0.000742	96.7	80	120			
Lithium	0.253	0.0100	0.200	0.0964	78.2	80	120			S
Molybdenum	0.188	0.00500	0.200	0.00461	91.7	80	120			
Selenium	0.201	0.00500	0.200	0	100	80	120			
Thallium	0.200	0.00150	0.200	0	100	80	120			

Sample ID **1703205-01A MSD**	Batch ID: **79714**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS5_170329C**	Analysis Date: **3/29/2017 12:38:00 PM**	Prep Date: **3/27/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.192	0.00250	0.200	0	96.0	80	120	1.77	15	
Arsenic	0.202	0.00500	0.200	0.0107	95.6	80	120	1.72	15	
Barium	0.234	0.0100	0.200	0.0371	98.7	80	120	1.36	15	
Cadmium	0.185	0.00100	0.200	0	92.5	80	120	1.67	15	
Calcium	229	0.300	5.00	224	90.9	80	120	0.390	15	
Chromium	0.190	0.00500	0.200	0	95.0	80	120	2.30	15	
Cobalt	0.189	0.00500	0.200	0	94.6	80	120	1.60	15	
Lead	0.196	0.00100	0.200	0.000742	97.5	80	120	0.789	15	
Lithium	0.262	0.0100	0.200	0.0964	83.0	80	120	3.75	15	
Molybdenum	0.189	0.00500	0.200	0.00461	92.1	80	120	0.342	15	
Selenium	0.201	0.00500	0.200	0	101	80	120	0.161	15	
Thallium	0.206	0.00150	0.200	0	103	80	120	2.65	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1703205
Project: Luminant - A-1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_170329C

Sample ID **ICV-170329**	Batch ID: **R91184**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS5_170329C**	Analysis Date: **3/29/2017 10:27:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.0981	0.00250	0.100	0	98.1	90	110			
Arsenic	0.101	0.00500	0.100	0	101	90	110			
Barium	0.101	0.0100	0.100	0	101	90	110			
Cadmium	0.101	0.00100	0.100	0	101	90	110			
Calcium	2.43	0.300	2.50	0	97.2	90	110			
Chromium	0.106	0.00500	0.100	0	106	90	110			
Cobalt	0.104	0.00500	0.100	0	104	90	110			
Lead	0.0991	0.00100	0.100	0	99.1	90	110			
Lithium	0.100	0.0100	0.100	0	100	90	110			
Molybdenum	0.0961	0.00500	0.100	0	96.1	90	110			
Selenium	0.101	0.00500	0.100	0	101	90	110			
Thallium	0.0967	0.00150	0.100	0	96.7	90	110			

Sample ID **LCVL-170329**	Batch ID: **R91184**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_170329C**	Analysis Date: **3/29/2017 10:32:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00189	0.00250	0.00200	0	94.6	70	130			
Arsenic	0.00484	0.00500	0.00500	0	96.7	70	130			
Barium	0.00499	0.0100	0.00500	0	99.9	70	130			
Cadmium	0.000993	0.00100	0.00100	0	99.3	70	130			
Calcium	0.102	0.300	0.100	0	102	70	130			
Chromium	0.00504	0.00500	0.00500	0	101	70	130			
Cobalt	0.00508	0.00500	0.00500	0	102	70	130			
Lead	0.00102	0.00100	0.00100	0	102	70	130			
Lithium	0.0112	0.0100	0.0100	0	112	70	130			
Molybdenum	0.00474	0.00500	0.00500	0	94.9	70	130			
Selenium	0.00467	0.00500	0.00500	0	93.5	70	130			
Thallium	0.000990	0.00150	0.00100	0	99.0	70	130			

Sample ID **CCV3-170329**	Batch ID: **R91184**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_170329C**	Analysis Date: **3/29/2017 11:51:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.193	0.00250	0.200	0	96.7	90	110			
Arsenic	0.203	0.00500	0.200	0	102	90	110			
Barium	0.195	0.0100	0.200	0	97.3	90	110			
Cadmium	0.197	0.00100	0.200	0	98.7	90	110			
Calcium	4.93	0.300	5.00	0	98.6	90	110			
Chromium	0.202	0.00500	0.200	0	101	90	110			
Cobalt	0.207	0.00500	0.200	0	103	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_170329C

Sample ID **CCV3-170329**	Batch ID: **R91184**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_170329C**	Analysis Date: **3/29/2017 11:51:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.197	0.00100	0.200	0	98.7	90	110			
Lithium	0.182	0.0100	0.200	0	91.0	90	110			
Molybdenum	0.192	0.00500	0.200	0	96.1	90	110			
Selenium	0.207	0.00500	0.200	0	104	90	110			
Thallium	0.206	0.00150	0.200	0	103	90	110			

Sample ID **LCVL3-170329**	Batch ID: **R91184**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_170329C**	Analysis Date: **3/29/2017 11:55:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00203	0.00250	0.00200	0	101	70	130			
Arsenic	0.00488	0.00500	0.00500	0	97.5	70	130			
Barium	0.00486	0.0100	0.00500	0	97.3	70	130			
Cadmium	0.000993	0.00100	0.00100	0	99.3	70	130			
Calcium	0.103	0.300	0.100	0	103	70	130			
Chromium	0.00509	0.00500	0.00500	0	102	70	130			
Cobalt	0.00512	0.00500	0.00500	0	102	70	130			
Lead	0.00100	0.00100	0.00100	0	100	70	130			
Lithium	0.00934	0.0100	0.0100	0	93.4	70	130			
Molybdenum	0.00470	0.00500	0.00500	0	94.0	70	130			
Selenium	0.00526	0.00500	0.00500	0	105	70	130			
Thallium	0.000974	0.00150	0.00100	0	97.4	70	130			

Sample ID **CCV4-170329**	Batch ID: **R91184**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_170329C**	Analysis Date: **3/29/2017 12:40:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.192	0.00250	0.200	0	95.9	90	110			
Arsenic	0.197	0.00500	0.200	0	98.5	90	110			
Barium	0.197	0.0100	0.200	0	98.5	90	110			
Cadmium	0.190	0.00100	0.200	0	94.8	90	110			
Calcium	4.93	0.300	5.00	0	98.7	90	110			
Chromium	0.197	0.00500	0.200	0	98.3	90	110			
Cobalt	0.202	0.00500	0.200	0	101	90	110			
Lead	0.196	0.00100	0.200	0	98.0	90	110			
Lithium	0.182	0.0100	0.200	0	91.0	90	110			
Molybdenum	0.181	0.00500	0.200	0	90.5	90	110			
Selenium	0.209	0.00500	0.200	0	105	90	110			
Thallium	0.207	0.00150	0.200	0	103	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_170329C

Sample ID **LCVL4-170329** Batch ID: **R91184** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS5_170329C** Analysis Date: **3/29/2017 12:44:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00193	0.00250	0.00200	0	96.4	70	130			
Arsenic	0.00467	0.00500	0.00500	0	93.4	70	130			
Barium	0.00480	0.0100	0.00500	0	96.0	70	130			
Cadmium	0.000925	0.00100	0.00100	0	92.5	70	130			
Calcium	0.0967	0.300	0.100	0	96.7	70	130			
Chromium	0.00432	0.00500	0.00500	0	86.4	70	130			
Cobalt	0.00489	0.00500	0.00500	0	97.7	70	130			
Lead	0.000997	0.00100	0.00100	0	99.7	70	130			
Lithium	0.0103	0.0100	0.0100	0	103	70	130			
Molybdenum	0.00444	0.00500	0.00500	0	88.9	70	130			
Selenium	0.00561	0.00500	0.00500	0	112	70	130			
Thallium	0.000968	0.00150	0.00100	0	96.8	70	130			

Sample ID **CCV5-170329** Batch ID: **R91184** TestNo: **SW6020A** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS5_170329C** Analysis Date: **3/29/2017 12:54:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.192	0.00250	0.200	0	96.2	90	110			
Arsenic	0.197	0.00500	0.200	0	98.7	90	110			
Barium	0.199	0.0100	0.200	0	99.3	90	110			
Cadmium	0.192	0.00100	0.200	0	96.0	90	110			
Chromium	0.198	0.00500	0.200	0	99.1	90	110			
Cobalt	0.203	0.00500	0.200	0	102	90	110			
Lead	0.198	0.00100	0.200	0	98.8	90	110			
Lithium	0.185	0.0100	0.200	0	92.5	90	110			
Molybdenum	0.183	0.00500	0.200	0	91.3	90	110			
Selenium	0.208	0.00500	0.200	0	104	90	110			
Thallium	0.206	0.00150	0.200	0	103	90	110			

Sample ID **LCVL5-170329** Batch ID: **R91184** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS5_170329C** Analysis Date: **3/29/2017 1:10:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00190	0.00250	0.00200	0	95.0	70	130			
Arsenic	0.00464	0.00500	0.00500	0	92.8	70	130			
Barium	0.00471	0.0100	0.00500	0	94.2	70	130			
Cadmium	0.000934	0.00100	0.00100	0	93.4	70	130			
Chromium	0.00455	0.00500	0.00500	0	91.0	70	130			
Cobalt	0.00493	0.00500	0.00500	0	98.7	70	130			
Lead	0.000956	0.00100	0.00100	0	95.6	70	130			
Lithium	0.00998	0.0100	0.0100	0	99.8	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank
J	Analyte detected between MDL and RL
ND	Not Detected at the Method Detection Limit
RL	Reporting Limit
J	Analyte detected between SDL and RL
DF	Dilution Factor
MDL	Method Detection Limit
R	RPD outside accepted control limits
S	Spike Recovery outside control limits
N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1703205
Project: Luminant - A-1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_170329C

Sample ID **LCVL5-170329** Batch ID: **R91184** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS5_170329C** Analysis Date: **3/29/2017 1:10:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Molybdenum	0.00447	0.00500	0.00500	0	89.4	70	130			
Selenium	0.00510	0.00500	0.00500	0	102	70	130			
Thallium	0.000931	0.00150	0.00100	0	93.1	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1703205
Project: Luminant - A-1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_170331B

The QC data in batch 79714 applies to the following samples: 1703205-01A, 1703205-02A, 1703205-03A

Sample ID	**MB-79714**	Batch ID:	**79714**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**ICP-MS5_170331B**	Analysis Date:	**3/31/2017 11:19:00 AM**	Prep Date:	**3/27/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	<0.000300	0.00100								
Boron	<0.0100	0.0300								

Sample ID	**LCS-79714**	Batch ID:	**79714**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**ICP-MS5_170331B**	Analysis Date:	**3/31/2017 11:21:00 AM**	Prep Date:	**3/27/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.197	0.00100	0.200	0	98.4	80	120			
Boron	0.196	0.0300	0.200	0	98.1	80	120			

Sample ID	**LCSD-79714**	Batch ID:	**79714**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**LCSD**	Run ID:	**ICP-MS5_170331B**	Analysis Date:	**3/31/2017 11:23:00 AM**	Prep Date:	**3/27/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.196	0.00100	0.200	0	98.0	80	120	0.379	15	
Boron	0.191	0.0300	0.200	0	95.3	80	120	2.97	15	

Sample ID	**1703205-01A SD**	Batch ID:	**79714**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**SD**	Run ID:	**ICP-MS5_170331B**	Analysis Date:	**3/31/2017 11:28:00 AM**	Prep Date:	**3/27/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	<0.00150	0.00500	0	0				0	10	
Boron	0.483	0.150	0	0.440				9.44	10	

Sample ID	**1703205-01A PDS**	Batch ID:	**79714**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**PDS**	Run ID:	**ICP-MS5_170331B**	Analysis Date:	**3/31/2017 11:39:00 AM**	Prep Date:	**3/27/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.189	0.00100	0.200	0	94.6	80	120			
Boron	0.639	0.0300	0.200	0.440	99.4	80	120			

Sample ID	**1703205-01A MS**	Batch ID:	**79714**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**MS**	Run ID:	**ICP-MS5_170331B**	Analysis Date:	**3/31/2017 11:41:00 AM**	Prep Date:	**3/27/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.191	0.00100	0.200	0	95.7	80	120			
Boron	0.657	0.0300	0.200	0.440	109	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1703205
Project: Luminant - A-1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_170331B

Sample ID **1703205-01A MSD**	Batch ID: **79714**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS5_170331B**	Analysis Date: **3/31/2017 11:42:00 AM**	Prep Date: **3/27/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.193	0.00100	0.200	0	96.7	80	120	0.987	15	
Boron	0.665	0.0300	0.200	0.440	113	80	120	1.18	15	

Sample ID **1703205-01A SD**	Batch ID: **79714**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS5_170331B**	Analysis Date: **3/31/2017 11:48:00 AM**	Prep Date: **3/27/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	210	75.0	0	215				2.31	10	

Sample ID **1703205-01A PDS**	Batch ID: **79714**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS5_170331B**	Analysis Date: **3/31/2017 11:53:00 AM**	Prep Date: **3/27/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	445	15.0	250	215	92.0	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

Sample ID **ICV-170331**	Batch ID: **R91201**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS5_170331B**	Analysis Date: **3/31/2017 10:01:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.0958	0.00100	0.100	0	95.8	90	110			
Boron	0.0975	0.0300	0.100	0	97.5	90	110			
Calcium	2.38	0.300	2.50	0	95.0	90	110			

Sample ID **LCVL-170331**	Batch ID: **R91201**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_170331B**	Analysis Date: **3/31/2017 10:05:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.000889	0.00100	0.00100	0	88.9	70	130			
Boron	0.0217	0.0300	0.0200	0	108	70	130			
Calcium	0.102	0.300	0.100	0	102	70	130			

Sample ID **CCV1-170331**	Batch ID: **R91201**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_170331B**	Analysis Date: **3/31/2017 10:59:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.200	0.00100	0.200	0	100	90	110			
Boron	0.198	0.0300	0.200	0	99.0	90	110			
Calcium	4.93	0.300	5.00	0	98.7	90	110			

Sample ID **LCVL1-170331**	Batch ID: **R91201**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_170331B**	Analysis Date: **3/31/2017 11:12:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.00108	0.00100	0.00100	0	108	70	130			
Boron	0.0227	0.0300	0.0200	0	114	70	130			
Calcium	0.0979	0.300	0.100	0	97.9	70	130			

Sample ID **CCV2-170331**	Batch ID: **R91201**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_170331B**	Analysis Date: **3/31/2017 12:00:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.209	0.00100	0.200	0	104	90	110			
Boron	0.204	0.0300	0.200	0	102	90	110			
Calcium	4.89	0.300	5.00	0	97.8	90	110			

Sample ID **LCVL2-170331**	Batch ID: **R91201**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_170331B**	Analysis Date: **3/31/2017 12:06:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.00104	0.00100	0.00100	0	104	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1703205
Project: Luminant - A-1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_170331B

Sample ID **LCVL2-170331** Batch ID: **R91201** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS5_170331B** Analysis Date: **3/31/2017 12:06:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0235	0.0300	0.0200	0	117	70	130			
Calcium	0.106	0.300	0.100	0	106	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1703205
Project: Luminant - A-1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_170327A

The QC data in batch 79708 applies to the following samples: 1703205-01D, 1703205-02D, 1703205-03D

Sample ID	**MB-79708**	Batch ID:	**79708**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**IC2_170327A**	Analysis Date:	**3/27/2017 10:37:51 AM**	Prep Date:	**3/27/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00								
Fluoride	<0.100	0.400								
Sulfate	<1.00	3.00								

Sample ID	**LCS-79708**	Batch ID:	**79708**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**IC2_170327A**	Analysis Date:	**3/27/2017 10:52:27 AM**	Prep Date:	**3/27/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.80	1.00	10.00	0	98.0	90	110			
Fluoride	3.81	0.400	4.000	0	95.4	90	110			
Sulfate	29.5	3.00	30.00	0	98.4	90	110			

Sample ID	**LCSD-79708**	Batch ID:	**79708**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**LCSD**	Run ID:	**IC2_170327A**	Analysis Date:	**3/27/2017 11:07:04 AM**	Prep Date:	**3/27/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.81	1.00	10.00	0	98.1	90	110	0.068	20	
Fluoride	3.83	0.400	4.000	0	95.8	90	110	0.495	20	
Sulfate	29.5	3.00	30.00	0	98.4	90	110	0.079	20	

Sample ID	**1703205-01DMS**	Batch ID:	**79708**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**MS**	Run ID:	**IC2_170327A**	Analysis Date:	**3/27/2017 2:46:41 PM**	Prep Date:	**3/27/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	314	10.0	200.0	112.1	101	90	110			
Fluoride	198	4.00	200.0	0	99.1	90	110			
Sulfate	832	30.0	200.0	610.0	111	90	110			S

Sample ID	**1703205-01DMSD**	Batch ID:	**79708**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**MSD**	Run ID:	**IC2_170327A**	Analysis Date:	**3/27/2017 3:01:17 PM**	Prep Date:	**3/27/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	314	10.0	200.0	112.1	101	90	110	0.017	20	
Fluoride	199	4.00	200.0	0	99.5	90	110	0.378	20	
Sulfate	835	30.0	200.0	610.0	112	90	110	0.314	20	S

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1703205
Project: Luminant - A-1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_170327A

Sample ID **ICV-170327**	Batch ID: **R91137**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC2_170327A**	Analysis Date: **3/27/2017 8:52:53 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	25.5	1.00	25.00	0	102	90	110			
Fluoride	9.80	0.400	10.00	0	98.0	90	110			
Sulfate	76.9	3.00	75.00	0	103	90	110			

Sample ID **CCV1-170327**	Batch ID: **R91137**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_170327A**	Analysis Date: **3/27/2017 3:15:54 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.86	1.00	10.00	0	98.6	90	110			
Fluoride	3.96	0.400	4.000	0	99.1	90	110			
Sulfate	29.9	3.00	30.00	0	99.6	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1703205
Project: Luminant - A-1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: **TITRATOR_170327A**

The QC data in batch 79716 applies to the following samples: 1703205-01D, 1703205-02D, 1703205-03D

Sample ID	**1703205-01D-DUP**	Batch ID:	**79716**	TestNo:	**M4500-H+ B**	Units:	**pH Units@20.6℃**
SampType:	**DUP**	Run ID:	**TITRATOR_170327A**	Analysis Date:	**3/27/2017 12:24:00 PM**	Prep Date:	**3/27/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	7.33	0	0	7.420				1.22	5	

Sample ID	**1703206-01B-DUP**	Batch ID:	**79716**	TestNo:	**M4500-H+ B**	Units:	**pH Units@21.1℃**
SampType:	**DUP**	Run ID:	**TITRATOR_170327A**	Analysis Date:	**3/27/2017 12:33:00 PM**	Prep Date:	**3/27/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	7.73	0	0	7.740				0.129	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1703205
Project: Luminant - A-1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_170327A

Sample ID	**ICV-170327**	Batch ID:	**R91113**	TestNo:	**M4500-H+ B**	Units:	**pH Units@20.5℃**
SampType:	**ICV**	Run ID:	**TITRATOR_170327A**	Analysis Date:	**3/27/2017 11:13:00 AM**	Prep Date:	**3/27/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	9.93	0	10.00	0	99.3	99	101			

Sample ID	**CCV1-170327**	Batch ID:	**R91113**	TestNo:	**M4500-H+ B**	Units:	**pH Units@21.5℃**
SampType:	**CCV**	Run ID:	**TITRATOR_170327A**	Analysis Date:	**3/27/2017 12:45:00 PM**	Prep Date:	**3/27/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	6.94	0	7.000	0	99.1	97.1	102.9			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1703205
Project: Luminant - A-1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: WC_170329D

The QC data in batch 79764 applies to the following samples: 1703205-01D, 1703205-02D, 1703205-03D

Sample ID **MB-79764**	Batch ID: **79764**	TestNo: **M2540C**	Units: **mg/L**
SampType: **MBLK**	Run ID: **WC_170329D**	Analysis Date: **3/30/2017 8:46:00 AM**	Prep Date: **3/29/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	<10.0	10.0								

Sample ID **LCS-79764**	Batch ID: **79764**	TestNo: **M2540C**	Units: **mg/L**
SampType: **LCS**	Run ID: **WC_170329D**	Analysis Date: **3/30/2017 8:46:00 AM**	Prep Date: **3/29/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	753	10.0	745.6	0	101	90	113			

Sample ID **1703195-07D-DUP**	Batch ID: **79764**	TestNo: **M2540C**	Units: **mg/L**
SampType: **DUP**	Run ID: **WC_170329D**	Analysis Date: **3/30/2017 8:46:00 AM**	Prep Date: **3/29/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	12400	200	0	12500				0.642	5	

Sample ID **1703206-03C-DUP**	Batch ID: **79764**	TestNo: **M2540C**	Units: **mg/L**
SampType: **DUP**	Run ID: **WC_170329D**	Analysis Date: **3/30/2017 8:46:00 AM**	Prep Date: **3/29/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	359	10.0	0	368.0				2.48	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

Case Narrative

Lab No: 20170261

This report contains the analytical results for the 3 sample(s) received under chain of custody by ESC Lab Sciences on 3/29/2017 11:08:22 AM. These samples are associated with your 1703205 project.

The analytical results included in this report meet all applicable quality control procedure requirements except as noted below:

The test results in this report meet all NELAC requirements unless noted below:

This report shall not be reproduced, except in full, without the written approval of ESC Lab Sciences.

All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client.

Results have been reviewed by the Director of Radiochemistry or their designees and is approved for release.

DL for Radiochemistry = MDA DL for Metals and Wet Chemistry = MDL DL for Drinking Water = SDWA

Observations / Nonconformances

L898946

Analytical Report

	Method	Result	DL	Units	Qual	Prep Date	Analysis Date	Analyst
Lab ID : **20170261-01**								
Client ID : **BMW-26**								
Date Sampled : **3/24/2017 9:30:00 AM**								
Matrix : **NPW**								
		Radiochemical Analyses						
Combined Radium		0.518 +/- 0.664	0.808	pCi/l				
Radium-226	SM 7500 Ra B M*	0.335 +/- 0.173	0.181	pCi/l		04/18/17	04/21/17	RE
Radium-228	EPA 904*	0.183 +/- 0.491	0.627	pCi/l		04/12/17	04/20/17	JR
Lab ID : **20170261-02**								
Client ID : **BMW-27**								
Date Sampled : **3/24/2017 10:20:00 AM**								
Matrix : **NPW**								
		Radiochemical Analyses						
Combined Radium		1.00 +/- 0.617	0.873	pCi/l				
Radium-226	SM 7500 Ra B M*	0.414 +/- 0.169	0.148	pCi/l		04/18/17	04/21/17	RE
Radium-228	EPA 904*	0.588 +/- 0.448	0.725	pCi/l		04/12/17	04/20/17	JR
Lab ID : **20170261-03**								
Client ID : **BMW-28**								
Date Sampled : **3/24/2017 11:35:00 AM**								
Matrix : **NPW**								
		Radiochemical Analyses						
Combined Radium		2.21 +/- 0.723	0.619	pCi/l				
Radium-226	SM 7500 Ra B M*	1.04 +/- 0.257	0.096	pCi/l		04/18/17	04/21/17	RE
Radium-228	EPA 904*	1.17 +/- 0.466	0.523	pCi/l		04/12/17	04/20/17	JR

QC Report

Parameter	Blank	LCS %REC	LCSD %REC	LCSD RPD	DUP RPD	RER, NAD or DER	MS %REC	MSD %REC	MSD RPD	Batch ID
Radium-226	0.122	107.0			NC	1.020	95.7	92.8	3.0	R1213
Radium-228	0.525	88.7			NC	1.260	104.0	86.7	15.3	R3946

Lab Approval:

Ron Eidson
Director of Radiochemistry

DHL Analytical, Inc.
2300 Double Creek Drive
Round Rock, TX 78664
TEL: *(512) 388-8222* FAX: *(512) 388-8229*

CHAIN-OF-CUSTODY RECORD

Work Order: 1703205

Subcontractor:

ESC Laboratory
311 North Aspen
Broken Arrow, Oklahoma 74012

TEL: (918) 251-2515
FAX:
Acct #: DHLRRTX

27-Mar-17

Sample Id	Matrix	DHL#	Date Collected	Bottle Type	Requested Tests					
					E904.0	SM7500Ra-B M				
BMW-26	Aqueous	-01B	03/24/17 09:30 AM	1LHDPEHNO3	1					
BMW-26	Aqueous	-01C	03/24/17 09:30 AM	500HDPEHNO3		1				
BMW-27	Aqueous	-02B	03/24/17 10:20 AM	1LHDPEHNO3	1					
BMW-27	Aqueous	-02C	03/24/17 10:20 AM	500HDPEHNO3		1				
BMW-28	Aqueous	-03B	03/24/17 11:35 AM	1LHDPEHNO3	1					
BMW-28	Aqueous	-03C	03/24/17 11:35 AM	500HDPEHNO3		1				

General Comments:

Please analyze these samples with Normal Turnaround Time.
Report RA-226, Ra-228 & Combined per Specs.
Quality Control Package Needed: Standard - NELAC Rad Test compliant
Email to cac@dhlanalytical.com & dupont@dhlanalytical.com

		Date/Time			Date/Time
Relinquished by:	[signature]	3/27/17 1735	**Received by:**	[signature]	3/27/17 1735
Relinquished by:			**Received by:**	[signature]	3/29/17 1108

2170261

SAMPLE LOGIN

Date Received: *3/29/2017 11:08:2* **Lab Number:** 20170261 **Due:** 4/26/2017

Sample Number	Client Sample ID	Matrix	Date Sampled	Container Type	Container Size	Preservation	Preserved Upon Receipt	Custody Seal	Seal Intact
20170261-01 B	BMW-26	NPW	03/24/17	Plastic	1 L	HNO3, pH < 2	☑	Yes	Yes
20170261-01 A	BMW-26	NPW	03/24/17	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20170261-02 B	BMW-27	NPW	03/24/17	Plastic	1 L	HNO3, pH < 2	☑	Yes	Yes
20170261-02 A	BMW-27	NPW	03/24/17	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20170261-03 B	BMW-28	NPW	03/24/17	Plastic	1 L	HNO3, pH < 2	☑	Yes	Yes
20170261-03 A	BMW-28	NPW	03/24/17	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						

CONTAINER INSPECTION

 # Coolers 03/29/17 1 **Custody Seals Broken** ☒ **Temperature:** 4.6 C **Ice** **Radiation Survey:** <300 cpm

SAMPLE INSPECTION

Sample Seal Broken Ø **Chain of Custody Record** ☑ **Labels in Tact** ☑ **Radiation Survey Complete** N/A

Anomalies

Inspected By: _____ **DATE** 3/29/17

QA or Designee Review: Raymond Thomas **DATE** 03/29/17

Sample Custodian Review: _____ **DATE** 3/29/17

Project Notes:

May 26, 2017

Will Vienne
Pastor, Behling & Wheeler
2201 Double Creek Dr #4004
Round Rock, Texas 78664
TEL: (512) 671-3434
FAX (512) 671-3446

Order No.: 1704272

RE: Luminant - A1 Landfill

Dear Will Vienne:

DHL Analytical, Inc. received 3 sample(s) on 4/26/2017 for the analyses presented in the following report.

There were no problems with the analyses and all data met requirements of NELAC except where noted in the Case Narrative. All non-NELAC methods will be identified accordingly in the case narrative and all estimated uncertainties of test results are within method or EPA specifications.

If you have any questions regarding these tests results, please feel free to call. Thank you for using DHL Analytical.

Sincerely,

John DuPont
General Manager

This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211-17-19

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Subcontract Report 1704272 ..... **36**

DHL ANALYTICAL
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Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
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№ 75003

CHAIN-OF-CUSTODY

CLIENT: PBW
ADDRESS: 2201 DOUBLE CREEK DR ROUNDROCK, TX 78664
PHONE: 512-671-3434 FAX/E-MAIL: 512-671-3446
DATA REPORTED TO: WILL VIENNE
ADDITIONAL REPORT COPIES TO:

DATE: 4-24-17 PAGE 1 OF 1
PO #: 5164-F DHL WORK ORDER #: 1704272
PROJECT LOCATION OR NAME: LUMINANT- AI-LANDFILL
CLENT PROJECT #: 5164-F COLLECTOR: J. BRAYTON

Authorize 5% surcharge for TRRP Report? ❑ Yes ❑ No

S=SOIL P=PAINT
W=WATER SL=SLUDGE
A=AIR O=OTHER
L=LIQUID SO=SOLID
SE=SEDIMENT

PRESERVATION: HCl | HNO_3 | H_2SO_4 ❑ NaOH ❑ | ICE | UNPRESERVED

ANALYSES: BTEX ❑ MTBE ❑ [METHOD 8021] | TPH 1005 ❑ TPH 1006 ❑ HOLD 1006 ❑ | GRO [METHOD 8015] ❑ DRO [METHOD 8105] ❑ | VOC 8260 ❑ VOC 624 ❑ VOC 8260/5035 ❑ | SVOC 8270 ❑ PAH 8270 ❑ HOLD PAH ❑ SVOC 625 ❑ | 8270 PEST ❑ 625 PEST/PCB ❑ 608 PCB ❑ 8270 PCB ❑ | 8270 O-P PEST ❑ 8082 PCB ❑ T PHOS, AMMONIA ❑ | 8321 HERB ❑ METALS 200.8 ❑ DISS. METALS ❑ | METALS 6020 ❑ METALS 200.8 ❑ | RCRA ❑ TX11 ❑ | PH ❑ HEX CHROM ❑ ALKALINITY ❑ COD ❑ | CHLORIDE ❑ ANIONS ❑ | TCLP-SVOC ❑ VOC ❑ PEST ❑ HERB ❑ | TCLP-METALS ❑ RCRA 8 ❑ TX-11 ❑ Pb ❑ | RCI ❑ FLASHPOINT ❑ DGAS ❑ | TDS ❑ TSS ❑ % MOISTURE ❑ CYANIDE ❑ | CCR

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	HCl	HNO_3	H_2SO_4 ❑ NaOH ❑	ICE	UNPRESERVED	CCR	FIELD NOTES
BMW-28	01	4-24-17	1415	W	P	4						X	
BMW-26	02	"	1520	W	P	4						X	
BMW-27	03	"	1630	W	P	4						X	

RELINQUISHED BY: (Signature) DATE/TIME 4-25-17 1130 RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature) DATE/TIME RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature) DATE/TIME RECEIVED BY: (Signature)

❑ DHL DISPOSAL @ $5.00 each ❑ Return

TURN AROUND TIME
RUSH ❑ CALL FIRST
1 DAY ❑ CALL FIRST
2 DAY ❑
NORMAL ☒
OTHER ❑

LABORATORY USE ONLY:
RECEIVING TEMP: 1.9 THERM #: 78
CUSTODY SEALS: ❑ BROKEN ❑ INTACT ☒ NOT USED
CARRIER: ❑ LONE STAR ❑ FEDEX ❑ UPS ❑ OTHER
❑ COURIER DELIVERY
☒ HAND DELIVERED

John Dupont

From: Sara Taube [Sara.Taube@pbwllc.com]
Sent: Wednesday, July 22, 2015 12:05 PM
To: John Dupont
Subject: CCR Appendix III and IV
Follow Up Flag: Follow up
Flag Status: Completed

Hi John,

Here are the Appendix III and Appendix IV constituents that we will need to have analyzed under the CCR Rule.

Appendix III
Boron
Calcium
Chloride
Fluoride
pH
sulfate
TDS

Appendix IV
Antimony
Arsenic
Barium
Beryllium
Cadmium
Chromium
Cobalt
Fluoride
Lead
Lithium
Mercury
Molybdenum
Selenium
Thallium
Radium 226 and 228

We are looking to have approximately 74 wells sampled 8 times over the course of the next two years. Please let me know if there is any more information you might need.

Cheers,

Sara

10/26/2015

DHL Analytical, Inc.

Sample Receipt Checklist

Client Name Pastor, Behling & Wheeler

Date Received: 4/26/2017

Work Order Number 1704272

Received by JT

Checklist completed by: _____ 4/26/2017
Signature | Date

Reviewed by _____ 4/26/2017
Initials | Date

Carrier name Hand Delivered

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	1.9 °C
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH<2 acceptable upon receipt?	Yes ☑	No ☐	NA ☐ LOT # 8086
	Adjusted? NO		Checked by _____
Water - ph>9 (S) or ph>12 (CN) acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted? _____		Checked by _____

Any No response must be detailed in the comments section below.

Client contacted _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments: _____

Corrective Action _____

DHL Analytical, Inc. **Date:** *26-May-17*

CLIENT: Pastor, Behling & Wheeler
Project: Luminant - A1 Landfill
Lab Order: 1704272

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Method SW6020A - Metals Analysis
Method SW7470A - Mercury Analysis
Method E300 - Anions Analysis
Method M4500-H+ B - pH of a Water Analysis
Method M2540C - TDS Analysis
Sub-contract - Radium-228 and Radium-226 analyses by methods E904/9320 and SM 7500 Ra B M. Analyzed at ESC Lab Sciences.

LOG IN

The samples were received and log-in performed on 4/25/17. A total of 3 samples were received. The samples arrived in good condition and were properly packaged.

METALS ANALYSIS

For Metals analysis performed on 4/27/17 the matrix spike and matrix spike duplicate recoveries were above control limits for Calcium and/or Thallium. These are flagged accordingly in the QC summary report. The sample selected for the matrix spike and matrix spike duplicate was not from this work order. The LCS was within control limits for these analytes. No further corrective actions were taken.

For Metals analysis performed on 4/27/17 the PDS recovery was above control limits for Calcium. This is flagged accordingly. The serial dilution was within control limits for this analyte. No further corrective actions were taken.

For Metals analysis performed on 4/27/17 and 5/10/17 the RPD for the serial dilution was above control limits for Selenium or Boron. These are flagged accordingly. The PDS was within control limits for these analytes. No further corrective actions were taken.

DHL Analytical, Inc.

Date: *26-May-17*

CLIENT: Pastor, Behling & Wheeler
Project: Luminant - A1 Landfill
Lab Order: 1704272

Work Order Sample Summary

Lab Smp ID	Client Sample ID	Tag Number	Date Collected	Date Recved
1704272-01	BMW-28		04/24/17 02:15 PM	4/26/2017
1704272-02	BMW-26		04/24/17 03:20 PM	4/26/2017
1704272-03	BMW-27		04/24/17 04:30 PM	4/26/2017

Lab Order: 1704272
Client: Pastor, Behling & Wheeler
Project: Luminant - A1 Landfill

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1704272-01A	BMW-28	04/24/17 02:15 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/27/17 08:32 AM	80206
	BMW-28	04/24/17 02:15 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/27/17 08:32 AM	80206
	BMW-28	04/24/17 02:15 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/27/17 08:32 AM	80206
	BMW-28	04/24/17 02:15 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/27/17 08:32 AM	80206
	BMW-28	04/24/17 02:15 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/27/17 08:32 AM	80206
	BMW-28	04/24/17 02:15 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	04/27/17 08:34 AM	80208
1704272-01D	BMW-28	04/24/17 02:15 PM	Aqueous	E300	Anion Preparation	04/27/17 08:55 AM	80209
	BMW-28	04/24/17 02:15 PM	Aqueous	E300	Anion Preparation	04/27/17 08:55 AM	80209
	BMW-28	04/24/17 02:15 PM	Aqueous	M4500-H+ B	pH Preparation	04/27/17 10:10 AM	80215
	BMW-28	04/24/17 02:15 PM	Aqueous	M2540C	TDS Preparation	05/01/17 03:45 PM	80266
1704272-02A	BMW-26	04/24/17 03:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/27/17 08:32 AM	80206
	BMW-26	04/24/17 03:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/27/17 08:32 AM	80206
	BMW-26	04/24/17 03:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/27/17 08:32 AM	80206
	BMW-26	04/24/17 03:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/27/17 08:32 AM	80206
	BMW-26	04/24/17 03:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/27/17 08:32 AM	80206
	BMW-26	04/24/17 03:20 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	04/27/17 08:34 AM	80208
1704272-02D	BMW-26	04/24/17 03:20 PM	Aqueous	E300	Anion Preparation	04/27/17 08:55 AM	80209
	BMW-26	04/24/17 03:20 PM	Aqueous	E300	Anion Preparation	04/27/17 08:55 AM	80209
	BMW-26	04/24/17 03:20 PM	Aqueous	M4500-H+ B	pH Preparation	04/27/17 10:10 AM	80215
	BMW-26	04/24/17 03:20 PM	Aqueous	M2540C	TDS Preparation	05/01/17 03:45 PM	80266
1704272-03A	BMW-27	04/24/17 04:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/27/17 08:32 AM	80206
	BMW-27	04/24/17 04:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/27/17 08:32 AM	80206
	BMW-27	04/24/17 04:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/27/17 08:32 AM	80206
	BMW-27	04/24/17 04:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/27/17 08:32 AM	80206
	BMW-27	04/24/17 04:30 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	04/27/17 08:34 AM	80208
1704272-03D	BMW-27	04/24/17 04:30 PM	Aqueous	E300	Anion Preparation	04/27/17 08:55 AM	80209
	BMW-27	04/24/17 04:30 PM	Aqueous	E300	Anion Preparation	04/27/17 08:55 AM	80209
	BMW-27	04/24/17 04:30 PM	Aqueous	M4500-H+ B	pH Preparation	04/27/17 10:10 AM	80215

Lab Order: 1704272
Client: Pastor, Behling & Wheeler
Project: Luminant - A1 Landfill

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1704272-03D	BMW-27	04/24/17 04:30 PM	Aqueous	M2540C	TDS Preparation	05/01/17 03:45 PM	80266

Lab Order: 1704272
Client: Pastor, Behling & Wheeler
Project: Luminant - A1 Landfill

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1704272-01A	BMW-28	Aqueous	SW7470A	Mercury Total: Aqueous	80208	1	04/28/17 12:56 PM	CETAC2_HG_170428C
	BMW-28	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	80206	50	04/28/17 01:27 PM	ICP-MS4_170428D
	BMW-28	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	80206	1	04/28/17 01:33 PM	ICP-MS4_170428D
	BMW-28	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	80206	1	04/27/17 04:58 PM	ICP-MS5_170427A
	BMW-28	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	80206	1	05/09/17 12:04 PM	ICP-MS5_170509A
	BMW-28	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	80206	1	05/09/17 03:28 PM	ICP-MS5_170509A
1704272-01D	BMW-28	Aqueous	E300	Anions by IC method - Water	80209	1	04/27/17 11:17 AM	IC3_170427A
	BMW-28	Aqueous	E300	Anions by IC method - Water	80209	10	04/27/17 12:27 PM	IC3_170427A
	BMW-28	Aqueous	M4500-H+ B	pH	80215	1	04/27/17 11:17 AM	TITRATOR_170427A
	BMW-28	Aqueous	M2540C	Total Dissolved Solids	80266	1	05/02/17 08:49 AM	WC_170501A
1704272-02A	BMW-26	Aqueous	SW7470A	Mercury Total: Aqueous	80208	1	04/28/17 12:58 PM	CETAC2_HG_170428C
	BMW-26	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	80206	5	05/10/17 12:07 PM	ICP-MS5_170510A
	BMW-26	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	80206	50	04/28/17 01:29 PM	ICP-MS4_170428D
	BMW-26	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	80206	1	04/28/17 01:35 PM	ICP-MS4_170428D
	BMW-26	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	80206	1	05/09/17 12:06 PM	ICP-MS5_170509A
	BMW-26	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	80206	1	04/27/17 05:00 PM	ICP-MS5_170427A
1704272-02D	BMW-26	Aqueous	E300	Anions by IC method - Water	80209	1	04/27/17 11:38 AM	IC3_170427A
	BMW-26	Aqueous	E300	Anions by IC method - Water	80209	10	04/27/17 01:12 PM	IC3_170427A
	BMW-26	Aqueous	M4500-H+ B	pH	80215	1	04/27/17 11:19 AM	TITRATOR_170427A
	BMW-26	Aqueous	M2540C	Total Dissolved Solids	80266	1	05/02/17 08:49 AM	WC_170501A
1704272-03A	BMW-27	Aqueous	SW7470A	Mercury Total: Aqueous	80208	1	04/28/17 01:01 PM	CETAC2_HG_170428C
	BMW-27	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	80206	10	04/28/17 01:31 PM	ICP-MS4_170428D
	BMW-27	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	80206	1	04/28/17 01:37 PM	ICP-MS4_170428D
	BMW-27	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	80206	1	04/27/17 05:02 PM	ICP-MS5_170427A
	BMW-27	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	80206	1	05/09/17 12:08 PM	ICP-MS5_170509A
1704272-03D	BMW-27	Aqueous	E300	Anions by IC method - Water	80209	1	04/27/17 11:58 AM	IC3_170427A

Lab Order: 1704272
Client: Pastor, Behling & Wheeler
Project: Luminant - A1 Landfill

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1704272-03D	BMW-27	Aqueous	E300	Anions by IC method - Water	80209	10	04/27/17 01:32 PM	IC3_170427A
	BMW-27	Aqueous	M4500-H+ B	pH	80215	1	04/27/17 11:20 AM	TITRATOR_170427A
	BMW-27	Aqueous	M2540C	Total Dissolved Solids	80266	1	05/02/17 08:49 AM	WC_170501A

DHL Analytical, Inc.

Date: *26-May-17*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	BMW-28
Project:	Luminant - A1 Landfill	**Lab ID:**	1704272-01
Project No:	5164-F	**Collection Date:**	04/24/17 02:15 PM
Lab Order:	1704272	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **CVD**
Antimony	0.00113	0.000800	0.00250	J	mg/L	1	04/27/17 04:58 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	04/27/17 04:58 PM
Barium	0.0470	0.00300	0.0100		mg/L	1	04/27/17 04:58 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	04/28/17 01:33 PM
Boron	1.16	0.0100	0.0300		mg/L	1	05/09/17 12:04 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	04/27/17 04:58 PM
Calcium	266	5.00	15.0		mg/L	50	04/28/17 01:27 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	04/27/17 04:58 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	04/27/17 04:58 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	04/27/17 04:58 PM
Lithium	0.109	0.00500	0.0100		mg/L	1	04/28/17 01:33 PM
Molybdenum	0.00766	0.00200	0.00500		mg/L	1	04/27/17 04:58 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	04/27/17 04:58 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	04/27/17 04:58 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	04/28/17 12:56 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	121	3.00	10.0		mg/L	10	04/27/17 12:27 PM
Fluoride	0.190	0.100	0.400	J	mg/L	1	04/27/17 11:17 AM
Sulfate	1330	10.0	30.0		mg/L	10	04/27/17 12:27 PM
PH		**M4500-H+ B**					Analyst: **BTJ**
pH	7.44	0	0		pH Units@19.8℃	1	04/27/17 11:17 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	2980	50.0	50.0		mg/L	1	05/02/17 08:49 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *26-May-17*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	BMW-26
Project:	Luminant - A1 Landfill	**Lab ID:**	1704272-02
Project No:	5164-F	**Collection Date:**	04/24/17 03:20 PM
Lab Order:	1704272	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **CVD**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	04/27/17 05:00 PM
Arsenic	0.00732	0.00200	0.00500		mg/L	1	04/27/17 05:00 PM
Barium	0.0322	0.00300	0.0100		mg/L	1	04/27/17 05:00 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	04/28/17 01:35 PM
Boron	0.495	0.0100	0.0300		mg/L	1	05/09/17 12:06 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	04/27/17 05:00 PM
Calcium	218	5.00	15.0		mg/L	50	04/28/17 01:29 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	04/27/17 05:00 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	04/27/17 05:00 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	04/27/17 05:00 PM
Lithium	0.0990	0.00500	0.0100		mg/L	1	04/28/17 01:35 PM
Molybdenum	0.00303	0.00200	0.00500	J	mg/L	1	04/27/17 05:00 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	04/27/17 05:00 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	04/27/17 05:00 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	04/28/17 12:58 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	111	3.00	10.0		mg/L	10	04/27/17 01:12 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	04/27/17 11:38 AM
Sulfate	576	10.0	30.0		mg/L	10	04/27/17 01:12 PM
PH		**M4500-H+ B**					Analyst: **BTJ**
pH	7.31	0	0		pH Units@19.9℃	1	04/27/17 11:19 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	2210	50.0	50.0		mg/L	1	05/02/17 08:49 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *26-May-17*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	BMW-27
Project:	Luminant - A1 Landfill	**Lab ID:**	1704272-03
Project No:	5164-F	**Collection Date:**	04/24/17 04:30 PM
Lab Order:	1704272	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **CVD**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	04/27/17 05:02 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	04/27/17 05:02 PM
Barium	0.0269	0.00300	0.0100		mg/L	1	04/27/17 05:02 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	04/28/17 01:37 PM
Boron	0.340	0.0100	0.0300		mg/L	1	05/09/17 12:08 PM
Cadmium	0.000659	0.000300	0.00100	J	mg/L	1	04/27/17 05:02 PM
Calcium	132	1.00	3.00		mg/L	10	04/28/17 01:31 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	04/27/17 05:02 PM
Cobalt	0.210	0.00300	0.00500		mg/L	1	04/27/17 05:02 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	04/27/17 05:02 PM
Lithium	0.0497	0.00500	0.0100		mg/L	1	04/28/17 01:37 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	04/27/17 05:02 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	04/27/17 05:02 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	04/27/17 05:02 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	04/28/17 01:01 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	130	3.00	10.0		mg/L	10	04/27/17 01:32 PM
Fluoride	0.663	0.100	0.400		mg/L	1	04/27/17 11:58 AM
Sulfate	1150	10.0	30.0		mg/L	10	04/27/17 01:32 PM
PH		**M4500-H+ B**					Analyst: **BTJ**
pH	6.61	0	0		pH Units@20℃	1	04/27/17 11:20 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	2290	50.0	50.0		mg/L	1	05/02/17 08:49 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT: Pastor, Behling & Wheeler
Work Order: 1704272
Project: Luminant - A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_170428C

The QC data in batch 80208 applies to the following samples: 1704272-01A, 1704272-02A, 1704272-03A

Sample ID **MB-80208**	Batch ID: **80208**		TestNo: **SW7470A**				Units: **mg/L**				
SampType: **MBLK**	Run ID: **CETAC2_HG_170428**		Analysis Date: **4/28/2017 12:08:53 PM**				Prep Date: **4/27/2017**				
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Mercury	<0.0000800	0.000200									

Sample ID **LCS-80208**	Batch ID: **80208**		TestNo: **SW7470A**				Units: **mg/L**				
SampType: **LCS**	Run ID: **CETAC2_HG_170428**		Analysis Date: **4/28/2017 12:13:25 PM**				Prep Date: **4/27/2017**				
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Mercury	0.00195	0.000200	0.00200	0	97.5	85	115				

Sample ID **LCSD-80208**	Batch ID: **80208**		TestNo: **SW7470A**				Units: **mg/L**				
SampType: **LCSD**	Run ID: **CETAC2_HG_170428**		Analysis Date: **4/28/2017 12:15:41 PM**				Prep Date: **4/27/2017**				
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Mercury	0.00195	0.000200	0.00200	0	97.5	85	115	0	15		

Sample ID **1704268-06B SD**	Batch ID: **80208**		TestNo: **SW7470A**				Units: **mg/L**				
SampType: **SD**	Run ID: **CETAC2_HG_170428**		Analysis Date: **4/28/2017 12:47:28 PM**				Prep Date: **4/27/2017**				
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Mercury	<0.000400	0.00100	0	0				0	10		

Sample ID **1704268-06B PDS**	Batch ID: **80208**		TestNo: **SW7470A**				Units: **mg/L**				
SampType: **PDS**	Run ID: **CETAC2_HG_170428**		Analysis Date: **4/28/2017 12:49:44 PM**				Prep Date: **4/27/2017**				
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Mercury	0.00231	0.000200	0.00250	0	92.4	85	115				

Sample ID **1704268-06B MS**	Batch ID: **80208**		TestNo: **SW7470A**				Units: **mg/L**				
SampType: **MS**	Run ID: **CETAC2_HG_170428**		Analysis Date: **4/28/2017 12:52:00 PM**				Prep Date: **4/27/2017**				
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Mercury	0.00184	0.000200	0.00200	0	92.0	80	120				

Sample ID **1704268-06B MSD**	Batch ID: **80208**		TestNo: **SW7470A**				Units: **mg/L**				
SampType: **MSD**	Run ID: **CETAC2_HG_170428**		Analysis Date: **4/28/2017 12:54:16 PM**				Prep Date: **4/27/2017**				
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Mercury	0.00193	0.000200	0.00200	0	96.5	80	120	4.77	15		

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1704272
Project: Luminant - A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_170428C

Sample ID **ICV-170428**	Batch ID: **R91706**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **ICV**	Run ID: **CETAC2_HG_170428**	Analysis Date: **4/28/2017 10:53:53 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00375	0.000200	0.00400	0	93.8	90	110			

Sample ID **CCV2-170428**	Batch ID: **R91706**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_170428**	Analysis Date: **4/28/2017 12:04:19 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00198	0.000200	0.00200	0	99.0	90	110			

Sample ID **CCV3-170428**	Batch ID: **R91706**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_170428**	Analysis Date: **4/28/2017 12:40:38 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00200	0.000200	0.00200	0	100	90	110			

Sample ID **CCV4-170428**	Batch ID: **R91706**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_170428**	Analysis Date: **4/28/2017 1:03:23 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00196	0.000200	0.00200	0	98.0	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1704272
Project: Luminant - A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_170428D

The QC data in batch 80206 applies to the following samples: 1704272-01A, 1704272-02A, 1704272-03A

Sample ID	**MB-80206**	Batch ID:	**80206**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**ICP-MS4_170428D**	Analysis Date:	**4/28/2017 1:15:00 PM**	Prep Date:	**4/27/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	<0.000300	0.00100								
Lithium	<0.00500	0.0100								

Sample ID	**LCS-80206**	Batch ID:	**80206**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**ICP-MS4_170428D**	Analysis Date:	**4/28/2017 1:17:00 PM**	Prep Date:	**4/27/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.205	0.00100	0.200	0	103	80	120			
Lithium	0.204	0.0100	0.200	0	102	80	120			

Sample ID	**LCSD-80206**	Batch ID:	**80206**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**LCSD**	Run ID:	**ICP-MS4_170428D**	Analysis Date:	**4/28/2017 1:19:00 PM**	Prep Date:	**4/27/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.211	0.00100	0.200	0	106	80	120	2.88	15	
Lithium	0.200	0.0100	0.200	0	100	80	120	1.74	15	

Sample ID	**1704253-03C SD**	Batch ID:	**80206**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**SD**	Run ID:	**ICP-MS4_170428D**	Analysis Date:	**4/28/2017 1:25:00 PM**	Prep Date:	**4/27/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	<0.00150	0.00500	0	0				0	10	
Lithium	0.273	0.0500	0	0.253				7.67	10	

Sample ID	**1704253-03C PDS**	Batch ID:	**80206**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**PDS**	Run ID:	**ICP-MS4_170428D**	Analysis Date:	**4/28/2017 1:39:00 PM**	Prep Date:	**4/27/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.191	0.00100	0.200	0	95.4	80	120			
Lithium	0.425	0.0100	0.200	0.253	85.8	80	120			

Sample ID	**1704253-03C MS**	Batch ID:	**80206**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**MS**	Run ID:	**ICP-MS4_170428D**	Analysis Date:	**4/28/2017 1:41:00 PM**	Prep Date:	**4/27/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.186	0.00100	0.200	0	92.9	80	120			
Lithium	0.423	0.0100	0.200	0.253	85.3	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1704272
Project: Luminant - A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_170428D

Sample ID **1704253-03C MSD** Batch ID: **80206** TestNo: **SW6020A** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS4_170428D** Analysis Date: **4/28/2017 1:43:00 PM** Prep Date: **4/27/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.181	0.00100	0.200	0	90.6	80	120	2.56	15	
Lithium	0.432	0.0100	0.200	0.253	89.6	80	120	2.02	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

Sample ID **ICV-170428**	Batch ID: **R91717**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_170428D**	Analysis Date: **4/28/2017 9:33:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.101	0.00100	0.100	0	101	90	110			
Calcium	2.55	0.300	2.50	0	102	90	110			
Lithium	0.0966	0.0100	0.100	0	96.6	90	110			

Sample ID **LCVL-170428**	Batch ID: **R91717**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_170428D**	Analysis Date: **4/28/2017 9:37:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.00101	0.00100	0.00100	0	101	70	130			
Calcium	0.0840	0.300	0.100	0	84.0	70	130			
Lithium	0.00975	0.0100	0.0100	0	97.5	70	130			

Sample ID **CCV2-170428**	Batch ID: **R91717**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_170428D**	Analysis Date: **4/28/2017 12:11:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.212	0.00100	0.200	0	106	90	110			
Calcium	5.43	0.300	5.00	0	109	90	110			
Lithium	0.204	0.0100	0.200	0	102	90	110			

Sample ID **LCVL2-170428**	Batch ID: **R91717**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_170428D**	Analysis Date: **4/28/2017 12:15:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.00114	0.00100	0.00100	0	114	70	130			
Calcium	0.0861	0.300	0.100	0	86.1	70	130			
Lithium	0.00931	0.0100	0.0100	0	93.1	70	130			

Sample ID **CCV3-170428**	Batch ID: **R91717**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_170428D**	Analysis Date: **4/28/2017 1:45:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.207	0.00100	0.200	0	104	90	110			
Calcium	5.45	0.300	5.00	0	109	90	110			
Lithium	0.204	0.0100	0.200	0	102	90	110			

Sample ID **LCVL3-170428**	Batch ID: **R91717**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_170428D**	Analysis Date: **4/28/2017 1:52:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.000888	0.00100	0.00100	0	88.8	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1704272
Project: Luminant - A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_170428D

Sample ID **LCVL3-170428** Batch ID: **R91717** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_170428D** Analysis Date: **4/28/2017 1:52:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.0929	0.300	0.100	0	92.9	70	130			
Lithium	0.00844	0.0100	0.0100	0	84.4	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank
J	Analyte detected between MDL and RL
ND	Not Detected at the Method Detection Limit
RL	Reporting Limit
J	Analyte detected between SDL and RL
DF	Dilution Factor
MDL	Method Detection Limit
R	RPD outside accepted control limits
S	Spike Recovery outside control limits
N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1704272
Project: Luminant - A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_170427A

The QC data in batch 80206 applies to the following samples: 1704272-01A, 1704272-02A, 1704272-03A

Sample ID **MB-80206**	Batch ID: **80206**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MBLK**	Run ID: **ICP-MS5_170427A**	Analysis Date: **4/27/2017 4:48:00 PM**	Prep Date: **4/27/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.000800	0.00250								
Arsenic	<0.00200	0.00500								
Barium	<0.00300	0.0100								
Cadmium	<0.000300	0.00100								
Calcium	<0.100	0.300								
Chromium	<0.00200	0.00500								
Cobalt	<0.00300	0.00500								
Lead	<0.000300	0.00100								
Molybdenum	<0.00200	0.00500								
Selenium	<0.00200	0.00500								
Thallium	<0.000500	0.00150								

Sample ID **LCS-80206**	Batch ID: **80206**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCS**	Run ID: **ICP-MS5_170427A**	Analysis Date: **4/27/2017 4:50:00 PM**	Prep Date: **4/27/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.194	0.00250	0.200	0	96.9	80	120			
Arsenic	0.195	0.00500	0.200	0	97.3	80	120			
Barium	0.207	0.0100	0.200	0	103	80	120			
Cadmium	0.201	0.00100	0.200	0	101	80	120			
Calcium	4.95	0.300	5.00	0	98.9	80	120			
Chromium	0.210	0.00500	0.200	0	105	80	120			
Cobalt	0.208	0.00500	0.200	0	104	80	120			
Lead	0.201	0.00100	0.200	0	100	80	120			
Molybdenum	0.193	0.00500	0.200	0	96.7	80	120			
Selenium	0.197	0.00500	0.200	0	98.7	80	120			
Thallium	0.214	0.00150	0.200	0	107	80	120			

Sample ID **LCSD-80206**	Batch ID: **80206**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCSD**	Run ID: **ICP-MS5_170427A**	Analysis Date: **4/27/2017 4:51:00 PM**	Prep Date: **4/27/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.193	0.00250	0.200	0	96.6	80	120	0.281	15	
Arsenic	0.193	0.00500	0.200	0	96.7	80	120	0.648	15	
Barium	0.202	0.0100	0.200	0	101	80	120	2.53	15	
Cadmium	0.200	0.00100	0.200	0	100	80	120	0.490	15	
Calcium	4.86	0.300	5.00	0	97.1	80	120	1.85	15	
Chromium	0.207	0.00500	0.200	0	103	80	120	1.46	15	
Cobalt	0.205	0.00500	0.200	0	103	80	120	1.26	15	
Lead	0.198	0.00100	0.200	0	99.1	80	120	1.40	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1704272
Project: Luminant - A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_170427A

Sample ID **LCSD-80206**	Batch ID: **80206**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCSD**	Run ID: **ICP-MS5_170427A**	Analysis Date: **4/27/2017 4:51:00 PM**	Prep Date: **4/27/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Molybdenum	0.190	0.00500	0.200	0	94.9	80	120	1.89	15	
Selenium	0.190	0.00500	0.200	0	95.0	80	120	3.84	15	
Thallium	0.207	0.00150	0.200	0	103	80	120	3.40	15	

Sample ID **1704253-03C SD**	Batch ID: **80206**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS5_170427A**	Analysis Date: **4/27/2017 4:57:00 PM**	Prep Date: **4/27/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.00400	0.0125	0	0				0	10	
Arsenic	<0.0100	0.0250	0	0.00340				0	10	
Barium	0.0349	0.0500	0	0.0358				2.74	10	
Cadmium	<0.00150	0.00500	0	0				0	10	
Calcium	339	1.50	0	357				4.96	10	
Chromium	<0.0100	0.0250	0	0				0	10	
Cobalt	<0.0150	0.0250	0	0				0	10	
Lead	0.00321	0.00500	0	0.00319				0.562	10	
Molybdenum	<0.0100	0.0250	0	0.00395				0	10	
Selenium	0.0104	0.0250	0	0.0129				21.4	10	R
Thallium	<0.00250	0.00750	0	0				0	10	

Sample ID **1704253-03C PDS**	Batch ID: **80206**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS5_170427A**	Analysis Date: **4/27/2017 5:14:00 PM**	Prep Date: **4/27/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.224	0.00250	0.200	0	112	80	120			
Arsenic	0.219	0.00500	0.200	0.00340	108	80	120			
Barium	0.266	0.0100	0.200	0.0358	115	80	120			
Cadmium	0.214	0.00100	0.200	0	107	80	120			
Calcium	372	0.300	5.00	357	302	80	120			S
Chromium	0.229	0.00500	0.200	0	115	80	120			
Cobalt	0.214	0.00500	0.200	0	107	80	120			
Lead	0.228	0.00100	0.200	0.00319	112	80	120			
Molybdenum	0.214	0.00500	0.200	0.00395	105	80	120			
Selenium	0.223	0.00500	0.200	0.0129	105	80	120			
Thallium	0.237	0.00150	0.200	0	118	80	120			

Sample ID **1704253-03C MS**	Batch ID: **80206**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS5_170427A**	Analysis Date: **4/27/2017 5:16:00 PM**	Prep Date: **4/27/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.219	0.00250	0.200	0	109	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1704272
Project: Luminant - A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_170427A

Sample ID **1704253-03C MS**	Batch ID: **80206**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS5_170427A**	Analysis Date: **4/27/2017 5:16:00 PM**	Prep Date: **4/27/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.217	0.00500	0.200	0.00340	107	80	120			
Barium	0.265	0.0100	0.200	0.0358	114	80	120			
Cadmium	0.213	0.00100	0.200	0	106	80	120			
Calcium	388	0.300	5.00	357	633	80	120			S
Chromium	0.225	0.00500	0.200	0	112	80	120			
Cobalt	0.212	0.00500	0.200	0	106	80	120			
Lead	0.230	0.00100	0.200	0.00319	113	80	120			
Molybdenum	0.218	0.00500	0.200	0.00395	107	80	120			
Selenium	0.229	0.00500	0.200	0.0129	108	80	120			
Thallium	0.243	0.00150	0.200	0	121	80	120			S

Sample ID **1704253-03C MSD**	Batch ID: **80206**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS5_170427A**	Analysis Date: **4/27/2017 5:17:00 PM**	Prep Date: **4/27/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.210	0.00250	0.200	0	105	80	120	3.86	15	
Arsenic	0.210	0.00500	0.200	0.00340	103	80	120	3.51	15	
Barium	0.256	0.0100	0.200	0.0358	110	80	120	3.24	15	
Cadmium	0.205	0.00100	0.200	0	103	80	120	3.71	15	
Calcium	383	0.300	5.00	357	524	80	120	1.42	15	S
Chromium	0.220	0.00500	0.200	0	110	80	120	2.24	15	
Cobalt	0.205	0.00500	0.200	0	103	80	120	3.09	15	
Lead	0.222	0.00100	0.200	0.00319	109	80	120	3.60	15	
Molybdenum	0.211	0.00500	0.200	0.00395	103	80	120	3.64	15	
Selenium	0.217	0.00500	0.200	0.0129	102	80	120	5.55	15	
Thallium	0.231	0.00150	0.200	0	116	80	120	4.82	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1704272
Project: Luminant - A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_170427A

Sample ID **ICV-170403**	Batch ID: **R91666**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS5_170427A**	Analysis Date: **4/27/2017 10:57:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.101	0.00250	0.100	0	101	90	110			
Arsenic	0.102	0.00500	0.100	0	102	90	110			
Barium	0.101	0.0100	0.100	0	101	90	110			
Cadmium	0.103	0.00100	0.100	0	103	90	110			
Calcium	2.52	0.300	2.50	0	101	90	110			
Chromium	0.106	0.00500	0.100	0	106	90	110			
Cobalt	0.104	0.00500	0.100	0	104	90	110			
Lead	0.101	0.00100	0.100	0	101	90	110			
Molybdenum	0.0958	0.00500	0.100	0	95.8	90	110			
Selenium	0.101	0.00500	0.100	0	101	90	110			
Thallium	0.100	0.00150	0.100	0	100	90	110			

Sample ID **LCVL-170403**	Batch ID: **R91666**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_170427A**	Analysis Date: **4/27/2017 11:00:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00199	0.00250	0.00200	0	99.4	70	130			
Arsenic	0.00493	0.00500	0.00500	0	98.7	70	130			
Barium	0.00498	0.0100	0.00500	0	99.5	70	130			
Cadmium	0.00101	0.00100	0.00100	0	101	70	130			
Calcium	0.102	0.300	0.100	0	102	70	130			
Chromium	0.00511	0.00500	0.00500	0	102	70	130			
Cobalt	0.00504	0.00500	0.00500	0	101	70	130			
Lead	0.00105	0.00100	0.00100	0	105	70	130			
Molybdenum	0.00473	0.00500	0.00500	0	94.7	70	130			
Selenium	0.00515	0.00500	0.00500	0	103	70	130			
Thallium	0.00102	0.00150	0.00100	0	102	70	130			

Sample ID **LCVL4-170427**	Batch ID: **R91666**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_170427A**	Analysis Date: **4/27/2017 4:36:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00207	0.00250	0.00200	0	103	70	130			
Arsenic	0.00488	0.00500	0.00500	0	97.5	70	130			
Barium	0.00531	0.0100	0.00500	0	106	70	130			
Cadmium	0.00104	0.00100	0.00100	0	104	70	130			
Calcium	0.0994	0.300	0.100	0	99.4	70	130			
Chromium	0.00508	0.00500	0.00500	0	102	70	130			
Cobalt	0.00514	0.00500	0.00500	0	103	70	130			
Lead	0.00102	0.00100	0.00100	0	102	70	130			
Molybdenum	0.00466	0.00500	0.00500	0	93.3	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

Sample ID **LCVL4-170427**	Batch ID: **R91666**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_170427A**	Analysis Date: **4/27/2017 4:36:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.00461	0.00500	0.00500	0	92.2	70	130			
Thallium	0.00106	0.00150	0.00100	0	106	70	130			

Sample ID **CCV4-170427**	Batch ID: **R91666**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_170427A**	Analysis Date: **4/27/2017 4:44:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.199	0.00250	0.200	0	99.7	90	110			
Arsenic	0.201	0.00500	0.200	0	101	90	110			
Barium	0.210	0.0100	0.200	0	105	90	110			
Cadmium	0.207	0.00100	0.200	0	104	90	110			
Calcium	5.03	0.300	5.00	0	101	90	110			
Chromium	0.215	0.00500	0.200	0	108	90	110			
Cobalt	0.213	0.00500	0.200	0	107	90	110			
Lead	0.207	0.00100	0.200	0	103	90	110			
Molybdenum	0.196	0.00500	0.200	0	97.9	90	110			
Selenium	0.201	0.00500	0.200	0	101	90	110			
Thallium	0.220	0.00150	0.200	0	110	90	110			

Sample ID **CCV5-170427**	Batch ID: **R91666**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_170427A**	Analysis Date: **4/27/2017 5:19:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.198	0.00250	0.200	0	98.9	90	110			
Arsenic	0.200	0.00500	0.200	0	100	90	110			
Barium	0.207	0.0100	0.200	0	104	90	110			
Cadmium	0.200	0.00100	0.200	0	100	90	110			
Calcium	5.14	0.300	5.00	0	103	90	110			
Chromium	0.208	0.00500	0.200	0	104	90	110			
Cobalt	0.210	0.00500	0.200	0	105	90	110			
Lead	0.205	0.00100	0.200	0	102	90	110			
Molybdenum	0.191	0.00500	0.200	0	95.6	90	110			
Selenium	0.205	0.00500	0.200	0	103	90	110			
Thallium	0.215	0.00150	0.200	0	108	90	110			

Sample ID **LCVL5-170427**	Batch ID: **R91666**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_170427A**	Analysis Date: **4/27/2017 5:23:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00198	0.00250	0.00200	0	99.0	70	130			
Arsenic	0.00482	0.00500	0.00500	0	96.3	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1704272
Project: Luminant - A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_170427A

Sample ID **LCVL5-170427** Batch ID: **R91666** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS5_170427A** Analysis Date: **4/27/2017 5:23:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.00512	0.0100	0.00500	0	102	70	130			
Cadmium	0.000996	0.00100	0.00100	0	99.6	70	130			
Calcium	0.101	0.300	0.100	0	101	70	130			
Chromium	0.00485	0.00500	0.00500	0	97.1	70	130			
Cobalt	0.00511	0.00500	0.00500	0	102	70	130			
Lead	0.00103	0.00100	0.00100	0	103	70	130			
Molybdenum	0.00464	0.00500	0.00500	0	92.7	70	130			
Selenium	0.00517	0.00500	0.00500	0	103	70	130			
Thallium	0.00102	0.00150	0.00100	0	102	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1704272
Project: Luminant - A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_170509A

The QC data in batch 80206 applies to the following samples: 1704272-01A, 1704272-02A, 1704272-03A

Sample ID	**MB-80206**	Batch ID:	**80206**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**ICP-MS5_170509A**	Analysis Date:	**5/9/2017 11:56:00 AM**	Prep Date:	**4/27/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	<0.0100	0.0300								

Sample ID	**LCS-80206**	Batch ID:	**80206**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**ICP-MS5_170509A**	Analysis Date:	**5/9/2017 11:57:00 AM**	Prep Date:	**4/27/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.187	0.0300	0.200	0	93.5	80	120			

Sample ID	**LCSD-80206**	Batch ID:	**80206**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**LCSD**	Run ID:	**ICP-MS5_170509A**	Analysis Date:	**5/9/2017 11:59:00 AM**	Prep Date:	**4/27/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.194	0.0300	0.200	0	96.9	80	120	3.58	15	

Sample ID	**1704253-03C MS**	Batch ID:	**80206**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**MS**	Run ID:	**ICP-MS5_170509A**	Analysis Date:	**5/9/2017 12:13:00 PM**	Prep Date:	**4/27/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.904	0.0300	0.200	0.725	89.6	80	120			

Sample ID	**1704253-03C MSD**	Batch ID:	**80206**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**MSD**	Run ID:	**ICP-MS5_170509A**	Analysis Date:	**5/9/2017 12:15:00 PM**	Prep Date:	**4/27/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.937	0.0300	0.200	0.725	106	80	120	3.50	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1704272
Project: Luminant - A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_170509A

Sample ID	**ICV-170509**	Batch ID:	**R91868**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**ICV**	Run ID:	**ICP-MS5_170509A**	Analysis Date:	**5/9/2017 11:05:00 AM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0981	0.0300	0.100	0	98.1	90	110			

Sample ID	**LCVL-170509**	Batch ID:	**R91868**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**LCVL**	Run ID:	**ICP-MS5_170509A**	Analysis Date:	**5/9/2017 11:09:00 AM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0226	0.0300	0.0200	0	113	70	130			

Sample ID	**CCV1-170509**	Batch ID:	**R91868**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**ICP-MS5_170509A**	Analysis Date:	**5/9/2017 11:48:00 AM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.205	0.0300	0.200	0	102	90	110			

Sample ID	**LCVL1-170509**	Batch ID:	**R91868**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**LCVL**	Run ID:	**ICP-MS5_170509A**	Analysis Date:	**5/9/2017 11:52:00 AM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0242	0.0300	0.0200	0	121	70	130			

Sample ID	**CCV2-170509**	Batch ID:	**R91868**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**ICP-MS5_170509A**	Analysis Date:	**5/9/2017 12:29:00 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.208	0.0300	0.200	0	104	90	110			

Sample ID	**LCVL2-170509**	Batch ID:	**R91868**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**LCVL**	Run ID:	**ICP-MS5_170509A**	Analysis Date:	**5/9/2017 12:37:00 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0238	0.0300	0.0200	0	119	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1704272
Project: Luminant - A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: **ICP-MS5_170510A**

The QC data in batch 80206 applies to the following samples: 1704272-01A, 1704272-02A, 1704272-03A

Sample ID **1704272-02A SD**	Batch ID: **80206**	TestNo: **SW6020A**	Units: **mg/L**						
SampType: **SD**	Run ID: **ICP-MS5_170510A**	Analysis Date: **5/10/2017 12:09:00 PM**	Prep Date: **4/27/2017**						
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.792	0.750	0	0.522				41.1	10	R

Sample ID **1704272-02A PDS**	Batch ID: **80206**	TestNo: **SW6020A**	Units: **mg/L**						
SampType: **PDS**	Run ID: **ICP-MS5_170510A**	Analysis Date: **5/10/2017 12:19:00 PM**	Prep Date: **4/27/2017**						
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	1.34	0.150	1.00	0.522	81.7	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1704272
Project: Luminant - A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_170510A

Sample ID **ICV-170510**	Batch ID: **R91881**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS5_170510A**	Analysis Date: **5/10/2017 11:48:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0959	0.0300	0.100	0	95.9	90	110			

Sample ID **LCVL-170510**	Batch ID: **R91881**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_170510A**	Analysis Date: **5/10/2017 11:52:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0219	0.0300	0.0200	0	109	70	130			

Sample ID **CCV1-170510**	Batch ID: **R91881**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_170510A**	Analysis Date: **5/10/2017 12:28:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.193	0.0300	0.200	0	96.5	90	110			

Sample ID **LCVL1-170510**	Batch ID: **R91881**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_170510A**	Analysis Date: **5/10/2017 12:40:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0224	0.0300	0.0200	0	112	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1704272
Project: Luminant - A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: IC3_170427A

The QC data in batch 80209 applies to the following samples: 1704272-01D, 1704272-02D, 1704272-03D

Sample ID	**MB-80209**	Batch ID:	**80209**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**IC3_170427A**	Analysis Date:	**4/27/2017 9:29:21 AM**	Prep Date:	**4/27/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00								
Fluoride	<0.100	0.400								
Sulfate	<1.00	3.00								

Sample ID	**LCSD-80209**	Batch ID:	**80209**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**LCSD**	Run ID:	**IC3_170427A**	Analysis Date:	**4/27/2017 10:10:38 AM**	Prep Date:	**4/27/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.0	1.00	10.00	0	100	90	110	0.439	20	
Fluoride	4.16	0.400	4.000	0	104	90	110	1.48	20	
Sulfate	29.7	3.00	30.00	0	99.2	90	110	0.218	20	

Sample ID	**LCS-80209**	Batch ID:	**80209**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**IC3_170427A**	Analysis Date:	**4/27/2017 10:33:24 AM**	Prep Date:	**4/27/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.99	1.00	10.00	0	99.9	90	110			
Fluoride	4.10	0.400	4.000	0	102	90	110			
Sulfate	29.8	3.00	30.00	0	99.4	90	110			

Sample ID	**1704272-02DMS**	Batch ID:	**80209**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**MS**	Run ID:	**IC3_170427A**	Analysis Date:	**4/27/2017 2:02:12 PM**	Prep Date:	**4/27/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	310	10.0	200.0	111.1	99.4	90	110			
Fluoride	182	4.00	200.0	0	90.9	90	110			
Sulfate	775	30.0	200.0	576.3	99.3	90	110			

Sample ID	**1704272-02DMSD**	Batch ID:	**80209**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**MSD**	Run ID:	**IC3_170427A**	Analysis Date:	**4/27/2017 2:25:47 PM**	Prep Date:	**4/27/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	309	10.0	200.0	111.1	98.9	90	110	0.313	20	
Fluoride	183	4.00	200.0	0	91.6	90	110	0.762	20	
Sulfate	779	30.0	200.0	576.3	101	90	110	0.525	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1704272
Project: Luminant - A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: IC3_170427A

Sample ID **ICV-170427**	Batch ID: **R91687**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC3_170427A**	Analysis Date: **4/27/2017 8:36:56 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	25.1	1.00	25.00	0	100	90	110			
Fluoride	10.4	0.400	10.00	0	104	90	110			
Sulfate	74.4	3.00	75.00	0	99.2	90	110			

Sample ID **CCV1-170427**	Batch ID: **R91687**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC3_170427A**	Analysis Date: **4/27/2017 3:07:03 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.0	1.00	10.00	0	100	90	110			
Fluoride	3.77	0.400	4.000	0	94.3	90	110			
Sulfate	28.8	3.00	30.00	0	96.1	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1704272
Project: Luminant - A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_170427A

The QC data in batch 80215 applies to the following samples: 1704272-01D, 1704272-02D, 1704272-03D

Sample ID **1704271-01D-DUP** Batch ID: **80215** TestNo: **M4500-H+ B** Units: **pH Units@18.6℃**
SampType: **DUP** Run ID: **TITRATOR_170427A** Analysis Date: **4/27/2017 11:11:00 AM** Prep Date: **4/27/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	7.85	0	0	7.700				1.93	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1704272
Project: Luminant - A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_170427A

Sample ID **ICV-170427**	Batch ID: **R91688**	TestNo: **M4500-H+ B**	Units: **pH Units@22.2℃**
SampType: **ICV**	Run ID: **TITRATOR_170427A**	Analysis Date: **4/27/2017 10:16:00 AM**	Prep Date: **4/27/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	9.95	0	10.00	0	99.5	99	101			

Sample ID **CCV1-170427**	Batch ID: **R91688**	TestNo: **M4500-H+ B**	Units: **pH Units@21.7℃**
SampType: **CCV**	Run ID: **TITRATOR_170427A**	Analysis Date: **4/27/2017 11:25:00 AM**	Prep Date: **4/27/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	6.97	0	7.000	0	99.6	97.1	102.9			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1704272
Project: Luminant - A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: WC_170501A

The QC data in batch 80266 applies to the following samples: 1704272-01D, 1704272-02D, 1704272-03D

Sample ID	**MB-80266**	Batch ID:	**80266**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**WC_170501A**	Analysis Date:	**5/2/2017 8:49:00 AM**	Prep Date:	**5/1/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	<10.0	10.0								

Sample ID	**LCS-80266**	Batch ID:	**80266**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**WC_170501A**	Analysis Date:	**5/2/2017 8:49:00 AM**	Prep Date:	**5/1/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	746	10.0	745.6	0	100	90	113			

Sample ID	**1704279-04C-DUP**	Batch ID:	**80266**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**DUP**	Run ID:	**WC_170501A**	Analysis Date:	**5/2/2017 8:49:00 AM**	Prep Date:	**5/1/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	1560	50.0	0	1515				2.61	5	

Sample ID	**1704305-02B-DUP**	Batch ID:	**80266**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**DUP**	Run ID:	**WC_170501A**	Analysis Date:	**5/2/2017 8:49:00 AM**	Prep Date:	**5/1/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	6520	50.0	0	6715				3.02	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

Case Narrative

Lab No: 20170351

This report contains the analytical results for the 3 sample(s) received under chain of custody by ESC Lab Sciences on 4/27/2017 10:09:14 AM. These samples are associated with your 1704272 project.

The analytical results included in this report meet all applicable quality control procedure requirements except as noted below:

The test results in this report meet all NELAC requirements unless noted below:

This report shall not be reproduced, except in full, without the written approval of ESC Lab Sciences.

All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client.

Results have been reviewed by the Director of Radiochemistry or their designees and is approved for release.

DL for Radiochemistry = MDA DL for Metals and Wet Chemistry = MDL DL for Drinking Water = SDWA

Observations / Nonconformances

L905308

Analytical Report

	Method	Result	DL	Units	Qual	Prep Date	Analysis Date	Analyst
Lab ID : **20170351-01**								
Client ID : **BMW-28**								
Date Sampled : **4/24/2017 2:15:00 PM**								
Matrix : **NPW**								
Radiochemical Analyses								
Combined Radium		2.24 +/- 0.959	0.659	pCi/l				
Radium-226	SM 7500 Ra B M*	0.356 +/- 0.212	0.256	pCi/l		05/11/17	05/16/17	SD
Radium-228	EPA 904*	1.88 +/- 0.747	0.403	pCi/l		05/15/17	05/19/17	JR
Lab ID : **20170351-02**								
Client ID : **BMW-26**								
Date Sampled : **4/24/2017 3:20:00 PM**								
Matrix : **NPW**								
Radiochemical Analyses								
Combined Radium		1.77 +/- 1.42	0.986	pCi/l				
Radium-226	SM 7500 Ra B M*	0.169 +/- 0.239	0.363	pCi/l		05/11/17	05/16/17	SD
Radium-228	EPA 904*	1.60 +/- 1.18	0.623	pCi/l		05/15/17	05/19/17	JR
Lab ID : **20170351-03**								
Client ID : **BMW-27**								
Date Sampled : **4/24/2017 4:30:00 PM**								
Matrix : **NPW**								
Radiochemical Analyses								
Combined Radium		1.53 +/- 0.885	0.828	pCi/l				
Radium-226	SM 7500 Ra B M*	-0.233 +/- 0.253	0.452	pCi/l		05/11/17	05/16/17	SD
Radium-228	EPA 904*	1.53 +/- 0.632	0.376	pCi/l		05/15/17	05/19/17	JR

Client	:	DHL Analytical, Inc.
Client Project	:	1704272
Lab Number	:	20170351
Date Reported	:	05/25/17
Date Received	:	04/27/17
Page Number	:	3 of 3

QC Report

Parameter	Blank	LCS %REC	LCSD %REC	LCSD RPD	DUP RPD	RER, NAD or DER	MS %REC	MSD %REC	MSD RPD	Batch ID
Radium-226	0.013	92.0			NC	1.300	87.0	86.0	1.9	R1223
Radium-228	-0.018	96.1			39.3	0.321	103.0	109.0	6.4	R3959

Lab Approval:

Ron Eidson
Director of Radiochemistry

*NELAC Certified Parameter BDL = Below Detection Limit

OUTREACH LABORATORY, A Divsion of ESC Lab Sciences
Address: 311 North Aspen Avenue, Broken Arrow, OK, 74012 EMail: outreach@esclabsciences.com - Tel: (918) 251-2515

DHL Analytical, Inc.
2300 Double Creek Drive
Round Rock, TX 78664
TEL: *(512) 388-8222* FAX: *(512) 388-8229*

CHAIN-OF-CUSTODY RECORD

Work Order: 1704272

Subcontractor:

ESC Laboratory
311 North Aspen
Broken Arrow, Oklahoma 74012

TEL: (918) 251-2515
FAX:
Acct #: DHLRRTX

26-Apr-17

Sample Id	Matrix	DHL#	Date Collected	Bottle Type	Requested Tests					
					E904.0	SM7500Ra-B M				
BMW-28	Aqueous	-01B	04/24/17 02:15 PM	1LHDPEHNO3	1					
BMW-28	Aqueous	-01C	04/24/17 02:15 PM	500HDPEHNO3		1				
BMW-26	Aqueous	-02B	04/24/17 03:20 PM	1LHDPEHNO3	1					
BMW-26	Aqueous	-02C	04/24/17 03:20 PM	500HDPEHNO3		1				
BMW-27	Aqueous	-03B	04/24/17 04:30 PM	1LHDPEHNO3	1					
BMW-27	Aqueous	-03C	04/24/17 04:30 PM	500HDPEHNO3		1				

General Comments:

Please analyze these samples with Normal Turnaround Time.
Report RA-226, Ra-228 & Combined per Specs.
Quality Control Package Needed: Standard - NELAC Rad Test compliant
Email to cac@dhlanalytical.com & dupont@dhlanalytical.com

		Date/Time			Date/Time
Relinquished by:	[signature]	4/26/17 1730	**Received by:**	[signature]	4/26/17 1730
Relinquished by:			**Received by:**	[signature]	4/27/17 1010

39 0176351 L905308

SAMPLE LOGIN

Date Received: 4/27/2017 10:09:1 **Lab Number:** 20170351 **Due:** 5/25/2017

Sample Number	Client Sample ID	Matrix	Date Sampled	Container Type	Container Size	Preservation	Preserved Upon Receipt	Custody Seal	Seal Intact
20170351-01 B	BMW-28	NPW	04/24/17	Plastic	1 L	HNO3, pH < 2	✓	Yes	Yes
20170351-01 A	BMW-28	NPW	04/24/17	Plastic	500 ml	HNO3, pH < 2	✓	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*						
20170351-02 B	BMW-26	NPW	04/24/17	Plastic	1 L	HNO3, pH < 2	✓	Yes	Yes
20170351-02 A	BMW-26	NPW	04/24/17	Plastic	500 ml	HNO3, pH < 2	✓	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*						
20170351-03 B	BMW-27	NPW	04/24/17	Plastic	1 L	HNO3, pH < 2	✓	Yes	Yes
20170351-03 A	BMW-27	NPW	04/24/17	Plastic	500 ml	HNO3, pH < 2	✓	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*						

CONTAINER INSPECTION

 # Coolers 1 **Custody Seals Broken** Ø **Temperature:** 4.5 C **Ice** **Radiation Survey:** <300 cpm

SAMPLE INSPECTION

Sample Seal Broken Ø **Chain of Custody Record** ✓ **Labels in Tact** ✓ **Radiation Survey Complete** N/A

Anomalies

Inspected By: _____ **DATE** 4/27/17

QA or Designee Review: Raymond Thomas **DATE** 04/27/17

Sample Custodian Review: _____ **DATE** 4/27/17

Project Notes:

June 22, 2017

Will Vienne
Pastor, Behling & Wheeler
2201 Double Creek Dr #4004
Round Rock, Texas 78664
TEL: (512) 671-3434
FAX (512) 671-3446

Order No.: 1705286

RE: Luminant A-1

Dear Will Vienne:

DHL Analytical, Inc. received 3 sample(s) on 5/26/2017 for the analyses presented in the following report.

There were no problems with the analyses and all data met requirements of NELAC except where noted in the Case Narrative. All non-NELAC methods will be identified accordingly in the case narrative and all estimated uncertainties of test results are within method or EPA specifications.

If you have any questions regarding these tests results, please feel free to call. Thank you for using DHL Analytical.

Sincerely,

John DuPont
General Manager

This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211-17-19

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DHL ANALYTICAL
2300 Double Creek Dr. ■ Round Rock, TX 78664
Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

№ 75424

CHAIN-OF-CUSTODY

CLIENT: PBW
ADDRESS: 2201 DOUBLE CREEK DR ROUND ROCK, TX 78664
PHONE: 512-671-3434 FAX/E-MAIL: 512-671-3446
DATA REPORTED TO: WILL VIENNE
ADDITIONAL REPORT COPIES TO:

DATE: 5/25/17 PAGE 1 OF 1
PO #: 5164-F DHL WORK ORDER #: 1705286
PROJECT LOCATION OR NAME: LUMINANT - A-1
CLENT PROJECT #: 5164-F COLLECTOR: J. BRAXTON

Authorize 5% surcharge for TRRP Report? ☐ Yes ☐ No

S=SOIL W=WATER A=AIR L=LIQUID SE=SEDIMENT P=PAINT SL=SLUDGE O=OTHER SO=SOLID

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	PRESERVATION: HCl	HNO_3	H_2SO_4 ☐ NaOH ☐	ICE	UNPRESERVED	ANALYSES: BTEX ☐ MTBE ☐ [METHOD 8021]	TPH 1005 ☐ TPH 1006 ☐ HOLD 1006 ☐	GRO [METHOD 8015] ☐ DRO [METHOD 8105] ☐	VOC 8260 ☐ VOC 624 ☐ VOC 8260/5035 ☐	SVOC 8270 ☐ PAH 8270 ☐ HOLD PAH ☐ SVOC 625 ☐	8270 PEST ☐ 625 PEST/PCB ☐ 608 PCB ☐ 8270 PCB ☐	8270 O-P PEST ☐ 8082 PCB ☐ 8270 PCB ☐	8321 HERB ☐ T PHOS, AMMONIA ☐	METALS 6020 ☐ METALS 200.8 ☐ DISS. METALS ☐	RCRA ☐ TX11 ☐ ☐	PH ☐ HEX CHROM ☐ ALKALINITY ☐ COD ☐	CHLORIDE ☐ ANIONS ☐	TCLP-SVOC ☐ VOC ☐ PEST ☐ HERB ☐	TCLP-METALS ☐ RCRA 8 ☐ TX-11 ☐ Pb ☐	RCI ☐ FLASHPOINT ☐ DGAS ☐	TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐	CCR	FIELD NOTES
BMW-27	01	5/25/17	0935	W	P	4																						X	
BMW-26	02	"	1035	W	P	4																						X	
BMW-28	03	"	1140	W	P	4																						X	

RELINQUISHED BY: (Signature) DATE/TIME 5/25/17 1700 RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature) DATE/TIME 5/26/17 905 RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature) DATE/TIME RECEIVED BY: (Signature)

TURN AROUND TIME
RUSH ☐ CALL FIRST
1 DAY ☐ CALL FIRST
2 DAY ☐
NORMAL ☒
OTHER ☐ _____

LABORATORY USE ONLY:
RECEIVING TEMP: 3.3 THERM #: 78
CUSTODY SEALS: ☐ BROKEN ☐ INTACT ☒ NOT USED
CARRIER: ☐ LONE STAR ☒ FEDEX ☐ UPS ☐ OTHER
☐ COURIER DELIVERY
☐ HAND DELIVERED

☐ DHL DISPOSAL @ $5.00 each ☐ Return

John Dupont

From:	Sara Taube [Sara.Taube@pbwllc.com]
Sent:	Wednesday, July 22, 2015 12:05 PM
To:	John Dupont
Subject:	CCR Appendix III and IV
Follow Up Flag:	Follow up
Flag Status:	Completed

Hi John,

Here are the Appendix III and Appendix IV constituents that we will need to have analyzed under the CCR Rule.

Appendix III
Boron
Calcium
Chloride
Fluoride
pH
sulfate
TDS

Appendix IV
Antimony
Arsenic
Barium
Beryllium
Cadmium
Chromium
Cobalt
Fluoride
Lead
Lithium
Mercury
Molybdenum
Selenium
Thallium
Radium 226 and 228

We are looking to have approximately 74 wells sampled 8 times over the course of the next two years. Please let me know if there is any more information you might need.

Cheers,

Sara

10/26/2015

ORIGIN ID:FWHA (512) 671-3434
JOHN BRAYTON

2201 DOUBLE CREEK DR STE 4004

ROUND ROCK, TX 78664
UNITED STATES US

SHIP DATE: 25MAY17
ACTWGT: 51.00 LB
CAD: 6991003/SSF01802
DIMS: 23x16x13 IN

BILL THIRD PARTY

Part # 156297V-435 RIT2 EXP 03/18

TO

DHL
2300 DOUBLECREEK DR

ROUND ROCK TX 78664

(512) 388-8222 REF:
INV:
PO: DEPT:

FedEx
Express

E

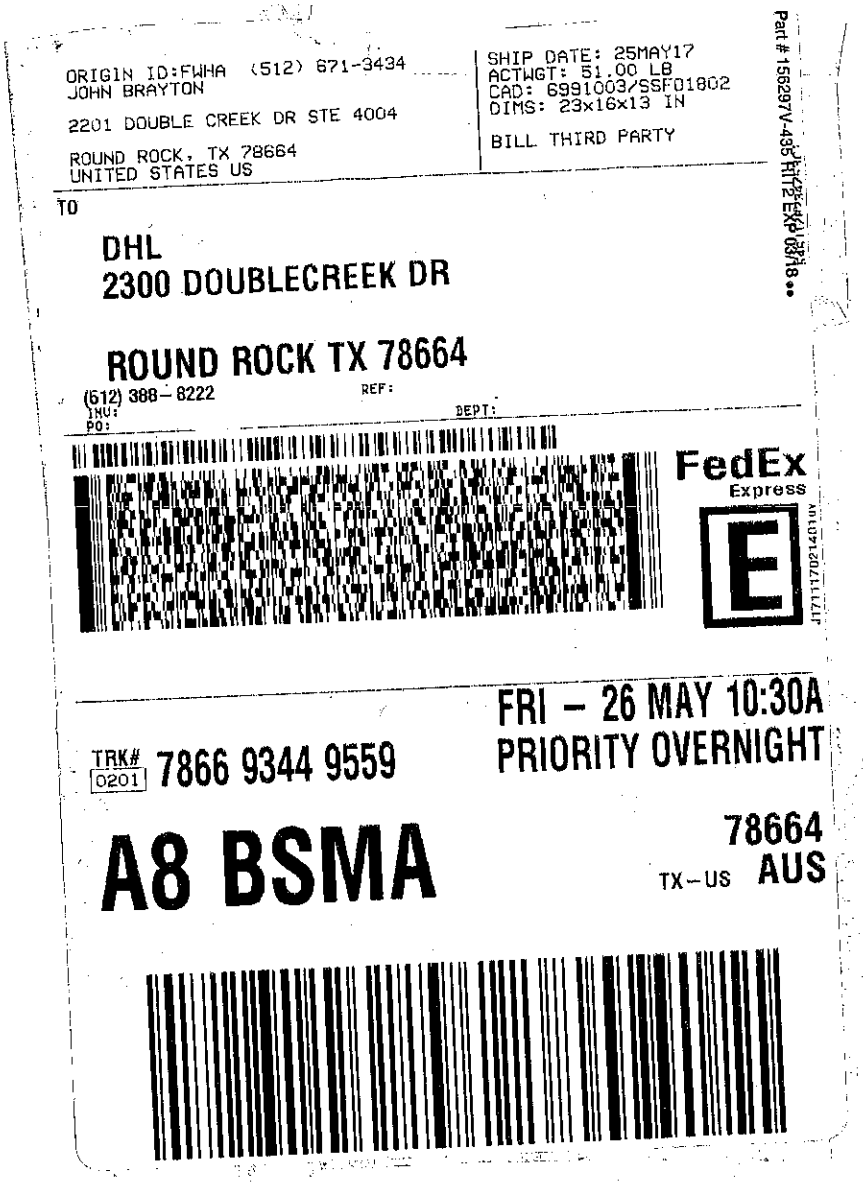
J171117021401UV

FRI - 26 MAY 10:30A
PRIORITY OVERNIGHT

TRK# 0201 7866 9344 9559

A8 BSMA

78664
TX-US AUS



DHL Analytical, Inc.

Sample Receipt Checklist

Client Name Pastor, Behling & Wheeler | Date Received: 5/26/2017

Work Order Number 1705286 | Received by JB

Checklist completed by [signature] Signature 5/26/2017 Date | Reviewed by [initials] Initials 5/26/2017 Date

Carrier name FedEx 1day

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	3.8 °C
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH<2 acceptable upon receipt?	Yes ☑	No ☐	NA ☐ LOT # 8086
	Adjusted? NO		Checked by [signature]
Water - ph>9 (S) or ph>12 (CN) acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted?		Checked by

Any No response must be detailed in the comments section below.

Client contacted _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments: _____

Corrective Action _____

Page 1 of 1

DHL Analytical, Inc. **Date:** *22-Jun-17*

CLIENT: Pastor, Behling & Wheeler
Project: Luminant A-1
Lab Order: 1705286

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Method SW6020A - Metals Analysis
Method SW7470A - Mercury Analysis
Method E300 - Anions Analysis
Method M4500-H+ B - pH of a Water Analysis
Method M2540C - TDS Analysis
Sub-contract - Radium-228 and Radium-226 analyses by methods E904/9320 and SM 7500 Ra B M. Analyzed at ESC Lab Sciences.

LOG IN

The samples were received and log-in performed on 5/26/17. A total of 3 samples were received. The samples arrived in good condition and were properly packaged.

METALS ANALYSIS

For Metals analysis performed on 6/6/17 the matrix spike and matrix spike duplicate recoveries were below control limits for Boron. These are flagged accordingly in the QC summary report. The sample selected for the matrix spike and matrix spike duplicate was not from this work order. The LCS was within control limits for this analyte. No further corrective actions were taken.

ANIONS ANALYSIS

For Anions analysis performed on 6/1/17 the matrix spike and matrix spike duplicate recoveries were slightly above control limits for Fluoride. These are flagged accordingly in the QC summary report. The sample selected for the matrix spike and matrix spike duplicate was not from this work order. The LCS was within control limits for this analyte. No further corrective actions were taken.

DHL Analytical, Inc.

Date: *22-Jun-17*

CLIENT: Pastor, Behling & Wheeler
Project: Luminant A-1
Lab Order: 1705286

Work Order Sample Summary

Lab Smp ID	Client Sample ID	Tag Number	Date Collected	Date Recved
1705286-01	BMW-27		05/25/17 09:35 AM	5/26/2017
1705286-02	BMW-26		05/25/17 10:35 AM	5/26/2017
1705286-03	BMW-28		05/25/17 11:40 AM	5/26/2017

Lab Order: 1705286
Client: Pastor, Behling & Wheeler
Project: Luminant A-1

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1705286-01A	BMW-27	05/25/17 09:35 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/01/17 09:48 AM	80708
	BMW-27	05/25/17 09:35 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/01/17 09:48 AM	80708
	BMW-27	05/25/17 09:35 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	06/01/17 12:04 PM	80717
1705286-01D	BMW-27	05/25/17 09:35 AM	Aqueous	E300	Anion Preparation	06/01/17 08:11 AM	80700
	BMW-27	05/25/17 09:35 AM	Aqueous	E300	Anion Preparation	06/01/17 08:11 AM	80700
	BMW-27	05/25/17 09:35 AM	Aqueous	M4500-H+ B	pH Preparation	05/30/17 08:08 AM	80650
	BMW-27	05/25/17 09:35 AM	Aqueous	M2540C	TDS Preparation	05/30/17 02:39 PM	80666
1705286-02A	BMW-26	05/25/17 10:35 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/01/17 09:48 AM	80708
	BMW-26	05/25/17 10:35 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/01/17 09:48 AM	80708
	BMW-26	05/25/17 10:35 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	06/01/17 12:04 PM	80717
1705286-02D	BMW-26	05/25/17 10:35 AM	Aqueous	E300	Anion Preparation	06/01/17 08:11 AM	80700
	BMW-26	05/25/17 10:35 AM	Aqueous	E300	Anion Preparation	06/01/17 08:11 AM	80700
	BMW-26	05/25/17 10:35 AM	Aqueous	M4500-H+ B	pH Preparation	05/30/17 08:08 AM	80650
	BMW-26	05/25/17 10:35 AM	Aqueous	M2540C	TDS Preparation	05/30/17 02:39 PM	80666
1705286-03A	BMW-28	05/25/17 11:40 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/01/17 09:48 AM	80708
	BMW-28	05/25/17 11:40 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/01/17 09:48 AM	80708
	BMW-28	05/25/17 11:40 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/01/17 09:48 AM	80708
	BMW-28	05/25/17 11:40 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	06/01/17 12:04 PM	80717
1705286-03D	BMW-28	05/25/17 11:40 AM	Aqueous	E300	Anion Preparation	06/01/17 08:11 AM	80700
	BMW-28	05/25/17 11:40 AM	Aqueous	E300	Anion Preparation	06/01/17 08:11 AM	80700
	BMW-28	05/25/17 11:40 AM	Aqueous	M4500-H+ B	pH Preparation	05/30/17 08:08 AM	80650
	BMW-28	05/25/17 11:40 AM	Aqueous	M2540C	TDS Preparation	05/30/17 02:39 PM	80666

Lab Order: 1705286
Client: Pastor, Behling & Wheeler
Project: Luminant A-1

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1705286-01A	BMW-27	Aqueous	SW7470A	Mercury Total: Aqueous	80717	1	06/02/17 11:38 AM	CETAC2_HG_170602D
	BMW-27	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	80708	1	06/05/17 03:15 PM	ICP-MS5_170605B
	BMW-27	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	80708	10	06/06/17 11:25 AM	ICP-MS5_170606A
1705286-01D	BMW-27	Aqueous	E300	Anions by IC method - Water	80700	1	06/01/17 10:23 AM	IC2_170601A
	BMW-27	Aqueous	E300	Anions by IC method - Water	80700	10	06/01/17 12:21 PM	IC2_170601A
	BMW-27	Aqueous	M4500-H+ B	pH	80650	1	05/30/17 09:04 AM	TITRATOR_170530A
	BMW-27	Aqueous	M2540C	Total Dissolved Solids	80666	1	05/31/17 08:53 AM	WC_170530C
1705286-02A	BMW-26	Aqueous	SW7470A	Mercury Total: Aqueous	80717	1	06/02/17 11:40 AM	CETAC2_HG_170602D
	BMW-26	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	80708	10	06/06/17 11:26 AM	ICP-MS5_170606A
	BMW-26	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	80708	1	06/05/17 03:16 PM	ICP-MS5_170605B
1705286-02D	BMW-26	Aqueous	E300	Anions by IC method - Water	80700	10	06/01/17 12:35 PM	IC2_170601A
	BMW-26	Aqueous	E300	Anions by IC method - Water	80700	1	06/01/17 10:37 AM	IC2_170601A
	BMW-26	Aqueous	M4500-H+ B	pH	80650	1	05/30/17 09:07 AM	TITRATOR_170530A
	BMW-26	Aqueous	M2540C	Total Dissolved Solids	80666	1	05/31/17 08:53 AM	WC_170530C
1705286-03A	BMW-28	Aqueous	SW7470A	Mercury Total: Aqueous	80717	1	06/02/17 11:42 AM	CETAC2_HG_170602D
	BMW-28	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	80708	1	06/05/17 03:18 PM	ICP-MS5_170605B
	BMW-28	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	80708	10	06/06/17 11:28 AM	ICP-MS5_170606A
	BMW-28	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	80708	50	06/06/17 01:20 PM	ICP-MS5_170606A
1705286-03D	BMW-28	Aqueous	E300	Anions by IC method - Water	80700	1	06/01/17 10:52 AM	IC2_170601A
	BMW-28	Aqueous	E300	Anions by IC method - Water	80700	10	06/01/17 12:50 PM	IC2_170601A
	BMW-28	Aqueous	M4500-H+ B	pH	80650	1	05/30/17 09:08 AM	TITRATOR_170530A
	BMW-28	Aqueous	M2540C	Total Dissolved Solids	80666	1	05/31/17 08:53 AM	WC_170530C

DHL Analytical, Inc.

Date: *22-Jun-17*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	BMW-27
Project:	Luminant A-1	**Lab ID:**	1705286-01
Project No:	5164-F	**Collection Date:**	05/25/17 09:35 AM
Lab Order:	1705286	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **CVD**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	06/05/17 03:15 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	06/05/17 03:15 PM
Barium	0.0266	0.00300	0.0100		mg/L	1	06/05/17 03:15 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	06/05/17 03:15 PM
Boron	0.331	0.100	0.300		mg/L	10	06/06/17 11:25 AM
Cadmium	0.000521	0.000300	0.00100	J	mg/L	1	06/05/17 03:15 PM
Calcium	122	1.00	3.00		mg/L	10	06/06/17 11:25 AM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	06/05/17 03:15 PM
Cobalt	0.200	0.00300	0.00500		mg/L	1	06/05/17 03:15 PM
Lead	0.000439	0.000300	0.00100	J	mg/L	1	06/05/17 03:15 PM
Lithium	0.0471	0.00500	0.0100		mg/L	1	06/05/17 03:15 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	06/05/17 03:15 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	06/05/17 03:15 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	06/05/17 03:15 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/02/17 11:38 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	124	3.00	10.0		mg/L	10	06/01/17 12:21 PM
Fluoride	1.61	0.100	0.400		mg/L	1	06/01/17 10:23 AM
Sulfate	1150	10.0	30.0		mg/L	10	06/01/17 12:21 PM
PH		**M4500-H+ B**					Analyst: **BTJ**
pH	6.81	0	0		pH Units@18.6℃	1	05/30/17 09:04 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	2320	50.0	50.0		mg/L	1	05/31/17 08:53 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *22-Jun-17*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	BMW-26
Project:	Luminant A-1	**Lab ID:**	1705286-02
Project No:	5164-F	**Collection Date:**	05/25/17 10:35 AM
Lab Order:	1705286	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **CVD**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	06/05/17 03:16 PM
Arsenic	0.00347	0.00200	0.00500	J	mg/L	1	06/05/17 03:16 PM
Barium	0.0243	0.00300	0.0100		mg/L	1	06/05/17 03:16 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	06/05/17 03:16 PM
Boron	0.613	0.100	0.300		mg/L	10	06/06/17 11:26 AM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	06/05/17 03:16 PM
Calcium	178	1.00	3.00		mg/L	10	06/06/17 11:26 AM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	06/05/17 03:16 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	06/05/17 03:16 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	06/05/17 03:16 PM
Lithium	0.0951	0.00500	0.0100		mg/L	1	06/05/17 03:16 PM
Molybdenum	0.00302	0.00200	0.00500	J	mg/L	1	06/05/17 03:16 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	06/05/17 03:16 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	06/05/17 03:16 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/02/17 11:40 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	115	3.00	10.0		mg/L	10	06/01/17 12:35 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	06/01/17 10:37 AM
Sulfate	613	10.0	30.0		mg/L	10	06/01/17 12:35 PM
PH		**M4500-H+ B**					Analyst: **BTJ**
pH	7.52	0	0		pH Units@18.6℃	1	05/30/17 09:07 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	2110	50.0	50.0		mg/L	1	05/31/17 08:53 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *22-Jun-17*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	BMW-28
Project:	Luminant A-1	**Lab ID:**	1705286-03
Project No:	5164-F	**Collection Date:**	05/25/17 11:40 AM
Lab Order:	1705286	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **CVD**
Antimony	0.00119	0.000800	0.00250	J	mg/L	1	06/05/17 03:18 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	06/05/17 03:18 PM
Barium	0.0468	0.00300	0.0100		mg/L	1	06/05/17 03:18 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	06/05/17 03:18 PM
Boron	1.23	0.100	0.300		mg/L	10	06/06/17 11:28 AM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	06/05/17 03:18 PM
Calcium	255	5.00	15.0		mg/L	50	06/06/17 01:20 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	06/05/17 03:18 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	06/05/17 03:18 PM
Lead	0.000427	0.000300	0.00100	J	mg/L	1	06/05/17 03:18 PM
Lithium	0.102	0.00500	0.0100		mg/L	1	06/05/17 03:18 PM
Molybdenum	0.00764	0.00200	0.00500		mg/L	1	06/05/17 03:18 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	06/05/17 03:18 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	06/05/17 03:18 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/02/17 11:42 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	130	3.00	10.0		mg/L	10	06/01/17 12:50 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	06/01/17 10:52 AM
Sulfate	1410	10.0	30.0		mg/L	10	06/01/17 12:50 PM
PH		**M4500-H+ B**					Analyst: **BTJ**
pH	7.33	0	0		pH Units@18.9℃	1	05/30/17 09:08 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	3180	50.0	50.0		mg/L	1	05/31/17 08:53 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT: Pastor, Behling & Wheeler
Work Order: 1705286
Project: Luminant A-1

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_170602D

The QC data in batch 80717 applies to the following samples: 1705286-01A, 1705286-02A, 1705286-03A

Sample ID	**MB-80717**	Batch ID:	**80717**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**CETAC2_HG_170602**	Analysis Date:	**6/2/2017 11:22:25 AM**	Prep Date:	**6/1/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.0000800	0.000200								

Sample ID	**LCS-80717**	Batch ID:	**80717**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**CETAC2_HG_170602**	Analysis Date:	**6/2/2017 11:24:41 AM**	Prep Date:	**6/1/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00222	0.000200	0.00200	0	111	85	115			

Sample ID	**LCSD-80717**	Batch ID:	**80717**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**LCSD**	Run ID:	**CETAC2_HG_170602**	Analysis Date:	**6/2/2017 11:26:56 AM**	Prep Date:	**6/1/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00218	0.000200	0.00200	0	109	85	115	1.82	15	

Sample ID	**1705300-21B SD**	Batch ID:	**80717**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**SD**	Run ID:	**CETAC2_HG_170602**	Analysis Date:	**6/2/2017 11:49:38 AM**	Prep Date:	**6/1/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.000400	0.00100	0	0				0	10	

Sample ID	**1705300-21B PDS**	Batch ID:	**80717**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**PDS**	Run ID:	**CETAC2_HG_170602**	Analysis Date:	**6/2/2017 11:51:54 AM**	Prep Date:	**6/1/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00242	0.000200	0.00250	0	96.8	85	115			

Sample ID	**1705300-21B MS**	Batch ID:	**80717**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**MS**	Run ID:	**CETAC2_HG_170602**	Analysis Date:	**6/2/2017 11:54:10 AM**	Prep Date:	**6/1/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00204	0.000200	0.00200	0	102	80	120			

Sample ID	**1705300-21B MSD**	Batch ID:	**80717**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**MSD**	Run ID:	**CETAC2_HG_170602**	Analysis Date:	**6/2/2017 11:56:27 AM**	Prep Date:	**6/1/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00204	0.000200	0.00200	0	102	80	120	0	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1705286
Project: Luminant A-1

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_170602D

Sample ID	**ICV-170602**	Batch ID:	**R92273**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**ICV**	Run ID:	**CETAC2_HG_170602**	Analysis Date:	**6/2/2017 10:50:36 AM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00404	0.000200	0.00400	0	101	90	110			

Sample ID	**CCV1-170602**	Batch ID:	**R92273**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**CETAC2_HG_170602**	Analysis Date:	**6/2/2017 11:17:51 AM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00206	0.000200	0.00200	0	103	90	110			

Sample ID	**CCV2-170602**	Batch ID:	**R92273**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**CETAC2_HG_170602**	Analysis Date:	**6/2/2017 12:01:01 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00208	0.000200	0.00200	0	104	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1705286
Project: Luminant A-1

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_170605B

The QC data in batch 80708 applies to the following samples: 1705286-01A, 1705286-02A, 1705286-03A

Sample ID **MB-80708** Batch ID: **80708** TestNo: **SW6020A** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS5_170605B** Analysis Date: **6/5/2017 3:02:00 PM** Prep Date: **6/1/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.000800	0.00250								
Arsenic	<0.00200	0.00500								
Barium	<0.00300	0.0100								
Beryllium	<0.000300	0.00100								
Cadmium	<0.000300	0.00100								
Calcium	<0.100	0.300								
Chromium	<0.00200	0.00500								
Cobalt	<0.00300	0.00500								
Lead	<0.000300	0.00100								
Lithium	<0.00500	0.0100								
Molybdenum	<0.00200	0.00500								
Selenium	<0.00200	0.00500								
Thallium	<0.000500	0.00150								

Sample ID **LCS-80708** Batch ID: **80708** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS5_170605B** Analysis Date: **6/5/2017 3:04:00 PM** Prep Date: **6/1/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.197	0.00250	0.200	0	98.4	80	120			
Arsenic	0.195	0.00500	0.200	0	97.6	80	120			
Barium	0.194	0.0100	0.200	0	96.8	80	120			
Beryllium	0.192	0.00100	0.200	0	96.0	80	120			
Cadmium	0.193	0.00100	0.200	0	96.6	80	120			
Calcium	5.08	0.300	5.00	0	102	80	120			
Chromium	0.198	0.00500	0.200	0	98.9	80	120			
Cobalt	0.203	0.00500	0.200	0	102	80	120			
Lead	0.193	0.00100	0.200	0	96.5	80	120			
Lithium	0.200	0.0100	0.200	0	99.9	80	120			
Molybdenum	0.186	0.00500	0.200	0	93.0	80	120			
Selenium	0.194	0.00500	0.200	0	97.2	80	120			
Thallium	0.204	0.00150	0.200	0	102	80	120			

Sample ID **LCSD-80708** Batch ID: **80708** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS5_170605B** Analysis Date: **6/5/2017 3:06:00 PM** Prep Date: **6/1/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.196	0.00250	0.200	0	98.2	80	120	0.210	15	
Arsenic	0.197	0.00500	0.200	0	98.4	80	120	0.865	15	
Barium	0.193	0.0100	0.200	0	96.3	80	120	0.522	15	
Beryllium	0.193	0.00100	0.200	0	96.3	80	120	0.282	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1705286
Project: Luminant A-1

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_170605B

Sample ID **LCSD-80708** Batch ID: **80708** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS5_170605B** Analysis Date: **6/5/2017 3:06:00 PM** Prep Date: **6/1/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cadmium	0.193	0.00100	0.200	0	96.6	80	120	0.036	15	
Calcium	5.19	0.300	5.00	0	104	80	120	2.23	15	
Chromium	0.200	0.00500	0.200	0	99.8	80	120	0.880	15	
Cobalt	0.203	0.00500	0.200	0	101	80	120	0.209	15	
Lead	0.195	0.00100	0.200	0	97.4	80	120	0.963	15	
Lithium	0.196	0.0100	0.200	0	98.0	80	120	1.92	15	
Molybdenum	0.186	0.00500	0.200	0	93.1	80	120	0.035	15	
Selenium	0.200	0.00500	0.200	0	100	80	120	2.84	15	
Thallium	0.206	0.00150	0.200	0	103	80	120	0.935	15	

Sample ID **1705303-01A SD** Batch ID: **80708** TestNo: **SW6020A** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS5_170605B** Analysis Date: **6/5/2017 3:11:00 PM** Prep Date: **6/1/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.00400	0.0125	0	0				0	10	
Arsenic	<0.0100	0.0250	0	0.00287				0	10	
Barium	0.0828	0.0500	0	0.0899				8.31	10	
Beryllium	<0.00150	0.00500	0	0				0	10	
Cadmium	<0.00150	0.00500	0	0				0	10	
Chromium	<0.0100	0.0250	0	0				0	10	
Cobalt	<0.0150	0.0250	0	0				0	10	
Lead	<0.00150	0.00500	0	0.00115				0	10	
Lithium	<0.0250	0.0500	0	0.00764				0	10	
Molybdenum	<0.0100	0.0250	0	0				0	10	
Selenium	<0.0100	0.0250	0	0				0	10	
Thallium	<0.00250	0.00750	0	0				0	10	

Sample ID **1705303-01A PDS** Batch ID: **80708** TestNo: **SW6020A** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS5_170605B** Analysis Date: **6/5/2017 3:29:00 PM** Prep Date: **6/1/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.181	0.00250	0.200	0	90.6	80	120			
Arsenic	0.197	0.00500	0.200	0.00287	96.8	80	120			
Barium	0.281	0.0100	0.200	0.0899	95.6	80	120			
Beryllium	0.204	0.00100	0.200	0	102	80	120			
Cadmium	0.192	0.00100	0.200	0	96.0	80	120			
Chromium	0.205	0.00500	0.200	0	103	80	120			
Cobalt	0.200	0.00500	0.200	0	100	80	120			
Lead	0.196	0.00100	0.200	0.00115	97.4	80	120			
Lithium	0.202	0.0100	0.200	0.00764	97.1	80	120			
Molybdenum	0.185	0.00500	0.200	0	92.7	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1705286
Project: Luminant A-1

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_170605B

Sample ID **1705303-01A PDS**	Batch ID: **80708**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS5_170605B**	Analysis Date: **6/5/2017 3:29:00 PM**	Prep Date: **6/1/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.189	0.00500	0.200	0	94.7	80	120			
Thallium	0.204	0.00150	0.200	0	102	80	120			

Sample ID **1705303-01A MS**	Batch ID: **80708**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS5_170605B**	Analysis Date: **6/5/2017 3:30:00 PM**	Prep Date: **6/1/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.192	0.00250	0.200	0	95.9	80	120			
Arsenic	0.193	0.00500	0.200	0.00287	95.1	80	120			
Barium	0.284	0.0100	0.200	0.0899	97.1	80	120			
Beryllium	0.196	0.00100	0.200	0	98.2	80	120			
Cadmium	0.189	0.00100	0.200	0	94.6	80	120			
Calcium	48.3	0.300	5.00	44.2	82.4	80	120			
Chromium	0.198	0.00500	0.200	0	98.8	80	120			
Cobalt	0.196	0.00500	0.200	0	97.9	80	120			
Lead	0.193	0.00100	0.200	0.00115	96.0	80	120			
Lithium	0.208	0.0100	0.200	0.00764	99.9	80	120			
Molybdenum	0.186	0.00500	0.200	0	93.2	80	120			
Selenium	0.187	0.00500	0.200	0	93.3	80	120			
Thallium	0.202	0.00150	0.200	0	101	80	120			

Sample ID **1705303-01A MSD**	Batch ID: **80708**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS5_170605B**	Analysis Date: **6/5/2017 3:32:00 PM**	Prep Date: **6/1/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.195	0.00250	0.200	0	97.3	80	120	1.37	15	
Arsenic	0.194	0.00500	0.200	0.00287	95.8	80	120	0.712	15	
Barium	0.288	0.0100	0.200	0.0899	99.0	80	120	1.30	15	
Beryllium	0.202	0.00100	0.200	0	101	80	120	2.57	15	
Cadmium	0.192	0.00100	0.200	0	95.8	80	120	1.24	15	
Calcium	48.5	0.300	5.00	44.2	87.4	80	120	0.517	15	
Chromium	0.200	0.00500	0.200	0	100	80	120	1.19	15	
Cobalt	0.197	0.00500	0.200	0	98.5	80	120	0.605	15	
Lead	0.195	0.00100	0.200	0.00115	97.1	80	120	1.05	15	
Lithium	0.206	0.0100	0.200	0.00764	99.2	80	120	0.736	15	
Molybdenum	0.189	0.00500	0.200	0	94.7	80	120	1.64	15	
Selenium	0.185	0.00500	0.200	0	92.6	80	120	0.674	15	
Thallium	0.203	0.00150	0.200	0	102	80	120	0.434	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1705286
Project: Luminant A-1

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_170605B

Sample ID **ICV-170605**	Batch ID: **R92293**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS5_170605B**	Analysis Date: **6/5/2017 11:42:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.102	0.00250	0.100	0	102	90	110			
Arsenic	0.102	0.00500	0.100	0	102	90	110			
Barium	0.100	0.0100	0.100	0	100	90	110			
Beryllium	0.101	0.00100	0.100	0	101	90	110			
Cadmium	0.100	0.00100	0.100	0	100	90	110			
Calcium	2.53	0.300	2.50	0	101	90	110			
Chromium	0.105	0.00500	0.100	0	105	90	110			
Cobalt	0.104	0.00500	0.100	0	104	90	110			
Lead	0.100	0.00100	0.100	0	100	90	110			
Lithium	0.0990	0.0100	0.100	0	99.0	90	110			
Molybdenum	0.0930	0.00500	0.100	0	93.0	90	110			
Selenium	0.103	0.00500	0.100	0	103	90	110			
Thallium	0.0979	0.00150	0.100	0	97.9	90	110			

Sample ID **LCVL-170605**	Batch ID: **R92293**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_170605B**	Analysis Date: **6/5/2017 11:46:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00206	0.00250	0.00200	0	103	70	130			
Arsenic	0.00484	0.00500	0.00500	0	96.7	70	130			
Barium	0.00482	0.0100	0.00500	0	96.3	70	130			
Beryllium	0.000837	0.00100	0.00100	0	83.7	70	130			
Cadmium	0.00101	0.00100	0.00100	0	101	70	130			
Calcium	0.0957	0.300	0.100	0	95.7	70	130			
Chromium	0.00493	0.00500	0.00500	0	98.6	70	130			
Cobalt	0.00504	0.00500	0.00500	0	101	70	130			
Lead	0.00103	0.00100	0.00100	0	103	70	130			
Lithium	0.0100	0.0100	0.0100	0	100	70	130			
Molybdenum	0.00484	0.00500	0.00500	0	96.8	70	130			
Selenium	0.00491	0.00500	0.00500	0	98.3	70	130			
Thallium	0.000958	0.00150	0.00100	0	95.8	70	130			

Sample ID **CCV4-170605**	Batch ID: **R92293**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_170605B**	Analysis Date: **6/5/2017 2:33:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.195	0.00250	0.200	0	97.7	90	110			
Arsenic	0.200	0.00500	0.200	0	99.8	90	110			
Barium	0.193	0.0100	0.200	0	96.6	90	110			
Beryllium	0.194	0.00100	0.200	0	97.0	90	110			
Cadmium	0.194	0.00100	0.200	0	97.0	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1705286
Project: Luminant A-1

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_170605B

Sample ID **CCV4-170605** Batch ID: **R92293** TestNo: **SW6020A** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS5_170605B** Analysis Date: **6/5/2017 2:33:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	5.16	0.300	5.00	0	103	90	110			
Chromium	0.200	0.00500	0.200	0	100	90	110			
Cobalt	0.204	0.00500	0.200	0	102	90	110			
Lead	0.195	0.00100	0.200	0	97.7	90	110			
Lithium	0.198	0.0100	0.200	0	99.2	90	110			
Molybdenum	0.187	0.00500	0.200	0	93.5	90	110			
Selenium	0.201	0.00500	0.200	0	100	90	110			
Thallium	0.206	0.00150	0.200	0	103	90	110			

Sample ID **LCVL4-170605** Batch ID: **R92293** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS5_170605B** Analysis Date: **6/5/2017 2:36:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00199	0.00250	0.00200	0	99.4	70	130			
Arsenic	0.00496	0.00500	0.00500	0	99.3	70	130			
Barium	0.00474	0.0100	0.00500	0	94.8	70	130			
Beryllium	0.00116	0.00100	0.00100	0	116	70	130			
Cadmium	0.000968	0.00100	0.00100	0	96.8	70	130			
Calcium	0.104	0.300	0.100	0	104	70	130			
Chromium	0.00516	0.00500	0.00500	0	103	70	130			
Cobalt	0.00493	0.00500	0.00500	0	98.6	70	130			
Lead	0.00105	0.00100	0.00100	0	105	70	130			
Lithium	0.0106	0.0100	0.0100	0	106	70	130			
Molybdenum	0.00451	0.00500	0.00500	0	90.2	70	130			
Selenium	0.00527	0.00500	0.00500	0	105	70	130			
Thallium	0.000962	0.00150	0.00100	0	96.2	70	130			

Sample ID **CCV5-170605** Batch ID: **R92293** TestNo: **SW6020A** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS5_170605B** Analysis Date: **6/5/2017 3:34:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.199	0.00250	0.200	0	99.3	90	110			
Arsenic	0.199	0.00500	0.200	0	99.7	90	110			
Barium	0.199	0.0100	0.200	0	99.5	90	110			
Beryllium	0.205	0.00100	0.200	0	103	90	110			
Cadmium	0.198	0.00100	0.200	0	99.0	90	110			
Calcium	5.13	0.300	5.00	0	103	90	110			
Chromium	0.201	0.00500	0.200	0	101	90	110			
Cobalt	0.208	0.00500	0.200	0	104	90	110			
Lead	0.196	0.00100	0.200	0	98.2	90	110			
Lithium	0.209	0.0100	0.200	0	104	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1705286
Project: Luminant A-1

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_170605B

Sample ID **CCV5-170605**	Batch ID: **R92293**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_170605B**	Analysis Date: **6/5/2017 3:34:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Molybdenum	0.192	0.00500	0.200	0	95.9	90	110			
Selenium	0.199	0.00500	0.200	0	99.5	90	110			
Thallium	0.208	0.00150	0.200	0	104	90	110			

Sample ID **LCVL5-170605**	Batch ID: **R92293**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_170605B**	Analysis Date: **6/5/2017 3:37:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00201	0.00250	0.00200	0	101	70	130			
Arsenic	0.00488	0.00500	0.00500	0	97.6	70	130			
Barium	0.00491	0.0100	0.00500	0	98.1	70	130			
Beryllium	0.00103	0.00100	0.00100	0	103	70	130			
Cadmium	0.000974	0.00100	0.00100	0	97.4	70	130			
Calcium	0.106	0.300	0.100	0	106	70	130			
Chromium	0.00504	0.00500	0.00500	0	101	70	130			
Cobalt	0.00502	0.00500	0.00500	0	100	70	130			
Lead	0.00103	0.00100	0.00100	0	103	70	130			
Lithium	0.0101	0.0100	0.0100	0	101	70	130			
Molybdenum	0.00462	0.00500	0.00500	0	92.3	70	130			
Selenium	0.00462	0.00500	0.00500	0	92.3	70	130			
Thallium	0.000974	0.00150	0.00100	0	97.4	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1705286
Project: Luminant A-1

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_170606A

The QC data in batch 80708 applies to the following samples: 1705286-01A, 1705286-02A, 1705286-03A

Sample ID	**MB-80708**	Batch ID:	**80708**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**ICP-MS5_170606A**	Analysis Date:	**6/6/2017 11:16:00 AM**	Prep Date:	**6/1/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	<0.0100	0.0300								

Sample ID	**LCS-80708**	Batch ID:	**80708**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**ICP-MS5_170606A**	Analysis Date:	**6/6/2017 11:18:00 AM**	Prep Date:	**6/1/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.194	0.0300	0.200	0	97.1	80	120			

Sample ID	**LCSD-80708**	Batch ID:	**80708**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**LCSD**	Run ID:	**ICP-MS5_170606A**	Analysis Date:	**6/6/2017 11:19:00 AM**	Prep Date:	**6/1/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.207	0.0300	0.200	0	103	80	120	6.35	15	

Sample ID	**1705303-01A SD**	Batch ID:	**80708**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**SD**	Run ID:	**ICP-MS5_170606A**	Analysis Date:	**6/6/2017 11:23:00 AM**	Prep Date:	**6/1/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	<0.500	1.50	0	0.324				0	10	
Calcium	44.3	15.0	0	44.5				0.321	10	

Sample ID	**1705303-01A PDS**	Batch ID:	**80708**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**PDS**	Run ID:	**ICP-MS5_170606A**	Analysis Date:	**6/6/2017 11:39:00 AM**	Prep Date:	**6/1/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	2.16	0.300	2.00	0.325	91.7	80	120			
Calcium	92.0	3.00	50.0	44.5	95.1	80	120			

Sample ID	**1705303-01A MS**	Batch ID:	**80708**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**MS**	Run ID:	**ICP-MS5_170606A**	Analysis Date:	**6/6/2017 11:41:00 AM**	Prep Date:	**6/1/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.459	0.300	0.200	0.325	67.4	80	120			S

Sample ID	**1705303-01A MSD**	Batch ID:	**80708**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**MSD**	Run ID:	**ICP-MS5_170606A**	Analysis Date:	**6/6/2017 11:42:00 AM**	Prep Date:	**6/1/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.427	0.300	0.200	0.325	51.4	80	120	0.664	15	S

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1705286
Project: Luminant A-1

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_170606A

Sample ID **ICV-170606**	Batch ID: **R92309**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS5_170606A**	Analysis Date: **6/6/2017 10:28:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0960	0.0300	0.100	0	96.0	90	110			
Calcium	2.44	0.300	2.50	0	97.8	90	110			

Sample ID **LCVL-170606**	Batch ID: **R92309**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_170606A**	Analysis Date: **6/6/2017 10:32:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0252	0.0300	0.0200	0	126	70	130			
Calcium	0.120	0.300	0.100	0	120	70	130			

Sample ID **CCV1-170606**	Batch ID: **R92309**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_170606A**	Analysis Date: **6/6/2017 11:06:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.208	0.0300	0.200	0	104	90	110			
Calcium	5.25	0.300	5.00	0	105	90	110			

Sample ID **LCVL1-170606**	Batch ID: **R92309**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_170606A**	Analysis Date: **6/6/2017 11:12:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0203	0.0300	0.0200	0	102	70	130			
Calcium	0.0861	0.300	0.100	0	86.1	70	130			

Sample ID **CCV2-170606**	Batch ID: **R92309**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_170606A**	Analysis Date: **6/6/2017 11:44:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.210	0.0300	0.200	0	105	90	110			
Calcium	5.15	0.300	5.00	0	103	90	110			

Sample ID **LCVL2-170606**	Batch ID: **R92309**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_170606A**	Analysis Date: **6/6/2017 11:51:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0185	0.0300	0.0200	0	92.5	70	130			
Calcium	0.111	0.300	0.100	0	111	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1705286
Project: Luminant A-1

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_170606A

Sample ID	**CCV3-170606**	Batch ID:	**R92309**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**ICP-MS5_170606A**	Analysis Date:	**6/6/2017 1:25:00 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	5.18	0.300	5.00	0	104	90	110			

Sample ID	**LCVL3-170606**	Batch ID:	**R92309**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**LCVL**	Run ID:	**ICP-MS5_170606A**	Analysis Date:	**6/6/2017 1:28:00 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.119	0.300	0.100	0	119	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1705286
Project: Luminant A-1

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_170601A

The QC data in batch 80700 applies to the following samples: 1705286-01D, 1705286-02D, 1705286-03D

Sample ID **MB-80700** Batch ID: **80700** TestNo: **E300** Units: **mg/L**
SampType: **MBLK** Run ID: **IC2_170601A** Analysis Date: **6/1/2017 9:02:16 AM** Prep Date: **6/1/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00								
Fluoride	<0.100	0.400								
Sulfate	<1.00	3.00								

Sample ID **LCS-80700** Batch ID: **80700** TestNo: **E300** Units: **mg/L**
SampType: **LCS** Run ID: **IC2_170601A** Analysis Date: **6/1/2017 9:16:53 AM** Prep Date: **6/1/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.1	1.00	10.00	0	101	90	110			
Fluoride	3.97	0.400	4.000	0	99.2	90	110			
Sulfate	30.1	3.00	30.00	0	100	90	110			

Sample ID **LCSD-80700** Batch ID: **80700** TestNo: **E300** Units: **mg/L**
SampType: **LCSD** Run ID: **IC2_170601A** Analysis Date: **6/1/2017 9:31:29 AM** Prep Date: **6/1/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.1	1.00	10.00	0	101	90	110	0.008	20	
Fluoride	4.04	0.400	4.000	0	101	90	110	1.81	20	
Sulfate	30.0	3.00	30.00	0	100	90	110	0.304	20	

Sample ID **1705316-01AMS** Batch ID: **80700** TestNo: **E300** Units: **mg/L**
SampType: **MS** Run ID: **IC2_170601A** Analysis Date: **6/1/2017 11:51:55 AM** Prep Date: **6/1/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	327	10.0	200.0	108.2	109	90	110			
Fluoride	227	4.00	200.0	0	113	90	110			S
Sulfate	247	30.0	200.0	40.96	103	90	110			

Sample ID **1705316-01AMSD** Batch ID: **80700** TestNo: **E300** Units: **mg/L**
SampType: **MSD** Run ID: **IC2_170601A** Analysis Date: **6/1/2017 12:06:31 PM** Prep Date: **6/1/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	329	10.0	200.0	108.2	110	90	110	0.661	20	
Fluoride	228	4.00	200.0	0	114	90	110	0.658	20	S
Sulfate	247	30.0	200.0	40.96	103	90	110	0.185	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1705286
Project: Luminant A-1

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_170601A

Sample ID **ICV-170601**	Batch ID: **R92244**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC2_170601A**	Analysis Date: **6/1/2017 8:20:07 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	25.6	1.00	25.00	0	102	90	110			
Fluoride	9.90	0.400	10.00	0	99.0	90	110			
Sulfate	76.6	3.00	75.00	0	102	90	110			

Sample ID **CCV1-170601**	Batch ID: **R92244**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_170601A**	Analysis Date: **6/1/2017 1:48:06 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.2	1.00	10.00	0	102	90	110			
Fluoride	4.17	0.400	4.000	0	104	90	110			
Sulfate	30.3	3.00	30.00	0	101	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1705286
Project: Luminant A-1

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_170530A

The QC data in batch 80650 applies to the following samples: 1705286-01D, 1705286-02D, 1705286-03D

Sample ID	**1705280-01D-DUP**	Batch ID:	**80650**	TestNo:	**M4500-H+ B**	Units:	**pH Units@18℃**
SampType:	**DUP**	Run ID:	**TITRATOR_170530A**	Analysis Date:	**5/30/2017 8:58:00 AM**	Prep Date:	**5/30/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	3.77	0	0	3.770				0	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1705286
Project: Luminant A-1

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_170530A

Sample ID **ICV-170530**	Batch ID: **R92194**	TestNo: **M4500-H+ B**	Units: **pH Units@21.9℃**
SampType: **ICV**	Run ID: **TITRATOR_170530A**	Analysis Date: **5/30/2017 8:24:00 AM**	Prep Date: **5/30/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	9.92	0	10.00	0	99.2	99	101			

Sample ID **CCV1-170530**	Batch ID: **R92194**	TestNo: **M4500-H+ B**	Units: **pH Units@21.6℃**
SampType: **CCV**	Run ID: **TITRATOR_170530A**	Analysis Date: **5/30/2017 9:09:00 AM**	Prep Date: **5/30/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	6.97	0	7.000	0	99.6	97.1	102.9			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1705286
Project: Luminant A-1

ANALYTICAL QC SUMMARY REPORT

RunID: WC_170530C

The QC data in batch 80666 applies to the following samples: 1705286-01D, 1705286-02D, 1705286-03D

Sample ID	**MB-80666**	Batch ID:	**80666**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**WC_170530C**	Analysis Date:	**5/31/2017 8:53:00 AM**	Prep Date:	**5/30/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	<10.0	10.0								

Sample ID	**LCS-80666**	Batch ID:	**80666**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**WC_170530C**	Analysis Date:	**5/31/2017 8:53:00 AM**	Prep Date:	**5/30/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	759	10.0	745.6	0	102	90	113			

Sample ID	**1705286-02D-DUP**	Batch ID:	**80666**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**DUP**	Run ID:	**WC_170530C**	Analysis Date:	**5/31/2017 8:53:00 AM**	Prep Date:	**5/30/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	2110	50.0	0	2115				0.474	5	

Sample ID	**1705300-09D-DUP**	Batch ID:	**80666**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**DUP**	Run ID:	**WC_170530C**	Analysis Date:	**5/31/2017 8:53:00 AM**	Prep Date:	**5/30/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	1230	50.0	0	1195				2.48	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

Case Narrative

Lab No: 20170479

This report contains the analytical results for the 3 sample(s) received under chain of custody by ESC Lab Sciences on 5/30/2017 11:30:35 AM. These samples are associated with your 1705286 project.

The analytical results included in this report meet all applicable quality control procedure requirements except as noted below:

The test results in this report meet all NELAC requirements unless noted below:

This report shall not be reproduced, except in full, without the written approval of ESC Lab Sciences.

All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client.

Results have been reviewed by the Director of Radiochemistry or their designees and is approved for release.

DL for Radiochemistry = MDA DL for Metals and Wet Chemistry = MDL DL for Drinking Water = SDWA

Observations / Nonconformances

L913295
The following QC parameters are outside method control limits:
MSD %REC Radium-226 SDG# R1241

Analytical Report

	Method	Result	DL	Units	Qual	Prep Date	Analysis Date	Analyst
Lab ID : **20170479-01**								
Client ID : **BMW-27**								
Date Sampled : **5/25/2017 9:35:00 AM**								
Matrix : **NPW**								
Radiochemical Analyses								
Combined Radium		1.45 +/- 0.74	0.787	pCi/l				
Radium-226	SM 7500 Ra B M*	0.073 +/- 0.233	0.443	pCi/l		06/15/17	06/20/17	SD
Radium-228	EPA 904*	1.38 +/- 0.507	0.344	pCi/l		06/09/17	06/15/17	JR
Lab ID : **20170479-02**								
Client ID : **BMW-26**								
Date Sampled : **5/25/2017 10:35:00 AM**								
Matrix : **NPW**								
Radiochemical Analyses								
Combined Radium		0.841 +/- 0.756	0.785	pCi/l				
Radium-226	SM 7500 Ra B M*	0.023 +/- 0.206	0.477	pCi/l		06/15/17	06/20/17	SD
Radium-228	EPA 904*	0.818 +/- 0.550	0.308	pCi/l		06/09/17	06/15/17	JR
Lab ID : **20170479-03**								
Client ID : **BMW-28**								
Date Sampled : **5/25/2017 11:40:00 AM**								
Matrix : **NPW**								
Radiochemical Analyses								
Combined Radium		1.70 +/- 1.30	1.14	pCi/l				
Radium-226	SM 7500 Ra B M*	0.534 +/- 0.566	0.739	pCi/l		06/15/17	06/20/17	SD
Radium-228	EPA 904*	1.17 +/- 0.736	0.403	pCi/l		06/09/17	06/15/17	JR

QC Report

Parameter	Blank	LCS %REC	LCSD %REC	LCSD RPD	DUP RPD	RER, NAD or DER	MS %REC	MSD %REC	MSD RPD	Batch ID
Radium-226	0.107	80.2			NC	0.544	125.0	131.0	4.4	R1241
Radium-228	-0.090	84.7			NC	0.065	93.5	103.0	9.1	R3969

Lab Approval:

Ron Eidson
Director of Radiochemistry

*NELAC Certified Parameter BDL = Below Detection Limit

DHL Analytical, Inc.
2300 Double Creek Drive
Round Rock, TX 78664
TEL: *(512) 388-8222* FAX: *(512) 388-8229*

CHAIN-OF-CUSTODY RECORD

Work Order: 1705286

Subcontractor:

ESC Laboratory
311 North Aspen
Broken Arrow, Oklahoma 74012

TEL: (918) 251-2515
FAX:
Acct #: DHLRRTX

26-May-17

Sample Id	Matrix	DHL#	Date Collected	Bottle Type	Requested Tests E904.0	M7500Ra-B M				
BMW-27	Aqueous	-01B	05/25/17 09:35 AM	1LHDPEHNO3	1					
BMW-27	Aqueous	-01C	05/25/17 09:35 AM	1LHDPEHNO3		1				
BMW-26	Aqueous	-02B	05/25/17 10:35 AM	1LHDPEHNO3	1					
BMW-26	Aqueous	-02C	05/25/17 10:35 AM	1LHDPEHNO3		1				
BMW-28	Aqueous	-03B	05/25/17 11:40 AM	1LHDPEHNO3	1					
BMW-28	Aqueous	-03C	05/25/17 11:40 AM	1LHDPEHNO3		1				

General Comments:

Please analyze these samples with Normal Turnaround Time.
Report RA-226, Ra-228 & Combined per Specs.
Quality Control Package Needed: Standard - NELAC Rad Test compliant
Email to cac@dhlanalytical.com & dupont@dhlanalytical.com

20120479 L913295

		Date/Time			Date/Time
Relinquished by:		5/26/17 1730	**Received by:**	Houston	5/26/17 1730
Relinquished by:			**Received by:**		5/30/17 1130

SAMPLE LOGIN

Date Received: 5/30/2017 11:30:3 **Lab Number:** 20170479 **Due:** 6/27/2017

Sample Number	Client Sample ID	Matrix	Date Sampled	Container Type	Container Size	Preservation	Preserved Upon Receipt	Custody Seal	Seal Intact
20170479-01 B	BMW-27	NPW	05/25/17	Plastic	1 L	HNO3, pH < 2	✓	Yes	Yes
20170479-01 A	BMW-27	NPW	05/25/17	Plastic	1 L	HNO3, pH < 2	✓	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*						
20170479-02 B	BMW-26	NPW	05/25/17	Plastic	1 L	HNO3, pH < 2	✓	Yes	Yes
20170479-02 A	BMW-26	NPW	05/25/17	Plastic	1 L	HNO3, pH < 2	✓	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*						
20170479-03 B	BMW-28	NPW	05/25/17	Plastic	1 L	HNO3, pH < 2	✓	Yes	Yes
20170479-03 A	BMW-28	NPW	05/25/17	Plastic	1 L	HNO3, pH < 2	✓	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*						

CONTAINER INSPECTION

 # Coolers 1 **Custody Seals Broken** Ø **Temperature:** 4.6 C **Ice** **Radiation Survey:** <300 cpm

SAMPLE INSPECTION

Sample Seal Broken Ø **Chain of Custody Record** ✓ **Labels in Tact** ✓ **Radiation Survey Complete** N/A

Anomalies

Inspected By: _____ **DATE** 5/30/17

QA or Designee Review: Raymond Thomas **DATE** 05/30/17

Sample Custodian Review: _____ **DATE** 5/30/17

Project Notes:

July 27, 2017

Will Vienne
Pastor, Behling & Wheeler
2201 Double Creek Dr #4004
Round Rock, Texas 78664
TEL: (512) 671-3434
FAX (512) 671-3446

Order No.: 1706346

RE: Beckville Mine

Dear Will Vienne:

DHL Analytical, Inc. received 3 sample(s) on 6/30/2017 for the analyses presented in the following report.

There were no problems with the analyses and all data met requirements of NELAC except where noted in the Case Narrative. All non-NELAC methods will be identified accordingly in the case narrative and all estimated uncertainties of test results are within method or EPA specifications.

If you have any questions regarding these tests results, please feel free to call. Thank you for using DHL Analytical.

Sincerely,

John DuPont
General Manager

This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211-17-19

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DHL ANALYTICAL
2300 Double Creek Dr. ■ Round Rock, TX 78664
Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

№ 75768
CHAIN-OF-CUSTODY

CLIENT: Pastor, Behling & Wheeler, LLC.
ADDRESS: 5416 Plaza Drive, Texarkana, TX
PHONE: 903-794-0625 FAX/E-MAIL:
DATA REPORTED TO: Will Vienne
ADDITIONAL REPORT COPIES TO:

DATE: 6-29-17 PAGE 1 OF 1
PO #: 5164-B DHL WORK ORDER #: 1706346
PROJECT LOCATION OR NAME: Beckville Mine
CLENT PROJECT #: 5164-B COLLECTOR: Keith Stanek

Authorize 5% surcharge for TRRP Report? ☐ Yes ☐ No

S=SOIL P=PAINT
W=WATER SL=SLUDGE
A=AIR O=OTHER
L=LIQUID SO=SOLID
SE=SEDIMENT

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	PRESERVATION: HCl	HNO_3	H_2SO_4 ☐ NaOH ☐	ICE	UNPRESERVED	ANALYSES	FIELD NOTES
BMW-26	01	6/29/17	1345	GW	250/500 Liter	4		✓		✓		✓	
BMW-27	02	"	1450	"	"	4		✓		✓		✓	
BMW-28	03	"	1220	"	"	4		✓		✓		✓	

ANALYSES: BTEX ☐ MTBE ☐ [METHOD 8021] TPH 1005 ☐ TPH 1006 ☐ HOLD 1006 ☐ GRO [METHOD 8015] ☐ DRO [METHOD 8105] ☐ VOC 8260 ☐ VOC 624 ☐ VOC 8260/5035 ☐ SVOC 8270 ☐ PAH 8270 ☐ HOLD PAH ☐ SVOC 625 ☐ 8270 PEST ☐ 625 PEST/PCB ☐ 608 PCB ☐ 8270 PCB ☐ 8270 O-P PEST ☐ 8082 PCB ☐ 8270 PCB ☐ 8321 HERB ☐ T PHOS, AMMONIA ☐ METALS 6020 ☐ METALS 200.8 ☐ DISS. METALS ☐ ☐ RCRA ☐ TX11 ☐ PH ☐ HEX CHROM ☐ ALKALINITY ☐ COD ☐ CHLORIDE ☐ ANIONS ☐ TCLP-SVOC ☐ VOC ☐ PEST ☐ HERB ☐ TCLP-METALS ☐ RCRA 8 ☐ TX-11 ☐ Pb ☐ RCI ☐ FLASHPOINT ☐ DGAS ☐ TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐ Per Attached CofC List

RELINQUISHED BY: (Signature) Keith Stanek DATE/TIME 6/29/17 1535 RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature) DATE/TIME 6.30.17 9:30 RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature) DATE/TIME RECEIVED BY: (Signature)

TURN AROUND TIME
RUSH ☐ CALL FIRST
1 DAY ☐ CALL FIRST
2 DAY ☐
NORMAL ☑
OTHER ☐

LABORATORY USE ONLY:
RECEIVING TEMP: 1.1 THERM #: 78
CUSTODY SEALS: ☐ BROKEN ☒ INTACT ☐ NOT USED
CARRIER: ☐ LONE STAR ☒ FEDEX ☐ UPS ☐ OTHER
☐ COURIER DELIVERY
☐ HAND DELIVERED

John Dupont

From: Sara Taube [Sara.Taube@pbwllc.com]
Sent: Wednesday, July 22, 2015 12:05 PM
To: John Dupont
Subject: CCR Appendix III and IV
Follow Up Flag: Follow up
Flag Status: Completed

Hi John,

Here are the Appendix III and Appendix IV constituents that we will need to have analyzed under the CCR Rule.

Appendix III
Boron
Calcium
Chloride
Fluoride
pH
sulfate
TDS

Appendix IV
Antimony
Arsenic
Barium
Beryllium
Cadmium
Chromium
Cobalt
Fluoride
Lead
Lithium
Mercury
Molybdenum
Selenium
Thallium
Radium 226 and 228

We are looking to have approximately 74 wells sampled 8 times over the course of the next two years. Please let me know if there is any more information you might need.

Cheers,

Sara

10/26/2015

2201 DOUBLE CREEK DR STE 4004
ROUND ROCK, TX 786643843
UNITED STATES US

DIMS: 24x14x15 IN
BILL SENDER

TO **LAB RECEIVING**
DHL ANALYTICAL
2300 DOUBLE CREEK DR

ROUND ROCK TX 78664
(512) 388-8222 REF:
INV:
PO: DEPT:

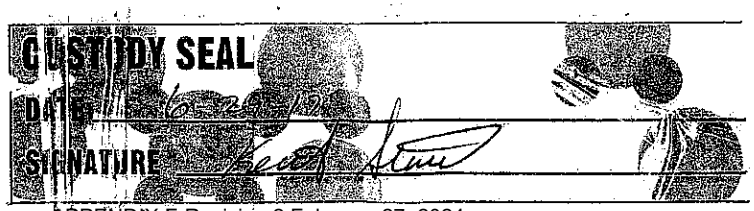
FedEx Express

TRK# 0200 **8022 5110 8391**

FRI - 30 JUN 3:00P
STANDARD OVERNIGHT

A8 BSMA

78664
TX-US **AUS**



QEC
Quality Environmental Containers
800-255-3950 • 304-255-3900

DHL Analytical, Inc.

Sample Receipt Checklist

Client Name **Pastor, Behling & Wheeler** Date Received: **6/30/2017**

Work Order Number **1706346** Received by **JT**

Checklist completed by: _____ 6/30/2017 Reviewed by _____ 6/30/2017
Signature | Date | Initials | Date

Carrier name FedEx 1day

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	**1.1** °C
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH<2 acceptable upon receipt?	Yes ☑	No ☐	NA ☐ LOT # 8086
	Adjusted? no		Checked by EL
Water - ph>9 (S) or ph>12 (CN) acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted?		Checked by

Any No response must be detailed in the comments section below.

Client contacted _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments: _____

Corrective Action _____

DHL Analytical, Inc. **Date:** *27-Jul-17*

CLIENT: Pastor, Behling & Wheeler
Project: Beckville Mine
Lab Order: 1706346

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Method SW6020A - Metals Analysis
Method SW7470A - Mercury Analysis
Method E300 - Anions Analysis
Method M4500-H+ B - pH of a Water Analysis
Method M2540C - TDS Analysis
Sub-contract - Radium-228 and Radium-226 analyses by methods E904/9320 and SM 7500 Ra B M. Analyzed at ESC Lab Sciences.

LOG IN

The samples were received and log-in performed on 6/30/17. A total of 3 samples were received. The samples arrived in good condition and were properly packaged.

METALS ANALYSIS

For Metals analysis performed on 7/13/17 the matrix spike and matrix spike duplicate recoveries were out of control limits for three analytes. These are flagged accordingly in the QC summary report. The sample selected for the matrix spike and matrix spike duplicate was from this work order. The LCS was within control limits for these analytes. No further corrective actions were taken.

For Metals analysis performed on 7/13/17 the RPD for the serial dilution was slightly above control limits for Boron. This is flagged accordingly. The PDS was within control limits for this analyte. No further corrective actions were taken.

ANIONS ANALYSIS

For Anions analysis performed on 7/12/17 the matrix spike recovery (1706346-03 MS) was above control limits for Sulfate. This is flagged accordingly in the QC summary report. The sample selected for the matrix spike and matrix spike duplicate was from this work order. The LCS was within control limits for this analyte. No further corrective actions were taken.

TDS ANALYSIS

For TDS analysis all samples were analyzed one day outside of HoldTime due to log-in error. All TDS results are flagged with a "C" to designate this.

DHL Analytical, Inc.

Date: *27-Jul-17*

CLIENT: Pastor, Behling & Wheeler
Project: Beckville Mine
Lab Order: 1706346

Work Order Sample Summary

Lab Smp ID	Client Sample ID	Tag Number	Date Collected	Date Recved
1706346-01	BMW-26		06/29/17 01:45 PM	6/30/2017
1706346-02	BMW-27		06/29/17 02:50 PM	6/30/2017
1706346-03	BMW-28		06/29/17 12:20 PM	6/30/2017

Lab Order: 1706346
Client: Pastor, Behling & Wheeler
Project: Beckville Mine

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1706346-01A	BMW-26	06/29/17 01:45 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	07/11/17 08:11 AM	81348
	BMW-26	06/29/17 01:45 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	07/11/17 08:11 AM	81348
	BMW-26	06/29/17 01:45 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	07/11/17 08:11 AM	81348
	BMW-26	06/29/17 01:45 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	07/11/17 08:11 AM	81348
	BMW-26	06/29/17 01:45 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	07/03/17 10:50 AM	81248
1706346-01B	BMW-26	06/29/17 01:45 PM	Aqueous	E300	Anion Preparation	07/12/17 08:57 AM	81368
	BMW-26	06/29/17 01:45 PM	Aqueous	E300	Anion Preparation	07/12/17 08:57 AM	81368
	BMW-26	06/29/17 01:45 PM	Aqueous	M4500-H+ B	pH Preparation	07/07/17 12:30 PM	81316
	BMW-26	06/29/17 01:45 PM	Aqueous	M2540C	TDS Preparation	07/07/17 10:30 AM	81315
1706346-02A	BMW-27	06/29/17 02:50 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	07/11/17 08:11 AM	81348
	BMW-27	06/29/17 02:50 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	07/11/17 08:11 AM	81348
	BMW-27	06/29/17 02:50 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	07/11/17 08:11 AM	81348
	BMW-27	06/29/17 02:50 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	07/11/17 08:11 AM	81348
	BMW-27	06/29/17 02:50 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	07/11/17 08:11 AM	81348
	BMW-27	06/29/17 02:50 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	07/03/17 10:50 AM	81248
1706346-02B	BMW-27	06/29/17 02:50 PM	Aqueous	E300	Anion Preparation	07/12/17 08:57 AM	81368
	BMW-27	06/29/17 02:50 PM	Aqueous	E300	Anion Preparation	07/12/17 08:57 AM	81368
	BMW-27	06/29/17 02:50 PM	Aqueous	M4500-H+ B	pH Preparation	07/07/17 12:30 PM	81316
	BMW-27	06/29/17 02:50 PM	Aqueous	M2540C	TDS Preparation	07/07/17 10:30 AM	81315
1706346-03A	BMW-28	06/29/17 12:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	07/11/17 08:11 AM	81348
	BMW-28	06/29/17 12:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	07/11/17 08:11 AM	81348
	BMW-28	06/29/17 12:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	07/11/17 08:11 AM	81348
	BMW-28	06/29/17 12:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	07/11/17 08:11 AM	81348
	BMW-28	06/29/17 12:20 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	07/03/17 10:50 AM	81248
1706346-03B	BMW-28	06/29/17 12:20 PM	Aqueous	E300	Anion Preparation	07/12/17 08:57 AM	81368
	BMW-28	06/29/17 12:20 PM	Aqueous	E300	Anion Preparation	07/12/17 08:57 AM	81368
	BMW-28	06/29/17 12:20 PM	Aqueous	M4500-H+ B	pH Preparation	07/07/17 12:30 PM	81316
	BMW-28	06/29/17 12:20 PM	Aqueous	M2540C	TDS Preparation	07/07/17 10:30 AM	81315

Lab Order: 1706346
Client: Pastor, Behling & Wheeler
Project: Beckville Mine

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1706346-01A	BMW-26	Aqueous	SW7470A	Mercury Total: Aqueous	81248	1	07/05/17 10:51 AM	CETAC2_HG_170705B
	BMW-26	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	81348	1	07/12/17 02:11 PM	ICP-MS5_170712B
	BMW-26	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	81348	50	07/13/17 11:20 AM	ICP-MS5_170713A
	BMW-26	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	81348	1	07/13/17 12:41 PM	ICP-MS5_170713A
	BMW-26	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	81348	1	07/14/17 12:29 PM	ICP-MS5_170714B
1706346-01B	BMW-26	Aqueous	E300	Anions by IC method - Water	81368	10	07/12/17 01:27 PM	IC3_170712A
	BMW-26	Aqueous	E300	Anions by IC method - Water	81368	1	07/13/17 12:44 AM	IC3_170712A
	BMW-26	Aqueous	M4500-H+ B	pH	81316	1	07/07/17 01:55 PM	TITRATOR_170707B
	BMW-26	Aqueous	M2540C	Total Dissolved Solids	81315	1	07/10/17 08:50 AM	WC_170707B
1706346-02A	BMW-27	Aqueous	SW7470A	Mercury Total: Aqueous	81248	1	07/05/17 10:53 AM	CETAC2_HG_170705B
	BMW-27	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	81348	1	07/14/17 12:31 PM	ICP-MS5_170714B
	BMW-27	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	81348	1	07/12/17 03:15 PM	ICP-MS5_170712B
	BMW-27	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	81348	10	07/13/17 11:49 AM	ICP-MS5_170713A
	BMW-27	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	81348	1	07/13/17 12:42 PM	ICP-MS5_170713A
	BMW-27	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	81348	100	07/13/17 12:11 PM	ICP-MS5_170713A
1706346-02B	BMW-27	Aqueous	E300	Anions by IC method - Water	81368	10	07/12/17 01:48 PM	IC3_170712A
	BMW-27	Aqueous	E300	Anions by IC method - Water	81368	1	07/13/17 01:05 AM	IC3_170712A
	BMW-27	Aqueous	M4500-H+ B	pH	81316	1	07/07/17 01:58 PM	TITRATOR_170707B
	BMW-27	Aqueous	M2540C	Total Dissolved Solids	81315	1	07/10/17 08:50 AM	WC_170707B
1706346-03A	BMW-28	Aqueous	SW7470A	Mercury Total: Aqueous	81248	1	07/05/17 10:56 AM	CETAC2_HG_170705B
	BMW-28	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	81348	1	07/12/17 01:53 PM	ICP-MS5_170712B
	BMW-28	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	81348	50	07/13/17 11:03 AM	ICP-MS5_170713A
	BMW-28	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	81348	1	07/13/17 12:30 PM	ICP-MS5_170713A
	BMW-28	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	81348	1	07/14/17 12:25 PM	ICP-MS5_170714B
1706346-03B	BMW-28	Aqueous	E300	Anions by IC method - Water	81368	10	07/12/17 02:09 PM	IC3_170712A
	BMW-28	Aqueous	E300	Anions by IC method - Water	81368	1	07/13/17 01:25 AM	IC3_170712A

Lab Order: 1706346
Client: Pastor, Behling & Wheeler
Project: Beckville Mine

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1706346-03B	BMW-28	Aqueous	M4500-H+ B	pH	81316	1	07/07/17 02:01 PM	TITRATOR_170707B
	BMW-28	Aqueous	M2540C	Total Dissolved Solids	81315	1	07/10/17 08:50 AM	WC_170707B

DHL Analytical, Inc.

Date: *27-Jul-17*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	BMW-26
Project:	Beckville Mine	**Lab ID:**	1706346-01
Project No:	5164-B	**Collection Date:**	06/29/17 01:45 PM
Lab Order:	1706346	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	07/12/17 02:11 PM
Arsenic	0.0328	0.00200	0.00500		mg/L	1	07/12/17 02:11 PM
Barium	0.0352	0.00300	0.0100		mg/L	1	07/12/17 02:11 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	07/13/17 12:41 PM
Boron	0.507	0.0100	0.0300		mg/L	1	07/13/17 12:41 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	07/12/17 02:11 PM
Calcium	233	5.00	15.0		mg/L	50	07/13/17 11:20 AM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	07/12/17 02:11 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	07/12/17 02:11 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	07/12/17 02:11 PM
Lithium	0.0985	0.00500	0.0100		mg/L	1	07/14/17 12:29 PM
Molybdenum	0.00257	0.00200	0.00500	J	mg/L	1	07/12/17 02:11 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	07/12/17 02:11 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	07/12/17 02:11 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	07/05/17 10:51 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **JL**
Chloride	111	3.00	10.0		mg/L	10	07/12/17 01:27 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	07/13/17 12:44 AM
Sulfate	604	10.0	30.0		mg/L	10	07/12/17 01:27 PM
PH		**M4500-H+ B**					Analyst: **BTJ**
pH	7.03	0	0		pH Units@20℃	1	07/07/17 01:55 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **PT**
Total Dissolved Solids (Residue, Filterable)	1700	50.0	50.0	C	mg/L	1	07/10/17 08:50 AM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *27-Jul-17*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	BMW-27
Project:	Beckville Mine	**Lab ID:**	1706346-02
Project No:	5164-B	**Collection Date:**	06/29/17 02:50 PM
Lab Order:	1706346	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	07/12/17 03:15 PM
Arsenic	0.00593	0.00200	0.00500		mg/L	1	07/12/17 03:15 PM
Barium	0.0307	0.00300	0.0100		mg/L	1	07/12/17 03:15 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	07/13/17 12:42 PM
Boron	0.390	0.0100	0.0300		mg/L	1	07/13/17 12:42 PM
Cadmium	0.000851	0.000300	0.00100	J	mg/L	1	07/12/17 03:15 PM
Calcium	144	10.0	30.0		mg/L	100	07/13/17 12:11 PM
Chromium	0.00266	0.00200	0.00500	J	mg/L	1	07/12/17 03:15 PM
Cobalt	0.225	0.00300	0.00500		mg/L	1	07/12/17 03:15 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	07/12/17 03:15 PM
Lithium	0.0480	0.00500	0.0100		mg/L	1	07/14/17 12:31 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	07/12/17 03:15 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	07/12/17 03:15 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	07/12/17 03:15 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	07/05/17 10:53 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **JL**
Chloride	129	3.00	10.0		mg/L	10	07/12/17 01:48 PM
Fluoride	0.717	0.100	0.400		mg/L	1	07/13/17 01:05 AM
Sulfate	1180	10.0	30.0		mg/L	10	07/12/17 01:48 PM
PH		**M4500-H+ B**					Analyst: **BTJ**
pH	6.11	0	0		pH Units@20℃	1	07/07/17 01:58 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **PT**
Total Dissolved Solids (Residue, Filterable)	2080	50.0	50.0	C	mg/L	1	07/10/17 08:50 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *27-Jul-17*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	BMW-28
Project:	Beckville Mine	**Lab ID:**	1706346-03
Project No:	5164-B	**Collection Date:**	06/29/17 12:20 PM
Lab Order:	1706346	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	07/12/17 01:53 PM
Arsenic	0.00253	0.00200	0.00500	J	mg/L	1	07/12/17 01:53 PM
Barium	0.0549	0.00300	0.0100		mg/L	1	07/12/17 01:53 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	07/13/17 12:30 PM
Boron	1.21	0.0100	0.0300		mg/L	1	07/13/17 12:30 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	07/12/17 01:53 PM
Calcium	269	5.00	15.0		mg/L	50	07/13/17 11:03 AM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	07/12/17 01:53 PM
Cobalt	0.00840	0.00300	0.00500		mg/L	1	07/12/17 01:53 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	07/12/17 01:53 PM
Lithium	0.104	0.00500	0.0100		mg/L	1	07/14/17 12:25 PM
Molybdenum	0.00754	0.00200	0.00500		mg/L	1	07/12/17 01:53 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	07/12/17 01:53 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	07/12/17 01:53 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	07/05/17 10:56 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **JL**
Chloride	130	3.00	10.0		mg/L	10	07/12/17 02:09 PM
Fluoride	0.137	0.100	0.400	J	mg/L	1	07/13/17 01:25 AM
Sulfate	1450	10.0	30.0		mg/L	10	07/12/17 02:09 PM
PH		**M4500-H+ B**					Analyst: **BTJ**
pH	7.13	0	0		pH Units@20.1℃	1	07/07/17 02:01 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **PT**
Total Dissolved Solids (Residue, Filterable)	2950	50.0	50.0	C	mg/L	1	07/10/17 08:50 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT: Pastor, Behling & Wheeler
Work Order: 1706346
Project: Beckville Mine

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_170705B

The QC data in batch 81248 applies to the following samples: 1706346-01A, 1706346-02A, 1706346-03A

Sample ID	**MB-81248**	Batch ID:	**81248**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**CETAC2_HG_170705**	Analysis Date:	**7/5/2017 10:19:46 AM**	Prep Date:	**7/3/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.0000800	0.000200								

Sample ID	**LCS-81248**	Batch ID:	**81248**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**CETAC2_HG_170705**	Analysis Date:	**7/5/2017 10:22:02 AM**	Prep Date:	**7/3/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00214	0.000200	0.00200	0	107	85	115			

Sample ID	**LCSD-81248**	Batch ID:	**81248**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**LCSD**	Run ID:	**CETAC2_HG_170705**	Analysis Date:	**7/5/2017 10:24:18 AM**	Prep Date:	**7/3/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00200	0.000200	0.00200	0	100	85	115	6.76	15	

Sample ID	**1706287-35D SD**	Batch ID:	**81248**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**SD**	Run ID:	**CETAC2_HG_170705**	Analysis Date:	**7/5/2017 10:31:06 AM**	Prep Date:	**7/3/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.000400	0.00100	0	0				0	10	

Sample ID	**1706287-35D PDS**	Batch ID:	**81248**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**PDS**	Run ID:	**CETAC2_HG_170705**	Analysis Date:	**7/5/2017 10:33:21 AM**	Prep Date:	**7/3/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00232	0.000200	0.00250	0	92.8	85	115			

Sample ID	**1706287-35D MS**	Batch ID:	**81248**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**MS**	Run ID:	**CETAC2_HG_170705**	Analysis Date:	**7/5/2017 10:35:37 AM**	Prep Date:	**7/3/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00189	0.000200	0.00200	0	94.5	80	120			

Sample ID	**1706287-35D MSD**	Batch ID:	**81248**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**MSD**	Run ID:	**CETAC2_HG_170705**	Analysis Date:	**7/5/2017 10:37:53 AM**	Prep Date:	**7/3/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00200	0.000200	0.00200	0	100	80	120	5.66	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1706346
Project: Beckville Mine

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_170705B

Sample ID	**ICV-170705**	Batch ID:	**R92871**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**ICV**	Run ID:	**CETAC2_HG_170705**	Analysis Date:	**7/5/2017 9:02:30 AM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00393	0.000200	0.00400	0	98.2	90	110			

Sample ID	**CCV2-170705**	Batch ID:	**R92871**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**CETAC2_HG_170705**	Analysis Date:	**7/5/2017 10:15:12 AM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00195	0.000200	0.00200	0	97.5	90	110			

Sample ID	**CCV3-170705**	Batch ID:	**R92871**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**CETAC2_HG_170705**	Analysis Date:	**7/5/2017 10:58:18 AM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00198	0.000200	0.00200	0	99.0	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1706346
Project: Beckville Mine

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_170712B

The QC data in batch 81348 applies to the following samples: 1706346-01A, 1706346-02A, 1706346-03A

Sample ID **MB-81348**	Batch ID: **81348**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MBLK**	Run ID: **ICP-MS5_170712B**	Analysis Date: **7/12/2017 1:46:00 PM**	Prep Date: **7/11/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.000800	0.00250								
Arsenic	<0.00200	0.00500								
Barium	<0.00300	0.0100								
Cadmium	<0.000300	0.00100								
Chromium	<0.00200	0.00500								
Cobalt	<0.00300	0.00500								
Lead	<0.000300	0.00100								
Molybdenum	<0.00200	0.00500								
Selenium	<0.00200	0.00500								
Thallium	<0.000500	0.00150								

Sample ID **LCS-81348**	Batch ID: **81348**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCS**	Run ID: **ICP-MS5_170712B**	Analysis Date: **7/12/2017 1:48:00 PM**	Prep Date: **7/11/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.200	0.00250	0.200	0	100	80	120			
Arsenic	0.200	0.00500	0.200	0	100	80	120			
Barium	0.202	0.0100	0.200	0	101	80	120			
Cadmium	0.204	0.00100	0.200	0	102	80	120			
Chromium	0.204	0.00500	0.200	0	102	80	120			
Cobalt	0.203	0.00500	0.200	0	101	80	120			
Lead	0.195	0.00100	0.200	0	97.3	80	120			
Molybdenum	0.198	0.00500	0.200	0	98.8	80	120			
Selenium	0.199	0.00500	0.200	0	99.5	80	120			
Thallium	0.193	0.00150	0.200	0	96.4	80	120			

Sample ID **LCSD-81348**	Batch ID: **81348**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCSD**	Run ID: **ICP-MS5_170712B**	Analysis Date: **7/12/2017 1:50:00 PM**	Prep Date: **7/11/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.199	0.00250	0.200	0	99.5	80	120	0.525	15	
Arsenic	0.199	0.00500	0.200	0	99.5	80	120	0.591	15	
Barium	0.200	0.0100	0.200	0	100	80	120	0.879	15	
Cadmium	0.202	0.00100	0.200	0	101	80	120	1.09	15	
Chromium	0.201	0.00500	0.200	0	100	80	120	1.35	15	
Cobalt	0.201	0.00500	0.200	0	101	80	120	0.906	15	
Lead	0.194	0.00100	0.200	0	97.2	80	120	0.102	15	
Molybdenum	0.196	0.00500	0.200	0	98.0	80	120	0.806	15	
Selenium	0.196	0.00500	0.200	0	97.8	80	120	1.76	15	
Thallium	0.194	0.00150	0.200	0	96.9	80	120	0.491	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1706346
Project: Beckville Mine

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_170712B

Sample ID **1706346-03A SD**	Batch ID: **81348**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS5_170712B**	Analysis Date: **7/12/2017 1:55:00 PM**	Prep Date: **7/11/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.00400	0.0125	0	0				0	10	
Arsenic	<0.0100	0.0250	0	0.00253				0	10	
Barium	0.0530	0.0500	0	0.0549				3.50	10	
Cadmium	<0.00150	0.00500	0	0				0	10	
Chromium	<0.0100	0.0250	0	0				0	10	
Cobalt	<0.0150	0.0250	0	0.00840				0	10	
Lead	<0.00150	0.00500	0	0				0	10	
Molybdenum	<0.0100	0.0250	0	0.00754				0	10	
Selenium	<0.0100	0.0250	0	0				0	10	
Thallium	<0.00250	0.00750	0	0				0	10	

Sample ID **1706346-03A PDS**	Batch ID: **81348**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS5_170712B**	Analysis Date: **7/12/2017 2:13:00 PM**	Prep Date: **7/11/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.186	0.00250	0.200	0	93.2	80	120			
Arsenic	0.203	0.00500	0.200	0.00253	100	80	120			
Barium	0.248	0.0100	0.200	0.0549	96.5	80	120			
Cadmium	0.191	0.00100	0.200	0	95.7	80	120			
Chromium	0.205	0.00500	0.200	0	102	80	120			
Cobalt	0.205	0.00500	0.200	0.00840	98.5	80	120			
Lead	0.201	0.00100	0.200	0	100	80	120			
Molybdenum	0.195	0.00500	0.200	0.00754	93.8	80	120			
Selenium	0.201	0.00500	0.200	0	100	80	120			
Thallium	0.199	0.00150	0.200	0	99.4	80	120			

Sample ID **1706346-03A MS**	Batch ID: **81348**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS5_170712B**	Analysis Date: **7/12/2017 2:15:00 PM**	Prep Date: **7/11/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.207	0.00250	0.200	0	104	80	120			
Arsenic	0.202	0.00500	0.200	0.00253	99.6	80	120			
Barium	0.263	0.0100	0.200	0.0549	104	80	120			
Cadmium	0.197	0.00100	0.200	0	98.3	80	120			
Chromium	0.197	0.00500	0.200	0	98.7	80	120			
Cobalt	0.203	0.00500	0.200	0.00840	97.3	80	120			
Lead	0.200	0.00100	0.200	0	99.8	80	120			
Molybdenum	0.208	0.00500	0.200	0.00754	100	80	120			
Selenium	0.200	0.00500	0.200	0	99.8	80	120			
Thallium	0.200	0.00150	0.200	0	100	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1706346
Project: Beckville Mine

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_170712B

Sample ID **1706346-03A MSD** Batch ID: **81348** TestNo: **SW6020A** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS5_170712B** Analysis Date: **7/12/2017 2:16:00 PM** Prep Date: **7/11/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.210	0.00250	0.200	0	105	80	120	1.52	15	
Arsenic	0.203	0.00500	0.200	0.00253	100	80	120	0.740	15	
Barium	0.268	0.0100	0.200	0.0549	106	80	120	1.56	15	
Cadmium	0.201	0.00100	0.200	0	100	80	120	2.15	15	
Chromium	0.201	0.00500	0.200	0	100	80	120	1.64	15	
Cobalt	0.205	0.00500	0.200	0.00840	98.4	80	120	1.12	15	
Lead	0.203	0.00100	0.200	0	101	80	120	1.56	15	
Molybdenum	0.212	0.00500	0.200	0.00754	102	80	120	1.73	15	
Selenium	0.199	0.00500	0.200	0	99.3	80	120	0.513	15	
Thallium	0.203	0.00150	0.200	0	101	80	120	1.28	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1706346
Project: Beckville Mine

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_170712B

Sample ID **ICV-170712**	Batch ID: **R93017**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS5_170712B**	Analysis Date: **7/12/2017 10:26:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.102	0.00250	0.100	0	102	90	110			
Arsenic	0.0996	0.00500	0.100	0	99.6	90	110			
Barium	0.0984	0.0100	0.100	0	98.4	90	110			
Cadmium	0.101	0.00100	0.100	0	101	90	110			
Chromium	0.104	0.00500	0.100	0	104	90	110			
Cobalt	0.102	0.00500	0.100	0	102	90	110			
Lead	0.0956	0.00100	0.100	0	95.6	90	110			
Molybdenum	0.0946	0.00500	0.100	0	94.6	90	110			
Selenium	0.0976	0.00500	0.100	0	97.6	90	110			
Thallium	0.0943	0.00150	0.100	0	94.3	90	110			

Sample ID **LCVL-170712**	Batch ID: **R93017**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_170712B**	Analysis Date: **7/12/2017 10:32:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00198	0.00250	0.00200	0	99.2	70	130			
Arsenic	0.00503	0.00500	0.00500	0	101	70	130			
Barium	0.00505	0.0100	0.00500	0	101	70	130			
Cadmium	0.00101	0.00100	0.00100	0	101	70	130			
Chromium	0.00525	0.00500	0.00500	0	105	70	130			
Cobalt	0.00514	0.00500	0.00500	0	103	70	130			
Lead	0.00102	0.00100	0.00100	0	102	70	130			
Molybdenum	0.00476	0.00500	0.00500	0	95.2	70	130			
Selenium	0.00450	0.00500	0.00500	0	90.0	70	130			
Thallium	0.000992	0.00150	0.00100	0	99.2	70	130			

Sample ID **CCV5-170712**	Batch ID: **R93017**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_170712B**	Analysis Date: **7/12/2017 1:30:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.202	0.00250	0.200	0	101	90	110			
Arsenic	0.202	0.00500	0.200	0	101	90	110			
Barium	0.205	0.0100	0.200	0	102	90	110			
Cadmium	0.207	0.00100	0.200	0	104	90	110			
Chromium	0.208	0.00500	0.200	0	104	90	110			
Cobalt	0.205	0.00500	0.200	0	102	90	110			
Lead	0.197	0.00100	0.200	0	98.7	90	110			
Molybdenum	0.200	0.00500	0.200	0	100	90	110			
Selenium	0.201	0.00500	0.200	0	101	90	110			
Thallium	0.198	0.00150	0.200	0	98.8	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1706346
Project: Beckville Mine

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_170712B

Sample ID **LCVL5-170712** Batch ID: **R93017** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS5_170712B** Analysis Date: **7/12/2017 1:35:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00203	0.00250	0.00200	0	101	70	130			
Arsenic	0.00507	0.00500	0.00500	0	101	70	130			
Barium	0.00500	0.0100	0.00500	0	99.9	70	130			
Cadmium	0.000996	0.00100	0.00100	0	99.6	70	130			
Chromium	0.00513	0.00500	0.00500	0	103	70	130			
Cobalt	0.00506	0.00500	0.00500	0	101	70	130			
Lead	0.00100	0.00100	0.00100	0	100	70	130			
Molybdenum	0.00486	0.00500	0.00500	0	97.1	70	130			
Selenium	0.00505	0.00500	0.00500	0	101	70	130			
Thallium	0.000989	0.00150	0.00100	0	98.9	70	130			

Sample ID **CCV6-170712** Batch ID: **R93017** TestNo: **SW6020A** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS5_170712B** Analysis Date: **7/12/2017 2:18:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.208	0.00250	0.200	0	104	90	110			
Arsenic	0.206	0.00500	0.200	0	103	90	110			
Barium	0.213	0.0100	0.200	0	107	90	110			
Cadmium	0.211	0.00100	0.200	0	106	90	110			
Chromium	0.214	0.00500	0.200	0	107	90	110			
Cobalt	0.213	0.00500	0.200	0	107	90	110			
Lead	0.206	0.00100	0.200	0	103	90	110			
Molybdenum	0.204	0.00500	0.200	0	102	90	110			
Selenium	0.208	0.00500	0.200	0	104	90	110			
Thallium	0.205	0.00150	0.200	0	103	90	110			

Sample ID **LCVL6-170712** Batch ID: **R93017** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS5_170712B** Analysis Date: **7/12/2017 3:11:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00217	0.00250	0.00200	0	108	70	130			
Arsenic	0.00508	0.00500	0.00500	0	102	70	130			
Barium	0.00557	0.0100	0.00500	0	111	70	130			
Cadmium	0.00112	0.00100	0.00100	0	112	70	130			
Chromium	0.00525	0.00500	0.00500	0	105	70	130			
Cobalt	0.00531	0.00500	0.00500	0	106	70	130			
Lead	0.00106	0.00100	0.00100	0	106	70	130			
Molybdenum	0.00518	0.00500	0.00500	0	104	70	130			
Selenium	0.00596	0.00500	0.00500	0	119	70	130			
Thallium	0.00102	0.00150	0.00100	0	102	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1706346
Project: Beckville Mine

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_170712B

Sample ID **CCV7-170712**	Batch ID: **R93017**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_170712B**	Analysis Date: **7/12/2017 3:38:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.201	0.00250	0.200	0	101	90	110			
Arsenic	0.206	0.00500	0.200	0	103	90	110			
Barium	0.205	0.0100	0.200	0	102	90	110			
Cadmium	0.203	0.00100	0.200	0	101	90	110			
Chromium	0.213	0.00500	0.200	0	106	90	110			
Cobalt	0.214	0.00500	0.200	0	107	90	110			
Lead	0.204	0.00100	0.200	0	102	90	110			
Molybdenum	0.194	0.00500	0.200	0	96.8	90	110			
Selenium	0.211	0.00500	0.200	0	105	90	110			
Thallium	0.202	0.00150	0.200	0	101	90	110			

Sample ID **LCVL7-170712**	Batch ID: **R93017**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_170712B**	Analysis Date: **7/12/2017 3:41:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00201	0.00250	0.00200	0	101	70	130			
Arsenic	0.00485	0.00500	0.00500	0	97.0	70	130			
Barium	0.00506	0.0100	0.00500	0	101	70	130			
Cadmium	0.00103	0.00100	0.00100	0	103	70	130			
Chromium	0.00448	0.00500	0.00500	0	89.5	70	130			
Cobalt	0.00526	0.00500	0.00500	0	105	70	130			
Lead	0.00102	0.00100	0.00100	0	102	70	130			
Molybdenum	0.00474	0.00500	0.00500	0	94.9	70	130			
Selenium	0.00478	0.00500	0.00500	0	95.7	70	130			
Thallium	0.00100	0.00150	0.00100	0	100	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1706346
Project: Beckville Mine

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_170713A

The QC data in batch 81348 applies to the following samples: 1706346-01A, 1706346-02A, 1706346-03A

Sample ID **MB-81348** Batch ID: **81348** TestNo: **SW6020A** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS5_170713A** Analysis Date: **7/13/2017 10:56:00 AM** Prep Date: **7/11/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	<0.000300	0.00100								
Boron	<0.0100	0.0300								
Calcium	<0.100	0.300								
Lithium	<0.00500	0.0100								

Sample ID **LCS-81348** Batch ID: **81348** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS5_170713A** Analysis Date: **7/13/2017 10:57:00 AM** Prep Date: **7/11/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.199	0.00100	0.200	0	99.3	80	120			
Boron	0.201	0.0300	0.200	0	101	80	120			
Calcium	5.09	0.300	5.00	0	102	80	120			
Lithium	0.203	0.0100	0.200	0	101	80	120			

Sample ID **LCSD-81348** Batch ID: **81348** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS5_170713A** Analysis Date: **7/13/2017 10:59:00 AM** Prep Date: **7/11/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.200	0.00100	0.200	0	100	80	120	0.782	15	
Boron	0.200	0.0300	0.200	0	100	80	120	0.325	15	
Calcium	5.14	0.300	5.00	0	103	80	120	0.877	15	
Lithium	0.209	0.0100	0.200	0	104	80	120	2.91	15	

Sample ID **1706346-03A SD** Batch ID: **81348** TestNo: **SW6020A** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS5_170713A** Analysis Date: **7/13/2017 11:04:00 AM** Prep Date: **7/11/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	271	75.0	0	269				0.778	10	

Sample ID **1706346-03A PDS** Batch ID: **81348** TestNo: **SW6020A** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS5_170713A** Analysis Date: **7/13/2017 11:22:00 AM** Prep Date: **7/11/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	512	15.0	250	269	97.0	80	120			

Sample ID **1706346-03A MS** Batch ID: **81348** TestNo: **SW6020A** Units: **mg/L**
SampType: **MS** Run ID: **ICP-MS5_170713A** Analysis Date: **7/13/2017 11:24:00 AM** Prep Date: **7/11/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.207	0.0500	0.200	0	104	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1706346
Project: Beckville Mine

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_170713A

Sample ID **1706346-03A MS**	Batch ID: **81348**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS5_170713A**	Analysis Date: **7/13/2017 11:24:00 AM**	Prep Date: **7/11/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	1.62	1.50	0.200	1.28	170	80	120			S
Calcium	267	15.0	5.00	269	-41.9	80	120			S
Lithium	0.342	0.500	0.200	0	171	80	120			S

Sample ID **1706346-03A MSD**	Batch ID: **81348**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS5_170713A**	Analysis Date: **7/13/2017 11:26:00 AM**	Prep Date: **7/11/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.204	0.0500	0.200	0	102	80	120	1.34	15	
Boron	1.82	1.50	0.200	1.28	269	80	120	11.6	15	S
Calcium	276	15.0	5.00	269	147	80	120	3.47	15	S
Lithium	0.384	0.500	0.200	0	192	80	120	11.7	15	S

Sample ID **1706346-03A SD**	Batch ID: **81348**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS5_170713A**	Analysis Date: **7/13/2017 12:32:00 PM**	Prep Date: **7/11/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	<0.00150	0.00500	0	0				0	10	
Boron	1.37	0.150	0	1.21				12.2	10	R

Sample ID **1706346-03A PDS**	Batch ID: **81348**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS5_170713A**	Analysis Date: **7/13/2017 12:44:00 PM**	Prep Date: **7/11/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.208	0.00100	0.200	0	104	80	120			
Boron	1.39	0.0300	0.200	1.21	88.0	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1706346
Project: Beckville Mine

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_170713A

Sample ID	**ICV-170713**	Batch ID:	**R93025**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**ICV**	Run ID:	**ICP-MS5_170713A**	Analysis Date:	**7/13/2017 10:28:00 AM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.100	0.0100	0.100	0	100	90	110			
Beryllium	0.0998	0.00100	0.100	0	99.8	90	110			
Boron	0.103	0.0300	0.100	0	103	90	110			
Calcium	2.59	0.300	2.50	0	104	90	110			
Chromium	0.103	0.00500	0.100	0	103	90	110			
Lead	0.0960	0.00100	0.100	0	96.0	90	110			
Lithium	0.104	0.0100	0.100	0	104	90	110			

Sample ID	**LCVL-170713**	Batch ID:	**R93025**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**LCVL**	Run ID:	**ICP-MS5_170713A**	Analysis Date:	**7/13/2017 10:31:00 AM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.00495	0.0100	0.00500	0	98.9	70	130			
Beryllium	0.00113	0.00100	0.00100	0	113	70	130			
Boron	0.0209	0.0300	0.0200	0	105	70	130			
Calcium	0.0984	0.300	0.100	0	98.4	70	130			
Chromium	0.00515	0.00500	0.00500	0	103	70	130			
Lead	0.00100	0.00100	0.00100	0	100	70	130			
Lithium	0.0111	0.0100	0.0100	0	111	70	130			

Sample ID	**CCV1-170713**	Batch ID:	**R93025**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**ICP-MS5_170713A**	Analysis Date:	**7/13/2017 11:30:00 AM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.208	0.00100	0.200	0	104	90	110			
Boron	0.199	0.0300	0.200	0	99.5	90	110			
Calcium	5.16	0.300	5.00	0	103	90	110			
Lithium	0.210	0.0100	0.200	0	105	90	110			

Sample ID	**LCVL1-170713**	Batch ID:	**R93025**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**LCVL**	Run ID:	**ICP-MS5_170713A**	Analysis Date:	**7/13/2017 11:36:00 AM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.00120	0.00100	0.00100	0	120	70	130			
Boron	0.0246	0.0300	0.0200	0	123	70	130			
Calcium	0.100	0.300	0.100	0	100	70	130			
Lithium	0.0113	0.0100	0.0100	0	113	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1706346
Project: Beckville Mine

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_170713A

Sample ID	**CCV2-170713**	Batch ID:	**R93025**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**ICP-MS5_170713A**	Analysis Date:	**7/13/2017 11:57:00 AM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	5.23	0.300	5.00	0	105	90	110			

Sample ID	**LCVL2-170713**	Batch ID:	**R93025**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**LCVL**	Run ID:	**ICP-MS5_170713A**	Analysis Date:	**7/13/2017 12:04:00 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.105	0.300	0.100	0	105	70	130			

Sample ID	**CCV3-170713**	Batch ID:	**R93025**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**ICP-MS5_170713A**	Analysis Date:	**7/13/2017 12:14:00 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.206	0.00100	0.200	0	103	90	110			
Boron	0.213	0.0300	0.200	0	107	90	110			
Calcium	5.20	0.300	5.00	0	104	90	110			

Sample ID	**LCVL3-170713**	Batch ID:	**R93025**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**LCVL**	Run ID:	**ICP-MS5_170713A**	Analysis Date:	**7/13/2017 12:22:00 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.000902	0.00100	0.00100	0	90.2	70	130			
Boron	0.0192	0.0300	0.0200	0	96.1	70	130			
Calcium	0.104	0.300	0.100	0	104	70	130			

Sample ID	**CCV4-170713**	Batch ID:	**R93025**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**ICP-MS5_170713A**	Analysis Date:	**7/13/2017 12:59:00 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.218	0.00100	0.200	0	109	90	110			
Boron	0.212	0.0300	0.200	0	106	90	110			

Sample ID	**LCVL4-170713**	Batch ID:	**R93025**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**LCVL**	Run ID:	**ICP-MS5_170713A**	Analysis Date:	**7/13/2017 1:29:00 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.00110	0.00100	0.00100	0	110	70	130			
Boron	0.0209	0.0300	0.0200	0	104	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1706346
Project: Beckville Mine

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_170714B

The QC data in batch 81348 applies to the following samples: 1706346-01A, 1706346-02A, 1706346-03A

Sample ID	**1706346-03A SD**	Batch ID:	**81348**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**SD**	Run ID:	**ICP-MS5_170714B**	Analysis Date:	**7/14/2017 12:27:00 PM**	Prep Date:	**7/11/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lithium	0.106	0.0500	0	0.104				2.02	10	

Sample ID	**1706346-03A PDS**	Batch ID:	**81348**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**PDS**	Run ID:	**ICP-MS5_170714B**	Analysis Date:	**7/14/2017 12:32:00 PM**	Prep Date:	**7/11/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lithium	0.292	0.0100	0.200	0.104	94.1	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1706346
Project: Beckville Mine

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_170714B

Sample ID	**ICV-170714**	Batch ID:	**R93056**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**ICV**	Run ID:	**ICP-MS5_170714B**	Analysis Date:	**7/14/2017 10:33:00 AM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lithium	0.0932	0.0100	0.100	0	93.2	90	110			

Sample ID	**CCV3-170714**	Batch ID:	**R93056**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**ICP-MS5_170714B**	Analysis Date:	**7/14/2017 12:16:00 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lithium	0.191	0.0100	0.200	0	95.3	90	110			

Sample ID	**LCVL3-170714**	Batch ID:	**R93056**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**LCVL**	Run ID:	**ICP-MS5_170714B**	Analysis Date:	**7/14/2017 12:21:00 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lithium	0.00995	0.0100	0.0100	0	99.5	70	130			

Sample ID	**CCV4-170714**	Batch ID:	**R93056**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**ICP-MS5_170714B**	Analysis Date:	**7/14/2017 12:34:00 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lithium	0.200	0.0100	0.200	0	99.8	90	110			

Sample ID	**LCVL4-170714**	Batch ID:	**R93056**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**LCVL**	Run ID:	**ICP-MS5_170714B**	Analysis Date:	**7/14/2017 12:43:00 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lithium	0.00923	0.0100	0.0100	0	92.3	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1706346
Project: Beckville Mine

ANALYTICAL QC SUMMARY REPORT

RunID: IC3_170712A

The QC data in batch 81368 applies to the following samples: 1706346-01B, 1706346-02B, 1706346-03B

Sample ID	**MB-81368**	Batch ID:	**81368**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**IC3_170712A**	Analysis Date:	**7/12/2017 10:49:18 AM**	Prep Date:	**7/12/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00								
Fluoride	<0.100	0.400								
Sulfate	<1.00	3.00								

Sample ID	**LCS-81368**	Batch ID:	**81368**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**IC3_170712A**	Analysis Date:	**7/12/2017 11:12:47 AM**	Prep Date:	**7/12/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.0	1.00	10.00	0	100	90	110			
Fluoride	4.19	0.400	4.000	0	105	90	110			
Sulfate	30.1	3.00	30.00	0	100	90	110			

Sample ID	**LCSD-81368**	Batch ID:	**81368**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**LCSD**	Run ID:	**IC3_170712A**	Analysis Date:	**7/12/2017 11:33:27 AM**	Prep Date:	**7/12/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.3	1.00	10.00	0	103	90	110	2.71	20	
Fluoride	4.17	0.400	4.000	0	104	90	110	0.526	20	
Sulfate	30.2	3.00	30.00	0	101	90	110	0.465	20	

Sample ID	**1706346-01BMS**	Batch ID:	**81368**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**MS**	Run ID:	**IC3_170712A**	Analysis Date:	**7/12/2017 12:02:17 PM**	Prep Date:	**7/12/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	326	10.0	200.0	111.1	108	90	110			
Fluoride	197	4.00	200.0	0	98.7	90	110			
Sulfate	811	30.0	200.0	604.1	104	90	110			

Sample ID	**1706346-01BMSD**	Batch ID:	**81368**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**MSD**	Run ID:	**IC3_170712A**	Analysis Date:	**7/12/2017 12:25:49 PM**	Prep Date:	**7/12/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	325	10.0	200.0	111.1	107	90	110	0.553	20	
Fluoride	197	4.00	200.0	0	98.6	90	110	0.112	20	
Sulfate	805	30.0	200.0	604.1	100	90	110	0.814	20	

Sample ID	**1706346-03BMS**	Batch ID:	**81368**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**MS**	Run ID:	**IC3_170712A**	Analysis Date:	**7/12/2017 12:46:28 PM**	Prep Date:	**7/12/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1706346
Project: Beckville Mine

ANALYTICAL QC SUMMARY REPORT

RunID: IC3_170712A

Sample ID **1706346-03BMS**	Batch ID: **81368**	TestNo: **E300**	Units: **mg/L**
SampType: **MS**	Run ID: **IC3_170712A**	Analysis Date: **7/12/2017 12:46:28 PM**	Prep Date: **7/12/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	343	10.0	200.0	130.3	106	90	110			
Fluoride	199	4.00	200.0	0	99.3	90	110			
Sulfate	1710	30.0	200.0	1449	131	90	110			S

Sample ID **1706346-03BMSD**	Batch ID: **81368**	TestNo: **E300**	Units: **mg/L**
SampType: **MSD**	Run ID: **IC3_170712A**	Analysis Date: **7/12/2017 1:07:08 PM**	Prep Date: **7/12/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	336	10.0	200.0	130.3	103	90	110	2.02	20	
Fluoride	195	4.00	200.0	0	97.5	90	110	1.84	20	
Sulfate	1650	30.0	200.0	1449	98.5	90	110	3.86	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1706346
Project: Beckville Mine

ANALYTICAL QC SUMMARY REPORT

RunID: IC3_170712A

Sample ID **ICV-170712**	Batch ID: **R93020**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC3_170712A**	Analysis Date: **7/12/2017 10:00:05 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	25.9	1.00	25.00	0	103	90	110			
Fluoride	10.0	0.400	10.00	0	100	90	110			
Sulfate	75.9	3.00	75.00	0	101	90	110			

Sample ID **CCV1-170712**	Batch ID: **R93020**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC3_170712A**	Analysis Date: **7/12/2017 6:53:52 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.3	1.00	10.00	0	103	90	110			
Fluoride	3.92	0.400	4.000	0	98.0	90	110			
Sulfate	29.5	3.00	30.00	0	98.5	90	110			

Sample ID **CCV2-170712**	Batch ID: **R93020**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC3_170712A**	Analysis Date: **7/12/2017 11:21:58 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.2	1.00	10.00	0	102	90	110			
Fluoride	3.96	0.400	4.000	0	99.1	90	110			
Sulfate	29.8	3.00	30.00	0	99.2	90	110			

Sample ID **CCV3-170712**	Batch ID: **R93020**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC3_170712A**	Analysis Date: **7/13/2017 2:07:01 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.2	1.00	10.00	0	102	90	110			
Fluoride	3.97	0.400	4.000	0	99.3	90	110			
Sulfate	29.9	3.00	30.00	0	99.5	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1706346
Project: Beckville Mine

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_170707B

The QC data in batch 81316 applies to the following samples: 1706346-01B, 1706346-02B, 1706346-03B

Sample ID	**1706346-01B-DUP**	Batch ID:	**81316**	TestNo:	**M4500-H+ B**	Units:	**pH Units@19.8℃**
SampType:	**DUP**	Run ID:	**TITRATOR_170707B**	Analysis Date:	**7/7/2017 1:57:00 PM**	Prep Date:	**7/7/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	7.08	0	0	7.030				0.709	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1706346
Project: Beckville Mine

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_170707B

Sample ID	**ICV-170707**	Batch ID:	**R92940**	TestNo:	**M4500-H+ B**	Units:	**pH Units@21.1℃**
SampType:	**ICV**	Run ID:	**TITRATOR_170707B**	Analysis Date:	**7/7/2017 1:52:00 PM**	Prep Date:	**7/7/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	9.90	0	10.00	0	99.0	99	101			

Sample ID	**CCV-170707**	Batch ID:	**R92940**	TestNo:	**M4500-H+ B**	Units:	**pH Units@21.2℃**
SampType:	**CCV**	Run ID:	**TITRATOR_170707B**	Analysis Date:	**7/7/2017 2:05:00 PM**	Prep Date:	**7/7/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	6.95	0	7.000	0	99.3	97.1	102.9			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1706346
Project: Beckville Mine

ANALYTICAL QC SUMMARY REPORT

RunID: WC_170707B

The QC data in batch 81315 applies to the following samples: 1706346-01B, 1706346-02B, 1706346-03B

Sample ID	**MB-81315**	Batch ID:	**81315**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**WC_170707B**	Analysis Date:	**7/10/2017 8:50:00 AM**	Prep Date:	**7/7/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	<10.0	10.0								

Sample ID	**LCS-81315**	Batch ID:	**81315**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**WC_170707B**	Analysis Date:	**7/10/2017 8:50:00 AM**	Prep Date:	**7/7/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	733	10.0	745.6	0	98.3	90	113			

Sample ID	**1706346-01B-DUP**	Batch ID:	**81315**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**DUP**	Run ID:	**WC_170707B**	Analysis Date:	**7/10/2017 8:50:00 AM**	Prep Date:	**7/7/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	1650	50.0	0	1695				2.99	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

Case Narrative

Lab No: 20170619

This report contains the analytical results for the 3 sample(s) received under chain of custody by ESC Lab Sciences on 7/5/2017 4:18:40 PM. These samples are associated with your 1706346 project.

The analytical results included in this report meet all applicable quality control procedure requirements except as noted below:

The test results in this report meet all NELAC requirements unless noted below:

This report shall not be reproduced, except in full, without the written approval of ESC Lab Sciences.

All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client.

Results have been reviewed by the Director of Radiochemistry or their designees and is approved for release.

DL for Radiochemistry = MDA DL for Metals and Wet Chemistry = MDL DL for Drinking Water = SDWA

Observations / Nonconformances

L920390

Analytical Report

	Method	Result	DL	Units	Qual	Prep Date	Analysis Date	Analyst
Lab ID : 20170619-01								
Client ID : BMW-26								
Date Sampled : 6/29/2017 1:45:00 AM								
Matrix : NPW								
		Radiochemical Analyses						
Combined Radium		0.401 +/- 0.788	0.533	pCi/l				
Radium-226	SM 7500 Ra B M*	0.198 +/- 0.111	0.099	pCi/l		07/14/17	07/19/17	SD
Radium-228	EPA 904*	0.203 +/- 0.677	0.434	pCi/l		07/17/17	07/24/17	JR
Lab ID : 20170619-02								
Client ID : BMW-27								
Date Sampled : 6/29/2017 2:50:00 PM								
Matrix : NPW								
		Radiochemical Analyses						
Combined Radium		0.607 +/- 0.759	0.592	pCi/l				
Radium-226	SM 7500 Ra B M*	0.303 +/- 0.131	0.110	pCi/l		07/14/17	07/19/17	SD
Radium-228	EPA 904*	0.304 +/- 0.628	0.482	pCi/l		07/17/17	07/24/17	JR
Lab ID : 20170619-03								
Client ID : BMW-28								
Date Sampled : 6/29/2017 12:20:00 PM								
Matrix : NPW								
		Radiochemical Analyses						
Combined Radium		0.489 +/- 2.47	1.53	pCi/l				
Radium-226	SM 7500 Ra B M*	0.489 +/- 0.160	0.090	pCi/l		07/14/17	07/19/17	SD
Radium-228	EPA 904*	-1.09 +/- 2.31	1.44	pCi/l		07/17/17	07/24/17	JR

APPENDIX F-Revision 2 February 27, 2024
OUTREACH LABORATORY, A Divsion of ESC Lab Sciences
Address: 311 North Aspen Avenue, Broken Arrow, OK, 74012 EMail: outreach@esclabsciences.com - Tel: (918) 251-2515

Client	:	DHL Analytical, Inc.
Client Project	:	1706346
Lab Number	:	20170619
Date Reported	:	07/26/17
Date Received	:	07/05/17
Page Number	:	3 of 3

QC Report

Parameter	Blank	LCS %REC	LCSD %REC	LCSD RPD	DUP RPD	RER, NAD or DER	MS %REC	MSD %REC	MSD RPD	Batch ID
Radium-226	0.006	112.0			NC	0.145	118.0	111.0	5.8	R1255
Radium-228	-0.796	94.7			NC	0.416	91.6	79.1	14.3	R3982

Lab Approval:

Ron Eidson
Director of Radiochemistry

*NELAC Certified Parameter BDL = Below Detection Limit

OUTREACH LABORATORY, A Divsion of ESC Lab Sciences
Address: 311 North Aspen Avenue, Broken Arrow, OK, 74012 EMail: outreach@esclabsciences.com - Tel: (918) 251-2515

DHL Analytical, Inc.
2300 Double Creek Drive
Round Rock, TX 78664
TEL: *(512) 388-8222* FAX: *(512) 388-8229*

CHAIN-OF-CUSTODY RECORD

Work Order: 1706346

Subcontractor:

ESC Laboratory
311 North Aspen
Broken Arrow, Oklahoma 74012

TEL: (918) 251-2515
FAX:
Acct #: DHLRRTX

30-Jun-17

DE 7/1/17 1:45pm

Sample Id	Matrix	DHL#	Date Collected	Bottle Type	Radium 226 E903.1	Radium 228 E904.0	Requested Tests			
BMW-26	Aqueous	-01C	06/29/17 01:40 PM	1LHDPEHNO3		1				
BMW-26	Aqueous	-01D	06/29/17 01:40 PM	1LHDPEHNO3	1					
BMW-27	Aqueous	-02C	06/29/17 02:50 PM	1LHDPEHNO3		1				
BMW-27	Aqueous	-02D	06/29/17 02:50 PM	1LHDPEHNO3	1					
BMW-28	Aqueous	-03C	06/29/17 12:20 PM	1LHDPEHNO3		1				
BMW-28	Aqueous	-03D	06/29/17 12:20 PM	1LHDPEHNO3	1					

General Comments:

Please analyze these samples with Normal Turnaround Time.
Report RA-226, Ra-228 & Combined per Specs.
Quality Control Package Needed: Standard - NELAC Rad Test compliant
Email to cac@dhlanalytical.com & dupont@dhlanalytical.com

		Date/Time		Date/Time
Relinquished by:		6/30/17 17:30	**Received by:**	6/30/17 17:30
Relinquished by:			**Received by:**	7/5/17 1618

2017061 9

SAMPLE LOGIN

Date Received: 7/5/2017 4:18:40 **Lab Number:** 20170619 **Due:** 8/2/2017

Sample Number	Client Sample ID	Matrix	Date Sampled	Container Type	Container Size	Preservation	Preserved Upon Receipt	Custody Seal	Seal Intact
20170619-01 B	BMW-26	NPW	06/29/17	Plastic	1 L	HNO3, pH < 2	☑	Yes	Yes
20170619-01 A	BMW-26	NPW	06/29/17	Plastic	1 L	HNO3, pH < 2	☑	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*						
20170619-02 B	BMW-27	NPW	06/29/17	Plastic	1 L	HNO3, pH < 2	☑	Yes	Yes
20170619-02 A	BMW-27	NPW	06/29/17	Plastic	1 L	HNO3, pH < 2	☑	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*						
20170619-03 B	BMW-28	NPW	06/29/17	Plastic	1 L	HNO3, pH < 2	☑	Yes	Yes
20170619-03 A	BMW-28	NPW	06/29/17	Plastic	1 L	HNO3, pH < 2	☑	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*						

CONTAINER INSPECTION

 # Coolers 1 **Custody Seals Broken** Ø **Temperature:** 4.6 C **Ice** **Radiation Survey:** <300 cpm

SAMPLE INSPECTION

Sample Seal Broken Ø **Chain of Custody Record** ☑ **Labels in Tact** ☑ **Radiation Survey Complete** N/A

Anomalies Sample-01 has a time of 1345 on bottles but 1340 on CoC – Correct time 1:45 confirmed by client email 7/7/17

Inspected By: _____ **DATE** 7/5/17

QA or Designee Review: Raymond Thomas **DATE** 07/05/17

Sample Custodian Review: _____ **DATE** 7/5/17

Project Notes:

August 30, 2017

Will Vienne
Pastor, Behling & Wheeler
2201 Double Creek Dr #4004
Round Rock, Texas 78664
TEL: (512) 671-3434
FAX (512) 671-3446

Order No.: 1708050

RE: A-1 Landfill (Luminant)

Dear Will Vienne:

DHL Analytical, Inc. received 1 sample(s) on 8/3/2017 for the analyses presented in the following report.

There were no problems with the analyses and all data met requirements of NELAC except where noted in the Case Narrative. All non-NELAC methods will be identified accordingly in the case narrative and all estimated uncertainties of test results are within method or EPA specifications.

If you have any questions regarding these tests results, please feel free to call. Thank you for using DHL Analytical.

Sincerely,

John DuPont
General Manager

This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211-17-19

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DHL ANALYTICAL
2300 Double Creek Dr. ■ Round Rock, TX 78664
Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

№ 77511

CHAIN-OF-CUSTODY

CLIENT: PBW
ADDRESS: 3416 Plaza Dr Texarkana TX, 75503
PHONE: 903-794-0625 FAX/E-MAIL: 903-794-0626
DATA REPORTED TO: Brian Thomas
ADDITIONAL REPORT COPIES TO: Keith Starmale

DATE: 8/2/17 PAGE 1 OF 1
PO #: DHL WORK ORDER #: 1708050
PROJECT LOCATION OR NAME: A-1 Landfill (Lumont)
CLENT PROJECT #: 2240 COLLECTOR: Alex Gonzales

Authorize 5% surcharge for TRRP Report? ☐ Yes ☐ No

S=SOIL P=PAINT W=WATER SL=SLUDGE A=AIR O=OTHER L=LIQUID SO=SOLID SE=SEDIMENT

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	PRESERVATION: HCl Ag	HNO_3	H_2SO_4 ☐ NaOH ☐	ICE	UNPRESERVED	ANALYSES: BTEX ☐ MTBE ☐ [METHOD 8021]	TPH 1005 ☐ TPH 1006 ☐ HOLD 1006 ☐	GRO [METHOD 8015] ☐ DRO [METHOD 8105] ☐	VOC 8260 ☐ VOC 624 ☐ VOC 8260/5035 ☐	SVOC 8270 ☐ PAH 8270 ☐ HOLD PAH ☐ SVOC 625 ☐	8270 PEST ☐ 625 PEST/PCB ☐ 608 PCB ☐	8270 O-P PEST ☐ 8082 PCB ☐ 8270 PCB ☐	8321 HERB ☐ T PHOS, AMMONIA ☐	METALS 6020 ☐ METALS 200.8 ☐ DISS. METALS ☐	RCRA ☐ TX11 ☐	PH ☐ HEX CHROM ☐ ALKALINITY ☐ COD ☐	CHLORIDE ☐ ANIONS ☐	TCLP-SVOC ☐ VOC ☐ PEST ☐ HERB ☐	TCLP-METALS ☐ RCRA 8 ☐ TX-11 ☐ Pb ☐	RCI ☐ FLASHPOINT ☐ DGAS ☐	TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐	Radium 226/228	Wet Chem/TSS/TDS	FIELD NOTES
BMW-28	01	8-1-17	1240	S	P	4	~~X~~	X		X										X								X	X		

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
Alex Gonzales	8/2/17	Fed Ex
Fed Ex	8/3/17 9:50	[signature]

☐ DHL DISPOSAL @ $5.00 each ☐ Return

TURN AROUND TIME
RUSH ☐ CALL FIRST
1 DAY ☐ CALL FIRST
2 DAY ☐
NORMAL ☐
OTHER ☐ _____

LABORATORY USE ONLY:
RECEIVING TEMP: 0.4°C THERM #: 71
CUSTODY SEALS: ☐ BROKEN ☒ INTACT ☐ NOT USED
CARRIER: ☐ LONE STAR ☒ FEDEX ☐ UPS ☐ OTHER
☐ COURIER DELIVERY
☐ HAND DELIVERED

ORIGIN ID:TXKA (903) 794-0625
ALEX GONZALES
PASTOR, BEHLING & WHEELER, LLC
5416 PLAZA DRIVE

TEXARKANA, TX 75503
UNITED STATES US

SHIP DATE: 02AUG17
ACTWGT: 15.00 LB
CAD: 2026420/INET3920
DIMS: 14x12x12 IN

BILL SENDER

TO RECEIVING DEPARTMENT
DHL ANALYTICAL
2300 DOUBLE CREEK DRIVE

ROUND ROCK TX 78664
(512) 388-8222 REF: 2240A
INV
PO DEPT

549J1677E/104C

FedEx Express

THU - 03 AUG 3:00P
STANDARD OVERNIGHT

TRK# 0201 7797 9222 0228

78664
XH BSMA TX-US AUS

CUSTODY SEAL
DATE
SIGNATURE

QEC
Quality Environmental Containers
800-255-3950 • 304-255-3919

DHL Analytical, Inc.

Sample Receipt Checklist

Client Name Pastor, Behling & Wheeler

Date Received: 8/3/2017

Work Order Number 1708050

Received by EL

Checklist completed by: _____ 8/3/2017 (Signature / Date)

Reviewed by (05) 8/3/2017 (Initials / Date)

Carrier name FedEx 1day

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	0.4 °C
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH<2 acceptable upon receipt?	Yes ☑	No ☐	NA ☐ LOT # 8086
	Adjusted? NO		Checked by EL
Water - ph>9 (S) or ph>12 (CN) acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted? _____		Checked by _____

Any No response must be detailed in the comments section below.

Client contacted _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments: _____

Corrective Action _____

DHL Analytical, Inc. **Date:** *30-Aug-17*

CLIENT: Pastor, Behling & Wheeler
Project: A-1 Landfill (Luminant)
Lab Order: 1708050

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Method SW6020A - Metals Analysis
Method SW7470A - Mercury Analysis
Method E300 - Anions Analysis
Method M4500-H+ B - pH of a Water Analysis
Method M2540C - TDS Analysis
Sub-contract - Radium-228 and Radium-226 analyses by methods E904/9320 and SM 7500 Ra B M. Analyzed at ESC Lab Sciences.

LOG IN

The sample was received and log-in performed on 8/3/17. A total of 1 sample was received. The sample arrived in good condition and was properly packaged.

METALS ANALYSIS

For Metals analysis the matrix spike, matrix spike duplicate and PDS had low responses for the internal standard Bismuth. The associated analyte (Lead) was within control limits for these QC samples. No further corrective actions were taken.

For Metals analysis performed on 8/8/17 and 8/9/17 the matrix spike and matrix spike duplicate recoveries were out of control limits for a total of four analytes. These are flagged accordingly in the QC summary report. The sample selected for the matrix spike and matrix spike duplicate was not from this work order. The LCS was within control limits for these analytes. No further corrective actions were taken.

DHL Analytical, Inc.

Date: *30-Aug-17*

CLIENT: Pastor, Behling & Wheeler
Project: A-1 Landfill (Luminant)
Lab Order: 1708050

Work Order Sample Summary

Lab Smp ID	Client Sample ID	Tag Number	Date Collected	Date Recved
1708050-01	BMW-28		08/01/17 12:40 PM	8/3/2017

Lab Order: 1708050
Client: Pastor, Behling & Wheeler
Project: A-1 Landfill (Luminant)

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1708050-01A	BMW-28	08/01/17 12:40 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/07/17 08:56 AM	81807
	BMW-28	08/01/17 12:40 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/07/17 08:56 AM	81807
	BMW-28	08/01/17 12:40 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/07/17 08:56 AM	81807
	BMW-28	08/01/17 12:40 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	08/04/17 01:48 PM	81795
1708050-01D	BMW-28	08/01/17 12:40 PM	Aqueous	E300	Anion Preparation	08/15/17 09:00 AM	81971
	BMW-28	08/01/17 12:40 PM	Aqueous	E300	Anion Preparation	08/15/17 09:00 AM	81971
	BMW-28	08/01/17 12:40 PM	Aqueous	E300	Anion Preparation	08/15/17 09:00 AM	81971
	BMW-28	08/01/17 12:40 PM	Aqueous	M4500-H+ B	pH Preparation	08/04/17 08:50 AM	81786
	BMW-28	08/01/17 12:40 PM	Aqueous	M2540C	TDS Preparation	08/07/17 01:19 PM	81830

Lab Order: 1708050
Client: Pastor, Behling & Wheeler
Project: A-1 Landfill (Luminant)

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1708050-01A	BMW-28	Aqueous	SW7470A	Mercury Total: Aqueous	81795	1	08/07/17 10:54 AM	CETAC2_HG_170807A
	BMW-28	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	81807	5	08/09/17 01:40 PM	ICP-MS4_170809C
	BMW-28	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	81807	50	08/09/17 01:21 PM	ICP-MS4_170809C
	BMW-28	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	81807	1	08/08/17 02:43 PM	ICP-MS4_170808B
1708050-01D	BMW-28	Aqueous	E300	Anions by IC method - Water	81971	1	08/15/17 02:49 PM	IC4_170815A
	BMW-28	Aqueous	E300	Anions by IC method - Water	81971	10	08/15/17 02:37 PM	IC4_170815A
	BMW-28	Aqueous	E300	Anions by IC method - Water	81971	100	08/15/17 02:25 PM	IC4_170815A
	BMW-28	Aqueous	M4500-H+ B	pH	81786	1	08/04/17 10:56 AM	TITRATOR_170804A
	BMW-28	Aqueous	M2540C	Total Dissolved Solids	81830	1	08/08/17 08:15 AM	WC_170807C

DHL Analytical, Inc.

Date: *30-Aug-17*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	BMW-28
Project:	A-1 Landfill (Luminant)	**Lab ID:**	1708050-01
Project No:	2240	**Collection Date:**	08/01/17 12:40 PM
Lab Order:	1708050	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **SP**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	08/08/17 02:43 PM
Arsenic	0.00570	0.00200	0.00500		mg/L	1	08/08/17 02:43 PM
Barium	0.0524	0.00300	0.0100		mg/L	1	08/08/17 02:43 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	08/08/17 02:43 PM
Boron	1.17	0.0500	0.150		mg/L	5	08/09/17 01:40 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	08/08/17 02:43 PM
Calcium	260	5.00	15.0		mg/L	50	08/09/17 01:21 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	08/08/17 02:43 PM
Cobalt	0.0115	0.00300	0.00500		mg/L	1	08/08/17 02:43 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	08/08/17 02:43 PM
Lithium	0.114	0.0250	0.0500		mg/L	5	08/09/17 01:40 PM
Molybdenum	0.00707	0.00200	0.00500		mg/L	1	08/08/17 02:43 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	08/08/17 02:43 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	08/08/17 02:43 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	08/07/17 10:54 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **JL**
Chloride	132	3.00	10.0		mg/L	10	08/15/17 02:37 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	08/15/17 02:49 PM
Sulfate	1460	100	300		mg/L	100	08/15/17 02:25 PM
PH		**M4500-H+ B**					Analyst: **BTJ**
pH	7.02	0	0		pH Units@16.6℃	1	08/04/17 10:56 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **BTJ**
Total Dissolved Solids (Residue, Filterable)	2780	50.0	50.0		mg/L	1	08/08/17 08:15 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT: Pastor, Behling & Wheeler
Work Order: 1708050
Project: A-1 Landfill (Luminant)

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_170807A

The QC data in batch 81795 applies to the following samples: 1708050-01A

Sample ID	**MB-81795**	Batch ID:	**81795**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**CETAC2_HG_170807A**	Analysis Date:	**8/7/2017 9:53:41 AM**	Prep Date:	**8/4/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.0000800	0.000200								

Sample ID	**LCS-81795**	Batch ID:	**81795**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**CETAC2_HG_170807A**	Analysis Date:	**8/7/2017 9:58:13 AM**	Prep Date:	**8/4/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00212	0.000200	0.00200	0	106	85	115			

Sample ID	**LCSD-81795**	Batch ID:	**81795**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**LCSD**	Run ID:	**CETAC2_HG_170807A**	Analysis Date:	**8/7/2017 10:00:29 AM**	Prep Date:	**8/4/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00195	0.000200	0.00200	0	97.5	85	115	8.35	15	

Sample ID	**1707273-08A SD**	Batch ID:	**81795**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**SD**	Run ID:	**CETAC2_HG_170807A**	Analysis Date:	**8/7/2017 10:20:52 AM**	Prep Date:	**8/4/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.000400	0.00100	0	0				0	10	

Sample ID	**1707273-08A PDS**	Batch ID:	**81795**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**PDS**	Run ID:	**CETAC2_HG_170807A**	Analysis Date:	**8/7/2017 10:23:08 AM**	Prep Date:	**8/4/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00233	0.000200	0.00250	0	93.2	85	115			

Sample ID	**1707273-08A MS**	Batch ID:	**81795**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**MS**	Run ID:	**CETAC2_HG_170807A**	Analysis Date:	**8/7/2017 10:25:24 AM**	Prep Date:	**8/4/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00188	0.000200	0.00200	0	94.0	80	120			

Sample ID	**1707273-08A MSD**	Batch ID:	**81795**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**MSD**	Run ID:	**CETAC2_HG_170807A**	Analysis Date:	**8/7/2017 10:27:40 AM**	Prep Date:	**8/4/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00186	0.000200	0.00200	0	93.0	80	120	1.07	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1708050
Project: A-1 Landfill (Luminant)

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_170807A

Sample ID	**ICV-170807**	Batch ID:	**R93507**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**ICV**	Run ID:	**CETAC2_HG_170807A**	Analysis Date:	**8/7/2017 9:49:07 AM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00394	0.000200	0.00400	0	98.5	90	110			

Sample ID	**CCV1-170807**	Batch ID:	**R93507**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**CETAC2_HG_170807A**	Analysis Date:	**8/7/2017 10:34:30 AM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00196	0.000200	0.00200	0	98.0	90	110			

Sample ID	**CCV2-170807**	Batch ID:	**R93507**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**CETAC2_HG_170807A**	Analysis Date:	**8/7/2017 10:57:18 AM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00198	0.000200	0.00200	0	99.0	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1708050
Project: A-1 Landfill (Luminant)

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_170808B

The QC data in batch 81807 applies to the following samples: 1708050-01A

Sample ID	**MB-81807**	Batch ID:	**81807**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**ICP-MS4_170808B**	Analysis Date:	**8/8/2017 1:52:00 PM**	Prep Date:	**8/7/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.000800	0.00250								
Arsenic	<0.00200	0.00500								
Barium	<0.00300	0.0100								
Beryllium	<0.000300	0.00100								
Cadmium	<0.000300	0.00100								
Chromium	<0.00200	0.00500								
Cobalt	<0.00300	0.00500								
Lead	<0.000300	0.00100								
Molybdenum	<0.00200	0.00500								
Selenium	<0.00200	0.00500								
Thallium	<0.000500	0.00150								

Sample ID	**LCS-81807**	Batch ID:	**81807**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**ICP-MS4_170808B**	Analysis Date:	**8/8/2017 1:54:00 PM**	Prep Date:	**8/7/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.204	0.00250	0.200	0	102	80	120			
Arsenic	0.201	0.00500	0.200	0	101	80	120			
Barium	0.197	0.0100	0.200	0	98.5	80	120			
Beryllium	0.215	0.00100	0.200	0	108	80	120			
Cadmium	0.204	0.00100	0.200	0	102	80	120			
Chromium	0.208	0.00500	0.200	0	104	80	120			
Cobalt	0.204	0.00500	0.200	0	102	80	120			
Lead	0.198	0.00100	0.200	0	98.8	80	120			
Molybdenum	0.198	0.00500	0.200	0	98.9	80	120			
Selenium	0.207	0.00500	0.200	0	103	80	120			
Thallium	0.197	0.00150	0.200	0	98.4	80	120			

Sample ID	**LCSD-81807**	Batch ID:	**81807**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**LCSD**	Run ID:	**ICP-MS4_170808B**	Analysis Date:	**8/8/2017 1:56:00 PM**	Prep Date:	**8/7/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.202	0.00250	0.200	0	101	80	120	0.977	15	
Arsenic	0.200	0.00500	0.200	0	99.9	80	120	0.821	15	
Barium	0.196	0.0100	0.200	0	97.9	80	120	0.532	15	
Beryllium	0.217	0.00100	0.200	0	108	80	120	0.773	15	
Cadmium	0.201	0.00100	0.200	0	100	80	120	1.60	15	
Chromium	0.206	0.00500	0.200	0	103	80	120	0.853	15	
Cobalt	0.202	0.00500	0.200	0	101	80	120	1.19	15	
Lead	0.195	0.00100	0.200	0	97.4	80	120	1.50	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1708050
Project: A-1 Landfill (Luminant)

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_170808B

Sample ID **LCSD-81807**	Batch ID: **81807**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCSD**	Run ID: **ICP-MS4_170808B**	Analysis Date: **8/8/2017 1:56:00 PM**	Prep Date: **8/7/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Molybdenum	0.194	0.00500	0.200	0	96.9	80	120	1.97	15	
Selenium	0.206	0.00500	0.200	0	103	80	120	0.396	15	
Thallium	0.194	0.00150	0.200	0	96.9	80	120	1.47	15	

Sample ID **1708021-07A SD**	Batch ID: **81807**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS4_170808B**	Analysis Date: **8/8/2017 2:03:00 PM**	Prep Date: **8/7/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.00400	0.0125	0	0				0	10	
Arsenic	<0.0100	0.0250	0	0				0	10	
Barium	0.0423	0.0500	0	0.0412				2.71	10	
Beryllium	<0.00150	0.00500	0	0				0	10	
Cadmium	<0.00150	0.00500	0	0				0	10	
Chromium	<0.0100	0.0250	0	0				0	10	
Cobalt	<0.0150	0.0250	0	0.00660				0	10	
Lead	0.00245	0.00500	0	0.00254				3.80	10	
Molybdenum	<0.0100	0.0250	0	0.00672				0	10	
Selenium	<0.0100	0.0250	0	0				0	10	
Thallium	<0.00250	0.00750	0	0				0	10	

Sample ID **1708021-07A PDS**	Batch ID: **81807**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_170808B**	Analysis Date: **8/8/2017 2:22:00 PM**	Prep Date: **8/7/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.202	0.00250	0.200	0	101	80	120			
Arsenic	0.219	0.00500	0.200	0	109	80	120			
Barium	0.252	0.0100	0.200	0.0412	105	80	120			
Beryllium	0.176	0.00100	0.200	0	87.9	80	120			
Cadmium	0.188	0.00100	0.200	0	93.9	80	120			
Chromium	0.211	0.00500	0.200	0	105	80	120			
Cobalt	0.216	0.00500	0.200	0.00660	105	80	120			
Lead	0.221	0.00100	0.200	0.00254	109	80	120			
Molybdenum	0.222	0.00500	0.200	0.00672	108	80	120			
Selenium	0.216	0.00500	0.200	0	108	80	120			
Thallium	0.219	0.00150	0.200	0	110	80	120			

Sample ID **1708021-07A MS**	Batch ID: **81807**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS4_170808B**	Analysis Date: **8/8/2017 2:24:00 PM**	Prep Date: **8/7/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.198	0.00250	0.200	0	99.1	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1708050
Project: A-1 Landfill (Luminant)

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_170808B

Sample ID **1708021-07A MS**	Batch ID: **81807**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS4_170808B**	Analysis Date: **8/8/2017 2:24:00 PM**	Prep Date: **8/7/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.206	0.00500	0.200	0	103	80	120			
Barium	0.239	0.0100	0.200	0.0412	99.1	80	120			
Beryllium	0.165	0.00100	0.200	0	82.7	80	120			
Cadmium	0.174	0.00100	0.200	0	86.9	80	120			
Chromium	0.189	0.00500	0.200	0	94.6	80	120			
Cobalt	0.198	0.00500	0.200	0.00660	95.7	80	120			
Lead	0.204	0.00100	0.200	0.00254	101	80	120			
Molybdenum	0.209	0.00500	0.200	0.00672	101	80	120			
Selenium	0.201	0.00500	0.200	0	101	80	120			
Thallium	0.204	0.00150	0.200	0	102	80	120			

Sample ID **1708021-07A MSD**	Batch ID: **81807**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS4_170808B**	Analysis Date: **8/8/2017 2:26:00 PM**	Prep Date: **8/7/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.200	0.00250	0.200	0	99.9	80	120	0.779	15	
Arsenic	0.209	0.00500	0.200	0	104	80	120	1.08	15	
Barium	0.239	0.0100	0.200	0.0412	98.7	80	120	0.366	15	
Beryllium	0.156	0.00100	0.200	0	78.2	80	120	5.55	15	S
Cadmium	0.174	0.00100	0.200	0	86.8	80	120	0.037	15	
Chromium	0.193	0.00500	0.200	0	96.4	80	120	1.85	15	
Cobalt	0.200	0.00500	0.200	0.00660	96.7	80	120	1.04	15	
Lead	0.207	0.00100	0.200	0.00254	102	80	120	1.31	15	
Molybdenum	0.210	0.00500	0.200	0.00672	102	80	120	0.326	15	
Selenium	0.203	0.00500	0.200	0	101	80	120	0.785	15	
Thallium	0.207	0.00150	0.200	0	104	80	120	1.74	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1708050
Project: A-1 Landfill (Luminant)

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_170808B

Sample ID **ICV-170808**	Batch ID: **R93550**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_170808B**	Analysis Date: **8/8/2017 10:59:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.102	0.00250	0.100	0	102	90	110			
Arsenic	0.101	0.00500	0.100	0	101	90	110			
Barium	0.0993	0.0100	0.100	0	99.3	90	110			
Beryllium	0.103	0.00100	0.100	0	103	90	110			
Cadmium	0.101	0.00100	0.100	0	101	90	110			
Chromium	0.105	0.00500	0.100	0	105	90	110			
Cobalt	0.102	0.00500	0.100	0	102	90	110			
Lead	0.0988	0.00100	0.100	0	98.8	90	110			
Molybdenum	0.0988	0.00500	0.100	0	98.8	90	110			
Selenium	0.102	0.00500	0.100	0	102	90	110			
Thallium	0.0963	0.00150	0.100	0	96.3	90	110			

Sample ID **LCVL-170808**	Batch ID: **R93550**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_170808B**	Analysis Date: **8/8/2017 11:04:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00225	0.00250	0.00200	0	113	70	130			
Arsenic	0.00557	0.00500	0.00500	0	111	70	130			
Barium	0.00540	0.0100	0.00500	0	108	70	130			
Beryllium	0.00105	0.00100	0.00100	0	105	70	130			
Cadmium	0.00107	0.00100	0.00100	0	107	70	130			
Chromium	0.00555	0.00500	0.00500	0	111	70	130			
Cobalt	0.00548	0.00500	0.00500	0	110	70	130			
Lead	0.00107	0.00100	0.00100	0	107	70	130			
Molybdenum	0.00552	0.00500	0.00500	0	110	70	130			
Selenium	0.00561	0.00500	0.00500	0	112	70	130			
Thallium	0.00104	0.00150	0.00100	0	104	70	130			

Sample ID **CCV3-170808**	Batch ID: **R93550**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_170808B**	Analysis Date: **8/8/2017 12:52:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.196	0.00250	0.200	0	97.9	90	110			
Arsenic	0.200	0.00500	0.200	0	99.8	90	110			
Barium	0.196	0.0100	0.200	0	98.2	90	110			
Beryllium	0.215	0.00100	0.200	0	107	90	110			
Cadmium	0.201	0.00100	0.200	0	101	90	110			
Chromium	0.206	0.00500	0.200	0	103	90	110			
Cobalt	0.203	0.00500	0.200	0	102	90	110			
Lead	0.196	0.00100	0.200	0	97.9	90	110			
Molybdenum	0.198	0.00500	0.200	0	98.9	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1708050
Project: A-1 Landfill (Luminant)

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_170808B

Sample ID **CCV3-170808**	Batch ID: **R93550**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_170808B**	Analysis Date: **8/8/2017 12:52:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.204	0.00500	0.200	0	102	90	110			
Thallium	0.194	0.00150	0.200	0	97.0	90	110			

Sample ID **LCVL3-170808**	Batch ID: **R93550**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_170808B**	Analysis Date: **8/8/2017 1:01:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00213	0.00250	0.00200	0	106	70	130			
Arsenic	0.00530	0.00500	0.00500	0	106	70	130			
Barium	0.00524	0.0100	0.00500	0	105	70	130			
Beryllium	0.00105	0.00100	0.00100	0	105	70	130			
Cadmium	0.00112	0.00100	0.00100	0	112	70	130			
Chromium	0.00559	0.00500	0.00500	0	112	70	130			
Cobalt	0.00537	0.00500	0.00500	0	107	70	130			
Lead	0.00103	0.00100	0.00100	0	103	70	130			
Molybdenum	0.00513	0.00500	0.00500	0	103	70	130			
Selenium	0.00548	0.00500	0.00500	0	110	70	130			
Thallium	0.00101	0.00150	0.00100	0	101	70	130			

Sample ID **CCV4-170808**	Batch ID: **R93550**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_170808B**	Analysis Date: **8/8/2017 2:28:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.196	0.00250	0.200	0	98.2	90	110			
Arsenic	0.203	0.00500	0.200	0	101	90	110			
Barium	0.198	0.0100	0.200	0	98.8	90	110			
Beryllium	0.189	0.00100	0.200	0	94.5	90	110			
Cadmium	0.197	0.00100	0.200	0	98.3	90	110			
Chromium	0.204	0.00500	0.200	0	102	90	110			
Cobalt	0.199	0.00500	0.200	0	99.4	90	110			
Lead	0.195	0.00100	0.200	0	97.6	90	110			
Molybdenum	0.193	0.00500	0.200	0	96.5	90	110			
Selenium	0.205	0.00500	0.200	0	103	90	110			
Thallium	0.193	0.00150	0.200	0	96.7	90	110			

Sample ID **LCVL4-170808**	Batch ID: **R93550**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_170808B**	Analysis Date: **8/8/2017 2:33:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00214	0.00250	0.00200	0	107	70	130			
Arsenic	0.00510	0.00500	0.00500	0	102	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1708050
Project: A-1 Landfill (Luminant)

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_170808B

Sample ID **LCVL4-170808** Batch ID: **R93550** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_170808B** Analysis Date: **8/8/2017 2:33:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.00518	0.0100	0.00500	0	104	70	130			
Beryllium	0.00107	0.00100	0.00100	0	107	70	130			
Cadmium	0.00110	0.00100	0.00100	0	110	70	130			
Chromium	0.00541	0.00500	0.00500	0	108	70	130			
Cobalt	0.00518	0.00500	0.00500	0	104	70	130			
Lead	0.00103	0.00100	0.00100	0	103	70	130			
Molybdenum	0.00511	0.00500	0.00500	0	102	70	130			
Selenium	0.00585	0.00500	0.00500	0	117	70	130			
Thallium	0.00102	0.00150	0.00100	0	102	70	130			

Sample ID **CCV5-170808** Batch ID: **R93550** TestNo: **SW6020A** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_170808B** Analysis Date: **8/8/2017 3:01:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.205	0.00250	0.200	0	103	90	110			
Arsenic	0.208	0.00500	0.200	0	104	90	110			
Barium	0.209	0.0100	0.200	0	105	90	110			
Beryllium	0.188	0.00100	0.200	0	94.0	90	110			
Cadmium	0.203	0.00100	0.200	0	102	90	110			
Chromium	0.212	0.00500	0.200	0	106	90	110			
Cobalt	0.202	0.00500	0.200	0	101	90	110			
Lead	0.203	0.00100	0.200	0	102	90	110			
Molybdenum	0.199	0.00500	0.200	0	99.5	90	110			
Selenium	0.213	0.00500	0.200	0	107	90	110			
Thallium	0.201	0.00150	0.200	0	101	90	110			

Sample ID **LCVL5-170808** Batch ID: **R93550** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_170808B** Analysis Date: **8/8/2017 3:10:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00222	0.00250	0.00200	0	111	70	130			
Arsenic	0.00530	0.00500	0.00500	0	106	70	130			
Barium	0.00569	0.0100	0.00500	0	114	70	130			
Beryllium	0.000723	0.00100	0.00100	0	72.3	70	130			
Cadmium	0.00111	0.00100	0.00100	0	111	70	130			
Chromium	0.00563	0.00500	0.00500	0	113	70	130			
Cobalt	0.00526	0.00500	0.00500	0	105	70	130			
Lead	0.00103	0.00100	0.00100	0	103	70	130			
Molybdenum	0.00501	0.00500	0.00500	0	100	70	130			
Selenium	0.00577	0.00500	0.00500	0	115	70	130			
Thallium	0.00102	0.00150	0.00100	0	102	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1708050
Project: A-1 Landfill (Luminant)

ANALYTICAL QC SUMMARY REPORT

RunID: **ICP-MS4_170809C**

The QC data in batch 81807 applies to the following samples: 1708050-01A

Sample ID	**MB-81807**	Batch ID:	**81807**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**ICP-MS4_170809C**	Analysis Date:	**8/9/2017 12:24:00 PM**	Prep Date:	**8/7/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	<0.0100	0.0300								
Calcium	<0.100	0.300								
Lithium	<0.00500	0.0100								

Sample ID	**LCS-81807**	Batch ID:	**81807**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**ICP-MS4_170809C**	Analysis Date:	**8/9/2017 12:26:00 PM**	Prep Date:	**8/7/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.219	0.0300	0.200	0	110	80	120			
Calcium	4.62	0.300	5.00	0	92.4	80	120			
Lithium	0.216	0.0100	0.200	0	108	80	120			

Sample ID	**LCSD-81807**	Batch ID:	**81807**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**LCSD**	Run ID:	**ICP-MS4_170809C**	Analysis Date:	**8/9/2017 12:28:00 PM**	Prep Date:	**8/7/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.210	0.0300	0.200	0	105	80	120	4.48	15	
Calcium	4.54	0.300	5.00	0	90.9	80	120	1.69	15	
Lithium	0.214	0.0100	0.200	0	107	80	120	0.844	15	

Sample ID	**1708021-07A SD**	Batch ID:	**81807**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**SD**	Run ID:	**ICP-MS4_170809C**	Analysis Date:	**8/9/2017 12:38:00 PM**	Prep Date:	**8/7/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	<5.00	15.0	0	2.49				0	10	
Calcium	534	150	0	520				2.68	10	
Lithium	<2.50	5.00	0	0				0	10	

Sample ID	**1708021-07A PDS**	Batch ID:	**81807**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**PDS**	Run ID:	**ICP-MS4_170809C**	Analysis Date:	**8/9/2017 12:58:00 PM**	Prep Date:	**8/7/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	24.8	3.00	20.0	2.49	111	80	120			
Calcium	1020	30.0	500	520	101	80	120			
Lithium	23.9	1.00	20.0	0	119	80	120			

Sample ID	**1708021-07A MS**	Batch ID:	**81807**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**MS**	Run ID:	**ICP-MS4_170809C**	Analysis Date:	**8/9/2017 1:00:00 PM**	Prep Date:	**8/7/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1708050
Project: A-1 Landfill (Luminant)

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_170809C

Sample ID **1708021-07A MS**	Batch ID: **81807**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS4_170809C**	Analysis Date: **8/9/2017 1:00:00 PM**	Prep Date: **8/7/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	2.51	3.00	0.200	2.49	12.5	80	120			S
Calcium	509	30.0	5.00	520	-226	80	120			S
Lithium	0.524	1.00	0.200	0	262	80	120			S

Sample ID **1708021-07A MSD**	Batch ID: **81807**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS4_170809C**	Analysis Date: **8/9/2017 1:02:00 PM**	Prep Date: **8/7/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	2.75	3.00	0.200	2.49	132	80	120	9.11	15	S
Calcium	517	30.0	5.00	520	-54.7	80	120	1.67	15	S
Lithium	0.519	1.00	0.200	0	260	80	120	0.844	15	S

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1708050
Project: A-1 Landfill (Luminant)

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_170809C

Sample ID **ICV-170809**	Batch ID: **R93568**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_170809C**	Analysis Date: **8/9/2017 9:52:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.104	0.0300	0.100	0	104	90	110			
Calcium	2.30	0.300	2.50	0	92.1	90	110			
Lithium	0.101	0.0100	0.100	0	101	90	110			

Sample ID **LCVL-170809**	Batch ID: **R93568**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_170809C**	Analysis Date: **8/9/2017 9:57:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0209	0.0300	0.0200	0	104	70	130			
Calcium	0.106	0.300	0.100	0	106	70	130			
Lithium	0.0112	0.0100	0.0100	0	112	70	130			

Sample ID **CCV3-170809**	Batch ID: **R93568**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_170809C**	Analysis Date: **8/9/2017 12:14:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.211	0.0300	0.200	0	105	90	110			
Calcium	4.73	0.300	5.00	0	94.7	90	110			
Lithium	0.211	0.0100	0.200	0	105	90	110			

Sample ID **LCVL3-170809**	Batch ID: **R93568**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_170809C**	Analysis Date: **8/9/2017 12:20:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0217	0.0300	0.0200	0	108	70	130			
Calcium	0.107	0.300	0.100	0	107	70	130			
Lithium	0.0112	0.0100	0.0100	0	112	70	130			

Sample ID **CCV4-170809**	Batch ID: **R93568**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_170809C**	Analysis Date: **8/9/2017 1:04:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.209	0.0300	0.200	0	105	90	110			
Calcium	4.73	0.300	5.00	0	94.7	90	110			
Lithium	0.213	0.0100	0.200	0	106	90	110			

Sample ID **LCVL4-170809**	Batch ID: **R93568**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_170809C**	Analysis Date: **8/9/2017 1:09:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0220	0.0300	0.0200	0	110	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1708050
Project: A-1 Landfill (Luminant)

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_170809C

Sample ID **LCVL4-170809**	Batch ID: **R93568**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_170809C**	Analysis Date: **8/9/2017 1:09:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.104	0.300	0.100	0	104	70	130			
Lithium	0.0112	0.0100	0.0100	0	112	70	130			

Sample ID **CCV5-170809**	Batch ID: **R93568**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_170809C**	Analysis Date: **8/9/2017 1:31:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.209	0.0300	0.200	0	104	90	110			
Calcium	4.74	0.300	5.00	0	94.7	90	110			
Lithium	0.208	0.0100	0.200	0	104	90	110			

Sample ID **LCVL5-170809**	Batch ID: **R93568**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_170809C**	Analysis Date: **8/9/2017 1:36:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0216	0.0300	0.0200	0	108	70	130			
Calcium	0.0997	0.300	0.100	0	99.7	70	130			
Lithium	0.0118	0.0100	0.0100	0	118	70	130			

Sample ID **CCV6-170809**	Batch ID: **R93568**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_170809C**	Analysis Date: **8/9/2017 1:48:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.219	0.0300	0.200	0	110	90	110			
Lithium	0.212	0.0100	0.200	0	106	90	110			

Sample ID **LCVL6-170809**	Batch ID: **R93568**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_170809C**	Analysis Date: **8/9/2017 1:54:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0249	0.0300	0.0200	0	125	70	130			
Lithium	0.0107	0.0100	0.0100	0	107	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1708050
Project: A-1 Landfill (Luminant)

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_170815A

The QC data in batch 81971 applies to the following samples: 1708050-01D

Sample ID	**MB-81971**	Batch ID:	**81971**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**IC4_170815A**	Analysis Date:	**8/15/2017 10:16:39 AM**	Prep Date:	**8/15/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00								
Fluoride	<0.100	0.400								
Sulfate	<1.00	3.00								

Sample ID	**LCS-81971**	Batch ID:	**81971**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**IC4_170815A**	Analysis Date:	**8/15/2017 10:28:39 AM**	Prep Date:	**8/15/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.32	1.00	10.00	0	93.2	90	110			
Fluoride	3.72	0.400	4.000	0	93.0	90	110			
Sulfate	28.3	3.00	30.00	0	94.3	90	110			

Sample ID	**LCSD-81971**	Batch ID:	**81971**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**LCSD**	Run ID:	**IC4_170815A**	Analysis Date:	**8/15/2017 10:40:39 AM**	Prep Date:	**8/15/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.34	1.00	10.00	0	93.4	90	110	0.124	20	
Fluoride	3.74	0.400	4.000	0	93.6	90	110	0.589	20	
Sulfate	28.2	3.00	30.00	0	94.1	90	110	0.211	20	

Sample ID	**1708120-07CMS**	Batch ID:	**81971**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**MS**	Run ID:	**IC4_170815A**	Analysis Date:	**8/15/2017 11:25:28 AM**	Prep Date:	**8/15/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	2120	100	2000	115.3	100	90	110			
Fluoride	1990	40.0	2000	0	99.5	90	110			
Sulfate	1930	300	2000	0	96.7	90	110			

Sample ID	**1708120-07CMSD**	Batch ID:	**81971**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**MSD**	Run ID:	**IC4_170815A**	Analysis Date:	**8/15/2017 11:37:28 AM**	Prep Date:	**8/15/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	2120	100	2000	115.3	100	90	110	0.345	20	
Fluoride	2000	40.0	2000	0	100	90	110	0.428	20	
Sulfate	1950	300	2000	0	97.5	90	110	0.736	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1708050
Project: A-1 Landfill (Luminant)

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_170815A

Sample ID **ICV-170815**	Batch ID: **R93690**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC4_170815A**	Analysis Date: **8/15/2017 9:52:39 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	24.3	1.00	25.00	0	97.3	90	110			
Fluoride	9.66	0.400	10.00	0	96.6	90	110			
Sulfate	73.2	3.00	75.00	0	97.6	90	110			

Sample ID **CCV1-170815**	Batch ID: **R93690**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC4_170815A**	Analysis Date: **8/15/2017 2:01:28 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.50	1.00	10.00	0	95.0	90	110			
Fluoride	3.84	0.400	4.000	0	95.9	90	110			
Sulfate	28.9	3.00	30.00	0	96.4	90	110			

Sample ID **CCV2-170815**	Batch ID: **R93690**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC4_170815A**	Analysis Date: **8/15/2017 3:49:28 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.60	1.00	10.00	0	96.0	90	110			
Fluoride	3.84	0.400	4.000	0	95.9	90	110			
Sulfate	29.3	3.00	30.00	0	97.8	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler

Work Order: 1708050

Project: A-1 Landfill (Luminant)

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_170804A

The QC data in batch 81786 applies to the following samples: 1708050-01D

Sample ID	**1708050-01D-DUP**	Batch ID:	**81786**	TestNo:	**M4500-H+ B**	Units:	**pH Units@16.6℃**
SampType:	**DUP**	Run ID:	**TITRATOR_170804A**	Analysis Date:	**8/4/2017 10:58:00 AM**	Prep Date:	**8/4/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	6.99	0	0	7.020				0.428	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1708050
Project: A-1 Landfill (Luminant)

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_170804A

Sample ID	**ICV-170804**	Batch ID:	**R93511**	TestNo:	**M4500-H+ B**	Units:	**pH Units@20.8℃**
SampType:	**ICV**	Run ID:	**TITRATOR_170804A**	Analysis Date:	**8/4/2017 9:58:00 AM**	Prep Date:	**8/4/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	9.95	0	10.00	0	99.5	99	101			

Sample ID	**CCV1-170804**	Batch ID:	**R93511**	TestNo:	**M4500-H+ B**	Units:	**pH Units@20.6℃**
SampType:	**CCV**	Run ID:	**TITRATOR_170804A**	Analysis Date:	**8/4/2017 10:59:00 AM**	Prep Date:	**8/4/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	6.96	0	7.000	0	99.4	97.1	102.9			

Sample ID	**CCV1-170804**	Batch ID:	**R93511**	TestNo:	**M4500-H+ B**	Units:	**pH Units@21.3℃**
SampType:	**CCV**	Run ID:	**TITRATOR_170804A**	Analysis Date:	**8/4/2017 2:31:00 PM**	Prep Date:	**8/4/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	6.96	0	7.000	0	99.4	97.1	102.9			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1708050
Project: A-1 Landfill (Luminant)

ANALYTICAL QC SUMMARY REPORT

RunID: WC_170807C

The QC data in batch 81830 applies to the following samples: 1708050-01D

Sample ID **MB-81830**	Batch ID: **81830**	TestNo: **M2540C**	Units: **mg/L**
SampType: **MBLK**	Run ID: **WC_170807C**	Analysis Date: **8/8/2017 8:15:00 AM**	Prep Date: **8/7/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	<10.0	10.0								

Sample ID **LCS-81830**	Batch ID: **81830**	TestNo: **M2540C**	Units: **mg/L**
SampType: **LCS**	Run ID: **WC_170807C**	Analysis Date: **8/8/2017 8:15:00 AM**	Prep Date: **8/7/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	772	10.0	745.6	0	104	90	113			

Sample ID **1708046-02B-DUP**	Batch ID: **81830**	TestNo: **M2540C**	Units: **mg/L**
SampType: **DUP**	Run ID: **WC_170807C**	Analysis Date: **8/8/2017 8:15:00 AM**	Prep Date: **8/7/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	2960	50.0	0	2990				1.18	5	

Sample ID **1708063-02B-DUP**	Batch ID: **81830**	TestNo: **M2540C**	Units: **mg/L**
SampType: **DUP**	Run ID: **WC_170807C**	Analysis Date: **8/8/2017 8:15:00 AM**	Prep Date: **8/7/2017**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	47900	1000	0	48300				0.832	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

Case Narrative

Lab No: 20170734

This report contains the analytical results for the 1 sample(s) received under chain of custody by ESC Lab Sciences on 8/7/2017 11:47:14 AM. These samples are associated with your 1708050 project.

The analytical results included in this report meet all applicable quality control procedure requirements except as noted below:

The test results in this report meet all NELAC requirements unless noted below:

This report shall not be reproduced, except in full, without the written approval of ESC Lab Sciences.

All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client.

Results have been reviewed by the Director of Radiochemistry or their designees and is approved for release.

DL for Radiochemistry = MDA DL for Metals and Wet Chemistry = MDL DL for Drinking Water = SDWA

Observations / Nonconformances

L927427

Client	:	DHL Analytical, Inc.
Client Project	:	1708050
Lab Number	:	20170734
Date Reported	:	08/29/17
Date Received	:	08/07/17
Page Number	:	2 of 2

Analytical Report

	Method	Result	DL	Units	Qual	Prep Date	Analysis Date	Analyst
Lab ID :	**20170734-01**							
Client ID :	**BMW-28**							
Date Sampled :	**8/1/2017 12:40:00 PM**							
Matrix :	**NPW**							
	Radiochemical Analyses							
Combined Radium		2.97 +/- 0.896	0.961	pCi/l				
Radium-226	SM 7500 Ra B M*	0.536 +/- 0.309	0.306	pCi/l		08/16/17	08/18/17	RE
Radium-228	EPA 904*	2.43 +/- 0.587	0.655	pCi/l		08/17/17	08/23/17	JR

QC Report

Parameter	Blank	LCS %REC	LCSD %REC	RPD	DUP RPD	RER, NAD or DER	MS %REC	MSD %REC	RPD	Batch ID
Radium-226	0.048	116.0			NC	1.140	104.0	112.0	6.9	R1268
Radium-228	0.323	95.6			NC	0.378	73.9	74.0	0.1	R3992

Lab Approval:

Ron Eidson
Director of Radiochemistry

*NELAC Certified Parameter BDL = Below Detection Limit

OUTREACH LABORATORY, A Divsion of ESC Lab Sciences
Address: 311 North Aspen Avenue, Broken Arrow, OK, 74012 *EMail: outreach@esclabsciences.com - Tel: (918) 251-2515*

DHL Analytical, Inc.
2300 Double Creek Drive
Round Rock, TX 78664
TEL: *(512) 388-8222* FAX: *(512) 388-8229*

CHAIN-OF-CUSTODY RECORD

Work Order: 1708050

Subcontractor:

ESC Laboratory
311 North Aspen
Broken Arrow, Oklahoma 74012

TEL: (918) 251-2515
FAX:
Acct #: DHLRRTX

03-Aug-17

Sample Id	Matrix	DHL#	Date Collected	Bottle Type	Requested Tests					
					E903.1	E904.0				
BMW-28	Aqueous	-01B	08/01/17 12:40 PM	1LHDPEHNO3		1				
BMW-28	Aqueous	-01C	08/01/17 12:40 PM	1LHDPEHNO3	1					

General Comments:

Please analyze these samples with Normal Turnaround Time.
Report RA-226, Ra-228 & Combined per Specs.
Quality Control Package Needed: Standard - NELAC Rad Test compliant
Email to cac@dhlanalytical.com & dupont@dhlanalytical.com

		Date/Time		Date/Time
Relinquished by:	Em	8/3/17 17:30	**Received by:**	LSO 8/3/17 1730
Relinquished by:			**Received by:**	8/7/17 1147

20170734 L927427

SAMPLE LOGIN

Date Received: *8/7/2017 11:47:14* **Lab Number:** 20170734 **Due:** 9/5/2017

Sample Number	Client Sample ID	Matrix	Date Sampled	Container Type	Container Size	Preservation	Preserved Upon Receipt	Custody Seal	Seal Intact
20170734-01 B	BMW-28	NPW	08/01/17	Plastic	1 L	HNO3, pH < 2	☑	No	No
20170734-01 A	BMW-28	NPW	08/01/17	Plastic	1 L	HNO3, pH < 2	☑	No	No
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*						

CONTAINER INSPECTION

 # Coolers 1 **Custody Seals Broken** ☑ **Temperature:** 4.6 C **Ice** **Radiation Survey:** <300 cpm

SAMPLE INSPECTION

Sample Seal Broken ☐ **Chain of Custody Record** ☑ **Labels in Tact** ☑ **Radiation Survey Complete** N/A

Anomalies

Inspected By: _____ **DATE** 8/7/17

QA or Designee Review: _____ **DATE** 08/07/17

Sample Custodian Review: _____ **DATE** 8/7/17

Project Notes:

Data Usability Summary
Luminant – Martin Lake Steam Electric Station
October 20-30, 2015
Groundwater Monitoring Event
DHL Analytical Data Packages 1510216, 1510228, and 1511007

Pastor, Behling & Wheeler, LLC reviewed three data packages from DHL Analytical for the analysis of groundwater samples collected October 20-30, 2015 at the Martin Lake Steam Electric Station in Tatum, Texas. Data were reviewed for adherence to project objectives.

Intended Use of Data: To provide current data on concentrations of chemicals of concern (COCs) in the groundwater at the site.

Analyses requested included:

- Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Lead, Lithium, Molybdenum, Selenium, and Thallium by USEPA Method SW6020A – Metals Analysis;
- Chloride, Fluoride, and Sulfate by USEPA Method E300 – Anion Analysis;
- Mercury by USEPA Method SW7470A – Mercury Analysis;
- pH of Water by Standard Method M4500-H + B – pH of Water Analysis;
- Total Dissolved Solids (TDS) by Standard Method M2540C – TDS Analysis; and
- Radium 226 and 228 by USEPA Methods 904.0/SW846 9320 Modified and 903.1 Modified.

Data were reviewed and validated and the results of the review/validation are discussed in this Data Usability Summary (DUS). The following laboratory submittals and field data were examined:

- the reportable data,
- case narratives, and
- field notes with respect to field instrument calibrations, filtering procedures, sampling procedures, and preservation procedures prior to shipping the samples to the laboratory.

The results of supporting quality control (QC) analyses were summarized in the case narrative, included in this review, with the laboratory data package.

Introduction

Twenty five (25) groundwater samples were analyzed for the constituents listed above (Appendix III and Appendix IV constituents in the Coal Combustion Residuals Federal Rule). Table B-1 lists the field sample identifications cross-referenced to the laboratory identifications.

Project Objectives

Project quality QC objectives were established in conformance to the requirements of *SW-846 Test Methods for Evaluating Solid Waste Physical/Chemical Methods* and *Standard Methods*. Laboratory control sample and sample duplicate recovery QC criteria were 70 – 130% recovery (%R) for metals and inorganics. Laboratory recovery QC criteria were 30% Relative Percent Difference (RPD). Field duplicate recovery QC criteria were 50% RPD.

Data Review / Validation Results

Analytical Results

Non-detected results (ND) are reported as less than the value of the method detection limit (MDL) and received a "U" flag. Analytes detected between the method quantitation limit (MQL) and the MDL were qualified with a "J-flag" to denote that the reported value was considered to be estimated. If a QC result was found outside of the review criteria, the reviewer applied a data qualifier and bias code to the associated sample data if the analyte was detected. Sample data were not qualified if recoveries exceeded QC criteria and the analyte was not detected.

Preservation and Holding Times

Samples were evaluated for agreement with the chain-of-custody (COC). All samples were received in the appropriate containers and in good condition with the paperwork filled out properly. Sample receipt temperatures were within the acceptance criteria of 4 ± 2 °C. Samples were prepared and analyzed within holding times as specified in the analysis methods.

Calibrations

The initial and continuing calibration data met laboratory control limits with the exception of the following:

For Metals analysis performed on 11/5/2015 and 11/9/2015, four LCVLs were above control limits for Boron. These are flagged accordingly. The associated CCVs were within control limits for this analyte. No further corrective actions were taken.

For Metals analysis performed on 11/3/2015, LCVL3-151103 was above control limits for Boron and Calcium. This was due to sample carryover. The affected samples were the matrix spike and matrix spike duplicate. No further corrective actions were taken.

For Metals analysis performed on 11/9/2015, LCVL2-151109 was slightly above control limits for Calcium. This is flagged accordingly. The associated CCV2-151109 was within control limits for this analyte. No further corrective actions were taken.

Blanks

No field blanks were used because the sampling event did not include volatile or semi-volatile compounds.

All laboratory method blank results were reported as non-detected or below applicable assessment levels with the exception of the following:

For Metals analysis performed on 11/5/2015 Chromium and Molybdenum were detected above the reporting limits in the method blank. All associated samples were below detection limits for these analytes. No further corrective actions were taken.

For Metals analysis performed on 11/9/2015 Boron was detected below the reporting limit in the method blank. All samples were detected greater than 10 times the amount in the blank for this analyte. No further corrective actions were taken.

No equipment blank was collected

Internal Standards

For Metals analysis samples BMW-19 and BMW-18 had low responses for the internal standards Indium and Bismuth. All associated analytes (Barium, Cadmium, Molybdenum, and Lead) were not reported from this analytical run and were re-analyzed.

Surrogate Recoveries

The analytical procedures used did not require surrogates; therefore, surrogate recovery is not applicable.

Laboratory Control Samples

Laboratory control sample (LCS) recoveries were within QC acceptance limits for all LCS analyses.

Matrix Spike/Matrix Spike Duplicates

MS/MSD percent recoveries were within acceptable control limits for all samples with the exception of the following:

For Metals analysis performed on 11/3/2015 the matrix spike and matrix spike duplicate recoveries were out of control limits for Calcium, and the matrix spike duplicate recovery was out of control limits for Antimony. In addition, the matrix spike and matrix spike duplicate had the RPD above control limits for Antimony. These are flagged accordingly in the QC summary report. The sample selected for the MS and MSD was not from this work order. The LCS was within control limits for these analytes. No further corrective actions were taken.

For Metals analysis performed on 11/9/2015 the matrix spike and matrix spike duplicate recoveries were out of control limits for Calcium. These are flagged accordingly in the QC summary report. The sample selected for the MS and MSD was not from this work order. The LCS was within control limits for this analyte. No further corrective actions were taken.

For Mercury analysis for lab package 1511007 the matrix spike and matrix spike duplicate was re-prepped and re-analyzed on 11/10/2015. This was due to a prep error. This exceeded the 24 hour prep window.

Serial Dilution/Post Dilution Spike

For Metals analysis performed on 11/9/2015 the RPD for the serial dilution was above control limits for Chromium. This is flagged accordingly. The PDS was within control limits for this analyte. No further corrective actions were taken.

Field Precision

No sample duplicates were taken during this sampling event.

Field Procedures

Groundwater samples were collected using low-flow procedures with a peristaltic, stainless steel submersible pump, or bladder pump and placed in unpreserved 250-ml plastic bottles and 500-ml plastic bottles preserved with HNO_3. Wells were purged until groundwater parameters (temperature, pH, specific conductivity, dissolved oxygen, redox, and turbidity) stabilized to within +/- 10%.

Summary

Groundwater analytical data are usable for the purpose of determining current COC concentrations in the groundwater at the site with no qualifications added as a result of this evaluation.

Table B-1. Cross-Reference Field Sample Identifications and Laboratory Identifications

Field Identification	Laboratory Identification
PDP-23	1510216-01
PDP-24	1510216-02
PDP-22	1510216-03
MW-19	1510216-04
MW-20A	1510216-05
PDP-26	1510216-06
PDP-25	1510216-07
H-30	1510216-08
H-31	1510216-09
H-29	1510216-10
H-28	1510216-11
H-27	1510216-12
H-26	1510216-13
H-33	1510216-14
H-32	1510216-15
MW-17A	1510216-16
BMW-22	1510228-01
BMW-23	1510228-02
BMW-24	1510228-03
BMW-20	1510228-04
BMW-21	1510228-05
BMW-19	1511007-01
BMW-11AR	1511007-02
MW-18A	1511007-03
BMW-18	1511007-04

Prepared by: Lindsey Sydow___ Date: June 2, 2017

Data Usability Summary
Luminant – Martin Lake Steam Electric Station
December 30, 2015
Groundwater Monitoring Event
DHL Analytical Data Package 1512359

Pastor, Behling & Wheeler, LLC reviewed one data package from DHL Analytical for the analysis of groundwater samples collected December 30, 2015 at the Martin Lake Steam Electric Station in Tatum, Texas. Data were reviewed for adherence to project objectives.

Intended Use of Data: To provide current data on concentrations of chemicals of concern (COCs) in the groundwater at the site.

Analyses requested included:

- Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Lead, Lithium, Molybdenum, Selenium, and Thallium by USEPA Method SW6020A – Metals Analysis;
- Chloride, Fluoride, and Sulfate by USEPA Method E300 – Anion Analysis;
- Mercury by USEPA Method SW7470A – Mercury Analysis;
- pH of Water by Standard Method M4500-H + B – pH of Water Analysis;
- Total Dissolved Solids (TDS) by Standard Method M2540C – TDS Analysis; and
- Radium 226 and 228 by USEPA Methods 904.0/SW846 9320 Modified and 903.1 Modified.

Data were reviewed and validated and the results of the review/validation are discussed in this Data Usability Summary (DUS). The following laboratory submittals and field data were examined:

- the reportable data,
- case narratives, and
- field notes with respect to field instrument calibrations, filtering procedures, sampling procedures, and preservation procedures prior to shipping the samples to the laboratory.

The results of supporting quality control (QC) analyses were summarized in the case narrative, included in this review, with the laboratory data package.

Introduction

Eight (8) groundwater samples were analyzed for the constituents listed above (Appendix III and Appendix IV constituents in the Coal Combustion Residuals Federal Rule). Table B-1 lists the field sample identifications cross-referenced to the laboratory identifications.

Project Objectives

Project quality QC objectives were established in conformance to the requirements of *SW-846 Test Methods for Evaluating Solid Waste Physical/Chemical Methods* and *Standard Methods*. Laboratory control sample and sample duplicate recovery QC criteria were 70 – 130% recovery (%R) for metals and inorganics. Laboratory recovery QC criteria were 30% Relative Percent Difference (RPD). Field duplicate recovery QC criteria were 50% RPD.

Data Review / Validation Results

Analytical Results

Non-detected results (ND) are reported as less than the value of the method detection limit (MDL) and received a "U" flag. Analytes detected between the method quantitation limit (MQL) and the MDL were qualified with a "J-flag" to denote that the reported value was considered to be estimated. If a QC result was found outside of the review criteria, the reviewer applied a data qualifier and bias code to the associated sample data if the analyte was detected. Sample data were not qualified if recoveries exceeded QC criteria and the analyte was not detected.

Preservation and Holding Times

Samples were evaluated for agreement with the chain-of-custody (COC). All samples were received in the appropriate containers and in good condition with the paperwork filled out properly. Sample receipt temperatures were within the acceptance criteria of 4 ± 2 °C. Samples were prepared and analyzed within holding times as specified in the analysis methods.

Calibrations

The initial and continuing calibration data met laboratory control limits.

Blanks

No field blanks were used because the sampling event did not include volatile or semi-volatile compounds.

All laboratory method blank results were reported as non-detected or below applicable assessment levels.

No equipment blank was collected.

Surrogate Recoveries

The analytical procedures used did not require surrogates; therefore, surrogate recovery is not applicable.

Laboratory Control Samples

Laboratory control sample (LCS) recoveries were within QC acceptance limits for all LCS analyses.

Matrix Spike/Matrix Spike Duplicates

MS/MSD percent recoveries were within acceptable control limits for all samples with the exception of the following:

For Metals analysis performed on 1/11/2016 the matrix spike and matrix spike duplicate recoveries were out of control limits for Calcium, and for analysis performed on 1/14/2016 the matrix spike and matrix spike duplicate recoveries were out of control limits for Boron. These are flagged accordingly in the QC summary report. The sample selected for the MS and MSD was from this work order. The LCS was within control limits for these analytes. No further corrective actions were taken.

Serial Dilution/Post Dilution Spike

For Mercury analysis performed on 1/5/2016 the PDS recover was below control limits. This is flagged accordingly. The serial dilution was within control limits. No further corrective actions were taken.

Field Precision

No sample duplicates were taken during this sampling event.

Field Procedures

Groundwater samples were collected using low-flow procedures with a peristaltic, stainless steel submersible pump, or bladder pump and placed in unpreserved 250-ml plastic bottles and 500-ml plastic bottles preserved with HNO_3. Wells were purged until groundwater parameters (temperature, pH, specific conductivity, dissolved oxygen, redox, and turbidity) stabilized to within +/- 10%.

Summary

Groundwater analytical data are usable for the purpose of determining current COC concentrations in the groundwater at the site with no qualifications added as a result of this evaluation.

Table B-1. Cross-Reference Field Sample Identifications and Laboratory Identifications

Field Identification	Laboratory Identification
BMW-20	1512359-01
BMW-21	1512359-02
BMW-22	1512359-03
BMW-23	1512359-04
BMW-24	1512359-05
BMW-11AR	1512359-06
BMW-18	1512359-07
BMW-19	1512359-08

Prepared by: Lindsey Sydow___ Date: June 6, 2017

Data Usability Summary
Luminant – Martin Lake Steam Electric Station
February 25-26, 2016
Groundwater Monitoring Event
DHL Analytical Data Package 1602289

Pastor, Behling & Wheeler, LLC reviewed one data packages from DHL Analytical for the analysis of groundwater samples collected February 25-26, 2016 at the Martin Lake Steam Electric Station in Tatum, Texas. Data were reviewed for adherence to project objectives.

Intended Use of Data: To provide current data on concentrations of chemicals of concern (COCs) in the groundwater at the site.

Analyses requested included:

- Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Lead, Lithium, Molybdenum, Selenium, and Thallium by USEPA Method SW6020A – Metals Analysis;
- Chloride, Fluoride, and Sulfate by USEPA Method E300 – Anion Analysis;
- Mercury by USEPA Method SW7470A – Mercury Analysis;
- pH of Water by Standard Method M4500-H + B – pH of Water Analysis;
- Total Dissolved Solids (TDS) by Standard Method M2540C – TDS Analysis; and
- Radium 226 and 228 by USEPA Methods 904.0/SW846 9320 Modified and 903.1 Modified.

Data were reviewed and validated and the results of the review/validation are discussed in this Data Usability Summary (DUS). The following laboratory submittals and field data were examined:

- the reportable data,
- case narratives, and
- field notes with respect to field instrument calibrations, filtering procedures, sampling procedures, and preservation procedures prior to shipping the samples to the laboratory.

The results of supporting quality control (QC) analyses were summarized in the case narrative, included in this review, with the laboratory data package.

Introduction

Eight (8) groundwater samples were analyzed for the constituents listed above (Appendix III and Appendix IV constituents in the Coal Combustion Residuals Federal Rule). Table B-1 lists the field sample identifications cross-referenced to the laboratory identifications.

Project Objectives

Project quality QC objectives were established in conformance to the requirements of *SW-846 Test Methods for Evaluating Solid Waste Physical/Chemical Methods* and *Standard Methods*. Laboratory control sample and sample duplicate recovery QC criteria were 70 – 130% recovery (%R) for metals and inorganics. Laboratory recovery QC criteria were 30% Relative Percent Difference (RPD). Field duplicate recovery QC criteria were 50% RPD.

Data Review / Validation Results

Analytical Results

Non-detected results (ND) are reported as less than the value of the method detection limit (MDL) and received a "U" flag. Analytes detected between the method quantitation limit (MQL) and the MDL were qualified with a "J-flag" to denote that the reported value was considered to be estimated. If a QC result was found outside of the review criteria, the reviewer applied a data qualifier and bias code to the associated sample data if the analyte was detected. Sample data were not qualified if recoveries exceeded QC criteria and the analyte was not detected.

Preservation and Holding Times

Samples were evaluated for agreement with the chain-of-custody (COC). All samples were received in the appropriate containers and in good condition with the paperwork filled out properly. Sample receipt temperatures were within the acceptance criteria of 4 ± 2 °C. Samples were prepared and analyzed within holding times as specified in the analysis methods.

Calibrations

The initial and continuing calibration data met laboratory control limits.

Blanks

No field blanks were used because the sampling event did not include volatile or semi-volatile compounds.

All laboratory method blank results were reported as non-detected or below applicable assessment levels with the exception of the following:

For Metals analysis performed on 3/7/2016 Boron was detected below the reporting limit in the method blank. All associated samples were detected greater than 10 times the amount in the blank for this analyte. No further corrective actions were taken.

No equipment blank was collected

Surrogate Recoveries

The analytical procedures used did not require surrogates; therefore, surrogate recovery is not applicable.

Laboratory Control Samples

Laboratory control sample (LCS) recoveries were within QC acceptance limits for all LCS analyses.

Matrix Spike/Matrix Spike Duplicates

MS/MSD percent recoveries were within acceptable control limits for all samples with the exception of the following:

For Metals analysis performed on 3/7/2016 the matrix spike duplicate recovery was above control limits for Boron. These are flagged accordingly in the QC summary report. The sample selected for the MS and MSD was not from this work order. The LCS was within control limits for this analyte. No further corrective actions were taken.

Field Precision

No sample duplicates were taken during this sampling event.

Field Procedures

Groundwater samples were collected using low-flow procedures with a peristaltic, stainless steel submersible pump, or bladder pump and placed in unpreserved 250-ml plastic bottles and 500-ml plastic bottles preserved with HNO_3. Wells were purged until groundwater parameters (temperature, pH, specific conductivity, dissolved oxygen, redox, and turbidity) stabilized to within +/- 10%.

Summary

Groundwater analytical data are usable for the purpose of determining current COC concentrations in the groundwater at the site with no qualifications added as a result of this evaluation.

Table B-1. Cross-Reference Field Sample Identifications and Laboratory Identifications

Field Identification	Laboratory Identification
BMW-22	1602289-01
BMW-23	1602289-02
BMW-24	1602289-03
BMW-19	1602289-04
BMW-20	1602289-05
BMW-21	1602289-06
BMW-11AR	1602289-07
BMW-18	1602289-08

Prepared by: Lindsey Sydow___ Date: June 6, 2017

Data Usability Summary
Luminant – Martin Lake Steam Electric Station
April 7, 2016
Groundwater Monitoring Event
DHL Analytical Data Package 1604102

Pastor, Behling & Wheeler, LLC reviewed one data package from DHL Analytical for the analysis of groundwater samples collected April 7, 2016 at the Martin Lake Steam Electric Station in Tatum, Texas. Data were reviewed for adherence to project objectives.

Intended Use of Data: To provide current data on concentrations of chemicals of concern (COCs) in the groundwater at the site.

Analyses requested included:

- Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Lead, Lithium, Molybdenum, Selenium, and Thallium by USEPA Method SW6020A – Metals Analysis;
- Chloride, Fluoride, and Sulfate by USEPA Method E300 – Anion Analysis;
- Mercury by USEPA Method SW7470A – Mercury Analysis;
- pH of Water by Standard Method M4500-H + B – pH of Water Analysis;
- Total Dissolved Solids (TDS) by Standard Method M2540C – TDS Analysis; and
- Radium 226 and 228 by USEPA Methods 904.0/SW846 9320 Modified and 903.1 Modified.

Data were reviewed and validated and the results of the review/validation are discussed in this Data Usability Summary (DUS). The following laboratory submittals and field data were examined:

- the reportable data,
- case narratives, and
- field notes with respect to field instrument calibrations, filtering procedures, sampling procedures, and preservation procedures prior to shipping the samples to the laboratory.

The results of supporting quality control (QC) analyses were summarized in the case narrative, included in this review, with the laboratory data package.

Introduction

Eight (8) groundwater samples were analyzed for the constituents listed above (Appendix III and Appendix IV constituents in the Coal Combustion Residuals Federal Rule). Table B-1 lists the field sample identifications cross-referenced to the laboratory identifications.

Project Objectives

Project quality QC objectives were established in conformance to the requirements of *SW-846 Test Methods for Evaluating Solid Waste Physical/Chemical Methods* and *Standard Methods*. Laboratory control sample and sample duplicate recovery QC criteria were 70 – 130% recovery (%R) for metals and inorganics. Laboratory recovery QC criteria were 30% Relative Percent Difference (RPD). Field duplicate recovery QC criteria were 50% RPD.

Data Review / Validation Results

Analytical Results

Non-detected results (ND) are reported as less than the value of the method detection limit (MDL) and received a "U" flag. Analytes detected between the method quantitation limit (MQL) and the MDL were qualified with a "J-flag" to denote that the reported value was considered to be estimated. If a QC result was found outside of the review criteria, the reviewer applied a data qualifier and bias code to the associated sample data if the analyte was detected. Sample data were not qualified if recoveries exceeded QC criteria and the analyte was not detected.

Preservation and Holding Times

Samples were evaluated for agreement with the chain-of-custody (COC). All samples were received in the appropriate containers and in good condition with the paperwork filled out properly. Sample receipt temperatures were within the acceptance criteria of 4 ± 2 °C. Samples were prepared and analyzed within holding times as specified in the analysis methods.

Calibrations

The initial and continuing calibration data met laboratory control limits with the exception of the following:

For Metals anlaysis performed on 4/22/2016 LCVL1-160422 was above control limits for Boron. This is flagged accordingly. The associated CCV1-160422 was within control limits for this analyte. No further corrective actions were taken.

Blanks

No field blanks were used because the sampling event did not include volatile or semi-volatile compounds.

All laboratory method blank results were reported as non-detected or below applicable assessment levels.

No equipment blank was collected.

Surrogate Recoveries

The analytical procedures used did not require surrogates; therefore, surrogate recovery is not applicable.

Laboratory Control Samples

Laboratory control sample (LCS) recoveries were within QC acceptance limits for all LCS analyses.

Matrix Spike/Matrix Spike Duplicates

MS/MSD percent recoveries were within acceptable control limits for all samples with the exception of the following:

For Metals analysis performed on 4/22/2016 the matrix spike duplicate recovery was above control limits for Boron. This is flagged accordingly in the QC summary report. The sample selected for the MS and MSD was not from this work order. The LCS was within control limits for these analytes. No further corrective actions were taken.

For Mercury analysis performed on 4/12/2016 the matrix spike and matrix spike duplicate recoveries were below control limits. These are flagged accordingly in the QC summary report. The sample selected for the MS/MSD was from this work order. The LCS was within control limits. No further corrective actions were taken.

Serial Dilution/Post Dilution Spike

For Mercury analysis performed on 4/12/2016 the PDS recover was below control limits. This is flagged accordingly. The serial dilution was within control limits. No further corrective actions were taken.

Field Precision

No sample duplicates were taken during this sampling event.

Field Procedures

Groundwater samples were collected using low-flow procedures with a peristaltic, stainless steel submersible pump, or bladder pump and placed in unpreserved 250-ml plastic bottles and 500-ml plastic bottles preserved with HNO_3. Wells were purged until groundwater parameters (temperature, pH, specific conductivity, dissolved oxygen, redox, and turbidity) stabilized to within +/- 10%.

Summary

Groundwater analytical data are usable for the purpose of determining current COC concentrations in the groundwater at the site with no qualifications added as a result of this evaluation.

Table B-1. Cross-Reference Field Sample Identifications and Laboratory Identifications

Field Identification	Laboratory Identification
BMW-24	1604102-01
BMW-23	1604102-02
BMW-22	1604102-03
BMW-20	1604102-04
BMW-21	1604102-05
BMW-11AR	1604102-06
BMW-19	1604102-07
BMW-18	1604102-08

Prepared by: Lindsey Sydow___ Date: June 8, 2017

Data Usability Summary
Luminant – Martin Lake Steam Electric Station
June 8-9, 2016
Groundwater Monitoring Event
DHL Analytical Data Package 1606122

Pastor, Behling & Wheeler, LLC reviewed one data package from DHL Analytical for the analysis of groundwater samples collected June 8-9, 2016 at the Martin Lake Steam Electric Station in Tatum, Texas. Data were reviewed for adherence to project objectives.

Intended Use of Data: To provide current data on concentrations of chemicals of concern (COCs) in the groundwater at the site.

Analyses requested included:

- Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Lead, Lithium, Molybdenum, Selenium, and Thallium by USEPA Method SW6020A – Metals Analysis;
- Chloride, Fluoride, and Sulfate by USEPA Method E300 – Anion Analysis;
- Mercury by USEPA Method SW7470A – Mercury Analysis;
- pH of Water by Standard Method M4500-H + B – pH of Water Analysis;
- Total Dissolved Solids (TDS) by Standard Method M2540C – TDS Analysis; and
- Radium 226 and 228 by USEPA Methods 904.0/SW846 9320 Modified and 903.1 Modified.

Data were reviewed and validated and the results of the review/validation are discussed in this Data Usability Summary (DUS). The following laboratory submittals and field data were examined:

- the reportable data,
- case narratives, and
- field notes with respect to field instrument calibrations, filtering procedures, sampling procedures, and preservation procedures prior to shipping the samples to the laboratory.

The results of supporting quality control (QC) analyses were summarized in the case narrative, included in this review, with the laboratory data package.

Introduction

Eight (8) groundwater samples were analyzed for the constituents listed above (Appendix III and Appendix IV constituents in the Coal Combustion Residuals Federal Rule). Table B-1 lists the field sample identifications cross-referenced to the laboratory identifications.

Project Objectives

Project quality QC objectives were established in conformance to the requirements of *SW-846 Test Methods for Evaluating Solid Waste Physical/Chemical Methods* and *Standard Methods*. Laboratory control sample and sample duplicate recovery QC criteria were 70 – 130% recovery (%R) for metals and inorganics. Laboratory recovery QC criteria were 30% Relative Percent Difference (RPD). Field duplicate recovery QC criteria were 50% RPD.

Data Review / Validation Results

Analytical Results

Non-detected results (ND) are reported as less than the value of the method detection limit (MDL) and received a "U" flag. Analytes detected between the method quantitation limit (MQL) and the MDL were qualified with a "J-flag" to denote that the reported value was considered to be estimated. If a QC result was found outside of the review criteria, the reviewer applied a data qualifier and bias code to the associated sample data if the analyte was detected. Sample data were not qualified if recoveries exceeded QC criteria and the analyte was not detected.

Preservation and Holding Times

Samples were evaluated for agreement with the chain-of-custody (COC). All samples were received in the appropriate containers and in good condition with the paperwork filled out properly. Sample receipt temperatures were within the acceptance criteria of 4 ± 2 °C. Samples were prepared and analyzed within holding times as specified in the analysis methods.

Calibrations

The initial and continuing calibration data met laboratory control limits.

Blanks

No field blanks were used because the sampling event did not include volatile or semi-volatile compounds.

All laboratory method blank results were reported as non-detected or below applicable assessment levels.

No equipment blank was collected.

Surrogate Recoveries

The analytical procedures used did not require surrogates; therefore, surrogate recovery is not applicable.

Laboratory Control Samples

Laboratory control sample (LCS) recoveries were within QC acceptance limits for all LCS analyses.

Matrix Spike/Matrix Spike Duplicates

MS/MSD percent recoveries were within acceptable control limits for all samples with the exception of the following:

For Metals analysis performed on 6/17/2016 and 6/23/2016 the matrix spike and matrix spike duplicate recoveries were outside control limits for Boron, Calcium, and Lithium. These are flagged accordingly in the QC summary report. The sample selected for the MS and MSD was not from this work order. The LCS was within control limits for these analytes. No further corrective actions were taken.
For Mercury analysis performed on 4/12/2016 the matrix spike and matrix spike duplicate recoveries were below control limits. These are flagged accordingly in the QC summary report. The sample selected for the MS/MSD was from this work order. The LCS was within control limits. No further corrective actions were taken.

Serial Dilution/Post Dilution Spike

For Metals analysis performed on 6/17/2016 the PDS recovery was below control limits for Molybdenum. This is flagged accordingly. The serial dilution was within control limits. No further corrective actions were taken.

Field Precision

No sample duplicates were taken during this sampling event.

Field Procedures

Groundwater samples were collected using low-flow procedures with a peristaltic, stainless steel submersible pump, or bladder pump and placed in unpreserved 250-ml plastic bottles and 500-ml plastic bottles preserved with HNO_3. Wells were purged until groundwater parameters (temperature, pH, specific conductivity, dissolved oxygen, redox, and turbidity) stabilized to within +/- 10%.

Summary

Groundwater analytical data are usable for the purpose of determining current COC concentrations in the groundwater at the site with no qualifications added as a result of this evaluation.

Table B-1. Cross-Reference Field Sample Identifications and Laboratory Identifications

Field Identification	Laboratory Identification
BMW-24	1606122-01
BMW-23	1606122-02
BMW-22	1606122-03
BMW-20	1606122-04
BMW-21	1606122-05
BMW-11AR	1606122-06
BMW-19	1606122-07
BMW-18	1606122-08

Prepared by: Lindsey Sydow___ Date: July 5, 2017

Data Usability Summary
Luminant – Martin Lake Steam Electric Station
August 9-11, 2016
Groundwater Monitoring Event
DHL Analytical Data Package 1608133

Pastor, Behling & Wheeler, LLC reviewed one data package from DHL Analytical for the analysis of groundwater samples collected August 9-11, 2016 at the Martin Lake Steam Electric Station in Tatum, Texas. Data were reviewed for adherence to project objectives.

Intended Use of Data: To provide current data on concentrations of chemicals of concern (COCs) in the groundwater at the site.

Analyses requested included:

- Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Lead, Lithium, Molybdenum, Selenium, and Thallium by USEPA Method SW6020A – Metals Analysis;
- Chloride, Fluoride, and Sulfate by USEPA Method E300 – Anion Analysis;
- Mercury by USEPA Method SW7470A – Mercury Analysis;
- pH of Water by Standard Method M4500-H + B – pH of Water Analysis;
- Total Dissolved Solids (TDS) by Standard Method M2540C – TDS Analysis; and
- Radium 226 and 228 by USEPA Methods 904.0/SW846 9320 Modified and 903.1 Modified.

Data were reviewed and validated and the results of the review/validation are discussed in this Data Usability Summary (DUS). The following laboratory submittals and field data were examined:

- the reportable data,
- case narratives, and
- field notes with respect to field instrument calibrations, filtering procedures, sampling procedures, and preservation procedures prior to shipping the samples to the laboratory.

The results of supporting quality control (QC) analyses were summarized in the case narrative, included in this review, with the laboratory data package.

Introduction

Twenty seven (27) groundwater samples were analyzed for the constituents listed above (Appendix III and Appendix IV constituents in the Coal Combustion Residuals Federal Rule). Table B-1 lists the field sample identifications cross-referenced to the laboratory identifications.

Project Objectives

Project quality QC objectives were established in conformance to the requirements of *SW-846 Test Methods for Evaluating Solid Waste Physical/Chemical Methods* and *Standard Methods*. Laboratory control sample and sample duplicate recovery QC criteria were 70 – 130% recovery (%R) for metals and inorganics. Laboratory recovery QC criteria were 30% Relative Percent Difference (RPD). Field duplicate recovery QC criteria were 50% RPD.

Data Review / Validation Results

Analytical Results

Non-detected results (ND) are reported as less than the value of the method detection limit (MDL) and received a "U" flag. Analytes detected between the method quantitation limit (MQL) and the MDL were qualified with a "J-flag" to denote that the reported value was considered to be estimated. If a QC result was found outside of the review criteria, the reviewer applied a data qualifier and bias code to the associated sample data if the analyte was detected. Sample data were not qualified if recoveries exceeded QC criteria and the analyte was not detected.

Preservation and Holding Times

Samples were evaluated for agreement with the chain-of-custody (COC). All samples were received in the appropriate containers and in good condition with the paperwork filled out properly. Sample receipt temperatures were within the acceptance criteria of 4 ± 2 °C. Samples were prepared and analyzed within holding times as specified in the analysis methods.

Calibrations

The initial and continuing calibration data met laboratory control limits with the exception of the following:

For Metals analysis performed on 8/18/2016 and 8/22/2016 LCVL3-160818 and LCVL2-160822 were out of control limits for Boron and Beryllium, respectively. These are flagged accordingly. The associated CCV3-160818 and CCV2-160822 were within control limits for these analytes. No further corrective actions were taken.

Blanks

No field blanks were used because the sampling event did not include volatile or semi-volatile compounds.

All laboratory method blank results were reported as non-detected or below applicable assessment levels.

One equipment blank was collected, with all results being below applicable assessment levels.

Surrogate Recoveries

The analytical procedures used did not require surrogates; therefore, surrogate recovery is not applicable.

Laboratory Control Samples

Laboratory control sample (LCS) recoveries were within QC acceptance limits for all LCS analyses.

Matrix Spike/Matrix Spike Duplicates

MS/MSD percent recoveries were within acceptable control limits for all samples with the exception of the following:

For Metals analysis (batch 76817) the matrix spike and matrix spike duplicate had low responses for the internal standard Bismuth. The associated analyte (Lead) was within control limits. No further corrective actions were taken.

For Metals analysis performed on 8/17/2016, 8/19/2016, 8/22/2016, 8/23/2016, and 8/24/2016, the matrix spike and matrix spike duplicate recoveries were outside control limits for a total of nine analytes. These are flagged accordingly in the QC summary report. The samples selected for the MS and MSD were not from this work order. The LCSs were within control limits for these analytes. No further corrective actions were taken.

Serial Dilution/Post Dilution Spikes

For Metals analysis performed on 8/23/2016, the PDS recovery was below control limits for Lithium. This is flagged accordingly. The serial dilution was within control limits for this analyte. No further corrective actions were taken.

Field Precision

Field duplicate precision met the quality objective of RPDs <50% for the pair collected at H-30 for all constituents.

Analytical testing for Radium 226 and 228 has reported inherent variability. The lab reports a result and a margin of error. To determine the acceptability of the duplicate sample, the margin of error for combined Radium is added and subtracted from the result to give a range in which the true result lies. If the parent range and duplicate range overlap, the duplicate data is considered acceptable. The parent and duplicate range overlap, and the duplicate data is considered acceptable.

Field Procedures

Groundwater samples were collected using low-flow procedures with a peristaltic, stainless steel submersible pump, or bladder pump and placed in unpreserved 250-ml plastic bottles and 500-ml plastic bottles preserved with HNO_3. Wells were purged until groundwater parameters (temperature, pH, specific conductivity, dissolved oxygen, redox, and turbidity) stabilized to within +/- 10%.

Summary

Groundwater analytical data are usable for the purpose of determining current COC concentrations in the groundwater at the site with no qualifications added as a result of this evaluation.

Table B-1. Cross-Reference Field Sample Identifications and Laboratory Identifications

Field Identification	Laboratory Identification
H-28	1608133-01
H-29	1608133-02
H-31	1608133-03
H-30	1608133-04
H-32	1608133-05
H-27	1608133-06
H-33	1608133-07
H-26	1608133-08
DUP-01	1608133-09
PDP-25	1608133-10

Field Identification	Laboratory Identification
PDP-24	1608133-11
MW-17A	1608133-12
PDP-23	1608133-13
MW-19	1608133-14
MW-20A	1608133-15
PDP-22	1608133-16
PDP-26	1608133-17
MW-18A	1608133-18
EB-1	1608133-19
BMW-11AR	1608133-20
BMW-19	1608133-21
BMW-18	1608133-22
BMW-20	1608133-23
BMW-24	1608133-24
BMW-23	1608133-25
BMW-22	1608133-26
BMW-21	1608133-27

Prepared by: Lindsey Sydow___ Date: July 6, 2017

Data Usability Summary
Luminant – Martin Lake Steam Electric Station
October 25-26, 2016
Groundwater Monitoring Event
DHL Analytical Data Packages 1610230 & 1610240

Pastor, Behling & Wheeler, LLC reviewed two data packages from DHL Analytical for the analysis of groundwater samples collected October 25-26, 2016 at the Martin Lake Steam Electric Station in Tatum, Texas. Data were reviewed for adherence to project objectives.

Intended Use of Data: To provide current data on concentrations of chemicals of concern (COCs) in the groundwater at the site.

Analyses requested included:

- Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Lead, Lithium, Molybdenum, Selenium, and Thallium by USEPA Method SW6020A – Metals Analysis;
- Chloride, Fluoride, and Sulfate by USEPA Method E300 – Anion Analysis;
- Mercury by USEPA Method SW7470A – Mercury Analysis;
- pH of Water by Standard Method M4500-H + B – pH of Water Analysis;
- Total Dissolved Solids (TDS) by Standard Method M2540C – TDS Analysis; and
- Radium 226 and 228 by USEPA Methods 904.0/SW846 9320 Modified and 903.1 Modified.

Data were reviewed and validated and the results of the review/validation are discussed in this Data Usability Summary (DUS). The following laboratory submittals and field data were examined:

- the reportable data,
- case narratives, and
- field notes with respect to field instrument calibrations, filtering procedures, sampling procedures, and preservation procedures prior to shipping the samples to the laboratory.

The results of supporting quality control (QC) analyses were summarized in the case narrative, included in this review, with the laboratory data package.

Introduction

Ten (10) groundwater samples were analyzed for the constituents listed above (Appendix III and Appendix IV constituents in the Coal Combustion Residuals Federal Rule). Table B-1 lists the field sample identifications cross-referenced to the laboratory identifications.

Project Objectives

Project quality QC objectives were established in conformance to the requirements of *SW-846 Test Methods for Evaluating Solid Waste Physical/Chemical Methods* and *Standard Methods*. Laboratory control sample and sample duplicate recovery QC criteria were 70 – 130% recovery (%R) for metals and inorganics. Laboratory recovery QC criteria were 30% Relative Percent Difference (RPD). Field duplicate recovery QC criteria were 50% RPD.

Data Review / Validation Results

Analytical Results

Non-detected results (ND) are reported as less than the value of the method detection limit (MDL) and received a "U" flag. Analytes detected between the method quantitation limit (MQL) and the MDL were qualified with a "J-flag" to denote that the reported value was considered to be estimated. If a QC result was found outside of the review criteria, the reviewer applied a data qualifier and bias code to the associated sample data if the analyte was detected. Sample data were not qualified if recoveries exceeded QC criteria and the analyte was not detected.

Preservation and Holding Times

Samples were evaluated for agreement with the chain-of-custody (COC). All samples were received in the appropriate containers and in good condition with the paperwork filled out properly. Sample receipt temperatures were within the acceptance criteria of 4 ± 2 °C. Samples were prepared and analyzed within holding times as specified in the analysis methods.

Calibrations

The initial and continuing calibration data met laboratory control limits for all constituents.

Blanks

No field blanks were used because the sampling event did not include volatile or semi-volatile compounds.

All laboratory method blank results were reported as non-detected or below applicable assessment levels with the exception of the following:

For Metals analysis performed on 11/9/2016 Calcium was detected above the reporting limit in the method blank (MB-77818). All samples were detected greater than 10 times the amount in the blank for this analyte. No further corrective actions were taken.

No equipment blank was collected.

Surrogate Recoveries

The analytical procedures used did not require surrogates; therefore, surrogate recovery is not applicable.

Laboratory Control Samples

Laboratory control sample (LCS) recoveries were within QC acceptance limits for all LCS analyses.

Matrix Spike/Matrix Spike Duplicates

MS/MSD percent recoveries were within acceptable control limits for all samples with the exception of the following:

For Metals analysis performed on 11/4/2016 the matrix spike recoveries for Antimony and Boron were outside of control limits. Additionally, the matrix spike and matrix spike duplicate had the RPD above control limits for Antimony and Boron. These are flagged accordingly in the QC summary report. The

sample selected for the MS and MSD was not from this work order. The LCS was within control limits for these analytes. No further corrective actions were taken.

Serial Dilution/Post Dilution Spikes

For Metals analysis performed on 11/8/2016 the RPD for the serial dilution was above control limits for Boron. This is flagged accordingly. The PDS was within control limits for this analyte. No further corrective actions were taken.

For Metals analysis performed on 11/9/2016 the RPD for the serial dilution was above control limits for Boron. This is flagged accordingly. The PDS was within control limits for this analyte. No further corrective actions were taken.

Field Precision

No sample duplicates were collected during this sampling event.

Field Procedures

Groundwater samples were collected using low-flow procedures with a peristaltic, stainless steel submersible pump, or bladder pump and placed in unpreserved 250-ml plastic bottles and 500-ml plastic bottles preserved with HNO_3. Wells were purged until groundwater parameters (temperature, pH, specific conductivity, dissolved oxygen, redox, and turbidity) stabilized to within +/- 10%.

Summary

Groundwater analytical data are usable for the purpose of determining current COC concentrations in the groundwater at the site with no qualifications added as a result of this evaluation.

Table B-1. Cross-Reference Field Sample Identifications and Laboratory Identifications

Field Identification	Laboratory Identification
BMW-24	1610230-01
BMW-23	1610230-02
BMW-22	1610230-03
BMW-20	1610230-04
BMW-21	1610230-05
BMW-11AR	1610230-06
BMW-19	1610230-07
BMW-18	1610240-01
BMW-26	1610240-02
BMW-27	1610240-03

Prepared by: Lindsey Sydow___ Date: August 4, 2017

Data Usability Summary
Luminant – Martin Lake Steam Electric Station
December 13-14, 2016
Groundwater Monitoring Event
DHL Analytical Data Packages 1612145 & 1612207

Pastor, Behling & Wheeler, LLC reviewed two data packages from DHL Analytical for the analysis of groundwater samples collected December 13-14, 2016 at the Martin Lake Steam Electric Station in Tatum, Texas. Data were reviewed for adherence to project objectives.

Intended Use of Data: To provide current data on concentrations of chemicals of concern (COCs) in the groundwater at the site.

Analyses requested included:

- Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Lead, Lithium, Molybdenum, Selenium, and Thallium by USEPA Method SW6020A – Metals Analysis;
- Chloride, Fluoride, and Sulfate by USEPA Method E300 – Anion Analysis;
- Mercury by USEPA Method SW7470A – Mercury Analysis;
- pH of Water by Standard Method M4500-H + B – pH of Water Analysis;
- Total Dissolved Solids (TDS) by Standard Method M2540C – TDS Analysis; and
- Radium 226 and 228 by USEPA Methods 904.0/SW846 9320 Modified and 903.1 Modified.

Data were reviewed and validated and the results of the review/validation are discussed in this Data Usability Summary (DUS). The following laboratory submittals and field data were examined:

- the reportable data,
- case narratives, and
- field notes with respect to field instrument calibrations, filtering procedures, sampling procedures, and preservation procedures prior to shipping the samples to the laboratory.

The results of supporting quality control (QC) analyses were summarized in the case narrative, included in this review, with the laboratory data package.

Introduction

Ten (10) groundwater samples were analyzed for the constituents listed above (Appendix III and Appendix IV constituents in the Coal Combustion Residuals Federal Rule). Table B-1 lists the field sample identifications cross-referenced to the laboratory identifications.

Project Objectives

Project quality QC objectives were established in conformance to the requirements of *SW-846 Test Methods for Evaluating Solid Waste Physical/Chemical Methods* and *Standard Methods*. Laboratory control sample and sample duplicate recovery QC criteria were 70 – 130% recovery (%R) for metals and inorganics. Laboratory recovery QC criteria were 30% Relative Percent Difference (RPD). Field duplicate recovery QC criteria were 50% RPD.

Data Review / Validation Results

Analytical Results

Non-detected results (ND) are reported as less than the value of the method detection limit (MDL) and received a "U" flag. Analytes detected between the method quantitation limit (MQL) and the MDL were qualified with a "J-flag" to denote that the reported value was considered to be estimated. If a QC result was found outside of the review criteria, the reviewer applied a data qualifier and bias code to the associated sample data if the analyte was detected. Sample data were not qualified if recoveries exceeded QC criteria and the analyte was not detected.

Preservation and Holding Times

Samples were evaluated for agreement with the chain-of-custody (COC). All samples were received in the appropriate containers and in good condition with the paperwork filled out properly. Sample receipt temperatures were within the acceptance criteria of 4 ± 2 °C. Samples were prepared and analyzed within holding times as specified in the analysis methods.

Calibrations

The initial and continuing calibration data met laboratory control limits for all constituents with the exception of the following:

For Metals analysis performed on 12/29/2016 LCVL7-161229 was above control limits for Calcium. This is flagged accordingly. The associated CCV was within control limits for this analyte. No further corrective actions were taken.

Blanks

No field blanks were used because the sampling event did not include volatile or semi-volatile compounds.

All laboratory method blank results were reported as non-detected or below applicable assessment levels.

One equipment blank was collected, with all results being below applicable assessment levels.

Surrogate Recoveries

The analytical procedures used did not require surrogates; therefore, surrogate recovery is not applicable.

Laboratory Control Samples

Laboratory control sample (LCS) recoveries were within QC acceptance limits for all LCS analyses.

Matrix Spike/Matrix Spike Duplicates

MS/MSD percent recoveries were within acceptable control limits for all samples with the exception of the following:

For Metals analysis performed on 12/29/2016 the matrix spike and matrix spike duplicate recoveries for Calcium were outside of control limits. This is flagged accordingly in the QC summary report. The sample selected for the MS and MSD was from this work order. The LCS was within control limits. No further corrective actions were taken.

For Mercury analysis performed on 12/22/2016 the matrix spike and matrix spike duplicate recoveries were blow control limits. This is flagged accordingly in the QC summary report. The sample selected for the MS and MSD was from this work order. The LCS was within control limits. No further corrective actions were taken.

Serial Dilution/Post Dilution Spikes

For Metals analysis performed on 12/29/2016 the RPD for the serial dilution was above control limits for Boron, Barium, and Lithium. These are flagged accordingly. The PDS was within control limits for these analytes. No further corrective actions were taken.

Field Precision

No sample duplicates were collected during this sampling event.

Field Procedures

Groundwater samples were collected using low-flow procedures with a peristaltic, stainless steel submersible pump, or bladder pump and placed in unpreserved 250-ml plastic bottles and 500-ml plastic bottles preserved with HNO_3. Wells were purged until groundwater parameters (temperature, pH, specific conductivity, dissolved oxygen, redox, and turbidity) stabilized to within +/- 10%.

Summary

Groundwater analytical data are usable for the purpose of determining current COC concentrations in the groundwater at the site with no qualifications added as a result of this evaluation.

Table B-1. Cross-Reference Field Sample Identifications and Laboratory Identifications

Field Identification	Laboratory Identification
BMW-24	1612145-01
BMW-23	1612145-02
BMW-22	1612145-03
BMW-21	1612145-04
BMW-20	1612145-05
BMW-19	1612207-01
BMW-18	1612207-02
BMW-28	1612207-03
BMW-27	1612207-04
BMW-26	1612207-05
EB-1	1612207-06
BMW-11AR	1612207-07

Prepared by: Lindsey Sydow___ Date: August 8, 2017

Data Usability Summary
Luminant – Martin Lake Steam Electric Station
January 23, 2017
Groundwater Monitoring Event
DHL Analytical Data Package 1701222

Pastor, Behling & Wheeler, LLC reviewed one data package from DHL Analytical for the analysis of groundwater samples collected January 23, 2017 at the Martin Lake Steam Electric Station in Tatum, Texas. Data were reviewed for adherence to project objectives.

Intended Use of Data: To provide current data on concentrations of chemicals of concern (COCs) in the groundwater at the site.

Analyses requested included:

- Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Lead, Lithium, Molybdenum, Selenium, and Thallium by USEPA Method SW6020A – Metals Analysis;
- Chloride, Fluoride, and Sulfate by USEPA Method E300 – Anion Analysis;
- Mercury by USEPA Method SW7470A – Mercury Analysis;
- pH of Water by Standard Method M4500-H + B – pH of Water Analysis;
- Total Dissolved Solids (TDS) by Standard Method M2540C – TDS Analysis; and
- Radium 226 and 228 by USEPA Methods 904.0/SW846 9320 Modified and 903.1 Modified.

Data were reviewed and validated and the results of the review/validation are discussed in this Data Usability Summary (DUS). The following laboratory submittals and field data were examined:

- the reportable data,
- case narratives, and
- field notes with respect to field instrument calibrations, filtering procedures, sampling procedures, and preservation procedures prior to shipping the samples to the laboratory.

The results of supporting quality control (QC) analyses were summarized in the case narrative, included in this review, with the laboratory data package.

Introduction

Three (3) groundwater samples were analyzed for the constituents listed above (Appendix III and Appendix IV constituents in the Coal Combustion Residuals Federal Rule). Table B-1 lists the field sample identifications cross-referenced to the laboratory identifications.

Project Objectives

Project quality QC objectives were established in conformance to the requirements of *SW-846 Test Methods for Evaluating Solid Waste Physical/Chemical Methods* and *Standard Methods*. Laboratory control sample and sample duplicate recovery QC criteria were 70 – 130% recovery (%R) for metals and inorganics. Laboratory recovery QC criteria were 30% Relative Percent Difference (RPD). Field duplicate recovery QC criteria were 50% RPD.

Data Review / Validation Results

Analytical Results

Non-detected results (ND) are reported as less than the value of the method detection limit (MDL) and received a "U" flag. Analytes detected between the method quantitation limit (MQL) and the MDL were qualified with a "J-flag" to denote that the reported value was considered to be estimated. If a QC result was found outside of the review criteria, the reviewer applied a data qualifier and bias code to the associated sample data if the analyte was detected. Sample data were not qualified if recoveries exceeded QC criteria and the analyte was not detected.

Preservation and Holding Times

Samples were evaluated for agreement with the chain-of-custody (COC). All samples were received in the appropriate containers and in good condition with the paperwork filled out properly. Sample receipt temperatures were within the acceptance criteria of 4 ± 2 °C. Samples were prepared and analyzed within holding times as specified in the analysis methods.

Calibrations

The initial and continuing calibration data met laboratory control limits for all constituents.

Blanks

No field blanks were used because the sampling event did not include volatile or semi-volatile compounds.

All laboratory method blank results were reported as non-detected or below applicable assessment levels.

No equipment blanks were collected during this sampling event.

Surrogate Recoveries

The analytical procedures used did not require surrogates; therefore, surrogate recovery is not applicable.

Laboratory Control Samples

Laboratory control sample (LCS) recoveries were within QC acceptance limits for all LCS analyses.

Matrix Spike/Matrix Spike Duplicates

MS/MSD percent recoveries were within acceptable control limits for all samples with the exception of the following:

For Metals analysis performed on 2/7/2017 the matrix spike and matrix spike duplicate recoveries were out of control limits for Boron and Calcium. These are flagged accordingly in the QC summary report. The sample selected for the MS and MSD was not from this work order. The LCS was within control limits for this analyte. No further corrective actions were taken.

For Mercury analysis performed on 2/1/2017 the matrix spike and matrix spike duplicate recoveries were below control limits. This was due to matrix effect. These are flagged accordingly in the QC summary report. The sample selected for the MS and MSD was from this work order. The LCS was within control limits. No further corrective actions were taken.

Serial Dilution/Post Dilution Spikes

For Metals analysis performed on 2/7/2017, the PDS recovery was out of control limits for Boron and Calcium. These are flagged accordingly. The serial dilution was within control limits for these analytes. No further corrective actions were taken.

For Mercury analysis performed on 2/1/2017, the PDS recovery was below control limits. This was due to matrix effect. This is flagged accordingly. The serial dilution was within control limits. No further corrective actions were taken.

Field Precision

No sample duplicates were taken during this sampling event.

Field Procedures

Groundwater samples were collected using low-flow procedures with a peristaltic, stainless steel submersible pump, or bladder pump and placed in unpreserved 250-ml plastic bottles and 500-ml plastic bottles preserved with HNO_3. Wells were purged until groundwater parameters (temperature, pH, specific conductivity, dissolved oxygen, redox, and turbidity) stabilized to within +/- 10%.

Summary

Groundwater analytical data are usable for the purpose of determining current COC concentrations in the groundwater at the site with no qualifications added as a result of this evaluation.

Table B-1. Cross-Reference Field Sample Identifications and Laboratory Identifications

Field Identification	Laboratory Identification
BMW-26	1701222-01
BMW-27	1701222-02
BMW-28	1701222-03

Prepared by: Lindsey Sydow___ Date: August 10, 2017

Data Usability Summary
Luminant – Martin Lake Steam Electric Station
February 23, 2017
Groundwater Monitoring Event
DHL Analytical Data Package 1702267

Pastor, Behling & Wheeler, LLC reviewed one data package from DHL Analytical for the analysis of groundwater samples collected February 23, 2017 at the Martin Lake Steam Electric Station in Tatum, Texas. Data were reviewed for adherence to project objectives.

Intended Use of Data: To provide current data on concentrations of chemicals of concern (COCs) in the groundwater at the site.

Analyses requested included:

- Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Lead, Lithium, Molybdenum, Selenium, and Thallium by USEPA Method SW6020A – Metals Analysis;
- Chloride, Fluoride, and Sulfate by USEPA Method E300 – Anion Analysis;
- Mercury by USEPA Method SW7470A – Mercury Analysis;
- pH of Water by Standard Method M4500-H + B – pH of Water Analysis;
- Total Dissolved Solids (TDS) by Standard Method M2540C – TDS Analysis; and
- Radium 226 and 228 by USEPA Methods 904.0/SW846 9320 Modified and 903.1 Modified.

Data were reviewed and validated and the results of the review/validation are discussed in this Data Usability Summary (DUS). The following laboratory submittals and field data were examined:

- the reportable data,
- case narratives, and
- field notes with respect to field instrument calibrations, filtering procedures, sampling procedures, and preservation procedures prior to shipping the samples to the laboratory.

The results of supporting quality control (QC) analyses were summarized in the case narrative, included in this review, with the laboratory data package.

Introduction

Three (3) groundwater samples were analyzed for the constituents listed above (Appendix III and Appendix IV constituents in the Coal Combustion Residuals Federal Rule). Table B-1 lists the field sample identifications cross-referenced to the laboratory identifications.

Project Objectives

Project quality QC objectives were established in conformance to the requirements of *SW-846 Test Methods for Evaluating Solid Waste Physical/Chemical Methods* and *Standard Methods*. Laboratory control sample and sample duplicate recovery QC criteria were 70 – 130% recovery (%R) for metals and inorganics. Laboratory recovery QC criteria were 30% Relative Percent Difference (RPD). Field duplicate recovery QC criteria were 50% RPD.

Data Review / Validation Results

Analytical Results

Non-detected results (ND) are reported as less than the value of the method detection limit (MDL) and received a "U" flag. Analytes detected between the method quantitation limit (MQL) and the MDL were qualified with a "J-flag" to denote that the reported value was considered to be estimated. If a QC result was found outside of the review criteria, the reviewer applied a data qualifier and bias code to the associated sample data if the analyte was detected. Sample data were not qualified if recoveries exceeded QC criteria and the analyte was not detected.

Preservation and Holding Times

Samples were evaluated for agreement with the chain-of-custody (COC). All samples were received in the appropriate containers and in good condition with the paperwork filled out properly. Sample receipt temperatures were within the acceptance criteria of 4 ± 2 °C. Samples were prepared and analyzed within holding times as specified in the analysis methods.

Calibrations

The initial and continuing calibration data met laboratory control limits for all constituents.

Blanks

No field blanks were used because the sampling event did not include volatile or semi-volatile compounds.

All laboratory method blank results were reported as non-detected or below applicable assessment levels.

No equipment blanks were collected during this sampling event.

Surrogate Recoveries

The analytical procedures used did not require surrogates; therefore, surrogate recovery is not applicable.

Laboratory Control Samples

Laboratory control sample (LCS) recoveries were within QC acceptance limits for all LCS analyses.

Matrix Spike/Matrix Spike Duplicates

MS/MSD percent recoveries were within acceptable control limits for all samples with the exception of the following:

For Metals analysis performed on 3/2/2017 and 3/3/2017, the matrix spike and matrix spike duplicate recoveries were out of control limits for nine analytes. Additionally, the MS/MSD had the RPD above control limits for Antimony. These are flagged accordingly in the QC summary report. The sample selected for the MS and MSD was not from this work order. The LCS was within control limits for this analyte. No further corrective actions were taken.

Serial Dilution/Post Dilution Spikes

SD/PDS percent recoveries were within acceptable control limits for all samples.

Field Precision

No sample duplicates were taken during this sampling event.

Field Procedures

Groundwater samples were collected using low-flow procedures with a peristaltic, stainless steel submersible pump, or bladder pump and placed in unpreserved 250-ml plastic bottles and 500-ml plastic bottles preserved with HNO_3. Wells were purged until groundwater parameters (temperature, pH, specific conductivity, dissolved oxygen, redox, and turbidity) stabilized to within +/- 10%.

Summary

Groundwater analytical data are usable for the purpose of determining current COC concentrations in the groundwater at the site with no qualifications added as a result of this evaluation.

Table B-1. Cross-Reference Field Sample Identifications and Laboratory Identifications

Field Identification	Laboratory Identification
BMW-26	1702267-01
BMW-27	1702267-02
BMW-28	1702267-03

Prepared by: Lindsey Sydow___ Date: August 10, 2017

Data Usability Summary
Luminant – Martin Lake Steam Electric Station
March 24, 2017
Groundwater Monitoring Event
DHL Analytical Data Package 1703205

Pastor, Behling & Wheeler, LLC reviewed one data package from DHL Analytical for the analysis of groundwater samples collected March 24, 2017 at the Martin Lake Steam Electric Station in Tatum, Texas. Data were reviewed for adherence to project objectives.

Intended Use of Data: To provide current data on concentrations of chemicals of concern (COCs) in the groundwater at the site.

Analyses requested included:

- Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Lead, Lithium, Molybdenum, Selenium, and Thallium by USEPA Method SW6020A – Metals Analysis;
- Chloride, Fluoride, and Sulfate by USEPA Method E300 – Anion Analysis;
- Mercury by USEPA Method SW7470A – Mercury Analysis;
- pH of Water by Standard Method M4500-H + B – pH of Water Analysis;
- Total Dissolved Solids (TDS) by Standard Method M2540C – TDS Analysis; and
- Radium 226 and 228 by USEPA Methods 904.0/SW846 9320 Modified and 903.1 Modified.

Data were reviewed and validated and the results of the review/validation are discussed in this Data Usability Summary (DUS). The following laboratory submittals and field data were examined:

- the reportable data,
- case narratives, and
- field notes with respect to field instrument calibrations, filtering procedures, sampling procedures, and preservation procedures prior to shipping the samples to the laboratory.

The results of supporting quality control (QC) analyses were summarized in the case narrative, included in this review, with the laboratory data package.

Introduction

Three (3) groundwater samples were analyzed for the constituents listed above (Appendix III and Appendix IV constituents in the Coal Combustion Residuals Federal Rule). Table B-1 lists the field sample identifications cross-referenced to the laboratory identifications.

Project Objectives

Project quality QC objectives were established in conformance to the requirements of *SW-846 Test Methods for Evaluating Solid Waste Physical/Chemical Methods* and *Standard Methods*. Laboratory control sample and sample duplicate recovery QC criteria were 70 – 130% recovery (%R) for metals and inorganics. Laboratory recovery QC criteria were 30% Relative Percent Difference (RPD). Field duplicate recovery QC criteria were 50% RPD.

Data Review / Validation Results

Analytical Results

Non-detected results (ND) are reported as less than the value of the method detection limit (MDL) and received a "U" flag. Analytes detected between the method quantitation limit (MQL) and the MDL were qualified with a "J-flag" to denote that the reported value was considered to be estimated. If a QC result was found outside of the review criteria, the reviewer applied a data qualifier and bias code to the associated sample data if the analyte was detected. Sample data were not qualified if recoveries exceeded QC criteria and the analyte was not detected.

Preservation and Holding Times

Samples were evaluated for agreement with the chain-of-custody (COC). All samples were received in the appropriate containers and in good condition with the paperwork filled out properly. Sample receipt temperatures were within the acceptance criteria of 4 ± 2 °C. Samples were prepared and analyzed within holding times as specified in the analysis methods.

Calibrations

The initial and continuing calibration data met laboratory control limits for all constituents.

Blanks

No field blanks were used because the sampling event did not include volatile or semi-volatile compounds.

All laboratory method blank results were reported as non-detected or below applicable assessment levels.

No equipment blanks were collected during this sampling event.

Surrogate Recoveries

The analytical procedures used did not require surrogates; therefore, surrogate recovery is not applicable.

Laboratory Control Samples

Laboratory control sample (LCS) recoveries were within QC acceptance limits for all LCS analyses.

Matrix Spike/Matrix Spike Duplicates

MS/MSD percent recoveries were within acceptable control limits for all samples.

Serial Dilution/Post Dilution Spikes

SD/PDS percent recoveries were within acceptable control limits for all samples.

Field Precision

No sample duplicates were taken during this sampling event.

Field Procedures

Groundwater samples were collected using low-flow procedures with a peristaltic, stainless steel submersible pump, or bladder pump and placed in unpreserved 250-ml plastic bottles and 500-ml plastic bottles preserved with HNO_3. Wells were purged until groundwater parameters (temperature, pH, specific conductivity, dissolved oxygen, redox, and turbidity) stabilized to within +/- 10%.

Summary

Groundwater analytical data are usable for the purpose of determining current COC concentrations in the groundwater at the site with no qualifications added as a result of this evaluation.

Table B-1. Cross-Reference Field Sample Identifications and Laboratory Identifications

Field Identification	Laboratory Identification
BMW-26	1703205-01
BMW-27	1703205-02
BMW-28	1703205-03

Prepared by: Lindsey Sydow___ Date: August 14, 2017

Data Usability Summary
Luminant – Martin Lake Steam Electric Station
April 24, 2017
Groundwater Monitoring Event
DHL Analytical Data Package 1704272

Pastor, Behling & Wheeler, LLC reviewed one data package from DHL Analytical for the analysis of groundwater samples collected April 24, 2017 at the Martin Lake Steam Electric Station in Tatum, Texas. Data were reviewed for adherence to project objectives.

Intended Use of Data: To provide current data on concentrations of chemicals of concern (COCs) in the groundwater at the site.

Analyses requested included:

- Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Lead, Lithium, Molybdenum, Selenium, and Thallium by USEPA Method SW6020A – Metals Analysis;
- Chloride, Fluoride, and Sulfate by USEPA Method E300 – Anion Analysis;
- Mercury by USEPA Method SW7470A – Mercury Analysis;
- pH of Water by Standard Method M4500-H + B – pH of Water Analysis;
- Total Dissolved Solids (TDS) by Standard Method M2540C – TDS Analysis; and
- Radium 226 and 228 by USEPA Methods 904.0/SW846 9320 Modified and 903.1 Modified.

Data were reviewed and validated and the results of the review/validation are discussed in this Data Usability Summary (DUS). The following laboratory submittals and field data were examined:

- the reportable data,
- case narratives, and
- field notes with respect to field instrument calibrations, filtering procedures, sampling procedures, and preservation procedures prior to shipping the samples to the laboratory.

The results of supporting quality control (QC) analyses were summarized in the case narrative, included in this review, with the laboratory data package.

Introduction

Three (3) groundwater samples were analyzed for the constituents listed above (Appendix III and Appendix IV constituents in the Coal Combustion Residuals Federal Rule). Table B-1 lists the field sample identifications cross-referenced to the laboratory identifications.

Project Objectives

Project quality QC objectives were established in conformance to the requirements of *SW-846 Test Methods for Evaluating Solid Waste Physical/Chemical Methods* and *Standard Methods*. Laboratory control sample and sample duplicate recovery QC criteria were 70 – 130% recovery (%R) for metals and inorganics. Laboratory recovery QC criteria were 30% Relative Percent Difference (RPD). Field duplicate recovery QC criteria were 50% RPD.

Data Review / Validation Results

Analytical Results

Non-detected results (ND) are reported as less than the value of the method detection limit (MDL) and received a "U" flag. Analytes detected between the method quantitation limit (MQL) and the MDL were qualified with a "J-flag" to denote that the reported value was considered to be estimated. If a QC result was found outside of the review criteria, the reviewer applied a data qualifier and bias code to the associated sample data if the analyte was detected. Sample data were not qualified if recoveries exceeded QC criteria and the analyte was not detected.

Preservation and Holding Times

Samples were evaluated for agreement with the chain-of-custody (COC). All samples were received in the appropriate containers and in good condition with the paperwork filled out properly. Sample receipt temperatures were within the acceptance criteria of 4 ± 2 °C. Samples were prepared and analyzed within holding times as specified in the analysis methods.

Calibrations

The initial and continuing calibration data met laboratory control limits for all constituents.

Blanks

No field blanks were used because the sampling event did not include volatile or semi-volatile compounds.

All laboratory method blank results were reported as non-detected or below applicable assessment levels.

No equipment blanks were collected during this sampling event.

Surrogate Recoveries

The analytical procedures used did not require surrogates; therefore, surrogate recovery is not applicable.

Laboratory Control Samples

Laboratory control sample (LCS) recoveries were within QC acceptance limits for all LCS analyses.

Matrix Spike/Matrix Spike Duplicates

MS/MSD percent recoveries were within acceptable control limits for all samples with the exception of the following:

For Metals analysis performed on 4/27/2017 the matrix spike and matrix spike duplicate recoveries were above control limits for Calcium. This is flagged accordingly in the QC summary report. The sample selected for the MS and MSD was not from this work order. The LCS was within control limits for this analyte. No further corrective actions were taken.

Serial Dilution/Post Dilution Spikes

SD/PDS percent recoveries were within acceptable control limits for all samples with the exception of the following:

For Metals analysis performed on 4/27/2017 the PDS recovery was above control limits for Calcium. This is flagged accordingly. The serial dilution was within control limits for this analyte. No further corrective actions were taken.

For Metals analysis performed on 5/10/2017 the RPD for the serial dilution was above control limits for Boron. This is flagged accordingly. The PDS was within control limits for these analytes. No further corrective actions were taken.

Field Precision

No sample duplicates were taken during this sampling event.

Field Procedures

Groundwater samples were collected using low-flow procedures with a peristaltic, stainless steel submersible pump, or bladder pump and placed in unpreserved 250-ml plastic bottles and 500-ml plastic bottles preserved with HNO_3. Wells were purged until groundwater parameters (temperature, pH, specific conductivity, dissolved oxygen, redox, and turbidity) stabilized to within +/- 10%.

Summary

Groundwater analytical data are usable for the purpose of determining current COC concentrations in the groundwater at the site with no qualifications added as a result of this evaluation.

Table B-1. Cross-Reference Field Sample Identifications and Laboratory Identifications

Field Identification	Laboratory Identification
BMW-28	1704272-01
BMW-26	1704272-02
BMW-27	1704272-03

Prepared by: Lindsey Sydow___ Date: August 14, 2017

Data Usability Summary
Luminant – Martin Lake Steam Electric Station
May 25, 2017
Groundwater Monitoring Event
DHL Analytical Data Package 1705286

Pastor, Behling & Wheeler, LLC reviewed one data package from DHL Analytical for the analysis of groundwater samples collected May 25, 2017 at the Martin Lake Steam Electric Station in Tatum, Texas. Data were reviewed for adherence to project objectives.

Intended Use of Data: To provide current data on concentrations of chemicals of concern (COCs) in the groundwater at the site.

Analyses requested included:

- Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Lead, Lithium, Molybdenum, Selenium, and Thallium by USEPA Method SW6020A – Metals Analysis;
- Chloride, Fluoride, and Sulfate by USEPA Method E300 – Anion Analysis;
- Mercury by USEPA Method SW7470A – Mercury Analysis;
- pH of Water by Standard Method M4500-H + B – pH of Water Analysis;
- Total Dissolved Solids (TDS) by Standard Method M2540C – TDS Analysis; and
- Radium 226 and 228 by USEPA Methods 904.0/SW846 9320 Modified and 903.1 Modified.

Data were reviewed and validated and the results of the review/validation are discussed in this Data Usability Summary (DUS). The following laboratory submittals and field data were examined:

- the reportable data,
- case narratives, and
- field notes with respect to field instrument calibrations, filtering procedures, sampling procedures, and preservation procedures prior to shipping the samples to the laboratory.

The results of supporting quality control (QC) analyses were summarized in the case narrative, included in this review, with the laboratory data package.

Introduction

Three (3) groundwater samples were analyzed for the constituents listed above (Appendix III and Appendix IV constituents in the Coal Combustion Residuals Federal Rule). Table B-1 lists the field sample identifications cross-referenced to the laboratory identifications.

Project Objectives

Project quality QC objectives were established in conformance to the requirements of *SW-846 Test Methods for Evaluating Solid Waste Physical/Chemical Methods* and *Standard Methods*. Laboratory control sample and sample duplicate recovery QC criteria were 70 – 130% recovery (%R) for metals and inorganics. Laboratory recovery QC criteria were 30% Relative Percent Difference (RPD). Field duplicate recovery QC criteria were 50% RPD.

Data Review / Validation Results

Analytical Results

Non-detected results (ND) are reported as less than the value of the method detection limit (MDL) and received a "U" flag. Analytes detected between the method quantitation limit (MQL) and the MDL were qualified with a "J-flag" to denote that the reported value was considered to be estimated. If a QC result was found outside of the review criteria, the reviewer applied a data qualifier and bias code to the associated sample data if the analyte was detected. Sample data were not qualified if recoveries exceeded QC criteria and the analyte was not detected.

Preservation and Holding Times

Samples were evaluated for agreement with the chain-of-custody (COC). All samples were received in the appropriate containers and in good condition with the paperwork filled out properly. Sample receipt temperatures were within the acceptance criteria of 4 ± 2 °C. Samples were prepared and analyzed within holding times as specified in the analysis methods.

Calibrations

The initial and continuing calibration data met laboratory control limits for all constituents.

Blanks

No field blanks were used because the sampling event did not include volatile or semi-volatile compounds.

All laboratory method blank results were reported as non-detected or below applicable assessment levels.

No equipment blanks were collected during this sampling event.

Surrogate Recoveries

The analytical procedures used did not require surrogates; therefore, surrogate recovery is not applicable.

Laboratory Control Samples

Laboratory control sample (LCS) recoveries were within QC acceptance limits for all LCS analyses.

Matrix Spike/Matrix Spike Duplicates

MS/MSD percent recoveries were within acceptable control limits for all samples with the exception of the following:

For Metals analysis performed on 6/6/2017 the matrix spike and matrix spike duplicate recoveries were below control limits for Boron. This is flagged accordingly in the QC summary report. The sample selected for the MS and MSD was not from this work order. The LCS was within control limits for this analyte. No further corrective actions were taken.

Serial Dilution/Post Dilution Spikes

SD/PDS percent recoveries were within acceptable control limits for all samples.

Field Precision

No sample duplicates were taken during this sampling event.

Field Procedures

Groundwater samples were collected using low-flow procedures with a peristaltic, stainless steel submersible pump, or bladder pump and placed in unpreserved 250-ml plastic bottles and 500-ml plastic bottles preserved with HNO_3. Wells were purged until groundwater parameters (temperature, pH, specific conductivity, dissolved oxygen, redox, and turbidity) stabilized to within +/- 10%.

Summary

Groundwater analytical data are usable for the purpose of determining current COC concentrations in the groundwater at the site with no qualifications added as a result of this evaluation.

Table B-1. Cross-Reference Field Sample Identifications and Laboratory Identifications

Field Identification	Laboratory Identification
BMW-27	1705286-01
BMW-26	1705286-02
BMW-28	1705286-03

Prepared by: Lindsey Sydow___ Date: August 14, 2017

Data Usability Summary
Luminant – Martin Lake Steam Electric Station
June 29, 2017
Groundwater Monitoring Event
DHL Analytical Data Package 1706346

Pastor, Behling & Wheeler, LLC reviewed one data package from DHL Analytical for the analysis of groundwater samples collected June 29, 2017 at the Martin Lake Steam Electric Station in Tatum, Texas. Data were reviewed for adherence to project objectives.

Intended Use of Data: To provide current data on concentrations of chemicals of concern (COCs) in the groundwater at the site.

Analyses requested included:

- Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Lead, Lithium, Molybdenum, Selenium, and Thallium by USEPA Method SW6020A – Metals Analysis;
- Chloride, Fluoride, and Sulfate by USEPA Method E300 – Anion Analysis;
- Mercury by USEPA Method SW7470A – Mercury Analysis;
- pH of Water by Standard Method M4500-H + B – pH of Water Analysis;
- Total Dissolved Solids (TDS) by Standard Method M2540C – TDS Analysis; and
- Radium 226 and 228 by USEPA Methods 904.0/SW846 9320 Modified and 903.1 Modified.

Data were reviewed and validated and the results of the review/validation are discussed in this Data Usability Summary (DUS). The following laboratory submittals and field data were examined:

- the reportable data,
- case narratives, and
- field notes with respect to field instrument calibrations, filtering procedures, sampling procedures, and preservation procedures prior to shipping the samples to the laboratory.

The results of supporting quality control (QC) analyses were summarized in the case narrative, included in this review, with the laboratory data package.

Introduction

Three (3) groundwater samples were analyzed for the constituents listed above (Appendix III and Appendix IV constituents in the Coal Combustion Residuals Federal Rule). Table B-1 lists the field sample identifications cross-referenced to the laboratory identifications.

Project Objectives

Project quality QC objectives were established in conformance to the requirements of *SW-846 Test Methods for Evaluating Solid Waste Physical/Chemical Methods* and *Standard Methods*. Laboratory control sample and sample duplicate recovery QC criteria were 70 – 130% recovery (%R) for metals and inorganics. Laboratory recovery QC criteria were 30% for Relative Percent Difference (RPD). Field duplicate recovery QC criteria were 50% RPD.

Data Review / Validation Results

Analytical Results

Non-detected results (ND) are reported as less than the value of the method detection limit (MDL) and received a "U" flag. Analytes detected between the method quantitation limit (MQL) and the MDL were qualified with a "J-flag" to denote that the reported value was considered to be estimated. If a QC result was found outside of the review criteria, the reviewer applied a data qualifier and bias code to the associated sample data if the analyte was detected. Sample data were not qualified if recoveries exceeded QC criteria and the analyte was not detected.

Preservation and Holding Times

Samples were evaluated for agreement with the chain-of-custody (COC). All samples were received in the appropriate containers and in good condition with the paperwork filled out properly. Sample receipt temperatures were within the acceptance criteria of 4 ± 2 °C. Samples were prepared and analyzed within holding times as specified in the analysis methods, with the exception of TDS, which was analyzed one day outside of hold time due to sample log-in error.

Calibrations

The initial and continuing calibration data met laboratory control limits for all constituents.

Blanks

No field blanks were used because the sampling event did not include volatile or semi-volatile compounds.

All laboratory method blank results were reported as non-detected or below applicable assessment levels.

No equipment blanks were collected during this sampling event.

Surrogate Recoveries

The analytical procedures used did not require surrogates; therefore, surrogate recovery is not applicable.

Laboratory Control Samples

Laboratory control sample (LCS) recoveries were within QC acceptance limits for all LCS analyses.

Matrix Spike/Matrix Spike Duplicates

MS/MSD percent recoveries were within acceptable control limits for all samples with the exception of the following:

For Metals analysis performed on 7/13/2017 the matrix spike and/or matrix spike duplicate recoveries were above or below control limits for boron, calcium, lithium, and sulfate. This is flagged accordingly in the QC summary report. The LCS results were within control limits for all analytes. No further corrective actions were taken.

Serial Dilution/Post Dilution Spikes

SD/PDS percent recoveries were within acceptable control limits for all samples.

Field Precision

No sample duplicates were taken during this sampling event.

Field Procedures

Groundwater samples were collected using low-flow procedures with a peristaltic, stainless steel submersible pump, or bladder pump and placed in unpreserved 250-ml plastic bottles and 500-ml plastic bottles preserved with HNO_3. Wells were purged until groundwater parameters (temperature, pH, specific conductivity, dissolved oxygen, redox, and turbidity) stabilized to within +/- 10%.

Summary

Groundwater analytical data are usable for the purpose of determining current COC concentrations in the groundwater at the site with no qualifications added as a result of this evaluation.

Table B-1. Cross-Reference Field Sample Identifications and Laboratory Identifications

Field Identification	Laboratory Identification
BMW-27	17056346-01
BMW-26	17056346-01
BMW-28	17056346-01

Prepared by: Lindsey Sydow___ Date: August 14, 2017

Data Usability Summary
Luminant – Martin Lake Steam Electric Station
August 1, 2017
Groundwater Monitoring Event
DHL Analytical Data Package 1708050

Pastor, Behling & Wheeler, LLC reviewed one data package from DHL Analytical for the analysis of groundwater samples collected August 1, 2017 at the Martin Lake Steam Electric Station in Tatum, Texas. Data were reviewed for adherence to project objectives.

Intended Use of Data: To provide current data on concentrations of chemicals of concern (COCs) in the groundwater at the site.

Analyses requested included:

- Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Lead, Lithium, Molybdenum, Selenium, and Thallium by USEPA Method SW6020A – Metals Analysis;
- Chloride, Fluoride, and Sulfate by USEPA Method E300 – Anion Analysis;
- Mercury by USEPA Method SW7470A – Mercury Analysis;
- pH of Water by Standard Method M4500-H + B – pH of Water Analysis;
- Total Dissolved Solids (TDS) by Standard Method M2540C – TDS Analysis; and
- Radium 226 and 228 by USEPA Methods 904.0/SW846 9320 Modified and 903.1 Modified.

Data were reviewed and validated and the results of the review/validation are discussed in this Data Usability Summary (DUS). The following laboratory submittals and field data were examined:

- the reportable data,
- case narratives, and
- field notes with respect to field instrument calibrations, filtering procedures, sampling procedures, and preservation procedures prior to shipping the samples to the laboratory.

The results of supporting quality control (QC) analyses were summarized in the case narrative, included in this review, with the laboratory data package.

Introduction

One (1) groundwater sample was analyzed for the constituents listed above (Appendix III and Appendix IV constituents in the Coal Combustion Residuals Federal Rule). Table B-1 lists the field sample identifications cross-referenced to the laboratory identifications.

Project Objectives

Project quality QC objectives were established in conformance to the requirements of *SW-846 Test Methods for Evaluating Solid Waste Physical/Chemical Methods* and *Standard Methods*. Laboratory control sample and sample duplicate recovery QC criteria were 70 – 130% recovery (%R) for metals and inorganics. Laboratory recovery QC criteria were 30% for Relative Percent Difference (RPD). Field duplicate recovery QC criteria were 50% RPD.

Data Review / Validation Results

Analytical Results

Non-detected results (ND) are reported as less than the value of the method detection limit (MDL) and received a "U" flag. Analytes detected between the method quantitation limit (MQL) and the MDL were qualified with a "J-flag" to denote that the reported value was considered to be estimated. If a QC result was found outside of the review criteria, the reviewer applied a data qualifier and bias code to the associated sample data if the analyte was detected. Sample data were not qualified if recoveries exceeded QC criteria and the analyte was not detected.

Preservation and Holding Times

Samples were evaluated for agreement with the chain-of-custody (COC). All samples were received in the appropriate containers and in good condition with the paperwork filled out properly. Sample receipt temperatures were within the acceptance criteria of 4 ± 2 °C. Samples were prepared and analyzed within holding times as specified in the analysis methods.

Calibrations

The initial and continuing calibration data met laboratory control limits for all constituents.

Blanks

No field blanks were used because the sampling event did not include volatile or semi-volatile compounds.

All laboratory method blank results were reported as non-detected or below applicable assessment levels.

No equipment blanks were collected during this sampling event.

Surrogate Recoveries

The analytical procedures used did not require surrogates; therefore, surrogate recovery is not applicable.

Laboratory Control Samples

Laboratory control sample (LCS) recoveries were within QC acceptance limits for all LCS analyses.

Matrix Spike/Matrix Spike Duplicates

MS/MSD percent recoveries were within acceptable control limits for all samples with the exception of the following:

For Metals analysis performed on 8/9/2017 the matrix spike and/or matrix spike duplicate recoveries were above or below control limits for boron, calcium, and lithium. This is flagged accordingly in the QC summary report. The LCS results were within control limits for all analytes. No further corrective actions were taken.

Serial Dilution/Post Dilution Spikes

SD/PDS percent recoveries were within acceptable control limits for all samples.

Field Precision

No sample duplicates were taken during this sampling event.

Field Procedures

Groundwater samples were collected using low-flow procedures with a peristaltic, stainless steel submersible pump, or bladder pump and placed in unpreserved 250-ml plastic bottles and 500-ml plastic bottles preserved with HNO_3. Wells were purged until groundwater parameters (temperature, pH, specific conductivity, dissolved oxygen, redox, and turbidity) stabilized to within +/- 10%.

Summary

Groundwater analytical data are usable for the purpose of determining current COC concentrations in the groundwater at the site with no qualifications added as a result of this evaluation.

Table B-1. Cross-Reference Field Sample Identifications and Laboratory Identifications

Field Identification	Laboratory Identification
BMW-28	1708050-01

Prepared by: Lindsey Sydow___ Date: Sept. 15, 2017

APPENDIX C

Statistical Approach to Establishing Baseline Concentrations

Appendix C. STATISTICAL APPROACH TO ESTABLISHING BASELINE CONCENTRATIONS

This appendix summarizes the statistical approach used for establishing baseline groundwater quality concentrations for the A1 Area Landfill Coal Combustion Residual (CCR) groundwater monitoring system. The following statistical approach was selected to demonstrate groundwater compliance under the CCR Rule:

- Use of interwell data evaluations, which compare new sample data to data from upgradient or background monitoring wells.

- Use of upper prediction limits (UPLs) to develop site-specific background concentrations for all Appendix III and Appendix IV constituents. This approach is a common statistical method used to evaluate groundwater compliance for Subtitle D landfill facilities and is one of the approved options for groundwater quality data statistical evaluations under the CCR Rule.

- After every detection monitoring event, Appendix III constituent concentrations from each compliance well are compared to background UPLs to ascertain if a statistically significant increase above background exists. Background UPLs are based on a 1-of-2 resampling approach, meaning that if one or more constituent concentrations in a compliance well are above their respective baseline concentration, a resample can be collected to validate or invalidate the baseline concentration exceedance.

- If assessment monitoring is required, the 95% lower confidence limit of the mean (LCL) is calculated after each assessment monitoring event for each Appendix IV constituent and compliance well. The data set used to calculate LCLs is based on current and historical constituent concentrations for a compliance well. A statistically significant increase over the Groundwater Protection Standard (GWPS) has occurred at a CCR unit when the LCL for at least one assessment monitoring constituent at a well is greater than the appropriate GWPS. Development of the GWPSs is discussed in Section C.4.

This approach follows the Statistical Analysis Plan-Revision 1 (SAP) (Golder, 2022) and conforms to the 40 CFR 257 rules as well as EPA's *Unified Guidance: Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities* (EPA, 2009) (hereafter, referred to as the Unified Guidance) and the American Society for Testing and Materials (ASTM) standard D6312-17, *Developing Appropriate Statistical Approaches for Groundwater Detection Monitoring Programs at waste Disposal Facilities* (ASTM, 2017). The statistical methodology is designed to detect a release from the facility at the earliest indication so that it is protective of human health and the environment.

Section 257.94(b) of the CCR Rule requires that a minimum of eight independent groundwater samples from each background and downgradient well be collected and analyzed for the constituents listed in Appendix III and IV to Part 257 no later than October 17, 2017. To satisfy this requirement, at least eight groundwater monitoring events were performed from October 2015 through August 2017 using upgradient/background well (BMW-11-AR) and ten downgradient compliance wells (BMW-18, BMW-19, BMW-20, BMW-21, BMW-22, BMW-23, BMW-24, BMW-26, BMW-27, BMW-28) in the A1 Area Landfill CCR monitoring well system. Well BMW-33 was added to the CCR monitoring well system as an upgradient well in 2021 (BBA, 2024), but it was not sampled during the initial baseline period and was, therefore, not used to establish background concentrations.

Prior to performing background data evaluations, data from the upgradient well were prepared for analysis. Methods for handling field duplicate samples and handling non-detects were implemented during this data preparation phase, as presented in Section C.1. Statistical assumptions were evaluated to assess the independence of background data prior to calculating the UPLs, as discussed in Section C.2. In order to calculate UPLs, the distribution of each data set was defined and a site-wide Type I experiment wise error rate was established. UPLs based on a 1-of-2 resampling approach were calculated for detected constituents to establish baseline values for the well hydraulically upgradient of the CCR unit, as further described in Section C.3. Details about the approach used to evaluate detection and assessment monitoring data after baseline concentrations were established are provided in Section C.4.

C.1 Data Preparation

Analytical data from wells in the groundwater monitoring network at a CCR unit during each sampling event are first reviewed for usability after final data packages are received from the laboratory. The analytical data are then prepared for statistical analysis. The raw sample data can be found in Tables C-1 and C-2 for the Appendix III and Appendix IV constituents, respectively.

Methods for handling duplicate and non-detect data are implemented during this data preparation phase to comply with the performance standards outlined in 40 CFR 257.93. Field duplicates and data rejected after data validation are removed from the data set. Only the primary samples are retained for the statistical evaluation.

In accordance with EPA guidance, non-detects were handled by using one of two approaches depending on the percentage of detected concentrations:

- If a constituent was detected in at least 85% of samples, a simple substitution method was used in which half of the sample detection limit was substituted as a proxy concentration (EPA, 2009; EPA, 2000).

- If a constituent was detected in at least 50% of the samples but no more than 85% of the samples, the Robust Regression Order Statistics (RROS) method was used to estimate summary statistics such as the mean and standard deviation (EPA, 2009).

If the constituent was detected in fewer than 50% of the samples, non-detects were handled by using nonparametric statistical approaches to evaluate the data and to prepare summary statistics (EPA, 2009; EPA, 2000). J-flagged data, estimated concentrations between the sample detection limit and the reporting limit, were defined as detected concentrations.

C.2 Statistical Assumptions

In accordance with Section 257.94(6), the background groundwater sample data used in calculating the UPLs were evaluated for seasonal variability as well as temporal correlation in the data to assess the independence and usability of the background data to calculate UPLs. An evaluation for spatial variation was not necessary and not conducted for A1 Area Landfill since baseline concentrations were estimated using one upgradient well (BMW-11-AR). Statistical independence was checked by testing for:

- Temporal stationarity,
- Lack of autocorrelation, and
- Lack of statistical data outliers.

The statistical software **R** (The R Foundation, 2023) and the EnvStats package (Envstats, 2023) were used to perform the statistical tests to check the validity of independent samples.

To identify the statistical significance across the detected Appendix III or Appendix IV constituents, a Type I experiment wise error rate, α, of 0.05 was used and a single test error rate was defined for each statistical test. The single test error rate, was based on the number of constituents detected (d^*), and in some cases the number of constituents detected at least 50% of the time, for a given constituent list.

For instance, the single test error rate associated with a statistical test for one of the seven detected Appendix III constituents (d^*=7) equals $1-(1-\alpha)^{1/d^*} = 1-(1-\alpha)^{1/7} = 0.0073$.

Temporal stationarity and autocorrelation components are considered addressed after evaluation of the background data as a whole, showing general consistency with the data obtained. For A1 Area Landfill, no linear trend or autocorrelation was identified at upgradient well BMW-11-AR for Appendix III or Appendix IV constituents. Since there are no cases with significant trends and/or autocorrelation, the data are, therefore, considered usable.

Handling Outliers

Outliers are "extreme, unusual-looking measurements" and the Unified Guidance recommends testing for outliers to attempt to determine whether a suspect outlier was drawn from the same sample population as the rest of the data.

Before establishing baseline values for the detection monitoring or assessment monitoring programs, two steps were taken to check for suspect outliers for each detected constituent in the upgradient well: a box plot was created to identify suspect outliers as a basis to identify suspect outliers, and if the constituent had at least 50% detected concentrations then the Dixon's test was performed as a formal test to check if a suspect outlier is also a statistical outlier. Box plots and results for the Dixon's test were generated using the statistical software **R** (The R Foundation, 2023). Box plots are provided in Figures C-1 through C-15 and Table C-3 presents the suspect outliers based on the box plots and presents the results from the Dixon's test, based on a 95% level of confidence.

The suspect outliers based on box plots for Appendix III are chloride (one low concentration of 2.39 mg/L) and fluoride (one high concentration of 0.26 J mg/L). The suspect outliers identified for Appendix IV are arsenic (one high concentration of 0.0116 mg/L), cobalt (one high concentration of 0.0124 mg/L), fluoride (one high concentration of 0.26 J mg/ L), and lead (one high concentration of 0.00347 mg/L). The Dixon's test is appropriate for data sets of fewer than 25 samples, and so Dixon's test was used to evaluate outliers in the baseline data sets. Since there were less than 50% detects for fluoride, cobalt, and lead, the Dixon's test was not performed. The Dixon's test assumes that a data set with the suspect outlier removed is normally distributed (or lognormally distributed if the data are transformed to the natural-log scale). The Dixon's test was used to test if the suspect outliers for chloride and arsenic were statistical outliers. For chloride, the results of the Dixon's test did not indicate that the low suspect

outlier was a statistical outlier. For arsenic, the results of the Dixon's tests indicated that the suspect outlier was also considered a statistical outlier. Although the high arsenic concentration was identified as a statistical outlier, it is within the range of baseline concentrations for downgradient wells and is considered representative of background conditions upgradient of the CCR unit. Therefore, suspect and statistical outliers were not removed from the baseline data set.

C.3 Statistical Approach for Calculating UPLs

UPLs were calculated for each detected constituent in the upgradient well to establish baseline values for background. UPLs were calculated to include a 1-of-2 retesting strategy to ensure comparisons are statistically powerful and to achieve the site-wide false positive rate (SWFPR). A 1-of-2 retesting strategy means that if one or more constituent concentrations in a compliance well are above their respective baseline concentration, a resample can be collected to validate or invalidate the baseline concentration exceedance.

Background data distributions were defined in accordance with EPA guidance (EPA, 2000; EPA, 2002; EPA, 2009; EPA, 2017; SWDIV, 1998). UPLs were calculated based on the SWFPR and defined background data distribution. Power rates were defined for each calculated UPL. The open source, statistical software **R** (The R Foundation, 2023) was used to perform all statistical distribution tests and to calculate UPLs.

<u>Achieving the SWFPR</u>

UPLs were computed using a significance level that ensures a cumulative SWFPR or Type I experiment wise error rate for yearly monitoring that is no more than 10%. That means, a single test error rate for the UPLs must be considerably lower than 0.10. The single test error rate depends on the number of detected constituents and number of compliance wells evaluated in the CCR monitoring program, defined as: $1-(1-\alpha)^{1/cw}$, where

- α=0.10,
- c=7 or 12, the number detected constituents for the monitoring program for Appendix III and Appendix IV constituents, respectively; and
- w=10, the number of downgradient compliance wells at A1 Area Landfill.

The single test error rate for the UPLs is 0.0015 and 0.00088 for the detected Appendix III constituents and Appendix IV constituents, respectively. The Unified Guidance recommends defining the single test error rate for nonparametric UPLs as: $1-(1-\alpha)^{1/c}$, and so the single test error rate for nonparametric UPLs is 0.015 and 0.0087 for the detected Appendix III constituents and Appendix IV constituents, respectively. Since field pH has two bounds, a lower and upper prediction limit, the SWPFR for field pH is one-half of the appropriate SWFPR value shown above.

Defining a Distribution and Type of UPL

The type of UPL calculated is based on a data set's defined distribution. Figure C-16 outlines the steps that were taken to define whether a data set follows a normal, gamma, lognormal, or nonparametric distribution. Distributional test results and defined distributions are presented in Table C-4.

The type of UPL computed (e.g., parametric or nonparametric) was based on the detection frequency and the defined data distribution. For a constituent with no detections in the baseline data, the UPL was set to the reporting limit (EPA, 2009). For a constituent with at least 50% detections, the UPL was adjusted for non-detected concentration(s), as described previously in the Data Preparation section, Section C.1, and the appropriate UPL calculation was based on results from the distributional tests. If no parametric distribution (normal, gamma, or lognormal) was appropriate, then a nonparametric UPL was estimated. The confidence level used for each UPL was based on the appropriate single test error rate.

Defining Power Rate Associated with Each UPL

The power of each UPL was evaluated and a power rate was defined as good, acceptable, or low. A power rate was defined as 'good' when the power at both 3 standard deviations and 4 standard deviations were above 85%; a power rate was defined as 'acceptable' when power at either 3 standard deviations or 4 standard deviations was between 59% and 85%; and a power rate was defined as 'low' occurs when power at both 3 standard deviations and 4 standard deviations were below 85%.

C.4 Detection and Assessment Monitoring Data Evaluations

Detection and assessment monitoring constituent concentrations are compared to the appropriate baseline value for background or GWPS to determine whether a significant difference exists between the initial and current site conditions. The appropriate baseline value for detection monitoring is the Appendix III constituent's UPL and the appropriate baseline value for assessment monitoring is the

Appendix IV constituent's GWPS (Table C-5). The GWPS for each Appendix IV constituent is established as follows:

- For constituents with an established MCL, the GWPS is the highest of the MCL, UPL, or laboratory reporting limit for that constituent; or
- For constituents with no established MCL, the GWPS is the highest of the UPL, laboratory reporting limit, and alternative GWPS (as applicable for cobalt, lead, lithium, and molybdenum).

For detection monitoring, a well is defined as in-compliance when all the Appendix III constituent concentrations are less than the appropriate baseline value. If any concentration exceeds the appropriate baseline value, then a resample may be collected, analyzed, and compared to the appropriate baseline value—if this resample exceeds the appropriate baseline value, then a statistically significant increase over background is indicated.

For assessment monitoring, a 95% confidence interval of the mean is estimated for each detected Appendix IV constituent in a downgradient well using the current and previous sampling event concentrations. The confidence interval contains both a LCL and an upper confidence limit (UCL). The Unified guidance states that "for testing under compliance/assessment monitoring, a [LCL] around the true parameter is utilized. If the LCL exceeds the standard [GWPS], there is statistically significant evidence in favor that the compliance standard has been violated." A constituent is in-compliance when the LCL for the constituent is less than the appropriate GWPS. (EPA, 2009).

The 95% confidence interval (i.e., the LCL and UCL) is based on the constituent concentrations from the current year's sampling events and historical sampling events at a given well. Confidence intervals are calculated based on the defined data distribution. The data distribution is defined in accordance with EPA guidance (EPA, 2000; EPA, 2002; EPA, 2009; EPA, 2017; SWDIV, 1998). The type of confidence interval computed (e.g., parametric or nonparametric) is based on the detection frequency and the defined data distribution for each data set, as described in Section C.3. For a constituent with no detected concentration measurements, the LCL (and UCL) is set to the reporting limit (EPA, 2009). For a constituent with at least 50% detections, the LCL (and UCL) calculation adjusts for non-detected concentration(s) as described in Section C.1, and the appropriate LCL (and UCL) calculation is used based on results from the distributional tests. If no parametric distribution (normal, lognormal, or gamma) can be defined for a data set or there are fewer than 50% detections, then a nonparametric, approximate 95% confidence interval of the median is estimated for the LCL and UCL.

C.5 REFERENCES

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Table C-1. CCR Groundwater Baseline Detection Monitoring
Data Summary - A1 Landfill

Sample Location	Date Sampled	B	Ca	Cl	F	field pH	SO_4	TDS
Upgradient Wells								
BMW-11-AR	10/29/2015	0.332	91.5	11.3	<0.100	6.97	243	923
	12/30/2015	0.285	92.3	2.39	0.26 J	6.87	114	642
	2/25/2016	0.44	136	18.8	0.123 J	6.52	382	1,450
	4/7/2016	0.391	151	17.5	<0.100	6.34	334	1,290
	6/9/2016	0.417	182	19.8	<0.100	6.63	603	1,700
	8/11/2016	0.389	170	20.8	<0.100	6.68	682	1,790
	10/26/2016	0.316	99.7	15.8	<0.100	6.85	495	1,590
	12/14/2016	0.409	201	19.8	<0.100	6.65	665	1,970
Downgradient Wells								
BMW-18	10/30/2015	0.41	7.2	26.6	0.148 J	6.65	97	768
	12/30/2015	0.322	346	7.14	0.101 J	6.77	1,570	2,470
	2/26/2016	0.406	9.49	17.1	0.164 J	6.91	90	508
	4/7/2016	0.423	7.08	16.3	0.117 J	6.52	87	489
	6/9/2016	0.429	7.32	18.7	0.128 J	6.64	101	498
	8/11/2016	0.415	7.02	18.5	<0.100	6.81	100	493
	10/26/2016	0.45	6.55	18.1	0.158 J	6.67	94.3	534
	12/14/2016	0.411	9.26	17.6	0.134 J	6.77	94.1	493
BMW-19	12/30/2015	0.4	441	11.4	0.127 J	6.49	2,100	3,260
	2/25/2016	0.458	504	8.4	<0.100	6.14	2,330	2,960
	4/7/2016	0.424	480	8.46	<0.100	6.71	2,270	3,740
	6/9/2016	0.444	489	8.04	<0.100	6.32	2,390	4,180
	8/11/2016	0.419	458	8.26	<0.100	6.95	2,370	3,780
	10/26/2016	0.417	443	8.26	<0.100	6.97	2,210	4,410
	12/14/2016	0.427	481	7.2	<0.100	6.75	2220	3,660
BMW-20	10/23/2015	0.139 J	71.2	64.8	<0.100	6.28	223	804
	12/30/2015	0.144	96	36.4	0.12 J	6.32	443	987
	2/25/2016	0.202	157	30.7	<0.100	5.7	131	888
	4/7/2016	0.0787	80	30	<0.100	6.22	219	600
	6/9/2016	0.129	128	37.5	<0.100	6.24	557	1,220
	8/11/2016	0.106	107	39.4	<0.100	6.86	602	1,310
	10/26/2016	0.113	93.5	48.2	<0.100	6.93	801	1,610
	12/13/2016	0.0687	62.8	42.8	<0.100	6.64	335	757
BMW-21	10/23/2015	0.973	157	496	<0.100	7.28	484	2,510
	12/30/2015	0.951	142	365	0.126 J	7.08	444	2,020
	2/25/2016	1.01	148	393	<0.100	6.64	462	1,990
	4/7/2016	0.99	158	373	<0.100	7.02	454	2,190
	6/9/2016	1.17	155	415	<0.100	7.09	477	2,230
	8/11/2016	1.04	143	425	<0.100	6.66	484	1,860
	10/26/2016	1.14	145	399	<0.100	6.85	434	2,170
	12/13/2016	0.993	149	426	<0.100	6.93	483	2,170
BMW-22	10/23/2015	2.76	209	377	<0.100	6.86	927	2,720
	12/30/2015	2.54	150	215	0.186 J	6.92	670	1,870
	2/25/2016	3.18	209	295	<0.100	6.27	949	2,430
	4/7/2016	3.34	202	256	<0.100	6.84	839	2,230
	6/8/2016	3.53	193	279	<0.100	6.84	890	2,340
	8/11/2016	3.18	198	311	<0.100	6.25	946	2,520
	10/26/2016	3.38	183	241	<0.100	6.89	803	2,600
	12/13/2016	3.45	191	281	<0.100	6.73	896	2,370

Notes:
1. All concentrations in mg/L. pH in standard units.

Table C-1. CCR Groundwater Baseline Detection Monitoring
Data Summary - A1 Landfill

Sample Location	Date Sampled	B	Ca	Cl	F	field pH	SO_4	TDS
BMW-23	10/23/2015	1.19	102	287	<0.100	6.84	577	1,980
	12/30/2015	1.25	95.2	214	0.122 J	6.76	529	1,500
	2/25/2016	1.31	97.7	225	<0.100	6.16	527	1,520
	4/7/2016	1.22	95.1	221	<0.100	6.63	503	1,510
	6/8/2016	1.31	102	254	<0.100	6.71	558	1,720
	8/11/2016	1.28	90.4	242	<0.100	6.15	539	1,430
	10/26/2016	1.22	86.8	219	<0.100	6.85	467	1,700
	12/13/2016	1.25	91.8	237	<0.100	6.63	510	1,870
BMW-24	10/23/2015	0.144 J	61.6	633	0.247 J	7.14	45	1,510
	12/30/2015	0.347	58.8	404	0.391 J	7.07	125	1,210
	2/25/2016	0.431	61.6	332	0.236 J	5.8	184	1,210
	4/7/2016	0.532	63.4	224	0.109 J	7.07	240	1,100
	6/8/2016	0.612	60.1	201	0.147 J	7.06	259	984
	8/11/2016	0.248	58.5	481	0.225 J	5.84	97.8	1,150
	10/26/2016	0.225	59.2	518	0.305 J	6.78	34.2	1,490
	12/13/2016	0.225	62.5	518	0.3 J	6.78	33	1,480
BMW-26	9/13/2016	0.457	234	97.8	<0.100	6.51	671	2,120
	10/26/16	0.127	44.3	16.2	<0.100	6.87	140	414
	12/14/16	0.251	130	152	0.344 J	6.96	1210	2,050
	01/23/17	0.478	224	126	<0.1	6.96	669	1,950
	02/23/27	0.0683	52	23.9	0.106 J	8.13	20.4	209
	03/24/17	0.44	215	112	<0.1	7.42	610	1,690
	04/24/17	0.495	218	111	<0.1	7.31	576	2,210
	05/25/17	0.613	178	115	<0.1	7.52	613	2,110
	6/29/2017	0.507	233	111	<0.1	7.03	604	1700
BMW-27	09/13/16	0.486	160	133	0.668	5.87	1,150	2,750
	10/26/16	0.548	196	102	<0.100	6.73	700	2,020
	12/14/16	0.529	211	101	<0.100	6.9	674	1,810
	01/23/17	0.393	152	143	0.573	6.12	1,280	2,260
	02/23/17	0.0832	52.4	24	0.252 J	8.18	20.6	239
	03/24/17	0.304	120	132	0.738	6.28	1,190	2,100
	04/24/17	0.34	132	130	0.663	6.61	1,150	2,290
	05/25/17	0.331	122	124	1.61	6.81	1,150	2,320
	6/29/2017	0.39	144	129	0.717	6.11	1,180	2,080
BMW-28	12/14/16	1.22	234	111	<0.100	6.87	1280	2,360
	01/23/17	1.18	221	122	0.104 J	7.4	1,370	2,810
	02/23/17	0.0776	53.3	24	0.11 J	8.23	20.3	203
	03/24/17	1.14	242	121	<0.1	7.51	1,350	2,580
	04/24/17	1.16	266	121	0.19 J	7.44	1,330	2,980
	05/25/17	1.23	255	130	<0.1	7.33	1,410	3,180
	06/29/17	1.21	269	130	0.137 J	7.13	1,450	2,950
	08/01/17	1.17	260	132	<0.1	7.02	1,460	2,780

Notes:
1. All concentrations in mg/L. pH in standard units.

Table C-2. CCR Groundwater Baseline Assessment Monitoring
Data Summary - A1 Landfill

Sample Location	Date Sampled	Sb	As	Ba	Be	Cd	Cr	Co	F	Pb	Li	Hg	Mo	Se	Th	Ra 226/228 Combined
Upgradient Wells																
BMW-11-AR	10/29/2015	<0.0008	0.0116	0.0659	<0.0003	<0.0003	<0.002	0.0124	<0.1	0.000391 J	0.0594	<0.00008	0.00496 J	<0.002	<0.0005	6.35
	12/30/2015	<0.0008	0.00362 J	0.0433	<0.0003	<0.0003	<0.002	<0.003	0.26 J	0.000362 J	0.0589	<0.00008	0.00384 J	<0.002	<0.0005	4.85
	2/25/2016	<0.0008	0.00608	0.0724	<0.0003	<0.0003	<0.002	0.00486 J	0.123 J	<0.0003	0.0276	<0.00008	0.00597	<0.002	<0.0005	6.23
	4/7/2016	<0.0008	0.00614	0.0929	<0.0003	<0.0003	<0.002	<0.003	<0.1	<0.0003	0.0195	<0.00008	0.00444 J	<0.002	<0.0005	2.37
	6/9/2016	<0.0008	0.00532	0.0891	<0.0003	<0.0003	<0.002	<0.003	<0.1	<0.0003	0.0187	<0.00008	0.00355 J	<0.002	<0.0005	1.14
	8/11/2016	<0.0008	0.00271 J	0.0772	<0.0003	<0.0003	<0.002	<0.003	<0.1	<0.0003	0.0147	<0.00008	0.00346 J	<0.002	<0.0005	3.23
	10/26/2016	<0.0008	<0.002	0.0429	<0.0003	<0.0003	<0.002	<0.003	<0.1	<0.0003	0.0508	<0.00008	0.00363 J	<0.002	<0.0005	1.55
	12/14/2016	<0.0008	0.0061	0.074	<0.0003	<0.0003	<0.002	<0.003	<0.1	0.00347	0.0139	<0.00008	0.00303 J	<0.002	<0.0005	<2.551
Downgradient Wells																
BMW-18	10/30/2015	<0.0008	<0.002	0.0401	<0.0003	<0.0003	0.00944	<0.003	0.148 J	<0.0003	0.14	<0.00008	<0.002	<0.002	<0.0005	2.04
	12/30/2015	<0.0008	<0.002	0.0168	<0.0003	<0.0003	<0.002	0.0129	0.101 J	<0.0003	0.0415	<0.00008	<0.002	<0.002	<0.0005	<2.445
	2/26/2016	<0.0008	<0.002	0.0446	<0.0003	<0.0003	0.00214 J	<0.003	0.164 J	<0.0003	0.0156	<0.00008	<0.002	<0.002	<0.0005	<2.306
	4/7/2016	<0.0008	<0.002	0.0306	<0.0003	<0.0003	<0.002	<0.003	0.117 J	<0.0003	0.0171	<0.00008	<0.002	<0.002	<0.0005	<1.109
	6/9/2016	<0.0008	<0.002	0.0283	<0.0003	<0.0003	<0.002	<0.003	0.128 J	<0.0003	0.0152	<0.00008	<0.002	<0.002	<0.0005	1.00
	8/11/2016	<0.0008	<0.002	0.0291	<0.0003	<0.0003	<0.002	<0.003	<0.1	<0.0003	0.0147	<0.00008	<0.002	<0.002	<0.0005	<1.29
	10/26/2016	<0.0008	<0.002	0.029	<0.0003	<0.0003	<0.002	<0.003	0.158 J	<0.0003	0.0156	<0.00008	<0.002	<0.002	<0.0005	<0.666
	12/14/2016	<0.0008	<0.002	0.0384	<0.0003	<0.0003	<0.002	<0.003	0.134 J	<0.0003	0.0158	<0.00008	<0.002	<0.002	<0.0005	2.13
BMW-19	12/30/2015	<0.0008	<0.002	0.0222	<0.0003	<0.0003	<0.002	0.0166	0.127 J	<0.0003	0.0506	<0.00008	<0.002	<0.002	<0.0005	3.49
	2/25/2016	<0.0008	0.00235 J	0.0169	<0.0003	<0.0003	<0.002	0.0149	<0.1	<0.0003	0.0711	<0.00008	<0.002	<0.002	<0.0005	2.51
	4/7/2016	<0.0008	<0.002	0.0178	<0.0003	<0.0003	<0.002	0.0137	<0.1	<0.0003	0.0591	<0.00008	<0.002	<0.002	<0.0005	<0.9
	6/9/2016	<0.0008	<0.002	0.0158	<0.0003	<0.0003	<0.002	0.0141	<0.1	<0.0003	0.0644	<0.00008	<0.002	<0.002	<0.0005	2.12
	8/11/2016	<0.0008	0.00711	0.0158	<0.0003	<0.0003	<0.002	0.0128	<0.1	<0.0003	0.0568	<0.00008	<0.002	<0.002	<0.0005	1.74
	10/26/2016	<0.0008	<0.002	0.0144	<0.0003	<0.0003	<0.002	0.0104	<0.1	<0.0003	0.0495	<0.00008	<0.002	<0.002	<0.0005	<0.632
	12/14/2016	<0.0008	0.00369 J	0.0171	<0.0003	<0.0003	<0.002	0.0125	<0.1	<0.0003	0.0584	<0.00008	<0.002	<0.002	<0.0005	1.14
BMW-20	10/23/2015	<0.0008	0.00236 J	0.0778	<0.0003	<0.0003	<0.002	0.0256	<0.1	0.000501 J	<0.005	<0.00008	<0.002	<0.002	<0.0005	2.35
	12/30/2015	<0.0008	0.00344 J	0.0777	<0.0003	<0.0003	<0.002	0.051	0.12 J	<0.0003	<0.005	<0.00008	<0.002	<0.002	<0.0005	3.23
	2/25/2016	<0.0008	0.00474 J	0.0989	<0.0003	<0.0003	<0.002	0.022	<0.1	<0.0003	<0.005	<0.00008	<0.002	<0.002	<0.0005	3.46
	4/7/2016	<0.0008	0.00411 J	0.0912	<0.0003	<0.0003	<0.002	0.0276	<0.1	<0.0003	<0.005	<0.00008	<0.002	<0.002	<0.0005	1.30
	6/9/2016	<0.0008	0.0103	0.0776	<0.0003	<0.0003	<0.002	0.054	<0.1	0.000696 J	<0.005	<0.00008	<0.002	<0.002	<0.0005	1.23
	8/11/2016	<0.0008	<0.002	0.0637	<0.0003	<0.0003	<0.002	0.0513	<0.1	<0.0003	<0.005	<0.00008	<0.002	<0.002	<0.0005	1.72
	10/26/2016	<0.0008	0.00444 J	0.0421	<0.0003	<0.0003	<0.002	0.0786	<0.1	<0.0003	<0.005	<0.00008	<0.002	<0.002	<0.0005	1.20
	12/13/2016	<0.0008	0.00483 J	0.0377	<0.0003	<0.0003	<0.002	0.0451	<0.1	<0.0003	<0.005	<0.00008	<0.002	<0.002	<0.0005	1.40

Notes:
1. All concentrations in mg/L. Ra combined in pCi/L.

Table C-2. CCR Groundwater Baseline Assessment Monitoring
Data Summary - A1 Landfill

Sample Location	Date Sampled	Sb	As	Ba	Be	Cd	Cr	Co	F	Pb	Li	Hg	Mo	Se	Th	Ra 226/228 Combined
BMW-21	10/23/2015	<0.0008	0.00324 J	0.0703	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.0623	<0.00008	<0.002	<0.002	<0.0005	<1.384
	12/30/2015	<0.0008	0.00247 J	0.0478	<0.0003	<0.0003	<0.002	<0.003	0.126 J	<0.0003	0.0602	<0.00008	<0.002	<0.002	<0.0005	2.58
	2/25/2016	<0.0008	0.00327 J	0.0471	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.0602	<0.00008	<0.002	<0.002	<0.0005	2.87
	4/7/2016	<0.0008	0.00337 J	0.0472	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.0653	<0.00008	<0.002	<0.002	<0.0005	3.25
	6/9/2016	<0.0008	0.0034 J	0.0457	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.0675	<0.00008	<0.002	<0.002	<0.0005	1.24
	8/11/2016	<0.0008	0.00373 J	0.0445	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.0527	<0.00008	<0.002	<0.002	<0.0005	1.38
	10/26/2016	<0.0008	0.0037 J	0.0443	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.0611	<0.00008	<0.002	<0.002	<0.0005	1.99
	12/13/2016	<0.0008	0.00217 J	0.0438	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.0631	<0.00008	<0.002	<0.002	<0.0005	1.21
BMW-22	10/23/2015	<0.0008	<0.002	0.106	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.0675	<0.00008	<0.002	<0.002	<0.0005	3.70
	12/30/2015	<0.0008	<0.002	0.084	<0.0003	<0.0003	<0.002	<0.003	0.186 J	<0.0003	0.0594	<0.00008	<0.002	<0.002	<0.0005	2.52
	2/25/2016	<0.0008	<0.002	0.0761	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.0801	<0.00008	<0.002	<0.002	<0.0005	2.52
	4/7/2016	<0.0008	<0.002	0.072	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.0773	<0.00008	<0.002	<0.002	<0.0005	1.94
	6/8/2016	<0.0008	0.00206 J	0.0667	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.0847	<0.00008	<0.002	<0.002	<0.0005	2.77
	8/11/2016	<0.0008	<0.002	0.0679	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.0675	<0.00008	<0.002	<0.002	<0.0005	2.54
	10/26/2016	<0.0008	0.00216 J	0.0645	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.0753	<0.00008	<0.002	<0.002	<0.0005	1.65
	12/13/2016	<0.0008	0.00232 J	0.0655	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.0689	<0.00008	<0.002	<0.002	<0.0005	1.26
BMW-23	10/23/2015	<0.0008	<0.002	0.0519	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.0802	<0.00008	<0.002	<0.002	<0.0005	3.10
	12/30/2015	<0.0008	<0.002	0.0462	<0.0003	<0.0003	<0.002	<0.003	0.122 J	<0.0003	0.0897	<0.00008	<0.002	<0.002	<0.0005	3.33
	2/25/2016	<0.0008	<0.002	0.0488	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.0959	<0.00008	<0.002	<0.002	<0.0005	2.38
	4/7/2016	<0.0008	<0.002	0.0472	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.095	<0.00008	<0.002	<0.002	<0.0005	2.70
	6/8/2016	<0.0008	<0.002	0.0497	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.103	<0.00008	<0.002	<0.002	<0.0005	1.94
	8/11/2016	<0.0008	<0.002	0.0458	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.077	<0.00008	<0.002	<0.002	<0.0005	2.88
	10/26/2016	<0.0008	<0.002	0.0437	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.0856	<0.00008	<0.002	<0.002	<0.0005	2.23
	12/13/2016	<0.0008	<0.002	0.0407	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.0817	<0.00008	<0.002	<0.002	<0.0005	0.93
BMW-24	10/23/2015	<0.0008	0.00494 J	1.87	<0.0003	<0.0003	<0.002	0.00802	0.247 J	<0.0003	<0.005	<0.00008	<0.002	<0.002	<0.0005	5.15
	12/30/2015	<0.0008	0.00579	0.801	<0.0003	<0.0003	<0.002	0.0146	0.391 J	<0.0003	0.0161	<0.00008	<0.002	<0.002	<0.0005	2.15
	2/25/2016	<0.0008	0.00442 J	0.645	<0.0003	<0.0003	<0.002	0.0137	0.236 J	<0.0003	0.0267	<0.00008	<0.002	<0.002	<0.0005	3.13
	4/7/2016	<0.0008	0.00376 J	0.202	<0.0003	<0.0003	<0.002	0.0238	0.109 J	<0.0003	0.0415	<0.00008	<0.002	<0.002	<0.0005	<1.929
	6/8/2016	<0.0008	0.00481 J	0.181	<0.0003	<0.0003	<0.002	0.0227	0.147 J	<0.0003	0.0475	<0.00008	<0.002	<0.002	<0.0005	1.62
	8/11/2016	<0.0008	0.00414 J	1.26	<0.0003	<0.0003	<0.002	0.00707	0.225 J	<0.0003	0.00938 J	<0.00008	<0.002	<0.002	<0.0005	1.51
	10/26/2016	<0.0008	0.00364 J	1.88	<0.0003	<0.0003	<0.002	<0.003	0.305 J	<0.0003	0.00767 J	<0.00008	<0.002	<0.002	<0.0005	2.68
	12/13/2016	<0.0008	0.00498 J	1.96	<0.0003	<0.0003	<0.002	0.00326 J	0.3 J	<0.0003	0.00914 J	<0.00008	<0.002	<0.002	<0.0005	1.43

Notes:
1. All concentrations in mg/L. Ra combined in pCi/L.

Table C-2. CCR Groundwater Baseline Assessment Monitoring
Data Summary - A1 Landfill

Sample Location	Date Sampled	Sb	As	Ba	Be	Cd	Cr	Co	F	Pb	Li	Hg	Mo	Se	Th	Ra 226/228 Combined
BMW-26	9/13/2016	<0.0008	0.017	0.0425	<0.0003	<0.0003	<0.002	<0.003	<0.1	<0.0003	0.0944	<0.00008	0.00215 J	<0.002	<0.0005	1.17
	10/26/16	<0.0008	0.00318 J	0.0731	<0.0003	<0.0003	<0.002	0.00402 J	<0.1	<0.0003	<0.005	<0.00008	<0.002	<0.002	<0.0005	0.87
	12/14/16	<0.0008	<0.002	0.0424	<0.0003	0.000823 J	<0.002	0.236	0.344 J	<0.0003	0.0527	<0.00008	<0.002	<0.002	<0.0005	1.47
	01/23/17	<0.0008	0.0325	0.0446	<0.0003	<0.0003	<0.002	<0.003	<0.1	0.00059 J	0.0977	<0.00008	0.0035 J	<0.002	<0.0005	1.29
	02/23/17	<0.0008	<0.002	0.0705	<0.0003	<0.0003	<0.002	<0.003	0.106 J	0.00073 J	0.0052 J	<0.00008	<0.002	<0.002	<0.0005	1.26
	03/24/17	<0.0008	0.0107	0.0371	<0.0003	<0.0003	<0.002	<0.003	<0.1	0.00074 J	0.0964	<0.00008	0.00461 J	<0.002	<0.0005	0.96
	04/24/17	<0.0008	0.00732	0.0322	<0.0003	<0.0003	<0.002	<0.003	<0.1	<0.0003	0.099	<0.00008	0.00303 J	<0.002	<0.0005	1.96
	05/25/17	<0.0008	0.00347 J	0.0243	<0.0003	<0.0003	<0.002	<0.003	<0.1	<0.0003	0.0951	<0.0008	0.00302 J	<0.002	<0.0005	1.30
	06/29/17	<0.0008	0.0328	0.0352	<0.0003	<0.0003	<0.002	<0.003	<0.1	<0.0003	0.0985	<0.0008	0.00257 J	<0.002	<0.0005	0.88
BMW-27	09/13/16	<0.0008	0.00536	0.0434	<0.0003	0.000615 J	<0.002	0.15	0.668	0.000432 J	0.0541	<0.00008	<0.002	<0.002	<0.0005	1.45
	10/26/16	<0.0008	0.00625	0.0339	<0.0003	<0.0003	<0.002	<0.003	<0.1	<0.0003	0.0933	<0.00008	<0.002	<0.002	<0.0005	2.10
	12/14/16	<0.0008	0.0051	0.0342	<0.0003	<0.0003	<0.002	<0.003	<0.1	<0.0003	0.0932	<0.00008	<0.002	<0.002	<0.0005	<1.17
	01/23/17	<0.0008	0.00845	0.0333	<0.0003	0.00071 J	0.00278 J	0.195	0.573	0.00032 J	0.0484	<0.00008	<0.002	<0.002	<0.0005	1.30
	02/23/17	<0.0008	<0.002	0.0704	<0.0003	<0.0003	<0.002	<0.003	0.252 J	0.00074 J	<0.005	<0.00008	<0.002	<0.002	<0.0005	0.87
	03/24/17	<0.0008	0.00319 J	0.0296	<0.0003	0.00078 J	<0.002	0.222	0.738	<0.0003	0.0474	<0.00008	<0.002	<0.002	<0.0005	1.14
	04/24/17	<0.0008	<0.002	0.0269	<0.0003	0.00066 J	<0.002	0.21	0.663	<0.0003	0.0497	<0.00008	<0.002	<0.002	<0.0005	1.98
	05/25/17	<0.0008	<0.002	0.0266	<0.0003	0.000521 J	<0.002	0.2	1.61	0.000439 J	0.0471	<0.00008	<0.002	<0.002	<0.0005	1.82
	06/29/17	<0.0008	0.00593	0.0307	<0.0003	0.00851 J	0.00266 J	0.255	0.717	<0.0003	0.048	<0.0008	<0.002	<0.002	<0.0005	0.93
BMW-28	12/14/16	0.00117 J	<0.002	0.0509	<0.0003	<0.0003	<0.002	<0.003	<0.1	<0.0003	0.11	<0.00008	0.0103	0.00445 J	<0.0005	2.79
	01/23/17	0.00101 J	<0.002	0.0518	<0.0003	<0.0003	<0.002	<0.003	0.104 J	<0.0003	0.116	<0.00008	0.00881	<0.002	<0.0005	1.75
	02/23/17	<0.0008	<0.002	0.0734	<0.0003	<0.0003	<0.002	<0.003	0.11 J	0.00097 J	0.00514 J	<0.00008	<0.002	<0.002	<0.0005	1.00
	03/24/17	0.00121 J	<0.002	0.046	<0.0003	<0.0003	<0.002	<0.003	<0.1	<0.0003	0.1	<0.00008	0.00773	0.00208 J	<0.0005	2.21
	04/24/17	0.00113 J	<0.002	0.047	<0.0003	<0.0003	<0.002	<0.003	0.19 J	<0.0003	0.109	<0.00008	0.00766	<0.002	<0.0005	2.24
	05/25/17	0.00119 J	<0.002	0.0468	<0.0003	<0.0003	<0.002	<0.003	<0.1	0.000427 J	0.102	<0.00008	0.00764	<0.002	<0.0005	1.91
	06/29/17	<0.0008	0.00253 J	0.0549	<0.0003	<0.0003	<0.002	0.0084	0.137 J	<0.0003	0.104	<0.00008	0.00754	<0.002	<0.0005	2.80
	08/01/17	<0.0008	0.0057	0.0524	<0.0003	<0.0003	<0.002	0.0115	<0.1	<0.0003	0.114	<0.00008	0.00707	<0.002	<0.0005	2.97

Notes:
1. All concentrations in mg/L. Ra combined in pCi/L.

Table C-3. Summary of Observed Suspect Outliers, Dixon's Test and Rosner's Test- Normality A1 Area Landfill - Upgradient Well (BMW-11-AR)

Constituent List	Constituent	Suspect Outlier for Low or High Concentration?	Suspect Outlier Concentration (Date Sampled)	p-values for Distributional Tests without Outlier, Detect Data - Normality			Is Distribution without Outlier(s) Normal?	p-values for Distributional Tests without Outlier, Detect Data - Lognormality			Is Distribution without Outlier(s) Lognormal?	Conclusion of Dixon Test
				Kolmogorov-Smirnov Test	Shapiro-Wilks Test	Probability Plot Correlation		Kolmogorov-Smirnov Test	Shapiro-Wilks Test	Probability Plot Correlation		
Appendix III	Chloride	Low	2.39 mg/L (2015-12-30)	0.50	0.17	0.12	Yes	0.34	0.056	0.042	Yes	Not a statistical low outlier (p-value=0.74) Based on Normality
	Fluoride	High	0.26 J mg/L (2015-12-30)	--	--	--	--	--	--	--	--	Not Performed, <50% Detects
Appendix IV	Arsenic	High	0.0116 mg/L (2015-10-29)	0.19	0.07	0.08	Yes	0.12	0.05	0.06	Yes	Statistical high outlier (p-value=0.025) Based on Normality
	Cobalt	High	0.0124 mg/L (2015-10-29)	--	--	--	--	--	--	--	--	Not Performed, <50% Detects
	Fluoride	High	0.26 J mg/L (2015-12-30)	--	--	--	--	--	--	--	--	Not Performed, <50% Detects
	Lead	High	0.00347 mg/L (2016-12-14)	--	--	--	--	--	--	--	--	Not Performed, <50% Detects

NOTE: APPENDIX F-Revision 2 February 27, 2024

Dixon's Test can be performed for only one value.

Statistical Significance for Distributional tests for Dixon's test are based on 95% level of confidence, or α=0.05.

Table C-4. Summary of Distributional Tests
A1 Area Landfill - Upgradient Well (BMW-11-AR)

Constituent List	Constituent	# Detects/ # Samples	% Detects	Defined Distribution	Tests for Normality			Can the Data be defined as Normal?
					Kolmogorov-Smirnov Test	Shapiro-Wilks Test	Probability Plot Correlation	
Appendix III	Boron	8/8	100	Normal	0.17	0.48	0.55	Yes
	Calcium	8/8	100	Normal	0.41	0.35	0.53	Yes
	Chloride	8/8	100	Normal	0.14	0.024	0.022	Yes
	Fluoride	2/8	25	Nonparametric, <50% Detects	--	--	--	--
	field pH	8/8	100	Normal	0.79	0.87	0.89	Yes
	Sulfate	8/8	100	Normal	0.79	0.65	0.84	Yes
	Total Dissolved Solids	8/8	100	Normal	0.85	0.67	0.72	Yes
Appendix IV	Antimony	0/8	0	All NDs	--	--	--	--
	Arsenic	7/8	88	Normal	0.021	0.13	0.068	Yes
	Barium	8/8	100	Normal	0.60	0.31	0.39	Yes
	Beryllium	0/8	0	All NDs	--	--	--	--
	Cadmium	0/8	0	All NDs	--	--	--	--
	Chromium	0/8	0	All NDs	--	--	--	--
	Cobalt	2/8	25	Nonparametric, <50% Detects	--	--	--	--
	Fluoride	2/8	25	Nonparametric, <50% Detects	--	--	--	--
	Lead	3/8	38	Nonparametric, <50% Detects	--	--	--	--
	Lithium	8/8	100	Normal	0.15	0.036	0.068	Yes
	Mercury	0/8	0	All NDs	--	--	--	--
	Molybdenum	8/8	100	Normal	0.21	0.30	0.24	Yes
	Selenium	0/8	0	All NDs	--	--	--	--
	Thallium	0/8	0	All NDs	--	--	--	--
	Radium-226 + Radium 228	7/8	88	Normal	0.80	0.34	0.53	Yes

Note:
Statistical Significance for Distributional tests are based on 95% level of confidence, or α=0.05.
'-- No Distributional Test performed since <50% Detects

Table C-4. Summary of Distributional Tests
A1 Area Landfill - Upgradient Well (BMW-11-AR)

Constituent List	Constituent	# Detects/ # Samples	% Detects	Defined Distribution	Tests for Gamma		Can the Data be defined as Gamma?
					Shapiro-Wilks Test	Probability Plot Correlation	
Appendix III	Boron	8/8	100	Normal	0.40	0.45	Yes
	Calcium	8/8	100	Normal	0.28	0.44	Yes
	Chloride	8/8	100	Normal	0.0014	0.0028	No
	Fluoride	2/8	25	Nonparametric, <50% Detects	--	--	--
	field pH	8/8	100	Normal	0.85	0.88	Yes
	Sulfate	8/8	100	Normal	0.41	0.43	Yes
	Total Dissolved Solids	8/8	100	Normal	0.32	0.29	Yes
Appendix IV	Antimony	0/8	0	All NDs	--	--	--
	Arsenic	7/8	88	Normal	0.45	0.28	Yes
	Barium	8/8	100	Normal	0.16	0.20	Yes
	Beryllium	0/8	0	All NDs	--	--	--
	Cadmium	0/8	0	All NDs	--	--	--
	Chromium	0/8	0	All NDs	--	--	--
	Cobalt	2/8	25	Nonparametric, <50% Detects	--	--	--
	Fluoride	2/8	25	Nonparametric, <50% Detects	--	--	--
	Lead	3/8	38	Nonparametric, <50% Detects	--	--	--
	Lithium	8/8	100	Normal	0.079	0.14	Yes
	Mercury	0/8	0	All NDs	--	--	--
	Molybdenum	8/8	100	Normal	0.52	0.46	Yes
	Selenium	0/8	0	All NDs	--	--	--
	Thallium	0/8	0	All NDs	--	--	--
	Radium-226 + Radium 228	7/8	88	Normal	0.48	0.72	Yes

Note:
Statistical Significance for Distributional tests are based on 95% level of confidence, or α=0.05.
'-- No Distributional Test performed since <50% Detects

Table C-4. Summary of Distributional Tests
A1 Area Landfill - Upgradient Well (BMW-11-AR)

Constituent List	Constituent	# Detects/ # Samples	% Detects	Defined Distribution	Tests for Lognormality			Can the Data be defined as Lognormal?
					Kolmogorov-Smirnov Test	Shapiro-Wilks Test	Probability Plot Correlation	
Appendix III	Boron	8/8	100	Normal	0.11	0.36	0.40	Yes
	Calcium	8/8	100	Normal	0.43	0.24	0.38	Yes
	Chloride	8/8	100	Normal	0.0093	3.6E-04	0.0012	No
	Fluoride	2/8	25	Nonparametric, <50% Detects	--	--	--	--
	field pH	8/8	100	Normal	0.79	0.85	0.87	Yes
	Sulfate	8/8	100	Normal	0.68	0.22	0.19	Yes
	Total Dissolved Solids	8/8	100	Normal	0.39	0.19	0.16	Yes
Appendix IV	Antimony	0/8	0	All NDs	--	--	--	--
	Arsenic	7/8	88	Normal	0.20	0.56	0.38	Yes
	Barium	8/8	100	Normal	0.28	0.11	0.14	Yes
	Beryllium	0/8	0	All NDs	--	--	--	--
	Cadmium	0/8	0	All NDs	--	--	--	--
	Chromium	0/8	0	All NDs	--	--	--	--
	Cobalt	2/8	25	Nonparametric, <50% Detects	--	--	--	--
	Fluoride	2/8	25	Nonparametric, <50% Detects	--	--	--	--
	Lead	3/8	38	Nonparametric, <50% Detects	--	--	--	--
	Lithium	8/8	100	Normal	0.31	0.11	0.19	Yes
	Mercury	0/8	0	All NDs	--	--	--	--
	Molybdenum	8/8	100	Normal	0.40	0.63	0.59	Yes
	Selenium	0/8	0	All NDs	--	--	--	--
	Thallium	0/8	0	All NDs	--	--	--	--
	Radium-226 + Radium 228	7/8	88	Normal	0.72	0.47	0.68	Yes

Note:
Statistical Significance for Distributional tests are based on 95% level of confidence, or α=0.05.
'-- No Distributional Test performed since <50% Detects

Table C-5. Summary Statistics with Baseline Values (UPLs and GWPS)
A1 Area Landfill - Upgradient Well (BMW-11-AR)

Constituent List	Constituent	# Detects/ # Samples	% Detects	Minimum Detected Result	Maximum Detected Result	Baseline Value (UPL/ GWPS)	MCL or Alternative GWPS*	Reporting Limit	UPL 1-of-2	Defined Distribution	single test error rate for annual SWFPR of 10%	Power Rate for UPL 1-of-2
Appendix III	Boron	8/8	100	0.285	0.44	0.55	--	0.03	0.55	Normal	0.0015	LOW
	Calcium	8/8	100	91.5	201	280	--	0.3	280	Normal	0.0015	LOW
	Chloride	8/8	100	2.39	20.8	35	--	1	35	Normal	0.0015	LOW
	Fluoride	2/8	25	0.123	0.26	0.4	4	0.4	0.26	Nonparametric, <50% Detects	0.015	GOOD
	field pH	8/8	100	6.34	6.97	5.9 - 7.4	--	--	5.9 - 7.4	Normal	0.00075	LOW - LOW
	Sulfate	8/8	100	114	682	1100	--	1	1100	Normal	0.0015	LOW
	Total Dissolved Solids	8/8	100	642	1970	2800	--	10	2800	Normal	0.0015	LOW
Appendix IV	Antimony	0/8	0	ND	ND	0.006	0.006	0.0025	0.0025	All NDs	--	--
	Arsenic	7/8	88	0.00271	0.0116	0.016	0.01	0.005	0.016	Normal	0.00088	LOW
	Barium	8/8	100	0.0429	0.0929	2	2	0.01	0.14	Normal	0.00088	LOW
	Beryllium	0/8	0	ND	ND	0.004	0.004	0.001	0.001	All NDs	--	--
	Cadmium	0/8	0	ND	ND	0.005	0.005	0.001	0.001	All NDs	--	--
	Chromium	0/8	0	ND	ND	0.1	0.1	0.005	0.005	All NDs	--	--
	Cobalt	2/8	25	0.00486	0.0124	0.012	0.006	0.005	0.012	Nonparametric, <50% Detects	0.0087	GOOD
	Fluoride	2/8	25	0.123	0.26	4	4	0.4	0.26	Nonparametric, <50% Detects	0.0087	GOOD
	Lead	3/8	38	0.000362	0.00347	0.0035	0.015	0.001	0.0035	Nonparametric, <50% Detects	0.0087	GOOD
	Lithium	8/8	100	0.0139	0.0594	0.10	0.04	0.01	0.10	Normal	0.00088	LOW
	Mercury	0/8	0	ND	ND	0.002	0.002	0.0002	0.0002	All NDs	--	--
	Molybdenum	8/8	100	0.00303	0.00597	0.0075	0.1	0.005	0.0075	Normal	0.00088	LOW
	Selenium	0/8	0	ND	ND	0.05	0.05	0.005	0.005	All NDs	--	--
	Thallium	0/8	0	ND	ND	0.002	0.002	0.0015	0.0015	All NDs	--	--
	Radium-226 + Radium 228	7/8	88	1.14	6.35	11	5	--	11	Normal	0.00088	LOW

Notes:

1. All concentrations in mg/L except pH in standard units and Ra combined in pCi/L.
2. *Alternative GWPS for Cobalt, Lithium, Lead, and Molybdenum

Figure C−1. Appendix III − Boron

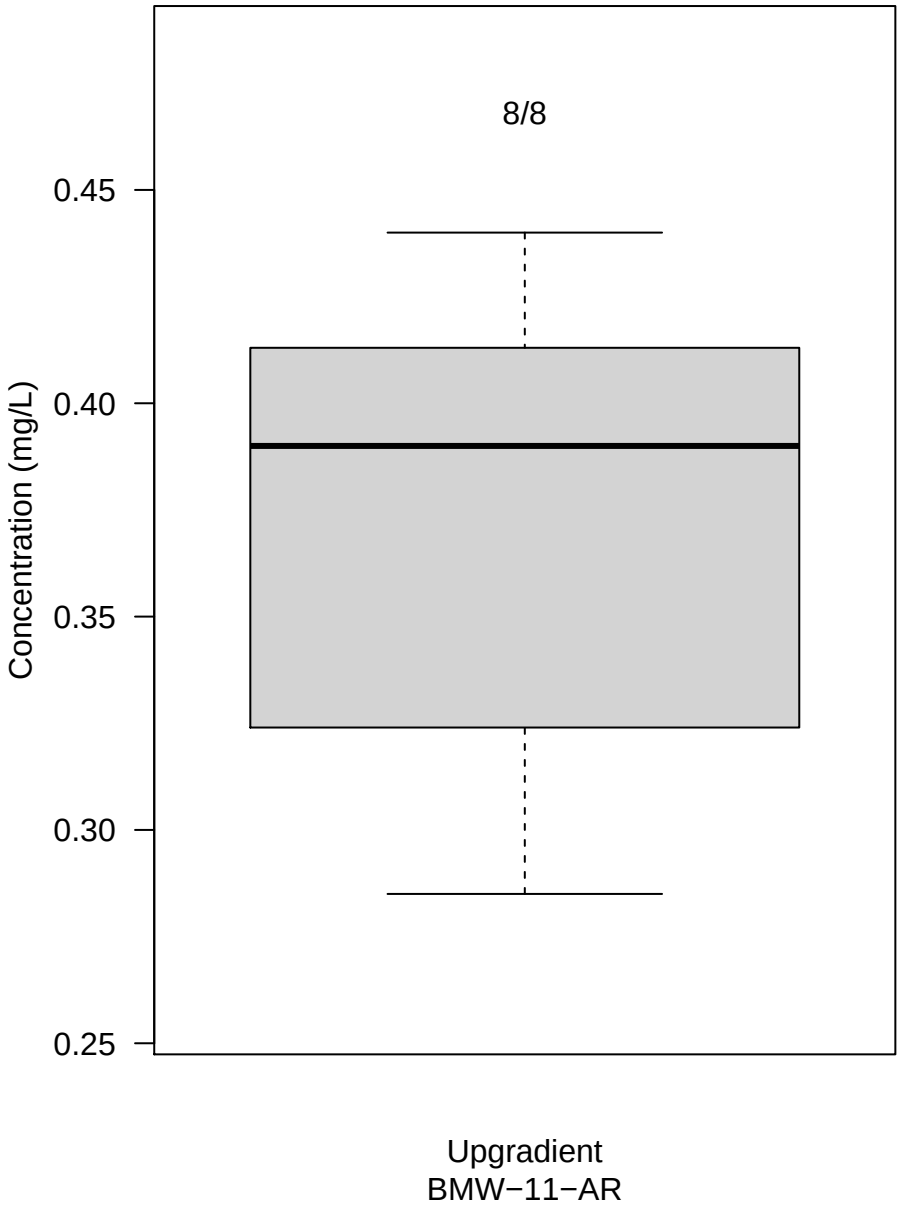


Figure C−2. Appendix III − Calcium

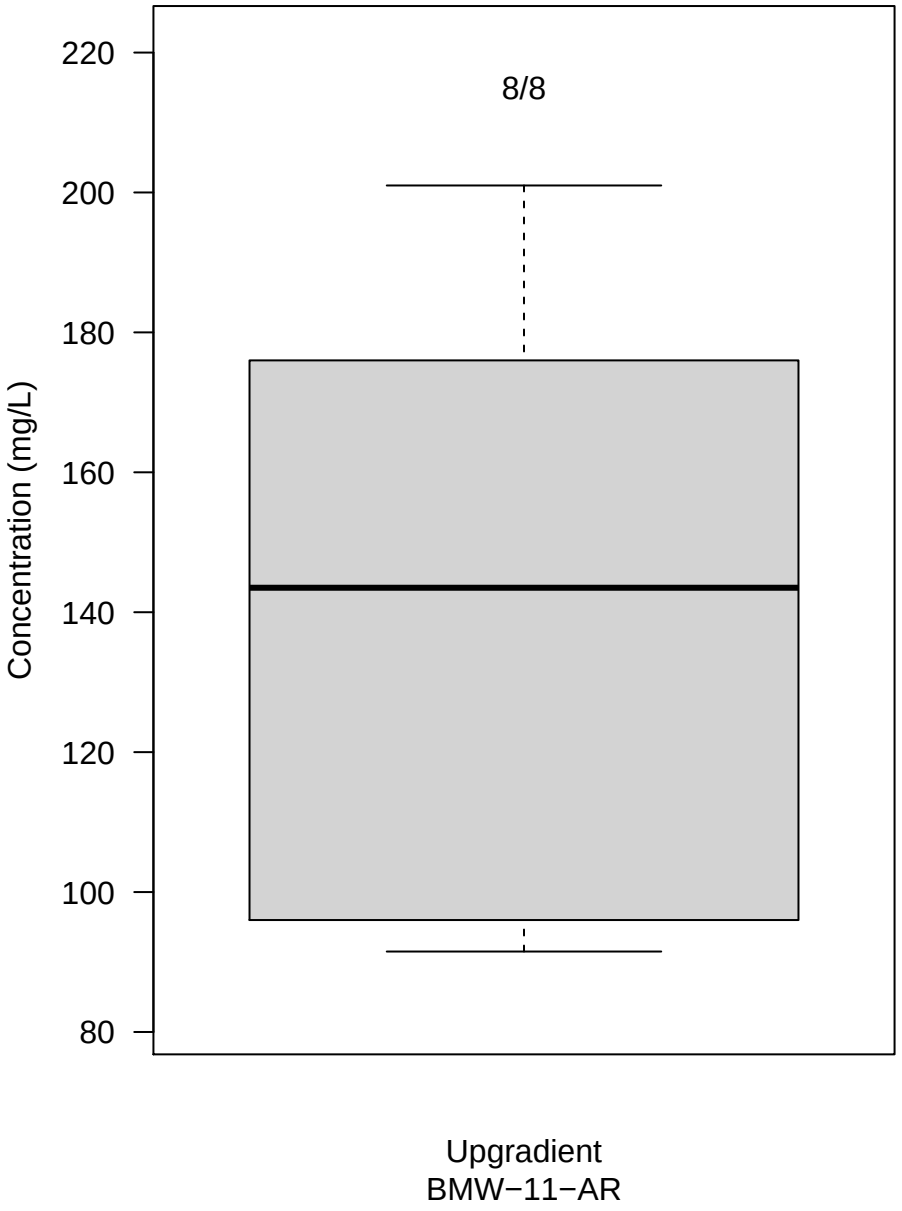


Figure C−3. Appendix III − Chloride

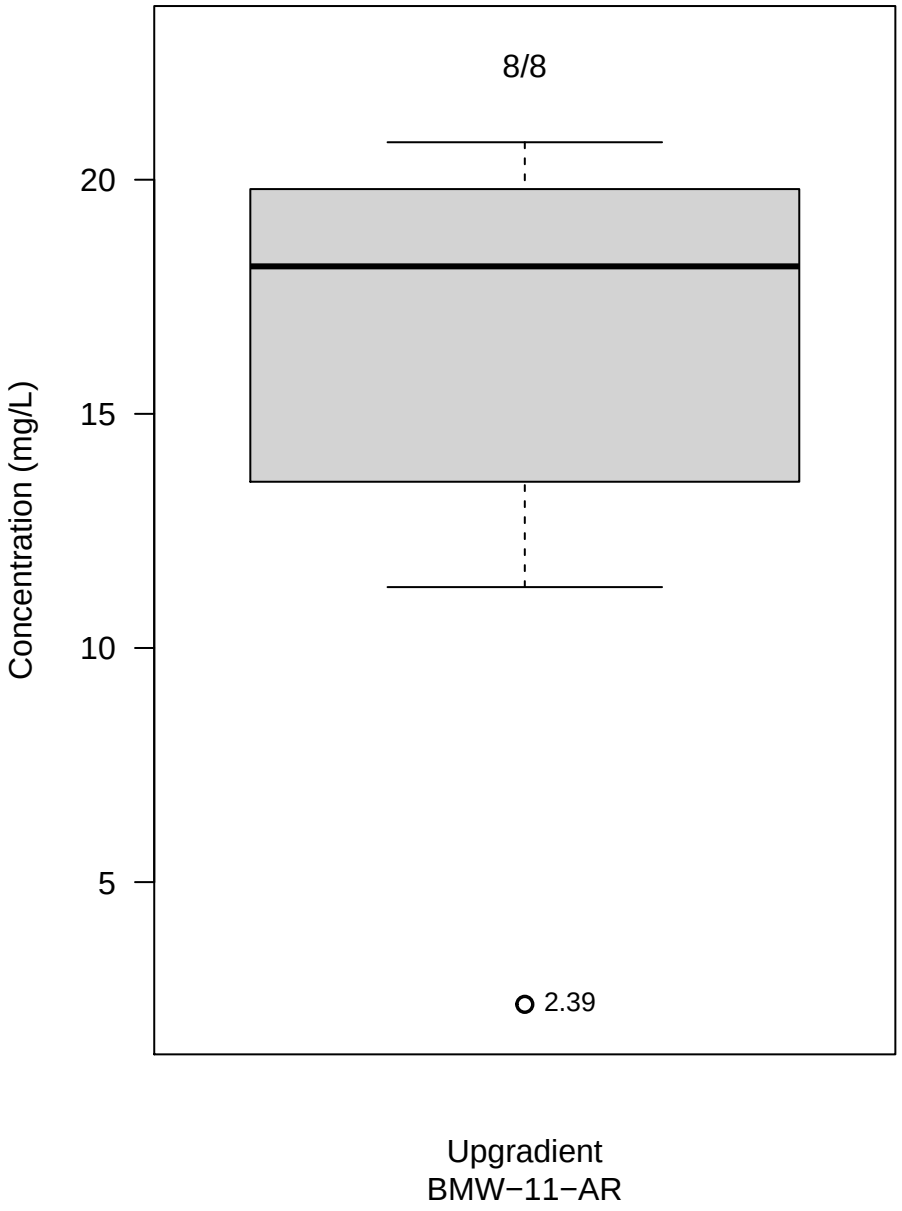


Figure C−4. Appendix III − Fluoride

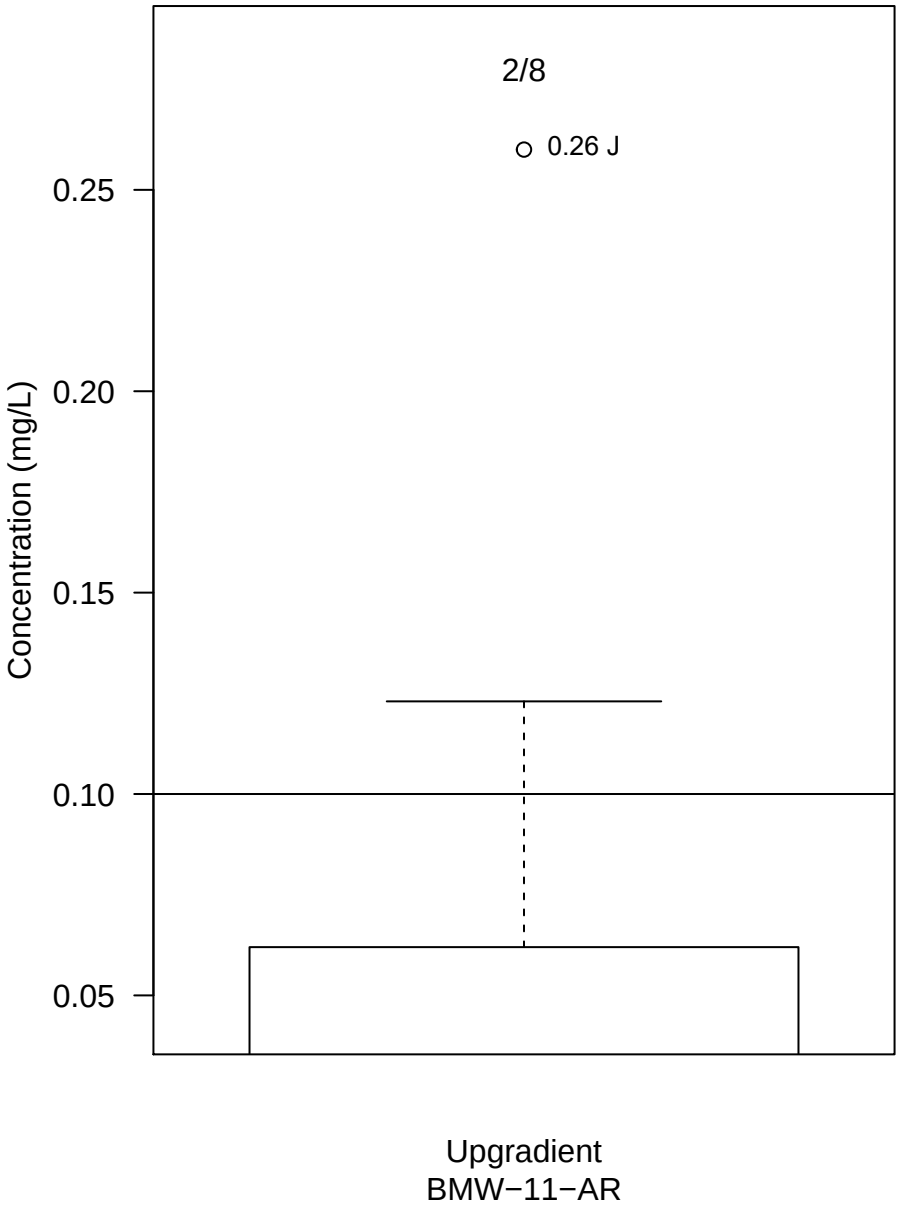


Figure C−5. Appendix III − field pH

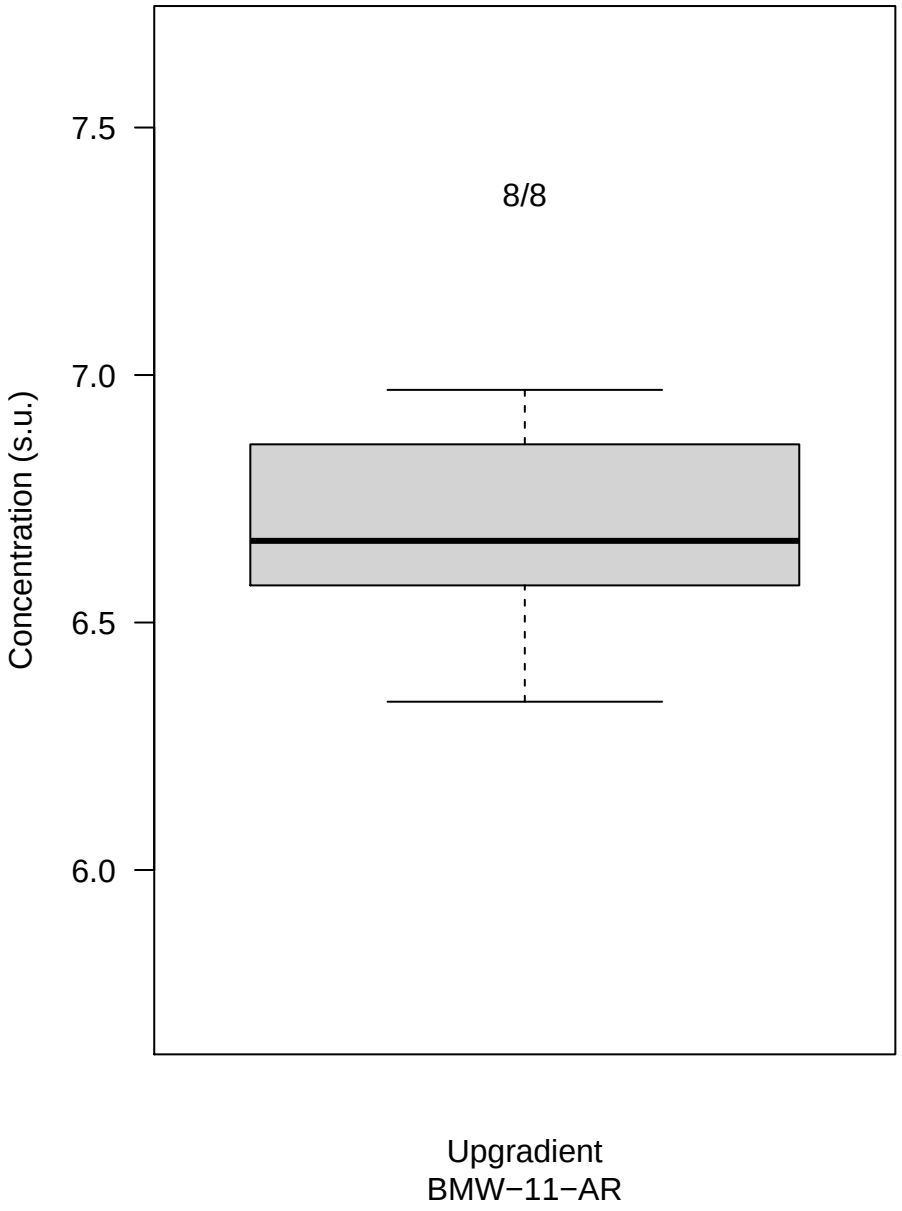


Figure C−6. Appendix III − Sulfate

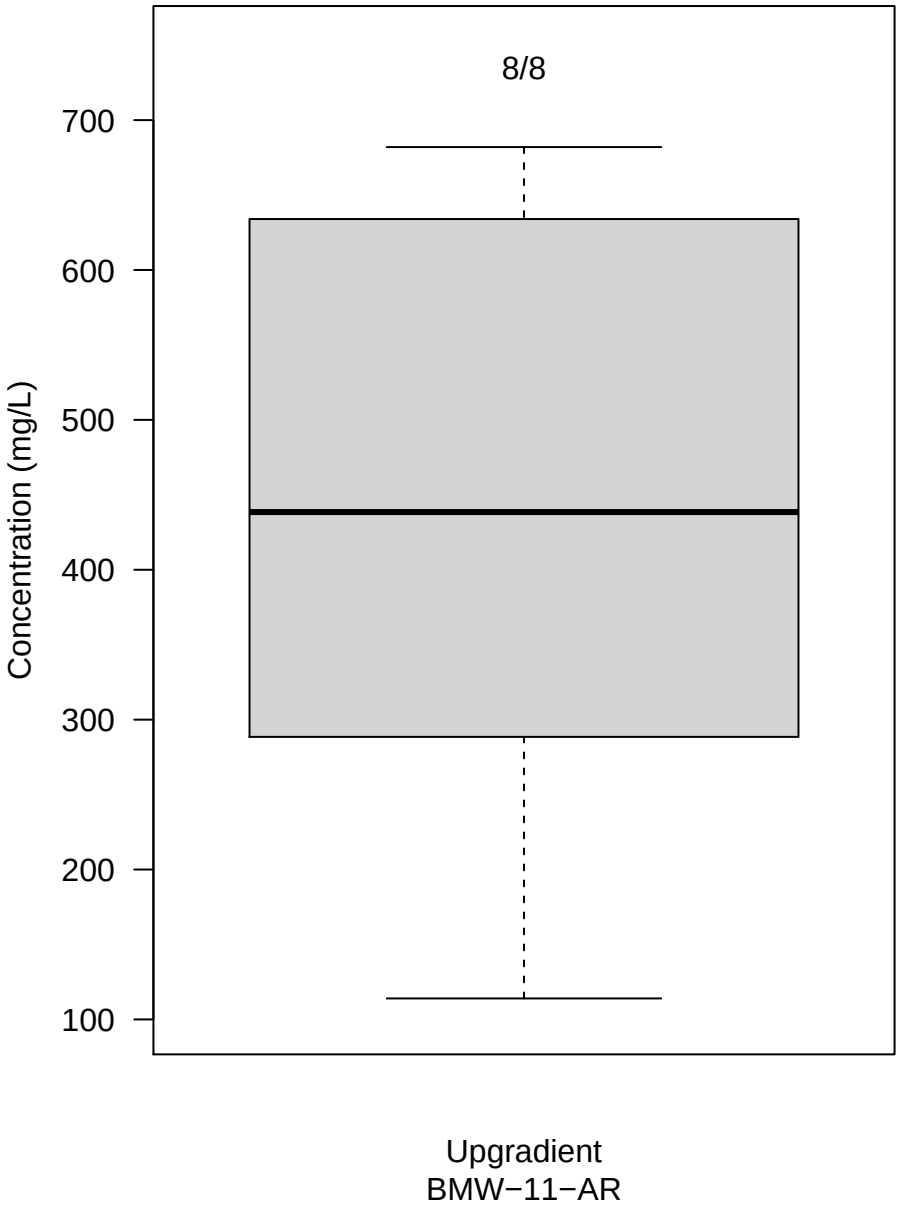


Figure C−7. Appendix III − Total Dissolved Solids

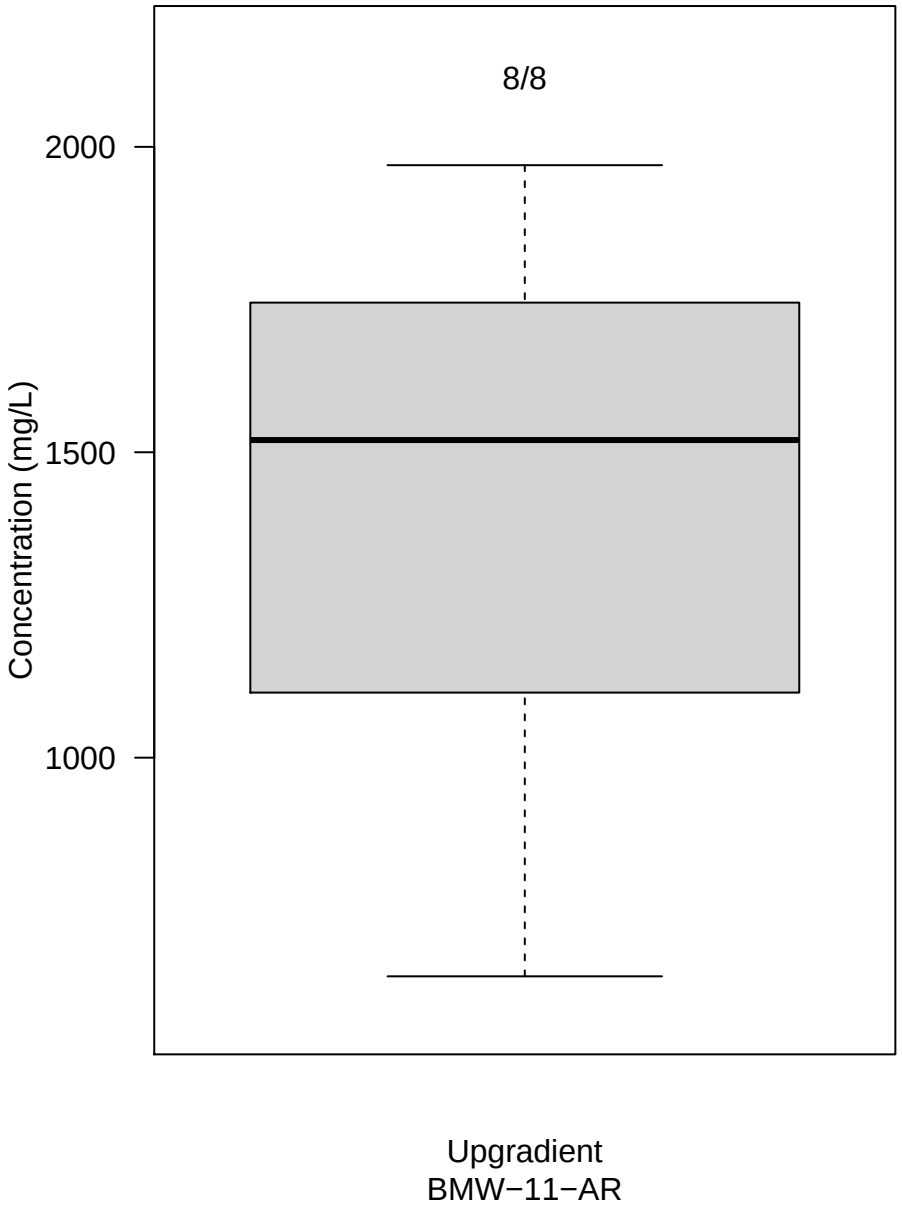


Figure C−8. Appendix IV − Arsenic

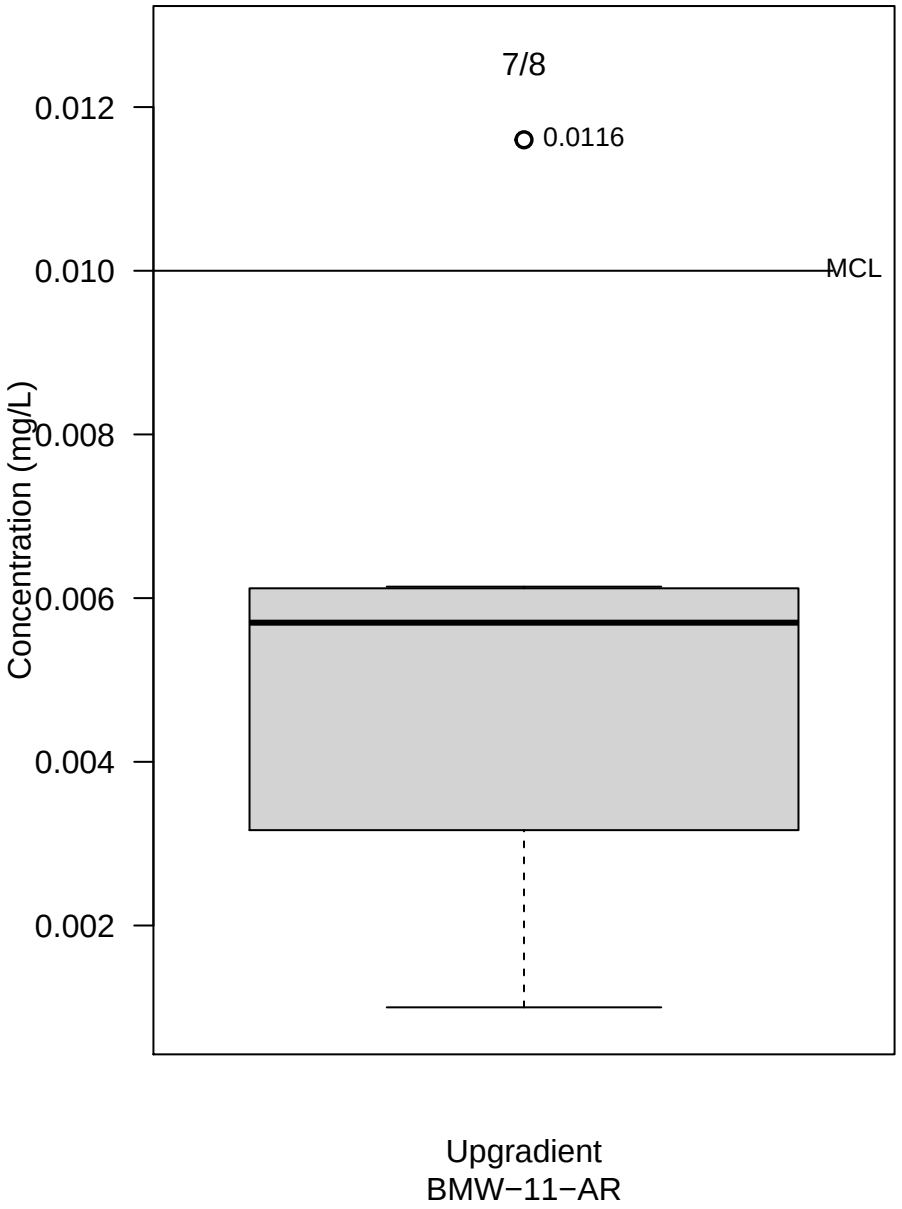


Figure C−9. Appendix IV − Barium

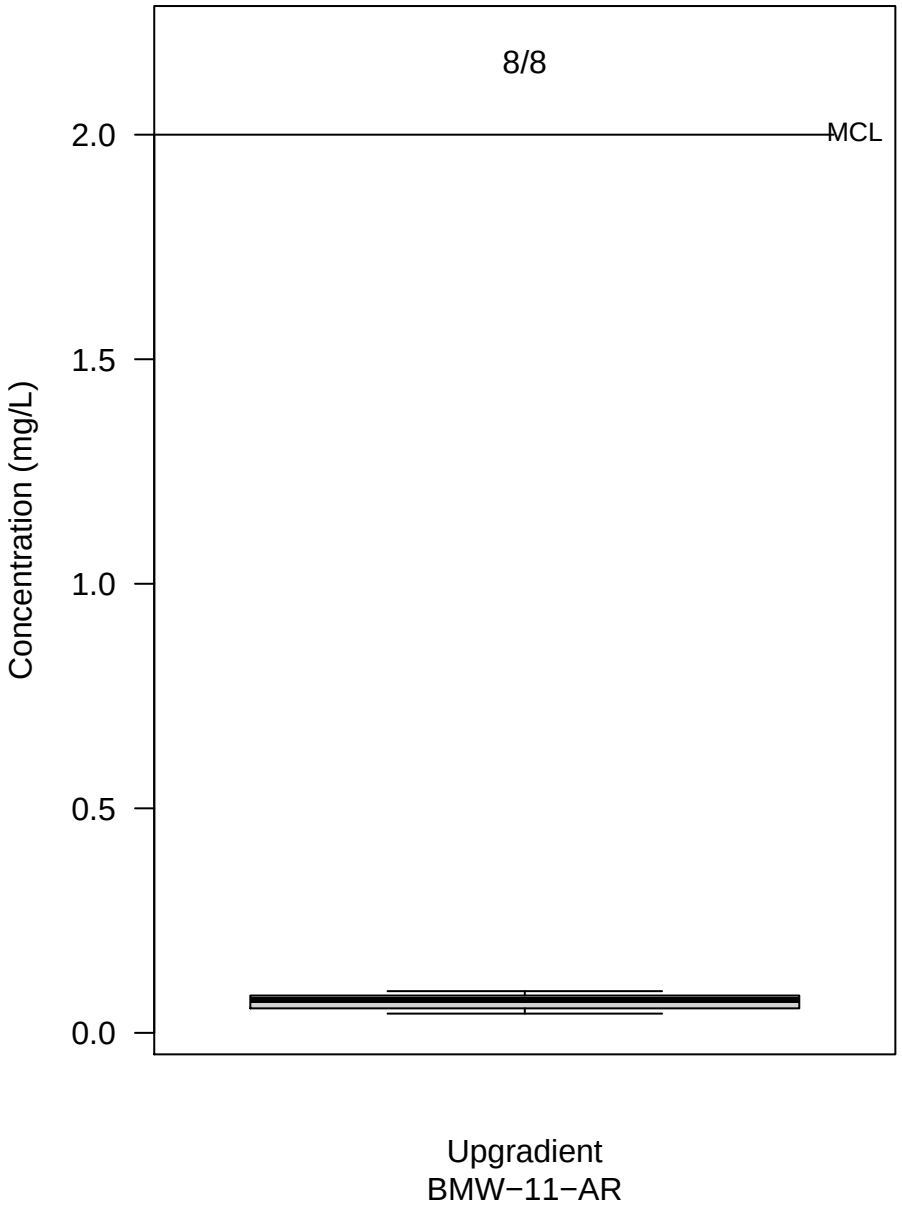


Figure C−10. Appendix IV − Cobalt

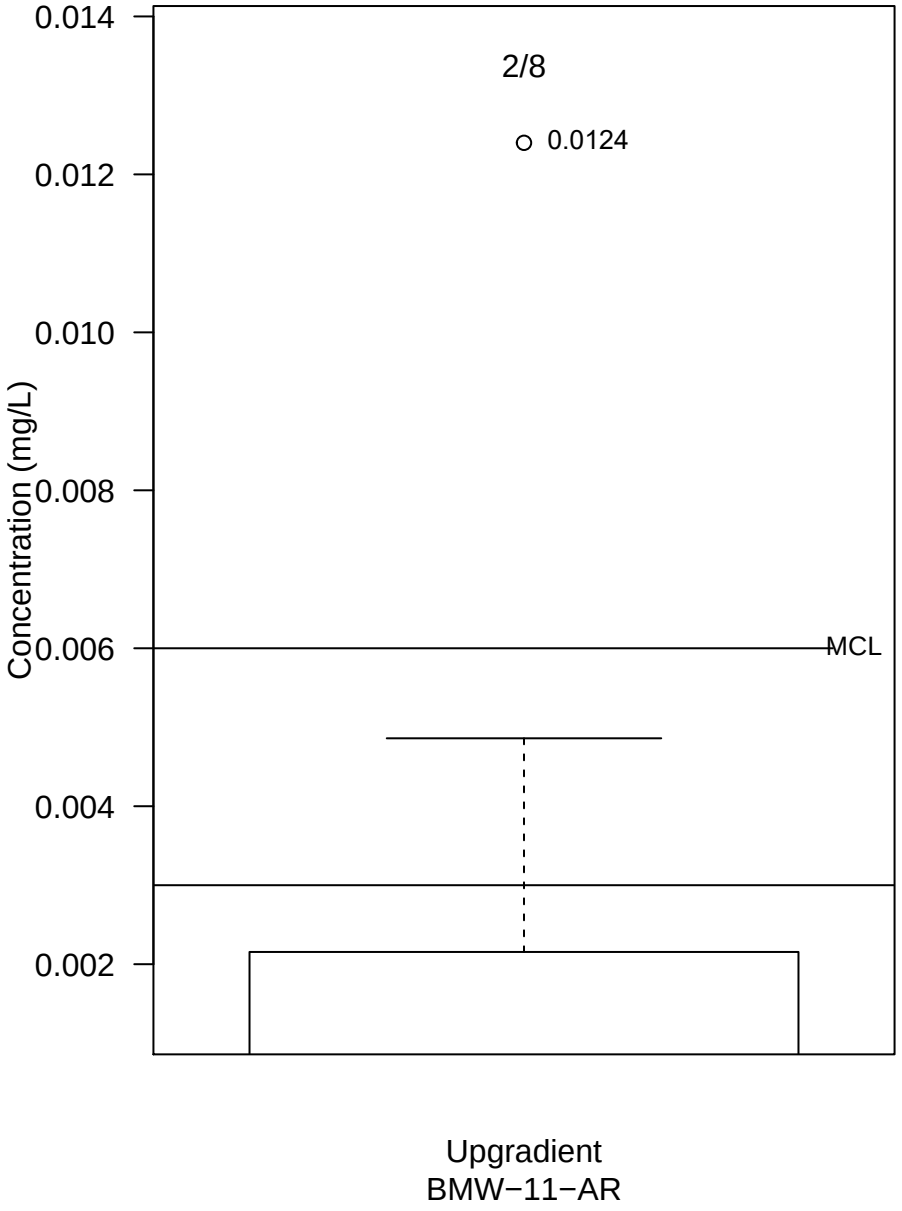


Figure C−11. Appendix IV − Fluoride

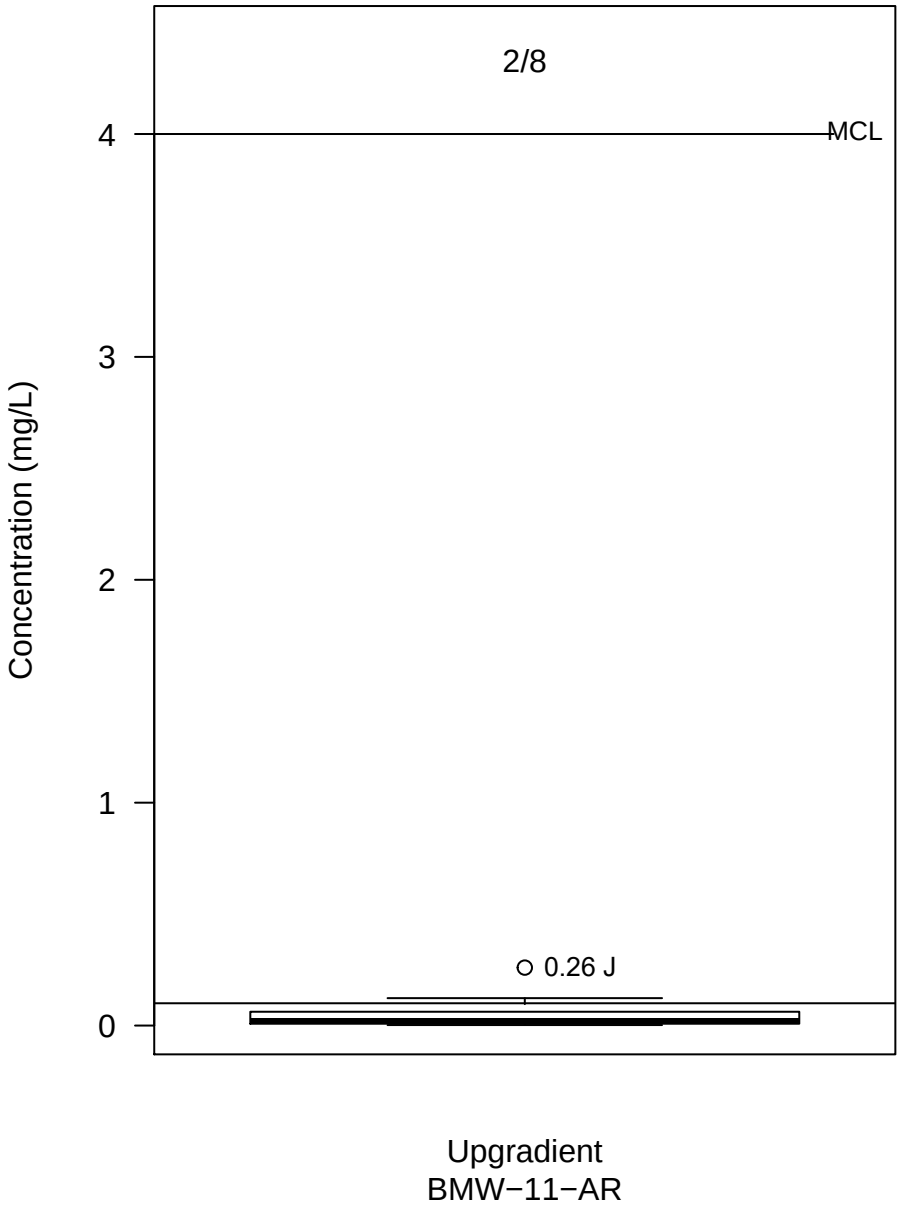


Figure C−12. Appendix IV − Lead

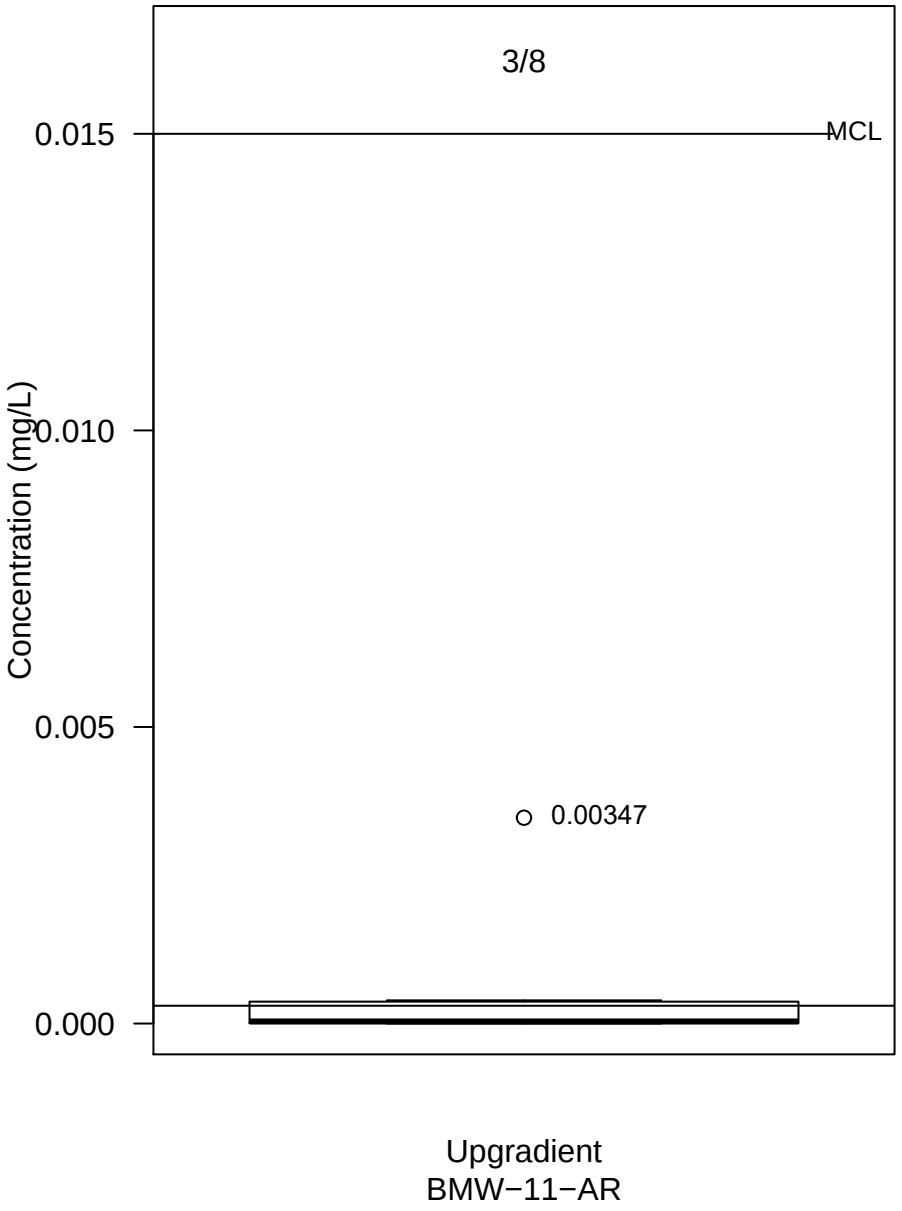


Figure C−13. Appendix IV − Lithium

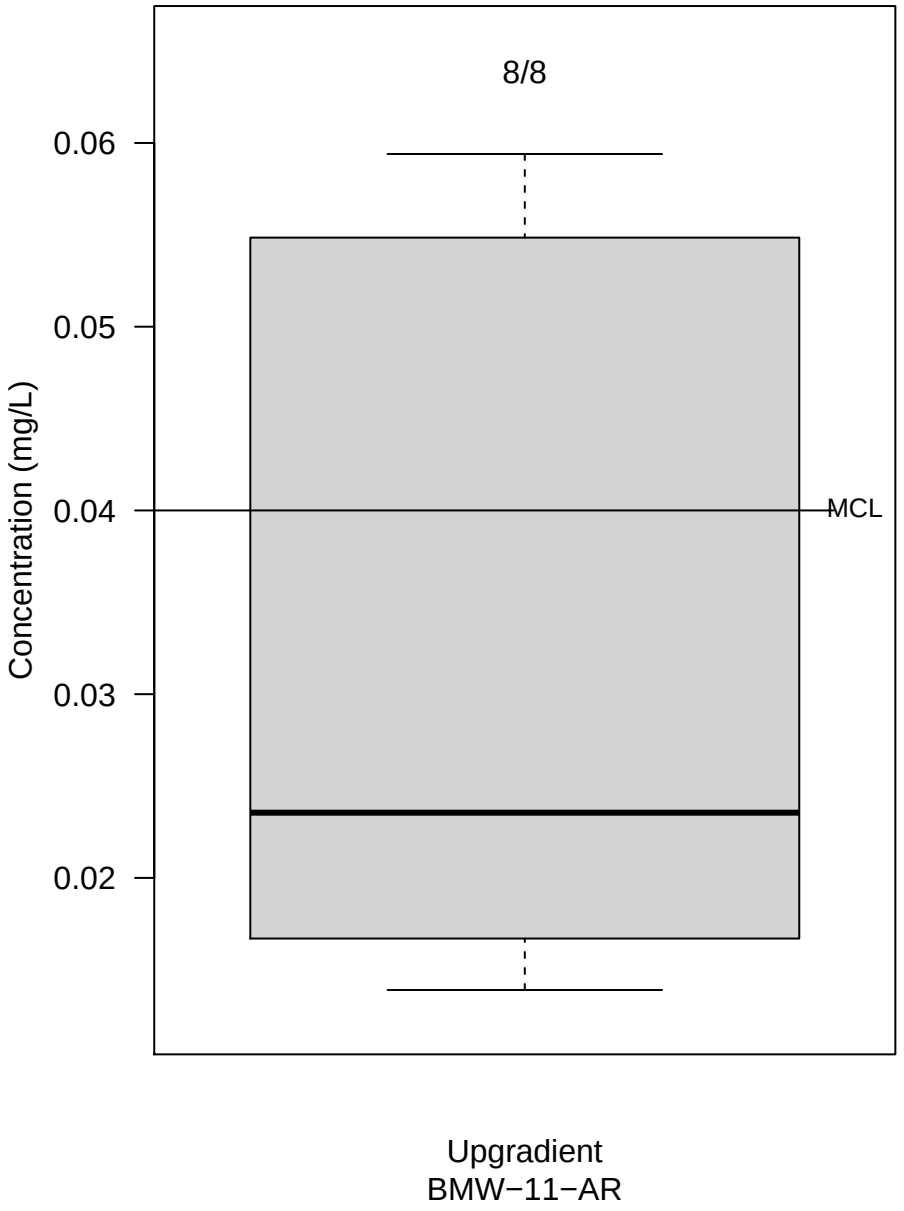


Figure C−14. Appendix IV − Molybdenum

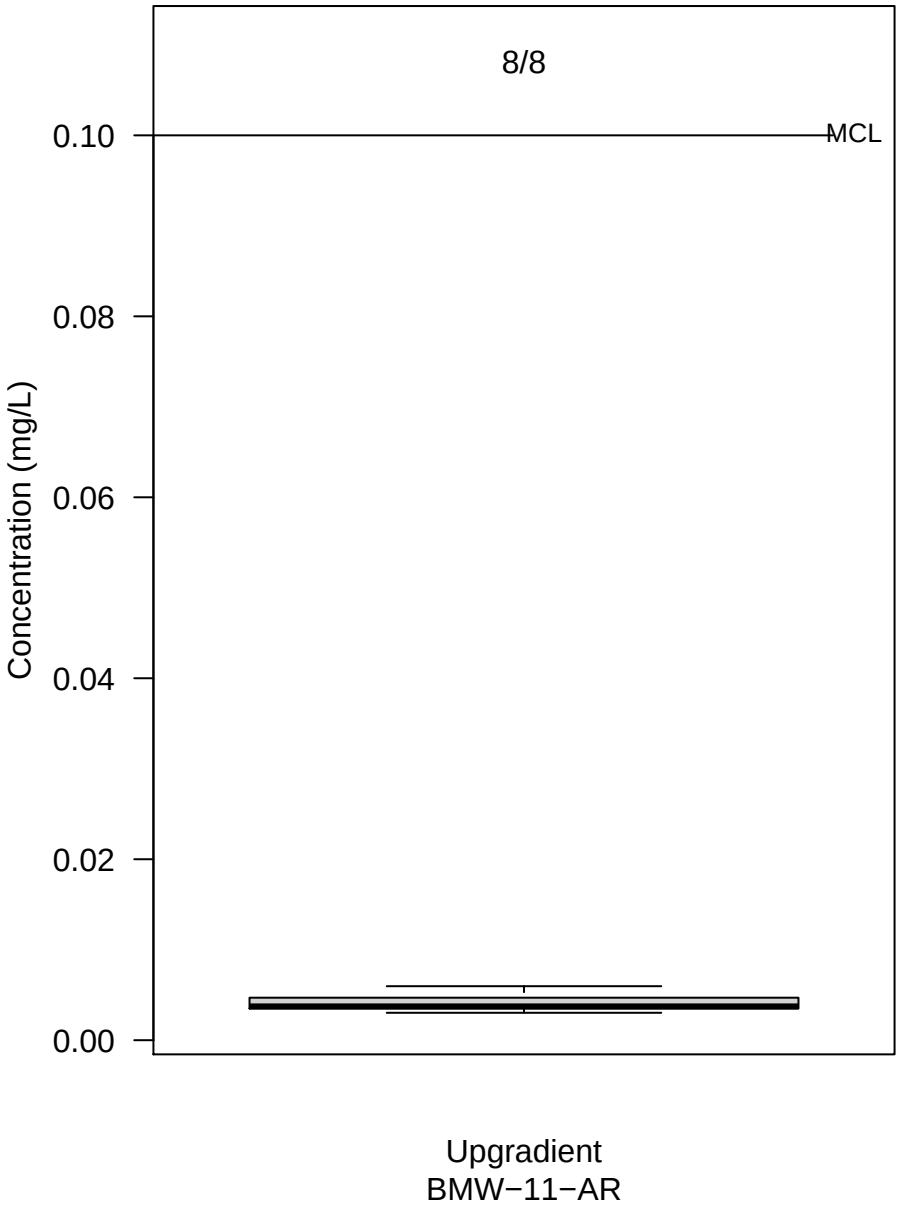
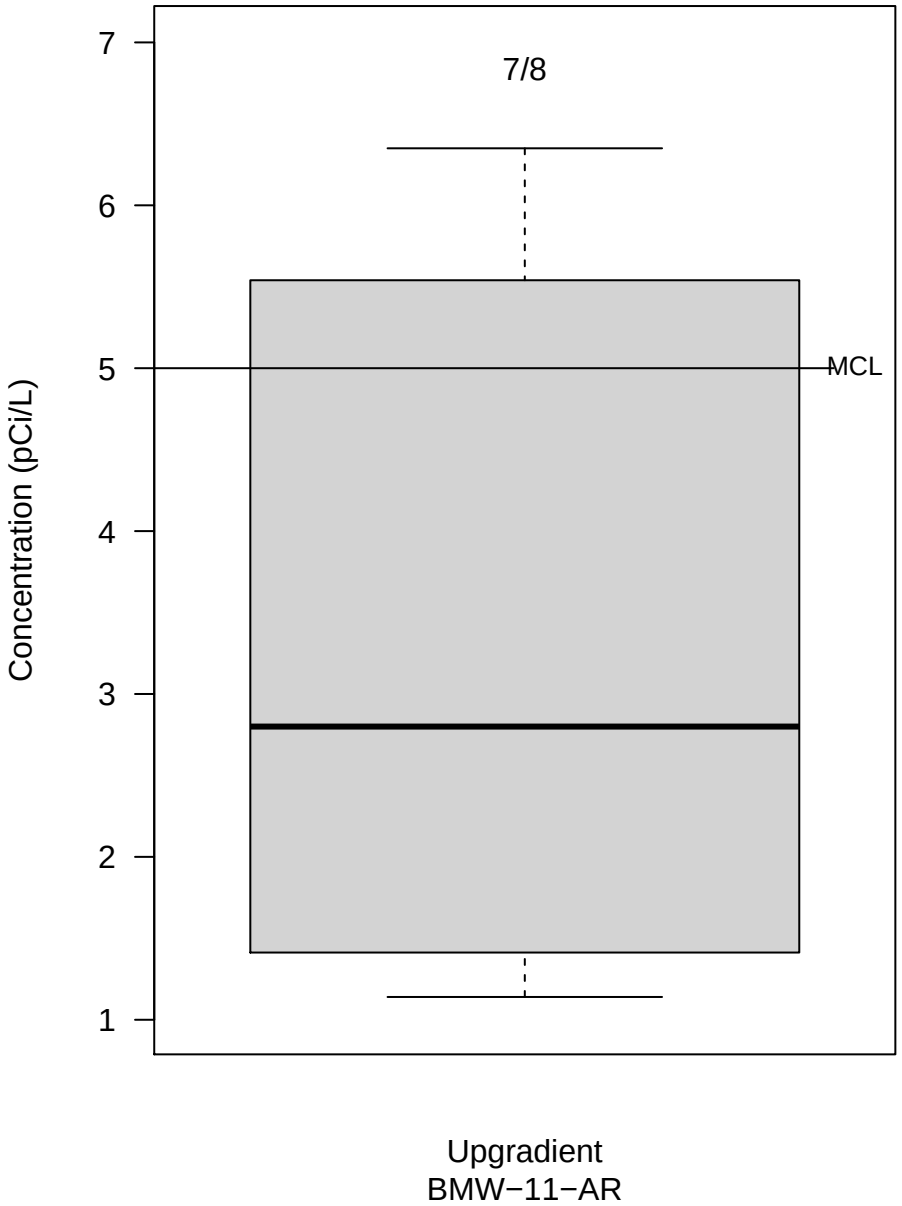
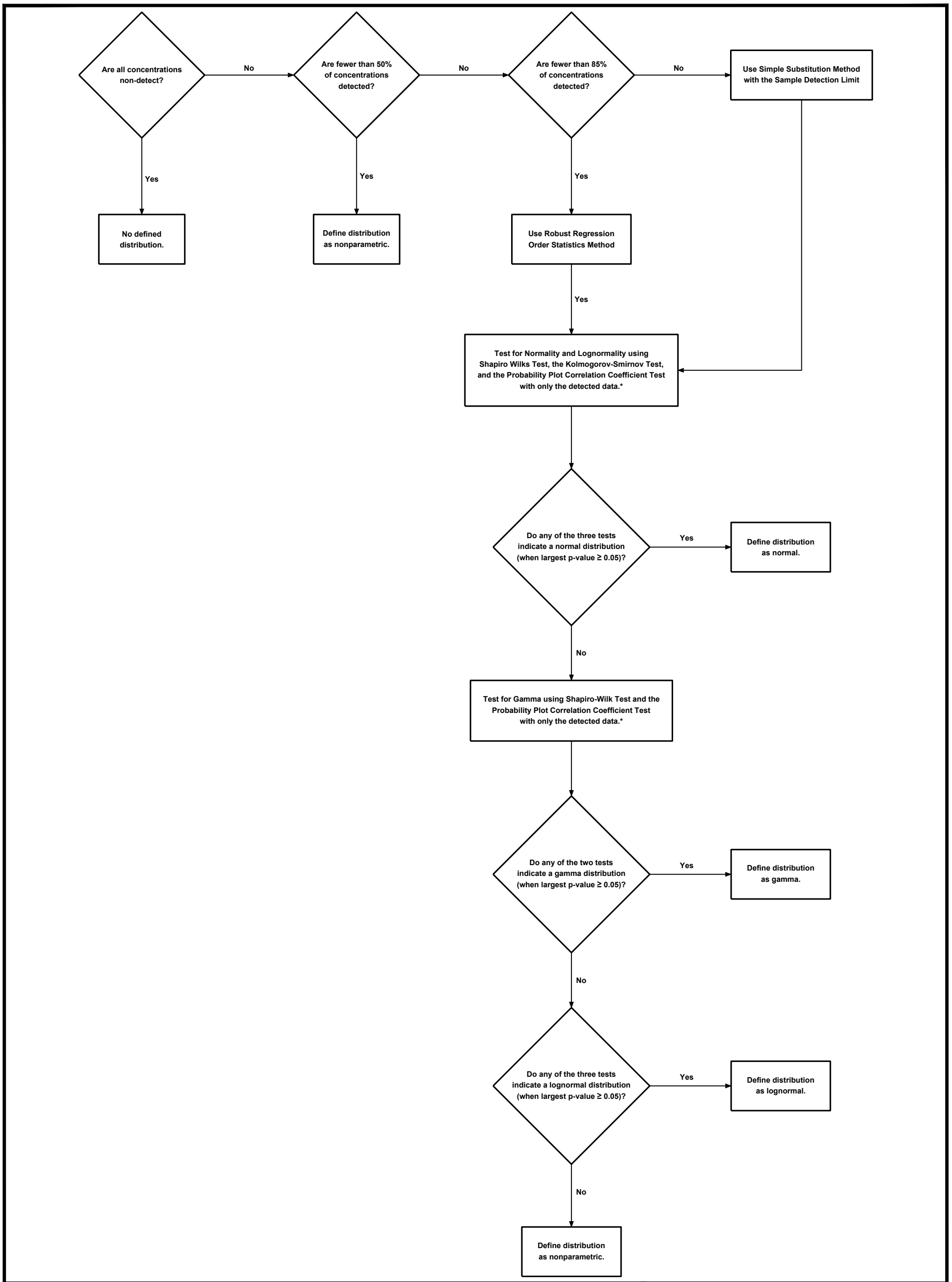


Figure C−15. Appendix IV − Radium−226 + Radium−228





Note:

* - Distributional tests can not be performed for the following cases:

1. For a data group with fewer than five detected samples, the Kolmogorov-Smirnov Test and the Probability Plot Correlation Coefficient Test can not be performed using only the detected concentrations.
2. For a data group with fewer than four detected samples, the Shapiro-Wilks Test can not be performed using only the detected concentrations.

Figure C-16

PROCESS FOR DEFINING A DISTRIBUTION FOR A DATA SET

PROJECT: 5164E	BY: AJD	REVISIONS
DATE: jAN. 2019	CHECKED: PJB	

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COAL COMBUSTION RESIDUAL RULE BACKGROUND GROUNDWATER MONITORING AND STATISTICAL ANALYSIS SUMMARY REPORT

ASH POND AREA
MARTIN LAKE STEAM ELECTRIC STATION
RUSK COUNTY, TEXAS

February 26, 2024

Prepared For:

Luminant Generation Company LLC

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B	Laboratory Analytical Reports
C	Statistical Approach to Establishing Baseline Concentrations

1.0 INTRODUCTION

Luminant Power (Luminant) operates the Martin Lake Steam Electric Station (MLSES) located approximately 5 miles southeast of Tatum, Rusk County, Texas (Figure 1). The MLSES consists of three coal-fired power generation units. Coal Combustion Residuals (CCRs) including fly ash, bottom ash and gypsum are generated as part of the MLSES unit operations. Currently, CCRs generated at the MLSES are transported off-site for beneficial reuse by third-parties or are managed by Luminant in surface impoundments located on the MLSES property or the A1 Area Landfill located approximately 2.5 miles east of the MLSES. This report discusses the Ash Pond Area (the Site), which includes the West Ash Pond (WAP), East Ash Pond (EAP), and the New Scrubber Pond, which are all located on the MLSES property.

The federal CCR Rule (Title 40 Code of Federal Regulations (CFR) Section 257 Subpart D - *Standards for the Receipt of Coal Combustion Residuals in Landfills and Surface Impoundments*) has been promulgated by the United States Environmental Protection Agency (USEPA) to regulate the management and disposal of CCRs as solid waste under Resource Conservation and Recovery Act (RCRA) Subtitle D. The final CCR Rule was published in the Federal Register on April 17, 2015. The effective date of the CCR Rule is October 19, 2015. TCEQ adopted portions of the Federal CCR Rule at Title 30 Texas Administrative Code (TAC) Chapter 352 (Texas CCR Rule). The USEPA published its final approval of the Texas CCR Rule on June 28, 2021 and the Texas CCR Rule became effective on July 28, 2021. It adopts and incorporates by reference the Federal CCR Program requirements for groundwater monitoring at 30 TAC Sections 352.901 through 352.951.

The CCR Rule establishes national minimum criteria for existing and new CCR landfills, existing and new CCR surface impoundments, and lateral expansions to landfills/impoundments. 40 C.F.R § 257.93(d) of the CCR Rule requires that the owner or operator of the CCR unit must establish background groundwater quality in a hydraulically upgradient or background well(s) for each of the constituents required in the particular groundwater monitoring program that applies to the CCR unit as determined under 40 C.F.R § 257.94(a) (*Detection Monitoring Program)* and 40 C.F.R § 257.95(a) (*Assessment Monitoring Program)*. 40 C.F.R § 257.94(b) of the CCR Rule requires that a minimum of eight independent groundwater samples from each background and downgradient well associated with a CCR unit be collected and analyzed for the constituents listed in Appendix III and IV to Part 257 no later than October 17, 2017. This report presents a

summary of the sampling and analytical activities performed to establish background groundwater quality at the Site.

1.1 Description of Ash Pond Area

The WAP, EAP, and New Scrubber Pond (collectively referred to as the “Ash Ponds”) are located immediately east of the MLSES power units (Figure 2). The WAP and EAP receive fluids from bottom ash dewatering bins and other MLSES process wastewater sources that typically include bottom ash fines. Solids present in these wastewaters settle within the ponds and are periodically dredged, dewatered, and transported to the A1 Area Landfill for disposal. The New Scrubber Pond is the primary impoundment used for recycling process wastewater from the flue-gas desulfurization (FGD) process at the MLSES. Solids present in the FGD wastewater settle within the pond and are periodically removed and managed similar to the ash solids from the WAP and EAP.

1.2 Ash Pond Area Groundwater Monitoring System

The CCR groundwater monitoring system at the Ash Pond Area consists of the following eight monitoring wells:

Upgradient Wells	Downgradient Wells
H-26	H-28
H-27	H-29
H-33	H-30
	H-31
	H-32

The CCR monitoring well locations are shown on Figure 2 and groundwater potentiometric surface maps of the Ash Pond Area from the background monitoring period are presented in Appendix A. The CCR groundwater monitoring system was certified by a professional engineer in accordance with 40 C.F.R § 257.91 of the CCR Rule (PBW, 2017).

2.0 BACKGROUND GROUNDWATER MONITORING PROGRAM

This section describes groundwater sampling and analysis procedures used in the background monitoring program.

2.1 Groundwater Sampling Procedures

Background groundwater sampling was performed from October 2015 to December 2016 in accordance with the Site Groundwater Monitoring Plan-Revision 2 (WSP Golder, 2022a). Water levels were measured in each well to the nearest 0.01-foot prior to purging or sampling the wells. The wells were purged using low-flow methods until field water quality parameters stabilized, after which a groundwater sample was collected in a laboratory-supplied container. After the samples were collected, the sample containers were placed in a cooler or similar container, preserved with ice, and delivered to the laboratory for analysis.

2.2 Analytes and Analytical Procedures

Groundwater samples collected during the background monitoring period were analyzed for the constituents listed in Appendix III and IV to Part 257, including:

Appendix III Constituents	Appendix IV Constituents
Boron	Arsenic
Calcium	Barium
Chloride	Beryllium
Fluoride	Cadmium
pH	Chromium
Sulfate	Cobalt
Total Dissolved Solids (TDS)	Fluoride
	Lead
	Lithium
	Mercury
	Molybdenum
	Selenium
	Thallium
	Radium 226 and 228 (combined)

The laboratory methods used to analyze the Appendix III and IV constituents were as follows:

Appendix III Constituents

- Boron and calcium by USEPA Method SW6020;
- Chloride, fluoride, and sulfate by USEPA Method E300;
- pH by Standard Method M4500-H + B (field measurement); and
- TDS by Standard Method M2540.

Appendix IV Constituents

- Antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, lead, lithium, molybdenum, selenium, and thallium by USEPA Method SW6020;
- Fluoride USEPA Method E300;
- Mercury by USEPA Method SW7470; and
- Radium 226 and 228 by USEPA Methods 904.0/SW9320 Modified and 903.1 Modified.

All metals analyses were reported as “total recoverable metals” in accordance with 40 C.F.R § 257.93(1) of the CCR Rule. Samples were not filtered prior to analysis.

2.3 Background Groundwater Monitoring Sampling Results

Eight background groundwater monitoring events were performed using the monitoring well system from October 2015 to December 2016. The laboratory analytical reports for the background samples are presented in Appendix B and the background sample data are summarized in Appendix C, Table C-1 (Appendix III) and Table C-2 (Appendix IV).

2.4 Establishing Background Assessment Levels

The following statistical evaluation approach was selected to develop background groundwater quality assessment levels for the Site:

- Use of interwell data evaluations, which compare new sample data to data from upgradient or background monitoring wells.

- Use of upper prediction limits (UPLs) to develop site-specific background concentrations for all Appendix III and Appendix IV constituents. This approach is a common statistical method used to evaluate groundwater compliance for Subtitle D landfill facilities and is one of the approved options for groundwater quality data statistical evaluations under the CCR Rule.

Documentation on the statistical procedures used to establish background UPLs is presented in Appendix C.

3.0 DETECTION AND ASSESSMENT MONITORING DATA EVALUATION PROCEDURES

Statistical analysis of groundwater monitoring data is required as part of detection monitoring and assessment monitoring under 40 C.F.R § 257.93 of the CCR Rule, and as adopted by the state of Texas at 30 T.A.C. § 352.931. The CCR Rule provides several options for statistically evaluating groundwater data. The owner or operator of the CCR unit must select one of the following statistical methods specified in paragraphs (f)(1) through (5) of 40 C.F.R § 257.93 to evaluate groundwater monitoring data for each specified constituent:

(1) A parametric analysis of variance followed by multiple comparison procedures to identify statistically significant evidence of contamination. The method must include estimation and testing of the contrasts between each compliance well's mean and the background mean levels for each constituent.

(2) An analysis of variance based on ranks followed by multiple comparison procedures to identify statistically significant evidence of contamination. The method must include estimation and testing of the contrasts between each compliance well's median and the background median levels for each constituent.

(3) A tolerance or prediction interval procedure, in which an interval for each constituent is established from the distribution of the background data and the level of each constituent in each compliance well is compared to the upper tolerance or prediction limit.

(4) A control chart approach that gives control limits for each constituent.

(5) Another statistical test method that meets the performance standards of paragraph (g) of this section.

The following statistical evaluation approaches were selected to demonstrate groundwater compliance for the Ash Pond Area under the CCR Rule:

- Use of interwell data evaluations, which compare new sample data to data from upgradient or background monitoring wells.
- Use of UPLs to develop site-specific background concentrations for all Appendix III and Appendix IV constituents. This approach is a common statistical method used to evaluate groundwater compliance for Subtitle D landfill facilities and is one of the approved options for groundwater quality data statistical evaluations under the CCR Rule.
- After every detection monitoring event, Appendix III constituent concentrations from each well are compared to background UPLs to ascertain if a statistically significant increase above background exists. Background UPLs are based on a 1-of-2 resampling

approach, meaning that if one or more constituent concentrations in a compliance well are above their respective background concentration, a resample can be collected to validate or invalidate the background concentration exceedance.

- If in assessment monitoring, the 95% lower confidence limit of the mean (LCL) is calculated after each assessment monitoring event for each Appendix IV constituent. The data set used to calculate LCLs is based on current and historical constituent concentrations. A statistically significant increase over the Groundwater Protection Standard (GWPS) has occurred at a CCR unit when the LCL for at least one assessment monitoring constituent at a well is greater than the appropriate GWPS. Development of the GWPSs is discussed in Section 3.2 and statistical procedures used to develop LCLs are discussed in Appendix C.

The selected statistical evaluation procedures conform with the CCR Rule requirements, as well as the Statistical Analysis Plan for the Site (WSP Golder, 2022b), USEPA's *Unified Guidance: Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities* (USEPA, 2009), and the American Society for Testing and Materials (ASTM) standard D6312-17, *Developing Appropriate Statistical Approaches for Groundwater Detection Monitoring Programs at waste Disposal Facilities* (ASTM, 2017).

3.1 Detection Monitoring Data Evaluation

Background UPLs are based on a 1-of-2 resampling approach, meaning that if zero or one concentration measurements from a series of two independent samples collected from a well do not exceed the appropriate UPL, then a statistically significant increase over background has not occurred at the CCR unit. This conclusion will be reached if the data indicate either of the following:

- All detection monitoring constituent concentrations in a compliance well are less than or equal to their respective background UPL; or

- At least one detection monitoring constituent concentration in a well is above the respective background UPL. If this occurs, the well or wells with constituent concentration(s) above the background UPL(s) may be resampled and analyzed for the detection monitoring constituent(s) with exceedances. If the resample indicates that the target detection monitoring constituent concentration(s) in the well or wells is less than or equal to their respective background UPL(s), then it can be concluded that a statistically significant increase over background for all detection monitoring constituents has not occurred since concentrations in one sample of the two independent samples do not exceed the appropriate background UPL(s).

If the groundwater monitoring data indicate that a statistically significant increase over background has not occurred at the CCR wells, then detection monitoring at all CCR wells will

continue on a semi-annual basis.

If one or more detection monitoring constituent concentration in any well is above the respective background UPL in both the original detection monitoring sample and the resample, then a statistically significant increase over background for the target detection monitoring constituents can be concluded. In accordance with 40 C.F.R. § 257.94(e), if a statistically significant increase is indicated, within 90 days the owner/operator shall:

- Establish an assessment monitoring program, or
- Demonstrate that a source other than the CCR unit caused the statistically significant increase over the background UPL for a constituent, or that the statistically significant increase resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. Per 30 TAC § 352.941, in making an alternative source demonstration, the owner or operator must:
    - Notify the TCEQ executive director, and any local pollution agency with jurisdiction that has requested to be notified, in writing within 14 days that the owner or operator intends to make an alternative source demonstration; and
    - Within 90 days of making a determination of a statistically significant increase over the background value for any Appendix III constituent, submit a report prepared and certified in accordance with 30 TAC § 352.4 (relating to Engineering and Geoscientific Information) to the TCEQ executive director and any local pollution agency with jurisdiction that has requested to be notified, demonstrating that a source other than a CCR unit caused the statistically significant increase or that the statistically significant increase resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality.

The Appendix III detection monitoring prediction limits are summarized in Table 1. Documentation on the statistical procedures used to establish background groundwater quality prediction limits is presented in Appendix C.

3.2 Assessment Monitoring Data Evaluation

Assessment monitoring will be performed at a CCR unit's groundwater monitoring system after a statistically significant increase over background has been confirmed for one or more of the detection monitoring constituents and the statistically significant increase cannot be attributed to a source other than the CCR unit. Within 90 days of obtaining the results from the initial assessment monitoring sampling event, GWPSs will be established for all Appendix IV assessment monitoring constituents as follows:

- For constituents for which an MCL has been established, the GWPS is the highest of the MCL, UPL, or laboratory reporting limit for each constituent; or

- For constituents for which an MCL has not been established, the GWPS is the higher of the UPL, laboratory reporting limit, or alternative GWPS (as applicable for cobalt, lead, lithium, and molybdenum).

The GWPS for each Appendix IV constituent is presented in Table 2.

The 95% LCL for each Appendix IV constituent concentration for each well is compared to the GWPS established for the constituent to ascertain if a statistically significant increase above the GWPS does or does not exist. A statistically significant increase is indicated if the LCL exceeds the GWPS. Additional information on the development of Appendix IV constituent LCLs is provided in Appendix C.

In accordance with 40 C.F.R. § 257.95(g)(3), if a statistically significant increase over GWPSs for any Appendix IV assessment monitoring constituent is confirmed, within 90 days of the initial assessment monitoring event, the owner/operator will either:

- Initiate an assessment of corrective measures for the CCR unit in accordance with 40 C.F.R. § 257.96; or

- Demonstrate that a source other than the CCR unit caused the statistically significant level over the background UPL for a constituent, or that the statistically significant increase resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. Per 30 TAC § 352.951, in making an alternative source demonstration, the owner or operator must:

    - Notify the TCEQ executive director, and any local pollution agency with jurisdiction that has requested to be notified, in writing within 14 days that the owner or operator intends to make an alternative source demonstration; and

    - Within 90 days of making a determination of a statistically significant increase over the GWPS of any Appendix IV constituent, submit a report prepared and certified in accordance with 30 TAC § 352.4 (relating to Engineering and Geoscientific Information) to the TCEQ executive director, and any local pollution agency with jurisdiction that has requested to be notified, demonstrating that a source other than a CCR unit caused the exceedance or that the exceedance resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality.

If one or more Appendix IV assessment monitoring constituents are detected at statistically significant levels above their respective GWPS in any sampling event, and if a source other than

the CCR unit cannot be demonstrated to have caused the exceedance, the nature and extent of the release should be further characterized as follows in accordance with 40 C.F.R § 257.95(g)(1):

- Install additional monitoring wells necessary to define the contaminant plume(s);
- Collect data on the nature and estimated quantity of material released including specific information on the Appendix IV assessment monitoring constituents and the levels at which they are present in the material released;
- Install at least one additional monitoring well at the facility boundary in the direction of contaminant migration and sample this well for all Appendix III detection monitoring parameters and for those Appendix IV assessment monitoring constituents that have been detected as part of assessment monitoring. This monitoring must be performed on at least a semi-annual basis thereafter; and
- Sample all wells in accordance with 40 C.F.R § 257.95(d)(1) to characterize the nature and extent of the release.

4.0 REFERENCES

ASTM, 2017. Standard Guide for Developing Appropriate Statistical Approaches for Groundwater Detection Monitoring Programs at Waste Disposal Facilities - D6312-17.

PBW, 2017. CCR Groundwater Monitoring System Certification – Martin Lake Steam Electric Station, Ash Pond Area, Rusk County, Texas, August.

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WSP Golder, 2022a. Groundwater Monitoring Plan – Revision 2, Martin Lake Steam Electric Station – Ash Pond Area, Rusk County, Texas.

WSP Golder, 2022b. Statistical Analysis Plan – Revision 1, Martin Lake Steam Electric Station – Ash Pond Area, Rusk County, Texas.

SIGNATURE PAGE

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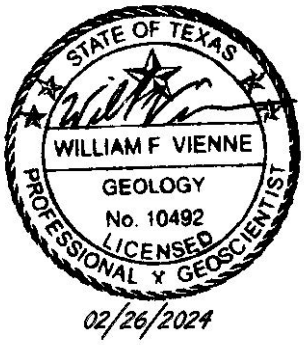


TABLES

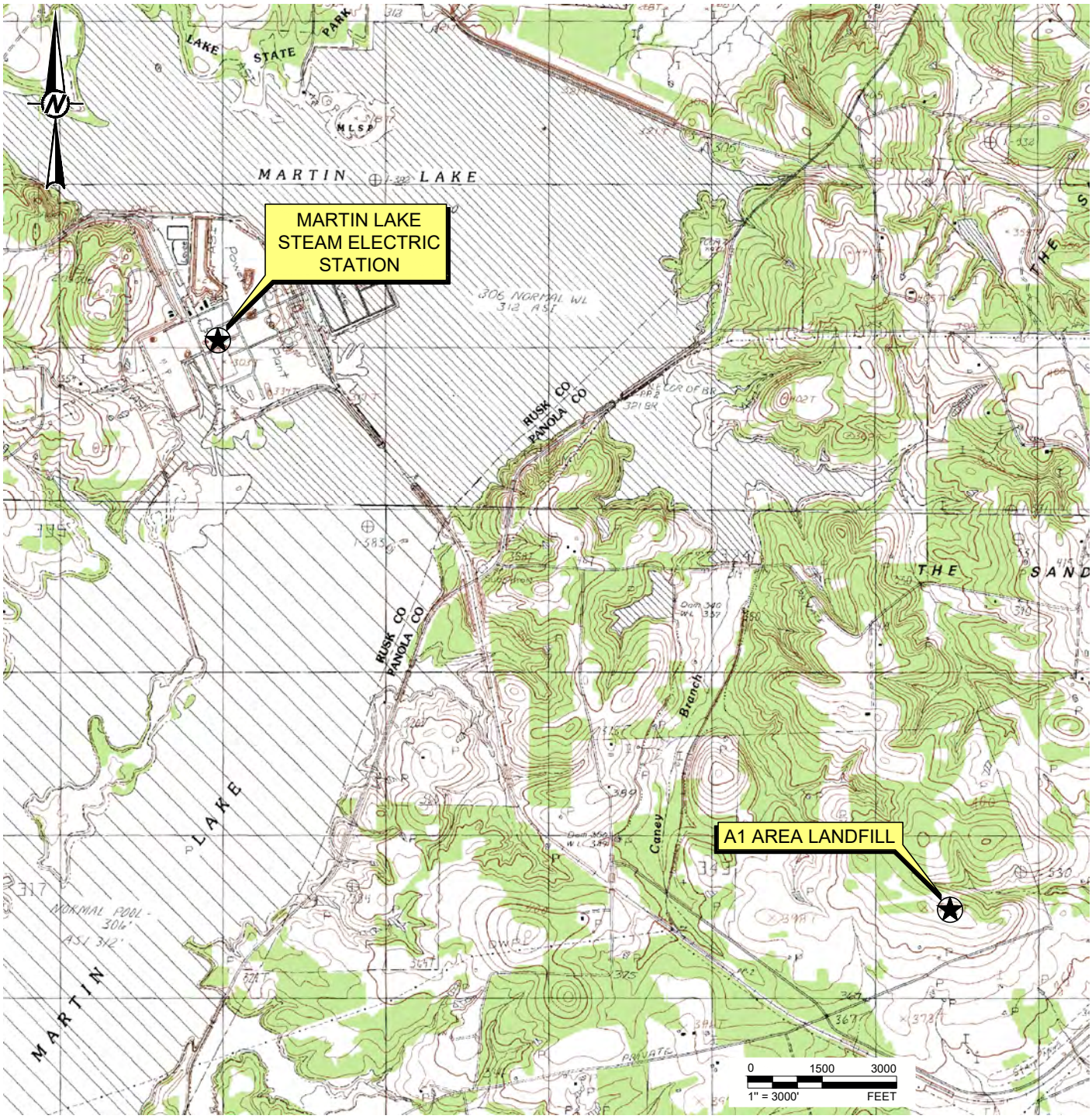
Table 1
Appendix III Background Statistical Values
MLSES Ash Pond Area

Parameter	Statistical Background Value
Boron (mg/L)	0.60
Calcium (mg/L)	57
Chloride (mg/L)	150
Fluoride (mg/L)	0.40
field pH (s.u.)	4.6 7.6
Sulfate (mg/L)	370
Total Dissolved Solids (mg/L)	1,100

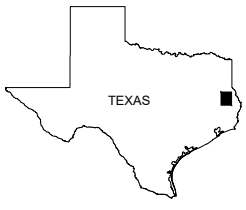
Table 2
Appendix IV Analytical Results
MLSES Ash Pond Area

Parameter	Groundwater Protection Standard
Antimony (mg/L)	0.0060
Arsenic (mg/L)	0.010
Barium (mg/L)	2.0
Beryllium (mg/L)	0.0040
Cadmium (mg/L)	0.0050
Chromium (mg/L)	0.10
Cobalt (mg/L)	0.056
Fluoride (mg/L)	4.0
Lead (mg/L)	0.015
Lithium (mg/L)	0.18
Mercury (mg/L)	0.0020
Molybdenum (mg/L)	0.10
Selenium (mg/L)	0.050
Thallium (mg/L)	0.0020
Radium 226+228 (pCi/L)	5.0

FIGURES



REFERENCE(S)
BASE MAP TAKEN FROM TNRIS.GOV, TATUM, TX 7.5 MIN. USGS QUADRANGLE DATED 1983.



QUADRANGLE LOCATION

LUMINANT
MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

Figure 1
SITE LOCATION MAP

PROJECT: 23643.01	BY: SLB	DATE: 12/14/2023	CHECKED: WV

Bullock, Bennett & Associates, LLC
Engineering and Geoscience
Texas Registrations: Engineering F-8542, Geoscience 50127

LEGEND

- DOWNGRADIENT CCR MONITORING WELL
- UPGRADIENT CCR MONITORING WELL

REFERENCE(S)
BASE MAP TAKEN FROM GOOGLE EARTH IMAGERY DATED 4/6/17.

LUMINANT
MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

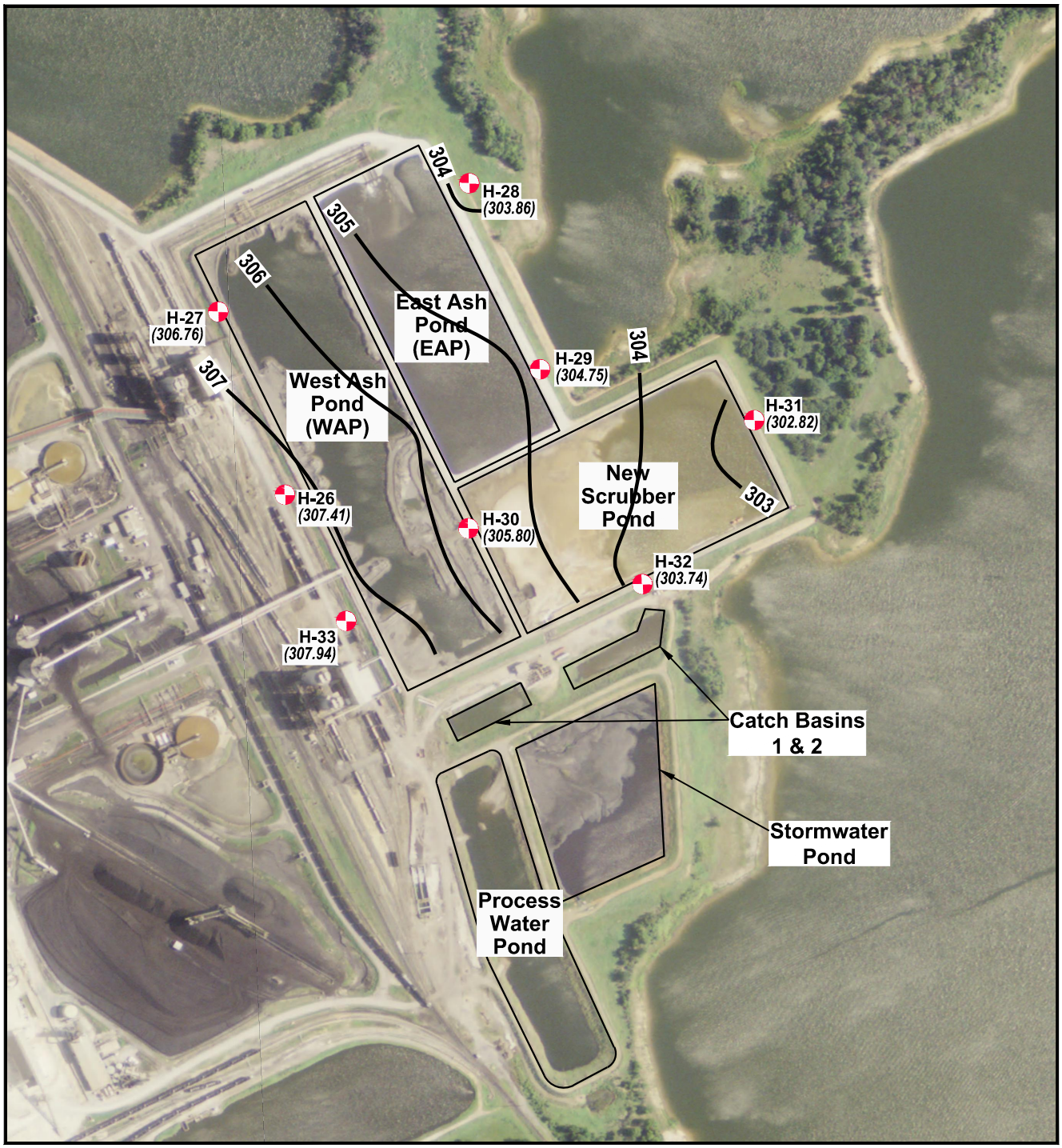
Figure 2
ASH POND AREA CCR GROUNDWATER MONITORING NETWORK

PROJECT: 23643.01	BY: SLB	DATE: 12/14/2023	CHECKED: WV

Bullock, Bennett & Associates, LLC
Engineering and Geoscience
Texas Registrations: Engineering F-8542, Geoscience 50127

APPENDIX A

Groundwater Potentiometric Surface Maps



EXPLANATION

- CCR Monitoring Well Location
- (308.70) Groundwater Potentiometric Surface (ft. MSL)
- 308 Groundwater Potentiometric Surface Contour (C.I. = 1 ft.)

N

Scale in Feet

0 250 500

SOURCE: Imagery from www.tnris.gov, Rusk County, aerial photographs, 2012.

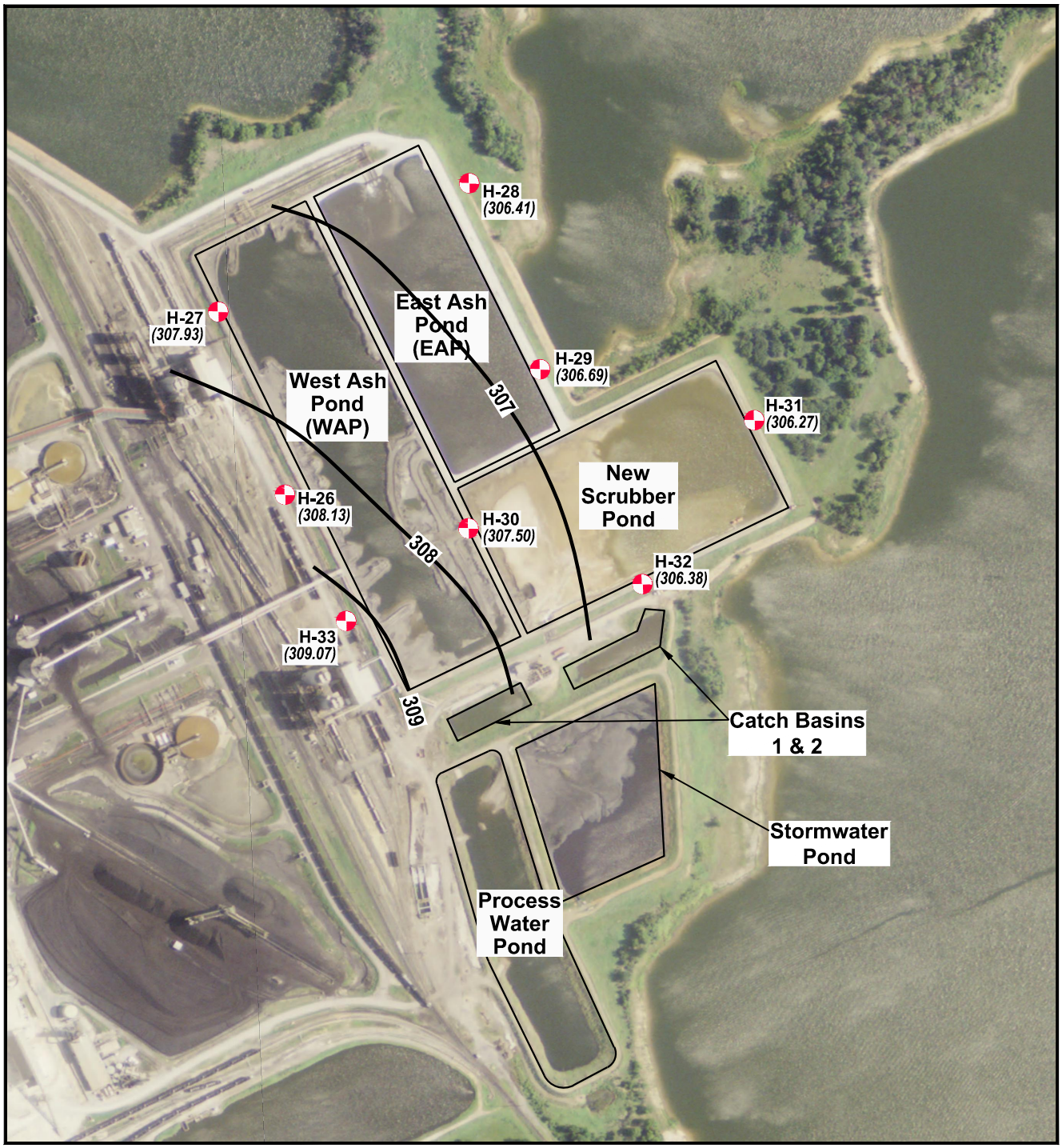
MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

Figure 1

ASH POND AREA - GROUNDWATER ZONE B POTENTIOMETRIC SURFACE MAP - OCTOBER 21-22, 2015

PROJECT: 5164B	BY: AJD	REVISIONS
DATE: SEPT., 2017	CHECKED: PJB	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS



EXPLANATION

- CCR Monitoring Well Location
- (308.70) Groundwater Potentiometric Surface (ft. MSL)
- 308 Groundwater Potentiometric Surface Contour (C.I. = 1 ft.)

N

Scale in Feet

0 250 500

SOURCE: Imagery from www.tnris.gov, Rusk County, aerial photographs, 2012.

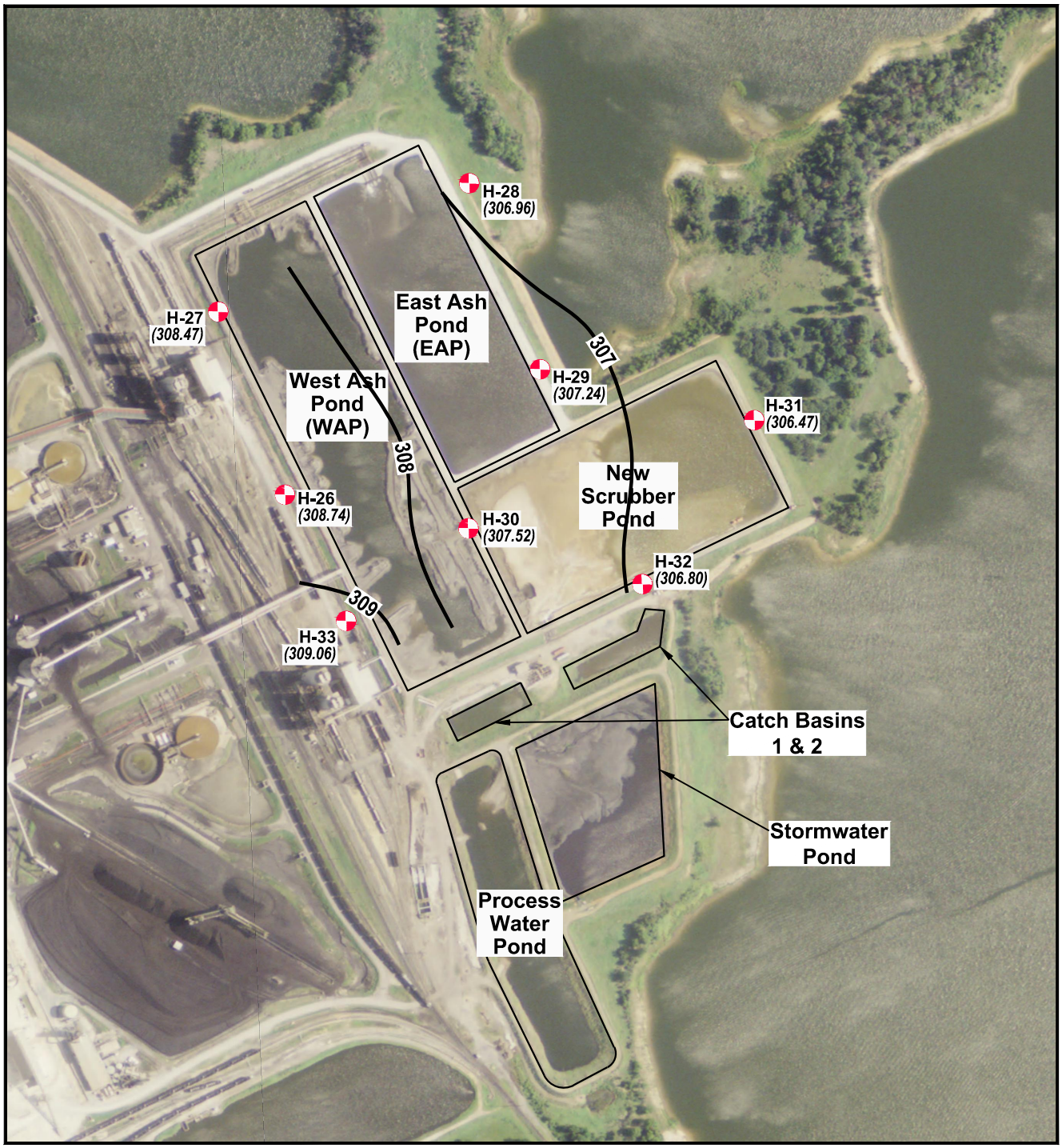
MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

Figure 2

ASH POND AREA - GROUNDWATER ZONE B POTENTIOMETRIC SURFACE MAP - DECEMBER 14, 2015

PROJECT: 5164B	BY: AJD	REVISIONS
DATE: SEPT., 2017	CHECKED: PJB	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS



EXPLANATION

- CCR Monitoring Well Location
- (308.70) Groundwater Potentiometric Surface (ft. MSL)
- 308 Groundwater Potentiometric Surface Contour (C.I. = 1 ft.)

N

Scale in Feet

0 250 500

SOURCE: Imagery from www.tnris.gov, Rusk County, aerial photographs, 2012.

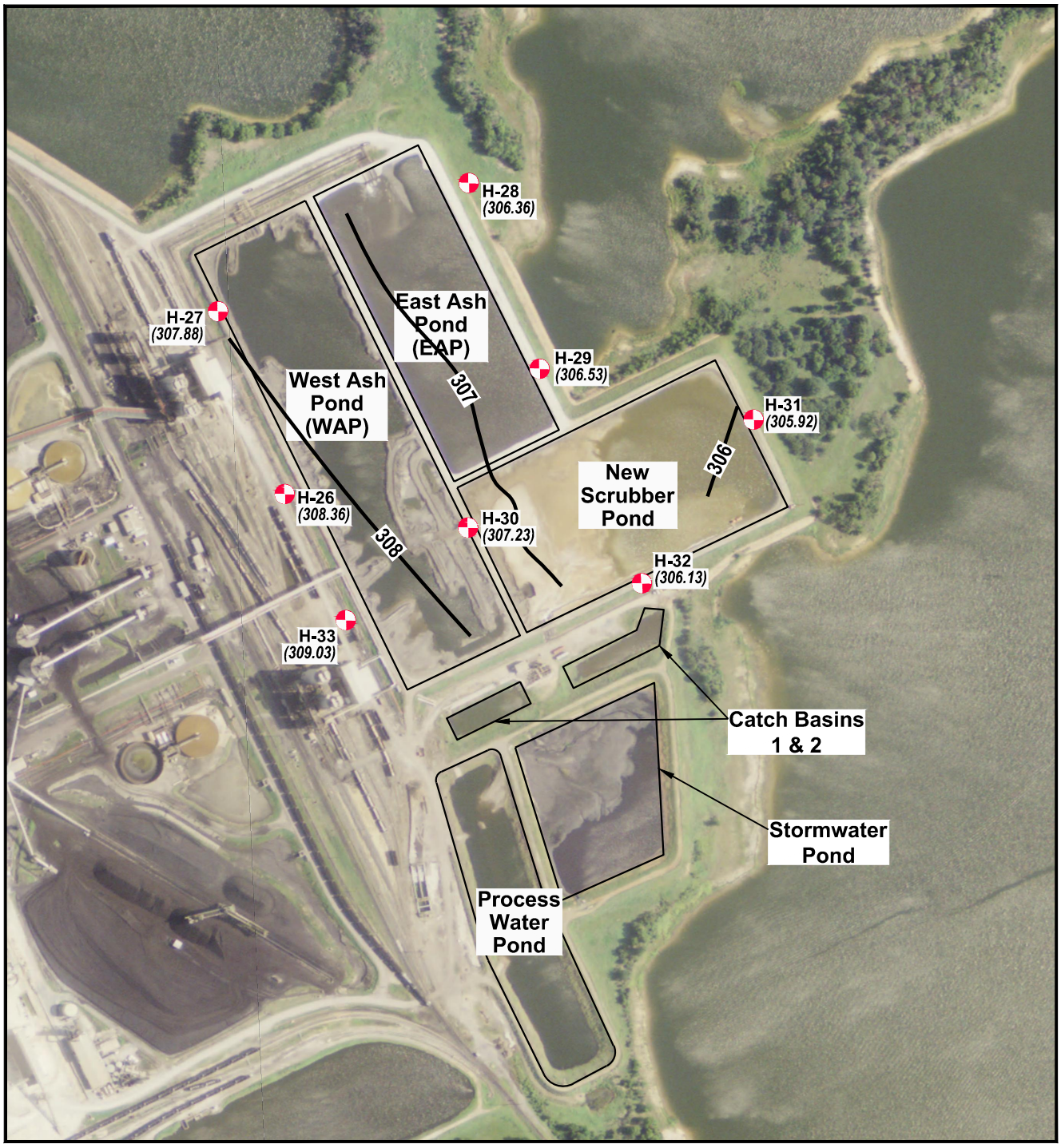
MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

Figure 3

ASH POND AREA - GROUNDWATER ZONE B POTENTIOMETRIC SURFACE MAP - FEBRUARY 25, 2016

PROJECT: 5164B	BY: AJD	REVISIONS
DATE: SEPT., 2017	CHECKED: PJB	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS



EXPLANATION

- CCR Monitoring Well Location
- (308.70) Groundwater Potentiometric Surface (ft. MSL)
- 308 Groundwater Potentiometric Surface Contour (C.I. = 1 ft.)

N

Scale in Feet

0 250 500

SOURCE: Imagery from www.tnris.gov, Rusk County, aerial photographs, 2012.

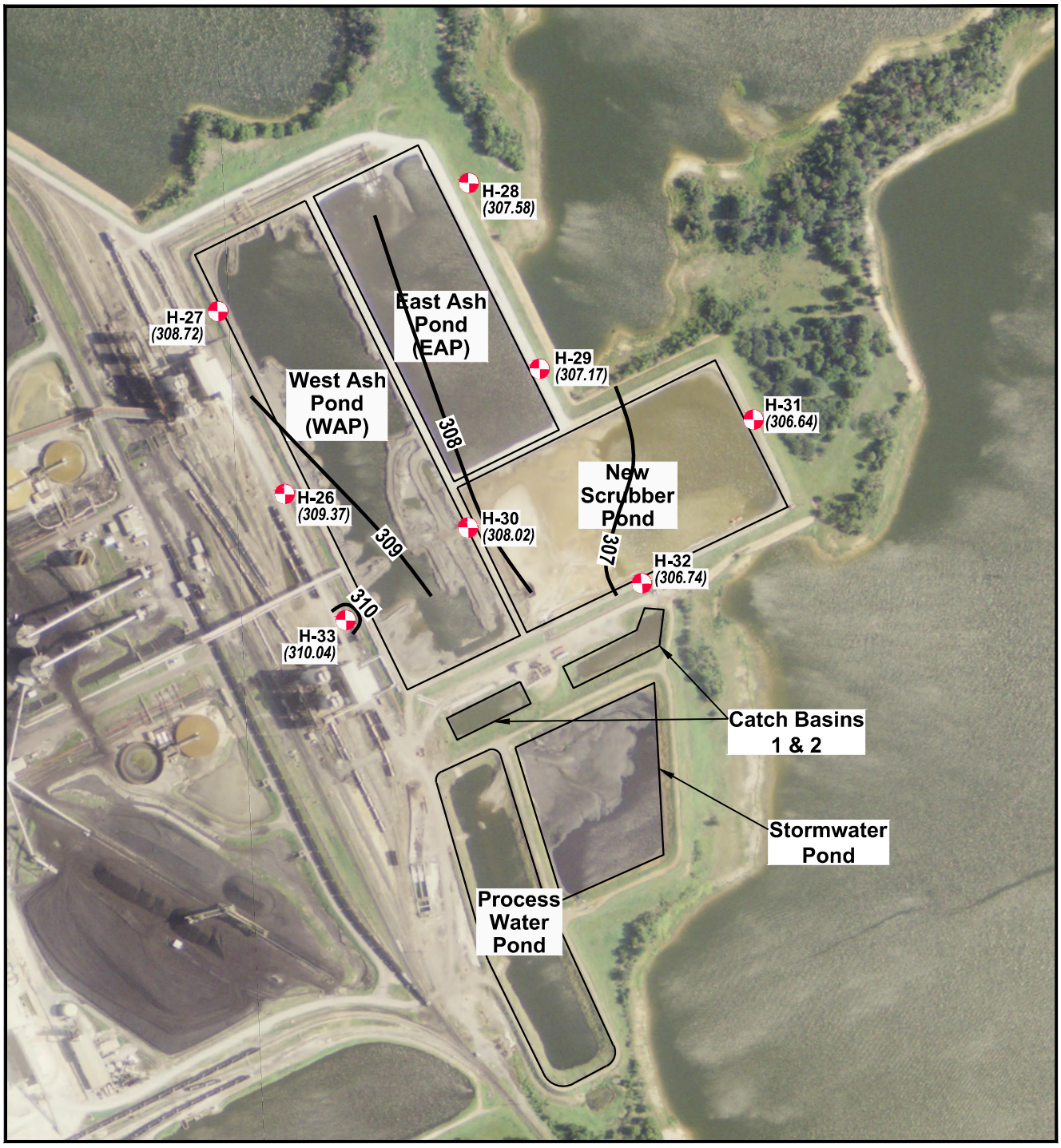
MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

Figure 4

ASH POND AREA - GROUNDWATER ZONE B POTENTIOMETRIC SURFACE MAP - APRIL 5, 2016

PROJECT: 5164B	BY: AJD	REVISIONS
DATE: SEPT., 2017	CHECKED: PJB	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS



EXPLANATION

- CCR Monitoring Well Location
- (308.70) Groundwater Potentiometric Surface (ft. MSL)
- 308 Groundwater Potentiometric Surface Contour (C.I. = 1 ft.)

N

Scale in Feet

0 250 500

SOURCE: Imagery from www.tnris.gov, Rusk County, aerial photographs, 2012.

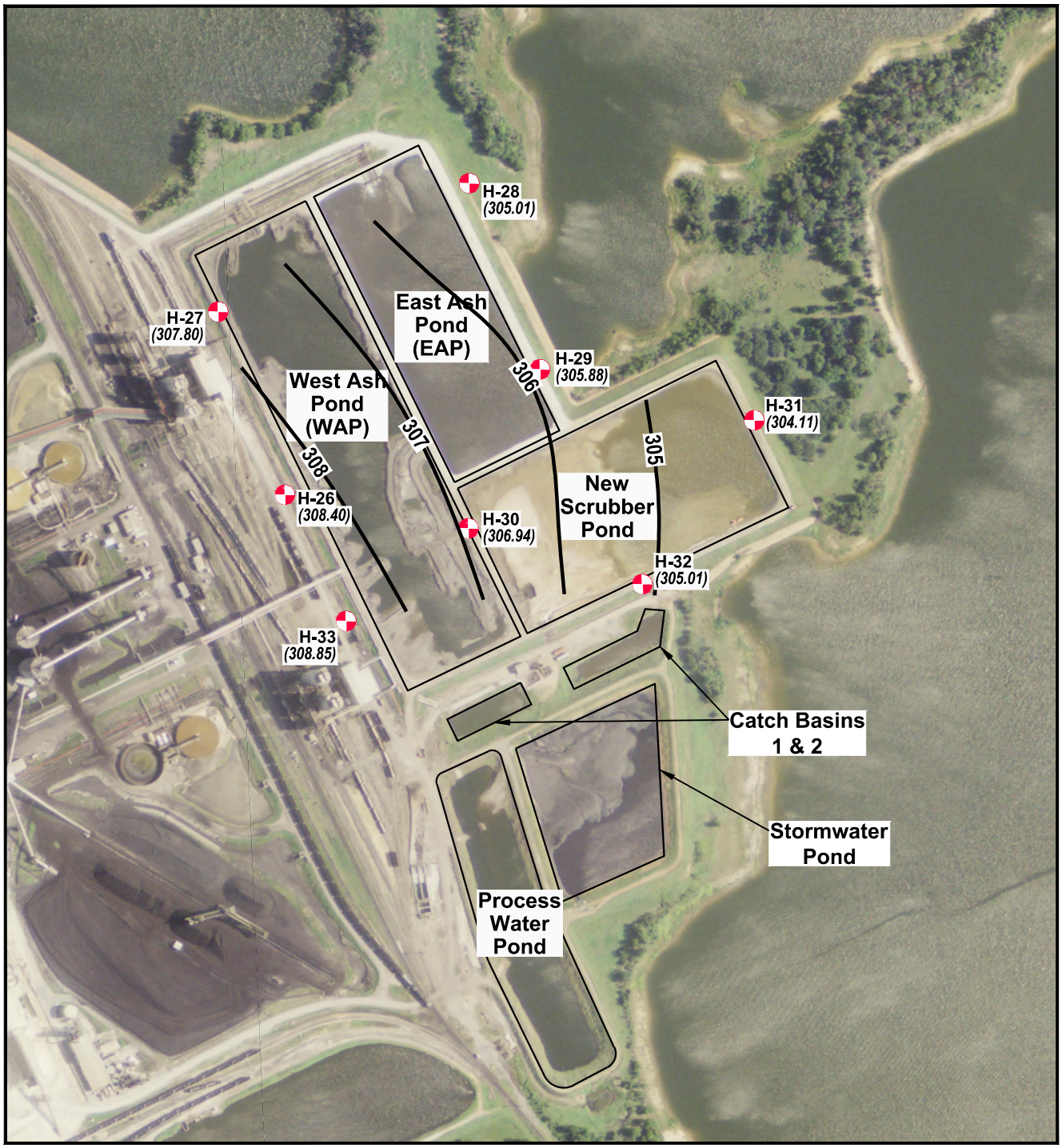
MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

Figure 5

ASH POND AREA - GROUNDWATER ZONE B POTENTIOMETRIC SURFACE MAP - JUNE 6, 2016

PROJECT: 5164B	BY: AJD	REVISIONS
DATE: SEPT., 2017	CHECKED: PJB	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS



EXPLANATION

- CCR Monitoring Well Location
- (308.70) Groundwater Potentiometric Surface (ft. MSL)
- 308 Groundwater Potentiometric Surface Contour (C.I. = 1 ft.)

N

Scale in Feet

0 250 500

SOURCE: Imagery from www.tnris.gov, Rusk County, aerial photographs, 2012.

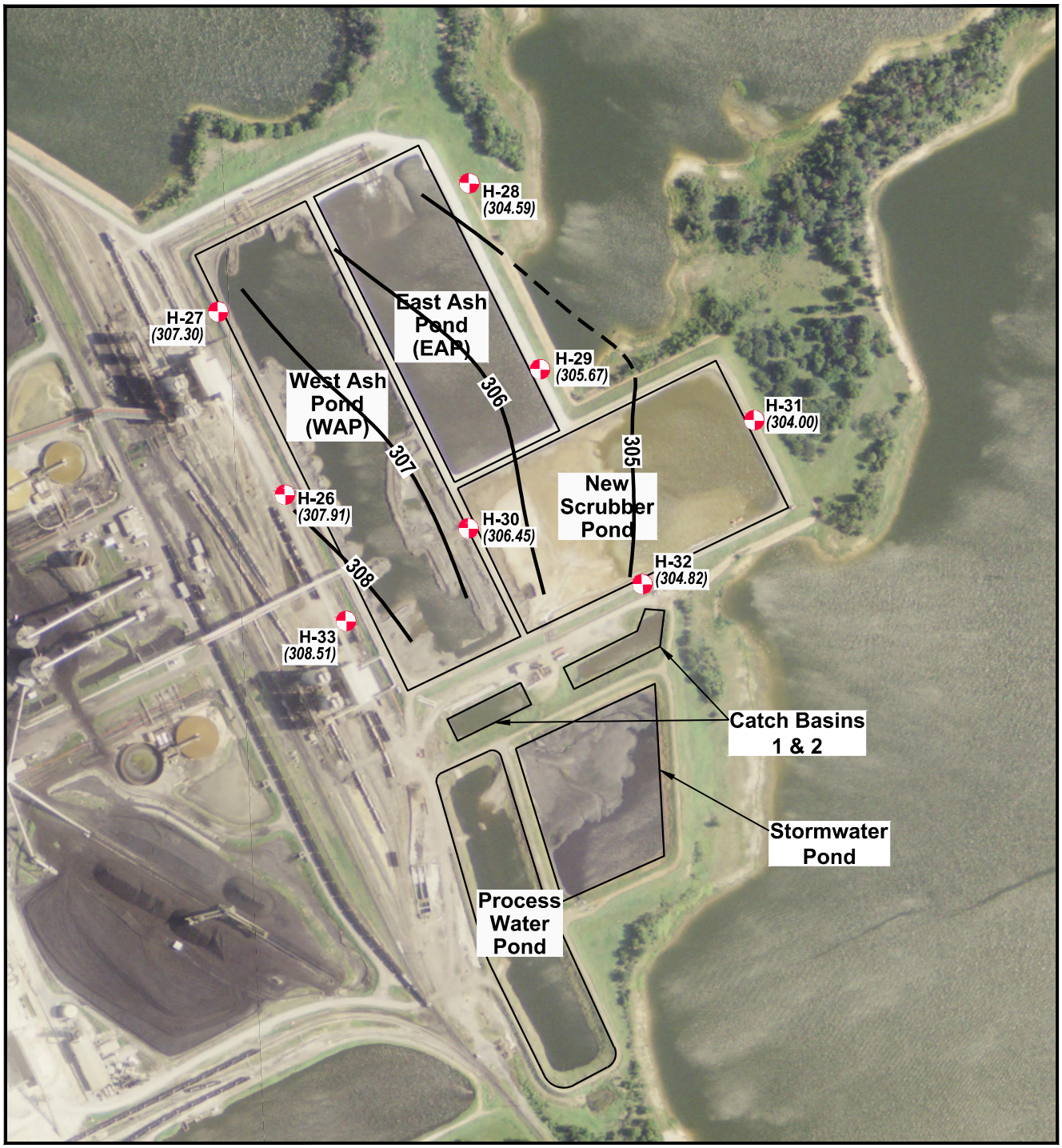
MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

Figure 6

ASH POND AREA - GROUNDWATER ZONE B POTENTIOMETRIC SURFACE MAP - AUGUST 9, 2016

PROJECT: 5164B	BY: AJD	REVISIONS
DATE: SEPT., 2017	CHECKED: PJB	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS



EXPLANATION

- CCR Monitoring Well Location
- (308.70) Groundwater Potentiometric Surface (ft. MSL)
- 308 Groundwater Potentiometric Surface Contour (C.I. = 1 ft.)

N

Scale in Feet

0 250 500

SOURCE: Imagery from www.tnris.gov, Rusk County, aerial photographs, 2012.

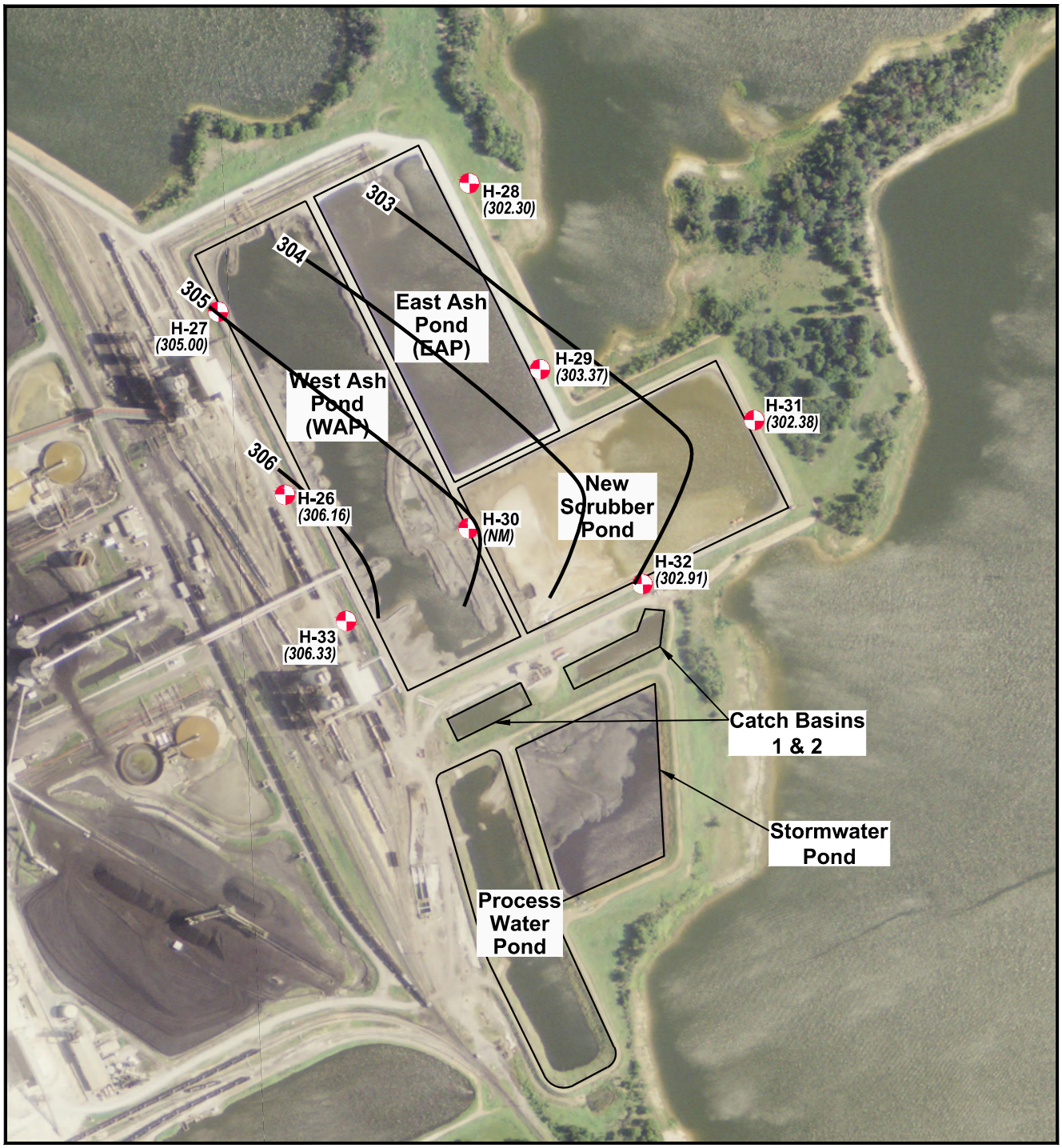
MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

Figure 7

ASH POND AREA - GROUNDWATER ZONE B POTENTIOMETRIC SURFACE MAP - OCTOBER 17, 2016

PROJECT: 5164B	BY: AJD	REVISIONS
DATE: SEPT., 2017	CHECKED: PJB	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS



EXPLANATION

- CCR Monitoring Well Location
- (308.70) Groundwater Potentiometric Surface (ft. MSL)
- 308 Groundwater Potentiometric Surface Contour (C.I. = 1 ft.)

N

Scale in Feet

0 250 500

SOURCE: Imagery from www.tnris.gov, Rusk County, aerial photographs, 2012.

MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

Figure 8

ASH POND AREA - GROUNDWATER ZONE B POTENTIOMETRIC SURFACE MAP - DECEMBER 11, 2016

PROJECT: 5164B	BY: AJD	REVISIONS
DATE: SEPT., 2017	CHECKED: PJB	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS

APPENDIX B

Laboratory Analytical Reports

December 04, 2015

Will Vienne
Pastor, Behling & Wheeler
2201 Double Creek Dr #4004
Round Rock, Texas 78664
TEL: (512) 671-3434
FAX (512) 671-3446

Order No.: 1510216

RE: Luminant - Martin Lake

Dear Will Vienne:

DHL Analytical, Inc. received 16 sample(s) on 10/23/2015 for the analyses presented in the following report.

There were no problems with the analyses and all data met requirements of NELAC except where noted in the Case Narrative. All non-NELAC methods will be identified accordingly in the case narrative and all estimated uncertainties of test results are within method or EPA specifications.

If you have any questions regarding these tests results, please feel free to call. Thank you for using DHL Analytical.

Sincerely,

John DuPont
General Manager

This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211-15-15

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Subcontract Report 1510216 ..... **55**

DHL ANALYTICAL
2300 Double Creek Dr. ■ Round Rock, TX 78664
Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

№ 68682

CHAIN-OF-CUSTODY

CLIENT: PBW
ADDRESS: 2201 DOUBLE CREEK DR ROUND ROCK, TX 78664
PHONE: 512-671-3434 FAX/E-MAIL: 512-671-3446
DATA REPORTED TO: WILL VIENNE
ADDITIONAL REPORT COPIES TO:

DATE: 10-22-15 PAGE 1 OF 2
PO #: 5164-B DHL WORK ORDER #: 1510214
PROJECT LOCATION OR NAME: LUMINANT - MARTIN LAKE
CLENT PROJECT #: 5164-B COLLECTOR: J. BRAXTON

Authorize 5% surcharge for TRRP Report? ❑ Yes ❑ No

S=SOIL P=PAINT
W=WATER SL=SLUDGE
A=AIR O=OTHER
L=LIQUID SO=SOLID
SE=SEDIMENT

PRESERVATION: HCl, HNO_3, H_2SO_4 ❑ NaOH ❑, ICE, UNPRESERVED

ANALYSES: BTEX ❑ MTBE ❑ [METHOD 8021] | TPH 1005 ❑ TPH 1006 ❑ HOLD 1006 ❑ | GRO [METHOD 8015] ❑ DRO [METHOD 8105] ❑ | VOC 8260 ❑ VOC 624 ❑ VOC 8260/5035 ❑ | SVOC 8270 ❑ PAH 8270 ❑ HOLD PAH ❑ SVOC 625 ❑ | 8270 PEST ❑ 625 PEST/PCB ❑ 608 PCB ❑ 8270 PCB ❑ | 8270 O-P PEST ❑ 8082 PCB ❑ T PHOS, AMMONIA ❑ | 8321 HERB ❑ T PHOS, AMMONIA ❑ | METALS 6020 X METALS 200.8 ❑ DISS. METALS ❑ | RCRA ❑ TX11 ❑ ❑ | PH X HEX CHROM ❑ ALKALINITY ❑ COD ❑ | CHLORIDE X ANIONS E-524 ❑ | TCLP-SVOC ❑ VOC ❑ PEST ❑ HERB ❑ | TCLP-METALS ❑ RCRA 8 ❑ TX-11 ❑ Pb ❑ | RCI ❑ FLASHPOINT ❑ DGAS ❑ | TDS X TSS ❑ % MOISTURE ❑ CYANIDE ❑ | SEE ATTACHED

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	HCl	HNO_3	H_2SO_4 ❑ NaOH ❑	ICE	UNPRESERVED	FIELD NOTES
PDP-23	01	10-20-15	0740	W		4						
PDP-24	02		0835	W		4						
PDP-22	03		0925	W		4						
MW-19	04		1020	W		4						
MW-20A	05		1120	W		4						
~~JB~~	~~JB~~	JB	~~JB~~	~~JB~~	JB	~~JB~~						JB
PDP-26	06		1400	W		4						
PDP-25	07		1520	W		4						
H-30	08		1620	W		4						
H-31	09		1715	W		4						
H-29	10	10-21-15	1245	W		4						
H-28	11		1335	W		4						
H-27	12		1420	W		4						
H-26	13		1525	W		4						
H-33	14	10-22-15	1255	W		4						

RELINQUISHED BY: (Signature) DATE/TIME 10-22-15 1800 RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature) DATE/TIME 10/22/15 1950 RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature) DATE/TIME RECEIVED BY: (Signature)

❑ DHL DISPOSAL @ $5.00 each ❑ Return

TURN AROUND TIME
RUSH ❑ CALL FIRST
1 DAY ❑ CALL FIRST
2 DAY ❑
NORMAL ☒
OTHER ❑ _____

LABORATORY USE ONLY:
RECEIVING TEMP: 4.5, 4.2, 3.4 THERM #: 78
CUSTODY SEALS: ❑ BROKEN ❑ INTACT ☒ NOT USED
CARRIER: ❑ LONE STAR ☒ FEDEX ❑ UPS ❑ OTHER
❑ COURIER DELIVERY
❑ HAND DELIVERED

DHL ANALYTICAL
2300 Double Creek Dr. ■ Round Rock, TX 78664
Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

№ 68683

CHAIN-OF-CUSTODY

CLIENT: PBW
ADDRESS: 2201 DOUBLE CREEK DR ROUND ROCK TX 78664
PHONE: 512-671-3434 FAX/E-MAIL: 512-671-3446
DATA REPORTED TO: WILL VIENNE
ADDITIONAL REPORT COPIES TO:

DATE: 10-22-15 PAGE 2 OF 2
PO #: 5164-B DHL WORK ORDER #: 151024
PROJECT LOCATION OR NAME: LUMINANT- MARTIN LAKE
CLENT PROJECT #: 5164-B COLLECTOR: J. BRANDON

Authorize 5% surcharge for TRRP Report? ☐ Yes ☐ No

S=SOIL W=WATER A=AIR L=LIQUID SE=SEDIMENT P=PAINT SL=SLUDGE O=OTHER SO=SOLID

PRESERVATION: HCl | HNO_3 | H_2SO_4 ☐ NaOH ☐ | ICE | UNPRESERVED

ANALYSES: BTEX ☐ MTBE ☐ (METHOD 8021) | TPH 1005 ☐ TPH 1006 ☐ HOLD 1006 ☐ | GRO (METHOD 8015) ☐ DRO (METHOD 8105) ☐ | VOC 8260 ☐ VOC 624 ☐ VOC 8260/5035 ☐ | SVOC 8270 ☐ PAH 8270 ☐ HOLD PAH ☐ SVOC 625 ☐ | 8270 PEST ☐ 625 PEST/PCB ☐ 608 PCB ☐ | 8270 O-P PEST ☐ 8082 PCB ☐ 8270 PCB ☐ | 8321 HERB ☐ T PHOS, AMMONIA ☐ | METALS 6020 ☐ METALS 200.8 ☐ DISS. METALS ☐ | RCRA ☐ TX11 ☐ ☐ | PH ☐ HEX CHROM ☐ ALKALINITY ☐ COD ☐ | CHLORIDE ☐ ANIONS ☐ SO4 ☐ ☐ | TCLP-SVOC ☐ VOC ☐ PEST ☐ HERB ☐ | TCLP-METALS ☐ RCRA 8 ☐ TX-11 ☐ Pb ☐ | RCI ☐ FLASHPOINT ☐ DGAS ☐ | TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐ | SEE ATTACHED

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	HCl	HNO_3	H_2SO_4 NaOH	ICE	UNPRESERVED	ANALYSES	FIELD NOTES
H-32	15	10-22-15	1355	W		4						1 1 1 1 X	
MW-17A	16	10-21-15	1455	W		4						X	
[illegible] JB		[illegible] JB	[illegible] JB	[illegible] JB		[illegible]	JB					JB	
		JB	JB										

RELINQUISHED BY: (Signature) DATE/TIME: 10-22-15 1800 RECEIVED BY: (Signature) FedEx
RELINQUISHED BY: (Signature) FedEx DATE/TIME: 10/23/15 1050 RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature) DATE/TIME: RECEIVED BY: (Signature)

☐ DHL DISPOSAL @ $5.00 each ☐ Return

TURN AROUND TIME
RUSH ☐ CALL FIRST
1 DAY ☐ CALL FIRST
2 DAY ☐
NORMAL ☒
OTHER ☐ _____

LABORATORY USE ONLY:
RECEIVING TEMP: 4.5, 4.2, 3.4 THERM #: 78
CUSTODY SEALS: ☐ BROKEN ☐ INTACT ☒ NOT USED
CARRIER: ☐ LONE STAR ☐ FEDEX ☐ UPS ☐ OTHER
☐ COURIER DELIVERY
☐ HAND DELIVERED

John Dupont

From: Sara Taube [Sara.Taube@pbwllc.com]
Sent: Wednesday, July 22, 2015 12:05 PM
To: John Dupont
Subject: CCR Appendix III and IV
Follow Up Flag: Follow up
Flag Status: Completed

Hi John,

Here are the Appendix III and Appendix IV constituents that we will need to have analyzed under the CCR Rule.

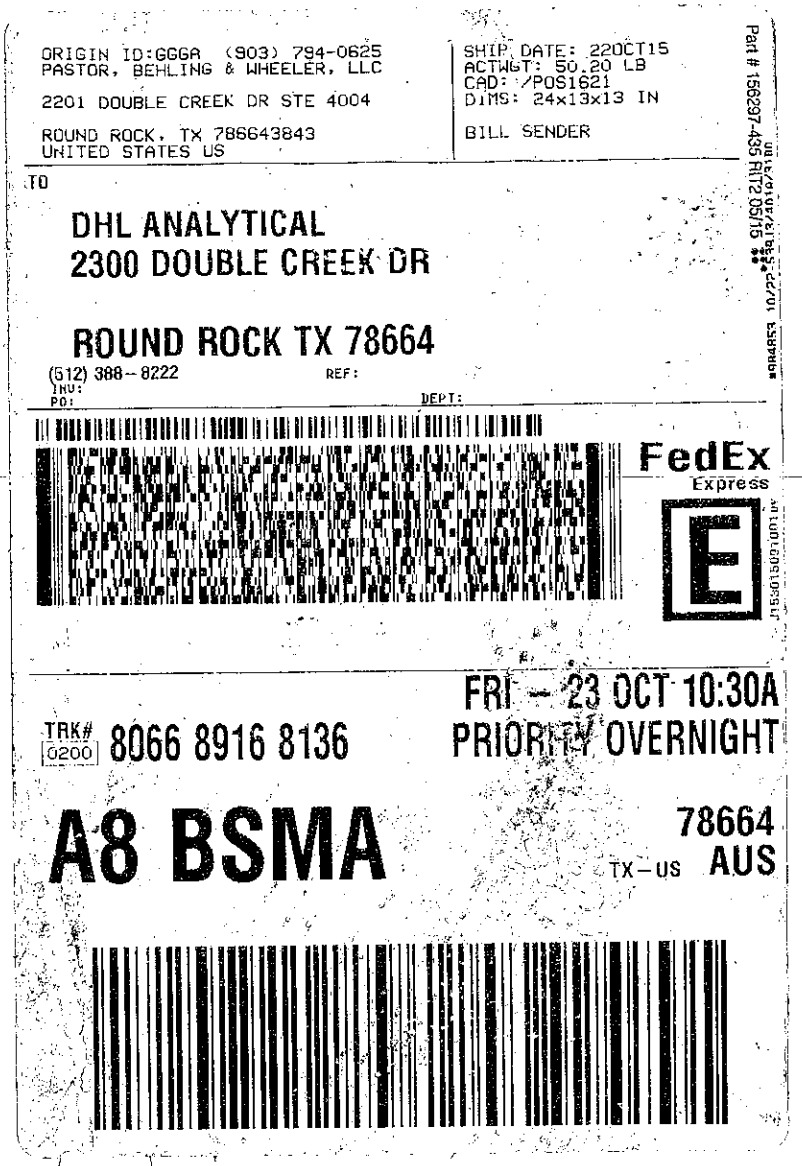
Appendix III
Boron
Calcium
Chloride
Fluoride
pH
sulfate
TDS

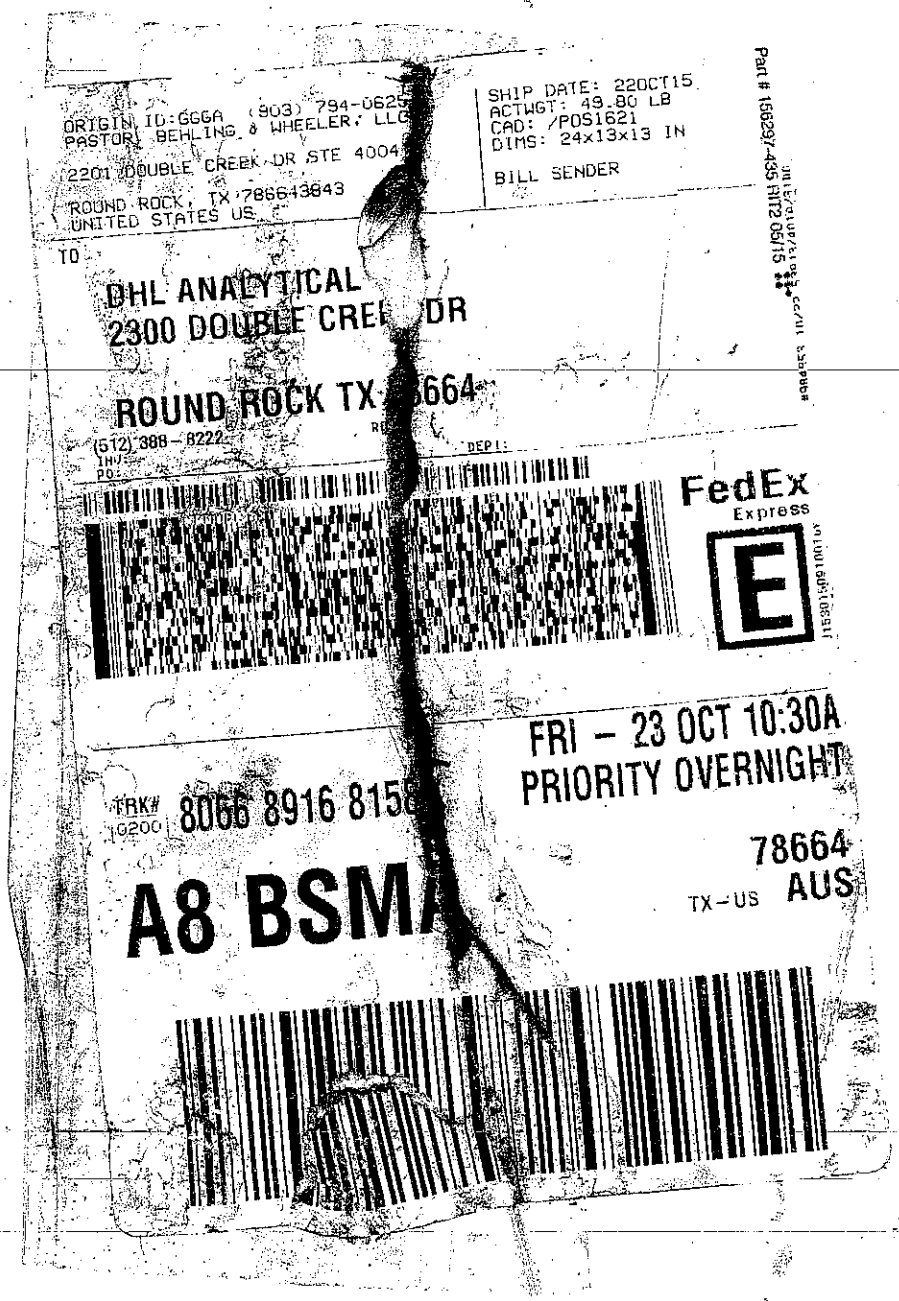
Appendix IV
Antimony
Arsenic
Barium
Beryllium
Cadmium
Chromium
Cobalt
Fluoride
Lead
Lithium
Mercury
Molybdenum
Selenium
Thallium
Radium 226 and 228

We are looking to have approximately 74 wells sampled 8 times over the course of the next two years. Please let me know if there is any more information you might need.

Cheers,

Sara


ORIGIN ID:GGGA (903) 794-0625
PASTOR, BEHLING & WHEELER, LLC
2201 DOUBLE CREEK DR STE 4004
ROUND ROCK, TX 786643843
UNITED STATES US
SHIP DATE: 22OCT15
ACTWGT: 50.20 LB
CAD: /POS1621
DIMS: 24x13x13 IN
BILL SENDER
TO
DHL ANALYTICAL
2300 DOUBLE CREEK DR
ROUND ROCK TX 78664
(512) 388-8222
REF:
INV:
PO:
DEPT:
FedEx
Express
TRK# 0200 8066 8916 8136
FRI - 23 OCT 10:30A
PRIORITY OVERNIGHT
A8 BSMA
78664
TX-US AUS


ORIGIN ID:GGGA (903) 794-0625
PASTOR, BEHLING & WHEELER, LLC
2201 DOUBLE CREEK DR STE 4004
ROUND ROCK, TX 786643843
UNITED STATES US
SHIP DATE: 220CT15
ACTWGT: 49.80 LB
CAD: /POS1621
DIMS: 24x13x13 IN
BILL SENDER
TO
DHL ANALYTICAL
2300 DOUBLE CREE DR
ROUND ROCK TX 664
(512) 388-8222
DEPT:
FedEx
Express
FRI - 23 OCT 10:30A
PRIORITY OVERNIGHT
TRK# 8066 8916 815
78664
TX-US AUS
A8 BSM

DHL Analytical, Inc.

Sample Receipt Checklist

Client Name **Pastor, Behling & Wheeler** Date Received: **10/23/2015**

Work Order Number **1510216** Received by **JB**

Checklist completed by: _____ 10/23/2015 Reviewed by _____ 10/23/2015
Signature Date Initials Date

Carrier name FedEx 1day

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	4.5 °C 1,4.2.3.4
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH<2 acceptable upon receipt?	Yes ☑	No ☐	NA ☐ LOT # 8086
	Adjusted? NO		Checked by
Water - ph>9 (S) or ph>12 (CN) acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted?		Checked by

Any No response must be detailed in the comments section below.

Client contacted _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding _____

Comments: _____

Corrective Action _____

DHL Analytical, Inc. **Date:** *04-Dec-15*

CLIENT: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake
Lab Order: 1510216

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Method SW6020A - Metals Analysis
Method SW7470A - Mercury Analysis
Method E300 - Anions Analysis
Method M4500-H+ B - pH of a Water Analysis
Method M2540C - TDS Analysis

LOG IN

The samples were received and log-in performed on 10/23/15. A total of 16 samples were received. The samples arrived in good condition and were properly packaged.

METALS ANALYSIS

For Metals analysis performed on 11/5/15 Chromium and Molybdenum were detected above the reporting limits in the method blank (MB-72051). All associated samples were below detection limits for these analytes. No further corrective actions were taken.

For Metals analysis performed on 11/5/15 (batch 72051) the matrix spike duplicate recovery was slightly above control limits for Boron and Calcium. These are flagged accordingly in the QC summary report. The sample selected for the matrix spike and matrix spike duplicate was from this work order. The LCS was within control limits for these analytes. No further corrective actions were taken.

For Metals analysis performed on 11/9/15 (batch 72217) the RPD for the serial dilution was above control limits for Chromium. This is flagged accordingly. The PDS was within control limits for this analyte. No further corrective actions were taken.

For Metals analysis performed on 11/5/15 and 11/9/15 four LCVLs were above control limits for Boron. These are flagged accordingly. The associated CCVs were within control limits for this analyte. No further corrective actions were taken.

ANIONS ANALYSIS

For Anions analysis performed on 11/2/15 the matrix spike duplicate recoveries (1510216-02 MSD & 1510216-07 MSD) were slightly above control limits for Sulfate. These are flagged accordingly in the QC summary report. The samples selected for the matrix spikes and matrix spike duplicates were from this work order. The LCS was within control limits for this analyte. No further corrective actions were taken.

DHL Analytical, Inc.

Date: *04-Dec-15*

CLIENT: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake
Lab Order: 1510216

Work Order Sample Summary

Lab Smp ID	Client Sample ID	Tag Number	Date Collected	Date Recved
1510216-01	PDP-23		10/20/15 07:40 AM	10/23/2015
1510216-02	PDP-24		10/20/15 08:35 AM	10/23/2015
1510216-03	PDP-22		10/20/15 09:25 AM	10/23/2015
1510216-04	MW-19		10/20/15 10:20 AM	10/23/2015
1510216-05	MW-20A		10/20/15 11:20 AM	10/23/2015
1510216-06	PDP-26		10/20/15 02:20 PM	10/23/2015
1510216-07	PDP-25		10/20/15 03:20 PM	10/23/2015
1510216-08	H-30		10/20/15 04:20 PM	10/23/2015
1510216-09	H-31		10/20/15 05:15 PM	10/23/2015
1510216-10	H-29		10/21/15 12:45 PM	10/23/2015
1510216-11	H-28		10/21/15 01:35 PM	10/23/2015
1510216-12	H-27		10/21/15 02:20 PM	10/23/2015
1510216-13	H-26		10/21/15 03:25 PM	10/23/2015
1510216-14	H-33		10/22/15 12:55 PM	10/23/2015
1510216-15	H-32		10/22/15 01:55 PM	10/23/2015
1510216-16	MW-17A		10/21/15 02:55 PM	10/23/2015

Lab Order: 1510216
Client: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1510216-01A	PDP-23	10/20/15 07:40 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/28/15 08:58 AM	72051
	PDP-23	10/20/15 07:40 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/28/15 08:58 AM	72051
	PDP-23	10/20/15 07:40 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	10/28/15 10:56 AM	72061
1510216-01D	PDP-23	10/20/15 07:40 AM	Aqueous	E300	Anion Preparation	11/02/15 08:38 AM	72110
	PDP-23	10/20/15 07:40 AM	Aqueous	M4500-H+ B	pH Preparation	10/23/15 12:13 PM	71998
	PDP-23	10/20/15 07:40 AM	Aqueous	M2540C	TDS Preparation	10/26/15 10:21 AM	72016
1510216-02A	PDP-24	10/20/15 08:35 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/28/15 08:58 AM	72051
	PDP-24	10/20/15 08:35 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/28/15 08:58 AM	72051
	PDP-24	10/20/15 08:35 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/28/15 08:58 AM	72051
	PDP-24	10/20/15 08:35 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	10/28/15 10:56 AM	72061
1510216-02D	PDP-24	10/20/15 08:35 AM	Aqueous	E300	Anion Preparation	11/02/15 08:38 AM	72110
	PDP-24	10/20/15 08:35 AM	Aqueous	E300	Anion Preparation	11/02/15 08:38 AM	72110
	PDP-24	10/20/15 08:35 AM	Aqueous	M4500-H+ B	pH Preparation	10/23/15 12:13 PM	71998
	PDP-24	10/20/15 08:35 AM	Aqueous	M2540C	TDS Preparation	10/26/15 10:21 AM	72016
1510216-03A	PDP-22	10/20/15 09:25 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/28/15 08:58 AM	72051
	PDP-22	10/20/15 09:25 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/28/15 08:58 AM	72051
	PDP-22	10/20/15 09:25 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	10/28/15 10:56 AM	72061
1510216-03D	PDP-22	10/20/15 09:25 AM	Aqueous	E300	Anion Preparation	11/02/15 08:38 AM	72110
	PDP-22	10/20/15 09:25 AM	Aqueous	M4500-H+ B	pH Preparation	10/23/15 12:13 PM	71998
	PDP-22	10/20/15 09:25 AM	Aqueous	M2540C	TDS Preparation	10/26/15 10:21 AM	72016
1510216-04A	MW-19	10/20/15 10:20 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/28/15 08:58 AM	72051
	MW-19	10/20/15 10:20 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/28/15 08:58 AM	72051
	MW-19	10/20/15 10:20 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	10/28/15 10:56 AM	72061
1510216-04D	MW-19	10/20/15 10:20 AM	Aqueous	E300	Anion Preparation	11/02/15 08:38 AM	72110
	MW-19	10/20/15 10:20 AM	Aqueous	M4500-H+ B	pH Preparation	10/23/15 12:13 PM	71998
	MW-19	10/20/15 10:20 AM	Aqueous	M2540C	TDS Preparation	10/26/15 10:21 AM	72016
1510216-05A	MW-20A	10/20/15 11:20 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/28/15 08:58 AM	72051
	MW-20A	10/20/15 11:20 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/28/15 08:58 AM	72051

Lab Order: 1510216
Client: Pastor, Behling & Wheeler
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PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1510216-05A	MW-20A	10/20/15 11:20 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	10/28/15 10:56 AM	72061
1510216-05D	MW-20A	10/20/15 11:20 AM	Aqueous	E300	Anion Preparation	11/02/15 08:38 AM	72110
	MW-20A	10/20/15 11:20 AM	Aqueous	M4500-H+ B	pH Preparation	10/23/15 12:13 PM	71998
	MW-20A	10/20/15 11:20 AM	Aqueous	M2540C	TDS Preparation	10/26/15 10:21 AM	72016
1510216-06A	PDP-26	10/20/15 02:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/28/15 08:58 AM	72051
	PDP-26	10/20/15 02:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/28/15 08:58 AM	72051
	PDP-26	10/20/15 02:20 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	10/28/15 10:56 AM	72061
1510216-06D	PDP-26	10/20/15 02:20 PM	Aqueous	E300	Anion Preparation	11/02/15 08:38 AM	72110
	PDP-26	10/20/15 02:20 PM	Aqueous	M4500-H+ B	pH Preparation	10/23/15 12:13 PM	71998
	PDP-26	10/20/15 02:20 PM	Aqueous	M2540C	TDS Preparation	10/26/15 10:21 AM	72016
1510216-07A	PDP-25	10/20/15 03:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/28/15 08:58 AM	72051
	PDP-25	10/20/15 03:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/28/15 08:58 AM	72051
	PDP-25	10/20/15 03:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/28/15 08:58 AM	72051
	PDP-25	10/20/15 03:20 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	10/28/15 10:56 AM	72061
1510216-07D	PDP-25	10/20/15 03:20 PM	Aqueous	E300	Anion Preparation	11/02/15 08:38 AM	72110
	PDP-25	10/20/15 03:20 PM	Aqueous	E300	Anion Preparation	11/02/15 08:38 AM	72110
	PDP-25	10/20/15 03:20 PM	Aqueous	M4500-H+ B	pH Preparation	10/23/15 12:13 PM	71998
	PDP-25	10/20/15 03:20 PM	Aqueous	M2540C	TDS Preparation	10/26/15 10:21 AM	72016
1510216-08A	H-30	10/20/15 04:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/28/15 08:58 AM	72051
	H-30	10/20/15 04:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/28/15 08:58 AM	72051
	H-30	10/20/15 04:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	11/09/15 08:08 AM	72217
	H-30	10/20/15 04:20 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	10/28/15 10:56 AM	72061
1510216-08D	H-30	10/20/15 04:20 PM	Aqueous	E300	Anion Preparation	11/02/15 08:38 AM	72110
	H-30	10/20/15 04:20 PM	Aqueous	E300	Anion Preparation	11/02/15 08:38 AM	72110
	H-30	10/20/15 04:20 PM	Aqueous	M4500-H+ B	pH Preparation	10/23/15 12:13 PM	71998
	H-30	10/20/15 04:20 PM	Aqueous	M2540C	TDS Preparation	10/26/15 10:21 AM	72016
1510216-09A	H-31	10/20/15 05:15 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/28/15 08:58 AM	72051
	H-31	10/20/15 05:15 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	11/09/15 08:08 AM	72217

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PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1510216-09A	H-31	10/20/15 05:15 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	11/09/15 08:08 AM	72217
	H-31	10/20/15 05:15 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/28/15 08:58 AM	72051
	H-31	10/20/15 05:15 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	10/28/15 10:56 AM	72061
1510216-09D	H-31	10/20/15 05:15 PM	Aqueous	E300	Anion Preparation	11/02/15 08:38 AM	72110
	H-31	10/20/15 05:15 PM	Aqueous	E300	Anion Preparation	11/02/15 08:38 AM	72110
	H-31	10/20/15 05:15 PM	Aqueous	M4500-H+ B	pH Preparation	10/23/15 12:13 PM	71998
	H-31	10/20/15 05:15 PM	Aqueous	M2540C	TDS Preparation	10/26/15 10:21 AM	72016
1510216-10A	H-29	10/21/15 12:45 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/28/15 08:58 AM	72051
	H-29	10/21/15 12:45 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/28/15 08:58 AM	72051
	H-29	10/21/15 12:45 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	10/28/15 10:56 AM	72061
1510216-10D	H-29	10/21/15 12:45 PM	Aqueous	E300	Anion Preparation	11/02/15 08:38 AM	72110
	H-29	10/21/15 12:45 PM	Aqueous	E300	Anion Preparation	11/02/15 08:38 AM	72110
	H-29	10/21/15 12:45 PM	Aqueous	M4500-H+ B	pH Preparation	10/23/15 12:13 PM	71998
	H-29	10/21/15 12:45 PM	Aqueous	M2540C	TDS Preparation	10/26/15 10:21 AM	72016
1510216-11A	H-28	10/21/15 01:35 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/28/15 08:58 AM	72051
	H-28	10/21/15 01:35 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/28/15 08:58 AM	72051
	H-28	10/21/15 01:35 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	10/28/15 10:56 AM	72061
1510216-11D	H-28	10/21/15 01:35 PM	Aqueous	E300	Anion Preparation	11/02/15 08:38 AM	72110
	H-28	10/21/15 01:35 PM	Aqueous	E300	Anion Preparation	11/02/15 08:38 AM	72110
	H-28	10/21/15 01:35 PM	Aqueous	M4500-H+ B	pH Preparation	10/23/15 12:13 PM	71998
	H-28	10/21/15 01:35 PM	Aqueous	M2540C	TDS Preparation	10/26/15 10:21 AM	72016
1510216-12A	H-27	10/21/15 02:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/28/15 08:58 AM	72051
	H-27	10/21/15 02:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/28/15 08:58 AM	72051
	H-27	10/21/15 02:20 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	10/28/15 10:56 AM	72061
1510216-12D	H-27	10/21/15 02:20 PM	Aqueous	E300	Anion Preparation	11/02/15 08:38 AM	72110
	H-27	10/21/15 02:20 PM	Aqueous	E300	Anion Preparation	11/02/15 08:38 AM	72110
	H-27	10/21/15 02:20 PM	Aqueous	M4500-H+ B	pH Preparation	10/23/15 12:13 PM	71998
	H-27	10/21/15 02:20 PM	Aqueous	M2540C	TDS Preparation	10/26/15 10:21 AM	72016

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PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1510216-13A	H-26	10/21/15 03:25 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/28/15 08:58 AM	72051
	H-26	10/21/15 03:25 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	10/28/15 10:56 AM	72061
1510216-13D	H-26	10/21/15 03:25 PM	Aqueous	E300	Anion Preparation	11/02/15 08:38 AM	72110
	H-26	10/21/15 03:25 PM	Aqueous	E300	Anion Preparation	11/02/15 08:38 AM	72110
	H-26	10/21/15 03:25 PM	Aqueous	M4500-H+ B	pH Preparation	10/23/15 12:13 PM	71998
	H-26	10/21/15 03:25 PM	Aqueous	M2540C	TDS Preparation	10/26/15 10:21 AM	72016
1510216-14A	H-33	10/22/15 12:55 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/28/15 08:58 AM	72051
	H-33	10/22/15 12:55 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/28/15 08:58 AM	72051
	H-33	10/22/15 12:55 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	10/28/15 10:56 AM	72061
1510216-14D	H-33	10/22/15 12:55 PM	Aqueous	E300	Anion Preparation	11/02/15 08:38 AM	72110
	H-33	10/22/15 12:55 PM	Aqueous	E300	Anion Preparation	11/02/15 08:38 AM	72110
	H-33	10/22/15 12:55 PM	Aqueous	M4500-H+ B	pH Preparation	10/23/15 12:13 PM	71998
	H-33	10/22/15 12:55 PM	Aqueous	M2540C	TDS Preparation	10/26/15 10:21 AM	72016
1510216-15A	H-32	10/22/15 01:55 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/28/15 08:58 AM	72051
	H-32	10/22/15 01:55 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/28/15 08:58 AM	72051
	H-32	10/22/15 01:55 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	10/28/15 10:56 AM	72061
1510216-15D	H-32	10/22/15 01:55 PM	Aqueous	E300	Anion Preparation	11/02/15 08:38 AM	72110
	H-32	10/22/15 01:55 PM	Aqueous	E300	Anion Preparation	11/02/15 08:38 AM	72110
	H-32	10/22/15 01:55 PM	Aqueous	M4500-H+ B	pH Preparation	10/23/15 12:13 PM	71998
	H-32	10/22/15 01:55 PM	Aqueous	M2540C	TDS Preparation	10/26/15 10:21 AM	72016
1510216-16A	MW-17A	10/21/15 02:55 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/28/15 08:58 AM	72051
	MW-17A	10/21/15 02:55 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	10/28/15 10:56 AM	72061
1510216-16D	MW-17A	10/21/15 02:55 PM	Aqueous	E300	Anion Preparation	11/02/15 08:38 AM	72110
	MW-17A	10/21/15 02:55 PM	Aqueous	M4500-H+ B	pH Preparation	10/23/15 12:13 PM	71998
	MW-17A	10/21/15 02:55 PM	Aqueous	M2540C	TDS Preparation	10/26/15 10:21 AM	72016

Lab Order: 1510216
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ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1510216-01A	PDP-23	Aqueous	SW7470A	Mercury Total: Aqueous	72061	1	10/29/15 12:36 PM	CETAC2_HG_151029B
	PDP-23	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72051	1	11/05/15 01:33 PM	ICP-MS3_151105A
	PDP-23	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72051	1	11/09/15 03:16 PM	ICP-MS4_151109D
1510216-01D	PDP-23	Aqueous	E300	Anions by IC method - Water	72110	1	11/02/15 10:06 AM	IC2_151102A
	PDP-23	Aqueous	M4500-H+ B	pH	71998	1	10/23/15 12:49 PM	TITRATOR_151023A
	PDP-23	Aqueous	M2540C	Total Dissolved Solids	72016	1	10/27/15 07:30 AM	WC_151026B
1510216-02A	PDP-24	Aqueous	SW7470A	Mercury Total: Aqueous	72061	1	10/29/15 12:47 PM	CETAC2_HG_151029B
	PDP-24	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72051	1	11/05/15 01:20 PM	ICP-MS3_151105A
	PDP-24	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72051	10	11/05/15 05:24 PM	ICP-MS3_151105A
	PDP-24	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72051	10	11/09/15 03:12 PM	ICP-MS4_151109D
1510216-02D	PDP-24	Aqueous	E300	Anions by IC method - Water	72110	1	11/02/15 10:21 AM	IC2_151102A
	PDP-24	Aqueous	E300	Anions by IC method - Water	72110	10	11/02/15 02:52 PM	IC2_151102A
	PDP-24	Aqueous	M4500-H+ B	pH	71998	1	10/23/15 12:51 PM	TITRATOR_151023A
	PDP-24	Aqueous	M2540C	Total Dissolved Solids	72016	1	10/27/15 07:30 AM	WC_151026B
1510216-03A	PDP-22	Aqueous	SW7470A	Mercury Total: Aqueous	72061	1	10/29/15 12:49 PM	CETAC2_HG_151029B
	PDP-22	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72051	1	11/05/15 01:39 PM	ICP-MS3_151105A
	PDP-22	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72051	1	11/09/15 03:18 PM	ICP-MS4_151109D
1510216-03D	PDP-22	Aqueous	E300	Anions by IC method - Water	72110	1	11/02/15 10:35 AM	IC2_151102A
	PDP-22	Aqueous	M4500-H+ B	pH	71998	1	10/23/15 12:53 PM	TITRATOR_151023A
	PDP-22	Aqueous	M2540C	Total Dissolved Solids	72016	1	10/27/15 07:30 AM	WC_151026B
1510216-04A	MW-19	Aqueous	SW7470A	Mercury Total: Aqueous	72061	1	10/29/15 12:52 PM	CETAC2_HG_151029B
	MW-19	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72051	1	11/05/15 01:45 PM	ICP-MS3_151105A
	MW-19	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72051	1	11/09/15 03:20 PM	ICP-MS4_151109D
1510216-04D	MW-19	Aqueous	E300	Anions by IC method - Water	72110	1	11/02/15 10:50 AM	IC2_151102A
	MW-19	Aqueous	M4500-H+ B	pH	71998	1	10/23/15 12:55 PM	TITRATOR_151023A
	MW-19	Aqueous	M2540C	Total Dissolved Solids	72016	1	10/27/15 07:30 AM	WC_151026B

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ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1510216-05A	MW-20A	Aqueous	SW7470A	Mercury Total: Aqueous	72061	1	10/29/15 12:54 PM	CETAC2_HG_151029B
	MW-20A	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72051	1	11/09/15 03:22 PM	ICP-MS4_151109D
	MW-20A	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72051	1	11/05/15 01:51 PM	ICP-MS3_151105A
1510216-05D	MW-20A	Aqueous	E300	Anions by IC method - Water	72110	1	11/02/15 11:04 AM	IC2_151102A
	MW-20A	Aqueous	M4500-H+ B	pH	71998	1	10/23/15 12:58 PM	TITRATOR_151023A
	MW-20A	Aqueous	M2540C	Total Dissolved Solids	72016	1	10/27/15 07:30 AM	WC_151026B
1510216-06A	PDP-26	Aqueous	SW7470A	Mercury Total: Aqueous	72061	1	10/29/15 01:01 PM	CETAC2_HG_151029B
	PDP-26	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72051	1	11/05/15 01:57 PM	ICP-MS3_151105A
	PDP-26	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72051	1	11/09/15 03:24 PM	ICP-MS4_151109D
1510216-06D	PDP-26	Aqueous	E300	Anions by IC method - Water	72110	1	11/02/15 11:19 AM	IC2_151102A
	PDP-26	Aqueous	M4500-H+ B	pH	71998	1	10/23/15 12:59 PM	TITRATOR_151023A
	PDP-26	Aqueous	M2540C	Total Dissolved Solids	72016	1	10/27/15 07:30 AM	WC_151026B
1510216-07A	PDP-25	Aqueous	SW7470A	Mercury Total: Aqueous	72061	1	10/29/15 01:03 PM	CETAC2_HG_151029B
	PDP-25	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72051	1	11/05/15 02:03 PM	ICP-MS3_151105A
	PDP-25	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72051	10	11/05/15 05:30 PM	ICP-MS3_151105A
	PDP-25	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72051	1	11/09/15 03:26 PM	ICP-MS4_151109D
1510216-07D	PDP-25	Aqueous	E300	Anions by IC method - Water	72110	1	11/02/15 11:44 AM	IC2_151102A
	PDP-25	Aqueous	E300	Anions by IC method - Water	72110	10	11/02/15 03:06 PM	IC2_151102A
	PDP-25	Aqueous	M4500-H+ B	pH	71998	1	10/23/15 01:00 PM	TITRATOR_151023A
	PDP-25	Aqueous	M2540C	Total Dissolved Solids	72016	1	10/27/15 07:30 AM	WC_151026B
1510216-08A	H-30	Aqueous	SW7470A	Mercury Total: Aqueous	72061	1	10/29/15 01:05 PM	CETAC2_HG_151029B
	H-30	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72051	1	11/05/15 02:09 PM	ICP-MS3_151105A
	H-30	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72051	50	11/05/15 05:36 PM	ICP-MS3_151105A
	H-30	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72217	1	11/09/15 05:48 PM	ICP-MS4_151109D
1510216-08D	H-30	Aqueous	E300	Anions by IC method - Water	72110	1	11/02/15 11:59 AM	IC2_151102A
	H-30	Aqueous	E300	Anions by IC method - Water	72110	10	11/02/15 03:21 PM	IC2_151102A

Lab Order: 1510216
Client: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1510216-08D	H-30	Aqueous	M4500-H+ B	pH	71998	1	10/23/15 01:02 PM	TITRATOR_151023A
	H-30	Aqueous	M2540C	Total Dissolved Solids	72016	1	10/27/15 07:30 AM	WC_151026B
1510216-09A	H-31	Aqueous	SW7470A	Mercury Total: Aqueous	72061	1	10/29/15 01:08 PM	CETAC2_HG_151029B
	H-31	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72051	1	11/05/15 02:15 PM	ICP-MS3_151105A
	H-31	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72051	50	11/05/15 05:42 PM	ICP-MS3_151105A
	H-31	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72217	1	11/09/15 05:44 PM	ICP-MS4_151109D
	H-31	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72217	100	11/09/15 06:37 PM	ICP-MS4_151109D
1510216-09D	H-31	Aqueous	E300	Anions by IC method - Water	72110	1	11/02/15 12:13 PM	IC2_151102A
	H-31	Aqueous	E300	Anions by IC method - Water	72110	100	11/02/15 05:22 PM	IC2_151102A
	H-31	Aqueous	M4500-H+ B	pH	71998	1	10/23/15 01:03 PM	TITRATOR_151023A
	H-31	Aqueous	M2540C	Total Dissolved Solids	72016	1	10/27/15 07:30 AM	WC_151026B
1510216-10A	H-29	Aqueous	SW7470A	Mercury Total: Aqueous	72061	1	10/29/15 01:11 PM	CETAC2_HG_151029B
	H-29	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72051	1	11/05/15 02:21 PM	ICP-MS3_151105A
	H-29	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72051	1	11/09/15 03:28 PM	ICP-MS4_151109D
1510216-10D	H-29	Aqueous	E300	Anions by IC method - Water	72110	1	11/02/15 12:28 PM	IC2_151102A
	H-29	Aqueous	E300	Anions by IC method - Water	72110	10	11/02/15 05:36 PM	IC2_151102A
	H-29	Aqueous	M4500-H+ B	pH	71998	1	10/23/15 01:08 PM	TITRATOR_151023A
	H-29	Aqueous	M2540C	Total Dissolved Solids	72016	1	10/27/15 07:30 AM	WC_151026B
1510216-11A	H-28	Aqueous	SW7470A	Mercury Total: Aqueous	72061	1	10/29/15 01:13 PM	CETAC2_HG_151029B
	H-28	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72051	1	11/05/15 03:58 PM	ICP-MS3_151105A
	H-28	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72051	10	11/05/15 05:48 PM	ICP-MS3_151105A
1510216-11D	H-28	Aqueous	E300	Anions by IC method - Water	72110	1	11/02/15 01:18 PM	IC2_151102A
	H-28	Aqueous	E300	Anions by IC method - Water	72110	10	11/02/15 05:51 PM	IC2_151102A
	H-28	Aqueous	M4500-H+ B	pH	71998	1	10/23/15 01:09 PM	TITRATOR_151023A
	H-28	Aqueous	M2540C	Total Dissolved Solids	72016	1	10/27/15 07:30 AM	WC_151026B
1510216-12A	H-27	Aqueous	SW7470A	Mercury Total: Aqueous	72061	1	10/29/15 01:15 PM	CETAC2_HG_151029B

Lab Order: 1510216
Client: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1510216-12A	H-27	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72051	1	11/05/15 04:04 PM	ICP-MS3_151105A
	H-27	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72051	10	11/05/15 05:54 PM	ICP-MS3_151105A
1510216-12D	H-27	Aqueous	E300	Anions by IC method - Water	72110	1	11/02/15 01:33 PM	IC2_151102A
	H-27	Aqueous	E300	Anions by IC method - Water	72110	10	11/02/15 06:20 PM	IC2_151102A
	H-27	Aqueous	M4500-H+ B	pH	71998	1	10/23/15 01:11 PM	TITRATOR_151023A
	H-27	Aqueous	M2540C	Total Dissolved Solids	72016	1	10/27/15 07:30 AM	WC_151026B
1510216-13A	H-26	Aqueous	SW7470A	Mercury Total: Aqueous	72061	1	10/29/15 01:17 PM	CETAC2_HG_151029B
	H-26	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72051	1	11/05/15 04:10 PM	ICP-MS3_151105A
1510216-13D	H-26	Aqueous	E300	Anions by IC method - Water	72110	1	11/02/15 01:48 PM	IC2_151102A
	H-26	Aqueous	E300	Anions by IC method - Water	72110	10	11/02/15 06:34 PM	IC2_151102A
	H-26	Aqueous	M4500-H+ B	pH	71998	1	10/23/15 01:12 PM	TITRATOR_151023A
	H-26	Aqueous	M2540C	Total Dissolved Solids	72016	1	10/27/15 07:30 AM	WC_151026B
1510216-14A	H-33	Aqueous	SW7470A	Mercury Total: Aqueous	72061	1	10/29/15 01:20 PM	CETAC2_HG_151029B
	H-33	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72051	1	11/05/15 04:16 PM	ICP-MS3_151105A
	H-33	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72051	1	11/09/15 03:30 PM	ICP-MS4_151109D
1510216-14D	H-33	Aqueous	E300	Anions by IC method - Water	72110	10	11/02/15 06:49 PM	IC2_151102A
	H-33	Aqueous	E300	Anions by IC method - Water	72110	1	11/02/15 02:02 PM	IC2_151102A
	H-33	Aqueous	M4500-H+ B	pH	71998	1	10/23/15 01:14 PM	TITRATOR_151023A
	H-33	Aqueous	M2540C	Total Dissolved Solids	72016	1	10/27/15 07:30 AM	WC_151026B
1510216-15A	H-32	Aqueous	SW7470A	Mercury Total: Aqueous	72061	1	10/29/15 01:22 PM	CETAC2_HG_151029B
	H-32	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72051	1	11/05/15 04:22 PM	ICP-MS3_151105A
	H-32	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72051	10	11/05/15 06:00 PM	ICP-MS3_151105A
1510216-15D	H-32	Aqueous	E300	Anions by IC method - Water	72110	1	11/02/15 02:17 PM	IC2_151102A
	H-32	Aqueous	E300	Anions by IC method - Water	72110	10	11/02/15 07:04 PM	IC2_151102A
	H-32	Aqueous	M4500-H+ B	pH	71998	1	10/23/15 01:16 PM	TITRATOR_151023A
	H-32	Aqueous	M2540C	Total Dissolved Solids	72016	1	10/27/15 07:30 AM	WC_151026B

Lab Order: 1510216
Client: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1510216-16A	MW-17A	Aqueous	SW7470A	Mercury Total: Aqueous	72061	1	10/29/15 01:29 PM	CETAC2_HG_151029B
	MW-17A	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72051	1	11/05/15 04:34 PM	ICP-MS3_151105A
1510216-16D	MW-17A	Aqueous	E300	Anions by IC method - Water	72110	1	11/02/15 02:31 PM	IC2_151102A
	MW-17A	Aqueous	M4500-H+ B	pH	71998	1	10/23/15 01:17 PM	TITRATOR_151023A
	MW-17A	Aqueous	M2540C	Total Dissolved Solids	72016	1	10/27/15 07:30 AM	WC_151026B

DHL Analytical, Inc.

Date: *04-Dec-15*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	PDP-23
Project:	Luminant - Martin Lake	**Lab ID:**	1510216-01
Project No:	5164-B	**Collection Date:**	10/20/15 07:40 AM
Lab Order:	1510216	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **ABO**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	10/29/15 12:36 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **KL**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	11/05/15 01:33 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	11/05/15 01:33 PM
Barium	0.0423	0.00300	0.0100		mg/L	1	11/05/15 01:33 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	11/05/15 01:33 PM
Boron	0.0310	0.0100	0.0300		mg/L	1	11/09/15 03:16 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	11/05/15 01:33 PM
Calcium	1.80	0.100	0.300		mg/L	1	11/05/15 01:33 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	11/05/15 01:33 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	11/05/15 01:33 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	11/05/15 01:33 PM
Lithium	0.0114	0.00500	0.0100		mg/L	1	11/05/15 01:33 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	11/05/15 01:33 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	11/05/15 01:33 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	11/05/15 01:33 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	5.38	0.300	1.00		mg/L	1	11/02/15 10:06 AM
Fluoride	<0.100	0.100	0.400		mg/L	1	11/02/15 10:06 AM
Sulfate	1.75	1.00	3.00	J	mg/L	1	11/02/15 10:06 AM
PH		**M4500-H+ B**					Analyst: **LM**
pH	5.76	0	0		pH Units@15.2℃	1	10/23/15 12:49 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **BJT**
Total Dissolved Solids (Residue, Filterable)	106	10.0	10.0		mg/L	1	10/27/15 07:30 AM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *04-Dec-15*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	PDP-24
Project:	Luminant - Martin Lake	**Lab ID:**	1510216-02
Project No:	5164-B	**Collection Date:**	10/20/15 08:35 AM
Lab Order:	1510216	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **ABO**
Mercury	0.000734	0.0000800	0.000200		mg/L	1	10/29/15 12:47 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **KL**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	11/05/15 01:20 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	11/05/15 01:20 PM
Barium	0.0214	0.00300	0.0100		mg/L	1	11/05/15 01:20 PM
Beryllium	0.00477	0.000300	0.00100		mg/L	1	11/05/15 01:20 PM
Boron	3.82	0.100	0.300		mg/L	10	11/09/15 03:12 PM
Cadmium	0.00230	0.000300	0.00100		mg/L	1	11/05/15 01:20 PM
Calcium	36.4	1.00	3.00		mg/L	10	11/09/15 03:12 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	11/05/15 01:20 PM
Cobalt	0.0897	0.00300	0.00500		mg/L	1	11/05/15 01:20 PM
Lead	0.000812	0.000300	0.00100	J	mg/L	1	11/05/15 01:20 PM
Lithium	0.0262	0.00500	0.0100		mg/L	1	11/05/15 01:20 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	11/05/15 01:20 PM
Selenium	0.00914	0.00200	0.00500		mg/L	1	11/05/15 01:20 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	11/05/15 01:20 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	21.7	0.300	1.00		mg/L	1	11/02/15 10:21 AM
Fluoride	0.539	0.100	0.400		mg/L	1	11/02/15 10:21 AM
Sulfate	425	10.0	30.0		mg/L	10	11/02/15 02:52 PM
PH		**M4500-H+ B**					Analyst: **LM**
pH	4.60	0	0		pH Units@15.2℃	1	10/23/15 12:51 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **BJT**
Total Dissolved Solids (Residue, Filterable)	711	10.0	10.0		mg/L	1	10/27/15 07:30 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *04-Dec-15*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	PDP-22
Project:	Luminant - Martin Lake	**Lab ID:**	1510216-03
Project No:	5164-B	**Collection Date:**	10/20/15 09:25 AM
Lab Order:	1510216	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **ABO**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	10/29/15 12:49 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **KL**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	11/05/15 01:39 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	11/05/15 01:39 PM
Barium	0.0567	0.00300	0.0100		mg/L	1	11/05/15 01:39 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	11/05/15 01:39 PM
Boron	0.0794	0.0100	0.0300		mg/L	1	11/09/15 03:18 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	11/05/15 01:39 PM
Calcium	3.40	0.100	0.300		mg/L	1	11/05/15 01:39 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	11/05/15 01:39 PM
Cobalt	0.00397	0.00300	0.00500	J	mg/L	1	11/05/15 01:39 PM
Lead	0.00244	0.000300	0.00100		mg/L	1	11/05/15 01:39 PM
Lithium	0.00712	0.00500	0.0100	J	mg/L	1	11/05/15 01:39 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	11/05/15 01:39 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	11/05/15 01:39 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	11/05/15 01:39 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	25.9	0.300	1.00		mg/L	1	11/02/15 10:35 AM
Fluoride	0.108	0.100	0.400	J	mg/L	1	11/02/15 10:35 AM
Sulfate	42.2	1.00	3.00		mg/L	1	11/02/15 10:35 AM
PH		**M4500-H+ B**					Analyst: **LM**
pH	6.17	0	0		pH Units@15.4℃	1	10/23/15 12:53 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **BJT**
Total Dissolved Solids (Residue, Filterable)	270	10.0	10.0		mg/L	1	10/27/15 07:30 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *04-Dec-15*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	MW-19
Project:	Luminant - Martin Lake	**Lab ID:**	1510216-04
Project No:	5164-B	**Collection Date:**	10/20/15 10:20 AM
Lab Order:	1510216	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **ABO**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	10/29/15 12:52 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **KL**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	11/05/15 01:45 PM
Arsenic	0.00502	0.00200	0.00500		mg/L	1	11/05/15 01:45 PM
Barium	0.0396	0.00300	0.0100		mg/L	1	11/05/15 01:45 PM
Beryllium	0.000336	0.000300	0.00100	J	mg/L	1	11/05/15 01:45 PM
Boron	0.117	0.0100	0.0300		mg/L	1	11/09/15 03:20 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	11/05/15 01:45 PM
Calcium	21.7	0.100	0.300		mg/L	1	11/05/15 01:45 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	11/05/15 01:45 PM
Cobalt	0.00304	0.00300	0.00500	J	mg/L	1	11/05/15 01:45 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	11/05/15 01:45 PM
Lithium	0.0158	0.00500	0.0100		mg/L	1	11/05/15 01:45 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	11/05/15 01:45 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	11/05/15 01:45 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	11/05/15 01:45 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	48.2	0.300	1.00		mg/L	1	11/02/15 10:50 AM
Fluoride	0.117	0.100	0.400	J	mg/L	1	11/02/15 10:50 AM
Sulfate	84.1	1.00	3.00		mg/L	1	11/02/15 10:50 AM
PH		**M4500-H+ B**					Analyst: **LM**
pH	6.10	0	0		pH Units@15.8℃	1	10/23/15 12:55 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **BJT**
Total Dissolved Solids (Residue, Filterable)	472	10.0	10.0		mg/L	1	10/27/15 07:30 AM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *04-Dec-15*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	MW-20A
Project:	Luminant - Martin Lake	**Lab ID:**	1510216-05
Project No:	5164-B	**Collection Date:**	10/20/15 11:20 AM
Lab Order:	1510216	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **ABO**
Mercury	0.00289	0.0000800	0.000200		mg/L	1	10/29/15 12:54 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **KL**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	11/05/15 01:51 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	11/05/15 01:51 PM
Barium	0.0357	0.00300	0.0100		mg/L	1	11/05/15 01:51 PM
Beryllium	0.000407	0.000300	0.00100	J	mg/L	1	11/05/15 01:51 PM
Boron	0.102	0.0100	0.0300		mg/L	1	11/09/15 03:22 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	11/05/15 01:51 PM
Calcium	9.16	0.100	0.300		mg/L	1	11/05/15 01:51 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	11/05/15 01:51 PM
Cobalt	0.00346	0.00300	0.00500	J	mg/L	1	11/05/15 01:51 PM
Lead	0.00101	0.000300	0.00100		mg/L	1	11/05/15 01:51 PM
Lithium	0.0164	0.00500	0.0100		mg/L	1	11/05/15 01:51 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	11/05/15 01:51 PM
Selenium	0.00483	0.00200	0.00500	J	mg/L	1	11/05/15 01:51 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	11/05/15 01:51 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	10.7	0.300	1.00		mg/L	1	11/02/15 11:04 AM
Fluoride	0.552	0.100	0.400		mg/L	1	11/02/15 11:04 AM
Sulfate	99.8	1.00	3.00		mg/L	1	11/02/15 11:04 AM
PH		**M4500-H+ B**					Analyst: **LM**
pH	4.67	0	0		pH Units@16.2℃	1	10/23/15 12:58 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **BJT**
Total Dissolved Solids (Residue, Filterable)	236	10.0	10.0		mg/L	1	10/27/15 07:30 AM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *04-Dec-15*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	PDP-26
Project:	Luminant - Martin Lake	**Lab ID:**	1510216-06
Project No:	5164-B	**Collection Date:**	10/20/15 02:20 PM
Lab Order:	1510216	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **ABO**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	10/29/15 01:01 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **KL**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	11/05/15 01:57 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	11/05/15 01:57 PM
Barium	0.0326	0.00300	0.0100		mg/L	1	11/05/15 01:57 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	11/05/15 01:57 PM
Boron	0.0838	0.0100	0.0300		mg/L	1	11/09/15 03:24 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	11/05/15 01:57 PM
Calcium	4.19	0.100	0.300		mg/L	1	11/05/15 01:57 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	11/05/15 01:57 PM
Cobalt	0.00338	0.00300	0.00500	J	mg/L	1	11/05/15 01:57 PM
Lead	0.000983	0.000300	0.00100	J	mg/L	1	11/05/15 01:57 PM
Lithium	0.0111	0.00500	0.0100		mg/L	1	11/05/15 01:57 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	11/05/15 01:57 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	11/05/15 01:57 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	11/05/15 01:57 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	11.8	0.300	1.00		mg/L	1	11/02/15 11:19 AM
Fluoride	0.160	0.100	0.400	J	mg/L	1	11/02/15 11:19 AM
Sulfate	37.2	1.00	3.00		mg/L	1	11/02/15 11:19 AM
PH		**M4500-H+ B**					Analyst: **LM**
pH	6.50	0	0		pH Units@15.7℃	1	10/23/15 12:59 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **BJT**
Total Dissolved Solids (Residue, Filterable)	306	10.0	10.0		mg/L	1	10/27/15 07:30 AM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *04-Dec-15*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	PDP-25
Project:	Luminant - Martin Lake	**Lab ID:**	1510216-07
Project No:	5164-B	**Collection Date:**	10/20/15 03:20 PM
Lab Order:	1510216	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **ABO**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	10/29/15 01:03 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **KL**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	11/05/15 02:03 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	11/05/15 02:03 PM
Barium	0.222	0.00300	0.0100		mg/L	1	11/05/15 02:03 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	11/05/15 02:03 PM
Boron	0.101	0.0100	0.0300		mg/L	1	11/09/15 03:26 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	11/05/15 02:03 PM
Calcium	35.2	1.00	3.00		mg/L	10	11/05/15 05:30 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	11/05/15 02:03 PM
Cobalt	0.0114	0.00300	0.00500		mg/L	1	11/05/15 02:03 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	11/05/15 02:03 PM
Lithium	0.0718	0.00500	0.0100		mg/L	1	11/05/15 02:03 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	11/05/15 02:03 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	11/05/15 02:03 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	11/05/15 02:03 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	137	3.00	10.0		mg/L	10	11/02/15 03:06 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	11/02/15 11:44 AM
Sulfate	105	1.00	3.00		mg/L	1	11/02/15 11:44 AM
PH		**M4500-H+ B**					Analyst: **LM**
pH	5.90	0	0		pH Units@15.5℃	1	10/23/15 01:00 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **BJT**
Total Dissolved Solids (Residue, Filterable)	533	10.0	10.0		mg/L	1	10/27/15 07:30 AM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *04-Dec-15*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	H-30
Project:	Luminant - Martin Lake	**Lab ID:**	1510216-08
Project No:	5164-B	**Collection Date:**	10/20/15 04:20 PM
Lab Order:	1510216	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **ABO**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	10/29/15 01:05 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **KL**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	11/05/15 02:09 PM
Arsenic	0.0120	0.00200	0.00500		mg/L	1	11/05/15 02:09 PM
Barium	0.0675	0.00300	0.0100		mg/L	1	11/05/15 02:09 PM
Beryllium	0.0102	0.000300	0.00100		mg/L	1	11/05/15 02:09 PM
Boron	12.3	0.500	1.50		mg/L	50	11/05/15 05:36 PM
Cadmium	0.00186	0.000300	0.00100		mg/L	1	11/05/15 02:09 PM
Calcium	156	5.00	15.0		mg/L	50	11/05/15 05:36 PM
Chromium	0.00680	0.00200	0.00500		mg/L	1	11/09/15 05:48 PM
Cobalt	0.303	0.00300	0.00500		mg/L	1	11/05/15 02:09 PM
Lead	0.000456	0.000300	0.00100	J	mg/L	1	11/05/15 02:09 PM
Lithium	0.110	0.00500	0.0100		mg/L	1	11/05/15 02:09 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	11/05/15 02:09 PM
Selenium	0.0740	0.00200	0.00500		mg/L	1	11/05/15 02:09 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	11/05/15 02:09 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	131	3.00	10.0		mg/L	10	11/02/15 03:21 PM
Fluoride	0.471	0.100	0.400		mg/L	1	11/02/15 11:59 AM
Sulfate	1400	10.0	30.0		mg/L	10	11/02/15 03:21 PM
PH		**M4500-H+ B**					Analyst: **LM**
pH	5.74	0	0		pH Units@15.7℃	1	10/23/15 01:02 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **BJT**
Total Dissolved Solids (Residue, Filterable)	2410	50.0	50.0		mg/L	1	10/27/15 07:30 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *04-Dec-15*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	H-31
Project:	Luminant - Martin Lake	**Lab ID:**	1510216-09
Project No:	5164-B	**Collection Date:**	10/20/15 05:15 PM
Lab Order:	1510216	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **ABO**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	10/29/15 01:08 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **KL**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	11/05/15 02:15 PM
Arsenic	0.0168	0.00200	0.00500		mg/L	1	11/05/15 02:15 PM
Barium	0.0732	0.00300	0.0100		mg/L	1	11/05/15 02:15 PM
Beryllium	0.0126	0.000300	0.00100		mg/L	1	11/05/15 02:15 PM
Boron	17.2	0.500	1.50		mg/L	50	11/05/15 05:42 PM
Cadmium	0.00320	0.000300	0.00100		mg/L	1	11/05/15 02:15 PM
Calcium	194	5.00	15.0		mg/L	50	11/05/15 05:42 PM
Chromium	0.00687	0.00200	0.00500		mg/L	1	11/09/15 05:44 PM
Cobalt	0.434	0.00300	0.00500		mg/L	1	11/05/15 02:15 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	11/05/15 02:15 PM
Lithium	0.137	0.00500	0.0100		mg/L	1	11/05/15 02:15 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	11/05/15 02:15 PM
Selenium	0.116	0.00200	0.00500		mg/L	1	11/05/15 02:15 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	11/05/15 02:15 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	179	30.0	100		mg/L	100	11/02/15 05:22 PM
Fluoride	0.889	0.100	0.400		mg/L	1	11/02/15 12:13 PM
Sulfate	1930	100	300		mg/L	100	11/02/15 05:22 PM
PH		**M4500-H+ B**					Analyst: **LM**
pH	5.53	0	0		pH Units@15.7℃	1	10/23/15 01:03 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **BJT**
Total Dissolved Solids (Residue, Filterable)	3270	50.0	50.0		mg/L	1	10/27/15 07:30 AM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *04-Dec-15*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	H-29
Project:	Luminant - Martin Lake	**Lab ID:**	1510216-10
Project No:	5164-B	**Collection Date:**	10/21/15 12:45 PM
Lab Order:	1510216	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **ABO**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	10/29/15 01:11 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **KL**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	11/05/15 02:21 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	11/05/15 02:21 PM
Barium	0.159	0.00300	0.0100		mg/L	1	11/05/15 02:21 PM
Beryllium	0.000359	0.000300	0.00100	J	mg/L	1	11/05/15 02:21 PM
Boron	0.0788	0.0100	0.0300		mg/L	1	11/09/15 03:28 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	11/05/15 02:21 PM
Calcium	16.0	0.100	0.300		mg/L	1	11/05/15 02:21 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	11/05/15 02:21 PM
Cobalt	0.0301	0.00300	0.00500		mg/L	1	11/05/15 02:21 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	11/05/15 02:21 PM
Lithium	0.0156	0.00500	0.0100		mg/L	1	11/05/15 02:21 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	11/05/15 02:21 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	11/05/15 02:21 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	11/05/15 02:21 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	65.2	3.00	10.0		mg/L	10	11/02/15 05:36 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	11/02/15 12:28 PM
Sulfate	171	10.0	30.0		mg/L	10	11/02/15 05:36 PM
PH		**M4500-H+ B**					Analyst: **LM**
pH	5.59	0	0		pH Units@17.6℃	1	10/23/15 01:08 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **BJT**
Total Dissolved Solids (Residue, Filterable)	441	10.0	10.0		mg/L	1	10/27/15 07:30 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *04-Dec-15*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	H-28
Project:	Luminant - Martin Lake	**Lab ID:**	1510216-11
Project No:	5164-B	**Collection Date:**	10/21/15 01:35 PM
Lab Order:	1510216	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **ABO**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	10/29/15 01:13 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **KL**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	11/05/15 03:58 PM
Arsenic	0.00278	0.00200	0.00500	J	mg/L	1	11/05/15 03:58 PM
Barium	0.0396	0.00300	0.0100		mg/L	1	11/05/15 03:58 PM
Beryllium	0.00148	0.000300	0.00100		mg/L	1	11/05/15 03:58 PM
Boron	9.25	0.100	0.300		mg/L	10	11/05/15 05:48 PM
Cadmium	0.00121	0.000300	0.00100		mg/L	1	11/05/15 03:58 PM
Calcium	113	1.00	3.00		mg/L	10	11/05/15 05:48 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	11/05/15 03:58 PM
Cobalt	0.188	0.00300	0.00500		mg/L	1	11/05/15 03:58 PM
Lead	0.000491	0.000300	0.00100	J	mg/L	1	11/05/15 03:58 PM
Lithium	0.154	0.00500	0.0100		mg/L	1	11/05/15 03:58 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	11/05/15 03:58 PM
Selenium	0.00682	0.00200	0.00500		mg/L	1	11/05/15 03:58 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	11/05/15 03:58 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	109	3.00	10.0		mg/L	10	11/02/15 05:51 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	11/02/15 01:18 PM
Sulfate	1010	10.0	30.0		mg/L	10	11/02/15 05:51 PM
PH		**M4500-H+ B**					Analyst: **LM**
pH	5.00	0	0		pH Units@17℃	1	10/23/15 01:09 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **BJT**
Total Dissolved Solids (Residue, Filterable)	1830	50.0	50.0		mg/L	1	10/27/15 07:30 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *04-Dec-15*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	H-27
Project:	Luminant - Martin Lake	**Lab ID:**	1510216-12
Project No:	5164-B	**Collection Date:**	10/21/15 02:20 PM
Lab Order:	1510216	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **ABO**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	10/29/15 01:15 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **KL**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	11/05/15 04:04 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	11/05/15 04:04 PM
Barium	0.0378	0.00300	0.0100		mg/L	1	11/05/15 04:04 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	11/05/15 04:04 PM
Boron	0.580	0.0100	0.0300		mg/L	1	11/05/15 04:04 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	11/05/15 04:04 PM
Calcium	55.3	1.00	3.00		mg/L	10	11/05/15 05:54 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	11/05/15 04:04 PM
Cobalt	0.00432	0.00300	0.00500	J	mg/L	1	11/05/15 04:04 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	11/05/15 04:04 PM
Lithium	0.0607	0.00500	0.0100		mg/L	1	11/05/15 04:04 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	11/05/15 04:04 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	11/05/15 04:04 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	11/05/15 04:04 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	117	3.00	10.0		mg/L	10	11/02/15 06:20 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	11/02/15 01:33 PM
Sulfate	328	10.0	30.0		mg/L	10	11/02/15 06:20 PM
PH		**M4500-H+ B**					Analyst: **LM**
pH	6.10	0	0		pH Units@16.9℃	1	10/23/15 01:11 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **BJT**
Total Dissolved Solids (Residue, Filterable)	800	10.0	10.0		mg/L	1	10/27/15 07:30 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *04-Dec-15*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	H-26
Project:	Luminant - Martin Lake	**Lab ID:**	1510216-13
Project No:	5164-B	**Collection Date:**	10/21/15 03:25 PM
Lab Order:	1510216	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **ABO**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	10/29/15 01:17 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **KL**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	11/05/15 04:10 PM
Arsenic	0.00364	0.00200	0.00500	J	mg/L	1	11/05/15 04:10 PM
Barium	0.0785	0.00300	0.0100		mg/L	1	11/05/15 04:10 PM
Beryllium	0.000349	0.000300	0.00100	J	mg/L	1	11/05/15 04:10 PM
Boron	0.602	0.0100	0.0300		mg/L	1	11/05/15 04:10 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	11/05/15 04:10 PM
Calcium	24.2	0.100	0.300		mg/L	1	11/05/15 04:10 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	11/05/15 04:10 PM
Cobalt	0.0385	0.00300	0.00500		mg/L	1	11/05/15 04:10 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	11/05/15 04:10 PM
Lithium	0.0139	0.00500	0.0100		mg/L	1	11/05/15 04:10 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	11/05/15 04:10 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	11/05/15 04:10 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	11/05/15 04:10 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	69.2	3.00	10.0		mg/L	10	11/02/15 06:34 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	11/02/15 01:48 PM
Sulfate	154	10.0	30.0		mg/L	10	11/02/15 06:34 PM
PH		**M4500-H+ B**					Analyst: **LM**
pH	5.71	0	0		pH Units@17.2℃	1	10/23/15 01:12 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **BJT**
Total Dissolved Solids (Residue, Filterable)	466	10.0	10.0		mg/L	1	10/27/15 07:30 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *04-Dec-15*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	H-33
Project:	Luminant - Martin Lake	**Lab ID:**	1510216-14
Project No:	5164-B	**Collection Date:**	10/22/15 12:55 PM
Lab Order:	1510216	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **ABO**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	10/29/15 01:20 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **KL**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	11/05/15 04:16 PM
Arsenic	0.00208	0.00200	0.00500	J	mg/L	1	11/05/15 04:16 PM
Barium	0.0586	0.00300	0.0100		mg/L	1	11/05/15 04:16 PM
Beryllium	0.000351	0.000300	0.00100	J	mg/L	1	11/05/15 04:16 PM
Boron	0.0462	0.0100	0.0300		mg/L	1	11/09/15 03:30 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	11/05/15 04:16 PM
Calcium	17.9	0.100	0.300		mg/L	1	11/05/15 04:16 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	11/05/15 04:16 PM
Cobalt	0.0274	0.00300	0.00500		mg/L	1	11/05/15 04:16 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	11/05/15 04:16 PM
Lithium	0.0814	0.00500	0.0100		mg/L	1	11/05/15 04:16 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	11/05/15 04:16 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	11/05/15 04:16 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	11/05/15 04:16 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	60.5	3.00	10.0		mg/L	10	11/02/15 06:49 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	11/02/15 02:02 PM
Sulfate	120	1.00	3.00		mg/L	1	11/02/15 02:02 PM
PH		**M4500-H+ B**					Analyst: **LM**
pH	5.65	0	0		pH Units@17.1℃	1	10/23/15 01:14 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **BJT**
Total Dissolved Solids (Residue, Filterable)	415	10.0	10.0		mg/L	1	10/27/15 07:30 AM

Qualifiers:					
	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *04-Dec-15*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	H-32
Project:	Luminant - Martin Lake	**Lab ID:**	1510216-15
Project No:	5164-B	**Collection Date:**	10/22/15 01:55 PM
Lab Order:	1510216	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **ABO**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	10/29/15 01:22 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **KL**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	11/05/15 04:22 PM
Arsenic	0.00280	0.00200	0.00500	J	mg/L	1	11/05/15 04:22 PM
Barium	0.160	0.00300	0.0100		mg/L	1	11/05/15 04:22 PM
Beryllium	0.00266	0.000300	0.00100		mg/L	1	11/05/15 04:22 PM
Boron	1.22	0.0100	0.0300		mg/L	1	11/05/15 04:22 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	11/05/15 04:22 PM
Calcium	42.2	1.00	3.00		mg/L	10	11/05/15 06:00 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	11/05/15 04:22 PM
Cobalt	0.163	0.00300	0.00500		mg/L	1	11/05/15 04:22 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	11/05/15 04:22 PM
Lithium	0.0788	0.00500	0.0100		mg/L	1	11/05/15 04:22 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	11/05/15 04:22 PM
Selenium	0.00303	0.00200	0.00500	J	mg/L	1	11/05/15 04:22 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	11/05/15 04:22 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	120	3.00	10.0		mg/L	10	11/02/15 07:04 PM
Fluoride	0.374	0.100	0.400	J	mg/L	1	11/02/15 02:17 PM
Sulfate	309	10.0	30.0		mg/L	10	11/02/15 07:04 PM
PH		**M4500-H+ B**					Analyst: **LM**
pH	5.65	0	0		pH Units@17.9℃	1	10/23/15 01:16 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **BJT**
Total Dissolved Solids (Residue, Filterable)	797	10.0	10.0		mg/L	1	10/27/15 07:30 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *04-Dec-15*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	MW-17A
Project:	Luminant - Martin Lake	**Lab ID:**	1510216-16
Project No:	5164-B	**Collection Date:**	10/21/15 02:55 PM
Lab Order:	1510216	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **ABO**
Mercury	0.000217	0.0000800	0.000200		mg/L	1	10/29/15 01:29 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **KL**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	11/05/15 04:34 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	11/05/15 04:34 PM
Barium	0.101	0.00300	0.0100		mg/L	1	11/05/15 04:34 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	11/05/15 04:34 PM
Boron	0.402	0.0100	0.0300		mg/L	1	11/05/15 04:34 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	11/05/15 04:34 PM
Calcium	4.38	0.100	0.300		mg/L	1	11/05/15 04:34 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	11/05/15 04:34 PM
Cobalt	0.00732	0.00300	0.00500		mg/L	1	11/05/15 04:34 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	11/05/15 04:34 PM
Lithium	0.0145	0.00500	0.0100		mg/L	1	11/05/15 04:34 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	11/05/15 04:34 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	11/05/15 04:34 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	11/05/15 04:34 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	9.10	0.300	1.00		mg/L	1	11/02/15 02:31 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	11/02/15 02:31 PM
Sulfate	37.0	1.00	3.00		mg/L	1	11/02/15 02:31 PM
PH		**M4500-H+ B**					Analyst: **LM**
pH	5.30	0	0		pH Units@17.9℃	1	10/23/15 01:17 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **BJT**
Total Dissolved Solids (Residue, Filterable)	138	10.0	10.0		mg/L	1	10/27/15 07:30 AM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

CLIENT: Pastor, Behling & Wheeler
Work Order: 1510216
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_151029B

The QC data in batch 72061 applies to the following samples: 1510216-01A, 1510216-02A, 1510216-03A, 1510216-04A, 1510216-05A, 1510216-06A, 1510216-07A, 1510216-08A, 1510216-09A, 1510216-10A, 1510216-11A, 1510216-12A, 1510216-13A, 1510216-14A, 1510216-15A, 1510216-16A

Sample ID	**MB-72061**	Batch ID:	**72061**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**CETAC2_HG_151029B**	Analysis Date:	**10/29/2015 12:29:17 P**	Prep Date:	**10/28/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.0000800	0.000200								

Sample ID	**LCS-72061**	Batch ID:	**72061**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**CETAC2_HG_151029B**	Analysis Date:	**10/29/2015 12:31:33 P**	Prep Date:	**10/28/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00211	0.000200	0.00200	0	106	85	115			

Sample ID	**LCSD-72061**	Batch ID:	**72061**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**LCSD**	Run ID:	**CETAC2_HG_151029B**	Analysis Date:	**10/29/2015 12:33:50 P**	Prep Date:	**10/28/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00212	0.000200	0.00200	0	106	85	115	0.473	15	

Sample ID	**1510216-01A SD**	Batch ID:	**72061**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**SD**	Run ID:	**CETAC2_HG_151029B**	Analysis Date:	**10/29/2015 12:38:23 P**	Prep Date:	**10/28/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.000400	0.00100	0	0				0	10	

Sample ID	**1510216-01A PDS**	Batch ID:	**72061**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**PDS**	Run ID:	**CETAC2_HG_151029B**	Analysis Date:	**10/29/2015 12:40:40 P**	Prep Date:	**10/28/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00246	0.000200	0.00250	0	98.4	85	115			

Sample ID	**1510216-01A MS**	Batch ID:	**72061**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**MS**	Run ID:	**CETAC2_HG_151029B**	Analysis Date:	**10/29/2015 12:42:56 P**	Prep Date:	**10/28/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00200	0.000200	0.00200	0	100	80	120			

Sample ID	**1510216-01A MSD**	Batch ID:	**72061**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**MSD**	Run ID:	**CETAC2_HG_151029B**	Analysis Date:	**10/29/2015 12:45:13 P**	Prep Date:	**10/28/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00218	0.000200	0.00200	0	109	80	120	8.61	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1510216
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_151029B

Sample ID	**ICV-151029**	Batch ID:	**R82414**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**ICV**	Run ID:	**CETAC2_HG_151029B**	Analysis Date:	**10/29/2015 11:25:42 A**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00406	0.000200	0.00400	0	102	90	110			

Sample ID	**CCV1-151029**	Batch ID:	**R82414**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**CETAC2_HG_151029B**	Analysis Date:	**10/29/2015 12:06:33 P**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00200	0.000200	0.00200	0	100	90	110			

Sample ID	**CCV2-151029**	Batch ID:	**R82414**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**CETAC2_HG_151029B**	Analysis Date:	**10/29/2015 12:56:38 P**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00204	0.000200	0.00200	0	102	90	110			

Sample ID	**CCV3-151029**	Batch ID:	**R82414**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**CETAC2_HG_151029B**	Analysis Date:	**10/29/2015 1:24:47 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00201	0.000200	0.00200	0	101	90	110			

Sample ID	**CCV4-151029**	Batch ID:	**R82414**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**CETAC2_HG_151029B**	Analysis Date:	**10/29/2015 2:12:20 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00202	0.000200	0.00200	0	101	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1510216
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS3_151105A

The QC data in batch 72051 applies to the following samples: 1510216-01A, 1510216-02A, 1510216-03A, 1510216-04A, 1510216-05A, 1510216-06A, 1510216-07A, 1510216-08A, 1510216-09A, 1510216-10A, 1510216-11A, 1510216-12A, 1510216-13A, 1510216-14A, 1510216-15A, 1510216-16A

Sample ID **MB-72051** Batch ID: **72051** TestNo: **SW6020A** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS3_151105A** Analysis Date: **11/5/2015 12:50:00 PM** Prep Date: **10/28/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.000800	0.00250								
Arsenic	<0.00200	0.00500								
Barium	<0.00300	0.0100								
Beryllium	<0.000300	0.00100								
Boron	<0.0100	0.0300								
Cadmium	<0.000300	0.00100								
Calcium	<0.100	0.300								
Chromium	0.0533	0.00500								
Cobalt	<0.00300	0.00500								
Lead	<0.000300	0.00100								
Lithium	<0.00500	0.0100								
Molybdenum	0.00622	0.00500								
Selenium	<0.00200	0.00500								
Thallium	<0.000500	0.00150								

Sample ID **LCS-72051** Batch ID: **72051** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS3_151105A** Analysis Date: **11/5/2015 12:56:00 PM** Prep Date: **10/28/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.181	0.00250	0.200	0	90.3	80	120			
Arsenic	0.186	0.00500	0.200	0	92.8	80	120			
Barium	0.181	0.0100	0.200	0	90.7	80	120			
Beryllium	0.199	0.00100	0.200	0	99.6	80	120			
Boron	0.181	0.0300	0.200	0	90.6	80	120			
Cadmium	0.179	0.00100	0.200	0	89.4	80	120			
Calcium	4.76	0.300	5.00	0	95.2	80	120			
Chromium	0.184	0.00500	0.200	0	92.1	80	120			
Cobalt	0.189	0.00500	0.200	0	94.6	80	120			
Lead	0.192	0.00100	0.200	0	95.8	80	120			
Lithium	0.192	0.0100	0.200	0	96.2	80	120			
Molybdenum	0.176	0.00500	0.200	0	87.8	80	120			
Selenium	0.184	0.00500	0.200	0	91.9	80	120			
Thallium	0.194	0.00150	0.200	0	96.8	80	120			

Sample ID **LCSD-72051** Batch ID: **72051** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS3_151105A** Analysis Date: **11/5/2015 1:02:00 PM** Prep Date: **10/28/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.182	0.00250	0.200	0	90.9	80	120	0.662	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1510216
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS3_151105A

Sample ID **LCSD-72051**	Batch ID: **72051**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCSD**	Run ID: **ICP-MS3_151105A**	Analysis Date: **11/5/2015 1:02:00 PM**	Prep Date: **10/28/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.189	0.00500	0.200	0	94.3	80	120	1.55	15	
Barium	0.187	0.0100	0.200	0	93.4	80	120	2.99	15	
Beryllium	0.207	0.00100	0.200	0	103	80	120	3.65	15	
Boron	0.193	0.0300	0.200	0	96.6	80	120	6.41	15	
Cadmium	0.184	0.00100	0.200	0	92.0	80	120	2.87	15	
Calcium	4.84	0.300	5.00	0	96.7	80	120	1.52	15	
Chromium	0.190	0.00500	0.200	0	94.8	80	120	2.84	15	
Cobalt	0.198	0.00500	0.200	0	99.0	80	120	4.65	15	
Lead	0.195	0.00100	0.200	0	97.6	80	120	1.81	15	
Lithium	0.201	0.0100	0.200	0	101	80	120	4.52	15	
Molybdenum	0.180	0.00500	0.200	0	90.2	80	120	2.75	15	
Selenium	0.189	0.00500	0.200	0	94.5	80	120	2.79	15	
Thallium	0.199	0.00150	0.200	0	99.5	80	120	2.80	15	

Sample ID **1510216-02A SD**	Batch ID: **72051**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS3_151105A**	Analysis Date: **11/5/2015 1:26:00 PM**	Prep Date: **10/28/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.00400	0.0125	0	0				0	10	
Arsenic	<0.0100	0.0250	0	0				0	10	
Barium	0.0222	0.0500	0	0.0214				3.78	10	
Beryllium	0.00476	0.00500	0	0.00477				0.083	10	
Cadmium	0.00228	0.00500	0	0.00230				0.829	10	
Chromium	<0.0100	0.0250	0	0				0	10	
Cobalt	0.0927	0.0250	0	0.0897				3.19	10	
Lead	<0.00150	0.00500	0	0.000812				0	10	
Lithium	0.0270	0.0500	0	0.0262				3.03	10	
Molybdenum	<0.0100	0.0250	0	0				0	10	
Selenium	<0.0100	0.0250	0	0.00914				0	10	
Thallium	<0.00250	0.00750	0	0				0	10	

Sample ID **1510216-02A PDS**	Batch ID: **72051**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS3_151105A**	Analysis Date: **11/5/2015 2:27:00 PM**	Prep Date: **10/28/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.179	0.00250	0.200	0	89.4	80	120			
Arsenic	0.184	0.00500	0.200	0	92.0	80	120			
Barium	0.209	0.0100	0.200	0.0214	93.6	80	120			
Beryllium	0.197	0.00100	0.200	0.00477	96.2	80	120			
Cadmium	0.182	0.00100	0.200	0.00230	89.8	80	120			
Chromium	0.188	0.00500	0.200	0	93.8	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1510216
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS3_151105A

Sample ID **1510216-02A PDS**	Batch ID: **72051**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS3_151105A**	Analysis Date: **11/5/2015 2:27:00 PM**	Prep Date: **10/28/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cobalt	0.277	0.00500	0.200	0.0897	93.6	80	120			
Lead	0.194	0.00100	0.200	0.000812	96.5	80	120			
Lithium	0.208	0.0100	0.200	0.0262	91.0	80	120			
Molybdenum	0.176	0.00500	0.200	0	88.2	80	120			
Selenium	0.190	0.00500	0.200	0.00914	90.5	80	120			
Thallium	0.194	0.00150	0.200	0	97.2	80	120			

Sample ID **1510216-02A MS**	Batch ID: **72051**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS3_151105A**	Analysis Date: **11/5/2015 2:33:00 PM**	Prep Date: **10/28/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.184	0.00250	0.200	0	92.2	80	120			
Arsenic	0.185	0.00500	0.200	0	92.5	80	120			
Barium	0.207	0.0100	0.200	0.0214	92.9	80	120			
Beryllium	0.194	0.00100	0.200	0.00477	94.4	80	120			
Boron	3.58	0.0300	0.200	3.37	104	80	120			
Cadmium	0.181	0.00100	0.200	0.00230	89.5	80	120			
Calcium	42.0	0.300	5.00	36.7	107	80	120			
Chromium	0.181	0.00500	0.200	0	90.7	80	120			
Cobalt	0.275	0.00500	0.200	0.0897	92.5	80	120			
Lead	0.190	0.00100	0.200	0.000812	94.5	80	120			
Lithium	0.206	0.0100	0.200	0.0262	90.1	80	120			
Molybdenum	0.175	0.00500	0.200	0	87.6	80	120			
Selenium	0.187	0.00500	0.200	0.00914	89.0	80	120			
Thallium	0.194	0.00150	0.200	0	97.0	80	120			

Sample ID **1510216-02A MSD**	Batch ID: **72051**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS3_151105A**	Analysis Date: **11/5/2015 2:39:00 PM**	Prep Date: **10/28/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.182	0.00250	0.200	0	90.9	80	120	1.37	15	
Arsenic	0.182	0.00500	0.200	0	91.1	80	120	1.53	15	
Barium	0.206	0.0100	0.200	0.0214	92.2	80	120	0.678	15	
Beryllium	0.194	0.00100	0.200	0.00477	94.5	80	120	0.155	15	
Boron	3.63	0.0300	0.200	3.37	129	80	120	1.39	15	S
Cadmium	0.181	0.00100	0.200	0.00230	89.2	80	120	0.331	15	
Calcium	42.8	0.300	5.00	36.7	123	80	120	1.91	15	S
Chromium	0.180	0.00500	0.200	0	90.2	80	120	0.608	15	
Cobalt	0.272	0.00500	0.200	0.0897	91.3	80	120	0.914	15	
Lead	0.191	0.00100	0.200	0.000812	95.0	80	120	0.525	15	
Lithium	0.212	0.0100	0.200	0.0262	92.9	80	120	2.68	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1510216
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS3_151105A

Sample ID **1510216-02A MSD** Batch ID: **72051** TestNo: **SW6020A** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS3_151105A** Analysis Date: **11/5/2015 2:39:00 PM** Prep Date: **10/28/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Molybdenum	0.176	0.00500	0.200	0	87.9	80	120	0.399	15	
Selenium	0.189	0.00500	0.200	0.00914	90.0	80	120	1.01	15	
Thallium	0.195	0.00150	0.200	0	97.4	80	120	0.514	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1510216
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS3_151105A

Sample ID **ICV1-151105**	Batch ID: **R82538**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS3_151105A**	Analysis Date: **11/5/2015 12:26:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.100	0.00250	0.100	0	100	90	110			
Arsenic	0.101	0.00500	0.100	0	101	90	110			
Barium	0.101	0.0100	0.100	0	101	90	110			
Beryllium	0.108	0.00100	0.100	0	108	90	110			
Boron	0.0989	0.0300	0.100	0	98.9	90	110			
Cadmium	0.0994	0.00100	0.100	0	99.4	90	110			
Calcium	2.41	0.300	2.50	0	96.4	90	110			
Chromium	0.105	0.00500	0.100	0	105	90	110			
Cobalt	0.108	0.00500	0.100	0	108	90	110			
Lead	0.104	0.00100	0.100	0	104	90	110			
Lithium	0.104	0.0100	0.100	0	104	90	110			
Molybdenum	0.0943	0.00500	0.100	0	94.3	90	110			
Selenium	0.101	0.00500	0.100	0	101	90	110			
Thallium	0.101	0.00150	0.100	0	101	90	110			

Sample ID **ILCVL-151105**	Batch ID: **R82538**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS3_151105A**	Analysis Date: **11/5/2015 12:38:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00202	0.00250	0.00200	0	101	70	130			
Arsenic	0.00519	0.00500	0.00500	0	104	70	130			
Barium	0.00531	0.0100	0.00500	0	106	70	130			
Beryllium	0.00114	0.00100	0.00100	0	114	70	130			
Boron	0.0194	0.0300	0.0200	0	97.1	70	130			
Cadmium	0.00102	0.00100	0.00100	0	102	70	130			
Calcium	0.111	0.300	0.100	0	111	70	130			
Chromium	0.00528	0.00500	0.00500	0	106	70	130			
Cobalt	0.00549	0.00500	0.00500	0	110	70	130			
Lead	0.00113	0.00100	0.00100	0	113	70	130			
Lithium	0.0108	0.0100	0.0100	0	108	70	130			
Molybdenum	0.00515	0.00500	0.00500	0	103	70	130			
Selenium	0.00533	0.00500	0.00500	0	107	70	130			
Thallium	0.00111	0.00150	0.00100	0	111	70	130			

Sample ID **CCV1-151105**	Batch ID: **R82538**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS3_151105A**	Analysis Date: **11/5/2015 3:40:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.198	0.00250	0.200	0	98.8	90	110			
Arsenic	0.193	0.00500	0.200	0	96.6	90	110			
Barium	0.195	0.0100	0.200	0	97.3	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1510216
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS3_151105A

Sample ID **CCV1-151105** Batch ID: **R82538** TestNo: **SW6020A** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS3_151105A** Analysis Date: **11/5/2015 3:40:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.215	0.00100	0.200	0	108	90	110			
Boron	0.215	0.0300	0.200	0	107	90	110			
Cadmium	0.190	0.00100	0.200	0	95.0	90	110			
Calcium	5.27	0.300	5.00	0	105	90	110			
Chromium	0.197	0.00500	0.200	0	98.3	90	110			
Cobalt	0.205	0.00500	0.200	0	103	90	110			
Lead	0.206	0.00100	0.200	0	103	90	110			
Lithium	0.214	0.0100	0.200	0	107	90	110			
Molybdenum	0.187	0.00500	0.200	0	93.4	90	110			
Selenium	0.200	0.00500	0.200	0	100	90	110			
Thallium	0.209	0.00150	0.200	0	105	90	110			

Sample ID **LCVL1-151105** Batch ID: **R82538** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS3_151105A** Analysis Date: **11/5/2015 3:52:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00204	0.00250	0.00200	0	102	70	130			
Arsenic	0.00506	0.00500	0.00500	0	101	70	130			
Barium	0.00523	0.0100	0.00500	0	105	70	130			
Beryllium	0.00112	0.00100	0.00100	0	112	70	130			
Boron	0.0331	0.0300	0.0200	0	166	70	130			S
Cadmium	0.00100	0.00100	0.00100	0	100	70	130			
Calcium	0.105	0.300	0.100	0	105	70	130			
Chromium	0.00521	0.00500	0.00500	0	104	70	130			
Cobalt	0.00534	0.00500	0.00500	0	107	70	130			
Lead	0.00109	0.00100	0.00100	0	109	70	130			
Lithium	0.0111	0.0100	0.0100	0	110	70	130			
Molybdenum	0.00489	0.00500	0.00500	0	97.8	70	130			
Selenium	0.00523	0.00500	0.00500	0	105	70	130			
Thallium	0.00105	0.00150	0.00100	0	105	70	130			

Sample ID **CCV2-151105** Batch ID: **R82538** TestNo: **SW6020A** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS3_151105A** Analysis Date: **11/5/2015 4:46:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.204	0.00250	0.200	0	102	90	110			
Arsenic	0.198	0.00500	0.200	0	98.8	90	110			
Barium	0.201	0.0100	0.200	0	100	90	110			
Beryllium	0.218	0.00100	0.200	0	109	90	110			
Boron	0.220	0.0300	0.200	0	110	90	110			
Cadmium	0.197	0.00100	0.200	0	98.4	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1510216
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS3_151105A

Sample ID **CCV2-151105** Batch ID: **R82538** TestNo: **SW6020A** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS3_151105A** Analysis Date: **11/5/2015 4:46:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	5.40	0.300	5.00	0	108	90	110			
Chromium	0.203	0.00500	0.200	0	102	90	110			
Cobalt	0.206	0.00500	0.200	0	103	90	110			
Lead	0.209	0.00100	0.200	0	104	90	110			
Lithium	0.217	0.0100	0.200	0	108	90	110			
Molybdenum	0.189	0.00500	0.200	0	94.4	90	110			
Selenium	0.201	0.00500	0.200	0	101	90	110			
Thallium	0.210	0.00150	0.200	0	105	90	110			

Sample ID **LCVL2-151105** Batch ID: **R82538** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS3_151105A** Analysis Date: **11/5/2015 5:12:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00197	0.00250	0.00200	0	98.4	70	130			
Arsenic	0.00469	0.00500	0.00500	0	93.9	70	130			
Barium	0.00521	0.0100	0.00500	0	104	70	130			
Beryllium	0.00109	0.00100	0.00100	0	109	70	130			
Boron	0.0301	0.0300	0.0200	0	150	70	130			S
Cadmium	0.00105	0.00100	0.00100	0	104	70	130			
Calcium	0.102	0.300	0.100	0	102	70	130			
Chromium	0.00523	0.00500	0.00500	0	105	70	130			
Cobalt	0.00526	0.00500	0.00500	0	105	70	130			
Lead	0.00107	0.00100	0.00100	0	107	70	130			
Lithium	0.0118	0.0100	0.0100	0	118	70	130			
Molybdenum	0.00473	0.00500	0.00500	0	94.5	70	130			
Selenium	0.00507	0.00500	0.00500	0	101	70	130			
Thallium	0.00103	0.00150	0.00100	0	103	70	130			

Sample ID **CCV3-151105** Batch ID: **R82538** TestNo: **SW6020A** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS3_151105A** Analysis Date: **11/5/2015 6:07:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.214	0.0300	0.200	0	107	90	110			
Calcium	5.22	0.300	5.00	0	104	90	110			

Sample ID **LCVL3-151105** Batch ID: **R82538** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS3_151105A** Analysis Date: **11/5/2015 6:31:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0283	0.0300	0.0200	0	141	70	130			S
Calcium	0.0945	0.300	0.100	0	94.5	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler

Work Order: 1510216

Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_151109D

The QC data in batch 72051 applies to the following samples: 1510216-01A, 1510216-02A, 1510216-03A, 1510216-04A, 1510216-05A, 1510216-06A, 1510216-07A, 1510216-08A, 1510216-09A, 1510216-10A, 1510216-11A, 1510216-12A, 1510216-13A, 1510216-14A, 1510216-15A, 1510216-16A

Sample ID **1510216-02A SD** Batch ID: **72051** TestNo: **SW6020A** Units: **mg/L**

SampType: **SD** Run ID: **ICP-MS4_151109D** Analysis Date: **11/9/2015 3:14:00 PM** Prep Date: **10/28/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	4.22	1.50	0	3.82				9.82	10	
Calcium	35.8	15.0	0	36.4				1.60	10	

Sample ID **1510216-02A PDS** Batch ID: **72051** TestNo: **SW6020A** Units: **mg/L**

SampType: **PDS** Run ID: **ICP-MS4_151109D** Analysis Date: **11/9/2015 3:32:00 PM** Prep Date: **10/28/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	5.97	0.300	2.00	3.82	107	80	120			
Calcium	80.2	3.00	50.0	36.4	87.6	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1510216
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_151109D

The QC data in batch 72217 applies to the following samples: 1510216-08A, 1510216-09A

Sample ID	**MB-72217**	Batch ID:	**72217**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**ICP-MS4_151109D**	Analysis Date:	**11/9/2015 5:36:00 PM**	Prep Date:	**11/9/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chromium	<0.00200	0.00500								

Sample ID	**LCS-72217**	Batch ID:	**72217**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**ICP-MS4_151109D**	Analysis Date:	**11/9/2015 5:38:00 PM**	Prep Date:	**11/9/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chromium	0.196	0.00500	0.200	0	97.8	80	120			

Sample ID	**LCSD-72217**	Batch ID:	**72217**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**LCSD**	Run ID:	**ICP-MS4_151109D**	Analysis Date:	**11/9/2015 5:40:00 PM**	Prep Date:	**11/9/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chromium	0.196	0.00500	0.200	0	98.0	80	120	0.238	15	

Sample ID	**1510216-09A SD**	Batch ID:	**72217**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**SD**	Run ID:	**ICP-MS4_151109D**	Analysis Date:	**11/9/2015 5:46:00 PM**	Prep Date:	**11/9/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chromium	0.216	0.0250	0	0.00687				188	10	R

Sample ID	**1510216-09A PDS**	Batch ID:	**72217**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**PDS**	Run ID:	**ICP-MS4_151109D**	Analysis Date:	**11/9/2015 6:06:00 PM**	Prep Date:	**11/9/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chromium	0.199	0.00500	0.200	0.00687	96.1	80	120			

Sample ID	**1510216-09A MS**	Batch ID:	**72217**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**MS**	Run ID:	**ICP-MS4_151109D**	Analysis Date:	**11/9/2015 6:07:00 PM**	Prep Date:	**11/9/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chromium	0.194	0.00500	0.200	0.00687	93.7	80	120			

Sample ID	**1510216-09A MSD**	Batch ID:	**72217**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**MSD**	Run ID:	**ICP-MS4_151109D**	Analysis Date:	**11/9/2015 6:09:00 PM**	Prep Date:	**11/9/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chromium	0.196	0.00500	0.200	0.00687	94.6	80	120	0.873	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1510216
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_151109D

Sample ID	**ICV-151109**	Batch ID:	**R82579**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**ICV**	Run ID:	**ICP-MS4_151109D**	Analysis Date:	**11/9/2015 10:39:00 AM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.104	0.0300	0.100	0	104	90	110			
Calcium	2.28	0.300	2.50	0	91.3	90	110			
Chromium	0.107	0.00500	0.100	0	107	90	110			

Sample ID	**LCVL-151109**	Batch ID:	**R82579**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**LCVL**	Run ID:	**ICP-MS4_151109D**	Analysis Date:	**11/9/2015 10:45:00 AM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0338	0.0300	0.0200	0	169	70	130			S
Calcium	0.0913	0.300	0.100	0	91.3	70	130			
Chromium	0.00514	0.00500	0.00500	0	103	70	130			

Sample ID	**CCV2-151109**	Batch ID:	**R82579**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**ICP-MS4_151109D**	Analysis Date:	**11/9/2015 11:55:00 AM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.202	0.0300	0.200	0	101	90	110			

Sample ID	**LCVL2-151109**	Batch ID:	**R82579**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**LCVL**	Run ID:	**ICP-MS4_151109D**	Analysis Date:	**11/9/2015 12:02:00 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0216	0.0300	0.0200	0	108	70	130			

Sample ID	**CCV6-151109**	Batch ID:	**R82579**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**ICP-MS4_151109D**	Analysis Date:	**11/9/2015 3:02:00 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.199	0.0300	0.200	0	99.6	90	110			
Calcium	4.86	0.300	5.00	0	97.3	90	110			

Sample ID	**LCVL6-151109**	Batch ID:	**R82579**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**LCVL**	Run ID:	**ICP-MS4_151109D**	Analysis Date:	**11/9/2015 3:08:00 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0253	0.0300	0.0200	0	126	70	130			
Calcium	0.102	0.300	0.100	0	102	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1510216
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_151109D

Sample ID **CCV7-151109**	Batch ID: **R82579**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_151109D**	Analysis Date: **11/9/2015 3:36:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.209	0.0300	0.200	0	105	90	110			
Calcium	4.77	0.300	5.00	0	95.4	90	110			

Sample ID **LCVL7-151109**	Batch ID: **R82579**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_151109D**	Analysis Date: **11/9/2015 3:53:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0247	0.0300	0.0200	0	124	70	130			
Calcium	0.0965	0.300	0.100	0	96.5	70	130			

Sample ID **CCV9-151109**	Batch ID: **R82579**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_151109D**	Analysis Date: **11/9/2015 5:17:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chromium	0.202	0.00500	0.200	0	101	90	110			

Sample ID **LCVL9-151109**	Batch ID: **R82579**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_151109D**	Analysis Date: **11/9/2015 5:32:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chromium	0.00517	0.00500	0.00500	0	103	70	130			

Sample ID **CCV10-151109**	Batch ID: **R82579**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_151109D**	Analysis Date: **11/9/2015 6:19:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chromium	0.203	0.00500	0.200	0	101	90	110			

Sample ID **LCVL10-151109**	Batch ID: **R82579**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_151109D**	Analysis Date: **11/9/2015 6:33:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chromium	0.00511	0.00500	0.00500	0	102	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1510216
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_151102A

The QC data in batch 72110 applies to the following samples: 1510216-01D, 1510216-02D, 1510216-03D, 1510216-04D, 1510216-05D, 1510216-06D, 1510216-07D, 1510216-08D, 1510216-09D, 1510216-10D, 1510216-11D, 1510216-12D, 1510216-13D, 1510216-14D, 1510216-15D, 1510216-16D

Sample ID **MB-72110** Batch ID: **72110** TestNo: **E300** Units: **mg/L**
SampType: **MBLK** Run ID: **IC2_151102A** Analysis Date: **11/2/2015 9:01:55 AM** Prep Date: **11/2/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00								
Fluoride	<0.100	0.400								
Sulfate	<1.00	3.00								

Sample ID **LCSD-72110** Batch ID: **72110** TestNo: **E300** Units: **mg/L**
SampType: **LCSD** Run ID: **IC2_151102A** Analysis Date: **11/2/2015 9:31:04 AM** Prep Date: **11/2/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.0	1.00	10.00	0	100	90	110	0.071	20	
Fluoride	3.67	0.400	4.000	0	91.7	90	110	0.548	20	
Sulfate	30.9	3.00	30.00	0	103	90	110	0.336	20	

Sample ID **LCS-72110** Batch ID: **72110** TestNo: **E300** Units: **mg/L**
SampType: **LCS** Run ID: **IC2_151102A** Analysis Date: **11/2/2015 9:49:16 AM** Prep Date: **11/2/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.0	1.00	10.00	0	100	90	110			
Fluoride	3.69	0.400	4.000	0	92.2	90	110			
Sulfate	31.0	3.00	30.00	0	103	90	110			

Sample ID **1510216-02DMS** Batch ID: **72110** TestNo: **E300** Units: **mg/L**
SampType: **MS** Run ID: **IC2_151102A** Analysis Date: **11/2/2015 3:52:34 PM** Prep Date: **11/2/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	225	10.0	200.0	21.08	102	90	110			
Fluoride	200	4.00	200.0	0	99.8	90	110			
Sulfate	646	30.0	200.0	424.6	110	90	110			

Sample ID **1510216-02DMSD** Batch ID: **72110** TestNo: **E300** Units: **mg/L**
SampType: **MSD** Run ID: **IC2_151102A** Analysis Date: **11/2/2015 4:07:08 PM** Prep Date: **11/2/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	226	10.0	200.0	21.08	102	90	110	0.173	20	
Fluoride	200	4.00	200.0	0	100	90	110	0.354	20	
Sulfate	646	30.0	200.0	424.6	111	90	110	0.140	20	S

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1510216
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_151102A

Sample ID **1510216-07DMS**	Batch ID: **72110**	TestNo: **E300**	Units: **mg/L**
SampType: **MS**	Run ID: **IC2_151102A**	Analysis Date: **11/2/2015 4:21:42 PM**	Prep Date: **11/2/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	327	10.0	200.0	137.0	95.2	90	110			
Fluoride	202	4.00	200.0	0	101	90	110			
Sulfate	320	30.0	200.0	103.1	108	90	110			

Sample ID **1510216-07DMSD**	Batch ID: **72110**	TestNo: **E300**	Units: **mg/L**
SampType: **MSD**	Run ID: **IC2_151102A**	Analysis Date: **11/2/2015 4:36:17 PM**	Prep Date: **11/2/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	328	10.0	200.0	137.0	95.3	90	110	0.068	20	
Fluoride	202	4.00	200.0	0	101	90	110	0.067	20	
Sulfate	325	30.0	200.0	103.1	111	90	110	1.53	20	S

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1510216
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_151102A

Sample ID **ICV-151102**	Batch ID: **R82477**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC2_151102A**	Analysis Date: **11/2/2015 8:26:46 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	24.8	1.00	25.00	0	99.0	90	110			
Fluoride	9.86	0.400	10.00	0	98.6	90	110			
Sulfate	78.1	3.00	75.00	0	104	90	110			

Sample ID **CCV1-151102**	Batch ID: **R82477**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_151102A**	Analysis Date: **11/2/2015 12:42:58 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.90	1.00	10.00	0	99.0	90	110			
Fluoride	3.92	0.400	4.000	0	98.0	90	110			
Sulfate	30.8	3.00	30.00	0	103	90	110			

Sample ID **CCV2-151102**	Batch ID: **R82477**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_151102A**	Analysis Date: **11/2/2015 4:50:51 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.97	1.00	10.00	0	99.7	90	110			
Fluoride	4.03	0.400	4.000	0	101	90	110			
Sulfate	30.4	3.00	30.00	0	101	90	110			

Sample ID **CCV3-151102**	Batch ID: **R82477**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_151102A**	Analysis Date: **11/2/2015 7:18:42 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.88	1.00	10.00	0	98.8	90	110			
Fluoride	3.99	0.400	4.000	0	99.8	90	110			
Sulfate	29.6	3.00	30.00	0	98.6	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler

Work Order: 1510216

Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_151023A

The QC data in batch 71998 applies to the following samples: 1510216-01D, 1510216-02D, 1510216-03D, 1510216-04D, 1510216-05D, 1510216-06D, 1510216-07D, 1510216-08D, 1510216-09D, 1510216-10D, 1510216-11D, 1510216-12D, 1510216-13D, 1510216-14D, 1510216-15D, 1510216-16D

Sample ID **1510216-09D DUP** Batch ID: **71998** TestNo: **M4500-H+ B** Units: **pH Units@15.7℃**

SampType: **DUP** Run ID: **TITRATOR_151023A** Analysis Date: **10/23/2015 1:05:00 PM** Prep Date: **10/23/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	5.55	0	0	5.530				0.361	5	

Sample ID **1510216-16D DUP** Batch ID: **71998** TestNo: **M4500-H+ B** Units: **pH Units@17.9℃**

SampType: **DUP** Run ID: **TITRATOR_151023A** Analysis Date: **10/23/2015 1:19:00 PM** Prep Date: **10/23/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	5.28	0	0	5.300				0.378	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1510216
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_151023A

Sample ID	**ICV-151023**	Batch ID:	**R82326**	TestNo:	**M4500-H+ B**	Units:	**pH Units@22.7℃**
SampType:	**ICV**	Run ID:	**TITRATOR_151023A**	Analysis Date:	**10/23/2015 12:44:00 P**	Prep Date:	**10/23/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	10.0	0	10.00	0	100	99	101			

Sample ID	**CCV1-151023**	Batch ID:	**R82326**	TestNo:	**M4500-H+ B**	Units:	**pH Units@21.2℃**
SampType:	**CCV**	Run ID:	**TITRATOR_151023A**	Analysis Date:	**10/23/2015 1:06:00 PM**	Prep Date:	**10/23/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	6.99	0	7.000	0	99.9	97.1	102.9			

Sample ID	**CCV2-151023**	Batch ID:	**R82326**	TestNo:	**M4500-H+ B**	Units:	**pH Units@21℃**
SampType:	**CCV**	Run ID:	**TITRATOR_151023A**	Analysis Date:	**10/23/2015 1:24:00 PM**	Prep Date:	**10/23/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	7.00	0	7.000	0	100	97.1	102.9			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1510216
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: WC_151026B

The QC data in batch 72016 applies to the following samples: 1510216-01D, 1510216-02D, 1510216-03D, 1510216-04D, 1510216-05D, 1510216-06D, 1510216-07D, 1510216-08D, 1510216-09D, 1510216-10D, 1510216-11D, 1510216-12D, 1510216-13D, 1510216-14D, 1510216-15D, 1510216-16D

Sample ID **MB-72016** Batch ID: **72016** TestNo: **M2540C** Units: **mg/L**
SampType: **MBLK** Run ID: **WC_151026B** Analysis Date: **10/27/2015 7:30:00 AM** Prep Date: **10/26/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	<10.0	10.0								

Sample ID **LCS-72016** Batch ID: **72016** TestNo: **M2540C** Units: **mg/L**
SampType: **LCS** Run ID: **WC_151026B** Analysis Date: **10/27/2015 7:30:00 AM** Prep Date: **10/26/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	766	10.0	745.6	0	103	90	113			

Sample ID **1510216-01D-DUP** Batch ID: **72016** TestNo: **M2540C** Units: **mg/L**
SampType: **DUP** Run ID: **WC_151026B** Analysis Date: **10/27/2015 7:30:00 AM** Prep Date: **10/26/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	106	10.0	0	106.0				0	5	

Sample ID **1510216-11D-DUP** Batch ID: **72016** TestNo: **M2540C** Units: **mg/L**
SampType: **DUP** Run ID: **WC_151026B** Analysis Date: **10/27/2015 7:30:00 AM** Prep Date: **10/26/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	1820	50.0	0	1830				0.823	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

GEL Laboratories LLC
a member of The GEL Group INC

PO Box 30712 Charleston, SC 29417
2040 Savage Road Charleston, SC 29407
P 843.556.8171
F 843.766.1178

gel.com

December 02, 2015

Mr. John DuPont
DHL Analytical
2300 Double Creek Drive
Round Rock, Texas 78664

Re: Routine Analysis
Work Order: 384150
SDG: 1510216

Dear Mr. DuPont:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on October 28, 2015. This original data report has been prepared and reviewed in accordance with GEL's standard operating procedures.

Our policy is to provide high quality, personalized analytical services to enable you to meet your analytical needs on time every time. We trust that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at (843) 556-8171, ext. 4707.

Sincerely,

Anna C Day

Anna Day
Project Manager

Enclosures

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 − (843) 556−8171 − www.gel.com

Certificate of Analysis Report
for

DHLA002 DHL Analytical

Client SDG: 1510216 GEL Work Order: 384150

The Qualifiers in this report are defined as follows:

* A quality control analyte recovery is outside of specified acceptance criteria

** Analyte is a Tracer compound

** Analyte is a surrogate compound

U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the Certificate of Analysis.

The designation ND, if present, appears in the result column when the analyte concentration is not detected above the limit as defined in the 'U' qualifier above.

This data report has been prepared and reviewed in accordance with GEL Laboratories LLC standard operating procedures. Please direct any questions to your Project Manager, Anna Day.

Reviewed by Anna C Day

There are no "Data Exception Reports" associated with this analytical report.

DHL Analytical, Inc.
2300 Double Creek Drive
Round Rock, TX 78664
TEL: *(512) 388-8222* FAX: *(512) 388-8229*

CHAIN-OF-CUSTODY RECORD

Work Order: 1510216

Subcontractor:

GEL Laboratories
PO Box 30712
Charleston, SC 29417

TEL: (843) 556-8171
FAX:
Acct #: 384150

23-Oct-15

Sample Id	Matrix	DHL#	Date Collected	Bottle Type	Requested Tests E903.1 (22Ra)	E904.0 (228Ra)				
PDP-23	Aqueous	-01B	10/20/15 07:40 AM	500HDPEHNO3		1				
PDP-23	Aqueous	-01C	10/20/15 07:40 AM	500HDPEHNO3	1					
PDP-24	Aqueous	-02B	10/20/15 08:35 AM	500HDPEHNO3		1				
PDP-24	Aqueous	-02C	10/20/15 08:35 AM	500HDPEHNO3	1					
PDP-22	Aqueous	-03B	10/20/15 09:25 AM	500HDPEHNO3		1				
PDP-22	Aqueous	-03C	10/20/15 09:25 AM	500HDPEHNO3	1					
MW-19	Aqueous	-04B	10/20/15 10:20 AM	500HDPEHNO3		1				
MW-19	Aqueous	-04C	10/20/15 10:20 AM	500HDPEHNO3	1					
MW-20A	Aqueous	-05B	10/20/15 11:20 AM	500HDPEHNO3		1				
MW-20A	Aqueous	-05C	10/20/15 11:20 AM	500HDPEHNO3	1					
PDP-26	Aqueous	-06B	10/20/15 02:20 PM	500HDPEHNO3		1				
PDP-26	Aqueous	-06C	10/20/15 02:20 PM	500HDPEHNO3	1					
PDP-25	Aqueous	-07B	10/20/15 03:20 PM	500HDPEHNO3		1				
PDP-25	Aqueous	-07C	10/20/15 03:20 PM	500HDPEHNO3	1					
H-30	Aqueous	-08B	10/20/15 04:20 PM	500HDPEHNO3		1				
H-30	Aqueous	-08C	10/20/15 04:20 PM	500HDPEHNO3	1					
H-31	Aqueous	-09B	10/20/15 05:15 PM	500HDPEHNO3		1				
H-31	Aqueous	-09C	10/20/15 05:15 PM	500HDPEHNO3	1					

General Comments:

Please analyze these samples with a Standard Turnaround Time.
Call John DuPont if you have questions.
Quality Control Package Needed: Standard / _____
EMAIL report to both cac@dhlanalytical.com & dupont@dhlanalytical.com

		Date/Time			Date/Time
Relinquished by:		10/23/15 1730	**Received by:**		10/23/15 1730
Relinquished by:			**Received by:**		0920 10/24/15

DHL Analytical, Inc.
2300 Double Creek Drive
Round Rock, TX 78664
TEL: *(512) 388-8222* FAX: *(512) 388-8229*

CHAIN-OF-CUSTODY RECORD

Work Order: 1510216

Subcontractor:

GEL Laboratories
PO Box 30712
Charleston, SC 29417

TEL: (843) 556-8171
FAX:
Acct #:

23-Oct-15

Sample Id	Matrix	DHL#	Date Collected	Bottle Type	Requested Tests 226 E903.1	228 E904.0				
H-29	Aqueous	-10B	10/21/15 12:45 PM	500HDPEHNO3		1				
H-29	Aqueous	-10C	10/21/15 12:45 PM	500HDPEHNO3	1					
H-28	Aqueous	-11B	10/21/15 01:35 PM	500HDPEHNO3		1				
H-28	Aqueous	-11C	10/21/15 01:35 PM	500HDPEHNO3	1					
H-27	Aqueous	-12B	10/21/15 02:20 PM	500HDPEHNO3		1				
H-27	Aqueous	-12C	10/21/15 02:20 PM	500HDPEHNO3	1					
H-26	Aqueous	-13B	10/21/15 03:25 PM	500HDPEHNO3		1				
H-26	Aqueous	-13C	10/21/15 03:25 PM	500HDPEHNO3	1					
H-33	Aqueous	-14B	10/22/15 12:55 PM	500HDPEHNO3		1				
H-33	Aqueous	-14C	10/22/15 12:55 PM	500HDPEHNO3	1					
H-32	Aqueous	-15B	10/22/15 01:55 PM	500HDPEHNO3		1				
H-32	Aqueous	-15C	10/22/15 01:55 PM	500HDPEHNO3	1					
MW-17A	Aqueous	-16B	10/21/15 02:55 PM	500HDPEHNO3		1				
MW-17A	Aqueous	-16C	10/21/15 02:55 PM	500HDPEHNO3	1					

General Comments:

Please analyze these samples with a Standard Turnaround Time.
Call John DuPont if you have questions.
Quality Control Package Needed: Standard / _____
EMAIL report to both cac@dhlanalytical.com & dupont@dhlanalytical.com

		Date/Time			Date/Time
Relinquished by:		10/22/15 1730	**Received by:**		10/23/15 1730
Relinquished by:			**Received by:**		0920 102815

GEL Laboratories LLC

SAMPLE RECEIPT & REVIEW FORM

Client: PHILA			**SDG/AR/COC/Work Order:** 384150	
Received By: H. Taylor			**Date Received:** 102815 0920	
Suspected Hazard Information	**Yes**	**No**	*If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation.	
COC/Samples marked as radioactive?		✓	Maximum Net Counts Observed* (Observed Counts - Area Background Counts): CCPM	
Classified Radioactive II or III by RSO?		✓	If yes, Were swipes taken of sample containers < action levels?	
COC/Samples marked containing PCBs?		✓		
Package, COC, and/or Samples marked as beryllium or asbestos containing?		✓	If yes, samples are to be segregated as Safety Controlled Samples, and opened by the GEL Safety Group.	
Shipped as a DOT Hazardous?		✓	Hazard Class Shipped: UN#:	
Samples identified as Foreign Soil?		✓		

	Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (Required for Non-Conforming Items)
1	Shipping containers received intact and sealed?	✓			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
2	Samples requiring cold preservation within (0 ≤ 6 deg. C)?*			✓	Preservation Method: Ice bags Blue ice Dry ice None Other (describe) *all temperatures are recorded in Celsius
2a	Daily check performed and passed on IR temperature gun?	✓			Temperature Device Serial #: ES03201330 Secondary Temperature Device Serial # (If Applicable):
3	Chain of custody documents included with shipment?	✓			
4	Sample containers intact and sealed?	✓			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
5	Samples requiring chemical preservation at proper pH?	✓			Sample ID's, containers affected and observed pH: If Preservation added, Lot#:
6	Do Low Level Perchlorate samples have headspace as required?			✓	Sample ID's and containers affected:
7	VOA vials contain acid preservation?			✓	(If unknown, select No)
8	VOA vials free of headspace (defined as < 6mm bubble)?			✓	Sample ID's and containers affected:
9	Are Encore containers present?			✓	(If yes, immediately deliver to Volatiles laboratory)
10	Samples received within holding time?	✓			ID's and tests affected:
11	Sample ID's on COC match ID's on bottles?	✓			Sample ID's and containers affected:
12	Date & time on COC match date & time on bottles?	✓			Sample ID's affected:
13	Number of containers received match number indicated on COC?	✓			Sample ID's affected:
14	Are sample containers identifiable as GEL provided?			✓	
15	COC form is properly signed in relinquished/received sections?	✓			
16	Carrier and tracking number.				Circle Applicable: FedEx Air FedEx Ground UPS Field Services Courier Other 7748 1199 6914

Comments (Use Continuation Form if needed):

PM (or PMA) review: Initials HH Date 102515 Page 1 of 1 GL-CHL-SR-001 Rev 2

List of current GEL Certifications as of 02 December 2015

State	Certification
Alaska	UST−110
Arkansas	88−0651
CLIA	42D0904046
California	2940 Interim
Colorado	SC00012
Connecticut	PH−0169
Delaware	SC000122013−10
DoD ELAP/ ISO17025 A2LA	2567.01
Florida NELAP	E87156
Foreign Soils Permit	P330−15−00283, P330−15−00253
Georgia	SC00012
Georgia SDWA	967
Hawaii	SC000122013−10
Idaho Chemistry	SC00012
Idaho Radiochemistry	SC00012
Illinois NELAP	200029
Indiana	C−SC−01
Kansas NELAP	E−10332
Kentucky SDWA	90129
Kentucky Wastewater	90129
Louisiana NELAP	03046 (AI33904)
Louisiana SDWA	LA150001
Maryland	270
Massachusetts	M−SC012
Michigan	9976
Mississippi	SC000122013−10
Nebraska	NE−OS−26−13
Nevada	SC000122016−1
New Hampshire NELAP	2054
New Jersey NELAP	SC002
New Mexico	SC00012
New York NELAP	11501
North Carolina	233
North Carolina SDWA	45709
North Dakota	R−158
Oklahoma	9904
Pennsylvania NELAP	68−00485
S.Carolina Radchem	10120002
South Carolina Chemistry	10120001
Tennessee	TN 02934
Texas NELAP	T104704235−15−10
Utah NELAP	SC000122015−19
Vermont	VT87156
Virginia NELAP	460202
Washington	C780
West Virginia	997404

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: December 2, 2015

Company : DHL Analytical
Address : 2300 Double Creek Drive

Round Rock, Texas 78664
Contact: Mr. John DuPont
Project: Routine Analysis

Client Sample ID: PDP-23
Sample ID: 384150001
Matrix: Water
Collect Date: 20-OCT-15 07:40
Receive Date: 28-OCT-15
Collector: Client

Project: DHLA00112
Client ID: DHLA002

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228	U	-0.554	+/-0.788	1.67	3.00	pCi/L		AXM6	12/02/15	1104	1522094	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226		1.06	+/-0.452	0.537	1.00	pCi/L		CXP3	11/20/15	0450	1518773	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			79	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: December 2, 2015

Company : DHL Analytical
Address : 2300 Double Creek Drive

Round Rock, Texas 78664
Contact: Mr. John DuPont
Project: Routine Analysis

Client Sample ID: PDP-24
Sample ID: 384150002
Matrix: Water
Collect Date: 20-OCT-15 08:35
Receive Date: 28-OCT-15
Collector: Client

Project: DHLA00112
Client ID: DHLA002

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228		3.49	+/-1.81	2.53	3.00	pCi/L		AXM6	12/02/15	1104	1522094	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226		1.29	+/-0.557	0.670	1.00	pCi/L		CXP3	11/20/15	0450	1518773	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			44.7	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: December 2, 2015

Company :	DHL Analytical
Address :	2300 Double Creek Drive
	Round Rock, Texas 78664
Contact:	Mr. John DuPont
Project:	Routine Analysis

Client Sample ID:	PDP-22	Project:	DHLA00112
Sample ID:	384150003	Client ID:	DHLA002
Matrix:	Water		
Collect Date:	20-OCT-15 09:25		
Receive Date:	28-OCT-15		
Collector:	Client		

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228	U	0.730	+/-0.970	1.66	3.00	pCi/L		AXM6	12/02/15	1100	1522094	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226		1.18	+/-0.522	0.634	1.00	pCi/L		CXP3	11/20/15	0450	1518773	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			86.2	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: December 2, 2015

Company :	DHL Analytical
Address :	2300 Double Creek Drive
	Round Rock, Texas 78664
Contact:	Mr. John DuPont
Project:	Routine Analysis

Client Sample ID:	MW-19	Project:	DHLA00112
Sample ID:	384150004	Client ID:	DHLA002
Matrix:	Water		
Collect Date:	20-OCT-15 10:20		
Receive Date:	28-OCT-15		
Collector:	Client		

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228	U	0.211	+/-1.28	2.48	3.00	pCi/L		AXM6	12/02/15	1101	1522094	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226		0.683	+/-0.388	0.525	1.00	pCi/L		CXP3	11/20/15	0450	1518773	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			40.9	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: December 2, 2015

Company : DHL Analytical
Address : 2300 Double Creek Drive

Round Rock, Texas 78664
Contact: Mr. John DuPont
Project: Routine Analysis

Client Sample ID: MW-20A
Sample ID: 384150005
Matrix: Water
Collect Date: 20-OCT-15 11:20
Receive Date: 28-OCT-15
Collector: Client

Project: DHLA00112
Client ID: DHLA002

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228	U	1.38	+/-1.03	1.60	3.00	pCi/L		AXM6	12/02/15	1100	1522094	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226		3.01	+/-0.651	0.507	1.00	pCi/L		CXP3	11/20/15	0450	1518773	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			81.6	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: December 2, 2015

Company : DHL Analytical
Address : 2300 Double Creek Drive

Round Rock, Texas 78664
Contact: Mr. John DuPont
Project: Routine Analysis

Client Sample ID: PDP-26
Sample ID: 384150006
Matrix: Water
Collect Date: 20-OCT-15 14:20
Receive Date: 28-OCT-15
Collector: Client

Project: DHLA00112
Client ID: DHLA002

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228	U	0.237	+/-0.830	1.54	3.00	pCi/L		AXM6	12/02/15	1100	1522094	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226		0.590	+/-0.360	0.502	1.00	pCi/L		CXP3	11/20/15	0645	1518773	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			77.9	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: December 2, 2015

Company : DHL Analytical
Address : 2300 Double Creek Drive

Round Rock, Texas 78664
Contact: Mr. John DuPont
Project: Routine Analysis

Client Sample ID: PDP-25
Sample ID: 384150007
Matrix: Water
Collect Date: 20-OCT-15 15:20
Receive Date: 28-OCT-15
Collector: Client

Project: DHLA00112
Client ID: DHLA002

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228	U	1.11	+/-0.966	1.55	3.00	pCi/L		AXM6	12/02/15	1100	1522094	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226		1.19	+/-0.528	0.642	1.00	pCi/L		CXP3	11/20/15	0645	1518773	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			83.7	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: December 2, 2015

Company : DHL Analytical
Address : 2300 Double Creek Drive

Round Rock, Texas 78664
Contact: Mr. John DuPont
Project: Routine Analysis

Client Sample ID: H-30
Sample ID: 384150008
Matrix: Water
Collect Date: 20-OCT-15 16:20
Receive Date: 28-OCT-15
Collector: Client

Project: DHLA00112
Client ID: DHLA002

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228	U	0.886	+/-1.52	2.67	3.00	pCi/L		AXM6	12/02/15	1105	1522094	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226	U	0.404	+/-0.323	0.485	1.00	pCi/L		CXP3	11/20/15	0645	1518773	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			62	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: December 2, 2015

Company : DHL Analytical
Address : 2300 Double Creek Drive

Round Rock, Texas 78664
Contact: Mr. John DuPont
Project: Routine Analysis

Client Sample ID: H-31
Sample ID: 384150009
Matrix: Water
Collect Date: 20-OCT-15 17:15
Receive Date: 28-OCT-15
Collector: Client

Project: DHLA00112
Client ID: DHLA002

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228	U	-0.476	+/-0.862	1.88	3.00	pCi/L		AXM6	12/02/15	1105	1522094	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226		0.943	+/-0.427	0.525	1.00	pCi/L		CXP3	11/20/15	0645	1518773	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			62.6	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: December 2, 2015

Company : DHL Analytical
Address : 2300 Double Creek Drive

Round Rock, Texas 78664
Contact: Mr. John DuPont
Project: Routine Analysis

Client Sample ID: H-29
Sample ID: 384150010
Matrix: Water
Collect Date: 21-OCT-15 12:45
Receive Date: 28-OCT-15
Collector: Client

Project: DHLA00112
Client ID: DHLA002

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228		1.82	+/-1.18	1.79	3.00	pCi/L		AXM6	12/02/15	1105	1522094	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226		0.464	+/-0.291	0.381	1.00	pCi/L		CXP3	11/20/15	0645	1518773	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			71.8	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: December 2, 2015

Company : DHL Analytical
Address : 2300 Double Creek Drive

Round Rock, Texas 78664
Contact: Mr. John DuPont
Project: Routine Analysis

Client Sample ID: H-28
Sample ID: 384150011
Matrix: Water
Collect Date: 21-OCT-15 13:35
Receive Date: 28-OCT-15
Collector: Client

Project: DHLA00112
Client ID: DHLA002

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228	U	0.653	+/-0.959	1.65	3.00	pCi/L		AXM6	12/02/15	1102	1522094	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226	U	0.207	+/-0.318	0.558	1.00	pCi/L		CXP3	11/20/15	0720	1518773	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			89.8	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: December 2, 2015

Company : DHL Analytical
Address : 2300 Double Creek Drive

Round Rock, Texas 78664
Contact: Mr. John DuPont
Project: Routine Analysis

Client Sample ID: H-27
Sample ID: 384150012
Matrix: Water
Collect Date: 21-OCT-15 14:20
Receive Date: 28-OCT-15
Collector: Client

Project: DHLA00112
Client ID: DHLA002

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228	U	0.245	+/-0.914	1.67	3.00	pCi/L		AXM6	12/02/15	1100	1522094	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226	U	0.445	+/-0.361	0.553	1.00	pCi/L		CXP3	11/20/15	0720	1518773	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			83.7	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: December 2, 2015

Company : DHL Analytical
Address : 2300 Double Creek Drive

Round Rock, Texas 78664
Contact: Mr. John DuPont
Project: Routine Analysis

Client Sample ID: H-26
Sample ID: 384150013
Matrix: Water
Collect Date: 21-OCT-15 15:25
Receive Date: 28-OCT-15
Collector: Client

Project: DHLA00112
Client ID: DHLA002

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228	U	-0.347	+/-0.785	1.64	3.00	pCi/L		AXM6	12/02/15	1105	1522094	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226		0.919	+/-0.475	0.619	1.00	pCi/L		CXP3	11/20/15	0720	1518773	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			73.2	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: December 2, 2015

Company : DHL Analytical
Address : 2300 Double Creek Drive

Round Rock, Texas 78664
Contact: Mr. John DuPont
Project: Routine Analysis

Client Sample ID: H-33
Sample ID: 384150014
Matrix: Water
Collect Date: 21-OCT-15 12:55
Receive Date: 28-OCT-15
Collector: Client

Project: DHLA00112
Client ID: DHLA002

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228		1.64	+/-1.09	1.63	3.00	pCi/L		AXM6	12/02/15	1100	1522094	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226		1.76	+/-0.589	0.617	1.00	pCi/L		CXP3	11/20/15	0720	1518773	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			73	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: December 2, 2015

Company : DHL Analytical
Address : 2300 Double Creek Drive

Round Rock, Texas 78664
Contact: Mr. John DuPont
Project: Routine Analysis

Client Sample ID: H-32
Sample ID: 384150015
Matrix: Water
Collect Date: 21-OCT-15 13:55
Receive Date: 28-OCT-15
Collector: Client

Project: DHLA00112
Client ID: DHLA002

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228	U	-0.0843	+/-0.953	1.90	3.00	pCi/L		AXM6	12/02/15	1105	1522094	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226		1.05	+/-0.445	0.530	1.00	pCi/L		CXP3	11/20/15	0720	1518773	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			60	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

GEL LABORATORIES LLC
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Certificate of Analysis

Report Date: December 2, 2015

Company :	DHL Analytical
Address :	2300 Double Creek Drive
	Round Rock, Texas 78664
Contact:	Mr. John DuPont
Project:	Routine Analysis

Client Sample ID:	MW-17A	Project:	DHLA00112
Sample ID:	384150016	Client ID:	DHLA002
Matrix:	Water		
Collect Date:	21-OCT-15 14:55		
Receive Date:	28-OCT-15		
Collector:	Client		

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228	U	0.722	+/-0.974	1.67	3.00	pCi/L		AXM6	12/02/15	1102	1522094	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226		0.597	+/-0.356	0.477	1.00	pCi/L		CXP3	11/20/15	0755	1518773	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			86.1	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

QC Summary

Report Date: December 2, 2015

DHL Analytical
2300 Double Creek Drive
Round Rock, Texas

Contact: **Mr. John DuPont**

Workorder: **384150**

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Rad Gas Flow										
Batch 1522094										
QC1203430457 384150008 DUP										
Radium-228	U	0.886	U	1.05	pCi/L	N/A		N/A	AXM6	12/02/15 12:45
	Uncertainty	+/-1.52		+/-1.67						
QC1203430458 LCS										
Radium-228	29.2			28.0	pCi/L		95.9	(75%-125%)		12/02/15 11:01
	Uncertainty			+/-2.81						
QC1203430456 MB										
Radium-228			U	-0.145	pCi/L					12/02/15 11:02
	Uncertainty			+/-0.757						
Rad Ra-226										
Batch 1518773										
QC1203421510 384779001 DUP										
Radium-226	U	0.424		0.636	pCi/L	40.1		(0% - 100%)	CXP3	11/20/15 07:55
	Uncertainty	+/-0.362		+/-0.399						
QC1203421512 LCS										
Radium-226	24.4			28.7	pCi/L		117	(75%-125%)		11/20/15 08:25
	Uncertainty			+/-1.97						
QC1203421509 MB										
Radium-226			U	0.197	pCi/L					11/20/15 07:55
	Uncertainty			+/-0.301						
QC1203421511 384779001 MS										
Radium-226	122 U	0.424		92.4	pCi/L		75.7	(75%-125%)		11/20/15 08:25
	Uncertainty	+/-0.362		+/-8.53						

Notes:

Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

The Qualifiers in this report are defined as follows:

**	Analyte is a Tracer compound
<	Result is less than value reported
>	Result is greater than value reported
BD	Results are either below the MDC or tracer recovery is low
FA	Failed analysis.
H	Analytical holding time was exceeded
J	Value is estimated
K	Analyte present. Reported value may be biased high. Actual value is expected to be lower.
L	Analyte present. Reported value may be biased low. Actual value is expected to be higher.
M	M if above MDC and less than LLD
M	REMP Result > MDC/CL and < RDL
N/A	RPD or %Recovery limits do not apply.

QC Summary

Workorder: **384150**

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time

N1	See case narrative
ND	Analyte concentration is not detected above the detection limit
NJ	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
Q	One or more quality control criteria have not been met. Refer to the applicable narrative or DER.
R	Sample results are rejected
U	Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
UI	Gamma Spectroscopy--Uncertain identification
UJ	Gamma Spectroscopy--Uncertain identification
UL	Not considered detected. The associated number is the reported concentration, which may be inaccurate due to a low bias.
X	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
Y	Other specific qualifiers were required to properly define the results. Consult case narrative.
^	RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.
h	Preparation or preservation holding time was exceeded

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.
^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.
* Indicates that a Quality Control parameter was not within specifications.
For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.

January 21, 2016

Will Vienne
Pastor, Behling & Wheeler
2201 Double Creek Dr #4004
Round Rock, Texas 78664
TEL: (512) 671-3434
FAX (512) 671-3446

Order No.: 1512236

RE: Luminant - Martin Lake

Dear Will Vienne:

DHL Analytical, Inc. received 17 sample(s) on 12/17/2015 for the analyses presented in the following report.

There were no problems with the analyses and all data met requirements of NELAC except where noted in the Case Narrative. All non-NELAC methods will be identified accordingly in the case narrative and all estimated uncertainties of test results are within method or EPA specifications.

If you have any questions regarding these tests results, please feel free to call. Thank you for using DHL Analytical.

Sincerely,

John DuPont
General Manager

This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211-15-15

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DHL ANALYTICAL
2300 Double Creek Dr. ■ Round Rock, TX 78664
Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

№69475

CHAIN-OF-CUSTODY

CLIENT: PBW
ADDRESS: 2201 DOUBLE CREEK DR ROUND ROCK TX 78664
PHONE: 512-671-3434 FAX/E-MAIL: 512-671-3446
DATA REPORTED TO: WILL VIENNE
ADDITIONAL REPORT COPIES TO:

DATE: 12-15-15 PAGE 1 OF 2
PO #: S164-B DHL WORK ORDER #: 1512236
PROJECT LOCATION OR NAME: LUMINANT - MARTIN LAKE
CLENT PROJECT #: S164-B COLLECTOR: J. BRAYTON

Authorize 5% surcharge for TRRP Report? ❑ Yes ❑ No

S=SOIL W=WATER A=AIR L=LIQUID SE=SEDIMENT P=PAINT SL=SLUDGE O=OTHER SO=SOLID

PRESERVATION: HCl | HNO_3 | H_2SO_4 ❑ NaOH ❑ | ICE | UNPRESERVED

ANALYSES: BTEX ❑ MTBE ❑ [METHOD 8021] | TPH 1005 ❑ TPH 1006 ❑ HOLD 1006 ❑ | GRO [METHOD 8015] ❑ DRO [METHOD 8105] ❑ | VOC 8260 ❑ VOC 624 ❑ VOC 8260/5035 ❑ | SVOC 8270 ❑ PAH 8270 ❑ HOLD PAH ❑ SVOC 625 ❑ | 8270 PEST ❑ 625 PEST/PCB ❑ 608 PCB ❑ | 8270 O-P PEST ❑ 8082 PCB ❑ 8270 PCB ❑ | 8321 HERB ❑ T PHOS, AMMONIA ❑ | METALS 6020 ❑ METALS 200.8 ❑ DISS. METALS ❑ | RCRA ❑ TX11 ❑ ___ ❑ | PH ❑ HEX CHROM ❑ ALKALINITY ❑ COD ❑ | CHLORIDE ❑ ANIONS ___ ❑ | TCLP-SVOC ❑ VOC ❑ PEST ❑ HERB ❑ | TCLP-METALS ❑ RCRA 8 ❑ TX-11 ❑ Pb ❑ | RCI ❑ FLASHPOINT ❑ DGAS ❑ | TDS ❑ TSS ❑ % MOISTURE ❑ CYANIDE ❑ | SEE ATTACHED

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	HCl	HNO_3	H_2SO_4 ❑ NaOH ❑	ICE	UNPRESERVED	SEE ATTACHED	FIELD NOTES
H-29	01	12-14-15	0905	W	P	4						X	
H-30	02		0950	W	P	4						X	
H-31	03		1040	W	P	4						X	
H-32	04		1130	W	P	4						X	
H-27	05		1220	W	P	4						X	
H-28	06		1315	W	P	4						X	
H-26	07		1405	W	P	4						X	
H-33	08		1455	W	P	4						X	
MW-20A	09		1700	W	P	4						X	
PDP-22	10		1750	W	P	4						X	
MW-19	11		1840	W	P	4						X	
PDP-23	12	↓	1930	W	P	4						X	
PDP-26	13	12-15-15	0750	W	P	4						X	
MW-17A	14		0850	W	P	4						X	
PDP-24	15	↓	0940	W	P	4						X	

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
	12-16-15	1800 Fedex
Fedex	12/17/15	1020
	DATE/TIME	RECEIVED BY: (Signature)

TURN AROUND TIME
RUSH ❑ CALL FIRST
1 DAY ❑ CALL FIRST
2 DAY ❑
NORMAL ☒
OTHER ❑ _____

LABORATORY USE ONLY:
RECEIVING TEMP: 3.5, 4.3, 4.3 THERM #: 23
CUSTODY SEALS: ❑ BROKEN ❑ INTACT ☒ NOT USED
CARRIER: ❑ LONE STAR ☒ FEDEX ❑ UPS ❑ OTHER
❑ COURIER DELIVERY
❑ HAND DELIVERED

❑ DHL DISPOSAL @ $5.00 each ❑ Return

DHL ANALYTICAL
2300 Double Creek Dr. ■ Round Rock, TX 78664
Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

№ 69476

CHAIN-OF-CUSTODY

CLIENT: PBW
ADDRESS: 2201 DOUBLE CREEK DR ROUND ROCK TX 78664
PHONE: 512-671-3434 FAX/E-MAIL: 512-671-3446
DATA REPORTED TO: WILL VIENNE
ADDITIONAL REPORT COPIES TO:

DATE: 12-15-15 PAGE 2 OF 2
PO #: 5164-B DHL WORK ORDER #: 1512236
PROJECT LOCATION OR NAME: LUMINANT - MARTIN LAKE
CLENT PROJECT #: 5164-B COLLECTOR: J. BRAYTON

Authorize 5% surcharge for TRRP Report? ☐ Yes ☐ No

S=SOIL W=WATER A=AIR L=LIQUID SE=SEDIMENT P=PAINT SL=SLUDGE O=OTHER SO=SOLID

PRESERVATION: HCl | HNO_3 | H_2SO_4 ☐ NaOH ☐ | ICE | UNPRESERVED

ANALYSES: BTEX ☐ MTBE ☐ [METHOD 8021] | TPH 1005 ☐ TPH 1006 ☐ HOLD 1006 ☐ | GRO [METHOD 8015] ☐ DRO [METHOD 8105] ☐ | VOC 8260 ☐ VOC 624 ☐ VOC 8260/5035 ☐ | SVOC 8270 ☐ PAH 8270 ☐ HOLD PAH ☐ SVOC 625 ☐ | 8270 PEST ☐ 625 PEST/PCB ☐ 608 PCB ☐ 8270 PCB ☐ | 8270 O-P PEST ☐ 8082 PCB ☐ 8270 PCB ☐ | 8321 HERB ☐ T PHOS, AMMONIA ☐ | METALS 6020 ☐ METALS 200.8 ☐ DISS. METALS ☐ | RCRA ☐ TX11 ☐ ☐ | PH ☐ HEX CHROM ☐ ALKALINITY ☐ COD ☐ | CHLORIDE ☐ ANIONS ☐ | TCLP-SVOC ☐ VOC ☐ PEST ☐ HERB ☐ | TCLP-METALS ☐ RCRA 8 ☐ TX-11 ☐ Pb ☐ | RCI ☐ FLASHPOINT ☐ DGAS ☐ | TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐ | SEE ATTACHED

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	HCl	HNO_3	H_2SO_4 ☐ NaOH ☐	ICE	UNPRESERVED	SEE ATTACHED	FIELD NOTES
MW-18A	16	12-15-15	1030	W	P	4						X	
PDP-25	17	12-15-15	1135	W	P	4						X	

RELINQUISHED BY: (Signature) DATE/TIME 12-16-15 RECEIVED BY: (Signature) 1830
RELINQUISHED BY: (Signature) DATE/TIME 12/17/15 RECEIVED BY: (Signature) 1090
RELINQUISHED BY: (Signature) DATE/TIME RECEIVED BY: (Signature)

☐ DHL DISPOSAL @ $5.00 each ☐ Return

TURN AROUND TIME
RUSH ☐ CALL FIRST
1 DAY ☐ CALL FIRST
2 DAY ☐
NORMAL ☒
OTHER ☐ _____

LABORATORY USE ONLY:
RECEIVING TEMP: _____ THERM #: _____
CUSTODY SEALS: ☐ BROKEN ☐ INTACT ☐ NOT USED
CARRIER: ☐ LONE STAR ☐ FEDEX ☐ UPS ☐ OTHER
☐ COURIER DELIVERY
☐ HAND DELIVERED

John Dupont

From: Sara Taube [Sara.Taube@pbwllc.com]
Sent: Wednesday, July 22, 2015 12:05 PM
To: John Dupont
Subject: CCR Appendix III and IV
Follow Up Flag: Follow up
Flag Status: Completed

Hi John,

Here are the Appendix III and Appendix IV constituents that we will need to have analyzed under the CCR Rule.

Appendix III
Boron
Calcium
Chloride
Fluoride
pH
sulfate
TDS

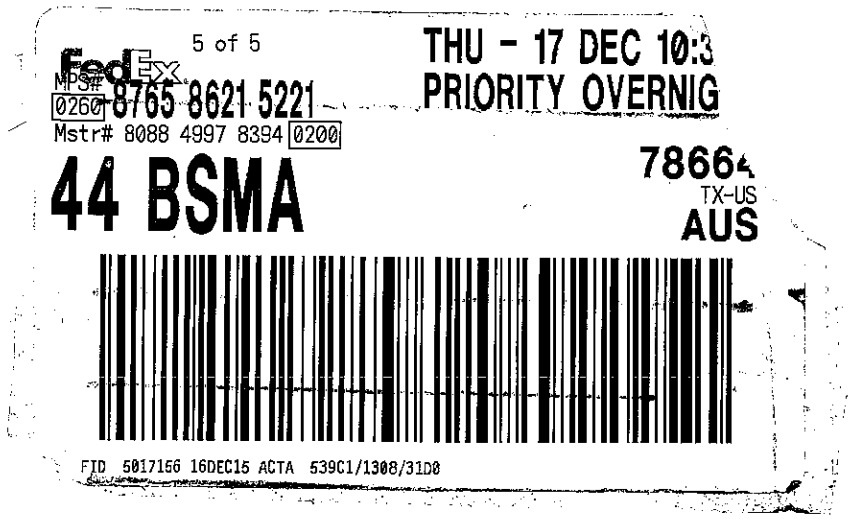
Appendix IV
Antimony
Arsenic
Barium
Beryllium
Cadmium
Chromium
Cobalt
Fluoride
Lead
Lithium
Mercury
Molybdenum
Selenium
Thallium
Radium 226 and 228

We are looking to have approximately 74 wells sampled 8 times over the course of the next two years. Please let me know if there is any more information you might need.

Cheers,

Sara

10/26/2015


5 of 5
FedEx
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0260 8765 8621 5221
Mstr# 8088 4997 8394 0200
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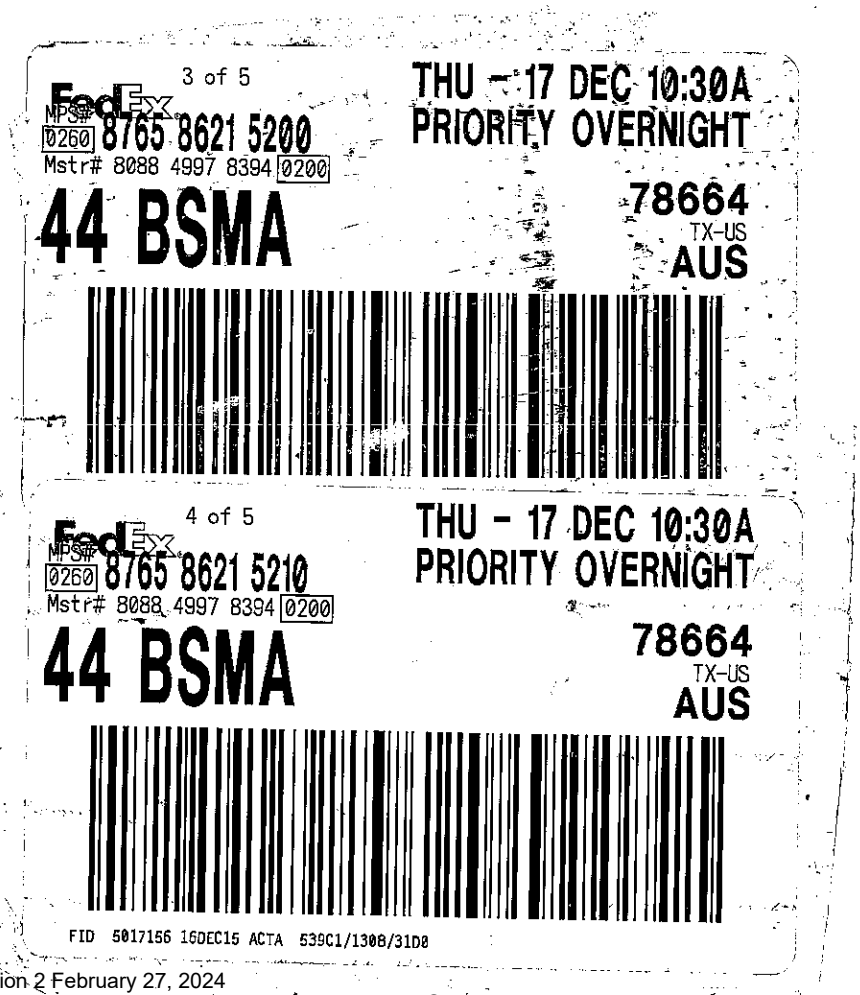
PRIORITY OVERNIG
44 BSMA
78664
TX-US
AUS
FID 5017156 16DEC15 ACTA 539C1/1308/31D8


3 of 5
FedEx
MPS#
0260 8765 8621 5200
Mstr# 8088 4997 8394 0200
THU - 17 DEC 10:30A
PRIORITY OVERNIGHT
44 BSMA
78664
TX-US
AUS
4 of 5
FedEx
MPS#
0260 8765 8621 5210
Mstr# 8088 4997 8394 0200
THU - 17 DEC 10:30A
PRIORITY OVERNIGHT
44 BSMA
78664
TX-US
AUS
FID 5017156 16DEC15 ACTA 539C1/1308/31D8

DHL Analytical, Inc.

Sample Receipt Checklist

Client Name **Pastor, Behling & Wheeler** Date Received: **12/17/2015**

Work Order Number **1512236** Received by **JB**

Checklist completed by: _____ 12/17/2015 Reviewed by DL 12/17/2015
Signature Date Initials Date

Carrier name FedEx 1day

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	3.5 °C, 4.8, 4.3
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH<2 acceptable upon receipt?	Yes ☑	No ☐	NA ☐ LOT # 8086
	Adjusted? NO		Checked by QD
Water - ph>9 (S) or ph>12 (CN) acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted? _____		Checked by _____

Any No response must be detailed in the comments section below.

Client contacted _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding _____

Comments: _____

Corrective Action _____

DHL Analytical, Inc. **Date:** *21-Jan-16*

CLIENT: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake
Lab Order: 1512236

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Method SW6020A - Metals Analysis
Method SW7470A - Mercury Analysis
Method E300 - Anions Analysis
Method M4500-H+ B - pH of a Water Analysis
Method M2540C - TDS Analysis
Sub-contract - Radium-228 and Radium-226 analyses by methods E904.0/SW8469320 Modified and E903.1 Modified. Analyzed at GEL Laboratory.

LOG IN

The samples were received and log-in performed on 12/17/15. A total of 17 samples were received. The samples arrived in good condition and were properly packaged.

METALS ANALYSIS

For Metals analysis performed on 1/7/16 Boron was detected below the reporting limit in the method blank (MB-72946). All samples were may be biased high for this analyte. No further corrective actions were taken.

For Metals analysis performed on 1/5/16 the matrix spike and matrix spike duplicate recoveries were out of control limits for Calcium. These are flagged accordingly in the QC summary report. The sample selected for the matrix spike and matrix spike duplicate was from this work order. The LCS was within control limits for this analyte. No further corrective actions were taken.

DHL Analytical, Inc.

Date: *21-Jan-16*

CLIENT: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake
Lab Order: 1512236

Work Order Sample Summary

Lab Smp ID	Client Sample ID	Tag Number	Date Collected	Date Recved
1512236-01	H-29		12/14/15 09:05 AM	12/17/2015
1512236-02	H-30		12/14/15 09:50 AM	12/17/2015
1512236-03	H-31		12/14/15 10:40 AM	12/17/2015
1512236-04	H-32		12/14/15 11:30 AM	12/17/2015
1512236-05	H-27		12/14/15 12:20 PM	12/17/2015
1512236-06	H-28		12/14/15 01:15 PM	12/17/2015
1512236-07	H-26		12/14/15 02:05 PM	12/17/2015
1512236-08	H-33		12/14/15 02:55 PM	12/17/2015
1512236-09	MW-20A		12/14/15 05:00 PM	12/17/2015
1512236-10	PDP-22		12/14/15 05:50 PM	12/17/2015
1512236-11	MW-19		12/14/15 06:40 PM	12/17/2015
1512236-12	PDP-23		12/14/15 07:30 PM	12/17/2015
1512236-13	PDP-26		12/15/15 07:50 AM	12/17/2015
1512236-14	MW-17A		12/15/15 08:50 AM	12/17/2015
1512236-15	PDP-24		12/15/15 09:40 AM	12/17/2015
1512236-16	MW-18A		12/15/15 10:30 AM	12/17/2015
1512236-17	PDP-25		12/15/15 11:35 AM	12/17/2015

Lab Order: 1512236
Client: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1512236-01A	H-29	12/14/15 09:05 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	H-29	12/14/15 09:05 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	H-29	12/14/15 09:05 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	H-29	12/14/15 09:05 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	H-29	12/14/15 09:05 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	12/19/15 10:57 AM	72835
1512236-01D	H-29	12/14/15 09:05 AM	Aqueous	E300	Anion Preparation	12/22/15 12:13 PM	72897
	H-29	12/14/15 09:05 AM	Aqueous	E300	Anion Preparation	12/22/15 12:13 PM	72897
	H-29	12/14/15 09:05 AM	Aqueous	M4500-H+ B	pH Preparation	12/18/15 10:36 AM	72710
	H-29	12/14/15 09:05 AM	Aqueous	M2540C	TDS Preparation	12/18/15 02:13 PM	72824
1512236-02A	H-30	12/14/15 09:50 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	H-30	12/14/15 09:50 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	H-30	12/14/15 09:50 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	H-30	12/14/15 09:50 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	H-30	12/14/15 09:50 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	12/19/15 10:57 AM	72835
1512236-02D	H-30	12/14/15 09:50 AM	Aqueous	E300	Anion Preparation	12/22/15 12:13 PM	72897
	H-30	12/14/15 09:50 AM	Aqueous	E300	Anion Preparation	12/22/15 12:13 PM	72897
	H-30	12/14/15 09:50 AM	Aqueous	M4500-H+ B	pH Preparation	12/18/15 10:36 AM	72710
	H-30	12/14/15 09:50 AM	Aqueous	M2540C	TDS Preparation	12/18/15 02:13 PM	72824
1512236-03A	H-31	12/14/15 10:40 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	H-31	12/14/15 10:40 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	H-31	12/14/15 10:40 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	H-31	12/14/15 10:40 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	12/19/15 10:57 AM	72835
1512236-03D	H-31	12/14/15 10:40 AM	Aqueous	E300	Anion Preparation	12/22/15 12:13 PM	72897
	H-31	12/14/15 10:40 AM	Aqueous	E300	Anion Preparation	12/22/15 12:13 PM	72897
	H-31	12/14/15 10:40 AM	Aqueous	M4500-H+ B	pH Preparation	12/18/15 10:36 AM	72710
	H-31	12/14/15 10:40 AM	Aqueous	M2540C	TDS Preparation	12/18/15 02:13 PM	72824
1512236-04A	H-32	12/14/15 11:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	H-32	12/14/15 11:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946

Lab Order: 1512236
Client: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1512236-04A	H-32	12/14/15 11:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	H-32	12/14/15 11:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	H-32	12/14/15 11:30 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	12/19/15 10:57 AM	72835
1512236-04D	H-32	12/14/15 11:30 AM	Aqueous	E300	Anion Preparation	12/22/15 12:13 PM	72897
	H-32	12/14/15 11:30 AM	Aqueous	E300	Anion Preparation	12/22/15 12:13 PM	72897
	H-32	12/14/15 11:30 AM	Aqueous	M4500-H+ B	pH Preparation	12/18/15 10:36 AM	72710
	H-32	12/14/15 11:30 AM	Aqueous	M2540C	TDS Preparation	12/18/15 02:13 PM	72824
1512236-05A	H-27	12/14/15 12:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	H-27	12/14/15 12:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	H-27	12/14/15 12:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	H-27	12/14/15 12:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	H-27	12/14/15 12:20 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	12/19/15 10:57 AM	72835
1512236-05D	H-27	12/14/15 12:20 PM	Aqueous	E300	Anion Preparation	12/22/15 12:13 PM	72897
	H-27	12/14/15 12:20 PM	Aqueous	E300	Anion Preparation	12/22/15 12:13 PM	72897
	H-27	12/14/15 12:20 PM	Aqueous	M4500-H+ B	pH Preparation	12/18/15 10:36 AM	72710
	H-27	12/14/15 12:20 PM	Aqueous	M2540C	TDS Preparation	12/18/15 02:13 PM	72824
1512236-06A	H-28	12/14/15 01:15 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	H-28	12/14/15 01:15 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	H-28	12/14/15 01:15 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	H-28	12/14/15 01:15 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	12/19/15 10:57 AM	72835
1512236-06D	H-28	12/14/15 01:15 PM	Aqueous	E300	Anion Preparation	12/22/15 12:13 PM	72897
	H-28	12/14/15 01:15 PM	Aqueous	M4500-H+ B	pH Preparation	12/18/15 10:36 AM	72710
	H-28	12/14/15 01:15 PM	Aqueous	M2540C	TDS Preparation	12/18/15 02:13 PM	72824
1512236-07A	H-26	12/14/15 02:05 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	H-26	12/14/15 02:05 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	H-26	12/14/15 02:05 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	H-26	12/14/15 02:05 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	12/19/15 10:57 AM	72835
1512236-07D	H-26	12/14/15 02:05 PM	Aqueous	E300	Anion Preparation	12/22/15 12:13 PM	72897

Lab Order: 1512236
Client: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1512236-07D	H-26	12/14/15 02:05 PM	Aqueous	M4500-H+ B	pH Preparation	12/18/15 10:36 AM	72710
	H-26	12/14/15 02:05 PM	Aqueous	M2540C	TDS Preparation	12/18/15 02:13 PM	72824
1512236-08A	H-33	12/14/15 02:55 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	H-33	12/14/15 02:55 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	H-33	12/14/15 02:55 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	H-33	12/14/15 02:55 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	12/19/15 10:57 AM	72835
1512236-08D	H-33	12/14/15 02:55 PM	Aqueous	E300	Anion Preparation	12/22/15 12:13 PM	72897
	H-33	12/14/15 02:55 PM	Aqueous	E300	Anion Preparation	12/22/15 12:13 PM	72897
	H-33	12/14/15 02:55 PM	Aqueous	M4500-H+ B	pH Preparation	12/18/15 10:36 AM	72710
	H-33	12/14/15 02:55 PM	Aqueous	M2540C	TDS Preparation	12/18/15 02:13 PM	72824
1512236-09A	MW-20A	12/14/15 05:00 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	MW-20A	12/14/15 05:00 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	MW-20A	12/14/15 05:00 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	MW-20A	12/14/15 05:00 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	12/19/15 10:57 AM	72835
1512236-09D	MW-20A	12/14/15 05:00 PM	Aqueous	E300	Anion Preparation	12/22/15 12:13 PM	72897
	MW-20A	12/14/15 05:00 PM	Aqueous	M4500-H+ B	pH Preparation	12/18/15 10:36 AM	72710
	MW-20A	12/14/15 05:00 PM	Aqueous	M2540C	TDS Preparation	12/18/15 02:13 PM	72824
1512236-10A	PDP-22	12/14/15 05:50 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	PDP-22	12/14/15 05:50 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	PDP-22	12/14/15 05:50 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	PDP-22	12/14/15 05:50 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	PDP-22	12/14/15 05:50 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	PDP-22	12/14/15 05:50 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	12/19/15 10:57 AM	72835
1512236-10D	PDP-22	12/14/15 05:50 PM	Aqueous	E300	Anion Preparation	12/22/15 12:13 PM	72897
	PDP-22	12/14/15 05:50 PM	Aqueous	E300	Anion Preparation	12/22/15 12:13 PM	72897
	PDP-22	12/14/15 05:50 PM	Aqueous	M4500-H+ B	pH Preparation	12/18/15 10:36 AM	72710
	PDP-22	12/14/15 05:50 PM	Aqueous	M2540C	TDS Preparation	12/18/15 02:13 PM	72824
1512236-11A	MW-19	12/14/15 06:40 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946

Lab Order: 1512236
Client: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1512236-11A	MW-19	12/14/15 06:40 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	MW-19	12/14/15 06:40 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	MW-19	12/14/15 06:40 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	MW-19	12/14/15 06:40 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	12/19/15 10:57 AM	72835
1512236-11D	MW-19	12/14/15 06:40 PM	Aqueous	E300	Anion Preparation	12/22/15 12:13 PM	72897
	MW-19	12/14/15 06:40 PM	Aqueous	E300	Anion Preparation	12/22/15 12:13 PM	72897
	MW-19	12/14/15 06:40 PM	Aqueous	M4500-H+ B	pH Preparation	12/18/15 10:36 AM	72710
	MW-19	12/14/15 06:40 PM	Aqueous	M2540C	TDS Preparation	12/18/15 02:13 PM	72824
1512236-12A	PDP-23	12/14/15 07:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	PDP-23	12/14/15 07:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	PDP-23	12/14/15 07:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	PDP-23	12/14/15 07:30 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	12/19/15 10:57 AM	72835
1512236-12D	PDP-23	12/14/15 07:30 PM	Aqueous	E300	Anion Preparation	12/22/15 12:13 PM	72897
	PDP-23	12/14/15 07:30 PM	Aqueous	M4500-H+ B	pH Preparation	12/18/15 10:36 AM	72710
	PDP-23	12/14/15 07:30 PM	Aqueous	M2540C	TDS Preparation	12/18/15 02:13 PM	72824
1512236-13A	PDP-26	12/15/15 07:50 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	PDP-26	12/15/15 07:50 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	PDP-26	12/15/15 07:50 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	PDP-26	12/15/15 07:50 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	12/19/15 10:57 AM	72835
1512236-13D	PDP-26	12/15/15 07:50 AM	Aqueous	E300	Anion Preparation	12/22/15 12:13 PM	72897
	PDP-26	12/15/15 07:50 AM	Aqueous	M4500-H+ B	pH Preparation	12/18/15 10:36 AM	72710
	PDP-26	12/15/15 07:50 AM	Aqueous	M2540C	TDS Preparation	12/21/15 01:00 PM	72884
1512236-14A	MW-17A	12/15/15 08:50 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	MW-17A	12/15/15 08:50 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	MW-17A	12/15/15 08:50 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	MW-17A	12/15/15 08:50 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	12/19/15 10:57 AM	72835
1512236-14D	MW-17A	12/15/15 08:50 AM	Aqueous	E300	Anion Preparation	12/22/15 12:13 PM	72897
	MW-17A	12/15/15 08:50 AM	Aqueous	M4500-H+ B	pH Preparation	12/18/15 10:36 AM	72710

Lab Order: 1512236
Client: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1512236-14D	MW-17A	12/15/15 08:50 AM	Aqueous	M2540C	TDS Preparation	12/21/15 01:00 PM	72884
1512236-15A	PDP-24	12/15/15 09:40 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	PDP-24	12/15/15 09:40 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	PDP-24	12/15/15 09:40 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	PDP-24	12/15/15 09:40 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	12/19/15 10:57 AM	72835
1512236-15D	PDP-24	12/15/15 09:40 AM	Aqueous	E300	Anion Preparation	12/22/15 12:13 PM	72897
	PDP-24	12/15/15 09:40 AM	Aqueous	E300	Anion Preparation	12/22/15 12:13 PM	72897
	PDP-24	12/15/15 09:40 AM	Aqueous	M4500-H+ B	pH Preparation	12/18/15 10:36 AM	72710
	PDP-24	12/15/15 09:40 AM	Aqueous	M2540C	TDS Preparation	12/21/15 01:00 PM	72884
1512236-16A	MW-18A	12/15/15 10:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	MW-18A	12/15/15 10:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	MW-18A	12/15/15 10:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	MW-18A	12/15/15 10:30 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	12/19/15 10:57 AM	72835
	MW-18A	12/15/15 10:30 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	12/19/15 10:57 AM	72835
1512236-16D	MW-18A	12/15/15 10:30 AM	Aqueous	E300	Anion Preparation	12/22/15 12:13 PM	72897
	MW-18A	12/15/15 10:30 AM	Aqueous	M4500-H+ B	pH Preparation	12/18/15 10:36 AM	72710
	MW-18A	12/15/15 10:30 AM	Aqueous	M2540C	TDS Preparation	12/21/15 01:00 PM	72884
1512236-17A	PDP-25	12/15/15 11:35 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	PDP-25	12/15/15 11:35 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	PDP-25	12/15/15 11:35 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	PDP-25	12/15/15 11:35 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	PDP-25	12/15/15 11:35 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	12/19/15 10:57 AM	72835
1512236-17D	PDP-25	12/15/15 11:35 AM	Aqueous	E300	Anion Preparation	12/22/15 12:13 PM	72897
	PDP-25	12/15/15 11:35 AM	Aqueous	E300	Anion Preparation	12/22/15 12:13 PM	72897
	PDP-25	12/15/15 11:35 AM	Aqueous	M4500-H+ B	pH Preparation	12/18/15 10:36 AM	72710
	PDP-25	12/15/15 11:35 AM	Aqueous	M2540C	TDS Preparation	12/21/15 01:00 PM	72884

Lab Order: 1512236
Client: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1512236-01A	H-29	Aqueous	SW7470A	Mercury Total: Aqueous	72835	1	12/22/15 01:08 PM	CETAC2_HG_151222A
	H-29	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	1	01/05/16 05:10 PM	ICP-MS4_160105A
	H-29	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	1	01/06/16 03:17 PM	ICP-MS4_160106A
	H-29	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	50	01/06/16 04:22 PM	ICP-MS4_160106A
	H-29	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	1	01/07/16 11:15 AM	ICP-MS4_160107A
1512236-01D	H-29	Aqueous	E300	Anions by IC method - Water	72897	1	12/22/15 01:29 PM	IC2_151222B
	H-29	Aqueous	E300	Anions by IC method - Water	72897	10	12/22/15 07:18 PM	IC2_151222B
	H-29	Aqueous	M4500-H+ B	pH	72710	1	12/18/15 03:57 PM	TITRATOR_151218A
	H-29	Aqueous	M2540C	Total Dissolved Solids	72824	1	12/21/15 08:00 AM	WC_151218C
1512236-02A	H-30	Aqueous	SW7470A	Mercury Total: Aqueous	72835	1	12/22/15 01:23 PM	CETAC2_HG_151222A
	H-30	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	1	01/05/16 05:14 PM	ICP-MS4_160105A
	H-30	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	50	01/06/16 02:40 PM	ICP-MS4_160106A
	H-30	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	10	01/06/16 02:42 PM	ICP-MS4_160106A
	H-30	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	1	01/07/16 03:57 PM	ICP-MS4_160107D
1512236-02D	H-30	Aqueous	E300	Anions by IC method - Water	72897	1	12/22/15 01:44 PM	IC2_151222B
	H-30	Aqueous	E300	Anions by IC method - Water	72897	100	12/22/15 07:32 PM	IC2_151222B
	H-30	Aqueous	M4500-H+ B	pH	72710	1	12/18/15 03:59 PM	TITRATOR_151218A
	H-30	Aqueous	M2540C	Total Dissolved Solids	72824	1	12/21/15 08:00 AM	WC_151218C
1512236-03A	H-31	Aqueous	SW7470A	Mercury Total: Aqueous	72835	1	12/22/15 01:25 PM	CETAC2_HG_151222A
	H-31	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	1	01/05/16 05:16 PM	ICP-MS4_160105A
	H-31	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	50	01/06/16 02:44 PM	ICP-MS4_160106A
	H-31	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	1	01/07/16 03:59 PM	ICP-MS4_160107D
1512236-03D	H-31	Aqueous	E300	Anions by IC method - Water	72897	1	12/22/15 01:59 PM	IC2_151222B
	H-31	Aqueous	E300	Anions by IC method - Water	72897	100	12/22/15 07:47 PM	IC2_151222B
	H-31	Aqueous	M4500-H+ B	pH	72710	1	12/18/15 04:02 PM	TITRATOR_151218A
	H-31	Aqueous	M2540C	Total Dissolved Solids	72824	1	12/21/15 08:00 AM	WC_151218C

Lab Order: 1512236
Client: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1512236-04A	H-32	Aqueous	SW7470A	Mercury Total: Aqueous	72835	1	12/22/15 01:27 PM	CETAC2_HG_151222A
	H-32	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	1	01/05/16 05:18 PM	ICP-MS4_160105A
	H-32	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	10	01/06/16 02:46 PM	ICP-MS4_160106A
	H-32	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	1	01/06/16 03:21 PM	ICP-MS4_160106A
	H-32	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	2	01/07/16 11:17 AM	ICP-MS4_160107A
1512236-04D	H-32	Aqueous	E300	Anions by IC method - Water	72897	1	12/22/15 02:13 PM	IC2_151222B
	H-32	Aqueous	E300	Anions by IC method - Water	72897	10	12/23/15 07:54 AM	IC2_151222B
	H-32	Aqueous	M4500-H+ B	pH	72710	1	12/18/15 04:05 PM	TITRATOR_151218A
	H-32	Aqueous	M2540C	Total Dissolved Solids	72824	1	12/21/15 08:00 AM	WC_151218C
1512236-05A	H-27	Aqueous	SW7470A	Mercury Total: Aqueous	72835	1	12/22/15 01:29 PM	CETAC2_HG_151222A
	H-27	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	1	01/05/16 05:20 PM	ICP-MS4_160105A
	H-27	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	10	01/06/16 02:48 PM	ICP-MS4_160106A
	H-27	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	1	01/06/16 03:23 PM	ICP-MS4_160106A
	H-27	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	1	01/07/16 11:19 AM	ICP-MS4_160107A
1512236-05D	H-27	Aqueous	E300	Anions by IC method - Water	72897	10	12/23/15 08:08 AM	IC2_151222B
	H-27	Aqueous	E300	Anions by IC method - Water	72897	1	12/22/15 02:28 PM	IC2_151222B
	H-27	Aqueous	M4500-H+ B	pH	72710	1	12/18/15 04:07 PM	TITRATOR_151218A
	H-27	Aqueous	M2540C	Total Dissolved Solids	72824	1	12/21/15 08:00 AM	WC_151218C
1512236-06A	H-28	Aqueous	SW7470A	Mercury Total: Aqueous	72835	1	12/22/15 01:32 PM	CETAC2_HG_151222A
	H-28	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	1	01/05/16 05:22 PM	ICP-MS4_160105A
	H-28	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	1	01/06/16 03:25 PM	ICP-MS4_160106A
	H-28	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	2	01/07/16 11:21 AM	ICP-MS4_160107A
1512236-06D	H-28	Aqueous	E300	Anions by IC method - Water	72897	1	12/22/15 02:43 PM	IC2_151222B
	H-28	Aqueous	M4500-H+ B	pH	72710	1	12/18/15 04:10 PM	TITRATOR_151218A
	H-28	Aqueous	M2540C	Total Dissolved Solids	72824	1	12/21/15 08:00 AM	WC_151218C
1512236-07A	H-26	Aqueous	SW7470A	Mercury Total: Aqueous	72835	1	12/22/15 01:34 PM	CETAC2_HG_151222A

Lab Order: 1512236
Client: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1512236-07A	H-26	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	1	01/05/16 05:24 PM	ICP-MS4_160105A
	H-26	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	1	01/06/16 03:27 PM	ICP-MS4_160106A
	H-26	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	1	01/07/16 11:23 AM	ICP-MS4_160107A
1512236-07D	H-26	Aqueous	E300	Anions by IC method - Water	72897	1	12/22/15 02:57 PM	IC2_151222B
	H-26	Aqueous	M4500-H+ B	pH	72710	1	12/18/15 04:12 PM	TITRATOR_151218A
	H-26	Aqueous	M2540C	Total Dissolved Solids	72824	1	12/21/15 08:00 AM	WC_151218C
1512236-08A	H-33	Aqueous	SW7470A	Mercury Total: Aqueous	72835	1	12/22/15 01:36 PM	CETAC2_HG_151222A
	H-33	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	1	01/05/16 05:26 PM	ICP-MS4_160105A
	H-33	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	1	01/06/16 03:29 PM	ICP-MS4_160106A
	H-33	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	1	01/07/16 11:25 AM	ICP-MS4_160107A
1512236-08D	H-33	Aqueous	E300	Anions by IC method - Water	72897	1	12/22/15 03:12 PM	IC2_151222B
	H-33	Aqueous	E300	Anions by IC method - Water	72897	10	12/23/15 08:23 AM	IC2_151222B
	H-33	Aqueous	M4500-H+ B	pH	72710	1	12/18/15 04:16 PM	TITRATOR_151218A
	H-33	Aqueous	M2540C	Total Dissolved Solids	72824	1	12/21/15 08:00 AM	WC_151218C
1512236-09A	MW-20A	Aqueous	SW7470A	Mercury Total: Aqueous	72835	1	12/22/15 01:39 PM	CETAC2_HG_151222A
	MW-20A	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	1	01/06/16 03:31 PM	ICP-MS4_160106A
	MW-20A	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	1	01/07/16 11:27 AM	ICP-MS4_160107A
	MW-20A	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	1	01/05/16 05:28 PM	ICP-MS4_160105A
1512236-09D	MW-20A	Aqueous	E300	Anions by IC method - Water	72897	1	12/22/15 03:26 PM	IC2_151222B
	MW-20A	Aqueous	M4500-H+ B	pH	72710	1	12/18/15 04:17 PM	TITRATOR_151218A
	MW-20A	Aqueous	M2540C	Total Dissolved Solids	72824	1	12/21/15 08:00 AM	WC_151218C
1512236-10A	PDP-22	Aqueous	SW7470A	Mercury Total: Aqueous	72835	1	12/22/15 01:41 PM	CETAC2_HG_151222A
	PDP-22	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	1	01/06/16 03:33 PM	ICP-MS4_160106A
	PDP-22	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	1	01/07/16 11:29 AM	ICP-MS4_160107A
	PDP-22	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	10	01/06/16 02:50 PM	ICP-MS4_160106A
	PDP-22	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	1	01/05/16 05:30 PM	ICP-MS4_160105A

Lab Order: 1512236
Client: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1512236-10A	PDP-22	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	50	01/07/16 12:11 PM	ICP-MS4_160107A
1512236-10D	PDP-22	Aqueous	E300	Anions by IC method - Water	72897	1	12/22/15 03:41 PM	IC2_151222B
	PDP-22	Aqueous	E300	Anions by IC method - Water	72897	10	12/23/15 08:44 AM	IC2_151222B
	PDP-22	Aqueous	M4500-H+ B	pH	72710	1	12/18/15 04:20 PM	TITRATOR_151218A
	PDP-22	Aqueous	M2540C	Total Dissolved Solids	72824	1	12/21/15 08:00 AM	WC_151218C
1512236-11A	MW-19	Aqueous	SW7470A	Mercury Total: Aqueous	72835	1	12/22/15 01:48 PM	CETAC2_HG_151222A
	MW-19	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	10	01/06/16 02:52 PM	ICP-MS4_160106A
	MW-19	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	1	01/06/16 03:35 PM	ICP-MS4_160106A
	MW-19	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	1	01/05/16 06:08 PM	ICP-MS4_160105A
	MW-19	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	1	01/07/16 11:31 AM	ICP-MS4_160107A
1512236-11D	MW-19	Aqueous	E300	Anions by IC method - Water	72897	1	12/22/15 04:37 PM	IC2_151222B
	MW-19	Aqueous	E300	Anions by IC method - Water	72897	10	12/23/15 09:57 AM	IC2_151222B
	MW-19	Aqueous	M4500-H+ B	pH	72710	1	12/18/15 04:23 PM	TITRATOR_151218A
	MW-19	Aqueous	M2540C	Total Dissolved Solids	72824	1	12/21/15 08:00 AM	WC_151218C
1512236-12A	PDP-23	Aqueous	SW7470A	Mercury Total: Aqueous	72835	1	12/22/15 01:50 PM	CETAC2_HG_151222A
	PDP-23	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	1	01/05/16 06:10 PM	ICP-MS4_160105A
	PDP-23	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	1	01/06/16 03:37 PM	ICP-MS4_160106A
	PDP-23	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	1	01/07/16 12:13 PM	ICP-MS4_160107A
1512236-12D	PDP-23	Aqueous	E300	Anions by IC method - Water	72897	1	12/22/15 04:52 PM	IC2_151222B
	PDP-23	Aqueous	M4500-H+ B	pH	72710	1	12/18/15 04:26 PM	TITRATOR_151218A
	PDP-23	Aqueous	M2540C	Total Dissolved Solids	72824	1	12/21/15 08:00 AM	WC_151218C
1512236-13A	PDP-26	Aqueous	SW7470A	Mercury Total: Aqueous	72835	1	12/22/15 01:52 PM	CETAC2_HG_151222A
	PDP-26	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	1	01/07/16 11:11 AM	ICP-MS4_160107A
	PDP-26	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	1	01/05/16 06:12 PM	ICP-MS4_160105A
	PDP-26	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	1	01/06/16 04:28 PM	ICP-MS4_160106A
1512236-13D	PDP-26	Aqueous	E300	Anions by IC method - Water	72897	1	12/22/15 05:06 PM	IC2_151222B

Lab Order: 1512236
Client: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1512236-13D	PDP-26	Aqueous	M4500-H+ B	pH	72710	1	12/18/15 04:29 PM	TITRATOR_151218A
	PDP-26	Aqueous	M2540C	Total Dissolved Solids	72884	1	12/22/15 08:00 AM	WC_151221A
1512236-14A	MW-17A	Aqueous	SW7470A	Mercury Total: Aqueous	72835	1	12/22/15 01:54 PM	CETAC2_HG_151222A
	MW-17A	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	1	01/05/16 06:14 PM	ICP-MS4_160105A
	MW-17A	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	1	01/06/16 04:30 PM	ICP-MS4_160106A
	MW-17A	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	1	01/07/16 12:15 PM	ICP-MS4_160107A
1512236-14D	MW-17A	Aqueous	E300	Anions by IC method - Water	72897	1	12/22/15 05:21 PM	IC2_151222B
	MW-17A	Aqueous	M4500-H+ B	pH	72710	1	12/18/15 04:31 PM	TITRATOR_151218A
	MW-17A	Aqueous	M2540C	Total Dissolved Solids	72884	1	12/22/15 08:00 AM	WC_151221A
1512236-15A	PDP-24	Aqueous	SW7470A	Mercury Total: Aqueous	72835	1	12/22/15 01:57 PM	CETAC2_HG_151222A
	PDP-24	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	1	01/05/16 06:16 PM	ICP-MS4_160105A
	PDP-24	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	10	01/06/16 02:54 PM	ICP-MS4_160106A
	PDP-24	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	1	01/07/16 04:01 PM	ICP-MS4_160107D
1512236-15D	PDP-24	Aqueous	E300	Anions by IC method - Water	72897	1	12/22/15 05:36 PM	IC2_151222B
	PDP-24	Aqueous	E300	Anions by IC method - Water	72897	10	12/22/15 06:19 PM	IC2_151222B
	PDP-24	Aqueous	M4500-H+ B	pH	72710	1	12/18/15 04:33 PM	TITRATOR_151218A
	PDP-24	Aqueous	M2540C	Total Dissolved Solids	72884	1	12/22/15 08:00 AM	WC_151221A
1512236-16A	MW-18A	Aqueous	SW7470A	Mercury Total: Aqueous	72835	1	12/22/15 02:03 PM	CETAC2_HG_151222A
	MW-18A	Aqueous	SW7470A	Mercury Total: Aqueous	72835	5	12/22/15 04:30 PM	CETAC2_HG_151222A
	MW-18A	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	1	01/05/16 06:18 PM	ICP-MS4_160105A
	MW-18A	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	1	01/06/16 04:32 PM	ICP-MS4_160106A
	MW-18A	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	1	01/07/16 12:17 PM	ICP-MS4_160107A
1512236-16D	MW-18A	Aqueous	E300	Anions by IC method - Water	72897	1	12/22/15 05:50 PM	IC2_151222B
	MW-18A	Aqueous	M4500-H+ B	pH	72710	1	12/18/15 04:35 PM	TITRATOR_151218A
	MW-18A	Aqueous	M2540C	Total Dissolved Solids	72884	1	12/22/15 08:00 AM	WC_151221A
1512236-17A	PDP-25	Aqueous	SW7470A	Mercury Total: Aqueous	72835	1	12/22/15 02:05 PM	CETAC2_HG_151222A

Lab Order: 1512236
Client: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1512236-17A	PDP-25	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	10	01/06/16 02:56 PM	ICP-MS4_160106A
	PDP-25	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	1	01/06/16 04:34 PM	ICP-MS4_160106A
	PDP-25	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	1	01/07/16 12:19 PM	ICP-MS4_160107A
	PDP-25	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	1	01/05/16 06:20 PM	ICP-MS4_160105A
1512236-17D	PDP-25	Aqueous	E300	Anions by IC method - Water	72897	1	12/22/15 06:05 PM	IC2_151222B
	PDP-25	Aqueous	E300	Anions by IC method - Water	72897	10	12/22/15 06:34 PM	IC2_151222B
	PDP-25	Aqueous	M4500-H+ B	pH	72710	1	12/18/15 04:38 PM	TITRATOR_151218A
	PDP-25	Aqueous	M2540C	Total Dissolved Solids	72884	1	12/22/15 08:00 AM	WC_151221A

DHL Analytical, Inc.

Date: *21-Jan-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	H-29
Project:	Luminant - Martin Lake	**Lab ID:**	1512236-01
Project No:	5164-B	**Collection Date:**	12/14/15 09:05 AM
Lab Order:	1512236	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **ABO**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/22/15 01:08 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	01/05/16 05:10 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	01/05/16 05:10 PM
Barium	0.277	0.00300	0.0100		mg/L	1	01/05/16 05:10 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	01/05/16 05:10 PM
Boron	0.290	0.0100	0.0300		mg/L	1	01/07/16 11:15 AM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	01/05/16 05:10 PM
Calcium	165	5.00	15.0		mg/L	50	01/06/16 04:22 PM
Chromium	0.0620	0.00200	0.00500		mg/L	1	01/05/16 05:10 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	01/05/16 05:10 PM
Lead	0.000542	0.000300	0.00100	J	mg/L	1	01/05/16 05:10 PM
Lithium	0.0202	0.00500	0.0100		mg/L	1	01/05/16 05:10 PM
Molybdenum	0.00819	0.00200	0.00500		mg/L	1	01/05/16 05:10 PM
Selenium	0.0282	0.00200	0.00500		mg/L	1	01/05/16 05:10 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	01/06/16 03:17 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	8.68	0.300	1.00		mg/L	1	12/22/15 01:29 PM
Fluoride	0.560	0.100	0.400		mg/L	1	12/22/15 01:29 PM
Sulfate	178	10.0	30.0		mg/L	10	12/22/15 07:18 PM
PH		**M4500-H+ B**					Analyst: **LM**
pH	11.9	0	0		pH Units@18.5℃	1	12/18/15 03:57 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **BJT**
Total Dissolved Solids (Residue, Filterable)	990	50.0	50.0		mg/L	1	12/21/15 08:00 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *21-Jan-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	H-30
Project:	Luminant - Martin Lake	**Lab ID:**	1512236-02
Project No:	5164-B	**Collection Date:**	12/14/15 09:50 AM
Lab Order:	1512236	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **ABO**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/22/15 01:23 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	01/05/16 05:14 PM
Arsenic	0.0114	0.00200	0.00500		mg/L	1	01/05/16 05:14 PM
Barium	0.129	0.00300	0.0100		mg/L	1	01/05/16 05:14 PM
Beryllium	0.00999	0.000300	0.00100		mg/L	1	01/05/16 05:14 PM
Boron	4.13	0.100	0.300		mg/L	10	01/06/16 02:42 PM
Cadmium	0.00274	0.000300	0.00100		mg/L	1	01/05/16 05:14 PM
Calcium	360	5.00	15.0		mg/L	50	01/06/16 02:40 PM
Chromium	0.185	0.00200	0.00500		mg/L	1	01/05/16 05:14 PM
Cobalt	0.124	0.00300	0.00500		mg/L	1	01/05/16 05:14 PM
Lead	0.0196	0.000300	0.00100		mg/L	1	01/05/16 05:14 PM
Lithium	0.0513	0.00500	0.0100		mg/L	1	01/05/16 05:14 PM
Molybdenum	0.0133	0.00200	0.00500		mg/L	1	01/05/16 05:14 PM
Selenium	0.161	0.00200	0.00500		mg/L	1	01/05/16 05:14 PM
Thallium	0.000571	0.000500	0.00150	J	mg/L	1	01/07/16 03:57 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	45.2	0.300	1.00		mg/L	1	12/22/15 01:44 PM
Fluoride	0.462	0.100	0.400		mg/L	1	12/22/15 01:44 PM
Sulfate	821	100	300		mg/L	100	12/22/15 07:32 PM
PH		**M4500-H+ B**					Analyst: **LM**
pH	11.4	0	0		pH Units@18℃	1	12/18/15 03:59 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **BJT**
Total Dissolved Solids (Residue, Filterable)	1660	50.0	50.0		mg/L	1	12/21/15 08:00 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *21-Jan-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	H-31
Project:	Luminant - Martin Lake	**Lab ID:**	1512236-03
Project No:	5164-B	**Collection Date:**	12/14/15 10:40 AM
Lab Order:	1512236	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **ABO**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/22/15 01:25 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	01/05/16 05:16 PM
Arsenic	0.00513	0.00200	0.00500		mg/L	1	01/05/16 05:16 PM
Barium	0.0388	0.00300	0.0100		mg/L	1	01/05/16 05:16 PM
Beryllium	0.00702	0.000300	0.00100		mg/L	1	01/05/16 05:16 PM
Boron	20.4	0.500	1.50		mg/L	50	01/06/16 02:44 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	01/05/16 05:16 PM
Calcium	236	5.00	15.0		mg/L	50	01/06/16 02:44 PM
Chromium	0.00456	0.00200	0.00500	J	mg/L	1	01/05/16 05:16 PM
Cobalt	0.0651	0.00300	0.00500		mg/L	1	01/05/16 05:16 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	01/05/16 05:16 PM
Lithium	0.149	0.00500	0.0100		mg/L	1	01/05/16 05:16 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	01/05/16 05:16 PM
Selenium	0.0231	0.00200	0.00500		mg/L	1	01/05/16 05:16 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	01/07/16 03:59 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	147	30.0	100		mg/L	100	12/22/15 07:47 PM
Fluoride	0.692	0.100	0.400		mg/L	1	12/22/15 01:59 PM
Sulfate	1740	100	300		mg/L	100	12/22/15 07:47 PM
PH		**M4500-H+ B**					Analyst: **LM**
pH	6.47	0	0		pH Units@18.1℃	1	12/18/15 04:02 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **BJT**
Total Dissolved Solids (Residue, Filterable)	2250	50.0	50.0		mg/L	1	12/21/15 08:00 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *21-Jan-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	H-32
Project:	Luminant - Martin Lake	**Lab ID:**	1512236-04
Project No:	5164-B	**Collection Date:**	12/14/15 11:30 AM
Lab Order:	1512236	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **ABO**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/22/15 01:27 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	01/05/16 05:18 PM
Arsenic	0.0123	0.00200	0.00500		mg/L	1	01/05/16 05:18 PM
Barium	0.0384	0.00300	0.0100		mg/L	1	01/05/16 05:18 PM
Beryllium	0.00313	0.000300	0.00100		mg/L	1	01/05/16 05:18 PM
Boron	1.39	0.0200	0.0600		mg/L	2	01/07/16 11:17 AM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	01/05/16 05:18 PM
Calcium	37.4	1.00	3.00		mg/L	10	01/06/16 02:46 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	01/05/16 05:18 PM
Cobalt	0.155	0.00300	0.00500		mg/L	1	01/05/16 05:18 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	01/05/16 05:18 PM
Lithium	0.0733	0.00500	0.0100		mg/L	1	01/05/16 05:18 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	01/05/16 05:18 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	01/05/16 05:18 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	01/06/16 03:21 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	122	3.00	10.0		mg/L	10	12/23/15 07:54 AM
Fluoride	0.619	0.100	0.400		mg/L	1	12/22/15 02:13 PM
Sulfate	325	10.0	30.0		mg/L	10	12/23/15 07:54 AM
PH		**M4500-H+ B**					Analyst: **LM**
pH	5.82	0	0		pH Units@18.3℃	1	12/18/15 04:05 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **BJT**
Total Dissolved Solids (Residue, Filterable)	860	10.0	10.0		mg/L	1	12/21/15 08:00 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *21-Jan-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	H-27
Project:	Luminant - Martin Lake	**Lab ID:**	1512236-05
Project No:	5164-B	**Collection Date:**	12/14/15 12:20 PM
Lab Order:	1512236	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **ABO**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/22/15 01:29 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	01/05/16 05:20 PM
Arsenic	0.00210	0.00200	0.00500	J	mg/L	1	01/05/16 05:20 PM
Barium	0.0390	0.00300	0.0100		mg/L	1	01/05/16 05:20 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	01/05/16 05:20 PM
Boron	0.474	0.0100	0.0300		mg/L	1	01/07/16 11:19 AM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	01/05/16 05:20 PM
Calcium	57.2	1.00	3.00		mg/L	10	01/06/16 02:48 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	01/05/16 05:20 PM
Cobalt	0.00326	0.00300	0.00500	J	mg/L	1	01/05/16 05:20 PM
Lead	0.000339	0.000300	0.00100	J	mg/L	1	01/05/16 05:20 PM
Lithium	0.0624	0.00500	0.0100		mg/L	1	01/05/16 05:20 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	01/05/16 05:20 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	01/05/16 05:20 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	01/06/16 03:23 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	112	3.00	10.0		mg/L	10	12/23/15 08:08 AM
Fluoride	0.156	0.100	0.400	J	mg/L	1	12/22/15 02:28 PM
Sulfate	317	10.0	30.0		mg/L	10	12/23/15 08:08 AM
PH		**M4500-H+ B**					Analyst: **LM**
pH	6.27	0	0		pH Units@18.4℃	1	12/18/15 04:07 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **BJT**
Total Dissolved Solids (Residue, Filterable)	857	10.0	10.0		mg/L	1	12/21/15 08:00 AM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *21-Jan-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	H-28
Project:	Luminant - Martin Lake	**Lab ID:**	1512236-06
Project No:	5164-B	**Collection Date:**	12/14/15 01:15 PM
Lab Order:	1512236	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **ABO**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/22/15 01:32 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	01/05/16 05:22 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	01/05/16 05:22 PM
Barium	0.0224	0.00300	0.0100		mg/L	1	01/05/16 05:22 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	01/05/16 05:22 PM
Boron	1.02	0.0200	0.0600		mg/L	2	01/07/16 11:21 AM
Cadmium	0.000572	0.000300	0.00100	J	mg/L	1	01/05/16 05:22 PM
Calcium	17.3	0.100	0.300		mg/L	1	01/05/16 05:22 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	01/05/16 05:22 PM
Cobalt	0.0225	0.00300	0.00500		mg/L	1	01/05/16 05:22 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	01/05/16 05:22 PM
Lithium	0.0210	0.00500	0.0100		mg/L	1	01/05/16 05:22 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	01/05/16 05:22 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	01/05/16 05:22 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	01/06/16 03:25 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	15.5	0.300	1.00		mg/L	1	12/22/15 02:43 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	12/22/15 02:43 PM
Sulfate	113	1.00	3.00		mg/L	1	12/22/15 02:43 PM
PH		**M4500-H+ B**					Analyst: **LM**
pH	6.84	0	0		pH Units@18.7℃	1	12/18/15 04:10 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **BJT**
Total Dissolved Solids (Residue, Filterable)	299	10.0	10.0		mg/L	1	12/21/15 08:00 AM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *21-Jan-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	H-26
Project:	Luminant - Martin Lake	**Lab ID:**	1512236-07
Project No:	5164-B	**Collection Date:**	12/14/15 02:05 PM
Lab Order:	1512236	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **ABO**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/22/15 01:34 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	01/05/16 05:24 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	01/05/16 05:24 PM
Barium	0.0401	0.00300	0.0100		mg/L	1	01/05/16 05:24 PM
Beryllium	0.000458	0.000300	0.00100	J	mg/L	1	01/05/16 05:24 PM
Boron	0.0679	0.0100	0.0300		mg/L	1	01/07/16 11:23 AM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	01/05/16 05:24 PM
Calcium	9.88	0.100	0.300		mg/L	1	01/05/16 05:24 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	01/05/16 05:24 PM
Cobalt	0.0244	0.00300	0.00500		mg/L	1	01/05/16 05:24 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	01/05/16 05:24 PM
Lithium	0.0769	0.00500	0.0100		mg/L	1	01/05/16 05:24 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	01/05/16 05:24 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	01/05/16 05:24 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	01/06/16 03:27 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	40.3	0.300	1.00		mg/L	1	12/22/15 02:57 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	12/22/15 02:57 PM
Sulfate	75.8	1.00	3.00		mg/L	1	12/22/15 02:57 PM
PH		**M4500-H+ B**					Analyst: **LM**
pH	6.06	0	0		pH Units@19.1℃	1	12/18/15 04:12 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **BJT**
Total Dissolved Solids (Residue, Filterable)	280	10.0	10.0		mg/L	1	12/21/15 08:00 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *21-Jan-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	H-33
Project:	Luminant - Martin Lake	**Lab ID:**	1512236-08
Project No:	5164-B	**Collection Date:**	12/14/15 02:55 PM
Lab Order:	1512236	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **ABO**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/22/15 01:36 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	01/05/16 05:26 PM
Arsenic	0.00205	0.00200	0.00500	J	mg/L	1	01/05/16 05:26 PM
Barium	0.0473	0.00300	0.0100		mg/L	1	01/05/16 05:26 PM
Beryllium	0.000382	0.000300	0.00100	J	mg/L	1	01/05/16 05:26 PM
Boron	0.0596	0.0100	0.0300		mg/L	1	01/07/16 11:25 AM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	01/05/16 05:26 PM
Calcium	10.7	0.100	0.300		mg/L	1	01/05/16 05:26 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	01/05/16 05:26 PM
Cobalt	0.0293	0.00300	0.00500		mg/L	1	01/05/16 05:26 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	01/05/16 05:26 PM
Lithium	0.0903	0.00500	0.0100		mg/L	1	01/05/16 05:26 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	01/05/16 05:26 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	01/05/16 05:26 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	01/06/16 03:29 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	59.6	3.00	10.0		mg/L	10	12/23/15 08:23 AM
Fluoride	0.136	0.100	0.400	J	mg/L	1	12/22/15 03:12 PM
Sulfate	110	1.00	3.00		mg/L	1	12/22/15 03:12 PM
PH		**M4500-H+ B**					Analyst: **LM**
pH	5.93	0	0		pH Units@19.4℃	1	12/18/15 04:16 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **BJT**
Total Dissolved Solids (Residue, Filterable)	403	10.0	10.0		mg/L	1	12/21/15 08:00 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *21-Jan-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	MW-20A
Project:	Luminant - Martin Lake	**Lab ID:**	1512236-09
Project No:	5164-B	**Collection Date:**	12/14/15 05:00 PM
Lab Order:	1512236	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **ABO**
Mercury	0.000390	0.0000800	0.000200		mg/L	1	12/22/15 01:39 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	01/05/16 05:28 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	01/05/16 05:28 PM
Barium	0.0291	0.00300	0.0100		mg/L	1	01/05/16 05:28 PM
Beryllium	0.000605	0.000300	0.00100	J	mg/L	1	01/05/16 05:28 PM
Boron	0.147	0.0100	0.0300		mg/L	1	01/07/16 11:27 AM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	01/05/16 05:28 PM
Calcium	14.8	0.100	0.300		mg/L	1	01/05/16 05:28 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	01/05/16 05:28 PM
Cobalt	0.00464	0.00300	0.00500	J	mg/L	1	01/05/16 05:28 PM
Lead	0.00132	0.000300	0.00100		mg/L	1	01/05/16 05:28 PM
Lithium	0.0162	0.00500	0.0100		mg/L	1	01/05/16 05:28 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	01/05/16 05:28 PM
Selenium	0.00682	0.00200	0.00500		mg/L	1	01/05/16 05:28 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	01/06/16 03:31 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	9.98	0.300	1.00		mg/L	1	12/22/15 03:26 PM
Fluoride	0.654	0.100	0.400		mg/L	1	12/22/15 03:26 PM
Sulfate	97.8	1.00	3.00		mg/L	1	12/22/15 03:26 PM
PH		**M4500-H+ B**					Analyst: **LM**
pH	4.72	0	0		pH Units@19.2℃	1	12/18/15 04:17 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **BJT**
Total Dissolved Solids (Residue, Filterable)	201	10.0	10.0		mg/L	1	12/21/15 08:00 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *21-Jan-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	PDP-22
Project:	Luminant - Martin Lake	**Lab ID:**	1512236-10
Project No:	5164-B	**Collection Date:**	12/14/15 05:50 PM
Lab Order:	1512236	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **ABO**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/22/15 01:41 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	01/05/16 05:30 PM
Arsenic	0.0108	0.00200	0.00500		mg/L	1	01/05/16 05:30 PM
Barium	0.469	0.00300	0.0100		mg/L	1	01/05/16 05:30 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	01/05/16 05:30 PM
Boron	0.291	0.0100	0.0300		mg/L	1	01/07/16 11:29 AM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	01/05/16 05:30 PM
Calcium	123	5.00	15.0		mg/L	50	01/07/16 12:11 PM
Chromium	0.0968	0.00200	0.00500		mg/L	1	01/05/16 05:30 PM
Cobalt	0.00434	0.00300	0.00500	J	mg/L	1	01/05/16 05:30 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	01/05/16 05:30 PM
Lithium	0.106	0.00500	0.0100		mg/L	1	01/05/16 05:30 PM
Molybdenum	0.00649	0.00200	0.00500		mg/L	1	01/05/16 05:30 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	01/05/16 05:30 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	01/06/16 03:33 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	21.1	0.300	1.00		mg/L	1	12/22/15 03:41 PM
Fluoride	0.858	0.100	0.400		mg/L	1	12/22/15 03:41 PM
Sulfate	202	10.0	30.0		mg/L	10	12/23/15 08:44 AM
PH		**M4500-H+ B**					Analyst: **LM**
pH	8.23	0	0		pH Units@19.3℃	1	12/18/15 04:20 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **BJT**
Total Dissolved Solids (Residue, Filterable)	1430	50.0	50.0		mg/L	1	12/21/15 08:00 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *21-Jan-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	MW-19
Project:	Luminant - Martin Lake	**Lab ID:**	1512236-11
Project No:	5164-B	**Collection Date:**	12/14/15 06:40 PM
Lab Order:	1512236	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **ABO**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/22/15 01:48 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	01/05/16 06:08 PM
Arsenic	0.00470	0.00200	0.00500	J	mg/L	1	01/05/16 06:08 PM
Barium	0.0591	0.00300	0.0100		mg/L	1	01/05/16 06:08 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	01/05/16 06:08 PM
Boron	0.271	0.0100	0.0300		mg/L	1	01/07/16 11:31 AM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	01/05/16 06:08 PM
Calcium	75.4	1.00	3.00		mg/L	10	01/06/16 02:52 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	01/05/16 06:08 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	01/05/16 06:08 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	01/05/16 06:08 PM
Lithium	0.00593	0.00500	0.0100	J	mg/L	1	01/05/16 06:08 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	01/05/16 06:08 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	01/05/16 06:08 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	01/06/16 03:35 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	28.4	0.300	1.00		mg/L	1	12/22/15 04:37 PM
Fluoride	0.195	0.100	0.400	J	mg/L	1	12/22/15 04:37 PM
Sulfate	200	10.0	30.0		mg/L	10	12/23/15 09:57 AM
PH		**M4500-H+ B**					Analyst: **LM**
pH	7.14	0	0		pH Units@19.4℃	1	12/18/15 04:23 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **BJT**
Total Dissolved Solids (Residue, Filterable)	573	10.0	10.0		mg/L	1	12/21/15 08:00 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *21-Jan-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	PDP-23
Project:	Luminant - Martin Lake	**Lab ID:**	1512236-12
Project No:	5164-B	**Collection Date:**	12/14/15 07:30 PM
Lab Order:	1512236	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **ABO**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/22/15 01:50 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	01/05/16 06:10 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	01/05/16 06:10 PM
Barium	0.0384	0.00300	0.0100		mg/L	1	01/05/16 06:10 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	01/05/16 06:10 PM
Boron	0.0390	0.0100	0.0300		mg/L	1	01/07/16 12:13 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	01/05/16 06:10 PM
Calcium	1.79	0.100	0.300		mg/L	1	01/05/16 06:10 PM
Chromium	0.00275	0.00200	0.00500	J	mg/L	1	01/05/16 06:10 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	01/05/16 06:10 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	01/05/16 06:10 PM
Lithium	0.0162	0.00500	0.0100		mg/L	1	01/05/16 06:10 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	01/05/16 06:10 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	01/05/16 06:10 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	01/06/16 03:37 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	5.09	0.300	1.00		mg/L	1	12/22/15 04:52 PM
Fluoride	0.127	0.100	0.400	J	mg/L	1	12/22/15 04:52 PM
Sulfate	1.45	1.00	3.00	J	mg/L	1	12/22/15 04:52 PM
PH		**M4500-H+ B**					Analyst: **LM**
pH	6.04	0	0		pH Units@19.7℃	1	12/18/15 04:26 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **BJT**
Total Dissolved Solids (Residue, Filterable)	57.0	10.0	10.0		mg/L	1	12/21/15 08:00 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *21-Jan-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	PDP-26
Project:	Luminant - Martin Lake	**Lab ID:**	1512236-13
Project No:	5164-B	**Collection Date:**	12/15/15 07:50 AM
Lab Order:	1512236	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **ABO**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/22/15 01:52 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	01/05/16 06:12 PM
Arsenic	0.00474	0.00200	0.00500	J	mg/L	1	01/05/16 06:12 PM
Barium	0.0284	0.00300	0.0100		mg/L	1	01/05/16 06:12 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	01/05/16 06:12 PM
Boron	0.0429	0.0100	0.0300		mg/L	1	01/07/16 11:11 AM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	01/05/16 06:12 PM
Calcium	2.71	0.100	0.300		mg/L	1	01/05/16 06:12 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	01/05/16 06:12 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	01/05/16 06:12 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	01/05/16 06:12 PM
Lithium	0.0126	0.00500	0.0100		mg/L	1	01/05/16 06:12 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	01/05/16 06:12 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	01/05/16 06:12 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	01/06/16 04:28 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	6.94	0.300	1.00		mg/L	1	12/22/15 05:06 PM
Fluoride	0.391	0.100	0.400	J	mg/L	1	12/22/15 05:06 PM
Sulfate	15.3	1.00	3.00		mg/L	1	12/22/15 05:06 PM
PH		**M4500-H+ B**					Analyst: **LM**
pH	6.71	0	0		pH Units@20℃	1	12/18/15 04:29 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **BJT**
Total Dissolved Solids (Residue, Filterable)	126	10.0	10.0		mg/L	1	12/22/15 08:00 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *21-Jan-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	MW-17A
Project:	Luminant - Martin Lake	**Lab ID:**	1512236-14
Project No:	5164-B	**Collection Date:**	12/15/15 08:50 AM
Lab Order:	1512236	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **ABO**
Mercury	0.0000969	0.0000800	0.000200	J	mg/L	1	12/22/15 01:54 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	01/05/16 06:14 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	01/05/16 06:14 PM
Barium	0.0987	0.00300	0.0100		mg/L	1	01/05/16 06:14 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	01/05/16 06:14 PM
Boron	0.440	0.0100	0.0300		mg/L	1	01/07/16 12:15 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	01/05/16 06:14 PM
Calcium	4.16	0.100	0.300		mg/L	1	01/05/16 06:14 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	01/05/16 06:14 PM
Cobalt	0.00780	0.00300	0.00500		mg/L	1	01/05/16 06:14 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	01/05/16 06:14 PM
Lithium	0.0147	0.00500	0.0100		mg/L	1	01/05/16 06:14 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	01/05/16 06:14 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	01/05/16 06:14 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	01/06/16 04:30 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	8.92	0.300	1.00		mg/L	1	12/22/15 05:21 PM
Fluoride	0.182	0.100	0.400	J	mg/L	1	12/22/15 05:21 PM
Sulfate	37.3	1.00	3.00		mg/L	1	12/22/15 05:21 PM
PH		**M4500-H+ B**					Analyst: **LM**
pH	5.35	0	0		pH Units@20.1℃	1	12/18/15 04:31 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **BJT**
Total Dissolved Solids (Residue, Filterable)	112	10.0	10.0		mg/L	1	12/22/15 08:00 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *21-Jan-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	PDP-24
Project:	Luminant - Martin Lake	**Lab ID:**	1512236-15
Project No:	5164-B	**Collection Date:**	12/15/15 09:40 AM
Lab Order:	1512236	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **ABO**
Mercury	0.000557	0.0000800	0.000200		mg/L	1	12/22/15 01:57 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	01/05/16 06:16 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	01/05/16 06:16 PM
Barium	0.0259	0.00300	0.0100		mg/L	1	01/05/16 06:16 PM
Beryllium	0.00402	0.000300	0.00100		mg/L	1	01/05/16 06:16 PM
Boron	2.96	0.100	0.300		mg/L	10	01/06/16 02:54 PM
Cadmium	0.00176	0.000300	0.00100		mg/L	1	01/05/16 06:16 PM
Calcium	34.9	1.00	3.00		mg/L	10	01/06/16 02:54 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	01/05/16 06:16 PM
Cobalt	0.0786	0.00300	0.00500		mg/L	1	01/05/16 06:16 PM
Lead	0.000507	0.000300	0.00100	J	mg/L	1	01/05/16 06:16 PM
Lithium	0.0256	0.00500	0.0100		mg/L	1	01/05/16 06:16 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	01/05/16 06:16 PM
Selenium	0.00219	0.00200	0.00500	J	mg/L	1	01/05/16 06:16 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	01/07/16 04:01 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	22.6	0.300	1.00		mg/L	1	12/22/15 05:36 PM
Fluoride	0.756	0.100	0.400		mg/L	1	12/22/15 05:36 PM
Sulfate	340	10.0	30.0		mg/L	10	12/22/15 06:19 PM
PH		**M4500-H+ B**					Analyst: **LM**
pH	4.94	0	0		pH Units@20.4℃	1	12/18/15 04:33 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **BJT**
Total Dissolved Solids (Residue, Filterable)	606	10.0	10.0		mg/L	1	12/22/15 08:00 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *21-Jan-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	MW-18A
Project:	Luminant - Martin Lake	**Lab ID:**	1512236-16
Project No:	5164-B	**Collection Date:**	12/15/15 10:30 AM
Lab Order:	1512236	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **ABO**
Mercury	0.00620	0.000400	0.00100		mg/L	5	12/22/15 04:30 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	01/05/16 06:18 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	01/05/16 06:18 PM
Barium	0.0674	0.00300	0.0100		mg/L	1	01/05/16 06:18 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	01/05/16 06:18 PM
Boron	0.142	0.0100	0.0300		mg/L	1	01/07/16 12:17 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	01/05/16 06:18 PM
Calcium	2.06	0.100	0.300		mg/L	1	01/05/16 06:18 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	01/05/16 06:18 PM
Cobalt	0.00346	0.00300	0.00500	J	mg/L	1	01/05/16 06:18 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	01/05/16 06:18 PM
Lithium	0.00873	0.00500	0.0100	J	mg/L	1	01/05/16 06:18 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	01/05/16 06:18 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	01/05/16 06:18 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	01/06/16 04:32 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	8.23	0.300	1.00		mg/L	1	12/22/15 05:50 PM
Fluoride	0.125	0.100	0.400	J	mg/L	1	12/22/15 05:50 PM
Sulfate	6.43	1.00	3.00		mg/L	1	12/22/15 05:50 PM
PH		**M4500-H+ B**					Analyst: **LM**
pH	5.35	0	0		pH Units@20.6℃	1	12/18/15 04:35 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **BJT**
Total Dissolved Solids (Residue, Filterable)	50.0	10.0	10.0		mg/L	1	12/22/15 08:00 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *21-Jan-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	PDP-25
Project:	Luminant - Martin Lake	**Lab ID:**	1512236-17
Project No:	5164-B	**Collection Date:**	12/15/15 11:35 AM
Lab Order:	1512236	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **ABO**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/22/15 02:05 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	01/05/16 06:20 PM
Arsenic	0.00372	0.00200	0.00500	J	mg/L	1	01/05/16 06:20 PM
Barium	0.210	0.00300	0.0100		mg/L	1	01/05/16 06:20 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	01/05/16 06:20 PM
Boron	0.0935	0.0100	0.0300		mg/L	1	01/07/16 12:19 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	01/05/16 06:20 PM
Calcium	33.2	1.00	3.00		mg/L	10	01/06/16 02:56 PM
Chromium	0.0131	0.00200	0.00500		mg/L	1	01/05/16 06:20 PM
Cobalt	0.0110	0.00300	0.00500		mg/L	1	01/05/16 06:20 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	01/05/16 06:20 PM
Lithium	0.128	0.00500	0.0100		mg/L	1	01/05/16 06:20 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	01/05/16 06:20 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	01/05/16 06:20 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	01/06/16 04:34 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	124	3.00	10.0		mg/L	10	12/22/15 06:34 PM
Fluoride	0.259	0.100	0.400	J	mg/L	1	12/22/15 06:05 PM
Sulfate	94.3	1.00	3.00		mg/L	1	12/22/15 06:05 PM
PH		**M4500-H+ B**					Analyst: **LM**
pH	6.28	0	0		pH Units@21℃	1	12/18/15 04:38 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **BJT**
Total Dissolved Solids (Residue, Filterable)	578	10.0	10.0		mg/L	1	12/22/15 08:00 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT: Pastor, Behling & Wheeler
Work Order: 1512236
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_151222A

The QC data in batch 72835 applies to the following samples: 1512236-01A, 1512236-02A, 1512236-03A, 1512236-04A, 1512236-05A, 1512236-06A, 1512236-07A, 1512236-08A, 1512236-09A, 1512236-10A, 1512236-11A, 1512236-12A, 1512236-13A, 1512236-14A, 1512236-15A, 1512236-16A, 1512236-17A

Sample ID	**MB-72835**	Batch ID:	**72835**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**CETAC2_HG_151222A**	Analysis Date:	**12/22/2015 1:01:59 PM**	Prep Date:	**12/19/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.0000800	0.000200								

Sample ID	**LCS-72835**	Batch ID:	**72835**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**CETAC2_HG_151222A**	Analysis Date:	**12/22/2015 1:04:15 PM**	Prep Date:	**12/19/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00191	0.000200	0.00200	0	95.5	85	115			

Sample ID	**LCSD-72835**	Batch ID:	**72835**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**LCSD**	Run ID:	**CETAC2_HG_151222A**	Analysis Date:	**12/22/2015 1:11:49 PM**	Prep Date:	**12/19/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00192	0.000200	0.00200	0	96.0	85	115	0.522	15	

Sample ID	**1512236-01A SD**	Batch ID:	**72835**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**SD**	Run ID:	**CETAC2_HG_151222A**	Analysis Date:	**12/22/2015 1:14:06 PM**	Prep Date:	**12/19/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.000400	0.00100	0	0				0	10	

Sample ID	**1512236-01A PDS**	Batch ID:	**72835**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**PDS**	Run ID:	**CETAC2_HG_151222A**	Analysis Date:	**12/22/2015 1:16:21 PM**	Prep Date:	**12/19/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00245	0.000200	0.00250	0	98.0	85	115			

Sample ID	**1512236-01A MS**	Batch ID:	**72835**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**MS**	Run ID:	**CETAC2_HG_151222A**	Analysis Date:	**12/22/2015 1:18:36 PM**	Prep Date:	**12/19/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00193	0.000200	0.00200	0	96.5	80	120			

Sample ID	**1512236-01A MSD**	Batch ID:	**72835**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**MSD**	Run ID:	**CETAC2_HG_151222A**	Analysis Date:	**12/22/2015 1:20:52 PM**	Prep Date:	**12/19/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00193	0.000200	0.00200	0	96.5	80	120	0	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1512236
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_151222A

Sample ID	**ICV-151222**	Batch ID:	**R83299**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**ICV**	Run ID:	**CETAC2_HG_151222A**	Analysis Date:	**12/22/2015 10:31:35 A**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00397	0.000200	0.00400	0	99.2	90	110			

Sample ID	**CCV4-151222**	Batch ID:	**R83299**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**CETAC2_HG_151222A**	Analysis Date:	**12/22/2015 12:57:25 P**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00190	0.000200	0.00200	0	95.0	90	110			

Sample ID	**CCV5-151222**	Batch ID:	**R83299**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**CETAC2_HG_151222A**	Analysis Date:	**12/22/2015 1:43:34 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00191	0.000200	0.00200	0	95.5	90	110			

Sample ID	**CCV6-151222**	Batch ID:	**R83299**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**CETAC2_HG_151222A**	Analysis Date:	**12/22/2015 2:14:55 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00193	0.000200	0.00200	0	96.5	90	110			

Sample ID	**CCV9-151222**	Batch ID:	**R83299**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**CETAC2_HG_151222A**	Analysis Date:	**12/22/2015 4:14:23 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00190	0.000200	0.00200	0	95.0	90	110			

Sample ID	**CCV10-151222**	Batch ID:	**R83299**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**CETAC2_HG_151222A**	Analysis Date:	**12/22/2015 4:53:05 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00190	0.000200	0.00200	0	95.0	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1512236
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160105A

The QC data in batch 72946 applies to the following samples: 1512236-01A, 1512236-02A, 1512236-03A, 1512236-04A, 1512236-05A, 1512236-06A, 1512236-07A, 1512236-08A, 1512236-09A, 1512236-10A, 1512236-11A, 1512236-12A, 1512236-13A, 1512236-14A, 1512236-15A, 1512236-16A, 1512236-17A

Sample ID **MB-72946** Batch ID: **72946** TestNo: **SW6020A** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_160105A** Analysis Date: **1/5/2016 5:02:00 PM** Prep Date: **12/28/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.000800	0.00250								
Arsenic	<0.00200	0.00500								
Barium	<0.00300	0.0100								
Beryllium	<0.000300	0.00100								
Cadmium	<0.000300	0.00100								
Calcium	<0.100	0.300								
Chromium	<0.00200	0.00500								
Cobalt	<0.00300	0.00500								
Lead	<0.000300	0.00100								
Lithium	<0.00500	0.0100								
Molybdenum	<0.00200	0.00500								
Selenium	<0.00200	0.00500								

Sample ID **LCS-72946** Batch ID: **72946** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_160105A** Analysis Date: **1/5/2016 5:04:00 PM** Prep Date: **12/28/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.186	0.00250	0.200	0	92.9	80	120			
Arsenic	0.200	0.00500	0.200	0	100	80	120			
Barium	0.196	0.0100	0.200	0	97.8	80	120			
Beryllium	0.201	0.00100	0.200	0	100	80	120			
Cadmium	0.194	0.00100	0.200	0	97.1	80	120			
Calcium	4.61	0.300	5.00	0	92.3	80	120			
Chromium	0.197	0.00500	0.200	0	98.4	80	120			
Cobalt	0.204	0.00500	0.200	0	102	80	120			
Lead	0.192	0.00100	0.200	0	96.0	80	120			
Lithium	0.203	0.0100	0.200	0	102	80	120			
Molybdenum	0.187	0.00500	0.200	0	93.4	80	120			
Selenium	0.200	0.00500	0.200	0	99.8	80	120			

Sample ID **LCSD-72946** Batch ID: **72946** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_160105A** Analysis Date: **1/5/2016 5:06:00 PM** Prep Date: **12/28/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.186	0.00250	0.200	0	92.8	80	120	0.111	15	
Arsenic	0.196	0.00500	0.200	0	98.1	80	120	1.88	15	
Barium	0.193	0.0100	0.200	0	96.6	80	120	1.25	15	
Beryllium	0.199	0.00100	0.200	0	99.4	80	120	1.11	15	
Cadmium	0.191	0.00100	0.200	0	95.7	80	120	1.53	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1512236
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160105A

Sample ID **LCSD-72946**	Batch ID: **72946**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCSD**	Run ID: **ICP-MS4_160105A**	Analysis Date: **1/5/2016 5:06:00 PM**	Prep Date: **12/28/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.54	0.300	5.00	0	90.9	80	120	1.56	15	
Chromium	0.194	0.00500	0.200	0	97.1	80	120	1.39	15	
Cobalt	0.202	0.00500	0.200	0	101	80	120	1.06	15	
Lead	0.189	0.00100	0.200	0	94.5	80	120	1.56	15	
Lithium	0.202	0.0100	0.200	0	101	80	120	0.819	15	
Molybdenum	0.185	0.00500	0.200	0	92.6	80	120	0.869	15	
Selenium	0.199	0.00500	0.200	0	99.3	80	120	0.446	15	

Sample ID **1512236-01A SD**	Batch ID: **72946**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS4_160105A**	Analysis Date: **1/5/2016 5:12:00 PM**	Prep Date: **12/28/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.00400	0.0125	0	0				0	10	
Arsenic	<0.0100	0.0250	0	0				0	10	
Barium	0.278	0.0500	0	0.277				0.366	10	
Beryllium	<0.00150	0.00500	0	0				0	10	
Cadmium	<0.00150	0.00500	0	0				0	10	
Chromium	0.0627	0.0250	0	0.0620				1.11	10	
Cobalt	<0.0150	0.0250	0	0				0	10	
Lead	<0.00150	0.00500	0	0.000542				0	10	
Lithium	<0.0250	0.0500	0	0.0202				0	10	
Molybdenum	<0.0100	0.0250	0	0.00819				0	10	
Selenium	0.0300	0.0250	0	0.0282				6.16	10	

Sample ID **1512236-01A PDS**	Batch ID: **72946**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_160105A**	Analysis Date: **1/5/2016 5:32:00 PM**	Prep Date: **12/28/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.169	0.00250	0.200	0	84.6	80	120			
Arsenic	0.204	0.00500	0.200	0	102	80	120			
Barium	0.460	0.0100	0.200	0.277	91.8	80	120			
Beryllium	0.199	0.00100	0.200	0	99.4	80	120			
Cadmium	0.189	0.00100	0.200	0	94.5	80	120			
Chromium	0.259	0.00500	0.200	0.0620	98.4	80	120			
Cobalt	0.205	0.00500	0.200	0	102	80	120			
Lead	0.197	0.00100	0.200	0.000542	98.2	80	120			
Lithium	0.217	0.0100	0.200	0.0202	98.4	80	120			
Molybdenum	0.194	0.00500	0.200	0.00819	92.8	80	120			
Selenium	0.223	0.00500	0.200	0.0282	97.4	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1512236
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160105A

Sample ID **1512236-01A MS**	Batch ID: **72946**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS4_160105A**	Analysis Date: **1/5/2016 5:34:00 PM**	Prep Date: **12/28/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.185	0.00250	0.200	0	92.6	80	120			
Arsenic	0.200	0.00500	0.200	0	99.9	80	120			
Barium	0.462	0.0100	0.200	0.277	92.6	80	120			
Beryllium	0.196	0.00100	0.200	0	98.2	80	120			
Cadmium	0.184	0.00100	0.200	0	91.8	80	120			
Calcium	159	0.300	5.00	159	2.05	80	120			S
Chromium	0.252	0.00500	0.200	0.0620	94.8	80	120			
Cobalt	0.196	0.00500	0.200	0	97.8	80	120			
Lead	0.189	0.00100	0.200	0.000542	94.4	80	120			
Lithium	0.215	0.0100	0.200	0.0202	97.2	80	120			
Molybdenum	0.191	0.00500	0.200	0.00819	91.6	80	120			
Selenium	0.224	0.00500	0.200	0.0282	97.7	80	120			

Sample ID **1512236-01A MSD**	Batch ID: **72946**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS4_160105A**	Analysis Date: **1/5/2016 5:36:00 PM**	Prep Date: **12/28/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.185	0.00250	0.200	0	92.5	80	120	0.080	15	
Arsenic	0.201	0.00500	0.200	0	101	80	120	0.722	15	
Barium	0.461	0.0100	0.200	0.277	92.1	80	120	0.184	15	
Beryllium	0.194	0.00100	0.200	0	97.2	80	120	0.993	15	
Cadmium	0.185	0.00100	0.200	0	92.4	80	120	0.646	15	
Calcium	159	0.300	5.00	159	-4.28	80	120	0.199	15	S
Chromium	0.253	0.00500	0.200	0.0620	95.4	80	120	0.454	15	
Cobalt	0.196	0.00500	0.200	0	98.0	80	120	0.261	15	
Lead	0.192	0.00100	0.200	0.000542	95.5	80	120	1.20	15	
Lithium	0.215	0.0100	0.200	0.0202	97.5	80	120	0.253	15	
Molybdenum	0.191	0.00500	0.200	0.00819	91.5	80	120	0.150	15	
Selenium	0.226	0.00500	0.200	0.0282	98.7	80	120	0.914	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

Sample ID **ICV-160105**	Batch ID: **R83481**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_160105A**	Analysis Date: **1/5/2016 11:22:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.0949	0.00250	0.100	0	94.9	90	110			
Arsenic	0.103	0.00500	0.100	0	103	90	110			
Barium	0.100	0.0100	0.100	0	100	90	110			
Beryllium	0.101	0.00100	0.100	0	101	90	110			
Cadmium	0.101	0.00100	0.100	0	101	90	110			
Calcium	2.30	0.300	2.50	0	92.1	90	110			
Chromium	0.105	0.00500	0.100	0	105	90	110			
Cobalt	0.108	0.00500	0.100	0	108	90	110			
Lead	0.102	0.00100	0.100	0	102	90	110			
Lithium	0.0984	0.0100	0.100	0	98.4	90	110			
Molybdenum	0.0966	0.00500	0.100	0	96.6	90	110			
Selenium	0.102	0.00500	0.100	0	102	90	110			

Sample ID **LCVL-160105**	Batch ID: **R83481**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160105A**	Analysis Date: **1/5/2016 11:26:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00199	0.00250	0.00200	0	99.4	70	130			
Arsenic	0.00495	0.00500	0.00500	0	99.0	70	130			
Barium	0.00489	0.0100	0.00500	0	97.7	70	130			
Beryllium	0.000790	0.00100	0.00100	0	79.0	70	130			
Cadmium	0.000992	0.00100	0.00100	0	99.2	70	130			
Calcium	0.0944	0.300	0.100	0	94.4	70	130			
Chromium	0.00499	0.00500	0.00500	0	99.8	70	130			
Cobalt	0.00520	0.00500	0.00500	0	104	70	130			
Lead	0.000899	0.00100	0.00100	0	89.9	70	130			
Lithium	0.00999	0.0100	0.0100	0	99.9	70	130			
Molybdenum	0.00492	0.00500	0.00500	0	98.5	70	130			
Selenium	0.00551	0.00500	0.00500	0	110	70	130			

Sample ID **CCV5-160105**	Batch ID: **R83481**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160105A**	Analysis Date: **1/5/2016 4:46:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.193	0.00250	0.200	0	96.4	90	110			
Arsenic	0.207	0.00500	0.200	0	104	90	110			
Barium	0.201	0.0100	0.200	0	101	90	110			
Beryllium	0.206	0.00100	0.200	0	103	90	110			
Cadmium	0.199	0.00100	0.200	0	99.3	90	110			
Calcium	4.79	0.300	5.00	0	95.8	90	110			
Chromium	0.204	0.00500	0.200	0	102	90	110			

CLIENT: Pastor, Behling & Wheeler
Work Order: 1512236
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160105A

Sample ID **CCV5-160105**	Batch ID: **R83481**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160105A**	Analysis Date: **1/5/2016 4:46:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cobalt	0.210	0.00500	0.200	0	105	90	110			
Lead	0.199	0.00100	0.200	0	99.5	90	110			
Lithium	0.212	0.0100	0.200	0	106	90	110			
Molybdenum	0.193	0.00500	0.200	0	96.6	90	110			
Selenium	0.210	0.00500	0.200	0	105	90	110			

Sample ID **LCVL5-160105**	Batch ID: **R83481**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160105A**	Analysis Date: **1/5/2016 4:56:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00189	0.00250	0.00200	0	94.3	70	130			
Arsenic	0.00501	0.00500	0.00500	0	100	70	130			
Barium	0.00490	0.0100	0.00500	0	97.9	70	130			
Beryllium	0.000974	0.00100	0.00100	0	97.4	70	130			
Cadmium	0.000940	0.00100	0.00100	0	94.0	70	130			
Calcium	0.0993	0.300	0.100	0	99.3	70	130			
Chromium	0.00500	0.00500	0.00500	0	100	70	130			
Cobalt	0.00516	0.00500	0.00500	0	103	70	130			
Lead	0.000807	0.00100	0.00100	0	80.7	70	130			
Lithium	0.0117	0.0100	0.0100	0	117	70	130			
Molybdenum	0.00471	0.00500	0.00500	0	94.2	70	130			
Selenium	0.00519	0.00500	0.00500	0	104	70	130			

Sample ID **CCV6-160105**	Batch ID: **R83481**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160105A**	Analysis Date: **1/5/2016 5:54:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.196	0.00250	0.200	0	98.1	90	110			
Arsenic	0.212	0.00500	0.200	0	106	90	110			
Barium	0.204	0.0100	0.200	0	102	90	110			
Beryllium	0.213	0.00100	0.200	0	106	90	110			
Cadmium	0.203	0.00100	0.200	0	102	90	110			
Calcium	4.84	0.300	5.00	0	96.7	90	110			
Chromium	0.208	0.00500	0.200	0	104	90	110			
Cobalt	0.214	0.00500	0.200	0	107	90	110			
Lead	0.202	0.00100	0.200	0	101	90	110			
Lithium	0.213	0.0100	0.200	0	106	90	110			
Molybdenum	0.197	0.00500	0.200	0	98.5	90	110			
Selenium	0.213	0.00500	0.200	0	106	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

Sample ID **LCVL6-160105** Batch ID: **R83481** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_160105A** Analysis Date: **1/5/2016 6:04:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00189	0.00250	0.00200	0	94.6	70	130			
Arsenic	0.00500	0.00500	0.00500	0	99.9	70	130			
Barium	0.00486	0.0100	0.00500	0	97.2	70	130			
Beryllium	0.000767	0.00100	0.00100	0	76.7	70	130			
Cadmium	0.00100	0.00100	0.00100	0	100	70	130			
Calcium	0.0950	0.300	0.100	0	95.0	70	130			
Chromium	0.00506	0.00500	0.00500	0	101	70	130			
Cobalt	0.00520	0.00500	0.00500	0	104	70	130			
Lead	0.000806	0.00100	0.00100	0	80.6	70	130			
Lithium	0.0107	0.0100	0.0100	0	107	70	130			
Molybdenum	0.00463	0.00500	0.00500	0	92.6	70	130			
Selenium	0.00496	0.00500	0.00500	0	99.2	70	130			

Sample ID **CCV7-160105** Batch ID: **R83481** TestNo: **SW6020A** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_160105A** Analysis Date: **1/5/2016 6:30:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.192	0.00250	0.200	0	95.8	90	110			
Arsenic	0.209	0.00500	0.200	0	105	90	110			
Barium	0.199	0.0100	0.200	0	99.5	90	110			
Beryllium	0.207	0.00100	0.200	0	104	90	110			
Cadmium	0.198	0.00100	0.200	0	98.8	90	110			
Calcium	4.70	0.300	5.00	0	94.1	90	110			
Chromium	0.202	0.00500	0.200	0	101	90	110			
Cobalt	0.208	0.00500	0.200	0	104	90	110			
Lead	0.196	0.00100	0.200	0	98.0	90	110			
Lithium	0.204	0.0100	0.200	0	102	90	110			
Molybdenum	0.190	0.00500	0.200	0	94.8	90	110			
Selenium	0.210	0.00500	0.200	0	105	90	110			

Sample ID **LCVL7-160105** Batch ID: **R83481** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_160105A** Analysis Date: **1/5/2016 6:41:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00187	0.00250	0.00200	0	93.5	70	130			
Arsenic	0.00520	0.00500	0.00500	0	104	70	130			
Barium	0.00495	0.0100	0.00500	0	98.9	70	130			
Beryllium	0.00113	0.00100	0.00100	0	112	70	130			
Cadmium	0.000975	0.00100	0.00100	0	97.5	70	130			
Calcium	0.0960	0.300	0.100	0	96.0	70	130			
Chromium	0.00500	0.00500	0.00500	0	99.9	70	130			

CLIENT: Pastor, Behling & Wheeler
Work Order: 1512236
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160105A

Sample ID **LCVL7-160105** Batch ID: **R83481** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_160105A** Analysis Date: **1/5/2016 6:41:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cobalt	0.00517	0.00500	0.00500	0	103	70	130			
Lead	0.000802	0.00100	0.00100	0	80.2	70	130			
Lithium	0.0113	0.0100	0.0100	0	113	70	130			
Molybdenum	0.00450	0.00500	0.00500	0	90.0	70	130			
Selenium	0.00496	0.00500	0.00500	0	99.2	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1512236
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160106A

The QC data in batch 72946 applies to the following samples: 1512236-01A, 1512236-02A, 1512236-03A, 1512236-04A, 1512236-05A, 1512236-06A, 1512236-07A, 1512236-08A, 1512236-09A, 1512236-10A, 1512236-11A, 1512236-12A, 1512236-13A, 1512236-14A, 1512236-15A, 1512236-16A, 1512236-17A

Sample ID	**MB-72946**	Batch ID:	**72946**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**ICP-MS4_160106A**	Analysis Date:	**1/6/2016 3:09:00 PM**	Prep Date:	**12/28/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Thallium	<0.000500	0.00150								

Sample ID	**LCS-72946**	Batch ID:	**72946**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**ICP-MS4_160106A**	Analysis Date:	**1/6/2016 3:11:00 PM**	Prep Date:	**12/28/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Thallium	0.194	0.00150	0.200	0	97.2	80	120			

Sample ID	**LCSD-72946**	Batch ID:	**72946**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**LCSD**	Run ID:	**ICP-MS4_160106A**	Analysis Date:	**1/6/2016 3:13:00 PM**	Prep Date:	**12/28/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Thallium	0.190	0.00150	0.200	0	94.9	80	120	2.47	15	

Sample ID	**1512236-01A SD**	Batch ID:	**72946**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**SD**	Run ID:	**ICP-MS4_160106A**	Analysis Date:	**1/6/2016 3:19:00 PM**	Prep Date:	**12/28/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Thallium	<0.00250	0.00750	0	0				0	10	

Sample ID	**1512236-01A PDS**	Batch ID:	**72946**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**PDS**	Run ID:	**ICP-MS4_160106A**	Analysis Date:	**1/6/2016 3:39:00 PM**	Prep Date:	**12/28/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Thallium	0.208	0.00150	0.200	0	104	80	120			

Sample ID	**1512236-01A MS**	Batch ID:	**72946**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**MS**	Run ID:	**ICP-MS4_160106A**	Analysis Date:	**1/6/2016 3:41:00 PM**	Prep Date:	**12/28/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Thallium	0.190	0.00150	0.200	0	94.9	80	120			

Sample ID	**1512236-01A MSD**	Batch ID:	**72946**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**MSD**	Run ID:	**ICP-MS4_160106A**	Analysis Date:	**1/6/2016 3:43:00 PM**	Prep Date:	**12/28/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Thallium	0.190	0.00150	0.200	0	95.2	80	120	0.259	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1512236
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160106A

Sample ID **1512236-01A SD**	Batch ID: **72946**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS4_160106A**	Analysis Date: **1/6/2016 4:24:00 PM**	Prep Date: **12/28/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	166	75.0	0	165				0.704	10	

Sample ID **1512236-01A PDS**	Batch ID: **72946**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_160106A**	Analysis Date: **1/6/2016 4:26:00 PM**	Prep Date: **12/28/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	393	15.0	250	165	91.4	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1512236
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160106A

Sample ID **ICV-160106**	Batch ID: **R83505**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_160106A**	Analysis Date: **1/6/2016 2:25:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0975	0.0300	0.100	0	97.5	90	110			
Calcium	2.33	0.300	2.50	0	93.1	90	110			
Thallium	0.0942	0.00150	0.100	0	94.2	90	110			

Sample ID **LCVL-160106**	Batch ID: **R83505**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160106A**	Analysis Date: **1/6/2016 2:30:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0238	0.0300	0.0200	0	119	70	130			
Calcium	0.0992	0.300	0.100	0	99.2	70	130			
Thallium	0.000864	0.00150	0.00100	0	86.4	70	130			

Sample ID **CCV1-160106**	Batch ID: **R83505**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160106A**	Analysis Date: **1/6/2016 3:00:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.190	0.0300	0.200	0	94.9	90	110			
Calcium	4.84	0.300	5.00	0	96.7	90	110			
Thallium	0.198	0.00150	0.200	0	98.9	90	110			

Sample ID **LCVL1-160106**	Batch ID: **R83505**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160106A**	Analysis Date: **1/6/2016 3:04:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0237	0.0300	0.0200	0	119	70	130			
Calcium	0.104	0.300	0.100	0	104	70	130			
Thallium	0.000908	0.00150	0.00100	0	90.8	70	130			

Sample ID **CCV2-160106**	Batch ID: **R83505**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160106A**	Analysis Date: **1/6/2016 3:57:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.76	0.300	5.00	0	95.3	90	110			
Thallium	0.196	0.00150	0.200	0	97.9	90	110			

Sample ID **LCVL2-160106**	Batch ID: **R83505**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160106A**	Analysis Date: **1/6/2016 4:18:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.104	0.300	0.100	0	104	70	130			
Thallium	0.000909	0.00150	0.00100	0	90.9	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1512236
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160106A

Sample ID **CCV3-160106**	Batch ID: **R83505**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160106A**	Analysis Date: **1/6/2016 4:36:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.89	0.300	5.00	0	97.8	90	110			
Thallium	0.202	0.00150	0.200	0	101	90	110			

Sample ID **LCVL3-160106**	Batch ID: **R83505**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160106A**	Analysis Date: **1/6/2016 4:40:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.100	0.300	0.100	0	100	70	130			
Thallium	0.000920	0.00150	0.00100	0	92.0	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1512236
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160107A

The QC data in batch 72946 applies to the following samples: 1512236-01A, 1512236-02A, 1512236-03A, 1512236-04A, 1512236-05A, 1512236-06A, 1512236-07A, 1512236-08A, 1512236-09A, 1512236-10A, 1512236-11A, 1512236-12A, 1512236-13A, 1512236-14A, 1512236-15A, 1512236-16A, 1512236-17A

Sample ID	**MB-72946**	Batch ID:	**72946**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**ICP-MS4_160107A**	Analysis Date:	**1/7/2016 11:03:00 AM**	Prep Date:	**12/28/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0132	0.0300								

Sample ID	**LCS-72946**	Batch ID:	**72946**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**ICP-MS4_160107A**	Analysis Date:	**1/7/2016 11:05:00 AM**	Prep Date:	**12/28/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.206	0.0300	0.200	0	103	80	120			

Sample ID	**LCSD-72946**	Batch ID:	**72946**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**LCSD**	Run ID:	**ICP-MS4_160107A**	Analysis Date:	**1/7/2016 11:07:00 AM**	Prep Date:	**12/28/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.200	0.0300	0.200	0	100	80	120	2.88	15	

Sample ID	**1512236-13A SD**	Batch ID:	**72946**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**SD**	Run ID:	**ICP-MS4_160107A**	Analysis Date:	**1/7/2016 11:13:00 AM**	Prep Date:	**12/28/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	<0.0500	0.150	0	0.0429				0	10	

Sample ID	**1512236-13A PDS**	Batch ID:	**72946**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**PDS**	Run ID:	**ICP-MS4_160107A**	Analysis Date:	**1/7/2016 11:33:00 AM**	Prep Date:	**12/28/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.248	0.0300	0.200	0.0429	103	80	120			

Sample ID	**1512236-01A MS**	Batch ID:	**72946**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**MS**	Run ID:	**ICP-MS4_160107A**	Analysis Date:	**1/7/2016 11:35:00 AM**	Prep Date:	**12/28/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.478	0.0300	0.200	0.290	93.8	80	120			

Sample ID	**1512236-01A MSD**	Batch ID:	**72946**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**MSD**	Run ID:	**ICP-MS4_160107A**	Analysis Date:	**1/7/2016 11:37:00 AM**	Prep Date:	**12/28/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.502	0.0300	0.200	0.290	106	80	120	4.89	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160107A

Sample ID **ICV-160107**	Batch ID: **R83509**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_160107A**	Analysis Date: **1/7/2016 10:44:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.103	0.0300	0.100	0	103	90	110			
Calcium	2.38	0.300	2.50	0	95.3	90	110			

Sample ID **LCVL-160107**	Batch ID: **R83509**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160107A**	Analysis Date: **1/7/2016 10:57:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0225	0.0300	0.0200	0	113	70	130			
Calcium	0.107	0.300	0.100	0	107	70	130			

Sample ID **CCV1-160107**	Batch ID: **R83509**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160107A**	Analysis Date: **1/7/2016 11:47:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.205	0.0300	0.200	0	103	90	110			
Calcium	5.03	0.300	5.00	0	101	90	110			

Sample ID **LCVL1-160107**	Batch ID: **R83509**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160107A**	Analysis Date: **1/7/2016 12:06:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0229	0.0300	0.0200	0	115	70	130			
Calcium	0.113	0.300	0.100	0	113	70	130			

Sample ID **CCV2-160107**	Batch ID: **R83509**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160107A**	Analysis Date: **1/7/2016 12:25:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.205	0.0300	0.200	0	103	90	110			
Calcium	4.97	0.300	5.00	0	99.4	90	110			

Sample ID **LCVL2-160107**	Batch ID: **R83509**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160107A**	Analysis Date: **1/7/2016 12:37:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0258	0.0300	0.0200	0	129	70	130			
Calcium	0.110	0.300	0.100	0	110	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1512236
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160107D

Sample ID	**ICV2-160107**	Batch ID:	**R83517**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**ICV**	Run ID:	**ICP-MS4_160107D**	Analysis Date:	**1/7/2016 3:16:00 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Thallium	0.102	0.00150	0.100	0	102	90	110			

Sample ID	**ILCVL2-160107**	Batch ID:	**R83517**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**LCVL**	Run ID:	**ICP-MS4_160107D**	Analysis Date:	**1/7/2016 3:22:00 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Thallium	0.000999	0.00150	0.00100	0	99.9	70	130			

Sample ID	**CCV5-160107**	Batch ID:	**R83517**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**ICP-MS4_160107D**	Analysis Date:	**1/7/2016 4:03:00 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Thallium	0.206	0.00150	0.200	0	103	90	110			

Sample ID	**LCVL5-160107**	Batch ID:	**R83517**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**LCVL**	Run ID:	**ICP-MS4_160107D**	Analysis Date:	**1/7/2016 4:07:00 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Thallium	0.00103	0.00150	0.00100	0	103	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1512236
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_151222B

The QC data in batch 72897 applies to the following samples: 1512236-01D, 1512236-02D, 1512236-03D, 1512236-04D, 1512236-05D, 1512236-06D, 1512236-07D, 1512236-08D, 1512236-09D, 1512236-10D, 1512236-11D, 1512236-12D, 1512236-13D, 1512236-14D, 1512236-15D, 1512236-16D, 1512236-17D

Sample ID **MB-72897** Batch ID: **72897** TestNo: **E300** Units: **mg/L**
SampType: **MBLK** Run ID: **IC2_151222B** Analysis Date: **12/22/2015 12:38:49 P** Prep Date: **12/22/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00								
Fluoride	<0.100	0.400								
Sulfate	<1.00	3.00								

Sample ID **LCS-72897** Batch ID: **72897** TestNo: **E300** Units: **mg/L**
SampType: **LCS** Run ID: **IC2_151222B** Analysis Date: **12/22/2015 12:53:26 P** Prep Date: **12/22/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.94	1.00	10.00	0	99.4	90	110			
Fluoride	4.08	0.400	4.000	0	102	90	110			
Sulfate	29.0	3.00	30.00	0	96.7	90	110			

Sample ID **LCSD-72897** Batch ID: **72897** TestNo: **E300** Units: **mg/L**
SampType: **LCSD** Run ID: **IC2_151222B** Analysis Date: **12/22/2015 1:08:02 PM** Prep Date: **12/22/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.97	1.00	10.00	0	99.7	90	110	0.397	20	
Fluoride	4.10	0.400	4.000	0	103	90	110	0.547	20	
Sulfate	29.0	3.00	30.00	0	96.7	90	110	0.005	20	

Sample ID **1512236-08DMS** Batch ID: **72897** TestNo: **E300** Units: **mg/L**
SampType: **MS** Run ID: **IC2_151222B** Analysis Date: **12/23/2015 8:58:40 AM** Prep Date: **12/22/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	261	10.0	200.0	59.58	101	90	110			
Fluoride	191	4.00	200.0	0	95.5	90	110			
Sulfate	308	30.0	200.0	113.1	97.5	90	110			

Sample ID **1512236-08DMSD** Batch ID: **72897** TestNo: **E300** Units: **mg/L**
SampType: **MSD** Run ID: **IC2_151222B** Analysis Date: **12/23/2015 9:13:17 AM** Prep Date: **12/22/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	261	10.0	200.0	59.58	101	90	110	0.005	20	
Fluoride	198	4.00	200.0	0	98.8	90	110	3.40	20	
Sulfate	309	30.0	200.0	113.1	97.7	90	110	0.173	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1512236
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_151222B

Sample ID **1512236-10DMS**	Batch ID: **72897**	TestNo: **E300**	Units: **mg/L**
SampType: **MS**	Run ID: **IC2_151222B**	Analysis Date: **12/23/2015 9:27:53 AM**	Prep Date: **12/22/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	223	10.0	200.0	21.04	101	90	110			
Fluoride	201	4.00	200.0	0	101	90	110			
Sulfate	398	30.0	200.0	201.9	98.1	90	110			

Sample ID **1512236-10DMSD**	Batch ID: **72897**	TestNo: **E300**	Units: **mg/L**
SampType: **MSD**	Run ID: **IC2_151222B**	Analysis Date: **12/23/2015 9:42:30 AM**	Prep Date: **12/22/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	222	10.0	200.0	21.04	101	90	110	0.369	20	
Fluoride	201	4.00	200.0	0	101	90	110	0.112	20	
Sulfate	400	30.0	200.0	201.9	99.0	90	110	0.430	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1512236
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_151222B

Sample ID **ICV-151222**	Batch ID: **R83318**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC2_151222B**	Analysis Date: **12/22/2015 9:02:57 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	24.5	1.00	25.00	0	97.9	90	110			
Fluoride	9.97	0.400	10.00	0	99.7	90	110			
Sulfate	71.9	3.00	75.00	0	95.8	90	110			

Sample ID **CCV1-151222**	Batch ID: **R83318**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_151222B**	Analysis Date: **12/22/2015 12:03:35 P**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.96	1.00	10.00	0	99.6	90	110			
Fluoride	4.08	0.400	4.000	0	102	90	110			
Sulfate	29.0	3.00	30.00	0	96.8	90	110			

Sample ID **CCV2-151222**	Batch ID: **R83318**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_151222B**	Analysis Date: **12/22/2015 3:56:03 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.83	1.00	10.00	0	98.3	90	110			
Fluoride	4.07	0.400	4.000	0	102	90	110			
Sulfate	29.1	3.00	30.00	0	97.0	90	110			

Sample ID **CCV3-151222**	Batch ID: **R83318**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_151222B**	Analysis Date: **12/22/2015 6:49:08 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.80	1.00	10.00	0	98.0	90	110			
Fluoride	4.08	0.400	4.000	0	102	90	110			
Sulfate	28.9	3.00	30.00	0	96.3	90	110			

Sample ID **CCV4-151222**	Batch ID: **R83318**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_151222B**	Analysis Date: **12/23/2015 10:17:03 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.94	1.00	10.00	0	99.4	90	110			
Fluoride	4.00	0.400	4.000	0	100	90	110			
Sulfate	29.5	3.00	30.00	0	98.2	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler

Work Order: 1512236

Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_151218A

The QC data in batch 72710 applies to the following samples: 1512236-01D, 1512236-02D, 1512236-03D, 1512236-04D, 1512236-05D, 1512236-06D, 1512236-07D, 1512236-08D, 1512236-09D, 1512236-10D, 1512236-11D, 1512236-12D, 1512236-13D, 1512236-14D, 1512236-15D, 1512236-16D, 1512236-17D

Sample ID **1512236-01D DUP** Batch ID: **72710** TestNo: **M4500-H+ B** Units: **pH Units@18.4℃**

SampType: **DUP** Run ID: **TITRATOR_151218A** Analysis Date: **12/18/2015 3:58:00 PM** Prep Date: **12/18/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	11.9	0	0	11.87				0.084	5	

Sample ID **1512236-17D DUP** Batch ID: **72710** TestNo: **M4500-H+ B** Units: **pH Units@21.2℃**

SampType: **DUP** Run ID: **TITRATOR_151218A** Analysis Date: **12/18/2015 4:41:00 PM** Prep Date: **12/18/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	6.40	0	0	6.280				1.89	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1512236
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_151218A

Sample ID	**ICV-151218**	Batch ID:	**R83249**	TestNo:	**M4500-H+ B**	Units:	**pH Units@21.2℃**
SampType:	**ICV**	Run ID:	**TITRATOR_151218A**	Analysis Date:	**12/18/2015 2:48:00 PM**	Prep Date:	**12/18/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	9.96	0	10.00	0	99.6	99	101			

Sample ID	**CCV-151218-PH12**	Batch ID:	**R83249**	TestNo:	**M4500-H+ B**	Units:	**pH Units@21.2℃**
SampType:	**CCV**	Run ID:	**TITRATOR_151218A**	Analysis Date:	**12/18/2015 3:50:00 PM**	Prep Date:	**12/18/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	12.0	0	12.00	0	100	97.1	102.9			

Sample ID	**CCV4-151218**	Batch ID:	**R83249**	TestNo:	**M4500-H+ B**	Units:	**pH Units@19.8℃**
SampType:	**CCV**	Run ID:	**TITRATOR_151218A**	Analysis Date:	**12/18/2015 4:14:00 PM**	Prep Date:	**12/18/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	6.98	0	7.000	0	99.7	97.1	102.9			

Sample ID	**CCV5-151218**	Batch ID:	**R83249**	TestNo:	**M4500-H+ B**	Units:	**pH Units@19.8℃**
SampType:	**CCV**	Run ID:	**TITRATOR_151218A**	Analysis Date:	**12/18/2015 4:39:00 PM**	Prep Date:	**12/18/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	6.96	0	7.000	0	99.4	97.1	102.9			

Sample ID	**CCV6-151218**	Batch ID:	**R83249**	TestNo:	**M4500-H+ B**	Units:	**pH Units@20.8℃**
SampType:	**CCV**	Run ID:	**TITRATOR_151218A**	Analysis Date:	**12/18/2015 4:45:00 PM**	Prep Date:	**12/18/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	6.97	0	7.000	0	99.6	97.1	102.9			

Sample ID	**CCV-151218-PH12**	Batch ID:	**R83249**	TestNo:	**M4500-H+ B**	Units:	**pH Units@21.4℃**
SampType:	**CCV**	Run ID:	**TITRATOR_151218A**	Analysis Date:	**12/18/2015 4:48:00 PM**	Prep Date:	**12/18/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	12.0	0	12.00	0	100	97.1	102.9			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1512236
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: WC_151218C

The QC data in batch 72824 applies to the following samples: 1512236-01D, 1512236-02D, 1512236-03D, 1512236-04D, 1512236-05D, 1512236-06D, 1512236-07D, 1512236-08D, 1512236-09D, 1512236-10D, 1512236-11D, 1512236-12D

Sample ID	**MB-72824**	Batch ID:	**72824**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**WC_151218C**	Analysis Date:	**12/21/2015 8:00:00 AM**	Prep Date:	**12/18/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	<10.0	10.0								

Sample ID	**LCS-72824**	Batch ID:	**72824**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**WC_151218C**	Analysis Date:	**12/21/2015 8:00:00 AM**	Prep Date:	**12/18/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	741	10.0	745.6	0	99.4	90	113			

Sample ID	**1512226-01G-DUP**	Batch ID:	**72824**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**DUP**	Run ID:	**WC_151218C**	Analysis Date:	**12/21/2015 8:00:00 AM**	Prep Date:	**12/18/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	64.0	10.0	0	63.00				1.57	5	

Sample ID	**1512236-03D-DUP**	Batch ID:	**72824**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**DUP**	Run ID:	**WC_151218C**	Analysis Date:	**12/21/2015 8:00:00 AM**	Prep Date:	**12/18/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	2260	50.0	0	2245				0.887	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1512236
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: WC_151221A

The QC data in batch 72884 applies to the following samples: 1512236-13D, 1512236-14D, 1512236-15D, 1512236-16D, 1512236-17D

Sample ID **MB-72884**	Batch ID: **72884**	TestNo: **M2540C**	Units: **mg/L**
SampType: **MBLK**	Run ID: **WC_151221A**	Analysis Date: **12/22/2015 8:00:00 AM**	Prep Date: **12/21/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	<10.0	10.0								

Sample ID **LCS-72884**	Batch ID: **72884**	TestNo: **M2540C**	Units: **mg/L**
SampType: **LCS**	Run ID: **WC_151221A**	Analysis Date: **12/22/2015 8:00:00 AM**	Prep Date: **12/21/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	749	10.0	745.6	0	100	90	113			

Sample ID **1512251-01B-DUP**	Batch ID: **72884**	TestNo: **M2540C**	Units: **mg/L**
SampType: **DUP**	Run ID: **WC_151221A**	Analysis Date: **12/22/2015 8:00:00 AM**	Prep Date: **12/21/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	340	10.0	0	338.0				0.590	5	

Sample ID **1512237-07D-DUP**	Batch ID: **72884**	TestNo: **M2540C**	Units: **mg/L**
SampType: **DUP**	Run ID: **WC_151221A**	Analysis Date: **12/22/2015 8:00:00 AM**	Prep Date: **12/21/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	1900	50.0	0	1875				1.32	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

GEL Laboratories LLC
a member of The GEL Group INC

PO Box 30712 Charleston, SC 29417
2040 Savage Road Charleston, SC 29407
P 843.556.8171
F 843.766.1178

gel.com

January 14, 2016

Mr. John DuPont
DHL Analytical
2300 Double Creek Drive
Round Rock, Texas 78664

Re: Routine Analysis
Work Order: 387924
SDG: 1512236

Dear Mr. DuPont:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on December 22, 2015. This original data report has been prepared and reviewed in accordance with GEL's standard operating procedures.

Our policy is to provide high quality, personalized analytical services to enable you to meet your analytical needs on time every time. We trust that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at (843) 556-8171, ext. 4707.

Sincerely,

Anna C Day

Anna Day
Project Manager

Purchase Order: 14090
Enclosures

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 − (843) 556−8171 − www.gel.com

Certificate of Analysis Report
for

DHLA002 DHL Analytical

Client SDG: 1512236 GEL Work Order: 387924

The Qualifiers in this report are defined as follows:

* A quality control analyte recovery is outside of specified acceptance criteria

** Analyte is a Tracer compound

** Analyte is a surrogate compound

U Analyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the Certificate of Analysis.

The designation ND, if present, appears in the result column when the analyte concentration is not detected above the limit as defined in the 'U' qualifier above.

This data report has been prepared and reviewed in accordance with GEL Laboratories LLC standard operating procedures. Please direct any questions to your Project Manager, Anna Day.

Reviewed by Anna C Day

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: January 14, 2016

Company : DHL Analytical
Address : 2300 Double Creek Drive

Round Rock, Texas 78664
Contact: Mr. John DuPont
Project: Routine Analysis

Client Sample ID: H-29
Sample ID: 387924001
Matrix: Water
Collect Date: 14-DEC-15 09:05
Receive Date: 22-DEC-15
Collector: Client

Project: DHLA00112
Client ID: DHLA002

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228	U	0.669	+/-0.748	1.25	3.00	pCi/L		AXM6	01/08/16	1516	1534780	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226	U	0.230	+/-0.308	0.530	1.00	pCi/L		CXP3	01/14/16	0730	1533728	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			93.4	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: January 14, 2016

Company : DHL Analytical
Address : 2300 Double Creek Drive

Round Rock, Texas 78664
Contact: Mr. John DuPont
Project: Routine Analysis

Client Sample ID: H-30
Sample ID: 387924002
Matrix: Water
Collect Date: 14-DEC-15 09:50
Receive Date: 22-DEC-15
Collector: Client

Project: DHLA00112
Client ID: DHLA002

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228	U	0.956	+/-1.24	2.11	3.00	pCi/L		AXM6	01/08/16	1516	1534780	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226		1.93	+/-0.624	0.638	1.00	pCi/L		CXP3	01/14/16	0730	1533728	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			92.1	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

GEL LABORATORIES LLC
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Certificate of Analysis

Report Date: January 14, 2016

Company : DHL Analytical
Address : 2300 Double Creek Drive

Round Rock, Texas 78664
Contact: Mr. John DuPont
Project: Routine Analysis

Client Sample ID: H-31
Sample ID: 387924003
Matrix: Water
Collect Date: 14-DEC-15 10:40
Receive Date: 22-DEC-15
Collector: Client

Project: DHLA00112
Client ID: DHLA002

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228	U	0.453	+/-0.737	1.29	3.00	pCi/L		AXM6	01/08/16	1516	1534780	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226		1.61	+/-0.562	0.604	1.00	pCi/L		CXP3	01/14/16	0730	1533728	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			104	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

GEL LABORATORIES LLC
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Certificate of Analysis

Report Date: January 14, 2016

Company : DHL Analytical
Address : 2300 Double Creek Drive

Round Rock, Texas 78664
Contact: Mr. John DuPont
Project: Routine Analysis

Client Sample ID: H-32
Sample ID: 387924004
Matrix: Water
Collect Date: 14-DEC-15 11:30
Receive Date: 22-DEC-15
Collector: Client

Project: DHLA00112
Client ID: DHLA002

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228	U	0.120	+/-1.22	2.21	3.00	pCi/L		AXM6	01/08/16	1516	1534780	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226		0.712	+/-0.379	0.500	1.00	pCi/L		CXP3	01/14/16	0730	1533728	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			93.4	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

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Certificate of Analysis

Report Date: January 14, 2016

Company : DHL Analytical
Address : 2300 Double Creek Drive

Round Rock, Texas 78664
Contact: Mr. John DuPont
Project: Routine Analysis

Client Sample ID: H-27
Sample ID: 387924005
Matrix: Water
Collect Date: 14-DEC-15 12:20
Receive Date: 22-DEC-15
Collector: Client

Project: DHLA00112
Client ID: DHLA002

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228	U	0.354	+/-0.941	1.68	3.00	pCi/L		AXM6	01/08/16	1516	1534780	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226		0.468	+/-0.291	0.397	1.00	pCi/L		CXP3	01/14/16	0730	1533728	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			96.1	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

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Certificate of Analysis

Report Date: January 14, 2016

Company : DHL Analytical
Address : 2300 Double Creek Drive

Round Rock, Texas 78664
Contact: Mr. John DuPont
Project: Routine Analysis

Client Sample ID: H-28
Sample ID: 387924006
Matrix: Water
Collect Date: 14-DEC-15 13:15
Receive Date: 22-DEC-15
Collector: Client

Project: DHLA00112
Client ID: DHLA002

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228	U	0.136	+/-0.625	1.18	3.00	pCi/L		AXM6	01/08/16	1516	1534780	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226		0.707	+/-0.388	0.519	1.00	pCi/L		CXP3	01/14/16	0730	1533728	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			89.6	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

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Certificate of Analysis

Report Date: January 14, 2016

Company : DHL Analytical
Address : 2300 Double Creek Drive

Round Rock, Texas 78664
Contact: Mr. John DuPont
Project: Routine Analysis

Client Sample ID: H-26 | Project: DHLA00112
Sample ID: 387924007 | Client ID: DHLA002
Matrix: Water
Collect Date: 14-DEC-15 14:05
Receive Date: 22-DEC-15
Collector: Client

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228	U	0.936	+/-1.15	1.95	3.00	pCi/L		AXM6	01/08/16	1517	1534780	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226		0.619	+/-0.356	0.469	1.00	pCi/L		CXP3	01/14/16	0800	1533728	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			104	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

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Certificate of Analysis

Report Date: January 14, 2016

Company : DHL Analytical
Address : 2300 Double Creek Drive

Round Rock, Texas 78664
Contact: Mr. John DuPont
Project: Routine Analysis

Client Sample ID: H-33
Sample ID: 387924008
Matrix: Water
Collect Date: 14-DEC-15 14:55
Receive Date: 22-DEC-15
Collector: Client

Project: DHLA00112
Client ID: DHLA002

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228	U	-0.663	+/-0.754	1.79	3.00	pCi/L		AXM6	01/12/16	1124	1534780	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226		1.94	+/-0.604	0.604	1.00	pCi/L		CXP3	01/14/16	0800	1533728	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			87.1	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

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Certificate of Analysis

Report Date: January 14, 2016

Company : DHL Analytical
Address : 2300 Double Creek Drive

Round Rock, Texas 78664
Contact: Mr. John DuPont
Project: Routine Analysis

Client Sample ID: MW-20A
Sample ID: 387924009
Matrix: Water
Collect Date: 14-DEC-15 17:00
Receive Date: 22-DEC-15
Collector: Client

Project: DHLA00112
Client ID: DHLA002

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228	U	0.112	+/-1.21	2.20	3.00	pCi/L		AXM6	01/08/16	1517	1534780	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226		0.939	+/-0.459	0.584	1.00	pCi/L		CXP3	01/14/16	0800	1533728	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			92.2	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

GEL LABORATORIES LLC
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Certificate of Analysis

Report Date: January 14, 2016

Company : DHL Analytical
Address : 2300 Double Creek Drive

Round Rock, Texas 78664
Contact: Mr. John DuPont
Project: Routine Analysis

Client Sample ID: PDP-22
Sample ID: 387924010
Matrix: Water
Collect Date: 14-DEC-15 17:50
Receive Date: 22-DEC-15
Collector: Client

Project: DHLA00112
Client ID: DHLA002

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228		2.14	+/-1.10	1.59	3.00	pCi/L		AXM6	01/08/16	1517	1534780	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226		2.12	+/-0.622	0.600	1.00	pCi/L		CXP3	01/14/16	0800	1533728	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			85.6	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

GEL LABORATORIES LLC
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Certificate of Analysis

Report Date: January 14, 2016

Company : DHL Analytical
Address : 2300 Double Creek Drive

Round Rock, Texas 78664
Contact: Mr. John DuPont
Project: Routine Analysis

Client Sample ID: MW-19
Sample ID: 387924011
Matrix: Water
Collect Date: 14-DEC-15 18:40
Receive Date: 22-DEC-15
Collector: Client

Project: DHLA00112
Client ID: DHLA002

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228	U	0.462	+/-0.687	1.19	3.00	pCi/L		AXM6	01/08/16	1517	1534780	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226	U	0.194	+/-0.261	0.448	1.00	pCi/L		CXP3	01/14/16	0800	1533728	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			90.9	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: January 14, 2016

Company : DHL Analytical
Address : 2300 Double Creek Drive

Round Rock, Texas 78664
Contact: Mr. John DuPont
Project: Routine Analysis

Client Sample ID: PDP-23
Sample ID: 387924012
Matrix: Water
Collect Date: 14-DEC-15 19:30
Receive Date: 22-DEC-15
Collector: Client

Project: DHLA00112
Client ID: DHLA002

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228	U	0.865	+/-0.704	1.11	3.00	pCi/L		AXM6	01/08/16	1517	1534780	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226	U	0.320	+/-0.274	0.419	1.00	pCi/L		CXP3	01/14/16	0800	1533728	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			100	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: January 14, 2016

Company : DHL Analytical
Address : 2300 Double Creek Drive

Round Rock, Texas 78664
Contact: Mr. John DuPont
Project: Routine Analysis

Client Sample ID: PDP-26
Sample ID: 387924013
Matrix: Water
Collect Date: 15-DEC-15 07:50
Receive Date: 22-DEC-15
Collector: Client

Project: DHLA00112
Client ID: DHLA002

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228	U	-0.363	+/-0.651	1.35	3.00	pCi/L		AXM6	01/08/16	1517	1534780	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226	U	0.251	+/-0.301	0.506	1.00	pCi/L		CXP3	01/14/16	0830	1533728	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			99.6	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: January 14, 2016

Company : DHL Analytical
Address : 2300 Double Creek Drive

Round Rock, Texas 78664
Contact: Mr. John DuPont
Project: Routine Analysis

Client Sample ID: MW-17A
Sample ID: 387924014
Matrix: Water
Collect Date: 15-DEC-15 08:50
Receive Date: 22-DEC-15
Collector: Client

Project: DHLA00112
Client ID: DHLA002

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228	U	0.315	+/-0.860	1.54	3.00	pCi/L		AXM6	01/08/16	1517	1534780	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226		0.459	+/-0.273	0.314	1.00	pCi/L		CXP3	01/14/16	0830	1533728	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			96.9	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: January 14, 2016

Company : DHL Analytical
Address : 2300 Double Creek Drive

Round Rock, Texas 78664
Contact: Mr. John DuPont
Project: Routine Analysis

Client Sample ID: PDP-24
Sample ID: 387924015
Matrix: Water
Collect Date: 15-DEC-15 09:40
Receive Date: 22-DEC-15
Collector: Client

Project: DHLA00112
Client ID: DHLA002

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228	U	0.663	+/-1.28	2.23	3.00	pCi/L		AXM6	01/08/16	1518	1534780	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226		1.01	+/-0.419	0.494	1.00	pCi/L		CXP3	01/14/16	0830	1533728	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			86	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: January 14, 2016

Company : DHL Analytical
Address : 2300 Double Creek Drive

Round Rock, Texas 78664
Contact: Mr. John DuPont
Project: Routine Analysis

Client Sample ID: MW-18A
Sample ID: 387924016
Matrix: Water
Collect Date: 15-DEC-15 10:30
Receive Date: 22-DEC-15
Collector: Client

Project: DHLA00112
Client ID: DHLA002

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228	U	0.231	+/-1.06	1.90	3.00	pCi/L		AXM6	01/08/16	1518	1534780	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226		0.805	+/-0.383	0.482	1.00	pCi/L		CXP3	01/14/16	0830	1533728	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			108	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: January 14, 2016

Company : DHL Analytical
Address : 2300 Double Creek Drive

Round Rock, Texas 78664
Contact: Mr. John DuPont
Project: Routine Analysis

Client Sample ID: PDP-25
Sample ID: 387924017
Matrix: Water
Collect Date: 15-DEC-15 11:35
Receive Date: 22-DEC-15
Collector: Client

Project: DHLA00112
Client ID: DHLA002

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228	U	0.465	+/-0.776	1.36	3.00	pCi/L		AXM6	01/08/16	1518	1534780	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226		0.807	+/-0.394	0.502	1.00	pCi/L		CXP3	01/14/16	0830	1533728	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			95.7	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

QC Summary

Report Date: January 14, 2016

DHL Analytical
2300 Double Creek Drive
Round Rock, Texas

Contact: **Mr. John DuPont**

Workorder: **387924**

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Rad Gas Flow										
Batch 1534780										
QC1203462619 387924008 DUP										
Radium-228	U	-0.663	U	-0.512	pCi/L	N/A		N/A	AXM6	01/12/16 11:24
	Uncertainty	+/-0.754		+/-0.808						
QC1203462620 LCS										
Radium-228	28.8			24.6	pCi/L		85.6	(75%-125%)		01/08/16 15:17
	Uncertainty			+/-2.34						
QC1203462618 MB										
Radium-228			U	-0.302	pCi/L					01/08/16 15:17
	Uncertainty			+/-0.708						
Rad Ra-226										
Batch 1533728										
QC1203459854 387939003 DUP										
Radium-226		0.672		1.11	pCi/L	48.8		(0% - 100%)	CXP3	01/14/16 09:40
	Uncertainty	+/-0.358		+/-0.419						
QC1203459856 LCS										
Radium-226	30.5			27.4	pCi/L		89.7	(75%-125%)		01/14/16 10:10
	Uncertainty			+/-1.77						
QC1203459853 MB										
Radium-226			U	0.0947	pCi/L					01/14/16 09:40
	Uncertainty			+/-0.270						
QC1203459855 387939003 MS										
Radium-226	61.0	0.672		54.7	pCi/L		88.6	(75%-125%)		01/14/16 09:40
	Uncertainty	+/-0.358		+/-3.57						

Notes:

Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

The Qualifiers in this report are defined as follows:

**	Analyte is a Tracer compound
<	Result is less than value reported
>	Result is greater than value reported
BD	Results are either below the MDC or tracer recovery is low
FA	Failed analysis.
H	Analytical holding time was exceeded
J	Value is estimated
K	Analyte present. Reported value may be biased high. Actual value is expected to be lower.
L	Analyte present. Reported value may be biased low. Actual value is expected to be higher.
M	M if above MDC and less than LLD
M	REMP Result > MDC/CL and < RDL
N/A	RPD or %Recovery limits do not apply.

QC Summary

Workorder: **387924**

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time

N1	See case narrative
ND	Analyte concentration is not detected above the detection limit
NJ	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
Q	One or more quality control criteria have not been met. Refer to the applicable narrative or DER.
R	Sample results are rejected
U	Analyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD.
UI	Gamma Spectroscopy--Uncertain identification
UJ	Gamma Spectroscopy--Uncertain identification
UL	Not considered detected. The associated number is the reported concentration, which may be inaccurate due to a low bias.
X	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
Y	Other specific qualifiers were required to properly define the results. Consult case narrative.
^	RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.
h	Preparation or preservation holding time was exceeded

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.
^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.
* Indicates that a Quality Control parameter was not within specifications.
For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.

There are no "Data Exception Reports" associated with this analytical report.

DHL Analytical, Inc.
2300 Double Creek Drive
Round Rock, TX 78664
TEL: *(512) 388-8222* FAX: *(512) 388-8229*

CHAIN-OF-CUSTODY RECORD

Work Order: 1512236

Subcontractor:

GEL Laboratories
PO Box 30712
Charleston, SC 29417

TEL: (843) 556-8171
FAX:
Acct #: 387924

18-Dec-15

Sample Id	Matrix	DHL#	Date Collected	Bottle Type	Requested Tests					
					E903.1	E904.0				
H-29	Aqueous	-01B	12/14/15 09:05 AM	500HDPEHNO3		1				
H-29	Aqueous	-01C	12/14/15 09:05 AM	500HDPEHNO3	1					
H-30	Aqueous	-02B	12/14/15 09:50 AM	500HDPEHNO3		1				
H-30	Aqueous	-02C	12/14/15 09:50 AM	500HDPEHNO3	1					
H-31	Aqueous	-03B	12/14/15 10:40 AM	500HDPEHNO3		1				
H-31	Aqueous	-03C	12/14/15 10:40 AM	500HDPEHNO3	1					
H-32	Aqueous	-04B	12/14/15 11:30 AM	500HDPEHNO3		1				
H-32	Aqueous	-04C	12/14/15 11:30 AM	500HDPEHNO3	1					
H-27	Aqueous	-05B	12/14/15 12:20 PM	500HDPEHNO3		1				
H-27	Aqueous	-05C	12/14/15 12:20 PM	500HDPEHNO3	1					
H-28	Aqueous	-06B	12/14/15 01:15 PM	500HDPEHNO3		1				
H-28	Aqueous	-06C	12/14/15 01:15 PM	500HDPEHNO3	1					
H-26	Aqueous	-07B	12/14/15 02:05 PM	500HDPEHNO3		1				
H-26	Aqueous	-07C	12/14/15 02:05 PM	500HDPEHNO3	1					
H-33	Aqueous	-08B	12/14/15 02:55 PM	500HDPEHNO3		1				
H-33	Aqueous	-08C	12/14/15 02:55 PM	500HDPEHNO3	1					
MW-20A	Aqueous	-09B	12/14/15 05:00 PM	500HDPEHNO3		1				
MW-20A	Aqueous	-09C	12/14/15 05:00 PM	500HDPEHNO3	1					

General Comments:

Please analyze these samples with a Standard Turnaround Time.
Call John DuPont if you have questions.
Quality Control Package Needed: Standard / _____
EMAIL report to both cac@dhlanalytical.com & dupont@dhlanalytical.com

		Date/Time			Date/Time
Relinquished by:	[signature]	12/18/15 1730	**Received by:**	Fed ex	12/18/15 1730
Relinquished by:			**Received by:**	B. Luthman	12/22/15 0850

DHL Analytical, Inc.
2300 Double Creek Drive
Round Rock, TX 78664
TEL: *(512) 388-8222* FAX: *(512) 388-8229*

CHAIN-OF-CUSTODY RECORD

Work Order: 1512236

Subcontractor:

GEL Laboratories
PO Box 30712
Charleston, SC 29417

TEL: (843) 556-8171
FAX:
Acct #:

18-Dec-15

Sample Id	Matrix	DHL#	Date Collected	Bottle Type	Requested Tests					
					E903.1	E904.0				
PDP-22	Aqueous	-10B	12/14/15 05:50 PM	500HDPEHNO3		1				
PDP-22	Aqueous	-10C	12/14/15 05:50 PM	500HDPEHNO3	1					
MW-19	Aqueous	-11B	12/14/15 06:40 PM	500HDPEHNO3		1				
MW-19	Aqueous	-11C	12/14/15 06:40 PM	500HDPEHNO3	1					
PDP-23	Aqueous	-12B	12/14/15 07:30 PM	500HDPEHNO3		1				
PDP-23	Aqueous	-12C	12/14/15 07:30 PM	500HDPEHNO3	1					
PDP-26	Aqueous	-13B	12/15/15 07:50 AM	500HDPEHNO3		1				
PDP-26	Aqueous	-13C	12/15/15 07:50 AM	500HDPEHNO3	1					
MW-17A	Aqueous	-14B	12/15/15 08:50 AM	500HDPEHNO3		1				
MW-17A	Aqueous	-14C	12/15/15 08:50 AM	500HDPEHNO3	1					
PDP-24	Aqueous	-15B	12/15/15 09:40 AM	500HDPEHNO3		1				
PDP-24	Aqueous	-15C	12/15/15 09:40 AM	500HDPEHNO3	1					
MW-18A	Aqueous	-16B	12/15/15 10:30 AM	500HDPEHNO3		1				
MW-18A	Aqueous	-16C	12/15/15 10:30 AM	500HDPEHNO3	1					
PDP-25	Aqueous	-17B	12/15/15 11:35 AM	500HDPEHNO3		1				
PDP-25	Aqueous	-17C	12/15/15 11:35 AM	500HDPEHNO3	1					

General Comments:

Please analyze these samples with a Standard Turnaround Time.
Call John DuPont if you have questions.
Quality Control Package Needed: Standard / _____
EMAIL report to both cac@dhlanalytical.com & dupont@dhlanalytical.com

		Date/Time			Date/Time
Relinquished by:		12/18/15 1733	**Received by:**	Fed Ex	12/18/15 (733)
Relinquished by:			**Received by:**	B. Luthman	12/22/15 0852

GEL Laboratories LLC

SAMPLE RECEIPT & REVIEW FORM

Client: DHLA	SDG/AR/COC/Work Order: 387924
Received By: Brielle Luthman	Date Received: 12/22/15 0850

Suspected Hazard Information	Yes	No	*If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation.
COC/Samples marked as radioactive?		✓	Maximum Net Counts Observed* (Observed Counts - Area Background Counts): 0
Classified Radioactive II or III by RSO?		✓	If yes, Were swipes taken of sample containers < action levels?
COC/Samples marked containing PCBs?		✓	
Package, COC, and/or Samples marked as beryllium or asbestos containing?		✓	If yes, samples are to be segregated as Safety Controlled Samples, and opened by the GEL Safety Group.
Shipped as a DOT Hazardous?		✓	Hazard Class Shipped: UN#:
Samples identified as Foreign Soil?		✓	

	Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (Required for Non-Conforming Items)
1	Shipping containers received intact and sealed?	✓			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
2	Samples requiring cold preservation within (0 ≤ 6 deg. C)?*		✓		Preservation Method: Ice bags Blue ice Dry ice (None) Other (describe) *all temperatures are recorded in Celsius 18°
2a	Daily check performed and passed on IR temperature gun?	✓			Temperature Device Serial #: Secondary Temperature Device Serial # (If Applicable): ES032015830
3	Chain of custody documents included with shipment?	✓			
4	Sample containers intact and sealed?	✓			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
5	Samples requiring chemical preservation at proper pH?	✓			Sample ID's, containers affected and observed pH: If Preservation added, Lot#:
6	Do Low Level Perchlorate samples have headspace as required?		✓		Sample ID's and containers affected:
7	VOA vials contain acid preservation?		✓		(If unknown, select No)
8	VOA vials free of headspace (defined as < 6mm bubble)?		✓		Sample ID's and containers affected:
9	Are Encore containers present?			✓	(If yes, immediately deliver to Volatiles laboratory)
10	Samples received within holding time?	✓			ID's and tests affected:
11	Sample ID's on COC match ID's on bottles?	✓			Sample ID's and containers affected:
12	Date & time on COC match date & time on bottles?	✓			Sample ID's affected:
13	Number of containers received match number indicated on COC?	✓			Sample ID's affected:
14	Are sample containers identifiable as GEL provided?			✓	
15	COC form is properly signed in relinquished/received sections?	✓			
16	Carrier and tracking number.				Circle Applicable: FedEx Air (FedEx Ground) UPS Field Services Courier Other 7752 4483 5086

Comments (Use Continuation Form if needed):

PM (or PMA) review: Initials BL Date 12/22/15 Page 1 of 1 GL-CHL-SR-001 Rev 2

List of current GEL Certifications as of 14 January 2016

State	Certification
Alaska	UST−110
Arkansas	88−0651
CLIA	42D0904046
California	2940 Interim
Colorado	SC00012
Connecticut	PH−0169
Delaware	SC000122013−10
DoD ELAP/ ISO17025 A2LA	2567.01
Florida NELAP	E87156
Foreign Soils Permit	P330−15−00283, P330−15−00253
Georgia	SC00012
Georgia SDWA	967
Hawaii	SC000122013−10
Idaho Chemistry	SC00012
Idaho Radiochemistry	SC00012
Illinois NELAP	200029
Indiana	C−SC−01
Kansas NELAP	E−10332
Kentucky SDWA	90129
Kentucky Wastewater	90129
Louisiana NELAP	03046 (AI33904)
Louisiana SDWA	LA150001
Maryland	270
Massachusetts	M−SC012
Michigan	9976
Mississippi	SC000122013−10
Nebraska	NE−OS−26−13
Nevada	SC000122016−1
New Hampshire NELAP	2054
New Jersey NELAP	SC002
New Mexico	SC00012
New York NELAP	11501
North Carolina	233
North Carolina SDWA	45709
North Dakota	R−158
Oklahoma	9904
Pennsylvania NELAP	68−00485
S.Carolina Radchem	10120002
South Carolina Chemistry	10120001
Tennessee	TN 02934
Texas NELAP	T104704235−15−10
Utah NELAP	SC000122015−19
Vermont	VT87156
Virginia NELAP	460202
Washington	C780
West Virginia	997404

March 29, 2016

Will Vienne
Pastor, Behling & Wheeler
2201 Double Creek Dr #4004
Round Rock, Texas 78664
TEL: (512) 671-3434
FAX (512) 671-3446

Order No.: 1602269

RE: Luminant - Martin Lake

Dear Will Vienne:

DHL Analytical, Inc. received 17 sample(s) on 2/25/2016 for the analyses presented in the following report.

There were no problems with the analyses and all data met requirements of NELAC except where noted in the Case Narrative. All non-NELAC methods will be identified accordingly in the case narrative and all estimated uncertainties of test results are within method or EPA specifications.

If you have any questions regarding these tests results, please feel free to call. Thank you for using DHL Analytical.

Sincerely,

John DuPont
General Manager

This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211-15-15

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Miscellaneous Documents **3**

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Subcontract Report 1602269 ..... **71**

DHL ANALYTICAL
2300 Double Creek Dr. ■ Round Rock, TX 78664
Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

№ 70379

CHAIN-OF-CUSTODY

CLIENT: PBW
ADDRESS: 2201 DOUBLE CREEK DR ROUND ROCK, A 78664
PHONE: 512-671-3434 FAX/E-MAIL: 512-671-3446
DATA REPORTED TO: WILL VIENNE
ADDITIONAL REPORT COPIES TO:

DATE: 2-24-16 PAGE 1 OF 2
PO #: 5164-B DHL WORK ORDER #: 1602269
PROJECT LOCATION OR NAME: LUMINANT - MARTIN LAKE
CLENT PROJECT #: 5164-B COLLECTOR: J. BRAYTON/CK

Authorize 5% surcharge for TRRP Report? ☐ Yes ☐ No

S=SOIL W=WATER A=AIR L=LIQUID SE=SEDIMENT P=PAINT SL=SLUDGE O=OTHER SO=SOLID

PRESERVATION: HCl, HNO_3, H_2SO_4 ☐ NaOH ☐, ICE, UNPRESERVED

ANALYSES: BTEX ☐ MTBE ☐ [METHOD 8021] TPH 1005 ☐ TPH 1006 ☐ HOLD 1006 ☐ GRO [METHOD 8015] ☐ DRO [METHOD 8105] ☐ VOC 8260 ☐ VOC 624 ☐ VOC 8260/5035 ☐ SVOC 8270 ☐ PAH 8270 ☐ HOLD PAH ☐ SVOC 625 ☐ 8270 PEST ☐ 625 PEST/PCB ☐ 608 PCB ☐ 8270 PCB ☐ 8270 O-P PEST ☐ 8082 PCB ☐ 8270 PCB ☐ 8321 HERB ☐ T PHOS, AMMONIA ☐ METALS 6020 ☐ METALS 200.8 ☐ DISS. METALS ☐ RCRA ☐ TX11 ☐ PH ☐ HEX CHROM ☐ ALKALINITY ☐ COD ☐ CHLORIDE ☐ ANIONS ☐ TCLP-SVOC ☐ VOC ☐ PEST ☐ HERB ☐ TCLP-METALS ☐ RCRA 8 ☐ TX-11 ☐ Pb ☐ RCI ☐ FLASHPOINT ☐ DGAS ☐ TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐ SEE ATTACHED

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	HCl	HNO_3	H_2SO_4 ☐ NaOH ☐	ICE	UNPRESERVED	ANALYSES	FIELD NOTES
MW-19	01	2-24-16	1210	W	P	4						X	
PDP-22	02	↓	1115	W	P	4						X	
MW-18A	03		1015	W	P	4						X	
PDP-26	04		0910	W	P	4						X	
MW-20A	05	↓	0810	W	P	4						X	
H-30	06	2-23-16	1220	W	P	4						X	
H-33	07	↓	1125	W	P	4						X	
H-26	08		1035	W	P	4						X	
H-31	09		1125	W	P	4						X	
H-32	10		1235	W	P	4						X	
H-28	11		1530	W	P	4						X	
H-29	12		1620	W	P	4						X	
H-27	13	↓	17:30	W	P	4						X	
PDP-23	14	2/24/16	945	W	P	4						X	
PDP-25	15	↓	1055	W	P	4						X	

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
[signature]	2-24-16 1830	Fedex
Fedex	2/25/16 930	[signature]

TURN AROUND TIME
RUSH ☐ CALL FIRST
1 DAY ☐ CALL FIRST
2 DAY ☐
NORMAL ☒
OTHER ☐

LABORATORY USE ONLY:
RECEIVING TEMP: 5.3, 1.5, 1.8 THERM #: 73
CUSTODY SEALS: ☐ BROKEN ☐ INTACT ☐ NOT USED
CARRIER: ☐ LONE STAR ☐ FEDEX ☐ UPS ☐ OTHER
☐ COURIER DELIVERY
☐ HAND DELIVERED

APPENDIX F-Revision 2 February 27, 2024 ☐ DHL DISPOSAL @ $4.00 each ☐ Return

DHL ANALYTICAL
2300 Double Creek Dr. ■ Round Rock, TX 78664
Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

nelap

№ 70375

CHAIN-OF-CUSTODY

CLIENT: PBW
ADDRESS: 2201 Double Creek Dr. Round Rock, TX 78664
PHONE: 512 671 3434 FAX/E-MAIL: 512 671 3446
DATA REPORTED TO: Will Vienne
ADDITIONAL REPORT COPIES TO:

DATE: 2/24/16 PAGE 2 OF 2
PO #: 5164-B DHL WORK ORDER #: 1602269
PROJECT LOCATION OR NAME: Luminant-Martin Lake
CLENT PROJECT #: 5164-B COLLECTOR: Chris Kakolewski

Authorize 5% surcharge for TRRP Report? ☐ Yes ☐ No

S=SOIL W=WATER A=AIR L=LIQUID SE=SEDIMENT P=PAINT SL=SLUDGE O=OTHER SO=SOLID

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	HCl	HNO_3	H_2SO_4 ☐ NaOH ☐	ICE	UNPRESERVED	BTEX ☐ MTBE ☐ [METHOD 8021]	TPH 1005 ☐ TPH 1006 ☐ HOLD 1006 ☐	GRO [METHOD 8015] ☐ DRO [METHOD 8105] ☐	VOC 8260 ☐ VOC 624 ☐ VOC 8260/5035 ☐	SVOC 8270 ☐ PAH 8270 ☐ HOLD PAH ☐ SVOC 625 ☐	8270 PEST ☐ 625 PEST/PCB ☐ 608 PCB ☐	8270 O-P PEST ☐ 8082 PCB ☐ 8270 PCB ☐	8321 HERB ☐ T PHOS, AMMONIA ☐	METALS 6020 ☐ METALS 200.8 ☐ DISS. METALS ☐	RCRA ☐ TX11 ☐	PH ☐ HEX CHROM ☐ ALKALINITY ☐ COD ☐	CHLORIDE ☐ ANIONS	TCLP-SVOC ☐ VOC ☐ PEST ☐ HERB ☐	TCLP-METALS ☐ RCRA 8 ☐ TX-11 ☐ Pb ☐	RCI ☐ FLASHPOINT ☐ DGAS ☐	TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐	SEE ATTACHED	FIELD NOTES
MW-17A	16	2/24/16	1200	W	P	4																							X		
PDP-24	17	2/24/16	1430	W	P	4																							X		

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
[signature]	2-24-16 1830	[signature]
[signature]	2/25/16 930	[signature]

TURN AROUND TIME
RUSH ☐ CALL FIRST
1 DAY ☐ CALL FIRST
2 DAY ☐
NORMAL ☒
OTHER ☐

LABORATORY USE ONLY:
RECEIVING TEMP: 5.3, 1.9, 1.8 THERM #: 78
CUSTODY SEALS: ☐ BROKEN ☐ INTACT ☒ NOT USED
CARRIER: ☐ LONE STAR ☒ FEDEX ☐ UPS ☐ OTHER
☐ COURIER DELIVERY
☐ HAND DELIVERED

APPENDIX F-Revision 2 February 27, 2014 ☐ DHL DISPOSAL @ $2.00 each ☐ Return

John Dupont

From: Sara Taube [Sara.Taube@pbwllc.com]
Sent: Wednesday, July 22, 2015 12:05 PM
To: John Dupont
Subject: CCR Appendix III and IV
Follow Up Flag: Follow up
Flag Status: Completed

Hi John,

Here are the Appendix III and Appendix IV constituents that we will need to have analyzed under the CCR Rule.

Appendix III
Boron
Calcium
Chloride
Fluoride
pH
sulfate
TDS

Appendix IV
Antimony
Arsenic
Barium
Beryllium
Cadmium
Chromium
Cobalt
Fluoride
Lead
Lithium
Mercury
Molybdenum
Selenium
Thallium
Radium 226 and 228

We are looking to have approximately 74 wells sampled 8 times over the course of the next two years. Please let me know if there is any more information you might need.

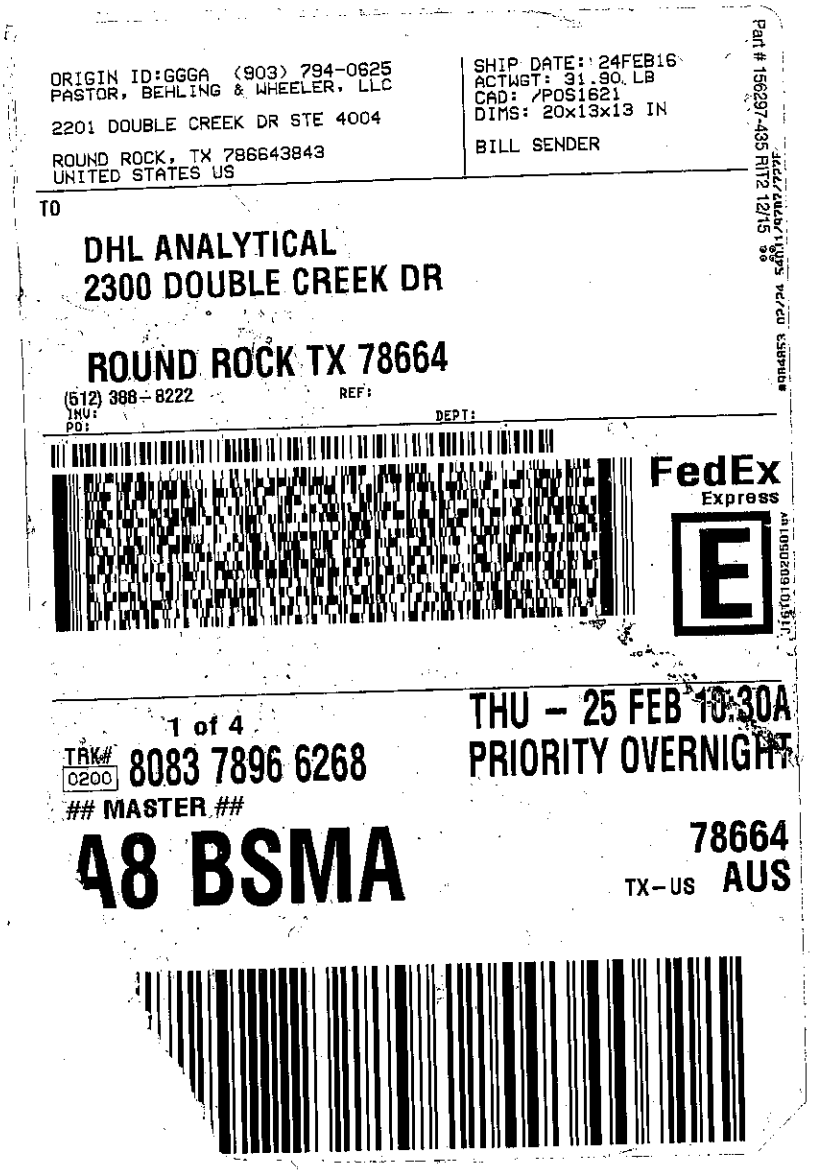
Cheers,

Sara

10/26/2015

ORIGIN ID:GGGA (903) 794-0625
PASTOR, BEHLING & WHEELER, LLC
2201 DOUBLE CREEK DR STE 4004
ROUND ROCK, TX 786643843
UNITED STATES US
SHIP
ACTWG
CAD:
DIMS:
BILL SENDER
TO
DHL ANALYTICAL
2300 DOUBLE CREEK DR
ROUND ROCK TX 78664
(512) 388-8222
INV:
PO:
REF:
DEPT:
FedEx
Express
3 of 4
MPS# 0681 7824 5489 3168
Mstr# 8083 7896 6268
0200
THU - 25 FEB 10:30A
PRIORITY OVERNIGHT
A8 BSMA
78664
TX-US AUS

FZ
10:30 C
3179
02.25
ORIGIN ID:GGGA (903) 794-0625
PASTOR, BEHLING & WHEELER, LLC
2201 DOUBLE CREEK DR STE 4004
ROUND ROCK, TX 786643843
UNITED STATES US
CAD: /POSIBC
DIMS: 24x13x13 IN
BILL SENDER
TO
DHL ANALYTICAL
2300 DOUBLE CREEK DR
ROUND ROCK TX 78664
(612) 388-6222
REF:
INV:
PO:
DEPT
FedEx
Express
4 of 4
MPS# 7824 5489 3179
0681
Mstr# 8083 7896 6268
0200
THU - 25 FEB 10:30A
PRIORITY OVERNIGHT
78664
TX-US AUS
A8 BSMA


ORIGIN ID:GGGA (903) 794-0625
PASTOR, BEHLING & WHEELER, LLC
2201 DOUBLE CREEK DR STE 4004
ROUND ROCK, TX 786643843
UNITED STATES US
SHIP DATE: 24FEB16
ACTWGT: 31.90 LB
CAD: /POS1621
DIMS: 20x13x13 IN
BILL SENDER
TO
DHL ANALYTICAL
2300 DOUBLE CREEK DR
ROUND ROCK TX 78664
(512) 388-8222
REF:
INV:
PO:
DEPT:
FedEx
Express
1 of 4
TRK# 0200 8083 7896 6268
MASTER
THU - 25 FEB 10:30A
PRIORITY OVERNIGHT
48 BSMA
78664
TX-US AUS

DHL Analytical, Inc.

Sample Receipt Checklist

Client Name **Pastor, Behling & Wheeler** Date Received: **2/25/2016**

Work Order Number **1602269** Received by **JB**

Checklist completed by: 2/25/2016 (Signature / Date) Reviewed by (PL) 2/25/2016 (Initials / Date)

Carrier name FedEx 1day

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	1.9 °C 5.3.1.B
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH<2 acceptable upon receipt?	Yes ☑	No ☐	NA ☐ LOT # 8086
	Adjusted? NO		Checked by
Water - ph>9 (S) or ph>12 (CN) acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted?		Checked by

Any No response must be detailed in the comments section below.

Client contacted _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments: _____

Corrective Action _____

DHL Analytical, Inc. **Date:** *29-Mar-16*

CLIENT: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake
Lab Order: 1602269

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Method SW6020A - Metals Analysis
Method SW7470A - Mercury Analysis
Method E300 - Anions Analysis
Method M4500-H+ B - pH of a Water Analysis
Method M2540C - TDS Analysis
Sub-contract - Radium-228 and Radium-226 analyses by methods E904.0/SW8469320 Modified and E903.1 Modified. Analyzed at GEL Laboratory.

LOG IN

The samples were received and log-in performed on 2/25/16. A total of 17 samples were received. The samples arrived in good condition and were properly packaged.

METALS ANALYSIS

For Metals analysis performed on 3/7/16 (batches 73869 & 73881) Boron was detected below the reporting limit in the method blanks (MB-73869 & 73878). All associated samples may be biased high for this analyte. No further corrective actions were taken.

For Metals analysis performed on 3/7/16 (batch 73869) the matrix spike and matrix spike duplicate recoveries were above control limits for Boron. These are flagged accordingly in the QC summary report. The sample selected for the matrix spike and matrix spike duplicate was not from this work order. The LCS was within control limits for this analyte. No further corrective actions were taken.

For Metals analysis performed on 3/4/16 (batch 73869) the RPD for the serial dilution was above control limits for Lead. This is flagged accordingly. The PDS was within control limits for this analyte. No further corrective actions were taken.

For Metals analysis performed on 3/3/16 (batch 73881) the PDS recovery was slightly below control limits for Calcium. This is flagged accordingly. The serial dilution was within control limits for this analyte. No further corrective actions were taken.

MERCURY ANALYSIS

For Mercury analysis performed on 3/8/16 (batch 73953) the LCS/LCSD had the RPD slightly above control limits. This is flagged accordingly in the QC summary report. The percent recoveries were within control limits. No further corrective actions were taken.

ANIONS ANALYSIS

For Anions analysis performed on 3/3/16 (batch 73960) the matrix spike and matrix spike duplicate recoveries (1602269-01 MS/MSD) were slightly above control limits for Sulfate. These are flagged accordingly in the QC summary report. The sample selected for the matrix spike and matrix spike duplicate was from this work order. The LCS was within control limits for this analyte. No further corrective actions were taken.

TDS ANALYSIS

For TDS analysis performed on 2/26/16 (batch 73878) TDS was detected below the reporting limit in the method blank (MB-73878). All associated samples were detected greater than 10 times the amount in the blank. No further corrective actions were taken.

DHL Analytical, Inc.

Date: *29-Mar-16*

CLIENT: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake
Lab Order: 1602269

Work Order Sample Summary

Lab Smp ID	Client Sample ID	Tag Number	Date Collected	Date Recved
1602269-01	MW-19		02/24/16 12:10 PM	2/25/2016
1602269-02	PDP-22		02/24/16 11:15 AM	2/25/2016
1602269-03	MW-18A		02/24/16 10:15 AM	2/25/2016
1602269-04	PDP-26		02/24/16 09:10 AM	2/25/2016
1602269-05	MW-20A		02/24/16 08:10 AM	2/25/2016
1602269-06	H-30		02/23/16 12:20 PM	2/25/2016
1602269-07	H-33		02/23/16 11:25 AM	2/25/2016
1602269-08	H-26		02/23/16 10:35 AM	2/25/2016
1602269-09	H-31		02/23/16 11:25 AM	2/25/2016
1602269-10	H-32		02/23/16 12:35 PM	2/25/2016
1602269-11	H-28		02/23/16 03:30 PM	2/25/2016
1602269-12	H-29		02/23/16 04:20 PM	2/25/2016
1602269-13	H-27		02/23/16 05:30 PM	2/25/2016
1602269-14	PDP-23		02/24/16 09:45 AM	2/25/2016
1602269-15	PDP-25		02/24/16 10:55 AM	2/25/2016
1602269-16	MW-17A		02/24/16 12:00 PM	2/25/2016
1602269-17	PDP-24		02/24/16 02:30 PM	2/25/2016

Lab Order: 1602269
Client: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1602269-01A	MW-19	02/24/16 12:10 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/26/16 08:39 AM	73869
	MW-19	02/24/16 12:10 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/26/16 08:39 AM	73869
	MW-19	02/24/16 12:10 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/26/16 08:39 AM	73869
	MW-19	02/24/16 12:10 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	03/02/16 01:57 PM	73953
1602269-01D	MW-19	02/24/16 12:10 PM	Aqueous	E300	Anion Preparation	03/03/16 08:45 AM	73960
	MW-19	02/24/16 12:10 PM	Aqueous	E300	Anion Preparation	03/03/16 08:45 AM	73960
	MW-19	02/24/16 12:10 PM	Aqueous	M4500-H+ B	pH Preparation	02/26/16 08:07 AM	73868
	MW-19	02/24/16 12:10 PM	Aqueous	M2540C	TDS Preparation	02/26/16 10:17 AM	73878
1602269-02A	PDP-22	02/24/16 11:15 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/26/16 08:39 AM	73869
	PDP-22	02/24/16 11:15 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/26/16 08:39 AM	73869
	PDP-22	02/24/16 11:15 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/26/16 08:39 AM	73869
	PDP-22	02/24/16 11:15 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	03/02/16 09:00 AM	73940
1602269-02D	PDP-22	02/24/16 11:15 AM	Aqueous	E300	Anion Preparation	03/03/16 08:45 AM	73960
	PDP-22	02/24/16 11:15 AM	Aqueous	E300	Anion Preparation	03/03/16 08:45 AM	73960
	PDP-22	02/24/16 11:15 AM	Aqueous	M4500-H+ B	pH Preparation	02/26/16 08:07 AM	73868
	PDP-22	02/24/16 11:15 AM	Aqueous	M2540C	TDS Preparation	02/26/16 10:17 AM	73878
1602269-03A	MW-18A	02/24/16 10:15 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/26/16 08:39 AM	73869
	MW-18A	02/24/16 10:15 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/26/16 08:39 AM	73869
	MW-18A	02/24/16 10:15 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	03/02/16 09:00 AM	73940
1602269-03D	MW-18A	02/24/16 10:15 AM	Aqueous	E300	Anion Preparation	03/03/16 08:45 AM	73960
	MW-18A	02/24/16 10:15 AM	Aqueous	M4500-H+ B	pH Preparation	02/26/16 08:07 AM	73868
	MW-18A	02/24/16 10:15 AM	Aqueous	M2540C	TDS Preparation	02/26/16 10:17 AM	73878
1602269-04A	PDP-26	02/24/16 09:10 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/26/16 08:39 AM	73869
	PDP-26	02/24/16 09:10 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/26/16 08:39 AM	73869
	PDP-26	02/24/16 09:10 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	03/02/16 09:00 AM	73940
1602269-04D	PDP-26	02/24/16 09:10 AM	Aqueous	E300	Anion Preparation	03/03/16 08:45 AM	73960
	PDP-26	02/24/16 09:10 AM	Aqueous	M4500-H+ B	pH Preparation	02/26/16 08:07 AM	73868
	PDP-26	02/24/16 09:10 AM	Aqueous	M2540C	TDS Preparation	02/26/16 10:17 AM	73878

Lab Order: 1602269
Client: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1602269-05A	MW-20A	02/24/16 08:10 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/26/16 08:39 AM	73869
	MW-20A	02/24/16 08:10 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/26/16 08:39 AM	73869
	MW-20A	02/24/16 08:10 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	03/02/16 09:00 AM	73940
1602269-05D	MW-20A	02/24/16 08:10 AM	Aqueous	E300	Anion Preparation	03/03/16 08:45 AM	73960
	MW-20A	02/24/16 08:10 AM	Aqueous	M4500-H+ B	pH Preparation	02/26/16 08:07 AM	73868
	MW-20A	02/24/16 08:10 AM	Aqueous	M2540C	TDS Preparation	02/26/16 10:17 AM	73878
1602269-06A	H-30	02/23/16 12:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/26/16 08:39 AM	73869
	H-30	02/23/16 12:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/26/16 08:39 AM	73869
	H-30	02/23/16 12:20 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	03/02/16 09:00 AM	73940
1602269-06D	H-30	02/23/16 12:20 PM	Aqueous	E300	Anion Preparation	03/03/16 08:45 AM	73960
	H-30	02/23/16 12:20 PM	Aqueous	E300	Anion Preparation	03/03/16 08:45 AM	73960
	H-30	02/23/16 12:20 PM	Aqueous	M4500-H+ B	pH Preparation	02/26/16 08:07 AM	73868
	H-30	02/23/16 12:20 PM	Aqueous	M2540C	TDS Preparation	02/26/16 10:17 AM	73878
1602269-07A	H-33	02/23/16 11:25 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/26/16 08:39 AM	73869
	H-33	02/23/16 11:25 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/26/16 08:39 AM	73869
	H-33	02/23/16 11:25 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	03/02/16 09:00 AM	73940
1602269-07D	H-33	02/23/16 11:25 AM	Aqueous	E300	Anion Preparation	03/03/16 08:45 AM	73960
	H-33	02/23/16 11:25 AM	Aqueous	E300	Anion Preparation	03/03/16 08:45 AM	73960
	H-33	02/23/16 11:25 AM	Aqueous	M4500-H+ B	pH Preparation	02/26/16 08:07 AM	73868
	H-33	02/23/16 11:25 AM	Aqueous	M2540C	TDS Preparation	02/26/16 10:17 AM	73878
1602269-08A	H-26	02/23/16 10:35 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/26/16 11:11 AM	73881
	H-26	02/23/16 10:35 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/26/16 11:11 AM	73881
	H-26	02/23/16 10:35 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	03/02/16 09:00 AM	73940
1602269-08D	H-26	02/23/16 10:35 AM	Aqueous	E300	Anion Preparation	03/03/16 08:45 AM	73960
	H-26	02/23/16 10:35 AM	Aqueous	M4500-H+ B	pH Preparation	02/26/16 08:07 AM	73868
	H-26	02/23/16 10:35 AM	Aqueous	M2540C	TDS Preparation	02/26/16 10:17 AM	73878
1602269-09A	H-31	02/23/16 11:25 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/26/16 11:11 AM	73881
	H-31	02/23/16 11:25 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/26/16 11:11 AM	73881

Lab Order: 1602269
Client: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1602269-09A	H-31	02/23/16 11:25 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	03/02/16 01:57 PM	73953
1602269-09D	H-31	02/23/16 11:25 AM	Aqueous	E300	Anion Preparation	03/03/16 08:45 AM	73960
	H-31	02/23/16 11:25 AM	Aqueous	E300	Anion Preparation	03/03/16 08:45 AM	73960
	H-31	02/23/16 11:25 AM	Aqueous	M4500-H+ B	pH Preparation	02/26/16 08:07 AM	73868
	H-31	02/23/16 11:25 AM	Aqueous	M2540C	TDS Preparation	02/29/16 09:40 AM	73900
1602269-10A	H-32	02/23/16 12:35 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/26/16 11:11 AM	73881
	H-32	02/23/16 12:35 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/26/16 11:11 AM	73881
	H-32	02/23/16 12:35 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/26/16 11:11 AM	73881
	H-32	02/23/16 12:35 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	03/02/16 01:57 PM	73953
1602269-10D	H-32	02/23/16 12:35 PM	Aqueous	E300	Anion Preparation	03/03/16 08:45 AM	73960
	H-32	02/23/16 12:35 PM	Aqueous	E300	Anion Preparation	03/03/16 08:45 AM	73960
	H-32	02/23/16 12:35 PM	Aqueous	M4500-H+ B	pH Preparation	02/26/16 08:07 AM	73868
	H-32	02/23/16 12:35 PM	Aqueous	M2540C	TDS Preparation	02/29/16 09:40 AM	73900
1602269-11A	H-28	02/23/16 03:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/26/16 11:11 AM	73881
	H-28	02/23/16 03:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/26/16 11:11 AM	73881
	H-28	02/23/16 03:30 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	03/02/16 01:57 PM	73953
1602269-11D	H-28	02/23/16 03:30 PM	Aqueous	E300	Anion Preparation	03/03/16 08:45 AM	73960
	H-28	02/23/16 03:30 PM	Aqueous	E300	Anion Preparation	03/03/16 08:45 AM	73960
	H-28	02/23/16 03:30 PM	Aqueous	M4500-H+ B	pH Preparation	02/26/16 08:07 AM	73868
	H-28	02/23/16 03:30 PM	Aqueous	M2540C	TDS Preparation	02/29/16 09:40 AM	73900
1602269-12A	H-29	02/23/16 04:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/26/16 11:11 AM	73881
	H-29	02/23/16 04:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/26/16 11:11 AM	73881
	H-29	02/23/16 04:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/26/16 11:11 AM	73881
	H-29	02/23/16 04:20 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	03/02/16 01:57 PM	73953
1602269-12D	H-29	02/23/16 04:20 PM	Aqueous	E300	Anion Preparation	03/03/16 08:45 AM	73960
	H-29	02/23/16 04:20 PM	Aqueous	E300	Anion Preparation	03/03/16 08:45 AM	73960
	H-29	02/23/16 04:20 PM	Aqueous	M4500-H+ B	pH Preparation	02/26/16 08:07 AM	73868
	H-29	02/23/16 04:20 PM	Aqueous	M2540C	TDS Preparation	02/29/16 09:40 AM	73900

Lab Order: 1602269
Client: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1602269-13A	H-27	02/23/16 05:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/26/16 11:11 AM	73881
	H-27	02/23/16 05:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/26/16 11:11 AM	73881
	H-27	02/23/16 05:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/26/16 11:11 AM	73881
	H-27	02/23/16 05:30 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	03/02/16 01:57 PM	73953
1602269-13D	H-27	02/23/16 05:30 PM	Aqueous	E300	Anion Preparation	03/03/16 08:45 AM	73960
	H-27	02/23/16 05:30 PM	Aqueous	E300	Anion Preparation	03/03/16 08:45 AM	73960
	H-27	02/23/16 05:30 PM	Aqueous	M4500-H+ B	pH Preparation	02/26/16 08:07 AM	73868
	H-27	02/23/16 05:30 PM	Aqueous	M2540C	TDS Preparation	02/29/16 09:40 AM	73900
1602269-14A	PDP-23	02/24/16 09:45 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/26/16 11:11 AM	73881
	PDP-23	02/24/16 09:45 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/26/16 11:11 AM	73881
	PDP-23	02/24/16 09:45 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	03/02/16 01:57 PM	73953
1602269-14D	PDP-23	02/24/16 09:45 AM	Aqueous	E300	Anion Preparation	03/03/16 08:45 AM	73960
	PDP-23	02/24/16 09:45 AM	Aqueous	M4500-H+ B	pH Preparation	02/26/16 10:40 AM	73880
	PDP-23	02/24/16 09:45 AM	Aqueous	M2540C	TDS Preparation	02/29/16 09:40 AM	73900
1602269-15A	PDP-25	02/24/16 10:55 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/26/16 11:11 AM	73881
	PDP-25	02/24/16 10:55 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/26/16 11:11 AM	73881
	PDP-25	02/24/16 10:55 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/26/16 11:11 AM	73881
	PDP-25	02/24/16 10:55 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	03/02/16 01:57 PM	73953
1602269-15D	PDP-25	02/24/16 10:55 AM	Aqueous	E300	Anion Preparation	03/03/16 08:45 AM	73960
	PDP-25	02/24/16 10:55 AM	Aqueous	E300	Anion Preparation	03/03/16 08:45 AM	73960
	PDP-25	02/24/16 10:55 AM	Aqueous	M4500-H+ B	pH Preparation	02/26/16 10:40 AM	73880
	PDP-25	02/24/16 10:55 AM	Aqueous	M2540C	TDS Preparation	02/29/16 09:40 AM	73900
1602269-16A	MW-17A	02/24/16 12:00 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/26/16 11:11 AM	73881
	MW-17A	02/24/16 12:00 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/26/16 11:11 AM	73881
	MW-17A	02/24/16 12:00 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	03/02/16 01:57 PM	73953
1602269-16D	MW-17A	02/24/16 12:00 PM	Aqueous	E300	Anion Preparation	03/03/16 08:45 AM	73960
	MW-17A	02/24/16 12:00 PM	Aqueous	M4500-H+ B	pH Preparation	02/26/16 10:40 AM	73880
	MW-17A	02/24/16 12:00 PM	Aqueous	M2540C	TDS Preparation	02/29/16 09:40 AM	73900

Lab Order: 1602269
Client: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1602269-17A	PDP-24	02/24/16 02:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/26/16 11:11 AM	73881
	PDP-24	02/24/16 02:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/26/16 11:11 AM	73881
	PDP-24	02/24/16 02:30 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	03/02/16 01:57 PM	73953
1602269-17D	PDP-24	02/24/16 02:30 PM	Aqueous	E300	Anion Preparation	03/03/16 08:45 AM	73960
	PDP-24	02/24/16 02:30 PM	Aqueous	E300	Anion Preparation	03/03/16 08:45 AM	73960
	PDP-24	02/24/16 02:30 PM	Aqueous	M4500-H+ B	pH Preparation	02/26/16 10:40 AM	73880
	PDP-24	02/24/16 02:30 PM	Aqueous	M2540C	TDS Preparation	02/29/16 09:40 AM	73900

Lab Order: 1602269
Client: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1602269-01A	MW-19	Aqueous	SW7470A	Mercury Total: Aqueous	73953	1	03/08/16 10:54 AM	CETAC2_HG_160308C
	MW-19	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73869	1	03/04/16 08:49 PM	ICP-MS4_160304C
	MW-19	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73869	1	03/07/16 06:52 PM	ICP-MS4_160307A
	MW-19	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73869	10	03/07/16 07:38 PM	ICP-MS4_160307A
1602269-01D	MW-19	Aqueous	E300	Anions by IC method - Water	73960	1	03/03/16 10:07 AM	IC2_160303A
	MW-19	Aqueous	E300	Anions by IC method - Water	73960	10	03/03/16 03:45 PM	IC2_160303A
	MW-19	Aqueous	M4500-H+ B	pH	73868	1	02/26/16 09:16 AM	TITRATOR_160226A
	MW-19	Aqueous	M2540C	Total Dissolved Solids	73878	1	02/29/16 08:55 AM	WC_160226B
1602269-02A	PDP-22	Aqueous	SW7470A	Mercury Total: Aqueous	73940	1	03/03/16 11:59 AM	CETAC2_HG_160303A
	PDP-22	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73869	1	03/04/16 08:51 PM	ICP-MS4_160304C
	PDP-22	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73869	1	03/07/16 06:53 PM	ICP-MS4_160307A
	PDP-22	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73869	10	03/07/16 07:40 PM	ICP-MS4_160307A
1602269-02D	PDP-22	Aqueous	E300	Anions by IC method - Water	73960	10	03/03/16 04:29 PM	IC2_160303A
	PDP-22	Aqueous	E300	Anions by IC method - Water	73960	1	03/03/16 10:22 AM	IC2_160303A
	PDP-22	Aqueous	M4500-H+ B	pH	73868	1	02/26/16 09:18 AM	TITRATOR_160226A
	PDP-22	Aqueous	M2540C	Total Dissolved Solids	73878	1	02/29/16 08:55 AM	WC_160226B
1602269-03A	MW-18A	Aqueous	SW7470A	Mercury Total: Aqueous	73940	1	03/03/16 12:10 PM	CETAC2_HG_160303A
	MW-18A	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73869	1	03/04/16 08:53 PM	ICP-MS4_160304C
	MW-18A	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73869	1	03/07/16 07:42 PM	ICP-MS4_160307A
1602269-03D	MW-18A	Aqueous	E300	Anions by IC method - Water	73960	1	03/03/16 10:37 AM	IC2_160303A
	MW-18A	Aqueous	M4500-H+ B	pH	73868	1	02/26/16 09:21 AM	TITRATOR_160226A
	MW-18A	Aqueous	M2540C	Total Dissolved Solids	73878	1	02/29/16 08:55 AM	WC_160226B
1602269-04A	PDP-26	Aqueous	SW7470A	Mercury Total: Aqueous	73940	1	03/03/16 12:12 PM	CETAC2_HG_160303A
	PDP-26	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73869	1	03/04/16 08:55 PM	ICP-MS4_160304C
	PDP-26	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73869	1	03/07/16 07:44 PM	ICP-MS4_160307A
1602269-04D	PDP-26	Aqueous	E300	Anions by IC method - Water	73960	1	03/03/16 10:51 AM	IC2_160303A

Lab Order: 1602269
Client: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1602269-04D	PDP-26	Aqueous	M4500-H+ B	pH	73868	1	02/26/16 09:23 AM	TITRATOR_160226A
	PDP-26	Aqueous	M2540C	Total Dissolved Solids	73878	1	02/29/16 08:55 AM	WC_160226B
1602269-05A	MW-20A	Aqueous	SW7470A	Mercury Total: Aqueous	73940	1	03/03/16 12:15 PM	CETAC2_HG_160303A
	MW-20A	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73869	1	03/07/16 07:46 PM	ICP-MS4_160307A
	MW-20A	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73869	1	03/04/16 08:57 PM	ICP-MS4_160304C
1602269-05D	MW-20A	Aqueous	E300	Anions by IC method - Water	73960	1	03/03/16 11:06 AM	IC2_160303A
	MW-20A	Aqueous	M4500-H+ B	pH	73868	1	02/26/16 09:26 AM	TITRATOR_160226A
	MW-20A	Aqueous	M2540C	Total Dissolved Solids	73878	1	02/29/16 08:55 AM	WC_160226B
1602269-06A	H-30	Aqueous	SW7470A	Mercury Total: Aqueous	73940	1	03/03/16 12:17 PM	CETAC2_HG_160303A
	H-30	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73869	1	03/04/16 08:59 PM	ICP-MS4_160304C
	H-30	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73869	10	03/07/16 07:48 PM	ICP-MS4_160307A
1602269-06D	H-30	Aqueous	E300	Anions by IC method - Water	73960	1	03/03/16 11:22 AM	IC2_160303A
	H-30	Aqueous	E300	Anions by IC method - Water	73960	10	03/03/16 05:13 PM	IC2_160303A
	H-30	Aqueous	M4500-H+ B	pH	73868	1	02/26/16 09:28 AM	TITRATOR_160226A
	H-30	Aqueous	M2540C	Total Dissolved Solids	73878	1	02/29/16 08:55 AM	WC_160226B
1602269-07A	H-33	Aqueous	SW7470A	Mercury Total: Aqueous	73940	1	03/03/16 12:19 PM	CETAC2_HG_160303A
	H-33	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73869	1	03/07/16 07:50 PM	ICP-MS4_160307A
	H-33	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73869	1	03/04/16 09:01 PM	ICP-MS4_160304C
1602269-07D	H-33	Aqueous	E300	Anions by IC method - Water	73960	1	03/03/16 11:37 AM	IC2_160303A
	H-33	Aqueous	E300	Anions by IC method - Water	73960	10	03/03/16 05:42 PM	IC2_160303A
	H-33	Aqueous	M4500-H+ B	pH	73868	1	02/26/16 09:31 AM	TITRATOR_160226A
	H-33	Aqueous	M2540C	Total Dissolved Solids	73878	1	02/29/16 08:55 AM	WC_160226B
1602269-08A	H-26	Aqueous	SW7470A	Mercury Total: Aqueous	73940	1	03/03/16 12:21 PM	CETAC2_HG_160303A
	H-26	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73881	1	03/03/16 07:35 PM	ICP-MS4_160303F
	H-26	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73881	1	03/07/16 02:56 PM	ICP-MS4_160307A
1602269-08D	H-26	Aqueous	E300	Anions by IC method - Water	73960	1	03/03/16 11:51 AM	IC2_160303A

Lab Order: 1602269
Client: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1602269-08D	H-26	Aqueous	M4500-H+ B	pH	73868	1	02/26/16 09:33 AM	TITRATOR_160226A
	H-26	Aqueous	M2540C	Total Dissolved Solids	73878	1	02/29/16 08:55 AM	WC_160226B
1602269-09A	H-31	Aqueous	SW7470A	Mercury Total: Aqueous	73953	1	03/08/16 10:56 AM	CETAC2_HG_160308C
	H-31	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73881	1	03/03/16 07:45 PM	ICP-MS4_160303F
	H-31	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73881	50	03/07/16 03:00 PM	ICP-MS4_160307A
1602269-09D	H-31	Aqueous	E300	Anions by IC method - Water	73960	100	03/03/16 05:57 PM	IC2_160303A
	H-31	Aqueous	E300	Anions by IC method - Water	73960	1	03/03/16 12:06 PM	IC2_160303A
	H-31	Aqueous	M4500-H+ B	pH	73868	1	02/26/16 09:35 AM	TITRATOR_160226A
	H-31	Aqueous	M2540C	Total Dissolved Solids	73900	1	03/01/16 08:43 AM	WC_160229D
1602269-10A	H-32	Aqueous	SW7470A	Mercury Total: Aqueous	73953	1	03/08/16 10:59 AM	CETAC2_HG_160308C
	H-32	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73881	1	03/03/16 07:47 PM	ICP-MS4_160303F
	H-32	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73881	1	03/07/16 03:02 PM	ICP-MS4_160307A
	H-32	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73881	10	03/07/16 04:52 PM	ICP-MS4_160307A
1602269-10D	H-32	Aqueous	E300	Anions by IC method - Water	73960	1	03/03/16 12:53 PM	IC2_160303A
	H-32	Aqueous	E300	Anions by IC method - Water	73960	10	03/03/16 06:11 PM	IC2_160303A
	H-32	Aqueous	M4500-H+ B	pH	73868	1	02/26/16 09:37 AM	TITRATOR_160226A
	H-32	Aqueous	M2540C	Total Dissolved Solids	73900	1	03/01/16 08:43 AM	WC_160229D
1602269-11A	H-28	Aqueous	SW7470A	Mercury Total: Aqueous	73953	1	03/08/16 11:01 AM	CETAC2_HG_160308C
	H-28	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73881	1	03/03/16 07:49 PM	ICP-MS4_160303F
	H-28	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73881	10	03/07/16 03:04 PM	ICP-MS4_160307A
1602269-11D	H-28	Aqueous	E300	Anions by IC method - Water	73960	10	03/03/16 06:26 PM	IC2_160303A
	H-28	Aqueous	E300	Anions by IC method - Water	73960	1	03/03/16 01:07 PM	IC2_160303A
	H-28	Aqueous	M4500-H+ B	pH	73868	1	02/26/16 09:38 AM	TITRATOR_160226A
	H-28	Aqueous	M2540C	Total Dissolved Solids	73900	1	03/01/16 08:43 AM	WC_160229D
1602269-12A	H-29	Aqueous	SW7470A	Mercury Total: Aqueous	73953	1	03/08/16 11:03 AM	CETAC2_HG_160308C
	H-29	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73881	1	03/03/16 07:51 PM	ICP-MS4_160303F

Lab Order: 1602269
Client: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1602269-12A	H-29	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73881	1	03/07/16 03:06 PM	ICP-MS4_160307A
	H-29	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73881	10	03/07/16 04:54 PM	ICP-MS4_160307A
1602269-12D	H-29	Aqueous	E300	Anions by IC method - Water	73960	1	03/03/16 01:22 PM	IC2_160303A
	H-29	Aqueous	E300	Anions by IC method - Water	73960	10	03/03/16 06:55 PM	IC2_160303A
	H-29	Aqueous	M4500-H+ B	pH	73868	1	02/26/16 09:42 AM	TITRATOR_160226A
	H-29	Aqueous	M2540C	Total Dissolved Solids	73900	1	03/01/16 08:43 AM	WC_160229D
1602269-13A	H-27	Aqueous	SW7470A	Mercury Total: Aqueous	73953	1	03/08/16 11:06 AM	CETAC2_HG_160308C
	H-27	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73881	1	03/03/16 07:53 PM	ICP-MS4_160303F
	H-27	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73881	1	03/07/16 03:08 PM	ICP-MS4_160307A
	H-27	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73881	10	03/07/16 04:56 PM	ICP-MS4_160307A
1602269-13D	H-27	Aqueous	E300	Anions by IC method - Water	73960	1	03/03/16 01:36 PM	IC2_160303A
	H-27	Aqueous	E300	Anions by IC method - Water	73960	10	03/03/16 07:39 PM	IC2_160303A
	H-27	Aqueous	M4500-H+ B	pH	73868	1	02/26/16 09:45 AM	TITRATOR_160226A
	H-27	Aqueous	M2540C	Total Dissolved Solids	73900	1	03/01/16 08:43 AM	WC_160229D
1602269-14A	PDP-23	Aqueous	SW7470A	Mercury Total: Aqueous	73953	1	03/08/16 11:08 AM	CETAC2_HG_160308C
	PDP-23	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73881	1	03/03/16 07:55 PM	ICP-MS4_160303F
	PDP-23	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73881	1	03/07/16 03:10 PM	ICP-MS4_160307A
1602269-14D	PDP-23	Aqueous	E300	Anions by IC method - Water	73960	1	03/03/16 01:51 PM	IC2_160303A
	PDP-23	Aqueous	M4500-H+ B	pH	73880	1	02/26/16 11:02 AM	TITRATOR_160226B
	PDP-23	Aqueous	M2540C	Total Dissolved Solids	73900	1	03/01/16 08:43 AM	WC_160229D
1602269-15A	PDP-25	Aqueous	SW7470A	Mercury Total: Aqueous	73953	1	03/08/16 11:11 AM	CETAC2_HG_160308C
	PDP-25	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73881	1	03/03/16 08:11 PM	ICP-MS4_160303F
	PDP-25	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73881	1	03/07/16 03:13 PM	ICP-MS4_160307A
	PDP-25	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73881	10	03/07/16 06:49 PM	ICP-MS4_160307A
1602269-15D	PDP-25	Aqueous	E300	Anions by IC method - Water	73960	10	03/03/16 07:53 PM	IC2_160303A
	PDP-25	Aqueous	E300	Anions by IC method - Water	73960	1	03/03/16 02:06 PM	IC2_160303A

Lab Order: 1602269
Client: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1602269-15D	PDP-25	Aqueous	M4500-H+ B	pH	73880	1	02/26/16 11:07 AM	TITRATOR_160226B
	PDP-25	Aqueous	M2540C	Total Dissolved Solids	73900	1	03/01/16 08:43 AM	WC_160229D
1602269-16A	MW-17A	Aqueous	SW7470A	Mercury Total: Aqueous	73953	1	03/08/16 11:13 AM	CETAC2_HG_160308C
	MW-17A	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73881	1	03/03/16 08:13 PM	ICP-MS4_160303F
	MW-17A	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73881	1	03/07/16 03:14 PM	ICP-MS4_160307A
1602269-16D	MW-17A	Aqueous	E300	Anions by IC method - Water	73960	1	03/03/16 02:20 PM	IC2_160303A
	MW-17A	Aqueous	M4500-H+ B	pH	73880	1	02/26/16 11:09 AM	TITRATOR_160226B
	MW-17A	Aqueous	M2540C	Total Dissolved Solids	73900	1	03/01/16 08:43 AM	WC_160229D
1602269-17A	PDP-24	Aqueous	SW7470A	Mercury Total: Aqueous	73953	1	03/08/16 11:15 AM	CETAC2_HG_160308C
	PDP-24	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73881	1	03/03/16 08:15 PM	ICP-MS4_160303F
	PDP-24	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73881	10	03/07/16 03:17 PM	ICP-MS4_160307A
1602269-17D	PDP-24	Aqueous	E300	Anions by IC method - Water	73960	1	03/03/16 02:35 PM	IC2_160303A
	PDP-24	Aqueous	E300	Anions by IC method - Water	73960	10	03/03/16 08:08 PM	IC2_160303A
	PDP-24	Aqueous	M4500-H+ B	pH	73880	1	02/26/16 11:10 AM	TITRATOR_160226B
	PDP-24	Aqueous	M2540C	Total Dissolved Solids	73900	1	03/01/16 08:43 AM	WC_160229D

DHL Analytical, Inc.

Date: *29-Mar-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	MW-19
Project:	Luminant - Martin Lake	**Lab ID:**	1602269-01
Project No:	5164-B	**Collection Date:**	02/24/16 12:10 PM
Lab Order:	1602269	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	03/08/16 10:54 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	03/04/16 08:49 PM
Arsenic	0.0147	0.00200	0.00500		mg/L	1	03/04/16 08:49 PM
Barium	0.0878	0.00300	0.0100		mg/L	1	03/04/16 08:49 PM
Beryllium	0.000679	0.000300	0.00100	J	mg/L	1	03/04/16 08:49 PM
Boron	0.516	0.0100	0.0300		mg/L	1	03/07/16 06:52 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	03/04/16 08:49 PM
Calcium	155	1.00	3.00		mg/L	10	03/07/16 07:38 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	03/04/16 08:49 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	03/04/16 08:49 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	03/04/16 08:49 PM
Lithium	<0.00500	0.00500	0.0100		mg/L	1	03/04/16 08:49 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	03/04/16 08:49 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	03/04/16 08:49 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	03/04/16 08:49 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	30.0	0.300	1.00		mg/L	1	03/03/16 10:07 AM
Fluoride	0.144	0.100	0.400	J	mg/L	1	03/03/16 10:07 AM
Sulfate	372	10.0	30.0		mg/L	10	03/03/16 03:45 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.88	0	0		pH Units@13.9℃	1	02/26/16 09:16 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	978	10.0	10.0		mg/L	1	02/29/16 08:55 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *29-Mar-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	PDP-22
Project:	Luminant - Martin Lake	**Lab ID:**	1602269-02
Project No:	5164-B	**Collection Date:**	02/24/16 11:15 AM
Lab Order:	1602269	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **KL**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	03/03/16 11:59 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	03/04/16 08:51 PM
Arsenic	0.00742	0.00200	0.00500		mg/L	1	03/04/16 08:51 PM
Barium	0.332	0.00300	0.0100		mg/L	1	03/04/16 08:51 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	03/04/16 08:51 PM
Boron	0.250	0.0100	0.0300		mg/L	1	03/07/16 06:53 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	03/04/16 08:51 PM
Calcium	160	1.00	3.00		mg/L	10	03/07/16 07:40 PM
Chromium	0.0375	0.00200	0.00500		mg/L	1	03/04/16 08:51 PM
Cobalt	0.00608	0.00300	0.00500		mg/L	1	03/04/16 08:51 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	03/04/16 08:51 PM
Lithium	0.0229	0.00500	0.0100		mg/L	1	03/04/16 08:51 PM
Molybdenum	0.00213	0.00200	0.00500	J	mg/L	1	03/04/16 08:51 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	03/04/16 08:51 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	03/04/16 08:51 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	16.5	0.300	1.00		mg/L	1	03/03/16 10:22 AM
Fluoride	0.264	0.100	0.400	J	mg/L	1	03/03/16 10:22 AM
Sulfate	211	10.0	30.0		mg/L	10	03/03/16 04:29 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	7.01	0	0		pH Units@14.5℃	1	02/26/16 09:18 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	883	10.0	10.0		mg/L	1	02/29/16 08:55 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *29-Mar-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	MW-18A
Project:	Luminant - Martin Lake	**Lab ID:**	1602269-03
Project No:	5164-B	**Collection Date:**	02/24/16 10:15 AM
Lab Order:	1602269	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **KL**
Mercury	0.00354	0.0000800	0.000200		mg/L	1	03/03/16 12:10 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	03/04/16 08:53 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	03/04/16 08:53 PM
Barium	0.0591	0.00300	0.0100		mg/L	1	03/04/16 08:53 PM
Beryllium	0.000344	0.000300	0.00100	J	mg/L	1	03/04/16 08:53 PM
Boron	0.133	0.0100	0.0300		mg/L	1	03/07/16 07:42 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	03/04/16 08:53 PM
Calcium	1.78	0.100	0.300		mg/L	1	03/04/16 08:53 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	03/04/16 08:53 PM
Cobalt	0.00318	0.00300	0.00500	J	mg/L	1	03/04/16 08:53 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	03/04/16 08:53 PM
Lithium	0.00858	0.00500	0.0100	J	mg/L	1	03/04/16 08:53 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	03/04/16 08:53 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	03/04/16 08:53 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	03/04/16 08:53 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	8.10	0.300	1.00		mg/L	1	03/03/16 10:37 AM
Fluoride	0.104	0.100	0.400	J	mg/L	1	03/03/16 10:37 AM
Sulfate	6.44	1.00	3.00		mg/L	1	03/03/16 10:37 AM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	5.43	0	0		pH Units@14.5℃	1	02/26/16 09:21 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	125	10.0	10.0		mg/L	1	02/29/16 08:55 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *29-Mar-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	PDP-26
Project:	Luminant - Martin Lake	**Lab ID:**	1602269-04
Project No:	5164-B	**Collection Date:**	02/24/16 09:10 AM
Lab Order:	1602269	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **KL**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	03/03/16 12:12 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	03/04/16 08:55 PM
Arsenic	0.00334	0.00200	0.00500	J	mg/L	1	03/04/16 08:55 PM
Barium	0.0277	0.00300	0.0100		mg/L	1	03/04/16 08:55 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	03/04/16 08:55 PM
Boron	0.0446	0.0100	0.0300		mg/L	1	03/07/16 07:44 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	03/04/16 08:55 PM
Calcium	2.33	0.100	0.300		mg/L	1	03/04/16 08:55 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	03/04/16 08:55 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	03/04/16 08:55 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	03/04/16 08:55 PM
Lithium	0.0141	0.00500	0.0100		mg/L	1	03/04/16 08:55 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	03/04/16 08:55 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	03/04/16 08:55 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	03/04/16 08:55 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	5.99	0.300	1.00		mg/L	1	03/03/16 10:51 AM
Fluoride	0.246	0.100	0.400	J	mg/L	1	03/03/16 10:51 AM
Sulfate	10.5	1.00	3.00		mg/L	1	03/03/16 10:51 AM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.56	0	0		pH Units@14.2℃	1	02/26/16 09:23 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	186	10.0	10.0		mg/L	1	02/29/16 08:55 AM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *29-Mar-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	MW-20A
Project:	Luminant - Martin Lake	**Lab ID:**	1602269-05
Project No:	5164-B	**Collection Date:**	02/24/16 08:10 AM
Lab Order:	1602269	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **KL**
Mercury	0.000352	0.0000800	0.000200		mg/L	1	03/03/16 12:15 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	03/04/16 08:57 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	03/04/16 08:57 PM
Barium	0.0289	0.00300	0.0100		mg/L	1	03/04/16 08:57 PM
Beryllium	0.000632	0.000300	0.00100	J	mg/L	1	03/04/16 08:57 PM
Boron	0.159	0.0100	0.0300		mg/L	1	03/07/16 07:46 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	03/04/16 08:57 PM
Calcium	15.4	0.100	0.300		mg/L	1	03/04/16 08:57 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	03/04/16 08:57 PM
Cobalt	0.00539	0.00300	0.00500		mg/L	1	03/04/16 08:57 PM
Lead	0.00166	0.000300	0.00100		mg/L	1	03/04/16 08:57 PM
Lithium	0.0163	0.00500	0.0100		mg/L	1	03/04/16 08:57 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	03/04/16 08:57 PM
Selenium	0.00680	0.00200	0.00500		mg/L	1	03/04/16 08:57 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	03/04/16 08:57 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	10.2	0.300	1.00		mg/L	1	03/03/16 11:06 AM
Fluoride	0.608	0.100	0.400		mg/L	1	03/03/16 11:06 AM
Sulfate	107	1.00	3.00		mg/L	1	03/03/16 11:06 AM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	4.64	0	0		pH Units@14.6℃	1	02/26/16 09:26 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	309	10.0	10.0		mg/L	1	02/29/16 08:55 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *29-Mar-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	H-30
Project:	Luminant - Martin Lake	**Lab ID:**	1602269-06
Project No:	5164-B	**Collection Date:**	02/23/16 12:20 PM
Lab Order:	1602269	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **KL**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	03/03/16 12:17 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	03/04/16 08:59 PM
Arsenic	0.00588	0.00200	0.00500		mg/L	1	03/04/16 08:59 PM
Barium	0.0226	0.00300	0.0100		mg/L	1	03/04/16 08:59 PM
Beryllium	0.00555	0.000300	0.00100		mg/L	1	03/04/16 08:59 PM
Boron	7.28	0.100	0.300		mg/L	10	03/07/16 07:48 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	03/04/16 08:59 PM
Calcium	145	1.00	3.00		mg/L	10	03/07/16 07:48 PM
Chromium	0.00223	0.00200	0.00500	J	mg/L	1	03/04/16 08:59 PM
Cobalt	0.179	0.00300	0.00500		mg/L	1	03/04/16 08:59 PM
Lead	0.00133	0.000300	0.00100		mg/L	1	03/04/16 08:59 PM
Lithium	0.0902	0.00500	0.0100		mg/L	1	03/04/16 08:59 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	03/04/16 08:59 PM
Selenium	0.00937	0.00200	0.00500		mg/L	1	03/04/16 08:59 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	03/04/16 08:59 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	101	3.00	10.0		mg/L	10	03/03/16 05:13 PM
Fluoride	0.251	0.100	0.400	J	mg/L	1	03/03/16 11:22 AM
Sulfate	1150	10.0	30.0		mg/L	10	03/03/16 05:13 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	5.32	0	0		pH Units@14.5℃	1	02/26/16 09:28 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	2400	50.0	50.0		mg/L	1	02/29/16 08:55 AM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *29-Mar-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	H-33
Project:	Luminant - Martin Lake	**Lab ID:**	1602269-07
Project No:	5164-B	**Collection Date:**	02/23/16 11:25 AM
Lab Order:	1602269	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **KL**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	03/03/16 12:19 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	03/04/16 09:01 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	03/04/16 09:01 PM
Barium	0.0529	0.00300	0.0100		mg/L	1	03/04/16 09:01 PM
Beryllium	0.000311	0.000300	0.00100	J	mg/L	1	03/04/16 09:01 PM
Boron	0.0656	0.0100	0.0300		mg/L	1	03/07/16 07:50 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	03/04/16 09:01 PM
Calcium	11.2	0.100	0.300		mg/L	1	03/04/16 09:01 PM
Chromium	0.0194	0.00200	0.00500		mg/L	1	03/04/16 09:01 PM
Cobalt	0.0163	0.00300	0.00500		mg/L	1	03/04/16 09:01 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	03/04/16 09:01 PM
Lithium	0.182	0.00500	0.0100		mg/L	1	03/04/16 09:01 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	03/04/16 09:01 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	03/04/16 09:01 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	03/04/16 09:01 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	56.1	3.00	10.0		mg/L	10	03/03/16 05:42 PM
Fluoride	0.125	0.100	0.400	J	mg/L	1	03/03/16 11:37 AM
Sulfate	111	1.00	3.00		mg/L	1	03/03/16 11:37 AM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.59	0	0		pH Units@15.3℃	1	02/26/16 09:31 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	625	10.0	10.0		mg/L	1	02/29/16 08:55 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *29-Mar-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	H-26
Project:	Luminant - Martin Lake	**Lab ID:**	1602269-08
Project No:	5164-B	**Collection Date:**	02/23/16 10:35 AM
Lab Order:	1602269	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **KL**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	03/03/16 12:21 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	03/03/16 07:35 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	03/03/16 07:35 PM
Barium	0.0423	0.00300	0.0100		mg/L	1	03/03/16 07:35 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	03/03/16 07:35 PM
Boron	0.206	0.0100	0.0300		mg/L	1	03/07/16 02:56 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	03/03/16 07:35 PM
Calcium	11.7	0.100	0.300		mg/L	1	03/03/16 07:35 PM
Chromium	0.00770	0.00200	0.00500		mg/L	1	03/03/16 07:35 PM
Cobalt	0.00813	0.00300	0.00500		mg/L	1	03/03/16 07:35 PM
Lead	0.000315	0.000300	0.00100	J	mg/L	1	03/03/16 07:35 PM
Lithium	0.0124	0.00500	0.0100		mg/L	1	03/03/16 07:35 PM
Molybdenum	0.00248	0.00200	0.00500	J	mg/L	1	03/03/16 07:35 PM
Selenium	0.00220	0.00200	0.00500	J	mg/L	1	03/03/16 07:35 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	03/03/16 07:35 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	17.1	0.300	1.00		mg/L	1	03/03/16 11:51 AM
Fluoride	0.151	0.100	0.400	J	mg/L	1	03/03/16 11:51 AM
Sulfate	54.0	1.00	3.00		mg/L	1	03/03/16 11:51 AM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.58	0	0		pH Units@16.3℃	1	02/26/16 09:33 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	219	10.0	10.0		mg/L	1	02/29/16 08:55 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *29-Mar-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	H-31
Project:	Luminant - Martin Lake	**Lab ID:**	1602269-09
Project No:	5164-B	**Collection Date:**	02/23/16 11:25 AM
Lab Order:	1602269	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	03/08/16 10:56 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	03/03/16 07:45 PM
Arsenic	0.00436	0.00200	0.00500	J	mg/L	1	03/03/16 07:45 PM
Barium	0.0243	0.00300	0.0100		mg/L	1	03/03/16 07:45 PM
Beryllium	0.0101	0.000300	0.00100		mg/L	1	03/03/16 07:45 PM
Boron	22.3	0.500	1.50		mg/L	50	03/07/16 03:00 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	03/03/16 07:45 PM
Calcium	252	5.00	15.0		mg/L	50	03/07/16 03:00 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	03/03/16 07:45 PM
Cobalt	0.0594	0.00300	0.00500		mg/L	1	03/03/16 07:45 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	03/03/16 07:45 PM
Lithium	0.146	0.00500	0.0100		mg/L	1	03/03/16 07:45 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	03/03/16 07:45 PM
Selenium	0.0209	0.00200	0.00500		mg/L	1	03/03/16 07:45 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	03/03/16 07:45 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	199	30.0	100		mg/L	100	03/03/16 05:57 PM
Fluoride	0.921	0.100	0.400		mg/L	1	03/03/16 12:06 PM
Sulfate	2510	100	300		mg/L	100	03/03/16 05:57 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	5.97	0	0		pH Units@16.3℃	1	02/26/16 09:35 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	4180	50.0	50.0		mg/L	1	03/01/16 08:43 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *29-Mar-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	H-32
Project:	Luminant - Martin Lake	**Lab ID:**	1602269-10
Project No:	5164-B	**Collection Date:**	02/23/16 12:35 PM
Lab Order:	1602269	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	03/08/16 10:59 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	03/03/16 07:47 PM
Arsenic	0.00712	0.00200	0.00500		mg/L	1	03/03/16 07:47 PM
Barium	0.0277	0.00300	0.0100		mg/L	1	03/03/16 07:47 PM
Beryllium	0.00452	0.000300	0.00100		mg/L	1	03/03/16 07:47 PM
Boron	1.48	0.0100	0.0300		mg/L	1	03/07/16 03:02 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	03/03/16 07:47 PM
Calcium	45.3	1.00	3.00		mg/L	10	03/07/16 04:52 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	03/03/16 07:47 PM
Cobalt	0.188	0.00300	0.00500		mg/L	1	03/03/16 07:47 PM
Lead	0.000326	0.000300	0.00100	J	mg/L	1	03/03/16 07:47 PM
Lithium	0.0821	0.00500	0.0100		mg/L	1	03/03/16 07:47 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	03/03/16 07:47 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	03/03/16 07:47 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	03/03/16 07:47 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	123	3.00	10.0		mg/L	10	03/03/16 06:11 PM
Fluoride	0.701	0.100	0.400		mg/L	1	03/03/16 12:53 PM
Sulfate	323	10.0	30.0		mg/L	10	03/03/16 06:11 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	5.53	0	0		pH Units@16.4℃	1	02/26/16 09:37 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	842	10.0	10.0		mg/L	1	03/01/16 08:43 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *29-Mar-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	H-28
Project:	Luminant - Martin Lake	**Lab ID:**	1602269-11
Project No:	5164-B	**Collection Date:**	02/23/16 03:30 PM
Lab Order:	1602269	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	03/08/16 11:01 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	03/03/16 07:49 PM
Arsenic	0.00225	0.00200	0.00500	J	mg/L	1	03/03/16 07:49 PM
Barium	0.0202	0.00300	0.0100		mg/L	1	03/03/16 07:49 PM
Beryllium	0.00133	0.000300	0.00100		mg/L	1	03/03/16 07:49 PM
Boron	10.2	0.100	0.300		mg/L	10	03/07/16 03:04 PM
Cadmium	0.00151	0.000300	0.00100		mg/L	1	03/03/16 07:49 PM
Calcium	123	1.00	3.00		mg/L	10	03/07/16 03:04 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	03/03/16 07:49 PM
Cobalt	0.201	0.00300	0.00500		mg/L	1	03/03/16 07:49 PM
Lead	0.000530	0.000300	0.00100	J	mg/L	1	03/03/16 07:49 PM
Lithium	0.159	0.00500	0.0100		mg/L	1	03/03/16 07:49 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	03/03/16 07:49 PM
Selenium	0.00222	0.00200	0.00500	J	mg/L	1	03/03/16 07:49 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	03/03/16 07:49 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	97.4	3.00	10.0		mg/L	10	03/03/16 06:26 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	03/03/16 01:07 PM
Sulfate	1070	10.0	30.0		mg/L	10	03/03/16 06:26 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	5.25	0	0		pH Units@17℃	1	02/26/16 09:38 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	1910	50.0	50.0		mg/L	1	03/01/16 08:43 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *29-Mar-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	H-29
Project:	Luminant - Martin Lake	**Lab ID:**	1602269-12
Project No:	5164-B	**Collection Date:**	02/23/16 04:20 PM
Lab Order:	1602269	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	03/08/16 11:03 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	03/03/16 07:51 PM
Arsenic	0.00203	0.00200	0.00500	J	mg/L	1	03/03/16 07:51 PM
Barium	0.151	0.00300	0.0100		mg/L	1	03/03/16 07:51 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	03/03/16 07:51 PM
Boron	0.268	0.0100	0.0300		mg/L	1	03/07/16 03:06 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	03/03/16 07:51 PM
Calcium	59.4	1.00	3.00		mg/L	10	03/07/16 04:54 PM
Chromium	0.0190	0.00200	0.00500		mg/L	1	03/03/16 07:51 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	03/03/16 07:51 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	03/03/16 07:51 PM
Lithium	0.0135	0.00500	0.0100		mg/L	1	03/03/16 07:51 PM
Molybdenum	0.00603	0.00200	0.00500		mg/L	1	03/03/16 07:51 PM
Selenium	0.0148	0.00200	0.00500		mg/L	1	03/03/16 07:51 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	03/03/16 07:51 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	14.6	0.300	1.00		mg/L	1	03/03/16 01:22 PM
Fluoride	0.239	0.100	0.400	J	mg/L	1	03/03/16 01:22 PM
Sulfate	156	10.0	30.0		mg/L	10	03/03/16 06:55 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	10.7	0	0		pH Units@17.4℃	1	02/26/16 09:42 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	334	10.0	10.0		mg/L	1	03/01/16 08:43 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *29-Mar-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	H-27
Project:	Luminant - Martin Lake	**Lab ID:**	1602269-13
Project No:	5164-B	**Collection Date:**	02/23/16 05:30 PM
Lab Order:	1602269	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	03/08/16 11:06 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	03/03/16 07:53 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	03/03/16 07:53 PM
Barium	0.0266	0.00300	0.0100		mg/L	1	03/03/16 07:53 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	03/03/16 07:53 PM
Boron	0.523	0.0100	0.0300		mg/L	1	03/07/16 03:08 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	03/03/16 07:53 PM
Calcium	53.8	1.00	3.00		mg/L	10	03/07/16 04:56 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	03/03/16 07:53 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	03/03/16 07:53 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	03/03/16 07:53 PM
Lithium	0.0601	0.00500	0.0100		mg/L	1	03/03/16 07:53 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	03/03/16 07:53 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	03/03/16 07:53 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	03/03/16 07:53 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	113	3.00	10.0		mg/L	10	03/03/16 07:39 PM
Fluoride	0.101	0.100	0.400	J	mg/L	1	03/03/16 01:36 PM
Sulfate	344	10.0	30.0		mg/L	10	03/03/16 07:39 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.54	0	0		pH Units@17.8℃	1	02/26/16 09:45 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	811	10.0	10.0		mg/L	1	03/01/16 08:43 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *29-Mar-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	PDP-23
Project:	Luminant - Martin Lake	**Lab ID:**	1602269-14
Project No:	5164-B	**Collection Date:**	02/24/16 09:45 AM
Lab Order:	1602269	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	03/08/16 11:08 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	03/03/16 07:55 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	03/03/16 07:55 PM
Barium	0.0433	0.00300	0.0100		mg/L	1	03/03/16 07:55 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	03/03/16 07:55 PM
Boron	0.0556	0.0100	0.0300		mg/L	1	03/07/16 03:10 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	03/03/16 07:55 PM
Calcium	1.61	0.100	0.300		mg/L	1	03/03/16 07:55 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	03/03/16 07:55 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	03/03/16 07:55 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	03/03/16 07:55 PM
Lithium	0.0115	0.00500	0.0100		mg/L	1	03/03/16 07:55 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	03/03/16 07:55 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	03/03/16 07:55 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	03/03/16 07:55 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	5.63	0.300	1.00		mg/L	1	03/03/16 01:51 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	03/03/16 01:51 PM
Sulfate	2.52	1.00	3.00	J	mg/L	1	03/03/16 01:51 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	5.76	0	0		pH Units@16.3℃	1	02/26/16 11:02 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	60.0	10.0	10.0		mg/L	1	03/01/16 08:43 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *29-Mar-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	PDP-25
Project:	Luminant - Martin Lake	**Lab ID:**	1602269-15
Project No:	5164-B	**Collection Date:**	02/24/16 10:55 AM
Lab Order:	1602269	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	03/08/16 11:11 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	03/03/16 08:11 PM
Arsenic	0.00239	0.00200	0.00500	J	mg/L	1	03/03/16 08:11 PM
Barium	0.218	0.00300	0.0100		mg/L	1	03/03/16 08:11 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	03/03/16 08:11 PM
Boron	0.113	0.0100	0.0300		mg/L	1	03/07/16 03:13 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	03/03/16 08:11 PM
Calcium	36.6	1.00	3.00		mg/L	10	03/07/16 06:49 PM
Chromium	0.0231	0.00200	0.00500		mg/L	1	03/03/16 08:11 PM
Cobalt	0.00978	0.00300	0.00500		mg/L	1	03/03/16 08:11 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	03/03/16 08:11 PM
Lithium	0.176	0.00500	0.0100		mg/L	1	03/03/16 08:11 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	03/03/16 08:11 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	03/03/16 08:11 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	03/03/16 08:11 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	116	3.00	10.0		mg/L	10	03/03/16 07:53 PM
Fluoride	0.151	0.100	0.400	J	mg/L	1	03/03/16 02:06 PM
Sulfate	97.8	1.00	3.00		mg/L	1	03/03/16 02:06 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.50	0	0		pH Units@16.7℃	1	02/26/16 11:07 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	602	10.0	10.0		mg/L	1	03/01/16 08:43 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *29-Mar-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	MW-17A
Project:	Luminant - Martin Lake	**Lab ID:**	1602269-16
Project No:	5164-B	**Collection Date:**	02/24/16 12:00 PM
Lab Order:	1602269	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	0.000232	0.0000800	0.000200		mg/L	1	03/08/16 11:13 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	03/03/16 08:13 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	03/03/16 08:13 PM
Barium	0.111	0.00300	0.0100		mg/L	1	03/03/16 08:13 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	03/03/16 08:13 PM
Boron	0.458	0.0100	0.0300		mg/L	1	03/07/16 03:14 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	03/03/16 08:13 PM
Calcium	4.56	0.100	0.300		mg/L	1	03/03/16 08:13 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	03/03/16 08:13 PM
Cobalt	0.00790	0.00300	0.00500		mg/L	1	03/03/16 08:13 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	03/03/16 08:13 PM
Lithium	0.0146	0.00500	0.0100		mg/L	1	03/03/16 08:13 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	03/03/16 08:13 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	03/03/16 08:13 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	03/03/16 08:13 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	8.39	0.300	1.00		mg/L	1	03/03/16 02:20 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	03/03/16 02:20 PM
Sulfate	39.5	1.00	3.00		mg/L	1	03/03/16 02:20 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	5.35	0	0		pH Units@16.3℃	1	02/26/16 11:09 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	118	10.0	10.0		mg/L	1	03/01/16 08:43 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *29-Mar-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	PDP-24
Project:	Luminant - Martin Lake	**Lab ID:**	1602269-17
Project No:	5164-B	**Collection Date:**	02/24/16 02:30 PM
Lab Order:	1602269	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	0.00152	0.0000800	0.000200		mg/L	1	03/08/16 11:15 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	03/03/16 08:15 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	03/03/16 08:15 PM
Barium	0.0188	0.00300	0.0100		mg/L	1	03/03/16 08:15 PM
Beryllium	0.00486	0.000300	0.00100		mg/L	1	03/03/16 08:15 PM
Boron	3.81	0.100	0.300		mg/L	10	03/07/16 03:17 PM
Cadmium	0.00226	0.000300	0.00100		mg/L	1	03/03/16 08:15 PM
Calcium	35.3	1.00	3.00		mg/L	10	03/07/16 03:17 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	03/03/16 08:15 PM
Cobalt	0.0901	0.00300	0.00500		mg/L	1	03/03/16 08:15 PM
Lead	0.000965	0.000300	0.00100	J	mg/L	1	03/03/16 08:15 PM
Lithium	0.0270	0.00500	0.0100		mg/L	1	03/03/16 08:15 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	03/03/16 08:15 PM
Selenium	0.00294	0.00200	0.00500	J	mg/L	1	03/03/16 08:15 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	03/03/16 08:15 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	19.1	0.300	1.00		mg/L	1	03/03/16 02:35 PM
Fluoride	0.732	0.100	0.400		mg/L	1	03/03/16 02:35 PM
Sulfate	410	10.0	30.0		mg/L	10	03/03/16 08:08 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	4.51	0	0		pH Units@16.7℃	1	02/26/16 11:10 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	688	10.0	10.0		mg/L	1	03/01/16 08:43 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT: Pastor, Behling & Wheeler
Work Order: 1602269
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_160303A

The QC data in batch 73940 applies to the following samples: 1602269-02A, 1602269-03A, 1602269-04A, 1602269-05A, 1602269-06A, 1602269-07A, 1602269-08A

Sample ID	**MB-73940**	Batch ID:	**73940**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**CETAC2_HG_160303A**	Analysis Date:	**3/3/2016 11:52:24 AM**	Prep Date:	**3/2/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.0000800	0.000200								

Sample ID	**LCS-73940**	Batch ID:	**73940**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**CETAC2_HG_160303A**	Analysis Date:	**3/3/2016 11:54:39 AM**	Prep Date:	**3/2/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00198	0.000200	0.00200	0	99.0	85	115			

Sample ID	**LCSD-73940**	Batch ID:	**73940**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**LCSD**	Run ID:	**CETAC2_HG_160303A**	Analysis Date:	**3/3/2016 11:56:55 AM**	Prep Date:	**3/2/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00201	0.000200	0.00200	0	101	85	115	1.50	15	

Sample ID	**1602269-02A SD**	Batch ID:	**73940**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**SD**	Run ID:	**CETAC2_HG_160303A**	Analysis Date:	**3/3/2016 12:01:28 PM**	Prep Date:	**3/2/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.000400	0.00100	0	0				0	10	

Sample ID	**1602269-02A PDS**	Batch ID:	**73940**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**PDS**	Run ID:	**CETAC2_HG_160303A**	Analysis Date:	**3/3/2016 12:03:43 PM**	Prep Date:	**3/2/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00218	0.000200	0.00250	0	87.2	85	115			

Sample ID	**1602269-02A MS**	Batch ID:	**73940**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**MS**	Run ID:	**CETAC2_HG_160303A**	Analysis Date:	**3/3/2016 12:05:59 PM**	Prep Date:	**3/2/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00177	0.000200	0.00200	0	88.5	80	120			

Sample ID	**1602269-02A MSD**	Batch ID:	**73940**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**MSD**	Run ID:	**CETAC2_HG_160303A**	Analysis Date:	**3/3/2016 12:08:14 PM**	Prep Date:	**3/2/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00181	0.000200	0.00200	0	90.5	80	120	2.23	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1602269
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_160303A

Sample ID **ICV-160303**	Batch ID: **R84495**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **ICV**	Run ID: **CETAC2_HG_160303A**	Analysis Date: **3/3/2016 10:37:24 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00395	0.000200	0.00400	0	98.8	90	110			

Sample ID **CCV2-160303**	Batch ID: **R84495**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_160303A**	Analysis Date: **3/3/2016 11:47:50 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00199	0.000200	0.00200	0	99.5	90	110			

Sample ID **CCV3-160303**	Batch ID: **R84495**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_160303A**	Analysis Date: **3/3/2016 12:30:56 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00202	0.000200	0.00200	0	101	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1602269
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_160308C

The QC data in batch 73953 applies to the following samples: 1602269-01A, 1602269-09A, 1602269-10A, 1602269-11A, 1602269-12A, 1602269-13A, 1602269-14A, 1602269-15A, 1602269-16A, 1602269-17A

Sample ID	**MB-73953**	Batch ID:	**73953**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**CETAC2_HG_160308C**	Analysis Date:	**3/8/2016 10:47:52 AM**	Prep Date:	**3/2/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.0000800	0.000200								

Sample ID	**LCS-73953**	Batch ID:	**73953**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**CETAC2_HG_160308C**	Analysis Date:	**3/8/2016 10:50:07 AM**	Prep Date:	**3/2/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00172	0.000200	0.00200	0	86.0	85	115			

Sample ID	**LCSD-73953**	Batch ID:	**73953**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**LCSD**	Run ID:	**CETAC2_HG_160308C**	Analysis Date:	**3/8/2016 10:52:23 AM**	Prep Date:	**3/2/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00207	0.000200	0.00200	0	104	85	115	18.5	15	R

Sample ID	**1603013-04C SD**	Batch ID:	**73953**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**SD**	Run ID:	**CETAC2_HG_160308C**	Analysis Date:	**3/8/2016 11:47:35 AM**	Prep Date:	**3/2/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.000400	0.00100	0	0				0	10	

Sample ID	**1603013-04C PDS**	Batch ID:	**73953**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**PDS**	Run ID:	**CETAC2_HG_160308C**	Analysis Date:	**3/8/2016 11:49:52 AM**	Prep Date:	**3/2/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00238	0.000200	0.00250	0	95.2	85	115			

Sample ID	**1603013-04C MS**	Batch ID:	**73953**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**MS**	Run ID:	**CETAC2_HG_160308C**	Analysis Date:	**3/8/2016 11:52:09 AM**	Prep Date:	**3/2/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00210	0.000200	0.00200	0	105	80	120			

Sample ID	**1603013-04C MSD**	Batch ID:	**73953**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**MSD**	Run ID:	**CETAC2_HG_160308C**	Analysis Date:	**3/8/2016 11:54:26 AM**	Prep Date:	**3/2/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00201	0.000200	0.00200	0	101	80	120	4.38	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1602269
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_160308C

Sample ID	**ICV-160308**	Batch ID:	**R84579**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**ICV**	Run ID:	**CETAC2_HG_160308C**	Analysis Date:	**3/8/2016 10:11:57 AM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00394	0.000200	0.00400	0	98.5	90	110			

Sample ID	**CCV1-160308**	Batch ID:	**R84579**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**CETAC2_HG_160308C**	Analysis Date:	**3/8/2016 10:43:17 AM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00192	0.000200	0.00200	0	96.0	90	110			

Sample ID	**CCV2-160308**	Batch ID:	**R84579**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**CETAC2_HG_160308C**	Analysis Date:	**3/8/2016 11:17:58 AM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00188	0.000200	0.00200	0	94.0	90	110			

Sample ID	**CCV3-160308**	Batch ID:	**R84579**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**CETAC2_HG_160308C**	Analysis Date:	**3/8/2016 11:59:01 AM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00195	0.000200	0.00200	0	97.5	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1602269
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: **ICP-MS4_160303F**

The QC data in batch 73881 applies to the following samples: 1602269-08A, 1602269-09A, 1602269-10A, 1602269-11A, 1602269-12A, 1602269-13A, 1602269-14A, 1602269-15A, 1602269-16A, 1602269-17A

Sample ID **MB-73881** Batch ID: **73881** TestNo: **SW6020A** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_160303F** Analysis Date: **3/3/2016 7:27:00 PM** Prep Date: **2/26/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.000800	0.00250								
Arsenic	<0.00200	0.00500								
Barium	<0.00300	0.0100								
Beryllium	<0.000300	0.00100								
Cadmium	<0.000300	0.00100								
Calcium	<0.100	0.300								
Chromium	<0.00200	0.00500								
Cobalt	<0.00300	0.00500								
Lead	<0.000300	0.00100								
Lithium	<0.00500	0.0100								
Molybdenum	<0.00200	0.00500								
Selenium	<0.00200	0.00500								
Thallium	<0.000500	0.00150								

Sample ID **LCS-73881** Batch ID: **73881** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_160303F** Analysis Date: **3/3/2016 7:29:00 PM** Prep Date: **2/26/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.203	0.00250	0.200	0	102	80	120			
Arsenic	0.199	0.00500	0.200	0	99.7	80	120			
Barium	0.206	0.0100	0.200	0	103	80	120			
Beryllium	0.197	0.00100	0.200	0	98.7	80	120			
Cadmium	0.205	0.00100	0.200	0	102	80	120			
Calcium	4.74	0.300	5.00	0	94.9	80	120			
Chromium	0.200	0.00500	0.200	0	100	80	120			
Cobalt	0.201	0.00500	0.200	0	100	80	120			
Lead	0.205	0.00100	0.200	0	103	80	120			
Lithium	0.197	0.0100	0.200	0	98.5	80	120			
Molybdenum	0.200	0.00500	0.200	0	99.9	80	120			
Selenium	0.200	0.00500	0.200	0	100	80	120			
Thallium	0.205	0.00150	0.200	0	102	80	120			

Sample ID **LCSD-73881** Batch ID: **73881** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_160303F** Analysis Date: **3/3/2016 7:31:00 PM** Prep Date: **2/26/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.199	0.00250	0.200	0	99.7	80	120	1.98	15	
Arsenic	0.200	0.00500	0.200	0	100	80	120	0.487	15	
Barium	0.203	0.0100	0.200	0	102	80	120	1.14	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1602269
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160303F

Sample ID **LCSD-73881**	Batch ID: **73881**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCSD**	Run ID: **ICP-MS4_160303F**	Analysis Date: **3/3/2016 7:31:00 PM**	Prep Date: **2/26/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.196	0.00100	0.200	0	98.2	80	120	0.502	15	
Cadmium	0.203	0.00100	0.200	0	101	80	120	0.771	15	
Calcium	4.70	0.300	5.00	0	94.0	80	120	0.921	15	
Chromium	0.201	0.00500	0.200	0	100	80	120	0.358	15	
Cobalt	0.199	0.00500	0.200	0	99.6	80	120	0.675	15	
Lead	0.206	0.00100	0.200	0	103	80	120	0.258	15	
Lithium	0.202	0.0100	0.200	0	101	80	120	2.55	15	
Molybdenum	0.199	0.00500	0.200	0	99.4	80	120	0.464	15	
Selenium	0.200	0.00500	0.200	0	100	80	120	0.088	15	
Thallium	0.206	0.00150	0.200	0	103	80	120	0.441	15	

Sample ID **1602269-08A SD**	Batch ID: **73881**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS4_160303F**	Analysis Date: **3/3/2016 7:37:00 PM**	Prep Date: **2/26/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.00400	0.0125	0	0				0	10	
Arsenic	<0.0100	0.0250	0	0				0	10	
Barium	0.0429	0.0500	0	0.0423				1.42	10	
Beryllium	<0.00150	0.00500	0	0				0	10	
Cadmium	<0.00150	0.00500	0	0				0	10	
Calcium	11.9	1.50	0	11.7				2.04	10	
Chromium	<0.0100	0.0250	0	0.00770				0	10	
Cobalt	<0.0150	0.0250	0	0.00813				0	10	
Lead	<0.00150	0.00500	0	0.000315				0	10	
Lithium	<0.0250	0.0500	0	0.0124				0	10	
Molybdenum	<0.0100	0.0250	0	0.00248				0	10	
Selenium	<0.0100	0.0250	0	0.00220				0	10	
Thallium	<0.00250	0.00750	0	0				0	10	

Sample ID **1602269-08A PDS**	Batch ID: **73881**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_160303F**	Analysis Date: **3/3/2016 7:57:00 PM**	Prep Date: **2/26/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.205	0.00250	0.200	0	102	80	120			
Arsenic	0.191	0.00500	0.200	0	95.3	80	120			
Barium	0.236	0.0100	0.200	0.0423	97.1	80	120			
Beryllium	0.194	0.00100	0.200	0	97.2	80	120			
Cadmium	0.193	0.00100	0.200	0	96.7	80	120			
Calcium	15.5	0.300	5.00	11.7	76.3	80	120			S
Chromium	0.208	0.00500	0.200	0.00770	100	80	120			
Cobalt	0.199	0.00500	0.200	0.00813	95.3	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1602269
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160303F

Sample ID **1602269-08A PDS**	Batch ID: **73881**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_160303F**	Analysis Date: **3/3/2016 7:57:00 PM**	Prep Date: **2/26/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.199	0.00100	0.200	0.000315	99.4	80	120			
Lithium	0.206	0.0100	0.200	0.0124	96.9	80	120			
Molybdenum	0.193	0.00500	0.200	0.00248	95.2	80	120			
Selenium	0.192	0.00500	0.200	0.00220	94.7	80	120			
Thallium	0.195	0.00150	0.200	0	97.7	80	120			

Sample ID **1602269-08A MS**	Batch ID: **73881**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS4_160303F**	Analysis Date: **3/3/2016 7:59:00 PM**	Prep Date: **2/26/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.203	0.00250	0.200	0	101	80	120			
Arsenic	0.203	0.00500	0.200	0	102	80	120			
Barium	0.249	0.0100	0.200	0.0423	104	80	120			
Beryllium	0.204	0.00100	0.200	0	102	80	120			
Cadmium	0.205	0.00100	0.200	0	103	80	120			
Calcium	16.6	0.300	5.00	11.7	99.0	80	120			
Chromium	0.213	0.00500	0.200	0.00770	102	80	120			
Cobalt	0.206	0.00500	0.200	0.00813	98.9	80	120			
Lead	0.210	0.00100	0.200	0.000315	105	80	120			
Lithium	0.218	0.0100	0.200	0.0124	103	80	120			
Molybdenum	0.204	0.00500	0.200	0.00248	101	80	120			
Selenium	0.199	0.00500	0.200	0.00220	98.3	80	120			
Thallium	0.210	0.00150	0.200	0	105	80	120			

Sample ID **1602269-08A MSD**	Batch ID: **73881**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS4_160303F**	Analysis Date: **3/3/2016 8:01:00 PM**	Prep Date: **2/26/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.205	0.00250	0.200	0	103	80	120	1.02	15	
Arsenic	0.201	0.00500	0.200	0	101	80	120	0.950	15	
Barium	0.252	0.0100	0.200	0.0423	105	80	120	0.866	15	
Beryllium	0.203	0.00100	0.200	0	102	80	120	0.589	15	
Cadmium	0.206	0.00100	0.200	0	103	80	120	0.141	15	
Calcium	16.7	0.300	5.00	11.7	100	80	120	0.444	15	
Chromium	0.211	0.00500	0.200	0.00770	101	80	120	0.961	15	
Cobalt	0.205	0.00500	0.200	0.00813	98.7	80	120	0.196	15	
Lead	0.207	0.00100	0.200	0.000315	103	80	120	1.47	15	
Lithium	0.212	0.0100	0.200	0.0124	99.8	80	120	2.82	15	
Molybdenum	0.205	0.00500	0.200	0.00248	101	80	120	0.819	15	
Selenium	0.201	0.00500	0.200	0.00220	99.6	80	120	1.28	15	
Thallium	0.206	0.00150	0.200	0	103	80	120	2.03	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1602269
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160303F

Sample ID **ICV-160303**	Batch ID: **R84524**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_160303F**	Analysis Date: **3/3/2016 11:22:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.0989	0.00250	0.100	0	98.9	90	110			
Arsenic	0.0988	0.00500	0.100	0	98.8	90	110			
Barium	0.0991	0.0100	0.100	0	99.1	90	110			
Beryllium	0.0997	0.00100	0.100	0	99.7	90	110			
Cadmium	0.0995	0.00100	0.100	0	99.5	90	110			
Calcium	2.32	0.300	2.50	0	92.8	90	110			
Chromium	0.105	0.00500	0.100	0	105	90	110			
Cobalt	0.102	0.00500	0.100	0	102	90	110			
Lead	0.102	0.00100	0.100	0	102	90	110			
Lithium	0.0978	0.0100	0.100	0	97.8	90	110			
Molybdenum	0.0976	0.00500	0.100	0	97.6	90	110			
Selenium	0.101	0.00500	0.100	0	101	90	110			
Thallium	0.101	0.00150	0.100	0	101	90	110			

Sample ID **LCVL-160303**	Batch ID: **R84524**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160303F**	Analysis Date: **3/3/2016 11:29:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00209	0.00250	0.00200	0	105	70	130			
Arsenic	0.00531	0.00500	0.00500	0	106	70	130			
Barium	0.00531	0.0100	0.00500	0	106	70	130			
Beryllium	0.000991	0.00100	0.00100	0	99.1	70	130			
Cadmium	0.00109	0.00100	0.00100	0	109	70	130			
Calcium	0.107	0.300	0.100	0	107	70	130			
Chromium	0.00539	0.00500	0.00500	0	108	70	130			
Cobalt	0.00533	0.00500	0.00500	0	107	70	130			
Lead	0.00103	0.00100	0.00100	0	103	70	130			
Lithium	0.0104	0.0100	0.0100	0	104	70	130			
Molybdenum	0.00523	0.00500	0.00500	0	105	70	130			
Selenium	0.00567	0.00500	0.00500	0	113	70	130			
Thallium	0.00106	0.00150	0.00100	0	106	70	130			

Sample ID **CCV9-160303**	Batch ID: **R84524**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160303F**	Analysis Date: **3/3/2016 7:19:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.205	0.00250	0.200	0	102	90	110			
Arsenic	0.202	0.00500	0.200	0	101	90	110			
Barium	0.207	0.0100	0.200	0	103	90	110			
Beryllium	0.198	0.00100	0.200	0	98.8	90	110			
Cadmium	0.207	0.00100	0.200	0	103	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1602269
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160303F

Sample ID **CCV9-160303**	Batch ID: **R84524**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160303F**	Analysis Date: **3/3/2016 7:19:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	5.12	0.300	5.00	0	102	90	110			
Chromium	0.210	0.00500	0.200	0	105	90	110			
Cobalt	0.201	0.00500	0.200	0	101	90	110			
Lead	0.206	0.00100	0.200	0	103	90	110			
Lithium	0.197	0.0100	0.200	0	98.3	90	110			
Molybdenum	0.202	0.00500	0.200	0	101	90	110			
Selenium	0.206	0.00500	0.200	0	103	90	110			
Thallium	0.205	0.00150	0.200	0	103	90	110			

Sample ID **LCVL9-160303**	Batch ID: **R84524**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160303F**	Analysis Date: **3/3/2016 7:23:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00217	0.00250	0.00200	0	108	70	130			
Arsenic	0.00515	0.00500	0.00500	0	103	70	130			
Barium	0.00524	0.0100	0.00500	0	105	70	130			
Beryllium	0.000979	0.00100	0.00100	0	97.9	70	130			
Cadmium	0.00103	0.00100	0.00100	0	103	70	130			
Calcium	0.105	0.300	0.100	0	105	70	130			
Chromium	0.00512	0.00500	0.00500	0	102	70	130			
Cobalt	0.00500	0.00500	0.00500	0	99.9	70	130			
Lead	0.000985	0.00100	0.00100	0	98.5	70	130			
Lithium	0.0110	0.0100	0.0100	0	110	70	130			
Molybdenum	0.00506	0.00500	0.00500	0	101	70	130			
Selenium	0.00600	0.00500	0.00500	0	120	70	130			
Thallium	0.00102	0.00150	0.00100	0	102	70	130			

Sample ID **CCV10-160303**	Batch ID: **R84524**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160303F**	Analysis Date: **3/3/2016 8:03:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.208	0.00250	0.200	0	104	90	110			
Arsenic	0.203	0.00500	0.200	0	101	90	110			
Barium	0.210	0.0100	0.200	0	105	90	110			
Beryllium	0.204	0.00100	0.200	0	102	90	110			
Cadmium	0.210	0.00100	0.200	0	105	90	110			
Calcium	4.90	0.300	5.00	0	98.1	90	110			
Chromium	0.211	0.00500	0.200	0	105	90	110			
Cobalt	0.202	0.00500	0.200	0	101	90	110			
Lead	0.206	0.00100	0.200	0	103	90	110			
Lithium	0.209	0.0100	0.200	0	104	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160303F

Sample ID **CCV10-160303**	Batch ID: **R84524**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160303F**	Analysis Date: **3/3/2016 8:03:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Molybdenum	0.203	0.00500	0.200	0	102	90	110			
Selenium	0.205	0.00500	0.200	0	103	90	110			
Thallium	0.206	0.00150	0.200	0	103	90	110			

Sample ID **LCVL10-160303**	Batch ID: **R84524**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160303F**	Analysis Date: **3/3/2016 8:07:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00215	0.00250	0.00200	0	107	70	130			
Arsenic	0.00522	0.00500	0.00500	0	104	70	130			
Barium	0.00535	0.0100	0.00500	0	107	70	130			
Beryllium	0.00130	0.00100	0.00100	0	130	70	130			
Cadmium	0.00107	0.00100	0.00100	0	107	70	130			
Calcium	0.103	0.300	0.100	0	103	70	130			
Chromium	0.00523	0.00500	0.00500	0	105	70	130			
Cobalt	0.00509	0.00500	0.00500	0	102	70	130			
Lead	0.00103	0.00100	0.00100	0	103	70	130			
Lithium	0.0115	0.0100	0.0100	0	115	70	130			
Molybdenum	0.00495	0.00500	0.00500	0	98.9	70	130			
Selenium	0.00572	0.00500	0.00500	0	114	70	130			
Thallium	0.00106	0.00150	0.00100	0	106	70	130			

Sample ID **CCV11-160303**	Batch ID: **R84524**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160303F**	Analysis Date: **3/3/2016 8:31:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.206	0.00250	0.200	0	103	90	110			
Arsenic	0.203	0.00500	0.200	0	102	90	110			
Barium	0.209	0.0100	0.200	0	104	90	110			
Beryllium	0.207	0.00100	0.200	0	103	90	110			
Cadmium	0.207	0.00100	0.200	0	104	90	110			
Calcium	4.88	0.300	5.00	0	97.6	90	110			
Chromium	0.211	0.00500	0.200	0	105	90	110			
Cobalt	0.203	0.00500	0.200	0	102	90	110			
Lead	0.210	0.00100	0.200	0	105	90	110			
Lithium	0.207	0.0100	0.200	0	104	90	110			
Molybdenum	0.202	0.00500	0.200	0	101	90	110			
Selenium	0.205	0.00500	0.200	0	102	90	110			
Thallium	0.210	0.00150	0.200	0	105	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1602269
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160303F

Sample ID **LCVL11-160303** Batch ID: **R84524** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_160303F** Analysis Date: **3/3/2016 8:35:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00209	0.00250	0.00200	0	105	70	130			
Arsenic	0.00509	0.00500	0.00500	0	102	70	130			
Barium	0.00528	0.0100	0.00500	0	106	70	130			
Beryllium	0.000994	0.00100	0.00100	0	99.4	70	130			
Cadmium	0.00103	0.00100	0.00100	0	103	70	130			
Calcium	0.105	0.300	0.100	0	105	70	130			
Chromium	0.00522	0.00500	0.00500	0	104	70	130			
Cobalt	0.00511	0.00500	0.00500	0	102	70	130			
Lead	0.00100	0.00100	0.00100	0	100	70	130			
Lithium	0.0109	0.0100	0.0100	0	109	70	130			
Molybdenum	0.00496	0.00500	0.00500	0	99.2	70	130			
Selenium	0.00620	0.00500	0.00500	0	124	70	130			
Thallium	0.00104	0.00150	0.00100	0	104	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler

Work Order: 1602269

Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: **ICP-MS4_160304C**

The QC data in batch 73869 applies to the following samples: 1602269-01A, 1602269-02A, 1602269-03A, 1602269-04A, 1602269-05A, 1602269-06A, 1602269-07A

Sample ID **MB-73869** Batch ID: **73869** TestNo: **SW6020A** Units: **mg/L**

SampType: **MBLK** Run ID: **ICP-MS4_160304C** Analysis Date: **3/4/2016 8:36:00 PM** Prep Date: **2/26/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.000800	0.00250								
Arsenic	<0.00200	0.00500								
Barium	<0.00300	0.0100								
Beryllium	<0.000300	0.00100								
Cadmium	<0.000300	0.00100								
Calcium	<0.100	0.300								
Chromium	<0.00200	0.00500								
Cobalt	<0.00300	0.00500								
Lead	<0.000300	0.00100								
Lithium	<0.00500	0.0100								
Molybdenum	<0.00200	0.00500								
Selenium	<0.00200	0.00500								
Thallium	<0.000500	0.00150								

Sample ID **LCS-73869** Batch ID: **73869** TestNo: **SW6020A** Units: **mg/L**

SampType: **LCS** Run ID: **ICP-MS4_160304C** Analysis Date: **3/4/2016 8:38:00 PM** Prep Date: **2/26/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.198	0.00250	0.200	0	98.8	80	120			
Arsenic	0.201	0.00500	0.200	0	101	80	120			
Barium	0.200	0.0100	0.200	0	100	80	120			
Beryllium	0.210	0.00100	0.200	0	105	80	120			
Cadmium	0.202	0.00100	0.200	0	101	80	120			
Calcium	4.80	0.300	5.00	0	96.0	80	120			
Chromium	0.206	0.00500	0.200	0	103	80	120			
Cobalt	0.210	0.00500	0.200	0	105	80	120			
Lead	0.203	0.00100	0.200	0	101	80	120			
Lithium	0.211	0.0100	0.200	0	106	80	120			
Molybdenum	0.199	0.00500	0.200	0	99.7	80	120			
Selenium	0.202	0.00500	0.200	0	101	80	120			
Thallium	0.204	0.00150	0.200	0	102	80	120			

Sample ID **LCSD-73869** Batch ID: **73869** TestNo: **SW6020A** Units: **mg/L**

SampType: **LCSD** Run ID: **ICP-MS4_160304C** Analysis Date: **3/4/2016 8:40:00 PM** Prep Date: **2/26/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.194	0.00250	0.200	0	96.9	80	120	1.92	15	
Arsenic	0.202	0.00500	0.200	0	101	80	120	0.158	15	
Barium	0.200	0.0100	0.200	0	100	80	120	0.014	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1602269
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160304C

Sample ID **LCSD-73869**	Batch ID: **73869**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCSD**	Run ID: **ICP-MS4_160304C**	Analysis Date: **3/4/2016 8:40:00 PM**	Prep Date: **2/26/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.209	0.00100	0.200	0	105	80	120	0.197	15	
Cadmium	0.202	0.00100	0.200	0	101	80	120	0.080	15	
Calcium	4.82	0.300	5.00	0	96.4	80	120	0.428	15	
Chromium	0.205	0.00500	0.200	0	103	80	120	0.584	15	
Cobalt	0.211	0.00500	0.200	0	105	80	120	0.480	15	
Lead	0.203	0.00100	0.200	0	101	80	120	0.065	15	
Lithium	0.210	0.0100	0.200	0	105	80	120	0.784	15	
Molybdenum	0.198	0.00500	0.200	0	98.9	80	120	0.823	15	
Selenium	0.204	0.00500	0.200	0	102	80	120	0.985	15	
Thallium	0.204	0.00150	0.200	0	102	80	120	0.218	15	

Sample ID **1602265-08A SD**	Batch ID: **73869**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS4_160304C**	Analysis Date: **3/4/2016 8:47:00 PM**	Prep Date: **2/26/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.00400	0.0125	0	0				0	10	
Arsenic	<0.0100	0.0250	0	0				0	10	
Barium	0.0466	0.0500	0	0.0460				1.24	10	
Beryllium	<0.00150	0.00500	0	0				0	10	
Cadmium	<0.00150	0.00500	0	0				0	10	
Chromium	<0.0100	0.0250	0	0				0	10	
Cobalt	<0.0150	0.0250	0	0				0	10	
Lead	0.00272	0.00500	0	0.00338				21.5	10	R
Lithium	0.144	0.0500	0	0.135				6.58	10	
Molybdenum	<0.0100	0.0250	0	0				0	10	
Selenium	<0.0100	0.0250	0	0				0	10	
Thallium	<0.00250	0.00750	0	0				0	10	

Sample ID **1602265-08A PDS**	Batch ID: **73869**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_160304C**	Analysis Date: **3/4/2016 9:07:00 PM**	Prep Date: **2/26/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.204	0.00250	0.200	0	102	80	120			
Arsenic	0.195	0.00500	0.200	0	97.6	80	120			
Barium	0.241	0.0100	0.200	0.0460	97.3	80	120			
Beryllium	0.199	0.00100	0.200	0	99.4	80	120			
Cadmium	0.191	0.00100	0.200	0	95.3	80	120			
Chromium	0.199	0.00500	0.200	0	99.6	80	120			
Cobalt	0.198	0.00500	0.200	0	99.0	80	120			
Lead	0.203	0.00100	0.200	0.00338	99.8	80	120			
Lithium	0.320	0.0100	0.200	0.135	92.8	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1602269
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160304C

Sample ID **1602265-08A PDS**	Batch ID: **73869**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_160304C**	Analysis Date: **3/4/2016 9:07:00 PM**	Prep Date: **2/26/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Molybdenum	0.198	0.00500	0.200	0	98.9	80	120			
Selenium	0.194	0.00500	0.200	0	97.2	80	120			
Thallium	0.199	0.00150	0.200	0	99.3	80	120			

Sample ID **1602265-08AMS**	Batch ID: **73869**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS4_160304C**	Analysis Date: **3/4/2016 9:08:00 PM**	Prep Date: **2/26/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.195	0.00250	0.200	0	97.6	80	120			
Arsenic	0.201	0.00500	0.200	0	100	80	120			
Barium	0.244	0.0100	0.200	0.0460	98.9	80	120			
Beryllium	0.204	0.00100	0.200	0	102	80	120			
Cadmium	0.194	0.00100	0.200	0	97.2	80	120			
Calcium	207	0.300	5.00	203	87.0	80	120			
Chromium	0.200	0.00500	0.200	0	99.8	80	120			
Cobalt	0.200	0.00500	0.200	0	99.8	80	120			
Lead	0.207	0.00100	0.200	0.00338	102	80	120			
Lithium	0.334	0.0100	0.200	0.135	99.4	80	120			
Molybdenum	0.202	0.00500	0.200	0	101	80	120			
Selenium	0.200	0.00500	0.200	0	100	80	120			
Thallium	0.203	0.00150	0.200	0	101	80	120			

Sample ID **1602265-08AMSD**	Batch ID: **73869**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS4_160304C**	Analysis Date: **3/4/2016 9:10:00 PM**	Prep Date: **2/26/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.199	0.00250	0.200	0	99.5	80	120	1.95	15	
Arsenic	0.199	0.00500	0.200	0	99.7	80	120	0.635	15	
Barium	0.249	0.0100	0.200	0.0460	101	80	120	1.90	15	
Beryllium	0.202	0.00100	0.200	0	101	80	120	1.33	15	
Cadmium	0.198	0.00100	0.200	0	98.9	80	120	1.74	15	
Calcium	208	0.300	5.00	203	107	80	120	0.478	15	
Chromium	0.200	0.00500	0.200	0	100	80	120	0.215	15	
Cobalt	0.199	0.00500	0.200	0	99.5	80	120	0.315	15	
Lead	0.202	0.00100	0.200	0.00338	99.5	80	120	2.10	15	
Lithium	0.337	0.0100	0.200	0.135	101	80	120	1.13	15	
Molybdenum	0.205	0.00500	0.200	0	102	80	120	1.26	15	
Selenium	0.194	0.00500	0.200	0	97.2	80	120	2.95	15	
Thallium	0.200	0.00150	0.200	0	100	80	120	1.16	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1602269
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160304C

Sample ID **ICV2-160304**	Batch ID: **R84540**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_160304C**	Analysis Date: **3/4/2016 7:22:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.0990	0.00250	0.100	0	99.0	90	110			
Arsenic	0.101	0.00500	0.100	0	101	90	110			
Barium	0.0993	0.0100	0.100	0	99.3	90	110			
Beryllium	0.101	0.00100	0.100	0	101	90	110			
Cadmium	0.0986	0.00100	0.100	0	98.6	90	110			
Calcium	2.30	0.300	2.50	0	92.1	90	110			
Chromium	0.104	0.00500	0.100	0	104	90	110			
Cobalt	0.105	0.00500	0.100	0	105	90	110			
Lead	0.101	0.00100	0.100	0	101	90	110			
Lithium	0.102	0.0100	0.100	0	102	90	110			
Molybdenum	0.0968	0.00500	0.100	0	96.8	90	110			
Selenium	0.101	0.00500	0.100	0	101	90	110			
Thallium	0.0988	0.00150	0.100	0	98.8	90	110			

Sample ID **ILCVL2-160304**	Batch ID: **R84540**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160304C**	Analysis Date: **3/4/2016 7:27:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00199	0.00250	0.00200	0	99.4	70	130			
Arsenic	0.00514	0.00500	0.00500	0	103	70	130			
Barium	0.00517	0.0100	0.00500	0	103	70	130			
Beryllium	0.000955	0.00100	0.00100	0	95.5	70	130			
Cadmium	0.00104	0.00100	0.00100	0	104	70	130			
Calcium	0.107	0.300	0.100	0	107	70	130			
Chromium	0.00527	0.00500	0.00500	0	105	70	130			
Cobalt	0.00540	0.00500	0.00500	0	108	70	130			
Lead	0.000898	0.00100	0.00100	0	89.8	70	130			
Lithium	0.0113	0.0100	0.0100	0	113	70	130			
Molybdenum	0.00507	0.00500	0.00500	0	101	70	130			
Selenium	0.00580	0.00500	0.00500	0	116	70	130			
Thallium	0.00101	0.00150	0.00100	0	101	70	130			

Sample ID **CCV2-160304**	Batch ID: **R84540**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160304C**	Analysis Date: **3/4/2016 8:28:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.198	0.00250	0.200	0	99.1	90	110			
Arsenic	0.202	0.00500	0.200	0	101	90	110			
Barium	0.203	0.0100	0.200	0	101	90	110			
Beryllium	0.210	0.00100	0.200	0	105	90	110			
Cadmium	0.204	0.00100	0.200	0	102	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160304C

Sample ID **CCV2-160304**	Batch ID: **R84540**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160304C**	Analysis Date: **3/4/2016 8:28:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.82	0.300	5.00	0	96.4	90	110			
Chromium	0.208	0.00500	0.200	0	104	90	110			
Cobalt	0.209	0.00500	0.200	0	104	90	110			
Lead	0.204	0.00100	0.200	0	102	90	110			
Lithium	0.213	0.0100	0.200	0	107	90	110			
Molybdenum	0.200	0.00500	0.200	0	99.8	90	110			
Selenium	0.201	0.00500	0.200	0	100	90	110			
Thallium	0.204	0.00150	0.200	0	102	90	110			

Sample ID **LCVL2-160304**	Batch ID: **R84540**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160304C**	Analysis Date: **3/4/2016 8:32:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00205	0.00250	0.00200	0	102	70	130			
Arsenic	0.00515	0.00500	0.00500	0	103	70	130			
Barium	0.00503	0.0100	0.00500	0	101	70	130			
Beryllium	0.00104	0.00100	0.00100	0	104	70	130			
Cadmium	0.00106	0.00100	0.00100	0	106	70	130			
Calcium	0.101	0.300	0.100	0	101	70	130			
Chromium	0.00522	0.00500	0.00500	0	104	70	130			
Cobalt	0.00536	0.00500	0.00500	0	107	70	130			
Lead	0.000910	0.00100	0.00100	0	91.0	70	130			
Lithium	0.0111	0.0100	0.0100	0	111	70	130			
Molybdenum	0.00490	0.00500	0.00500	0	98.0	70	130			
Selenium	0.00547	0.00500	0.00500	0	109	70	130			
Thallium	0.00103	0.00150	0.00100	0	103	70	130			

Sample ID **CCV3-160304**	Batch ID: **R84540**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160304C**	Analysis Date: **3/4/2016 9:12:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.197	0.00250	0.200	0	98.7	90	110			
Arsenic	0.202	0.00500	0.200	0	101	90	110			
Barium	0.202	0.0100	0.200	0	101	90	110			
Beryllium	0.211	0.00100	0.200	0	105	90	110			
Cadmium	0.203	0.00100	0.200	0	101	90	110			
Calcium	4.82	0.300	5.00	0	96.4	90	110			
Chromium	0.209	0.00500	0.200	0	105	90	110			
Cobalt	0.212	0.00500	0.200	0	106	90	110			
Lead	0.207	0.00100	0.200	0	104	90	110			
Lithium	0.216	0.0100	0.200	0	108	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1602269
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160304C

Sample ID **CCV3-160304**	Batch ID: **R84540**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160304C**	Analysis Date: **3/4/2016 9:12:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Molybdenum	0.199	0.00500	0.200	0	99.6	90	110			
Selenium	0.203	0.00500	0.200	0	102	90	110			
Thallium	0.208	0.00150	0.200	0	104	90	110			

Sample ID **LCVL3-160304**	Batch ID: **R84540**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160304C**	Analysis Date: **3/4/2016 9:16:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00205	0.00250	0.00200	0	103	70	130			
Arsenic	0.00507	0.00500	0.00500	0	101	70	130			
Barium	0.00522	0.0100	0.00500	0	104	70	130			
Beryllium	0.00112	0.00100	0.00100	0	112	70	130			
Cadmium	0.000999	0.00100	0.00100	0	99.9	70	130			
Calcium	0.100	0.300	0.100	0	100	70	130			
Chromium	0.00528	0.00500	0.00500	0	106	70	130			
Cobalt	0.00536	0.00500	0.00500	0	107	70	130			
Lead	0.000897	0.00100	0.00100	0	89.7	70	130			
Lithium	0.0112	0.0100	0.0100	0	112	70	130			
Molybdenum	0.00512	0.00500	0.00500	0	102	70	130			
Selenium	0.00535	0.00500	0.00500	0	107	70	130			
Thallium	0.00100	0.00150	0.00100	0	100	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1602269
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160307A

The QC data in batch 73869 applies to the following samples: 1602269-01A, 1602269-02A, 1602269-03A, 1602269-04A, 1602269-05A, 1602269-06A, 1602269-07A

Sample ID **MB-73869** Batch ID: **73869** TestNo: **SW6020A** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_160307A** Analysis Date: **3/7/2016 7:26:00 PM** Prep Date: **2/26/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0214	0.0300								

Sample ID **LCS-73869** Batch ID: **73869** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_160307A** Analysis Date: **3/7/2016 7:28:00 PM** Prep Date: **2/26/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.218	0.0300	0.200	0	109	80	120			

Sample ID **LCSD-73869** Batch ID: **73869** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_160307A** Analysis Date: **3/7/2016 7:30:00 PM** Prep Date: **2/26/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.229	0.0300	0.200	0	115	80	120	5.28	15	

Sample ID **1602265-08A SD** Batch ID: **73869** TestNo: **SW6020A** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS4_160307A** Analysis Date: **3/7/2016 7:36:00 PM** Prep Date: **2/26/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	<2.50	7.50	0	1.18				0	10	
Calcium	207	75.0	0	207				0.002	10	

Sample ID **1602265-08A PDS** Batch ID: **73869** TestNo: **SW6020A** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS4_160307A** Analysis Date: **3/7/2016 7:57:00 PM** Prep Date: **2/26/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	12.0	1.50	10.0	1.18	108	80	120			
Calcium	438	15.0	250	207	92.1	80	120			

Sample ID **1602265-08AMS** Batch ID: **73869** TestNo: **SW6020A** Units: **mg/L**
SampType: **MS** Run ID: **ICP-MS4_160307A** Analysis Date: **3/7/2016 7:59:00 PM** Prep Date: **2/26/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	1.88	1.50	0.200	1.18	347	80	120			S

Sample ID **1602265-08AMSD** Batch ID: **73869** TestNo: **SW6020A** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS4_160307A** Analysis Date: **3/7/2016 8:01:00 PM** Prep Date: **2/26/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	1.96	1.50	0.200	1.18	389	80	120	4.42	15	S

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1602269
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160307A

The QC data in batch 73881 applies to the following samples: 1602269-08A, 1602269-09A, 1602269-10A, 1602269-11A, 1602269-12A, 1602269-13A, 1602269-14A, 1602269-15A, 1602269-16A, 1602269-17A

Sample ID	**MB-73881**	Batch ID:	**73881**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**ICP-MS4_160307A**	Analysis Date:	**3/7/2016 2:46:00 PM**	Prep Date:	**2/26/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0276	0.0300								

Sample ID	**LCS-73881**	Batch ID:	**73881**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**ICP-MS4_160307A**	Analysis Date:	**3/7/2016 2:48:00 PM**	Prep Date:	**2/26/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.224	0.0300	0.200	0	112	80	120			

Sample ID	**LCSD-73881**	Batch ID:	**73881**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**LCSD**	Run ID:	**ICP-MS4_160307A**	Analysis Date:	**3/7/2016 2:50:00 PM**	Prep Date:	**2/26/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.223	0.0300	0.200	0	111	80	120	0.504	15	

Sample ID	**1602269-08A SD**	Batch ID:	**73881**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**SD**	Run ID:	**ICP-MS4_160307A**	Analysis Date:	**3/7/2016 2:58:00 PM**	Prep Date:	**2/26/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.228	0.150	0	0.206				10.0	10	

Sample ID	**1602269-08A PDS**	Batch ID:	**73881**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**PDS**	Run ID:	**ICP-MS4_160307A**	Analysis Date:	**3/7/2016 3:19:00 PM**	Prep Date:	**2/26/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.398	0.0300	0.200	0.206	96.0	80	120			

Sample ID	**1602269-08A MS**	Batch ID:	**73881**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**MS**	Run ID:	**ICP-MS4_160307A**	Analysis Date:	**3/7/2016 3:21:00 PM**	Prep Date:	**2/26/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.405	0.0300	0.200	0.206	99.5	80	120			

Sample ID	**1602269-08A MSD**	Batch ID:	**73881**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**MSD**	Run ID:	**ICP-MS4_160307A**	Analysis Date:	**3/7/2016 3:23:00 PM**	Prep Date:	**2/26/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.419	0.0300	0.200	0.206	106	80	120	3.37	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1602269
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160307A

Sample ID **ICV-160307**	Batch ID: **R84569**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_160307A**	Analysis Date: **3/7/2016 11:53:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.103	0.0300	0.100	0	103	90	110			
Calcium	2.32	0.300	2.50	0	93.0	90	110			

Sample ID **LCVL-160307**	Batch ID: **R84569**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160307A**	Analysis Date: **3/7/2016 11:58:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0240	0.0300	0.0200	0	120	70	130			
Calcium	0.101	0.300	0.100	0	101	70	130			

Sample ID **CCV3-160307**	Batch ID: **R84569**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160307A**	Analysis Date: **3/7/2016 2:27:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.190	0.0300	0.200	0	95.0	90	110			
Calcium	4.70	0.300	5.00	0	94.0	90	110			

Sample ID **LCVL3-160307**	Batch ID: **R84569**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160307A**	Analysis Date: **3/7/2016 2:41:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0246	0.0300	0.0200	0	123	70	130			
Calcium	0.0986	0.300	0.100	0	98.6	70	130			

Sample ID **CCV4-160307**	Batch ID: **R84569**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160307A**	Analysis Date: **3/7/2016 3:33:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.216	0.0300	0.200	0	108	90	110			
Calcium	4.81	0.300	5.00	0	96.2	90	110			

Sample ID **LCVL4-160307**	Batch ID: **R84569**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160307A**	Analysis Date: **3/7/2016 4:33:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0249	0.0300	0.0200	0	125	70	130			
Calcium	0.0916	0.300	0.100	0	91.6	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160307A

Sample ID **CCV5-160307**	Batch ID: **R84569**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160307A**	Analysis Date: **3/7/2016 5:10:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.76	0.300	5.00	0	95.1	90	110			

Sample ID **LCVL5-160307**	Batch ID: **R84569**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160307A**	Analysis Date: **3/7/2016 5:24:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.103	0.300	0.100	0	103	70	130			

Sample ID **CCV6-160307**	Batch ID: **R84569**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160307A**	Analysis Date: **3/7/2016 6:17:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.204	0.0300	0.200	0	102	90	110			
Calcium	4.87	0.300	5.00	0	97.5	90	110			

Sample ID **LCVL6-160307**	Batch ID: **R84569**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160307A**	Analysis Date: **3/7/2016 6:31:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0211	0.0300	0.0200	0	106	70	130			
Calcium	0.100	0.300	0.100	0	100	70	130			

Sample ID **CCV7-160307**	Batch ID: **R84569**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160307A**	Analysis Date: **3/7/2016 7:08:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.194	0.0300	0.200	0	97.2	90	110			
Calcium	4.77	0.300	5.00	0	95.4	90	110			

Sample ID **LCVL7-160307**	Batch ID: **R84569**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160307A**	Analysis Date: **3/7/2016 7:22:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0228	0.0300	0.0200	0	114	70	130			
Calcium	0.103	0.300	0.100	0	103	70	130			

Sample ID **CCV8-160307**	Batch ID: **R84569**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160307A**	Analysis Date: **3/7/2016 8:15:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.206	0.0300	0.200	0	103	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1602269
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160307A

Sample ID **CCV8-160307**	Batch ID: **R84569**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160307A**	Analysis Date: **3/7/2016 8:15:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.78	0.300	5.00	0	95.7	90	110			

Sample ID **LCVL8-160307**	Batch ID: **R84569**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160307A**	Analysis Date: **3/7/2016 8:29:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0222	0.0300	0.0200	0	111	70	130			
Calcium	0.101	0.300	0.100	0	101	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1602269
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_160303A

The QC data in batch 73960 applies to the following samples: 1602269-01D, 1602269-02D, 1602269-03D, 1602269-04D, 1602269-05D, 1602269-06D, 1602269-07D, 1602269-08D, 1602269-09D, 1602269-10D, 1602269-11D, 1602269-12D, 1602269-13D, 1602269-14D, 1602269-15D, 1602269-16D, 1602269-17D

Sample ID **MB-73960** Batch ID: **73960** TestNo: **E300** Units: **mg/L**
SampType: **MBLK** Run ID: **IC2_160303A** Analysis Date: **3/3/2016 9:06:25 AM** Prep Date: **3/3/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00								
Fluoride	<0.100	0.400								
Sulfate	<1.00	3.00								

Sample ID **LCS-73960** Batch ID: **73960** TestNo: **E300** Units: **mg/L**
SampType: **LCS** Run ID: **IC2_160303A** Analysis Date: **3/3/2016 9:21:02 AM** Prep Date: **3/3/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.36	1.00	10.00	0	93.6	90	110			
Fluoride	3.80	0.400	4.000	0	95.1	90	110			
Sulfate	29.9	3.00	30.00	0	99.5	90	110			

Sample ID **LCSD-73960** Batch ID: **73960** TestNo: **E300** Units: **mg/L**
SampType: **LCSD** Run ID: **IC2_160303A** Analysis Date: **3/3/2016 9:35:38 AM** Prep Date: **3/3/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.30	1.00	10.00	0	93.0	90	110	0.670	20	
Fluoride	3.80	0.400	4.000	0	95.1	90	110	0.001	20	
Sulfate	29.8	3.00	30.00	0	99.5	90	110	0.087	20	

Sample ID **1602269-01DMS** Batch ID: **73960** TestNo: **E300** Units: **mg/L**
SampType: **MS** Run ID: **IC2_160303A** Analysis Date: **3/3/2016 4:00:14 PM** Prep Date: **3/3/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	227	10.0	200.0	27.67	99.5	90	110			
Fluoride	201	4.00	200.0	0	101	90	110			
Sulfate	599	30.0	200.0	372.5	113	90	110			S

Sample ID **1602269-01DMSD** Batch ID: **73960** TestNo: **E300** Units: **mg/L**
SampType: **MSD** Run ID: **IC2_160303A** Analysis Date: **3/3/2016 4:14:50 PM** Prep Date: **3/3/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	225	10.0	200.0	27.67	98.4	90	110	0.916	20	
Fluoride	200	4.00	200.0	0	100	90	110	0.529	20	
Sulfate	595	30.0	200.0	372.5	111	90	110	0.732	20	S

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1602269
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_160303A

Sample ID **1602269-02DMS**	Batch ID: **73960**	TestNo: **E300**	Units: **mg/L**
SampType: **MS**	Run ID: **IC2_160303A**	Analysis Date: **3/3/2016 4:44:03 PM**	Prep Date: **3/3/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	211	10.0	200.0	15.89	97.6	90	110			
Fluoride	199	4.00	200.0	1.001	98.9	90	110			
Sulfate	419	30.0	200.0	210.6	104	90	110			

Sample ID **1602269-02DMSD**	Batch ID: **73960**	TestNo: **E300**	Units: **mg/L**
SampType: **MSD**	Run ID: **IC2_160303A**	Analysis Date: **3/3/2016 4:58:40 PM**	Prep Date: **3/3/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	213	10.0	200.0	15.89	98.3	90	110	0.650	20	
Fluoride	200	4.00	200.0	1.001	99.4	90	110	0.483	20	
Sulfate	419	30.0	200.0	210.6	104	90	110	0.161	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_160303A

Sample ID **ICV-160303**	Batch ID: **R84523**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC2_160303A**	Analysis Date: **3/3/2016 8:30:12 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	23.9	1.00	25.00	0	95.8	90	110			
Fluoride	9.55	0.400	10.00	0	95.5	90	110			
Sulfate	75.5	3.00	75.00	0	101	90	110			

Sample ID **CCV1-160303**	Batch ID: **R84523**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_160303A**	Analysis Date: **3/3/2016 12:20:50 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.22	1.00	10.00	0	92.2	90	110			
Fluoride	3.67	0.400	4.000	0	91.8	90	110			
Sulfate	32.1	3.00	30.00	0	107	90	110			

Sample ID **CCV2-160303**	Batch ID: **R84523**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_160303A**	Analysis Date: **3/3/2016 3:09:01 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.26	1.00	10.00	0	92.6	90	110			
Fluoride	3.88	0.400	4.000	0	97.1	90	110			
Sulfate	29.8	3.00	30.00	0	99.2	90	110			

Sample ID **CCV3-160303**	Batch ID: **R84523**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_160303A**	Analysis Date: **3/3/2016 7:10:09 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.44	1.00	10.00	0	94.4	90	110			
Fluoride	3.96	0.400	4.000	0	99.1	90	110			
Sulfate	30.0	3.00	30.00	0	99.9	90	110			

Sample ID **CCV4-160303**	Batch ID: **R84523**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_160303A**	Analysis Date: **3/3/2016 8:23:12 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.39	1.00	10.00	0	93.9	90	110			
Sulfate	30.0	3.00	30.00	0	99.8	90	110			

CLIENT: Pastor, Behling & Wheeler
Work Order: 1602269
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_160226A

The QC data in batch 73868 applies to the following samples: 1602269-01D, 1602269-02D, 1602269-03D, 1602269-04D, 1602269-05D, 1602269-06D, 1602269-07D, 1602269-08D, 1602269-09D, 1602269-10D, 1602269-11D, 1602269-12D, 1602269-13D

Sample ID **1602239-01D-DUP** Batch ID: **73868** TestNo: **M4500-H+ B** Units: **pH Units@11.1℃**
SampType: **DUP** Run ID: **TITRATOR_160226A** Analysis Date: **2/26/2016 8:48:00 AM** Prep Date: **2/26/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	7.71	0	0	7.720				0.130	5	

Sample ID **1602269-04D-DUP** Batch ID: **73868** TestNo: **M4500-H+ B** Units: **pH Units@14.3℃**
SampType: **DUP** Run ID: **TITRATOR_160226A** Analysis Date: **2/26/2016 9:25:00 AM** Prep Date: **2/26/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	6.71	0	0	6.560				2.26	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1602269
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_160226A

Sample ID	**ICV-160226**	Batch ID:	**R84382**	TestNo:	**M4500-H+ B**	Units:	**pH Units@20.9℃**
SampType:	**ICV**	Run ID:	**TITRATOR_160226A**	Analysis Date:	**2/26/2016 8:43:00 AM**	Prep Date:	**2/26/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	10.0	0	10.00	0	100	99	101			

Sample ID	**CCV1-160226**	Batch ID:	**R84382**	TestNo:	**M4500-H+ B**	Units:	**pH Units@20.5℃**
SampType:	**CCV**	Run ID:	**TITRATOR_160226A**	Analysis Date:	**2/26/2016 9:19:00 AM**	Prep Date:	**2/26/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	7.04	0	7.000	0	101	97.1	102.9			

Sample ID	**CCV2-160226**	Batch ID:	**R84382**	TestNo:	**M4500-H+ B**	Units:	**pH Units@20.4℃**
SampType:	**CCV**	Run ID:	**TITRATOR_160226A**	Analysis Date:	**2/26/2016 9:40:00 AM**	Prep Date:	**2/26/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	7.02	0	7.000	0	100	97.1	102.9			

Sample ID	**CCV3-160226**	Batch ID:	**R84382**	TestNo:	**M4500-H+ B**	Units:	**pH Units@20.3℃**
SampType:	**CCV**	Run ID:	**TITRATOR_160226A**	Analysis Date:	**2/26/2016 9:46:00 AM**	Prep Date:	**2/26/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	7.03	0	7.000	0	100	97.1	102.9			

Sample ID	**CCV4-160226-PH12**	Batch ID:	**R84382**	TestNo:	**M4500-H+ B**	Units:	**pH Units@21.3℃**
SampType:	**CCV**	Run ID:	**TITRATOR_160226A**	Analysis Date:	**2/26/2016 9:49:00 AM**	Prep Date:	**2/26/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	12.0	0	12.00	0	99.6	97.1	102.9			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1602269
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_160226B

The QC data in batch 73880 applies to the following samples: 1602269-14D, 1602269-15D, 1602269-16D, 1602269-17D

Sample ID **1602269-14D-DUP** Batch ID: **73880** TestNo: **M4500-H+ B** Units: **pH Units@16.2℃**
SampType: **DUP** Run ID: **TITRATOR_160226B** Analysis Date: **2/26/2016 11:04:00 AM** Prep Date: **2/26/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	5.75	0	0	5.760				0.174	5	

Sample ID **1602270-07D-DUP** Batch ID: **73880** TestNo: **M4500-H+ B** Units: **pH Units@17℃**
SampType: **DUP** Run ID: **TITRATOR_160226B** Analysis Date: **2/26/2016 11:29:00 AM** Prep Date: **2/26/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	5.47	0	0	5.490				0.365	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1602269
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_160226B

Sample ID	**ICV-160226**	Batch ID:	**R84386**	TestNo:	**M4500-H+ B**	Units:	**pH Units@20.9℃**
SampType:	**ICV**	Run ID:	**TITRATOR_160226B**	Analysis Date:	**2/26/2016 8:43:00 AM**	Prep Date:	**2/26/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	10.0	0	10.00	0	100	99	101			

Sample ID	**CCV5-160226**	Batch ID:	**R84386**	TestNo:	**M4500-H+ B**	Units:	**pH Units@20.6℃**
SampType:	**CCV**	Run ID:	**TITRATOR_160226B**	Analysis Date:	**2/26/2016 11:23:00 AM**	Prep Date:	**2/26/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	7.03	0	7.000	0	100	97.1	102.9			

Sample ID	**CCV6-160226**	Batch ID:	**R84386**	TestNo:	**M4500-H+ B**	Units:	**pH Units@20.6℃**
SampType:	**CCV**	Run ID:	**TITRATOR_160226B**	Analysis Date:	**2/26/2016 11:30:00 AM**	Prep Date:	**2/26/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	7.02	0	7.000	0	100	97.1	102.9			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1602269
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: WC_160226B

The QC data in batch 73878 applies to the following samples: 1602269-01D, 1602269-02D, 1602269-03D, 1602269-04D, 1602269-05D, 1602269-06D, 1602269-07D, 1602269-08D

Sample ID	**MB-73878**	Batch ID:	**73878**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**WC_160226B**	Analysis Date:	**2/29/2016 8:55:00 AM**	Prep Date:	**2/26/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	10.0	10.0								

Sample ID	**LCS-73878**	Batch ID:	**73878**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**WC_160226B**	Analysis Date:	**2/29/2016 8:55:00 AM**	Prep Date:	**2/26/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	802	10.0	745.6	0	108	90	113			

Sample ID	**1602262-01D-DUP**	Batch ID:	**73878**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**DUP**	Run ID:	**WC_160226B**	Analysis Date:	**2/29/2016 8:55:00 AM**	Prep Date:	**2/26/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	2010	50.0	0	2025				0.743	5	

Sample ID	**1602270-01D-DUP**	Batch ID:	**73878**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**DUP**	Run ID:	**WC_160226B**	Analysis Date:	**2/29/2016 8:55:00 AM**	Prep Date:	**2/26/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	1610	50.0	0	1570				2.52	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1602269
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: WC_160229D

The QC data in batch 73900 applies to the following samples: 1602269-09D, 1602269-10D, 1602269-11D, 1602269-12D, 1602269-13D, 1602269-14D, 1602269-15D, 1602269-16D, 1602269-17D

Sample ID	**MB-73900**	Batch ID:	**73900**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**WC_160229D**	Analysis Date:	**3/1/2016 8:43:00 AM**	Prep Date:	**2/29/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	<10.0	10.0								

Sample ID	**LCS-73900**	Batch ID:	**73900**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**WC_160229D**	Analysis Date:	**3/1/2016 8:43:00 AM**	Prep Date:	**2/29/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	760	10.0	745.6	0	102	90	113			

Sample ID	**1602269-09D-DUP**	Batch ID:	**73900**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**DUP**	Run ID:	**WC_160229D**	Analysis Date:	**3/1/2016 8:43:00 AM**	Prep Date:	**2/29/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	4190	50.0	0	4175				0.239	5	

Sample ID	**1602278-01E-DUP**	Batch ID:	**73900**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**DUP**	Run ID:	**WC_160229D**	Analysis Date:	**3/1/2016 8:43:00 AM**	Prep Date:	**2/29/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	1920	50.0	0	1895				1.05	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

GEL Laboratories LLC
a member of The GEL Group INC

PO Box 30712 Charleston, SC 29417
2040 Savage Road Charleston, SC 29407
P 843.556.8171
F 843.766.1178

gel.com

March 23, 2016

Mr. John DuPont
DHL Analytical
2300 Double Creek Drive
Round Rock, Texas 78664

Re: Routine Analysis
Work Order: 392232
SDG: 1602269

Dear Mr. DuPont:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on March 01, 2016. This original data report has been prepared and reviewed in accordance with GEL's standard operating procedures.

Our policy is to provide high quality, personalized analytical services to enable you to meet your analytical needs on time every time. We trust that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at (843) 556-8171, ext. 4707.

Sincerely,

Hope Taylor for
Anna Day
Project Manager

Purchase Order: 14273
Chain of Custody: 1602269
Enclosures

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 − (843) 556−8171 − www.gel.com

Certificate of Analysis Report
for

DHLA002 DHL Analytical

Client SDG: 1602269 GEL Work Order: 392232

The Qualifiers in this report are defined as follows:

* A quality control analyte recovery is outside of specified acceptance criteria

** Analyte is a Tracer compound

** Analyte is a surrogate compound

U Analyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the Certificate of Analysis.

The designation ND, if present, appears in the result column when the analyte concentration is not detected above the limit as defined in the 'U' qualifier above.

This data report has been prepared and reviewed in accordance with GEL Laboratories LLC standard operating procedures. Please direct any questions to your Project Manager, Anna Day.

Reviewed by _____

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: March 23, 2016

Company : DHL Analytical
Address : 2300 Double Creek Drive

Round Rock, Texas 78664
Contact: Mr. John DuPont
Project: Routine Analysis

Client Sample ID: MW-19
Sample ID: 392232001
Matrix: Water
Collect Date: 24-FEB-16 12:10
Receive Date: 01-MAR-16
Collector: Client

Project: DHLA00112
Client ID: DHLA002

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228	U	1.07	+/-0.980	1.60	3.00	pCi/L		AXM6	03/22/16	1658	1550814	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226		1.49	+/-0.459	0.456	1.00	pCi/L		CXP3	03/22/16	0735	1549017	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			99.7	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: March 23, 2016

Company : DHL Analytical
Address : 2300 Double Creek Drive

Round Rock, Texas 78664
Contact: Mr. John DuPont
Project: Routine Analysis

Client Sample ID: PDP-22
Sample ID: 392232002
Matrix: Water
Collect Date: 24-FEB-16 11:15
Receive Date: 01-MAR-16
Collector: Client

Project: DHLA00112
Client ID: DHLA002

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228	U	0.945	+/-0.966	1.60	3.00	pCi/L		AXM6	03/22/16	1658	1550814	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226		1.27	+/-0.427	0.383	1.00	pCi/L		CXP3	03/22/16	0735	1549017	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			95.7	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: March 23, 2016

Company : DHL Analytical
Address : 2300 Double Creek Drive

Round Rock, Texas 78664
Contact: Mr. John DuPont
Project: Routine Analysis

Client Sample ID: MW-18A
Sample ID: 392232003
Matrix: Water
Collect Date: 24-FEB-16 10:15
Receive Date: 01-MAR-16
Collector: Client

Project: DHLA00112
Client ID: DHLA002

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228	U	0.680	+/-1.05	1.82	3.00	pCi/L		AXM6	03/22/16	1658	1550814	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226	U	0.419	+/-0.340	0.521	1.00	pCi/L		CXP3	03/22/16	0735	1549017	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			99.5	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: March 23, 2016

Company : DHL Analytical
Address : 2300 Double Creek Drive

Round Rock, Texas 78664
Contact: Mr. John DuPont
Project: Routine Analysis

Client Sample ID: PDP-26
Sample ID: 392232004
Matrix: Water
Collect Date: 24-FEB-16 09:10
Receive Date: 01-MAR-16
Collector: Client

Project: DHLA00112
Client ID: DHLA002

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228	U	0.354	+/-0.907	1.64	3.00	pCi/L		AXM6	03/22/16	1658	1550814	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226		0.793	+/-0.388	0.493	1.00	pCi/L		CXP3	03/22/16	0735	1549017	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			88.8	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: March 23, 2016

Company : DHL Analytical
Address : 2300 Double Creek Drive

Round Rock, Texas 78664
Contact: Mr. John DuPont
Project: Routine Analysis

Client Sample ID: MW-20A
Sample ID: 392232005
Matrix: Water
Collect Date: 24-FEB-16 08:10
Receive Date: 01-MAR-16
Collector: Client

Project: DHLA00112
Client ID: DHLA002

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228		2.21	+/-0.996	1.31	3.00	pCi/L		AXM6	03/22/16	1658	1550814	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226		0.643	+/-0.314	0.400	1.00	pCi/L		CXP3	03/22/16	0735	1549017	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			95.6	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: March 23, 2016

Company : DHL Analytical
Address : 2300 Double Creek Drive

Round Rock, Texas 78664
Contact: Mr. John DuPont
Project: Routine Analysis

Client Sample ID: H-30
Sample ID: 392232006
Matrix: Water
Collect Date: 23-FEB-16 12:20
Receive Date: 01-MAR-16
Collector: Client

Project: DHLA00112
Client ID: DHLA002

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228	U	0.946	+/-1.39	2.38	3.00	pCi/L		AXM6	03/22/16	1659	1550814	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226		0.585	+/-0.321	0.430	1.00	pCi/L		CXP3	03/22/16	0735	1549017	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			91.3	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: March 23, 2016

Company : DHL Analytical
Address : 2300 Double Creek Drive

Round Rock, Texas 78664
Contact: Mr. John DuPont
Project: Routine Analysis

Client Sample ID: H-33
Sample ID: 392232007
Matrix: Water
Collect Date: 23-FEB-16 11:25
Receive Date: 01-MAR-16
Collector: Client

Project: DHLA00112
Client ID: DHLA002

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228	U	2.26	+/-1.48	2.32	3.00	pCi/L		AXM6	03/22/16	1659	1550814	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226		0.906	+/-0.393	0.472	1.00	pCi/L		CXP3	03/22/16	0810	1549017	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			94.2	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: March 23, 2016

Company : DHL Analytical
Address : 2300 Double Creek Drive

Round Rock, Texas 78664
Contact: Mr. John DuPont
Project: Routine Analysis

Client Sample ID: H-26
Sample ID: 392232008
Matrix: Water
Collect Date: 23-FEB-16 10:35
Receive Date: 01-MAR-16
Collector: Client

Project: DHLA00112
Client ID: DHLA002

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228	U	0.212	+/-1.10	2.06	3.00	pCi/L		AXM6	03/22/16	1659	1550814	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226		0.372	+/-0.243	0.297	1.00	pCi/L		CXP3	03/22/16	0810	1549017	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			100	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: March 23, 2016

Company : DHL Analytical
Address : 2300 Double Creek Drive

Round Rock, Texas 78664
Contact: Mr. John DuPont
Project: Routine Analysis

Client Sample ID: H-31
Sample ID: 392232009
Matrix: Water
Collect Date: 23-FEB-16 11:25
Receive Date: 01-MAR-16
Collector: Client

Project: DHLA00112
Client ID: DHLA002

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228	U	0.746	+/-0.963	1.64	3.00	pCi/L		AXM6	03/22/16	1659	1550814	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226	U	0.311	+/-0.269	0.419	1.00	pCi/L		CXP3	03/22/16	0810	1549017	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			90.2	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: March 23, 2016

Company : DHL Analytical
Address : 2300 Double Creek Drive

Round Rock, Texas 78664
Contact: Mr. John DuPont
Project: Routine Analysis

Client Sample ID: H-32
Sample ID: 392232010
Matrix: Water
Collect Date: 23-FEB-16 12:35
Receive Date: 01-MAR-16
Collector: Client

Project: DHLA00112
Client ID: DHLA002

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228		1.60	+/-0.969	1.45	3.00	pCi/L		AXM6	03/22/16	1659	1550814	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226		1.12	+/-0.450	0.519	1.00	pCi/L		CXP3	03/22/16	0810	1549017	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			101	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: March 23, 2016

Company : DHL Analytical
Address : 2300 Double Creek Drive

Round Rock, Texas 78664
Contact: Mr. John DuPont
Project: Routine Analysis

Client Sample ID: H-28
Sample ID: 392232011
Matrix: Water
Collect Date: 23-FEB-16 15:30
Receive Date: 01-MAR-16
Collector: Client

Project: DHLA00112
Client ID: DHLA002

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228		2.24	+/-1.14	1.65	3.00	pCi/L		AXM6	03/22/16	1659	1550814	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226	U	0.294	+/-0.254	0.396	1.00	pCi/L		CXP3	03/22/16	0810	1549017	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			93.6	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: March 23, 2016

Company : DHL Analytical
Address : 2300 Double Creek Drive

Round Rock, Texas 78664
Contact: Mr. John DuPont
Project: Routine Analysis

Client Sample ID: H-29
Sample ID: 392232012
Matrix: Water
Collect Date: 23-FEB-16 16:20
Receive Date: 01-MAR-16
Collector: Client

Project: DHLA00112
Client ID: DHLA002

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228	U	1.49	+/-1.35	2.22	3.00	pCi/L		AXM6	03/22/16	1659	1550814	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226	U	0.337	+/-0.254	0.374	1.00	pCi/L		CXP3	03/22/16	0810	1549017	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			90.5	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: March 23, 2016

Company : DHL Analytical
Address : 2300 Double Creek Drive

Round Rock, Texas 78664
Contact: Mr. John DuPont
Project: Routine Analysis

Client Sample ID: H-27
Sample ID: 392232013
Matrix: Water
Collect Date: 23-FEB-16 17:30
Receive Date: 01-MAR-16
Collector: Client

Project: DHLA00112
Client ID: DHLA002

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228	U	0.533	+/-0.924	1.62	3.00	pCi/L		AXM6	03/22/16	1659	1550814	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226		0.921	+/-0.383	0.451	1.00	pCi/L		CXP3	03/22/16	0840	1549017	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			84.9	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: March 23, 2016

Company : DHL Analytical
Address : 2300 Double Creek Drive

Round Rock, Texas 78664
Contact: Mr. John DuPont
Project: Routine Analysis

Client Sample ID: PDP-23
Sample ID: 392232014
Matrix: Water
Collect Date: 24-FEB-16 09:45
Receive Date: 01-MAR-16
Collector: Client

Project: DHLA00112
Client ID: DHLA002

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228	U	-0.208	+/-0.825	1.61	3.00	pCi/L		AXM6	03/22/16	1659	1550814	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226		1.06	+/-0.440	0.519	1.00	pCi/L		CXP3	03/22/16	0840	1549017	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			102	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: March 23, 2016

Company : DHL Analytical
Address : 2300 Double Creek Drive

Round Rock, Texas 78664
Contact: Mr. John DuPont
Project: Routine Analysis

Client Sample ID: PDP-25
Sample ID: 392232015
Matrix: Water
Collect Date: 24-FEB-16 10:55
Receive Date: 01-MAR-16
Collector: Client

Project: DHLA00112
Client ID: DHLA002

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228	U	2.13	+/-1.44	2.28	3.00	pCi/L		AXM6	03/22/16	1703	1550814	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226		0.613	+/-0.274	0.223	1.00	pCi/L		CXP3	03/22/16	0840	1549017	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			102	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: March 23, 2016

Company : DHL Analytical
Address : 2300 Double Creek Drive

Round Rock, Texas 78664
Contact: Mr. John DuPont
Project: Routine Analysis

Client Sample ID: MW-17A
Sample ID: 392232016
Matrix: Water
Collect Date: 24-FEB-16 12:00
Receive Date: 01-MAR-16
Collector: Client

Project: DHLA00112
Client ID: DHLA002

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228		3.07	+/-1.12	1.42	3.00	pCi/L		AXM6	03/22/16	1703	1550814	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226	U	0.436	+/-0.302	0.440	1.00	pCi/L		CXP3	03/22/16	0840	1549017	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			103	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: March 23, 2016

Company : DHL Analytical
Address : 2300 Double Creek Drive

Round Rock, Texas 78664
Contact: Mr. John DuPont
Project: Routine Analysis

Client Sample ID: PDP-24
Sample ID: 392232017
Matrix: Water
Collect Date: 24-FEB-16 14:30
Receive Date: 01-MAR-16
Collector: Client

Project: DHLA00112
Client ID: DHLA002

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228	U	0.498	+/-1.04	1.83	3.00	pCi/L		AXM6	03/22/16	1703	1550814	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226		0.622	+/-0.353	0.479	1.00	pCi/L		CXP3	03/22/16	0840	1549017	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			94.2	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

QC Summary

Report Date: March 23, 2016

DHL Analytical
2300 Double Creek Drive
Round Rock, Texas

Contact: **Mr. John DuPont**

Workorder: **392232**

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Rad Gas Flow										
Batch 1550814										
QC1203504569 392232008 DUP										
Radium-228	U	0.212	U	0.772	pCi/L	N/A		N/A	AXM6	03/22/16 17:03
	Uncertainty	+/-1.10		+/-1.04						
QC1203504570 LCS										
Radium-228	47.0			44.9	pCi/L		95.5	(75%-125%)		03/22/16 17:03
	Uncertainty			+/-3.39						
QC1203504568 MB										
Radium-228			U	0.687	pCi/L					03/22/16 17:03
	Uncertainty			+/-0.831						
Rad Ra-226										
Batch 1549017										
QC1203499953 392929001 DUP										
Radium-226		1.82		1.56	pCi/L	15.5		(0% - 100%)	CXP3	03/22/16 09:15
	Uncertainty	+/-0.560		+/-0.507						
QC1203499955 LCS										
Radium-226	24.4			19.7	pCi/L		80.9	(75%-125%)		03/22/16 09:15
	Uncertainty			+/-1.41						
QC1203499952 MB										
Radium-226			U	0.398	pCi/L					03/22/16 09:15
	Uncertainty			+/-0.290						
QC1203499954 392929001 MS										
Radium-226	122	1.82		97.3	pCi/L		78.2	(75%-125%)		03/22/16 09:15
	Uncertainty	+/-0.560		+/-7.24						

Notes:

Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

The Qualifiers in this report are defined as follows:

**	Analyte is a Tracer compound
<	Result is less than value reported
>	Result is greater than value reported
BD	Results are either below the MDC or tracer recovery is low
FA	Failed analysis.
H	Analytical holding time was exceeded
J	Value is estimated
K	Analyte present. Reported value may be biased high. Actual value is expected to be lower.
L	Analyte present. Reported value may be biased low. Actual value is expected to be higher.
M	M if above MDC and less than LLD
M	REMP Result > MDC/CL and < RDL
N/A	RPD or %Recovery limits do not apply.

QC Summary

Workorder: **392232**

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time

N1 See case narrative

ND Analyte concentration is not detected above the detection limit

NJ Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier

Q One or more quality control criteria have not been met. Refer to the applicable narrative or DER.

R Sample results are rejected

U Analyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD.

UI Gamma Spectroscopy--Uncertain identification

UJ Gamma Spectroscopy--Uncertain identification

UL Not considered detected. The associated number is the reported concentration, which may be inaccurate due to a low bias.

X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier

Y Other specific qualifiers were required to properly define the results. Consult case narrative.

^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.

h Preparation or preservation holding time was exceeded

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.
^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.
* Indicates that a Quality Control parameter was not within specifications.
For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.

There are no "Data Exception Reports" associated with this analytical report.

392232

DHL Analytical, Inc.
2300 Double Creek Drive
Round Rock, TX 78664
TEL: *(512) 388-8222* FAX: *(512) 388-8229*

CHAIN-OF-CUSTODY RECORD

Work Order: 1602269

Subcontractor:

GEL Laboratories
PO Box 30712
Charleston, SC 29417

TEL: (843) 556-8171
FAX:
Acct #:

25-Feb-16

Sample Id	Matrix	DHL#	Date Collected	Bottle Type	Requested Tests					
					E903.1	E904.0				
MW-19	Aqueous	-01B	02/24/16 12:10 PM	500HDPEHNO3		1				
MW-19	Aqueous	-01C	02/24/16 12:10 PM	500HDPEHNO3	1					
PDP-22	Aqueous	-02B	02/24/16 11:15 AM	500HDPEHNO3		1				
PDP-22	Aqueous	-02C	02/24/16 11:15 AM	500HDPEHNO3	1					
MW-18A	Aqueous	-03B	02/24/16 10:15 AM	500HDPEHNO3		1				
MW-18A	Aqueous	-03C	02/24/16 10:15 AM	500HDPEHNO3	1					
PDP-26	Aqueous	-04B	02/24/16 09:10 AM	500HDPEHNO3		1				
PDP-26	Aqueous	-04C	02/24/16 09:10 AM	500HDPEHNO3	1					
MW-20A	Aqueous	-05B	02/24/16 08:10 AM	500HDPEHNO3		1				
MW-20A	Aqueous	-05C	02/24/16 08:10 AM	500HDPEHNO3	1					
H-30	Aqueous	-06B	02/23/16 12:20 PM	500HDPEHNO3		1				
H-30	Aqueous	-06C	02/23/16 12:20 PM	500HDPEHNO3	1					
H-33	Aqueous	-07B	02/23/16 11:25 AM	500HDPEHNO3		1				
H-33	Aqueous	-07C	02/23/16 11:25 AM	500HDPEHNO3	1					
H-26	Aqueous	-08B	02/23/16 10:35 AM	500HDPEHNO3		1				
H-26	Aqueous	-08C	02/23/16 10:35 AM	500HDPEHNO3	1					
H-31	Aqueous	-09B	02/23/16 11:25 AM	500HDPEHNO3		1				
H-31	Aqueous	-09C	02/23/16 11:25 AM	500HDPEHNO3	1					

General Comments:

Please analyze these samples with a Standard Turnaround Time.
Call John DuPont if you have questions.
Quality Control Package Needed: Standard / _____
EMAIL report to both cac@dhlanalytical.com & dupont@dhlanalytical.com

		Date/Time			Date/Time
Relinquished by:		2/25/16 1730	**Received by:**	Fed ex	2/23/16 1730
Relinquished by:			**Received by:**		3-1-16 8:50

DHL Analytical, Inc.
2300 Double Creek Drive
Round Rock, TX 78664
TEL: *(512) 388-8222* FAX: *(512) 388-8229*

CHAIN-OF-CUSTODY RECORD

Work Order: 1602269

Subcontractor:

GEL Laboratories
PO Box 30712
Charleston, SC 29417

TEL: (843) 556-8171
FAX:
Acct #:

25-Feb-16

Sample Id	Matrix	DHL#	Date Collected	Bottle Type	Requested Tests					
					E903.1	E904.0				
H-32	Aqueous	-10B	02/23/16 12:35 PM	500HDPEHNO3		1				
H-32	Aqueous	-10C	02/23/16 12:35 PM	500HDPEHNO3	1					
H-28	Aqueous	-11B	02/23/16 03:30 PM	500HDPEHNO3		1				
H-28	Aqueous	-11C	02/23/16 03:30 PM	500HDPEHNO3	1					
H-29	Aqueous	-12B	02/23/16 04:20 PM	500HDPEHNO3		1				
H-29	Aqueous	-12C	02/23/16 04:20 PM	500HDPEHNO3	1					
H-27	Aqueous	-13B	02/23/16 05:30 PM	500HDPEHNO3		1				
H-27	Aqueous	-13C	02/23/16 05:30 PM	500HDPEHNO3	1					
PDP-23	Aqueous	-14B	02/24/16 09:45 AM	500HDPEHNO3		1				
PDP-23	Aqueous	-14C	02/24/16 09:45 AM	500HDPEHNO3	1					
PDP-25	Aqueous	-15B	02/24/16 10:55 AM	500HDPEHNO3		1				
PDP-25	Aqueous	-15C	02/24/16 10:55 AM	500HDPEHNO3	1					
MW-17A	Aqueous	-16B	02/24/16 12:00 PM	500HDPEHNO3		1				
MW-17A	Aqueous	-16C	02/24/16 12:00 PM	500HDPEHNO3	1					
PDP-24	Aqueous	-17B	02/24/16 02:30 PM	500HDPEHNO3		1				
PDP-24	Aqueous	-17C	02/24/16 02:30 PM	500HDPEHNO3	1					

General Comments:

Please analyze these samples with a Standard Turnaround Time.
Call John DuPont if you have questions.
Quality Control Package Needed: Standard / _____
EMAIL report to both cac@dhlanalytical.com & dupont@dhlanalytical.com

		Date/Time		Date/Time
Relinquished by:		2/25/16 1730	**Received by:**	2/25/16 1735
Relinquished by:			**Received by:**	3-1-16 8:50

GEL Laboratories LLC

SAMPLE RECEIPT & REVIEW FORM

Client: DHLA	**SDG/AR/COC/Work Order:** 392232
Received By: Shanta mack	**Date Received:** 3-1-16 8:50

Suspected Hazard Information	Yes	No	*If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation.
COC/Samples marked as radioactive?		✓	Maximum Net Counts Observed* (Observed Counts - Area Background Counts): 90 cpm
Classified Radioactive II or III by RSO?		✓	If yes, Were swipes taken of sample containers < action levels?
COC/Samples marked containing PCBs?		✓	
Package, COC, and/or Samples marked as beryllium or asbestos containing?		✓	If yes, samples are to be segregated as Safety Controlled Samples, and opened by the GEL Safety Group.
Shipped as a DOT Hazardous?		✓	Hazard Class Shipped: UN#:
Samples identified as Foreign Soil?		✓	

	Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (Required for Non-Conforming Items)
1	Shipping containers received intact and sealed?	✓			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
2	Samples requiring cold preservation within (0 ≤ 6 deg. C)?*		✓		Preservation Method: Ice bags Blue ice Dry ice None Other (describe) *all temperatures are recorded in Celsius 16C
2a	Daily check performed and passed on IR temperature gun?	✓			Temperature Device Serial #: Secondary Temperature Device Serial # (If Applicable): 150320158 35
3	Chain of custody documents included with shipment?	✓			
4	Sample containers intact and sealed?	✓			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
5	Samples requiring chemical preservation at proper pH?	✓			Sample ID's, containers affected and observed pH: If Preservation added, Lot#:
6	Do Low Level Perchlorate samples have headspace as required?		✓		Sample ID's and containers affected:
7	VOA vials contain acid preservation?		✓		(If unknown, select No)
8	VOA vials free of headspace (defined as < 6mm bubble)?		✓		Sample ID's and containers affected:
9	Are Encore containers present?			✓	(If yes, immediately deliver to Volatiles laboratory)
10	Samples received within holding time?	✓			ID's and tests affected:
11	Sample ID's on COC match ID's on bottles?	✓			Sample ID's and containers affected:
12	Date & time on COC match date & time on bottles?	✓			Sample ID's affected:
13	Number of containers received match number indicated on COC?	✓			Sample ID's affected:
14	Are sample containers identifiable as GEL provided?			✓	
15	COC form is properly signed in relinquished/received sections?	✓			
16	Carrier and tracking number.				Circle Applicable: FedEx Air FedEx Ground UPS Field Services Courier Other 7757 3717 4362 7757 3716 0138

Comments (Use Continuation Form if needed):

PM (or PMA) review: Initials ACD Date 3/2/16 Page 1 of 1 GL-CHL-SR-001 Rev 2

List of current GEL Certifications as of 23 March 2016

State	Certification
Alaska	UST−0110
Arkansas	88−0651
CLIA	42D0904046
California	2940
Colorado	SC00012
Connecticut	PH−0169
Delaware	SC00012
DoD ELAP/ ISO17025 A2LA	2567.01
Florida NELAP	E87156
Foreign Soils Permit	P330−15−00283, P330−15−00253
Georgia	SC00012
Georgia SDWA	967
Hawaii	SC00012
Idaho Chemistry	SC00012
Idaho Radiochemistry	SC00012
Illinois NELAP	200029
Indiana	C−SC−01
Kansas NELAP	E−10332
Kentucky SDWA	90129
Kentucky Wastewater	90129
Louisiana NELAP	03046 (AI33904)
Louisiana SDWA	LA160006
Maryland	270
Massachusetts	M−SC012
Michigan	9976
Mississippi	SC00012
Nebraska	NE−OS−26−13
Nevada	SC000122016−1
New Hampshire NELAP	205415
New Jersey NELAP	SC002
New Mexico	SC00012
New York NELAP	11501
North Carolina	233
North Carolina SDWA	45709
North Dakota	R−158
Oklahoma	9904
Pennsylvania NELAP	68−00485
S.Carolina Radchem	10120002
South Carolina Chemistry	10120001
Tennessee	TN 02934
Texas NELAP	T104704235−16−11
Utah NELAP	SC000122016−20
Vermont	VT87156
Virginia NELAP	460202
Washington	C780
West Virginia	997404

May 26, 2016

Will Vienne
Pastor, Behling & Wheeler
2201 Double Creek Dr #4004
Round Rock, Texas 78664
TEL: (512) 671-3434
FAX (512) 671-3446

Order No.: 1604052

RE: Luminant-Martin Lake

Dear Will Vienne:

DHL Analytical, Inc. received 7 sample(s) on 4/6/2016 for the analyses presented in the following report.

REVISION#1: This revision consists of having the sub-contract laboratory correct the Ra-228 result for sample H-27 as per the client. Please replace the original report with this revised report.

There were no problems with the analyses and all data met requirements of NELAC except where noted in the Case Narrative. All non-NELAC methods will be identified accordingly in the case narrative and all estimated uncertainties of test results are within method or EPA specifications.

If you have any questions regarding these tests results, please feel free to call. Thank you for using DHL Analytical.

Sincerely,

John DuPont
General Manager

This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211-16-16

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DHL ANALYTICAL
2300 Double Creek Dr. ■ Round Rock, TX 78664
Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

№ 70875

CHAIN-OF-CUSTODY

CLIENT: PBW
ADDRESS: 2201 DOUBLE CREEK DR ROUND ROCK, TX 78664
PHONE: 512-671-3434 FAX/E-MAIL: 512-671-3446
DATA REPORTED TO: WILL VIENVE
ADDITIONAL REPORT COPIES TO:

DATE: 4-5-16 PAGE 1 OF 1
PO #: 5164-B DHL WORK ORDER #: 1604052
PROJECT LOCATION OR NAME: LUMINANT - MARTIN LAKE
CLENT PROJECT #: 5164-B COLLECTOR: J. BRAYTON

Authorize 5% surcharge for TRRP Report? ☐ Yes ☐ No

S=SOIL P=PAINT
W=WATER SL=SLUDGE
A=AIR O=OTHER
L=LIQUID SO=SOLID
SE=SEDIMENT

PRESERVATION: HCl | HNO_3 | H_2SO_4 ☐ NaOH ☐ | ICE | UNPRESERVED

ANALYSES: BTEX ☐ MTBE ☐ [METHOD 8021] | TPH 1005 ☐ TPH 1006 ☐ HOLD 1006 ☐ | GRO [METHOD 8015] ☐ DRO [METHOD 8105] ☐ | VOC 8260 ☐ VOC 624 ☐ VOC 8260/5035 ☐ | SVOC 8270 ☐ PAH 8270 ☐ HOLD PAH ☐ SVOC 625 ☐ | 8270 PEST ☐ 625 PEST/PCB ☐ 608 PCB ☐ 8082 PCB ☐ 8270 PCB ☐ | 8270 O-P PEST ☐ 8321 HERB ☐ T PHOS, AMMONIA ☐ | METALS 6020 ☐ METALS 200.8 ☐ DISS. METALS ☐ | RCRA ☐ TX11 ☐ ☐ | PH ☐ HEX CHROM ☐ ALKALINITY ☐ COD ☐ | CHLORIDE ☐ ANIONS ☐ | TCLP-SVOC ☐ VOC ☐ PEST ☐ HERB ☐ | TCLP-METALS ☐ RCRA 8 ☐ TX-11 ☐ Pb ☐ | RCI ☐ FLASHPOINT ☐ DGAS ☐ | TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐ | SEE ATTACHED

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	HCl	HNO_3	H_2SO_4 ☐ NaOH ☐	ICE	UNPRESERVED	SEE ATTACHED	FIELD NOTES
H-29	01	4-5-16	0755	W	P	4						X	
H-31	02		0845	W	P	4						X	
H-32	03		0930	W	P	4						X	
H-30	04		1030	W	P	4						X	
DUP-1	05		1030	W	P	4						X	
H-27	06		1120	W	P	4						X	
H-28	07	↓	1215	W	P	4						X	

RELINQUISHED BY: (Signature) DATE/TIME 4-5-16 1845 RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature) DATE/TIME 4/6/16 930 RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature) DATE/TIME RECEIVED BY: (Signature)

APPENDIX F-REVISION 27, 2014 ☐ DHL DISPOSAL @ $5.00 each ☐ Return

TURN AROUND TIME
RUSH ☐ CALL FIRST
1 DAY ☐ CALL FIRST
2 DAY ☐
NORMAL ☒
OTHER ☐

LABORATORY USE ONLY:
RECEIVING TEMP: 5.6 THERM #: 78
CUSTODY SEALS: ☐ BROKEN ☐ INTACT ☐ NOT USED
CARRIER: ☐ LONE STAR ☑ FEDEX ☐ UPS ☐ OTHER
☐ COURIER DELIVERY
☐ HAND DELIVERED

John Dupont

From: Sara Taube [Sara.Taube@pbwllc.com]
Sent: Wednesday, July 22, 2015 12:05 PM
To: John Dupont
Subject: CCR Appendix III and IV
Follow Up Flag: Follow up
Flag Status: Completed

Hi John,

Here are the Appendix III and Appendix IV constituents that we will need to have analyzed under the CCR Rule.

Appendix III
Boron
Calcium
Chloride
Fluoride
pH
sulfate
TDS

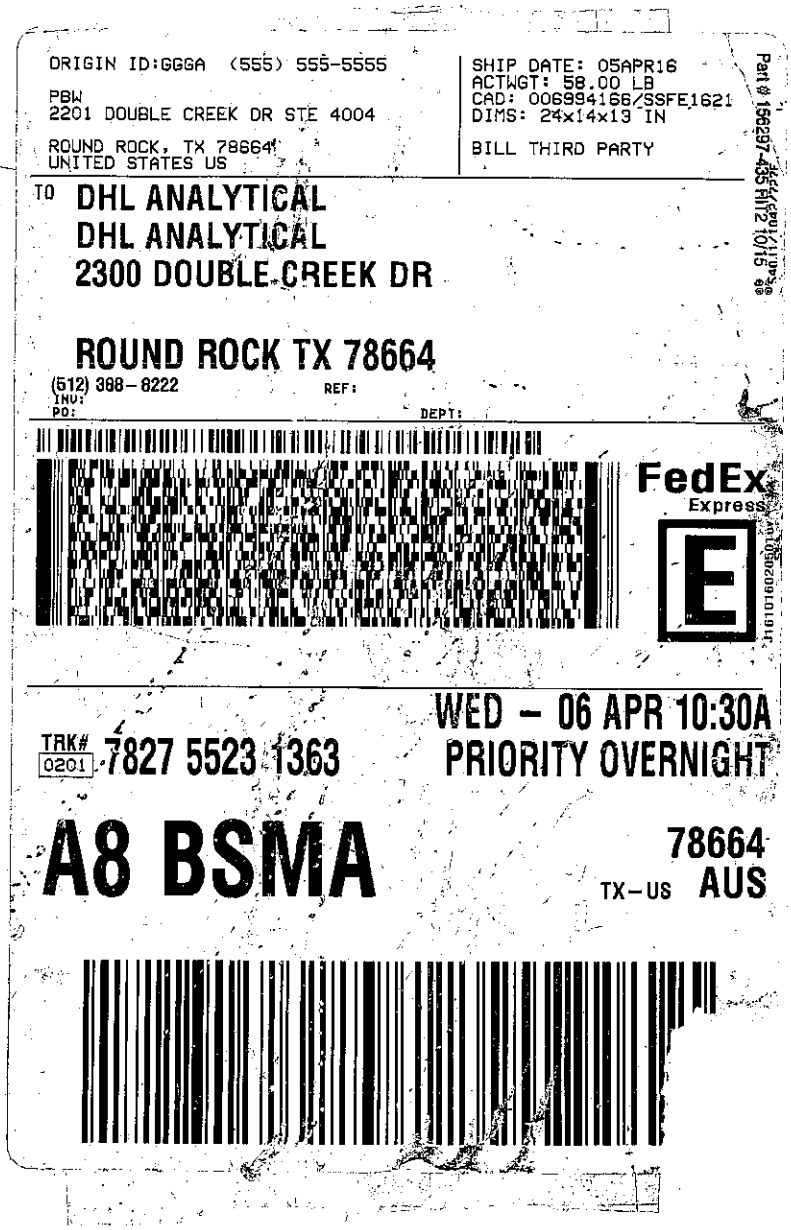
Appendix IV
Antimony
Arsenic
Barium
Beryllium
Cadmium
Chromium
Cobalt
Fluoride
Lead
Lithium
Mercury
Molybdenum
Selenium
Thallium
Radium 226 and 228

We are looking to have approximately 74 wells sampled 8 times over the course of the next two years. Please let me know if there is any more information you might need.

Cheers,

Sara

10/26/2015


ORIGIN ID:GGGA (555) 555-5555
PBW
2201 DOUBLE CREEK DR STE 4004
ROUND ROCK, TX 78664
UNITED STATES US
SHIP DATE: 05APR16
ACTWGT: 58.00 LB
CAD: 0069941 66/SSFE1621
DIMS: 24x14x19 IN
BILL THIRD PARTY
TO DHL ANALYTICAL
DHL ANALYTICAL
2300 DOUBLE CREEK DR
ROUND ROCK TX 78664
(512) 388-8222
REF:
INV:
PO:
DEPT:
FedEx
Express
TRK# 0201 7827 5523 1363
WED - 06 APR 10:30A
PRIORITY OVERNIGHT
A8 BSMA
78664
TX-US AUS

DHL Analytical, Inc.

Sample Receipt Checklist

Client Name **Pastor, Behling & Wheeler** Date Received: **4/6/2016**

Work Order Number **1604052** Received by **JB**

Checklist completed by: _____ 4/6/2016 Reviewed by DZ 4/6/2016
Signature Date Initials Date

Carrier name FedEx 1day

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	5.6 °C
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH<2 acceptable upon receipt?	Yes ☑	No ☐	NA ☐ LOT # 8086
	Adjusted? no		Checked by JB
Water - ph>9 (S) or ph>12 (CN) acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted? _____		Checked by _____

Any No response must be detailed in the comments section below.

Client contacted _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments: _____

Corrective Action _____

DHL Analytical, Inc. **Date:** *09-May-16*

CLIENT: Pastor, Behling & Wheeler
Project: Luminant-Martin Lake
Lab Order: 1604052

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Method SW6020A - Metals Analysis
Method SW7470A - Mercury Analysis
Method E300 - Anions Analysis
Method M4500-H+ B - pH of a Water Analysis
Method M2540C - TDS Analysis
Sub-contract - Radium-228 and Radium-226 analyses by methods E904*/9320* and SM 7500 Ra B M*. Analyzed at ESC Lab Sciences.

LOG IN

The samples were received and log-in performed on 4/6/16. A total of 7 samples were received. The samples arrived in good condition and were properly packaged.

METALS ANALYSIS

For Metals analysis performed on 4/8/16, 4/11/16 and 4/15/16 (batches 74761 & 74482) the matrix spikes and matrix spike duplicate recoveries were out of control limits for Boron and/or Calcium. These are flagged accordingly in the QC summary report. The sample selected for the matrix spike and matrix spike duplicate (batch 74461) was not from this work order. The sample selected for the matrix spike and matrix spike duplicate (batch 74482) was from this work order. The LCSs were within control limits for these analytes. No further corrective actions were taken.

For Metals analysis performed on 4/15/16 (batch 74482) the RPD for the serial dilution was slightly above control limits for Boron. This is flagged accordingly. The PDS was within control limits for this analyte. No further corrective actions were taken.

MERCURY ANALYSIS

For Mercury analysis performed on 4/7/16 the LCS/LCSD had the RPD slightly above control limits. This is flagged accordingly in the QC summary report. The percent recoveries were within control limits. No further corrective actions were taken.

For Mercury analysis performed on 4/7/16 the PDS recovery was slightly below control limits. This is flagged accordingly. The serial dilution was within control limits. No further corrective actions were taken.

DHL Analytical, Inc.

Date: *09-May-16*

CLIENT: Pastor, Behling & Wheeler
Project: Luminant-Martin Lake
Lab Order: 1604052

Work Order Sample Summary

Lab Smp ID	Client Sample ID	Tag Number	Date Collected	Date Recved
1604052-01	H-29		04/05/16 07:55 AM	4/6/2016
1604052-02	H-31		04/05/16 08:45 AM	4/6/2016
1604052-03	H-32		04/05/16 09:30 AM	4/6/2016
1604052-04	H-30		04/05/16 10:30 AM	4/6/2016
1604052-05	DUP-1		04/05/16 10:30 AM	4/6/2016
1604052-06	H-27		04/05/16 11:20 AM	4/6/2016
1604052-07	H-28		04/05/16 12:15 PM	4/6/2016

Lab Order: 1604052
Client: Pastor, Behling & Wheeler
Project: Luminant-Martin Lake

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1604052-01A	H-29	04/05/16 07:55 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/06/16 12:07 PM	74461
	H-29	04/05/16 07:55 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/06/16 12:07 PM	74461
	H-29	04/05/16 07:55 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/06/16 12:07 PM	74461
	H-29	04/05/16 07:55 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	04/06/16 01:29 PM	74463
1604052-01D	H-29	04/05/16 07:55 AM	Aqueous	E300	Anion Preparation	04/07/16 10:57 AM	74480
	H-29	04/05/16 07:55 AM	Aqueous	E300	Anion Preparation	04/07/16 10:57 AM	74480
	H-29	04/05/16 07:55 AM	Aqueous	M4500-H+ B	pH Preparation	04/07/16 09:53 AM	74479
	H-29	04/05/16 07:55 AM	Aqueous	M2540C	TDS Preparation	04/11/16 09:22 AM	74527
1604052-02A	H-31	04/05/16 08:45 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/06/16 12:07 PM	74461
	H-31	04/05/16 08:45 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/06/16 12:07 PM	74461
	H-31	04/05/16 08:45 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	04/06/16 01:29 PM	74463
1604052-02D	H-31	04/05/16 08:45 AM	Aqueous	E300	Anion Preparation	04/07/16 10:57 AM	74480
	H-31	04/05/16 08:45 AM	Aqueous	E300	Anion Preparation	04/07/16 10:57 AM	74480
	H-31	04/05/16 08:45 AM	Aqueous	M4500-H+ B	pH Preparation	04/07/16 09:53 AM	74479
	H-31	04/05/16 08:45 AM	Aqueous	M2540C	TDS Preparation	04/11/16 09:22 AM	74527
1604052-03A	H-32	04/05/16 09:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/07/16 11:20 AM	74482
	H-32	04/05/16 09:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/07/16 11:20 AM	74482
	H-32	04/05/16 09:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/07/16 11:20 AM	74482
	H-32	04/05/16 09:30 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	04/06/16 01:29 PM	74463
1604052-03D	H-32	04/05/16 09:30 AM	Aqueous	E300	Anion Preparation	04/07/16 10:57 AM	74480
	H-32	04/05/16 09:30 AM	Aqueous	E300	Anion Preparation	04/07/16 10:57 AM	74480
	H-32	04/05/16 09:30 AM	Aqueous	M4500-H+ B	pH Preparation	04/07/16 09:53 AM	74479
	H-32	04/05/16 09:30 AM	Aqueous	M2540C	TDS Preparation	04/11/16 09:22 AM	74527
1604052-04A	H-30	04/05/16 10:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/07/16 11:20 AM	74482
	H-30	04/05/16 10:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/07/16 11:20 AM	74482
	H-30	04/05/16 10:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/07/16 11:20 AM	74482
	H-30	04/05/16 10:30 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	04/06/16 01:29 PM	74463
1604052-04D	H-30	04/05/16 10:30 AM	Aqueous	E300	Anion Preparation	04/07/16 10:57 AM	74480

Lab Order: 1604052
Client: Pastor, Behling & Wheeler
Project: Luminant-Martin Lake

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1604052-04D	H-30	04/05/16 10:30 AM	Aqueous	E300	Anion Preparation	04/07/16 10:57 AM	74480
	H-30	04/05/16 10:30 AM	Aqueous	M4500-H+ B	pH Preparation	04/07/16 09:53 AM	74479
	H-30	04/05/16 10:30 AM	Aqueous	M2540C	TDS Preparation	04/11/16 09:22 AM	74527
1604052-05A	DUP-1	04/05/16 10:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/07/16 11:20 AM	74482
	DUP-1	04/05/16 10:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/07/16 11:20 AM	74482
	DUP-1	04/05/16 10:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/07/16 11:20 AM	74482
	DUP-1	04/05/16 10:30 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	04/06/16 01:29 PM	74463
1604052-05D	DUP-1	04/05/16 10:30 AM	Aqueous	E300	Anion Preparation	04/07/16 10:57 AM	74480
	DUP-1	04/05/16 10:30 AM	Aqueous	E300	Anion Preparation	04/07/16 10:57 AM	74480
	DUP-1	04/05/16 10:30 AM	Aqueous	M4500-H+ B	pH Preparation	04/07/16 09:53 AM	74479
	DUP-1	04/05/16 10:30 AM	Aqueous	M2540C	TDS Preparation	04/11/16 09:22 AM	74527
1604052-06A	H-27	04/05/16 11:20 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/07/16 11:20 AM	74482
	H-27	04/05/16 11:20 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/07/16 11:20 AM	74482
	H-27	04/05/16 11:20 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/07/16 11:20 AM	74482
	H-27	04/05/16 11:20 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	04/06/16 01:29 PM	74463
1604052-06D	H-27	04/05/16 11:20 AM	Aqueous	E300	Anion Preparation	04/07/16 10:57 AM	74480
	H-27	04/05/16 11:20 AM	Aqueous	E300	Anion Preparation	04/07/16 10:57 AM	74480
	H-27	04/05/16 11:20 AM	Aqueous	M4500-H+ B	pH Preparation	04/07/16 09:53 AM	74479
	H-27	04/05/16 11:20 AM	Aqueous	M2540C	TDS Preparation	04/11/16 09:22 AM	74527
1604052-07A	H-28	04/05/16 12:15 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/07/16 11:20 AM	74482
	H-28	04/05/16 12:15 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/07/16 11:20 AM	74482
	H-28	04/05/16 12:15 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/07/16 11:20 AM	74482
	H-28	04/05/16 12:15 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	04/06/16 01:29 PM	74463
1604052-07D	H-28	04/05/16 12:15 PM	Aqueous	E300	Anion Preparation	04/07/16 10:57 AM	74480
	H-28	04/05/16 12:15 PM	Aqueous	E300	Anion Preparation	04/07/16 10:57 AM	74480
	H-28	04/05/16 12:15 PM	Aqueous	M4500-H+ B	pH Preparation	04/07/16 09:53 AM	74479
	H-28	04/05/16 12:15 PM	Aqueous	M2540C	TDS Preparation	04/11/16 09:22 AM	74527

Lab Order: 1604052
Client: Pastor, Behling & Wheeler
Project: Luminant-Martin Lake

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1604052-01A	H-29	Aqueous	SW7470A	Mercury Total: Aqueous	74463	1	04/07/16 05:08 PM	CETAC2_HG_160407C
	H-29	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	74461	1	04/07/16 02:41 PM	ICP-MS4_160407C
	H-29	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	74461	10	04/08/16 12:31 PM	ICP-MS4_160408C
	H-29	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	74461	1	04/08/16 12:58 PM	ICP-MS4_160408C
1604052-01D	H-29	Aqueous	E300	Anions by IC method - Water	74480	1	04/07/16 12:21 PM	IC3_160407A
	H-29	Aqueous	E300	Anions by IC method - Water	74480	10	04/07/16 05:13 PM	IC3_160407A
	H-29	Aqueous	M4500-H+ B	pH	74479	1	04/07/16 11:28 AM	TITRATOR_160407A
	H-29	Aqueous	M2540C	Total Dissolved Solids	74527	1	04/12/16 08:45 AM	WC_160411C
1604052-02A	H-31	Aqueous	SW7470A	Mercury Total: Aqueous	74463	1	04/07/16 05:10 PM	CETAC2_HG_160407C
	H-31	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	74461	1	04/07/16 02:43 PM	ICP-MS4_160407C
	H-31	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	74461	50	04/08/16 01:00 PM	ICP-MS4_160408C
1604052-02D	H-31	Aqueous	E300	Anions by IC method - Water	74480	100	04/07/16 06:15 PM	IC3_160407A
	H-31	Aqueous	E300	Anions by IC method - Water	74480	1	04/07/16 12:45 PM	IC3_160407A
	H-31	Aqueous	M4500-H+ B	pH	74479	1	04/07/16 11:35 AM	TITRATOR_160407A
	H-31	Aqueous	M2540C	Total Dissolved Solids	74527	1	04/12/16 08:45 AM	WC_160411C
1604052-03A	H-32	Aqueous	SW7470A	Mercury Total: Aqueous	74463	1	04/07/16 05:12 PM	CETAC2_HG_160407C
	H-32	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	74482	1	04/11/16 02:38 PM	ICP-MS4_160411D
	H-32	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	74482	10	04/13/16 12:16 PM	ICP-MS4_160413A
	H-32	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	74482	5	04/15/16 10:35 AM	ICP-MS4_160415A
1604052-03D	H-32	Aqueous	E300	Anions by IC method - Water	74480	1	04/07/16 01:05 PM	IC3_160407A
	H-32	Aqueous	E300	Anions by IC method - Water	74480	10	04/07/16 06:35 PM	IC3_160407A
	H-32	Aqueous	M4500-H+ B	pH	74479	1	04/07/16 11:37 AM	TITRATOR_160407A
	H-32	Aqueous	M2540C	Total Dissolved Solids	74527	1	04/12/16 08:45 AM	WC_160411C
1604052-04A	H-30	Aqueous	SW7470A	Mercury Total: Aqueous	74463	1	04/07/16 05:15 PM	CETAC2_HG_160407C
	H-30	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	74482	10	04/15/16 10:37 AM	ICP-MS4_160415A
	H-30	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	74482	1	04/11/16 02:46 PM	ICP-MS4_160411D

Lab Order: 1604052
Client: Pastor, Behling & Wheeler
Project: Luminant-Martin Lake

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1604052-04A	H-30	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	74482	10	04/13/16 11:20 AM	ICP-MS4_160413A
1604052-04D	H-30	Aqueous	E300	Anions by IC method - Water	74480	1	04/07/16 01:26 PM	IC3_160407A
	H-30	Aqueous	E300	Anions by IC method - Water	74480	100	04/07/16 06:56 PM	IC3_160407A
	H-30	Aqueous	M4500-H+ B	pH	74479	1	04/07/16 11:39 AM	TITRATOR_160407A
	H-30	Aqueous	M2540C	Total Dissolved Solids	74527	1	04/12/16 08:45 AM	WC_160411C
1604052-05A	DUP-1	Aqueous	SW7470A	Mercury Total: Aqueous	74463	1	04/07/16 05:17 PM	CETAC2_HG_160407C
	DUP-1	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	74482	1	04/11/16 02:48 PM	ICP-MS4_160411D
	DUP-1	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	74482	10	04/13/16 11:22 AM	ICP-MS4_160413A
	DUP-1	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	74482	10	04/15/16 10:39 AM	ICP-MS4_160415A
1604052-05D	DUP-1	Aqueous	E300	Anions by IC method - Water	74480	1	04/07/16 01:47 PM	IC3_160407A
	DUP-1	Aqueous	E300	Anions by IC method - Water	74480	100	04/07/16 07:17 PM	IC3_160407A
	DUP-1	Aqueous	M4500-H+ B	pH	74479	1	04/07/16 11:41 AM	TITRATOR_160407A
	DUP-1	Aqueous	M2540C	Total Dissolved Solids	74527	1	04/12/16 08:45 AM	WC_160411C
1604052-06A	H-27	Aqueous	SW7470A	Mercury Total: Aqueous	74463	1	04/07/16 05:19 PM	CETAC2_HG_160407C
	H-27	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	74482	1	04/11/16 02:50 PM	ICP-MS4_160411D
	H-27	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	74482	10	04/13/16 12:22 PM	ICP-MS4_160413A
	H-27	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	74482	1	04/15/16 10:31 AM	ICP-MS4_160415A
1604052-06D	H-27	Aqueous	E300	Anions by IC method - Water	74480	1	04/07/16 02:07 PM	IC3_160407A
	H-27	Aqueous	E300	Anions by IC method - Water	74480	10	04/07/16 07:37 PM	IC3_160407A
	H-27	Aqueous	M4500-H+ B	pH	74479	1	04/07/16 11:43 AM	TITRATOR_160407A
	H-27	Aqueous	M2540C	Total Dissolved Solids	74527	1	04/12/16 08:45 AM	WC_160411C
1604052-07A	H-28	Aqueous	SW7470A	Mercury Total: Aqueous	74463	1	04/07/16 05:21 PM	CETAC2_HG_160407C
	H-28	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	74482	1	04/11/16 02:52 PM	ICP-MS4_160411D
	H-28	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	74482	10	04/13/16 11:26 AM	ICP-MS4_160413A
	H-28	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	74482	10	04/15/16 10:41 AM	ICP-MS4_160415A
1604052-07D	H-28	Aqueous	E300	Anions by IC method - Water	74480	1	04/07/16 02:28 PM	IC3_160407A

Lab Order: 1604052
Client: Pastor, Behling & Wheeler
Project: Luminant-Martin Lake

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1604052-07D	H-28	Aqueous	E300	Anions by IC method - Water	74480	10	04/07/16 07:58 PM	IC3_160407A
	H-28	Aqueous	M4500-H+ B	pH	74479	1	04/07/16 11:45 AM	TITRATOR_160407A
	H-28	Aqueous	M2540C	Total Dissolved Solids	74527	1	04/12/16 08:45 AM	WC_160411C

DHL Analytical, Inc.

Date: *09-May-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	H-29
Project:	Luminant-Martin Lake	**Lab ID:**	1604052-01
Project No:	5164-B	**Collection Date:**	04/05/16 07:55 AM
Lab Order:	1604052	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	04/07/16 05:08 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	04/07/16 02:41 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	04/07/16 02:41 PM
Barium	0.167	0.00300	0.0100		mg/L	1	04/07/16 02:41 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	04/07/16 02:41 PM
Boron	0.361	0.0100	0.0300		mg/L	1	04/08/16 12:58 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	04/07/16 02:41 PM
Calcium	80.8	1.00	3.00		mg/L	10	04/08/16 12:31 PM
Chromium	0.0420	0.00200	0.00500		mg/L	1	04/07/16 02:41 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	04/07/16 02:41 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	04/07/16 02:41 PM
Lithium	0.0175	0.00500	0.0100		mg/L	1	04/07/16 02:41 PM
Molybdenum	0.00697	0.00200	0.00500		mg/L	1	04/07/16 02:41 PM
Selenium	0.0232	0.00200	0.00500		mg/L	1	04/07/16 02:41 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	04/07/16 02:41 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	14.2	0.300	1.00		mg/L	1	04/07/16 12:21 PM
Fluoride	0.363	0.100	0.400	J	mg/L	1	04/07/16 12:21 PM
Sulfate	181	10.0	30.0		mg/L	10	04/07/16 05:13 PM
PH		**M4500-H+ B**					Analyst: **JL**
pH	11.4	0	0		pH Units@19.5℃	1	04/07/16 11:28 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	489	10.0	10.0		mg/L	1	04/12/16 08:45 AM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *09-May-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	H-31
Project:	Luminant-Martin Lake	**Lab ID:**	1604052-02
Project No:	5164-B	**Collection Date:**	04/05/16 08:45 AM
Lab Order:	1604052	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	04/07/16 05:10 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	04/07/16 02:43 PM
Arsenic	0.00514	0.00200	0.00500		mg/L	1	04/07/16 02:43 PM
Barium	0.0241	0.00300	0.0100		mg/L	1	04/07/16 02:43 PM
Beryllium	0.00925	0.000300	0.00100		mg/L	1	04/07/16 02:43 PM
Boron	21.1	0.500	1.50		mg/L	50	04/08/16 01:00 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	04/07/16 02:43 PM
Calcium	250	5.00	15.0		mg/L	50	04/08/16 01:00 PM
Chromium	0.00435	0.00200	0.00500	J	mg/L	1	04/07/16 02:43 PM
Cobalt	0.0685	0.00300	0.00500		mg/L	1	04/07/16 02:43 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	04/07/16 02:43 PM
Lithium	0.146	0.00500	0.0100		mg/L	1	04/07/16 02:43 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	04/07/16 02:43 PM
Selenium	0.0226	0.00200	0.00500		mg/L	1	04/07/16 02:43 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	04/07/16 02:43 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	186	30.0	100		mg/L	100	04/07/16 06:15 PM
Fluoride	1.36	0.100	0.400		mg/L	1	04/07/16 12:45 PM
Sulfate	2450	100	300		mg/L	100	04/07/16 06:15 PM
PH		**M4500-H+ B**					Analyst: **JL**
pH	6.27	0	0		pH Units@20.2℃	1	04/07/16 11:35 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	3920	50.0	50.0		mg/L	1	04/12/16 08:45 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *09-May-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	H-32
Project:	Luminant-Martin Lake	**Lab ID:**	1604052-03
Project No:	5164-B	**Collection Date:**	04/05/16 09:30 AM
Lab Order:	1604052	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	04/07/16 05:12 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	04/11/16 02:38 PM
Arsenic	0.00648	0.00200	0.00500		mg/L	1	04/11/16 02:38 PM
Barium	0.0237	0.00300	0.0100		mg/L	1	04/11/16 02:38 PM
Beryllium	0.00527	0.000300	0.00100		mg/L	1	04/11/16 02:38 PM
Boron	1.65	0.0500	0.150		mg/L	5	04/15/16 10:35 AM
Cadmium	0.00128	0.000300	0.00100		mg/L	1	04/11/16 02:38 PM
Calcium	44.3	1.00	3.00		mg/L	10	04/13/16 12:16 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	04/11/16 02:38 PM
Cobalt	0.208	0.00300	0.00500		mg/L	1	04/11/16 02:38 PM
Lead	0.00182	0.000300	0.00100		mg/L	1	04/11/16 02:38 PM
Lithium	0.0818	0.00500	0.0100		mg/L	1	04/11/16 02:38 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	04/11/16 02:38 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	04/11/16 02:38 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	04/11/16 02:38 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	125	3.00	10.0		mg/L	10	04/07/16 06:35 PM
Fluoride	1.05	0.100	0.400		mg/L	1	04/07/16 01:05 PM
Sulfate	337	10.0	30.0		mg/L	10	04/07/16 06:35 PM
PH		**M4500-H+ B**					Analyst: **JL**
pH	5.47	0	0		pH Units@20.1℃	1	04/07/16 11:37 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	831	10.0	10.0		mg/L	1	04/12/16 08:45 AM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *09-May-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	H-30
Project:	Luminant-Martin Lake	**Lab ID:**	1604052-04
Project No:	5164-B	**Collection Date:**	04/05/16 10:30 AM
Lab Order:	1604052	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	04/07/16 05:15 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	04/11/16 02:46 PM
Arsenic	0.00525	0.00200	0.00500		mg/L	1	04/11/16 02:46 PM
Barium	0.0434	0.00300	0.0100		mg/L	1	04/11/16 02:46 PM
Beryllium	0.00505	0.000300	0.00100		mg/L	1	04/11/16 02:46 PM
Boron	6.67	0.100	0.300		mg/L	10	04/15/16 10:37 AM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	04/11/16 02:46 PM
Calcium	161	1.00	3.00		mg/L	10	04/13/16 11:20 AM
Chromium	0.00888	0.00200	0.00500		mg/L	1	04/11/16 02:46 PM
Cobalt	0.161	0.00300	0.00500		mg/L	1	04/11/16 02:46 PM
Lead	0.00230	0.000300	0.00100		mg/L	1	04/11/16 02:46 PM
Lithium	0.0807	0.00500	0.0100		mg/L	1	04/11/16 02:46 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	04/11/16 02:46 PM
Selenium	0.0301	0.00200	0.00500		mg/L	1	04/11/16 02:46 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	04/11/16 02:46 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	100	30.0	100		mg/L	100	04/07/16 06:56 PM
Fluoride	0.514	0.100	0.400		mg/L	1	04/07/16 01:26 PM
Sulfate	1260	100	300		mg/L	100	04/07/16 06:56 PM
PH		**M4500-H+ B**					Analyst: **JL**
pH	5.75	0	0		pH Units@20℃	1	04/07/16 11:39 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	2120	50.0	50.0		mg/L	1	04/12/16 08:45 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *09-May-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	DUP-1
Project:	Luminant-Martin Lake	**Lab ID:**	1604052-05
Project No:	5164-B	**Collection Date:**	04/05/16 10:30 AM
Lab Order:	1604052	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	04/07/16 05:17 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	04/11/16 02:48 PM
Arsenic	0.00589	0.00200	0.00500		mg/L	1	04/11/16 02:48 PM
Barium	0.0367	0.00300	0.0100		mg/L	1	04/11/16 02:48 PM
Beryllium	0.00561	0.000300	0.00100		mg/L	1	04/11/16 02:48 PM
Boron	7.21	0.100	0.300		mg/L	10	04/15/16 10:39 AM
Cadmium	0.000450	0.000300	0.00100	J	mg/L	1	04/11/16 02:48 PM
Calcium	150	1.00	3.00		mg/L	10	04/13/16 11:22 AM
Chromium	0.0102	0.00200	0.00500		mg/L	1	04/11/16 02:48 PM
Cobalt	0.167	0.00300	0.00500		mg/L	1	04/11/16 02:48 PM
Lead	0.00442	0.000300	0.00100		mg/L	1	04/11/16 02:48 PM
Lithium	0.0817	0.00500	0.0100		mg/L	1	04/11/16 02:48 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	04/11/16 02:48 PM
Selenium	0.0203	0.00200	0.00500		mg/L	1	04/11/16 02:48 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	04/11/16 02:48 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	99.6	30.0	100	J	mg/L	100	04/07/16 07:17 PM
Fluoride	0.450	0.100	0.400		mg/L	1	04/07/16 01:47 PM
Sulfate	1270	100	300		mg/L	100	04/07/16 07:17 PM
PH		**M4500-H+ B**					Analyst: **JL**
pH	5.67	0	0		pH Units@20.1℃	1	04/07/16 11:41 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	2170	50.0	50.0		mg/L	1	04/12/16 08:45 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *09-May-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	H-27
Project:	Luminant-Martin Lake	**Lab ID:**	1604052-06
Project No:	5164-B	**Collection Date:**	04/05/16 11:20 AM
Lab Order:	1604052	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	04/07/16 05:19 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	04/11/16 02:50 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	04/11/16 02:50 PM
Barium	0.0245	0.00300	0.0100		mg/L	1	04/11/16 02:50 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	04/11/16 02:50 PM
Boron	0.480	0.0100	0.0300		mg/L	1	04/15/16 10:31 AM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	04/11/16 02:50 PM
Calcium	52.7	1.00	3.00		mg/L	10	04/13/16 12:22 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	04/11/16 02:50 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	04/11/16 02:50 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	04/11/16 02:50 PM
Lithium	0.0573	0.00500	0.0100		mg/L	1	04/11/16 02:50 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	04/11/16 02:50 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	04/11/16 02:50 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	04/11/16 02:50 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	115	3.00	10.0		mg/L	10	04/07/16 07:37 PM
Fluoride	0.124	0.100	0.400	J	mg/L	1	04/07/16 02:07 PM
Sulfate	360	10.0	30.0		mg/L	10	04/07/16 07:37 PM
PH		**M4500-H+ B**					Analyst: **JL**
pH	6.11	0	0		pH Units@20.4℃	1	04/07/16 11:43 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	819	10.0	10.0		mg/L	1	04/12/16 08:45 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *09-May-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	H-28
Project:	Luminant-Martin Lake	**Lab ID:**	1604052-07
Project No:	5164-B	**Collection Date:**	04/05/16 12:15 PM
Lab Order:	1604052	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	04/07/16 05:21 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	04/11/16 02:52 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	04/11/16 02:52 PM
Barium	0.0173	0.00300	0.0100		mg/L	1	04/11/16 02:52 PM
Beryllium	0.00110	0.000300	0.00100		mg/L	1	04/11/16 02:52 PM
Boron	10.3	0.100	0.300		mg/L	10	04/15/16 10:41 AM
Cadmium	0.00252	0.000300	0.00100		mg/L	1	04/11/16 02:52 PM
Calcium	120	1.00	3.00		mg/L	10	04/13/16 11:26 AM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	04/11/16 02:52 PM
Cobalt	0.199	0.00300	0.00500		mg/L	1	04/11/16 02:52 PM
Lead	0.000874	0.000300	0.00100	J	mg/L	1	04/11/16 02:52 PM
Lithium	0.150	0.00500	0.0100		mg/L	1	04/11/16 02:52 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	04/11/16 02:52 PM
Selenium	0.00237	0.00200	0.00500	J	mg/L	1	04/11/16 02:52 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	04/11/16 02:52 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	94.4	3.00	10.0		mg/L	10	04/07/16 07:58 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	04/07/16 02:28 PM
Sulfate	1080	10.0	30.0		mg/L	10	04/07/16 07:58 PM
PH		**M4500-H+ B**					Analyst: **JL**
pH	5.25	0	0		pH Units@20.5℃	1	04/07/16 11:45 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	1890	50.0	50.0		mg/L	1	04/12/16 08:45 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT: Pastor, Behling & Wheeler
Work Order: 1604052
Project: Luminant-Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_160407C

The QC data in batch 74463 applies to the following samples: 1604052-01A, 1604052-02A, 1604052-03A, 1604052-04A, 1604052-05A, 1604052-06A, 1604052-07A

Sample ID **MB-74463** Batch ID: **74463** TestNo: **SW7470A** Units: **mg/L**
SampType: **MBLK** Run ID: **CETAC2_HG_160407C** Analysis Date: **4/7/2016 4:24:08 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.0000800	0.000200								

Sample ID **LCS-74463** Batch ID: **74463** TestNo: **SW7470A** Units: **mg/L**
SampType: **LCS** Run ID: **CETAC2_HG_160407C** Analysis Date: **4/7/2016 4:28:40 PM** Prep Date: **4/1/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00169	0.000200	0.00200	0	84.5	85	115			

Sample ID **LCSD-74463** Batch ID: **74463** TestNo: **SW7470A** Units: **mg/L**
SampType: **LCSD** Run ID: **CETAC2_HG_160407C** Analysis Date: **4/7/2016 4:30:57 PM** Prep Date: **4/1/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00203	0.000200	0.00200	0	102	85	115	18.3	15	R

Sample ID **1604052-07A SD** Batch ID: **74463** TestNo: **SW7470A** Units: **mg/L**
SampType: **SD** Run ID: **CETAC2_HG_160407C** Analysis Date: **4/7/2016 5:24:15 PM** Prep Date: **4/6/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.000400	0.00100	0	0				0	10	

Sample ID **1604052-07A PDS** Batch ID: **74463** TestNo: **SW7470A** Units: **mg/L**
SampType: **PDS** Run ID: **CETAC2_HG_160407C** Analysis Date: **4/7/2016 5:26:31 PM** Prep Date: **4/6/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00206	0.000200	0.00250	0	82.4	85	115			S

Sample ID **1604052-07A MS** Batch ID: **74463** TestNo: **SW7470A** Units: **mg/L**
SampType: **MS** Run ID: **CETAC2_HG_160407C** Analysis Date: **4/7/2016 5:28:48 PM** Prep Date: **4/6/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00166	0.000200	0.00200	0	83.0	80	120			

Sample ID **1604052-07A MSD** Batch ID: **74463** TestNo: **SW7470A** Units: **mg/L**
SampType: **MSD** Run ID: **CETAC2_HG_160407C** Analysis Date: **4/7/2016 5:31:04 PM** Prep Date: **4/6/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00168	0.000200	0.00200	0	84.0	80	120	1.20	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1604052
Project: Luminant-Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_160407C

Sample ID	**ICV-160407**	Batch ID:	**R85117**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**ICV**	Run ID:	**CETAC2_HG_160407C**	Analysis Date:	**4/7/2016 4:19:34 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00386	0.000200	0.00400	0	96.5	90	110			

Sample ID	**CCV1-160407**	Batch ID:	**R85117**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**CETAC2_HG_160407C**	Analysis Date:	**4/7/2016 4:59:15 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00194	0.000200	0.00200	0	97.0	90	110			

Sample ID	**CCV2-160407**	Batch ID:	**R85117**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**CETAC2_HG_160407C**	Analysis Date:	**4/7/2016 5:33:22 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00198	0.000200	0.00200	0	99.0	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1604052
Project: Luminant-Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: **ICP-MS4_160407C**

The QC data in batch 74461 applies to the following samples: 1604052-01A, 1604052-02A

Sample ID **MB-74461** Batch ID: **74461** TestNo: **SW6020A** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_160407C** Analysis Date: **4/7/2016 1:35:00 PM** Prep Date: **4/6/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.000800	0.00250								
Arsenic	<0.00200	0.00500								
Barium	<0.00300	0.0100								
Beryllium	<0.000300	0.00100								
Cadmium	<0.000300	0.00100								
Calcium	<0.100	0.300								
Chromium	<0.00200	0.00500								
Cobalt	<0.00300	0.00500								
Lead	<0.000300	0.00100								
Lithium	<0.00500	0.0100								
Molybdenum	<0.00200	0.00500								
Selenium	<0.00200	0.00500								
Thallium	<0.000500	0.00150								

Sample ID **LCS-74461** Batch ID: **74461** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_160407C** Analysis Date: **4/7/2016 1:37:00 PM** Prep Date: **4/6/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.195	0.00250	0.200	0	97.6	80	120			
Arsenic	0.196	0.00500	0.200	0	98.1	80	120			
Barium	0.193	0.0100	0.200	0	96.4	80	120			
Beryllium	0.196	0.00100	0.200	0	98.1	80	120			
Cadmium	0.192	0.00100	0.200	0	96.0	80	120			
Calcium	4.83	0.300	5.00	0	96.6	80	120			
Chromium	0.195	0.00500	0.200	0	97.7	80	120			
Cobalt	0.198	0.00500	0.200	0	99.0	80	120			
Lead	0.192	0.00100	0.200	0	96.0	80	120			
Lithium	0.194	0.0100	0.200	0	96.9	80	120			
Molybdenum	0.190	0.00500	0.200	0	95.0	80	120			
Selenium	0.201	0.00500	0.200	0	100	80	120			
Thallium	0.194	0.00150	0.200	0	97.0	80	120			

Sample ID **LCSD-74461** Batch ID: **74461** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_160407C** Analysis Date: **4/7/2016 1:39:00 PM** Prep Date: **4/6/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.199	0.00250	0.200	0	99.4	80	120	1.81	15	
Arsenic	0.198	0.00500	0.200	0	98.8	80	120	0.723	15	
Barium	0.196	0.0100	0.200	0	98.1	80	120	1.69	15	
Beryllium	0.198	0.00100	0.200	0	98.8	80	120	0.751	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

Sample ID **LCSD-74461**	Batch ID: **74461**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCSD**	Run ID: **ICP-MS4_160407C**	Analysis Date: **4/7/2016 1:39:00 PM**	Prep Date: **4/6/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cadmium	0.195	0.00100	0.200	0	97.4	80	120	1.44	15	
Calcium	4.85	0.300	5.00	0	97.1	80	120	0.439	15	
Chromium	0.196	0.00500	0.200	0	98.1	80	120	0.446	15	
Cobalt	0.200	0.00500	0.200	0	100	80	120	1.05	15	
Lead	0.192	0.00100	0.200	0	95.9	80	120	0.056	15	
Lithium	0.198	0.0100	0.200	0	98.9	80	120	1.99	15	
Molybdenum	0.192	0.00500	0.200	0	95.8	80	120	0.839	15	
Selenium	0.199	0.00500	0.200	0	99.4	80	120	1.06	15	
Thallium	0.194	0.00150	0.200	0	96.8	80	120	0.181	15	

Sample ID **1604046-01A SD**	Batch ID: **74461**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS4_160407C**	Analysis Date: **4/7/2016 1:45:00 PM**	Prep Date: **4/6/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.00400	0.0125	0	0				0	10	
Arsenic	<0.0100	0.0250	0	0				0	10	
Barium	0.0646	0.0500	0	0.0648				0.294	10	
Beryllium	<0.00150	0.00500	0	0				0	10	
Cadmium	<0.00150	0.00500	0	0				0	10	
Chromium	<0.0100	0.0250	0	0				0	10	
Cobalt	<0.0150	0.0250	0	0				0	10	
Lead	<0.00150	0.00500	0	0				0	10	
Lithium	0.0340	0.0500	0	0.0346				1.90	10	
Molybdenum	<0.0100	0.0250	0	0				0	10	
Selenium	<0.0100	0.0250	0	0				0	10	
Thallium	<0.00250	0.00750	0	0				0	10	

Sample ID **1604046-01A PDS**	Batch ID: **74461**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_160407C**	Analysis Date: **4/7/2016 2:05:00 PM**	Prep Date: **4/6/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.181	0.00250	0.200	0	90.6	80	120			
Arsenic	0.203	0.00500	0.200	0	102	80	120			
Barium	0.258	0.0100	0.200	0.0648	96.4	80	120			
Beryllium	0.196	0.00100	0.200	0	98.2	80	120			
Cadmium	0.191	0.00100	0.200	0	95.6	80	120			
Chromium	0.202	0.00500	0.200	0	101	80	120			
Cobalt	0.198	0.00500	0.200	0	99.2	80	120			
Lead	0.198	0.00100	0.200	0	99.2	80	120			
Lithium	0.222	0.0100	0.200	0.0346	93.5	80	120			
Molybdenum	0.192	0.00500	0.200	0	96.0	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1604052
Project: Luminant-Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160407C

Sample ID **1604046-01A PDS**	Batch ID: **74461**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_160407C**	Analysis Date: **4/7/2016 2:05:00 PM**	Prep Date: **4/6/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.204	0.00500	0.200	0	102	80	120			
Thallium	0.199	0.00150	0.200	0	99.7	80	120			

Sample ID **1604046-01A MS**	Batch ID: **74461**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS4_160407C**	Analysis Date: **4/7/2016 2:07:00 PM**	Prep Date: **4/6/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.205	0.00250	0.200	0	102	80	120			
Arsenic	0.199	0.00500	0.200	0	99.6	80	120			
Barium	0.264	0.0100	0.200	0.0648	99.6	80	120			
Beryllium	0.191	0.00100	0.200	0	95.7	80	120			
Cadmium	0.193	0.00100	0.200	0	96.5	80	120			
Calcium	59.0	0.300	5.00	54.3	93.3	80	120			
Chromium	0.193	0.00500	0.200	0	96.4	80	120			
Cobalt	0.192	0.00500	0.200	0	95.9	80	120			
Lead	0.192	0.00100	0.200	0	95.9	80	120			
Lithium	0.222	0.0100	0.200	0.0346	93.6	80	120			
Molybdenum	0.195	0.00500	0.200	0	97.7	80	120			
Selenium	0.196	0.00500	0.200	0	98.1	80	120			
Thallium	0.194	0.00150	0.200	0	97.1	80	120			

Sample ID **1604046-01A MSD**	Batch ID: **74461**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS4_160407C**	Analysis Date: **4/7/2016 2:09:00 PM**	Prep Date: **4/6/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.200	0.00250	0.200	0	99.9	80	120	2.52	15	
Arsenic	0.198	0.00500	0.200	0	99.0	80	120	0.585	15	
Barium	0.260	0.0100	0.200	0.0648	97.5	80	120	1.57	15	
Beryllium	0.193	0.00100	0.200	0	96.3	80	120	0.697	15	
Cadmium	0.191	0.00100	0.200	0	95.6	80	120	0.932	15	
Calcium	60.0	0.300	5.00	54.3	113	80	120	1.63	15	
Chromium	0.192	0.00500	0.200	0	96.2	80	120	0.213	15	
Cobalt	0.191	0.00500	0.200	0	95.4	80	120	0.465	15	
Lead	0.191	0.00100	0.200	0	95.4	80	120	0.499	15	
Lithium	0.223	0.0100	0.200	0.0346	94.2	80	120	0.517	15	
Molybdenum	0.194	0.00500	0.200	0	96.9	80	120	0.847	15	
Selenium	0.195	0.00500	0.200	0	97.4	80	120	0.727	15	
Thallium	0.194	0.00150	0.200	0	97.2	80	120	0.025	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1604052
Project: Luminant-Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160407C

Sample ID **ICV-160407**	Batch ID: **R85109**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_160407C**	Analysis Date: **4/7/2016 10:13:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.0988	0.00250	0.100	0	98.8	90	110			
Arsenic	0.0993	0.00500	0.100	0	99.3	90	110			
Barium	0.0985	0.0100	0.100	0	98.5	90	110			
Beryllium	0.0984	0.00100	0.100	0	98.4	90	110			
Cadmium	0.0977	0.00100	0.100	0	97.7	90	110			
Calcium	2.33	0.300	2.50	0	93.2	90	110			
Chromium	0.107	0.00500	0.100	0	107	90	110			
Cobalt	0.103	0.00500	0.100	0	103	90	110			
Lead	0.0991	0.00100	0.100	0	99.1	90	110			
Lithium	0.0993	0.0100	0.100	0	99.3	90	110			
Molybdenum	0.0956	0.00500	0.100	0	95.6	90	110			
Selenium	0.0994	0.00500	0.100	0	99.4	90	110			
Thallium	0.0983	0.00150	0.100	0	98.3	90	110			

Sample ID **LCVL-160407**	Batch ID: **R85109**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160407C**	Analysis Date: **4/7/2016 10:29:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00208	0.00250	0.00200	0	104	70	130			
Arsenic	0.00539	0.00500	0.00500	0	108	70	130			
Barium	0.00514	0.0100	0.00500	0	103	70	130			
Beryllium	0.000974	0.00100	0.00100	0	97.4	70	130			
Cadmium	0.00102	0.00100	0.00100	0	102	70	130			
Calcium	0.0978	0.300	0.100	0	97.8	70	130			
Chromium	0.00543	0.00500	0.00500	0	109	70	130			
Cobalt	0.00542	0.00500	0.00500	0	108	70	130			
Lead	0.000953	0.00100	0.00100	0	95.3	70	130			
Lithium	0.0110	0.0100	0.0100	0	110	70	130			
Molybdenum	0.00510	0.00500	0.00500	0	102	70	130			
Selenium	0.00538	0.00500	0.00500	0	108	70	130			
Thallium	0.00104	0.00150	0.00100	0	104	70	130			

Sample ID **CCV3-160407**	Batch ID: **R85109**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160407C**	Analysis Date: **4/7/2016 1:14:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.200	0.00250	0.200	0	100	90	110			
Arsenic	0.206	0.00500	0.200	0	103	90	110			
Barium	0.203	0.0100	0.200	0	101	90	110			
Beryllium	0.206	0.00100	0.200	0	103	90	110			
Cadmium	0.203	0.00100	0.200	0	102	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1604052
Project: Luminant-Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160407C

Sample ID **CCV3-160407**	Batch ID: **R85109**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160407C**	Analysis Date: **4/7/2016 1:14:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.91	0.300	5.00	0	98.1	90	110			
Chromium	0.207	0.00500	0.200	0	103	90	110			
Cobalt	0.209	0.00500	0.200	0	105	90	110			
Lead	0.200	0.00100	0.200	0	100	90	110			
Lithium	0.206	0.0100	0.200	0	103	90	110			
Molybdenum	0.196	0.00500	0.200	0	98.1	90	110			
Selenium	0.205	0.00500	0.200	0	103	90	110			
Thallium	0.202	0.00150	0.200	0	101	90	110			

Sample ID **LCVL3-160407**	Batch ID: **R85109**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160407C**	Analysis Date: **4/7/2016 1:24:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00200	0.00250	0.00200	0	100	70	130			
Arsenic	0.00535	0.00500	0.00500	0	107	70	130			
Barium	0.00509	0.0100	0.00500	0	102	70	130			
Beryllium	0.00115	0.00100	0.00100	0	115	70	130			
Cadmium	0.00103	0.00100	0.00100	0	103	70	130			
Calcium	0.0999	0.300	0.100	0	99.9	70	130			
Chromium	0.00530	0.00500	0.00500	0	106	70	130			
Cobalt	0.00541	0.00500	0.00500	0	108	70	130			
Lead	0.000905	0.00100	0.00100	0	90.5	70	130			
Lithium	0.0108	0.0100	0.0100	0	108	70	130			
Molybdenum	0.00507	0.00500	0.00500	0	101	70	130			
Selenium	0.00568	0.00500	0.00500	0	114	70	130			
Thallium	0.00101	0.00150	0.00100	0	101	70	130			

Sample ID **CCV4-160407**	Batch ID: **R85109**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160407C**	Analysis Date: **4/7/2016 2:11:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.201	0.00250	0.200	0	101	90	110			
Arsenic	0.209	0.00500	0.200	0	104	90	110			
Barium	0.201	0.0100	0.200	0	101	90	110			
Beryllium	0.201	0.00100	0.200	0	101	90	110			
Cadmium	0.199	0.00100	0.200	0	99.5	90	110			
Calcium	4.96	0.300	5.00	0	99.2	90	110			
Chromium	0.205	0.00500	0.200	0	103	90	110			
Cobalt	0.211	0.00500	0.200	0	106	90	110			
Lead	0.201	0.00100	0.200	0	100	90	110			
Lithium	0.204	0.0100	0.200	0	102	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160407C

Sample ID **CCV4-160407** Batch ID: **R85109** TestNo: **SW6020A** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_160407C** Analysis Date: **4/7/2016 2:11:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Molybdenum	0.194	0.00500	0.200	0	97.2	90	110			
Selenium	0.206	0.00500	0.200	0	103	90	110			
Thallium	0.202	0.00150	0.200	0	101	90	110			

Sample ID **LCVL4-160407** Batch ID: **R85109** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_160407C** Analysis Date: **4/7/2016 2:25:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00214	0.00250	0.00200	0	107	70	130			
Arsenic	0.00528	0.00500	0.00500	0	106	70	130			
Barium	0.00528	0.0100	0.00500	0	106	70	130			
Beryllium	0.000975	0.00100	0.00100	0	97.5	70	130			
Cadmium	0.000973	0.00100	0.00100	0	97.3	70	130			
Calcium	0.101	0.300	0.100	0	101	70	130			
Chromium	0.00516	0.00500	0.00500	0	103	70	130			
Cobalt	0.00530	0.00500	0.00500	0	106	70	130			
Lead	0.000908	0.00100	0.00100	0	90.8	70	130			
Lithium	0.0104	0.0100	0.0100	0	104	70	130			
Molybdenum	0.00510	0.00500	0.00500	0	102	70	130			
Selenium	0.00559	0.00500	0.00500	0	112	70	130			
Thallium	0.00100	0.00150	0.00100	0	100	70	130			

Sample ID **CCV5-160407** Batch ID: **R85109** TestNo: **SW6020A** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_160407C** Analysis Date: **4/7/2016 2:49:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.200	0.00250	0.200	0	99.9	90	110			
Arsenic	0.208	0.00500	0.200	0	104	90	110			
Barium	0.202	0.0100	0.200	0	101	90	110			
Beryllium	0.203	0.00100	0.200	0	102	90	110			
Cadmium	0.201	0.00100	0.200	0	101	90	110			
Chromium	0.205	0.00500	0.200	0	103	90	110			
Cobalt	0.210	0.00500	0.200	0	105	90	110			
Lead	0.203	0.00100	0.200	0	102	90	110			
Lithium	0.206	0.0100	0.200	0	103	90	110			
Molybdenum	0.195	0.00500	0.200	0	97.5	90	110			
Selenium	0.208	0.00500	0.200	0	104	90	110			
Thallium	0.206	0.00150	0.200	0	103	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1604052
Project: Luminant-Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160407C

Sample ID **LCVL5-160407** Batch ID: **R85109** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_160407C** Analysis Date: **4/7/2016 3:01:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00207	0.00250	0.00200	0	104	70	130			
Arsenic	0.00546	0.00500	0.00500	0	109	70	130			
Barium	0.00527	0.0100	0.00500	0	105	70	130			
Beryllium	0.00106	0.00100	0.00100	0	106	70	130			
Cadmium	0.00105	0.00100	0.00100	0	104	70	130			
Chromium	0.00525	0.00500	0.00500	0	105	70	130			
Cobalt	0.00546	0.00500	0.00500	0	109	70	130			
Lead	0.000907	0.00100	0.00100	0	90.7	70	130			
Lithium	0.0104	0.0100	0.0100	0	104	70	130			
Molybdenum	0.00506	0.00500	0.00500	0	101	70	130			
Selenium	0.00590	0.00500	0.00500	0	118	70	130			
Thallium	0.00101	0.00150	0.00100	0	101	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1604052
Project: Luminant-Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: **ICP-MS4_160408C**

The QC data in batch 74461 applies to the following samples: 1604052-01A, 1604052-02A

Sample ID	**MB-74461**	Batch ID:	**74461**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**ICP-MS4_160408C**	Analysis Date:	**4/8/2016 12:02:00 PM**	Prep Date:	**4/6/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	<0.0100	0.0300								

Sample ID	**LCS-74461**	Batch ID:	**74461**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**ICP-MS4_160408C**	Analysis Date:	**4/8/2016 12:04:00 PM**	Prep Date:	**4/6/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.197	0.0300	0.200	0	98.4	80	120			

Sample ID	**LCSD-74461**	Batch ID:	**74461**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**LCSD**	Run ID:	**ICP-MS4_160408C**	Analysis Date:	**4/8/2016 12:06:00 PM**	Prep Date:	**4/6/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.195	0.0300	0.200	0	97.5	80	120	0.941	15	

Sample ID	**1604046-01A SD**	Batch ID:	**74461**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**SD**	Run ID:	**ICP-MS4_160408C**	Analysis Date:	**4/8/2016 12:12:00 PM**	Prep Date:	**4/6/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	<0.500	1.50	0	0.333				0	10	
Calcium	56.5	15.0	0	57.3				1.35	10	

Sample ID	**1604046-01A PDS**	Batch ID:	**74461**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**PDS**	Run ID:	**ICP-MS4_160408C**	Analysis Date:	**4/8/2016 12:33:00 PM**	Prep Date:	**4/6/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	2.43	0.300	2.00	0.333	105	80	120			
Calcium	107	3.00	50.0	57.3	98.7	80	120			

Sample ID	**1604046-01A MS**	Batch ID:	**74461**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**MS**	Run ID:	**ICP-MS4_160408C**	Analysis Date:	**4/8/2016 12:35:00 PM**	Prep Date:	**4/6/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.662	0.300	0.200	0.333	164	80	120			S

Sample ID	**1604046-01A MSD**	Batch ID:	**74461**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**MSD**	Run ID:	**ICP-MS4_160408C**	Analysis Date:	**4/8/2016 12:37:00 PM**	Prep Date:	**4/6/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.621	0.300	0.200	0.333	144	80	120	6.40	15	S

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1604052
Project: Luminant-Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160408C

Sample ID **ICV-160408**	Batch ID: **R85142**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_160408C**	Analysis Date: **4/8/2016 11:00:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0999	0.0300	0.100	0	99.9	90	110			
Calcium	2.42	0.300	2.50	0	96.9	90	110			

Sample ID **LCVL-160408**	Batch ID: **R85142**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160408C**	Analysis Date: **4/8/2016 11:06:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0216	0.0300	0.0200	0	108	70	130			
Calcium	0.118	0.300	0.100	0	118	70	130			

Sample ID **CCV2-160408**	Batch ID: **R85142**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160408C**	Analysis Date: **4/8/2016 11:54:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.193	0.0300	0.200	0	96.7	90	110			
Calcium	4.74	0.300	5.00	0	94.7	90	110			

Sample ID **LCVL2-160408**	Batch ID: **R85142**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160408C**	Analysis Date: **4/8/2016 11:58:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0201	0.0300	0.0200	0	101	70	130			
Calcium	0.113	0.300	0.100	0	113	70	130			

Sample ID **CCV3-160408**	Batch ID: **R85142**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160408C**	Analysis Date: **4/8/2016 12:43:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.201	0.0300	0.200	0	100	90	110			
Calcium	4.80	0.300	5.00	0	95.9	90	110			

Sample ID **LCVL3-160408**	Batch ID: **R85142**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160408C**	Analysis Date: **4/8/2016 12:49:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0225	0.0300	0.0200	0	113	70	130			
Calcium	0.110	0.300	0.100	0	110	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1604052
Project: Luminant-Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160408C

Sample ID **CCV4-160408**	Batch ID: **R85142**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160408C**	Analysis Date: **4/8/2016 1:24:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.187	0.0300	0.200	0	93.7	90	110			
Calcium	4.76	0.300	5.00	0	95.2	90	110			

Sample ID **LCVL4-160408**	Batch ID: **R85142**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160408C**	Analysis Date: **4/8/2016 1:31:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0188	0.0300	0.0200	0	94.1	70	130			
Calcium	0.106	0.300	0.100	0	106	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1604052
Project: Luminant-Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160411D

The QC data in batch 74482 applies to the following samples: 1604052-03A, 1604052-04A, 1604052-05A, 1604052-06A, 1604052-07A

Sample ID **MB-74482** Batch ID: **74482** TestNo: **SW6020A** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_160411D** Analysis Date: **4/11/2016 2:30:00 PM** Prep Date: **4/7/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.000800	0.00250								
Arsenic	<0.00200	0.00500								
Barium	<0.00300	0.0100								
Beryllium	<0.000300	0.00100								
Cadmium	<0.000300	0.00100								
Calcium	<0.100	0.300								
Chromium	<0.00200	0.00500								
Cobalt	<0.00300	0.00500								
Lead	<0.000300	0.00100								
Lithium	<0.00500	0.0100								
Molybdenum	<0.00200	0.00500								
Selenium	<0.00200	0.00500								
Thallium	<0.000500	0.00150								

Sample ID **LCS-74482** Batch ID: **74482** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_160411D** Analysis Date: **4/11/2016 2:32:00 PM** Prep Date: **4/7/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.188	0.00250	0.200	0	94.1	80	120			
Arsenic	0.165	0.00500	0.200	0	82.5	80	120			
Barium	0.186	0.0100	0.200	0	93.2	80	120			
Beryllium	0.194	0.00100	0.200	0	96.9	80	120			
Cadmium	0.190	0.00100	0.200	0	94.8	80	120			
Calcium	4.98	0.300	5.00	0	99.5	80	120			
Chromium	0.190	0.00500	0.200	0	94.9	80	120			
Cobalt	0.203	0.00500	0.200	0	101	80	120			
Lead	0.192	0.00100	0.200	0	96.0	80	120			
Lithium	0.194	0.0100	0.200	0	96.9	80	120			
Molybdenum	0.170	0.00500	0.200	0	85.2	80	120			
Selenium	0.189	0.00500	0.200	0	94.5	80	120			
Thallium	0.194	0.00150	0.200	0	97.2	80	120			

Sample ID **LCSD-74482** Batch ID: **74482** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_160411D** Analysis Date: **4/11/2016 2:34:00 PM** Prep Date: **4/7/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.190	0.00250	0.200	0	94.9	80	120	0.895	15	
Arsenic	0.175	0.00500	0.200	0	87.6	80	120	5.95	15	
Barium	0.187	0.0100	0.200	0	93.6	80	120	0.445	15	
Beryllium	0.193	0.00100	0.200	0	96.4	80	120	0.525	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1604052
Project: Luminant-Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160411D

Sample ID **LCSD-74482**	Batch ID: **74482**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCSD**	Run ID: **ICP-MS4_160411D**	Analysis Date: **4/11/2016 2:34:00 PM**	Prep Date: **4/7/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cadmium	0.192	0.00100	0.200	0	95.8	80	120	1.03	15	
Calcium	4.96	0.300	5.00	0	99.2	80	120	0.351	15	
Chromium	0.193	0.00500	0.200	0	96.4	80	120	1.49	15	
Cobalt	0.204	0.00500	0.200	0	102	80	120	0.761	15	
Lead	0.193	0.00100	0.200	0	96.6	80	120	0.589	15	
Lithium	0.193	0.0100	0.200	0	96.5	80	120	0.486	15	
Molybdenum	0.176	0.00500	0.200	0	87.9	80	120	3.17	15	
Selenium	0.193	0.00500	0.200	0	96.5	80	120	2.07	15	
Thallium	0.198	0.00150	0.200	0	98.9	80	120	1.75	15	

Sample ID **1604052-03A SD**	Batch ID: **74482**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS4_160411D**	Analysis Date: **4/11/2016 2:40:00 PM**	Prep Date: **4/7/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.00400	0.0125	0	0				0	10	
Arsenic	<0.0100	0.0250	0	0.00648				0	10	
Barium	0.0229	0.0500	0	0.0237				3.71	10	
Beryllium	0.00542	0.00500	0	0.00527				2.83	10	
Cadmium	<0.00150	0.00500	0	0.00128				0	10	
Chromium	<0.0100	0.0250	0	0				0	10	
Cobalt	0.210	0.0250	0	0.208				0.962	10	
Lead	0.00181	0.00500	0	0.00182				0.825	10	
Lithium	0.0862	0.0500	0	0.0818				5.33	10	
Molybdenum	<0.0100	0.0250	0	0				0	10	
Selenium	<0.0100	0.0250	0	0				0	10	
Thallium	<0.00250	0.00750	0	0				0	10	

Sample ID **1604052-03A PDS**	Batch ID: **74482**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_160411D**	Analysis Date: **4/11/2016 3:00:00 PM**	Prep Date: **4/7/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.182	0.00250	0.200	0	91.0	80	120			
Arsenic	0.197	0.00500	0.200	0.00648	95.4	80	120			
Barium	0.202	0.0100	0.200	0.0237	88.9	80	120			
Beryllium	0.188	0.00100	0.200	0.00527	91.4	80	120			
Cadmium	0.177	0.00100	0.200	0.00128	87.6	80	120			
Chromium	0.183	0.00500	0.200	0	91.4	80	120			
Cobalt	0.382	0.00500	0.200	0.208	87.5	80	120			
Lead	0.186	0.00100	0.200	0.00182	92.0	80	120			
Lithium	0.252	0.0100	0.200	0.0818	85.1	80	120			
Molybdenum	0.178	0.00500	0.200	0	88.8	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1604052
Project: Luminant-Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160411D

Sample ID **1604052-03A PDS**	Batch ID: **74482**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_160411D**	Analysis Date: **4/11/2016 3:00:00 PM**	Prep Date: **4/7/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.195	0.00500	0.200	0	97.6	80	120			
Thallium	0.185	0.00150	0.200	0	92.6	80	120			

Sample ID **1604052-03A MS**	Batch ID: **74482**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS4_160411D**	Analysis Date: **4/11/2016 3:02:00 PM**	Prep Date: **4/7/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.189	0.00250	0.200	0	94.7	80	120			
Arsenic	0.199	0.00500	0.200	0.00648	96.3	80	120			
Barium	0.205	0.0100	0.200	0.0237	90.6	80	120			
Beryllium	0.188	0.00100	0.200	0.00527	91.5	80	120			
Cadmium	0.179	0.00100	0.200	0.00128	89.0	80	120			
Calcium	48.4	0.300	5.00	46.3	43.1	80	120			S
Chromium	0.179	0.00500	0.200	0	89.3	80	120			
Cobalt	0.393	0.00500	0.200	0.208	92.6	80	120			
Lead	0.187	0.00100	0.200	0.00182	92.6	80	120			
Lithium	0.257	0.0100	0.200	0.0818	87.4	80	120			
Molybdenum	0.180	0.00500	0.200	0	90.2	80	120			
Selenium	0.195	0.00500	0.200	0	97.6	80	120			
Thallium	0.188	0.00150	0.200	0	94.2	80	120			

Sample ID **1604052-03A MSD**	Batch ID: **74482**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS4_160411D**	Analysis Date: **4/11/2016 3:04:00 PM**	Prep Date: **4/7/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.192	0.00250	0.200	0	95.8	80	120	1.21	15	
Arsenic	0.203	0.00500	0.200	0.00648	98.4	80	120	2.09	15	
Barium	0.207	0.0100	0.200	0.0237	91.6	80	120	0.985	15	
Beryllium	0.191	0.00100	0.200	0.00527	92.9	80	120	1.47	15	
Cadmium	0.183	0.00100	0.200	0.00128	90.7	80	120	1.88	15	
Calcium	50.4	0.300	5.00	46.3	82.3	80	120	3.97	15	
Chromium	0.182	0.00500	0.200	0	91.1	80	120	1.94	15	
Cobalt	0.400	0.00500	0.200	0.208	96.4	80	120	1.92	15	
Lead	0.189	0.00100	0.200	0.00182	93.6	80	120	1.13	15	
Lithium	0.260	0.0100	0.200	0.0818	89.3	80	120	1.43	15	
Molybdenum	0.184	0.00500	0.200	0	91.9	80	120	1.81	15	
Selenium	0.199	0.00500	0.200	0	99.4	80	120	1.84	15	
Thallium	0.191	0.00150	0.200	0	95.7	80	120	1.57	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1604052
Project: Luminant-Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160411D

Sample ID **ICV-160411**	Batch ID: **R85180**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_160411D**	Analysis Date: **4/11/2016 12:01:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.0967	0.00250	0.100	0	96.7	90	110			
Arsenic	0.0981	0.00500	0.100	0	98.1	90	110			
Barium	0.0939	0.0100	0.100	0	93.9	90	110			
Beryllium	0.0994	0.00100	0.100	0	99.4	90	110			
Cadmium	0.0937	0.00100	0.100	0	93.7	90	110			
Calcium	2.37	0.300	2.50	0	94.9	90	110			
Chromium	0.101	0.00500	0.100	0	101	90	110			
Cobalt	0.103	0.00500	0.100	0	103	90	110			
Lead	0.0981	0.00100	0.100	0	98.1	90	110			
Lithium	0.0981	0.0100	0.100	0	98.1	90	110			
Molybdenum	0.0925	0.00500	0.100	0	92.5	90	110			
Selenium	0.0996	0.00500	0.100	0	99.6	90	110			
Thallium	0.0967	0.00150	0.100	0	96.7	90	110			

Sample ID **LCVL-160411**	Batch ID: **R85180**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160411D**	Analysis Date: **4/11/2016 12:14:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00210	0.00250	0.00200	0	105	70	130			
Arsenic	0.00512	0.00500	0.00500	0	102	70	130			
Barium	0.00513	0.0100	0.00500	0	103	70	130			
Beryllium	0.000966	0.00100	0.00100	0	96.6	70	130			
Cadmium	0.00100	0.00100	0.00100	0	100	70	130			
Calcium	0.110	0.300	0.100	0	110	70	130			
Chromium	0.00535	0.00500	0.00500	0	107	70	130			
Cobalt	0.00539	0.00500	0.00500	0	108	70	130			
Lead	0.00102	0.00100	0.00100	0	102	70	130			
Lithium	0.0104	0.0100	0.0100	0	104	70	130			
Molybdenum	0.00504	0.00500	0.00500	0	101	70	130			
Selenium	0.00554	0.00500	0.00500	0	111	70	130			
Thallium	0.00101	0.00150	0.00100	0	101	70	130			

Sample ID **CCV3-160411**	Batch ID: **R85180**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160411D**	Analysis Date: **4/11/2016 2:18:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.195	0.00250	0.200	0	97.3	90	110			
Arsenic	0.191	0.00500	0.200	0	95.4	90	110			
Barium	0.185	0.0100	0.200	0	92.7	90	110			
Beryllium	0.196	0.00100	0.200	0	97.9	90	110			
Cadmium	0.186	0.00100	0.200	0	92.9	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1604052
Project: Luminant-Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160411D

Sample ID **CCV3-160411**	Batch ID: **R85180**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160411D**	Analysis Date: **4/11/2016 2:18:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	5.05	0.300	5.00	0	101	90	110			
Chromium	0.194	0.00500	0.200	0	97.0	90	110			
Cobalt	0.202	0.00500	0.200	0	101	90	110			
Lead	0.188	0.00100	0.200	0	93.8	90	110			
Lithium	0.199	0.0100	0.200	0	99.7	90	110			
Molybdenum	0.187	0.00500	0.200	0	93.5	90	110			
Selenium	0.192	0.00500	0.200	0	96.2	90	110			
Thallium	0.191	0.00150	0.200	0	95.4	90	110			

Sample ID **LCVL3-160411**	Batch ID: **R85180**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160411D**	Analysis Date: **4/11/2016 2:25:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00213	0.00250	0.00200	0	106	70	130			
Arsenic	0.00515	0.00500	0.00500	0	103	70	130			
Barium	0.00496	0.0100	0.00500	0	99.3	70	130			
Beryllium	0.00106	0.00100	0.00100	0	106	70	130			
Cadmium	0.000968	0.00100	0.00100	0	96.8	70	130			
Calcium	0.107	0.300	0.100	0	107	70	130			
Chromium	0.00518	0.00500	0.00500	0	104	70	130			
Cobalt	0.00540	0.00500	0.00500	0	108	70	130			
Lead	0.000992	0.00100	0.00100	0	99.2	70	130			
Lithium	0.0111	0.0100	0.0100	0	111	70	130			
Molybdenum	0.00507	0.00500	0.00500	0	101	70	130			
Selenium	0.00510	0.00500	0.00500	0	102	70	130			
Thallium	0.000997	0.00150	0.00100	0	99.7	70	130			

Sample ID **CCV4-160411**	Batch ID: **R85180**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160411D**	Analysis Date: **4/11/2016 3:06:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.198	0.00250	0.200	0	98.8	90	110			
Arsenic	0.198	0.00500	0.200	0	99.2	90	110			
Barium	0.187	0.0100	0.200	0	93.5	90	110			
Beryllium	0.197	0.00100	0.200	0	98.5	90	110			
Cadmium	0.188	0.00100	0.200	0	93.8	90	110			
Calcium	4.79	0.300	5.00	0	95.8	90	110			
Chromium	0.192	0.00500	0.200	0	96.1	90	110			
Cobalt	0.203	0.00500	0.200	0	101	90	110			
Lead	0.192	0.00100	0.200	0	96.2	90	110			
Lithium	0.192	0.0100	0.200	0	95.9	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1604052
Project: Luminant-Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160411D

Sample ID **CCV4-160411**	Batch ID: **R85180**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160411D**	Analysis Date: **4/11/2016 3:06:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Molybdenum	0.189	0.00500	0.200	0	94.5	90	110			
Selenium	0.198	0.00500	0.200	0	99.1	90	110			
Thallium	0.196	0.00150	0.200	0	98.2	90	110			

Sample ID **LCVL4-160411**	Batch ID: **R85180**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160411D**	Analysis Date: **4/11/2016 3:10:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00228	0.00250	0.00200	0	114	70	130			
Arsenic	0.00541	0.00500	0.00500	0	108	70	130			
Barium	0.00498	0.0100	0.00500	0	99.5	70	130			
Beryllium	0.00119	0.00100	0.00100	0	119	70	130			
Cadmium	0.000981	0.00100	0.00100	0	98.1	70	130			
Calcium	0.107	0.300	0.100	0	107	70	130			
Chromium	0.00519	0.00500	0.00500	0	104	70	130			
Cobalt	0.00538	0.00500	0.00500	0	108	70	130			
Lead	0.000990	0.00100	0.00100	0	99.0	70	130			
Lithium	0.0106	0.0100	0.0100	0	106	70	130			
Molybdenum	0.00503	0.00500	0.00500	0	101	70	130			
Selenium	0.00572	0.00500	0.00500	0	114	70	130			
Thallium	0.000991	0.00150	0.00100	0	99.1	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1604052
Project: Luminant-Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160413A

The QC data in batch 74482 applies to the following samples: 1604052-03A, 1604052-04A, 1604052-05A, 1604052-06A, 1604052-07A

Sample ID **1604052-03A SD**	Batch ID: **74482**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS4_160413A**	Analysis Date: **4/13/2016 12:18:00 PM**	Prep Date: **4/7/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	44.5	15.0	0	44.3				0.489	10	

Sample ID **1604052-03A PDS**	Batch ID: **74482**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_160413A**	Analysis Date: **4/13/2016 12:20:00 PM**	Prep Date: **4/7/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	88.7	3.00	50.0	44.3	88.8	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

Sample ID **ICV-160413**	Batch ID: **R85219**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_160413A**	Analysis Date: **4/13/2016 10:50:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	2.34	0.300	2.50	0	93.7	90	110			

Sample ID **LCVL-160413**	Batch ID: **R85219**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160413A**	Analysis Date: **4/13/2016 10:56:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.0872	0.300	0.100	0	87.2	70	130			

Sample ID **CCV1-160413**	Batch ID: **R85219**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160413A**	Analysis Date: **4/13/2016 11:56:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.72	0.300	5.00	0	94.4	90	110			

Sample ID **LCVL1-160413**	Batch ID: **R85219**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160413A**	Analysis Date: **4/13/2016 12:11:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.0903	0.300	0.100	0	90.3	70	130			

Sample ID **CCV2-160413**	Batch ID: **R85219**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160413A**	Analysis Date: **4/13/2016 12:34:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.67	0.300	5.00	0	93.4	90	110			

Sample ID **LCVL2-160413**	Batch ID: **R85219**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160413A**	Analysis Date: **4/13/2016 12:40:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.0979	0.300	0.100	0	97.9	70	130			

CLIENT: Pastor, Behling & Wheeler
Work Order: 1604052
Project: Luminant-Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160415A

The QC data in batch 74482 applies to the following samples: 1604052-03A, 1604052-04A, 1604052-05A, 1604052-06A, 1604052-07A

Sample ID	**MB-74482**	Batch ID:	**74482**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**ICP-MS4_160415A**	Analysis Date:	**4/15/2016 10:23:00 AM**	Prep Date:	**4/7/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	<0.0100	0.0300								

Sample ID	**LCS-74482**	Batch ID:	**74482**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**ICP-MS4_160415A**	Analysis Date:	**4/15/2016 10:25:00 AM**	Prep Date:	**4/7/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.175	0.0300	0.200	0	87.7	80	120			

Sample ID	**LCSD-74482**	Batch ID:	**74482**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**LCSD**	Run ID:	**ICP-MS4_160415A**	Analysis Date:	**4/15/2016 10:27:00 AM**	Prep Date:	**4/7/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.192	0.0300	0.200	0	95.8	80	120	8.82	15	

Sample ID	**1604052-06A SD**	Batch ID:	**74482**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**SD**	Run ID:	**ICP-MS4_160415A**	Analysis Date:	**4/15/2016 10:33:00 AM**	Prep Date:	**4/7/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.546	0.150	0	0.480				12.9	10	R

Sample ID	**1604052-06A PDS**	Batch ID:	**74482**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**PDS**	Run ID:	**ICP-MS4_160415A**	Analysis Date:	**4/15/2016 10:52:00 AM**	Prep Date:	**4/7/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.657	0.0300	0.200	0.480	88.8	80	120			

Sample ID	**1604052-03A MS**	Batch ID:	**74482**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**MS**	Run ID:	**ICP-MS4_160415A**	Analysis Date:	**4/15/2016 10:54:00 AM**	Prep Date:	**4/7/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	1.90	0.150	0.200	1.65	127	80	120			S

Sample ID	**1604052-03A MSD**	Batch ID:	**74482**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**MSD**	Run ID:	**ICP-MS4_160415A**	Analysis Date:	**4/15/2016 10:56:00 AM**	Prep Date:	**4/7/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	1.93	0.150	0.200	1.65	140	80	120	1.42	15	S

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1604052
Project: Luminant-Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160415A

Sample ID **ICV-160415**	Batch ID: **R85266**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_160415A**	Analysis Date: **4/15/2016 10:11:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.103	0.0300	0.100	0	103	90	110			

Sample ID **LCVL-160415**	Batch ID: **R85266**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160415A**	Analysis Date: **4/15/2016 10:17:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0236	0.0300	0.0200	0	118	70	130			

Sample ID **CCV1-160415**	Batch ID: **R85266**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160415A**	Analysis Date: **4/15/2016 11:06:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.209	0.0300	0.200	0	104	90	110			

Sample ID **LCVL1-160415**	Batch ID: **R85266**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160415A**	Analysis Date: **4/15/2016 11:33:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0228	0.0300	0.0200	0	114	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1604052
Project: Luminant-Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: IC3_160407A

The QC data in batch 74480 applies to the following samples: 1604052-01D, 1604052-02D, 1604052-03D, 1604052-04D, 1604052-05D, 1604052-06D, 1604052-07D

Sample ID **MB-74480** Batch ID: **74480** TestNo: **E300** Units: **mg/L**
SampType: **MBLK** Run ID: **IC3_160407A** Analysis Date: **4/7/2016 11:10:40 AM** Prep Date: **4/7/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00								
Fluoride	<0.100	0.400								
Sulfate	<1.00	3.00								

Sample ID **LCS-74480** Batch ID: **74480** TestNo: **E300** Units: **mg/L**
SampType: **LCS** Run ID: **IC3_160407A** Analysis Date: **4/7/2016 11:34:11 AM** Prep Date: **4/7/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.66	1.00	10.00	0	96.6	90	110			
Fluoride	4.31	0.400	4.000	0	108	90	110			
Sulfate	31.4	3.00	30.00	0	105	90	110			

Sample ID **LCSD-74480** Batch ID: **74480** TestNo: **E300** Units: **mg/L**
SampType: **LCSD** Run ID: **IC3_160407A** Analysis Date: **4/7/2016 11:54:53 AM** Prep Date: **4/7/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.63	1.00	10.00	0	96.3	90	110	0.295	20	
Fluoride	4.18	0.400	4.000	0	104	90	110	3.23	20	
Sulfate	30.9	3.00	30.00	0	103	90	110	1.54	20	

Sample ID **1604052-01DMS** Batch ID: **74480** TestNo: **E300** Units: **mg/L**
SampType: **MS** Run ID: **IC3_160407A** Analysis Date: **4/7/2016 5:33:53 PM** Prep Date: **4/7/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	217	10.0	200.0	13.31	102	90	110			
Fluoride	198	4.00	200.0	0	99.2	90	110			
Sulfate	390	30.0	200.0	180.8	105	90	110			

Sample ID **1604052-01DMSD** Batch ID: **74480** TestNo: **E300** Units: **mg/L**
SampType: **MSD** Run ID: **IC3_160407A** Analysis Date: **4/7/2016 5:54:33 PM** Prep Date: **4/7/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	208	10.0	200.0	13.31	97.2	90	110	4.29	20	
Fluoride	198	4.00	200.0	0	98.8	90	110	0.418	20	
Sulfate	393	30.0	200.0	180.8	106	90	110	0.669	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1604052
Project: Luminant-Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: IC3_160407A

Sample ID **ICV-160407**	Batch ID: **R85130**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC3_160407A**	Analysis Date: **4/7/2016 10:13:47 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	26.2	1.00	25.00	0	105	90	110			
Fluoride	10.3	0.400	10.00	0	103	90	110			
Sulfate	76.6	3.00	75.00	0	102	90	110			

Sample ID **CCV1-160407**	Batch ID: **R85130**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC3_160407A**	Analysis Date: **4/7/2016 3:52:58 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.60	1.00	10.00	0	96.0	90	110			
Fluoride	4.15	0.400	4.000	0	104	90	110			
Sulfate	30.5	3.00	30.00	0	102	90	110			

Sample ID **CCV2-160407**	Batch ID: **R85130**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC3_160407A**	Analysis Date: **4/7/2016 8:39:43 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.66	1.00	10.00	0	96.6	90	110			
Fluoride	4.15	0.400	4.000	0	104	90	110			
Sulfate	30.9	3.00	30.00	0	103	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler

Work Order: 1604052

Project: Luminant-Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_160407A

The QC data in batch 74479 applies to the following samples: 1604052-01D, 1604052-02D, 1604052-03D, 1604052-04D, 1604052-05D, 1604052-06D, 1604052-07D

Sample ID	**1604052-01D-DUP**	Batch ID:	**74479**	TestNo:	**M4500-H+ B**	Units:	**pH Units@19.7℃**
SampType:	**DUP**	Run ID:	**TITRATOR_160407A**	Analysis Date:	**4/7/2016 11:30:00 AM**	Prep Date:	**4/7/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	11.4	0	0	11.36				0.088	5	

Sample ID	**1604052-07D-DUP**	Batch ID:	**74479**	TestNo:	**M4500-H+ B**	Units:	**pH Units@20.6℃**
SampType:	**DUP**	Run ID:	**TITRATOR_160407A**	Analysis Date:	**4/7/2016 11:47:00 AM**	Prep Date:	**4/7/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	5.27	0	0	5.250				0.380	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1604052
Project: Luminant-Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_160407A

Sample ID	**ICV-160407**	Batch ID:	**R85104**	TestNo:	**M4500-H+ B**	Units:	**pH Units@22℃**
SampType:	**ICV**	Run ID:	**TITRATOR_160407A**	Analysis Date:	**4/7/2016 11:11:00 AM**	Prep Date:	**4/7/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	9.99	0	10.00	0	99.9	99	101			

Sample ID	**CCV1-160407**	Batch ID:	**R85104**	TestNo:	**M4500-H+ B**	Units:	**pH Units@21.2℃**
SampType:	**CCV**	Run ID:	**TITRATOR_160407A**	Analysis Date:	**4/7/2016 11:32:00 AM**	Prep Date:	**4/7/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	7.03	0	7.000	0	100	97.1	102.9			

Sample ID	**CCV2-160407**	Batch ID:	**R85104**	TestNo:	**M4500-H+ B**	Units:	**pH Units@21.5℃**
SampType:	**CCV**	Run ID:	**TITRATOR_160407A**	Analysis Date:	**4/7/2016 11:48:00 AM**	Prep Date:	**4/7/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	7.00	0	7.000	0	100	97.1	102.9			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1604052
Project: Luminant-Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: WC_160411C

The QC data in batch 74527 applies to the following samples: 1604052-01D, 1604052-02D, 1604052-03D, 1604052-04D, 1604052-05D, 1604052-06D, 1604052-07D

Sample ID	**MB-74527**	Batch ID:	**74527**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**WC_160411C**	Analysis Date:	**4/12/2016 8:45:00 AM**	Prep Date:	**4/11/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	<10.0	10.0								

Sample ID	**LCS-74527**	Batch ID:	**74527**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**WC_160411C**	Analysis Date:	**4/12/2016 8:45:00 AM**	Prep Date:	**4/11/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	750	10.0	745.6	0	101	90	113			

Sample ID	**1604044-08B-DUP**	Batch ID:	**74527**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**DUP**	Run ID:	**WC_160411C**	Analysis Date:	**4/12/2016 8:45:00 AM**	Prep Date:	**4/11/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	1330	50.0	0	1315				1.51	5	

Sample ID	**1604071-01D-DUP**	Batch ID:	**74527**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**DUP**	Run ID:	**WC_160411C**	Analysis Date:	**4/12/2016 8:45:00 AM**	Prep Date:	**4/11/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	217	10.0	0	213.0				1.86	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

AMENDED

Case Narrative

Lab No: 20160335

This report contains the analytical results for the 7 sample(s) received under chain of custody by ESC Lab Sciences on 04/08/16 16:03:50. These samples are associated with your 1604052 project.

The analytical results included in this report meet all applicable quality control procedure requirements except as noted below:

The test results in this report meet all NELAC requirements unless noted below:

This report shall not be reproduced, except in full, without the written approval of ESC Lab Sciences.

All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client.

Results have been reviewed by the Director of Radiochemistry or their designees and is approved for release.

Observations / Nonconformances

The following QC parameters are outside method control limits: Ra226 MSD RPD.
The report was amended on 5/20/16 to correct the Ra-228 result for sample #6. No other changes were made.

OUTREACH LABORATORY, A Divsion of ESC Lab Sciences
Address: 311 North Aspen Avenue, Broken Arrow, OK, 74012 EMail: outreach@esclabsciences.com - Tel: (918) 251-2515

AMENDED

Client	:	DHL Analytical, Inc.
Client Project	:	1604052
Lab Number	:	20160335
Date Reported	:	05/20/16
Date Received	:	04/08/16
Page Number	:	2 of 4

Analytical Report

	Method	Result	DL	Units	Qual	Prep Date	Analysis Date	Analyst
Lab ID : 20160335-01								
Client ID : H-29								
Date Sampled : 04/05/16 07:55:00								
Matrix : NPW								
		Radiochemical Analyses						
Combined Radium		0.221 +/- 0.900	1.12	pCi/l				
Radium-226	SM 7500 Ra B M*	0.133 +/- 0.153	0.228	pCi/l		04/15/16	04/13/16	AK
Radium-228	EPA 904*/9320*	0.088 +/- 0.747	0.897	pCi/l		04/14/16	04/19/16	JR
Lab ID : 20160335-02								
Client ID : H-31								
Date Sampled : 04/05/16 08:45:00								
Matrix : NPW								
		Radiochemical Analyses						
Combined Radium		0.774 +/- 0.884	1.23	pCi/l				
Radium-226	SM 7500 Ra B M*	0.185 +/- 0.223	0.334	pCi/l		04/15/16	04/13/16	AK
Radium-228	EPA 904*/9320*	0.589 +/- 0.661	0.897	pCi/l		04/14/16	04/19/16	JR
Lab ID : 20160335-03								
Client ID : H-32								
Date Sampled : 04/05/16 09:30:00								
Matrix : NPW								
		Radiochemical Analyses						
Combined Radium		1.14 +/- 1.04	1.51	pCi/l				
Radium-226	SM 7500 Ra B M*	-0.131 +/- 0.208	0.364	pCi/l		04/15/16	04/13/16	AK
Radium-228	EPA 904*/9320*	1.14 +/- 0.905	1.15	pCi/l		04/14/16	04/19/16	JR
Lab ID : 20160335-04								
Client ID : H-30								
Date Sampled : 04/05/16 10:30:00								
Matrix : NPW								
		Radiochemical Analyses						
Combined Radium		1.76 +/- 0.892	1.14	pCi/l				
Radium-226	SM 7500 Ra B M*	0.312 +/- 0.202	0.215	pCi/l		04/15/16	04/13/16	AK
Radium-228	EPA 904*/9320*	1.45 +/- 0.690	0.922	pCi/l		04/14/16	04/19/16	JR

*NELAC Certified Parameter BDL = Below Detection Limit

OUTREACH LABORATORY, A Divsion of ESC Lab Sciences
Address: 311 North Aspen Avenue, Broken Arrow, OK, 74012 EMail: outreach@esclabsciences.com - Tel: (918) 251-2515

AMENDED

ESC LAB SCIENCES
YOUR LAB OF CHOICE

Client : DHL Analytical, Inc.
Client Project : 1604052
Lab Number : 20160335
Date Reported : 05/20/16
Date Received : 04/08/16

Analytical Report

	Method	Result	DL	Units	Qual	Prep Date	Analysis Date	Analyst
Lab ID : 20160335-05								
Client ID : DUP-1								
Date Sampled : 04/05/16 10:30:00								
Matrix : NPW								
Radiochemical Analyses								
Combined Radium		2.64 +/- 1.19	1.36	pCi/l				
Radium-226	SM 7500 Ra B M*	0.722 +/- 0.326	0.266	pCi/l		04/15/16	04/13/16	AK
Radium-228	EPA 904*/9320*	1.92 +/- 0.864	1.09	pCi/l		04/14/16	04/19/16	JR
Lab ID : 20160335-06								
Client ID : H-27								
Date Sampled : 04/05/16 11:20:00								
Matrix : NPW								
Radiochemical Analyses								
Combined Radium		0.269 +/- 1.19	2.24	pCi/l				
Radium-226	SM 7500 Ra B M*	0.269 +/- 0.160	0.192	pCi/l		04/15/16	04/13/16	AK
Radium-228	EPA 904*/9320*	-0.076 +/- 1.03	2.05	pCi/l		04/14/16	05/13/16	AE
Lab ID : 20160335-07								
Client ID : H-28								
Date Sampled : 04/05/16 12:15:00								
Matrix : NPW								
Radiochemical Analyses								
Combined Radium		1.94 +/- 1.12	1.52	pCi/l				
Radium-226	SM 7500 Ra B M*	0.176 +/- 0.163	0.231	pCi/l		04/15/16	04/13/16	AK
Radium-228	EPA 904*/9320*	1.76 +/- 0.959	1.29	pCi/l		04/14/16	04/19/16	JR

*NELAC Certified Parameter BDL = Below Detection Limit

OUTREACH LABORATORY, A Divsion of ESC Lab Sciences
Address: 311 North Aspen Avenue, Broken Arrow, OK, 74012 EMail: outreach@esclabsciences.com - Tel: (918) 251-2515

AMENDED

Client	:	DHL Analytical, Inc.
Client Project	:	1604052
Lab Number	:	20160335
Date Reported	:	05/20/16
Date Received	:	04/08/16
Page Number	:	4 of 4

QC Report

Parameter	Blank	LCS %REC	LCSD %REC	LCSD RPD	DUP RPD	RER, NAD or DER	MS %REC	MSD %REC	MSD RPD	Date
Radium-226	-0.033	117.0			42.8	1.060	106.0	82.7	23.3	04/14/16
Radium-228	0.105	101.0			NC	0.429	114.0	95.7	17.0	04/18/16

Lab Approval:

*NELAC Certified Parameter BDL = Below Detection Limit

OUTREACH LABORATORY, A Divsion of ESC Lab Sciences
Address: 311 North Aspen Avenue, Broken Arrow, OK, 74012 EMail: outreach@esclabsciences.com - Tel: (918) 251-2515

DHL Analytical, Inc.
2300 Double Creek Drive
Round Rock, TX 78664
TEL: *(512) 388-8222* FAX: *(512) 388-8229*

CHAIN-OF-CUSTODY RECORD

Work Order: 1604052

Subcontractor:

ESC Laboratory
311 North Aspen
Broken Arrow, Oklahoma 74012

TEL: (918) 251-2515
FAX:
Acct #: DHLRRTX

06-Apr-16

Sample Id	Matrix	DHL#	Date Collected	Bottle Type	Requested Tests					
					E904.0	SM7500Ra-B M				
H-29	Aqueous	-01B	04/05/16 07:55 AM	500HDPEHNO3	1					
H-29	Aqueous	-01C	04/05/16 07:55 AM	500HDPEHNO3		1				
H-31	Aqueous	-02B	04/05/16 08:45 AM	500HDPEHNO3	1					
H-31	Aqueous	-02C	04/05/16 08:45 AM	500HDPEHNO3		1				
H-32	Aqueous	-03B	04/05/16 09:30 AM	500HDPEHNO3	1					
H-32	Aqueous	-03C	04/05/16 09:30 AM	500HDPEHNO3		1				
H-30	Aqueous	-04B	04/05/16 10:30 AM	500HDPEHNO3	1					
H-30	Aqueous	-04C	04/05/16 10:30 AM	500HDPEHNO3		1				
DUP-1	Aqueous	-05B	04/05/16 10:30 AM	500HDPEHNO3	1					
DUP-1	Aqueous	-05C	04/05/16 10:30 AM	500HDPEHNO3		1				
H-27	Aqueous	-06B	04/05/16 11:20 AM	500HDPEHNO3	1					
H-27	Aqueous	-06C	04/05/16 11:20 AM	500HDPEHNO3		1				
H-28	Aqueous	-07B	04/05/16 12:15 PM	500HDPEHNO3	1					
H-28	Aqueous	-07C	04/05/16 12:15 PM	500HDPEHNO3		1				

General Comments:

Please analyze these samples with Normal Turnaround Time.
Report RA-226, Ra-228 & Combined per Specs DHLRRTX033116S.
Quality Control Package Needed: Standard - NELAC Rad Test compliant
Email to cac@dhlanalytical.com & dupont@dhlanalytical.com

L828692

		Date/Time			Date/Time
Relinquished by:	J Horan	4/6/16 1735	Received by:	Lonestar	4/6/16 17:35
Relinquished by:			Received by:		4/8/16 16:03

SAMPLE LOGIN

Date Received: *04/08/16 16:03:50* **Lab Number:** 20160335 **Due:** 05/06/16

Sample Number	Client Sample ID	Matrix	Date Sampled	Container Type	Container Size	Preservation	Preserved Upon Receipt	Custody Seal	Seal Intact
20160335-01 B	H-29	NPW	04/05/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
20160335-01 A	H-29	NPW	04/05/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160335-02 B	H-31	NPW	04/05/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
20160335-02 A	H-31	NPW	04/05/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160335-03 B	H-32	NPW	04/05/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
20160335-03 A	H-32	NPW	04/05/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160335-04 B	H-30	NPW	04/05/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
20160335-04 A	H-30	NPW	04/05/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160335-05 B	DUP-1	NPW	04/05/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
20160335-05 A	DUP-1	NPW	04/05/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160335-06 B	H-27	NPW	04/05/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
20160335-06 A	H-27	NPW	04/05/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160335-07 B	H-28	NPW	04/05/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
20160335-07 A	H-28	NPW	04/05/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						

CONTAINER INSPECTION

 # Coolers 1 **Custody Seals Broken** ☐ **Temperature:** C **Ice** **Radiation Survey:** <300 cpm

SAMPLE INSPECTION

Sample Seal Broken No **Chain of Custody Record** ☑ **Labels in Tact** ☑ **Radiation Survey Complete** ☐

Anomalies

Inspected By: _____ **DATE** 4/8/16

QA or Designee Review: Raymond Thomas **DATE** 04/08/16

Sample Custodian Review: _____ **DATE** _____

Project Notes:

May 09, 2016

Will Vienne
Pastor, Behling & Wheeler
2201 Double Creek Dr #4004
Round Rock, Texas 78664
TEL: (512) 671-3434
FAX (512) 671-3446

Order No.: 1604071

RE: Luminant-Martin Lake

Dear Will Vienne:

DHL Analytical, Inc. received 12 sample(s) on 4/7/2016 for the analyses presented in the following report.

There were no problems with the analyses and all data met requirements of NELAC except where noted in the Case Narrative. All non-NELAC methods will be identified accordingly in the case narrative and all estimated uncertainties of test results are within method or EPA specifications.

If you have any questions regarding these tests results, please feel free to call. Thank you for using DHL Analytical.

Sincerely,

John DuPont
General Manager

This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211-16-16

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DHL ANALYTICAL
2300 Double Creek Dr. ■ Round Rock, TX 78664
Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

№ 70867

CHAIN-OF-CUSTODY

CLIENT: PBW
ADDRESS: 2201 DOUBLE CREEK DR ROUND ROCK TX 78664
PHONE: 512-671-3434 FAX/E-MAIL: 512-671-3446
DATA REPORTED TO: WILL VIENNE
ADDITIONAL REPORT COPIES TO:

DATE: 4-6-16 PAGE 1 OF 1
PO #: 5164-B DHL WORK ORDER #: 1604071
PROJECT LOCATION OR NAME: LUMINANT - MARTIN LAKE
CLENT PROJECT #: 5164-B COLLECTOR: J BRAYTON

Authorize 5% surcharge for TRRP Report? ☐ Yes ☐ No

S=SOIL W=WATER A=AIR L=LIQUID SE=SEDIMENT P=PAINT SL=SLUDGE O=OTHER SO=SOLID

PRESERVATION: HCl | HNO_3 | H_2SO_4 ☐ NaOH ☐ | ICE | UNPRESERVED

ANALYSES: BTEX ☐ MTBE ☐ (METHOD 8021) | TPH 1005 ☐ TPH 1006 ☐ HOLD 1006 ☐ | GRO (METHOD 8015) ☐ DRO (METHOD 8105) ☐ | VOC 8260 ☐ VOC 624 ☐ VOC 8260/5035 ☐ | SVOC 8270 ☐ PAH 8270 ☐ HOLD PAH ☐ SVOC 625 ☐ | 8270 PEST ☐ 625 PEST/PCB ☐ 608 PCB ☐ | 8270 O-P PEST ☐ 8082 PCB ☐ 8270 PCB ☐ | 8321 HERB ☐ T PHOS, AMMONIA ☐ | METALS 6020 ☐ METALS 200.8 ☐ DISS. METALS ☐ | RCRA ☐ TX11 ☐ ☐ | PH ☐ HEX CHROM ☐ ALKALINITY ☐ COD ☐ | CHLORIDE ☐ ANIONS ☐ | TCLP-SVOC ☐ VOC ☐ PEST ☐ HERB ☐ | TCLP-METALS ☐ RCRA 8 ☐ TX-11 ☐ Pb ☐ | RCI ☐ FLASHPOINT ☐ DGAS ☐ | TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐ | SEE ATTACHED

	Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	HCl	HNO_3	H_2SO_4 ☐ NaOH ☐	ICE	UNPRESERVED	ANALYSES	FIELD NOTES
01	H-26	01	4-5-16	1305	W	P	4						X	
02	H-33	02		1445	W	P	4						X	
03	MW-17A	03		1655	W	P	4						X	
04	PDP-24	04	↓	1745	W	P	4						X	
05	MW-19	05	4-6-16	0740	W	P	4						X	
06	PDP-22	06		0835	W	P	4						X	
07	PDP-23	07		0930	W	P	4						X	
08	MW-20A	08		1020	W	P	4						X	
09	PDP-26	09		1115	W	P	4						X	
10	PDP-25	10		1200	W	P	4						X	
11	MW-18A	11		1255	W	P	4						X	
12	EB-1	12	↓	1315	W	P	4						X	

RELINQUISHED BY: (Signature) DATE/TIME 4-6-16 1730 RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature) DATE/TIME 4/7/16 1000 RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature) DATE/TIME RECEIVED BY: (Signature)

☐ DHL DISPOSAL @ $5.00 each ☐ Return

TURN AROUND TIME
RUSH ☐ CALL FIRST
1 DAY ☐ CALL FIRST
2 DAY ☐
NORMAL ☒
OTHER ☐ _____

LABORATORY USE ONLY:
RECEIVING TEMP: 1.6, 1.8 THERM #: 78
CUSTODY SEALS: ☐ BROKEN ☐ INTACT ☒ NOT USED
CARRIER: ☐ LONE STAR ☒ FEDEX ☐ UPS ☐ OTHER
☐ COURIER DELIVERY
☐ HAND DELIVERED

John Dupont

From: Sara Taube [Sara.Taube@pbwllc.com]
Sent: Wednesday, July 22, 2015 12:05 PM
To: John Dupont
Subject: CCR Appendix III and IV
Follow Up Flag: Follow up
Flag Status: Completed

Hi John,

Here are the Appendix III and Appendix IV constituents that we will need to have analyzed under the CCR Rule.

Appendix III
Boron
Calcium
Chloride
Fluoride
pH
sulfate
TDS

Appendix IV
Antimony
Arsenic
Barium
Beryllium
Cadmium
Chromium
Cobalt
Fluoride
Lead
Lithium
Mercury
Molybdenum
Selenium
Thallium
Radium 226 and 228

We are looking to have approximately 74 wells sampled 8 times over the course of the next two years. Please let me know if there is any more information you might need.

Cheers,

Sara

10/26/2015

ORIGIN ID:GGGA (555) 555-5555
PBW
2201 DOUBLE CREEK DR STE 4004
ROUND ROCK, TX 78664
UNITED STATES US
SHIP DATE: 06APR16
ACTWGT: 55.00 LB
CAD: 006994166/SSFE1
DIMS: 24x13x13 IN
BILL THIRD PARTY
TO DHL ANALYTICAL
DHL ANALYTICAL
2300 DOUBLE CREEK DR
ROUND ROCK TX 78664
(512) 388-8222
INV:
PO:
REF:
DEPT:
FedEx
Express
TRK# 0201 7827 6477 3276
THU - 07 APR 10:30A
PRIORITY OVERNIGHT
A8 BSMA
78664
TX-US AUS

ORIGIN ID:GGGA (555) 555-5555
PBW
2201 DOUBLE CREEK DR STE 4004
ROUND ROCK, TX 78664
UNITED STATES US
TO DHL ANALYTICAL
DHL ANALYTICAL
2300 DOUBLE CREEK DR
ROUND ROCK TX 78664
(512) 388-8222
INV:
PO:
REF:
DEPT:
FedEx
Express
TRK# 0201 7827 6476 0817
THU - 07 APR 10:30A
PRIORITY OVERNIGHT
A8 BSMA
78664
TX-US AUS

DHL Analytical, Inc.

Sample Receipt Checklist

Client Name **Pastor, Behling & Wheeler**

Date Received: **4/7/2016**

Work Order Number **1604071**

Received by **JB**

Checklist completed by: _____ 4/7/2016
Signature | Date

Reviewed by: JD 4/7/2016
Initials | Date

Carrier name FedEx 1day

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	1.6 °C
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH<2 acceptable upon receipt?	Yes ☑	No ☐	NA ☐ LOT # 8086
	Adjusted? no		Checked by JB
Water - ph>9 (S) or ph>12 (CN) acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted? _____		Checked by _____

Any No response must be detailed in the comments section below.

Client contacted _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments: _____

Corrective Action _____

DHL Analytical, Inc. **Date:** *09-May-16*

CLIENT: Pastor, Behling & Wheeler
Project: Luminant-Martin Lake
Lab Order: 1604071

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Method SW6020A - Metals Analysis
Method SW7470A - Mercury Analysis
Method E300 - Anions Analysis
Method M4500-H+ B - pH of a Water Analysis
Method M2540C - TDS Analysis
Sub-contract - Radium-228 and Radium-226 analyses by methods E904/9320 and SM 7500 Ra B M. Analyzed at ESC Lab Sciences.

LOG IN

The samples were received and log-in performed on 4/7/16. A total of 12 samples were received. The samples arrived in good condition and were properly packaged.

METALS ANALYSIS

For Metals analysis performed on 4/11/16, 4/15/16 and 4/20/16 (batches 74482 & 74505) the matrix spikes and/or matrix spike duplicate recoveries were out of control limits for Boron and/or Calcium. These are flagged accordingly in the QC summary report. The samples selected for the matrix spikes and matrix spike duplicates (batches 74482 & 74505) were not from this work order. The LCSs were within control limits for these analytes. No further corrective actions were taken.

For Metals analysis performed on 4/15/16 (batch 74482) the RPD for the serial dilution was slightly above control limits for Boron. This is flagged accordingly. The PDS was within control limits for this analyte. No further corrective actions were taken.

DHL Analytical, Inc.

Date: *09-May-16*

CLIENT: Pastor, Behling & Wheeler
Project: Luminant-Martin Lake
Lab Order: 1604071

Work Order Sample Summary

Lab Smp ID	Client Sample ID	Tag Number	Date Collected	Date Recved
1604071-01	H-26		04/05/16 01:05 PM	4/7/2016
1604071-02	H-33		04/05/16 02:45 PM	4/7/2016
1604071-03	MW-17A		04/05/16 04:55 PM	4/7/2016
1604071-04	PDP-24		04/05/16 05:45 PM	4/7/2016
1604071-05	MW-19		04/06/16 07:40 AM	4/7/2016
1604071-06	PDP-22		04/06/16 08:35 AM	4/7/2016
1604071-07	PDP-23		04/06/16 09:30 AM	4/7/2016
1604071-08	MW-20A		04/06/16 10:20 AM	4/7/2016
1604071-09	PDP-26		04/06/16 11:15 AM	4/7/2016
1604071-10	PDP-25		04/06/16 12:00 PM	4/7/2016
1604071-11	MW-18A		04/06/16 12:55 PM	4/7/2016
1604071-12	EB-1		04/06/16 01:15 PM	4/7/2016

Lab Order: 1604071
Client: Pastor, Behling & Wheeler
Project: Luminant-Martin Lake

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1604071-01A	H-26	04/05/16 01:05 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/07/16 11:20 AM	74482
	H-26	04/05/16 01:05 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/07/16 11:20 AM	74482
	H-26	04/05/16 01:05 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	04/07/16 01:49 PM	74488
1604071-01D	H-26	04/05/16 01:05 PM	Aqueous	E300	Anion Preparation	04/14/16 10:21 AM	74597
	H-26	04/05/16 01:05 PM	Aqueous	M4500-H+ B	pH Preparation	04/11/16 08:50 AM	74521
	H-26	04/05/16 01:05 PM	Aqueous	M2540C	TDS Preparation	04/11/16 09:22 AM	74527
1604071-02A	H-33	04/05/16 02:45 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/07/16 11:20 AM	74482
	H-33	04/05/16 02:45 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/07/16 11:20 AM	74482
	H-33	04/05/16 02:45 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	04/07/16 01:49 PM	74488
1604071-02D	H-33	04/05/16 02:45 PM	Aqueous	E300	Anion Preparation	04/14/16 10:21 AM	74597
	H-33	04/05/16 02:45 PM	Aqueous	E300	Anion Preparation	04/14/16 10:21 AM	74597
	H-33	04/05/16 02:45 PM	Aqueous	M4500-H+ B	pH Preparation	04/11/16 08:50 AM	74521
	H-33	04/05/16 02:45 PM	Aqueous	M2540C	TDS Preparation	04/11/16 09:22 AM	74527
1604071-03A	MW-17A	04/05/16 04:55 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/07/16 11:20 AM	74482
	MW-17A	04/05/16 04:55 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/07/16 11:20 AM	74482
	MW-17A	04/05/16 04:55 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	04/07/16 01:49 PM	74488
1604071-03D	MW-17A	04/05/16 04:55 PM	Aqueous	E300	Anion Preparation	04/14/16 10:21 AM	74597
	MW-17A	04/05/16 04:55 PM	Aqueous	M4500-H+ B	pH Preparation	04/11/16 08:50 AM	74521
	MW-17A	04/05/16 04:55 PM	Aqueous	M2540C	TDS Preparation	04/11/16 09:22 AM	74527
1604071-04A	PDP-24	04/05/16 05:45 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/07/16 11:20 AM	74482
	PDP-24	04/05/16 05:45 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/07/16 11:20 AM	74482
	PDP-24	04/05/16 05:45 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/07/16 11:20 AM	74482
	PDP-24	04/05/16 05:45 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	04/07/16 01:49 PM	74488
1604071-04D	PDP-24	04/05/16 05:45 PM	Aqueous	E300	Anion Preparation	04/14/16 10:21 AM	74597
	PDP-24	04/05/16 05:45 PM	Aqueous	E300	Anion Preparation	04/14/16 10:21 AM	74597
	PDP-24	04/05/16 05:45 PM	Aqueous	M4500-H+ B	pH Preparation	04/11/16 08:50 AM	74521
	PDP-24	04/05/16 05:45 PM	Aqueous	M2540C	TDS Preparation	04/11/16 09:22 AM	74527
1604071-05A	MW-19	04/06/16 07:40 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/08/16 10:16 AM	74505

Lab Order: 1604071
Client: Pastor, Behling & Wheeler
Project: Luminant-Martin Lake

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1604071-05A	MW-19	04/06/16 07:40 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/08/16 10:16 AM	74505
	MW-19	04/06/16 07:40 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/08/16 10:16 AM	74505
	MW-19	04/06/16 07:40 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	04/07/16 01:49 PM	74488
1604071-05D	MW-19	04/06/16 07:40 AM	Aqueous	E300	Anion Preparation	04/14/16 10:21 AM	74597
	MW-19	04/06/16 07:40 AM	Aqueous	E300	Anion Preparation	04/14/16 10:21 AM	74597
	MW-19	04/06/16 07:40 AM	Aqueous	M4500-H+ B	pH Preparation	04/11/16 08:50 AM	74521
	MW-19	04/06/16 07:40 AM	Aqueous	M2540C	TDS Preparation	04/11/16 09:22 AM	74527
1604071-06A	PDP-22	04/06/16 08:35 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/08/16 10:16 AM	74505
	PDP-22	04/06/16 08:35 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/08/16 10:16 AM	74505
	PDP-22	04/06/16 08:35 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/08/16 10:16 AM	74505
	PDP-22	04/06/16 08:35 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	04/07/16 01:49 PM	74488
1604071-06D	PDP-22	04/06/16 08:35 AM	Aqueous	E300	Anion Preparation	04/14/16 10:21 AM	74597
	PDP-22	04/06/16 08:35 AM	Aqueous	E300	Anion Preparation	04/14/16 10:21 AM	74597
	PDP-22	04/06/16 08:35 AM	Aqueous	M4500-H+ B	pH Preparation	04/11/16 08:50 AM	74521
	PDP-22	04/06/16 08:35 AM	Aqueous	M2540C	TDS Preparation	04/11/16 09:22 AM	74527
1604071-07A	PDP-23	04/06/16 09:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/08/16 10:16 AM	74505
	PDP-23	04/06/16 09:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/08/16 10:16 AM	74505
	PDP-23	04/06/16 09:30 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	04/07/16 01:49 PM	74488
1604071-07D	PDP-23	04/06/16 09:30 AM	Aqueous	E300	Anion Preparation	04/14/16 10:21 AM	74597
	PDP-23	04/06/16 09:30 AM	Aqueous	M4500-H+ B	pH Preparation	04/11/16 08:50 AM	74521
	PDP-23	04/06/16 09:30 AM	Aqueous	M2540C	TDS Preparation	04/11/16 09:22 AM	74527
1604071-08A	MW-20A	04/06/16 10:20 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/08/16 10:16 AM	74505
	MW-20A	04/06/16 10:20 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/08/16 10:16 AM	74505
	MW-20A	04/06/16 10:20 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	04/07/16 01:49 PM	74488
1604071-08D	MW-20A	04/06/16 10:20 AM	Aqueous	E300	Anion Preparation	04/14/16 10:21 AM	74597
	MW-20A	04/06/16 10:20 AM	Aqueous	M4500-H+ B	pH Preparation	04/11/16 08:50 AM	74521
	MW-20A	04/06/16 10:20 AM	Aqueous	M2540C	TDS Preparation	04/11/16 09:22 AM	74527
1604071-09A	PDP-26	04/06/16 11:15 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/08/16 10:16 AM	74505

Lab Order: 1604071
Client: Pastor, Behling & Wheeler
Project: Luminant-Martin Lake

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1604071-09A	PDP-26	04/06/16 11:15 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/08/16 10:16 AM	74505
	PDP-26	04/06/16 11:15 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	04/07/16 01:49 PM	74488
1604071-09D	PDP-26	04/06/16 11:15 AM	Aqueous	E300	Anion Preparation	04/14/16 10:21 AM	74597
	PDP-26	04/06/16 11:15 AM	Aqueous	M4500-H+ B	pH Preparation	04/11/16 08:50 AM	74521
	PDP-26	04/06/16 11:15 AM	Aqueous	M2540C	TDS Preparation	04/11/16 09:22 AM	74527
1604071-10A	PDP-25	04/06/16 12:00 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/08/16 10:16 AM	74505
	PDP-25	04/06/16 12:00 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/08/16 10:16 AM	74505
	PDP-25	04/06/16 12:00 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/08/16 10:16 AM	74505
	PDP-25	04/06/16 12:00 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	04/07/16 01:49 PM	74488
1604071-10D	PDP-25	04/06/16 12:00 PM	Aqueous	E300	Anion Preparation	04/14/16 10:21 AM	74597
	PDP-25	04/06/16 12:00 PM	Aqueous	E300	Anion Preparation	04/14/16 10:21 AM	74597
	PDP-25	04/06/16 12:00 PM	Aqueous	M4500-H+ B	pH Preparation	04/11/16 08:50 AM	74521
	PDP-25	04/06/16 12:00 PM	Aqueous	M2540C	TDS Preparation	04/11/16 09:22 AM	74527
1604071-11A	MW-18A	04/06/16 12:55 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/08/16 10:16 AM	74505
	MW-18A	04/06/16 12:55 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/08/16 10:16 AM	74505
	MW-18A	04/06/16 12:55 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	04/07/16 01:49 PM	74488
1604071-11D	MW-18A	04/06/16 12:55 PM	Aqueous	E300	Anion Preparation	04/14/16 09:11 AM	74589
	MW-18A	04/06/16 12:55 PM	Aqueous	M4500-H+ B	pH Preparation	04/11/16 08:50 AM	74521
	MW-18A	04/06/16 12:55 PM	Aqueous	M2540C	TDS Preparation	04/11/16 09:22 AM	74527
1604071-12A	EB-1	04/06/16 01:15 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/08/16 10:16 AM	74505
	EB-1	04/06/16 01:15 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/08/16 10:16 AM	74505
	EB-1	04/06/16 01:15 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	04/07/16 01:49 PM	74488
1604071-12D	EB-1	04/06/16 01:15 PM	Aqueous	E300	Anion Preparation	04/14/16 09:11 AM	74589
	EB-1	04/06/16 01:15 PM	Aqueous	M4500-H+ B	pH Preparation	04/11/16 08:50 AM	74521
	EB-1	04/06/16 01:15 PM	Aqueous	M2540C	TDS Preparation	04/12/16 10:57 AM	74560

Lab Order: 1604071
Client: Pastor, Behling & Wheeler
Project: Luminant-Martin Lake

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1604071-01A	H-26	Aqueous	SW7470A	Mercury Total: Aqueous	74488	1	04/12/16 01:48 PM	CETAC2_HG_160412A
	H-26	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	74482	1	04/11/16 02:54 PM	ICP-MS4_160411D
	H-26	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	74482	1	04/15/16 10:43 AM	ICP-MS4_160415A
1604071-01D	H-26	Aqueous	E300	Anions by IC method - Water	74597	1	04/14/16 12:06 PM	IC3_160414A
	H-26	Aqueous	M4500-H+ B	pH	74521	1	04/11/16 09:54 AM	TITRATOR_160411A
	H-26	Aqueous	M2540C	Total Dissolved Solids	74527	1	04/12/16 08:45 AM	WC_160411C
1604071-02A	H-33	Aqueous	SW7470A	Mercury Total: Aqueous	74488	1	04/12/16 01:50 PM	CETAC2_HG_160412A
	H-33	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	74482	1	04/11/16 02:56 PM	ICP-MS4_160411D
	H-33	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	74482	1	04/15/16 10:45 AM	ICP-MS4_160415A
1604071-02D	H-33	Aqueous	E300	Anions by IC method - Water	74597	1	04/14/16 12:27 PM	IC3_160414A
	H-33	Aqueous	E300	Anions by IC method - Water	74597	10	04/14/16 05:10 PM	IC3_160414A
	H-33	Aqueous	M4500-H+ B	pH	74521	1	04/11/16 09:59 AM	TITRATOR_160411A
	H-33	Aqueous	M2540C	Total Dissolved Solids	74527	1	04/12/16 08:45 AM	WC_160411C
1604071-03A	MW-17A	Aqueous	SW7470A	Mercury Total: Aqueous	74488	1	04/12/16 01:57 PM	CETAC2_HG_160412A
	MW-17A	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	74482	1	04/11/16 02:58 PM	ICP-MS4_160411D
	MW-17A	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	74482	1	04/15/16 10:47 AM	ICP-MS4_160415A
1604071-03D	MW-17A	Aqueous	E300	Anions by IC method - Water	74597	1	04/14/16 12:47 PM	IC3_160414A
	MW-17A	Aqueous	M4500-H+ B	pH	74521	1	04/11/16 10:01 AM	TITRATOR_160411A
	MW-17A	Aqueous	M2540C	Total Dissolved Solids	74527	1	04/12/16 08:45 AM	WC_160411C
1604071-04A	PDP-24	Aqueous	SW7470A	Mercury Total: Aqueous	74488	1	04/12/16 01:59 PM	CETAC2_HG_160412A
	PDP-24	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	74482	10	04/15/16 10:49 AM	ICP-MS4_160415A
	PDP-24	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	74482	10	04/13/16 12:24 PM	ICP-MS4_160413A
	PDP-24	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	74482	1	04/11/16 03:14 PM	ICP-MS4_160411D
1604071-04D	PDP-24	Aqueous	E300	Anions by IC method - Water	74597	1	04/14/16 01:08 PM	IC3_160414A
	PDP-24	Aqueous	E300	Anions by IC method - Water	74597	10	04/14/16 06:12 PM	IC3_160414A
	PDP-24	Aqueous	M4500-H+ B	pH	74521	1	04/11/16 10:02 AM	TITRATOR_160411A

Lab Order: 1604071
Client: Pastor, Behling & Wheeler
Project: Luminant-Martin Lake

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1604071-04D	PDP-24	Aqueous	M2540C	Total Dissolved Solids	74527	1	04/12/16 08:45 AM	WC_160411C
1604071-05A	MW-19	Aqueous	SW7470A	Mercury Total: Aqueous	74488	1	04/12/16 02:01 PM	CETAC2_HG_160412A
	MW-19	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	74505	10	04/20/16 12:55 PM	ICP-MS4_160420A
	MW-19	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	74505	1	04/20/16 01:01 PM	ICP-MS4_160420A
	MW-19	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	74505	1	04/11/16 01:34 PM	ICP-MS4_160411D
1604071-05D	MW-19	Aqueous	E300	Anions by IC method - Water	74597	10	04/14/16 07:14 PM	IC3_160414A
	MW-19	Aqueous	E300	Anions by IC method - Water	74597	1	04/14/16 01:28 PM	IC3_160414A
	MW-19	Aqueous	M4500-H+ B	pH	74521	1	04/11/16 10:05 AM	TITRATOR_160411A
	MW-19	Aqueous	M2540C	Total Dissolved Solids	74527	1	04/12/16 08:45 AM	WC_160411C
1604071-06A	PDP-22	Aqueous	SW7470A	Mercury Total: Aqueous	74488	1	04/12/16 02:04 PM	CETAC2_HG_160412A
	PDP-22	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	74505	1	04/11/16 01:36 PM	ICP-MS4_160411D
	PDP-22	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	74505	10	04/20/16 12:57 PM	ICP-MS4_160420A
	PDP-22	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	74505	1	04/20/16 01:03 PM	ICP-MS4_160420A
1604071-06D	PDP-22	Aqueous	E300	Anions by IC method - Water	74597	10	04/14/16 07:35 PM	IC3_160414A
	PDP-22	Aqueous	E300	Anions by IC method - Water	74597	1	04/14/16 01:52 PM	IC3_160414A
	PDP-22	Aqueous	M4500-H+ B	pH	74521	1	04/11/16 10:08 AM	TITRATOR_160411A
	PDP-22	Aqueous	M2540C	Total Dissolved Solids	74527	1	04/12/16 08:45 AM	WC_160411C
1604071-07A	PDP-23	Aqueous	SW7470A	Mercury Total: Aqueous	74488	1	04/12/16 02:06 PM	CETAC2_HG_160412A
	PDP-23	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	74505	1	04/11/16 01:58 PM	ICP-MS4_160411D
	PDP-23	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	74505	1	04/20/16 01:05 PM	ICP-MS4_160420A
1604071-07D	PDP-23	Aqueous	E300	Anions by IC method - Water	74597	1	04/14/16 02:16 PM	IC3_160414A
	PDP-23	Aqueous	M4500-H+ B	pH	74521	1	04/11/16 10:11 AM	TITRATOR_160411A
	PDP-23	Aqueous	M2540C	Total Dissolved Solids	74527	1	04/12/16 08:45 AM	WC_160411C
1604071-08A	MW-20A	Aqueous	SW7470A	Mercury Total: Aqueous	74488	1	04/12/16 02:08 PM	CETAC2_HG_160412A
	MW-20A	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	74505	1	04/11/16 02:00 PM	ICP-MS4_160411D
	MW-20A	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	74505	1	04/20/16 01:07 PM	ICP-MS4_160420A

Lab Order: 1604071
Client: Pastor, Behling & Wheeler
Project: Luminant-Martin Lake

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1604071-08D	MW-20A	Aqueous	E300	Anions by IC method - Water	74597	1	04/14/16 02:36 PM	IC3_160414A
	MW-20A	Aqueous	M4500-H+ B	pH	74521	1	04/11/16 10:12 AM	TITRATOR_160411A
	MW-20A	Aqueous	M2540C	Total Dissolved Solids	74527	1	04/12/16 08:45 AM	WC_160411C
1604071-09A	PDP-26	Aqueous	SW7470A	Mercury Total: Aqueous	74488	1	04/12/16 02:10 PM	CETAC2_HG_160412A
	PDP-26	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	74505	1	04/11/16 02:02 PM	ICP-MS4_160411D
	PDP-26	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	74505	1	04/20/16 01:09 PM	ICP-MS4_160420A
1604071-09D	PDP-26	Aqueous	E300	Anions by IC method - Water	74597	1	04/14/16 08:16 PM	IC3_160414A
	PDP-26	Aqueous	M4500-H+ B	pH	74521	1	04/11/16 10:13 AM	TITRATOR_160411A
	PDP-26	Aqueous	M2540C	Total Dissolved Solids	74527	1	04/12/16 08:45 AM	WC_160411C
1604071-10A	PDP-25	Aqueous	SW7470A	Mercury Total: Aqueous	74488	1	04/12/16 02:13 PM	CETAC2_HG_160412A
	PDP-25	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	74505	1	04/11/16 02:04 PM	ICP-MS4_160411D
	PDP-25	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	74505	10	04/20/16 12:59 PM	ICP-MS4_160420A
	PDP-25	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	74505	1	04/20/16 01:11 PM	ICP-MS4_160420A
1604071-10D	PDP-25	Aqueous	E300	Anions by IC method - Water	74597	1	04/14/16 08:57 PM	IC3_160414A
	PDP-25	Aqueous	E300	Anions by IC method - Water	74597	10	04/14/16 09:18 PM	IC3_160414A
	PDP-25	Aqueous	M4500-H+ B	pH	74521	1	04/11/16 10:18 AM	TITRATOR_160411A
	PDP-25	Aqueous	M2540C	Total Dissolved Solids	74527	1	04/12/16 08:45 AM	WC_160411C
1604071-11A	MW-18A	Aqueous	SW7470A	Mercury Total: Aqueous	74488	1	04/12/16 02:15 PM	CETAC2_HG_160412A
	MW-18A	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	74505	1	04/11/16 02:06 PM	ICP-MS4_160411D
	MW-18A	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	74505	1	04/20/16 01:58 PM	ICP-MS4_160420A
1604071-11D	MW-18A	Aqueous	E300	Anions by IC method - Water	74589	1	04/14/16 03:00 PM	IC2_160414A
	MW-18A	Aqueous	M4500-H+ B	pH	74521	1	04/11/16 10:20 AM	TITRATOR_160411A
	MW-18A	Aqueous	M2540C	Total Dissolved Solids	74527	1	04/12/16 08:45 AM	WC_160411C
1604071-12A	EB-1	Aqueous	SW7470A	Mercury Total: Aqueous	74488	1	04/12/16 02:17 PM	CETAC2_HG_160412A
	EB-1	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	74505	1	04/11/16 02:08 PM	ICP-MS4_160411D
	EB-1	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	74505	1	04/20/16 02:00 PM	ICP-MS4_160420A

Lab Order: 1604071
Client: Pastor, Behling & Wheeler
Project: Luminant-Martin Lake

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1604071-12D	EB-1	Aqueous	E300	Anions by IC method - Water	74589	1	04/14/16 03:15 PM	IC2_160414A
	EB-1	Aqueous	M4500-H+ B	pH	74521	1	04/11/16 10:23 AM	TITRATOR_160411A
	EB-1	Aqueous	M2540C	Total Dissolved Solids	74560	1	04/13/16 08:45 AM	WC_160412B

DHL Analytical, Inc.

Date: *09-May-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	H-26
Project:	Luminant-Martin Lake	**Lab ID:**	1604071-01
Project No:	5164-B	**Collection Date:**	04/05/16 01:05 PM
Lab Order:	1604071	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	04/12/16 01:48 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	04/11/16 02:54 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	04/11/16 02:54 PM
Barium	0.0408	0.00300	0.0100		mg/L	1	04/11/16 02:54 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	04/11/16 02:54 PM
Boron	0.289	0.0100	0.0300		mg/L	1	04/15/16 10:43 AM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	04/11/16 02:54 PM
Calcium	11.8	0.100	0.300		mg/L	1	04/11/16 02:54 PM
Chromium	0.00798	0.00200	0.00500		mg/L	1	04/11/16 02:54 PM
Cobalt	0.0125	0.00300	0.00500		mg/L	1	04/11/16 02:54 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	04/11/16 02:54 PM
Lithium	0.0121	0.00500	0.0100		mg/L	1	04/11/16 02:54 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	04/11/16 02:54 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	04/11/16 02:54 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	04/11/16 02:54 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	27.8	0.300	1.00		mg/L	1	04/14/16 12:06 PM
Fluoride	0.199	0.100	0.400	J	mg/L	1	04/14/16 12:06 PM
Sulfate	56.8	1.00	3.00		mg/L	1	04/14/16 12:06 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.22	0	0		pH Units@19.3℃	1	04/11/16 09:54 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	213	10.0	10.0		mg/L	1	04/12/16 08:45 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *09-May-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	H-33
Project:	Luminant-Martin Lake	**Lab ID:**	1604071-02
Project No:	5164-B	**Collection Date:**	04/05/16 02:45 PM
Lab Order:	1604071	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	04/12/16 01:50 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	04/11/16 02:56 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	04/11/16 02:56 PM
Barium	0.0576	0.00300	0.0100		mg/L	1	04/11/16 02:56 PM
Beryllium	0.000302	0.000300	0.00100	J	mg/L	1	04/11/16 02:56 PM
Boron	0.0659	0.0100	0.0300		mg/L	1	04/15/16 10:45 AM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	04/11/16 02:56 PM
Calcium	14.9	0.100	0.300		mg/L	1	04/11/16 02:56 PM
Chromium	0.0171	0.00200	0.00500		mg/L	1	04/11/16 02:56 PM
Cobalt	0.0160	0.00300	0.00500		mg/L	1	04/11/16 02:56 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	04/11/16 02:56 PM
Lithium	0.160	0.00500	0.0100		mg/L	1	04/11/16 02:56 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	04/11/16 02:56 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	04/11/16 02:56 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	04/11/16 02:56 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	58.3	3.00	10.0		mg/L	10	04/14/16 05:10 PM
Fluoride	0.140	0.100	0.400	J	mg/L	1	04/14/16 12:27 PM
Sulfate	113	1.00	3.00		mg/L	1	04/14/16 12:27 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.72	0	0		pH Units@19.3℃	1	04/11/16 09:59 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	589	10.0	10.0		mg/L	1	04/12/16 08:45 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *09-May-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	MW-17A
Project:	Luminant-Martin Lake	**Lab ID:**	1604071-03
Project No:	5164-B	**Collection Date:**	04/05/16 04:55 PM
Lab Order:	1604071	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	0.000196	0.0000800	0.000200	J	mg/L	1	04/12/16 01:57 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	04/11/16 02:58 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	04/11/16 02:58 PM
Barium	0.103	0.00300	0.0100		mg/L	1	04/11/16 02:58 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	04/11/16 02:58 PM
Boron	0.459	0.0100	0.0300		mg/L	1	04/15/16 10:47 AM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	04/11/16 02:58 PM
Calcium	4.64	0.100	0.300		mg/L	1	04/11/16 02:58 PM
Chromium	0.00550	0.00200	0.00500		mg/L	1	04/11/16 02:58 PM
Cobalt	0.00829	0.00300	0.00500		mg/L	1	04/11/16 02:58 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	04/11/16 02:58 PM
Lithium	0.0137	0.00500	0.0100		mg/L	1	04/11/16 02:58 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	04/11/16 02:58 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	04/11/16 02:58 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	04/11/16 02:58 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	7.82	0.300	1.00		mg/L	1	04/14/16 12:47 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	04/14/16 12:47 PM
Sulfate	41.4	1.00	3.00		mg/L	1	04/14/16 12:47 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	5.47	0	0		pH Units@19.5℃	1	04/11/16 10:01 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	132	10.0	10.0		mg/L	1	04/12/16 08:45 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *09-May-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	PDP-24
Project:	Luminant-Martin Lake	**Lab ID:**	1604071-04
Project No:	5164-B	**Collection Date:**	04/05/16 05:45 PM
Lab Order:	1604071	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	0.000469	0.0000800	0.000200		mg/L	1	04/12/16 01:59 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	04/11/16 03:14 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	04/11/16 03:14 PM
Barium	0.0186	0.00300	0.0100		mg/L	1	04/11/16 03:14 PM
Beryllium	0.00485	0.000300	0.00100		mg/L	1	04/11/16 03:14 PM
Boron	3.99	0.100	0.300		mg/L	10	04/15/16 10:49 AM
Cadmium	0.00207	0.000300	0.00100		mg/L	1	04/11/16 03:14 PM
Calcium	34.5	1.00	3.00		mg/L	10	04/13/16 12:24 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	04/11/16 03:14 PM
Cobalt	0.0894	0.00300	0.00500		mg/L	1	04/11/16 03:14 PM
Lead	0.000769	0.000300	0.00100	J	mg/L	1	04/11/16 03:14 PM
Lithium	0.0261	0.00500	0.0100		mg/L	1	04/11/16 03:14 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	04/11/16 03:14 PM
Selenium	0.00276	0.00200	0.00500	J	mg/L	1	04/11/16 03:14 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	04/11/16 03:14 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	18.0	0.300	1.00		mg/L	1	04/14/16 01:08 PM
Fluoride	0.817	0.100	0.400		mg/L	1	04/14/16 01:08 PM
Sulfate	416	10.0	30.0		mg/L	10	04/14/16 06:12 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	4.31	0	0		pH Units@20.1℃	1	04/11/16 10:02 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	711	10.0	10.0		mg/L	1	04/12/16 08:45 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *09-May-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	MW-19
Project:	Luminant-Martin Lake	**Lab ID:**	1604071-05
Project No:	5164-B	**Collection Date:**	04/06/16 07:40 AM
Lab Order:	1604071	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	04/12/16 02:01 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	04/11/16 01:34 PM
Arsenic	0.00689	0.00200	0.00500		mg/L	1	04/11/16 01:34 PM
Barium	0.0517	0.00300	0.0100		mg/L	1	04/11/16 01:34 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	04/11/16 01:34 PM
Boron	0.473	0.0100	0.0300		mg/L	1	04/20/16 01:01 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	04/11/16 01:34 PM
Calcium	134	1.00	3.00		mg/L	10	04/20/16 12:55 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	04/11/16 01:34 PM
Cobalt	0.00434	0.00300	0.00500	J	mg/L	1	04/11/16 01:34 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	04/11/16 01:34 PM
Lithium	0.00622	0.00500	0.0100	J	mg/L	1	04/11/16 01:34 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	04/11/16 01:34 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	04/11/16 01:34 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	04/11/16 01:34 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	31.3	0.300	1.00		mg/L	1	04/14/16 01:28 PM
Fluoride	0.221	0.100	0.400	J	mg/L	1	04/14/16 01:28 PM
Sulfate	362	10.0	30.0		mg/L	10	04/14/16 07:14 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.70	0	0		pH Units@19.8℃	1	04/11/16 10:05 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	836	10.0	10.0		mg/L	1	04/12/16 08:45 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *09-May-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	PDP-22
Project:	Luminant-Martin Lake	**Lab ID:**	1604071-06
Project No:	5164-B	**Collection Date:**	04/06/16 08:35 AM
Lab Order:	1604071	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	04/12/16 02:04 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	04/11/16 01:36 PM
Arsenic	0.00536	0.00200	0.00500		mg/L	1	04/11/16 01:36 PM
Barium	0.146	0.00300	0.0100		mg/L	1	04/11/16 01:36 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	04/11/16 01:36 PM
Boron	0.218	0.0100	0.0300		mg/L	1	04/20/16 01:03 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	04/11/16 01:36 PM
Calcium	97.9	1.00	3.00		mg/L	10	04/20/16 12:57 PM
Chromium	0.0170	0.00200	0.00500		mg/L	1	04/11/16 01:36 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	04/11/16 01:36 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	04/11/16 01:36 PM
Lithium	0.0874	0.00500	0.0100		mg/L	1	04/11/16 01:36 PM
Molybdenum	0.00205	0.00200	0.00500	J	mg/L	1	04/11/16 01:36 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	04/11/16 01:36 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	04/11/16 01:36 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	13.7	0.300	1.00		mg/L	1	04/14/16 01:52 PM
Fluoride	0.349	0.100	0.400	J	mg/L	1	04/14/16 01:52 PM
Sulfate	209	10.0	30.0		mg/L	10	04/14/16 07:35 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	7.20	0	0		pH Units@19.9℃	1	04/11/16 10:08 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	767	10.0	10.0		mg/L	1	04/12/16 08:45 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *09-May-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	PDP-23
Project:	Luminant-Martin Lake	**Lab ID:**	1604071-07
Project No:	5164-B	**Collection Date:**	04/06/16 09:30 AM
Lab Order:	1604071	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	04/12/16 02:06 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	04/11/16 01:58 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	04/11/16 01:58 PM
Barium	0.0375	0.00300	0.0100		mg/L	1	04/11/16 01:58 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	04/11/16 01:58 PM
Boron	0.0476	0.0100	0.0300		mg/L	1	04/20/16 01:05 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	04/11/16 01:58 PM
Calcium	1.57	0.100	0.300		mg/L	1	04/11/16 01:58 PM
Chromium	0.00200	0.00200	0.00500	J	mg/L	1	04/11/16 01:58 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	04/11/16 01:58 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	04/11/16 01:58 PM
Lithium	0.0126	0.00500	0.0100		mg/L	1	04/11/16 01:58 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	04/11/16 01:58 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	04/11/16 01:58 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	04/11/16 01:58 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	4.17	0.300	1.00		mg/L	1	04/14/16 02:16 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	04/14/16 02:16 PM
Sulfate	1.46	1.00	3.00	J	mg/L	1	04/14/16 02:16 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.04	0	0		pH Units@20.3℃	1	04/11/16 10:11 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	88.0	10.0	10.0		mg/L	1	04/12/16 08:45 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *09-May-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	MW-20A
Project:	Luminant-Martin Lake	**Lab ID:**	1604071-08
Project No:	5164-B	**Collection Date:**	04/06/16 10:20 AM
Lab Order:	1604071	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	0.000371	0.0000800	0.000200		mg/L	1	04/12/16 02:08 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	04/11/16 02:00 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	04/11/16 02:00 PM
Barium	0.0300	0.00300	0.0100		mg/L	1	04/11/16 02:00 PM
Beryllium	0.000519	0.000300	0.00100	J	mg/L	1	04/11/16 02:00 PM
Boron	0.150	0.0100	0.0300		mg/L	1	04/20/16 01:07 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	04/11/16 02:00 PM
Calcium	17.1	0.100	0.300		mg/L	1	04/11/16 02:00 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	04/11/16 02:00 PM
Cobalt	0.00575	0.00300	0.00500		mg/L	1	04/11/16 02:00 PM
Lead	0.00209	0.000300	0.00100		mg/L	1	04/11/16 02:00 PM
Lithium	0.0166	0.00500	0.0100		mg/L	1	04/11/16 02:00 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	04/11/16 02:00 PM
Selenium	0.00739	0.00200	0.00500		mg/L	1	04/11/16 02:00 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	04/11/16 02:00 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	9.65	0.300	1.00		mg/L	1	04/14/16 02:36 PM
Fluoride	0.804	0.100	0.400		mg/L	1	04/14/16 02:36 PM
Sulfate	118	1.00	3.00		mg/L	1	04/14/16 02:36 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	4.65	0	0		pH Units@19.8℃	1	04/11/16 10:12 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	313	10.0	10.0		mg/L	1	04/12/16 08:45 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *09-May-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	PDP-26
Project:	Luminant-Martin Lake	**Lab ID:**	1604071-09
Project No:	5164-B	**Collection Date:**	04/06/16 11:15 AM
Lab Order:	1604071	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	04/12/16 02:10 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	04/11/16 02:02 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	04/11/16 02:02 PM
Barium	0.0242	0.00300	0.0100		mg/L	1	04/11/16 02:02 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	04/11/16 02:02 PM
Boron	0.0441	0.0100	0.0300		mg/L	1	04/20/16 01:09 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	04/11/16 02:02 PM
Calcium	2.62	0.100	0.300		mg/L	1	04/11/16 02:02 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	04/11/16 02:02 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	04/11/16 02:02 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	04/11/16 02:02 PM
Lithium	0.0138	0.00500	0.0100		mg/L	1	04/11/16 02:02 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	04/11/16 02:02 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	04/11/16 02:02 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	04/11/16 02:02 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	5.26	0.300	1.00		mg/L	1	04/14/16 08:16 PM
Fluoride	0.187	0.100	0.400	J	mg/L	1	04/14/16 08:16 PM
Sulfate	8.55	1.00	3.00		mg/L	1	04/14/16 08:16 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.52	0	0		pH Units@20℃	1	04/11/16 10:13 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	126	10.0	10.0		mg/L	1	04/12/16 08:45 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *09-May-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	PDP-25
Project:	Luminant-Martin Lake	**Lab ID:**	1604071-10
Project No:	5164-B	**Collection Date:**	04/06/16 12:00 PM
Lab Order:	1604071	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	04/12/16 02:13 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	04/11/16 02:04 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	04/11/16 02:04 PM
Barium	0.197	0.00300	0.0100		mg/L	1	04/11/16 02:04 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	04/11/16 02:04 PM
Boron	0.100	0.0100	0.0300		mg/L	1	04/20/16 01:11 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	04/11/16 02:04 PM
Calcium	38.3	1.00	3.00		mg/L	10	04/20/16 12:59 PM
Chromium	0.0165	0.00200	0.00500		mg/L	1	04/11/16 02:04 PM
Cobalt	0.0103	0.00300	0.00500		mg/L	1	04/11/16 02:04 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	04/11/16 02:04 PM
Lithium	0.171	0.00500	0.0100		mg/L	1	04/11/16 02:04 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	04/11/16 02:04 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	04/11/16 02:04 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	04/11/16 02:04 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	124	3.00	10.0		mg/L	10	04/14/16 09:18 PM
Fluoride	0.149	0.100	0.400	J	mg/L	1	04/14/16 08:57 PM
Sulfate	102	1.00	3.00		mg/L	1	04/14/16 08:57 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.48	0	0		pH Units@20.4℃	1	04/11/16 10:18 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	646	10.0	10.0		mg/L	1	04/12/16 08:45 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *09-May-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	MW-18A
Project:	Luminant-Martin Lake	**Lab ID:**	1604071-11
Project No:	5164-B	**Collection Date:**	04/06/16 12:55 PM
Lab Order:	1604071	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	0.00252	0.0000800	0.000200		mg/L	1	04/12/16 02:15 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	04/11/16 02:06 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	04/11/16 02:06 PM
Barium	0.0487	0.00300	0.0100		mg/L	1	04/11/16 02:06 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	04/11/16 02:06 PM
Boron	0.0961	0.0100	0.0300		mg/L	1	04/20/16 01:58 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	04/11/16 02:06 PM
Calcium	1.45	0.100	0.300		mg/L	1	04/11/16 02:06 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	04/11/16 02:06 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	04/11/16 02:06 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	04/11/16 02:06 PM
Lithium	0.00907	0.00500	0.0100	J	mg/L	1	04/11/16 02:06 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	04/11/16 02:06 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	04/11/16 02:06 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	04/11/16 02:06 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	7.07	0.300	1.00		mg/L	1	04/14/16 03:00 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	04/14/16 03:00 PM
Sulfate	5.26	1.00	3.00		mg/L	1	04/14/16 03:00 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	5.49	0	0		pH Units@20.6℃	1	04/11/16 10:20 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	79.0	10.0	10.0		mg/L	1	04/12/16 08:45 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *09-May-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	EB-1
Project:	Luminant-Martin Lake	**Lab ID:**	1604071-12
Project No:	5164-B	**Collection Date:**	04/06/16 01:15 PM
Lab Order:	1604071	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	04/12/16 02:17 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	04/11/16 02:08 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	04/11/16 02:08 PM
Barium	0.0641	0.00300	0.0100		mg/L	1	04/11/16 02:08 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	04/11/16 02:08 PM
Boron	0.0324	0.0100	0.0300		mg/L	1	04/20/16 02:00 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	04/11/16 02:08 PM
Calcium	2.98	0.100	0.300		mg/L	1	04/11/16 02:08 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	04/11/16 02:08 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	04/11/16 02:08 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	04/11/16 02:08 PM
Lithium	<0.00500	0.00500	0.0100		mg/L	1	04/11/16 02:08 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	04/11/16 02:08 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	04/11/16 02:08 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	04/11/16 02:08 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	7.93	0.300	1.00		mg/L	1	04/14/16 03:15 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	04/14/16 03:15 PM
Sulfate	1.66	1.00	3.00	J	mg/L	1	04/14/16 03:15 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	5.94	0	0		pH Units@20.7℃	1	04/11/16 10:23 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	13.0	10.0	10.0		mg/L	1	04/13/16 08:45 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT: Pastor, Behling & Wheeler
Work Order: 1604071
Project: Luminant-Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_160412A

The QC data in batch 74488 applies to the following samples: 1604071-01A, 1604071-02A, 1604071-03A, 1604071-04A, 1604071-05A, 1604071-06A, 1604071-07A, 1604071-08A, 1604071-09A, 1604071-10A, 1604071-11A, 1604071-12A

Sample ID	**MB-74488**	Batch ID:	**74488**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**CETAC2_HG_160412A**	Analysis Date:	**4/12/2016 1:23:16 PM**	Prep Date:	**4/7/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.0000800	0.000200								

Sample ID	**LCS-74488**	Batch ID:	**74488**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**CETAC2_HG_160412A**	Analysis Date:	**4/12/2016 1:25:31 PM**	Prep Date:	**4/7/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00203	0.000200	0.00200	0	102	85	115			

Sample ID	**LCSD-74488**	Batch ID:	**74488**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**LCSD**	Run ID:	**CETAC2_HG_160412A**	Analysis Date:	**4/12/2016 1:27:48 PM**	Prep Date:	**4/7/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00201	0.000200	0.00200	0	101	85	115	0.990	15	

Sample ID	**1604071-12A SD**	Batch ID:	**74488**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**SD**	Run ID:	**CETAC2_HG_160412A**	Analysis Date:	**4/12/2016 2:20:00 PM**	Prep Date:	**4/7/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.000400	0.00100	0	0				0	10	

Sample ID	**1604071-12A PDS**	Batch ID:	**74488**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**PDS**	Run ID:	**CETAC2_HG_160412A**	Analysis Date:	**4/12/2016 2:22:16 PM**	Prep Date:	**4/7/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00242	0.000200	0.00250	0	96.8	85	115			

Sample ID	**1604071-12A MS**	Batch ID:	**74488**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**MS**	Run ID:	**CETAC2_HG_160412A**	Analysis Date:	**4/12/2016 2:24:33 PM**	Prep Date:	**4/7/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00201	0.000200	0.00200	0	101	80	120			

Sample ID	**1604071-12A MSD**	Batch ID:	**74488**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**MSD**	Run ID:	**CETAC2_HG_160412A**	Analysis Date:	**4/12/2016 2:26:49 PM**	Prep Date:	**4/7/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00198	0.000200	0.00200	0	99.0	80	120	1.50	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1604071
Project: Luminant-Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_160412A

Sample ID	**ICV-160412**	Batch ID:	**R85189**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**ICV**	Run ID:	**CETAC2_HG_160412A**	Analysis Date:	**4/12/2016 10:31:03 AM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00395	0.000200	0.00400	0	98.8	90	110			

Sample ID	**CCV4-160412**	Batch ID:	**R85189**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**CETAC2_HG_160412A**	Analysis Date:	**4/12/2016 1:18:41 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00202	0.000200	0.00200	0	101	90	110			

Sample ID	**CCV5-160412**	Batch ID:	**R85189**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**CETAC2_HG_160412A**	Analysis Date:	**4/12/2016 1:52:44 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00199	0.000200	0.00200	0	99.5	90	110			

Sample ID	**CCV6-160412**	Batch ID:	**R85189**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**CETAC2_HG_160412A**	Analysis Date:	**4/12/2016 2:29:07 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00203	0.000200	0.00200	0	102	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1604071
Project: Luminant-Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160411D

The QC data in batch 74482 applies to the following samples: 1604071-01A, 1604071-02A, 1604071-03A, 1604071-04A

Sample ID **MB-74482** Batch ID: **74482** TestNo: **SW6020A** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_160411D** Analysis Date: **4/11/2016 2:30:00 PM** Prep Date: **4/7/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.000800	0.00250								
Arsenic	<0.00200	0.00500								
Barium	<0.00300	0.0100								
Beryllium	<0.000300	0.00100								
Cadmium	<0.000300	0.00100								
Calcium	<0.100	0.300								
Chromium	<0.00200	0.00500								
Cobalt	<0.00300	0.00500								
Lead	<0.000300	0.00100								
Lithium	<0.00500	0.0100								
Molybdenum	<0.00200	0.00500								
Selenium	<0.00200	0.00500								
Thallium	<0.000500	0.00150								

Sample ID **LCS-74482** Batch ID: **74482** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_160411D** Analysis Date: **4/11/2016 2:32:00 PM** Prep Date: **4/7/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.188	0.00250	0.200	0	94.1	80	120			
Arsenic	0.165	0.00500	0.200	0	82.5	80	120			
Barium	0.186	0.0100	0.200	0	93.2	80	120			
Beryllium	0.194	0.00100	0.200	0	96.9	80	120			
Cadmium	0.190	0.00100	0.200	0	94.8	80	120			
Calcium	4.98	0.300	5.00	0	99.5	80	120			
Chromium	0.190	0.00500	0.200	0	94.9	80	120			
Cobalt	0.203	0.00500	0.200	0	101	80	120			
Lead	0.192	0.00100	0.200	0	96.0	80	120			
Lithium	0.194	0.0100	0.200	0	96.9	80	120			
Molybdenum	0.170	0.00500	0.200	0	85.2	80	120			
Selenium	0.189	0.00500	0.200	0	94.5	80	120			
Thallium	0.194	0.00150	0.200	0	97.2	80	120			

Sample ID **LCSD-74482** Batch ID: **74482** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_160411D** Analysis Date: **4/11/2016 2:34:00 PM** Prep Date: **4/7/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.190	0.00250	0.200	0	94.9	80	120	0.895	15	
Arsenic	0.175	0.00500	0.200	0	87.6	80	120	5.95	15	
Barium	0.187	0.0100	0.200	0	93.6	80	120	0.445	15	
Beryllium	0.193	0.00100	0.200	0	96.4	80	120	0.525	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1604071
Project: Luminant-Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160411D

Sample ID **LCSD-74482**	Batch ID: **74482**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCSD**	Run ID: **ICP-MS4_160411D**	Analysis Date: **4/11/2016 2:34:00 PM**	Prep Date: **4/7/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cadmium	0.192	0.00100	0.200	0	95.8	80	120	1.03	15	
Calcium	4.96	0.300	5.00	0	99.2	80	120	0.351	15	
Chromium	0.193	0.00500	0.200	0	96.4	80	120	1.49	15	
Cobalt	0.204	0.00500	0.200	0	102	80	120	0.761	15	
Lead	0.193	0.00100	0.200	0	96.6	80	120	0.589	15	
Lithium	0.193	0.0100	0.200	0	96.5	80	120	0.486	15	
Molybdenum	0.176	0.00500	0.200	0	87.9	80	120	3.17	15	
Selenium	0.193	0.00500	0.200	0	96.5	80	120	2.07	15	
Thallium	0.198	0.00150	0.200	0	98.9	80	120	1.75	15	

Sample ID **1604052-03A SD**	Batch ID: **74482**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS4_160411D**	Analysis Date: **4/11/2016 2:40:00 PM**	Prep Date: **4/7/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.00400	0.0125	0	0				0	10	
Arsenic	<0.0100	0.0250	0	0.00648				0	10	
Barium	0.0229	0.0500	0	0.0237				3.71	10	
Beryllium	0.00542	0.00500	0	0.00527				2.83	10	
Cadmium	<0.00150	0.00500	0	0.00128				0	10	
Chromium	<0.0100	0.0250	0	0				0	10	
Cobalt	0.210	0.0250	0	0.208				0.962	10	
Lead	0.00181	0.00500	0	0.00182				0.825	10	
Lithium	0.0862	0.0500	0	0.0818				5.33	10	
Molybdenum	<0.0100	0.0250	0	0				0	10	
Selenium	<0.0100	0.0250	0	0				0	10	
Thallium	<0.00250	0.00750	0	0				0	10	

Sample ID **1604052-03A PDS**	Batch ID: **74482**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_160411D**	Analysis Date: **4/11/2016 3:00:00 PM**	Prep Date: **4/7/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.182	0.00250	0.200	0	91.0	80	120			
Arsenic	0.197	0.00500	0.200	0.00648	95.4	80	120			
Barium	0.202	0.0100	0.200	0.0237	88.9	80	120			
Beryllium	0.188	0.00100	0.200	0.00527	91.4	80	120			
Cadmium	0.177	0.00100	0.200	0.00128	87.6	80	120			
Chromium	0.183	0.00500	0.200	0	91.4	80	120			
Cobalt	0.382	0.00500	0.200	0.208	87.5	80	120			
Lead	0.186	0.00100	0.200	0.00182	92.0	80	120			
Lithium	0.252	0.0100	0.200	0.0818	85.1	80	120			
Molybdenum	0.178	0.00500	0.200	0	88.8	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1604071
Project: Luminant-Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160411D

Sample ID **1604052-03A PDS**	Batch ID: **74482**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_160411D**	Analysis Date: **4/11/2016 3:00:00 PM**	Prep Date: **4/7/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.195	0.00500	0.200	0	97.6	80	120			
Thallium	0.185	0.00150	0.200	0	92.6	80	120			

Sample ID **1604052-03A MS**	Batch ID: **74482**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS4_160411D**	Analysis Date: **4/11/2016 3:02:00 PM**	Prep Date: **4/7/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.189	0.00250	0.200	0	94.7	80	120			
Arsenic	0.199	0.00500	0.200	0.00648	96.3	80	120			
Barium	0.205	0.0100	0.200	0.0237	90.6	80	120			
Beryllium	0.188	0.00100	0.200	0.00527	91.5	80	120			
Cadmium	0.179	0.00100	0.200	0.00128	89.0	80	120			
Calcium	48.4	0.300	5.00	46.3	43.1	80	120			S
Chromium	0.179	0.00500	0.200	0	89.3	80	120			
Cobalt	0.393	0.00500	0.200	0.208	92.6	80	120			
Lead	0.187	0.00100	0.200	0.00182	92.6	80	120			
Lithium	0.257	0.0100	0.200	0.0818	87.4	80	120			
Molybdenum	0.180	0.00500	0.200	0	90.2	80	120			
Selenium	0.195	0.00500	0.200	0	97.6	80	120			
Thallium	0.188	0.00150	0.200	0	94.2	80	120			

Sample ID **1604052-03A MSD**	Batch ID: **74482**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS4_160411D**	Analysis Date: **4/11/2016 3:04:00 PM**	Prep Date: **4/7/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.192	0.00250	0.200	0	95.8	80	120	1.21	15	
Arsenic	0.203	0.00500	0.200	0.00648	98.4	80	120	2.09	15	
Barium	0.207	0.0100	0.200	0.0237	91.6	80	120	0.985	15	
Beryllium	0.191	0.00100	0.200	0.00527	92.9	80	120	1.47	15	
Cadmium	0.183	0.00100	0.200	0.00128	90.7	80	120	1.88	15	
Calcium	50.4	0.300	5.00	46.3	82.3	80	120	3.97	15	
Chromium	0.182	0.00500	0.200	0	91.1	80	120	1.94	15	
Cobalt	0.400	0.00500	0.200	0.208	96.4	80	120	1.92	15	
Lead	0.189	0.00100	0.200	0.00182	93.6	80	120	1.13	15	
Lithium	0.260	0.0100	0.200	0.0818	89.3	80	120	1.43	15	
Molybdenum	0.184	0.00500	0.200	0	91.9	80	120	1.81	15	
Selenium	0.199	0.00500	0.200	0	99.4	80	120	1.84	15	
Thallium	0.191	0.00150	0.200	0	95.7	80	120	1.57	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1604071
Project: Luminant-Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160411D

The QC data in batch 74505 applies to the following samples: 1604071-05A, 1604071-06A, 1604071-07A, 1604071-08A, 1604071-09A, 1604071-10A, 1604071-11A, 1604071-12A

Sample ID **MB-74505** Batch ID: **74505** TestNo: **SW6020A** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_160411D** Analysis Date: **4/11/2016 1:06:00 PM** Prep Date: **4/8/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.000800	0.00250								
Arsenic	<0.00200	0.00500								
Barium	<0.00300	0.0100								
Beryllium	<0.000300	0.00100								
Cadmium	<0.000300	0.00100								
Calcium	<0.100	0.300								
Chromium	<0.00200	0.00500								
Cobalt	<0.00300	0.00500								
Lead	<0.000300	0.00100								
Lithium	<0.00500	0.0100								
Molybdenum	<0.00200	0.00500								
Selenium	<0.00200	0.00500								
Thallium	<0.000500	0.00150								

Sample ID **LCS-74505** Batch ID: **74505** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_160411D** Analysis Date: **4/11/2016 1:10:00 PM** Prep Date: **4/8/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.200	0.00250	0.200	0	99.9	80	120			
Arsenic	0.192	0.00500	0.200	0	96.2	80	120			
Barium	0.189	0.0100	0.200	0	94.7	80	120			
Beryllium	0.201	0.00100	0.200	0	101	80	120			
Cadmium	0.194	0.00100	0.200	0	96.9	80	120			
Calcium	4.92	0.300	5.00	0	98.5	80	120			
Chromium	0.197	0.00500	0.200	0	98.5	80	120			
Cobalt	0.200	0.00500	0.200	0	99.9	80	120			
Lead	0.195	0.00100	0.200	0	97.3	80	120			
Lithium	0.203	0.0100	0.200	0	101	80	120			
Molybdenum	0.194	0.00500	0.200	0	96.8	80	120			
Selenium	0.193	0.00500	0.200	0	96.3	80	120			
Thallium	0.198	0.00150	0.200	0	98.8	80	120			

Sample ID **LCSD-74505** Batch ID: **74505** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_160411D** Analysis Date: **4/11/2016 1:12:00 PM** Prep Date: **4/8/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.199	0.00250	0.200	0	99.4	80	120	0.564	15	
Arsenic	0.193	0.00500	0.200	0	96.4	80	120	0.181	15	
Barium	0.186	0.0100	0.200	0	93.1	80	120	1.64	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1604071
Project: Luminant-Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160411D

Sample ID **LCSD-74505**	Batch ID: **74505**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCSD**	Run ID: **ICP-MS4_160411D**	Analysis Date: **4/11/2016 1:12:00 PM**	Prep Date: **4/8/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.201	0.00100	0.200	0	100	80	120	0.397	15	
Cadmium	0.189	0.00100	0.200	0	94.6	80	120	2.47	15	
Calcium	4.97	0.300	5.00	0	99.5	80	120	1.02	15	
Chromium	0.195	0.00500	0.200	0	97.5	80	120	1.03	15	
Cobalt	0.202	0.00500	0.200	0	101	80	120	1.08	15	
Lead	0.195	0.00100	0.200	0	97.3	80	120	0.026	15	
Lithium	0.198	0.0100	0.200	0	99.1	80	120	2.39	15	
Molybdenum	0.190	0.00500	0.200	0	95.2	80	120	1.63	15	
Selenium	0.193	0.00500	0.200	0	96.7	80	120	0.464	15	
Thallium	0.197	0.00150	0.200	0	98.7	80	120	0.154	15	

Sample ID **1604073-01A SD**	Batch ID: **74505**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS4_160411D**	Analysis Date: **4/11/2016 1:18:00 PM**	Prep Date: **4/8/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.00400	0.0125	0	0				0	10	
Arsenic	<0.0100	0.0250	0	0				0	10	
Barium	0.125	0.0500	0	0.127				1.27	10	
Beryllium	<0.00150	0.00500	0	0				0	10	
Cadmium	<0.00150	0.00500	0	0				0	10	
Chromium	<0.0100	0.0250	0	0				0	10	
Cobalt	<0.0150	0.0250	0	0				0	10	
Lead	<0.00150	0.00500	0	0				0	10	
Lithium	0.0761	0.0500	0	0.0715				6.22	10	
Molybdenum	<0.0100	0.0250	0	0				0	10	
Selenium	<0.0100	0.0250	0	0				0	10	
Thallium	<0.00250	0.00750	0	0				0	10	

Sample ID **1604073-01A PDS**	Batch ID: **74505**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_160411D**	Analysis Date: **4/11/2016 1:38:00 PM**	Prep Date: **4/8/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.192	0.00250	0.200	0	96.1	80	120			
Arsenic	0.191	0.00500	0.200	0	95.6	80	120			
Barium	0.310	0.0100	0.200	0.127	91.4	80	120			
Beryllium	0.195	0.00100	0.200	0	97.7	80	120			
Cadmium	0.187	0.00100	0.200	0	93.4	80	120			
Chromium	0.197	0.00500	0.200	0	98.4	80	120			
Cobalt	0.198	0.00500	0.200	0	98.9	80	120			
Lead	0.193	0.00100	0.200	0	96.6	80	120			
Lithium	0.256	0.0100	0.200	0.0715	92.4	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1604071
Project: Luminant-Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160411D

Sample ID **1604073-01A PDS**	Batch ID: **74505**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_160411D**	Analysis Date: **4/11/2016 1:38:00 PM**	Prep Date: **4/8/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Molybdenum	0.194	0.00500	0.200	0	97.1	80	120			
Selenium	0.190	0.00500	0.200	0	95.0	80	120			
Thallium	0.195	0.00150	0.200	0	97.5	80	120			

Sample ID **1604073-01A MS**	Batch ID: **74505**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS4_160411D**	Analysis Date: **4/11/2016 1:40:00 PM**	Prep Date: **4/8/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.208	0.00250	0.200	0	104	80	120			
Arsenic	0.197	0.00500	0.200	0	98.4	80	120			
Barium	0.324	0.0100	0.200	0.127	98.4	80	120			
Beryllium	0.199	0.00100	0.200	0	99.3	80	120			
Cadmium	0.192	0.00100	0.200	0	96.1	80	120			
Calcium	92.3	0.300	5.00	88.6	74.7	80	120			S
Chromium	0.198	0.00500	0.200	0	98.9	80	120			
Cobalt	0.200	0.00500	0.200	0	99.9	80	120			
Lead	0.196	0.00100	0.200	0	97.8	80	120			
Lithium	0.269	0.0100	0.200	0.0715	98.5	80	120			
Molybdenum	0.200	0.00500	0.200	0	100	80	120			
Selenium	0.197	0.00500	0.200	0	98.3	80	120			
Thallium	0.199	0.00150	0.200	0	99.7	80	120			

Sample ID **1604073-01A MSD**	Batch ID: **74505**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS4_160411D**	Analysis Date: **4/11/2016 1:42:00 PM**	Prep Date: **4/8/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.205	0.00250	0.200	0	102	80	120	1.36	15	
Arsenic	0.194	0.00500	0.200	0	97.1	80	120	1.37	15	
Barium	0.320	0.0100	0.200	0.127	96.4	80	120	1.28	15	
Beryllium	0.198	0.00100	0.200	0	99.1	80	120	0.179	15	
Cadmium	0.191	0.00100	0.200	0	95.6	80	120	0.590	15	
Calcium	93.7	0.300	5.00	88.6	101	80	120	1.43	15	
Chromium	0.195	0.00500	0.200	0	97.6	80	120	1.27	15	
Cobalt	0.198	0.00500	0.200	0	98.8	80	120	1.15	15	
Lead	0.197	0.00100	0.200	0	98.4	80	120	0.629	15	
Lithium	0.271	0.0100	0.200	0.0715	99.9	80	120	1.04	15	
Molybdenum	0.199	0.00500	0.200	0	99.4	80	120	0.826	15	
Selenium	0.193	0.00500	0.200	0	96.3	80	120	2.07	15	
Thallium	0.200	0.00150	0.200	0	100	80	120	0.412	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1604071
Project: Luminant-Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160411D

Sample ID **ICV-160411**	Batch ID: **R85180**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_160411D**	Analysis Date: **4/11/2016 12:01:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.0967	0.00250	0.100	0	96.7	90	110			
Arsenic	0.0981	0.00500	0.100	0	98.1	90	110			
Barium	0.0939	0.0100	0.100	0	93.9	90	110			
Beryllium	0.0994	0.00100	0.100	0	99.4	90	110			
Cadmium	0.0937	0.00100	0.100	0	93.7	90	110			
Calcium	2.37	0.300	2.50	0	94.9	90	110			
Chromium	0.101	0.00500	0.100	0	101	90	110			
Cobalt	0.103	0.00500	0.100	0	103	90	110			
Lead	0.0981	0.00100	0.100	0	98.1	90	110			
Lithium	0.0981	0.0100	0.100	0	98.1	90	110			
Molybdenum	0.0925	0.00500	0.100	0	92.5	90	110			
Selenium	0.0996	0.00500	0.100	0	99.6	90	110			
Thallium	0.0967	0.00150	0.100	0	96.7	90	110			

Sample ID **LCVL-160411**	Batch ID: **R85180**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160411D**	Analysis Date: **4/11/2016 12:14:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00210	0.00250	0.00200	0	105	70	130			
Arsenic	0.00512	0.00500	0.00500	0	102	70	130			
Barium	0.00513	0.0100	0.00500	0	103	70	130			
Beryllium	0.000966	0.00100	0.00100	0	96.6	70	130			
Cadmium	0.00100	0.00100	0.00100	0	100	70	130			
Calcium	0.110	0.300	0.100	0	110	70	130			
Chromium	0.00535	0.00500	0.00500	0	107	70	130			
Cobalt	0.00539	0.00500	0.00500	0	108	70	130			
Lead	0.00102	0.00100	0.00100	0	102	70	130			
Lithium	0.0104	0.0100	0.0100	0	104	70	130			
Molybdenum	0.00504	0.00500	0.00500	0	101	70	130			
Selenium	0.00554	0.00500	0.00500	0	111	70	130			
Thallium	0.00101	0.00150	0.00100	0	101	70	130			

Sample ID **CCV1-160411**	Batch ID: **R85180**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160411D**	Analysis Date: **4/11/2016 12:47:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.197	0.00250	0.200	0	98.6	90	110			
Arsenic	0.193	0.00500	0.200	0	96.6	90	110			
Barium	0.185	0.0100	0.200	0	92.5	90	110			
Beryllium	0.187	0.00100	0.200	0	93.4	90	110			
Cadmium	0.187	0.00100	0.200	0	93.4	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1604071
Project: Luminant-Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160411D

Sample ID **CCV1-160411**	Batch ID: **R85180**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160411D**	Analysis Date: **4/11/2016 12:47:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.77	0.300	5.00	0	95.5	90	110			
Chromium	0.190	0.00500	0.200	0	94.8	90	110			
Cobalt	0.199	0.00500	0.200	0	99.5	90	110			
Lead	0.189	0.00100	0.200	0	94.7	90	110			
Lithium	0.191	0.0100	0.200	0	95.5	90	110			
Molybdenum	0.186	0.00500	0.200	0	93.0	90	110			
Selenium	0.194	0.00500	0.200	0	96.9	90	110			
Thallium	0.192	0.00150	0.200	0	95.8	90	110			

Sample ID **LCVL1-160411**	Batch ID: **R85180**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160411D**	Analysis Date: **4/11/2016 12:52:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00228	0.00250	0.00200	0	114	70	130			
Arsenic	0.00517	0.00500	0.00500	0	103	70	130			
Barium	0.00498	0.0100	0.00500	0	99.7	70	130			
Beryllium	0.00113	0.00100	0.00100	0	113	70	130			
Cadmium	0.00102	0.00100	0.00100	0	102	70	130			
Calcium	0.112	0.300	0.100	0	112	70	130			
Chromium	0.00516	0.00500	0.00500	0	103	70	130			
Cobalt	0.00538	0.00500	0.00500	0	108	70	130			
Lead	0.00100	0.00100	0.00100	0	100	70	130			
Lithium	0.0108	0.0100	0.0100	0	108	70	130			
Molybdenum	0.00499	0.00500	0.00500	0	99.8	70	130			
Selenium	0.00534	0.00500	0.00500	0	107	70	130			
Thallium	0.00101	0.00150	0.00100	0	101	70	130			

Sample ID **CCV2-160411**	Batch ID: **R85180**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160411D**	Analysis Date: **4/11/2016 1:44:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.194	0.00250	0.200	0	96.8	90	110			
Arsenic	0.192	0.00500	0.200	0	95.8	90	110			
Barium	0.185	0.0100	0.200	0	92.5	90	110			
Beryllium	0.190	0.00100	0.200	0	95.1	90	110			
Cadmium	0.186	0.00100	0.200	0	92.8	90	110			
Calcium	4.79	0.300	5.00	0	95.9	90	110			
Chromium	0.191	0.00500	0.200	0	95.6	90	110			
Cobalt	0.201	0.00500	0.200	0	101	90	110			
Lead	0.191	0.00100	0.200	0	95.5	90	110			
Lithium	0.194	0.0100	0.200	0	96.8	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1604071
Project: Luminant-Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160411D

Sample ID **CCV2-160411**	Batch ID: **R85180**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160411D**	Analysis Date: **4/11/2016 1:44:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Molybdenum	0.187	0.00500	0.200	0	93.4	90	110			
Selenium	0.193	0.00500	0.200	0	96.5	90	110			
Thallium	0.194	0.00150	0.200	0	97.2	90	110			

Sample ID **LCVL2-160411**	Batch ID: **R85180**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160411D**	Analysis Date: **4/11/2016 1:52:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00214	0.00250	0.00200	0	107	70	130			
Arsenic	0.00504	0.00500	0.00500	0	101	70	130			
Barium	0.00508	0.0100	0.00500	0	102	70	130			
Beryllium	0.00114	0.00100	0.00100	0	114	70	130			
Cadmium	0.000959	0.00100	0.00100	0	95.9	70	130			
Calcium	0.107	0.300	0.100	0	107	70	130			
Chromium	0.00528	0.00500	0.00500	0	106	70	130			
Cobalt	0.00537	0.00500	0.00500	0	107	70	130			
Lead	0.000997	0.00100	0.00100	0	99.7	70	130			
Lithium	0.0106	0.0100	0.0100	0	106	70	130			
Molybdenum	0.00495	0.00500	0.00500	0	99.0	70	130			
Selenium	0.00563	0.00500	0.00500	0	113	70	130			
Thallium	0.00100	0.00150	0.00100	0	100	70	130			

Sample ID **CCV3-160411**	Batch ID: **R85180**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160411D**	Analysis Date: **4/11/2016 2:18:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.195	0.00250	0.200	0	97.3	90	110			
Arsenic	0.191	0.00500	0.200	0	95.4	90	110			
Barium	0.185	0.0100	0.200	0	92.7	90	110			
Beryllium	0.196	0.00100	0.200	0	97.9	90	110			
Cadmium	0.186	0.00100	0.200	0	92.9	90	110			
Calcium	5.05	0.300	5.00	0	101	90	110			
Chromium	0.194	0.00500	0.200	0	97.0	90	110			
Cobalt	0.202	0.00500	0.200	0	101	90	110			
Lead	0.188	0.00100	0.200	0	93.8	90	110			
Lithium	0.199	0.0100	0.200	0	99.7	90	110			
Molybdenum	0.187	0.00500	0.200	0	93.5	90	110			
Selenium	0.192	0.00500	0.200	0	96.2	90	110			
Thallium	0.191	0.00150	0.200	0	95.4	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1604071
Project: Luminant-Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160411D

Sample ID **LCVL3-160411**	Batch ID: **R85180**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160411D**	Analysis Date: **4/11/2016 2:25:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00213	0.00250	0.00200	0	106	70	130			
Arsenic	0.00515	0.00500	0.00500	0	103	70	130			
Barium	0.00496	0.0100	0.00500	0	99.3	70	130			
Beryllium	0.00106	0.00100	0.00100	0	106	70	130			
Cadmium	0.000968	0.00100	0.00100	0	96.8	70	130			
Calcium	0.107	0.300	0.100	0	107	70	130			
Chromium	0.00518	0.00500	0.00500	0	104	70	130			
Cobalt	0.00540	0.00500	0.00500	0	108	70	130			
Lead	0.000992	0.00100	0.00100	0	99.2	70	130			
Lithium	0.0111	0.0100	0.0100	0	111	70	130			
Molybdenum	0.00507	0.00500	0.00500	0	101	70	130			
Selenium	0.00510	0.00500	0.00500	0	102	70	130			
Thallium	0.000997	0.00150	0.00100	0	99.7	70	130			

Sample ID **CCV4-160411**	Batch ID: **R85180**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160411D**	Analysis Date: **4/11/2016 3:06:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.198	0.00250	0.200	0	98.8	90	110			
Arsenic	0.198	0.00500	0.200	0	99.2	90	110			
Barium	0.187	0.0100	0.200	0	93.5	90	110			
Beryllium	0.197	0.00100	0.200	0	98.5	90	110			
Cadmium	0.188	0.00100	0.200	0	93.8	90	110			
Calcium	4.79	0.300	5.00	0	95.8	90	110			
Chromium	0.192	0.00500	0.200	0	96.1	90	110			
Cobalt	0.203	0.00500	0.200	0	101	90	110			
Lead	0.192	0.00100	0.200	0	96.2	90	110			
Lithium	0.192	0.0100	0.200	0	95.9	90	110			
Molybdenum	0.189	0.00500	0.200	0	94.5	90	110			
Selenium	0.198	0.00500	0.200	0	99.1	90	110			
Thallium	0.196	0.00150	0.200	0	98.2	90	110			

Sample ID **LCVL4-160411**	Batch ID: **R85180**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160411D**	Analysis Date: **4/11/2016 3:10:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00228	0.00250	0.00200	0	114	70	130			
Arsenic	0.00541	0.00500	0.00500	0	108	70	130			
Barium	0.00498	0.0100	0.00500	0	99.5	70	130			
Beryllium	0.00119	0.00100	0.00100	0	119	70	130			
Cadmium	0.000981	0.00100	0.00100	0	98.1	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

Sample ID **LCVL4-160411** Batch ID: **R85180** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_160411D** Analysis Date: **4/11/2016 3:10:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.107	0.300	0.100	0	107	70	130			
Chromium	0.00519	0.00500	0.00500	0	104	70	130			
Cobalt	0.00538	0.00500	0.00500	0	108	70	130			
Lead	0.000990	0.00100	0.00100	0	99.0	70	130			
Lithium	0.0106	0.0100	0.0100	0	106	70	130			
Molybdenum	0.00503	0.00500	0.00500	0	101	70	130			
Selenium	0.00572	0.00500	0.00500	0	114	70	130			
Thallium	0.000991	0.00150	0.00100	0	99.1	70	130			

Sample ID **CCV5-160411** Batch ID: **R85180** TestNo: **SW6020A** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_160411D** Analysis Date: **4/11/2016 3:34:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.197	0.00250	0.200	0	98.3	90	110			
Arsenic	0.201	0.00500	0.200	0	101	90	110			
Barium	0.186	0.0100	0.200	0	93.2	90	110			
Beryllium	0.189	0.00100	0.200	0	94.6	90	110			
Cadmium	0.183	0.00100	0.200	0	91.3	90	110			
Chromium	0.186	0.00500	0.200	0	93.1	90	110			
Cobalt	0.195	0.00500	0.200	0	97.7	90	110			
Lead	0.187	0.00100	0.200	0	93.5	90	110			
Lithium	0.186	0.0100	0.200	0	92.9	90	110			
Molybdenum	0.183	0.00500	0.200	0	91.5	90	110			
Selenium	0.201	0.00500	0.200	0	100	90	110			
Thallium	0.187	0.00150	0.200	0	93.6	90	110			

Sample ID **LCVL5-160411** Batch ID: **R85180** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_160411D** Analysis Date: **4/11/2016 4:06:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00209	0.00250	0.00200	0	105	70	130			
Arsenic	0.00544	0.00500	0.00500	0	109	70	130			
Barium	0.00499	0.0100	0.00500	0	99.8	70	130			
Beryllium	0.00111	0.00100	0.00100	0	111	70	130			
Cadmium	0.000970	0.00100	0.00100	0	97.0	70	130			
Chromium	0.00516	0.00500	0.00500	0	103	70	130			
Cobalt	0.00545	0.00500	0.00500	0	109	70	130			
Lead	0.00100	0.00100	0.00100	0	100	70	130			
Lithium	0.0110	0.0100	0.0100	0	110	70	130			
Molybdenum	0.00500	0.00500	0.00500	0	100	70	130			
Selenium	0.00561	0.00500	0.00500	0	112	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1604071
Project: Luminant-Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160411D

Sample ID **LCVL5-160411**	Batch ID: **R85180**	TestNo: **SW6020A**	Units: **mg/L**		
SampType: **LCVL**	Run ID: **ICP-MS4_160411D**	Analysis Date: **4/11/2016 4:06:00 PM**	Prep Date:		

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Thallium	0.000984	0.00150	0.00100	0	98.4	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1604071
Project: Luminant-Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160413A

The QC data in batch 74482 applies to the following samples: 1604071-01A, 1604071-02A, 1604071-03A, 1604071-04A

Sample ID	**1604052-03A SD**	Batch ID:	**74482**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**SD**	Run ID:	**ICP-MS4_160413A**	Analysis Date:	**4/13/2016 12:18:00 PM**	Prep Date:	**4/7/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	44.5	15.0	0	44.3				0.489	10	

Sample ID	**1604052-03A PDS**	Batch ID:	**74482**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**PDS**	Run ID:	**ICP-MS4_160413A**	Analysis Date:	**4/13/2016 12:20:00 PM**	Prep Date:	**4/7/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	88.7	3.00	50.0	44.3	88.8	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1604071
Project: Luminant-Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160413A

Sample ID	**ICV-160413**	Batch ID:	**R85219**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**ICV**	Run ID:	**ICP-MS4_160413A**	Analysis Date:	**4/13/2016 10:50:00 AM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	2.34	0.300	2.50	0	93.7	90	110			

Sample ID	**LCVL-160413**	Batch ID:	**R85219**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**LCVL**	Run ID:	**ICP-MS4_160413A**	Analysis Date:	**4/13/2016 10:56:00 AM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.0872	0.300	0.100	0	87.2	70	130			

Sample ID	**CCV1-160413**	Batch ID:	**R85219**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**ICP-MS4_160413A**	Analysis Date:	**4/13/2016 11:56:00 AM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.72	0.300	5.00	0	94.4	90	110			

Sample ID	**LCVL1-160413**	Batch ID:	**R85219**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**LCVL**	Run ID:	**ICP-MS4_160413A**	Analysis Date:	**4/13/2016 12:11:00 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.0903	0.300	0.100	0	90.3	70	130			

Sample ID	**CCV2-160413**	Batch ID:	**R85219**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**ICP-MS4_160413A**	Analysis Date:	**4/13/2016 12:34:00 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.67	0.300	5.00	0	93.4	90	110			

Sample ID	**LCVL2-160413**	Batch ID:	**R85219**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**LCVL**	Run ID:	**ICP-MS4_160413A**	Analysis Date:	**4/13/2016 12:40:00 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.0979	0.300	0.100	0	97.9	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1604071
Project: Luminant-Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160415A

The QC data in batch 74482 applies to the following samples: 1604071-01A, 1604071-02A, 1604071-03A, 1604071-04A

Sample ID	**MB-74482**	Batch ID:	**74482**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**ICP-MS4_160415A**	Analysis Date:	**4/15/2016 10:23:00 AM**	Prep Date:	**4/7/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	<0.0100	0.0300								

Sample ID	**LCS-74482**	Batch ID:	**74482**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**ICP-MS4_160415A**	Analysis Date:	**4/15/2016 10:25:00 AM**	Prep Date:	**4/7/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.175	0.0300	0.200	0	87.7	80	120			

Sample ID	**LCSD-74482**	Batch ID:	**74482**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**LCSD**	Run ID:	**ICP-MS4_160415A**	Analysis Date:	**4/15/2016 10:27:00 AM**	Prep Date:	**4/7/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.192	0.0300	0.200	0	95.8	80	120	8.82	15	

Sample ID	**1604052-06A SD**	Batch ID:	**74482**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**SD**	Run ID:	**ICP-MS4_160415A**	Analysis Date:	**4/15/2016 10:33:00 AM**	Prep Date:	**4/7/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.546	0.150	0	0.480				12.9	10	R

Sample ID	**1604052-06A PDS**	Batch ID:	**74482**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**PDS**	Run ID:	**ICP-MS4_160415A**	Analysis Date:	**4/15/2016 10:52:00 AM**	Prep Date:	**4/7/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.657	0.0300	0.200	0.480	88.8	80	120			

Sample ID	**1604052-03A MS**	Batch ID:	**74482**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**MS**	Run ID:	**ICP-MS4_160415A**	Analysis Date:	**4/15/2016 10:54:00 AM**	Prep Date:	**4/7/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	1.90	0.150	0.200	1.65	127	80	120			S

Sample ID	**1604052-03A MSD**	Batch ID:	**74482**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**MSD**	Run ID:	**ICP-MS4_160415A**	Analysis Date:	**4/15/2016 10:56:00 AM**	Prep Date:	**4/7/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	1.93	0.150	0.200	1.65	140	80	120	1.42	15	S

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1604071
Project: Luminant-Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160415A

Sample ID	**ICV-160415**	Batch ID:	**R85266**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**ICV**	Run ID:	**ICP-MS4_160415A**	Analysis Date:	**4/15/2016 10:11:00 AM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.103	0.0300	0.100	0	103	90	110			

Sample ID	**LCVL-160415**	Batch ID:	**R85266**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**LCVL**	Run ID:	**ICP-MS4_160415A**	Analysis Date:	**4/15/2016 10:17:00 AM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0236	0.0300	0.0200	0	118	70	130			

Sample ID	**CCV1-160415**	Batch ID:	**R85266**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**ICP-MS4_160415A**	Analysis Date:	**4/15/2016 11:06:00 AM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.209	0.0300	0.200	0	104	90	110			

Sample ID	**LCVL1-160415**	Batch ID:	**R85266**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**LCVL**	Run ID:	**ICP-MS4_160415A**	Analysis Date:	**4/15/2016 11:33:00 AM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0228	0.0300	0.0200	0	114	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1604071
Project: Luminant-Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160420A

The QC data in batch 74505 applies to the following samples: 1604071-05A, 1604071-06A, 1604071-07A, 1604071-08A, 1604071-09A, 1604071-10A, 1604071-11A, 1604071-12A

Sample ID	**MB-74505**	Batch ID:	**74505**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**ICP-MS4_160420A**	Analysis Date:	**4/20/2016 12:43:00 PM**	Prep Date:	**4/8/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	<0.0100	0.0300								

Sample ID	**LCS-74505**	Batch ID:	**74505**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**ICP-MS4_160420A**	Analysis Date:	**4/20/2016 12:45:00 PM**	Prep Date:	**4/8/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.197	0.0300	0.200	0	98.7	80	120			

Sample ID	**LCSD-74505**	Batch ID:	**74505**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**LCSD**	Run ID:	**ICP-MS4_160420A**	Analysis Date:	**4/20/2016 12:47:00 PM**	Prep Date:	**4/8/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.193	0.0300	0.200	0	96.6	80	120	2.14	15	

Sample ID	**1604073-01A SD**	Batch ID:	**74505**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**SD**	Run ID:	**ICP-MS4_160420A**	Analysis Date:	**4/20/2016 12:53:00 PM**	Prep Date:	**4/8/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	<0.500	1.50	0	0.191				0	10	
Calcium	90.1	15.0	0	89.0				1.22	10	

Sample ID	**1604073-01A PDS**	Batch ID:	**74505**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**PDS**	Run ID:	**ICP-MS4_160420A**	Analysis Date:	**4/20/2016 1:17:00 PM**	Prep Date:	**4/8/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	2.17	0.300	2.00	0.191	99.1	80	120			
Calcium	136	3.00	50.0	89.0	94.0	80	120			

Sample ID	**1604073-01A MS**	Batch ID:	**74505**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**MS**	Run ID:	**ICP-MS4_160420A**	Analysis Date:	**4/20/2016 1:19:00 PM**	Prep Date:	**4/8/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.474	0.300	0.200	0.191	141	80	120			S

Sample ID	**1604073-01A MSD**	Batch ID:	**74505**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**MSD**	Run ID:	**ICP-MS4_160420A**	Analysis Date:	**4/20/2016 1:21:00 PM**	Prep Date:	**4/8/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.426	0.300	0.200	0.191	117	80	120	10.6	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1604071
Project: Luminant-Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160420A

Sample ID **ICV-160420**	Batch ID: **R85336**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_160420A**	Analysis Date: **4/20/2016 12:30:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.103	0.0300	0.100	0	103	90	110			
Calcium	2.42	0.300	2.50	0	96.7	90	110			

Sample ID **LCVL-160420**	Batch ID: **R85336**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160420A**	Analysis Date: **4/20/2016 12:37:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0182	0.0300	0.0200	0	91.1	70	130			
Calcium	0.0969	0.300	0.100	0	96.9	70	130			

Sample ID **CCV1-160420**	Batch ID: **R85336**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160420A**	Analysis Date: **4/20/2016 1:31:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.199	0.0300	0.200	0	99.6	90	110			
Calcium	4.90	0.300	5.00	0	98.0	90	110			

Sample ID **LCVL1-160420**	Batch ID: **R85336**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160420A**	Analysis Date: **4/20/2016 1:46:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0204	0.0300	0.0200	0	102	70	130			
Calcium	0.0967	0.300	0.100	0	96.7	70	130			

Sample ID **CCV2-160420**	Batch ID: **R85336**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160420A**	Analysis Date: **4/20/2016 2:10:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.194	0.0300	0.200	0	97.1	90	110			

Sample ID **LCVL2-160420**	Batch ID: **R85336**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160420A**	Analysis Date: **4/20/2016 2:20:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0215	0.0300	0.0200	0	107	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1604071
Project: Luminant-Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_160414A

The QC data in batch 74589 applies to the following samples: 1604071-11D, 1604071-12D

Sample ID	**MB-74589**	Batch ID:	**74589**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**IC2_160414A**	Analysis Date:	**4/14/2016 9:48:16 AM**	Prep Date:	**4/14/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00								
Fluoride	<0.100	0.400								
Sulfate	<1.00	3.00								

Sample ID	**LCS-74589**	Batch ID:	**74589**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**IC2_160414A**	Analysis Date:	**4/14/2016 10:02:53 AM**	Prep Date:	**4/14/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.83	1.00	10.00	0	98.3	90	110			
Fluoride	3.79	0.400	4.000	0	94.9	90	110			
Sulfate	31.1	3.00	30.00	0	104	90	110			

Sample ID	**LCSD-74589**	Batch ID:	**74589**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**LCSD**	Run ID:	**IC2_160414A**	Analysis Date:	**4/14/2016 10:17:30 AM**	Prep Date:	**4/14/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.83	1.00	10.00	0	98.3	90	110	0.081	20	
Fluoride	3.87	0.400	4.000	0	96.8	90	110	2.02	20	
Sulfate	31.2	3.00	30.00	0	104	90	110	0.231	20	

Sample ID	**1604071-11DMS**	Batch ID:	**74589**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**MS**	Run ID:	**IC2_160414A**	Analysis Date:	**4/14/2016 3:43:26 PM**	Prep Date:	**4/14/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	26.5	1.00	20.00	7.068	97.1	90	110			
Fluoride	19.9	0.400	20.00	0	99.4	90	110			
Sulfate	23.3	3.00	20.00	5.260	90.0	90	110			

Sample ID	**1604071-11DMSD**	Batch ID:	**74589**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**MSD**	Run ID:	**IC2_160414A**	Analysis Date:	**4/14/2016 3:58:02 PM**	Prep Date:	**4/14/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	26.9	1.00	20.00	7.068	99.1	90	110	1.52	20	
Fluoride	20.4	0.400	20.00	0	102	90	110	2.45	20	
Sulfate	23.5	3.00	20.00	5.260	91.3	90	110	1.15	20	

Sample ID	**1604071-12DMS**	Batch ID:	**74589**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**MS**	Run ID:	**IC2_160414A**	Analysis Date:	**4/14/2016 4:12:39 PM**	Prep Date:	**4/14/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1604071
Project: Luminant-Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_160414A

Sample ID **1604071-12DMS**	Batch ID: **74589**	TestNo: **E300**	Units: **mg/L**
SampType: **MS**	Run ID: **IC2_160414A**	Analysis Date: **4/14/2016 4:12:39 PM**	Prep Date: **4/14/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	27.4	1.00	20.00	7.933	97.5	90	110			
Fluoride	20.1	0.400	20.00	0	100	90	110			
Sulfate	19.8	3.00	20.00	1.659	90.7	90	110			

Sample ID **1604071-12DMSD**	Batch ID: **74589**	TestNo: **E300**	Units: **mg/L**
SampType: **MSD**	Run ID: **IC2_160414A**	Analysis Date: **4/14/2016 4:27:15 PM**	Prep Date: **4/14/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	27.7	1.00	20.00	7.933	99.0	90	110	1.11	20	
Fluoride	20.4	0.400	20.00	0	102	90	110	1.52	20	
Sulfate	20.0	3.00	20.00	1.659	91.8	90	110	1.05	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1604071
Project: Luminant-Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_160414A

Sample ID **ICV-160414**	Batch ID: **R85263**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC2_160414A**	Analysis Date: **4/14/2016 9:12:51 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	24.0	1.00	25.00	0	96.0	90	110			
Fluoride	9.60	0.400	10.00	0	96.0	90	110			
Sulfate	75.9	3.00	75.00	0	101	90	110			

Sample ID **CCV1-160414**	Batch ID: **R85263**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_160414A**	Analysis Date: **4/14/2016 1:12:49 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.76	1.00	10.00	0	97.6	90	110			
Fluoride	4.00	0.400	4.000	0	100	90	110			
Sulfate	31.3	3.00	30.00	0	104	90	110			

Sample ID **CCV2-160414**	Batch ID: **R85263**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_160414A**	Analysis Date: **4/14/2016 4:41:52 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.57	1.00	10.00	0	95.7	90	110			
Fluoride	4.00	0.400	4.000	0	100	90	110			
Sulfate	30.8	3.00	30.00	0	103	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1604071
Project: Luminant-Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: IC3_160414A

The QC data in batch 74597 applies to the following samples: 1604071-01D, 1604071-02D, 1604071-03D, 1604071-04D, 1604071-05D, 1604071-06D, 1604071-07D, 1604071-08D, 1604071-09D, 1604071-10D

Sample ID **MB-74597** Batch ID: **74597** TestNo: **E300** Units: **mg/L**
SampType: **MBLK** Run ID: **IC3_160414A** Analysis Date: **4/14/2016 10:35:39 AM** Prep Date: **4/14/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00								
Fluoride	<0.100	0.400								
Sulfate	<1.00	3.00								

Sample ID **LCS-74597** Batch ID: **74597** TestNo: **E300** Units: **mg/L**
SampType: **LCS** Run ID: **IC3_160414A** Analysis Date: **4/14/2016 10:59:09 AM** Prep Date: **4/14/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.62	1.00	10.00	0	96.2	90	110			
Fluoride	4.25	0.400	4.000	0	106	90	110			
Sulfate	31.1	3.00	30.00	0	104	90	110			

Sample ID **LCSD-74597** Batch ID: **74597** TestNo: **E300** Units: **mg/L**
SampType: **LCSD** Run ID: **IC3_160414A** Analysis Date: **4/14/2016 11:19:49 AM** Prep Date: **4/14/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.60	1.00	10.00	0	96.0	90	110	0.192	20	
Fluoride	4.12	0.400	4.000	0	103	90	110	3.06	20	
Sulfate	30.5	3.00	30.00	0	102	90	110	2.08	20	

Sample ID **1604071-02DMS** Batch ID: **74597** TestNo: **E300** Units: **mg/L**
SampType: **MS** Run ID: **IC3_160414A** Analysis Date: **4/14/2016 5:31:13 PM** Prep Date: **4/14/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	254	10.0	200.0	58.30	97.6	90	110			
Fluoride	196	4.00	200.0	0	97.8	90	110			
Sulfate	325	30.0	200.0	113.2	106	90	110			

Sample ID **1604071-02DMSD** Batch ID: **74597** TestNo: **E300** Units: **mg/L**
SampType: **MSD** Run ID: **IC3_160414A** Analysis Date: **4/14/2016 5:51:54 PM** Prep Date: **4/14/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	256	10.0	200.0	58.30	98.6	90	110	0.790	20	
Fluoride	198	4.00	200.0	0	99.2	90	110	1.46	20	
Sulfate	328	30.0	200.0	113.2	107	90	110	0.845	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1604071
Project: Luminant-Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: IC3_160414A

Sample ID **1604071-04DMS**	Batch ID: **74597**	TestNo: **E300**	Units: **mg/L**
SampType: **MS**	Run ID: **IC3_160414A**	Analysis Date: **4/14/2016 6:33:14 PM**	Prep Date: **4/14/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	212	10.0	200.0	17.56	97.3	90	110			
Fluoride	198	4.00	200.0	1.462	98.4	90	110			
Sulfate	627	30.0	200.0	415.9	106	90	110			

Sample ID **1604071-04DMSD**	Batch ID: **74597**	TestNo: **E300**	Units: **mg/L**
SampType: **MSD**	Run ID: **IC3_160414A**	Analysis Date: **4/14/2016 6:53:53 PM**	Prep Date: **4/14/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	212	10.0	200.0	17.56	97.4	90	110	0.090	20	
Fluoride	199	4.00	200.0	1.462	98.8	90	110	0.359	20	
Sulfate	629	30.0	200.0	415.9	106	90	110	0.273	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1604071
Project: Luminant-Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: IC3_160414A

Sample ID **ICV-160414**	Batch ID: **R85265**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC3_160414A**	Analysis Date: **4/14/2016 9:43:15 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	24.5	1.00	25.00	0	97.8	90	110			
Fluoride	10.2	0.400	10.00	0	102	90	110			
Sulfate	76.5	3.00	75.00	0	102	90	110			

Sample ID **CCV1-160414**	Batch ID: **R85265**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC3_160414A**	Analysis Date: **4/14/2016 3:38:37 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.63	1.00	10.00	0	96.3	90	110			
Fluoride	4.08	0.400	4.000	0	102	90	110			
Sulfate	29.7	3.00	30.00	0	99.1	90	110			

Sample ID **CCV2-160414**	Batch ID: **R85265**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC3_160414A**	Analysis Date: **4/14/2016 9:59:44 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.79	1.00	10.00	0	97.9	90	110			
Fluoride	4.14	0.400	4.000	0	103	90	110			
Sulfate	30.9	3.00	30.00	0	103	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1604071
Project: Luminant-Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_160411A

The QC data in batch 74521 applies to the following samples: 1604071-01D, 1604071-02D, 1604071-03D, 1604071-04D, 1604071-05D, 1604071-06D, 1604071-07D, 1604071-08D, 1604071-09D, 1604071-10D, 1604071-11D, 1604071-12D

Sample ID **1604071-01D-DUP** Batch ID: **74521** TestNo: **M4500-H+ B** Units: **pH Units@19.8℃**
SampType: **DUP** Run ID: **TITRATOR_160411A** Analysis Date: **4/11/2016 9:56:00 AM** Prep Date: **4/11/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	6.31	0	0	6.220				1.44	5	

Sample ID **1604078-02D-DUP** Batch ID: **74521** TestNo: **M4500-H+ B** Units: **pH Units@20.9℃**
SampType: **DUP** Run ID: **TITRATOR_160411A** Analysis Date: **4/11/2016 10:35:00 AM** Prep Date: **4/11/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	7.76	0	0	7.740				0.258	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1604071
Project: Luminant-Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_160411A

Sample ID	**ICV-160411**	Batch ID:	**R85150**	TestNo:	**M4500-H+ B**	Units:	**pH Units@22.6℃**
SampType:	**ICV**	Run ID:	**TITRATOR_160411A**	Analysis Date:	**4/11/2016 9:03:00 AM**	Prep Date:	**4/11/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	9.98	0	10.00	0	99.8	99	101			

Sample ID	**CCV1-160411**	Batch ID:	**R85150**	TestNo:	**M4500-H+ B**	Units:	**pH Units@21.2℃**
SampType:	**CCV**	Run ID:	**TITRATOR_160411A**	Analysis Date:	**4/11/2016 10:15:00 AM**	Prep Date:	**4/11/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	7.00	0	7.000	0	100	97.1	102.9			

Sample ID	**CCV2-160411**	Batch ID:	**R85150**	TestNo:	**M4500-H+ B**	Units:	**pH Units@21.5℃**
SampType:	**CCV**	Run ID:	**TITRATOR_160411A**	Analysis Date:	**4/11/2016 10:59:00 AM**	Prep Date:	**4/11/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	7.01	0	7.000	0	100	97.1	102.9			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1604071
Project: Luminant-Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: WC_160411C

The QC data in batch 74527 applies to the following samples: 1604071-01D, 1604071-02D, 1604071-03D, 1604071-04D, 1604071-05D, 1604071-06D, 1604071-07D, 1604071-08D, 1604071-09D, 1604071-10D, 1604071-11D

Sample ID	**MB-74527**	Batch ID:	**74527**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**WC_160411C**	Analysis Date:	**4/12/2016 8:45:00 AM**	Prep Date:	**4/11/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	<10.0	10.0								

Sample ID	**LCS-74527**	Batch ID:	**74527**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**WC_160411C**	Analysis Date:	**4/12/2016 8:45:00 AM**	Prep Date:	**4/11/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	750	10.0	745.6	0	101	90	113			

Sample ID	**1604044-08B-DUP**	Batch ID:	**74527**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**DUP**	Run ID:	**WC_160411C**	Analysis Date:	**4/12/2016 8:45:00 AM**	Prep Date:	**4/11/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	1330	50.0	0	1315				1.51	5	

Sample ID	**1604071-01D-DUP**	Batch ID:	**74527**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**DUP**	Run ID:	**WC_160411C**	Analysis Date:	**4/12/2016 8:45:00 AM**	Prep Date:	**4/11/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	217	10.0	0	213.0				1.86	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1604071
Project: Luminant-Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: WC_160412B

The QC data in batch 74560 applies to the following samples: 1604071-12D

Sample ID	**MB-74560**	Batch ID:	**74560**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**WC_160412B**	Analysis Date:	**4/13/2016 8:45:00 AM**	Prep Date:	**4/12/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	<10.0	10.0								

Sample ID	**LCS-74560**	Batch ID:	**74560**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**WC_160412B**	Analysis Date:	**4/13/2016 8:45:00 AM**	Prep Date:	**4/12/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	758	10.0	745.6	0	102	90	113			

Sample ID	**1604108-01C-DUP**	Batch ID:	**74560**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**DUP**	Run ID:	**WC_160412B**	Analysis Date:	**4/13/2016 8:45:00 AM**	Prep Date:	**4/12/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	1200	10.0	0	1149				3.92	5	

Sample ID	**1604108-06C-DUP**	Batch ID:	**74560**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**DUP**	Run ID:	**WC_160412B**	Analysis Date:	**4/13/2016 8:45:00 AM**	Prep Date:	**4/12/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	680	10.0	0	684.0				0.587	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

Case Narrative

Lab No: 20160337

This report contains the analytical results for the 12 sample(s) received under chain of custody by ESC Lab Sciences on 04/11/16 14:12:37. These samples are associated with your 16040 project.

The analytical results included in this report meet all applicable quality control procedure requirements except as noted below:

The test results in this report meet all NELAC requirements unless noted below:

This report shall not be reproduced, except in full, without the written approval of ESC Lab Sciences.

All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client.

Results have been reviewed by the Director of Radiochemistry or their designees and is approved for release.

Observations / Nonconformances

The following QC parameters are outside method control limits: Ra226 MSD RPD

OUTREACH LABORATORY, A Divsion of ESC Lab Sciences
Address: 311 North Aspen Avenue, Broken Arrow, OK, 74012 EMail: outreach@esclabsciences.com - Tel: (918) 251-2515

Analytical Report

	Method	Result	DL	Units	Qual	Prep Date	Analysis Date	Analyst
Lab ID : **20160337-01**								
Client ID : **H-26**								
Date Sampled : **04/05/16 13:05:00**								
Matrix : **NPW**								
Radiochemical Analyses								
Combined Radium		0.788 +/- 1.10	1.30	pCi/l				
Radium-226	SM 7500 Ra B M*	0.201 +/- 0.173	0.243	pCi/l		04/13/16	04/15/16	AK
Radium-228	EPA 904*/9320*	0.587 +/- 0.926	1.06	pCi/l		04/20/16	04/25/16	JR
Lab ID : **20160337-02**								
Client ID : **H-33**								
Date Sampled : **04/05/16 14:45:00**								
Matrix : **NPW**								
Radiochemical Analyses								
Combined Radium		1.41 +/- 1.01	1.21	pCi/l				
Radium-226	SM 7500 Ra B M*	0.328 +/- 0.173	0.168	pCi/l		04/13/16	04/15/16	AK
Radium-228	EPA 904*/9320*	1.08 +/- 0.837	1.04	pCi/l		04/20/16	04/25/16	JR
Lab ID : **20160337-03**								
Client ID : **MW-17A**								
Date Sampled : **04/05/16 16:55:00**								
Matrix : **NPW**								
Radiochemical Analyses								
Combined Radium		0.544 +/- 0.880	1.13	pCi/l				
Radium-226	SM 7500 Ra B M*	0.280 +/- 0.200	0.267	pCi/l		04/13/16	04/15/16	RE
Radium-228	EPA 904*/9320*	0.264 +/- 0.681	0.863	pCi/l		04/20/16	04/25/16	JR
Lab ID : **20160337-04**								
Client ID : **PDP-24**								
Date Sampled : **04/05/16 17:45:00**								
Matrix : **NPW**								
Radiochemical Analyses								
Combined Radium		2.21 +/- 0.889	1.07	pCi/l				
Radium-226	SM 7500 Ra B M*	0.344 +/- 0.226	0.258	pCi/l		04/20/16	04/22/16	AK
Radium-228	EPA 904*/9320*	1.86 +/- 0.663	0.808	pCi/l		04/20/16	04/25/16	JR

Analytical Report

	Method	Result	DL	Units	Qual	Prep Date	Analysis Date	Analyst
Lab ID : **20160337-05**								
Client ID : **MW-19**								
Date Sampled : **04/06/16 07:40:00**								
Matrix : **NPW**								
Radiochemical Analyses								
Combined Radium		0.307 +/- 1.00	1.22	pCi/l				
Radium-226	SM 7500 Ra B M*	0.307 +/- 0.160	0.176	pCi/l		04/20/16	04/22/16	AK
Radium-228	EPA 904*/9320*	-0.048 +/- 0.844	1.05	pCi/l		04/20/16	04/25/16	JR
Lab ID : **20160337-06**								
Client ID : **PDP-22**								
Date Sampled : **04/06/16 08:35:00**								
Matrix : **NPW**								
Radiochemical Analyses								
Combined Radium		0.859 +/- 0.884	1.36	pCi/l				
Radium-226	SM 7500 Ra B M*	0.354 +/- 0.184	0.199	pCi/l		04/20/16	04/22/16	AK
Radium-228	EPA 904*/9320*	0.505 +/- 0.700	1.16	pCi/l		04/20/16	04/25/16	JR
Lab ID : **20160337-07**								
Client ID : **PDP-23**								
Date Sampled : **04/06/16 09:30:00**								
Matrix : **NPW**								
Radiochemical Analyses								
Combined Radium		0.000 +/- 0.984	1.36	pCi/l				
Radium-226	SM 7500 Ra B M*	-0.035 +/- 0.108	0.247	pCi/l		04/20/16	04/22/16	AK
Radium-228	EPA 904*/9320*	-0.711 +/- 0.876	1.11	pCi/l		04/20/16	04/25/16	JR
Lab ID : **20160337-08**								
Client ID : **MW-20A**								
Date Sampled : **04/06/16 10:20:00**								
Matrix : **NPW**								
Radiochemical Analyses								
Combined Radium		0.778 +/- 1.13	1.42	pCi/l				
Radium-226	SM 7500 Ra B M*	0.778 +/- 0.255	0.189	pCi/l		04/20/16	04/22/16	AK
Radium-228	EPA 904*/9320*	-0.051 +/- 0.878	1.23	pCi/l		04/20/16	04/25/16	JR

OUTREACH LABORATORY, A Divsion of ESC Lab Sciences
Address: 311 North Aspen Avenue, Broken Arrow, OK, 74012 EMail: outreach@esclabsciences.com - Tel: (918) 251-2515

Analytical Report

	Method	Result	DL	Units	Qual	Prep Date	Analysis Date	Analyst
Lab ID : **20160337-09**								
Client ID : **PDP-26**								
Date Sampled : **04/06/16 11:15:00**								
Matrix : **NPW**								
Radiochemical Analyses								
Combined Radium		0.149 +/- 0.903	1.27	pCi/l				
Radium-226	SM 7500 Ra B M*	0.149 +/- 0.138	0.187	pCi/l		04/20/16	04/22/16	AK
Radium-228	EPA 904*/9320*	-0.637 +/- 0.765	1.08	pCi/l		04/20/16	04/25/16	JR
Lab ID : **20160337-10**								
Client ID : **PDP-25**								
Date Sampled : **04/06/16 12:00:00**								
Matrix : **NPW**								
Radiochemical Analyses								
Combined Radium		1.40 +/- 1.24	1.56	pCi/l				
Radium-226	SM 7500 Ra B M*	0.568 +/- 0.305	0.341	pCi/l		04/20/16	04/22/16	AK
Radium-228	EPA 904*/9320*	0.828 +/- 0.935	1.22	pCi/l		04/20/16	04/25/16	JR
Lab ID : **20160337-11**								
Client ID : **MW-18A**								
Date Sampled : **04/06/16 12:55:00**								
Matrix : **NPW**								
Radiochemical Analyses								
Combined Radium		1.23 +/- 1.12	1.48	pCi/l				
Radium-226	SM 7500 Ra B M*	0.294 +/- 0.304	0.443	pCi/l		04/20/16	04/22/16	AK
Radium-228	EPA 904*/9320*	0.935 +/- 0.820	1.04	pCi/l		04/20/16	04/25/16	JR
Lab ID : **20160337-12**								
Client ID : **EB-1**								
Date Sampled : **04/06/16 13:15:00**								
Matrix : **NPW**								
Radiochemical Analyses								
Combined Radium		0.000 +/- 0.902	1.25	pCi/l				
Radium-226	SM 7500 Ra B M*	-0.029 +/- 0.247	0.409	pCi/l		04/20/16	04/22/16	AK
Radium-228	EPA 904*/9320*	-0.499 +/- 0.654	0.838	pCi/l		04/20/16	04/25/16	JR

*NELAC Certified Parameter BDL = Below Detection Limit

QC Report

Parameter	Blank	LCS %REC	LCSD %REC	LCSD RPD	DUP RPD	RER, NAD or DER	MS %REC	MSD %REC	MSD RPD	Date
Radium-226	0.00	108.0			NC	0.621	84.0	85.5	1.8	04/22/16
Radium-226	0.016	116.0			11.8	0.750	119.0			04/15/16
Radium-226	0.033	117.0			42.8	1.060	106.0	82.7	23.3	04/14/16
Radium-228	0.153	86.1			NC	0.302	104.0	99.2	4.5	04/25/16

Lab Approval:

*NELAC Certified Parameter BDL = Below Detection Limit

OUTREACH LABORATORY, A Divsion of ESC Lab Sciences
Address: 311 North Aspen Avenue, Broken Arrow, OK, 74012 EMail: outreach@esclabsciences.com - Tel: (918) 251-2515

DHL Analytical, Inc.
2300 Double Creek Drive
Round Rock, TX 78664
TEL: *(512) 388-8222* FAX: *(512) 388-8229*

CHAIN-OF-CUSTODY RECORD

Work Order: 1604071

Subcontractor:

ESC Laboratory
311 North Aspen
Broken Arrow, Oklahoma 74012

TEL: (918) 251-2515
FAX:
Acct #: DHLRRTX

07-Apr-16

Sample Id	Matrix	DHL#	Date Collected	Bottle Type	Requested Tests					
					E904.0	SM7500Ra-B M				
H-26	Aqueous	-01B	04/05/16 01:05 PM	500HDPEHNO3	1					
H-26	Aqueous	-01C	04/05/16 01:05 PM	500HDPEHNO3		1				
H-33	Aqueous	-02B	04/05/16 02:45 PM	500HDPEHNO3	1					
H-33	Aqueous	-02C	04/05/16 02:45 PM	500HDPEHNO3		1				
MW-17A	Aqueous	-03B	04/05/16 04:55 PM	500HDPEHNO3	1					
MW-17A	Aqueous	-03C	04/05/16 04:55 PM	500HDPEHNO3		1				
PDP-24	Aqueous	-04B	04/05/16 05:45 PM	500HDPEHNO3	1					
PDP-24	Aqueous	-04C	04/05/16 05:45 PM	500HDPEHNO3		1				
MW-19	Aqueous	-05B	04/06/16 07:40 AM	500HDPEHNO3	1					
MW-19	Aqueous	-05C	04/06/16 07:40 AM	500HDPEHNO3		1				
PDP-22	Aqueous	-06B	04/06/16 08:35 AM	500HDPEHNO3	1					
PDP-22	Aqueous	-06C	04/06/16 08:35 AM	500HDPEHNO3		1				
PDP-23	Aqueous	-07B	04/06/16 09:30 AM	500HDPEHNO3	1					
PDP-23	Aqueous	-07C	04/06/16 09:30 AM	500HDPEHNO3		1				
MW-20A	Aqueous	-08B	04/06/16 10:20 AM	500HDPEHNO3	1					
MW-20A	Aqueous	-08C	04/06/16 10:20 AM	500HDPEHNO3		1				
PDP-26	Aqueous	-09B	04/06/16 11:15 AM	500HDPEHNO3	1					
PDP-26	Aqueous	-09C	04/06/16 11:15 AM	500HDPEHNO3		1				

General Comments:

Please analyze these samples with Normal Turnaround Time.
Report RA-226, Ra-228 & Combined per Specs DHLRRTX033116S.
Quality Control Package Needed: Standard - NELAC Rad Test compliant
Email to cac@dhlanalytical.com & dupont@dhlanalytical.com

(829295
20160337-1

		Date/Time			Date/Time
Relinquished by:	J Torres	4/7/16 1730	Received by:	Lonestar	4/7/16 1730
Relinquished by:			Received by:		4/11/16 13:40

DHL Analytical, Inc.
2300 Double Creek Drive
Round Rock, TX 78664
TEL: *(512) 388-8222* FAX: *(512) 388-8229*

CHAIN-OF-CUSTODY RECORD

Work Order: 1604071

Subcontractor:

ESC Laboratory
311 North Aspen
Broken Arrow, Oklahoma 74012

TEL: (918) 251-2515
FAX:
Acct #: DHLRRTX

07-Apr-16

Sample Id	Matrix	DHL#	Date Collected	Bottle Type	Requested Tests					
					E904.0	SM7500Ra-B M				
PDP-25	Aqueous	-10B	04/06/16 12:00 PM	500HDPEHNO3	1					
PDP-25	Aqueous	-10C	04/06/16 12:00 PM	500HDPEHNO3		1				
MW-18A	Aqueous	-11B	04/06/16 12:55 PM	500HDPEHNO3	1					
MW-18A	Aqueous	-11C	04/06/16 12:55 PM	500HDPEHNO3		1				
EB-1	Aqueous	-12B	04/06/16 01:15 PM	500HDPEHNO3	1					
EB-1	Aqueous	-12C	04/06/16 01:15 PM	500HDPEHNO3		1				

General Comments:

Please analyze these samples with Normal Turnaround Time.
Report RA-226, Ra-228 & Combined per Specs DHLRRTX033116S.
Quality Control Package Needed: Standard - NELAC Rad Test compliant
Email to cac@dhlanalytical.com & dupont@dhlanalytical.com

L 825295
201604337 -2

		Date/Time			Date/Time
Relinquished by:		4/7/16 1730	Received by:	Lonestar	4/7/16 1730
Relinquished by:			Received by:		4/11/16 1340

July 20, 2016

Will Vienne
Pastor, Behling & Wheeler
2201 Double Creek Dr #4004
Round Rock, Texas 78664
TEL: (512) 671-3434
FAX (512) 671-3446

Order No.: 1606075

RE: Luminant - MLSES

Dear Will Vienne:

DHL Analytical, Inc. received 9 sample(s) on 6/8/2016 for the analyses presented in the following report.

There were no problems with the analyses and all data met requirements of NELAC except where noted in the Case Narrative. All non-NELAC methods will be identified accordingly in the case narrative and all estimated uncertainties of test results are within method or EPA specifications.

If you have any questions regarding these tests results, please feel free to call. Thank you for using DHL Analytical.

Sincerely,

John DuPont
General Manager

This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211-16-16

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DHL ANALYTICAL
2300 Double Creek Dr. ■ Round Rock, TX 78664
Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

№ 71423

CHAIN-OF-CUSTODY

CLIENT: PBW
ADDRESS: 2201 DOUBLE CREEK DR ROUND ROCK, TX 78664
PHONE: 512-671-3434 FAX/E-MAIL: 512-671-3446
DATA REPORTED TO: WILL VIENE
ADDITIONAL REPORT COPIES TO:

DATE: 6-7-16 PAGE 1 OF 1
PO #: 5164-B DHL WORK ORDER #: 1606075
PROJECT LOCATION OR NAME: LUMINANT - MLSES
CLENT PROJECT #: 5164-B COLLECTOR: J. BRAYTON

Authorize 5% surcharge for TRRP Report? ❑ Yes ❑ No

S=SOIL W=WATER A=AIR L=LIQUID SE=SEDIMENT P=PAINT SL=SLUDGE O=OTHER SO=SOLID

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	PRESERVATION: HCl	HNO_3	H_2SO_4 ❑ NaOH ❑	ICE	UNPRESERVED	ANALYSES: BTEX ❑ MTBE ❑ [METHOD 8021]	TPH 1005 ❑ TPH 1006 ❑ HOLD 1006 ❑	GRO [METHOD 8015] ❑ DRO [METHOD 8105] ❑	VOC 8260 ❑ VOC 624 ❑ VOC 8260/5035 ❑	SVOC 8270 ❑ PAH 8270 ❑ HOLD PAH ❑ SVOC 625 ❑	8270 PEST ❑ 625 PEST/PCB ❑ 608 PCB ❑	8270 O-P PEST ❑ 8082 PCB ❑ 8270 PCB ❑	8321 HERB ❑ T PHOS, AMMONIA ❑	METALS 6020 ❑ METALS 200.8 ❑ DISS. METALS ❑	RCRA ❑ TX1T ❑ _____ ❑	PH ❑ HEX CHROM ❑ ALKALINITY ❑ COD ❑	CHLORIDE ❑ ANIONS _____ ❑	TCLP-SVOC ❑ VOC ❑ PEST ❑ HERB ❑	TCLP-METALS ❑ RCRA 8 ❑ TX-11 ❑ Pb ❑	RCI ❑ FLASHPOINT ❑ DGAS ❑	TDS ❑ TSS ❑ % MOISTURE ❑ CYANIDE ❑	SEE ATTACHED	FIELD NOTES
H-29	01	6-7-16	0735	W	P	4				X																			X	
H-31	02		0820	W	P	4				X																			X	
H-32	03		0910	W	P	4				X																			X	
H-30	04		1000	W	P	4				X																			X	
H-40	05		0845	W	P	4				X																			X	
H-26	06		1045	W	P	4				X																			X	
H-27	07		1145	W	P	4				X																			X	
H-33	08		1230	W	P	4				X																			X	
H-28	09		1415	W	P	4				X																			X	

RELINQUISHED BY: (Signature)	DATE/TIME 6-7-16	1830	RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature)	DATE/TIME 6/8/16	915	RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature)	DATE/TIME		RECEIVED BY: (Signature)

TURN AROUND TIME
RUSH ❑ CALL FIRST
1 DAY ❑ CALL FIRST
2 DAY ❑
NORMAL ☒
OTHER ❑ _____

LABORATORY USE ONLY:
RECEIVING TEMP: 0.6, 4.1 THERM #: 73
CUSTODY SEALS: ❑ BROKEN ❑ INTACT ❑ NOT USED
CARRIER: ❑ LONE STAR ❑ FEDEX ❑ UPS ❑ OTHER
❑ COURIER DELIVERY
❑ HAND DELIVERED

❑ DHL DISPOSAL @ $5.00 each ❑ Return

John Dupont

From: Sara Taube [Sara.Taube@pbwllc.com]
Sent: Wednesday, July 22, 2015 12:05 PM
To: John Dupont
Subject: CCR Appendix III and IV
Follow Up Flag: Follow up
Flag Status: Completed

Hi John,

Here are the Appendix III and Appendix IV constituents that we will need to have analyzed under the CCR Rule.

Appendix III
Boron
Calcium
Chloride
Fluoride
pH
sulfate
TDS

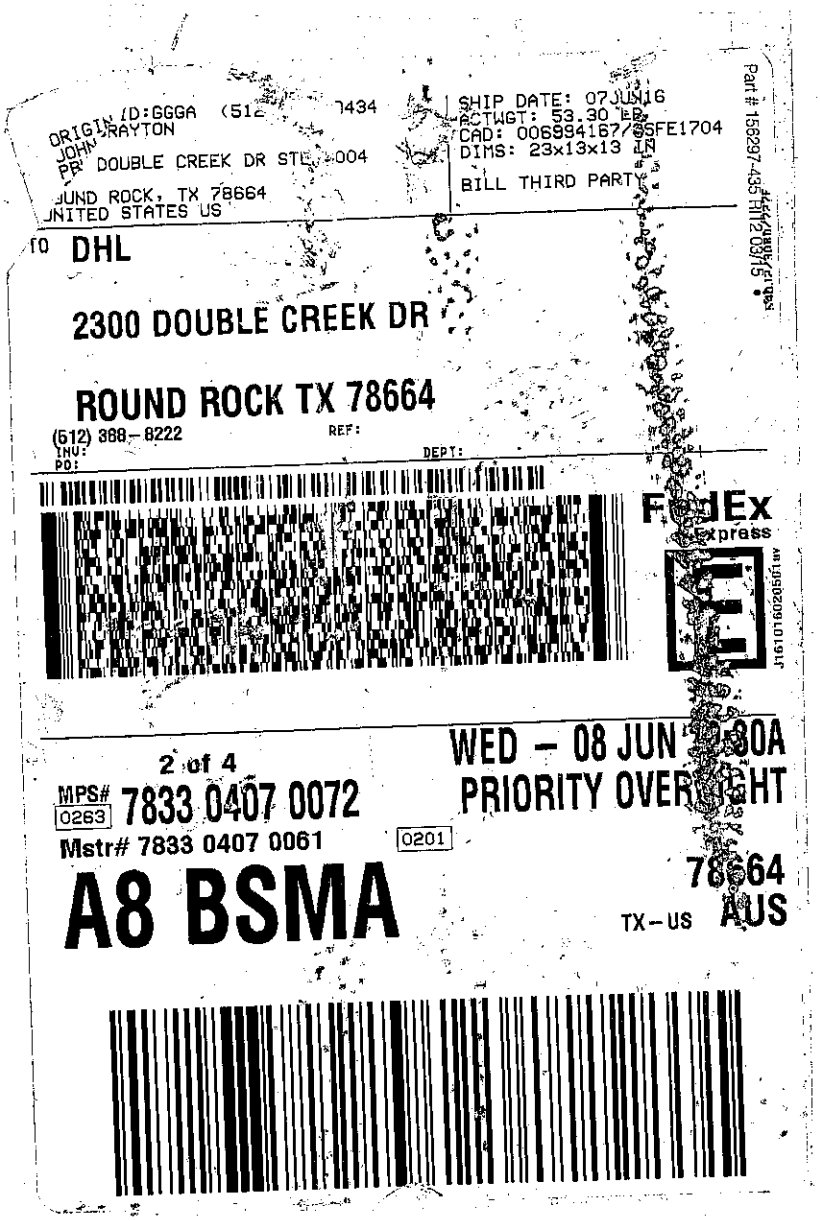
Appendix IV
Antimony
Arsenic
Barium
Beryllium
Cadmium
Chromium
Cobalt
Fluoride
Lead
Lithium
Mercury
Molybdenum
Selenium
Thallium
Radium 226 and 228

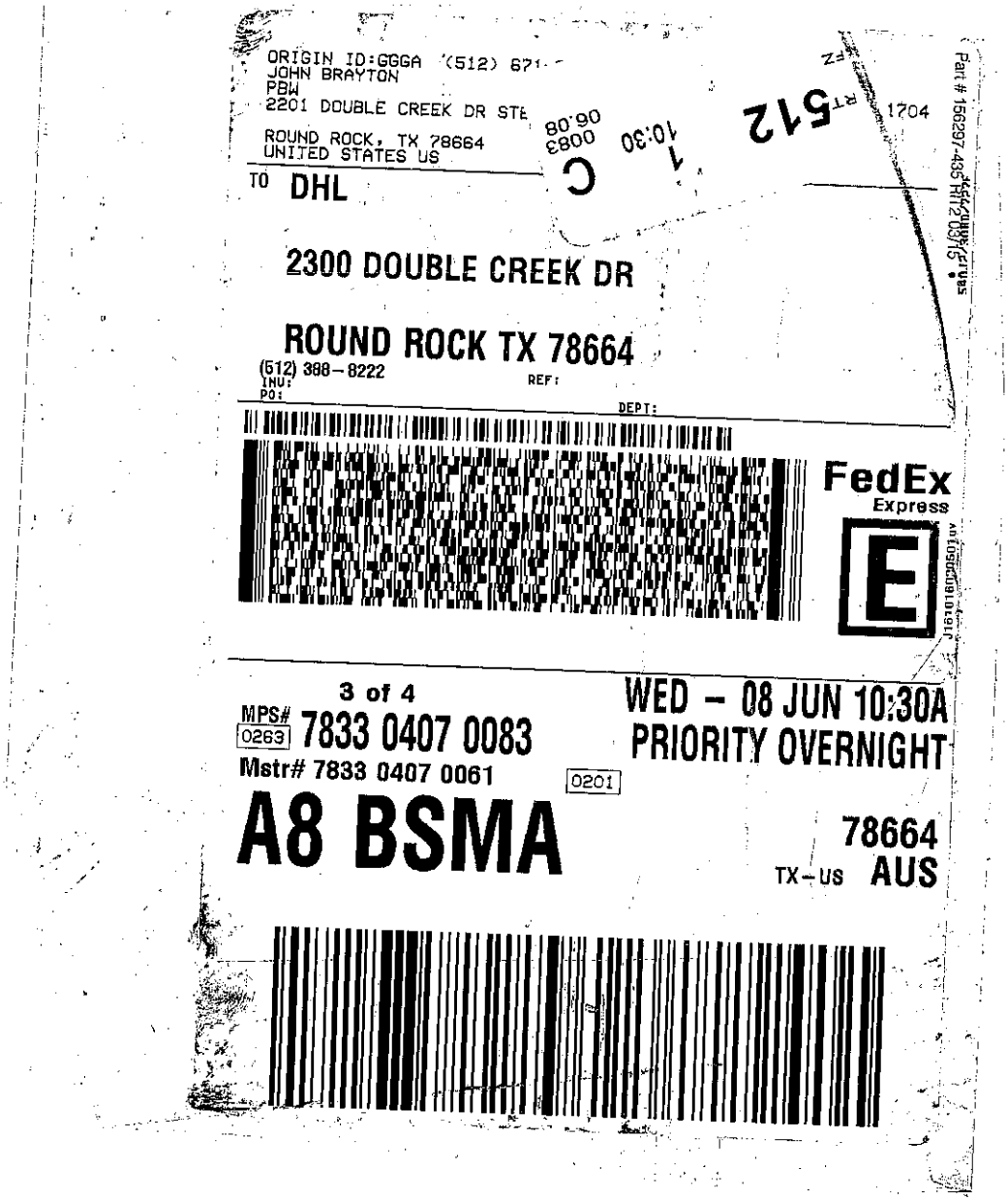
We are looking to have approximately 74 wells sampled 8 times over the course of the next two years. Please let me know if there is any more information you might need.

Cheers,

Sara

10/26/2015


ORIGIN ID:GGGA (512 7434
JOHN RAYTON
PR DOUBLE CREEK DR STE 004
ROUND ROCK, TX 78664
UNITED STATES US
SHIP DATE: 07JUN16
ACTWGT: 53.30 LB
CAD: 0068941677/SSFE1704
DIMS: 23x13x13 IN
BILL THIRD PARTY
TO DHL
2300 DOUBLE CREEK DR
ROUND ROCK TX 78664
(512) 388-8222
REF:
INV:
PO:
DEPT:
FedEx Express
2 of 4
MPS# 0263 7833 0407 0072
Mstr# 7833 0407 0061
0201
WED - 08 JUN
PRIORITY OVERNIGHT
A8 BSMA
78664
TX-US
AUS
Part # 158297-435 RH12 03/15


ORIGIN ID:GGGA (512) 671-
JOHN BRAYTON
PBW
2201 DOUBLE CREEK DR STE
ROUND ROCK, TX 78664
UNITED STATES US
TO DHL
2300 DOUBLE CREEK DR
ROUND ROCK TX 78664
(512) 398-8222
INV:
PO:
REF:
DEPT:
FedEx
Express
3 of 4
MPS# 0263 7833 0407 0083
Mstr# 7833 0407 0061
0201
A8 BSMA
WED - 08 JUN 10:30A
PRIORITY OVERNIGHT
78664
TX-US AUS

DHL Analytical, Inc.

Sample Receipt Checklist

Client Name **Pastor, Behling & Wheeler** Date Received: **6/8/2016**

Work Order Number **1606075** Received by **JB**

Checklist completed by: Signature 6/8/2016 Date Reviewed by Initials 6/8/2016 Date

Carrier name FedEx 1day

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	0.6 °C, 4.1
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH<2 acceptable upon receipt?	Yes ☑	No ☐	NA ☐ LOT # 8086
	Adjusted? NO		Checked by
Water - ph>9 (S) or ph>12 (CN) acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted?		Checked by

Any No response must be detailed in the comments section below.

Client contacted _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments: _____

Corrective Action _____

Page 1 of 1

DHL Analytical, Inc. **Date:** *20-Jul-16*

CLIENT: Pastor, Behling & Wheeler
Project: Luminant - MLSES
Lab Order: 1606075

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Method SW6020A - Metals Analysis
Method SW7470A - Mercury Analysis
Method E300 - Anions Analysis
Method M4500-H+ B - pH of a Water Analysis
Method M2540C - TDS Analysis
Sub-contract - Radium-228 and Radium-226 analyses by methods E904/9320 and SM 7500 Ra B M. Analyzed at ESC Lab Sciences.

LOG IN

The samples were received and log-in performed on 6/8/16. A total of 9 samples were received. The samples arrived in good condition and were properly packaged.

METALS ANALYSIS

For Metals analysis performed on 6/10/16 the matrix spike and matrix spike duplicate had the RPD slightly above control limits for Antimony. This is flagged accordingly in the QC summary report. The sample selected for the matrix spike and matrix spike duplicate was from this work order. The percent recovery was within control limits for this analyte. No further corrective actions were taken.

For Metals analysis performed on 6/14/16 the RPD for the serial dilution was slightly above control limits for Boron. This is flagged accordingly. The PDS was within control limits for this analyte. No further corrective actions were taken.

For Metals analysis performed on 6/10/16 LCVL-160610 was slightly below control limits for Beryllium. This is flagged accordingly. The associated CCV-160610 was within control limits for this analyte. No further corrective actions were taken.

MERCURY ANALYSIS

For Mercury analysis performed on 6/17/16 the matrix spike and matrix spike duplicate recoveries were below control limits. These are flagged accordingly in the QC summary report. The sample selected for the matrix spike and matrix spike duplicate was from this work order. The LCS was within control limits. No further corrective actions were taken.

For Mercury analysis performed on 6/17/16 the PDS recovery was below control limits. This is flagged accordingly. The serial dilution was within control limits. No further corrective actions were taken.

DHL Analytical, Inc.

Date: *20-Jul-16*

CLIENT: Pastor, Behling & Wheeler
Project: Luminant - MLSES
Lab Order: 1606075

Work Order Sample Summary

Lab Smp ID	Client Sample ID	Tag Number	Date Collected	Date Recved
1606075-01	H-29		06/07/16 07:35 AM	6/8/2016
1606075-02	H-31		06/07/16 08:20 AM	6/8/2016
1606075-03	H-32		06/07/16 09:10 AM	6/8/2016
1606075-04	H-30		06/07/16 10:00 AM	6/8/2016
1606075-05	H-40		06/07/16 08:45 AM	6/8/2016
1606075-06	H-26		06/07/16 10:45 AM	6/8/2016
1606075-07	H-27		06/07/16 11:45 AM	6/8/2016
1606075-08	H-33		06/07/16 12:30 PM	6/8/2016
1606075-09	H-28		06/07/16 02:15 PM	6/8/2016

Lab Order: 1606075
Client: Pastor, Behling & Wheeler
Project: Luminant - MLSES

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1606075-01A	H-29	06/07/16 07:35 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/09/16 09:12 AM	75531
	H-29	06/07/16 07:35 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/09/16 09:12 AM	75531
	H-29	06/07/16 07:35 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/09/16 09:12 AM	75531
	H-29	06/07/16 07:35 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	06/16/16 10:00 AM	75688
1606075-01D	H-29	06/07/16 07:35 AM	Aqueous	E300	Anion Preparation	06/13/16 09:38 AM	75598
	H-29	06/07/16 07:35 AM	Aqueous	E300	Anion Preparation	06/13/16 09:38 AM	75598
	H-29	06/07/16 07:35 AM	Aqueous	E300	Anion Preparation	06/13/16 09:38 AM	75598
	H-29	06/07/16 07:35 AM	Aqueous	M4500-H+ B	pH Preparation	06/09/16 08:03 AM	75528
	H-29	06/07/16 07:35 AM	Aqueous	M2540C	TDS Preparation	06/09/16 01:30 PM	75550
1606075-02A	H-31	06/07/16 08:20 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/09/16 09:12 AM	75531
	H-31	06/07/16 08:20 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/09/16 09:12 AM	75531
	H-31	06/07/16 08:20 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	06/16/16 10:00 AM	75688
1606075-02D	H-31	06/07/16 08:20 AM	Aqueous	E300	Anion Preparation	06/13/16 09:38 AM	75598
	H-31	06/07/16 08:20 AM	Aqueous	E300	Anion Preparation	06/13/16 09:38 AM	75598
	H-31	06/07/16 08:20 AM	Aqueous	M4500-H+ B	pH Preparation	06/09/16 08:03 AM	75528
	H-31	06/07/16 08:20 AM	Aqueous	M2540C	TDS Preparation	06/09/16 01:30 PM	75550
1606075-03A	H-32	06/07/16 09:10 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/09/16 09:12 AM	75531
	H-32	06/07/16 09:10 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/09/16 09:12 AM	75531
	H-32	06/07/16 09:10 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	06/16/16 10:00 AM	75688
1606075-03D	H-32	06/07/16 09:10 AM	Aqueous	E300	Anion Preparation	06/13/16 09:38 AM	75598
	H-32	06/07/16 09:10 AM	Aqueous	E300	Anion Preparation	06/13/16 09:38 AM	75598
	H-32	06/07/16 09:10 AM	Aqueous	M4500-H+ B	pH Preparation	06/09/16 08:03 AM	75528
	H-32	06/07/16 09:10 AM	Aqueous	M2540C	TDS Preparation	06/09/16 01:30 PM	75550
1606075-04A	H-30	06/07/16 10:00 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/09/16 09:12 AM	75531
	H-30	06/07/16 10:00 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/09/16 09:12 AM	75531
	H-30	06/07/16 10:00 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	06/16/16 10:00 AM	75688
1606075-04D	H-30	06/07/16 10:00 AM	Aqueous	E300	Anion Preparation	06/13/16 09:38 AM	75598
	H-30	06/07/16 10:00 AM	Aqueous	E300	Anion Preparation	06/13/16 09:38 AM	75598

Lab Order: 1606075
Client: Pastor, Behling & Wheeler
Project: Luminant - MLSES

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1606075-04D	H-30	06/07/16 10:00 AM	Aqueous	M4500-H+ B	pH Preparation	06/09/16 08:03 AM	75528
	H-30	06/07/16 10:00 AM	Aqueous	M2540C	TDS Preparation	06/09/16 01:30 PM	75550
1606075-05A	H-40	06/07/16 08:45 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/09/16 09:12 AM	75531
	H-40	06/07/16 08:45 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/09/16 09:12 AM	75531
	H-40	06/07/16 08:45 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	06/16/16 10:00 AM	75688
1606075-05D	H-40	06/07/16 08:45 AM	Aqueous	E300	Anion Preparation	06/13/16 09:38 AM	75598
	H-40	06/07/16 08:45 AM	Aqueous	E300	Anion Preparation	06/13/16 09:38 AM	75598
	H-40	06/07/16 08:45 AM	Aqueous	M4500-H+ B	pH Preparation	06/09/16 08:03 AM	75528
	H-40	06/07/16 08:45 AM	Aqueous	M2540C	TDS Preparation	06/09/16 01:30 PM	75550
1606075-06A	H-26	06/07/16 10:45 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/09/16 09:12 AM	75531
	H-26	06/07/16 10:45 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/09/16 09:12 AM	75531
	H-26	06/07/16 10:45 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	06/16/16 10:00 AM	75688
1606075-06D	H-26	06/07/16 10:45 AM	Aqueous	E300	Anion Preparation	06/13/16 09:38 AM	75598
	H-26	06/07/16 10:45 AM	Aqueous	M4500-H+ B	pH Preparation	06/09/16 08:03 AM	75528
	H-26	06/07/16 10:45 AM	Aqueous	M2540C	TDS Preparation	06/09/16 01:30 PM	75550
1606075-07A	H-27	06/07/16 11:45 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/09/16 09:12 AM	75531
	H-27	06/07/16 11:45 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/09/16 09:12 AM	75531
	H-27	06/07/16 11:45 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	06/16/16 10:00 AM	75688
1606075-07D	H-27	06/07/16 11:45 AM	Aqueous	E300	Anion Preparation	06/13/16 09:38 AM	75598
	H-27	06/07/16 11:45 AM	Aqueous	M4500-H+ B	pH Preparation	06/09/16 08:03 AM	75528
	H-27	06/07/16 11:45 AM	Aqueous	M2540C	TDS Preparation	06/09/16 01:30 PM	75550
1606075-08A	H-33	06/07/16 12:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/09/16 09:12 AM	75531
	H-33	06/07/16 12:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/09/16 09:12 AM	75531
	H-33	06/07/16 12:30 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	06/16/16 10:00 AM	75688
1606075-08D	H-33	06/07/16 12:30 PM	Aqueous	E300	Anion Preparation	06/13/16 09:38 AM	75598
	H-33	06/07/16 12:30 PM	Aqueous	E300	Anion Preparation	06/13/16 09:38 AM	75598
	H-33	06/07/16 12:30 PM	Aqueous	M4500-H+ B	pH Preparation	06/09/16 08:03 AM	75528
	H-33	06/07/16 12:30 PM	Aqueous	M2540C	TDS Preparation	06/09/16 01:30 PM	75550

Lab Order: 1606075
Client: Pastor, Behling & Wheeler
Project: Luminant - MLSES

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1606075-09A	H-28	06/07/16 02:15 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/09/16 09:12 AM	75531
	H-28	06/07/16 02:15 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/09/16 09:12 AM	75531
	H-28	06/07/16 02:15 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	06/16/16 10:00 AM	75688
1606075-09D	H-28	06/07/16 02:15 PM	Aqueous	E300	Anion Preparation	06/13/16 09:38 AM	75598
	H-28	06/07/16 02:15 PM	Aqueous	E300	Anion Preparation	06/13/16 09:38 AM	75598
	H-28	06/07/16 02:15 PM	Aqueous	M4500-H+ B	pH Preparation	06/09/16 08:03 AM	75528
	H-28	06/07/16 02:15 PM	Aqueous	M2540C	TDS Preparation	06/09/16 01:30 PM	75550

Lab Order: 1606075
Client: Pastor, Behling & Wheeler
Project: Luminant - MLSES

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1606075-01A	H-29	Aqueous	SW7470A	Mercury Total: Aqueous	75688	1	06/17/16 10:28 AM	CETAC2_HG_160617A
	H-29	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	75531	1	06/10/16 01:20 PM	ICP-MS4_160610C
	H-29	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	75531	10	06/14/16 12:58 PM	ICP-MS4_160614B
	H-29	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	75531	1	06/14/16 01:50 PM	ICP-MS4_160614B
1606075-01D	H-29	Aqueous	E300	Anions by IC method - Water	75598	1	06/13/16 12:42 PM	IC4_160613A
	H-29	Aqueous	E300	Anions by IC method - Water	75598	1	06/13/16 02:39 PM	IC4_160613A
	H-29	Aqueous	E300	Anions by IC method - Water	75598	10	06/13/16 08:52 PM	IC4_160613A
	H-29	Aqueous	M4500-H+ B	pH	75528	1	06/09/16 09:29 AM	TITRATOR_160609A
	H-29	Aqueous	M2540C	Total Dissolved Solids	75550	1	06/10/16 08:46 AM	WC_160609E
1606075-02A	H-31	Aqueous	SW7470A	Mercury Total: Aqueous	75688	1	06/17/16 10:31 AM	CETAC2_HG_160617A
	H-31	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	75531	1	06/10/16 01:24 PM	ICP-MS4_160610C
	H-31	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	75531	100	06/14/16 01:02 PM	ICP-MS4_160614B
1606075-02D	H-31	Aqueous	E300	Anions by IC method - Water	75598	1	06/13/16 12:57 PM	IC4_160613A
	H-31	Aqueous	E300	Anions by IC method - Water	75598	100	06/13/16 09:37 PM	IC4_160613A
	H-31	Aqueous	M4500-H+ B	pH	75528	1	06/09/16 09:34 AM	TITRATOR_160609A
	H-31	Aqueous	M2540C	Total Dissolved Solids	75550	1	06/10/16 08:46 AM	WC_160609E
1606075-03A	H-32	Aqueous	SW7470A	Mercury Total: Aqueous	75688	1	06/17/16 10:42 AM	CETAC2_HG_160617A
	H-32	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	75531	1	06/10/16 01:26 PM	ICP-MS4_160610C
	H-32	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	75531	10	06/14/16 01:04 PM	ICP-MS4_160614B
1606075-03D	H-32	Aqueous	E300	Anions by IC method - Water	75598	1	06/13/16 01:12 PM	IC4_160613A
	H-32	Aqueous	E300	Anions by IC method - Water	75598	10	06/13/16 09:52 PM	IC4_160613A
	H-32	Aqueous	M4500-H+ B	pH	75528	1	06/09/16 09:36 AM	TITRATOR_160609A
	H-32	Aqueous	M2540C	Total Dissolved Solids	75550	1	06/10/16 08:46 AM	WC_160609E
1606075-04A	H-30	Aqueous	SW7470A	Mercury Total: Aqueous	75688	1	06/17/16 10:44 AM	CETAC2_HG_160617A
	H-30	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	75531	10	06/14/16 01:06 PM	ICP-MS4_160614B
	H-30	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	75531	1	06/10/16 01:28 PM	ICP-MS4_160610C

Lab Order: 1606075
Client: Pastor, Behling & Wheeler
Project: Luminant - MLSES

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1606075-04D	H-30	Aqueous	E300	Anions by IC method - Water	75598	1	06/13/16 01:27 PM	IC4_160613A
	H-30	Aqueous	E300	Anions by IC method - Water	75598	10	06/13/16 10:07 PM	IC4_160613A
	H-30	Aqueous	M4500-H+ B	pH	75528	1	06/09/16 09:38 AM	TITRATOR_160609A
	H-30	Aqueous	M2540C	Total Dissolved Solids	75550	1	06/10/16 08:46 AM	WC_160609E
1606075-05A	H-40	Aqueous	SW7470A	Mercury Total: Aqueous	75688	1	06/17/16 10:47 AM	CETAC2_HG_160617A
	H-40	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	75531	1	06/10/16 01:30 PM	ICP-MS4_160610C
	H-40	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	75531	10	06/14/16 01:08 PM	ICP-MS4_160614B
1606075-05D	H-40	Aqueous	E300	Anions by IC method - Water	75598	1	06/13/16 02:54 PM	IC4_160613A
	H-40	Aqueous	E300	Anions by IC method - Water	75598	10	06/13/16 10:37 PM	IC4_160613A
	H-40	Aqueous	M4500-H+ B	pH	75528	1	06/09/16 09:39 AM	TITRATOR_160609A
	H-40	Aqueous	M2540C	Total Dissolved Solids	75550	1	06/10/16 08:46 AM	WC_160609E
1606075-06A	H-26	Aqueous	SW7470A	Mercury Total: Aqueous	75688	1	06/17/16 10:49 AM	CETAC2_HG_160617A
	H-26	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	75531	1	06/10/16 01:32 PM	ICP-MS4_160610C
	H-26	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	75531	1	06/14/16 01:10 PM	ICP-MS4_160614B
1606075-06D	H-26	Aqueous	E300	Anions by IC method - Water	75598	1	06/13/16 03:09 PM	IC4_160613A
	H-26	Aqueous	M4500-H+ B	pH	75528	1	06/09/16 09:41 AM	TITRATOR_160609A
	H-26	Aqueous	M2540C	Total Dissolved Solids	75550	1	06/10/16 08:46 AM	WC_160609E
1606075-07A	H-27	Aqueous	SW7470A	Mercury Total: Aqueous	75688	1	06/17/16 10:51 AM	CETAC2_HG_160617A
	H-27	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	75531	1	06/10/16 01:34 PM	ICP-MS4_160610C
	H-27	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	75531	1	06/14/16 01:12 PM	ICP-MS4_160614B
1606075-07D	H-27	Aqueous	E300	Anions by IC method - Water	75598	1	06/13/16 03:24 PM	IC4_160613A
	H-27	Aqueous	M4500-H+ B	pH	75528	1	06/09/16 09:44 AM	TITRATOR_160609A
	H-27	Aqueous	M2540C	Total Dissolved Solids	75550	1	06/10/16 08:46 AM	WC_160609E
1606075-08A	H-33	Aqueous	SW7470A	Mercury Total: Aqueous	75688	1	06/17/16 10:53 AM	CETAC2_HG_160617A
	H-33	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	75531	1	06/10/16 01:36 PM	ICP-MS4_160610C
	H-33	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	75531	1	06/14/16 01:14 PM	ICP-MS4_160614B

Lab Order: 1606075
Client: Pastor, Behling & Wheeler
Project: Luminant - MLSES

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1606075-08D	H-33	Aqueous	E300	Anions by IC method - Water	75598	1	06/13/16 03:39 PM	IC4_160613A
	H-33	Aqueous	E300	Anions by IC method - Water	75598	10	06/13/16 10:52 PM	IC4_160613A
	H-33	Aqueous	M4500-H+ B	pH	75528	1	06/09/16 09:47 AM	TITRATOR_160609A
	H-33	Aqueous	M2540C	Total Dissolved Solids	75550	1	06/10/16 08:46 AM	WC_160609E
1606075-09A	H-28	Aqueous	SW7470A	Mercury Total: Aqueous	75688	1	06/17/16 10:56 AM	CETAC2_HG_160617A
	H-28	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	75531	1	06/10/16 01:38 PM	ICP-MS4_160610C
	H-28	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	75531	10	06/14/16 01:16 PM	ICP-MS4_160614B
1606075-09D	H-28	Aqueous	E300	Anions by IC method - Water	75598	1	06/13/16 03:54 PM	IC4_160613A
	H-28	Aqueous	E300	Anions by IC method - Water	75598	10	06/14/16 12:22 AM	IC4_160613A
	H-28	Aqueous	M4500-H+ B	pH	75528	1	06/09/16 09:50 AM	TITRATOR_160609A
	H-28	Aqueous	M2540C	Total Dissolved Solids	75550	1	06/10/16 08:46 AM	WC_160609E

DHL Analytical, Inc.

Date: *20-Jul-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	H-29
Project:	Luminant - MLSES	**Lab ID:**	1606075-01
Project No:	5164-B	**Collection Date:**	06/07/16 07:35 AM
Lab Order:	1606075	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **KL**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/17/16 10:28 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **CVD**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	06/10/16 01:20 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	06/10/16 01:20 PM
Barium	0.136	0.00300	0.0100		mg/L	1	06/10/16 01:20 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	06/10/16 01:20 PM
Boron	0.311	0.0100	0.0300		mg/L	1	06/14/16 01:50 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	06/10/16 01:20 PM
Calcium	29.8	1.00	3.00		mg/L	10	06/14/16 12:58 PM
Chromium	0.0274	0.00200	0.00500		mg/L	1	06/10/16 01:20 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	06/10/16 01:20 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	06/10/16 01:20 PM
Lithium	0.0188	0.00500	0.0100		mg/L	1	06/10/16 01:20 PM
Molybdenum	0.00551	0.00200	0.00500		mg/L	1	06/10/16 01:20 PM
Selenium	0.0152	0.00200	0.00500		mg/L	1	06/10/16 01:20 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	06/10/16 01:20 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	19.3	0.300	1.00		mg/L	1	06/13/16 02:39 PM
Fluoride	0.270	0.100	0.400	J	mg/L	1	06/13/16 02:39 PM
Sulfate	166	10.0	30.0		mg/L	10	06/13/16 08:52 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	9.79	0	0		pH Units@18.7℃	1	06/09/16 09:29 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	308	10.0	10.0		mg/L	1	06/10/16 08:46 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *20-Jul-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	H-31
Project:	Luminant - MLSES	**Lab ID:**	1606075-02
Project No:	5164-B	**Collection Date:**	06/07/16 08:20 AM
Lab Order:	1606075	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **KL**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/17/16 10:31 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **CVD**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	06/10/16 01:24 PM
Arsenic	0.00380	0.00200	0.00500	J	mg/L	1	06/10/16 01:24 PM
Barium	0.0242	0.00300	0.0100		mg/L	1	06/10/16 01:24 PM
Beryllium	0.00789	0.000300	0.00100		mg/L	1	06/10/16 01:24 PM
Boron	22.2	1.00	3.00		mg/L	100	06/14/16 01:02 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	06/10/16 01:24 PM
Calcium	244	10.0	30.0		mg/L	100	06/14/16 01:02 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	06/10/16 01:24 PM
Cobalt	0.0406	0.00300	0.00500		mg/L	1	06/10/16 01:24 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	06/10/16 01:24 PM
Lithium	0.157	0.00500	0.0100		mg/L	1	06/10/16 01:24 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	06/10/16 01:24 PM
Selenium	0.0307	0.00200	0.00500		mg/L	1	06/10/16 01:24 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	06/10/16 01:24 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	241	30.0	100		mg/L	100	06/13/16 09:37 PM
Fluoride	0.783	0.100	0.400		mg/L	1	06/13/16 12:57 PM
Sulfate	2720	100	300		mg/L	100	06/13/16 09:37 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.22	0	0		pH Units@18.9℃	1	06/09/16 09:34 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	4570	50.0	50.0		mg/L	1	06/10/16 08:46 AM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *20-Jul-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	H-32
Project:	Luminant - MLSES	**Lab ID:**	1606075-03
Project No:	5164-B	**Collection Date:**	06/07/16 09:10 AM
Lab Order:	1606075	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **KL**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/17/16 10:42 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **CVD**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	06/10/16 01:26 PM
Arsenic	0.00446	0.00200	0.00500	J	mg/L	1	06/10/16 01:26 PM
Barium	0.0238	0.00300	0.0100		mg/L	1	06/10/16 01:26 PM
Beryllium	0.00583	0.000300	0.00100		mg/L	1	06/10/16 01:26 PM
Boron	1.82	0.100	0.300		mg/L	10	06/14/16 01:04 PM
Cadmium	0.000997	0.000300	0.00100	J	mg/L	1	06/10/16 01:26 PM
Calcium	45.6	1.00	3.00		mg/L	10	06/14/16 01:04 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	06/10/16 01:26 PM
Cobalt	0.207	0.00300	0.00500		mg/L	1	06/10/16 01:26 PM
Lead	0.00168	0.000300	0.00100		mg/L	1	06/10/16 01:26 PM
Lithium	0.0870	0.00500	0.0100		mg/L	1	06/10/16 01:26 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	06/10/16 01:26 PM
Selenium	0.00298	0.00200	0.00500	J	mg/L	1	06/10/16 01:26 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	06/10/16 01:26 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	137	3.00	10.0		mg/L	10	06/13/16 09:52 PM
Fluoride	0.858	0.100	0.400		mg/L	1	06/13/16 01:12 PM
Sulfate	350	10.0	30.0		mg/L	10	06/13/16 09:52 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	5.52	0	0		pH Units@19.1℃	1	06/09/16 09:36 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	829	10.0	10.0		mg/L	1	06/10/16 08:46 AM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *20-Jul-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	H-30
Project:	Luminant - MLSES	**Lab ID:**	1606075-04
Project No:	5164-B	**Collection Date:**	06/07/16 10:00 AM
Lab Order:	1606075	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **KL**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/17/16 10:44 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **CVD**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	06/10/16 01:28 PM
Arsenic	0.00570	0.00200	0.00500		mg/L	1	06/10/16 01:28 PM
Barium	0.0256	0.00300	0.0100		mg/L	1	06/10/16 01:28 PM
Beryllium	0.00641	0.000300	0.00100		mg/L	1	06/10/16 01:28 PM
Boron	7.36	0.100	0.300		mg/L	10	06/14/16 01:06 PM
Cadmium	0.000488	0.000300	0.00100	J	mg/L	1	06/10/16 01:28 PM
Calcium	142	1.00	3.00		mg/L	10	06/14/16 01:06 PM
Chromium	0.00480	0.00200	0.00500	J	mg/L	1	06/10/16 01:28 PM
Cobalt	0.182	0.00300	0.00500		mg/L	1	06/10/16 01:28 PM
Lead	0.00526	0.000300	0.00100		mg/L	1	06/10/16 01:28 PM
Lithium	0.102	0.00500	0.0100		mg/L	1	06/10/16 01:28 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	06/10/16 01:28 PM
Selenium	0.0172	0.00200	0.00500		mg/L	1	06/10/16 01:28 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	06/10/16 01:28 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	118	3.00	10.0		mg/L	10	06/13/16 10:07 PM
Fluoride	0.335	0.100	0.400	J	mg/L	1	06/13/16 01:27 PM
Sulfate	1280	10.0	30.0		mg/L	10	06/13/16 10:07 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	5.18	0	0		pH Units@18.9℃	1	06/09/16 09:38 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	2060	50.0	50.0		mg/L	1	06/10/16 08:46 AM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *20-Jul-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	H-40
Project:	Luminant - MLSES	**Lab ID:**	1606075-05
Project No:	5164-B	**Collection Date:**	06/07/16 08:45 AM
Lab Order:	1606075	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **KL**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/17/16 10:47 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **CVD**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	06/10/16 01:30 PM
Arsenic	0.00605	0.00200	0.00500		mg/L	1	06/10/16 01:30 PM
Barium	0.0257	0.00300	0.0100		mg/L	1	06/10/16 01:30 PM
Beryllium	0.00560	0.000300	0.00100		mg/L	1	06/10/16 01:30 PM
Boron	7.08	0.100	0.300		mg/L	10	06/14/16 01:08 PM
Cadmium	0.000492	0.000300	0.00100	J	mg/L	1	06/10/16 01:30 PM
Calcium	137	1.00	3.00		mg/L	10	06/14/16 01:08 PM
Chromium	0.00728	0.00200	0.00500		mg/L	1	06/10/16 01:30 PM
Cobalt	0.179	0.00300	0.00500		mg/L	1	06/10/16 01:30 PM
Lead	0.00678	0.000300	0.00100		mg/L	1	06/10/16 01:30 PM
Lithium	0.0940	0.00500	0.0100		mg/L	1	06/10/16 01:30 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	06/10/16 01:30 PM
Selenium	0.0181	0.00200	0.00500		mg/L	1	06/10/16 01:30 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	06/10/16 01:30 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	117	3.00	10.0		mg/L	10	06/13/16 10:37 PM
Fluoride	0.324	0.100	0.400	J	mg/L	1	06/13/16 02:54 PM
Sulfate	1280	10.0	30.0		mg/L	10	06/13/16 10:37 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	5.09	0	0		pH Units@18.6℃	1	06/09/16 09:39 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	2150	50.0	50.0		mg/L	1	06/10/16 08:46 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *20-Jul-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	H-26
Project:	Luminant - MLSES	**Lab ID:**	1606075-06
Project No:	5164-B	**Collection Date:**	06/07/16 10:45 AM
Lab Order:	1606075	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **KL**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/17/16 10:49 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **CVD**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	06/10/16 01:32 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	06/10/16 01:32 PM
Barium	0.0467	0.00300	0.0100		mg/L	1	06/10/16 01:32 PM
Beryllium	0.000721	0.000300	0.00100	J	mg/L	1	06/10/16 01:32 PM
Boron	0.441	0.0100	0.0300		mg/L	1	06/14/16 01:10 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	06/10/16 01:32 PM
Calcium	11.7	0.100	0.300		mg/L	1	06/10/16 01:32 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	06/10/16 01:32 PM
Cobalt	0.0217	0.00300	0.00500		mg/L	1	06/10/16 01:32 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	06/10/16 01:32 PM
Lithium	0.0132	0.00500	0.0100		mg/L	1	06/10/16 01:32 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	06/10/16 01:32 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	06/10/16 01:32 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	06/10/16 01:32 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	48.6	0.300	1.00		mg/L	1	06/13/16 03:09 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	06/13/16 03:09 PM
Sulfate	72.2	1.00	3.00		mg/L	1	06/13/16 03:09 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	5.75	0	0		pH Units@18.5℃	1	06/09/16 09:41 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	278	10.0	10.0		mg/L	1	06/10/16 08:46 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *20-Jul-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	H-27
Project:	Luminant - MLSES	**Lab ID:**	1606075-07
Project No:	5164-B	**Collection Date:**	06/07/16 11:45 AM
Lab Order:	1606075	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **KL**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/17/16 10:51 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **CVD**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	06/10/16 01:34 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	06/10/16 01:34 PM
Barium	0.0342	0.00300	0.0100		mg/L	1	06/10/16 01:34 PM
Beryllium	0.000609	0.000300	0.00100	J	mg/L	1	06/10/16 01:34 PM
Boron	0.319	0.0100	0.0300		mg/L	1	06/14/16 01:12 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	06/10/16 01:34 PM
Calcium	10.6	0.100	0.300		mg/L	1	06/10/16 01:34 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	06/10/16 01:34 PM
Cobalt	0.0160	0.00300	0.00500		mg/L	1	06/10/16 01:34 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	06/10/16 01:34 PM
Lithium	0.0107	0.00500	0.0100		mg/L	1	06/10/16 01:34 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	06/10/16 01:34 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	06/10/16 01:34 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	06/10/16 01:34 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	40.5	0.300	1.00		mg/L	1	06/13/16 03:24 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	06/13/16 03:24 PM
Sulfate	55.0	1.00	3.00		mg/L	1	06/13/16 03:24 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	5.90	0	0		pH Units@18.8℃	1	06/09/16 09:44 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	207	10.0	10.0		mg/L	1	06/10/16 08:46 AM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *20-Jul-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	H-33
Project:	Luminant - MLSES	**Lab ID:**	1606075-08
Project No:	5164-B	**Collection Date:**	06/07/16 12:30 PM
Lab Order:	1606075	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **KL**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/17/16 10:53 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **CVD**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	06/10/16 01:36 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	06/10/16 01:36 PM
Barium	0.0774	0.00300	0.0100		mg/L	1	06/10/16 01:36 PM
Beryllium	0.000604	0.000300	0.00100	J	mg/L	1	06/10/16 01:36 PM
Boron	0.0571	0.0100	0.0300		mg/L	1	06/14/16 01:14 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	06/10/16 01:36 PM
Calcium	20.1	0.100	0.300		mg/L	1	06/10/16 01:36 PM
Chromium	0.0153	0.00200	0.00500		mg/L	1	06/10/16 01:36 PM
Cobalt	0.0196	0.00300	0.00500		mg/L	1	06/10/16 01:36 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	06/10/16 01:36 PM
Lithium	0.163	0.00500	0.0100		mg/L	1	06/10/16 01:36 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	06/10/16 01:36 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	06/10/16 01:36 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	06/10/16 01:36 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	67.5	3.00	10.0		mg/L	10	06/13/16 10:52 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	06/13/16 03:39 PM
Sulfate	121	1.00	3.00		mg/L	1	06/13/16 03:39 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.51	0	0		pH Units@19.3℃	1	06/09/16 09:47 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	515	10.0	10.0		mg/L	1	06/10/16 08:46 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *20-Jul-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	H-28
Project:	Luminant - MLSES	**Lab ID:**	1606075-09
Project No:	5164-B	**Collection Date:**	06/07/16 02:15 PM
Lab Order:	1606075	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **KL**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/17/16 10:56 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **CVD**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	06/10/16 01:38 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	06/10/16 01:38 PM
Barium	0.0468	0.00300	0.0100		mg/L	1	06/10/16 01:38 PM
Beryllium	0.000934	0.000300	0.00100	J	mg/L	1	06/10/16 01:38 PM
Boron	3.66	0.100	0.300		mg/L	10	06/14/16 01:16 PM
Cadmium	0.000664	0.000300	0.00100	J	mg/L	1	06/10/16 01:38 PM
Calcium	45.4	1.00	3.00		mg/L	10	06/14/16 01:16 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	06/10/16 01:38 PM
Cobalt	0.0944	0.00300	0.00500		mg/L	1	06/10/16 01:38 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	06/10/16 01:38 PM
Lithium	0.0959	0.00500	0.0100		mg/L	1	06/10/16 01:38 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	06/10/16 01:38 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	06/10/16 01:38 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	06/10/16 01:38 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	62.2	3.00	10.0		mg/L	10	06/14/16 12:22 AM
Fluoride	<0.100	0.100	0.400		mg/L	1	06/13/16 03:54 PM
Sulfate	465	10.0	30.0		mg/L	10	06/14/16 12:22 AM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.15	0	0		pH Units@19.4℃	1	06/09/16 09:50 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	817	10.0	10.0		mg/L	1	06/10/16 08:46 AM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

CLIENT: Pastor, Behling & Wheeler
Work Order: 1606075
Project: Luminant - MLSES

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_160617A

The QC data in batch 75688 applies to the following samples: 1606075-01A, 1606075-02A, 1606075-03A, 1606075-04A, 1606075-05A, 1606075-06A, 1606075-07A, 1606075-08A, 1606075-09A

Sample ID **MB-75688** Batch ID: **75688** TestNo: **SW7470A** Units: **mg/L**
SampType: **MBLK** Run ID: **CETAC2_HG_160617A** Analysis Date: **6/17/2016 10:22:10 AM** Prep Date: **6/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.0000800	0.000200								

Sample ID **LCS-75688** Batch ID: **75688** TestNo: **SW7470A** Units: **mg/L**
SampType: **LCS** Run ID: **CETAC2_HG_160617A** Analysis Date: **6/17/2016 10:24:25 AM** Prep Date: **6/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00195	0.000200	0.00200	0	97.5	85	115			

Sample ID **LCSD-75688** Batch ID: **75688** TestNo: **SW7470A** Units: **mg/L**
SampType: **LCSD** Run ID: **CETAC2_HG_160617A** Analysis Date: **6/17/2016 10:26:41 AM** Prep Date: **6/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00195	0.000200	0.00200	0	97.5	85	115	0	15	

Sample ID **1606075-02A SD** Batch ID: **75688** TestNo: **SW7470A** Units: **mg/L**
SampType: **SD** Run ID: **CETAC2_HG_160617A** Analysis Date: **6/17/2016 10:33:29 AM** Prep Date: **6/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.000400	0.00100	0	0				0	10	

Sample ID **1606075-02A PDS** Batch ID: **75688** TestNo: **SW7470A** Units: **mg/L**
SampType: **PDS** Run ID: **CETAC2_HG_160617A** Analysis Date: **6/17/2016 10:35:45 AM** Prep Date: **6/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00178	0.000200	0.00250	0	71.2	85	115			S

Sample ID **1606075-02A MS** Batch ID: **75688** TestNo: **SW7470A** Units: **mg/L**
SampType: **MS** Run ID: **CETAC2_HG_160617A** Analysis Date: **6/17/2016 10:38:00 AM** Prep Date: **6/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00138	0.000200	0.00200	0	69.0	80	120			S

Sample ID **1606075-02A MSD** Batch ID: **75688** TestNo: **SW7470A** Units: **mg/L**
SampType: **MSD** Run ID: **CETAC2_HG_160617A** Analysis Date: **6/17/2016 10:40:16 AM** Prep Date: **6/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00136	0.000200	0.00200	0	68.0	80	120	1.46	15	S

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1606075
Project: Luminant - MLSES

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_160617A

Sample ID	**ICV-160617**	Batch ID:	**R86398**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**ICV**	Run ID:	**CETAC2_HG_160617A**	Analysis Date:	**6/17/2016 10:17:36 AM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00406	0.000200	0.00400	0	102	90	110			

Sample ID	**CCV1-160617**	Batch ID:	**R86398**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**CETAC2_HG_160617A**	Analysis Date:	**6/17/2016 11:00:42 AM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00201	0.000200	0.00200	0	101	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1606075
Project: Luminant - MLSES

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160610C

The QC data in batch 75531 applies to the following samples: 1606075-01A, 1606075-02A, 1606075-03A, 1606075-04A, 1606075-05A, 1606075-06A, 1606075-07A, 1606075-08A, 1606075-09A

Sample ID **MB-75531** Batch ID: **75531** TestNo: **SW6020A** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_160610C** Analysis Date: **6/10/2016 1:12:00 PM** Prep Date: **6/9/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.000800	0.00250								
Arsenic	<0.00200	0.00500								
Barium	<0.00300	0.0100								
Beryllium	<0.000300	0.00100								
Cadmium	<0.000300	0.00100								
Calcium	<0.100	0.300								
Chromium	<0.00200	0.00500								
Cobalt	<0.00300	0.00500								
Lead	<0.000300	0.00100								
Lithium	<0.00500	0.0100								
Molybdenum	<0.00200	0.00500								
Selenium	<0.00200	0.00500								
Thallium	<0.000500	0.00150								

Sample ID **LCS-75531** Batch ID: **75531** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_160610C** Analysis Date: **6/10/2016 1:14:00 PM** Prep Date: **6/9/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.201	0.00250	0.200	0	100	80	120			
Arsenic	0.199	0.00500	0.200	0	99.3	80	120			
Barium	0.199	0.0100	0.200	0	99.5	80	120			
Beryllium	0.204	0.00100	0.200	0	102	80	120			
Cadmium	0.201	0.00100	0.200	0	100	80	120			
Calcium	4.67	0.300	5.00	0	93.5	80	120			
Chromium	0.205	0.00500	0.200	0	103	80	120			
Cobalt	0.206	0.00500	0.200	0	103	80	120			
Lead	0.200	0.00100	0.200	0	100	80	120			
Lithium	0.205	0.0100	0.200	0	102	80	120			
Molybdenum	0.195	0.00500	0.200	0	97.3	80	120			
Selenium	0.202	0.00500	0.200	0	101	80	120			
Thallium	0.200	0.00150	0.200	0	100	80	120			

Sample ID **LCSD-75531** Batch ID: **75531** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_160610C** Analysis Date: **6/10/2016 1:16:00 PM** Prep Date: **6/9/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.201	0.00250	0.200	0	100	80	120	0.131	15	
Arsenic	0.195	0.00500	0.200	0	97.7	80	120	1.65	15	
Barium	0.198	0.0100	0.200	0	98.8	80	120	0.694	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1606075
Project: Luminant - MLSES

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160610C

Sample ID **LCSD-75531**	Batch ID: **75531**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCSD**	Run ID: **ICP-MS4_160610C**	Analysis Date: **6/10/2016 1:16:00 PM**	Prep Date: **6/9/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.205	0.00100	0.200	0	103	80	120	0.753	15	
Cadmium	0.199	0.00100	0.200	0	99.6	80	120	0.863	15	
Calcium	4.54	0.300	5.00	0	90.8	80	120	2.96	15	
Chromium	0.202	0.00500	0.200	0	101	80	120	1.41	15	
Cobalt	0.204	0.00500	0.200	0	102	80	120	0.976	15	
Lead	0.196	0.00100	0.200	0	98.2	80	120	1.98	15	
Lithium	0.212	0.0100	0.200	0	106	80	120	3.29	15	
Molybdenum	0.195	0.00500	0.200	0	97.5	80	120	0.210	15	
Selenium	0.203	0.00500	0.200	0	101	80	120	0.226	15	
Thallium	0.197	0.00150	0.200	0	98.4	80	120	1.83	15	

Sample ID **1606075-01A SD**	Batch ID: **75531**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS4_160610C**	Analysis Date: **6/10/2016 1:22:00 PM**	Prep Date: **6/9/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.00400	0.0125	0	0				0	10	
Arsenic	<0.0100	0.0250	0	0				0	10	
Barium	0.136	0.0500	0	0.136				0.087	10	
Beryllium	<0.00150	0.00500	0	0				0	10	
Cadmium	<0.00150	0.00500	0	0				0	10	
Chromium	0.0275	0.0250	0	0.0274				0.230	10	
Cobalt	<0.0150	0.0250	0	0				0	10	
Lead	<0.00150	0.00500	0	0				0	10	
Lithium	<0.0250	0.0500	0	0.0188				0	10	
Molybdenum	<0.0100	0.0250	0	0.00551				0	10	
Selenium	0.0140	0.0250	0	0.0152				8.12	10	
Thallium	<0.00250	0.00750	0	0				0	10	

Sample ID **1606075-01A PDS**	Batch ID: **75531**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_160610C**	Analysis Date: **6/10/2016 1:42:00 PM**	Prep Date: **6/9/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.212	0.00250	0.200	0	106	80	120			
Arsenic	0.198	0.00500	0.200	0	99.2	80	120			
Barium	0.334	0.0100	0.200	0.136	99.1	80	120			
Beryllium	0.201	0.00100	0.200	0	101	80	120			
Cadmium	0.200	0.00100	0.200	0	99.8	80	120			
Chromium	0.233	0.00500	0.200	0.0274	103	80	120			
Cobalt	0.207	0.00500	0.200	0	104	80	120			
Lead	0.201	0.00100	0.200	0	101	80	120			
Lithium	0.223	0.0100	0.200	0.0188	102	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1606075
Project: Luminant - MLSES

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160610C

Sample ID **1606075-01A PDS** Batch ID: **75531** TestNo: **SW6020A** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS4_160610C** Analysis Date: **6/10/2016 1:42:00 PM** Prep Date: **6/9/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Molybdenum	0.201	0.00500	0.200	0.00551	97.8	80	120			
Selenium	0.216	0.00500	0.200	0.0152	100	80	120			
Thallium	0.198	0.00150	0.200	0	99.2	80	120			

Sample ID **1606075-01A MS** Batch ID: **75531** TestNo: **SW6020A** Units: **mg/L**
SampType: **MS** Run ID: **ICP-MS4_160610C** Analysis Date: **6/10/2016 1:44:00 PM** Prep Date: **6/9/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.171	0.00250	0.200	0	85.7	80	120			
Arsenic	0.194	0.00500	0.200	0	97.2	80	120			
Barium	0.336	0.0100	0.200	0.136	100	80	120			
Beryllium	0.199	0.00100	0.200	0	99.3	80	120			
Cadmium	0.196	0.00100	0.200	0	98.0	80	120			
Calcium	35.2	0.300	5.00	30.2	99.9	80	120			
Chromium	0.228	0.00500	0.200	0.0274	100	80	120			
Cobalt	0.199	0.00500	0.200	0	99.4	80	120			
Lead	0.200	0.00100	0.200	0	99.8	80	120			
Lithium	0.227	0.0100	0.200	0.0188	104	80	120			
Molybdenum	0.197	0.00500	0.200	0.00551	95.7	80	120			
Selenium	0.212	0.00500	0.200	0.0152	98.5	80	120			
Thallium	0.200	0.00150	0.200	0	99.9	80	120			

Sample ID **1606075-01A MSD** Batch ID: **75531** TestNo: **SW6020A** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS4_160610C** Analysis Date: **6/10/2016 1:46:00 PM** Prep Date: **6/9/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.207	0.00250	0.200	0	103	80	120	18.8	15	R
Arsenic	0.195	0.00500	0.200	0	97.3	80	120	0.105	15	
Barium	0.344	0.0100	0.200	0.136	104	80	120	2.24	15	
Beryllium	0.205	0.00100	0.200	0	102	80	120	3.02	15	
Cadmium	0.199	0.00100	0.200	0	99.4	80	120	1.42	15	
Calcium	35.1	0.300	5.00	30.2	97.9	80	120	0.288	15	
Chromium	0.226	0.00500	0.200	0.0274	99.2	80	120	0.798	15	
Cobalt	0.198	0.00500	0.200	0	98.8	80	120	0.539	15	
Lead	0.197	0.00100	0.200	0	98.7	80	120	1.11	15	
Lithium	0.227	0.0100	0.200	0.0188	104	80	120	0.131	15	
Molybdenum	0.203	0.00500	0.200	0.00551	98.6	80	120	2.96	15	
Selenium	0.210	0.00500	0.200	0.0152	97.2	80	120	1.22	15	
Thallium	0.196	0.00150	0.200	0	97.9	80	120	1.98	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

Sample ID **ICV-160610** Batch ID: **R86262** TestNo: **SW6020A** Units: **mg/L**
SampType: **ICV** Run ID: **ICP-MS4_160610C** Analysis Date: **6/10/2016 11:12:00 AM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.102	0.00250	0.100	0	102	90	110			
Arsenic	0.0989	0.00500	0.100	0	98.9	90	110			
Barium	0.0993	0.0100	0.100	0	99.3	90	110			
Beryllium	0.0988	0.00100	0.100	0	98.8	90	110			
Cadmium	0.0996	0.00100	0.100	0	99.6	90	110			
Calcium	2.30	0.300	2.50	0	92.2	90	110			
Chromium	0.105	0.00500	0.100	0	105	90	110			
Cobalt	0.105	0.00500	0.100	0	105	90	110			
Lead	0.0992	0.00100	0.100	0	99.2	90	110			
Lithium	0.0970	0.0100	0.100	0	97.0	90	110			
Molybdenum	0.0975	0.00500	0.100	0	97.5	90	110			
Selenium	0.101	0.00500	0.100	0	101	90	110			
Thallium	0.0972	0.00150	0.100	0	97.2	90	110			

Sample ID **LCVL-160610** Batch ID: **R86262** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_160610C** Analysis Date: **6/10/2016 11:30:00 AM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00198	0.00250	0.00200	0	99.2	70	130			
Arsenic	0.00496	0.00500	0.00500	0	99.2	70	130			
Barium	0.00488	0.0100	0.00500	0	97.7	70	130			
Beryllium	0.000665	0.00100	0.00100	0	66.5	70	130			S
Cadmium	0.00102	0.00100	0.00100	0	102	70	130			
Calcium	0.0969	0.300	0.100	0	96.9	70	130			
Chromium	0.00511	0.00500	0.00500	0	102	70	130			
Cobalt	0.00513	0.00500	0.00500	0	103	70	130			
Lead	0.000970	0.00100	0.00100	0	97.0	70	130			
Lithium	0.00812	0.0100	0.0100	0	81.2	70	130			
Molybdenum	0.00485	0.00500	0.00500	0	96.9	70	130			
Selenium	0.00534	0.00500	0.00500	0	107	70	130			
Thallium	0.000972	0.00150	0.00100	0	97.2	70	130			

Sample ID **CCV2-160610** Batch ID: **R86262** TestNo: **SW6020A** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_160610C** Analysis Date: **6/10/2016 12:40:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.201	0.00250	0.200	0	101	90	110			
Arsenic	0.198	0.00500	0.200	0	99.0	90	110			
Barium	0.199	0.0100	0.200	0	99.4	90	110			
Beryllium	0.197	0.00100	0.200	0	98.7	90	110			
Cadmium	0.200	0.00100	0.200	0	100	90	110			

CLIENT: Pastor, Behling & Wheeler
Work Order: 1606075
Project: Luminant - MLSES

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160610C

Sample ID **CCV2-160610**	Batch ID: **R86262**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160610C**	Analysis Date: **6/10/2016 12:40:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.56	0.300	5.00	0	91.1	90	110			
Chromium	0.200	0.00500	0.200	0	100	90	110			
Cobalt	0.205	0.00500	0.200	0	102	90	110			
Lead	0.200	0.00100	0.200	0	100	90	110			
Lithium	0.207	0.0100	0.200	0	103	90	110			
Molybdenum	0.195	0.00500	0.200	0	97.5	90	110			
Selenium	0.202	0.00500	0.200	0	101	90	110			
Thallium	0.199	0.00150	0.200	0	99.7	90	110			

Sample ID **LCVL2-160610**	Batch ID: **R86262**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160610C**	Analysis Date: **6/10/2016 12:59:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00200	0.00250	0.00200	0	100	70	130			
Arsenic	0.00496	0.00500	0.00500	0	99.2	70	130			
Barium	0.00499	0.0100	0.00500	0	99.8	70	130			
Beryllium	0.000814	0.00100	0.00100	0	81.4	70	130			
Cadmium	0.000965	0.00100	0.00100	0	96.5	70	130			
Calcium	0.0953	0.300	0.100	0	95.3	70	130			
Chromium	0.00526	0.00500	0.00500	0	105	70	130			
Cobalt	0.00516	0.00500	0.00500	0	103	70	130			
Lead	0.000965	0.00100	0.00100	0	96.5	70	130			
Lithium	0.00960	0.0100	0.0100	0	96.0	70	130			
Molybdenum	0.00474	0.00500	0.00500	0	94.9	70	130			
Selenium	0.00503	0.00500	0.00500	0	101	70	130			
Thallium	0.000981	0.00150	0.00100	0	98.1	70	130			

Sample ID **CCV3-160610**	Batch ID: **R86262**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160610C**	Analysis Date: **6/10/2016 1:48:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.205	0.00250	0.200	0	102	90	110			
Arsenic	0.199	0.00500	0.200	0	99.3	90	110			
Barium	0.203	0.0100	0.200	0	102	90	110			
Beryllium	0.207	0.00100	0.200	0	104	90	110			
Cadmium	0.204	0.00100	0.200	0	102	90	110			
Calcium	4.57	0.300	5.00	0	91.3	90	110			
Chromium	0.204	0.00500	0.200	0	102	90	110			
Cobalt	0.207	0.00500	0.200	0	103	90	110			
Lead	0.200	0.00100	0.200	0	99.9	90	110			
Lithium	0.220	0.0100	0.200	0	110	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1606075
Project: Luminant - MLSES

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160610C

Sample ID **CCV3-160610**	Batch ID: **R86262**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160610C**	Analysis Date: **6/10/2016 1:48:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Molybdenum	0.197	0.00500	0.200	0	98.7	90	110			
Selenium	0.204	0.00500	0.200	0	102	90	110			
Thallium	0.200	0.00150	0.200	0	99.9	90	110			

Sample ID **LCVL3-160610**	Batch ID: **R86262**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160610C**	Analysis Date: **6/10/2016 1:57:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00204	0.00250	0.00200	0	102	70	130			
Arsenic	0.00515	0.00500	0.00500	0	103	70	130			
Barium	0.00497	0.0100	0.00500	0	99.4	70	130			
Beryllium	0.000961	0.00100	0.00100	0	96.1	70	130			
Cadmium	0.00100	0.00100	0.00100	0	100	70	130			
Calcium	0.0939	0.300	0.100	0	93.9	70	130			
Chromium	0.00516	0.00500	0.00500	0	103	70	130			
Cobalt	0.00517	0.00500	0.00500	0	103	70	130			
Lead	0.000982	0.00100	0.00100	0	98.2	70	130			
Lithium	0.0108	0.0100	0.0100	0	108	70	130			
Molybdenum	0.00478	0.00500	0.00500	0	95.6	70	130			
Selenium	0.00544	0.00500	0.00500	0	109	70	130			
Thallium	0.000995	0.00150	0.00100	0	99.5	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1606075
Project: Luminant - MLSES

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160614B

The QC data in batch 75531 applies to the following samples: 1606075-01A, 1606075-02A, 1606075-03A, 1606075-04A, 1606075-05A, 1606075-06A, 1606075-07A, 1606075-08A, 1606075-09A

Sample ID **MB-75531** Batch ID: **75531** TestNo: **SW6020A** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_160614B** Analysis Date: **6/14/2016 12:49:00 PM** Prep Date: **6/9/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	<0.0100	0.0300								

Sample ID **LCS-75531** Batch ID: **75531** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_160614B** Analysis Date: **6/14/2016 12:52:00 PM** Prep Date: **6/9/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.185	0.0300	0.200	0	92.5	80	120			

Sample ID **LCSD-75531** Batch ID: **75531** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_160614B** Analysis Date: **6/14/2016 12:54:00 PM** Prep Date: **6/9/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.183	0.0300	0.200	0	91.5	80	120	1.08	15	

Sample ID **1606075-01A SD** Batch ID: **75531** TestNo: **SW6020A** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS4_160614B** Analysis Date: **6/14/2016 1:00:00 PM** Prep Date: **6/9/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	29.9	15.0	0	29.8				0.133	10	

Sample ID **1606075-01A PDS** Batch ID: **75531** TestNo: **SW6020A** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS4_160614B** Analysis Date: **6/14/2016 1:20:00 PM** Prep Date: **6/9/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	75.0	3.00	50.0	29.8	90.3	80	120			

Sample ID **1606075-01A MS** Batch ID: **75531** TestNo: **SW6020A** Units: **mg/L**
SampType: **MS** Run ID: **ICP-MS4_160614B** Analysis Date: **6/14/2016 1:22:00 PM** Prep Date: **6/9/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.509	0.0300	0.200	0.311	98.9	80	120			

Sample ID **1606075-01A MSD** Batch ID: **75531** TestNo: **SW6020A** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS4_160614B** Analysis Date: **6/14/2016 1:24:00 PM** Prep Date: **6/9/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.521	0.0300	0.200	0.311	105	80	120	2.33	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1606075
Project: Luminant - MLSES

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160614B

Sample ID **1606075-01A SD**	Batch ID: **75531**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS4_160614B**	Analysis Date: **6/14/2016 1:52:00 PM**	Prep Date: **6/9/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.367	0.150	0	0.311				16.5	10	R

Sample ID **1606075-01A PDS**	Batch ID: **75531**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_160614B**	Analysis Date: **6/14/2016 2:12:00 PM**	Prep Date: **6/9/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.540	0.0300	0.200	0.311	114	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

Sample ID **ICV-160614**	Batch ID: **R86319**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_160614B**	Analysis Date: **6/14/2016 12:16:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.100	0.0300	0.100	0	100	90	110			
Calcium	2.26	0.300	2.50	0	90.2	90	110			

Sample ID **LCVL-160614**	Batch ID: **R86319**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160614B**	Analysis Date: **6/14/2016 12:42:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0171	0.0300	0.0200	0	85.3	70	130			
Calcium	0.0889	0.300	0.100	0	88.9	70	130			

Sample ID **CCV1-160614**	Batch ID: **R86319**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160614B**	Analysis Date: **6/14/2016 1:34:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.197	0.0300	0.200	0	98.7	90	110			
Calcium	4.62	0.300	5.00	0	92.5	90	110			

Sample ID **LCVL1-160614**	Batch ID: **R86319**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160614B**	Analysis Date: **6/14/2016 1:46:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0159	0.0300	0.0200	0	79.4	70	130			
Calcium	0.0858	0.300	0.100	0	85.8	70	130			

Sample ID **CCV2-160614**	Batch ID: **R86319**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160614B**	Analysis Date: **6/14/2016 2:22:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.198	0.0300	0.200	0	99.1	90	110			

Sample ID **LCVL2-160614**	Batch ID: **R86319**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160614B**	Analysis Date: **6/14/2016 2:51:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0210	0.0300	0.0200	0	105	70	130			

Sample ID **CCV9-160614**	Batch ID: **R86319**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160614B**	Analysis Date: **6/14/2016 6:47:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.197	0.00250	0.200	0	98.3	90	110			

CLIENT: Pastor, Behling & Wheeler
Work Order: 1606075
Project: Luminant - MLSES

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160614B

Sample ID **CCV9-160614**	Batch ID: **R86319**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160614B**	Analysis Date: **6/14/2016 6:47:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.204	0.00500	0.200	0	102	90	110			
Barium	0.192	0.0100	0.200	0	96.0	90	110			
Beryllium	0.197	0.00100	0.200	0	98.3	90	110			
Cadmium	0.192	0.00100	0.200	0	95.9	90	110			
Chromium	0.198	0.00500	0.200	0	99.2	90	110			
Lead	0.202	0.00100	0.200	0	101	90	110			
Selenium	0.207	0.00500	0.200	0	104	90	110			

Sample ID **LCVL9-160614**	Batch ID: **R86319**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160614B**	Analysis Date: **6/14/2016 6:51:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00201	0.00250	0.00200	0	100	70	130			
Arsenic	0.00517	0.00500	0.00500	0	103	70	130			
Barium	0.00500	0.0100	0.00500	0	100	70	130			
Beryllium	0.00102	0.00100	0.00100	0	102	70	130			
Cadmium	0.00105	0.00100	0.00100	0	105	70	130			
Chromium	0.00500	0.00500	0.00500	0	100	70	130			
Lead	0.000991	0.00100	0.00100	0	99.1	70	130			
Selenium	0.00603	0.00500	0.00500	0	120	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1606075
Project: Luminant - MLSES

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_160613A

The QC data in batch 75598 applies to the following samples: 1606075-01D, 1606075-02D, 1606075-03D, 1606075-04D, 1606075-05D, 1606075-06D, 1606075-07D, 1606075-08D, 1606075-09D

Sample ID **MB-75598** Batch ID: **75598** TestNo: **E300** Units: **mg/L**
SampType: **MBLK** Run ID: **IC4_160613A** Analysis Date: **6/13/2016 10:19:50 AM** Prep Date: **6/13/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00								
Fluoride	<0.100	0.400								
Sulfate	<1.00	3.00								

Sample ID **LCS-75598** Batch ID: **75598** TestNo: **E300** Units: **mg/L**
SampType: **LCS** Run ID: **IC4_160613A** Analysis Date: **6/13/2016 10:34:50 AM** Prep Date: **6/13/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.0	1.00	10.00	0	100	90	110			
Fluoride	3.95	0.400	4.000	0	98.7	90	110			
Sulfate	30.6	3.00	30.00	0	102	90	110			

Sample ID **LCSD-75598** Batch ID: **75598** TestNo: **E300** Units: **mg/L**
SampType: **LCSD** Run ID: **IC4_160613A** Analysis Date: **6/13/2016 10:49:50 AM** Prep Date: **6/13/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.1	1.00	10.00	0	101	90	110	0.572	20	
Fluoride	3.97	0.400	4.000	0	99.1	90	110	0.395	20	
Sulfate	30.7	3.00	30.00	0	102	90	110	0.428	20	

Sample ID **1606075-01DMS** Batch ID: **75598** TestNo: **E300** Units: **mg/L**
SampType: **MS** Run ID: **IC4_160613A** Analysis Date: **6/13/2016 9:07:41 PM** Prep Date: **6/13/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	231	10.0	200.0	18.93	106	90	110			
Fluoride	209	4.00	200.0	0	104	90	110			
Sulfate	383	30.0	200.0	165.7	109	90	110			

Sample ID **1606075-01DMSD** Batch ID: **75598** TestNo: **E300** Units: **mg/L**
SampType: **MSD** Run ID: **IC4_160613A** Analysis Date: **6/13/2016 9:22:41 PM** Prep Date: **6/13/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	232	10.0	200.0	18.93	106	90	110	0.260	20	
Fluoride	209	4.00	200.0	0	105	90	110	0.285	20	
Sulfate	382	30.0	200.0	165.7	108	90	110	0.399	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1606075
Project: Luminant - MLSES

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_160613A

Sample ID **1606075-08DMS**	Batch ID: **75598**	TestNo: **E300**	Units: **mg/L**
SampType: **MS**	Run ID: **IC4_160613A**	Analysis Date: **6/13/2016 11:07:41 PM**	Prep Date: **6/13/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	281	10.0	200.0	67.47	107	90	110			
Fluoride	210	4.00	200.0	0	105	90	110			
Sulfate	340	30.0	200.0	122.3	109	90	110			

Sample ID **1606075-08DMSD**	Batch ID: **75598**	TestNo: **E300**	Units: **mg/L**
SampType: **MSD**	Run ID: **IC4_160613A**	Analysis Date: **6/13/2016 11:22:41 PM**	Prep Date: **6/13/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	279	10.0	200.0	67.47	106	90	110	0.720	20	
Fluoride	209	4.00	200.0	0	105	90	110	0.564	20	
Sulfate	340	30.0	200.0	122.3	109	90	110	0.011	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_160613A

Sample ID **ICV-160613**	Batch ID: **R86308**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC4_160613A**	Analysis Date: **6/13/2016 9:39:31 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	25.0	1.00	25.00	0	100	90	110			
Fluoride	9.91	0.400	10.00	0	99.1	90	110			
Sulfate	76.8	3.00	75.00	0	102	90	110			

Sample ID **CCV1-160613**	Batch ID: **R86308**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC4_160613A**	Analysis Date: **6/13/2016 1:57:05 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.4	1.00	10.00	0	104	90	110			
Fluoride	4.04	0.400	4.000	0	101	90	110			
Sulfate	31.9	3.00	30.00	0	106	90	110			

Sample ID **CCV2-160613**	Batch ID: **R86308**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC4_160613A**	Analysis Date: **6/13/2016 6:37:41 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.5	1.00	10.00	0	105	90	110			
Fluoride	4.11	0.400	4.000	0	103	90	110			
Sulfate	31.8	3.00	30.00	0	106	90	110			

Sample ID **CCV3-160613**	Batch ID: **R86308**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC4_160613A**	Analysis Date: **6/13/2016 11:52:41 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.6	1.00	10.00	0	106	90	110			
Fluoride	4.20	0.400	4.000	0	105	90	110			
Sulfate	32.1	3.00	30.00	0	107	90	110			

Sample ID **CCV4-160613**	Batch ID: **R86308**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC4_160613A**	Analysis Date: **6/14/2016 12:52:41 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.8	1.00	10.00	0	108	90	110			
Fluoride	4.38	0.400	4.000	0	109	90	110			
Sulfate	32.3	3.00	30.00	0	108	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1606075
Project: Luminant - MLSES

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_160609A

The QC data in batch 75528 applies to the following samples: 1606075-01D, 1606075-02D, 1606075-03D, 1606075-04D, 1606075-05D, 1606075-06D, 1606075-07D, 1606075-08D, 1606075-09D

Sample ID	**1606075-01D-DUP**	Batch ID:	**75528**	TestNo:	**M4500-H+ B**	Units:	**pH Units@18.7℃**
SampType:	**DUP**	Run ID:	**TITRATOR_160609A**	Analysis Date:	**6/9/2016 9:31:00 AM**	Prep Date:	**6/9/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	9.81	0	0	9.790				0.204	5	

Sample ID	**1606078-01D-DUP**	Batch ID:	**75528**	TestNo:	**M4500-H+ B**	Units:	**pH Units@19.8℃**
SampType:	**DUP**	Run ID:	**TITRATOR_160609A**	Analysis Date:	**6/9/2016 10:01:00 AM**	Prep Date:	**6/9/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	6.12	0	0	6.160				0.651	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1606075
Project: Luminant - MLSES

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_160609A

Sample ID	**ICV-160609**	Batch ID:	**R86216**	TestNo:	**M4500-H+ B**	Units:	**pH Units@22℃**
SampType:	**ICV**	Run ID:	**TITRATOR_160609A**	Analysis Date:	**6/9/2016 8:40:00 AM**	Prep Date:	**6/9/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	9.97	0	10.00	0	99.7	99	101			

Sample ID	**CCV1-160609**	Batch ID:	**R86216**	TestNo:	**M4500-H+ B**	Units:	**pH Units@20.9℃**
SampType:	**CCV**	Run ID:	**TITRATOR_160609A**	Analysis Date:	**6/9/2016 9:48:00 AM**	Prep Date:	**6/9/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	7.00	0	7.000	0	100	97.1	102.9			

Sample ID	**CCV2-160609**	Batch ID:	**R86216**	TestNo:	**M4500-H+ B**	Units:	**pH Units@21.5℃**
SampType:	**CCV**	Run ID:	**TITRATOR_160609A**	Analysis Date:	**6/9/2016 10:29:00 AM**	Prep Date:	**6/9/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	7.00	0	7.000	0	100	97.1	102.9			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1606075
Project: Luminant - MLSES

ANALYTICAL QC SUMMARY REPORT

RunID: WC_160609E

The QC data in batch 75550 applies to the following samples: 1606075-01D, 1606075-02D, 1606075-03D, 1606075-04D, 1606075-05D, 1606075-06D, 1606075-07D, 1606075-08D, 1606075-09D

Sample ID **MB-75550**	Batch ID: **75550**	TestNo: **M2540C**	Units: **mg/L**
SampType: **MBLK**	Run ID: **WC_160609E**	Analysis Date: **6/10/2016 8:46:00 AM**	Prep Date: **6/9/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	<10.0	10.0								

Sample ID **LCS-75550**	Batch ID: **75550**	TestNo: **M2540C**	Units: **mg/L**
SampType: **LCS**	Run ID: **WC_160609E**	Analysis Date: **6/10/2016 8:46:00 AM**	Prep Date: **6/9/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	751	10.0	745.6	0	101	90	113			

Sample ID **1606055-02D-DUP**	Batch ID: **75550**	TestNo: **M2540C**	Units: **mg/L**
SampType: **DUP**	Run ID: **WC_160609E**	Analysis Date: **6/10/2016 8:46:00 AM**	Prep Date: **6/9/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	13600	200	0	14280				4.58	5	

Sample ID **1606078-06D-DUP**	Batch ID: **75550**	TestNo: **M2540C**	Units: **mg/L**
SampType: **DUP**	Run ID: **WC_160609E**	Analysis Date: **6/10/2016 8:46:00 AM**	Prep Date: **6/9/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	1210	50.0	0	1240				2.45	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

Case Narrative

Lab No: 20160558

This report contains the analytical results for the 9 sample(s) received under chain of custody by ESC Lab Sciences on 6/10/2016 11:17:04 AM. These samples are associated with your 1606075 project.

The analytical results included in this report meet all applicable quality control procedure requirements except as noted below:

The test results in this report meet all NELAC requirements unless noted below:

This report shall not be reproduced, except in full, without the written approval of ESC Lab Sciences.

All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client.

Results have been reviewed by the Director of Radiochemistry or their designees and is approved for release.

Observations / Nonconformances

OUTREACH LABORATORY, A Divsion of ESC Lab Sciences
Address: 311 North Aspen Avenue, Broken Arrow, OK, 74012 EMail: outreach@esclabsciences.com - Tel: (918) 251-2515

Analytical Report

	Method	Result	DL	Units	Qual	Prep Date	Analysis Date	Analyst
Lab ID : **20160558-01**								
Client ID : **H-29**								
Date Sampled : **6/7/2016 7:35:00 AM**								
Matrix : **NPW**								
Radiochemical Analyses								
Combined Radium		0.183 +/- 1.42	0.976	pCi/l				
Radium-226	SM 7500 Ra B M*	0.183 +/- 0.139	0.142	pCi/l		06/13/16	06/14/16	AK
Radium-228	EPA 904*/9320*	-0.336 +/- 1.28	0.834	pCi/l		07/06/16	07/12/16	JR
Lab ID : **20160558-02**								
Client ID : **H-31**								
Date Sampled : **6/7/2016 8:20:00 AM**								
Matrix : **NPW**								
Radiochemical Analyses								
Combined Radium		0.661 +/- 1.07	0.747	pCi/l				
Radium-226	SM 7500 Ra B M*	0.257 +/- 0.152	0.192	pCi/l		06/13/16	06/14/16	AK
Radium-228	EPA 904*/9320*	0.404 +/- 0.913	0.555	pCi/l		07/06/16	07/12/16	JR
Lab ID : **20160558-03**								
Client ID : **H-32**								
Date Sampled : **6/7/2016 9:10:00 AM**								
Matrix : **NPW**								
Radiochemical Analyses								
Combined Radium		0.739 +/- 0.820	0.598	pCi/l				
Radium-226	SM 7500 Ra B M*	0.126 +/- 0.116	0.165	pCi/l		06/13/16	06/14/16	AK
Radium-228	EPA 904*/9320*	0.613 +/- 0.704	0.433	pCi/l		07/06/16	07/12/16	JR
Lab ID : **20160558-04**								
Client ID : **H-30**								
Date Sampled : **6/7/2016 10:00:00 AM**								
Matrix : **NPW**								
Radiochemical Analyses								
Combined Radium		2.18 +/- 1.00	0.841	pCi/l				
Radium-226	SM 7500 Ra B M*	0.257 +/- 0.130	0.116	pCi/l		06/13/16	06/14/16	AK
Radium-228	EPA 904*/9320*	1.92 +/- 0.872	0.725	pCi/l		07/06/16	07/12/16	JR

OUTREACH LABORATORY, A Divsion of ESC Lab Sciences
Address: 311 North Aspen Avenue, Broken Arrow, OK, 74012 EMail: outreach@esclabsciences.com - Tel: (918) 251-2515

Analytical Report

	Method	Result	DL	Units	Qual	Prep Date	Analysis Date	Analyst
Lab ID : **20160558-05**								
Client ID : **H-40**								
Date Sampled : **6/7/2016 8:45:00 AM**								
Matrix : **NPW**								
		Radiochemical Analyses						
Combined Radium		1.78 +/- 1.05	0.736	pCi/l				
Radium-226	SM 7500 Ra B M*	0.234 +/- 0.151	0.194	pCi/l		06/13/16	06/14/16	AK
Radium-228	EPA 904*/9320*	1.55 +/- 0.903	0.542	pCi/l		07/06/16	07/12/16	JR
Lab ID : **20160558-06**								
Client ID : **H-26**								
Date Sampled : **6/7/2016 10:45:00 AM**								
Matrix : **NPW**								
		Radiochemical Analyses						
Combined Radium		1.92 +/- 1.00	0.654	pCi/l				
Radium-226	SM 7500 Ra B M*	0.245 +/- 0.116	0.091	pCi/l		06/13/16	06/14/16	AK
Radium-228	EPA 904*/9320*	1.67 +/- 0.881	0.563	pCi/l		07/06/16	07/12/16	JR
Lab ID : **20160558-07**								
Client ID : **H-27**								
Date Sampled : **6/7/2016 11:45:00 AM**								
Matrix : **NPW**								
		Radiochemical Analyses						
Combined Radium		0.269 +/- 1.01	0.781	pCi/l				
Radium-226	SM 7500 Ra B M*	0.269 +/- 0.133	0.123	pCi/l		06/13/16	06/14/16	AK
Radium-228	EPA 904*/9320*	-0.400 +/- 0.872	0.658	pCi/l		07/06/16	07/12/16	JR
Lab ID : **20160558-08**								
Client ID : **H-33**								
Date Sampled : **6/7/2016 12:30:00 PM**								
Matrix : **NPW**								
		Radiochemical Analyses						
Combined Radium		1.17 +/- 0.683	0.856	pCi/l				
Radium-226	SM 7500 Ra B M*	0.276 +/- 0.148	0.157	pCi/l		06/13/16	06/14/16	AK
Radium-228	EPA 904*/9320*	0.897 +/- 0.535	0.699	pCi/l		07/06/16	07/12/16	JR

OUTREACH LABORATORY, A Divsion of ESC Lab Sciences
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Analytical Report

	Method	Result	DL	Units	Qual	Prep Date	Analysis Date	Analyst
Lab ID :	**20160558-09**							
Client ID :	**H-28**							
Date Sampled :	**6/7/2016 2:15:00 PM**							
Matrix :	**NPW**							
	Radiochemical Analyses							
Combined Radium		1.79 +/- 0.725	0.876	pCi/l				
Radium-226	SM 7500 Ra B M*	0.310 +/- 0.160	0.163	pCi/l		06/13/16	06/14/16	AK
Radium-228	EPA 904*/9320*	1.48 +/- 0.565	0.713	pCi/l		07/06/16	07/12/16	JR

QC Report

Parameter	Blank	LCS %REC	LCSD %REC	LCSD RPD	DUP RPD	RER, NAD or DER	MS %REC	MSD %REC	MSD RPD	Batch ID
Radium-226	0.000	95.3			NC	0.542	102.0	99.0	3.2	
Radium-228	-0.346	104.0			NC	0.308	103.0	103.0	0.2	R3827

Lab Approval:

*NELAC Certified Parameter BDL = Below Detection Limit

OUTREACH LABORATORY, A Divsion of ESC Lab Sciences
Address: 311 North Aspen Avenue, Broken Arrow, OK, 74012 *EMail: outreach@esclabsciences.com - Tel: (918) 251-2515*

DHL Analytical, Inc.
2300 Double Creek Drive
Round Rock, TX 78664
TEL: *(512) 388-8222* FAX: *(512) 388-8229*

CHAIN-OF-CUSTODY RECORD

Work Order: 1606075

Subcontractor:

ESC Laboratory
311 North Aspen
Broken Arrow, Oklahoma 74012

TEL: (918) 251-2515
FAX:
Acct #: DHLRRTX

08-Jun-16

	Sample Id	Matrix	DHL#	Date Collected	Bottle Type	Requested Tests: E904.0	SM7500Ra-B M				
01	H-29	Aqueous	-01B	06/07/16 07:35 AM	500HDPEHNO3	1					
	H-29	Aqueous	-01C	06/07/16 07:35 AM	500HDPEHNO3		1				
02	H-31	Aqueous	-02B	06/07/16 08:20 AM	500HDPEHNO3	1					
	H-31	Aqueous	-02C	06/07/16 08:20 AM	500HDPEHNO3		1				
13	H-32	Aqueous	-03B	06/07/16 09:10 AM	500HDPEHNO3	1					
	H-32	Aqueous	-03C	06/07/16 09:10 AM	500HDPEHNO3		1				
14	H-30	Aqueous	-04B	06/07/16 10:00 AM	500HDPEHNO3	1					
	H-30	Aqueous	-04C	06/07/16 10:00 AM	500HDPEHNO3		1				
15	H-40	Aqueous	-05B	06/07/16 08:45 AM	500HDPEHNO3	1					
	H-40	Aqueous	-05C	06/07/16 08:45 AM	500HDPEHNO3		1				
16	H-26	Aqueous	-06B	06/07/16 10:45 AM	500HDPEHNO3	1					
	H-26	Aqueous	-06C	06/07/16 10:45 AM	500HDPEHNO3		1				
17	H-27	Aqueous	-07B	06/07/16 11:45 AM	500HDPEHNO3	1					
	H-27	Aqueous	-07C	06/07/16 11:45 AM	500HDPEHNO3		1				
18	H-33	Aqueous	-08B	06/07/16 12:30 PM	500HDPEHNO3	1					
	H-33	Aqueous	-08C	06/07/16 12:30 PM	500HDPEHNO3		1				
19	H-28	Aqueous	-09B	06/07/16 02:15 PM	500HDPEHNO3	1					
	H-28	Aqueous	-09C	06/07/16 02:15 PM	500HDPEHNO3		1				

General Comments:

Please analyze these samples with Normal Turnaround Time.
Report RA-226, Ra-228 & Combined per Specs DHLRRTX033116S.
Quality Control Package Needed: Standard - NELAC Rad Test compliant
Email to cac@dhlanalytical.com & dupont@dhlanalytical.com

C840920
20160558

	Date/Time		Date/Time
Relinquished by:		**Received by:**	
Relinquished by:		**Received by:** Ben Mahony	06.10.16

SAMPLE LOGIN

Date Received: *06/10/16 11:17:04* **Lab Number:** 20160558 **Due:** 07/08/16

Sample Number	Client Sample ID	Matrix	Date Sampled	Container Type	Container Size	Preservation	Preserved Upon Receipt	Custody Seal	Seal Intact
20160558-01 B	H-29	NPW	06/07/16	Plastic	500 ml	HNO3, pH < 2		Yes	Yes
20160558-01 A	H-29	NPW	06/07/16	Plastic	500 ml	HNO3, pH < 2		Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160558-02 A	H-31	NPW	06/07/16	Plastic	500 ml	HNO3, pH < 2		Yes	Yes
20160558-02 B	H-31	NPW	06/07/16	Plastic	500 ml	HNO3, pH < 2		Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160558-03 A	H-32	NPW	06/07/16	Plastic	500 ml	HNO3, pH < 2		Yes	Yes
20160558-03 B	H-32	NPW	06/07/16	Plastic	500 ml	HNO3, pH < 2		Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160558-04 B	H-30	NPW	06/07/16	Plastic	500 ml	HNO3, pH < 2		Yes	Yes
20160558-04 A	H-30	NPW	06/07/16	Plastic	500 ml	HNO3, pH < 2		Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160558-05 B	H-40	NPW	06/07/16	Plastic	500 ml	HNO3, pH < 2		Yes	Yes
20160558-05 A	H-40	NPW	06/07/16	Plastic	500 ml	HNO3, pH < 2		Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160558-06 A	H-26	NPW	06/07/16	Plastic	500 ml	HNO3, pH < 2		Yes	Yes
20160558-06 B	H-26	NPW	06/07/16	Plastic	500 ml	HNO3, pH < 2		Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160558-07 A	H-27	NPW	06/07/16	Plastic	500 ml	HNO3, pH < 2		Yes	Yes
20160558-07 B	H-27	NPW	06/07/16	Plastic	500 ml	HNO3, pH < 2		Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						

20160558-08 A	H-33	NPW	06/07/16	Plastic	500 ml	HNO3, pH < 2	✓	Yes	Yes
20160558-08 B	H-33	NPW	06/07/16	Plastic	500 ml	HNO3, pH < 2	✓	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160558-09 B	H-28	NPW	06/07/16	Plastic	500 ml	HNO3, pH < 2	✓	Yes	Yes
20160558-09 A	H-28	NPW	06/07/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						

CONTAINER INSPECTION

 # Coolers **Custody Seals Broken** ☐ **Temperature:** NA °C **Ice** **Radiation Survey:** <300 cpm

SAMPLE INSPECTION

Sample Seal Broken **Chain of Custody Record** ✓ **Labels in Tact** ☐ **Radiation Survey Complete** NA

Anomalies

Inspected By: _____ **DATE** 6/10/16

QA or Designee Review: Raymond Thomas **DATE** 06/10/16

Sample Custodian Review: Ben Mahony **DATE** 06.10.16

Project Notes:

September 14, 2016

Will Vienne
Pastor, Behling & Wheeler
2201 Double Creek Dr #4004
Round Rock, Texas 78664
TEL: (512) 671-3434
FAX (512) 671-3446

Order No.: 1608133

RE: Luminant - Martin Lake

Dear Will Vienne:

DHL Analytical, Inc. received 27 sample(s) on 8/11/2016 for the analyses presented in the following report.

There were no problems with the analyses and all data met requirements of NELAC except where noted in the Case Narrative. All non-NELAC methods will be identified accordingly in the case narrative and all estimated uncertainties of test results are within method or EPA specifications.

If you have any questions regarding these tests results, please feel free to call. Thank you for using DHL Analytical.

Sincerely,

John DuPont
General Manager

This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211-16-16

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DHL ANALYTICAL
2300 Double Creek Dr. ■ Round Rock, TX 78664
Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

№ 72291

CHAIN-OF-CUSTODY

CLIENT: DBW
ADDRESS: 2201 Double Creek Dr Ste 4004 Round Rock TX 78664
PHONE: 512 671 3434 FAX/E-MAIL: 512 671 3446
DATA REPORTED TO: WILL VIENNE
ADDITIONAL REPORT COPIES TO:

DATE: 8/9/16 PAGE ____ OF ____
PO #: 5164-B DHL WORK ORDER #: 1100833
PROJECT LOCATION OR NAME: Luminant - Martin Lake
CLENT PROJECT #: 5164-B COLLECTOR: C KAKOLEWSKI

Authorize 5% surcharge for TRRP Report? ☐ Yes ☐ No

S=SOIL W=WATER A=AIR L=LIQUID SE=SEDIMENT P=PAINT SL=SLUDGE O=OTHER SO=SOLID

PRESERVATION: HCl | HNO_3 | H_2SO_4 ☐ NaOH ☐ | ICE | UNPRESERVED

ANALYSES: BTEX ☐ MTBE ☐ [METHOD 8021] | TPH 1005 ☐ TPH 1006 ☐ HOLD 1006 ☐ | GRO [METHOD 8015] ☐ DRO [METHOD 8105] ☐ | VOC 8260 ☐ VOC 624 ☐ VOC 8260/5035 ☐ | SVOC 8270 ☐ PAH 8270 ☐ HOLD PAH ☐ SVOC 625 ☐ | 8270 PEST ☐ 625 PEST/PCB ☐ 608 PCB ☐ | 8270 O-P PEST ☐ 8082 PCB ☐ 8270 PCB ☐ | 8321 HERB ☐ T PHOS, AMMONIA ☐ | METALS 6020 ☐ METALS 200.8 ☐ DISS. METALS ☐ | RCRA ☐ TX11 ☐ _____ ☐ | PH ☐ HEX CHROM ☐ ALKALINITY ☐ COD ☐ | CHLORIDE ☐ ANIONS _____ ☐ | TCLP-SVOC ☐ VOC ☐ PEST ☐ HERB ☐ | TCLP-METALS ☐ RCRA 8 ☐ TX-11 ☐ Pb ☐ | RCI ☐ FLASHPOINT ☐ DGAS ☐ | TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐ | SEE ATTACHED

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	HCl	HNO_3	H_2SO_4 ☐ NaOH ☐	ICE	UNPRESERVED	FIELD NOTES
H-28	01	8/9/16	0903 8/12/16 0904	W	P	4		3		X	1	9:30
H-29	02		1003									10:35
H-31	03		1115									11:50
H-30	04		1219									12:45
H-32	05		1325									13:50
H-27	06		1421									14:50
H-33	07		1531									15:55
H-26	08		1614								X	16:45
DUP-01	09	8/9/16	1438	W	P	4		3		X	1	14:30
PDP-25	10	8/10/16	1330	W	P	4		3		X	1	13:30
PDP-24	11		1100									11:00
MW-17A	12		1020									10:20
PDP-23	13		910									9:10
MW-19	14		1500									15:00
MW-20A	15		1410									14:10

per chris 8/12/16 gg

RELINQUISHED BY: (Signature) 17:20 DATE/TIME 8/11/16 RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature) DATE/TIME RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature) DATE/TIME RECEIVED BY: (Signature)

TURN AROUND TIME
RUSH ☐ CALL FIRST
1 DAY ☐ CALL FIRST
2 DAY ☐
NORMAL ☒
OTHER ☐ _____

LABORATORY USE ONLY:
RECEIVING TEMP: 3.1 | 0.2 | 0.6 THERM #: 78
CUSTODY SEALS: ☐ BROKEN ☐ INTACT ☒ NOT USED
CARRIER: ☐ LONE STAR ☐ FEDEX ☐ UPS ☐ OTHER
☐ COURIER DELIVERY
☒ HAND DELIVERED

APPENDIX F-Revision 2 February 27, 2014 ☐ DHL DISPOSAL @ $5.00 each ☐ Return

DHL ANALYTICAL
2300 Double Creek Dr. ■ Round Rock, TX 78664
Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

№ 72452

CHAIN-OF-CUSTODY

CLIENT: PBW
ADDRESS: 2201 DOUBLE CREEK DR ROUND ROCK, TX 78664
PHONE: 512-671-3434 FAX/E-MAIL: 512-671-3446
DATA REPORTED TO: WILL VIENNE
ADDITIONAL REPORT COPIES TO:

DATE: 8-11-16 PAGE 1 OF 1
PO #: 5164-B DHL WORK ORDER #: 1608133
PROJECT LOCATION OR NAME: LUMINANT - MCSES
CLENT PROJECT #: 5164-B COLLECTOR: J. BRAYTON

Authorize 5% surcharge for TRRP Report? ❑ Yes ❑ No

S=SOIL P=PAINT
W=WATER SL=SLUDGE
A=AIR O=OTHER
L=LIQUID SO=SOLID
SE=SEDIMENT

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	PRESERVATION: HCl	HNO_3	H_2SO_4 ❑ NaOH ❑	ICE	UNPRESERVED	ANALYSES: BTEX ❑ MTBE ❑ [METHOD 8021] ❑ TPH 1005 ❑ TPH 1006 ❑ HOLD 1006 ❑ GRO [METHOD 8015] ❑ DRO [METHOD 8105] ❑ VOC 8260 ❑ VOC 624 ❑ VOC 8260/5035 ❑ SVOC 8270 ❑ PAH 8270 ❑ HOLD PAH ❑ SVOC 625 ❑ 8270 PEST ❑ 625 PEST/PCB ❑ 608 PCB ❑ 8270 PCB ❑ 8270 O-P PEST ❑ 8082 PCB ❑ 8270 PCB ❑ 8321 HERB ❑ T PHOS, AMMONIA ❑ METALS 6020 ❑ METALS 200.8 ❑ DISS. METALS ❑ ____ ❑ RCRA ❑ TX11 ❑ ____ PH ❑ HEX CHROM ❑ ALKALINITY ❑ COD ❑ CHLORIDE ❑ ANIONS ____ ❑ TCLP-SVOC ❑ VOC ❑ PEST ❑ HERB ❑ TCLP-METALS ❑ RCRA 8 ❑ TX-11 ❑ Pb ❑ RCI ❑ FLASHPOINT ❑ DGAS ❑ TDS ❑ TSS ❑ % MOISTURE ❑ CYANIDE ❑ SEE ATTACHED	FIELD NOTES
PDP-22	16	8-10-16	0920	W	P	4		X		X	X		
PDP-26	17		1030	W	P	4		X		X	X		
MW-18A	18		1130	W	P	4		X		X	X		
EB-1	19		1145	W	P	4		X		X	X		
BMW-11AR	20	8-11-16	0825	W	P	4		X		X	X		
BMW-19	21		0920	W	P	4		X		X	X		
BMW-18	22		1015	W	P	4		X		X	X		
BMW-20	23		1050	W	P	4		X		X	X		

RELINQUISHED BY: (Signature) DATE/TIME 8-11-16 17:20 RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature) DATE/TIME 8-11-16 17:20 RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature) DATE/TIME RECEIVED BY: (Signature)

APPENDIX F-Revision 2 February 27, 2024 ❑ EMAIL RESULTS @ $5.00 each ❑ Return

TURN AROUND TIME
RUSH ❑ CALL FIRST
1 DAY ❑ CALL FIRST
2 DAY ❑
NORMAL ☒
OTHER ❑ ____

LABORATORY USE ONLY:
RECEIVING TEMP: 3.1 | 0.2 | 0.6 THERM #: 78
CUSTODY SEALS: 2@ ❑ BROKEN ❑ INTACT ☒ NOT USED
CARRIER: ❑ LONE STAR ❑ FEDEX ❑ UPS ❑ OTHER
❑ COURIER DELIVERY
☒ HAND DELIVERED

DHL ANALYTICAL
2300 Double Creek Dr. ■ Round Rock, TX 78664
Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

№ 72290

CHAIN-OF-CUSTODY

CLIENT: PBW
ADDRESS: 2301 Double Creek Dr. Ste 4004 Round Rock, TX 78664
PHONE: 512 671 3434 FAX/E-MAIL: 512 671 3446
DATA REPORTED TO: Will Vienne
ADDITIONAL REPORT COPIES TO:

DATE: 8/11/16 PAGE ___ OF ___
PO #: 5164-B DHL WORK ORDER #: 1608133
PROJECT LOCATION OR NAME: Luminant - Martin Lake
CLENT PROJECT #: 5164-B COLLECTOR: C Kakolewski

Authorize 5% surcharge for TRRP Report? ☐ Yes ☐ No

S=SOIL P=PAINT
W=WATER SL=SLUDGE
A=AIR O=OTHER
L=LIQUID SO=SOLID
SE=SEDIMENT

PRESERVATION: HCl | HNO_3 | H_2SO_4 ☐ NaOH ☐ | ICE | UNPRESERVED

ANALYSES: BTEX ☐ MTBE ☐ [METHOD 8021] | TPH 1005 ☐ TPH 1006 ☐ HOLD 1006 ☐ | GRO [METHOD 8015] ☐ DRO [METHOD 8105] ☐ | VOC 8260 ☐ VOC 624 ☐ VOC 8260/5035 ☐ | SVOC 8270 ☐ PAH 8270 ☐ HOLD PAH ☐ SVOC 625 ☐ | 8270 PEST ☐ 625 PEST/PCB ☐ 608 PCB ☐ | 8270 O-P PEST ☐ 8082 PCB ☐ 8270 PCB ☐ | 8321 HERB ☐ T PHOS, AMMONIA ☐ | METALS 6020 ☐ METALS 200.8 ☐ DISS. METALS ☐ | RCRA ☐ TX11 ☐ ___ ☐ | PH ☐ HEX CHROM ☐ ALKALINITY ☐ COD ☐ | CHLORIDE ☐ ANIONS ___ ☐ | TCLP-SVOC ☐ VOC ☐ PEST ☐ HERB ☐ | TCLP-METALS ☐ RCRA 8 ☐ TX-11 ☐ Pb ☐ | RCI ☐ FLASHPOINT ☐ DGAS ☐ | TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐ | see Attached

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	HCl	HNO_3	H_2SO_4 ☐ NaOH ☐	ICE	UNPRESERVED	FIELD NOTES
BMW-24	24	8/11/16	850 EST	W	P	4		3		X	1	X
BMW-23	25		920									
BMW-22	26		1000									
BMW-21	27		1030									

RELINQUISHED BY: (Signature) DATE/TIME RECEIVED BY: (Signature)
[signature] 17:20 8/11/16 5:20 [signature]
RELINQUISHED BY: (Signature) DATE/TIME RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature) DATE/TIME RECEIVED BY: (Signature)

☐ DHL DISPOSAL @ $5.00 each ☐ Return

TURN AROUND TIME
RUSH ☐ CALL FIRST
1 DAY ☐ CALL FIRST
2 DAY ☐
NORMAL ☒
OTHER ☐ ___

LABORATORY USE ONLY:
RECEIVING TEMP: 3.1 | 0.2 | 0.4 THERM #: 78
CUSTODY SEALS: ☐ BROKEN ☐ INTACT ☒ NOT USED
CARRIER: ☐ LONE STAR ☐ FEDEX ☐ UPS ☐ OTHER
☐ COURIER DELIVERY
☒ HAND DELIVERED

John Dupont

From:	Sara Taube [Sara.Taube@pbwllc.com]
Sent:	Wednesday, July 22, 2015 12:06 PM
To:	John Dupont
Subject:	CCR Appendix III and IV
Follow Up Flag:	Follow up
Flag Status:	Completed

Hi John,

Here are the Appendix III and Appendix IV constituents that we will need to have analyzed under the CCR Rule.

Appendix III
Boron
Calcium
Chloride
Fluoride
pH
sulfate
TDS

Appendix IV
Antimony
Arsenic
Barium
Beryllium
Cadmium
Chromium
Cobalt
Fluoride
Lead
Lithium
Mercury
Molybdenum
Selenium
Thallium
Radium 226 and 228

We are looking to have approximately 74 wells sampled 8 times over the course of the next two years. Please let me know if there is any more information you might need.

Cheers,

Sara

10/26/2015

DHL Analytical, Inc.

Sample Receipt Checklist

Client Name **Pastor, Behling & Wheeler** Date Received: **8/11/2016**

Work Order Number **1608133** Received by **JT**

Checklist completed by: Signature 8/12/2016 Date Reviewed by Initials 8/12/2016 Date

Carrier name Hand Delivered

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	3.1 °C 10.2.16
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH<2 acceptable upon receipt?	Yes ☑	No ☐	NA ☐ LOT # 8086
	Adjusted? NO		Checked by
Water - ph>9 (S) or ph>12 (CN) acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted?		Checked by

Any No response must be detailed in the comments section below.

Client contacted _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments: _____

Corrective Action _____

Samples were analyzed using the methods outlined in the following references:

Method SW6020A - Metals Analysis
Method SW7470A - Mercury Analysis
Method E300 - Anions Analysis
Method M4500-H+ B - pH of a Water Analysis
Method M2540C - TDS Analysis
Sub-contract - Radium-228 and Radium-226 analyses by methods E904/9320 and SM 7500 Ra B M. Analyzed at ESC Lab Sciences.

LOG IN

The samples were received and log-in performed on 8/11/16. A total of 27 samples were received. The samples arrived in good condition and were properly packaged.

METALS ANALYSIS

For Metals analysis (batch 76817) the matrix spike and matrix spike duplicate had low responses for the internal standard Bismuth. The associated analyte (Lead) was within control limits. No further corrective actions were taken.

For Metals analysis performed on 8/17/16, 8/19/16, 8/22/16, 8/23/16 and 8/24/16 (batches 76816, 76817, 76893 and 76895) the matrix spikes and matrix spike duplicate recoveries were out of control limits for a total of nine analytes. In addition, the matrix spikes and matrix spike duplicates (batches 76893 & 76895) had the RPD slightly above control limits for Boron or Selenium. These are flagged accordingly in the QC summary report. The samples selected for the matrix spikes and matrix spike duplicates were not from this work order. The LCSs were within control limits for these analytes. No further corrective actions were taken.

For Metals analysis performed on 8/22/16 and 8/24/16 (batches 76817 & 76893) the RPDs for the serial dilutions were slightly above control limits for Boron. These are flagged accordingly. The PDSs were within control limits for this analyte. No further corrective actions were taken.

For Metals analysis performed on 8/19/16 and 8/23/16 (batches 76817 & 76893) the PDS recoveries were below control limits for Molybdenum or Lithium. These are flagged accordingly. The serial dilutions were within control limits for these analytes. No further corrective actions were taken.

For Metals analysis performed on 8/18/16 and 8/22/16 LCVL3-160818 and LCVL2-160822 were out of control limits for Boron or Beryllium. These are flagged accordingly. The associated CCV3-160818

and CCV2-160822 were within control limits for these analytes. No further corrective actions were taken.

DHL Analytical, Inc.

Date: *14-Sep-16*

CLIENT: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake
Lab Order: 1608133

Work Order Sample Summary

Lab Smp ID	Client Sample ID	Tag Number	Date Collected	Date Recved
1608133-01	H-28		08/09/16 09:30 AM	8/11/2016
1608133-02	H-29		08/09/16 10:35 AM	8/11/2016
1608133-03	H-31		08/09/16 11:50 AM	8/11/2016
1608133-04	H-30		08/09/16 12:45 PM	8/11/2016
1608133-05	H-32		08/09/16 01:50 PM	8/11/2016
1608133-06	H-27		08/09/16 02:50 PM	8/11/2016
1608133-07	H-33		08/09/16 03:55 PM	8/11/2016
1608133-08	H-26		08/09/16 04:45 PM	8/11/2016
1608133-09	DUP-01		08/09/16 02:38 PM	8/11/2016
1608133-10	PDP-25		08/10/16 01:30 PM	8/11/2016
1608133-11	PDP-24		08/10/16 11:00 AM	8/11/2016
1608133-12	MW-17A		08/10/16 10:20 AM	8/11/2016
1608133-13	PDP-23		08/10/16 09:10 AM	8/11/2016
1608133-14	MW-19		08/10/16 03:00 PM	8/11/2016
1608133-15	MW-20A		08/10/16 02:10 PM	8/11/2016
1608133-16	PDP-22		08/10/16 09:20 AM	8/11/2016
1608133-17	PDP-26		08/10/16 10:30 AM	8/11/2016
1608133-18	MW-18A		08/10/16 11:30 AM	8/11/2016
1608133-19	EB-1		08/10/16 11:45 AM	8/11/2016
1608133-20	BMW-11AR		08/11/16 08:25 AM	8/11/2016
1608133-21	BMW-19		08/11/16 09:20 AM	8/11/2016
1608133-22	BMW-18		08/11/16 10:15 AM	8/11/2016
1608133-23	BMW-20		08/11/16 10:50 AM	8/11/2016
1608133-24	BMW-24		08/11/16 08:50 AM	8/11/2016
1608133-25	BMW-23		08/11/16 09:20 AM	8/11/2016
1608133-26	BMW-22		08/11/16 10:00 AM	8/11/2016
1608133-27	BMW-21		08/11/16 10:30 AM	8/11/2016

Lab Order: 1608133
Client: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1608133-01A	H-28	08/09/16 09:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:53 AM	76816
	H-28	08/09/16 09:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:53 AM	76816
	H-28	08/09/16 09:30 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	08/17/16 09:07 AM	76835
1608133-01D	H-28	08/09/16 09:30 AM	Aqueous	E300	Anion Preparation	08/15/16 10:13 AM	76808
	H-28	08/09/16 09:30 AM	Aqueous	E300	Anion Preparation	08/15/16 10:13 AM	76808
	H-28	08/09/16 09:30 AM	Aqueous	M4500-H+ B	pH Preparation	08/16/16 08:41 AM	76818
	H-28	08/09/16 09:30 AM	Aqueous	M2540C	TDS Preparation	08/15/16 03:45 PM	76803
1608133-02A	H-29	08/09/16 10:35 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:53 AM	76816
	H-29	08/09/16 10:35 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:53 AM	76816
	H-29	08/09/16 10:35 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:53 AM	76816
	H-29	08/09/16 10:35 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	08/17/16 09:07 AM	76835
1608133-02D	H-29	08/09/16 10:35 AM	Aqueous	E300	Anion Preparation	08/15/16 10:13 AM	76808
	H-29	08/09/16 10:35 AM	Aqueous	E300	Anion Preparation	08/15/16 10:13 AM	76808
	H-29	08/09/16 10:35 AM	Aqueous	M4500-H+ B	pH Preparation	08/16/16 08:41 AM	76818
	H-29	08/09/16 10:35 AM	Aqueous	M2540C	TDS Preparation	08/15/16 03:45 PM	76803
1608133-03A	H-31	08/09/16 11:50 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:58 AM	76817
	H-31	08/09/16 11:50 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:58 AM	76817
	H-31	08/09/16 11:50 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:58 AM	76817
	H-31	08/09/16 11:50 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	08/17/16 09:07 AM	76835
1608133-03D	H-31	08/09/16 11:50 AM	Aqueous	E300	Anion Preparation	08/15/16 10:13 AM	76808
	H-31	08/09/16 11:50 AM	Aqueous	E300	Anion Preparation	08/15/16 10:13 AM	76808
	H-31	08/09/16 11:50 AM	Aqueous	M4500-H+ B	pH Preparation	08/16/16 08:41 AM	76818
	H-31	08/09/16 11:50 AM	Aqueous	M2540C	TDS Preparation	08/15/16 03:45 PM	76803
1608133-04A	H-30	08/09/16 12:45 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:58 AM	76817
	H-30	08/09/16 12:45 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:58 AM	76817
	H-30	08/09/16 12:45 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:58 AM	76817
	H-30	08/09/16 12:45 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	08/17/16 09:07 AM	76835
1608133-04D	H-30	08/09/16 12:45 PM	Aqueous	E300	Anion Preparation	08/15/16 10:13 AM	76808

Lab Order: 1608133
Client: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1608133-04D	H-30	08/09/16 12:45 PM	Aqueous	E300	Anion Preparation	08/15/16 10:13 AM	76808
	H-30	08/09/16 12:45 PM	Aqueous	M4500-H+ B	pH Preparation	08/16/16 08:41 AM	76818
	H-30	08/09/16 12:45 PM	Aqueous	M2540C	TDS Preparation	08/15/16 03:45 PM	76803
1608133-05A	H-32	08/09/16 01:50 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:58 AM	76817
	H-32	08/09/16 01:50 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:58 AM	76817
	H-32	08/09/16 01:50 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:58 AM	76817
	H-32	08/09/16 01:50 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	08/17/16 09:07 AM	76835
1608133-05D	H-32	08/09/16 01:50 PM	Aqueous	E300	Anion Preparation	08/15/16 10:13 AM	76808
	H-32	08/09/16 01:50 PM	Aqueous	E300	Anion Preparation	08/15/16 10:13 AM	76808
	H-32	08/09/16 01:50 PM	Aqueous	M4500-H+ B	pH Preparation	08/16/16 08:41 AM	76818
	H-32	08/09/16 01:50 PM	Aqueous	M2540C	TDS Preparation	08/15/16 03:45 PM	76803
1608133-06A	H-27	08/09/16 02:50 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:58 AM	76817
	H-27	08/09/16 02:50 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:58 AM	76817
	H-27	08/09/16 02:50 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:58 AM	76817
	H-27	08/09/16 02:50 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	08/17/16 09:07 AM	76835
1608133-06D	H-27	08/09/16 02:50 PM	Aqueous	E300	Anion Preparation	08/15/16 10:13 AM	76808
	H-27	08/09/16 02:50 PM	Aqueous	E300	Anion Preparation	08/15/16 10:13 AM	76808
	H-27	08/09/16 02:50 PM	Aqueous	M4500-H+ B	pH Preparation	08/16/16 08:41 AM	76818
	H-27	08/09/16 02:50 PM	Aqueous	M2540C	TDS Preparation	08/16/16 02:51 PM	76831
1608133-07A	H-33	08/09/16 03:55 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:58 AM	76817
	H-33	08/09/16 03:55 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:58 AM	76817
	H-33	08/09/16 03:55 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:58 AM	76817
	H-33	08/09/16 03:55 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	08/17/16 09:07 AM	76835
1608133-07D	H-33	08/09/16 03:55 PM	Aqueous	E300	Anion Preparation	08/15/16 10:13 AM	76808
	H-33	08/09/16 03:55 PM	Aqueous	E300	Anion Preparation	08/15/16 10:13 AM	76808
	H-33	08/09/16 03:55 PM	Aqueous	M4500-H+ B	pH Preparation	08/16/16 08:41 AM	76818
	H-33	08/09/16 03:55 PM	Aqueous	M2540C	TDS Preparation	08/16/16 02:51 PM	76831
1608133-08A	H-26	08/09/16 04:45 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:58 AM	76817

Lab Order: 1608133
Client: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1608133-08A	H-26	08/09/16 04:45 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:58 AM	76817
	H-26	08/09/16 04:45 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:58 AM	76817
	H-26	08/09/16 04:45 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	08/17/16 09:07 AM	76835
1608133-08D	H-26	08/09/16 04:45 PM	Aqueous	E300	Anion Preparation	08/15/16 10:13 AM	76808
	H-26	08/09/16 04:45 PM	Aqueous	E300	Anion Preparation	08/15/16 10:13 AM	76808
	H-26	08/09/16 04:45 PM	Aqueous	M4500-H+ B	pH Preparation	08/16/16 08:41 AM	76818
	H-26	08/09/16 04:45 PM	Aqueous	M2540C	TDS Preparation	08/16/16 02:51 PM	76831
1608133-09A	DUP-01	08/09/16 02:38 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:58 AM	76817
	DUP-01	08/09/16 02:38 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:58 AM	76817
	DUP-01	08/09/16 02:38 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:58 AM	76817
	DUP-01	08/09/16 02:38 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	08/17/16 09:07 AM	76835
1608133-09D	DUP-01	08/09/16 02:38 PM	Aqueous	E300	Anion Preparation	08/15/16 10:13 AM	76808
	DUP-01	08/09/16 02:38 PM	Aqueous	E300	Anion Preparation	08/15/16 10:13 AM	76808
	DUP-01	08/09/16 02:38 PM	Aqueous	M4500-H+ B	pH Preparation	08/16/16 08:41 AM	76818
	DUP-01	08/09/16 02:38 PM	Aqueous	M2540C	TDS Preparation	08/16/16 02:51 PM	76831
1608133-10A	PDP-25	08/10/16 01:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:58 AM	76817
	PDP-25	08/10/16 01:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:58 AM	76817
	PDP-25	08/10/16 01:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:58 AM	76817
	PDP-25	08/10/16 01:30 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	08/17/16 09:07 AM	76835
1608133-10D	PDP-25	08/10/16 01:30 PM	Aqueous	E300	Anion Preparation	08/16/16 09:28 AM	76820
	PDP-25	08/10/16 01:30 PM	Aqueous	E300	Anion Preparation	08/16/16 09:28 AM	76820
	PDP-25	08/10/16 01:30 PM	Aqueous	M4500-H+ B	pH Preparation	08/16/16 08:41 AM	76818
	PDP-25	08/10/16 01:30 PM	Aqueous	M2540C	TDS Preparation	08/16/16 02:51 PM	76831
1608133-11A	PDP-24	08/10/16 11:00 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:58 AM	76817
	PDP-24	08/10/16 11:00 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:58 AM	76817
	PDP-24	08/10/16 11:00 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:58 AM	76817
	PDP-24	08/10/16 11:00 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:58 AM	76817
	PDP-24	08/10/16 11:00 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	08/23/16 08:44 AM	76918

Lab Order: 1608133
Client: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1608133-11D	PDP-24	08/10/16 11:00 AM	Aqueous	E300	Anion Preparation	08/16/16 09:28 AM	76820
	PDP-24	08/10/16 11:00 AM	Aqueous	E300	Anion Preparation	08/16/16 09:28 AM	76820
	PDP-24	08/10/16 11:00 AM	Aqueous	M4500-H+ B	pH Preparation	08/17/16 10:19 AM	76839
	PDP-24	08/10/16 11:00 AM	Aqueous	M2540C	TDS Preparation	08/16/16 02:51 PM	76831
1608133-12A	MW-17A	08/10/16 10:20 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:58 AM	76817
	MW-17A	08/10/16 10:20 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:58 AM	76817
	MW-17A	08/10/16 10:20 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	08/23/16 08:44 AM	76918
1608133-12D	MW-17A	08/10/16 10:20 AM	Aqueous	E300	Anion Preparation	08/16/16 09:28 AM	76820
	MW-17A	08/10/16 10:20 AM	Aqueous	M4500-H+ B	pH Preparation	08/17/16 10:19 AM	76839
	MW-17A	08/10/16 10:20 AM	Aqueous	M2540C	TDS Preparation	08/16/16 02:51 PM	76831
1608133-13A	PDP-23	08/10/16 09:10 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:58 AM	76817
	PDP-23	08/10/16 09:10 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:58 AM	76817
	PDP-23	08/10/16 09:10 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	08/23/16 08:44 AM	76918
1608133-13D	PDP-23	08/10/16 09:10 AM	Aqueous	E300	Anion Preparation	08/16/16 09:28 AM	76820
	PDP-23	08/10/16 09:10 AM	Aqueous	M4500-H+ B	pH Preparation	08/17/16 10:19 AM	76839
	PDP-23	08/10/16 09:10 AM	Aqueous	M2540C	TDS Preparation	08/16/16 02:51 PM	76831
1608133-14A	MW-19	08/10/16 03:00 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:58 AM	76817
	MW-19	08/10/16 03:00 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:58 AM	76817
	MW-19	08/10/16 03:00 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	08/23/16 08:44 AM	76918
1608133-14D	MW-19	08/10/16 03:00 PM	Aqueous	E300	Anion Preparation	08/16/16 09:28 AM	76820
	MW-19	08/10/16 03:00 PM	Aqueous	M4500-H+ B	pH Preparation	08/17/16 10:19 AM	76839
	MW-19	08/10/16 03:00 PM	Aqueous	M2540C	TDS Preparation	08/16/16 02:51 PM	76831
1608133-15A	MW-20A	08/10/16 02:10 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:58 AM	76817
	MW-20A	08/10/16 02:10 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:58 AM	76817
	MW-20A	08/10/16 02:10 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:58 AM	76817
	MW-20A	08/10/16 02:10 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	08/23/16 08:44 AM	76918
1608133-15D	MW-20A	08/10/16 02:10 PM	Aqueous	E300	Anion Preparation	08/16/16 09:28 AM	76820
	MW-20A	08/10/16 02:10 PM	Aqueous	M4500-H+ B	pH Preparation	08/17/16 10:19 AM	76839

Lab Order: 1608133
Client: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1608133-15D	MW-20A	08/10/16 02:10 PM	Aqueous	M2540C	TDS Preparation	08/16/16 02:51 PM	76831
1608133-16A	PDP-22	08/10/16 09:20 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/22/16 08:54 AM	76893
	PDP-22	08/10/16 09:20 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/22/16 08:54 AM	76893
	PDP-22	08/10/16 09:20 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/22/16 08:54 AM	76893
	PDP-22	08/10/16 09:20 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	08/23/16 08:44 AM	76918
1608133-16D	PDP-22	08/10/16 09:20 AM	Aqueous	E300	Anion Preparation	08/16/16 09:28 AM	76820
	PDP-22	08/10/16 09:20 AM	Aqueous	E300	Anion Preparation	08/16/16 09:28 AM	76820
	PDP-22	08/10/16 09:20 AM	Aqueous	M4500-H+ B	pH Preparation	08/17/16 10:19 AM	76839
	PDP-22	08/10/16 09:20 AM	Aqueous	M2540C	TDS Preparation	08/16/16 02:51 PM	76831
1608133-17A	PDP-26	08/10/16 10:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/22/16 08:54 AM	76893
	PDP-26	08/10/16 10:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/22/16 08:54 AM	76893
	PDP-26	08/10/16 10:30 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	08/23/16 08:44 AM	76918
1608133-17D	PDP-26	08/10/16 10:30 AM	Aqueous	E300	Anion Preparation	08/16/16 09:28 AM	76820
	PDP-26	08/10/16 10:30 AM	Aqueous	M4500-H+ B	pH Preparation	08/17/16 10:19 AM	76839
	PDP-26	08/10/16 10:30 AM	Aqueous	M2540C	TDS Preparation	08/16/16 02:51 PM	76831
1608133-18A	MW-18A	08/10/16 11:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/22/16 08:54 AM	76893
	MW-18A	08/10/16 11:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/22/16 08:54 AM	76893
	MW-18A	08/10/16 11:30 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	08/23/16 08:44 AM	76918
	MW-18A	08/10/16 11:30 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	08/23/16 08:44 AM	76918
1608133-18D	MW-18A	08/10/16 11:30 AM	Aqueous	E300	Anion Preparation	08/16/16 09:28 AM	76820
	MW-18A	08/10/16 11:30 AM	Aqueous	M4500-H+ B	pH Preparation	08/17/16 10:19 AM	76839
	MW-18A	08/10/16 11:30 AM	Aqueous	M2540C	TDS Preparation	08/16/16 02:51 PM	76831
1608133-19A	EB-1	08/10/16 11:45 AM	Equip Blank	SW3005A	Aq Prep Metals : ICP-MS	08/22/16 08:54 AM	76893
	EB-1	08/10/16 11:45 AM	Equip Blank	SW3005A	Aq Prep Metals : ICP-MS	08/22/16 08:54 AM	76893
	EB-1	08/10/16 11:45 AM	Equip Blank	SW7470A	Mercury Aq Prep, Total	08/23/16 08:44 AM	76918
1608133-19D	EB-1	08/10/16 11:45 AM	Equip Blank	E300	Anion Preparation	08/17/16 09:55 AM	76838
	EB-1	08/10/16 11:45 AM	Equip Blank	M4500-H+ B	pH Preparation	08/17/16 10:19 AM	76839
	EB-1	08/10/16 11:45 AM	Equip Blank	M2540C	TDS Preparation	08/16/16 02:51 PM	76831

Lab Order: 1608133
Client: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1608133-20A	BMW-11AR	08/11/16 08:25 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/22/16 08:54 AM	76893
	BMW-11AR	08/11/16 08:25 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/22/16 08:54 AM	76893
	BMW-11AR	08/11/16 08:25 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/22/16 08:54 AM	76893
	BMW-11AR	08/11/16 08:25 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	08/23/16 08:44 AM	76918
1608133-20D	BMW-11AR	08/11/16 08:25 AM	Aqueous	E300	Anion Preparation	08/17/16 09:55 AM	76838
	BMW-11AR	08/11/16 08:25 AM	Aqueous	E300	Anion Preparation	08/17/16 09:55 AM	76838
	BMW-11AR	08/11/16 08:25 AM	Aqueous	M4500-H+ B	pH Preparation	08/17/16 10:19 AM	76839
	BMW-11AR	08/11/16 08:25 AM	Aqueous	M2540C	TDS Preparation	08/16/16 02:51 PM	76831
1608133-21A	BMW-19	08/11/16 09:20 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/22/16 08:54 AM	76893
	BMW-19	08/11/16 09:20 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/22/16 08:54 AM	76893
	BMW-19	08/11/16 09:20 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/22/16 08:54 AM	76893
	BMW-19	08/11/16 09:20 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/22/16 08:54 AM	76893
	BMW-19	08/11/16 09:20 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	08/23/16 08:44 AM	76918
1608133-21D	BMW-19	08/11/16 09:20 AM	Aqueous	E300	Anion Preparation	08/17/16 09:55 AM	76838
	BMW-19	08/11/16 09:20 AM	Aqueous	E300	Anion Preparation	08/17/16 09:55 AM	76838
	BMW-19	08/11/16 09:20 AM	Aqueous	M4500-H+ B	pH Preparation	08/17/16 10:19 AM	76839
	BMW-19	08/11/16 09:20 AM	Aqueous	M2540C	TDS Preparation	08/16/16 02:51 PM	76831
1608133-22A	BMW-18	08/11/16 10:15 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/22/16 08:54 AM	76893
	BMW-18	08/11/16 10:15 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/22/16 08:54 AM	76893
	BMW-18	08/11/16 10:15 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	08/23/16 08:44 AM	76918
1608133-22D	BMW-18	08/11/16 10:15 AM	Aqueous	E300	Anion Preparation	08/17/16 09:55 AM	76838
	BMW-18	08/11/16 10:15 AM	Aqueous	M4500-H+ B	pH Preparation	08/17/16 10:19 AM	76839
	BMW-18	08/11/16 10:15 AM	Aqueous	M2540C	TDS Preparation	08/16/16 02:51 PM	76831
1608133-23A	BMW-20	08/11/16 10:50 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/22/16 08:57 AM	76895
	BMW-20	08/11/16 10:50 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/22/16 08:57 AM	76895
	BMW-20	08/11/16 10:50 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/22/16 08:57 AM	76895
	BMW-20	08/11/16 10:50 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/22/16 08:57 AM	76895
	BMW-20	08/11/16 10:50 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	08/23/16 08:44 AM	76918

Lab Order: 1608133
Client: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1608133-23D	BMW-20	08/11/16 10:50 AM	Aqueous	E300	Anion Preparation	08/17/16 09:55 AM	76838
	BMW-20	08/11/16 10:50 AM	Aqueous	E300	Anion Preparation	08/17/16 09:55 AM	76838
	BMW-20	08/11/16 10:50 AM	Aqueous	M4500-H+ B	pH Preparation	08/17/16 10:19 AM	76839
	BMW-20	08/11/16 10:50 AM	Aqueous	M2540C	TDS Preparation	08/16/16 02:51 PM	76831
1608133-24A	BMW-24	08/11/16 08:50 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/22/16 08:57 AM	76895
	BMW-24	08/11/16 08:50 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/22/16 08:57 AM	76895
	BMW-24	08/11/16 08:50 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/22/16 08:57 AM	76895
	BMW-24	08/11/16 08:50 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/22/16 08:57 AM	76895
	BMW-24	08/11/16 08:50 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	08/23/16 08:44 AM	76918
1608133-24D	BMW-24	08/11/16 08:50 AM	Aqueous	E300	Anion Preparation	08/17/16 09:55 AM	76838
	BMW-24	08/11/16 08:50 AM	Aqueous	E300	Anion Preparation	08/17/16 09:55 AM	76838
	BMW-24	08/11/16 08:50 AM	Aqueous	M4500-H+ B	pH Preparation	08/17/16 10:19 AM	76839
	BMW-24	08/11/16 08:50 AM	Aqueous	M2540C	TDS Preparation	08/16/16 02:51 PM	76831
1608133-25A	BMW-23	08/11/16 09:20 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/22/16 08:57 AM	76895
	BMW-23	08/11/16 09:20 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/22/16 08:57 AM	76895
	BMW-23	08/11/16 09:20 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/22/16 08:57 AM	76895
	BMW-23	08/11/16 09:20 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	08/23/16 08:44 AM	76918
1608133-25D	BMW-23	08/11/16 09:20 AM	Aqueous	E300	Anion Preparation	08/17/16 09:55 AM	76838
	BMW-23	08/11/16 09:20 AM	Aqueous	E300	Anion Preparation	08/17/16 09:55 AM	76838
	BMW-23	08/11/16 09:20 AM	Aqueous	M4500-H+ B	pH Preparation	08/17/16 10:19 AM	76839
	BMW-23	08/11/16 09:20 AM	Aqueous	M2540C	TDS Preparation	08/18/16 08:44 AM	76858
1608133-26A	BMW-22	08/11/16 10:00 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/22/16 08:57 AM	76895
	BMW-22	08/11/16 10:00 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/22/16 08:57 AM	76895
	BMW-22	08/11/16 10:00 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/22/16 08:57 AM	76895
	BMW-22	08/11/16 10:00 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	08/23/16 08:44 AM	76918
1608133-26D	BMW-22	08/11/16 10:00 AM	Aqueous	E300	Anion Preparation	08/17/16 09:55 AM	76838
	BMW-22	08/11/16 10:00 AM	Aqueous	E300	Anion Preparation	08/17/16 09:55 AM	76838
	BMW-22	08/11/16 10:00 AM	Aqueous	M4500-H+ B	pH Preparation	08/17/16 10:19 AM	76839

Lab Order: 1608133
Client: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1608133-26D	BMW-22	08/11/16 10:00 AM	Aqueous	M2540C	TDS Preparation	08/18/16 08:44 AM	76858
1608133-27A	BMW-21	08/11/16 10:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/22/16 08:57 AM	76895
	BMW-21	08/11/16 10:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/22/16 08:57 AM	76895
	BMW-21	08/11/16 10:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/22/16 08:57 AM	76895
	BMW-21	08/11/16 10:30 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	08/23/16 08:44 AM	76918
1608133-27D	BMW-21	08/11/16 10:30 AM	Aqueous	E300	Anion Preparation	08/17/16 09:55 AM	76838
	BMW-21	08/11/16 10:30 AM	Aqueous	E300	Anion Preparation	08/17/16 09:55 AM	76838
	BMW-21	08/11/16 10:30 AM	Aqueous	M4500-H+ B	pH Preparation	08/17/16 10:19 AM	76839
	BMW-21	08/11/16 10:30 AM	Aqueous	M2540C	TDS Preparation	08/18/16 08:44 AM	76858

Lab Order: 1608133
Client: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1608133-01A	H-28	Aqueous	SW7470A	Mercury Total: Aqueous	76835	1	08/18/16 10:36 AM	CETAC2_HG_160818B
	H-28	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76816	1	08/17/16 02:05 PM	ICP-MS4_160817A
	H-28	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76816	50	08/18/16 03:36 PM	ICP-MS4_160818B
1608133-01D	H-28	Aqueous	E300	Anions by IC method - Water	76808	1	08/15/16 12:24 PM	IC4_160815A
	H-28	Aqueous	E300	Anions by IC method - Water	76808	10	08/15/16 03:58 PM	IC4_160815A
	H-28	Aqueous	M4500-H+ B	pH	76818	1	08/16/16 10:17 AM	TITRATOR_160816A
	H-28	Aqueous	M2540C	Total Dissolved Solids	76803	1	08/16/16 08:42 AM	WC_160815A
1608133-02A	H-29	Aqueous	SW7470A	Mercury Total: Aqueous	76835	1	08/18/16 10:43 AM	CETAC2_HG_160818B
	H-29	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76816	1	08/17/16 02:07 PM	ICP-MS4_160817A
	H-29	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76816	10	08/18/16 03:38 PM	ICP-MS4_160818B
	H-29	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76816	1	08/18/16 03:40 PM	ICP-MS4_160818B
1608133-02D	H-29	Aqueous	E300	Anions by IC method - Water	76808	1	08/15/16 12:39 PM	IC4_160815A
	H-29	Aqueous	E300	Anions by IC method - Water	76808	10	08/15/16 04:28 PM	IC4_160815A
	H-29	Aqueous	M4500-H+ B	pH	76818	1	08/16/16 10:20 AM	TITRATOR_160816A
	H-29	Aqueous	M2540C	Total Dissolved Solids	76803	1	08/16/16 08:42 AM	WC_160815A
1608133-03A	H-31	Aqueous	SW7470A	Mercury Total: Aqueous	76835	1	08/18/16 10:45 AM	CETAC2_HG_160818B
	H-31	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76817	1	08/19/16 05:50 PM	ICP-MS4_160819A
	H-31	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76817	100	08/22/16 02:05 PM	ICP-MS4_160822B
	H-31	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76817	1	08/22/16 03:22 PM	ICP-MS4_160822B
1608133-03D	H-31	Aqueous	E300	Anions by IC method - Water	76808	1	08/15/16 12:54 PM	IC4_160815A
	H-31	Aqueous	E300	Anions by IC method - Water	76808	100	08/15/16 04:43 PM	IC4_160815A
	H-31	Aqueous	M4500-H+ B	pH	76818	1	08/16/16 10:23 AM	TITRATOR_160816A
	H-31	Aqueous	M2540C	Total Dissolved Solids	76803	1	08/16/16 08:42 AM	WC_160815A
1608133-04A	H-30	Aqueous	SW7470A	Mercury Total: Aqueous	76835	1	08/18/16 10:48 AM	CETAC2_HG_160818B
	H-30	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76817	1	08/19/16 05:52 PM	ICP-MS4_160819A
	H-30	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76817	1	08/22/16 03:24 PM	ICP-MS4_160822B

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Client: Pastor, Behling & Wheeler
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ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1608133-04A	H-30	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76817	10	08/22/16 02:07 PM	ICP-MS4_160822B
1608133-04D	H-30	Aqueous	E300	Anions by IC method - Water	76808	1	08/15/16 01:09 PM	IC4_160815A
	H-30	Aqueous	E300	Anions by IC method - Water	76808	10	08/15/16 04:58 PM	IC4_160815A
	H-30	Aqueous	M4500-H+ B	pH	76818	1	08/16/16 10:25 AM	TITRATOR_160816A
	H-30	Aqueous	M2540C	Total Dissolved Solids	76803	1	08/16/16 08:42 AM	WC_160815A
1608133-05A	H-32	Aqueous	SW7470A	Mercury Total: Aqueous	76835	1	08/18/16 10:50 AM	CETAC2_HG_160818B
	H-32	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76817	1	08/19/16 05:54 PM	ICP-MS4_160819A
	H-32	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76817	10	08/22/16 02:09 PM	ICP-MS4_160822B
	H-32	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76817	1	08/22/16 03:26 PM	ICP-MS4_160822B
1608133-05D	H-32	Aqueous	E300	Anions by IC method - Water	76808	1	08/15/16 01:24 PM	IC4_160815A
	H-32	Aqueous	E300	Anions by IC method - Water	76808	10	08/15/16 05:28 PM	IC4_160815A
	H-32	Aqueous	M4500-H+ B	pH	76818	1	08/16/16 10:27 AM	TITRATOR_160816A
	H-32	Aqueous	M2540C	Total Dissolved Solids	76803	1	08/16/16 08:42 AM	WC_160815A
1608133-06A	H-27	Aqueous	SW7470A	Mercury Total: Aqueous	76835	1	08/18/16 10:52 AM	CETAC2_HG_160818B
	H-27	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76817	1	08/19/16 06:10 PM	ICP-MS4_160819A
	H-27	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76817	10	08/22/16 02:11 PM	ICP-MS4_160822B
	H-27	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76817	1	08/22/16 02:59 PM	ICP-MS4_160822B
1608133-06D	H-27	Aqueous	E300	Anions by IC method - Water	76808	1	08/15/16 01:39 PM	IC4_160815A
	H-27	Aqueous	E300	Anions by IC method - Water	76808	10	08/15/16 05:43 PM	IC4_160815A
	H-27	Aqueous	M4500-H+ B	pH	76818	1	08/16/16 10:29 AM	TITRATOR_160816A
	H-27	Aqueous	M2540C	Total Dissolved Solids	76831	1	08/17/16 08:42 AM	WC_160816D
1608133-07A	H-33	Aqueous	SW7470A	Mercury Total: Aqueous	76835	1	08/18/16 10:54 AM	CETAC2_HG_160818B
	H-33	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76817	1	08/22/16 02:13 PM	ICP-MS4_160822B
	H-33	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76817	1	08/24/16 05:45 PM	ICP-MS3_160824B
	H-33	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76817	1	08/19/16 06:12 PM	ICP-MS4_160819A
1608133-07D	H-33	Aqueous	E300	Anions by IC method - Water	76808	10	08/15/16 05:58 PM	IC4_160815A

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ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1608133-07D	H-33	Aqueous	E300	Anions by IC method - Water	76808	1	08/15/16 01:54 PM	IC4_160815A
	H-33	Aqueous	M4500-H+ B	pH	76818	1	08/16/16 10:32 AM	TITRATOR_160816A
	H-33	Aqueous	M2540C	Total Dissolved Solids	76831	1	08/17/16 08:42 AM	WC_160816D
1608133-08A	H-26	Aqueous	SW7470A	Mercury Total: Aqueous	76835	1	08/18/16 10:57 AM	CETAC2_HG_160818B
	H-26	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76817	1	08/24/16 05:51 PM	ICP-MS3_160824B
	H-26	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76817	1	08/19/16 06:14 PM	ICP-MS4_160819A
	H-26	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76817	1	08/22/16 02:15 PM	ICP-MS4_160822B
1608133-08D	H-26	Aqueous	E300	Anions by IC method - Water	76808	1	08/15/16 02:09 PM	IC4_160815A
	H-26	Aqueous	E300	Anions by IC method - Water	76808	10	08/15/16 07:28 PM	IC4_160815A
	H-26	Aqueous	M4500-H+ B	pH	76818	1	08/16/16 10:34 AM	TITRATOR_160816A
	H-26	Aqueous	M2540C	Total Dissolved Solids	76831	1	08/17/16 08:42 AM	WC_160816D
1608133-09A	DUP-01	Aqueous	SW7470A	Mercury Total: Aqueous	76835	1	08/18/16 10:59 AM	CETAC2_HG_160818B
	DUP-01	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76817	10	08/22/16 02:17 PM	ICP-MS4_160822B
	DUP-01	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76817	1	08/22/16 03:28 PM	ICP-MS4_160822B
	DUP-01	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76817	1	08/19/16 06:17 PM	ICP-MS4_160819A
1608133-09D	DUP-01	Aqueous	E300	Anions by IC method - Water	76808	1	08/15/16 02:24 PM	IC4_160815A
	DUP-01	Aqueous	E300	Anions by IC method - Water	76808	10	08/15/16 07:43 PM	IC4_160815A
	DUP-01	Aqueous	M4500-H+ B	pH	76818	1	08/16/16 10:36 AM	TITRATOR_160816A
	DUP-01	Aqueous	M2540C	Total Dissolved Solids	76831	1	08/17/16 08:42 AM	WC_160816D
1608133-10A	PDP-25	Aqueous	SW7470A	Mercury Total: Aqueous	76835	1	08/18/16 11:01 AM	CETAC2_HG_160818B
	PDP-25	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76817	1	08/19/16 06:19 PM	ICP-MS4_160819A
	PDP-25	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76817	10	08/22/16 02:19 PM	ICP-MS4_160822B
	PDP-25	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76817	1	08/22/16 03:01 PM	ICP-MS4_160822B
1608133-10D	PDP-25	Aqueous	E300	Anions by IC method - Water	76820	1	08/16/16 11:27 AM	IC4_160816A
	PDP-25	Aqueous	E300	Anions by IC method - Water	76820	10	08/16/16 02:52 PM	IC4_160816A
	PDP-25	Aqueous	M4500-H+ B	pH	76818	1	08/16/16 10:53 AM	TITRATOR_160816A

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Client: Pastor, Behling & Wheeler
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ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1608133-10D	PDP-25	Aqueous	M2540C	Total Dissolved Solids	76831	1	08/17/16 08:42 AM	WC_160816D
1608133-11A	PDP-24	Aqueous	SW7470A	Mercury Total: Aqueous	76918	1	08/24/16 10:23 AM	CETAC2_HG_160824B
	PDP-24	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76817	1	08/24/16 05:57 PM	ICP-MS3_160824B
	PDP-24	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76817	1	08/19/16 06:21 PM	ICP-MS4_160819A
	PDP-24	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76817	10	08/22/16 02:21 PM	ICP-MS4_160822B
	PDP-24	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76817	1	08/22/16 03:30 PM	ICP-MS4_160822B
1608133-11D	PDP-24	Aqueous	E300	Anions by IC method - Water	76820	1	08/16/16 11:42 AM	IC4_160816A
	PDP-24	Aqueous	E300	Anions by IC method - Water	76820	10	08/16/16 03:37 PM	IC4_160816A
	PDP-24	Aqueous	M4500-H+ B	pH	76839	1	08/17/16 11:15 AM	TITRATOR_160817B
	PDP-24	Aqueous	M2540C	Total Dissolved Solids	76831	1	08/17/16 08:42 AM	WC_160816D
1608133-12A	MW-17A	Aqueous	SW7470A	Mercury Total: Aqueous	76918	1	08/24/16 10:26 AM	CETAC2_HG_160824B
	MW-17A	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76817	1	08/19/16 06:23 PM	ICP-MS4_160819A
	MW-17A	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76817	1	08/22/16 02:51 PM	ICP-MS4_160822B
1608133-12D	MW-17A	Aqueous	E300	Anions by IC method - Water	76820	1	08/16/16 11:57 AM	IC4_160816A
	MW-17A	Aqueous	M4500-H+ B	pH	76839	1	08/17/16 11:19 AM	TITRATOR_160817B
	MW-17A	Aqueous	M2540C	Total Dissolved Solids	76831	1	08/17/16 08:42 AM	WC_160816D
1608133-13A	PDP-23	Aqueous	SW7470A	Mercury Total: Aqueous	76918	1	08/24/16 10:28 AM	CETAC2_HG_160824B
	PDP-23	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76817	1	08/19/16 06:25 PM	ICP-MS4_160819A
	PDP-23	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76817	1	08/22/16 02:53 PM	ICP-MS4_160822B
1608133-13D	PDP-23	Aqueous	E300	Anions by IC method - Water	76820	1	08/16/16 12:12 PM	IC4_160816A
	PDP-23	Aqueous	M4500-H+ B	pH	76839	1	08/17/16 11:21 AM	TITRATOR_160817B
	PDP-23	Aqueous	M2540C	Total Dissolved Solids	76831	1	08/17/16 08:42 AM	WC_160816D
1608133-14A	MW-19	Aqueous	SW7470A	Mercury Total: Aqueous	76918	1	08/24/16 10:30 AM	CETAC2_HG_160824B
	MW-19	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76817	1	08/22/16 02:55 PM	ICP-MS4_160822B
	MW-19	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76817	1	08/19/16 06:27 PM	ICP-MS4_160819A
1608133-14D	MW-19	Aqueous	E300	Anions by IC method - Water	76820	1	08/16/16 12:27 PM	IC4_160816A

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ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1608133-14D	MW-19	Aqueous	M4500-H+ B	pH	76839	1	08/17/16 11:24 AM	TITRATOR_160817B
	MW-19	Aqueous	M2540C	Total Dissolved Solids	76831	1	08/17/16 08:42 AM	WC_160816D
1608133-15A	MW-20A	Aqueous	SW7470A	Mercury Total: Aqueous	76918	1	08/24/16 10:32 AM	CETAC2_HG_160824B
	MW-20A	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76817	1	08/19/16 06:29 PM	ICP-MS4_160819A
	MW-20A	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76817	1	08/22/16 02:57 PM	ICP-MS4_160822B
	MW-20A	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76817	1	08/26/16 12:27 PM	ICP-MS4_160826B
1608133-15D	MW-20A	Aqueous	E300	Anions by IC method - Water	76820	1	08/16/16 12:42 PM	IC4_160816A
	MW-20A	Aqueous	M4500-H+ B	pH	76839	1	08/17/16 11:26 AM	TITRATOR_160817B
	MW-20A	Aqueous	M2540C	Total Dissolved Solids	76831	1	08/17/16 08:42 AM	WC_160816D
1608133-16A	PDP-22	Aqueous	SW7470A	Mercury Total: Aqueous	76918	1	08/24/16 10:35 AM	CETAC2_HG_160824B
	PDP-22	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76893	1	08/24/16 04:31 PM	ICP-MS4_160824B
	PDP-22	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76893	1	08/23/16 12:40 PM	ICP-MS4_160823B
	PDP-22	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76893	10	08/24/16 03:46 PM	ICP-MS4_160824B
1608133-16D	PDP-22	Aqueous	E300	Anions by IC method - Water	76820	1	08/16/16 12:57 PM	IC4_160816A
	PDP-22	Aqueous	E300	Anions by IC method - Water	76820	10	08/16/16 03:52 PM	IC4_160816A
	PDP-22	Aqueous	M4500-H+ B	pH	76839	1	08/17/16 11:28 AM	TITRATOR_160817B
	PDP-22	Aqueous	M2540C	Total Dissolved Solids	76831	1	08/17/16 08:42 AM	WC_160816D
1608133-17A	PDP-26	Aqueous	SW7470A	Mercury Total: Aqueous	76918	1	08/24/16 10:46 AM	CETAC2_HG_160824B
	PDP-26	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76893	1	08/23/16 01:14 PM	ICP-MS4_160823B
	PDP-26	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76893	1	08/24/16 04:33 PM	ICP-MS4_160824B
1608133-17D	PDP-26	Aqueous	E300	Anions by IC method - Water	76820	1	08/16/16 01:12 PM	IC4_160816A
	PDP-26	Aqueous	M4500-H+ B	pH	76839	1	08/17/16 11:31 AM	TITRATOR_160817B
	PDP-26	Aqueous	M2540C	Total Dissolved Solids	76831	1	08/17/16 08:42 AM	WC_160816D
1608133-18A	MW-18A	Aqueous	SW7470A	Mercury Total: Aqueous	76918	20	08/24/16 11:31 AM	CETAC2_HG_160824B
	MW-18A	Aqueous	SW7470A	Mercury Total: Aqueous	76918	1	08/24/16 10:48 AM	CETAC2_HG_160824B
	MW-18A	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76893	1	08/23/16 01:16 PM	ICP-MS4_160823B

Lab Order: 1608133
Client: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1608133-18A	MW-18A	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76893	1	08/24/16 05:29 PM	ICP-MS4_160824B
1608133-18D	MW-18A	Aqueous	E300	Anions by IC method - Water	76820	1	08/16/16 01:27 PM	IC4_160816A
	MW-18A	Aqueous	M4500-H+ B	pH	76839	1	08/17/16 11:34 AM	TITRATOR_160817B
	MW-18A	Aqueous	M2540C	Total Dissolved Solids	76831	1	08/17/16 08:42 AM	WC_160816D
1608133-19A	EB-1	Equip Blank	SW7470A	Mercury Total: Aqueous	76918	1	08/24/16 10:53 AM	CETAC2_HG_160824B
	EB-1	Equip Blank	SW6020A	Trace Metals: ICP-MS - Water	76893	1	08/23/16 01:18 PM	ICP-MS4_160823B
	EB-1	Equip Blank	SW6020A	Trace Metals: ICP-MS - Water	76893	1	08/24/16 05:31 PM	ICP-MS4_160824B
1608133-19D	EB-1	Equip Blank	E300	Anions by IC method - Water	76838	1	08/17/16 11:24 AM	IC4_160817A
	EB-1	Equip Blank	M4500-H+ B	pH	76839	1	08/17/16 11:36 AM	TITRATOR_160817B
	EB-1	Equip Blank	M2540C	Total Dissolved Solids	76831	1	08/17/16 08:42 AM	WC_160816D
1608133-20A	BMW-11AR	Aqueous	SW7470A	Mercury Total: Aqueous	76918	1	08/24/16 10:56 AM	CETAC2_HG_160824B
	BMW-11AR	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76893	10	08/24/16 05:33 PM	ICP-MS4_160824B
	BMW-11AR	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76893	1	08/24/16 05:35 PM	ICP-MS4_160824B
	BMW-11AR	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76893	1	08/23/16 01:20 PM	ICP-MS4_160823B
1608133-20D	BMW-11AR	Aqueous	E300	Anions by IC method - Water	76838	1	08/17/16 11:39 AM	IC4_160817A
	BMW-11AR	Aqueous	E300	Anions by IC method - Water	76838	10	08/17/16 02:41 PM	IC4_160817A
	BMW-11AR	Aqueous	M4500-H+ B	pH	76839	1	08/17/16 11:40 AM	TITRATOR_160817B
	BMW-11AR	Aqueous	M2540C	Total Dissolved Solids	76831	1	08/17/16 08:42 AM	WC_160816D
1608133-21A	BMW-19	Aqueous	SW7470A	Mercury Total: Aqueous	76918	1	08/24/16 11:04 AM	CETAC2_HG_160824B
	BMW-19	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76893	50	08/25/16 02:49 PM	ICP-MS4_160825A
	BMW-19	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76893	1	08/23/16 01:22 PM	ICP-MS4_160823B
	BMW-19	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76893	10	08/24/16 05:37 PM	ICP-MS4_160824B
	BMW-19	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76893	1	08/24/16 05:39 PM	ICP-MS4_160824B
1608133-21D	BMW-19	Aqueous	E300	Anions by IC method - Water	76838	100	08/17/16 02:56 PM	IC4_160817A
	BMW-19	Aqueous	E300	Anions by IC method - Water	76838	1	08/17/16 11:54 AM	IC4_160817A
	BMW-19	Aqueous	M4500-H+ B	pH	76839	1	08/17/16 11:42 AM	TITRATOR_160817B

Lab Order: 1608133
Client: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1608133-21D	BMW-19	Aqueous	M2540C	Total Dissolved Solids	76831	1	08/17/16 08:42 AM	WC_160816D
1608133-22A	BMW-18	Aqueous	SW7470A	Mercury Total: Aqueous	76918	1	08/24/16 11:06 AM	CETAC2_HG_160824B
	BMW-18	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76893	1	08/23/16 01:24 PM	ICP-MS4_160823B
	BMW-18	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76893	1	08/24/16 05:41 PM	ICP-MS4_160824B
1608133-22D	BMW-18	Aqueous	E300	Anions by IC method - Water	76838	1	08/17/16 12:09 PM	IC4_160817A
	BMW-18	Aqueous	M4500-H+ B	pH	76839	1	08/17/16 11:46 AM	TITRATOR_160817B
	BMW-18	Aqueous	M2540C	Total Dissolved Solids	76831	1	08/17/16 08:42 AM	WC_160816D
1608133-23A	BMW-20	Aqueous	SW7470A	Mercury Total: Aqueous	76918	1	08/24/16 11:08 AM	CETAC2_HG_160824B
	BMW-20	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76895	10	08/24/16 07:14 PM	ICP-MS4_160824B
	BMW-20	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76895	1	08/24/16 08:48 PM	ICP-MS4_160824B
	BMW-20	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76895	1	08/23/16 02:11 PM	ICP-MS4_160823B
	BMW-20	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76895	1	08/25/16 02:51 PM	ICP-MS4_160825A
1608133-23D	BMW-20	Aqueous	E300	Anions by IC method - Water	76838	1	08/17/16 12:24 PM	IC4_160817A
	BMW-20	Aqueous	E300	Anions by IC method - Water	76838	10	08/17/16 03:11 PM	IC4_160817A
	BMW-20	Aqueous	M4500-H+ B	pH	76839	1	08/17/16 11:48 AM	TITRATOR_160817B
	BMW-20	Aqueous	M2540C	Total Dissolved Solids	76831	1	08/17/16 08:42 AM	WC_160816D
1608133-24A	BMW-24	Aqueous	SW7470A	Mercury Total: Aqueous	76918	1	08/24/16 11:10 AM	CETAC2_HG_160824B
	BMW-24	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76895	1	08/23/16 02:13 PM	ICP-MS4_160823B
	BMW-24	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76895	10	08/24/16 07:16 PM	ICP-MS4_160824B
	BMW-24	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76895	1	08/24/16 08:50 PM	ICP-MS4_160824B
	BMW-24	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76895	1	08/25/16 02:53 PM	ICP-MS4_160825A
1608133-24D	BMW-24	Aqueous	E300	Anions by IC method - Water	76838	100	08/17/16 03:26 PM	IC4_160817A
	BMW-24	Aqueous	E300	Anions by IC method - Water	76838	1	08/17/16 12:39 PM	IC4_160817A
	BMW-24	Aqueous	M4500-H+ B	pH	76839	1	08/17/16 11:50 AM	TITRATOR_160817B
	BMW-24	Aqueous	M2540C	Total Dissolved Solids	76831	1	08/17/16 08:42 AM	WC_160816D
1608133-25A	BMW-23	Aqueous	SW7470A	Mercury Total: Aqueous	76918	1	08/24/16 11:13 AM	CETAC2_HG_160824B

Lab Order: 1608133
Client: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1608133-25A	BMW-23	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76895	1	08/23/16 02:15 PM	ICP-MS4_160823B
	BMW-23	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76895	10	08/24/16 07:18 PM	ICP-MS4_160824B
	BMW-23	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76895	1	08/25/16 02:55 PM	ICP-MS4_160825A
1608133-25D	BMW-23	Aqueous	E300	Anions by IC method - Water	76838	1	08/17/16 12:54 PM	IC4_160817A
	BMW-23	Aqueous	E300	Anions by IC method - Water	76838	10	08/17/16 03:41 PM	IC4_160817A
	BMW-23	Aqueous	M4500-H+ B	pH	76839	1	08/17/16 11:52 AM	TITRATOR_160817B
	BMW-23	Aqueous	M2540C	Total Dissolved Solids	76858	1	08/22/16 08:40 AM	WC_160818B
1608133-26A	BMW-22	Aqueous	SW7470A	Mercury Total: Aqueous	76918	1	08/24/16 11:15 AM	CETAC2_HG_160824B
	BMW-22	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76895	10	08/24/16 07:20 PM	ICP-MS4_160824B
	BMW-22	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76895	1	08/25/16 02:57 PM	ICP-MS4_160825A
	BMW-22	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76895	1	08/23/16 02:17 PM	ICP-MS4_160823B
1608133-26D	BMW-22	Aqueous	E300	Anions by IC method - Water	76838	100	08/17/16 03:56 PM	IC4_160817A
	BMW-22	Aqueous	E300	Anions by IC method - Water	76838	1	08/17/16 01:09 PM	IC4_160817A
	BMW-22	Aqueous	M4500-H+ B	pH	76839	1	08/17/16 11:53 AM	TITRATOR_160817B
	BMW-22	Aqueous	M2540C	Total Dissolved Solids	76858	1	08/22/16 08:40 AM	WC_160818B
1608133-27A	BMW-21	Aqueous	SW7470A	Mercury Total: Aqueous	76918	1	08/24/16 11:17 AM	CETAC2_HG_160824B
	BMW-21	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76895	1	08/23/16 02:19 PM	ICP-MS4_160823B
	BMW-21	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76895	10	08/24/16 07:22 PM	ICP-MS4_160824B
	BMW-21	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76895	1	08/25/16 02:58 PM	ICP-MS4_160825A
1608133-27D	BMW-21	Aqueous	E300	Anions by IC method - Water	76838	1	08/17/16 01:24 PM	IC4_160817A
	BMW-21	Aqueous	E300	Anions by IC method - Water	76838	100	08/17/16 04:11 PM	IC4_160817A
	BMW-21	Aqueous	M4500-H+ B	pH	76839	1	08/17/16 11:56 AM	TITRATOR_160817B
	BMW-21	Aqueous	M2540C	Total Dissolved Solids	76858	1	08/22/16 08:40 AM	WC_160818B

DHL Analytical, Inc.

Date: *14-Sep-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	H-28
Project:	Luminant - Martin Lake	**Lab ID:**	1608133-01
Project No:	5164-B	**Collection Date:**	08/09/16 09:30 AM
Lab Order:	1608133	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	08/18/16 10:36 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	08/17/16 02:05 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	08/17/16 02:05 PM
Barium	0.0155	0.00300	0.0100		mg/L	1	08/17/16 02:05 PM
Beryllium	0.00275	0.000300	0.00100		mg/L	1	08/17/16 02:05 PM
Boron	9.29	0.500	1.50		mg/L	50	08/18/16 03:36 PM
Cadmium	0.00160	0.000300	0.00100		mg/L	1	08/17/16 02:05 PM
Calcium	116	5.00	15.0		mg/L	50	08/18/16 03:36 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	08/17/16 02:05 PM
Cobalt	0.195	0.00300	0.00500		mg/L	1	08/17/16 02:05 PM
Lead	0.000774	0.000300	0.00100	J	mg/L	1	08/17/16 02:05 PM
Lithium	0.155	0.00500	0.0100		mg/L	1	08/17/16 02:05 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	08/17/16 02:05 PM
Selenium	0.00286	0.00200	0.00500	J	mg/L	1	08/17/16 02:05 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	08/17/16 02:05 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	98.4	3.00	10.0		mg/L	10	08/15/16 03:58 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	08/15/16 12:24 PM
Sulfate	1080	10.0	30.0		mg/L	10	08/15/16 03:58 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	5.29	0	0		pH Units@19.6℃	1	08/16/16 10:17 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	2100	50.0	50.0		mg/L	1	08/16/16 08:42 AM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *14-Sep-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	H-29
Project:	Luminant - Martin Lake	**Lab ID:**	1608133-02
Project No:	5164-B	**Collection Date:**	08/09/16 10:35 AM
Lab Order:	1608133	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	08/18/16 10:43 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	08/17/16 02:07 PM
Arsenic	0.00995	0.00200	0.00500		mg/L	1	08/17/16 02:07 PM
Barium	0.315	0.00300	0.0100		mg/L	1	08/17/16 02:07 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	08/17/16 02:07 PM
Boron	0.172	0.0100	0.0300		mg/L	1	08/18/16 03:40 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	08/17/16 02:07 PM
Calcium	64.6	1.00	3.00		mg/L	10	08/18/16 03:38 PM
Chromium	0.00297	0.00200	0.00500	J	mg/L	1	08/17/16 02:07 PM
Cobalt	0.00473	0.00300	0.00500	J	mg/L	1	08/17/16 02:07 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	08/17/16 02:07 PM
Lithium	0.0143	0.00500	0.0100		mg/L	1	08/17/16 02:07 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	08/17/16 02:07 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	08/17/16 02:07 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	08/17/16 02:07 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	53.1	3.00	10.0		mg/L	10	08/15/16 04:28 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	08/15/16 12:39 PM
Sulfate	124	1.00	3.00		mg/L	1	08/15/16 12:39 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.75	0	0		pH Units@19.7℃	1	08/16/16 10:20 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	575	10.0	10.0		mg/L	1	08/16/16 08:42 AM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *14-Sep-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	H-31
Project:	Luminant - Martin Lake	**Lab ID:**	1608133-03
Project No:	5164-B	**Collection Date:**	08/09/16 11:50 AM
Lab Order:	1608133	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	08/18/16 10:45 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **CVD**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	08/19/16 05:50 PM
Arsenic	0.00886	0.00200	0.00500		mg/L	1	08/19/16 05:50 PM
Barium	0.0191	0.00300	0.0100		mg/L	1	08/19/16 05:50 PM
Beryllium	0.00734	0.000300	0.00100		mg/L	1	08/22/16 03:22 PM
Boron	24.1	1.00	3.00		mg/L	100	08/22/16 02:05 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	08/19/16 05:50 PM
Calcium	251	10.0	30.0		mg/L	100	08/22/16 02:05 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	08/19/16 05:50 PM
Cobalt	0.286	0.00300	0.00500		mg/L	1	08/19/16 05:50 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	08/19/16 05:50 PM
Lithium	0.170	0.00500	0.0100		mg/L	1	08/22/16 03:22 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	08/19/16 05:50 PM
Selenium	0.0202	0.00200	0.00500		mg/L	1	08/19/16 05:50 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	08/19/16 05:50 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	217	30.0	100		mg/L	100	08/15/16 04:43 PM
Fluoride	0.216	0.100	0.400	J	mg/L	1	08/15/16 12:54 PM
Sulfate	2730	100	300		mg/L	100	08/15/16 04:43 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.07	0	0		pH Units@19.7℃	1	08/16/16 10:23 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	4440	50.0	50.0		mg/L	1	08/16/16 08:42 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *14-Sep-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	H-30
Project:	Luminant - Martin Lake	**Lab ID:**	1608133-04
Project No:	5164-B	**Collection Date:**	08/09/16 12:45 PM
Lab Order:	1608133	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	08/18/16 10:48 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **CVD**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	08/19/16 05:52 PM
Arsenic	0.00447	0.00200	0.00500	J	mg/L	1	08/19/16 05:52 PM
Barium	0.0233	0.00300	0.0100		mg/L	1	08/19/16 05:52 PM
Beryllium	0.00483	0.000300	0.00100		mg/L	1	08/22/16 03:24 PM
Boron	6.75	0.100	0.300		mg/L	10	08/22/16 02:07 PM
Cadmium	0.000380	0.000300	0.00100	J	mg/L	1	08/19/16 05:52 PM
Calcium	139	1.00	3.00		mg/L	10	08/22/16 02:07 PM
Chromium	0.00282	0.00200	0.00500	J	mg/L	1	08/19/16 05:52 PM
Cobalt	0.162	0.00300	0.00500		mg/L	1	08/19/16 05:52 PM
Lead	0.00363	0.000300	0.00100		mg/L	1	08/19/16 05:52 PM
Lithium	0.0819	0.00500	0.0100		mg/L	1	08/22/16 03:24 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	08/19/16 05:52 PM
Selenium	0.0195	0.00200	0.00500		mg/L	1	08/19/16 05:52 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	08/19/16 05:52 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	109	3.00	10.0		mg/L	10	08/15/16 04:58 PM
Fluoride	0.152	0.100	0.400	J	mg/L	1	08/15/16 01:09 PM
Sulfate	1230	10.0	30.0		mg/L	10	08/15/16 04:58 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	5.22	0	0		pH Units@19.7℃	1	08/16/16 10:25 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	2160	50.0	50.0		mg/L	1	08/16/16 08:42 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *14-Sep-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	H-32
Project:	Luminant - Martin Lake	**Lab ID:**	1608133-05
Project No:	5164-B	**Collection Date:**	08/09/16 01:50 PM
Lab Order:	1608133	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	08/18/16 10:50 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **CVD**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	08/19/16 05:54 PM
Arsenic	0.00344	0.00200	0.00500	J	mg/L	1	08/19/16 05:54 PM
Barium	0.0234	0.00300	0.0100		mg/L	1	08/19/16 05:54 PM
Beryllium	0.00548	0.000300	0.00100		mg/L	1	08/22/16 03:26 PM
Boron	1.69	0.100	0.300		mg/L	10	08/22/16 02:09 PM
Cadmium	0.000713	0.000300	0.00100	J	mg/L	1	08/19/16 05:54 PM
Calcium	45.4	1.00	3.00		mg/L	10	08/22/16 02:09 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	08/19/16 05:54 PM
Cobalt	0.190	0.00300	0.00500		mg/L	1	08/19/16 05:54 PM
Lead	0.00115	0.000300	0.00100		mg/L	1	08/19/16 05:54 PM
Lithium	0.0774	0.00500	0.0100		mg/L	1	08/22/16 03:26 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	08/19/16 05:54 PM
Selenium	0.00281	0.00200	0.00500	J	mg/L	1	08/19/16 05:54 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	08/19/16 05:54 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	132	3.00	10.0		mg/L	10	08/15/16 05:28 PM
Fluoride	0.680	0.100	0.400		mg/L	1	08/15/16 01:24 PM
Sulfate	342	10.0	30.0		mg/L	10	08/15/16 05:28 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	5.46	0	0		pH Units@20℃	1	08/16/16 10:27 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	839	10.0	10.0		mg/L	1	08/16/16 08:42 AM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *14-Sep-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	H-27
Project:	Luminant - Martin Lake	**Lab ID:**	1608133-06
Project No:	5164-B	**Collection Date:**	08/09/16 02:50 PM
Lab Order:	1608133	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	08/18/16 10:52 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **CVD**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	08/19/16 06:10 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	08/19/16 06:10 PM
Barium	0.0241	0.00300	0.0100		mg/L	1	08/19/16 06:10 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	08/22/16 02:59 PM
Boron	0.462	0.0100	0.0300		mg/L	1	08/22/16 02:59 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	08/19/16 06:10 PM
Calcium	54.3	1.00	3.00		mg/L	10	08/22/16 02:11 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	08/19/16 06:10 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	08/19/16 06:10 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	08/19/16 06:10 PM
Lithium	0.0616	0.00500	0.0100		mg/L	1	08/22/16 02:59 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	08/19/16 06:10 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	08/19/16 06:10 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	08/19/16 06:10 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	124	3.00	10.0		mg/L	10	08/15/16 05:43 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	08/15/16 01:39 PM
Sulfate	365	10.0	30.0		mg/L	10	08/15/16 05:43 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.10	0	0		pH Units@20.2℃	1	08/16/16 10:29 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	854	10.0	10.0		mg/L	1	08/17/16 08:42 AM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *14-Sep-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	H-33
Project:	Luminant - Martin Lake	**Lab ID:**	1608133-07
Project No:	5164-B	**Collection Date:**	08/09/16 03:55 PM
Lab Order:	1608133	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	08/18/16 10:54 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **CVD**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	08/19/16 06:12 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	08/19/16 06:12 PM
Barium	0.0424	0.00300	0.0100		mg/L	1	08/19/16 06:12 PM
Beryllium	0.000519	0.000300	0.00100	J	mg/L	1	08/24/16 05:45 PM
Boron	0.0431	0.0100	0.0300		mg/L	1	08/22/16 02:13 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	08/19/16 06:12 PM
Calcium	11.2	0.100	0.300		mg/L	1	08/19/16 06:12 PM
Chromium	0.00291	0.00200	0.00500	J	mg/L	1	08/19/16 06:12 PM
Cobalt	0.0284	0.00300	0.00500		mg/L	1	08/19/16 06:12 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	08/19/16 06:12 PM
Lithium	0.102	0.00500	0.0100		mg/L	1	08/22/16 02:13 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	08/19/16 06:12 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	08/19/16 06:12 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	08/19/16 06:12 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	64.9	3.00	10.0		mg/L	10	08/15/16 05:58 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	08/15/16 01:54 PM
Sulfate	120	10.0	30.0		mg/L	10	08/15/16 05:58 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.04	0	0		pH Units@20.5℃	1	08/16/16 10:32 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	442	10.0	10.0		mg/L	1	08/17/16 08:42 AM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *14-Sep-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	H-26
Project:	Luminant - Martin Lake	**Lab ID:**	1608133-08
Project No:	5164-B	**Collection Date:**	08/09/16 04:45 PM
Lab Order:	1608133	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	08/18/16 10:57 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **CVD**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	08/19/16 06:14 PM
Arsenic	0.00290	0.00200	0.00500	J	mg/L	1	08/19/16 06:14 PM
Barium	0.0431	0.00300	0.0100		mg/L	1	08/19/16 06:14 PM
Beryllium	0.00136	0.000300	0.00100		mg/L	1	08/24/16 05:51 PM
Boron	0.569	0.0100	0.0300		mg/L	1	08/22/16 02:15 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	08/19/16 06:14 PM
Calcium	14.0	0.100	0.300		mg/L	1	08/19/16 06:14 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	08/19/16 06:14 PM
Cobalt	0.0352	0.00300	0.00500		mg/L	1	08/19/16 06:14 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	08/19/16 06:14 PM
Lithium	0.0155	0.00500	0.0100		mg/L	1	08/22/16 02:15 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	08/19/16 06:14 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	08/19/16 06:14 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	08/19/16 06:14 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	70.0	3.00	10.0		mg/L	10	08/15/16 07:28 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	08/15/16 02:09 PM
Sulfate	90.9	1.00	3.00		mg/L	1	08/15/16 02:09 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	5.60	0	0		pH Units@20.7℃	1	08/16/16 10:34 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	354	10.0	10.0		mg/L	1	08/17/16 08:42 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *14-Sep-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	DUP-01
Project:	Luminant - Martin Lake	**Lab ID:**	1608133-09
Project No:	5164-B	**Collection Date:**	08/09/16 02:38 PM
Lab Order:	1608133	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	08/18/16 10:59 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **CVD**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	08/19/16 06:17 PM
Arsenic	0.00437	0.00200	0.00500	J	mg/L	1	08/19/16 06:17 PM
Barium	0.0212	0.00300	0.0100		mg/L	1	08/19/16 06:17 PM
Beryllium	0.00543	0.000300	0.00100		mg/L	1	08/22/16 03:28 PM
Boron	7.04	0.100	0.300		mg/L	10	08/22/16 02:17 PM
Cadmium	0.000367	0.000300	0.00100	J	mg/L	1	08/19/16 06:17 PM
Calcium	138	1.00	3.00		mg/L	10	08/22/16 02:17 PM
Chromium	0.00210	0.00200	0.00500	J	mg/L	1	08/19/16 06:17 PM
Cobalt	0.165	0.00300	0.00500		mg/L	1	08/19/16 06:17 PM
Lead	0.00341	0.000300	0.00100		mg/L	1	08/19/16 06:17 PM
Lithium	0.0809	0.00500	0.0100		mg/L	1	08/22/16 03:28 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	08/19/16 06:17 PM
Selenium	0.0166	0.00200	0.00500		mg/L	1	08/19/16 06:17 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	08/19/16 06:17 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	112	3.00	10.0		mg/L	10	08/15/16 07:43 PM
Fluoride	0.180	0.100	0.400	J	mg/L	1	08/15/16 02:24 PM
Sulfate	1260	10.0	30.0		mg/L	10	08/15/16 07:43 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	5.11	0	0		pH Units@21℃	1	08/16/16 10:36 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	2080	50.0	50.0		mg/L	1	08/17/16 08:42 AM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *14-Sep-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	PDP-25
Project:	Luminant - Martin Lake	**Lab ID:**	1608133-10
Project No:	5164-B	**Collection Date:**	08/10/16 01:30 PM
Lab Order:	1608133	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	08/18/16 11:01 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **CVD**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	08/19/16 06:19 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	08/19/16 06:19 PM
Barium	0.193	0.00300	0.0100		mg/L	1	08/19/16 06:19 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	08/22/16 03:01 PM
Boron	0.119	0.0100	0.0300		mg/L	1	08/22/16 03:01 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	08/19/16 06:19 PM
Calcium	37.7	1.00	3.00		mg/L	10	08/22/16 02:19 PM
Chromium	0.00527	0.00200	0.00500		mg/L	1	08/19/16 06:19 PM
Cobalt	0.0109	0.00300	0.00500		mg/L	1	08/19/16 06:19 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	08/19/16 06:19 PM
Lithium	0.120	0.00500	0.0100		mg/L	1	08/22/16 03:01 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	08/19/16 06:19 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	08/19/16 06:19 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	08/19/16 06:19 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	136	3.00	10.0		mg/L	10	08/16/16 02:52 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	08/16/16 11:27 AM
Sulfate	110	1.00	3.00		mg/L	1	08/16/16 11:27 AM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.19	0	0		pH Units@17.4℃	1	08/16/16 10:53 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	612	10.0	10.0		mg/L	1	08/17/16 08:42 AM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *14-Sep-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	PDP-24
Project:	Luminant - Martin Lake	**Lab ID:**	1608133-11
Project No:	5164-B	**Collection Date:**	08/10/16 11:00 AM
Lab Order:	1608133	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	0.00214	0.0000800	0.000200		mg/L	1	08/24/16 10:23 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **CVD**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	08/19/16 06:21 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	08/19/16 06:21 PM
Barium	0.0206	0.00300	0.0100		mg/L	1	08/19/16 06:21 PM
Beryllium	0.00427	0.000300	0.00100		mg/L	1	08/22/16 03:30 PM
Boron	3.80	0.100	0.300		mg/L	10	08/22/16 02:21 PM
Cadmium	0.00185	0.000300	0.00100		mg/L	1	08/19/16 06:21 PM
Calcium	32.6	1.00	3.00		mg/L	10	08/22/16 02:21 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	08/19/16 06:21 PM
Cobalt	0.0826	0.00300	0.00500		mg/L	1	08/19/16 06:21 PM
Lead	0.00121	0.000300	0.00100		mg/L	1	08/19/16 06:21 PM
Lithium	0.0241	0.00500	0.0100		mg/L	1	08/22/16 03:30 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	08/19/16 06:21 PM
Selenium	0.00377	0.00200	0.00500	J	mg/L	1	08/19/16 06:21 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	08/19/16 06:21 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	21.4	0.300	1.00		mg/L	1	08/16/16 11:42 AM
Fluoride	0.693	0.100	0.400		mg/L	1	08/16/16 11:42 AM
Sulfate	432	10.0	30.0		mg/L	10	08/16/16 03:37 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	4.53	0	0		pH Units@20℃	1	08/17/16 11:15 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	747	10.0	10.0		mg/L	1	08/17/16 08:42 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *14-Sep-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	MW-17A
Project:	Luminant - Martin Lake	**Lab ID:**	1608133-12
Project No:	5164-B	**Collection Date:**	08/10/16 10:20 AM
Lab Order:	1608133	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	0.000114	0.0000800	0.000200	J	mg/L	1	08/24/16 10:26 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **CVD**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	08/19/16 06:23 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	08/19/16 06:23 PM
Barium	0.108	0.00300	0.0100		mg/L	1	08/19/16 06:23 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	08/22/16 02:51 PM
Boron	0.410	0.0100	0.0300		mg/L	1	08/22/16 02:51 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	08/19/16 06:23 PM
Calcium	4.46	0.100	0.300		mg/L	1	08/19/16 06:23 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	08/19/16 06:23 PM
Cobalt	0.00795	0.00300	0.00500		mg/L	1	08/19/16 06:23 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	08/19/16 06:23 PM
Lithium	0.0153	0.00500	0.0100		mg/L	1	08/22/16 02:51 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	08/19/16 06:23 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	08/19/16 06:23 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	08/19/16 06:23 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	9.52	0.300	1.00		mg/L	1	08/16/16 11:57 AM
Fluoride	<0.100	0.100	0.400		mg/L	1	08/16/16 11:57 AM
Sulfate	42.9	1.00	3.00		mg/L	1	08/16/16 11:57 AM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	5.57	0	0		pH Units@20℃	1	08/17/16 11:19 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	143	10.0	10.0		mg/L	1	08/17/16 08:42 AM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *14-Sep-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	PDP-23
Project:	Luminant - Martin Lake	**Lab ID:**	1608133-13
Project No:	5164-B	**Collection Date:**	08/10/16 09:10 AM
Lab Order:	1608133	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	08/24/16 10:28 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **CVD**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	08/19/16 06:25 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	08/19/16 06:25 PM
Barium	0.0449	0.00300	0.0100		mg/L	1	08/19/16 06:25 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	08/22/16 02:53 PM
Boron	0.0357	0.0100	0.0300		mg/L	1	08/22/16 02:53 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	08/19/16 06:25 PM
Calcium	1.77	0.100	0.300		mg/L	1	08/19/16 06:25 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	08/19/16 06:25 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	08/19/16 06:25 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	08/19/16 06:25 PM
Lithium	0.0124	0.00500	0.0100		mg/L	1	08/22/16 02:53 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	08/19/16 06:25 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	08/19/16 06:25 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	08/19/16 06:25 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	6.61	0.300	1.00		mg/L	1	08/16/16 12:12 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	08/16/16 12:12 PM
Sulfate	2.37	1.00	3.00	J	mg/L	1	08/16/16 12:12 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	5.91	0	0		pH Units@20.1℃	1	08/17/16 11:21 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	99.0	10.0	10.0		mg/L	1	08/17/16 08:42 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *14-Sep-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	MW-19
Project:	Luminant - Martin Lake	**Lab ID:**	1608133-14
Project No:	5164-B	**Collection Date:**	08/10/16 03:00 PM
Lab Order:	1608133	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	08/24/16 10:30 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **CVD**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	08/19/16 06:27 PM
Arsenic	0.00286	0.00200	0.00500	J	mg/L	1	08/19/16 06:27 PM
Barium	0.0188	0.00300	0.0100		mg/L	1	08/19/16 06:27 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	08/22/16 02:55 PM
Boron	0.0539	0.0100	0.0300		mg/L	1	08/22/16 02:55 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	08/19/16 06:27 PM
Calcium	8.62	0.100	0.300		mg/L	1	08/19/16 06:27 PM
Chromium	0.00346	0.00200	0.00500	J	mg/L	1	08/19/16 06:27 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	08/19/16 06:27 PM
Lead	0.000807	0.000300	0.00100	J	mg/L	1	08/19/16 06:27 PM
Lithium	0.0144	0.00500	0.0100		mg/L	1	08/22/16 02:55 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	08/19/16 06:27 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	08/19/16 06:27 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	08/19/16 06:27 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	30.8	0.300	1.00		mg/L	1	08/16/16 12:27 PM
Fluoride	0.152	0.100	0.400	J	mg/L	1	08/16/16 12:27 PM
Sulfate	31.6	1.00	3.00		mg/L	1	08/16/16 12:27 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.24	0	0		pH Units@20.1℃	1	08/17/16 11:24 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	323	10.0	10.0		mg/L	1	08/17/16 08:42 AM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *14-Sep-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	MW-20A
Project:	Luminant - Martin Lake	**Lab ID:**	1608133-15
Project No:	5164-B	**Collection Date:**	08/10/16 02:10 PM
Lab Order:	1608133	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	0.000325	0.0000800	0.000200		mg/L	1	08/24/16 10:32 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **CVD**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	08/19/16 06:29 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	08/19/16 06:29 PM
Barium	0.0313	0.00300	0.0100		mg/L	1	08/19/16 06:29 PM
Beryllium	0.000502	0.000300	0.00100	J	mg/L	1	08/26/16 12:27 PM
Boron	0.123	0.0100	0.0300		mg/L	1	08/22/16 02:57 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	08/19/16 06:29 PM
Calcium	12.7	0.100	0.300		mg/L	1	08/19/16 06:29 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	08/19/16 06:29 PM
Cobalt	0.00427	0.00300	0.00500	J	mg/L	1	08/19/16 06:29 PM
Lead	0.00141	0.000300	0.00100		mg/L	1	08/19/16 06:29 PM
Lithium	0.0166	0.00500	0.0100		mg/L	1	08/22/16 02:57 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	08/19/16 06:29 PM
Selenium	0.00518	0.00200	0.00500		mg/L	1	08/19/16 06:29 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	08/19/16 06:29 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	11.2	0.300	1.00		mg/L	1	08/16/16 12:42 PM
Fluoride	0.389	0.100	0.400	J	mg/L	1	08/16/16 12:42 PM
Sulfate	77.8	1.00	3.00		mg/L	1	08/16/16 12:42 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	4.91	0	0		pH Units@20.1℃	1	08/17/16 11:26 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	210	10.0	10.0		mg/L	1	08/17/16 08:42 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *14-Sep-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	PDP-22
Project:	Luminant - Martin Lake	**Lab ID:**	1608133-16
Project No:	5164-B	**Collection Date:**	08/10/16 09:20 AM
Lab Order:	1608133	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	08/24/16 10:35 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	08/23/16 12:40 PM
Arsenic	0.00488	0.00200	0.00500	J	mg/L	1	08/23/16 12:40 PM
Barium	0.141	0.00300	0.0100		mg/L	1	08/23/16 12:40 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	08/23/16 12:40 PM
Boron	0.255	0.0100	0.0300		mg/L	1	08/24/16 04:31 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	08/23/16 12:40 PM
Calcium	104	1.00	3.00		mg/L	10	08/24/16 03:46 PM
Chromium	0.0121	0.00200	0.00500		mg/L	1	08/23/16 12:40 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	08/23/16 12:40 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	08/23/16 12:40 PM
Lithium	0.0219	0.00500	0.0100		mg/L	1	08/23/16 12:40 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 12:40 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 12:40 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	08/23/16 12:40 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	15.2	0.300	1.00		mg/L	1	08/16/16 12:57 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	08/16/16 12:57 PM
Sulfate	216	10.0	30.0		mg/L	10	08/16/16 03:52 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	7.08	0	0		pH Units@20.3℃	1	08/17/16 11:28 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	750	10.0	10.0		mg/L	1	08/17/16 08:42 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *14-Sep-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	PDP-26
Project:	Luminant - Martin Lake	**Lab ID:**	1608133-17
Project No:	5164-B	**Collection Date:**	08/10/16 10:30 AM
Lab Order:	1608133	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	08/24/16 10:46 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	08/23/16 01:14 PM
Arsenic	0.00589	0.00200	0.00500		mg/L	1	08/23/16 01:14 PM
Barium	0.0355	0.00300	0.0100		mg/L	1	08/23/16 01:14 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	08/23/16 01:14 PM
Boron	0.0671	0.0100	0.0300		mg/L	1	08/24/16 04:33 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	08/23/16 01:14 PM
Calcium	3.04	0.100	0.300		mg/L	1	08/23/16 01:14 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 01:14 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	08/23/16 01:14 PM
Lead	0.000675	0.000300	0.00100	J	mg/L	1	08/23/16 01:14 PM
Lithium	0.0151	0.00500	0.0100		mg/L	1	08/23/16 01:14 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 01:14 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 01:14 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	08/23/16 01:14 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	5.62	0.300	1.00		mg/L	1	08/16/16 01:12 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	08/16/16 01:12 PM
Sulfate	7.79	1.00	3.00		mg/L	1	08/16/16 01:12 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.97	0	0		pH Units@20.4℃	1	08/17/16 11:31 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	114	10.0	10.0		mg/L	1	08/17/16 08:42 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *14-Sep-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	MW-18A
Project:	Luminant - Martin Lake	**Lab ID:**	1608133-18
Project No:	5164-B	**Collection Date:**	08/10/16 11:30 AM
Lab Order:	1608133	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	0.0312	0.00160	0.00400		mg/L	20	08/24/16 11:31 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	08/23/16 01:16 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 01:16 PM
Barium	0.0447	0.00300	0.0100		mg/L	1	08/23/16 01:16 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	08/23/16 01:16 PM
Boron	0.0755	0.0100	0.0300		mg/L	1	08/24/16 05:29 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	08/23/16 01:16 PM
Calcium	1.13	0.100	0.300		mg/L	1	08/23/16 01:16 PM
Chromium	0.00251	0.00200	0.00500	J	mg/L	1	08/23/16 01:16 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	08/23/16 01:16 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	08/23/16 01:16 PM
Lithium	0.00806	0.00500	0.0100	J	mg/L	1	08/23/16 01:16 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 01:16 PM
Selenium	0.00292	0.00200	0.00500	J	mg/L	1	08/23/16 01:16 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	08/23/16 01:16 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	7.04	0.300	1.00		mg/L	1	08/16/16 01:27 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	08/16/16 01:27 PM
Sulfate	4.78	1.00	3.00		mg/L	1	08/16/16 01:27 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	5.86	0	0		pH Units@20.6℃	1	08/17/16 11:34 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	62.0	10.0	10.0		mg/L	1	08/17/16 08:42 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *14-Sep-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	EB-1
Project:	Luminant - Martin Lake	**Lab ID:**	1608133-19
Project No:	5164-B	**Collection Date:**	08/10/16 11:45 AM
Lab Order:	1608133	**Matrix:**	EQUIP BLANK

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	08/24/16 10:53 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	08/23/16 01:18 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 01:18 PM
Barium	<0.00300	0.00300	0.0100		mg/L	1	08/23/16 01:18 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	08/23/16 01:18 PM
Boron	0.0375	0.0100	0.0300		mg/L	1	08/24/16 05:31 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	08/23/16 01:18 PM
Calcium	5.33	0.100	0.300		mg/L	1	08/23/16 01:18 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 01:18 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	08/23/16 01:18 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	08/23/16 01:18 PM
Lithium	<0.00500	0.00500	0.0100		mg/L	1	08/23/16 01:18 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 01:18 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 01:18 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	08/23/16 01:18 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	11.4	0.300	1.00		mg/L	1	08/17/16 11:24 AM
Fluoride	<0.100	0.100	0.400		mg/L	1	08/17/16 11:24 AM
Sulfate	24.7	1.00	3.00		mg/L	1	08/17/16 11:24 AM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.97	0	0		pH Units@20.7℃	1	08/17/16 11:36 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	<10.0	10.0	10.0		mg/L	1	08/17/16 08:42 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *14-Sep-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	BMW-11AR
Project:	Luminant - Martin Lake	**Lab ID:**	1608133-20
Project No:	5164-B	**Collection Date:**	08/11/16 08:25 AM
Lab Order:	1608133	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	08/24/16 10:56 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	08/23/16 01:20 PM
Arsenic	0.00271	0.00200	0.00500	J	mg/L	1	08/23/16 01:20 PM
Barium	0.0772	0.00300	0.0100		mg/L	1	08/23/16 01:20 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	08/23/16 01:20 PM
Boron	0.389	0.0100	0.0300		mg/L	1	08/24/16 05:35 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	08/23/16 01:20 PM
Calcium	170	1.00	3.00		mg/L	10	08/24/16 05:33 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 01:20 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	08/23/16 01:20 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	08/23/16 01:20 PM
Lithium	0.0147	0.00500	0.0100		mg/L	1	08/23/16 01:20 PM
Molybdenum	0.00346	0.00200	0.00500	J	mg/L	1	08/23/16 01:20 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 01:20 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	08/23/16 01:20 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	20.8	0.300	1.00		mg/L	1	08/17/16 11:39 AM
Fluoride	<0.100	0.100	0.400		mg/L	1	08/17/16 11:39 AM
Sulfate	682	10.0	30.0		mg/L	10	08/17/16 02:41 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	7.24	0	0		pH Units@20.8℃	1	08/17/16 11:40 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	1790	50.0	50.0		mg/L	1	08/17/16 08:42 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *14-Sep-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	BMW-19
Project:	Luminant - Martin Lake	**Lab ID:**	1608133-21
Project No:	5164-B	**Collection Date:**	08/11/16 09:20 AM
Lab Order:	1608133	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	08/24/16 11:04 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	08/23/16 01:22 PM
Arsenic	0.00711	0.00200	0.00500		mg/L	1	08/23/16 01:22 PM
Barium	0.0158	0.00300	0.0100		mg/L	1	08/23/16 01:22 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	08/23/16 01:22 PM
Boron	0.419	0.0100	0.0300		mg/L	1	08/24/16 05:39 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	08/23/16 01:22 PM
Calcium	458	5.00	15.0		mg/L	50	08/25/16 02:49 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 01:22 PM
Cobalt	0.0128	0.00300	0.00500		mg/L	1	08/23/16 01:22 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	08/23/16 01:22 PM
Lithium	0.0568	0.00500	0.0100		mg/L	1	08/23/16 01:22 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 01:22 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 01:22 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	08/23/16 01:22 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	8.26	0.300	1.00		mg/L	1	08/17/16 11:54 AM
Fluoride	<0.100	0.100	0.400		mg/L	1	08/17/16 11:54 AM
Sulfate	2370	100	300		mg/L	100	08/17/16 02:56 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.75	0	0		pH Units@20.7℃	1	08/17/16 11:42 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	3780	50.0	50.0		mg/L	1	08/17/16 08:42 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *14-Sep-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	BMW-18
Project:	Luminant - Martin Lake	**Lab ID:**	1608133-22
Project No:	5164-B	**Collection Date:**	08/11/16 10:15 AM
Lab Order:	1608133	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	08/24/16 11:06 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	08/23/16 01:24 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 01:24 PM
Barium	0.0291	0.00300	0.0100		mg/L	1	08/23/16 01:24 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	08/23/16 01:24 PM
Boron	0.415	0.0100	0.0300		mg/L	1	08/24/16 05:41 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	08/23/16 01:24 PM
Calcium	7.02	0.100	0.300		mg/L	1	08/23/16 01:24 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 01:24 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	08/23/16 01:24 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	08/23/16 01:24 PM
Lithium	0.0147	0.00500	0.0100		mg/L	1	08/23/16 01:24 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 01:24 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 01:24 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	08/23/16 01:24 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	18.5	0.300	1.00		mg/L	1	08/17/16 12:09 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	08/17/16 12:09 PM
Sulfate	100	1.00	3.00		mg/L	1	08/17/16 12:09 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	8.48	0	0		pH Units@20.8℃	1	08/17/16 11:46 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	493	10.0	10.0		mg/L	1	08/17/16 08:42 AM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *14-Sep-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	BMW-20
Project:	Luminant - Martin Lake	**Lab ID:**	1608133-23
Project No:	5164-B	**Collection Date:**	08/11/16 10:50 AM
Lab Order:	1608133	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	08/24/16 11:08 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	08/23/16 02:11 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 02:11 PM
Barium	0.0637	0.00300	0.0100		mg/L	1	08/23/16 02:11 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	08/23/16 02:11 PM
Boron	0.106	0.0100	0.0300		mg/L	1	08/24/16 08:48 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	08/23/16 02:11 PM
Calcium	107	1.00	3.00		mg/L	10	08/24/16 07:14 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 02:11 PM
Cobalt	0.0513	0.00300	0.00500		mg/L	1	08/23/16 02:11 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	08/23/16 02:11 PM
Lithium	<0.00500	0.00500	0.0100		mg/L	1	08/25/16 02:51 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 02:11 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 02:11 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	08/23/16 02:11 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	39.4	0.300	1.00		mg/L	1	08/17/16 12:24 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	08/17/16 12:24 PM
Sulfate	602	10.0	30.0		mg/L	10	08/17/16 03:11 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.38	0	0		pH Units@20.8℃	1	08/17/16 11:48 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	1310	50.0	50.0		mg/L	1	08/17/16 08:42 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *14-Sep-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	BMW-24
Project:	Luminant - Martin Lake	**Lab ID:**	1608133-24
Project No:	5164-B	**Collection Date:**	08/11/16 08:50 AM
Lab Order:	1608133	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	08/24/16 11:10 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	08/23/16 02:13 PM
Arsenic	0.00414	0.00200	0.00500	J	mg/L	1	08/23/16 02:13 PM
Barium	1.26	0.00300	0.0100		mg/L	1	08/23/16 02:13 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	08/23/16 02:13 PM
Boron	0.248	0.0100	0.0300		mg/L	1	08/24/16 08:50 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	08/23/16 02:13 PM
Calcium	58.5	1.00	3.00		mg/L	10	08/24/16 07:16 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 02:13 PM
Cobalt	0.00707	0.00300	0.00500		mg/L	1	08/23/16 02:13 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	08/23/16 02:13 PM
Lithium	0.00938	0.00500	0.0100	J	mg/L	1	08/25/16 02:53 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 02:13 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 02:13 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	08/23/16 02:13 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	481	30.0	100		mg/L	100	08/17/16 03:26 PM
Fluoride	0.225	0.100	0.400	J	mg/L	1	08/17/16 12:39 PM
Sulfate	97.8	1.00	3.00		mg/L	1	08/17/16 12:39 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.52	0	0		pH Units@20.9℃	1	08/17/16 11:50 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	1150	50.0	50.0		mg/L	1	08/17/16 08:42 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *14-Sep-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	BMW-23
Project:	Luminant - Martin Lake	**Lab ID:**	1608133-25
Project No:	5164-B	**Collection Date:**	08/11/16 09:20 AM
Lab Order:	1608133	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	08/24/16 11:13 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	08/23/16 02:15 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 02:15 PM
Barium	0.0458	0.00300	0.0100		mg/L	1	08/23/16 02:15 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	08/23/16 02:15 PM
Boron	1.28	0.100	0.300		mg/L	10	08/24/16 07:18 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	08/23/16 02:15 PM
Calcium	90.4	1.00	3.00		mg/L	10	08/24/16 07:18 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 02:15 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	08/23/16 02:15 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	08/23/16 02:15 PM
Lithium	0.0770	0.00500	0.0100		mg/L	1	08/25/16 02:55 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 02:15 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 02:15 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	08/23/16 02:15 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	242	3.00	10.0		mg/L	10	08/17/16 03:41 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	08/17/16 12:54 PM
Sulfate	539	10.0	30.0		mg/L	10	08/17/16 03:41 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.69	0	0		pH Units@21℃	1	08/17/16 11:52 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	1430	50.0	50.0		mg/L	1	08/22/16 08:40 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *14-Sep-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	BMW-22
Project:	Luminant - Martin Lake	**Lab ID:**	1608133-26
Project No:	5164-B	**Collection Date:**	08/11/16 10:00 AM
Lab Order:	1608133	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	08/24/16 11:15 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	08/23/16 02:17 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 02:17 PM
Barium	0.0679	0.00300	0.0100		mg/L	1	08/23/16 02:17 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	08/23/16 02:17 PM
Boron	3.18	0.100	0.300		mg/L	10	08/24/16 07:20 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	08/23/16 02:17 PM
Calcium	198	1.00	3.00		mg/L	10	08/24/16 07:20 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 02:17 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	08/23/16 02:17 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	08/23/16 02:17 PM
Lithium	0.0675	0.00500	0.0100		mg/L	1	08/25/16 02:57 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 02:17 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 02:17 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	08/23/16 02:17 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	311	30.0	100		mg/L	100	08/17/16 03:56 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	08/17/16 01:09 PM
Sulfate	946	100	300		mg/L	100	08/17/16 03:56 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.78	0	0		pH Units@21.1℃	1	08/17/16 11:53 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	2520	50.0	50.0		mg/L	1	08/22/16 08:40 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *14-Sep-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	BMW-21
Project:	Luminant - Martin Lake	**Lab ID:**	1608133-27
Project No:	5164-B	**Collection Date:**	08/11/16 10:30 AM
Lab Order:	1608133	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	08/24/16 11:17 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	08/23/16 02:19 PM
Arsenic	0.00373	0.00200	0.00500	J	mg/L	1	08/23/16 02:19 PM
Barium	0.0445	0.00300	0.0100		mg/L	1	08/23/16 02:19 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	08/23/16 02:19 PM
Boron	1.04	0.100	0.300		mg/L	10	08/24/16 07:22 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	08/23/16 02:19 PM
Calcium	143	1.00	3.00		mg/L	10	08/24/16 07:22 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 02:19 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	08/23/16 02:19 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	08/23/16 02:19 PM
Lithium	0.0527	0.00500	0.0100		mg/L	1	08/25/16 02:58 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 02:19 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 02:19 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	08/23/16 02:19 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	425	30.0	100		mg/L	100	08/17/16 04:11 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	08/17/16 01:24 PM
Sulfate	484	100	300		mg/L	100	08/17/16 04:11 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	7.28	0	0		pH Units@21.7℃	1	08/17/16 11:56 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	1860	50.0	50.0		mg/L	1	08/22/16 08:40 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_160818B

The QC data in batch 76835 applies to the following samples: 1608133-01A, 1608133-02A, 1608133-03A, 1608133-04A, 1608133-05A, 1608133-06A, 1608133-07A, 1608133-08A, 1608133-09A, 1608133-10A

Sample ID	**MB-76835**	Batch ID:	**76835**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**CETAC2_HG_160818B**	Analysis Date:	**8/18/2016 9:58:12 AM**	Prep Date:	**8/17/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.0000800	0.000200								

Sample ID	**LCS-76835**	Batch ID:	**76835**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**CETAC2_HG_160818B**	Analysis Date:	**8/18/2016 10:02:44 AM**	Prep Date:	**8/17/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00192	0.000200	0.00200	0	96.0	85	115			

Sample ID	**LCSD-76835**	Batch ID:	**76835**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**LCSD**	Run ID:	**CETAC2_HG_160818B**	Analysis Date:	**8/18/2016 10:05:00 AM**	Prep Date:	**8/17/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00197	0.000200	0.00200	0	98.5	85	115	2.57	15	

Sample ID	**1608119-02A SD**	Batch ID:	**76835**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**SD**	Run ID:	**CETAC2_HG_160818B**	Analysis Date:	**8/18/2016 10:11:47 AM**	Prep Date:	**8/17/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.000400	0.00100	0	0				0	10	

Sample ID	**1608119-02A PDS**	Batch ID:	**76835**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**PDS**	Run ID:	**CETAC2_HG_160818B**	Analysis Date:	**8/18/2016 10:14:03 AM**	Prep Date:	**8/17/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00235	0.000200	0.00250	0	94.0	85	115			

Sample ID	**1608119-02A MS**	Batch ID:	**76835**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**MS**	Run ID:	**CETAC2_HG_160818B**	Analysis Date:	**8/18/2016 10:16:19 AM**	Prep Date:	**8/17/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00199	0.000200	0.00200	0	99.5	80	120			

Sample ID	**1608119-02A MSD**	Batch ID:	**76835**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**MSD**	Run ID:	**CETAC2_HG_160818B**	Analysis Date:	**8/18/2016 10:18:35 AM**	Prep Date:	**8/17/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00199	0.000200	0.00200	0	99.5	80	120	0	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_160818B

Sample ID	**ICV-160818**	Batch ID:	**R87672**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**ICV**	Run ID:	**CETAC2_HG_160818B**	Analysis Date:	**8/18/2016 9:53:38 AM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00388	0.000200	0.00400	0	97.0	90	110			

Sample ID	**CCV1-160818**	Batch ID:	**R87672**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**CETAC2_HG_160818B**	Analysis Date:	**8/18/2016 10:39:00 AM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00190	0.000200	0.00200	0	95.0	90	110			

Sample ID	**CCV2-160818**	Batch ID:	**R87672**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**CETAC2_HG_160818B**	Analysis Date:	**8/18/2016 11:06:20 AM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00193	0.000200	0.00200	0	96.5	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_160824B

The QC data in batch 76918 applies to the following samples: 1608133-11A, 1608133-12A, 1608133-13A, 1608133-14A, 1608133-15A, 1608133-16A, 1608133-17A, 1608133-18A, 1608133-19A , 1608133-20A, 1608133-21A, 1608133-22A, 1608133-23A, 1608133-24A, 1608133-25A, 1608133-26A, 1608133-27A

Sample ID **MB-76918** Batch ID: **76918** TestNo: **SW7470A** Units: **mg/L**
SampType: **MBLK** Run ID: **CETAC2_HG_160824B** Analysis Date: **8/24/2016 10:14:50 AM** Prep Date: **8/23/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.0000800	0.000200								

Sample ID **LCS-76918** Batch ID: **76918** TestNo: **SW7470A** Units: **mg/L**
SampType: **LCS** Run ID: **CETAC2_HG_160824B** Analysis Date: **8/24/2016 10:19:22 AM** Prep Date: **8/23/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00201	0.000200	0.00200	0	101	85	115			

Sample ID **LCSD-76918** Batch ID: **76918** TestNo: **SW7470A** Units: **mg/L**
SampType: **LCSD** Run ID: **CETAC2_HG_160824B** Analysis Date: **8/24/2016 10:21:38 AM** Prep Date: **8/23/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00207	0.000200	0.00200	0	104	85	115	2.94	15	

Sample ID **1608133-16A SD** Batch ID: **76918** TestNo: **SW7470A** Units: **mg/L**
SampType: **SD** Run ID: **CETAC2_HG_160824B** Analysis Date: **8/24/2016 10:37:29 AM** Prep Date: **8/23/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.000400	0.00100	0	0				0	10	

Sample ID **1608133-16A PDS** Batch ID: **76918** TestNo: **SW7470A** Units: **mg/L**
SampType: **PDS** Run ID: **CETAC2_HG_160824B** Analysis Date: **8/24/2016 10:39:45 AM** Prep Date: **8/23/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00228	0.000200	0.00250	0	91.2	85	115			

Sample ID **1608133-16A MS** Batch ID: **76918** TestNo: **SW7470A** Units: **mg/L**
SampType: **MS** Run ID: **CETAC2_HG_160824B** Analysis Date: **8/24/2016 10:42:01 AM** Prep Date: **8/23/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00186	0.000200	0.00200	0	93.0	80	120			

Sample ID **1608133-16A MSD** Batch ID: **76918** TestNo: **SW7470A** Units: **mg/L**
SampType: **MSD** Run ID: **CETAC2_HG_160824B** Analysis Date: **8/24/2016 10:44:17 AM** Prep Date: **8/23/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00186	0.000200	0.00200	0	93.0	80	120	0	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_160824B

Sample ID **ICV-160824**	Batch ID: **R87769**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **ICV**	Run ID: **CETAC2_HG_160824B**	Analysis Date: **8/24/2016 10:10:16 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00395	0.000200	0.00400	0	98.8	90	110			

Sample ID **CCV1-160824**	Batch ID: **R87769**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_160824B**	Analysis Date: **8/24/2016 10:58:25 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00201	0.000200	0.00200	0	101	90	110			

Sample ID **CCV2-160824**	Batch ID: **R87769**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_160824B**	Analysis Date: **8/24/2016 11:26:52 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00198	0.000200	0.00200	0	99.0	90	110			

Sample ID **CCV3-160824**	Batch ID: **R87769**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_160824B**	Analysis Date: **8/24/2016 11:33:45 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00198	0.000200	0.00200	0	99.0	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS3_160824B

Sample ID **ICV1-160824**	Batch ID: **R87792**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS3_160824B**	Analysis Date: **8/24/2016 1:49:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.103	0.00100	0.100	0	103	90	110			

Sample ID **ILCVL-160824**	Batch ID: **R87792**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS3_160824B**	Analysis Date: **8/24/2016 1:55:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.00108	0.00100	0.00100	0	108	70	130			

Sample ID **CCV1-160824**	Batch ID: **R87792**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS3_160824B**	Analysis Date: **8/24/2016 4:35:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.217	0.00100	0.200	0	108	90	110			

Sample ID **LCVL1-160824**	Batch ID: **R87792**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS3_160824B**	Analysis Date: **8/24/2016 4:47:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.00107	0.00100	0.00100	0	107	70	130			

Sample ID **CCV2-160824**	Batch ID: **R87792**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS3_160824B**	Analysis Date: **8/24/2016 6:51:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.203	0.00100	0.200	0	102	90	110			

Sample ID **LCVL2-160824**	Batch ID: **R87792**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS3_160824B**	Analysis Date: **8/24/2016 7:02:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.00112	0.00100	0.00100	0	112	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160817A

The QC data in batch 76816 applies to the following samples: 1608133-01A, 1608133-02A

Sample ID **MB-76816** Batch ID: **76816** TestNo: **SW6020A** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_160817A** Analysis Date: **8/17/2016 12:55:00 PM** Prep Date: **8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.000800	0.00250								
Arsenic	<0.00200	0.00500								
Barium	<0.00300	0.0100								
Beryllium	<0.000300	0.00100								
Cadmium	<0.000300	0.00100								
Calcium	<0.100	0.300								
Chromium	<0.00200	0.00500								
Cobalt	<0.00300	0.00500								
Lead	<0.000300	0.00100								
Lithium	<0.00500	0.0100								
Molybdenum	<0.00200	0.00500								
Selenium	<0.00200	0.00500								
Thallium	<0.000500	0.00150								

Sample ID **LCS-76816** Batch ID: **76816** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_160817A** Analysis Date: **8/17/2016 12:57:00 PM** Prep Date: **8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.209	0.00250	0.200	0	105	80	120			
Arsenic	0.184	0.00500	0.200	0	91.9	80	120			
Barium	0.197	0.0100	0.200	0	98.5	80	120			
Beryllium	0.200	0.00100	0.200	0	100	80	120			
Cadmium	0.200	0.00100	0.200	0	99.8	80	120			
Calcium	4.73	0.300	5.00	0	94.5	80	120			
Chromium	0.198	0.00500	0.200	0	99.1	80	120			
Cobalt	0.180	0.00500	0.200	0	89.8	80	120			
Lead	0.196	0.00100	0.200	0	97.9	80	120			
Lithium	0.199	0.0100	0.200	0	99.4	80	120			
Molybdenum	0.194	0.00500	0.200	0	96.9	80	120			
Selenium	0.180	0.00500	0.200	0	90.0	80	120			
Thallium	0.202	0.00150	0.200	0	101	80	120			

Sample ID **LCSD-76816** Batch ID: **76816** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_160817A** Analysis Date: **8/17/2016 12:59:00 PM** Prep Date: **8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.210	0.00250	0.200	0	105	80	120	0.364	15	
Arsenic	0.192	0.00500	0.200	0	96.2	80	120	4.61	15	
Barium	0.194	0.0100	0.200	0	97.2	80	120	1.39	15	
Beryllium	0.199	0.00100	0.200	0	99.6	80	120	0.495	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160817A

Sample ID **LCSD-76816**	Batch ID: **76816**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCSD**	Run ID: **ICP-MS4_160817A**	Analysis Date: **8/17/2016 12:59:00 PM**	Prep Date: **8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cadmium	0.197	0.00100	0.200	0	98.5	80	120	1.30	15	
Calcium	4.70	0.300	5.00	0	94.0	80	120	0.549	15	
Chromium	0.196	0.00500	0.200	0	98.2	80	120	0.920	15	
Cobalt	0.186	0.00500	0.200	0	93.0	80	120	3.45	15	
Lead	0.191	0.00100	0.200	0	95.5	80	120	2.54	15	
Lithium	0.197	0.0100	0.200	0	98.5	80	120	0.885	15	
Molybdenum	0.193	0.00500	0.200	0	96.6	80	120	0.298	15	
Selenium	0.189	0.00500	0.200	0	94.3	80	120	4.76	15	
Thallium	0.194	0.00150	0.200	0	96.9	80	120	4.14	15	

Sample ID **1608135-04A SD**	Batch ID: **76816**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS4_160817A**	Analysis Date: **8/17/2016 1:05:00 PM**	Prep Date: **8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.0400	0.125	0	0				0	10	
Arsenic	0.667	0.250	0	0.668				0.086	10	
Barium	<0.150	0.500	0	0				0	10	
Beryllium	<0.0150	0.0500	0	0				0	10	
Cadmium	<0.0150	0.0500	0	0				0	10	
Calcium	5.38	15.0	0	5.68				5.39	10	
Chromium	<0.100	0.250	0	0				0	10	
Cobalt	<0.150	0.250	0	0				0	10	
Lead	<0.0150	0.0500	0	0				0	10	
Lithium	<0.250	0.500	0	0				0	10	
Molybdenum	1.25	0.250	0	1.21				3.01	10	
Selenium	<0.100	0.250	0	0				0	10	
Thallium	<0.0250	0.0750	0	0				0	10	

Sample ID **1608135-04A PDS**	Batch ID: **76816**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_160817A**	Analysis Date: **8/17/2016 1:25:00 PM**	Prep Date: **8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	2.10	0.0250	2.00	0	105	80	120			
Arsenic	2.66	0.0500	2.00	0.668	99.7	80	120			
Barium	1.97	0.100	2.00	0	98.6	80	120			
Beryllium	1.86	0.0100	2.00	0	93.2	80	120			
Cadmium	1.87	0.0100	2.00	0	93.7	80	120			
Calcium	50.3	3.00	50.0	5.68	89.2	80	120			
Chromium	1.93	0.0500	2.00	0	96.7	80	120			
Cobalt	1.90	0.0500	2.00	0	95.1	80	120			
Lead	1.97	0.0100	2.00	0	98.7	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

Sample ID **1608135-04A PDS**	Batch ID: **76816**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_160817A**	Analysis Date: **8/17/2016 1:25:00 PM**	Prep Date: **8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lithium	1.81	0.100	2.00	0	90.4	80	120			
Molybdenum	3.08	0.0500	2.00	1.21	93.4	80	120			
Selenium	1.94	0.0500	2.00	0	96.8	80	120			
Thallium	1.97	0.0150	2.00	0	98.3	80	120			

Sample ID **1608135-04A MS**	Batch ID: **76816**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS4_160817A**	Analysis Date: **8/17/2016 1:27:00 PM**	Prep Date: **8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.219	0.0250	0.200	0	110	80	120			
Arsenic	0.891	0.0500	0.200	0.668	112	80	120			
Barium	0.215	0.100	0.200	0	107	80	120			
Beryllium	0.186	0.0100	0.200	0	92.9	80	120			
Cadmium	0.196	0.0100	0.200	0	97.9	80	120			
Calcium	10.3	3.00	5.00	5.68	92.9	80	120			
Chromium	0.191	0.0500	0.200	0	95.6	80	120			
Cobalt	0.195	0.0500	0.200	0	97.4	80	120			
Lead	0.204	0.0100	0.200	0	102	80	120			
Lithium	0.215	0.100	0.200	0	108	80	120			
Molybdenum	1.48	0.0500	0.200	1.21	135	80	120			S
Selenium	0.175	0.0500	0.200	0	87.3	80	120			
Thallium	0.199	0.0150	0.200	0	99.5	80	120			

Sample ID **1608135-04A MSD**	Batch ID: **76816**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS4_160817A**	Analysis Date: **8/17/2016 1:29:00 PM**	Prep Date: **8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.213	0.0250	0.200	0	106	80	120	3.19	15	
Arsenic	0.873	0.0500	0.200	0.668	103	80	120	2.08	15	
Barium	0.213	0.100	0.200	0	106	80	120	0.965	15	
Beryllium	0.184	0.0100	0.200	0	91.8	80	120	1.18	15	
Cadmium	0.192	0.0100	0.200	0	95.9	80	120	2.08	15	
Calcium	10.3	3.00	5.00	5.68	91.6	80	120	0.674	15	
Chromium	0.189	0.0500	0.200	0	94.7	80	120	0.972	15	
Cobalt	0.192	0.0500	0.200	0	95.8	80	120	1.70	15	
Lead	0.199	0.0100	0.200	0	99.4	80	120	2.38	15	
Lithium	0.206	0.100	0.200	0	103	80	120	4.42	15	
Molybdenum	1.48	0.0500	0.200	1.21	134	80	120	0.179	15	S
Selenium	0.164	0.0500	0.200	0	82.1	80	120	6.17	15	
Thallium	0.200	0.0150	0.200	0	99.8	80	120	0.341	15	

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160817A

Sample ID **ICV-160817**	Batch ID: **R87663**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_160817A**	Analysis Date: **8/17/2016 10:42:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.104	0.00250	0.100	0	104	90	110			
Arsenic	0.101	0.00500	0.100	0	101	90	110			
Barium	0.0993	0.0100	0.100	0	99.3	90	110			
Beryllium	0.100	0.00100	0.100	0	100	90	110			
Cadmium	0.0985	0.00100	0.100	0	98.5	90	110			
Calcium	2.34	0.300	2.50	0	93.8	90	110			
Chromium	0.104	0.00500	0.100	0	104	90	110			
Cobalt	0.103	0.00500	0.100	0	103	90	110			
Lead	0.101	0.00100	0.100	0	101	90	110			
Lithium	0.0976	0.0100	0.100	0	97.6	90	110			
Molybdenum	0.0952	0.00500	0.100	0	95.2	90	110			
Selenium	0.101	0.00500	0.100	0	101	90	110			
Thallium	0.101	0.00150	0.100	0	101	90	110			

Sample ID **LCVL-160817**	Batch ID: **R87663**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160817A**	Analysis Date: **8/17/2016 10:46:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00221	0.00250	0.00200	0	110	70	130			
Arsenic	0.00526	0.00500	0.00500	0	105	70	130			
Barium	0.00513	0.0100	0.00500	0	103	70	130			
Beryllium	0.000783	0.00100	0.00100	0	78.3	70	130			
Cadmium	0.00104	0.00100	0.00100	0	104	70	130			
Calcium	0.105	0.300	0.100	0	105	70	130			
Chromium	0.00526	0.00500	0.00500	0	105	70	130			
Cobalt	0.00522	0.00500	0.00500	0	104	70	130			
Lead	0.00111	0.00100	0.00100	0	110	70	130			
Lithium	0.0100	0.0100	0.0100	0	100	70	130			
Molybdenum	0.00524	0.00500	0.00500	0	105	70	130			
Selenium	0.00555	0.00500	0.00500	0	111	70	130			
Thallium	0.00105	0.00150	0.00100	0	105	70	130			

Sample ID **CCV2-160817**	Batch ID: **R87663**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160817A**	Analysis Date: **8/17/2016 12:28:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.205	0.00250	0.200	0	103	90	110			
Arsenic	0.214	0.00500	0.200	0	107	90	110			
Barium	0.204	0.0100	0.200	0	102	90	110			
Beryllium	0.210	0.00100	0.200	0	105	90	110			
Cadmium	0.208	0.00100	0.200	0	104	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160817A

Sample ID **CCV2-160817** Batch ID: **R87663** TestNo: **SW6020A** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_160817A** Analysis Date: **8/17/2016 12:28:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.66	0.300	5.00	0	93.1	90	110			
Chromium	0.208	0.00500	0.200	0	104	90	110			
Cobalt	0.211	0.00500	0.200	0	106	90	110			
Lead	0.210	0.00100	0.200	0	105	90	110			
Lithium	0.215	0.0100	0.200	0	107	90	110			
Molybdenum	0.207	0.00500	0.200	0	103	90	110			
Selenium	0.212	0.00500	0.200	0	106	90	110			
Thallium	0.217	0.00150	0.200	0	108	90	110			

Sample ID **LCVL2-160817** Batch ID: **R87663** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_160817A** Analysis Date: **8/17/2016 12:38:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00214	0.00250	0.00200	0	107	70	130			
Arsenic	0.00520	0.00500	0.00500	0	104	70	130			
Barium	0.00517	0.0100	0.00500	0	103	70	130			
Beryllium	0.00109	0.00100	0.00100	0	109	70	130			
Cadmium	0.00104	0.00100	0.00100	0	104	70	130			
Calcium	0.0990	0.300	0.100	0	99.0	70	130			
Chromium	0.00514	0.00500	0.00500	0	103	70	130			
Cobalt	0.00494	0.00500	0.00500	0	98.9	70	130			
Lead	0.00103	0.00100	0.00100	0	103	70	130			
Lithium	0.0104	0.0100	0.0100	0	104	70	130			
Molybdenum	0.00489	0.00500	0.00500	0	97.8	70	130			
Selenium	0.00491	0.00500	0.00500	0	98.1	70	130			
Thallium	0.00105	0.00150	0.00100	0	105	70	130			

Sample ID **CCV3-160817** Batch ID: **R87663** TestNo: **SW6020A** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_160817A** Analysis Date: **8/17/2016 1:39:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.203	0.00250	0.200	0	102	90	110			
Arsenic	0.210	0.00500	0.200	0	105	90	110			
Barium	0.203	0.0100	0.200	0	102	90	110			
Beryllium	0.209	0.00100	0.200	0	104	90	110			
Cadmium	0.206	0.00100	0.200	0	103	90	110			
Calcium	4.76	0.300	5.00	0	95.3	90	110			
Chromium	0.209	0.00500	0.200	0	105	90	110			
Cobalt	0.206	0.00500	0.200	0	103	90	110			
Lead	0.202	0.00100	0.200	0	101	90	110			
Lithium	0.217	0.0100	0.200	0	109	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160817A

Sample ID **CCV3-160817** Batch ID: **R87663** TestNo: **SW6020A** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_160817A** Analysis Date: **8/17/2016 1:39:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Molybdenum	0.202	0.00500	0.200	0	101	90	110			
Selenium	0.205	0.00500	0.200	0	103	90	110			
Thallium	0.208	0.00150	0.200	0	104	90	110			

Sample ID **LCVL3-160817** Batch ID: **R87663** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_160817A** Analysis Date: **8/17/2016 1:46:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00226	0.00250	0.00200	0	113	70	130			
Arsenic	0.00537	0.00500	0.00500	0	107	70	130			
Barium	0.00514	0.0100	0.00500	0	103	70	130			
Beryllium	0.000885	0.00100	0.00100	0	88.5	70	130			
Cadmium	0.00103	0.00100	0.00100	0	103	70	130			
Calcium	0.103	0.300	0.100	0	103	70	130			
Chromium	0.00517	0.00500	0.00500	0	103	70	130			
Cobalt	0.00528	0.00500	0.00500	0	106	70	130			
Lead	0.000995	0.00100	0.00100	0	99.5	70	130			
Lithium	0.0101	0.0100	0.0100	0	101	70	130			
Molybdenum	0.00491	0.00500	0.00500	0	98.2	70	130			
Selenium	0.00497	0.00500	0.00500	0	99.5	70	130			
Thallium	0.00101	0.00150	0.00100	0	101	70	130			

Sample ID **CCV4-160817** Batch ID: **R87663** TestNo: **SW6020A** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_160817A** Analysis Date: **8/17/2016 2:11:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.207	0.00250	0.200	0	103	90	110			
Arsenic	0.209	0.00500	0.200	0	105	90	110			
Barium	0.208	0.0100	0.200	0	104	90	110			
Beryllium	0.207	0.00100	0.200	0	103	90	110			
Cadmium	0.208	0.00100	0.200	0	104	90	110			
Chromium	0.207	0.00500	0.200	0	103	90	110			
Cobalt	0.208	0.00500	0.200	0	104	90	110			
Lead	0.204	0.00100	0.200	0	102	90	110			
Lithium	0.214	0.0100	0.200	0	107	90	110			
Molybdenum	0.205	0.00500	0.200	0	103	90	110			
Selenium	0.203	0.00500	0.200	0	101	90	110			
Thallium	0.210	0.00150	0.200	0	105	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160817A

Sample ID **LCVL4-160817**	Batch ID: **R87663**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160817A**	Analysis Date: **8/17/2016 2:15:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00226	0.00250	0.00200	0	113	70	130			
Arsenic	0.00509	0.00500	0.00500	0	102	70	130			
Barium	0.00516	0.0100	0.00500	0	103	70	130			
Beryllium	0.00123	0.00100	0.00100	0	123	70	130			
Cadmium	0.00108	0.00100	0.00100	0	108	70	130			
Chromium	0.00521	0.00500	0.00500	0	104	70	130			
Cobalt	0.00503	0.00500	0.00500	0	101	70	130			
Lead	0.00103	0.00100	0.00100	0	103	70	130			
Lithium	0.0104	0.0100	0.0100	0	104	70	130			
Molybdenum	0.00495	0.00500	0.00500	0	99.0	70	130			
Selenium	0.00460	0.00500	0.00500	0	91.9	70	130			
Thallium	0.00104	0.00150	0.00100	0	104	70	130			

Sample ID **CCV6-160817**	Batch ID: **R87663**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160817A**	Analysis Date: **8/17/2016 3:33:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.203	0.00250	0.200	0	102	90	110			
Arsenic	0.204	0.00500	0.200	0	102	90	110			
Barium	0.208	0.0100	0.200	0	104	90	110			
Beryllium	0.202	0.00100	0.200	0	101	90	110			
Cadmium	0.202	0.00100	0.200	0	101	90	110			
Chromium	0.201	0.00500	0.200	0	101	90	110			
Cobalt	0.195	0.00500	0.200	0	97.7	90	110			
Lead	0.206	0.00100	0.200	0	103	90	110			
Molybdenum	0.200	0.00500	0.200	0	99.8	90	110			
Selenium	0.198	0.00500	0.200	0	99.2	90	110			
Thallium	0.210	0.00150	0.200	0	105	90	110			

Sample ID **LCVL6-160817**	Batch ID: **R87663**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160817A**	Analysis Date: **8/17/2016 3:38:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00230	0.00250	0.00200	0	115	70	130			
Arsenic	0.00526	0.00500	0.00500	0	105	70	130			
Barium	0.00533	0.0100	0.00500	0	107	70	130			
Beryllium	0.00128	0.00100	0.00100	0	128	70	130			
Cadmium	0.000952	0.00100	0.00100	0	95.2	70	130			
Chromium	0.00519	0.00500	0.00500	0	104	70	130			
Cobalt	0.00517	0.00500	0.00500	0	103	70	130			
Lead	0.00101	0.00100	0.00100	0	101	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160817A

Sample ID **LCVL6-160817** Batch ID: **R87663** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_160817A** Analysis Date: **8/17/2016 3:38:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Molybdenum	0.00482	0.00500	0.00500	0	96.4	70	130			
Selenium	0.00483	0.00500	0.00500	0	96.7	70	130			
Thallium	0.00102	0.00150	0.00100	0	102	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160818B

The QC data in batch 76816 applies to the following samples: 1608133-01A, 1608133-02A

Sample ID	**MB-76816**	Batch ID:	**76816**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**ICP-MS4_160818B**	Analysis Date:	**8/18/2016 2:32:00 PM**	Prep Date:	**8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	<0.0100	0.0300								

Sample ID	**LCS-76816**	Batch ID:	**76816**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**ICP-MS4_160818B**	Analysis Date:	**8/18/2016 2:34:00 PM**	Prep Date:	**8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.193	0.0300	0.200	0	96.3	80	120			

Sample ID	**LCSD-76816**	Batch ID:	**76816**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**LCSD**	Run ID:	**ICP-MS4_160818B**	Analysis Date:	**8/18/2016 2:36:00 PM**	Prep Date:	**8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.185	0.0300	0.200	0	92.7	80	120	3.82	15	

Sample ID	**1608135-04A SD**	Batch ID:	**76816**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**SD**	Run ID:	**ICP-MS4_160818B**	Analysis Date:	**8/18/2016 2:42:00 PM**	Prep Date:	**8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	1.97	1.50	0	1.87				5.13	10	

Sample ID	**1608135-04A PDS**	Batch ID:	**76816**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**PDS**	Run ID:	**ICP-MS4_160818B**	Analysis Date:	**8/18/2016 2:44:00 PM**	Prep Date:	**8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	3.60	0.300	2.00	1.87	86.7	80	120			

Sample ID	**1608135-04A MS**	Batch ID:	**76816**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**MS**	Run ID:	**ICP-MS4_160818B**	Analysis Date:	**8/18/2016 3:04:00 PM**	Prep Date:	**8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	2.18	0.300	0.200	1.87	158	80	120			S

Sample ID	**1608135-04A MSD**	Batch ID:	**76816**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**MSD**	Run ID:	**ICP-MS4_160818B**	Analysis Date:	**8/18/2016 3:06:00 PM**	Prep Date:	**8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	2.07	0.300	0.200	1.87	102	80	120	5.26	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160818B

Sample ID **ICV2-160818**	Batch ID: **R87690**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_160818B**	Analysis Date: **8/18/2016 2:06:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0920	0.0300	0.100	0	92.0	90	110			
Calcium	2.39	0.300	2.50	0	95.8	90	110			

Sample ID **ILCVL2-160818**	Batch ID: **R87690**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160818B**	Analysis Date: **8/18/2016 2:11:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0190	0.0300	0.0200	0	95.0	70	130			
Calcium	0.102	0.300	0.100	0	102	70	130			

Sample ID **CCV2-160818**	Batch ID: **R87690**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160818B**	Analysis Date: **8/18/2016 3:08:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.195	0.0300	0.200	0	97.6	90	110			
Calcium	4.88	0.300	5.00	0	97.6	90	110			

Sample ID **LCVL2-160818**	Batch ID: **R87690**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160818B**	Analysis Date: **8/18/2016 3:16:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0176	0.0300	0.0200	0	87.8	70	130			
Calcium	0.0995	0.300	0.100	0	99.5	70	130			

Sample ID **CCV3-160818**	Batch ID: **R87690**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160818B**	Analysis Date: **8/18/2016 3:42:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.193	0.0300	0.200	0	96.6	90	110			
Calcium	4.89	0.300	5.00	0	97.8	90	110			

Sample ID **LCVL3-160818**	Batch ID: **R87690**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160818B**	Analysis Date: **8/18/2016 3:54:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.00902	0.0300	0.0200	0	45.1	70	130			S
Calcium	0.100	0.300	0.100	0	100	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160819A

The QC data in batch 76817 applies to the following samples: 1608133-03A, 1608133-04A, 1608133-05A, 1608133-06A, 1608133-07A, 1608133-08A, 1608133-09A, 1608133-10A, 1608133-11A, 1608133-12A, 1608133-13A, 1608133-14A, 1608133-15A

Sample ID **MB-76817** Batch ID: **76817** TestNo: **SW6020A** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_160819A** Analysis Date: **8/19/2016 5:26:00 PM** Prep Date: **8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.000800	0.00250								
Arsenic	<0.00200	0.00500								
Barium	<0.00300	0.0100								
Cadmium	<0.000300	0.00100								
Calcium	<0.100	0.300								
Chromium	<0.00200	0.00500								
Cobalt	<0.00300	0.00500								
Lead	<0.000300	0.00100								
Molybdenum	<0.00200	0.00500								
Selenium	<0.00200	0.00500								
Thallium	<0.000500	0.00150								

Sample ID **LCS-76817** Batch ID: **76817** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_160819A** Analysis Date: **8/19/2016 5:28:00 PM** Prep Date: **8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.199	0.00250	0.200	0	99.6	80	120			
Arsenic	0.200	0.00500	0.200	0	100	80	120			
Barium	0.194	0.0100	0.200	0	97.1	80	120			
Cadmium	0.190	0.00100	0.200	0	95.2	80	120			
Calcium	4.76	0.300	5.00	0	95.3	80	120			
Chromium	0.196	0.00500	0.200	0	97.9	80	120			
Cobalt	0.200	0.00500	0.200	0	100	80	120			
Lead	0.200	0.00100	0.200	0	99.8	80	120			
Molybdenum	0.186	0.00500	0.200	0	93.2	80	120			
Selenium	0.203	0.00500	0.200	0	102	80	120			
Thallium	0.200	0.00150	0.200	0	100	80	120			

Sample ID **LCSD-76817** Batch ID: **76817** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_160819A** Analysis Date: **8/19/2016 5:30:00 PM** Prep Date: **8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.200	0.00250	0.200	0	100	80	120	0.615	15	
Arsenic	0.201	0.00500	0.200	0	100	80	120	0.198	15	
Barium	0.195	0.0100	0.200	0	97.3	80	120	0.243	15	
Cadmium	0.192	0.00100	0.200	0	96.0	80	120	0.767	15	
Calcium	4.81	0.300	5.00	0	96.2	80	120	0.929	15	
Chromium	0.196	0.00500	0.200	0	97.8	80	120	0.039	15	
Cobalt	0.201	0.00500	0.200	0	100	80	120	0.213	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160819A

Sample ID **LCSD-76817**	Batch ID: **76817**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCSD**	Run ID: **ICP-MS4_160819A**	Analysis Date: **8/19/2016 5:30:00 PM**	Prep Date: **8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.199	0.00100	0.200	0	99.3	80	120	0.462	15	
Molybdenum	0.189	0.00500	0.200	0	94.5	80	120	1.31	15	
Selenium	0.203	0.00500	0.200	0	102	80	120	0.159	15	
Thallium	0.199	0.00150	0.200	0	99.3	80	120	0.824	15	

Sample ID **1608136-06A SD**	Batch ID: **76817**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS4_160819A**	Analysis Date: **8/19/2016 5:36:00 PM**	Prep Date: **8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.00400	0.0125	0	0				0	10	
Arsenic	0.190	0.0250	0	0.193				1.47	10	
Barium	0.0413	0.0500	0	0.0412				0.187	10	
Cadmium	<0.00150	0.00500	0	0				0	10	
Calcium	5.17	1.50	0	5.22				0.967	10	
Chromium	<0.0100	0.0250	0	0				0	10	
Cobalt	<0.0150	0.0250	0	0.00742				0	10	
Lead	<0.00150	0.00500	0	0.000484				0	10	
Molybdenum	0.364	0.0250	0	0.374				2.56	10	
Selenium	<0.0100	0.0250	0	0.00282				0	10	
Thallium	<0.00250	0.00750	0	0				0	10	

Sample ID **1608136-06A PDS**	Batch ID: **76817**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_160819A**	Analysis Date: **8/19/2016 5:56:00 PM**	Prep Date: **8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.209	0.00250	0.200	0	104	80	120			
Arsenic	0.386	0.00500	0.200	0.193	96.6	80	120			
Barium	0.238	0.0100	0.200	0.0412	98.6	80	120			
Cadmium	0.177	0.00100	0.200	0	88.4	80	120			
Calcium	9.50	0.300	5.00	5.22	85.7	80	120			
Chromium	0.186	0.00500	0.200	0	93.0	80	120			
Cobalt	0.197	0.00500	0.200	0.00742	94.6	80	120			
Lead	0.202	0.00100	0.200	0.000484	101	80	120			
Molybdenum	0.524	0.00500	0.200	0.374	74.9	80	120			S
Selenium	0.210	0.00500	0.200	0.00282	103	80	120			
Thallium	0.201	0.00150	0.200	0	101	80	120			

Sample ID **1608136-06A MS**	Batch ID: **76817**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS4_160819A**	Analysis Date: **8/19/2016 5:58:00 PM**	Prep Date: **8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160819A

Sample ID **1608136-06A MS**	Batch ID: **76817**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS4_160819A**	Analysis Date: **8/19/2016 5:58:00 PM**	Prep Date: **8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.204	0.00250	0.200	0	102	80	120			
Arsenic	0.633	0.00500	0.200	0.193	220	80	120			S
Barium	0.535	0.0100	0.200	0.0412	247	80	120			S
Cadmium	0.173	0.00100	0.200	0	86.5	80	120			
Calcium	5.64	0.300	5.00	5.22	8.36	80	120			S
Chromium	0.174	0.00500	0.200	0	87.1	80	120			
Cobalt	0.181	0.00500	0.200	0.00742	86.7	80	120			
Lead	0.201	0.00100	0.200	0.000484	100	80	120			
Molybdenum	2.66	0.00500	0.200	0.374	1140	80	120			S
Selenium	0.206	0.00500	0.200	0.00282	102	80	120			
Thallium	0.201	0.00150	0.200	0	101	80	120			

Sample ID **1608136-06A MSD**	Batch ID: **76817**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS4_160819A**	Analysis Date: **8/19/2016 6:00:00 PM**	Prep Date: **8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.198	0.00250	0.200	0	99.2	80	120	2.74	15	
Arsenic	0.612	0.00500	0.200	0.193	210	80	120	3.36	15	S
Barium	0.506	0.0100	0.200	0.0412	232	80	120	5.57	15	S
Cadmium	0.167	0.00100	0.200	0	83.7	80	120	3.24	15	
Calcium	5.63	0.300	5.00	5.22	8.09	80	120	0.238	15	S
Chromium	0.171	0.00500	0.200	0	85.6	80	120	1.72	15	
Cobalt	0.178	0.00500	0.200	0.00742	85.3	80	120	1.57	15	
Lead	0.199	0.00100	0.200	0.000484	99.2	80	120	1.03	15	
Molybdenum	2.51	0.00500	0.200	0.374	1070	80	120	5.76	15	S
Selenium	0.207	0.00500	0.200	0.00282	102	80	120	0.267	15	
Thallium	0.198	0.00150	0.200	0	98.9	80	120	1.84	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160819A

Sample ID **ICV-160819**	Batch ID: **R87706**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_160819A**	Analysis Date: **8/19/2016 12:09:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.104	0.00250	0.100	0	104	90	110			
Arsenic	0.101	0.00500	0.100	0	101	90	110			
Barium	0.101	0.0100	0.100	0	101	90	110			
Cadmium	0.0995	0.00100	0.100	0	99.5	90	110			
Calcium	2.40	0.300	2.50	0	96.1	90	110			
Chromium	0.105	0.00500	0.100	0	105	90	110			
Cobalt	0.105	0.00500	0.100	0	105	90	110			
Lead	0.0999	0.00100	0.100	0	99.9	90	110			
Molybdenum	0.0938	0.00500	0.100	0	93.8	90	110			
Selenium	0.103	0.00500	0.100	0	103	90	110			
Thallium	0.0989	0.00150	0.100	0	98.9	90	110			

Sample ID **LCVL-160819**	Batch ID: **R87706**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160819A**	Analysis Date: **8/19/2016 12:13:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00224	0.00250	0.00200	0	112	70	130			
Arsenic	0.00546	0.00500	0.00500	0	109	70	130			
Barium	0.00533	0.0100	0.00500	0	107	70	130			
Cadmium	0.00105	0.00100	0.00100	0	105	70	130			
Calcium	0.103	0.300	0.100	0	103	70	130			
Chromium	0.00543	0.00500	0.00500	0	109	70	130			
Cobalt	0.00554	0.00500	0.00500	0	111	70	130			
Lead	0.00113	0.00100	0.00100	0	113	70	130			
Molybdenum	0.00515	0.00500	0.00500	0	103	70	130			
Selenium	0.00608	0.00500	0.00500	0	122	70	130			
Thallium	0.00106	0.00150	0.00100	0	106	70	130			

Sample ID **CCV5-160819**	Batch ID: **R87706**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160819A**	Analysis Date: **8/19/2016 5:18:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.208	0.00250	0.200	0	104	90	110			
Arsenic	0.206	0.00500	0.200	0	103	90	110			
Barium	0.201	0.0100	0.200	0	100	90	110			
Cadmium	0.195	0.00100	0.200	0	97.3	90	110			
Calcium	4.99	0.300	5.00	0	99.9	90	110			
Chromium	0.202	0.00500	0.200	0	101	90	110			
Cobalt	0.204	0.00500	0.200	0	102	90	110			
Lead	0.203	0.00100	0.200	0	102	90	110			
Molybdenum	0.193	0.00500	0.200	0	96.7	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160819A

Sample ID **CCV5-160819**	Batch ID: **R87706**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160819A**	Analysis Date: **8/19/2016 5:18:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.207	0.00500	0.200	0	104	90	110			
Thallium	0.207	0.00150	0.200	0	104	90	110			

Sample ID **LCVL5-160819**	Batch ID: **R87706**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160819A**	Analysis Date: **8/19/2016 5:22:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00232	0.00250	0.00200	0	116	70	130			
Arsenic	0.00549	0.00500	0.00500	0	110	70	130			
Barium	0.00536	0.0100	0.00500	0	107	70	130			
Cadmium	0.00103	0.00100	0.00100	0	103	70	130			
Calcium	0.108	0.300	0.100	0	108	70	130			
Chromium	0.00549	0.00500	0.00500	0	110	70	130			
Cobalt	0.00548	0.00500	0.00500	0	110	70	130			
Lead	0.00113	0.00100	0.00100	0	113	70	130			
Molybdenum	0.00488	0.00500	0.00500	0	97.5	70	130			
Selenium	0.00563	0.00500	0.00500	0	113	70	130			
Thallium	0.00111	0.00150	0.00100	0	111	70	130			

Sample ID **CCV6-160819**	Batch ID: **R87706**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160819A**	Analysis Date: **8/19/2016 6:02:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.205	0.00250	0.200	0	103	90	110			
Arsenic	0.207	0.00500	0.200	0	103	90	110			
Barium	0.196	0.0100	0.200	0	97.9	90	110			
Cadmium	0.185	0.00100	0.200	0	92.6	90	110			
Calcium	5.07	0.300	5.00	0	101	90	110			
Chromium	0.188	0.00500	0.200	0	93.9	90	110			
Cobalt	0.196	0.00500	0.200	0	97.9	90	110			
Lead	0.202	0.00100	0.200	0	101	90	110			
Molybdenum	0.189	0.00500	0.200	0	94.5	90	110			
Selenium	0.215	0.00500	0.200	0	108	90	110			
Thallium	0.203	0.00150	0.200	0	102	90	110			

Sample ID **LCVL6-160819**	Batch ID: **R87706**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160819A**	Analysis Date: **8/19/2016 6:06:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00238	0.00250	0.00200	0	119	70	130			
Arsenic	0.00547	0.00500	0.00500	0	109	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160819A

Sample ID **LCVL6-160819** Batch ID: **R87706** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_160819A** Analysis Date: **8/19/2016 6:06:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.00542	0.0100	0.00500	0	108	70	130			
Cadmium	0.00101	0.00100	0.00100	0	101	70	130			
Calcium	0.109	0.300	0.100	0	109	70	130			
Chromium	0.00524	0.00500	0.00500	0	105	70	130			
Cobalt	0.00530	0.00500	0.00500	0	106	70	130			
Lead	0.00109	0.00100	0.00100	0	109	70	130			
Molybdenum	0.00510	0.00500	0.00500	0	102	70	130			
Selenium	0.00645	0.00500	0.00500	0	129	70	130			
Thallium	0.00111	0.00150	0.00100	0	111	70	130			

Sample ID **CCV7-160819** Batch ID: **R87706** TestNo: **SW6020A** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_160819A** Analysis Date: **8/19/2016 6:31:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.205	0.00250	0.200	0	102	90	110			
Arsenic	0.208	0.00500	0.200	0	104	90	110			
Barium	0.198	0.0100	0.200	0	99.0	90	110			
Cadmium	0.190	0.00100	0.200	0	94.9	90	110			
Calcium	4.94	0.300	5.00	0	98.8	90	110			
Chromium	0.200	0.00500	0.200	0	99.8	90	110			
Cobalt	0.205	0.00500	0.200	0	102	90	110			
Lead	0.204	0.00100	0.200	0	102	90	110			
Molybdenum	0.189	0.00500	0.200	0	94.3	90	110			
Selenium	0.208	0.00500	0.200	0	104	90	110			
Thallium	0.204	0.00150	0.200	0	102	90	110			

Sample ID **LCVL7-160819** Batch ID: **R87706** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_160819A** Analysis Date: **8/19/2016 6:35:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00228	0.00250	0.00200	0	114	70	130			
Arsenic	0.00552	0.00500	0.00500	0	110	70	130			
Barium	0.00510	0.0100	0.00500	0	102	70	130			
Cadmium	0.000970	0.00100	0.00100	0	97.0	70	130			
Calcium	0.104	0.300	0.100	0	104	70	130			
Chromium	0.00536	0.00500	0.00500	0	107	70	130			
Cobalt	0.00541	0.00500	0.00500	0	108	70	130			
Lead	0.00108	0.00100	0.00100	0	108	70	130			
Molybdenum	0.00480	0.00500	0.00500	0	96.1	70	130			
Selenium	0.00607	0.00500	0.00500	0	121	70	130			
Thallium	0.00111	0.00150	0.00100	0	111	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160822B

The QC data in batch 76817 applies to the following samples: 1608133-03A, 1608133-04A, 1608133-05A, 1608133-06A, 1608133-07A, 1608133-08A, 1608133-09A, 1608133-10A, 1608133-11A, 1608133-12A, 1608133-13A, 1608133-14A, 1608133-15A

Sample ID **MB-76817** Batch ID: **76817** TestNo: **SW6020A** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_160822B** Analysis Date: **8/22/2016 1:51:00 PM** Prep Date: **8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	<0.000300	0.00100								
Boron	<0.0100	0.0300								
Lithium	<0.00500	0.0100								

Sample ID **LCS-76817** Batch ID: **76817** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_160822B** Analysis Date: **8/22/2016 1:53:00 PM** Prep Date: **8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.200	0.00100	0.200	0	99.8	80	120			
Boron	0.196	0.0300	0.200	0	98.2	80	120			
Lithium	0.200	0.0100	0.200	0	100	80	120			

Sample ID **LCSD-76817** Batch ID: **76817** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_160822B** Analysis Date: **8/22/2016 1:55:00 PM** Prep Date: **8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.201	0.00100	0.200	0	100	80	120	0.617	15	
Boron	0.199	0.0300	0.200	0	99.4	80	120	1.23	15	
Lithium	0.207	0.0100	0.200	0	104	80	120	3.27	15	

Sample ID **1608136-06A SD** Batch ID: **76817** TestNo: **SW6020A** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS4_160822B** Analysis Date: **8/22/2016 2:01:00 PM** Prep Date: **8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	<0.0150	0.0500	0	0				0	10	
Boron	1.40	1.50	0	1.19				16.8	10	R
Lithium	<0.250	0.500	0	0				0	10	

Sample ID **1608136-06A PDS** Batch ID: **76817** TestNo: **SW6020A** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS4_160822B** Analysis Date: **8/22/2016 2:03:00 PM** Prep Date: **8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	1.86	0.0100	2.00	0	93.0	80	120			
Boron	3.08	0.300	2.00	1.19	94.9	80	120			
Lithium	1.82	0.100	2.00	0	91.1	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160822B

Sample ID **1608136-06A MS**	Batch ID: **76817**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS4_160822B**	Analysis Date: **8/22/2016 2:23:00 PM**	Prep Date: **8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.171	0.0100	0.200	0	85.3	80	120			
Boron	1.15	0.300	0.200	1.19	-18.0	80	120			S
Lithium	0.189	0.100	0.200	0	94.3	80	120			

Sample ID **1608136-06A MSD**	Batch ID: **76817**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS4_160822B**	Analysis Date: **8/22/2016 2:25:00 PM**	Prep Date: **8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.174	0.0100	0.200	0	87.2	80	120	2.20	15	
Boron	1.15	0.300	0.200	1.19	-18.1	80	120	0.025	15	S
Lithium	0.176	0.100	0.200	0	87.9	80	120	7.03	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160822B

Sample ID	**ICV2-160822**	Batch ID:	**R87729**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**ICV**	Run ID:	**ICP-MS4_160822B**	Analysis Date:	**8/22/2016 1:35:00 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.100	0.00100	0.100	0	100	90	110			
Boron	0.0948	0.0300	0.100	0	94.8	90	110			
Calcium	2.32	0.300	2.50	0	92.9	90	110			
Lithium	0.0966	0.0100	0.100	0	96.6	90	110			

Sample ID	**ILCVL2-160822**	Batch ID:	**R87729**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**LCVL**	Run ID:	**ICP-MS4_160822B**	Analysis Date:	**8/22/2016 1:44:00 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.00125	0.00100	0.00100	0	125	70	130			
Boron	0.0215	0.0300	0.0200	0	108	70	130			
Calcium	0.106	0.300	0.100	0	106	70	130			
Lithium	0.0114	0.0100	0.0100	0	114	70	130			

Sample ID	**CCV2-160822**	Batch ID:	**R87729**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**ICP-MS4_160822B**	Analysis Date:	**8/22/2016 2:35:00 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.209	0.00100	0.200	0	105	90	110			
Boron	0.213	0.0300	0.200	0	106	90	110			
Calcium	4.78	0.300	5.00	0	95.5	90	110			
Lithium	0.213	0.0100	0.200	0	107	90	110			

Sample ID	**LCVL2-160822**	Batch ID:	**R87729**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**LCVL**	Run ID:	**ICP-MS4_160822B**	Analysis Date:	**8/22/2016 2:46:00 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.00131	0.00100	0.00100	0	131	70	130			S
Boron	0.0245	0.0300	0.0200	0	123	70	130			
Calcium	0.0981	0.300	0.100	0	98.1	70	130			
Lithium	0.0113	0.0100	0.0100	0	113	70	130			

Sample ID	**CCV3-160822**	Batch ID:	**R87729**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**ICP-MS4_160822B**	Analysis Date:	**8/22/2016 3:07:00 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.208	0.00100	0.200	0	104	90	110			
Boron	0.220	0.0300	0.200	0	110	90	110			
Lithium	0.219	0.0100	0.200	0	110	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160822B

Sample ID **LCVL3-160822**	Batch ID: **R87729**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160822B**	Analysis Date: **8/22/2016 3:17:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.00108	0.00100	0.00100	0	108	70	130			
Boron	0.0214	0.0300	0.0200	0	107	70	130			
Lithium	0.0113	0.0100	0.0100	0	113	70	130			

Sample ID **CCV4-160822**	Batch ID: **R87729**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160822B**	Analysis Date: **8/22/2016 3:35:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.192	0.00100	0.200	0	96.0	90	110			
Lithium	0.202	0.0100	0.200	0	101	90	110			

Sample ID **LCVL4-160822**	Batch ID: **R87729**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160822B**	Analysis Date: **8/22/2016 3:46:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.00104	0.00100	0.00100	0	104	70	130			
Lithium	0.0101	0.0100	0.0100	0	101	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: **ICP-MS4_160823B**

The QC data in batch 76893 applies to the following samples: 1608133-16A, 1608133-17A, 1608133-18A, 1608133-19A, 1608133-20A, 1608133-21A, 1608133-22A

Sample ID **MB-76893** Batch ID: **76893** TestNo: **SW6020A** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_160823B** Analysis Date: **8/23/2016 12:12:00 PM** Prep Date: **8/22/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.000800	0.00250								
Arsenic	<0.00200	0.00500								
Barium	<0.00300	0.0100								
Beryllium	<0.000300	0.00100								
Cadmium	<0.000300	0.00100								
Calcium	<0.100	0.300								
Chromium	<0.00200	0.00500								
Cobalt	<0.00300	0.00500								
Lead	<0.000300	0.00100								
Lithium	<0.00500	0.0100								
Molybdenum	<0.00200	0.00500								
Selenium	<0.00200	0.00500								
Thallium	<0.000500	0.00150								

Sample ID **LCS-76893** Batch ID: **76893** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_160823B** Analysis Date: **8/23/2016 12:14:00 PM** Prep Date: **8/22/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.203	0.00250	0.200	0	101	80	120			
Arsenic	0.199	0.00500	0.200	0	99.5	80	120			
Barium	0.196	0.0100	0.200	0	97.8	80	120			
Beryllium	0.201	0.00100	0.200	0	101	80	120			
Cadmium	0.203	0.00100	0.200	0	101	80	120			
Calcium	4.82	0.300	5.00	0	96.4	80	120			
Chromium	0.203	0.00500	0.200	0	101	80	120			
Cobalt	0.202	0.00500	0.200	0	101	80	120			
Lead	0.196	0.00100	0.200	0	98.2	80	120			
Lithium	0.199	0.0100	0.200	0	99.6	80	120			
Molybdenum	0.201	0.00500	0.200	0	100	80	120			
Selenium	0.197	0.00500	0.200	0	98.5	80	120			
Thallium	0.196	0.00150	0.200	0	98.0	80	120			

Sample ID **LCSD-76893** Batch ID: **76893** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_160823B** Analysis Date: **8/23/2016 12:16:00 PM** Prep Date: **8/22/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.208	0.00250	0.200	0	104	80	120	2.52	15	
Arsenic	0.199	0.00500	0.200	0	99.3	80	120	0.240	15	
Barium	0.196	0.0100	0.200	0	98.1	80	120	0.297	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160823B

Sample ID **LCSD-76893**	Batch ID: **76893**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCSD**	Run ID: **ICP-MS4_160823B**	Analysis Date: **8/23/2016 12:16:00 PM**	Prep Date: **8/22/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.198	0.00100	0.200	0	98.9	80	120	1.69	15	
Cadmium	0.202	0.00100	0.200	0	101	80	120	0.195	15	
Calcium	4.79	0.300	5.00	0	95.9	80	120	0.478	15	
Chromium	0.201	0.00500	0.200	0	101	80	120	0.842	15	
Cobalt	0.203	0.00500	0.200	0	101	80	120	0.425	15	
Lead	0.200	0.00100	0.200	0	99.8	80	120	1.66	15	
Lithium	0.197	0.0100	0.200	0	98.4	80	120	1.20	15	
Molybdenum	0.202	0.00500	0.200	0	101	80	120	0.688	15	
Selenium	0.198	0.00500	0.200	0	98.9	80	120	0.390	15	
Thallium	0.197	0.00150	0.200	0	98.4	80	120	0.336	15	

Sample ID **1608181-05A SD**	Batch ID: **76893**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS4_160823B**	Analysis Date: **8/23/2016 12:22:00 PM**	Prep Date: **8/22/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00722	0.0125	0	0.00670				7.61	10	
Arsenic	0.0275	0.0250	0	0.0274				0.353	10	
Barium	0.0761	0.0500	0	0.0743				2.38	10	
Beryllium	<0.00150	0.00500	0	0.000692				0	10	
Cadmium	<0.00150	0.00500	0	0.000325				0	10	
Chromium	<0.0100	0.0250	0	0.00533				0	10	
Cobalt	<0.0150	0.0250	0	0.00556				0	10	
Lead	0.00462	0.00500	0	0.00469				1.55	10	
Lithium	0.267	0.0500	0	0.242				9.42	10	
Molybdenum	<0.0100	0.0250	0	0.00903				0	10	
Selenium	<0.0100	0.0250	0	0				0	10	
Thallium	<0.00250	0.00750	0	0				0	10	

Sample ID **1608181-05A PDS**	Batch ID: **76893**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_160823B**	Analysis Date: **8/23/2016 12:42:00 PM**	Prep Date: **8/22/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.219	0.00250	0.200	0.00670	106	80	120			
Arsenic	0.235	0.00500	0.200	0.0274	104	80	120			
Barium	0.267	0.0100	0.200	0.0743	96.4	80	120			
Beryllium	0.174	0.00100	0.200	0.000692	86.7	80	120			
Cadmium	0.185	0.00100	0.200	0.000325	92.6	80	120			
Chromium	0.193	0.00500	0.200	0.00533	93.6	80	120			
Cobalt	0.191	0.00500	0.200	0.00556	92.9	80	120			
Lead	0.203	0.00100	0.200	0.00469	99.3	80	120			
Lithium	0.368	0.0100	0.200	0.243	63.0	80	120			S

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160823B

Sample ID **1608181-05A PDS** Batch ID: **76893** TestNo: **SW6020A** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS4_160823B** Analysis Date: **8/23/2016 12:42:00 PM** Prep Date: **8/22/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Molybdenum	0.197	0.00500	0.200	0.00903	93.9	80	120			
Selenium	0.210	0.00500	0.200	0	105	80	120			
Thallium	0.198	0.00150	0.200	0	98.8	80	120			

Sample ID **1608181-05A MS** Batch ID: **76893** TestNo: **SW6020A** Units: **mg/L**
SampType: **MS** Run ID: **ICP-MS4_160823B** Analysis Date: **8/23/2016 12:44:00 PM** Prep Date: **8/22/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.207	0.00250	0.200	0.00670	100	80	120			
Arsenic	0.241	0.00500	0.200	0.0274	107	80	120			
Barium	0.269	0.0100	0.200	0.0743	97.2	80	120			
Beryllium	0.178	0.00100	0.200	0.000692	88.7	80	120			
Cadmium	0.188	0.00100	0.200	0.000325	93.6	80	120			
Calcium	587	0.300	5.00	573	282	80	120			S
Chromium	0.191	0.00500	0.200	0.00533	92.6	80	120			
Cobalt	0.192	0.00500	0.200	0.00556	93.0	80	120			
Lead	0.203	0.00100	0.200	0.00469	99.1	80	120			
Lithium	0.388	0.0100	0.200	0.243	72.5	80	120			S
Molybdenum	0.207	0.00500	0.200	0.00903	98.8	80	120			
Selenium	0.210	0.00500	0.200	0	105	80	120			
Thallium	0.198	0.00150	0.200	0	98.8	80	120			

Sample ID **1608181-05A MSD** Batch ID: **76893** TestNo: **SW6020A** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS4_160823B** Analysis Date: **8/23/2016 12:46:00 PM** Prep Date: **8/22/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.209	0.00250	0.200	0.00670	101	80	120	0.721	15	
Arsenic	0.240	0.00500	0.200	0.0274	106	80	120	0.404	15	
Barium	0.270	0.0100	0.200	0.0743	97.9	80	120	0.517	15	
Beryllium	0.175	0.00100	0.200	0.000692	86.9	80	120	1.95	15	
Cadmium	0.185	0.00100	0.200	0.000325	92.5	80	120	1.27	15	
Calcium	591	0.300	5.00	573	357	80	120	0.637	15	S
Chromium	0.190	0.00500	0.200	0.00533	92.1	80	120	0.519	15	
Cobalt	0.191	0.00500	0.200	0.00556	92.9	80	120	0.044	15	
Lead	0.206	0.00100	0.200	0.00469	100	80	120	1.30	15	
Lithium	0.392	0.0100	0.200	0.243	74.9	80	120	1.21	15	S
Molybdenum	0.205	0.00500	0.200	0.00903	98.2	80	120	0.647	15	
Selenium	0.218	0.00500	0.200	0	109	80	120	3.68	15	
Thallium	0.200	0.00150	0.200	0	100	80	120	1.23	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160823B

The QC data in batch 76895 applies to the following samples: 1608133-23A, 1608133-24A, 1608133-25A, 1608133-26A, 1608133-27A

Sample ID **MB-76895** Batch ID: **76895** TestNo: **SW6020A** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_160823B** Analysis Date: **8/23/2016 2:47:00 PM** Prep Date: **8/22/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.000800	0.00250								
Barium	<0.00300	0.0100								
Beryllium	<0.000300	0.00100								
Cadmium	<0.000300	0.00100								
Calcium	<0.100	0.300								
Chromium	<0.00200	0.00500								
Cobalt	<0.00300	0.00500								
Lead	<0.000300	0.00100								
Lithium	<0.00500	0.0100								
Molybdenum	<0.00200	0.00500								
Thallium	<0.000500	0.00150								

Sample ID **LCS-76895** Batch ID: **76895** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_160823B** Analysis Date: **8/23/2016 2:49:00 PM** Prep Date: **8/22/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.211	0.00250	0.200	0	106	80	120			
Barium	0.199	0.0100	0.200	0	99.7	80	120			
Beryllium	0.195	0.00100	0.200	0	97.6	80	120			
Cadmium	0.200	0.00100	0.200	0	100	80	120			
Calcium	4.95	0.300	5.00	0	98.9	80	120			
Chromium	0.200	0.00500	0.200	0	99.8	80	120			
Cobalt	0.199	0.00500	0.200	0	99.6	80	120			
Lead	0.199	0.00100	0.200	0	99.3	80	120			
Lithium	0.193	0.0100	0.200	0	96.7	80	120			
Molybdenum	0.195	0.00500	0.200	0	97.6	80	120			
Thallium	0.197	0.00150	0.200	0	98.5	80	120			

Sample ID **LCSD-76895** Batch ID: **76895** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_160823B** Analysis Date: **8/23/2016 2:51:00 PM** Prep Date: **8/22/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.210	0.00250	0.200	0	105	80	120	0.404	15	
Barium	0.199	0.0100	0.200	0	99.6	80	120	0.096	15	
Beryllium	0.194	0.00100	0.200	0	97.1	80	120	0.534	15	
Cadmium	0.200	0.00100	0.200	0	99.8	80	120	0.137	15	
Calcium	4.83	0.300	5.00	0	96.7	80	120	2.29	15	
Chromium	0.196	0.00500	0.200	0	98.2	80	120	1.60	15	
Cobalt	0.200	0.00500	0.200	0	99.9	80	120	0.293	15	
Lead	0.198	0.00100	0.200	0	98.8	80	120	0.463	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160823B

Sample ID **LCSD-76895**	Batch ID: **76895**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCSD**	Run ID: **ICP-MS4_160823B**	Analysis Date: **8/23/2016 2:51:00 PM**	Prep Date: **8/22/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lithium	0.195	0.0100	0.200	0	97.5	80	120	0.771	15	
Molybdenum	0.196	0.00500	0.200	0	98.2	80	120	0.676	15	
Thallium	0.197	0.00150	0.200	0	98.4	80	120	0.125	15	

Sample ID **1608210-05A MS**	Batch ID: **76895**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS4_160823B**	Analysis Date: **8/23/2016 3:18:00 PM**	Prep Date: **8/22/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.186	0.00250	0.200	0.00110	92.5	80	120			
Barium	0.366	0.0100	0.200	0.175	95.9	80	120			
Beryllium	0.123	0.00100	0.200	0.00194	60.3	80	120			S
Cadmium	0.177	0.00100	0.200	0.000340	88.5	80	120			
Calcium	1100	0.300	5.00	1070	657	80	120			S
Chromium	0.329	0.00500	0.200	0.191	68.8	80	120			S
Cobalt	0.190	0.00500	0.200	0.0273	81.1	80	120			
Lead	0.225	0.00100	0.200	0.0238	101	80	120			
Lithium	1.82	0.0100	0.200	1.98	-80.3	80	120			S
Molybdenum	0.197	0.00500	0.200	0.00359	96.6	80	120			
Thallium	0.201	0.00150	0.200	0	100	80	120			

Sample ID **1608210-05A MSD**	Batch ID: **76895**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS4_160823B**	Analysis Date: **8/23/2016 3:20:00 PM**	Prep Date: **8/22/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.175	0.00250	0.200	0.00110	87.1	80	120	6.01	15	
Barium	0.364	0.0100	0.200	0.175	94.5	80	120	0.800	15	
Beryllium	0.118	0.00100	0.200	0.00194	58.0	80	120	3.79	15	S
Cadmium	0.178	0.00100	0.200	0.000340	88.9	80	120	0.375	15	
Calcium	1090	0.300	5.00	1070	503	80	120	0.700	15	S
Chromium	0.318	0.00500	0.200	0.191	63.1	80	120	3.49	15	S
Cobalt	0.189	0.00500	0.200	0.0273	80.6	80	120	0.584	15	
Lead	0.224	0.00100	0.200	0.0238	100	80	120	0.170	15	
Lithium	1.70	0.0100	0.200	1.98	-138	80	120	6.61	15	S
Molybdenum	0.195	0.00500	0.200	0.00359	95.6	80	120	0.984	15	
Thallium	0.202	0.00150	0.200	0	101	80	120	0.458	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160823B

Sample ID **ICV-160823**	Batch ID: **R87756**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_160823B**	Analysis Date: **8/23/2016 11:07:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.104	0.00250	0.100	0	104	90	110			
Arsenic	0.0998	0.00500	0.100	0	99.8	90	110			
Barium	0.0969	0.0100	0.100	0	96.9	90	110			
Beryllium	0.0994	0.00100	0.100	0	99.4	90	110			
Cadmium	0.0990	0.00100	0.100	0	99.0	90	110			
Calcium	2.36	0.300	2.50	0	94.3	90	110			
Chromium	0.105	0.00500	0.100	0	105	90	110			
Cobalt	0.104	0.00500	0.100	0	104	90	110			
Lead	0.101	0.00100	0.100	0	101	90	110			
Lithium	0.0931	0.0100	0.100	0	93.1	90	110			
Molybdenum	0.0962	0.00500	0.100	0	96.2	90	110			
Selenium	0.0991	0.00500	0.100	0	99.1	90	110			
Thallium	0.0984	0.00150	0.100	0	98.4	90	110			

Sample ID **LCVL-160823**	Batch ID: **R87756**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160823B**	Analysis Date: **8/23/2016 11:11:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00222	0.00250	0.00200	0	111	70	130			
Arsenic	0.00516	0.00500	0.00500	0	103	70	130			
Barium	0.00518	0.0100	0.00500	0	104	70	130			
Beryllium	0.00109	0.00100	0.00100	0	109	70	130			
Cadmium	0.00103	0.00100	0.00100	0	103	70	130			
Calcium	0.105	0.300	0.100	0	105	70	130			
Chromium	0.00544	0.00500	0.00500	0	109	70	130			
Cobalt	0.00534	0.00500	0.00500	0	107	70	130			
Lead	0.00107	0.00100	0.00100	0	107	70	130			
Lithium	0.0102	0.0100	0.0100	0	102	70	130			
Molybdenum	0.00527	0.00500	0.00500	0	105	70	130			
Selenium	0.00562	0.00500	0.00500	0	112	70	130			
Thallium	0.00104	0.00150	0.00100	0	104	70	130			

Sample ID **CCV1-160823**	Batch ID: **R87756**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160823B**	Analysis Date: **8/23/2016 11:55:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.203	0.00250	0.200	0	102	90	110			
Arsenic	0.207	0.00500	0.200	0	103	90	110			
Barium	0.204	0.0100	0.200	0	102	90	110			
Beryllium	0.205	0.00100	0.200	0	103	90	110			
Cadmium	0.209	0.00100	0.200	0	104	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160823B

Sample ID **CCV1-160823** Batch ID: **R87756** TestNo: **SW6020A** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_160823B** Analysis Date: **8/23/2016 11:55:00 AM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.78	0.300	5.00	0	95.6	90	110			
Chromium	0.209	0.00500	0.200	0	105	90	110			
Cobalt	0.211	0.00500	0.200	0	106	90	110			
Lead	0.207	0.00100	0.200	0	104	90	110			
Lithium	0.205	0.0100	0.200	0	102	90	110			
Molybdenum	0.210	0.00500	0.200	0	105	90	110			
Selenium	0.203	0.00500	0.200	0	101	90	110			
Thallium	0.205	0.00150	0.200	0	103	90	110			

Sample ID **LCVL1-160823** Batch ID: **R87756** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_160823B** Analysis Date: **8/23/2016 12:00:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00243	0.00250	0.00200	0	121	70	130			
Arsenic	0.00524	0.00500	0.00500	0	105	70	130			
Barium	0.00523	0.0100	0.00500	0	105	70	130			
Beryllium	0.000968	0.00100	0.00100	0	96.8	70	130			
Cadmium	0.00105	0.00100	0.00100	0	105	70	130			
Calcium	0.0995	0.300	0.100	0	99.5	70	130			
Chromium	0.00534	0.00500	0.00500	0	107	70	130			
Cobalt	0.00537	0.00500	0.00500	0	107	70	130			
Lead	0.00104	0.00100	0.00100	0	104	70	130			
Lithium	0.00961	0.0100	0.0100	0	96.1	70	130			
Molybdenum	0.00520	0.00500	0.00500	0	104	70	130			
Selenium	0.00528	0.00500	0.00500	0	106	70	130			
Thallium	0.00102	0.00150	0.00100	0	102	70	130			

Sample ID **CCV2-160823** Batch ID: **R87756** TestNo: **SW6020A** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_160823B** Analysis Date: **8/23/2016 12:56:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.210	0.00250	0.200	0	105	90	110			
Arsenic	0.220	0.00500	0.200	0	110	90	110			
Barium	0.210	0.0100	0.200	0	105	90	110			
Beryllium	0.207	0.00100	0.200	0	103	90	110			
Cadmium	0.209	0.00100	0.200	0	105	90	110			
Calcium	4.92	0.300	5.00	0	98.4	90	110			
Chromium	0.206	0.00500	0.200	0	103	90	110			
Cobalt	0.207	0.00500	0.200	0	104	90	110			
Lead	0.208	0.00100	0.200	0	104	90	110			
Lithium	0.214	0.0100	0.200	0	107	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160823B

Sample ID **CCV2-160823**	Batch ID: **R87756**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160823B**	Analysis Date: **8/23/2016 12:56:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Molybdenum	0.205	0.00500	0.200	0	103	90	110			
Selenium	0.216	0.00500	0.200	0	108	90	110			
Thallium	0.206	0.00150	0.200	0	103	90	110			

Sample ID **LCVL2-160823**	Batch ID: **R87756**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160823B**	Analysis Date: **8/23/2016 1:10:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00218	0.00250	0.00200	0	109	70	130			
Arsenic	0.00551	0.00500	0.00500	0	110	70	130			
Barium	0.00522	0.0100	0.00500	0	104	70	130			
Beryllium	0.00101	0.00100	0.00100	0	101	70	130			
Cadmium	0.00106	0.00100	0.00100	0	106	70	130			
Calcium	0.106	0.300	0.100	0	106	70	130			
Chromium	0.00524	0.00500	0.00500	0	105	70	130			
Cobalt	0.00534	0.00500	0.00500	0	107	70	130			
Lead	0.00106	0.00100	0.00100	0	106	70	130			
Lithium	0.00967	0.0100	0.0100	0	96.7	70	130			
Molybdenum	0.00483	0.00500	0.00500	0	96.5	70	130			
Selenium	0.00610	0.00500	0.00500	0	122	70	130			
Thallium	0.00102	0.00150	0.00100	0	102	70	130			

Sample ID **CCV3-160823**	Batch ID: **R87756**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160823B**	Analysis Date: **8/23/2016 1:48:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.210	0.00250	0.200	0	105	90	110			
Arsenic	0.214	0.00500	0.200	0	107	90	110			
Barium	0.211	0.0100	0.200	0	105	90	110			
Beryllium	0.211	0.00100	0.200	0	106	90	110			
Cadmium	0.211	0.00100	0.200	0	106	90	110			
Calcium	4.87	0.300	5.00	0	97.4	90	110			
Chromium	0.211	0.00500	0.200	0	105	90	110			
Cobalt	0.209	0.00500	0.200	0	105	90	110			
Lead	0.208	0.00100	0.200	0	104	90	110			
Lithium	0.213	0.0100	0.200	0	107	90	110			
Molybdenum	0.212	0.00500	0.200	0	106	90	110			
Selenium	0.211	0.00500	0.200	0	105	90	110			
Thallium	0.206	0.00150	0.200	0	103	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160823B

Sample ID **LCVL3-160823**	Batch ID: **R87756**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160823B**	Analysis Date: **8/23/2016 1:58:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00218	0.00250	0.00200	0	109	70	130			
Arsenic	0.00574	0.00500	0.00500	0	115	70	130			
Barium	0.00526	0.0100	0.00500	0	105	70	130			
Beryllium	0.00110	0.00100	0.00100	0	110	70	130			
Cadmium	0.00107	0.00100	0.00100	0	107	70	130			
Calcium	0.104	0.300	0.100	0	104	70	130			
Chromium	0.00545	0.00500	0.00500	0	109	70	130			
Cobalt	0.00536	0.00500	0.00500	0	107	70	130			
Lead	0.00106	0.00100	0.00100	0	106	70	130			
Lithium	0.0114	0.0100	0.0100	0	114	70	130			
Molybdenum	0.00520	0.00500	0.00500	0	104	70	130			
Selenium	0.00575	0.00500	0.00500	0	115	70	130			
Thallium	0.00103	0.00150	0.00100	0	103	70	130			

Sample ID **CCV4-160823**	Batch ID: **R87756**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160823B**	Analysis Date: **8/23/2016 2:23:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.208	0.00250	0.200	0	104	90	110			
Arsenic	0.215	0.00500	0.200	0	108	90	110			
Barium	0.209	0.0100	0.200	0	104	90	110			
Beryllium	0.202	0.00100	0.200	0	101	90	110			
Cadmium	0.207	0.00100	0.200	0	103	90	110			
Calcium	4.84	0.300	5.00	0	96.9	90	110			
Chromium	0.204	0.00500	0.200	0	102	90	110			
Cobalt	0.206	0.00500	0.200	0	103	90	110			
Lead	0.205	0.00100	0.200	0	103	90	110			
Lithium	0.206	0.0100	0.200	0	103	90	110			
Molybdenum	0.204	0.00500	0.200	0	102	90	110			
Selenium	0.214	0.00500	0.200	0	107	90	110			
Thallium	0.203	0.00150	0.200	0	101	90	110			

Sample ID **LCVL4-160823**	Batch ID: **R87756**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160823B**	Analysis Date: **8/23/2016 2:42:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00221	0.00250	0.00200	0	111	70	130			
Arsenic	0.00570	0.00500	0.00500	0	114	70	130			
Barium	0.00543	0.0100	0.00500	0	109	70	130			
Beryllium	0.00108	0.00100	0.00100	0	108	70	130			
Cadmium	0.00105	0.00100	0.00100	0	105	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank
J	Analyte detected between MDL and RL
ND	Not Detected at the Method Detection Limit
RL	Reporting Limit
J	Analyte detected between SDL and RL
DF	Dilution Factor
MDL	Method Detection Limit
R	RPD outside accepted control limits
S	Spike Recovery outside control limits
N	Parameter not NELAC certified

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160823B

Sample ID **LCVL4-160823** Batch ID: **R87756** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_160823B** Analysis Date: **8/23/2016 2:42:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.110	0.300	0.100	0	110	70	130			
Chromium	0.00543	0.00500	0.00500	0	109	70	130			
Cobalt	0.00541	0.00500	0.00500	0	108	70	130			
Lead	0.00109	0.00100	0.00100	0	109	70	130			
Lithium	0.0103	0.0100	0.0100	0	103	70	130			
Molybdenum	0.00510	0.00500	0.00500	0	102	70	130			
Selenium	0.00616	0.00500	0.00500	0	123	70	130			
Thallium	0.00103	0.00150	0.00100	0	103	70	130			

Sample ID **CCV5-160823** Batch ID: **R87756** TestNo: **SW6020A** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_160823B** Analysis Date: **8/23/2016 3:42:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.212	0.00250	0.200	0	106	90	110			
Barium	0.213	0.0100	0.200	0	106	90	110			
Beryllium	0.194	0.00100	0.200	0	97.1	90	110			
Cadmium	0.207	0.00100	0.200	0	103	90	110			
Calcium	4.86	0.300	5.00	0	97.1	90	110			
Chromium	0.202	0.00500	0.200	0	101	90	110			
Cobalt	0.200	0.00500	0.200	0	99.8	90	110			
Lead	0.206	0.00100	0.200	0	103	90	110			
Lithium	0.190	0.0100	0.200	0	94.8	90	110			
Molybdenum	0.201	0.00500	0.200	0	101	90	110			
Thallium	0.204	0.00150	0.200	0	102	90	110			

Sample ID **LCVL5-160823** Batch ID: **R87756** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_160823B** Analysis Date: **8/23/2016 3:52:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00221	0.00250	0.00200	0	111	70	130			
Barium	0.00522	0.0100	0.00500	0	104	70	130			
Beryllium	0.00102	0.00100	0.00100	0	102	70	130			
Cadmium	0.00105	0.00100	0.00100	0	105	70	130			
Calcium	0.111	0.300	0.100	0	111	70	130			
Chromium	0.00518	0.00500	0.00500	0	104	70	130			
Cobalt	0.00517	0.00500	0.00500	0	103	70	130			
Lead	0.00103	0.00100	0.00100	0	103	70	130			
Lithium	0.0111	0.0100	0.0100	0	111	70	130			
Molybdenum	0.00497	0.00500	0.00500	0	99.4	70	130			
Thallium	0.00100	0.00150	0.00100	0	100	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160824B

The QC data in batch 76893 applies to the following samples: 1608133-16A, 1608133-17A, 1608133-18A, 1608133-19A, 1608133-20A, 1608133-21A, 1608133-22A

Sample ID **MB-76893** Batch ID: **76893** TestNo: **SW6020A** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_160824B** Analysis Date: **8/24/2016 3:18:00 PM** Prep Date: **8/22/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	<0.0100	0.0300								

Sample ID **LCS-76893** Batch ID: **76893** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_160824B** Analysis Date: **8/24/2016 3:20:00 PM** Prep Date: **8/22/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.206	0.0300	0.200	0	103	80	120			

Sample ID **LCSD-76893** Batch ID: **76893** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_160824B** Analysis Date: **8/24/2016 3:22:00 PM** Prep Date: **8/22/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.195	0.0300	0.200	0	97.3	80	120	5.62	15	

Sample ID **1608181-05A SD** Batch ID: **76893** TestNo: **SW6020A** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS4_160824B** Analysis Date: **8/24/2016 3:28:00 PM** Prep Date: **8/22/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	548	150	0	544				0.634	10	

Sample ID **1608181-05A PDS** Batch ID: **76893** TestNo: **SW6020A** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS4_160824B** Analysis Date: **8/24/2016 3:49:00 PM** Prep Date: **8/22/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	1010	30.0	500	544	92.7	80	120			

Sample ID **1608181-05A MS** Batch ID: **76893** TestNo: **SW6020A** Units: **mg/L**
SampType: **MS** Run ID: **ICP-MS4_160824B** Analysis Date: **8/24/2016 3:51:00 PM** Prep Date: **8/22/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	1.18	3.00	0.200	1.11	36.1	80	120			S

Sample ID **1608181-05A MSD** Batch ID: **76893** TestNo: **SW6020A** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS4_160824B** Analysis Date: **8/24/2016 3:53:00 PM** Prep Date: **8/22/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	1.43	3.00	0.200	1.11	161	80	120	19.1	15	SR

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160824B

Sample ID **1608181-05A SD**	Batch ID: **76893**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS4_160824B**	Analysis Date: **8/24/2016 4:14:00 PM**	Prep Date: **8/22/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.669	0.300	0	0.596				11.6	10	R

Sample ID **1608181-05A PDS**	Batch ID: **76893**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_160824B**	Analysis Date: **8/24/2016 4:16:00 PM**	Prep Date: **8/22/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.979	0.0600	0.400	0.596	95.8	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160824B

The QC data in batch 76895 applies to the following samples: 1608133-23A, 1608133-24A, 1608133-25A, 1608133-26A, 1608133-27A

Sample ID **MB-76895** Batch ID: **76895** TestNo: **SW6020A** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_160824B** Analysis Date: **8/24/2016 6:11:00 PM** Prep Date: **8/22/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	<0.00200	0.00500								
Boron	<0.0100	0.0300								
Selenium	<0.00200	0.00500								

Sample ID **LCS-76895** Batch ID: **76895** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_160824B** Analysis Date: **8/24/2016 6:13:00 PM** Prep Date: **8/22/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.191	0.00500	0.200	0	95.6	80	120			
Boron	0.206	0.0300	0.200	0	103	80	120			
Selenium	0.196	0.00500	0.200	0	97.9	80	120			

Sample ID **LCSD-76895** Batch ID: **76895** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_160824B** Analysis Date: **8/24/2016 6:15:00 PM** Prep Date: **8/22/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.190	0.00500	0.200	0	95.1	80	120	0.519	15	
Boron	0.205	0.0300	0.200	0	103	80	120	0.554	15	
Selenium	0.194	0.00500	0.200	0	97.1	80	120	0.779	15	

Sample ID **1608210-05A SD** Batch ID: **76895** TestNo: **SW6020A** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS4_160824B** Analysis Date: **8/24/2016 7:51:00 PM** Prep Date: **8/22/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	1020	150	0	1020				0.169	10	
Lithium	3.35	5.00	0	3.44				2.39	10	

Sample ID **1608210-05A PDS** Batch ID: **76895** TestNo: **SW6020A** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS4_160824B** Analysis Date: **8/24/2016 8:11:00 PM** Prep Date: **8/22/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	1500	30.0	500	1020	96.1	80	120			
Lithium	24.0	1.00	20.0	3.44	103	80	120			

Sample ID **1608210-05A MS** Batch ID: **76895** TestNo: **SW6020A** Units: **mg/L**
SampType: **MS** Run ID: **ICP-MS4_160824B** Analysis Date: **8/24/2016 8:13:00 PM** Prep Date: **8/22/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.238	0.500	0.200	0	119	80	120			
Boron	5.34	3.00	0.200	4.69	326	80	120			S

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160824B

Sample ID **1608210-05A MS**	Batch ID: **76895**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS4_160824B**	Analysis Date: **8/24/2016 8:13:00 PM**	Prep Date: **8/22/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.266	0.500	0.200	0	133	80	120			S

Sample ID **1608210-05A MSD**	Batch ID: **76895**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS4_160824B**	Analysis Date: **8/24/2016 8:15:00 PM**	Prep Date: **8/22/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.216	0.500	0.200	0	108	80	120	9.91	15	
Boron	5.41	3.00	0.200	4.69	357	80	120	1.18	15	S
Selenium	0.211	0.500	0.200	0	105	80	120	23.1	15	R

Sample ID **1608210-05A SD**	Batch ID: **76895**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS4_160824B**	Analysis Date: **8/24/2016 8:41:00 PM**	Prep Date: **8/22/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.0400	0.125	0	0				0	10	
Arsenic	<0.100	0.250	0	0				0	10	
Barium	0.170	0.500	0	0.164				3.63	10	
Beryllium	<0.0150	0.0500	0	0				0	10	
Boron	4.57	1.50	0	4.16				9.40	10	
Cadmium	<0.0150	0.0500	0	0				0	10	
Chromium	0.224	0.250	0	0.220				2.14	10	
Cobalt	<0.150	0.250	0	0.0308				0	10	
Lead	0.0218	0.0500	0	0.0219				0.137	10	
Molybdenum	<0.100	0.250	0	0				0	10	
Selenium	<0.100	0.250	0	0				0	10	
Thallium	<0.0250	0.0750	0	0				0	10	

Sample ID **1608210-05A PDS**	Batch ID: **76895**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_160824B**	Analysis Date: **8/24/2016 8:51:00 PM**	Prep Date: **8/22/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	1.97	0.0250	2.00	0	98.3	80	120			
Arsenic	2.00	0.0500	2.00	0	100	80	120			
Barium	2.07	0.100	2.00	0.164	95.2	80	120			
Beryllium	1.84	0.0100	2.00	0	92.0	80	120			
Boron	5.78	0.300	2.00	4.16	80.9	80	120			
Cadmium	1.73	0.0100	2.00	0	86.5	80	120			
Chromium	2.08	0.0500	2.00	0.220	93.0	80	120			
Cobalt	1.90	0.0500	2.00	0.0308	93.6	80	120			
Lead	1.84	0.0100	2.00	0.0219	90.7	80	120			
Molybdenum	1.79	0.0500	2.00	0	89.5	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160824B

Sample ID	**1608210-05A PDS**	Batch ID:	**76895**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**PDS**	Run ID:	**ICP-MS4_160824B**	Analysis Date:	**8/24/2016 8:51:00 PM**	Prep Date:	**8/22/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	2.00	0.0500	2.00	0	99.9	80	120			
Thallium	1.82	0.0150	2.00	0	90.8	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank
J	Analyte detected between MDL and RL
ND	Not Detected at the Method Detection Limit
RL	Reporting Limit
J	Analyte detected between SDL and RL
DF	Dilution Factor
MDL	Method Detection Limit
R	RPD outside accepted control limits
S	Spike Recovery outside control limits
N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160824B

Sample ID	**ICV2-160824**	Batch ID:	**R87787**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**ICV**	Run ID:	**ICP-MS4_160824B**	Analysis Date:	**8/24/2016 1:09:00 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.105	0.00250	0.100	0	105	90	110			
Arsenic	0.102	0.00500	0.100	0	102	90	110			
Barium	0.101	0.0100	0.100	0	101	90	110			
Beryllium	0.102	0.00100	0.100	0	102	90	110			
Boron	0.0984	0.0300	0.100	0	98.4	90	110			
Cadmium	0.0993	0.00100	0.100	0	99.3	90	110			
Calcium	2.41	0.300	2.50	0	96.5	90	110			
Chromium	0.107	0.00500	0.100	0	107	90	110			
Cobalt	0.105	0.00500	0.100	0	105	90	110			
Lead	0.100	0.00100	0.100	0	100	90	110			
Lithium	0.0948	0.0100	0.100	0	94.8	90	110			
Molybdenum	0.0973	0.00500	0.100	0	97.3	90	110			
Selenium	0.101	0.00500	0.100	0	101	90	110			
Thallium	0.0998	0.00150	0.100	0	99.8	90	110			

Sample ID	**ILCVL2-160824**	Batch ID:	**R87787**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**LCVL**	Run ID:	**ICP-MS4_160824B**	Analysis Date:	**8/24/2016 1:23:00 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00205	0.00250	0.00200	0	103	70	130			
Arsenic	0.00513	0.00500	0.00500	0	103	70	130			
Barium	0.00491	0.0100	0.00500	0	98.2	70	130			
Beryllium	0.00105	0.00100	0.00100	0	105	70	130			
Boron	0.0223	0.0300	0.0200	0	111	70	130			
Cadmium	0.000996	0.00100	0.00100	0	99.6	70	130			
Calcium	0.0954	0.300	0.100	0	95.4	70	130			
Chromium	0.00509	0.00500	0.00500	0	102	70	130			
Cobalt	0.00515	0.00500	0.00500	0	103	70	130			
Lead	0.000995	0.00100	0.00100	0	99.5	70	130			
Lithium	0.00919	0.0100	0.0100	0	91.9	70	130			
Molybdenum	0.00496	0.00500	0.00500	0	99.2	70	130			
Selenium	0.00548	0.00500	0.00500	0	110	70	130			
Thallium	0.000998	0.00150	0.00100	0	99.8	70	130			

Sample ID	**CCV3-140402**	Batch ID:	**R87787**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**ICP-MS4_160824B**	Analysis Date:	**8/24/2016 2:50:00 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.207	0.0300	0.200	0	103	90	110			
Calcium	4.75	0.300	5.00	0	95.0	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

Sample ID **LCVL3-140402**	Batch ID: **R87787**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160824B**	Analysis Date: **8/24/2016 3:05:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0234	0.0300	0.0200	0	117	70	130			
Calcium	0.0955	0.300	0.100	0	95.5	70	130			

Sample ID **CCV4-160824**	Batch ID: **R87787**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160824B**	Analysis Date: **8/24/2016 3:55:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.209	0.0300	0.200	0	104	90	110			
Calcium	4.79	0.300	5.00	0	95.8	90	110			

Sample ID **LCVL4-160824**	Batch ID: **R87787**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160824B**	Analysis Date: **8/24/2016 4:03:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0229	0.0300	0.0200	0	115	70	130			
Calcium	0.0911	0.300	0.100	0	91.1	70	130			

Sample ID **CCV5-160824**	Batch ID: **R87787**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160824B**	Analysis Date: **8/24/2016 5:12:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.217	0.0300	0.200	0	109	90	110			
Calcium	4.74	0.300	5.00	0	94.7	90	110			

Sample ID **LCVL5-160824**	Batch ID: **R87787**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160824B**	Analysis Date: **8/24/2016 5:24:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0246	0.0300	0.0200	0	123	70	130			
Calcium	0.0910	0.300	0.100	0	91.0	70	130			

Sample ID **CCV6-160824**	Batch ID: **R87787**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160824B**	Analysis Date: **8/24/2016 5:57:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.193	0.00500	0.200	0	96.6	90	110			
Boron	0.211	0.0300	0.200	0	105	90	110			
Calcium	4.75	0.300	5.00	0	95.0	90	110			
Selenium	0.196	0.00500	0.200	0	98.1	90	110			

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160824B

Sample ID **LCVL6-160824** Batch ID: **R87787** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_160824B** Analysis Date: **8/24/2016 6:07:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.00490	0.00500	0.00500	0	98.1	70	130			
Boron	0.0223	0.0300	0.0200	0	111	70	130			
Calcium	0.0897	0.300	0.100	0	89.7	70	130			
Selenium	0.00526	0.00500	0.00500	0	105	70	130			

Sample ID **CCV7-160824** Batch ID: **R87787** TestNo: **SW6020A** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_160824B** Analysis Date: **8/24/2016 6:52:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.192	0.00500	0.200	0	96.2	90	110			
Boron	0.210	0.0300	0.200	0	105	90	110			
Calcium	4.77	0.300	5.00	0	95.4	90	110			
Selenium	0.199	0.00500	0.200	0	99.3	90	110			

Sample ID **LCVL7-160824** Batch ID: **R87787** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_160824B** Analysis Date: **8/24/2016 7:02:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.00485	0.00500	0.00500	0	97.0	70	130			
Boron	0.0239	0.0300	0.0200	0	120	70	130			
Calcium	0.0928	0.300	0.100	0	92.8	70	130			
Selenium	0.00478	0.00500	0.00500	0	95.6	70	130			

Sample ID **CCV8-160824** Batch ID: **R87787** TestNo: **SW6020A** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_160824B** Analysis Date: **8/24/2016 7:35:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.190	0.00500	0.200	0	95.2	90	110			
Boron	0.206	0.0300	0.200	0	103	90	110			
Calcium	4.69	0.300	5.00	0	93.9	90	110			
Lithium	0.216	0.0100	0.200	0	108	90	110			
Selenium	0.194	0.00500	0.200	0	97.1	90	110			

Sample ID **LCVL8-160824** Batch ID: **R87787** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_160824B** Analysis Date: **8/24/2016 7:45:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.00499	0.00500	0.00500	0	99.7	70	130			
Boron	0.0223	0.0300	0.0200	0	111	70	130			
Calcium	0.0958	0.300	0.100	0	95.8	70	130			
Lithium	0.0105	0.0100	0.0100	0	105	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160824B

Sample ID **LCVL8-160824**	Batch ID: **R87787**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160824B**	Analysis Date: **8/24/2016 7:45:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.00528	0.00500	0.00500	0	106	70	130			

Sample ID **CCV9-160824**	Batch ID: **R87787**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160824B**	Analysis Date: **8/24/2016 8:25:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.193	0.00250	0.200	0	96.7	90	110			
Arsenic	0.194	0.00500	0.200	0	96.8	90	110			
Barium	0.193	0.0100	0.200	0	96.5	90	110			
Beryllium	0.203	0.00100	0.200	0	101	90	110			
Boron	0.212	0.0300	0.200	0	106	90	110			
Cadmium	0.187	0.00100	0.200	0	93.4	90	110			
Calcium	4.81	0.300	5.00	0	96.2	90	110			
Chromium	0.193	0.00500	0.200	0	96.6	90	110			
Cobalt	0.194	0.00500	0.200	0	97.1	90	110			
Lead	0.185	0.00100	0.200	0	92.6	90	110			
Lithium	0.219	0.0100	0.200	0	110	90	110			
Molybdenum	0.188	0.00500	0.200	0	94.0	90	110			
Selenium	0.200	0.00500	0.200	0	99.9	90	110			
Thallium	0.185	0.00150	0.200	0	92.7	90	110			

Sample ID **LCVL9-160824**	Batch ID: **R87787**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160824B**	Analysis Date: **8/24/2016 8:35:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00200	0.00250	0.00200	0	100	70	130			
Arsenic	0.00502	0.00500	0.00500	0	100	70	130			
Barium	0.00491	0.0100	0.00500	0	98.2	70	130			
Beryllium	0.000978	0.00100	0.00100	0	97.8	70	130			
Boron	0.0235	0.0300	0.0200	0	117	70	130			
Cadmium	0.00100	0.00100	0.00100	0	100	70	130			
Calcium	0.101	0.300	0.100	0	101	70	130			
Chromium	0.00504	0.00500	0.00500	0	101	70	130			
Cobalt	0.00506	0.00500	0.00500	0	101	70	130			
Lead	0.000944	0.00100	0.00100	0	94.4	70	130			
Lithium	0.0103	0.0100	0.0100	0	103	70	130			
Molybdenum	0.00456	0.00500	0.00500	0	91.1	70	130			
Selenium	0.00508	0.00500	0.00500	0	102	70	130			
Thallium	0.000931	0.00150	0.00100	0	93.1	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160824B

Sample ID **CCV10-160824**	Batch ID: **R87787**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160824B**	Analysis Date: **8/24/2016 9:02:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.191	0.00250	0.200	0	95.4	90	110			
Arsenic	0.195	0.00500	0.200	0	97.3	90	110			
Barium	0.193	0.0100	0.200	0	96.5	90	110			
Beryllium	0.204	0.00100	0.200	0	102	90	110			
Boron	0.213	0.0300	0.200	0	106	90	110			
Cadmium	0.185	0.00100	0.200	0	92.4	90	110			
Chromium	0.193	0.00500	0.200	0	96.4	90	110			
Cobalt	0.193	0.00500	0.200	0	96.7	90	110			
Lead	0.184	0.00100	0.200	0	92.1	90	110			
Molybdenum	0.185	0.00500	0.200	0	92.6	90	110			
Selenium	0.201	0.00500	0.200	0	100	90	110			
Thallium	0.185	0.00150	0.200	0	92.7	90	110			

Sample ID **LCVL10-160824**	Batch ID: **R87787**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160824B**	Analysis Date: **8/24/2016 9:12:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00192	0.00250	0.00200	0	96.2	70	130			
Arsenic	0.00497	0.00500	0.00500	0	99.4	70	130			
Barium	0.00487	0.0100	0.00500	0	97.5	70	130			
Beryllium	0.00120	0.00100	0.00100	0	120	70	130			
Boron	0.0213	0.0300	0.0200	0	107	70	130			
Cadmium	0.000888	0.00100	0.00100	0	88.8	70	130			
Chromium	0.00499	0.00500	0.00500	0	99.7	70	130			
Cobalt	0.00504	0.00500	0.00500	0	101	70	130			
Lead	0.000929	0.00100	0.00100	0	92.9	70	130			
Molybdenum	0.00454	0.00500	0.00500	0	90.7	70	130			
Selenium	0.00556	0.00500	0.00500	0	111	70	130			
Thallium	0.000937	0.00150	0.00100	0	93.7	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160825A

Sample ID **ICV-160825**	Batch ID: **R87816**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_160825A**	Analysis Date: **8/25/2016 2:28:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	2.34	0.300	2.50	0	93.6	90	110			
Lithium	0.100	0.0100	0.100	0	100	90	110			

Sample ID **LCVL-160825**	Batch ID: **R87816**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160825A**	Analysis Date: **8/25/2016 2:33:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.0943	0.300	0.100	0	94.3	70	130			
Lithium	0.0110	0.0100	0.0100	0	110	70	130			

Sample ID **CCV1-160825**	Batch ID: **R87816**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160825A**	Analysis Date: **8/25/2016 3:19:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.63	0.300	5.00	0	92.5	90	110			
Lithium	0.187	0.0100	0.200	0	93.3	90	110			

Sample ID **LCVL1-160825**	Batch ID: **R87816**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160825A**	Analysis Date: **8/25/2016 3:34:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.0931	0.300	0.100	0	93.1	70	130			
Lithium	0.00905	0.0100	0.0100	0	90.5	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160826B

Sample ID	**ICV-160826**	Batch ID:	**R87821**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**ICV**	Run ID:	**ICP-MS4_160826B**	Analysis Date:	**8/26/2016 11:10:00 AM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.100	0.00100	0.100	0	100	90	110			

Sample ID	**LCVL-160826**	Batch ID:	**R87821**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**LCVL**	Run ID:	**ICP-MS4_160826B**	Analysis Date:	**8/26/2016 11:15:00 AM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.000927	0.00100	0.00100	0	92.7	70	130			

Sample ID	**CCV1-160826**	Batch ID:	**R87821**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**ICP-MS4_160826B**	Analysis Date:	**8/26/2016 11:41:00 AM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.197	0.00100	0.200	0	98.7	90	110			

Sample ID	**LCVL1-160826**	Batch ID:	**R87821**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**LCVL**	Run ID:	**ICP-MS4_160826B**	Analysis Date:	**8/26/2016 11:52:00 AM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.000948	0.00100	0.00100	0	94.8	70	130			

Sample ID	**CCV2-160826**	Batch ID:	**R87821**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**ICP-MS4_160826B**	Analysis Date:	**8/26/2016 12:36:00 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.207	0.00100	0.200	0	103	90	110			

Sample ID	**LCVL2-160826**	Batch ID:	**R87821**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**LCVL**	Run ID:	**ICP-MS4_160826B**	Analysis Date:	**8/26/2016 12:41:00 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.00119	0.00100	0.00100	0	119	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_160815A

The QC data in batch 76808 applies to the following samples: 1608133-01D, 1608133-02D, 1608133-03D, 1608133-04D, 1608133-05D, 1608133-06D, 1608133-07D, 1608133-08D, 1608133-09D

Sample ID **MB-76808** Batch ID: **76808** TestNo: **E300** Units: **mg/L**
SampType: **MBLK** Run ID: **IC4_160815A** Analysis Date: **8/15/2016 10:51:35 AM** Prep Date: **8/15/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00								
Fluoride	<0.100	0.400								
Sulfate	<1.00	3.00								

Sample ID **LCS-76808** Batch ID: **76808** TestNo: **E300** Units: **mg/L**
SampType: **LCS** Run ID: **IC4_160815A** Analysis Date: **8/15/2016 11:06:35 AM** Prep Date: **8/15/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.2	1.00	10.00	0	102	90	110			
Fluoride	3.99	0.400	4.000	0	99.7	90	110			
Sulfate	31.4	3.00	30.00	0	105	90	110			

Sample ID **LCSD-76808** Batch ID: **76808** TestNo: **E300** Units: **mg/L**
SampType: **LCSD** Run ID: **IC4_160815A** Analysis Date: **8/15/2016 11:21:35 AM** Prep Date: **8/15/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.2	1.00	10.00	0	102	90	110	0.064	20	
Fluoride	4.00	0.400	4.000	0	99.9	90	110	0.229	20	
Sulfate	31.5	3.00	30.00	0	105	90	110	0.566	20	

Sample ID **1608133-07DMS** Batch ID: **76808** TestNo: **E300** Units: **mg/L**
SampType: **MS** Run ID: **IC4_160815A** Analysis Date: **8/15/2016 6:13:34 PM** Prep Date: **8/15/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	278	10.0	200.0	64.88	107	90	110			
Fluoride	202	4.00	200.0	0	101	90	110			
Sulfate	334	30.0	200.0	119.9	107	90	110			

Sample ID **1608133-07DMSD** Batch ID: **76808** TestNo: **E300** Units: **mg/L**
SampType: **MSD** Run ID: **IC4_160815A** Analysis Date: **8/15/2016 6:28:34 PM** Prep Date: **8/15/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	280	10.0	200.0	64.88	107	90	110	0.468	20	
Fluoride	203	4.00	200.0	0	101	90	110	0.428	20	
Sulfate	335	30.0	200.0	119.9	107	90	110	0.194	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_160815A

Sample ID **ICV-160815**	Batch ID: **R87629**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC4_160815A**	Analysis Date: **8/15/2016 10:15:59 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	25.6	1.00	25.00	0	102	90	110			
Fluoride	9.79	0.400	10.00	0	97.9	90	110			
Sulfate	78.7	3.00	75.00	0	105	90	110			

Sample ID **CCV1-160815**	Batch ID: **R87629**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC4_160815A**	Analysis Date: **8/15/2016 2:54:08 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.5	1.00	10.00	0	105	90	110			
Fluoride	4.05	0.400	4.000	0	101	90	110			
Sulfate	32.5	3.00	30.00	0	108	90	110			

Sample ID **CCV2-160815**	Batch ID: **R87629**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC4_160815A**	Analysis Date: **8/15/2016 6:58:34 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.5	1.00	10.00	0	105	90	110			
Fluoride	4.07	0.400	4.000	0	102	90	110			
Sulfate	32.1	3.00	30.00	0	107	90	110			

Sample ID **CCV3-160815**	Batch ID: **R87629**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC4_160815A**	Analysis Date: **8/15/2016 8:28:34 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.5	1.00	10.00	0	105	90	110			
Fluoride	4.09	0.400	4.000	0	102	90	110			
Sulfate	32.1	3.00	30.00	0	107	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_160816A

The QC data in batch 76820 applies to the following samples: 1608133-10D, 1608133-11D, 1608133-12D, 1608133-13D, 1608133-14D, 1608133-15D, 1608133-16D, 1608133-17D, 1608133-18D

Sample ID **MB-76820** Batch ID: **76820** TestNo: **E300** Units: **mg/L**
SampType: **MBLK** Run ID: **IC4_160816A** Analysis Date: **8/16/2016 10:21:13 AM** Prep Date: **8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00								
Fluoride	<0.100	0.400								
Sulfate	<1.00	3.00								

Sample ID **LCS-76820** Batch ID: **76820** TestNo: **E300** Units: **mg/L**
SampType: **LCS** Run ID: **IC4_160816A** Analysis Date: **8/16/2016 10:36:13 AM** Prep Date: **8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.5	1.00	10.00	0	105	90	110			
Fluoride	4.00	0.400	4.000	0	99.9	90	110			
Sulfate	32.1	3.00	30.00	0	107	90	110			

Sample ID **LCSD-76820** Batch ID: **76820** TestNo: **E300** Units: **mg/L**
SampType: **LCSD** Run ID: **IC4_160816A** Analysis Date: **8/16/2016 10:51:13 AM** Prep Date: **8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.5	1.00	10.00	0	105	90	110	0.125	20	
Fluoride	4.02	0.400	4.000	0	100	90	110	0.579	20	
Sulfate	32.1	3.00	30.00	0	107	90	110	0.230	20	

Sample ID **1608133-10DMS** Batch ID: **76820** TestNo: **E300** Units: **mg/L**
SampType: **MS** Run ID: **IC4_160816A** Analysis Date: **8/16/2016 3:07:33 PM** Prep Date: **8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	345	10.0	200.0	135.6	105	90	110			
Fluoride	201	4.00	200.0	0	101	90	110			
Sulfate	321	30.0	200.0	104.7	108	90	110			

Sample ID **1608133-10DMSD** Batch ID: **76820** TestNo: **E300** Units: **mg/L**
SampType: **MSD** Run ID: **IC4_160816A** Analysis Date: **8/16/2016 3:22:33 PM** Prep Date: **8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	346	10.0	200.0	135.6	105	90	110	0.130	20	
Fluoride	202	4.00	200.0	0	101	90	110	0.556	20	
Sulfate	322	30.0	200.0	104.7	109	90	110	0.536	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_160816A

Sample ID **ICV-160816**	Batch ID: **R87647**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC4_160816A**	Analysis Date: **8/16/2016 9:44:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	26.1	1.00	25.00	0	104	90	110			
Fluoride	9.82	0.400	10.00	0	98.2	90	110			
Sulfate	80.4	3.00	75.00	0	107	90	110			

Sample ID **CCV1-160816**	Batch ID: **R87647**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC4_160816A**	Analysis Date: **8/16/2016 1:57:44 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.5	1.00	10.00	0	105	90	110			
Fluoride	4.06	0.400	4.000	0	102	90	110			
Sulfate	32.3	3.00	30.00	0	108	90	110			

Sample ID **CCV2-160816**	Batch ID: **R87647**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC4_160816A**	Analysis Date: **8/16/2016 4:22:33 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.6	1.00	10.00	0	106	90	110			
Fluoride	4.06	0.400	4.000	0	102	90	110			
Sulfate	32.4	3.00	30.00	0	108	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_160817A

The QC data in batch 76838 applies to the following samples: 1608133-19D, 1608133-20D, 1608133-21D, 1608133-22D, 1608133-23D, 1608133-24D, 1608133-25D, 1608133-26D, 1608133-27D

Sample ID **MB-76838** Batch ID: **76838** TestNo: **E300** Units: **mg/L**
SampType: **MBLK** Run ID: **IC4_160817A** Analysis Date: **8/17/2016 10:32:13 AM** Prep Date: **8/17/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00								
Fluoride	<0.100	0.400								
Sulfate	<1.00	3.00								

Sample ID **LCS-76838** Batch ID: **76838** TestNo: **E300** Units: **mg/L**
SampType: **LCS** Run ID: **IC4_160817A** Analysis Date: **8/17/2016 10:47:13 AM** Prep Date: **8/17/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.4	1.00	10.00	0	104	90	110			
Fluoride	3.90	0.400	4.000	0	97.4	90	110			
Sulfate	31.7	3.00	30.00	0	106	90	110			

Sample ID **LCSD-76838** Batch ID: **76838** TestNo: **E300** Units: **mg/L**
SampType: **LCSD** Run ID: **IC4_160817A** Analysis Date: **8/17/2016 11:02:13 AM** Prep Date: **8/17/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.5	1.00	10.00	0	105	90	110	0.354	20	
Fluoride	4.04	0.400	4.000	0	101	90	110	3.66	20	
Sulfate	31.8	3.00	30.00	0	106	90	110	0.411	20	

Sample ID **1608133-27DMS** Batch ID: **76838** TestNo: **E300** Units: **mg/L**
SampType: **MS** Run ID: **IC4_160817A** Analysis Date: **8/17/2016 4:26:31 PM** Prep Date: **8/17/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	2540	100	2000	424.7	106	90	110			
Fluoride	1990	40.0	2000	0	99.5	90	110			
Sulfate	2600	300	2000	483.6	106	90	110			

Sample ID **1608133-27DMSD** Batch ID: **76838** TestNo: **E300** Units: **mg/L**
SampType: **MSD** Run ID: **IC4_160817A** Analysis Date: **8/17/2016 4:41:31 PM** Prep Date: **8/17/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	2570	100	2000	424.7	107	90	110	1.18	20	
Fluoride	2020	40.0	2000	0	101	90	110	1.31	20	
Sulfate	2630	300	2000	483.6	107	90	110	1.16	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_160817A

Sample ID **ICV-160817**	Batch ID: **R87682**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC4_160817A**	Analysis Date: **8/17/2016 9:50:02 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	26.1	1.00	25.00	0	104	90	110			
Fluoride	9.78	0.400	10.00	0	97.8	90	110			
Sulfate	80.2	3.00	75.00	0	107	90	110			

Sample ID **CCV1-160817**	Batch ID: **R87682**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC4_160817A**	Analysis Date: **8/17/2016 2:01:29 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.6	1.00	10.00	0	106	90	110			
Fluoride	3.95	0.400	4.000	0	98.6	90	110			
Sulfate	32.3	3.00	30.00	0	108	90	110			

Sample ID **CCV2-160817**	Batch ID: **R87682**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC4_160817A**	Analysis Date: **8/17/2016 5:11:31 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.5	1.00	10.00	0	105	90	110			
Fluoride	3.97	0.400	4.000	0	99.2	90	110			
Sulfate	32.1	3.00	30.00	0	107	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_160816A

The QC data in batch 76818 applies to the following samples: 1608133-01D, 1608133-02D, 1608133-03D, 1608133-04D, 1608133-05D, 1608133-06D, 1608133-07D, 1608133-08D, 1608133-09D, 1608133-10D

Sample ID	**1608119-02D-DUP**	Batch ID:	**76818**	TestNo:	**M4500-H+ B**	Units:	**pH Units@18.9℃**
SampType:	**DUP**	Run ID:	**TITRATOR_160816A**	Analysis Date:	**8/16/2016 9:53:00 AM**	Prep Date:	**8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	7.34	0	0	7.360				0.272	5	

Sample ID	**1608133-10D-DUP**	Batch ID:	**76818**	TestNo:	**M4500-H+ B**	Units:	**pH Units@17.7℃**
SampType:	**DUP**	Run ID:	**TITRATOR_160816A**	Analysis Date:	**8/16/2016 10:55:00 AM**	Prep Date:	**8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	6.18	0	0	6.190				0.162	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_160816A

Sample ID	**ICV-160816**	Batch ID:	**R87635**	TestNo:	**M4500-H+ B**	Units:	**pH Units@22℃**
SampType:	**ICV**	Run ID:	**TITRATOR_160816A**	Analysis Date:	**8/16/2016 8:52:00 AM**	Prep Date:	**8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	9.93	0	10.00	0	99.3	99	101			

Sample ID	**CCV1-160816**	Batch ID:	**R87635**	TestNo:	**M4500-H+ B**	Units:	**pH Units@20.6℃**
SampType:	**CCV**	Run ID:	**TITRATOR_160816A**	Analysis Date:	**8/16/2016 10:11:00 AM**	Prep Date:	**8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	6.97	0	7.000	0	99.6	97.1	102.9			

Sample ID	**CCV2-160816**	Batch ID:	**R87635**	TestNo:	**M4500-H+ B**	Units:	**pH Units@21℃**
SampType:	**CCV**	Run ID:	**TITRATOR_160816A**	Analysis Date:	**8/16/2016 10:45:00 AM**	Prep Date:	**8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	6.96	0	7.000	0	99.4	97.1	102.9			

Sample ID	**CCV3-160816**	Batch ID:	**R87635**	TestNo:	**M4500-H+ B**	Units:	**pH Units@21.4℃**
SampType:	**CCV**	Run ID:	**TITRATOR_160816A**	Analysis Date:	**8/16/2016 10:56:00 AM**	Prep Date:	**8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	6.96	0	7.000	0	99.4	97.1	102.9			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler

Work Order: 1608133

Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_160817B

The QC data in batch 76839 applies to the following samples: 1608133-11D, 1608133-12D, 1608133-13D, 1608133-14D, 1608133-15D, 1608133-16D, 1608133-17D, 1608133-18D, 1608133-19D, 1608133-20D, 1608133-21D, 1608133-22D, 1608133-23D, 1608133-24D, 1608133-25D, 1608133-26D, 1608133-27D

Sample ID **1608133-11D-DUP** Batch ID: **76839** TestNo: **M4500-H+ B** Units: **pH Units@20℃**

SampType: **DUP** Run ID: **TITRATOR_160817B** Analysis Date: **8/17/2016 11:16:00 AM** Prep Date: **8/17/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	4.54	0	0	4.530				0.221	5	

Sample ID **1608133-21D-DUP** Batch ID: **76839** TestNo: **M4500-H+ B** Units: **pH Units@20.7℃**

SampType: **DUP** Run ID: **TITRATOR_160817B** Analysis Date: **8/17/2016 11:43:00 AM** Prep Date: **8/17/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	6.77	0	0	6.750				0.296	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_160817B

Sample ID	**ICV-160817**	Batch ID:	**R87653**	TestNo:	**M4500-H+ B**	Units:	**pH Units@22.2℃**
SampType:	**ICV**	Run ID:	**TITRATOR_160817B**	Analysis Date:	**8/17/2016 9:01:00 AM**	Prep Date:	**8/17/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	9.93	0	10.00	0	99.3	99	101			

Sample ID	**CCV1-160817**	Batch ID:	**R87653**	TestNo:	**M4500-H+ B**	Units:	**pH Units@22.3℃**
SampType:	**CCV**	Run ID:	**TITRATOR_160817B**	Analysis Date:	**8/17/2016 10:30:00 AM**	Prep Date:	**8/17/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	6.98	0	7.000	0	99.7	97.1	102.9			

Sample ID	**CCV2-160817**	Batch ID:	**R87653**	TestNo:	**M4500-H+ B**	Units:	**pH Units@21.7℃**
SampType:	**CCV**	Run ID:	**TITRATOR_160817B**	Analysis Date:	**8/17/2016 11:37:00 AM**	Prep Date:	**8/17/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	6.96	0	7.000	0	99.4	97.1	102.9			

Sample ID	**CCV3-160817**	Batch ID:	**R87653**	TestNo:	**M4500-H+ B**	Units:	**pH Units@22℃**
SampType:	**CCV**	Run ID:	**TITRATOR_160817B**	Analysis Date:	**8/17/2016 11:58:00 AM**	Prep Date:	**8/17/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	6.97	0	7.000	0	99.6	97.1	102.9			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: WC_160815A

The QC data in batch 76803 applies to the following samples: 1608133-01D, 1608133-02D, 1608133-03D, 1608133-04D, 1608133-05D

Sample ID **MB-76803**	Batch ID: **76803**	TestNo: **M2540C**	Units: **mg/L**
SampType: **MBLK**	Run ID: **WC_160815A**	Analysis Date: **8/16/2016 8:42:00 AM**	Prep Date: **8/15/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	<10.0	10.0								

Sample ID **LCS-76803**	Batch ID: **76803**	TestNo: **M2540C**	Units: **mg/L**
SampType: **LCS**	Run ID: **WC_160815A**	Analysis Date: **8/16/2016 8:42:00 AM**	Prep Date: **8/15/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	761	10.0	745.6	0	102	90	113			

Sample ID **1608117-05C-DUP**	Batch ID: **76803**	TestNo: **M2540C**	Units: **mg/L**
SampType: **DUP**	Run ID: **WC_160815A**	Analysis Date: **8/16/2016 8:42:00 AM**	Prep Date: **8/15/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	782	10.0	0	801.0				2.40	5	

Sample ID **1608117-06C-DUP**	Batch ID: **76803**	TestNo: **M2540C**	Units: **mg/L**
SampType: **DUP**	Run ID: **WC_160815A**	Analysis Date: **8/16/2016 8:42:00 AM**	Prep Date: **8/15/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	1590	50.0	0	1600				0.627	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: WC_160816D

The QC data in batch 76831 applies to the following samples: 1608133-06D, 1608133-07D, 1608133-08D, 1608133-09D, 1608133-10D, 1608133-11D, 1608133-12D, 1608133-13D, 1608133-14D, 1608133-15D, 1608133-16D, 1608133-17D, 1608133-18D, 1608133-19D, 1608133-20D, 1608133-21D, 1608133-22D, 1608133-23D, 1608133-24D

Sample ID **MB-76831** Batch ID: **76831** TestNo: **M2540C** Units: **mg/L**
SampType: **MBLK** Run ID: **WC_160816D** Analysis Date: **8/17/2016 8:42:00 AM** Prep Date: **8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	<10.0	10.0								

Sample ID **LCS-76831** Batch ID: **76831** TestNo: **M2540C** Units: **mg/L**
SampType: **LCS** Run ID: **WC_160816D** Analysis Date: **8/17/2016 8:42:00 AM** Prep Date: **8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	741	10.0	745.6	0	99.4	90	113			

Sample ID **1608133-21D-DUP** Batch ID: **76831** TestNo: **M2540C** Units: **mg/L**
SampType: **DUP** Run ID: **WC_160816D** Analysis Date: **8/17/2016 8:42:00 AM** Prep Date: **8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	3640	50.0	0	3780				3.77	5	

Sample ID **1608133-24D-DUP** Batch ID: **76831** TestNo: **M2540C** Units: **mg/L**
SampType: **DUP** Run ID: **WC_160816D** Analysis Date: **8/17/2016 8:42:00 AM** Prep Date: **8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	1120	50.0	0	1150				3.09	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: WC_160818B

The QC data in batch 76858 applies to the following samples: 1608133-25D, 1608133-26D, 1608133-27D

Sample ID	**MB-76858**	Batch ID:	**76858**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**WC_160818B**	Analysis Date:	**8/22/2016 8:40:00 AM**	Prep Date:	**8/18/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	<10.0	10.0								

Sample ID	**LCS-76858**	Batch ID:	**76858**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**WC_160818B**	Analysis Date:	**8/22/2016 8:40:00 AM**	Prep Date:	**8/18/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	747	10.0	745.6	0	100	90	113			

Sample ID	**1608133-25D-DUP**	Batch ID:	**76858**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**DUP**	Run ID:	**WC_160818B**	Analysis Date:	**8/22/2016 8:40:00 AM**	Prep Date:	**8/18/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	1380	50.0	0	1430				3.56	5	

Sample ID	**1608181-01B-DUP**	Batch ID:	**76858**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**DUP**	Run ID:	**WC_160818B**	Analysis Date:	**8/22/2016 8:40:00 AM**	Prep Date:	**8/18/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	22900	200	0	22720				0.702	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

Case Narrative

Lab No: 20160784

This report contains the analytical results for the 27 sample(s) received under chain of custody by ESC Lab Sciences on 8/16/2016 10:12:00 AM. These samples are associated with your 1608133 project.

The analytical results included in this report meet all applicable quality control procedure requirements except as noted below:

The test results in this report meet all NELAC requirements unless noted below:

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All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client.

Results have been reviewed by the Director of Radiochemistry or their designees and is approved for release.

Observations / Nonconformances

Analytical Report

	Method	Result	DL	Units	Qual	Prep Date	Analysis Date	Analyst
Lab ID : **20160784-01**								
Client ID : **H-28**								
Date Sampled : **8/9/2016 9:30:00 AM**								
Matrix : **NPW**								
		Radiochemical Analyses						
Combined Radium		1.68 +/- 0.969	0.847	pCi/l				
Radium-226	SM 7500 Ra B M*	0.265 +/- 0.306	0.451	pCi/l		08/24/16	08/26/16	AK
Radium-228	EPA 904*/9320*	1.41 +/- 0.663	0.396	pCi/l		09/07/16	09/10/16	JR
Lab ID : **20160784-02**								
Client ID : **H-29**								
Date Sampled : **8/9/2016 10:35:00 AM**								
Matrix : **NPW**								
		Radiochemical Analyses						
Combined Radium		0.261 +/- 1.12	0.752	pCi/l				
Radium-226	SM 7500 Ra B M*	0.261 +/- 0.150	0.174	pCi/l		08/24/16	08/31/16	AK
Radium-228	EPA 904*/9320*	-0.009 +/- 0.967	0.578	pCi/l		09/07/16	09/10/16	JR
Lab ID : **20160784-03**								
Client ID : **H-31**								
Date Sampled : **8/9/2016 11:50:00 AM**								
Matrix : **NPW**								
		Radiochemical Analyses						
Combined Radium		2.21 +/- 0.942	0.523	pCi/l				
Radium-226	SM 7500 Ra B M*	1.31 +/- 0.276	0.135	pCi/l		08/24/16	08/31/16	AK
Radium-228	EPA 904*/9320*	0.900 +/- 0.666	0.388	pCi/l		09/07/16	09/10/16	JR
Lab ID : **20160784-04**								
Client ID : **H-30**								
Date Sampled : **8/9/2016 12:45:00 PM**								
Matrix : **NPW**								
		Radiochemical Analyses						
Combined Radium		0.927 +/- 1.00	0.813	pCi/l				
Radium-226	SM 7500 Ra B M*	0.203 +/- 0.140	0.171	pCi/l		08/24/16	08/31/16	AK
Radium-228	EPA 904*/9320*	0.724 +/- 0.860	0.642	pCi/l		09/07/16	09/10/16	JR

Analytical Report

	Method	Result	DL	Units	Qual	Prep Date	Analysis Date	Analyst
Lab ID : **20160784-05**								
Client ID : **H-32**								
Date Sampled : **8/9/2016 1:50:00 PM**								
Matrix : **NPW**								
Radiochemical Analyses								
Combined Radium		2.56 +/- 1.35	0.870	pCi/l				
Radium-226	SM 7500 Ra B M*	2.56 +/- 0.576	0.424	pCi/l		08/24/16	08/31/16	AK
Radium-228	EPA 904*/9320*	-0.008 +/- 0.769	0.446	pCi/l		09/07/16	09/10/16	JR
Lab ID : **20160784-06**								
Client ID : **H-27**								
Date Sampled : **8/9/2016 2:50:00 PM**								
Matrix : **NPW**								
Radiochemical Analyses								
Combined Radium		0.952 +/- 1.23	0.797	pCi/l				
Radium-226	SM 7500 Ra B M*	0.408 +/- 0.217	0.165	pCi/l		08/24/16	08/31/16	AK
Radium-228	EPA 904*/9320*	0.544 +/- 1.01	0.632	pCi/l		09/07/16	09/10/16	JR
Lab ID : **20160784-07**								
Client ID : **H-33**								
Date Sampled : **8/9/2016 3:55:00 PM**								
Matrix : **NPW**								
Radiochemical Analyses								
Combined Radium		0.759 +/- 0.958	0.660	pCi/l				
Radium-226	SM 7500 Ra B M*	0.110 +/- 0.106	0.149	pCi/l		08/24/16	08/31/16	AK
Radium-228	EPA 904*/9320*	0.649 +/- 0.852	0.511	pCi/l		09/07/16	09/10/16	JR
Lab ID : **20160784-08**								
Client ID : **H-26**								
Date Sampled : **8/9/2016 4:45:00 PM**								
Matrix : **NPW**								
Radiochemical Analyses								
Combined Radium		0.172 +/- 1.68	1.13	pCi/l				
Radium-226	SM 7500 Ra B M*	0.172 +/- 0.145	0.200	pCi/l		08/24/16	08/31/16	AK
Radium-228	EPA 904*/9320*	-0.529 +/- 1.53	0.932	pCi/l		09/07/16	09/10/16	JR

Analytical Report

	Method	Result	DL	Units	Qual	Prep Date	Analysis Date	Analyst
Lab ID : **20160784-09**								
Client ID : **DUP-01**								
Date Sampled : **8/9/2016 2:38:00 PM**								
Matrix : **NPW**								
		Radiochemical Analyses						
Combined Radium		2.61 +/- 0.977	0.641	pCi/l				
Radium-226	SM 7500 Ra B M*	0.685 +/- 0.229	0.208	pCi/l		08/24/16	08/31/16	AK
Radium-228	EPA 904*/9320*	1.92 +/- 0.748	0.433	pCi/l		09/07/16	09/10/16	JR
Lab ID : **20160784-10**								
Client ID : **PDP-25**								
Date Sampled : **8/10/2016 1:30:00 PM**								
Matrix : **NPW**								
		Radiochemical Analyses						
Combined Radium		0.658 +/- 0.998	0.657	pCi/l				
Radium-226	SM 7500 Ra B M*	0.417 +/- 0.199	0.170	pCi/l		08/24/16	08/31/16	AK
Radium-228	EPA 904*/9320*	0.241 +/- 0.799	0.487	pCi/l		09/07/16	09/10/16	JR
Lab ID : **20160784-11**								
Client ID : **PDP-24**								
Date Sampled : **8/10/2016 11:00:00 AM**								
Matrix : **NPW**								
		Radiochemical Analyses						
Combined Radium		3.10 +/- 1.26	0.825	pCi/l				
Radium-226	SM 7500 Ra B M*	0.735 +/- 0.219	0.197	pCi/l		08/24/16	08/31/16	AK
Radium-228	EPA 904*/9320*	2.36 +/- 1.04	0.628	pCi/l		09/07/16	09/10/16	JR
Lab ID : **20160784-12**								
Client ID : **MW-17A**								
Date Sampled : **8/10/2016 10:20:00 AM**								
Matrix : **NPW**								
		Radiochemical Analyses						
Combined Radium		0.871 +/- 1.25	0.827	pCi/l				
Radium-226	SM 7500 Ra B M*	0.343 +/- 0.158	0.120	pCi/l		08/24/16	08/31/16	AK
Radium-228	EPA 904*/9320*	0.528 +/- 1.09	0.707	pCi/l		09/07/16	09/10/16	JR

Analytical Report

	Method	Result	DL	Units	Qual	Prep Date	Analysis Date	Analyst
Lab ID : **20160784-13**								
Client ID : **PDP-23**								
Date Sampled : **8/10/2016 9:10:00 AM**								
Matrix : **NPW**								
		Radiochemical Analyses						
Combined Radium		0.670 +/- 1.90	1.42	pCi/l				
Radium-226	SM 7500 Ra B M*	-0.105 +/- 0.115	0.267	pCi/l		08/24/16	08/31/16	AK
Radium-228	EPA 904*/9320*	0.670 +/- 1.78	1.15	pCi/l		09/07/16	09/10/16	JR
Lab ID : **20160784-14**								
Client ID : **MW-19**								
Date Sampled : **8/10/2016 3:00:00 PM**								
Matrix : **NPW**								
		Radiochemical Analyses						
Combined Radium		0.304 +/- 1.183	0.767	pCi/l				
Radium-226	SM 7500 Ra B M*	0.223 +/- 0.133	0.144	pCi/l		08/24/16	08/31/16	AK
Radium-228	EPA 904*/9320*	0.081 +/- 1.05	0.623	pCi/l		09/07/16	09/12/16	JR
Lab ID : **20160784-15**								
Client ID : **MW-20A**								
Date Sampled : **8/10/2016 2:10:00 PM**								
Matrix : **NPW**								
		Radiochemical Analyses						
Combined Radium		1.66 +/- 1.16	0.715	pCi/l				
Radium-226	SM 7500 Ra B M*	0.607 +/- 0.242	0.200	pCi/l		08/24/16	08/31/16	AK
Radium-228	EPA 904*/9320*	1.05 +/- 0.918	0.515	pCi/l		09/07/16	09/12/16	JR
Lab ID : **20160784-16**								
Client ID : **PDP-22**								
Date Sampled : **8/10/2016 9:20:00 AM**								
Matrix : **NPW**								
		Radiochemical Analyses						
Combined Radium		1.42 +/- 1.04	0.567	pCi/l				
Radium-226	SM 7500 Ra B M*	0.793 +/- 0.221	0.092	pCi/l		08/24/16	08/31/16	AK
Radium-228	EPA 904*/9320*	0.628 +/- 0.817	0.475	pCi/l		09/07/16	09/12/16	JR

OUTREACH LABORATORY, A Divsion of ESC Lab Sciences
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Analytical Report

	Method	Result	DL	Units	Qual	Prep Date	Analysis Date	Analyst
Lab ID : **20160784-17**								
Client ID : **PDP-26**								
Date Sampled : **8/10/2016 10:30:00 AM**								
Matrix : **NPW**								
		Radiochemical Analyses						
Combined Radium		0.581 +/- 0.935	0.617	pCi/l				
Radium-226	SM 7500 Ra B M*	0.133 +/- 0.104	0.133	pCi/l		08/24/16	08/31/16	AK
Radium-228	EPA 904*/9320*	0.448 +/- 0.831	0.484	pCi/l		09/07/16	09/12/16	JR
Lab ID : **20160784-18**								
Client ID : **MW-18A**								
Date Sampled : **8/10/2016 11:30:00 AM**								
Matrix : **NPW**								
		Radiochemical Analyses						
Combined Radium		0.742 +/- 1.22	0.771	pCi/l				
Radium-226	SM 7500 Ra B M*	0.288 +/- 0.149	0.164	pCi/l		08/24/16	08/31/16	AK
Radium-228	EPA 904*/9320*	0.454 +/- 1.07	0.607	pCi/l		09/07/16	09/12/16	JR
Lab ID : **20160784-19**								
Client ID : **EB-1**								
Date Sampled : **8/10/2016 11:45:00 AM**								
Matrix : **NPW**								
		Radiochemical Analyses						
Combined Radium		1.45 +/- 0.992	0.729	pCi/l				
Radium-226	SM 7500 Ra B M*	0.000 +/- 0.115	0.239	pCi/l		08/24/16	08/31/16	AK
Radium-228	EPA 904*/9320*	1.45 +/- 0.877	0.490	pCi/l		09/07/16	09/12/16	JR
Lab ID : **20160784-20**								
Client ID : **BMW-11AR**								
Date Sampled : **8/11/2016 8:25:00 AM**								
Matrix : **NPW**								
		Radiochemical Analyses						
Combined Radium		3.23 +/- 1.45	0.838	pCi/l				
Radium-226	SM 7500 Ra B M*	0.810 +/- 0.204	0.116	pCi/l		08/24/16	08/31/16	AK
Radium-228	EPA 904*/9320*	2.42 +/- 1.25	0.722	pCi/l		09/07/16	09/12/16	JR

Analytical Report

	Method	Result	DL	Units	Qual	Prep Date	Analysis Date	Analyst
Lab ID : **20160784-21**								
Client ID : **BMW-19**								
Date Sampled : **8/11/2016 9:20:00 AM**								
Matrix : **NPW**								
		Radiochemical Analyses						
Combined Radium		1.19 +/- 1.17	0.933	pCi/l				
Radium-226	SM 7500 Ra B M*	0.927 +/- 0.200	0.118	pCi/l		08/25/16	08/29/16	AK
Radium-228	EPA 904*/9320*	0.262 +/- 0.695	0.815	pCi/l		09/02/16	09/08/16	JR
Lab ID : **20160784-22**								
Client ID : **BMW-18**								
Date Sampled : **8/11/2016 10:15:00 AM**								
Matrix : **NPW**								
		Radiochemical Analyses						
Combined Radium		0.117 +/- 0.983	1.29	pCi/l				
Radium-226	SM 7500 Ra B M*	0.117 +/- 0.146	0.220	pCi/l		08/25/16	08/29/16	AK
Radium-228	EPA 904*/9320*	-0.353 +/- 0.837	1.07	pCi/l		09/02/16	09/08/16	JR
Lab ID : **20160784-23**								
Client ID : **BMW-20**								
Date Sampled : **8/11/2016 10:50:00 AM**								
Matrix : **NPW**								
		Radiochemical Analyses						
Combined Radium		1.72 +/- 0.838	0.980	pCi/l				
Radium-226	SM 7500 Ra B M*	0.322 +/- 0.140	0.147	pCi/l		08/25/16	08/29/16	AK
Radium-228	EPA 904*/9320*	1.40 +/- 0.698	0.833	pCi/l		09/02/16	09/08/16	JR
Lab ID : **20160784-24**								
Client ID : **BMW-24**								
Date Sampled : **8/11/2016 8:50:00 AM**								
Matrix : **NPW**								
		Radiochemical Analyses						
Combined Radium		1.36 +/- 0.937	1.06	pCi/l				
Radium-226	SM 7500 Ra B M*	0.564 +/- 0.185	0.116	pCi/l		08/25/16	08/29/16	AK
Radium-228	EPA 904*/9320*	0.791 +/- 0.752	0.942	pCi/l		09/02/16	09/08/16	JR

Analytical Report

	Method	Result	DL	Units	Qual	Prep Date	Analysis Date	Analyst
Lab ID : **20160784-25**								
Client ID : **BMW-23**								
Date Sampled : **8/11/2016 9:20:00 AM**								
Matrix : **NPW**								
		Radiochemical Analyses						
Combined Radium		2.90 +/- 0.992	1.07	pCi/l				
Radium-226	SM 7500 Ra B M*	0.963 +/- 0.218	0.164	pCi/l		08/25/16	08/29/16	AK
Radium-228	EPA 904*/9320*	1.94 +/- 0.774	0.904	pCi/l		09/02/16	09/08/16	JR
Lab ID : **20160784-26**								
Client ID : **BMW-22**								
Date Sampled : **8/11/2016 10:00:00 AM**								
Matrix : **NPW**								
		Radiochemical Analyses						
Combined Radium		2.54 +/- 0.798	0.823	pCi/l				
Radium-226	SM 7500 Ra B M*	0.607 +/- 0.190	0.104	pCi/l		08/25/16	08/29/16	AK
Radium-228	EPA 904*/9320*	1.93 +/- 0.608	0.719	pCi/l		09/02/16	09/08/16	JR
Lab ID : **20160784-27**								
Client ID : **BMW-21**								
Date Sampled : **8/11/2016 10:30:00 AM**								
Matrix : **NPW**								
		Radiochemical Analyses						
Combined Radium		1.25 +/- 0.875	1.04	pCi/l				
Radium-226	SM 7500 Ra B M*	0.655 +/- 0.290	0.312	pCi/l		08/25/16	08/29/16	AK
Radium-228	EPA 904*/9320*	0.632 +/- 0.585	0.728	pCi/l		09/02/16	09/08/16	JR

QC Report

Parameter	Blank	LCS %REC	LCSD %REC	LCSD RPD	DUP RPD	RER, NAD or DER	MS %REC	MSD %REC	MSD RPD	Batch ID
Radium-226	-0.024	94.7			NC	0.923	108.0	101.0	6.5	R1125
Radium-226	-0.021	108.0			0.6	0.022	95.6	101.0	5.2	R1126
Radium-228	0.406	95.4			NC	0.159	95.1	98.8	3.8	R3850
Radium-228	0.402	84.4			NC	0.580	84.3	87.6	3.8	R3851

Lab Approval:

Ron Eidson
Director of Radiochemistry

*NELAC Certified Parameter BDL = Below Detection Limit

OUTREACH LABORATORY, A Divsion of ESC Lab Sciences
Address: 311 North Aspen Avenue, Broken Arrow, OK, 74012 EMail: outreach@esclabsciences.com - Tel: (918) 251-2515

DHL Analytical, Inc.
2300 Double Creek Drive
Round Rock, TX 78664
TEL: *(512) 388-8222* FAX: *(512) 388-8229*

CHAIN-OF-CUSTODY RECORD

Work Order: 1608133

Subcontractor:

ESC Laboratory
311 North Aspen
Broken Arrow, Oklahoma 74012

TEL: (918) 251-2515
FAX:
Acct #: DHLRRTX

12-Aug-16

Sample Id	Matrix	DHL#	Date Collected	Bottle Type	Requested Tests					
					E904.0	SM7500Ra-B M				
H-28	Aqueous	-01B	08/09/16 09:30 AM	500HDPEHNO3	1					
H-28	Aqueous	-01C	08/09/16 09:30 AM	500HDPEHNO3		1				
H-29	Aqueous	-02B	08/09/16 10:35 AM	500HDPEHNO3	1					
H-29	Aqueous	-02C	08/09/16 10:35 AM	500HDPEHNO3		1				
H-31	Aqueous	-03B	08/09/16 11:50 AM	500HDPEHNO3	1					
H-31	Aqueous	-03C	08/09/16 11:50 AM	500HDPEHNO3		1				
H-30	Aqueous	-04B	08/09/16 12:45 PM	500HDPEHNO3	1					
H-30	Aqueous	-04C	08/09/16 12:45 PM	500HDPEHNO3		1				
H-32	Aqueous	-05B	08/09/16 01:50 PM	500HDPEHNO3	1					
H-32	Aqueous	-05C	08/09/16 01:50 PM	500HDPEHNO3		1				
H-27	Aqueous	-06B	08/09/16 02:50 PM	500HDPEHNO3	1					
H-27	Aqueous	-06C	08/09/16 02:50 PM	500HDPEHNO3		1				
H-33	Aqueous	-07B	08/09/16 03:55 PM	500HDPEHNO3	1					
H-33	Aqueous	-07C	08/09/16 03:55 PM	500HDPEHNO3		1				
H-26	Aqueous	-08B	08/09/16 04:45 PM	500HDPEHNO3	1					
H-26	Aqueous	-08C	08/09/16 04:45 PM	500HDPEHNO3		1				
DUP-01	Aqueous	-09B	08/09/16 02:38 PM	500HDPEHNO3	1					
DUP-01	Aqueous	-09C	08/09/16 02:38 PM	500HDPEHNO3		1				

General Comments:

Please analyze these samples with Normal Turnaround Time.
Report RA-226, Ra-228 & Combined per Specs DHLRRTX033116S.
Quality Control Package Needed: Standard - NELAC Rad Test compliant
Email to cac@dhlanalytical.com & dupont@dhlanalytical.com

1608078
L854111

	Date/Time		Date/Time
Relinquished by:	8/12/16 17:30	**Received by:**	8/12/16 17:30
Relinquished by:		**Received by:**	8/12/16 1012

DHL Analytical, Inc.
2300 Double Creek Drive
Round Rock, TX 78664
TEL: *(512) 388-8222* FAX: *(512) 388-8229*

CHAIN-OF-CUSTODY RECORD

Work Order: 1608133

Subcontractor:

ESC Laboratory
311 North Aspen
Broken Arrow, Oklahoma 74012

TEL: (918) 251-2515
FAX:
Acct #: DHLRRTX

12-Aug-16

Sample Id	Matrix	DHL#	Date Collected	Bottle Type	Requested Tests					
					E904.0	SM7500Ra-B M				
PDP-25	Aqueous	-10B	08/10/16 01:30 PM	500HDPEHNO3	1					
PDP-25	Aqueous	-10C	08/10/16 01:30 PM	500HDPEHNO3		1				
PDP-24	Aqueous	-11B	08/10/16 11:00 AM	500HDPEHNO3	1					
PDP-24	Aqueous	-11C	08/10/16 11:00 AM	500HDPEHNO3		1				
MW-17A	Aqueous	-12B	08/10/16 10:20 AM	500HDPEHNO3	1					
MW-17A	Aqueous	-12C	08/10/16 10:20 AM	500HDPEHNO3		1				
PDP-23	Aqueous	-13B	08/10/16 09:10 AM	500HDPEHNO3	1					
PDP-23	Aqueous	-13C	08/10/16 09:10 AM	500HDPEHNO3		1				
MW-19	Aqueous	-14B	08/10/16 03:00 PM	500HDPEHNO3	1					
MW-19	Aqueous	-14C	08/10/16 03:00 PM	500HDPEHNO3		1				
MW-20A	Aqueous	-15B	08/10/16 02:10 PM	500HDPEHNO3	1					
MW-20A	Aqueous	-15C	08/10/16 02:10 PM	500HDPEHNO3		1				
PDP-22	Aqueous	-16B	08/10/16 09:20 AM	500HDPEHNO3	1					
PDP-22	Aqueous	-16C	08/10/16 09:20 AM	500HDPEHNO3		1				
PDP-26	Aqueous	-17B	08/10/16 10:30 AM	500HDPEHNO3	1					
PDP-26	Aqueous	-17C	08/10/16 10:30 AM	500HDPEHNO3		1				
MW-18A	Aqueous	-18B	08/10/16 11:30 AM	500HDPEHNO3	1					
MW-18A	Aqueous	-18C	08/10/16 11:30 AM	500HDPEHNO3		1				

General Comments:

Please analyze these samples with Normal Turnaround Time.
Report RA-226, Ra-228 & Combined per Specs DHLRRTX033116S.
Quality Control Package Needed: Standard - NELAC Rad Test compliant
Email to cac@dhlanalytical.com & dupont@dhlanalytical.com

		Date/Time			Date/Time
Relinquished by:	[signature]	8/12/16 17:30	**Received by:**	[signature]	8/12/16 17:30
Relinquished by:			**Received by:**	Amber Taylor	8/16/16 1012

DHL Analytical, Inc.
2300 Double Creek Drive
Round Rock, TX 78664
TEL: *(512) 388-8222* FAX: *(512) 388-8229*

CHAIN-OF-CUSTODY RECORD

Work Order: 1608133

Subcontractor:

ESC Laboratory
311 North Aspen
Broken Arrow, Oklahoma 74012

TEL: (918) 251-2515
FAX:
Acct #: DHLRRTX

12-Aug-16

Sample Id	Matrix	DHL#	Date Collected	Bottle Type	Requested Tests					
					E904.0	SM7500Ra-B M				
EB-1	Aqueous	-19B	08/10/16 11:45 AM	500HDPEHNO3	1					
EB-1	Aqueous	-19C	08/10/16 11:45 AM	500HDPEHNO3		1				
BMW-11AR	Aqueous	-20B	08/11/16 08:25 AM	500HDPEHNO3	1					
BMW-11AR	Aqueous	-20C	08/11/16 08:25 AM	500HDPEHNO3		1				
BMW-19	Aqueous	-21B	08/11/16 09:20 AM	500HDPEHNO3	1					
BMW-19	Aqueous	-21C	08/11/16 09:20 AM	500HDPEHNO3		1				
BMW-18	Aqueous	-22B	08/11/16 10:15 AM	500HDPEHNO3	1					
BMW-18	Aqueous	-22C	08/11/16 10:15 AM	500HDPEHNO3		1				
BMW-20	Aqueous	-23B	08/11/16 10:50 AM	500HDPEHNO3	1					
BMW-20	Aqueous	-23C	08/11/16 10:50 AM	500HDPEHNO3		1				
BMW-24	Aqueous	-24B	08/11/16 08:50 AM	500HDPEHNO3	1					
BMW-24	Aqueous	-24C	08/11/16 08:50 AM	500HDPEHNO3		1				
BMW-23	Aqueous	-25B	08/11/16 09:20 AM	500HDPEHNO3	1					
BMW-23	Aqueous	-25C	08/11/16 09:20 AM	500HDPEHNO3		1				
BMW-22	Aqueous	-26B	08/11/16 10:00 AM	500HDPEHNO3	1					
BMW-22	Aqueous	-26C	08/11/16 10:00 AM	500HDPEHNO3		1				
BMW-21	Aqueous	-27B	08/11/16 10:30 AM	500HDPEHNO3	1					
BMW-21	Aqueous	-27C	08/11/16 10:30 AM	500HDPEHNO3		1				

General Comments:

Please analyze these samples with Normal Turnaround Time.
Report RA-226, Ra-228 & Combined per Specs DHLRRTX033116S.
Quality Control Package Needed: Standard - NELAC Rad Test compliant
Email to cac@dhlanalytical.com & dupont@dhlanalytical.com

		Date/Time			Date/Time
Relinquished by:	Jtorrar	8/12/16 17:30	**Received by:**	FedEx	8/12/16 17:30
Relinquished by:			**Received by:**	Amber Taylor	8/16/16 1012

SAMPLE LOGIN

Date Received: *8/16/2016 10:12:0* **Lab Number:** 20160784 **Due:** 9/13/2016

Sample Number	Client Sample ID	Matrix	Date Sampled	Container Type	Container Size	Preservation	Preserved Upon Receipt	Custody Seal	Seal Intact
20160784-01 B	H-28	NPW	08/09/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
20160784-01 A	H-28	NPW	08/09/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160784-02 A	H-29	NPW	08/09/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
20160784-02 B	H-29	NPW	08/09/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160784-03 A	H-31	NPW	08/09/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
20160784-03 B	H-31	NPW	08/09/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160784-04 A	H-30	NPW	08/09/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
20160784-04 B	H-30	NPW	08/09/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160784-05 A	H-32	NPW	08/09/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
20160784-05 B	H-32	NPW	08/09/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160784-06 A	H-27	NPW	08/09/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
20160784-06 B	H-27	NPW	08/09/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160784-07 A	H-33	NPW	08/09/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
20160784-07 B	H-33	NPW	08/09/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						

20160784-08 B	H-26	NPW	08/09/16	Plastic	500 ml	HNO3, pH < 2	✓	Yes	Yes
20160784-08 A	H-26	NPW	08/09/16	Plastic	500 ml	HNO3, pH < 2	✓	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160784-09 A	DUP-01	NPW	08/09/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
20160784-09 B	DUP-01	NPW	08/09/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160784-10 A	PDP-25	NPW	08/10/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
20160784-10 B	PDP-25	NPW	08/10/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160784-11 A	PDP-24	NPW	08/10/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
20160784-11 B	PDP-24	NPW	08/10/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160784-12 A	MW-17A	NPW	08/10/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
20160784-12 B	MW-17A	NPW	08/10/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160784-13 A	PDP-23	NPW	08/10/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
20160784-13 B	PDP-23	NPW	08/10/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160784-14 B	MW-19	NPW	08/10/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
20160784-14 A	MW-19	NPW	08/10/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160784-15 A	MW-20A	NPW	08/10/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
20160784-15 B	MW-20A	NPW	08/10/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160784-16 A	PDP-22	NPW	08/10/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
20160784-16 B	PDP-22	NPW	08/10/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes

Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160784-17 A	PDP-26	NPW	08/10/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
20160784-17 B	PDP-26	NPW	08/10/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160784-18 A	MW-18A	NPW	08/10/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
20160784-18 B	MW-18A	NPW	08/10/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160784-19 A	EB-1	NPW	08/10/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
20160784-19 B	EB-1	NPW	08/10/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160784-20 B	BMW-11AR	NPW	08/11/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
20160784-20 A	BMW-11AR	NPW	08/11/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160784-21 A	BMW-19	NPW	08/11/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
20160784-21 B	BMW-19	NPW	08/11/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160784-22 A	BMW-18	NPW	08/11/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
20160784-22 B	BMW-18	NPW	08/11/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160784-23 A	BMW-20	NPW	08/11/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
20160784-23 B	BMW-20	NPW	08/11/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160784-24 A	BMW-24	NPW	08/11/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
20160784-24 B	BMW-24	NPW	08/11/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes

Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160784-25 A	BMW-23	NPW	08/11/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
20160784-25 B	BMW-23	NPW	08/11/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160784-26 A	BMW-22	NPW	08/11/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
20160784-26 B	BMW-22	NPW	08/11/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160784-27 B	BMW-21	NPW	08/11/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
20160784-27 A	BMW-21	NPW	08/11/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						

CONTAINER INSPECTION

 # Coolers 2 **Custody Seals Broken** ☑ **Temperature:** AMB °C **Ice** **Radiation Survey:** <300 cpm

SAMPLE INSPECTION

Sample Seal Broken ☑ **Chain of Custody Record** ☑ **Labels in Tact** ☑ **Radiation Survey Complete** N/A

Anomalies

Inspected By: Amber Taylor **DATE** 8/16/16

QA or Designee Review: Raymond Thomas **DATE** 08/16/16

Sample Custodian Review: Stan Ur **DATE** 8/16/16

Project Notes:

November 15, 2016

Will Vienne
Pastor, Behling & Wheeler
2201 Double Creek Dr #4004
Round Rock, Texas 78664
TEL: (512) 671-3434
FAX (512) 671-3446

Order No.: 1610171

RE: MLSES-Ash Pond Area

Dear Will Vienne:

DHL Analytical, Inc. received 8 sample(s) on 10/20/2016 for the analyses presented in the following report.

There were no problems with the analyses and all data met requirements of NELAC except where noted in the Case Narrative. All non-NELAC methods will be identified accordingly in the case narrative and all estimated uncertainties of test results are within method or EPA specifications.

If you have any questions regarding these tests results, please feel free to call. Thank you for using DHL Analytical.

Sincerely,

John DuPont
General Manager

This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211-16-17

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DHL ANALYTICAL
2300 Double Creek Dr. ■ Round Rock, TX 78664
Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

CHAIN-OF-CUSTODY

№ 70824

CLIENT: PBW
ADDRESS: 2201 DOUBLE CREEK DR ROUND ROCK, TX 78664
PHONE: 512-671-3434 FAX/E-MAIL: 512-671-3446
DATA REPORTED TO: WILL VIENNE
ADDITIONAL REPORT COPIES TO:

DATE: 10/19/16 PAGE 1 OF 1
PO #: 5164-B DHL WORK ORDER #: 1610171
PROJECT LOCATION OR NAME: MLSES - ASH POND AREA
CLENT PROJECT #: 5164-B COLLECTOR: J. BRAYTON

Authorize 5% surcharge for TRRP Report? ☐ Yes ☐ No

S=SOIL W=WATER A=AIR L=LIQUID SE=SEDIMENT P=PAINT SL=SLUDGE O=OTHER SO=SOLID

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	PRESERVATION: HCl	HNO_3	H_2SO_4 ☐ NaOH ☐	ICE	UNPRESERVED	ANALYSES: BTEX ☐ MTBE ☐ [METHOD 8021]	TPH 1005 ☐ TPH 1006 ☐ HOLD 1006 ☐	GRO [METHOD 8015] ☐ DRO [METHOD 8105] ☐	VOC 8260 ☐ VOC 624 ☐ VOC 8260/5035 ☐	SVOC 8270 ☐ PAH 8270 ☐ HOLD PAH ☐ SVOC 625 ☐	8270 PEST ☐ 625 PEST/PCB ☐ 608 PCB ☐ 8270 PCB ☐	8270 O-P PEST ☐ 8082 PCB ☐ 8270 PCB ☐	8321 HERB ☐ T PHOS, AMMONIA ☐	METALS 6020 ☐ METALS 200.8 ☐ DISS. METALS ☐	RCRA ☐ TX11 ☐ ☐	PH ☐ HEX CHROM ☐ ALKALINITY ☐ COD ☐	CHLORIDE ☐ ANIONS ☐	TCLP-SVOC ☐ VOC ☐ PEST ☐ HERB ☐	TCLP-METALS ☐ RCRA 8 ☐ TX-11 ☐ Pb ☐	RCI ☐ FLASHPOINT ☐ DGAS ☐	TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐ SCR	FIELD NOTES
H-29	01	10/18/16	0810	W	P	4		X		X	X															X	
H-31	02		0910	W	P	4		X		X	X															X	
DUP-01	03		0910	W	P	4		X		X	X															X	
H-32	04		1005	W	P	4		X		X	X															X	
H-27	05		1055	W	P	4		X		X	X															X	
H-28	06		1145	W	P	4		X		X	X															X	
H-26	07		1235	W	P	4		X		X	X															X	
H-33	08		1435	W	P	4		X		X	X															X	

RELINQUISHED BY: (Signature) DATE/TIME 10/19/16 RECEIVED BY: (Signature) 1730 Fedex
RELINQUISHED BY: (Signature) Fedex DATE/TIME 10/20/16 RECEIVED BY: (Signature) 915
RELINQUISHED BY: (Signature) DATE/TIME RECEIVED BY: (Signature)

APPENDIX F-Revision 2, February 27, 2014 ☐ DHL DISPOSAL @ $5.00 each ☐ Return

TURN AROUND TIME
RUSH ☐ CALL FIRST
1 DAY ☐ CALL FIRST
2 DAY ☐
NORMAL ☒
OTHER ☐ _____

LABORATORY USE ONLY:
RECEIVING TEMP: 4.6, 4.5 THERM #: 78
CUSTODY SEALS: ☐ BROKEN ☐ INTACT ☒ NOT USED
CARRIER: ☐ LONE STAR ☒ FEDEX ☐ UPS ☐ OTHER
☐ COURIER DELIVERY
☐ HAND DELIVERED

John Dupont

From:	Sara Taube [Sara.Taube@pbwllc.com]
Sent:	Wednesday, July 22, 2015 12:05 PM
To:	John Dupont
Subject:	CCR Appendix III and IV
Follow Up Flag:	Follow up
Flag Status:	Completed

Hi John,

Here are the Appendix III and Appendix IV constituents that we will need to have analyzed under the CCR Rule.

Appendix III
Boron
Calcium
Chloride
Fluoride
pH
sulfate
TDS

Appendix IV
Antimony
Arsenic
Barium
Beryllium
Cadmium
Chromium
Cobalt
Fluoride
Lead
Lithium
Mercury
Molybdenum
Selenium
Thallium
Radium 226 and 228

We are looking to have approximately 74 wells sampled 8 times over the course of the next two years. Please let me know if there is any more information you might need.

Cheers,

Sara

10/26/2015

ORIGIN ID:GGGA (512) 671-3434
JOHN BRAYTON
2201 DOUBLE CREEK DR STE 4004
ROUND ROCK, TX 78664
UNITED STATES US

SHIP DATE: 19OCT16
ACTWGT: 61.20 LB
CAD: 006994166/SSFE1722
DIMS: 23x14x14 IN
BILL THIRD PARTY

TO DHL
2300 DOUBLECREEK DR
ROUND ROCK TX 78664
(512) 388-8222
INV:
PO:
REF:
DEPT:

FedEx Express

1 of 2
TRK# 0201 7844 0276 2827
MASTER
A8 BSMA

THU - 20 OCT 10:30A
PRIORITY OVERNIGHT
78664
TX-US AUS

ORIGIN ID:GGGA (512) 671-3434
JOHN BRAYTON
2201 DOUBLE CREEK DR STE 4004
ROUND ROCK, TX 78664
UNITED STATES US

19OCT16
0 LB
6/SSFE1722
1 IN
Y

TO DHL
2300 DOUBLECREEK DR
ROUND ROCK TX 78664
(512) 388-8222
INV:
PO:
REF:
DEPT:

FedEx Express

2 of 2
MPS# 0263 7844 0276 2838
Mstr# 7844 0276 2827
0201
A8 BSMA

THU - 20 OCT 10:30A
PRIORITY OVERNIGHT
78664
TX-US AUS

DHL Analytical, Inc.

Sample Receipt Checklist

Client Name Pastor, Behling & Wheeler | Date Received: 10/20/2016

Work Order Number 1610171 | Received by JB

Checklist completed by: _____ 10/20/2016 (Signature / Date) | Reviewed by _____ 10/20/2016 (Initials / Date)

Carrier name FedEx 1day

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	4.6 °C
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH<2 acceptable upon receipt?	Yes ☑	No ☐	NA ☐ LOT # 8086
	Adjusted? no		Checked by JT
Water - ph>9 (S) or ph>12 (CN) acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted? _____		Checked by _____

Any No response must be detailed in the comments section below.

Client contacted _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments: _____

Corrective Action _____

CLIENT: Pastor, Behling & Wheeler
Project: MLSES-Ash Pond Area
Lab Order: 1610171

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Method SW6020A - Metals Analysis
Method SW7470A - Mercury Analysis
Method E300 - Anions Analysis
Method M4500-H+ B - pH of a Water Analysis
Method M2540C - TDS Analysis
Sub-contract - Radium-228 and Radium-226 analyses by methods E904/9320 and SM 7500 Ra B M. Analyzed at ESC Lab Sciences.

LOG IN

The samples were received and log-in performed on 10/20/16. A total of 8 samples were received. The samples arrived in good condition and were properly packaged.

METALS ANALYSIS

For Metals analysis performed on 10/28/16 the RPD for the serial dilution was slightly above control limits for Boron. This is flagged accordingly in the QC summary report. The PDS was within control limits for this analyte. No further corrective actions were taken.

DHL Analytical, Inc.

Date: *15-Nov-16*

CLIENT: Pastor, Behling & Wheeler
Project: MLSES-Ash Pond Area
Lab Order: 1610171

Work Order Sample Summary

Lab Smp ID	Client Sample ID	Tag Number	Date Collected	Date Recved
1610171-01	H-29		10/18/16 08:10 AM	10/20/2016
1610171-02	H-31		10/18/16 09:10 AM	10/20/2016
1610171-03	DUP-01		10/18/16 09:10 AM	10/20/2016
1610171-04	H-32		10/18/16 10:05 AM	10/20/2016
1610171-05	H-27		10/18/16 10:55 AM	10/20/2016
1610171-06	H-28		10/18/16 11:45 AM	10/20/2016
1610171-07	H-26		10/18/16 12:35 PM	10/20/2016
1610171-08	H-33		10/18/16 02:35 PM	10/20/2016

Lab Order: 1610171
Client: Pastor, Behling & Wheeler
Project: MLSES-Ash Pond Area

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1610171-01A	H-29	10/18/16 08:10 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/27/16 08:21 AM	77689
	H-29	10/18/16 08:10 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/27/16 08:21 AM	77689
	H-29	10/18/16 08:10 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/27/16 08:21 AM	77689
	H-29	10/18/16 08:10 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	10/24/16 12:40 PM	77658
1610171-01D	H-29	10/18/16 08:10 AM	Aqueous	E300	Anion Preparation	10/25/16 09:05 AM	77664
	H-29	10/18/16 08:10 AM	Aqueous	E300	Anion Preparation	10/25/16 09:05 AM	77664
	H-29	10/18/16 08:10 AM	Aqueous	M4500-H+ B	pH Preparation	10/21/16 08:50 AM	77638
	H-29	10/18/16 08:10 AM	Aqueous	M2540C	TDS Preparation	10/25/16 03:41 PM	77673
1610171-02A	H-31	10/18/16 09:10 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/27/16 08:21 AM	77689
	H-31	10/18/16 09:10 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/27/16 08:21 AM	77689
	H-31	10/18/16 09:10 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	10/24/16 12:40 PM	77658
1610171-02D	H-31	10/18/16 09:10 AM	Aqueous	E300	Anion Preparation	10/25/16 09:05 AM	77664
	H-31	10/18/16 09:10 AM	Aqueous	E300	Anion Preparation	10/25/16 09:05 AM	77664
	H-31	10/18/16 09:10 AM	Aqueous	E300	Anion Preparation	10/25/16 09:05 AM	77664
	H-31	10/18/16 09:10 AM	Aqueous	M4500-H+ B	pH Preparation	10/21/16 08:50 AM	77638
	H-31	10/18/16 09:10 AM	Aqueous	M2540C	TDS Preparation	10/25/16 03:41 PM	77673
1610171-03A	DUP-01	10/18/16 09:10 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/27/16 08:21 AM	77689
	DUP-01	10/18/16 09:10 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/27/16 08:21 AM	77689
	DUP-01	10/18/16 09:10 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	10/24/16 12:40 PM	77658
1610171-03D	DUP-01	10/18/16 09:10 AM	Aqueous	E300	Anion Preparation	10/25/16 09:05 AM	77664
	DUP-01	10/18/16 09:10 AM	Aqueous	E300	Anion Preparation	10/25/16 09:05 AM	77664
	DUP-01	10/18/16 09:10 AM	Aqueous	E300	Anion Preparation	10/25/16 09:05 AM	77664
	DUP-01	10/18/16 09:10 AM	Aqueous	M4500-H+ B	pH Preparation	10/21/16 08:50 AM	77638
	DUP-01	10/18/16 09:10 AM	Aqueous	M2540C	TDS Preparation	10/25/16 03:41 PM	77673
1610171-04A	H-32	10/18/16 10:05 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/27/16 08:21 AM	77689
	H-32	10/18/16 10:05 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/27/16 08:21 AM	77689
	H-32	10/18/16 10:05 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	10/24/16 12:42 PM	77659
1610171-04D	H-32	10/18/16 10:05 AM	Aqueous	E300	Anion Preparation	10/25/16 09:05 AM	77664

Lab Order: 1610171
Client: Pastor, Behling & Wheeler
Project: MLSES-Ash Pond Area

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1610171-04D	H-32	10/18/16 10:05 AM	Aqueous	E300	Anion Preparation	10/25/16 09:05 AM	77664
	H-32	10/18/16 10:05 AM	Aqueous	M4500-H+ B	pH Preparation	10/21/16 08:50 AM	77638
	H-32	10/18/16 10:05 AM	Aqueous	M2540C	TDS Preparation	10/25/16 03:41 PM	77673
1610171-05A	H-27	10/18/16 10:55 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/27/16 08:21 AM	77689
	H-27	10/18/16 10:55 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/27/16 08:21 AM	77689
	H-27	10/18/16 10:55 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	10/24/16 12:42 PM	77659
1610171-05D	H-27	10/18/16 10:55 AM	Aqueous	E300	Anion Preparation	10/25/16 09:05 AM	77664
	H-27	10/18/16 10:55 AM	Aqueous	E300	Anion Preparation	10/25/16 09:05 AM	77664
	H-27	10/18/16 10:55 AM	Aqueous	M4500-H+ B	pH Preparation	10/21/16 08:50 AM	77638
	H-27	10/18/16 10:55 AM	Aqueous	M2540C	TDS Preparation	10/25/16 03:41 PM	77673
1610171-06A	H-28	10/18/16 11:45 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/27/16 08:21 AM	77689
	H-28	10/18/16 11:45 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/27/16 08:21 AM	77689
	H-28	10/18/16 11:45 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	10/24/16 12:42 PM	77659
1610171-06D	H-28	10/18/16 11:45 AM	Aqueous	E300	Anion Preparation	10/25/16 09:05 AM	77664
	H-28	10/18/16 11:45 AM	Aqueous	E300	Anion Preparation	10/25/16 09:05 AM	77664
	H-28	10/18/16 11:45 AM	Aqueous	M4500-H+ B	pH Preparation	10/21/16 08:50 AM	77638
	H-28	10/18/16 11:45 AM	Aqueous	M2540C	TDS Preparation	10/25/16 03:41 PM	77673
1610171-07A	H-26	10/18/16 12:35 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/27/16 08:21 AM	77689
	H-26	10/18/16 12:35 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/27/16 08:21 AM	77689
	H-26	10/18/16 12:35 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/27/16 08:21 AM	77689
	H-26	10/18/16 12:35 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	10/24/16 12:42 PM	77659
1610171-07D	H-26	10/18/16 12:35 PM	Aqueous	E300	Anion Preparation	10/25/16 09:05 AM	77664
	H-26	10/18/16 12:35 PM	Aqueous	E300	Anion Preparation	10/25/16 09:05 AM	77664
	H-26	10/18/16 12:35 PM	Aqueous	M4500-H+ B	pH Preparation	10/21/16 08:50 AM	77638
	H-26	10/18/16 12:35 PM	Aqueous	M2540C	TDS Preparation	10/25/16 03:41 PM	77673
1610171-08A	H-33	10/18/16 02:35 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/27/16 08:21 AM	77689
	H-33	10/18/16 02:35 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/27/16 08:21 AM	77689
	H-33	10/18/16 02:35 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/27/16 08:21 AM	77689

Lab Order: 1610171
Client: Pastor, Behling & Wheeler
Project: MLSES-Ash Pond Area

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1610171-08A	H-33	10/18/16 02:35 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	10/24/16 12:42 PM	77659
1610171-08D	H-33	10/18/16 02:35 PM	Aqueous	E300	Anion Preparation	10/25/16 09:05 AM	77664
	H-33	10/18/16 02:35 PM	Aqueous	E300	Anion Preparation	10/25/16 09:05 AM	77664
	H-33	10/18/16 02:35 PM	Aqueous	M4500-H+ B	pH Preparation	10/21/16 08:50 AM	77638
	H-33	10/18/16 02:35 PM	Aqueous	M2540C	TDS Preparation	10/25/16 03:41 PM	77673

Lab Order: 1610171
Client: Pastor, Behling & Wheeler
Project: MLSES-Ash Pond Area

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1610171-01A	H-29	Aqueous	SW7470A	Mercury Total: Aqueous	77658	1	10/26/16 01:02 PM	CETAC2_HG_161026A
	H-29	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	77689	50	10/31/16 02:20 PM	ICP-MS3_161031A
	H-29	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	77689	1	10/31/16 04:20 PM	ICP-MS3_161031A
	H-29	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	77689	1	10/28/16 04:46 PM	ICP-MS4_161028B
1610171-01D	H-29	Aqueous	E300	Anions by IC method - Water	77664	1	10/25/16 10:47 AM	IC2_161025A
	H-29	Aqueous	E300	Anions by IC method - Water	77664	10	10/25/16 12:51 PM	IC2_161025A
	H-29	Aqueous	M4500-H+ B	pH	77638	1	10/21/16 10:57 AM	TITRATOR_161021A
	H-29	Aqueous	M2540C	Total Dissolved Solids	77673	1	10/26/16 08:43 AM	WC_161025B
1610171-02A	H-31	Aqueous	SW7470A	Mercury Total: Aqueous	77658	1	10/26/16 01:04 PM	CETAC2_HG_161026A
	H-31	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	77689	100	10/31/16 02:26 PM	ICP-MS3_161031A
	H-31	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	77689	1	10/28/16 04:48 PM	ICP-MS4_161028B
1610171-02D	H-31	Aqueous	E300	Anions by IC method - Water	77664	1	10/25/16 11:02 AM	IC2_161025A
	H-31	Aqueous	E300	Anions by IC method - Water	77664	10	10/25/16 01:45 PM	IC2_161025A
	H-31	Aqueous	E300	Anions by IC method - Water	77664	100	10/25/16 04:00 PM	IC2_161025A
	H-31	Aqueous	M4500-H+ B	pH	77638	1	10/21/16 10:59 AM	TITRATOR_161021A
	H-31	Aqueous	M2540C	Total Dissolved Solids	77673	1	10/26/16 08:43 AM	WC_161025B
1610171-03A	DUP-01	Aqueous	SW7470A	Mercury Total: Aqueous	77658	1	10/26/16 01:06 PM	CETAC2_HG_161026A
	DUP-01	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	77689	100	10/31/16 02:32 PM	ICP-MS3_161031A
	DUP-01	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	77689	1	10/28/16 04:50 PM	ICP-MS4_161028B
1610171-03D	DUP-01	Aqueous	E300	Anions by IC method - Water	77664	1	10/25/16 11:17 AM	IC2_161025A
	DUP-01	Aqueous	E300	Anions by IC method - Water	77664	10	10/25/16 02:00 PM	IC2_161025A
	DUP-01	Aqueous	E300	Anions by IC method - Water	77664	100	10/25/16 04:15 PM	IC2_161025A
	DUP-01	Aqueous	M4500-H+ B	pH	77638	1	10/21/16 11:02 AM	TITRATOR_161021A
	DUP-01	Aqueous	M2540C	Total Dissolved Solids	77673	1	10/26/16 08:43 AM	WC_161025B
1610171-04A	H-32	Aqueous	SW7470A	Mercury Total: Aqueous	77659	1	10/31/16 12:14 PM	CETAC2_HG_161031A
	H-32	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	77689	10	10/31/16 02:38 PM	ICP-MS3_161031A

Lab Order: 1610171
Client: Pastor, Behling & Wheeler
Project: MLSES-Ash Pond Area

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1610171-04A	H-32	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	77689	1	10/28/16 04:52 PM	ICP-MS4_161028B
1610171-04D	H-32	Aqueous	E300	Anions by IC method - Water	77664	1	10/25/16 11:31 AM	IC2_161025A
	H-32	Aqueous	E300	Anions by IC method - Water	77664	10	10/25/16 02:14 PM	IC2_161025A
	H-32	Aqueous	M4500-H+ B	pH	77638	1	10/21/16 11:04 AM	TITRATOR_161021A
	H-32	Aqueous	M2540C	Total Dissolved Solids	77673	1	10/26/16 08:43 AM	WC_161025B
1610171-05A	H-27	Aqueous	SW7470A	Mercury Total: Aqueous	77659	1	10/31/16 12:16 PM	CETAC2_HG_161031A
	H-27	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	77689	10	10/31/16 02:44 PM	ICP-MS3_161031A
	H-27	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	77689	1	10/28/16 04:54 PM	ICP-MS4_161028B
1610171-05D	H-27	Aqueous	E300	Anions by IC method - Water	77664	1	10/25/16 11:46 AM	IC2_161025A
	H-27	Aqueous	E300	Anions by IC method - Water	77664	10	10/25/16 03:00 PM	IC2_161025A
	H-27	Aqueous	M4500-H+ B	pH	77638	1	10/21/16 11:06 AM	TITRATOR_161021A
	H-27	Aqueous	M2540C	Total Dissolved Solids	77673	1	10/26/16 08:43 AM	WC_161025B
1610171-06A	H-28	Aqueous	SW7470A	Mercury Total: Aqueous	77659	1	10/31/16 12:18 PM	CETAC2_HG_161031A
	H-28	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	77689	10	10/31/16 03:50 PM	ICP-MS3_161031A
	H-28	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	77689	1	10/28/16 05:12 PM	ICP-MS4_161028B
1610171-06D	H-28	Aqueous	E300	Anions by IC method - Water	77664	1	10/25/16 12:00 PM	IC2_161025A
	H-28	Aqueous	E300	Anions by IC method - Water	77664	10	10/25/16 03:14 PM	IC2_161025A
	H-28	Aqueous	M4500-H+ B	pH	77638	1	10/21/16 11:08 AM	TITRATOR_161021A
	H-28	Aqueous	M2540C	Total Dissolved Solids	77673	1	10/26/16 08:43 AM	WC_161025B
1610171-07A	H-26	Aqueous	SW7470A	Mercury Total: Aqueous	77659	1	10/31/16 12:20 PM	CETAC2_HG_161031A
	H-26	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	77689	10	10/31/16 03:56 PM	ICP-MS3_161031A
	H-26	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	77689	1	10/31/16 04:26 PM	ICP-MS3_161031A
	H-26	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	77689	1	10/28/16 05:14 PM	ICP-MS4_161028B
1610171-07D	H-26	Aqueous	E300	Anions by IC method - Water	77664	1	10/25/16 12:15 PM	IC2_161025A
	H-26	Aqueous	E300	Anions by IC method - Water	77664	10	10/25/16 03:29 PM	IC2_161025A
	H-26	Aqueous	M4500-H+ B	pH	77638	1	10/21/16 11:10 AM	TITRATOR_161021A

Lab Order: 1610171
Client: Pastor, Behling & Wheeler
Project: MLSES-Ash Pond Area

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1610171-07D	H-26	Aqueous	M2540C	Total Dissolved Solids	77673	1	10/26/16 08:43 AM	WC_161025B
1610171-08A	H-33	Aqueous	SW7470A	Mercury Total: Aqueous	77659	1	10/31/16 12:23 PM	CETAC2_HG_161031A
	H-33	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	77689	1	10/31/16 04:33 PM	ICP-MS3_161031A
	H-33	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	77689	1	10/28/16 05:16 PM	ICP-MS4_161028B
	H-33	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	77689	10	10/31/16 04:02 PM	ICP-MS3_161031A
1610171-08D	H-33	Aqueous	E300	Anions by IC method - Water	77664	1	10/25/16 12:30 PM	IC2_161025A
	H-33	Aqueous	E300	Anions by IC method - Water	77664	10	10/25/16 03:44 PM	IC2_161025A
	H-33	Aqueous	M4500-H+ B	pH	77638	1	10/21/16 11:12 AM	TITRATOR_161021A
	H-33	Aqueous	M2540C	Total Dissolved Solids	77673	1	10/26/16 08:43 AM	WC_161025B

DHL Analytical, Inc.

Date: *15-Nov-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	H-29
Project:	MLSES-Ash Pond Area	**Lab ID:**	1610171-01
Project No:	5164-B	**Collection Date:**	10/18/16 08:10 AM
Lab Order:	1610171	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	10/26/16 01:02 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	10/28/16 04:46 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	10/28/16 04:46 PM
Barium	0.118	0.00300	0.0100		mg/L	1	10/28/16 04:46 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	10/28/16 04:46 PM
Boron	0.953	0.0100	0.0300		mg/L	1	10/31/16 04:20 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	10/28/16 04:46 PM
Calcium	150	5.00	15.0		mg/L	50	10/31/16 02:20 PM
Chromium	0.00412	0.00200	0.00500	J	mg/L	1	10/28/16 04:46 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	10/28/16 04:46 PM
Lead	0.000427	0.000300	0.00100	J	mg/L	1	10/28/16 04:46 PM
Lithium	0.00560	0.00500	0.0100	J	mg/L	1	10/28/16 04:46 PM
Molybdenum	0.00305	0.00200	0.00500	J	mg/L	1	10/28/16 04:46 PM
Selenium	0.0681	0.00200	0.00500		mg/L	1	10/28/16 04:46 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	10/28/16 04:46 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	4.33	0.300	1.00		mg/L	1	10/25/16 10:47 AM
Fluoride	1.15	0.100	0.400		mg/L	1	10/25/16 10:47 AM
Sulfate	346	10.0	30.0		mg/L	10	10/25/16 12:51 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	7.04	0	0		pH Units@20.1℃	1	10/21/16 10:57 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	607	10.0	10.0		mg/L	1	10/26/16 08:43 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *15-Nov-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	H-31
Project:	MLSES-Ash Pond Area	**Lab ID:**	1610171-02
Project No:	5164-B	**Collection Date:**	10/18/16 09:10 AM
Lab Order:	1610171	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	10/26/16 01:04 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	10/28/16 04:48 PM
Arsenic	0.00351	0.00200	0.00500	J	mg/L	1	10/28/16 04:48 PM
Barium	0.0215	0.00300	0.0100		mg/L	1	10/28/16 04:48 PM
Beryllium	0.00167	0.000300	0.00100		mg/L	1	10/28/16 04:48 PM
Boron	20.0	1.00	3.00		mg/L	100	10/31/16 02:26 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	10/28/16 04:48 PM
Calcium	236	10.0	30.0		mg/L	100	10/31/16 02:26 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	10/28/16 04:48 PM
Cobalt	0.0304	0.00300	0.00500		mg/L	1	10/28/16 04:48 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	10/28/16 04:48 PM
Lithium	0.165	0.00500	0.0100		mg/L	1	10/28/16 04:48 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	10/28/16 04:48 PM
Selenium	0.00567	0.00200	0.00500		mg/L	1	10/28/16 04:48 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	10/28/16 04:48 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	187	3.00	10.0		mg/L	10	10/25/16 01:45 PM
Fluoride	0.298	0.100	0.400	J	mg/L	1	10/25/16 11:02 AM
Sulfate	1960	100	300		mg/L	100	10/25/16 04:00 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.23	0	0		pH Units@20.3℃	1	10/21/16 10:59 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	3690	50.0	50.0		mg/L	1	10/26/16 08:43 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *15-Nov-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	DUP-01
Project:	MLSES-Ash Pond Area	**Lab ID:**	1610171-03
Project No:	5164-B	**Collection Date:**	10/18/16 09:10 AM
Lab Order:	1610171	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	10/26/16 01:06 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	10/28/16 04:50 PM
Arsenic	0.0201	0.00200	0.00500		mg/L	1	10/28/16 04:50 PM
Barium	0.0183	0.00300	0.0100		mg/L	1	10/28/16 04:50 PM
Beryllium	0.0266	0.000300	0.00100		mg/L	1	10/28/16 04:50 PM
Boron	23.0	1.00	3.00		mg/L	100	10/31/16 02:32 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	10/28/16 04:50 PM
Calcium	265	10.0	30.0		mg/L	100	10/31/16 02:32 PM
Chromium	0.00254	0.00200	0.00500	J	mg/L	1	10/28/16 04:50 PM
Cobalt	0.427	0.00300	0.00500		mg/L	1	10/28/16 04:50 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	10/28/16 04:50 PM
Lithium	0.193	0.00500	0.0100		mg/L	1	10/28/16 04:50 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	10/28/16 04:50 PM
Selenium	0.0634	0.00200	0.00500		mg/L	1	10/28/16 04:50 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	10/28/16 04:50 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	194	3.00	10.0		mg/L	10	10/25/16 02:00 PM
Fluoride	0.333	0.100	0.400	J	mg/L	1	10/25/16 11:17 AM
Sulfate	2100	100	300		mg/L	100	10/25/16 04:15 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.12	0	0		pH Units@20.6℃	1	10/21/16 11:02 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	3860	50.0	50.0		mg/L	1	10/26/16 08:43 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *15-Nov-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	H-32
Project:	MLSES-Ash Pond Area	**Lab ID:**	1610171-04
Project No:	5164-B	**Collection Date:**	10/18/16 10:05 AM
Lab Order:	1610171	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	10/31/16 12:14 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	10/28/16 04:52 PM
Arsenic	0.00289	0.00200	0.00500	J	mg/L	1	10/28/16 04:52 PM
Barium	0.0200	0.00300	0.0100		mg/L	1	10/28/16 04:52 PM
Beryllium	0.00567	0.000300	0.00100		mg/L	1	10/28/16 04:52 PM
Boron	1.72	0.100	0.300		mg/L	10	10/31/16 02:38 PM
Cadmium	0.00254	0.000300	0.00100		mg/L	1	10/28/16 04:52 PM
Calcium	50.5	1.00	3.00		mg/L	10	10/31/16 02:38 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	10/28/16 04:52 PM
Cobalt	0.204	0.00300	0.00500		mg/L	1	10/28/16 04:52 PM
Lead	0.00332	0.000300	0.00100		mg/L	1	10/28/16 04:52 PM
Lithium	0.0834	0.00500	0.0100		mg/L	1	10/28/16 04:52 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	10/28/16 04:52 PM
Selenium	0.00267	0.00200	0.00500	J	mg/L	1	10/28/16 04:52 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	10/28/16 04:52 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	121	3.00	10.0		mg/L	10	10/25/16 02:14 PM
Fluoride	0.904	0.100	0.400		mg/L	1	10/25/16 11:31 AM
Sulfate	319	10.0	30.0		mg/L	10	10/25/16 02:14 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	5.26	0	0		pH Units@20.6℃	1	10/21/16 11:04 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	888	10.0	10.0		mg/L	1	10/26/16 08:43 AM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *15-Nov-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	H-27
Project:	MLSES-Ash Pond Area	**Lab ID:**	1610171-05
Project No:	5164-B	**Collection Date:**	10/18/16 10:55 AM
Lab Order:	1610171	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	10/31/16 12:16 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	10/28/16 04:54 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	10/28/16 04:54 PM
Barium	0.0248	0.00300	0.0100		mg/L	1	10/28/16 04:54 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	10/28/16 04:54 PM
Boron	0.477	0.100	0.300		mg/L	10	10/31/16 02:44 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	10/28/16 04:54 PM
Calcium	56.5	1.00	3.00		mg/L	10	10/31/16 02:44 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	10/28/16 04:54 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	10/28/16 04:54 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	10/28/16 04:54 PM
Lithium	0.0576	0.00500	0.0100		mg/L	1	10/28/16 04:54 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	10/28/16 04:54 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	10/28/16 04:54 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	10/28/16 04:54 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	114	3.00	10.0		mg/L	10	10/25/16 03:00 PM
Fluoride	0.144	0.100	0.400	J	mg/L	1	10/25/16 11:46 AM
Sulfate	336	10.0	30.0		mg/L	10	10/25/16 03:00 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.05	0	0		pH Units@20.8℃	1	10/21/16 11:06 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	868	10.0	10.0		mg/L	1	10/26/16 08:43 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *15-Nov-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	H-28
Project:	MLSES-Ash Pond Area	**Lab ID:**	1610171-06
Project No:	5164-B	**Collection Date:**	10/18/16 11:45 AM
Lab Order:	1610171	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	10/31/16 12:18 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	10/28/16 05:12 PM
Arsenic	0.00284	0.00200	0.00500	J	mg/L	1	10/28/16 05:12 PM
Barium	0.0174	0.00300	0.0100		mg/L	1	10/28/16 05:12 PM
Beryllium	0.00685	0.000300	0.00100		mg/L	1	10/28/16 05:12 PM
Boron	4.96	0.100	0.300		mg/L	10	10/31/16 03:50 PM
Cadmium	0.000744	0.000300	0.00100	J	mg/L	1	10/28/16 05:12 PM
Calcium	67.3	1.00	3.00		mg/L	10	10/31/16 03:50 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	10/28/16 05:12 PM
Cobalt	0.169	0.00300	0.00500		mg/L	1	10/28/16 05:12 PM
Lead	0.00108	0.000300	0.00100		mg/L	1	10/28/16 05:12 PM
Lithium	0.155	0.00500	0.0100		mg/L	1	10/28/16 05:12 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	10/28/16 05:12 PM
Selenium	0.00273	0.00200	0.00500	J	mg/L	1	10/28/16 05:12 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	10/28/16 05:12 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	91.4	3.00	10.0		mg/L	10	10/25/16 03:14 PM
Fluoride	0.165	0.100	0.400	J	mg/L	1	10/25/16 12:00 PM
Sulfate	643	10.0	30.0		mg/L	10	10/25/16 03:14 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	5.07	0	0		pH Units@20.5℃	1	10/21/16 11:08 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	1460	50.0	50.0		mg/L	1	10/26/16 08:43 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *15-Nov-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	H-26
Project:	MLSES-Ash Pond Area	**Lab ID:**	1610171-07
Project No:	5164-B	**Collection Date:**	10/18/16 12:35 PM
Lab Order:	1610171	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	10/31/16 12:20 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	10/28/16 05:14 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	10/28/16 05:14 PM
Barium	0.0497	0.00300	0.0100		mg/L	1	10/28/16 05:14 PM
Beryllium	0.000709	0.000300	0.00100	J	mg/L	1	10/28/16 05:14 PM
Boron	0.439	0.0100	0.0300		mg/L	1	10/31/16 04:26 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	10/28/16 05:14 PM
Calcium	13.6	1.00	3.00		mg/L	10	10/31/16 03:56 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	10/28/16 05:14 PM
Cobalt	0.0214	0.00300	0.00500		mg/L	1	10/28/16 05:14 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	10/28/16 05:14 PM
Lithium	0.0136	0.00500	0.0100		mg/L	1	10/28/16 05:14 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	10/28/16 05:14 PM
Selenium	0.00265	0.00200	0.00500	J	mg/L	1	10/28/16 05:14 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	10/28/16 05:14 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	49.1	3.00	10.0		mg/L	10	10/25/16 03:29 PM
Fluoride	0.127	0.100	0.400	J	mg/L	1	10/25/16 12:15 PM
Sulfate	69.7	1.00	3.00		mg/L	1	10/25/16 12:15 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	5.68	0	0		pH Units@20.5℃	1	10/21/16 11:10 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	263	10.0	10.0		mg/L	1	10/26/16 08:43 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *15-Nov-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	H-33
Project:	MLSES-Ash Pond Area	**Lab ID:**	1610171-08
Project No:	5164-B	**Collection Date:**	10/18/16 02:35 PM
Lab Order:	1610171	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	10/31/16 12:23 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	10/28/16 05:16 PM
Arsenic	0.00347	0.00200	0.00500	J	mg/L	1	10/28/16 05:16 PM
Barium	0.0464	0.00300	0.0100		mg/L	1	10/28/16 05:16 PM
Beryllium	0.000617	0.000300	0.00100	J	mg/L	1	10/28/16 05:16 PM
Boron	0.0539	0.0100	0.0300		mg/L	1	10/31/16 04:33 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	10/28/16 05:16 PM
Calcium	11.1	1.00	3.00		mg/L	10	10/31/16 04:02 PM
Chromium	0.0309	0.00200	0.00500		mg/L	1	10/28/16 05:16 PM
Cobalt	0.0644	0.00300	0.00500		mg/L	1	10/28/16 05:16 PM
Lead	0.000329	0.000300	0.00100	J	mg/L	1	10/28/16 05:16 PM
Lithium	0.118	0.00500	0.0100		mg/L	1	10/28/16 05:16 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	10/28/16 05:16 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	10/28/16 05:16 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	10/28/16 05:16 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	59.2	3.00	10.0		mg/L	10	10/25/16 03:44 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	10/25/16 12:30 PM
Sulfate	114	1.00	3.00		mg/L	1	10/25/16 12:30 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.19	0	0		pH Units@20.5℃	1	10/21/16 11:12 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	398	10.0	10.0		mg/L	1	10/26/16 08:43 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT: Pastor, Behling & Wheeler
Work Order: 1610171
Project: MLSES-Ash Pond Area

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_161026A

The QC data in batch 77658 applies to the following samples: 1610171-01A, 1610171-02A, 1610171-03A

Sample ID	**MB-77658**	Batch ID:	**77658**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**CETAC2_HG_161026A**	Analysis Date:	**10/26/2016 12:41:45 P**	Prep Date:	**10/24/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.0000800	0.000200								

Sample ID	**LCS-77658**	Batch ID:	**77658**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**CETAC2_HG_161026A**	Analysis Date:	**10/26/2016 12:44:01 P**	Prep Date:	**10/24/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00213	0.000200	0.00200	0	106	85	115			

Sample ID	**LCSD-77658**	Batch ID:	**77658**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**LCSD**	Run ID:	**CETAC2_HG_161026A**	Analysis Date:	**10/26/2016 12:46:17 P**	Prep Date:	**10/24/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00215	0.000200	0.00200	0	108	85	115	0.935	15	

Sample ID	**1610190-01B SD**	Batch ID:	**77658**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**SD**	Run ID:	**CETAC2_HG_161026A**	Analysis Date:	**10/26/2016 1:27:09 PM**	Prep Date:	**10/24/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.000400	0.00100	0	0				0	10	

Sample ID	**1610190-01B PDS**	Batch ID:	**77658**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**PDS**	Run ID:	**CETAC2_HG_161026A**	Analysis Date:	**10/26/2016 1:29:25 PM**	Prep Date:	**10/24/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00242	0.000200	0.00250	0	96.8	85	115			

Sample ID	**1610190-01B MS**	Batch ID:	**77658**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**MS**	Run ID:	**CETAC2_HG_161026A**	Analysis Date:	**10/26/2016 1:31:41 PM**	Prep Date:	**10/24/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00204	0.000200	0.00200	0	102	80	120			

Sample ID	**1610190-01B MSD**	Batch ID:	**77658**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**MSD**	Run ID:	**CETAC2_HG_161026A**	Analysis Date:	**10/26/2016 1:33:58 PM**	Prep Date:	**10/24/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00202	0.000200	0.00200	0	101	80	120	0.985	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1610171
Project: MLSES-Ash Pond Area

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_161026A

Sample ID	**ICV-161026**	Batch ID:	**R88716**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**ICV**	Run ID:	**CETAC2_HG_161026A**	Analysis Date:	**10/26/2016 11:18:56 A**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00400	0.000200	0.00400	0	100	90	110			

Sample ID	**CCV2-161026**	Batch ID:	**R88716**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**CETAC2_HG_161026A**	Analysis Date:	**10/26/2016 12:31:38 P**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00196	0.000200	0.00200	0	98.0	90	110			

Sample ID	**CCV3-161026**	Batch ID:	**R88716**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**CETAC2_HG_161026A**	Analysis Date:	**10/26/2016 1:11:14 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00197	0.000200	0.00200	0	98.5	90	110			

Sample ID	**CCV4-161026**	Batch ID:	**R88716**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**CETAC2_HG_161026A**	Analysis Date:	**10/26/2016 1:47:38 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00200	0.000200	0.00200	0	100	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1610171
Project: MLSES-Ash Pond Area

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_161031A

The QC data in batch 77659 applies to the following samples: 1610171-04A, 1610171-05A, 1610171-06A, 1610171-07A, 1610171-08A

Sample ID	**MB-77659**	Batch ID:	**77659**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**CETAC2_HG_161031A**	Analysis Date:	**10/31/2016 12:04:54 P**	Prep Date:	**10/24/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.0000800	0.000200								

Sample ID	**LCS-77659**	Batch ID:	**77659**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**CETAC2_HG_161031A**	Analysis Date:	**10/31/2016 12:07:10 P**	Prep Date:	**10/24/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00213	0.000200	0.00200	0	106	85	115			

Sample ID	**LCSD-77659**	Batch ID:	**77659**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**LCSD**	Run ID:	**CETAC2_HG_161031A**	Analysis Date:	**10/31/2016 12:09:27 P**	Prep Date:	**10/24/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00218	0.000200	0.00200	0	109	85	115	2.32	15	

Sample ID	**1610183-01B SD**	Batch ID:	**77659**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**SD**	Run ID:	**CETAC2_HG_161031A**	Analysis Date:	**10/31/2016 12:27:34 P**	Prep Date:	**10/24/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.000400	0.00100	0	0				0	10	

Sample ID	**1610183-01B PDS**	Batch ID:	**77659**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**PDS**	Run ID:	**CETAC2_HG_161031A**	Analysis Date:	**10/31/2016 12:29:50 P**	Prep Date:	**10/24/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00229	0.000200	0.00250	0	91.6	85	115			

Sample ID	**1610183-01B MS**	Batch ID:	**77659**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**MS**	Run ID:	**CETAC2_HG_161031A**	Analysis Date:	**10/31/2016 12:32:05 P**	Prep Date:	**10/24/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00202	0.000200	0.00200	0	101	80	120			

Sample ID	**1610183-01B MSD**	Batch ID:	**77659**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**MSD**	Run ID:	**CETAC2_HG_161031A**	Analysis Date:	**10/31/2016 12:34:21 P**	Prep Date:	**10/24/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00201	0.000200	0.00200	0	101	80	120	0.496	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1610171
Project: MLSES-Ash Pond Area

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_161031A

Sample ID	**ICV-161031**	Batch ID:	**R88776**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**ICV**	Run ID:	**CETAC2_HG_161031A**	Analysis Date:	**10/31/2016 10:38:29 A**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00399	0.000200	0.00400	0	99.8	90	110			

Sample ID	**CCV2-161031**	Batch ID:	**R88776**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**CETAC2_HG_161031A**	Analysis Date:	**10/31/2016 11:51:11 A**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00200	0.000200	0.00200	0	100	90	110			

Sample ID	**CCV3-161031**	Batch ID:	**R88776**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**CETAC2_HG_161031A**	Analysis Date:	**10/31/2016 12:43:28 P**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00198	0.000200	0.00200	0	99.0	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1610171
Project: MLSES-Ash Pond Area

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS3_161031A

Sample ID **ICV1-161031**	Batch ID: **R88782**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS3_161031A**	Analysis Date: **10/31/2016 1:26:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.104	0.0300	0.100	0	104	90	110			
Calcium	2.43	0.300	2.50	0	97.2	90	110			

Sample ID **ILCVL-161031**	Batch ID: **R88782**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS3_161031A**	Analysis Date: **10/31/2016 1:38:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0217	0.0300	0.0200	0	109	70	130			
Calcium	0.0944	0.300	0.100	0	94.4	70	130			

Sample ID **CCV1-161031**	Batch ID: **R88782**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS3_161031A**	Analysis Date: **10/31/2016 2:50:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.197	0.0300	0.200	0	98.3	90	110			
Calcium	4.93	0.300	5.00	0	98.6	90	110			

Sample ID **LCVL1-161031**	Batch ID: **R88782**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS3_161031A**	Analysis Date: **10/31/2016 3:38:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0218	0.0300	0.0200	0	109	70	130			
Calcium	0.0870	0.300	0.100	0	87.0	70	130			

Sample ID **CCV2-161031**	Batch ID: **R88782**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS3_161031A**	Analysis Date: **10/31/2016 4:45:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.190	0.0300	0.200	0	95.2	90	110			
Calcium	4.88	0.300	5.00	0	97.6	90	110			

Sample ID **LCVL2-161031**	Batch ID: **R88782**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS3_161031A**	Analysis Date: **10/31/2016 4:57:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0221	0.0300	0.0200	0	110	70	130			
Calcium	0.0909	0.300	0.100	0	90.9	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1610171
Project: MLSES-Ash Pond Area

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161028A

The QC data in batch 77689 applies to the following samples: 1610171-01A, 1610171-02A, 1610171-03A, 1610171-04A, 1610171-05A, 1610171-06A, 1610171-07A, 1610171-08A

Sample ID **MB-77689** Batch ID: **77689** TestNo: **SW6020A** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_161028A** Analysis Date: **10/28/2016 11:09:00 A** Prep Date: **10/27/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.000800	0.00250								
Arsenic	<0.00200	0.00500								
Barium	<0.00300	0.0100								
Beryllium	<0.000300	0.00100								
Boron	<0.0100	0.0300								
Cadmium	<0.000300	0.00100								
Calcium	<0.100	0.300								
Chromium	<0.00200	0.00500								
Cobalt	<0.00300	0.00500								
Lead	<0.000300	0.00100								
Lithium	<0.00500	0.0100								
Molybdenum	<0.00200	0.00500								
Selenium	<0.00200	0.00500								
Thallium	<0.000500	0.00150								

Sample ID **LCS-77689** Batch ID: **77689** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_161028A** Analysis Date: **10/28/2016 11:11:00 A** Prep Date: **10/27/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.201	0.00250	0.200	0	101	80	120			
Arsenic	0.205	0.00500	0.200	0	102	80	120			
Barium	0.203	0.0100	0.200	0	101	80	120			
Beryllium	0.209	0.00100	0.200	0	104	80	120			
Boron	0.195	0.0300	0.200	0	97.4	80	120			
Cadmium	0.204	0.00100	0.200	0	102	80	120			
Calcium	5.06	0.300	5.00	0	101	80	120			
Chromium	0.213	0.00500	0.200	0	106	80	120			
Cobalt	0.210	0.00500	0.200	0	105	80	120			
Lead	0.205	0.00100	0.200	0	103	80	120			
Lithium	0.197	0.0100	0.200	0	98.7	80	120			
Molybdenum	0.201	0.00500	0.200	0	101	80	120			
Selenium	0.206	0.00500	0.200	0	103	80	120			
Thallium	0.203	0.00150	0.200	0	101	80	120			

Sample ID **LCSD-77689** Batch ID: **77689** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_161028A** Analysis Date: **10/28/2016 11:13:00 A** Prep Date: **10/27/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.198	0.00250	0.200	0	99.2	80	120	1.50	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1610171
Project: MLSES-Ash Pond Area

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161028A

Sample ID **LCSD-77689**	Batch ID: **77689**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCSD**	Run ID: **ICP-MS4_161028A**	Analysis Date: **10/28/2016 11:13:00 A**	Prep Date: **10/27/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.204	0.00500	0.200	0	102	80	120	0.410	15	
Barium	0.201	0.0100	0.200	0	100	80	120	0.998	15	
Beryllium	0.205	0.00100	0.200	0	103	80	120	1.73	15	
Boron	0.199	0.0300	0.200	0	99.5	80	120	2.13	15	
Cadmium	0.201	0.00100	0.200	0	100	80	120	1.58	15	
Calcium	4.92	0.300	5.00	0	98.5	80	120	2.73	15	
Chromium	0.211	0.00500	0.200	0	105	80	120	1.08	15	
Cobalt	0.209	0.00500	0.200	0	104	80	120	0.781	15	
Lead	0.207	0.00100	0.200	0	103	80	120	0.506	15	
Lithium	0.202	0.0100	0.200	0	101	80	120	2.12	15	
Molybdenum	0.200	0.00500	0.200	0	99.8	80	120	0.769	15	
Selenium	0.206	0.00500	0.200	0	103	80	120	0.244	15	
Thallium	0.205	0.00150	0.200	0	103	80	120	1.35	15	

Sample ID **1610170-04A SD**	Batch ID: **77689**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS4_161028A**	Analysis Date: **10/28/2016 11:19:00 A**	Prep Date: **10/27/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.00400	0.0125	0	0				0	10	
Arsenic	<0.0100	0.0250	0	0.00271				0	10	
Barium	0.0288	0.0500	0	0.0287				0.279	10	
Beryllium	<0.00150	0.00500	0	0				0	10	
Boron	0.0600	0.150	0	0.0483				21.5	10	R
Cadmium	<0.00150	0.00500	0	0				0	10	
Calcium	2.34	1.50	0	2.31				1.36	10	
Chromium	<0.0100	0.0250	0	0				0	10	
Cobalt	<0.0150	0.0250	0	0				0	10	
Lead	<0.00150	0.00500	0	0				0	10	
Lithium	<0.0250	0.0500	0	0.0122				0	10	
Molybdenum	<0.0100	0.0250	0	0				0	10	
Selenium	<0.0100	0.0250	0	0				0	10	
Thallium	<0.00250	0.00750	0	0				0	10	

Sample ID **1610170-04A PDS**	Batch ID: **77689**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_161028A**	Analysis Date: **10/28/2016 11:21:00 A**	Prep Date: **10/27/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.182	0.00250	0.200	0	90.8	80	120			
Arsenic	0.193	0.00500	0.200	0.00271	95.2	80	120			
Barium	0.227	0.0100	0.200	0.0287	99.4	80	120			
Beryllium	0.198	0.00100	0.200	0	99.2	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

Sample ID **1610170-04A PDS**	Batch ID: **77689**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_161028A**	Analysis Date: **10/28/2016 11:21:00 A**	Prep Date: **10/27/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.237	0.0300	0.200	0.0483	94.3	80	120			
Cadmium	0.194	0.00100	0.200	0	96.9	80	120			
Calcium	6.81	0.300	5.00	2.31	90.0	80	120			
Chromium	0.208	0.00500	0.200	0	104	80	120			
Cobalt	0.200	0.00500	0.200	0	99.9	80	120			
Lead	0.200	0.00100	0.200	0	99.8	80	120			
Lithium	0.215	0.0100	0.200	0.0122	101	80	120			
Molybdenum	0.189	0.00500	0.200	0	94.5	80	120			
Selenium	0.190	0.00500	0.200	0	94.8	80	120			
Thallium	0.198	0.00150	0.200	0	98.8	80	120			

Sample ID **1610170-04A MS**	Batch ID: **77689**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS4_161028A**	Analysis Date: **10/28/2016 11:25:00 A**	Prep Date: **10/27/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.206	0.00250	0.200	0	103	80	120			
Arsenic	0.204	0.00500	0.200	0.00271	101	80	120			
Barium	0.238	0.0100	0.200	0.0287	105	80	120			
Beryllium	0.204	0.00100	0.200	0	102	80	120			
Boron	0.282	0.0300	0.200	0.0483	117	80	120			
Cadmium	0.206	0.00100	0.200	0	103	80	120			
Calcium	7.25	0.300	5.00	2.31	98.8	80	120			
Chromium	0.212	0.00500	0.200	0	106	80	120			
Cobalt	0.210	0.00500	0.200	0	105	80	120			
Lead	0.209	0.00100	0.200	0	105	80	120			
Lithium	0.220	0.0100	0.200	0.0122	104	80	120			
Molybdenum	0.206	0.00500	0.200	0	103	80	120			
Selenium	0.201	0.00500	0.200	0	101	80	120			
Thallium	0.208	0.00150	0.200	0	104	80	120			

Sample ID **1610170-04A MSD**	Batch ID: **77689**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS4_161028A**	Analysis Date: **10/28/2016 11:27:00 A**	Prep Date: **10/27/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.201	0.00250	0.200	0	101	80	120	2.24	15	
Arsenic	0.204	0.00500	0.200	0.00271	101	80	120	0.079	15	
Barium	0.233	0.0100	0.200	0.0287	102	80	120	2.29	15	
Beryllium	0.208	0.00100	0.200	0	104	80	120	2.07	15	
Boron	0.271	0.0300	0.200	0.0483	111	80	120	4.32	15	
Cadmium	0.204	0.00100	0.200	0	102	80	120	0.913	15	
Calcium	7.37	0.300	5.00	2.31	101	80	120	1.58	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1610171
Project: MLSES-Ash Pond Area

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161028A

Sample ID **1610170-04A MSD** Batch ID: **77689** TestNo: **SW6020A** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS4_161028A** Analysis Date: **10/28/2016 11:27:00 A** Prep Date: **10/27/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chromium	0.214	0.00500	0.200	0	107	80	120	0.945	15	
Cobalt	0.208	0.00500	0.200	0	104	80	120	0.756	15	
Lead	0.212	0.00100	0.200	0	106	80	120	1.21	15	
Lithium	0.219	0.0100	0.200	0.0122	103	80	120	0.468	15	
Molybdenum	0.202	0.00500	0.200	0	101	80	120	2.09	15	
Selenium	0.201	0.00500	0.200	0	101	80	120	0.110	15	
Thallium	0.210	0.00150	0.200	0	105	80	120	1.20	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1610171
Project: MLSES-Ash Pond Area

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161028A

Sample ID **ICV-161028**	Batch ID: **R88745**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_161028A**	Analysis Date: **10/28/2016 10:46:00 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.0994	0.00250	0.100	0	99.4	90	110			
Arsenic	0.0952	0.00500	0.100	0	95.2	90	110			
Barium	0.0946	0.0100	0.100	0	94.6	90	110			
Beryllium	0.0978	0.00100	0.100	0	97.8	90	110			
Boron	0.0954	0.0300	0.100	0	95.4	90	110			
Cadmium	0.0943	0.00100	0.100	0	94.3	90	110			
Calcium	2.37	0.300	2.50	0	94.9	90	110			
Chromium	0.103	0.00500	0.100	0	103	90	110			
Cobalt	0.100	0.00500	0.100	0	100	90	110			
Lead	0.0988	0.00100	0.100	0	98.8	90	110			
Lithium	0.0955	0.0100	0.100	0	95.5	90	110			
Molybdenum	0.0917	0.00500	0.100	0	91.7	90	110			
Selenium	0.0981	0.00500	0.100	0	98.1	90	110			
Thallium	0.0982	0.00150	0.100	0	98.2	90	110			

Sample ID **LCVL-161028**	Batch ID: **R88745**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_161028A**	Analysis Date: **10/28/2016 11:02:00 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00194	0.00250	0.00200	0	97.2	70	130			
Arsenic	0.00510	0.00500	0.00500	0	102	70	130			
Barium	0.00511	0.0100	0.00500	0	102	70	130			
Beryllium	0.00126	0.00100	0.00100	0	126	70	130			
Boron	0.0206	0.0300	0.0200	0	103	70	130			
Cadmium	0.00102	0.00100	0.00100	0	102	70	130			
Calcium	0.0946	0.300	0.100	0	94.6	70	130			
Chromium	0.00522	0.00500	0.00500	0	104	70	130			
Cobalt	0.00519	0.00500	0.00500	0	104	70	130			
Lead	0.00104	0.00100	0.00100	0	104	70	130			
Lithium	0.0106	0.0100	0.0100	0	106	70	130			
Molybdenum	0.00499	0.00500	0.00500	0	99.9	70	130			
Selenium	0.00486	0.00500	0.00500	0	97.1	70	130			
Thallium	0.00101	0.00150	0.00100	0	101	70	130			

Sample ID **CCV1-161028**	Batch ID: **R88745**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_161028A**	Analysis Date: **10/28/2016 11:29:00 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.201	0.00250	0.200	0	100	90	110			
Arsenic	0.200	0.00500	0.200	0	99.9	90	110			
Barium	0.200	0.0100	0.200	0	100	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1610171
Project: MLSES-Ash Pond Area

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161028A

Sample ID **CCV1-161028** Batch ID: **R88745** TestNo: **SW6020A** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_161028A** Analysis Date: **10/28/2016 11:29:00 A** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.196	0.00100	0.200	0	97.9	90	110			
Boron	0.207	0.0300	0.200	0	103	90	110			
Cadmium	0.201	0.00100	0.200	0	101	90	110			
Calcium	4.62	0.300	5.00	0	92.4	90	110			
Chromium	0.209	0.00500	0.200	0	104	90	110			
Cobalt	0.205	0.00500	0.200	0	102	90	110			
Lead	0.205	0.00100	0.200	0	103	90	110			
Lithium	0.203	0.0100	0.200	0	101	90	110			
Molybdenum	0.198	0.00500	0.200	0	99.0	90	110			
Selenium	0.201	0.00500	0.200	0	100	90	110			
Thallium	0.204	0.00150	0.200	0	102	90	110			

Sample ID **LCVL1-161028** Batch ID: **R88745** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_161028A** Analysis Date: **10/28/2016 11:46:00 A** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00194	0.00250	0.00200	0	97.0	70	130			
Arsenic	0.00505	0.00500	0.00500	0	101	70	130			
Barium	0.00490	0.0100	0.00500	0	98.0	70	130			
Beryllium	0.00107	0.00100	0.00100	0	107	70	130			
Boron	0.0227	0.0300	0.0200	0	114	70	130			
Cadmium	0.000981	0.00100	0.00100	0	98.1	70	130			
Calcium	0.0930	0.300	0.100	0	93.0	70	130			
Chromium	0.00524	0.00500	0.00500	0	105	70	130			
Cobalt	0.00522	0.00500	0.00500	0	104	70	130			
Lead	0.00103	0.00100	0.00100	0	103	70	130			
Lithium	0.0109	0.0100	0.0100	0	109	70	130			
Molybdenum	0.00488	0.00500	0.00500	0	97.5	70	130			
Selenium	0.00562	0.00500	0.00500	0	112	70	130			
Thallium	0.000994	0.00150	0.00100	0	99.4	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1610171
Project: MLSES-Ash Pond Area

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161028B

Sample ID **ICV-161028** Batch ID: **R88760** TestNo: **SW6020A** Units: **mg/L**
SampType: **ICV** Run ID: **ICP-MS4_161028B** Analysis Date: **10/28/2016 10:46:00 A** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.0994	0.00250	0.100	0	99.4	90	110			
Arsenic	0.0952	0.00500	0.100	0	95.2	90	110			
Barium	0.0946	0.0100	0.100	0	94.6	90	110			
Beryllium	0.0978	0.00100	0.100	0	97.8	90	110			
Cadmium	0.0943	0.00100	0.100	0	94.3	90	110			
Chromium	0.103	0.00500	0.100	0	103	90	110			
Cobalt	0.100	0.00500	0.100	0	100	90	110			
Lead	0.0988	0.00100	0.100	0	98.8	90	110			
Lithium	0.0955	0.0100	0.100	0	95.5	90	110			
Molybdenum	0.0917	0.00500	0.100	0	91.7	90	110			
Selenium	0.0981	0.00500	0.100	0	98.1	90	110			
Thallium	0.0982	0.00150	0.100	0	98.2	90	110			

Sample ID **LCVL-161028** Batch ID: **R88760** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_161028B** Analysis Date: **10/28/2016 11:02:00 A** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00194	0.00250	0.00200	0	97.2	70	130			
Arsenic	0.00510	0.00500	0.00500	0	102	70	130			
Barium	0.00511	0.0100	0.00500	0	102	70	130			
Beryllium	0.00126	0.00100	0.00100	0	126	70	130			
Cadmium	0.00102	0.00100	0.00100	0	102	70	130			
Chromium	0.00522	0.00500	0.00500	0	104	70	130			
Cobalt	0.00519	0.00500	0.00500	0	104	70	130			
Lead	0.00104	0.00100	0.00100	0	104	70	130			
Lithium	0.0106	0.0100	0.0100	0	106	70	130			
Molybdenum	0.00499	0.00500	0.00500	0	99.9	70	130			
Selenium	0.00486	0.00500	0.00500	0	97.1	70	130			
Thallium	0.00101	0.00150	0.00100	0	101	70	130			

Sample ID **CCV8-161028** Batch ID: **R88760** TestNo: **SW6020A** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_161028B** Analysis Date: **10/28/2016 4:14:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.206	0.00250	0.200	0	103	90	110			
Arsenic	0.203	0.00500	0.200	0	101	90	110			
Barium	0.202	0.0100	0.200	0	101	90	110			
Beryllium	0.200	0.00100	0.200	0	99.8	90	110			
Cadmium	0.203	0.00100	0.200	0	101	90	110			
Chromium	0.208	0.00500	0.200	0	104	90	110			
Cobalt	0.206	0.00500	0.200	0	103	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161028B

Sample ID **CCV8-161028**	Batch ID: **R88760**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_161028B**	Analysis Date: **10/28/2016 4:14:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.205	0.00100	0.200	0	102	90	110			
Lithium	0.199	0.0100	0.200	0	99.5	90	110			
Molybdenum	0.201	0.00500	0.200	0	101	90	110			
Selenium	0.204	0.00500	0.200	0	102	90	110			
Thallium	0.201	0.00150	0.200	0	101	90	110			

Sample ID **LCVL8-161028**	Batch ID: **R88760**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_161028B**	Analysis Date: **10/28/2016 4:21:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00224	0.00250	0.00200	0	112	70	130			
Arsenic	0.00499	0.00500	0.00500	0	99.7	70	130			
Barium	0.00508	0.0100	0.00500	0	102	70	130			
Beryllium	0.00103	0.00100	0.00100	0	103	70	130			
Cadmium	0.00104	0.00100	0.00100	0	104	70	130			
Chromium	0.00544	0.00500	0.00500	0	109	70	130			
Cobalt	0.00509	0.00500	0.00500	0	102	70	130			
Lead	0.00102	0.00100	0.00100	0	102	70	130			
Lithium	0.0104	0.0100	0.0100	0	104	70	130			
Molybdenum	0.00503	0.00500	0.00500	0	101	70	130			
Selenium	0.00580	0.00500	0.00500	0	116	70	130			
Thallium	0.00102	0.00150	0.00100	0	102	70	130			

Sample ID **CCV9-161028**	Batch ID: **R88760**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_161028B**	Analysis Date: **10/28/2016 4:56:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.201	0.00250	0.200	0	100	90	110			
Arsenic	0.199	0.00500	0.200	0	99.7	90	110			
Barium	0.199	0.0100	0.200	0	99.7	90	110			
Beryllium	0.197	0.00100	0.200	0	98.3	90	110			
Cadmium	0.203	0.00100	0.200	0	102	90	110			
Chromium	0.210	0.00500	0.200	0	105	90	110			
Cobalt	0.206	0.00500	0.200	0	103	90	110			
Lead	0.203	0.00100	0.200	0	101	90	110			
Lithium	0.189	0.0100	0.200	0	94.7	90	110			
Molybdenum	0.204	0.00500	0.200	0	102	90	110			
Selenium	0.200	0.00500	0.200	0	100	90	110			
Thallium	0.202	0.00150	0.200	0	101	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

Sample ID **LCVL9-161028** Batch ID: **R88760** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_161028B** Analysis Date: **10/28/2016 5:08:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00197	0.00250	0.00200	0	98.4	70	130			
Arsenic	0.00491	0.00500	0.00500	0	98.1	70	130			
Barium	0.00513	0.0100	0.00500	0	103	70	130			
Beryllium	0.000934	0.00100	0.00100	0	93.4	70	130			
Cadmium	0.00103	0.00100	0.00100	0	103	70	130			
Chromium	0.00540	0.00500	0.00500	0	108	70	130			
Cobalt	0.00517	0.00500	0.00500	0	103	70	130			
Lead	0.000984	0.00100	0.00100	0	98.4	70	130			
Lithium	0.0112	0.0100	0.0100	0	112	70	130			
Molybdenum	0.00504	0.00500	0.00500	0	101	70	130			
Selenium	0.00522	0.00500	0.00500	0	104	70	130			
Thallium	0.00103	0.00150	0.00100	0	103	70	130			

Sample ID **CCV10-161028** Batch ID: **R88760** TestNo: **SW6020A** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_161028B** Analysis Date: **10/28/2016 5:32:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.202	0.00250	0.200	0	101	90	110			
Arsenic	0.202	0.00500	0.200	0	101	90	110			
Barium	0.202	0.0100	0.200	0	101	90	110			
Beryllium	0.200	0.00100	0.200	0	100	90	110			
Cadmium	0.201	0.00100	0.200	0	101	90	110			
Chromium	0.209	0.00500	0.200	0	104	90	110			
Cobalt	0.206	0.00500	0.200	0	103	90	110			
Lead	0.205	0.00100	0.200	0	103	90	110			
Lithium	0.196	0.0100	0.200	0	98.2	90	110			
Molybdenum	0.202	0.00500	0.200	0	101	90	110			
Selenium	0.201	0.00500	0.200	0	100	90	110			
Thallium	0.205	0.00150	0.200	0	103	90	110			

Sample ID **LCVL10-161028** Batch ID: **R88760** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_161028B** Analysis Date: **10/28/2016 5:43:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00198	0.00250	0.00200	0	98.8	70	130			
Arsenic	0.00500	0.00500	0.00500	0	100	70	130			
Barium	0.00513	0.0100	0.00500	0	103	70	130			
Beryllium	0.000834	0.00100	0.00100	0	83.4	70	130			
Cadmium	0.00103	0.00100	0.00100	0	103	70	130			
Chromium	0.00539	0.00500	0.00500	0	108	70	130			
Cobalt	0.00517	0.00500	0.00500	0	103	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1610171
Project: MLSES-Ash Pond Area

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161028B

Sample ID **LCVL10-161028** Batch ID: **R88760** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_161028B** Analysis Date: **10/28/2016 5:43:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.000981	0.00100	0.00100	0	98.1	70	130			
Lithium	0.0117	0.0100	0.0100	0	117	70	130			
Molybdenum	0.00513	0.00500	0.00500	0	103	70	130			
Selenium	0.00527	0.00500	0.00500	0	105	70	130			
Thallium	0.00100	0.00150	0.00100	0	100	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1610171
Project: MLSES-Ash Pond Area

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_161025A

The QC data in batch 77664 applies to the following samples: 1610171-01D, 1610171-02D, 1610171-03D, 1610171-04D, 1610171-05D, 1610171-06D, 1610171-07D, 1610171-08D

Sample ID **MB-77664** Batch ID: **77664** TestNo: **E300** Units: **mg/L**
SampType: **MBLK** Run ID: **IC2_161025A** Analysis Date: **10/25/2016 9:46:25 AM** Prep Date: **10/25/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00								
Fluoride	<0.100	0.400								
Sulfate	<1.00	3.00								

Sample ID **LCS-77664** Batch ID: **77664** TestNo: **E300** Units: **mg/L**
SampType: **LCS** Run ID: **IC2_161025A** Analysis Date: **10/25/2016 10:01:02 A** Prep Date: **10/25/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.47	1.00	10.00	0	94.7	90	110			
Fluoride	3.66	0.400	4.000	0	91.6	90	110			
Sulfate	28.5	3.00	30.00	0	95.0	90	110			

Sample ID **LCSD-77664** Batch ID: **77664** TestNo: **E300** Units: **mg/L**
SampType: **LCSD** Run ID: **IC2_161025A** Analysis Date: **10/25/2016 10:15:38 A** Prep Date: **10/25/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.51	1.00	10.00	0	95.1	90	110	0.469	20	
Fluoride	3.73	0.400	4.000	0	93.3	90	110	1.87	20	
Sulfate	28.7	3.00	30.00	0	95.6	90	110	0.556	20	

Sample ID **1610171-04DMS** Batch ID: **77664** TestNo: **E300** Units: **mg/L**
SampType: **MS** Run ID: **IC2_161025A** Analysis Date: **10/25/2016 2:29:29 PM** Prep Date: **10/25/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	316	10.0	200.0	121.2	97.5	90	110			
Fluoride	192	4.00	200.0	1.024	95.5	90	110			
Sulfate	518	30.0	200.0	319.2	99.5	90	110			

Sample ID **1610171-04DMSD** Batch ID: **77664** TestNo: **E300** Units: **mg/L**
SampType: **MSD** Run ID: **IC2_161025A** Analysis Date: **10/25/2016 2:44:06 PM** Prep Date: **10/25/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	316	10.0	200.0	121.2	97.5	90	110	0.030	20	
Fluoride	193	4.00	200.0	1.024	95.9	90	110	0.388	20	
Sulfate	517	30.0	200.0	319.2	99.1	90	110	0.158	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1610171
Project: MLSES-Ash Pond Area

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_161025A

Sample ID **ICV-161025**	Batch ID: **R88702**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC2_161025A**	Analysis Date: **10/25/2016 9:11:34 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	23.9	1.00	25.00	0	95.5	90	110			
Fluoride	9.25	0.400	10.00	0	92.5	90	110			
Sulfate	73.0	3.00	75.00	0	97.3	90	110			

Sample ID **CCV1-161025**	Batch ID: **R88702**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_161025A**	Analysis Date: **10/25/2016 1:06:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.48	1.00	10.00	0	94.8	90	110			
Fluoride	3.81	0.400	4.000	0	95.2	90	110			
Sulfate	28.9	3.00	30.00	0	96.4	90	110			

Sample ID **CCV2-161025**	Batch ID: **R88702**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_161025A**	Analysis Date: **10/25/2016 4:29:40 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.45	1.00	10.00	0	94.5	90	110			
Fluoride	3.86	0.400	4.000	0	96.6	90	110			
Sulfate	28.6	3.00	30.00	0	95.5	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler

Work Order: 1610171

Project: MLSES-Ash Pond Area

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_161021A

The QC data in batch 77638 applies to the following samples: 1610171-01D, 1610171-02D, 1610171-03D, 1610171-04D, 1610171-05D, 1610171-06D, 1610171-07D, 1610171-08D

Sample ID	**1610170-01D-DUP**	Batch ID:	**77638**	TestNo:	**M4500-H+ B**	Units:	**pH Units@20.4℃**
SampType:	**DUP**	Run ID:	**TITRATOR_161021A**	Analysis Date:	**10/21/2016 10:43:00 A**	Prep Date:	**10/21/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	5.91	0	0	6.130				3.65	5	

Sample ID	**1610171-08D-DUP**	Batch ID:	**77638**	TestNo:	**M4500-H+ B**	Units:	**pH Units@20.9℃**
SampType:	**DUP**	Run ID:	**TITRATOR_161021A**	Analysis Date:	**10/21/2016 11:14:00 A**	Prep Date:	**10/21/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	6.19	0	0	6.190				0	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1610171
Project: MLSES-Ash Pond Area

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_161021A

Sample ID	**ICV-161021**	Batch ID:	**R88654**	TestNo:	**M4500-H+ B**	Units:	**pH Units@21.6℃**
SampType:	**ICV**	Run ID:	**TITRATOR_161021A**	Analysis Date:	**10/21/2016 9:37:00 AM**	Prep Date:	**10/21/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	9.90	0	10.00	0	99.0	99	101			

Sample ID	**CCV-161021**	Batch ID:	**R88654**	TestNo:	**M4500-H+ B**	Units:	**pH Units@21.1℃**
SampType:	**CCV**	Run ID:	**TITRATOR_161021A**	Analysis Date:	**10/21/2016 11:01:00 A**	Prep Date:	**10/21/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	6.95	0	7.000	0	99.3	97.1	102.9			

Sample ID	**CCV2-161021**	Batch ID:	**R88654**	TestNo:	**M4500-H+ B**	Units:	**pH Units@21.5℃**
SampType:	**CCV**	Run ID:	**TITRATOR_161021A**	Analysis Date:	**10/21/2016 11:28:00 A**	Prep Date:	**10/21/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	6.95	0	7.000	0	99.3	97.1	102.9			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler

Work Order: 1610171

Project: MLSES-Ash Pond Area

ANALYTICAL QC SUMMARY REPORT

RunID: WC_161025B

The QC data in batch 77673 applies to the following samples: 1610171-01D, 1610171-02D, 1610171-03D, 1610171-04D, 1610171-05D, 1610171-06D, 1610171-07D, 1610171-08D

Sample ID	**MB-77673**	Batch ID:	**77673**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**WC_161025B**	Analysis Date:	**10/26/2016 8:43:00 AM**	Prep Date:	**10/25/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	<10.0	10.0								

Sample ID	**LCS-77673**	Batch ID:	**77673**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**WC_161025B**	Analysis Date:	**10/26/2016 8:43:00 AM**	Prep Date:	**10/25/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	757	10.0	745.6	0	102	90	113			

Sample ID	**1610176-01B-DUP**	Batch ID:	**77673**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**DUP**	Run ID:	**WC_161025B**	Analysis Date:	**10/26/2016 8:43:00 AM**	Prep Date:	**10/25/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	1800	50.0	0	1735				3.40	5	

Sample ID	**1610181-01D-DUP**	Batch ID:	**77673**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**DUP**	Run ID:	**WC_161025B**	Analysis Date:	**10/26/2016 8:43:00 AM**	Prep Date:	**10/25/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	2510	50.0	0	2395				4.49	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

Case Narrative

Lab No: 20161033

This report contains the analytical results for the 8 sample(s) received under chain of custody by ESC Lab Sciences on 10/24/2016 10:37:23 AM. These samples are associated with your 1610171 project.

The analytical results included in this report meet all applicable quality control procedure requirements except as noted below:

The test results in this report meet all NELAC requirements unless noted below:

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All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client.

Results have been reviewed by the Director of Radiochemistry or their designees and is approved for release.

Observations / Nonconformances

L867983

Analytical Report

	Method	Result	DL	Units	Qual	Prep Date	Analysis Date	Analyst
Lab ID : **20161033-01**								
Client ID : **H-29**								
Date Sampled : **10/18/2016 8:10:00 AM**								
Matrix : **NPW**								
		Radiochemical Analyses						
Combined Radium		0.428 +/- 0.805	0.562	pCi/l				
Radium-226	SM 7500 Ra B M*	0.155 +/- 0.107	0.123	pCi/l		11/07/16	11/09/16	AK
Radium-228	EPA 904*/9320*	0.273 +/- 0.698	0.439	pCi/l		11/07/16	11/10/16	JR
Lab ID : **20161033-02**								
Client ID : **H-31**								
Date Sampled : **10/18/2016 9:10:00 AM**								
Matrix : **NPW**								
		Radiochemical Analyses						
Combined Radium		1.35 +/- 0.877	0.634	pCi/l				
Radium-226	SM 7500 Ra B M*	0.169 +/- 0.125	0.167	pCi/l		11/07/16	11/09/16	AK
Radium-228	EPA 904*/9320*	1.18 +/- 0.752	0.467	pCi/l		11/07/16	11/10/16	JR
Lab ID : **20161033-03**								
Client ID : **DUP-01**								
Date Sampled : **10/18/2016 9:10:00 AM**								
Matrix : **NPW**								
		Radiochemical Analyses						
Combined Radium		1.84 +/- 1.00	0.596	pCi/l				
Radium-226	SM 7500 Ra B M*	0.514 +/- 0.181	0.110	pCi/l		11/07/16	11/09/16	AK
Radium-228	EPA 904*/9320*	1.33 +/- 0.819	0.486	pCi/l		11/07/16	11/10/16	JR
Lab ID : **20161033-04**								
Client ID : **H-32**								
Date Sampled : **10/18/2016 10:05:00 AM**								
Matrix : **NPW**								
		Radiochemical Analyses						
Combined Radium		0.765 +/- 0.769	0.543	pCi/l				
Radium-226	SM 7500 Ra B M*	0.082 +/- 0.094	0.139	pCi/l		11/07/16	11/09/16	AK
Radium-228	EPA 904*/9320*	0.683 +/- 0.675	0.404	pCi/l		11/07/16	11/10/16	JR

Analytical Report

	Method	Result	DL	Units	Qual	Prep Date	Analysis Date	Analyst
Lab ID : **20161033-05**								
Client ID : **H-27**								
Date Sampled : **10/18/2016 10:55:00 AM**								
Matrix : **NPW**								
Radiochemical Analyses								
Combined Radium		1.18 +/- 0.954	0.932	pCi/l				
Radium-226	SM 7500 Ra B M*	0.113 +/- 0.122	0.178	pCi/l		11/07/16	11/09/16	AK
Radium-228	EPA 904*/9320*	1.07 +/- 0.832	0.754	pCi/l		11/07/16	11/10/16	JR
Lab ID : **20161033-06**								
Client ID : **H-28**								
Date Sampled : **10/18/2016 11:45:00 AM**								
Matrix : **NPW**								
Radiochemical Analyses								
Combined Radium		0.718 +/- 0.904	0.700	pCi/l				
Radium-226	SM 7500 Ra B M*	0.073 +/- 0.141	0.228	pCi/l		11/07/16	11/09/16	AK
Radium-228	EPA 904*/9320*	0.645 +/- 0.763	0.472	pCi/l		11/07/16	11/10/16	JR
Lab ID : **20161033-07**								
Client ID : **H-26**								
Date Sampled : **10/18/2016 12:35:00 PM**								
Matrix : **NPW**								
Radiochemical Analyses								
Combined Radium		0.786 +/- 1.10	0.746	pCi/l				
Radium-226	SM 7500 Ra B M*	0.243 +/- 0.132	0.124	pCi/l		11/07/16	11/09/16	AK
Radium-228	EPA 904*/9320*	0.543 +/- 0.969	0.622	pCi/l		11/07/16	11/10/16	JR
Lab ID : **20161033-08**								
Client ID : **H-33**								
Date Sampled : **10/18/2016 2:35:00 PM**								
Matrix : **NPW**								
Radiochemical Analyses								
Combined Radium		0.264 +/- 0.887	0.592	pCi/l				
Radium-226	SM 7500 Ra B M*	0.096 +/- 0.073	0.075	pCi/l		11/07/16	11/09/16	AK
Radium-228	EPA 904*/9320*	0.168 +/- 0.814	0.517	pCi/l		11/07/16	11/10/16	JR

QC Report

Parameter	Blank	LCS %REC	LCSD %REC	LCSD RPD	DUP RPD	RER, NAD or DER	MS %REC	MSD %REC	MSD RPD	Batch ID
Radium-226	0.000	108.0			NC	0.454	124.0	104.0	17.6	R1157
Radium-228	-0.240	84.4			NC	0.272	99.6	111.0	10.1	R3878

Lab Approval:

Ron Eidson
Director of Radiochemistry

DHL Analytical, Inc.
2300 Double Creek Drive
Round Rock, TX 78664
TEL: *(512) 388-8222* FAX: *(512) 388-8229*

CHAIN-OF-CUSTODY RECORD

Work Order: 1610171

Subcontractor:

ESC Laboratory
311 North Aspen
Broken Arrow, Oklahoma 74012

TEL: (918) 251-2515
FAX:
Acct #: DHLRRTX

20-Oct-16

	Sample Id	Matrix	DHL#	Date Collected	Bottle Type	Requested Tests E904.0	SM7500Ra-B M				
1	H-29	Aqueous	-01B	10/18/16 08:10 AM	500HDPEHNO3	1					
	H-29	Aqueous	-01C	10/18/16 08:10 AM	500HDPEHNO3		1				
2	H-31	Aqueous	-02B	10/18/16 09:10 AM	500HDPEHNO3	1					
	H-31	Aqueous	-02C	10/18/16 09.10 AM	500HDPEHNO3		1				
3	DUP-01	Aqueous	-03B	10/18/16 09.10 AM	500HDPEHNO3	1					
	DUP-01	Aqueous	-03C	10/18/16 09.10 AM	500HDPEHNO3		1				
4	H-32	Aqueous	-04B	10/18/16 10.05 AM	500HDPEHNO3	1					
	H-32	Aqueous	-04C	10/18/16 10 05 AM	500HDPEHNO3		1				
5	H-27	Aqueous	-05B	10/18/16 10 55 AM	500HDPEHNO3	1					
	H-27	Aqueous	-05C	10/18/16 10:55 AM	500HDPEHNO3		1				
6	H-28	Aqueous	-06B	10/18/16 11.45 AM	500HDPEHNO3	1					
	H-28	Aqueous	-06C	10/18/16 11:45 AM	500HDPEHNO3		1				
7	H-26	Aqueous	-07B	10/18/16 12:35 PM	500HDPEHNO3	1					
	H-26	Aqueous	-07C	10/18/16 12:35 PM	500HDPEHNO3		1				
8	H-33	Aqueous	-08B	10/18/16 02 35 PM	500HDPEHNO3	1					
	H-33	Aqueous	-08C	10/18/16 02:35 PM	500HDPEHNO3		1				

General Comments:

Please analyze these samples with Normal Turnaround Time.
Report RA-226, Ra-228 & Combined per Specs DHLRRTX033116S.
Quality Control Package Needed: Standard - NELAC Rad Test compliant
Email to cac@dhlanalytical.com & dupont@dhlanalytical.com

L867983

		Date/Time			Date/Time
Relinquished by:	[signature]	10/20/16 17:30	Received by:	[signature]	10/20/16 17:30
Relinquished by:			Received by:	[signature]	10/24/16 0830

20161033

SAMPLE LOGIN

Date Received: *10/24/2016 10:37:*

Lab Number: 20161033

Due: 11/21/2016

Sample Number	Client Sample ID	Matrix	Date Sampled	Container Type	Container Size	Preservation	Preserved Upon Receipt	Custody Seal	Seal Intact
20161033-01 B	H-29	NPW	10/18/16	Plastic	500 ml	HNO3, pH < 2	✓	Yes	Yes
20161033-01 A	H-29	NPW	10/18/16	Plastic	500 ml	HNO3, pH < 2	✓	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20161033-02 A	H-31	NPW	10/18/16	Plastic	500 ml	HNO3, pH < 2	✓	Yes	Yes
20161033-02 B	H-31	NPW	10/18/16	Plastic	500 ml	HNO3, pH < 2	✓	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20161033-03 A	DUP-01	NPW	10/18/16	Plastic	500 ml	HNO3, pH < 2	✓	Yes	Yes
20161033-03 B	DUP-01	NPW	10/18/16	Plastic	500 ml	HNO3, pH < 2	✓	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20161033-04 B	H-32	NPW	10/18/16	Plastic	500 ml	HNO3, pH < 2	✓	Yes	Yes
20161033-04 A	H-32	NPW	10/18/16	Plastic	500 ml	HNO3, pH < 2	✓	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20161033-05 B	H-27	NPW	10/18/16	Plastic	500 ml	HNO3, pH < 2	✓	Yes	Yes
20161033-05 A	H-27	NPW	10/18/16	Plastic	500 ml	HNO3, pH < 2	✓	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20161033-06 A	H-28	NPW	10/18/16	Plastic	500 ml	HNO3, pH < 2	✓	Yes	Yes
20161033-06 B	H-28	NPW	10/18/16	Plastic	500 ml	HNO3, pH < 2	✓	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20161033-07 A	H-26	NPW	10/18/16	Plastic	500 ml	HNO3, pH < 2	✓	Yes	Yes
20161033-07 B	H-26	NPW	10/18/16	Plastic	500 ml	HNO3, pH < 2	✓	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						

20161033-08 B	H-33	NPW	10/18/16	Plastic	500 ml	HNO3, pH < 2	✓	Yes	Yes
20161033-08 A	H-33	NPW	10/18/16	Plastic	500 ml	HNO3, pH < 2	✓	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						

CONTAINER INSPECTION

Coolers 1 Custody Seals Broken Ø Temperature: Amb C Ice Radiation Survey: <300 cpm

SAMPLE INSPECTION

Sample Seal Broken Ø Chain of Custody Record ✓ Labels in Tact ✓ Radiation Survey Complete N/A

Anomalies

Inspected By: [signature] DATE 10/24/16

QA or Designee Review: Raymond Thomas DATE 10/24/16

Sample Custodian Review: [signature] DATE 10/24/16

Project Notes:

January 18, 2017

Will Vienne
Pastor, Behling & Wheeler
2201 Double Creek Dr #4004
Round Rock, Texas 78664
TEL: (512) 671-3434
FAX (512) 671-3446

Order No.: 1612132

RE: MLSES - Ash Pond Area

Dear Will Vienne:

DHL Analytical, Inc. received 8 sample(s) on 12/13/2016 for the analyses presented in the following report.

There were no problems with the analyses and all data met requirements of NELAC except where noted in the Case Narrative. All non-NELAC methods will be identified accordingly in the case narrative and all estimated uncertainties of test results are within method or EPA specifications.

If you have any questions regarding these tests results, please feel free to call. Thank you for using DHL Analytical.

Sincerely,

John DuPont
General Manager

This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211-16-17

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DHL ANALYTICAL
2300 Double Creek Dr. ■ Round Rock, TX 78664
Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

CHAIN-OF-CUSTOD

№ 73585

CLIENT: PBW
ADDRESS: 2201 DOUBLE CREEK DR ROUND ROCK, TX 78664
PHONE: 512-671-3434 FAX/E-MAIL: 512-671-3446
DATA REPORTED TO: WILL VIENNE
ADDITIONAL REPORT COPIES TO:

DATE: 12-11-16 PAGE 1 OF 1
PO #: 5164-B DHL WORK ORDER #: 161232
PROJECT LOCATION OR NAME: MLSES - ASH POND AREA
CLENT PROJECT #: 5164-B COLLECTOR: J. BEAUTON

Authorize 5% surcharge for TRRP Report? ❑ Yes ❑ No

S=SOIL W=WATER A=AIR L=LIQUID SE=SEDIMENT P=PAINT SL=SLUDGE O=OTHER SO=SOLID

PRESERVATION: HCl, HNO_3, H_2SO_4 ❑ NaOH ❑, ICE, UNPRESERVED

ANALYSES: BTEX ❑ MTBE ❑ [METHOD 8021] | TPH 1005 ❑ TPH 1006 ❑ HOLD 1006 ❑ | TPH 1005 ❑ TPH 1006 ❑ HOLD 1006 ❑ [METHOD 8015] ❑ DRO [METHOD 8105] ❑ | GRO [METHOD 8015] ❑ VOC 624 ❑ VOC 8260/5035 ❑ | VOC 8260 ❑ VOC 624 ❑ VOC 8260/5035 ❑ HOLD PAH ❑ SVOC 625 ❑ | SVOC 8270 ❑ PAH 8270 ❑ HOLD PAH 8270 ❑ 608 PCB ❑ | 8270 PEST ❑ 625 PEST/PCB ❑ 8082 PCB ❑ 8270 PCB ❑ | 8270 O-P PEST ❑ 8082 PCB ❑ T PHOS, AMMONIA ❑ | 8321 HERB ❑ T PHOS, AMMONIA ❑ METALS 200.8 ❑ DISS. METALS ❑ | METALS 6020 ❑ METALS 200.8 ❑ _____ ❑ | RCRA ❑ TX11 ❑ _____ ❑ | PH ❑ HEX CHROM ❑ ALKALINITY ❑ COD ❑ | CHLORIDE ❑ ANIONS _____ ❑ | **TCLP**-SVOC ❑ VOC ❑ PEST ❑ HERB ❑ | **TCLP**-METALS ❑ RCRA 8 ❑ TX-11 ❑ Pb ❑ | RCI ❑ FLASHPOINT ❑ DGAS ❑ | TDS ❑ TSS ❑ % MOISTURE ❑ CYANIDE ❑ | CCR SAMPLING

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	HCl	HNO_3	H_2SO_4 ❑ NaOH ❑	ICE	UNPRESERVED	CCR SAMPLING	FIELD NOTES
H-29	01	12-11-16	0905	W	P	4		X				X	
H-31	02		1010	W	P	4		X				X	
DUP-01	03		1010	W	P	4		X				X	
H-32	04		1100	W	P	4		X				X	
H-27	05		1150	W	P	4		X				X	
H-26	06		1240	W	P	4		X				X	
H-33	07		1430	W	P	4		X				X	
H-28	08		1525	W	P	4		X				X	

RELINQUISHED BY: (Signature) DATE/TIME 12-12-16 1800 RECEIVED BY: (Signature) Fedex
RELINQUISHED BY: (Signature) Fedex DATE/TIME 12/13/16 1040 RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature) DATE/TIME RECEIVED BY: (Signature)

❑ DHL DISPOSAL @ $5.00 each ❑ Return

TURN AROUND TIME
RUSH ❑ CALL FIRST
1 DAY ❑ CALL FIRST
2 DAY ❑
NORMAL ☒
OTHER ❑ _____

LABORATORY USE ONLY:
RECEIVING TEMP: 4.1/5.4 THERM #: 78
CUSTODY SEALS: ❑ BROKEN ☒ INTACT ❑ NOT USED
CARRIER: ❑ LONE STAR ☒ FEDEX ❑ UPS ❑ OTHER
❑ COURIER DELIVERY
❑ HAND DELIVERED

John Dupont

From: Sara Taube [Sara.Taube@pbwllc.com]
Sent: Wednesday, July 22, 2015 12:05 PM
To: John Dupont
Subject: CCR Appendix III and IV
Follow Up Flag: Follow up
Flag Status: Completed

Hi John,

Here are the Appendix III and Appendix IV constituents that we will need to have analyzed under the CCR Rule.

Appendix III
Boron
Calcium
Chloride
Fluoride
pH
sulfate
TDS

Appendix IV
Antimony
Arsenic
Barium
Beryllium
Cadmium
Chromium
Cobalt
Fluoride
Lead
Lithium
Mercury
Molybdenum
Selenium
Thallium
Radium 226 and 228

We are looking to have approximately 74 wells sampled 8 times over the course of the next two years. Please let me know if there is any more information you might need.

Cheers,

Sara

10/26/2015

ORIGIN ID:GGGA (512) 671-3434
JOHN BRAYTON
2201 DOUBLE CREEK DR STE 4004
ROUND ROCK, TX 78664
UNITED STATES US

BILL

TO DHL

2300 DOUBLE CREEK DR

ROUND ROCK TX 78664
(512) 388-8222 REF:
INV:
PO: DEPT:

FedEx Express

2 of 2
MPS# 0263 7849 6643 0699
Mstr# 7849 6643 0688 0201

TUE - 13 DEC 10:30A
PRIORITY OVERNIGHT

A8 BSMA

78664
TX-US AUS

ORIGIN ID:GGGA (512) 671-3434
JOHN BRAYTON
2201 DOUBLE CREEK DR STE 4004
ROUND ROCK, TX 78664
UNITED STATES US

SHIP DATE: 12DEC16
ACTWGT: 61.90 LB
CAD: 006994167/SSFE1722
DIMS: 24x15x14 IN

BILL THIRD PARTY

TO DHL

2300 DOUBLE CREEK DR

ROUND ROCK TX 78664
(512) 388-8222 REF:
INV:
PO: DEPT:

FedEx Express

1 of 2
TRK# 0201 7849 6643 0688
MASTER

TUE - 13 DEC 10:30A
PRIORITY OVERNIGHT

A8 BSMA

78664
TX-US AUS

DHL Analytical, Inc.

Sample Receipt Checklist

Client Name **Pastor, Behling & Wheeler**

Date Received: **12/13/2016**

Work Order Number **1612132**

Received by **JT**

Checklist completed by: _____ 12/13/2016 (Signature / Date)

Reviewed by _____ 12/13/2016 (Initials / Date)

Carrier name FedEx 1day

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	4.1 °C 1.5.4
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH<2 acceptable upon receipt?	Yes ☑	No ☐	NA ☐ LOT # 8086
	Adjusted? NO		Checked by _____
Water - ph>9 (S) or ph>12 (CN) acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted? _____		Checked by _____

Any No response must be detailed in the comments section below.

Client contacted _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments: _____

Corrective Action _____

CLIENT: Pastor, Behling & Wheeler
Project: MLSES - Ash Pond Area
Lab Order: 1612132

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Method SW6020A - Metals Analysis
Method SW7470A - Mercury Analysis
Method E300 - Anions Analysis
Method M4500-H+ B - pH of a Water Analysis
Method M2540C - TDS Analysis
Sub-contract - Radium-228 and Radium-226 analyses by methods E904/9320 and SM 7500 Ra B M. Analyzed at ESC Lab Sciences.

LOG IN

The samples were received and log-in performed on 12/13/16. A total of 8 samples were received. The samples arrived in good condition and were properly packaged.

METALS ANALYSIS

For Metals analysis performed on 12/15/16 the matrix spike and matrix spike duplicate recoveries were out of control limits for Boron and/or Calcium. These are flagged accordingly in the QC summary report. The sample selected for the matrix spike and matrix spike duplicate was from this work order. The percent recoveries for the LCS were within control limits for these analytes. No further corrective actions were taken.

For Metals analysis performed on 12/16/16 the LCS/LCSD had the RPD slightly above control limits for twelve analytes. These are flagged accordingly. The percent recoveries were within control limits. No further corrective actions were taken.

For Metals analysis performed on 12/20/16 the RPD for the serial dilution was above control limits for Boron. This is flagged accordingly. The PDS was within control limits for this analyte. No further corrective actions were taken.

For Metals analysis performed on 12/15/16 Boron was detected above the reporting limit in CCB8-161215. The associated samples are QC samples only. No further corrective actions were taken.

For Metals analysis performed on 12/15/16 CCV7-161215, LCVL7-161215, CCV8-161215 and LCVL8-16215 were above control limits for Boron. These are flagged accordingly. The associated samples were QC samples only. No further corrective actions were taken.

For Metals analysis performed on 12/16/16 LCVL4-161216 and LCVL5-16216 were out of control

limits for Boron. These are flagged accordingly. The associated CCVs were within control limits for this analyte. No further corrective actions were taken.

DHL Analytical, Inc.

Date: *18-Jan-17*

CLIENT: Pastor, Behling & Wheeler
Project: MLSES - Ash Pond Area
Lab Order: 1612132

Work Order Sample Summary

Lab Smp ID	Client Sample ID	Tag Number	Date Collected	Date Recved
1612132-01	H-29		12/11/16 09:05 AM	12/13/2016
1612132-02	H-31		12/11/16 10:10 AM	12/13/2016
1612132-03	DUP-01		12/11/16 10:10 AM	12/13/2016
1612132-04	H-32		12/11/16 11:00 AM	12/13/2016
1612132-05	H-27		12/11/16 11:50 AM	12/13/2016
1612132-06	H-26		12/11/16 12:40 PM	12/13/2016
1612132-07	H-33		12/11/16 02:30 PM	12/13/2016
1612132-08	H-28		12/11/16 03:25 PM	12/13/2016

Lab Order: 1612132
Client: Pastor, Behling & Wheeler
Project: MLSES - Ash Pond Area

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1612132-01A	H-29	12/11/16 09:05 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/14/16 08:47 AM	78271
	H-29	12/11/16 09:05 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/14/16 08:47 AM	78271
	H-29	12/11/16 09:05 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	12/19/16 10:27 AM	78368
1612132-01D	H-29	12/11/16 09:05 AM	Aqueous	E300	Anion Preparation	12/15/16 09:55 AM	78306
	H-29	12/11/16 09:05 AM	Aqueous	E300	Anion Preparation	12/15/16 09:55 AM	78306
	H-29	12/11/16 09:05 AM	Aqueous	M4500-H+ B	pH Preparation	12/14/16 08:12 AM	78265
	H-29	12/11/16 09:05 AM	Aqueous	M2540C	TDS Preparation	12/16/16 10:42 AM	78334
1612132-02A	H-31	12/11/16 10:10 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/14/16 08:47 AM	78271
	H-31	12/11/16 10:10 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/14/16 08:47 AM	78271
	H-31	12/11/16 10:10 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	12/19/16 10:27 AM	78368
1612132-02D	H-31	12/11/16 10:10 AM	Aqueous	E300	Anion Preparation	12/15/16 09:55 AM	78306
	H-31	12/11/16 10:10 AM	Aqueous	E300	Anion Preparation	12/15/16 09:55 AM	78306
	H-31	12/11/16 10:10 AM	Aqueous	M4500-H+ B	pH Preparation	12/14/16 08:12 AM	78265
	H-31	12/11/16 10:10 AM	Aqueous	M2540C	TDS Preparation	12/16/16 10:42 AM	78334
1612132-03A	DUP-01	12/11/16 10:10 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/14/16 08:47 AM	78271
	DUP-01	12/11/16 10:10 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/14/16 08:47 AM	78271
	DUP-01	12/11/16 10:10 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	12/19/16 10:27 AM	78368
1612132-03D	DUP-01	12/11/16 10:10 AM	Aqueous	E300	Anion Preparation	12/15/16 09:55 AM	78306
	DUP-01	12/11/16 10:10 AM	Aqueous	E300	Anion Preparation	12/15/16 09:55 AM	78306
	DUP-01	12/11/16 10:10 AM	Aqueous	M4500-H+ B	pH Preparation	12/14/16 08:12 AM	78265
	DUP-01	12/11/16 10:10 AM	Aqueous	M2540C	TDS Preparation	12/16/16 10:42 AM	78334
1612132-04A	H-32	12/11/16 11:00 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/14/16 08:47 AM	78271
	H-32	12/11/16 11:00 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/14/16 08:47 AM	78271
	H-32	12/11/16 11:00 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	12/19/16 10:27 AM	78368
1612132-04D	H-32	12/11/16 11:00 AM	Aqueous	E300	Anion Preparation	12/15/16 09:55 AM	78306
	H-32	12/11/16 11:00 AM	Aqueous	E300	Anion Preparation	12/15/16 09:55 AM	78306
	H-32	12/11/16 11:00 AM	Aqueous	M4500-H+ B	pH Preparation	12/14/16 08:12 AM	78265
	H-32	12/11/16 11:00 AM	Aqueous	M2540C	TDS Preparation	12/16/16 10:42 AM	78334

Lab Order: 1612132
Client: Pastor, Behling & Wheeler
Project: MLSES - Ash Pond Area

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1612132-05A	H-27	12/11/16 11:50 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/14/16 08:47 AM	78271
	H-27	12/11/16 11:50 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/14/16 08:47 AM	78271
	H-27	12/11/16 11:50 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/14/16 08:47 AM	78271
	H-27	12/11/16 11:50 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	12/19/16 10:27 AM	78368
1612132-05D	H-27	12/11/16 11:50 AM	Aqueous	E300	Anion Preparation	12/15/16 09:55 AM	78306
	H-27	12/11/16 11:50 AM	Aqueous	E300	Anion Preparation	12/15/16 09:55 AM	78306
	H-27	12/11/16 11:50 AM	Aqueous	M4500-H+ B	pH Preparation	12/14/16 08:12 AM	78265
	H-27	12/11/16 11:50 AM	Aqueous	M2540C	TDS Preparation	12/16/16 10:42 AM	78334
1612132-06A	H-26	12/11/16 12:40 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/14/16 08:47 AM	78271
	H-26	12/11/16 12:40 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/14/16 08:47 AM	78271
	H-26	12/11/16 12:40 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/14/16 08:47 AM	78271
	H-26	12/11/16 12:40 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	12/19/16 10:27 AM	78368
1612132-06D	H-26	12/11/16 12:40 PM	Aqueous	E300	Anion Preparation	12/15/16 09:55 AM	78306
	H-26	12/11/16 12:40 PM	Aqueous	E300	Anion Preparation	12/15/16 09:55 AM	78306
	H-26	12/11/16 12:40 PM	Aqueous	M4500-H+ B	pH Preparation	12/14/16 08:12 AM	78265
	H-26	12/11/16 12:40 PM	Aqueous	M2540C	TDS Preparation	12/16/16 10:42 AM	78334
1612132-07A	H-33	12/11/16 02:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/14/16 08:47 AM	78271
	H-33	12/11/16 02:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/14/16 08:47 AM	78271
	H-33	12/11/16 02:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/14/16 08:47 AM	78271
	H-33	12/11/16 02:30 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	12/19/16 10:27 AM	78368
1612132-07D	H-33	12/11/16 02:30 PM	Aqueous	E300	Anion Preparation	12/15/16 09:55 AM	78306
	H-33	12/11/16 02:30 PM	Aqueous	E300	Anion Preparation	12/15/16 09:55 AM	78306
	H-33	12/11/16 02:30 PM	Aqueous	M4500-H+ B	pH Preparation	12/14/16 08:12 AM	78265
	H-33	12/11/16 02:30 PM	Aqueous	M2540C	TDS Preparation	12/16/16 02:55 PM	78334
1612132-08A	H-28	12/11/16 03:25 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/14/16 08:47 AM	78271
	H-28	12/11/16 03:25 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/14/16 08:47 AM	78271
	H-28	12/11/16 03:25 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	12/19/16 10:27 AM	78368
1612132-08D	H-28	12/11/16 03:25 PM	Aqueous	E300	Anion Preparation	12/15/16 09:55 AM	78306

Lab Order: 1612132
Client: Pastor, Behling & Wheeler
Project: MLSES - Ash Pond Area

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1612132-08D	H-28	12/11/16 03:25 PM	Aqueous	E300	Anion Preparation	12/15/16 09:55 AM	78306
	H-28	12/11/16 03:25 PM	Aqueous	M4500-H+ B	pH Preparation	12/14/16 08:12 AM	78265
	H-28	12/11/16 03:25 PM	Aqueous	M2540C	TDS Preparation	12/16/16 10:42 AM	78334

Lab Order: 1612132
Client: Pastor, Behling & Wheeler
Project: MLSES - Ash Pond Area

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1612132-01A	H-29	Aqueous	SW7470A	Mercury Total: Aqueous	78368	1	12/21/16 01:23 PM	CETAC2_HG_161221A
	H-29	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	78271	1	12/15/16 05:05 PM	ICP-MS4_161215D
	H-29	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	78271	10	12/21/16 12:29 PM	ICP-MS4_161221A
1612132-01D	H-29	Aqueous	E300	Anions by IC method - Water	78306	1	12/15/16 11:37 AM	IC3_161215A
	H-29	Aqueous	E300	Anions by IC method - Water	78306	10	12/15/16 03:41 PM	IC3_161215A
	H-29	Aqueous	M4500-H+ B	pH	78265	1	12/14/16 08:58 AM	TITRATOR_161214A
	H-29	Aqueous	M2540C	Total Dissolved Solids	78334	1	12/19/16 08:42 AM	WC_161216B
1612132-02A	H-31	Aqueous	SW7470A	Mercury Total: Aqueous	78368	1	12/21/16 01:35 PM	CETAC2_HG_161221A
	H-31	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	78271	1	12/15/16 05:01 PM	ICP-MS4_161215D
	H-31	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	78271	100	12/20/16 02:01 PM	ICP-MS4_161220B
1612132-02D	H-31	Aqueous	E300	Anions by IC method - Water	78306	1	12/15/16 12:01 PM	IC3_161215A
	H-31	Aqueous	E300	Anions by IC method - Water	78306	100	12/15/16 04:05 PM	IC3_161215A
	H-31	Aqueous	M4500-H+ B	pH	78265	1	12/14/16 09:03 AM	TITRATOR_161214A
	H-31	Aqueous	M2540C	Total Dissolved Solids	78334	1	12/19/16 08:42 AM	WC_161216B
1612132-03A	DUP-01	Aqueous	SW7470A	Mercury Total: Aqueous	78368	1	12/21/16 01:37 PM	CETAC2_HG_161221A
	DUP-01	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	78271	100	12/21/16 12:31 PM	ICP-MS4_161221A
	DUP-01	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	78271	1	12/15/16 05:07 PM	ICP-MS4_161215D
1612132-03D	DUP-01	Aqueous	E300	Anions by IC method - Water	78306	1	12/15/16 12:21 PM	IC3_161215A
	DUP-01	Aqueous	E300	Anions by IC method - Water	78306	100	12/15/16 04:25 PM	IC3_161215A
	DUP-01	Aqueous	M4500-H+ B	pH	78265	1	12/14/16 09:05 AM	TITRATOR_161214A
	DUP-01	Aqueous	M2540C	Total Dissolved Solids	78334	1	12/19/16 08:42 AM	WC_161216B
1612132-04A	H-32	Aqueous	SW7470A	Mercury Total: Aqueous	78368	1	12/21/16 01:39 PM	CETAC2_HG_161221A
	H-32	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	78271	1	12/15/16 05:09 PM	ICP-MS4_161215D
	H-32	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	78271	100	12/21/16 12:33 PM	ICP-MS4_161221A
1612132-04D	H-32	Aqueous	E300	Anions by IC method - Water	78306	1	12/15/16 12:42 PM	IC3_161215A
	H-32	Aqueous	E300	Anions by IC method - Water	78306	10	12/15/16 04:46 PM	IC3_161215A

Lab Order: 1612132
Client: Pastor, Behling & Wheeler
Project: MLSES - Ash Pond Area

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1612132-04D	H-32	Aqueous	M4500-H+ B	pH	78265	1	12/14/16 09:07 AM	TITRATOR_161214A
	H-32	Aqueous	M2540C	Total Dissolved Solids	78334	1	12/19/16 08:42 AM	WC_161216B
1612132-05A	H-27	Aqueous	SW7470A	Mercury Total: Aqueous	78368	1	12/21/16 01:42 PM	CETAC2_HG_161221A
	H-27	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	78271	1	12/15/16 05:11 PM	ICP-MS4_161215D
	H-27	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	78271	1	12/21/16 12:43 PM	ICP-MS4_161221A
	H-27	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	78271	10	12/21/16 12:35 PM	ICP-MS4_161221A
1612132-05D	H-27	Aqueous	E300	Anions by IC method - Water	78306	1	12/15/16 01:03 PM	IC3_161215A
	H-27	Aqueous	E300	Anions by IC method - Water	78306	10	12/15/16 05:07 PM	IC3_161215A
	H-27	Aqueous	M4500-H+ B	pH	78265	1	12/14/16 09:09 AM	TITRATOR_161214A
	H-27	Aqueous	M2540C	Total Dissolved Solids	78334	1	12/19/16 08:42 AM	WC_161216B
1612132-06A	H-26	Aqueous	SW7470A	Mercury Total: Aqueous	78368	1	12/21/16 01:44 PM	CETAC2_HG_161221A
	H-26	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	78271	1	12/15/16 05:13 PM	ICP-MS4_161215D
	H-26	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	78271	10	12/21/16 12:37 PM	ICP-MS4_161221A
	H-26	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	78271	1	12/21/16 12:45 PM	ICP-MS4_161221A
1612132-06D	H-26	Aqueous	E300	Anions by IC method - Water	78306	1	12/15/16 01:23 PM	IC3_161215A
	H-26	Aqueous	E300	Anions by IC method - Water	78306	10	12/15/16 05:27 PM	IC3_161215A
	H-26	Aqueous	M4500-H+ B	pH	78265	1	12/14/16 09:12 AM	TITRATOR_161214A
	H-26	Aqueous	M2540C	Total Dissolved Solids	78334	1	12/19/16 08:42 AM	WC_161216B
1612132-07A	H-33	Aqueous	SW7470A	Mercury Total: Aqueous	78368	1	12/21/16 01:46 PM	CETAC2_HG_161221A
	H-33	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	78271	10	12/21/16 12:39 PM	ICP-MS4_161221A
	H-33	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	78271	1	12/21/16 12:47 PM	ICP-MS4_161221A
	H-33	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	78271	1	12/15/16 05:15 PM	ICP-MS4_161215D
1612132-07D	H-33	Aqueous	E300	Anions by IC method - Water	78306	1	12/15/16 01:44 PM	IC3_161215A
	H-33	Aqueous	E300	Anions by IC method - Water	78306	10	12/15/16 05:48 PM	IC3_161215A
	H-33	Aqueous	M4500-H+ B	pH	78265	1	12/14/16 09:14 AM	TITRATOR_161214A
	H-33	Aqueous	M2540C	Total Dissolved Solids	78334	1	12/19/16 08:42 AM	WC_161216B

Lab Order: 1612132
Client: Pastor, Behling & Wheeler
Project: MLSES - Ash Pond Area

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1612132-08A	H-28	Aqueous	SW7470A	Mercury Total: Aqueous	78368	1	12/21/16 01:48 PM	CETAC2_HG_161221A
	H-28	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	78271	1	12/15/16 05:17 PM	ICP-MS4_161215D
	H-28	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	78271	10	12/21/16 12:41 PM	ICP-MS4_161221A
1612132-08D	H-28	Aqueous	E300	Anions by IC method - Water	78306	1	12/15/16 02:05 PM	IC3_161215A
	H-28	Aqueous	E300	Anions by IC method - Water	78306	10	12/15/16 06:50 PM	IC3_161215A
	H-28	Aqueous	M4500-H+ B	pH	78265	1	12/14/16 09:17 AM	TITRATOR_161214A
	H-28	Aqueous	M2540C	Total Dissolved Solids	78334	1	12/19/16 08:42 AM	WC_161216B

DHL Analytical, Inc.

Date: *18-Jan-17*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	H-29
Project:	MLSES - Ash Pond Area	**Lab ID:**	1612132-01
Project No:	5164-B	**Collection Date:**	12/11/16 09:05 AM
Lab Order:	1612132	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/21/16 01:23 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	12/15/16 05:05 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	12/15/16 05:05 PM
Barium	0.0779	0.00300	0.0100		mg/L	1	12/15/16 05:05 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	12/15/16 05:05 PM
Boron	1.02	0.100	0.300		mg/L	10	12/21/16 12:29 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	12/15/16 05:05 PM
Calcium	130	1.00	3.00		mg/L	10	12/21/16 12:29 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	12/15/16 05:05 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	12/15/16 05:05 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	12/15/16 05:05 PM
Lithium	<0.00500	0.00500	0.0100		mg/L	1	12/15/16 05:05 PM
Molybdenum	0.00307	0.00200	0.00500	J	mg/L	1	12/15/16 05:05 PM
Selenium	0.0642	0.00200	0.00500		mg/L	1	12/15/16 05:05 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	12/15/16 05:05 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	4.65	0.300	1.00		mg/L	1	12/15/16 11:37 AM
Fluoride	1.40	0.100	0.400		mg/L	1	12/15/16 11:37 AM
Sulfate	365	10.0	30.0		mg/L	10	12/15/16 03:41 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	7.38	0	0		pH Units@17.7℃	1	12/14/16 08:58 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	651	10.0	10.0		mg/L	1	12/19/16 08:42 AM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *18-Jan-17*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	H-31
Project:	MLSES - Ash Pond Area	**Lab ID:**	1612132-02
Project No:	5164-B	**Collection Date:**	12/11/16 10:10 AM
Lab Order:	1612132	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/21/16 01:35 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	12/15/16 05:01 PM
Arsenic	0.00875	0.00200	0.00500		mg/L	1	12/15/16 05:01 PM
Barium	0.0189	0.00300	0.0100		mg/L	1	12/15/16 05:01 PM
Beryllium	0.0197	0.000300	0.00100		mg/L	1	12/15/16 05:01 PM
Boron	22.3	1.00	3.00		mg/L	100	12/20/16 02:01 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	12/15/16 05:01 PM
Calcium	246	10.0	30.0		mg/L	100	12/20/16 02:01 PM
Chromium	0.00386	0.00200	0.00500	J	mg/L	1	12/15/16 05:01 PM
Cobalt	0.230	0.00300	0.00500		mg/L	1	12/15/16 05:01 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	12/15/16 05:01 PM
Lithium	0.198	0.00500	0.0100		mg/L	1	12/15/16 05:01 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	12/15/16 05:01 PM
Selenium	0.0365	0.00200	0.00500		mg/L	1	12/15/16 05:01 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	12/15/16 05:01 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	201	30.0	100		mg/L	100	12/15/16 04:05 PM
Fluoride	0.892	0.100	0.400		mg/L	1	12/15/16 12:01 PM
Sulfate	2640	100	300		mg/L	100	12/15/16 04:05 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.33	0	0		pH Units@17.3℃	1	12/14/16 09:03 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	4170	50.0	50.0		mg/L	1	12/19/16 08:42 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *18-Jan-17*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	DUP-01
Project:	MLSES - Ash Pond Area	**Lab ID:**	1612132-03
Project No:	5164-B	**Collection Date:**	12/11/16 10:10 AM
Lab Order:	1612132	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/21/16 01:37 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	12/15/16 05:07 PM
Arsenic	0.0167	0.00200	0.00500		mg/L	1	12/15/16 05:07 PM
Barium	0.0172	0.00300	0.0100		mg/L	1	12/15/16 05:07 PM
Beryllium	0.0301	0.000300	0.00100		mg/L	1	12/15/16 05:07 PM
Boron	23.5	1.00	3.00		mg/L	100	12/21/16 12:31 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	12/15/16 05:07 PM
Calcium	250	10.0	30.0		mg/L	100	12/21/16 12:31 PM
Chromium	0.00457	0.00200	0.00500	J	mg/L	1	12/15/16 05:07 PM
Cobalt	0.419	0.00300	0.00500		mg/L	1	12/15/16 05:07 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	12/15/16 05:07 PM
Lithium	0.192	0.00500	0.0100		mg/L	1	12/15/16 05:07 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	12/15/16 05:07 PM
Selenium	0.0594	0.00200	0.00500		mg/L	1	12/15/16 05:07 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	12/15/16 05:07 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	200	30.0	100		mg/L	100	12/15/16 04:25 PM
Fluoride	0.843	0.100	0.400		mg/L	1	12/15/16 12:21 PM
Sulfate	2670	100	300		mg/L	100	12/15/16 04:25 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.32	0	0		pH Units@17.3℃	1	12/14/16 09:05 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	4250	50.0	50.0		mg/L	1	12/19/16 08:42 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *18-Jan-17*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	H-32
Project:	MLSES - Ash Pond Area	**Lab ID:**	1612132-04
Project No:	5164-B	**Collection Date:**	12/11/16 11:00 AM
Lab Order:	1612132	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/21/16 01:39 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	12/15/16 05:09 PM
Arsenic	0.00246	0.00200	0.00500	J	mg/L	1	12/15/16 05:09 PM
Barium	0.0205	0.00300	0.0100		mg/L	1	12/15/16 05:09 PM
Beryllium	0.00609	0.000300	0.00100		mg/L	1	12/15/16 05:09 PM
Boron	2.50	1.00	3.00	J	mg/L	100	12/21/16 12:33 PM
Cadmium	0.00108	0.000300	0.00100		mg/L	1	12/15/16 05:09 PM
Calcium	44.3	10.0	30.0		mg/L	100	12/21/16 12:33 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	12/15/16 05:09 PM
Cobalt	0.208	0.00300	0.00500		mg/L	1	12/15/16 05:09 PM
Lead	0.00137	0.000300	0.00100		mg/L	1	12/15/16 05:09 PM
Lithium	0.0838	0.00500	0.0100		mg/L	1	12/15/16 05:09 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	12/15/16 05:09 PM
Selenium	0.00237	0.00200	0.00500	J	mg/L	1	12/15/16 05:09 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	12/15/16 05:09 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	120	3.00	10.0		mg/L	10	12/15/16 04:46 PM
Fluoride	1.00	0.100	0.400		mg/L	1	12/15/16 12:42 PM
Sulfate	341	10.0	30.0		mg/L	10	12/15/16 04:46 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	5.35	0	0		pH Units@16.9℃	1	12/14/16 09:07 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	759	10.0	10.0		mg/L	1	12/19/16 08:42 AM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *18-Jan-17*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	H-27
Project:	MLSES - Ash Pond Area	**Lab ID:**	1612132-05
Project No:	5164-B	**Collection Date:**	12/11/16 11:50 AM
Lab Order:	1612132	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/21/16 01:42 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	12/15/16 05:11 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	12/15/16 05:11 PM
Barium	0.0236	0.00300	0.0100		mg/L	1	12/15/16 05:11 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	12/15/16 05:11 PM
Boron	0.427	0.0100	0.0300		mg/L	1	12/21/16 12:43 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	12/15/16 05:11 PM
Calcium	52.8	1.00	3.00		mg/L	10	12/21/16 12:35 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	12/15/16 05:11 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	12/15/16 05:11 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	12/15/16 05:11 PM
Lithium	0.0606	0.00500	0.0100		mg/L	1	12/15/16 05:11 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	12/15/16 05:11 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	12/15/16 05:11 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	12/15/16 05:11 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	119	3.00	10.0		mg/L	10	12/15/16 05:07 PM
Fluoride	0.161	0.100	0.400	J	mg/L	1	12/15/16 01:03 PM
Sulfate	355	10.0	30.0		mg/L	10	12/15/16 05:07 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.05	0	0		pH Units@16.9℃	1	12/14/16 09:09 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	805	10.0	10.0		mg/L	1	12/19/16 08:42 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *18-Jan-17*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	H-26
Project:	MLSES - Ash Pond Area	**Lab ID:**	1612132-06
Project No:	5164-B	**Collection Date:**	12/11/16 12:40 PM
Lab Order:	1612132	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/21/16 01:44 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	12/15/16 05:13 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	12/15/16 05:13 PM
Barium	0.0468	0.00300	0.0100		mg/L	1	12/15/16 05:13 PM
Beryllium	0.00146	0.000300	0.00100		mg/L	1	12/15/16 05:13 PM
Boron	0.537	0.0100	0.0300		mg/L	1	12/21/16 12:45 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	12/15/16 05:13 PM
Calcium	11.9	1.00	3.00		mg/L	10	12/21/16 12:37 PM
Chromium	0.00311	0.00200	0.00500	J	mg/L	1	12/15/16 05:13 PM
Cobalt	0.0275	0.00300	0.00500		mg/L	1	12/15/16 05:13 PM
Lead	0.000358	0.000300	0.00100	J	mg/L	1	12/15/16 05:13 PM
Lithium	0.0140	0.00500	0.0100		mg/L	1	12/15/16 05:13 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	12/15/16 05:13 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	12/15/16 05:13 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	12/15/16 05:13 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	57.6	3.00	10.0		mg/L	10	12/15/16 05:27 PM
Fluoride	0.161	0.100	0.400	J	mg/L	1	12/15/16 01:23 PM
Sulfate	68.8	1.00	3.00		mg/L	1	12/15/16 01:23 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	5.63	0	0		pH Units@17.4℃	1	12/14/16 09:12 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	236	10.0	10.0		mg/L	1	12/19/16 08:42 AM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *18-Jan-17*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	H-33
Project:	MLSES - Ash Pond Area	**Lab ID:**	1612132-07
Project No:	5164-B	**Collection Date:**	12/11/16 02:30 PM
Lab Order:	1612132	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/21/16 01:46 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	12/15/16 05:15 PM
Arsenic	0.00218	0.00200	0.00500	J	mg/L	1	12/15/16 05:15 PM
Barium	0.0537	0.00300	0.0100		mg/L	1	12/15/16 05:15 PM
Beryllium	0.000865	0.000300	0.00100	J	mg/L	1	12/15/16 05:15 PM
Boron	0.0594	0.0100	0.0300		mg/L	1	12/21/16 12:47 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	12/15/16 05:15 PM
Calcium	12.1	1.00	3.00		mg/L	10	12/21/16 12:39 PM
Chromium	0.0368	0.00200	0.00500		mg/L	1	12/15/16 05:15 PM
Cobalt	0.0408	0.00300	0.00500		mg/L	1	12/15/16 05:15 PM
Lead	0.000495	0.000300	0.00100	J	mg/L	1	12/15/16 05:15 PM
Lithium	0.115	0.00500	0.0100		mg/L	1	12/15/16 05:15 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	12/15/16 05:15 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	12/15/16 05:15 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	12/15/16 05:15 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	63.2	3.00	10.0		mg/L	10	12/15/16 05:48 PM
Fluoride	0.132	0.100	0.400	J	mg/L	1	12/15/16 01:44 PM
Sulfate	112	1.00	3.00		mg/L	1	12/15/16 01:44 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.06	0	0		pH Units@17.4℃	1	12/14/16 09:14 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	395	10.0	10.0		mg/L	1	12/19/16 08:42 AM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *18-Jan-17*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	H-28
Project:	MLSES - Ash Pond Area	**Lab ID:**	1612132-08
Project No:	5164-B	**Collection Date:**	12/11/16 03:25 PM
Lab Order:	1612132	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/21/16 01:48 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	12/15/16 05:17 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	12/15/16 05:17 PM
Barium	0.0471	0.00300	0.0100		mg/L	1	12/15/16 05:17 PM
Beryllium	0.000698	0.000300	0.00100	J	mg/L	1	12/15/16 05:17 PM
Boron	3.94	0.100	0.300		mg/L	10	12/21/16 12:41 PM
Cadmium	0.000668	0.000300	0.00100	J	mg/L	1	12/15/16 05:17 PM
Calcium	45.7	1.00	3.00		mg/L	10	12/21/16 12:41 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	12/15/16 05:17 PM
Cobalt	0.0924	0.00300	0.00500		mg/L	1	12/15/16 05:17 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	12/15/16 05:17 PM
Lithium	0.0869	0.00500	0.0100		mg/L	1	12/15/16 05:17 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	12/15/16 05:17 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	12/15/16 05:17 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	12/15/16 05:17 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	56.7	3.00	10.0		mg/L	10	12/15/16 06:50 PM
Fluoride	0.114	0.100	0.400	J	mg/L	1	12/15/16 02:05 PM
Sulfate	445	10.0	30.0		mg/L	10	12/15/16 06:50 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.23	0	0		pH Units@18℃	1	12/14/16 09:17 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	766	10.0	10.0		mg/L	1	12/19/16 08:42 AM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

CLIENT: Pastor, Behling & Wheeler
Work Order: 1612132
Project: MLSES - Ash Pond Area

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_161221A

The QC data in batch 78368 applies to the following samples: 1612132-01A, 1612132-02A, 1612132-03A, 1612132-04A, 1612132-05A, 1612132-06A, 1612132-07A, 1612132-08A

Sample ID **MB-78368** Batch ID: **78368** TestNo: **SW7470A** Units: **mg/L**
SampType: **MBLK** Run ID: **CETAC2_HG_161221A** Analysis Date: **12/21/2016 1:17:05 PM** Prep Date: **12/19/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.0000800	0.000200								

Sample ID **LCS-78368** Batch ID: **78368** TestNo: **SW7470A** Units: **mg/L**
SampType: **LCS** Run ID: **CETAC2_HG_161221A** Analysis Date: **12/21/2016 1:19:21 PM** Prep Date: **12/19/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00198	0.000200	0.00200	0	99.0	85	115			

Sample ID **LCSD-78368** Batch ID: **78368** TestNo: **SW7470A** Units: **mg/L**
SampType: **LCSD** Run ID: **CETAC2_HG_161221A** Analysis Date: **12/21/2016 1:21:37 PM** Prep Date: **12/19/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00204	0.000200	0.00200	0	102	85	115	2.99	15	

Sample ID **1612132-01A SD** Batch ID: **78368** TestNo: **SW7470A** Units: **mg/L**
SampType: **SD** Run ID: **CETAC2_HG_161221A** Analysis Date: **12/21/2016 1:26:10 PM** Prep Date: **12/19/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.000400	0.00100	0	0				0	10	

Sample ID **1612132-01A PDS** Batch ID: **78368** TestNo: **SW7470A** Units: **mg/L**
SampType: **PDS** Run ID: **CETAC2_HG_161221A** Analysis Date: **12/21/2016 1:28:25 PM** Prep Date: **12/19/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00231	0.000200	0.00250	0	92.4	85	115			

Sample ID **1612132-01A MS** Batch ID: **78368** TestNo: **SW7470A** Units: **mg/L**
SampType: **MS** Run ID: **CETAC2_HG_161221A** Analysis Date: **12/21/2016 1:30:40 PM** Prep Date: **12/19/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00200	0.000200	0.00200	0	100	80	120			

Sample ID **1612132-01A MSD** Batch ID: **78368** TestNo: **SW7470A** Units: **mg/L**
SampType: **MSD** Run ID: **CETAC2_HG_161221A** Analysis Date: **12/21/2016 1:32:56 PM** Prep Date: **12/19/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00203	0.000200	0.00200	0	102	80	120	1.49	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1612132
Project: MLSES - Ash Pond Area

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_161221A

Sample ID	**ICV-161221**	Batch ID:	**R89576**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**ICV**	Run ID:	**CETAC2_HG_161221A**	Analysis Date:	**12/21/2016 11:43:51 A**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00396	0.000200	0.00400	0	99.0	90	110			

Sample ID	**CCV2-161221**	Batch ID:	**R89576**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**CETAC2_HG_161221A**	Analysis Date:	**12/21/2016 1:12:31 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00199	0.000200	0.00200	0	99.5	90	110			

Sample ID	**CCV3-161221**	Batch ID:	**R89576**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**CETAC2_HG_161221A**	Analysis Date:	**12/21/2016 1:55:38 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00196	0.000200	0.00200	0	98.0	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1612132
Project: MLSES - Ash Pond Area

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161215D

The QC data in batch 78271 applies to the following samples: 1612132-01A, 1612132-02A, 1612132-03A, 1612132-04A, 1612132-05A, 1612132-06A, 1612132-07A, 1612132-08A

Sample ID **MB-78271** Batch ID: **78271** TestNo: **SW6020A** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_161215D** Analysis Date: **12/15/2016 4:53:00 PM** Prep Date: **12/14/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.000800	0.00250								
Arsenic	<0.00200	0.00500								
Barium	<0.00300	0.0100								
Beryllium	<0.000300	0.00100								
Boron	<0.0100	0.0300								
Cadmium	<0.000300	0.00100								
Calcium	<0.100	0.300								
Chromium	<0.00200	0.00500								
Cobalt	<0.00300	0.00500								
Lead	<0.000300	0.00100								
Lithium	<0.00500	0.0100								
Molybdenum	<0.00200	0.00500								
Selenium	<0.00200	0.00500								
Thallium	<0.000500	0.00150								

Sample ID **1612132-02A SD** Batch ID: **78271** TestNo: **SW6020A** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS4_161215D** Analysis Date: **12/15/2016 5:03:00 PM** Prep Date: **12/14/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.00400	0.0125	0	0				0	10	
Arsenic	<0.0100	0.0250	0	0.00875				0	10	
Barium	0.0188	0.0500	0	0.0189				0.903	10	
Beryllium	0.0211	0.00500	0	0.0197				6.80	10	
Cadmium	<0.00150	0.00500	0	0				0	10	
Chromium	<0.0100	0.0250	0	0.00386				0	10	
Cobalt	0.237	0.0250	0	0.230				3.00	10	
Lead	<0.00150	0.00500	0	0				0	10	
Lithium	0.205	0.0500	0	0.198				3.89	10	
Molybdenum	<0.0100	0.0250	0	0				0	10	
Selenium	0.0381	0.0250	0	0.0365				4.28	10	
Thallium	<0.00250	0.00750	0	0				0	10	

Sample ID **1612132-02A PDS** Batch ID: **78271** TestNo: **SW6020A** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS4_161215D** Analysis Date: **12/15/2016 5:23:00 PM** Prep Date: **12/14/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.202	0.00250	0.200	0	101	80	120			
Arsenic	0.210	0.00500	0.200	0.00875	101	80	120			
Barium	0.219	0.0100	0.200	0.0189	100	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1612132
Project: MLSES - Ash Pond Area

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161215D

Sample ID **1612132-02A PDS** Batch ID: **78271** TestNo: **SW6020A** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS4_161215D** Analysis Date: **12/15/2016 5:23:00 PM** Prep Date: **12/14/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.211	0.00100	0.200	0.0197	95.9	80	120			
Cadmium	0.187	0.00100	0.200	0	93.5	80	120			
Chromium	0.201	0.00500	0.200	0.00386	98.7	80	120			
Cobalt	0.408	0.00500	0.200	0.230	89.2	80	120			
Lead	0.200	0.00100	0.200	0	99.8	80	120			
Lithium	0.367	0.0100	0.200	0.198	84.8	80	120			
Molybdenum	0.193	0.00500	0.200	0	96.5	80	120			
Selenium	0.246	0.00500	0.200	0.0365	105	80	120			
Thallium	0.197	0.00150	0.200	0	98.3	80	120			

Sample ID **1612132-02A MS** Batch ID: **78271** TestNo: **SW6020A** Units: **mg/L**
SampType: **MS** Run ID: **ICP-MS4_161215D** Analysis Date: **12/15/2016 5:25:00 PM** Prep Date: **12/14/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.199	0.00250	0.200	0	99.4	80	120			
Arsenic	0.210	0.00500	0.200	0.00875	100	80	120			
Barium	0.213	0.0100	0.200	0.0189	96.9	80	120			
Beryllium	0.204	0.00100	0.200	0.0197	92.1	80	120			
Boron	22.0	0.0300	0.200	22.2	-120	80	120			S
Cadmium	0.184	0.00100	0.200	0	91.9	80	120			
Calcium	255	0.300	5.00	251	90.0	80	120			
Chromium	0.189	0.00500	0.200	0.00386	92.8	80	120			
Cobalt	0.413	0.00500	0.200	0.230	91.8	80	120			
Lead	0.196	0.00100	0.200	0	98.1	80	120			
Lithium	0.367	0.0100	0.200	0.198	84.9	80	120			
Molybdenum	0.194	0.00500	0.200	0	97.2	80	120			
Selenium	0.231	0.00500	0.200	0.0365	97.5	80	120			
Thallium	0.195	0.00150	0.200	0	97.4	80	120			

Sample ID **1612132-02A MSD** Batch ID: **78271** TestNo: **SW6020A** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS4_161215D** Analysis Date: **12/15/2016 5:27:00 PM** Prep Date: **12/14/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.200	0.00250	0.200	0	99.9	80	120	0.497	15	
Arsenic	0.216	0.00500	0.200	0.00875	104	80	120	3.10	15	
Barium	0.218	0.0100	0.200	0.0189	99.6	80	120	2.46	15	
Beryllium	0.207	0.00100	0.200	0.0197	93.7	80	120	1.57	15	
Boron	21.7	0.0300	0.200	22.2	-227	80	120	0.981	15	S
Cadmium	0.190	0.00100	0.200	0	94.8	80	120	3.10	15	
Calcium	260	0.300	5.00	251	181	80	120	1.76	15	S
Chromium	0.194	0.00500	0.200	0.00386	94.8	80	120	2.13	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1612132
Project: MLSES - Ash Pond Area

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161215D

Sample ID **1612132-02A MSD** Batch ID: **78271** TestNo: **SW6020A** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS4_161215D** Analysis Date: **12/15/2016 5:27:00 PM** Prep Date: **12/14/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cobalt	0.417	0.00500	0.200	0.230	93.6	80	120	0.851	15	
Lead	0.203	0.00100	0.200	0	102	80	120	3.44	15	
Lithium	0.371	0.0100	0.200	0.198	86.8	80	120	1.02	15	
Molybdenum	0.197	0.00500	0.200	0	98.4	80	120	1.31	15	
Selenium	0.241	0.00500	0.200	0.0365	102	80	120	4.09	15	
Thallium	0.200	0.00150	0.200	0	100	80	120	2.67	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1612132
Project: MLSES - Ash Pond Area

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161215D

Sample ID **ICV-161215**	Batch ID: **R89469**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_161215D**	Analysis Date: **12/15/2016 11:10:00 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.101	0.00250	0.100	0	101	90	110			
Arsenic	0.0999	0.00500	0.100	0	99.9	90	110			
Barium	0.102	0.0100	0.100	0	102	90	110			
Beryllium	0.102	0.00100	0.100	0	102	90	110			
Boron	0.0983	0.0300	0.100	0	98.3	90	110			
Cadmium	0.101	0.00100	0.100	0	101	90	110			
Calcium	2.30	0.300	2.50	0	92.0	90	110			
Chromium	0.106	0.00500	0.100	0	106	90	110			
Cobalt	0.104	0.00500	0.100	0	104	90	110			
Lead	0.101	0.00100	0.100	0	101	90	110			
Lithium	0.102	0.0100	0.100	0	102	90	110			
Molybdenum	0.0978	0.00500	0.100	0	97.8	90	110			
Selenium	0.0995	0.00500	0.100	0	99.5	90	110			
Thallium	0.0993	0.00150	0.100	0	99.3	90	110			

Sample ID **LCVL-161215**	Batch ID: **R89469**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_161215D**	Analysis Date: **12/15/2016 11:16:00 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00209	0.00250	0.00200	0	104	70	130			
Arsenic	0.00529	0.00500	0.00500	0	106	70	130			
Barium	0.00526	0.0100	0.00500	0	105	70	130			
Beryllium	0.000885	0.00100	0.00100	0	88.5	70	130			
Boron	0.0171	0.0300	0.0200	0	85.5	70	130			
Cadmium	0.00107	0.00100	0.00100	0	107	70	130			
Calcium	0.105	0.300	0.100	0	105	70	130			
Chromium	0.00548	0.00500	0.00500	0	110	70	130			
Cobalt	0.00544	0.00500	0.00500	0	109	70	130			
Lead	0.00109	0.00100	0.00100	0	109	70	130			
Lithium	0.0108	0.0100	0.0100	0	108	70	130			
Molybdenum	0.00513	0.00500	0.00500	0	103	70	130			
Selenium	0.00571	0.00500	0.00500	0	114	70	130			
Thallium	0.00103	0.00150	0.00100	0	103	70	130			

Sample ID **CCV7-161215**	Batch ID: **R89469**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_161215D**	Analysis Date: **12/15/2016 4:30:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.201	0.00250	0.200	0	101	90	110			
Arsenic	0.206	0.00500	0.200	0	103	90	110			
Barium	0.200	0.0100	0.200	0	99.8	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1612132
Project: MLSES - Ash Pond Area

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161215D

Sample ID **CCV7-161215** Batch ID: **R89469** TestNo: **SW6020A** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_161215D** Analysis Date: **12/15/2016 4:30:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.206	0.00100	0.200	0	103	90	110			
Boron	0.241	0.0300	0.200	0	120	90	110			S
Cadmium	0.199	0.00100	0.200	0	99.6	90	110			
Calcium	5.11	0.300	5.00	0	102	90	110			
Chromium	0.205	0.00500	0.200	0	102	90	110			
Cobalt	0.205	0.00500	0.200	0	103	90	110			
Lead	0.199	0.00100	0.200	0	99.4	90	110			
Lithium	0.205	0.0100	0.200	0	102	90	110			
Molybdenum	0.196	0.00500	0.200	0	97.8	90	110			
Selenium	0.209	0.00500	0.200	0	104	90	110			
Thallium	0.197	0.00150	0.200	0	98.6	90	110			

Sample ID **LCVL7-161215** Batch ID: **R89469** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_161215D** Analysis Date: **12/15/2016 4:35:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00215	0.00250	0.00200	0	108	70	130			
Arsenic	0.00532	0.00500	0.00500	0	106	70	130			
Barium	0.00528	0.0100	0.00500	0	106	70	130			
Beryllium	0.00108	0.00100	0.00100	0	108	70	130			
Boron	0.0406	0.0300	0.0200	0	203	70	130			S
Cadmium	0.00100	0.00100	0.00100	0	100	70	130			
Calcium	0.113	0.300	0.100	0	113	70	130			
Chromium	0.00531	0.00500	0.00500	0	106	70	130			
Cobalt	0.00531	0.00500	0.00500	0	106	70	130			
Lead	0.00102	0.00100	0.00100	0	102	70	130			
Lithium	0.0114	0.0100	0.0100	0	114	70	130			
Molybdenum	0.00488	0.00500	0.00500	0	97.5	70	130			
Selenium	0.00561	0.00500	0.00500	0	112	70	130			
Thallium	0.00106	0.00150	0.00100	0	106	70	130			

Sample ID **CCV8-161215** Batch ID: **R89469** TestNo: **SW6020A** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_161215D** Analysis Date: **12/15/2016 5:29:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.202	0.00250	0.200	0	101	90	110			
Arsenic	0.207	0.00500	0.200	0	104	90	110			
Barium	0.203	0.0100	0.200	0	101	90	110			
Beryllium	0.198	0.00100	0.200	0	98.9	90	110			
Boron	0.735	0.0300	0.200	0	368	90	110			S
Cadmium	0.198	0.00100	0.200	0	98.9	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1612132
Project: MLSES - Ash Pond Area

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161215D

Sample ID **CCV8-161215**	Batch ID: **R89469**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_161215D**	Analysis Date: **12/15/2016 5:29:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	5.06	0.300	5.00	0	101	90	110			
Chromium	0.204	0.00500	0.200	0	102	90	110			
Cobalt	0.203	0.00500	0.200	0	102	90	110			
Lead	0.201	0.00100	0.200	0	101	90	110			
Lithium	0.194	0.0100	0.200	0	97.0	90	110			
Molybdenum	0.195	0.00500	0.200	0	97.3	90	110			
Selenium	0.210	0.00500	0.200	0	105	90	110			
Thallium	0.197	0.00150	0.200	0	98.5	90	110			

Sample ID **LCVL8-161215**	Batch ID: **R89469**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_161215D**	Analysis Date: **12/15/2016 5:33:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00212	0.00250	0.00200	0	106	70	130			
Arsenic	0.00548	0.00500	0.00500	0	110	70	130			
Barium	0.00525	0.0100	0.00500	0	105	70	130			
Beryllium	0.000848	0.00100	0.00100	0	84.8	70	130			
Boron	0.328	0.0300	0.0200	0	1640	70	130			S
Cadmium	0.00106	0.00100	0.00100	0	106	70	130			
Calcium	0.116	0.300	0.100	0	116	70	130			
Chromium	0.00534	0.00500	0.00500	0	107	70	130			
Cobalt	0.00538	0.00500	0.00500	0	108	70	130			
Lead	0.00102	0.00100	0.00100	0	102	70	130			
Lithium	0.0112	0.0100	0.0100	0	112	70	130			
Molybdenum	0.00487	0.00500	0.00500	0	97.3	70	130			
Selenium	0.00612	0.00500	0.00500	0	122	70	130			
Thallium	0.00104	0.00150	0.00100	0	104	70	130			

Sample ID **CCV9-161215**	Batch ID: **R89469**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_161215D**	Analysis Date: **12/15/2016 5:57:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.199	0.00250	0.200	0	99.6	90	110			
Arsenic	0.209	0.00500	0.200	0	104	90	110			
Barium	0.201	0.0100	0.200	0	100	90	110			
Beryllium	0.196	0.00100	0.200	0	98.1	90	110			
Cadmium	0.197	0.00100	0.200	0	98.6	90	110			
Chromium	0.200	0.00500	0.200	0	100	90	110			
Cobalt	0.204	0.00500	0.200	0	102	90	110			
Lead	0.197	0.00100	0.200	0	98.4	90	110			
Lithium	0.198	0.0100	0.200	0	98.9	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1612132
Project: MLSES - Ash Pond Area

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161215D

Sample ID **CCV9-161215**	Batch ID: **R89469**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_161215D**	Analysis Date: **12/15/2016 5:57:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Molybdenum	0.191	0.00500	0.200	0	95.3	90	110			
Selenium	0.210	0.00500	0.200	0	105	90	110			
Thallium	0.195	0.00150	0.200	0	97.4	90	110			

Sample ID **LCVL9-161215**	Batch ID: **R89469**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_161215D**	Analysis Date: **12/15/2016 6:01:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00202	0.00250	0.00200	0	101	70	130			
Arsenic	0.00550	0.00500	0.00500	0	110	70	130			
Barium	0.00518	0.0100	0.00500	0	104	70	130			
Beryllium	0.000899	0.00100	0.00100	0	89.9	70	130			
Cadmium	0.00101	0.00100	0.00100	0	101	70	130			
Chromium	0.00537	0.00500	0.00500	0	107	70	130			
Cobalt	0.00529	0.00500	0.00500	0	106	70	130			
Lead	0.000975	0.00100	0.00100	0	97.5	70	130			
Lithium	0.0108	0.0100	0.0100	0	108	70	130			
Molybdenum	0.00468	0.00500	0.00500	0	93.7	70	130			
Selenium	0.00590	0.00500	0.00500	0	118	70	130			
Thallium	0.00100	0.00150	0.00100	0	100	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1612132
Project: MLSES - Ash Pond Area

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161216D

The QC data in batch 78271 applies to the following samples: 1612132-01A, 1612132-02A, 1612132-03A, 1612132-04A, 1612132-05A, 1612132-06A, 1612132-07A, 1612132-08A

Sample ID **LCS-78271** Batch ID: **78271** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_161216D** Analysis Date: **12/16/2016 3:22:00 PM** Prep Date: **12/14/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.200	0.00250	0.200	0	100	80	120			
Arsenic	0.204	0.00500	0.200	0	102	80	120			
Barium	0.200	0.0100	0.200	0	100	80	120			
Beryllium	0.210	0.00100	0.200	0	105	80	120			
Boron	0.206	0.0300	0.200	0	103	80	120			
Cadmium	0.202	0.00100	0.200	0	101	80	120			
Calcium	4.86	0.300	5.00	0	97.3	80	120			
Chromium	0.204	0.00500	0.200	0	102	80	120			
Cobalt	0.209	0.00500	0.200	0	105	80	120			
Lead	0.195	0.00100	0.200	0	97.7	80	120			
Lithium	0.199	0.0100	0.200	0	99.4	80	120			
Molybdenum	0.199	0.00500	0.200	0	99.5	80	120			
Selenium	0.208	0.00500	0.200	0	104	80	120			
Thallium	0.196	0.00150	0.200	0	98.0	80	120			

Sample ID **LCSD-78271** Batch ID: **78271** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_161216D** Analysis Date: **12/16/2016 3:24:00 PM** Prep Date: **12/14/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.196	0.00250	0.200	0	98.1	80	120	1.95	15	
Arsenic	0.168	0.00500	0.200	0	84.2	80	120	19.1	15	R
Barium	0.163	0.0100	0.200	0	81.4	80	120	20.6	15	R
Beryllium	0.170	0.00100	0.200	0	84.8	80	120	21.4	15	R
Boron	0.166	0.0300	0.200	0	83.2	80	120	21.4	15	R
Cadmium	0.164	0.00100	0.200	0	81.8	80	120	20.9	15	R
Calcium	4.85	0.300	5.00	0	97.1	80	120	0.204	15	
Chromium	0.166	0.00500	0.200	0	82.9	80	120	20.6	15	R
Cobalt	0.171	0.00500	0.200	0	85.4	80	120	20.3	15	R
Lead	0.163	0.00100	0.200	0	81.3	80	120	18.3	15	R
Lithium	0.162	0.0100	0.200	0	80.8	80	120	20.6	15	R
Molybdenum	0.162	0.00500	0.200	0	81.0	80	120	20.6	15	R
Selenium	0.168	0.00500	0.200	0	83.9	80	120	21.5	15	R
Thallium	0.163	0.00150	0.200	0	81.7	80	120	18.2	15	R

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1612132
Project: MLSES - Ash Pond Area

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161216D

Sample ID **ICV-161216**	Batch ID: **R89509**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_161216D**	Analysis Date: **12/16/2016 11:21:00 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.100	0.00250	0.100	0	100	90	110			
Arsenic	0.101	0.00500	0.100	0	101	90	110			
Barium	0.101	0.0100	0.100	0	101	90	110			
Beryllium	0.103	0.00100	0.100	0	103	90	110			
Boron	0.0983	0.0300	0.100	0	98.3	90	110			
Cadmium	0.102	0.00100	0.100	0	102	90	110			
Calcium	2.31	0.300	2.50	0	92.2	90	110			
Chromium	0.107	0.00500	0.100	0	107	90	110			
Cobalt	0.106	0.00500	0.100	0	106	90	110			
Lead	0.101	0.00100	0.100	0	101	90	110			
Lithium	0.0990	0.0100	0.100	0	99.0	90	110			
Molybdenum	0.0976	0.00500	0.100	0	97.6	90	110			
Selenium	0.103	0.00500	0.100	0	103	90	110			
Thallium	0.101	0.00150	0.100	0	101	90	110			

Sample ID **LCVL-161216**	Batch ID: **R89509**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_161216D**	Analysis Date: **12/16/2016 11:33:00 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00207	0.00250	0.00200	0	103	70	130			
Arsenic	0.00548	0.00500	0.00500	0	110	70	130			
Barium	0.00541	0.0100	0.00500	0	108	70	130			
Beryllium	0.00120	0.00100	0.00100	0	120	70	130			
Cadmium	0.00110	0.00100	0.00100	0	110	70	130			
Calcium	0.103	0.300	0.100	0	103	70	130			
Chromium	0.00564	0.00500	0.00500	0	113	70	130			
Cobalt	0.00561	0.00500	0.00500	0	112	70	130			
Lead	0.00111	0.00100	0.00100	0	111	70	130			
Lithium	0.0112	0.0100	0.0100	0	112	70	130			
Molybdenum	0.00530	0.00500	0.00500	0	106	70	130			
Selenium	0.00575	0.00500	0.00500	0	115	70	130			
Thallium	0.00110	0.00150	0.00100	0	110	70	130			

Sample ID **CCV4-161216**	Batch ID: **R89509**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_161216D**	Analysis Date: **12/16/2016 2:52:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.196	0.00250	0.200	0	97.9	90	110			
Arsenic	0.206	0.00500	0.200	0	103	90	110			
Barium	0.199	0.0100	0.200	0	99.6	90	110			
Beryllium	0.208	0.00100	0.200	0	104	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1612132
Project: MLSES - Ash Pond Area

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161216D

Sample ID **CCV4-161216** Batch ID: **R89509** TestNo: **SW6020A** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_161216D** Analysis Date: **12/16/2016 2:52:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.220	0.0300	0.200	0	110	90	110			
Cadmium	0.200	0.00100	0.200	0	99.9	90	110			
Calcium	4.92	0.300	5.00	0	98.4	90	110			
Chromium	0.204	0.00500	0.200	0	102	90	110			
Cobalt	0.209	0.00500	0.200	0	104	90	110			
Lead	0.198	0.00100	0.200	0	98.8	90	110			
Lithium	0.202	0.0100	0.200	0	101	90	110			
Molybdenum	0.199	0.00500	0.200	0	99.5	90	110			
Selenium	0.207	0.00500	0.200	0	103	90	110			
Thallium	0.199	0.00150	0.200	0	99.5	90	110			

Sample ID **LCVL4-161216** Batch ID: **R89509** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_161216D** Analysis Date: **12/16/2016 3:01:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00206	0.00250	0.00200	0	103	70	130			
Arsenic	0.00549	0.00500	0.00500	0	110	70	130			
Barium	0.00528	0.0100	0.00500	0	106	70	130			
Beryllium	0.00119	0.00100	0.00100	0	119	70	130			
Boron	0.0312	0.0300	0.0200	0	156	70	130			S
Cadmium	0.00107	0.00100	0.00100	0	107	70	130			
Calcium	0.110	0.300	0.100	0	110	70	130			
Chromium	0.00543	0.00500	0.00500	0	109	70	130			
Cobalt	0.00552	0.00500	0.00500	0	110	70	130			
Lead	0.00105	0.00100	0.00100	0	105	70	130			
Lithium	0.0105	0.0100	0.0100	0	105	70	130			
Molybdenum	0.00521	0.00500	0.00500	0	104	70	130			
Selenium	0.00549	0.00500	0.00500	0	110	70	130			
Thallium	0.00106	0.00150	0.00100	0	106	70	130			

Sample ID **CCV5-161216** Batch ID: **R89509** TestNo: **SW6020A** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_161216D** Analysis Date: **12/16/2016 3:58:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.201	0.00250	0.200	0	100	90	110			
Arsenic	0.206	0.00500	0.200	0	103	90	110			
Barium	0.202	0.0100	0.200	0	101	90	110			
Beryllium	0.200	0.00100	0.200	0	100	90	110			
Boron	0.202	0.0300	0.200	0	101	90	110			
Cadmium	0.203	0.00100	0.200	0	102	90	110			
Calcium	4.98	0.300	5.00	0	99.6	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1612132
Project: MLSES - Ash Pond Area

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161216D

Sample ID **CCV5-161216**	Batch ID: **R89509**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_161216D**	Analysis Date: **12/16/2016 3:58:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chromium	0.203	0.00500	0.200	0	102	90	110			
Cobalt	0.208	0.00500	0.200	0	104	90	110			
Lead	0.197	0.00100	0.200	0	98.4	90	110			
Lithium	0.199	0.0100	0.200	0	99.5	90	110			
Molybdenum	0.203	0.00500	0.200	0	101	90	110			
Selenium	0.206	0.00500	0.200	0	103	90	110			
Thallium	0.198	0.00150	0.200	0	98.8	90	110			

Sample ID **LCVL5-161216**	Batch ID: **R89509**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_161216D**	Analysis Date: **12/16/2016 4:18:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00198	0.00250	0.00200	0	99.0	70	130			
Arsenic	0.00526	0.00500	0.00500	0	105	70	130			
Barium	0.00525	0.0100	0.00500	0	105	70	130			
Beryllium	0.000977	0.00100	0.00100	0	97.7	70	130			
Boron	0.00708	0.0300	0.0200	0	35.4	70	130			S
Cadmium	0.00107	0.00100	0.00100	0	107	70	130			
Calcium	0.109	0.300	0.100	0	109	70	130			
Chromium	0.00540	0.00500	0.00500	0	108	70	130			
Cobalt	0.00553	0.00500	0.00500	0	111	70	130			
Lead	0.00103	0.00100	0.00100	0	103	70	130			
Lithium	0.0108	0.0100	0.0100	0	108	70	130			
Molybdenum	0.00501	0.00500	0.00500	0	100	70	130			
Selenium	0.00586	0.00500	0.00500	0	117	70	130			
Thallium	0.00103	0.00150	0.00100	0	103	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1612132
Project: MLSES - Ash Pond Area

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161220B

The QC data in batch 78271 applies to the following samples: 1612132-01A, 1612132-02A, 1612132-03A, 1612132-04A, 1612132-05A, 1612132-06A, 1612132-07A, 1612132-08A

Sample ID **1612132-02A SD** Batch ID: **78271** TestNo: **SW6020A** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS4_161220B** Analysis Date: **12/20/2016 2:03:00 PM** Prep Date: **12/14/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	30.9	15.0	0	22.3				32.3	10	R
Calcium	257	150	0	246				4.41	10	

Sample ID **1612132-02A PDS** Batch ID: **78271** TestNo: **SW6020A** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS4_161220B** Analysis Date: **12/20/2016 2:10:00 PM** Prep Date: **12/14/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	43.9	3.00	20.0	22.3	108	80	120			
Calcium	725	30.0	500	246	95.8	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1612132
Project: MLSES - Ash Pond Area

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161220B

Sample ID **ICV-161220** Batch ID: **R89557** TestNo: **SW6020A** Units: **mg/L**
SampType: **ICV** Run ID: **ICP-MS4_161220B** Analysis Date: **12/20/2016 11:39:00 A** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.102	0.0300	0.100	0	102	90	110			
Calcium	2.37	0.300	2.50	0	95.0	90	110			

Sample ID **LCVL-161220** Batch ID: **R89557** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_161220B** Analysis Date: **12/20/2016 11:49:00 A** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0230	0.0300	0.0200	0	115	70	130			
Calcium	0.0965	0.300	0.100	0	96.5	70	130			

Sample ID **CCV1-161220** Batch ID: **R89557** TestNo: **SW6020A** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_161220B** Analysis Date: **12/20/2016 1:02:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.215	0.0300	0.200	0	108	90	110			
Calcium	4.94	0.300	5.00	0	98.8	90	110			

Sample ID **LCVL1-161220** Batch ID: **R89557** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_161220B** Analysis Date: **12/20/2016 1:08:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0236	0.0300	0.0200	0	118	70	130			
Calcium	0.109	0.300	0.100	0	109	70	130			

Sample ID **CCV2-161220** Batch ID: **R89557** TestNo: **SW6020A** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_161220B** Analysis Date: **12/20/2016 2:52:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.208	0.0300	0.200	0	104	90	110			
Calcium	4.97	0.300	5.00	0	99.3	90	110			

Sample ID **LCVL2-161220** Batch ID: **R89557** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_161220B** Analysis Date: **12/20/2016 2:59:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0231	0.0300	0.0200	0	115	70	130			
Calcium	0.103	0.300	0.100	0	103	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1612132
Project: MLSES - Ash Pond Area

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161221A

Sample ID **ICV-161221**	Batch ID: **R89593**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_161221A**	Analysis Date: **12/21/2016 10:50:00 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.103	0.0300	0.100	0	103	90	110			
Calcium	2.28	0.300	2.50	0	91.1	90	110			

Sample ID **LCVL-161221**	Batch ID: **R89593**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_161221A**	Analysis Date: **12/21/2016 11:06:00 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0234	0.0300	0.0200	0	117	70	130			
Calcium	0.104	0.300	0.100	0	104	70	130			

Sample ID **CCV1-161221**	Batch ID: **R89593**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_161221A**	Analysis Date: **12/21/2016 12:08:00 P**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.197	0.0300	0.200	0	98.7	90	110			
Calcium	4.75	0.300	5.00	0	95.0	90	110			

Sample ID **LCVL1-161221**	Batch ID: **R89593**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_161221A**	Analysis Date: **12/21/2016 12:24:00 P**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0246	0.0300	0.0200	0	123	70	130			
Calcium	0.101	0.300	0.100	0	101	70	130			

Sample ID **CCV2-161221**	Batch ID: **R89593**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_161221A**	Analysis Date: **12/21/2016 12:49:00 P**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.208	0.0300	0.200	0	104	90	110			
Calcium	4.71	0.300	5.00	0	94.2	90	110			

Sample ID **LCVL2-161221**	Batch ID: **R89593**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_161221A**	Analysis Date: **12/21/2016 1:06:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0259	0.0300	0.0200	0	130	70	130			
Calcium	0.0983	0.300	0.100	0	98.3	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1612132
Project: MLSES - Ash Pond Area

ANALYTICAL QC SUMMARY REPORT

RunID: IC3_161215A

The QC data in batch 78306 applies to the following samples: 1612132-01D, 1612132-02D, 1612132-03D, 1612132-04D, 1612132-05D, 1612132-06D, 1612132-07D, 1612132-08D

Sample ID	**MB-78306**	Batch ID:	**78306**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**IC3_161215A**	Analysis Date:	**12/15/2016 10:00:04 A**	Prep Date:	**12/15/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00								
Fluoride	<0.100	0.400								
Sulfate	<1.00	3.00								

Sample ID	**LCSD-78306**	Batch ID:	**78306**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**LCSD**	Run ID:	**IC3_161215A**	Analysis Date:	**12/15/2016 10:44:12 A**	Prep Date:	**12/15/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.58	1.00	10.00	0	95.8	90	110	0.618	20	
Fluoride	4.29	0.400	4.000	0	107	90	110	0.116	20	
Sulfate	29.9	3.00	30.00	0	99.6	90	110	0.382	20	

Sample ID	**LCS-78306**	Batch ID:	**78306**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**IC3_161215A**	Analysis Date:	**12/15/2016 11:06:42 A**	Prep Date:	**12/15/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.52	1.00	10.00	0	95.2	90	110			
Fluoride	4.30	0.400	4.000	0	107	90	110			
Sulfate	29.8	3.00	30.00	0	99.2	90	110			

Sample ID	**1612132-07DMS**	Batch ID:	**78306**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**MS**	Run ID:	**IC3_161215A**	Analysis Date:	**12/15/2016 6:08:52 PM**	Prep Date:	**12/15/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	256	10.0	200.0	63.24	96.5	90	110			
Fluoride	189	4.00	200.0	0	94.3	90	110			
Sulfate	306	30.0	200.0	113.6	96.3	90	110			

Sample ID	**1612132-07DMSD**	Batch ID:	**78306**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**MSD**	Run ID:	**IC3_161215A**	Analysis Date:	**12/15/2016 6:29:31 PM**	Prep Date:	**12/15/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	257	10.0	200.0	63.24	96.7	90	110	0.172	20	
Fluoride	190	4.00	200.0	0	95.0	90	110	0.697	20	
Sulfate	309	30.0	200.0	113.6	97.5	90	110	0.817	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1612132
Project: MLSES - Ash Pond Area

ANALYTICAL QC SUMMARY REPORT

RunID: IC3_161215A

Sample ID **ICV-161215**	Batch ID: **R89480**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC3_161215A**	Analysis Date: **12/15/2016 9:09:10 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	24.0	1.00	25.00	0	95.9	90	110			
Fluoride	10.2	0.400	10.00	0	102	90	110			
Sulfate	73.2	3.00	75.00	0	97.5	90	110			

Sample ID **CCV1-161215**	Batch ID: **R89480**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC3_161215A**	Analysis Date: **12/15/2016 2:53:18 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.53	1.00	10.00	0	95.3	90	110			
Fluoride	4.24	0.400	4.000	0	106	90	110			
Sulfate	29.4	3.00	30.00	0	97.9	90	110			

Sample ID **CCV2-161215**	Batch ID: **R89480**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC3_161215A**	Analysis Date: **12/15/2016 7:31:27 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.57	1.00	10.00	0	95.7	90	110			
Fluoride	4.19	0.400	4.000	0	105	90	110			
Sulfate	29.6	3.00	30.00	0	98.6	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler

Work Order: 1612132

Project: MLSES - Ash Pond Area

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_161214A

The QC data in batch 78265 applies to the following samples: 1612132-01D, 1612132-02D, 1612132-03D, 1612132-04D, 1612132-05D, 1612132-06D, 1612132-07D, 1612132-08D

Sample ID **1612132-01D-DUP** Batch ID: **78265** TestNo: **M4500-H+ B** Units: **pH Units@17℃**

SampType: **DUP** Run ID: **TITRATOR_161214A** Analysis Date: **12/14/2016 9:00:00 AM** Prep Date: **12/14/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	7.60	0	0	7.380				2.94	5	

Sample ID **1612133-01D-DUP** Batch ID: **78265** TestNo: **M4500-H+ B** Units: **pH Units@18.9℃**

SampType: **DUP** Run ID: **TITRATOR_161214A** Analysis Date: **12/14/2016 9:24:00 AM** Prep Date: **12/14/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	5.69	0	0	5.780				1.57	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1612132
Project: MLSES - Ash Pond Area

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_161214A

Sample ID	**ICV-161214**	Batch ID:	**R89416**	TestNo:	**M4500-H+ B**	Units:	**pH Units@22.2℃**
SampType:	**ICV**	Run ID:	**TITRATOR_161214A**	Analysis Date:	**12/14/2016 8:31:00 AM**	Prep Date:	**12/14/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	9.91	0	10.00	0	99.1	99	101			

Sample ID	**CCV1-161214**	Batch ID:	**R89416**	TestNo:	**M4500-H+ B**	Units:	**pH Units@21.4℃**
SampType:	**CCV**	Run ID:	**TITRATOR_161214A**	Analysis Date:	**12/14/2016 9:21:00 AM**	Prep Date:	**12/14/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	6.96	0	7.000	0	99.4	97.1	102.9			

Sample ID	**CCV2-161214**	Batch ID:	**R89416**	TestNo:	**M4500-H+ B**	Units:	**pH Units@21.6℃**
SampType:	**CCV**	Run ID:	**TITRATOR_161214A**	Analysis Date:	**12/14/2016 9:30:00 AM**	Prep Date:	**12/14/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	6.99	0	7.000	0	99.9	97.1	102.9			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1612132
Project: MLSES - Ash Pond Area

ANALYTICAL QC SUMMARY REPORT

RunID: WC_161216B

The QC data in batch 78334 applies to the following samples: 1612132-01D, 1612132-02D, 1612132-03D, 1612132-04D, 1612132-05D, 1612132-06D, 1612132-07D, 1612132-08D

Sample ID	**MB-78334**	Batch ID:	**78334**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**WC_161216B**	Analysis Date:	**12/19/2016 8:42:00 AM**	Prep Date:	**12/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	<10.0	10.0								

Sample ID	**LCS-78334**	Batch ID:	**78334**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**WC_161216B**	Analysis Date:	**12/19/2016 8:42:00 AM**	Prep Date:	**12/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	751	10.0	745.6	0	101	90	113			

Sample ID	**1612137-01C-DUP**	Batch ID:	**78334**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**DUP**	Run ID:	**WC_161216B**	Analysis Date:	**12/19/2016 8:42:00 AM**	Prep Date:	**12/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	3580	50.0	0	3515				1.83	5	

Sample ID	**1612137-04C-DUP**	Batch ID:	**78334**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**DUP**	Run ID:	**WC_161216B**	Analysis Date:	**12/19/2016 8:42:00 AM**	Prep Date:	**12/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	3600	50.0	0	3445				4.26	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

Case Narrative

Lab No: 20161233

This report contains the analytical results for the 8 sample(s) received under chain of custody by ESC Lab Sciences on 12/15/2016 12:39:34 PM. These samples are associated with your 1612132 project.

The analytical results included in this report meet all applicable quality control procedure requirements except as noted below:

The test results in this report meet all NELAC requirements unless noted below:

This report shall not be reproduced, except in full, without the written approval of ESC Lab Sciences.

All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client.

Results have been reviewed by the Director of Radiochemistry or their designees and is approved for release.

Observations / Nonconformances

L879328

Analytical Report

	Method	Result	DL	Units	Qual	Prep Date	Analysis Date	Analyst
Lab ID : **20161233-01**								
Client ID : **H-29**								
Date Sampled : **12/11/2016 9:05:00 AM**								
Matrix : **NPW**								
		Radiochemical Analyses						
Combined Radium		0.451 +/- 0.712	1.10	pCi/l				
Radium-226	SM 7500 Ra B M*	0.007 +/- 0.113	0.203	pCi/l		12/17/16	12/22/16	AK
Radium-228	EPA 904*/9320*	0.444 +/- 0.599	0.892	pCi/l		01/11/17	01/14/17	JR
Lab ID : **20161233-02**								
Client ID : **H-31**								
Date Sampled : **12/11/2016 10:10:00 AM**								
Matrix : **NPW**								
		Radiochemical Analyses						
Combined Radium		0.777 +/- 0.897	1.28	pCi/l				
Radium-226	SM 7500 Ra B M*	0.195 +/- 0.143	0.188	pCi/l		12/17/16	12/22/16	AK
Radium-228	EPA 904*/9320*	0.582 +/- 0.754	1.09	pCi/l		01/11/17	01/14/17	JR
Lab ID : **20161233-03**								
Client ID : **DUP-01**								
Date Sampled : **12/11/2016 10:10:00 AM**								
Matrix : **NPW**								
		Radiochemical Analyses						
Combined Radium		1.74 +/- 0.626	0.800	pCi/l				
Radium-226	SM 7500 Ra B M*	0.232 +/- 0.157	0.204	pCi/l		12/17/16	12/22/16	AK
Radium-228	EPA 904*/9320*	1.51 +/- 0.469	0.596	pCi/l		01/11/17	01/14/17	JR
Lab ID : **20161233-04**								
Client ID : **H-32**								
Date Sampled : **12/11/2016 11:00:00 AM**								
Matrix : **NPW**								
		Radiochemical Analyses						
Combined Radium		0.540 +/- 0.916	1.46	pCi/l				
Radium-226	SM 7500 Ra B M*	-0.292 +/- 0.163	0.374	pCi/l		12/17/16	12/22/16	AK
Radium-228	EPA 904*/9320*	0.540 +/- 0.753	1.09	pCi/l		01/11/17	01/14/17	JR

Analytical Report

	Method	Result	DL	Units	Qual	Prep Date	Analysis Date	Analyst
Lab ID : **20161233-05**								
Client ID : **H-27**								
Date Sampled : **12/11/2016 11:50:00 AM**								
Matrix : **NPW**								
		Radiochemical Analyses						
Combined Radium		1.68 +/- 0.636	0.852	pCi/l				
Radium-226	SM 7500 Ra B M*	0.143 +/- 0.141	0.204	pCi/l		12/17/16	12/22/16	AK
Radium-228	EPA 904*/9320*	1.54 +/- 0.495	0.648	pCi/l		01/11/17	01/15/17	JR
Lab ID : **20161233-06**								
Client ID : **H-26**								
Date Sampled : **12/11/2016 12:40:00 PM**								
Matrix : **NPW**								
		Radiochemical Analyses						
Combined Radium		2.07 +/- 0.600	0.774	pCi/l				
Radium-226	SM 7500 Ra B M*	0.248 +/- 0.117	0.092	pCi/l		12/17/16	12/22/16	AK
Radium-228	EPA 904*/9320*	1.82 +/- 0.483	0.682	pCi/l		01/11/17	01/15/17	JR
Lab ID : **20161233-07**								
Client ID : **H-33**								
Date Sampled : **12/11/2016 2:30:00 PM**								
Matrix : **NPW**								
		Radiochemical Analyses						
Combined Radium		1.45 +/- 0.662	1.03	pCi/l				
Radium-226	SM 7500 Ra B M*	0.159 +/- 0.117	0.139	pCi/l		12/17/16	12/22/16	AK
Radium-228	EPA 904*/9320*	1.29 +/- 0.545	0.887	pCi/l		01/11/17	01/15/17	JR
Lab ID : **20161233-08**								
Client ID : **H-28**								
Date Sampled : **12/11/2016 3:25:00 PM**								
Matrix : **NPW**								
		Radiochemical Analyses						
Combined Radium		1.24 +/- 0.634	0.893	pCi/l				
Radium-226	SM 7500 Ra B M*	0.110 +/- 0.149	0.230	pCi/l		12/17/16	12/22/16	AK
Radium-228	EPA 904*/9320*	1.13 +/- 0.485	0.663	pCi/l		01/11/17	01/15/17	JR

QC Report

Parameter	Blank	LCS %REC	LCSD %REC	LCSD RPD	DUP RPD	RER, NAD or DER	MS %REC	MSD %REC	MSD RPD	Batch ID
Radium-226	0.004	110.0			NC	0.303	104.0	111.0	6.4	R1172
Radium-228	0.502	82.5			NC	0.976	83.3	76.9	7.6	R3906

Lab Approval:

Ron Eidson
Director of Radiochemistry

DHL Analytical, Inc.
2300 Double Creek Drive
Round Rock, TX 78664
TEL: *(512) 388-8222* FAX: *(512) 388-8229*

CHAIN-OF-CUSTODY RECORD

Work Order: 1612132

Subcontractor:

ESC Laboratory
311 North Aspen
Broken Arrow, Oklahoma 74012

TEL: (918) 251-2515
FAX:
Acct #: DHLRRTX

13-Dec-16

	Sample Id	Matrix	DHL#	Date Collected	Bottle Type	Requested Tests					
						E904.0	SM7500Ra-B M				
1	H-29	Aqueous	-01B	12/11/16 09:05 AM	1LHDPEHNO3	1					
	H-29	Aqueous	-01C	12/11/16 09:05 AM	500HDPEHNO3		1				
2	H-31	Aqueous	-02B	12/11/16 10:10 AM	1LHDPEHNO3	1					
	H-31	Aqueous	-02C	12/11/16 10:10 AM	500HDPEHNO3		1				
3	DUP-01	Aqueous	-03B	12/11/16 10:10 AM	1LHDPEHNO3	1					
	DUP-01	Aqueous	-03C	12/11/16 10:10 AM	500HDPEHNO3		1				
4	H-32	Aqueous	-04B	12/11/16 11:00 AM	1LHDPEHNO3	1					
	H-32	Aqueous	-04C	12/11/16 11:00 AM	500HDPEHNO3		1				
5	H-27	Aqueous	-05B	12/11/16 11:50 AM	1LHDPEHNO3	1					
	H-27	Aqueous	-05C	12/11/16 11:50 AM	500HDPEHNO3		1				
6	H-26	Aqueous	-06B	12/11/16 12:40 PM	1LHDPEHNO3	1					
	H-26	Aqueous	-06C	12/11/16 12:40 PM	500HDPEHNO3		1				
7	H-33	Aqueous	-07B	12/11/16 02:30 PM	1LHDPEHNO3	1					
	H-33	Aqueous	-07C	12/11/16 02:30 PM	500HDPEHNO3		1				
8	H-28	Aqueous	-08B	12/11/16 03:25 PM	1LHDPEHNO3	1					
	H-28	Aqueous	-08C	12/11/16 03:25 PM	500HDPEHNO3		1				

General Comments:

Please analyze these samples with Normal Turnaround Time.
Report RA-226, Ra-228 & Combined per Specs.
Quality Control Package Needed: Standard - NELAC Rad Test compliant
Email to cac@dhlanalytical.com & dupont@dhlanalytical.com

LB79328

		Date/Time			Date/Time
Relinquished by:		12/13/16 1730	**Received by:**	Loresta	12/13/16 1730
Relinquished by:			**Received by:**		12/15/16 1240

20161233

SAMPLE LOGIN

Date Received: *12/15/2016 12:39:* **Lab Number:** 20161233 **Due:** 1/16/2017

Sample Number	Client Sample ID	Matrix	Date Sampled	Container Type	Container Size	Preservation	Preserved Upon Receipt	Custody Seal	Seal Intact
20161233-01 B	H-29	NPW	12/11/16	Plastic	1 L	HNO3, pH < 2	☑	Yes	Yes
20161233-01 A	H-29	NPW	12/11/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20161233-02 A	H-31	NPW	12/11/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
20161233-02 B	H-31	NPW	12/11/16	Plastic	1 L	HNO3, pH < 2	☑	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20161233-03 A	DUP-01	NPW	12/11/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
20161233-03 B	DUP-01	NPW	12/11/16	Plastic	1 L	HNO3, pH < 2	☑	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20161233-04 B	H-32	NPW	12/11/16	Plastic	1 L	HNO3, pH < 2	☑	Yes	Yes
20161233-04 A	H-32	NPW	12/11/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20161233-05 B	H-27	NPW	12/11/16	Plastic	1 L	HNO3, pH < 2	☑	Yes	Yes
20161233-05 A	H-27	NPW	12/11/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20161233-06 A	H-26	NPW	12/11/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
20161233-06 B	H-26	NPW	12/11/16	Plastic	1 L	HNO3, pH < 2	☑	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20161233-07 A	H-33	NPW	12/11/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
20161233-07 B	H-33	NPW	12/11/16	Plastic	1 L	HNO3, pH < 2	☑	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						

20161233-08 B	H-28	NPW	12/11/16	Plastic	1 L	HNO3, pH < 2	☑	Yes	Yes
20161233-08 A	H-28	NPW	12/11/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						

CONTAINER INSPECTION

 # Coolers 1 **Custody Seals Broken** ☒ **Temperature:** 4.5 C **Ice** **Radiation Survey:** <300 cpm

SAMPLE INSPECTION

Sample Seal Broken ☒ **Chain of Custody Record** ☑ **Labels in Tact** ☑ **Radiation Survey Complete** ☐ N/A

Anomalles

Inspected By: _____ **DATE** 12/15/16

QA or Designee Review: _____ **DATE** 12/15/16

Sample Custodian Review: _____ **DATE** 12/15/16

Project Notes:

Data Usability Summary
Luminant – Martin Lake Steam Electric Station
October 20-30, 2015
Groundwater Monitoring Event
DHL Analytical Data Packages 1510216, 1510228, and 1511007

Pastor, Behling & Wheeler, LLC reviewed three data packages from DHL Analytical for the analysis of groundwater samples collected October 20-30, 2015 at the Martin Lake Steam Electric Station in Tatum, Texas. Data were reviewed for adherence to project objectives.

Intended Use of Data: To provide current data on concentrations of chemicals of concern (COCs) in the groundwater at the site.

Analyses requested included:

- Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Lead, Lithium, Molybdenum, Selenium, and Thallium by USEPA Method SW6020A – Metals Analysis;
- Chloride, Fluoride, and Sulfate by USEPA Method E300 – Anion Analysis;
- Mercury by USEPA Method SW7470A – Mercury Analysis;
- pH of Water by Standard Method M4500-H + B – pH of Water Analysis;
- Total Dissolved Solids (TDS) by Standard Method M2540C – TDS Analysis; and
- Radium 226 and 228 by USEPA Methods 904.0/SW846 9320 Modified and 903.1 Modified.

Data were reviewed and validated and the results of the review/validation are discussed in this Data Usability Summary (DUS). The following laboratory submittals and field data were examined:

- the reportable data,
- case narratives, and
- field notes with respect to field instrument calibrations, filtering procedures, sampling procedures, and preservation procedures prior to shipping the samples to the laboratory.

The results of supporting quality control (QC) analyses were summarized in the case narrative, included in this review, with the laboratory data package.

Introduction

Twenty five (25) groundwater samples were analyzed for the constituents listed above (Appendix III and Appendix IV constituents in the Coal Combustion Residuals Federal Rule). Table B-1 lists the field sample identifications cross-referenced to the laboratory identifications.

Project Objectives

Project quality QC objectives were established in conformance to the requirements of *SW-846 Test Methods for Evaluating Solid Waste Physical/Chemical Methods* and *Standard Methods*. Laboratory control sample and sample duplicate recovery QC criteria were 70 – 130% recovery (%R) for metals and inorganics. Laboratory recovery QC criteria were 30% Relative Percent Difference (RPD). Field duplicate recovery QC criteria were 50% RPD.

Data Review / Validation Results

Analytical Results

Non-detected results (ND) are reported as less than the value of the method detection limit (MDL) and received a "U" flag. Analytes detected between the method quantitation limit (MQL) and the MDL were qualified with a "J-flag" to denote that the reported value was considered to be estimated. If a QC result was found outside of the review criteria, the reviewer applied a data qualifier and bias code to the associated sample data if the analyte was detected. Sample data were not qualified if recoveries exceeded QC criteria and the analyte was not detected.

Preservation and Holding Times

Samples were evaluated for agreement with the chain-of-custody (COC). All samples were received in the appropriate containers and in good condition with the paperwork filled out properly. Sample receipt temperatures were within the acceptance criteria of 4 ± 2 °C. Samples were prepared and analyzed within holding times as specified in the analysis methods.

Calibrations

The initial and continuing calibration data met laboratory control limits with the exception of the following:

For Metals analysis performed on 11/5/2015 and 11/9/2015, four LCVLs were above control limits for Boron. These are flagged accordingly. The associated CCVs were within control limits for this analyte. No further corrective actions were taken.

For Metals analysis performed on 11/3/2015, LCVL3-151103 was above control limits for Boron and Calcium. This was due to sample carryover. The affected samples were the matrix spike and matrix spike duplicate. No further corrective actions were taken.

For Metals analysis performed on 11/9/2015, LCVL2-151109 was slightly above control limits for Calcium. This is flagged accordingly. The associated CCV2-151109 was within control limits for this analyte. No further corrective actions were taken.

Blanks

No field blanks were used because the sampling event did not include volatile or semi-volatile compounds.

All laboratory method blank results were reported as non-detected or below applicable assessment levels with the exception of the following:

For Metals analysis performed on 11/5/2015 Chromium and Molybdenum were detected above the reporting limits in the method blank. All associated samples were below detection limits for these analytes. No further corrective actions were taken.

For Metals analysis performed on 11/9/2015 Boron was detected below the reporting limit in the method blank. All samples were detected greater than 10 times the amount in the blank for this analyte. No further corrective actions were taken.

No equipment blank was collected

Internal Standards

For Metals analysis samples BMW-19 and BMW-18 had low responses for the internal standards Indium and Bismuth. All associated analytes (Barium, Cadmium, Molybdenum, and Lead) were not reported from this analytical run and were re-analyzed.

Surrogate Recoveries

The analytical procedures used did not require surrogates; therefore, surrogate recovery is not applicable.

Laboratory Control Samples

Laboratory control sample (LCS) recoveries were within QC acceptance limits for all LCS analyses.

Matrix Spike/Matrix Spike Duplicates

MS/MSD percent recoveries were within acceptable control limits for all samples with the exception of the following:

For Metals analysis performed on 11/3/2015 the matrix spike and matrix spike duplicate recoveries were out of control limits for Calcium, and the matrix spike duplicate recovery was out of control limits for Antimony. In addition, the matrix spike and matrix spike duplicate had the RPD above control limits for Antimony. These are flagged accordingly in the QC summary report. The sample selected for the MS and MSD was not from this work order. The LCS was within control limits for these analytes. No further corrective actions were taken.

For Metals analysis performed on 11/9/2015 the matrix spike and matrix spike duplicate recoveries were out of control limits for Calcium. These are flagged accordingly in the QC summary report. The sample selected for the MS and MSD was not from this work order. The LCS was within control limits for this analyte. No further corrective actions were taken.

For Mercury analysis for lab package 1511007 the matrix spike and matrix spike duplicate was re-prepped and re-analyzed on 11/10/2015. This was due to a prep error. This exceeded the 24 hour prep window.

Serial Dilution/Post Dilution Spike

For Metals analysis performed on 11/9/2015 the RPD for the serial dilution was above control limits for Chromium. This is flagged accordingly. The PDS was within control limits for this analyte. No further corrective actions were taken.

Field Precision

No sample duplicates were taken during this sampling event.

Field Procedures

Groundwater samples were collected using low-flow procedures with a peristaltic, stainless steel submersible pump, or bladder pump and placed in unpreserved 250-ml plastic bottles and 500-ml plastic bottles preserved with HNO_3. Wells were purged until groundwater parameters (temperature, pH, specific conductivity, dissolved oxygen, redox, and turbidity) stabilized to within +/- 10%.

Summary

Groundwater analytical data are usable for the purpose of determining current COC concentrations in the groundwater at the site with no qualifications added as a result of this evaluation.

Table B-1. Cross-Reference Field Sample Identifications and Laboratory Identifications

Field Identification	Laboratory Identification
PDP-23	1510216-01
PDP-24	1510216-02
PDP-22	1510216-03
MW-19	1510216-04
MW-20A	1510216-05
PDP-26	1510216-06
PDP-25	1510216-07
H-30	1510216-08
H-31	1510216-09
H-29	1510216-10
H-28	1510216-11
H-27	1510216-12
H-26	1510216-13
H-33	1510216-14
H-32	1510216-15
MW-17A	1510216-16
BMW-22	1510228-01
BMW-23	1510228-02
BMW-24	1510228-03
BMW-20	1510228-04
BMW-21	1510228-05
BMW-19	1511007-01
BMW-11AR	1511007-02
MW-18A	1511007-03
BMW-18	1511007-04

Prepared by: Lindsey Sydow___ Date: June 2, 2017

Data Usability Summary
Luminant – Martin Lake Steam Electric Station
December 14-15, 2015
Groundwater Monitoring Event
DHL Analytical Data Package 1512236

Pastor, Behling & Wheeler, LLC reviewed one data package from DHL Analytical for the analysis of groundwater samples collected December 14-15, 2015 at the Martin Lake Steam Electric Station in Tatum, Texas. Data were reviewed for adherence to project objectives.

Intended Use of Data: To provide current data on concentrations of chemicals of concern (COCs) in the groundwater at the site.

Analyses requested included:

- Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Lead, Lithium, Molybdenum, Selenium, and Thallium by USEPA Method SW6020A – Metals Analysis;
- Chloride, Fluoride, and Sulfate by USEPA Method E300 – Anion Analysis;
- Mercury by USEPA Method SW7470A – Mercury Analysis;
- pH of Water by Standard Method M4500-H + B – pH of Water Analysis;
- Total Dissolved Solids (TDS) by Standard Method M2540C – TDS Analysis; and
- Radium 226 and 228 by USEPA Methods 904.0/SW846 9320 Modified and 903.1 Modified.

Data were reviewed and validated and the results of the review/validation are discussed in this Data Usability Summary (DUS). The following laboratory submittals and field data were examined:

- the reportable data,
- case narratives, and
- field notes with respect to field instrument calibrations, filtering procedures, sampling procedures, and preservation procedures prior to shipping the samples to the laboratory.

The results of supporting quality control (QC) analyses were summarized in the case narrative, included in this review, with the laboratory data package.

Introduction

Seventeen (17) groundwater samples were analyzed for the constituents listed above (Appendix III and Appendix IV constituents in the Coal Combustion Residuals Federal Rule). Table B-1 lists the field sample identifications cross-referenced to the laboratory identifications.

Project Objectives

Project quality QC objectives were established in conformance to the requirements of *SW-846 Test Methods for Evaluating Solid Waste Physical/Chemical Methods* and *Standard Methods*. Laboratory control sample and sample duplicate recovery QC criteria were 70 – 130% recovery (%R) for metals and inorganics. Laboratory recovery QC criteria were 30% Relative Percent Difference (RPD). Field duplicate recovery QC criteria were 50% RPD.

Data Review / Validation Results

Analytical Results

Non-detected results (ND) are reported as less than the value of the method detection limit (MDL) and received a "U" flag. Analytes detected between the method quantitation limit (MQL) and the MDL were qualified with a "J-flag" to denote that the reported value was considered to be estimated. If a QC result was found outside of the review criteria, the reviewer applied a data qualifier and bias code to the associated sample data if the analyte was detected. Sample data were not qualified if recoveries exceeded QC criteria and the analyte was not detected.

Preservation and Holding Times

Samples were evaluated for agreement with the chain-of-custody (COC). All samples were received in the appropriate containers and in good condition with the paperwork filled out properly. Sample receipt temperatures were within the acceptance criteria of 4 ± 2 °C. Samples were prepared and analyzed within holding times as specified in the analysis methods.

Calibrations

The initial and continuing calibration data met laboratory control limits.

Blanks

No field blanks were used because the sampling event did not include volatile or semi-volatile compounds.

All laboratory method blank results were reported as non-detected or below applicable assessment levels with the exception of the following:

For Metals analysis performed on 1/7/2016 Boron was detected below the reporting limit in the method blank. All samples may be biased high for this analyte. No further corrective actions were taken.

No equipment blank was collected

Surrogate Recoveries

The analytical procedures used did not require surrogates; therefore, surrogate recovery is not applicable.

Laboratory Control Samples

Laboratory control sample (LCS) recoveries were within QC acceptance limits for all LCS analyses.

Matrix Spike/Matrix Spike Duplicates

MS/MSD percent recoveries were within acceptable control limits for all samples with the exception of the following:

For Metals analysis performed on 1/5/2016 the matrix spike and matrix spike duplicate recoveries were out of control limits for Calcium. These are flagged accordingly in the QC summary report. The sample selected for the MS and MSD was from this work order. The LCS was within control limits for these analytes. No further corrective actions were taken.

Field Precision

No sample duplicates were taken during this sampling event.

Field Procedures

Groundwater samples were collected using low-flow procedures with a peristaltic, stainless steel submersible pump, or bladder pump and placed in unpreserved 250-ml plastic bottles and 500-ml plastic bottles preserved with HNO_3. Wells were purged until groundwater parameters (temperature, pH, specific conductivity, dissolved oxygen, redox, and turbidity) stabilized to within +/- 10%.

Summary

Groundwater analytical data are usable for the purpose of determining current COC concentrations in the groundwater at the site with no qualifications added as a result of this evaluation.

Table B-1. Cross-Reference Field Sample Identifications and Laboratory Identifications

Field Identification	Laboratory Identification
H-29	1512236-01
H-30	1512236-02
H-31	1512236-03
H-32	1512236-04
H-27	1512236-05
H-28	1512236-06
H-26	1512236-07
H-33	1512236-08
MW-20A	1512236-09
PDP-22	1512236-10
MW-19	1512236-11
PDP-23	1512236-12
PDP-26	1512236-13
MW-17A	1512236-14
PDP-24	1512236-15
MW-18A	1512236-16
PDP-25	1512236-17

Prepared by: Lindsey Sydow___ Date: June 6, 2017

Data Usability Summary
Luminant – Martin Lake Steam Electric Station
February 23-24, 2016
Groundwater Monitoring Event
DHL Analytical Data Package 1602269

Pastor, Behling & Wheeler, LLC reviewed one data package from DHL Analytical for the analysis of groundwater samples collected February 23-24, 2016 at the Martin Lake Steam Electric Station in Tatum, Texas. Data were reviewed for adherence to project objectives.

Intended Use of Data: To provide current data on concentrations of chemicals of concern (COCs) in the groundwater at the site.

Analyses requested included:

- Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Lead, Lithium, Molybdenum, Selenium, and Thallium by USEPA Method SW6020A – Metals Analysis;
- Chloride, Fluoride, and Sulfate by USEPA Method E300 – Anion Analysis;
- Mercury by USEPA Method SW7470A – Mercury Analysis;
- pH of Water by Standard Method M4500-H + B – pH of Water Analysis;
- Total Dissolved Solids (TDS) by Standard Method M2540C – TDS Analysis; and
- Radium 226 and 228 by USEPA Methods 904.0/SW846 9320 Modified and 903.1 Modified.

Data were reviewed and validated and the results of the review/validation are discussed in this Data Usability Summary (DUS). The following laboratory submittals and field data were examined:

- the reportable data,
- case narratives, and
- field notes with respect to field instrument calibrations, filtering procedures, sampling procedures, and preservation procedures prior to shipping the samples to the laboratory.

The results of supporting quality control (QC) analyses were summarized in the case narrative, included in this review, with the laboratory data package.

Introduction

Seventeen (17) groundwater samples were analyzed for the constituents listed above (Appendix III and Appendix IV constituents in the Coal Combustion Residuals Federal Rule). Table B-1 lists the field sample identifications cross-referenced to the laboratory identifications.

Project Objectives

Project quality QC objectives were established in conformance to the requirements of *SW-846 Test Methods for Evaluating Solid Waste Physical/Chemical Methods* and *Standard Methods*. Laboratory control sample and sample duplicate recovery QC criteria were 70 – 130% recovery (%R) for metals and inorganics. Laboratory recovery QC criteria were 30% Relative Percent Difference (RPD). Field duplicate recovery QC criteria were 50% RPD.

Data Review / Validation Results

Analytical Results

Non-detected results (ND) are reported as less than the value of the method detection limit (MDL) and received a "U" flag. Analytes detected between the method quantitation limit (MQL) and the MDL were qualified with a "J-flag" to denote that the reported value was considered to be estimated. If a QC result was found outside of the review criteria, the reviewer applied a data qualifier and bias code to the associated sample data if the analyte was detected. Sample data were not qualified if recoveries exceeded QC criteria and the analyte was not detected.

Preservation and Holding Times

Samples were evaluated for agreement with the chain-of-custody (COC). All samples were received in the appropriate containers and in good condition with the paperwork filled out properly. Sample receipt temperatures were within the acceptance criteria of 4 ± 2 °C. Samples were prepared and analyzed within holding times as specified in the analysis methods.

Calibrations

The initial and continuing calibration data met laboratory control limits.

Blanks

No field blanks were used because the sampling event did not include volatile or semi-volatile compounds.

All laboratory method blank results were reported as non-detected or below applicable assessment levels with the exception of the following:

For Metals analysis performed on 3/7/2016 Boron was detected below the reporting limit in the method blanks. All associated samples may be biased high for this analyte. No further corrective actions were taken.

For TDS analysis performed on 2/26/2016 TDS was detected at the reporting limit in the method blank. All associated samples were detected greater than 10 times the amount in the blank. No further corrective actions were taken.

No equipment blank was collected

Surrogate Recoveries

The analytical procedures used did not require surrogates; therefore, surrogate recovery is not applicable.

Laboratory Control Samples

Laboratory control sample (LCS) recoveries were within QC acceptance limits for all LCS analyses.

Matrix Spike/Matrix Spike Duplicates

MS/MSD percent recoveries were within acceptable control limits for all samples with the exception of the following:

For Metals analysis performed on 3/7/2016 the matrix spike and matrix spike duplicate recoveries were above control limits for Boron. These are flagged accordingly in the QC summary report. The sample selected for the MS and MSD was not from this work order. The LCS was within control limits for this analyte. No further corrective actions were taken.

Field Precision

No sample duplicates were taken during this sampling event.

Field Procedures

Groundwater samples were collected using low-flow procedures with a peristaltic, stainless steel submersible pump, or bladder pump and placed in unpreserved 250-ml plastic bottles and 500-ml plastic bottles preserved with HNO_3. Wells were purged until groundwater parameters (temperature, pH, specific conductivity, dissolved oxygen, redox, and turbidity) stabilized to within +/- 10%.

Summary

Groundwater analytical data are usable for the purpose of determining current COC concentrations in the groundwater at the site with no qualifications added as a result of this evaluation.

Table B-1. Cross-Reference Field Sample Identifications and Laboratory Identifications

Field Identification	Laboratory Identification
MW-19	1602269-01
PDP-22	1602269-02
MW-18A	1602269-03
PDP-26	1602269-04
MW-20A	1602269-05
H-30	1602269-06
H-33	1602269-07
H-26	1602269-08
H-31	1602269-09
H-32	1602269-10
H-28	1602269-11
H-29	1602269-12
H-27	1602269-13
PDP-23	1602269-14
PDP-25	1602269-15
MW-17A	1602269-16
PDP-24	1602269-17

Prepared by: Lindsey Sydow___ Date: June 6, 2017

Data Usability Summary
Luminant – Martin Lake Steam Electric Station
April 5-6, 2016
Groundwater Monitoring Event
DHL Analytical Data Packages 1604052 and 1604071

Pastor, Behling & Wheeler, LLC reviewed two data packages from DHL Analytical for the analysis of groundwater samples collected April 5-6, 2016 at the Martin Lake Steam Electric Station in Tatum, Texas. Data were reviewed for adherence to project objectives.

Intended Use of Data: To provide current data on concentrations of chemicals of concern (COCs) in the groundwater at the site.

Analyses requested included:

- Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Lead, Lithium, Molybdenum, Selenium, and Thallium by USEPA Method SW6020A – Metals Analysis;
- Chloride, Fluoride, and Sulfate by USEPA Method E300 – Anion Analysis;
- Mercury by USEPA Method SW7470A – Mercury Analysis;
- pH of Water by Standard Method M4500-H + B – pH of Water Analysis;
- Total Dissolved Solids (TDS) by Standard Method M2540C – TDS Analysis; and
- Radium 226 and 228 by USEPA Methods 904.0/SW846 9320 Modified and 903.1 Modified.

Data were reviewed and validated and the results of the review/validation are discussed in this Data Usability Summary (DUS). The following laboratory submittals and field data were examined:

- the reportable data,
- case narratives, and
- field notes with respect to field instrument calibrations, filtering procedures, sampling procedures, and preservation procedures prior to shipping the samples to the laboratory.

The results of supporting quality control (QC) analyses were summarized in the case narrative, included in this review, with the laboratory data package.

Introduction

Nineteen (19) groundwater samples were analyzed for the constituents listed above (Appendix III and Appendix IV constituents in the Coal Combustion Residuals Federal Rule). Table B-1 lists the field sample identifications cross-referenced to the laboratory identifications.

Project Objectives

Project quality QC objectives were established in conformance to the requirements of *SW-846 Test Methods for Evaluating Solid Waste Physical/Chemical Methods* and *Standard Methods*. Laboratory control sample and sample duplicate recovery QC criteria were 70 – 130% recovery (%R) for metals and inorganics. Laboratory recovery QC criteria were 30% Relative Percent Difference (RPD). Field duplicate recovery QC criteria were 50% RPD.

Data Review / Validation Results

Analytical Results

Non-detected results (ND) are reported as less than the value of the method detection limit (MDL) and received a "U" flag. Analytes detected between the method quantitation limit (MQL) and the MDL were qualified with a "J-flag" to denote that the reported value was considered to be estimated. If a QC result was found outside of the review criteria, the reviewer applied a data qualifier and bias code to the associated sample data if the analyte was detected. Sample data were not qualified if recoveries exceeded QC criteria and the analyte was not detected.

Preservation and Holding Times

Samples were evaluated for agreement with the chain-of-custody (COC). All samples were received in the appropriate containers and in good condition with the paperwork filled out properly. Sample receipt temperatures were within the acceptance criteria of 4 ± 2 °C. Samples were prepared and analyzed within holding times as specified in the analysis methods.

Calibrations

The initial and continuing calibration data met laboratory control limits.

Blanks

No field blanks were used because the sampling event did not include volatile or semi-volatile compounds.

All laboratory method blank results were reported as non-detected or below applicable assessment levels.

One equipment blank was collected, with all results being below applicable assessment levels.

Surrogate Recoveries

The analytical procedures used did not require surrogates; therefore, surrogate recovery is not applicable.

Laboratory Control Samples

Laboratory control sample (LCS) recoveries were within QC acceptance limits for all LCS analyses.

Matrix Spike/Matrix Spike Duplicates

MS/MSD percent recoveries were within acceptable control limits for all samples with the exception of the following:

For Metals analysis performed on 4/8/2016, 4/11/2016, and 4/15/2016 (data package 1604052) the matrix spike and matrix spike duplicate recoveries were out of control limits for Boron and/or Calcium. These are flagged accordingly in the QC summary report. The sample selected for the MS and MSD on 4/8/2016 was not from this work order. The sample selected for the MS and MSD on 4/11/2016 and 4/15/2016 was from this work order. The LCSs were within control limits for these analytes. No further corrective actions were taken.

For Metals analysis performed on 4/11/2016, 4/15/2016, and 4/20/2016 (data package 1604071) the matrix spike or matrix spike duplicate recoveries were out of control limits for Boron and/or Calcium

These are flagged accordingly in the QC summary report. The samples selected for the MSs and MSDs were not from this work order. The LCSs were within control limits for these analytes. No further corrective actions were taken.

Field Precision

Field duplicate precision met the quality objective of RPDs <50% for the pair collected at H-30 for all constituents except for Lead. The results for this constituent for both the parent and duplicate samples have been flagged accordingly in the Appendix III and Appendix IV Baseline Groundwater Analytical Data tables.

Analytical testing for Radium 226 and 228 has reported inherent variability. The lab reports a result and a margin of error. To determine the acceptability of the duplicate sample, the margin of error for combined Radium is added and subtracted from the result to give a range in which the true result lies. If the parent range and duplicate range overlap, the duplicate data is considered acceptable. The parent and duplicate range overlap, and the duplicate data is considered acceptable.

Field Procedures

Groundwater samples were collected using low-flow procedures with a peristaltic, stainless steel submersible pump, or bladder pump and placed in unpreserved 250-ml plastic bottles and 500-ml plastic bottles preserved with HNO_3. Wells were purged until groundwater parameters (temperature, pH, specific conductivity, dissolved oxygen, redox, and turbidity) stabilized to within +/- 10%.

Summary

Groundwater analytical data are usable for the purpose of determining current COC concentrations in the groundwater at the site with no qualifications added as a result of this evaluation.

Table B-1. Cross-Reference Field Sample Identifications and Laboratory Identifications

Field Identification	Laboratory Identification
H-29	1604052-01
H-31	1604052-02
H-32	1604052-03
H-30	1604052-04
DUP-1	1604052-05
H-27	1604052-06
H-28	1604052-07
H-26	1604071-01
H-33	1604071-02
MW-17A	1604071-03
PDP-24	1604071-04
MW-19	1604071-05
PDP-22	1604071-06
PDP-23	1604071-07
MW-20A	1604071-08

Field Identification	Laboratory Identification
PDP-26	1604071-09
PDP-25	1604071-10
MW-18A	1604071-11
EB-1	1604071-12

Prepared by: Lindsey Sydow___ Date: June 9, 2017

Data Usability Summary
Luminant – Martin Lake Steam Electric Station
June 7, 2016
Groundwater Monitoring Event
DHL Analytical Data Package 1606075

Pastor, Behling & Wheeler, LLC reviewed one data package from DHL Analytical for the analysis of groundwater samples collected June 7, 2016 at the Martin Lake Steam Electric Station in Tatum, Texas. Data were reviewed for adherence to project objectives.

Intended Use of Data: To provide current data on concentrations of chemicals of concern (COCs) in the groundwater at the site.

Analyses requested included:

- Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Lead, Lithium, Molybdenum, Selenium, and Thallium by USEPA Method SW6020A – Metals Analysis;
- Chloride, Fluoride, and Sulfate by USEPA Method E300 – Anion Analysis;
- Mercury by USEPA Method SW7470A – Mercury Analysis;
- pH of Water by Standard Method M4500-H + B – pH of Water Analysis;
- Total Dissolved Solids (TDS) by Standard Method M2540C – TDS Analysis; and
- Radium 226 and 228 by USEPA Methods 904.0/SW846 9320 Modified and 903.1 Modified.

Data were reviewed and validated and the results of the review/validation are discussed in this Data Usability Summary (DUS). The following laboratory submittals and field data were examined:

- the reportable data,
- case narratives, and
- field notes with respect to field instrument calibrations, filtering procedures, sampling procedures, and preservation procedures prior to shipping the samples to the laboratory.

The results of supporting quality control (QC) analyses were summarized in the case narrative, included in this review, with the laboratory data package.

Introduction

Nine (9) groundwater samples were analyzed for the constituents listed above (Appendix III and Appendix IV constituents in the Coal Combustion Residuals Federal Rule). Table B-1 lists the field sample identifications cross-referenced to the laboratory identifications.

Project Objectives

Project quality QC objectives were established in conformance to the requirements of *SW-846 Test Methods for Evaluating Solid Waste Physical/Chemical Methods* and *Standard Methods*. Laboratory control sample and sample duplicate recovery QC criteria were 70 – 130% recovery (%R) for metals and inorganics. Laboratory recovery QC criteria were 30% Relative Percent Difference (RPD). Field duplicate recovery QC criteria were 50% RPD.

Data Review / Validation Results

Analytical Results

Non-detected results (ND) are reported as less than the value of the method detection limit (MDL) and received a "U" flag. Analytes detected between the method quantitation limit (MQL) and the MDL were qualified with a "J-flag" to denote that the reported value was considered to be estimated. If a QC result was found outside of the review criteria, the reviewer applied a data qualifier and bias code to the associated sample data if the analyte was detected. Sample data were not qualified if recoveries exceeded QC criteria and the analyte was not detected.

Preservation and Holding Times

Samples were evaluated for agreement with the chain-of-custody (COC). All samples were received in the appropriate containers and in good condition with the paperwork filled out properly. Sample receipt temperatures were within the acceptance criteria of 4 ± 2 °C. Samples were prepared and analyzed within holding times as specified in the analysis methods.

Calibrations

The initial and continuing calibration data met laboratory control limits with the exception of the following:

For Metals analysis performed on 6/10/2016 LCVL-160610 was slightly below control limits for Beryllium. This is flagged accordingly. The associated CCV-160610 was within control limits for this analyte. No further corrective actions were taken.

Blanks

No field blanks were used because the sampling event did not include volatile or semi-volatile compounds.

All laboratory method blank results were reported as non-detected or below applicable assessment levels.

One equipment blank was collected, with all results being below applicable assessment levels.

Surrogate Recoveries

The analytical procedures used did not require surrogates; therefore, surrogate recovery is not applicable.

Laboratory Control Samples

Laboratory control sample (LCS) recoveries were within QC acceptance limits for all LCS analyses.

Matrix Spike/Matrix Spike Duplicates

MS/MSD percent recoveries were within acceptable control limits for all samples with the exception of the following:

For Mercury analysis performed on 6/17/2016 the matrix spike and matrix spike duplicate recoveries were below control limits. These are flagged accordingly in the QC summary report. The sample selected for the MS and MSD was from this work order. The LCS was within control limits. No further corrective actions were taken.

Field Precision

Field duplicate precision met the quality objective of RPDs <50% for the pair collected at H-30 for all constituents.

Analytical testing for Radium 226 and 228 has reported inherent variability. The lab reports a result and a margin of error. To determine the acceptability of the duplicate sample, the margin of error for combined Radium is added and subtracted from the result to give a range in which the true result lies. If the parent range and duplicate range overlap, the duplicate data is considered acceptable. The parent and duplicate range overlap, and the duplicate data is considered acceptable.

Field Procedures

Groundwater samples were collected using low-flow procedures with a peristaltic, stainless steel submersible pump, or bladder pump and placed in unpreserved 250-ml plastic bottles and 500-ml plastic bottles preserved with HNO_3. Wells were purged until groundwater parameters (temperature, pH, specific conductivity, dissolved oxygen, redox, and turbidity) stabilized to within +/- 10%.

Summary

Groundwater analytical data are usable for the purpose of determining current COC concentrations in the groundwater at the site with no qualifications added as a result of this evaluation.

Table B-1. Cross-Reference Field Sample Identifications and Laboratory Identifications

Field Identification	Laboratory Identification
H-29	1606075-01
H-31	1606075-02
H-32	1606075-03
H-30	1606075-04
H-40 (duplicate of H-30)	1606075-05
H-26	1606075-06
H-27	1606075-07
H-33	1606075-08
H-28	1606075-09

Prepared by: Lindsey Sydow___ Date: July 5, 2017

Data Usability Summary
Luminant – Martin Lake Steam Electric Station
August 9-11, 2016
Groundwater Monitoring Event
DHL Analytical Data Package 1608133

Pastor, Behling & Wheeler, LLC reviewed one data package from DHL Analytical for the analysis of groundwater samples collected August 9-11, 2016 at the Martin Lake Steam Electric Station in Tatum, Texas. Data were reviewed for adherence to project objectives.

Intended Use of Data: To provide current data on concentrations of chemicals of concern (COCs) in the groundwater at the site.

Analyses requested included:

- Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Lead, Lithium, Molybdenum, Selenium, and Thallium by USEPA Method SW6020A – Metals Analysis;
- Chloride, Fluoride, and Sulfate by USEPA Method E300 – Anion Analysis;
- Mercury by USEPA Method SW7470A – Mercury Analysis;
- pH of Water by Standard Method M4500-H + B – pH of Water Analysis;
- Total Dissolved Solids (TDS) by Standard Method M2540C – TDS Analysis; and
- Radium 226 and 228 by USEPA Methods 904.0/SW846 9320 Modified and 903.1 Modified.

Data were reviewed and validated and the results of the review/validation are discussed in this Data Usability Summary (DUS). The following laboratory submittals and field data were examined:

- the reportable data,
- case narratives, and
- field notes with respect to field instrument calibrations, filtering procedures, sampling procedures, and preservation procedures prior to shipping the samples to the laboratory.

The results of supporting quality control (QC) analyses were summarized in the case narrative, included in this review, with the laboratory data package.

Introduction

Twenty seven (27) groundwater samples were analyzed for the constituents listed above (Appendix III and Appendix IV constituents in the Coal Combustion Residuals Federal Rule). Table B-1 lists the field sample identifications cross-referenced to the laboratory identifications.

Project Objectives

Project quality QC objectives were established in conformance to the requirements of *SW-846 Test Methods for Evaluating Solid Waste Physical/Chemical Methods* and *Standard Methods*. Laboratory control sample and sample duplicate recovery QC criteria were 70 – 130% recovery (%R) for metals and inorganics. Laboratory recovery QC criteria were 30% Relative Percent Difference (RPD). Field duplicate recovery QC criteria were 50% RPD.

Data Review / Validation Results

Analytical Results

Non-detected results (ND) are reported as less than the value of the method detection limit (MDL) and received a "U" flag. Analytes detected between the method quantitation limit (MQL) and the MDL were qualified with a "J-flag" to denote that the reported value was considered to be estimated. If a QC result was found outside of the review criteria, the reviewer applied a data qualifier and bias code to the associated sample data if the analyte was detected. Sample data were not qualified if recoveries exceeded QC criteria and the analyte was not detected.

Preservation and Holding Times

Samples were evaluated for agreement with the chain-of-custody (COC). All samples were received in the appropriate containers and in good condition with the paperwork filled out properly. Sample receipt temperatures were within the acceptance criteria of 4 ± 2 °C. Samples were prepared and analyzed within holding times as specified in the analysis methods.

Calibrations

The initial and continuing calibration data met laboratory control limits with the exception of the following:

For Metals analysis performed on 8/18/2016 and 8/22/2016 LCVL3-160818 and LCVL2-160822 were out of control limits for Boron and Beryllium, respectively. These are flagged accordingly. The associated CCV3-160818 and CCV2-160822 were within control limits for these analytes. No further corrective actions were taken.

Blanks

No field blanks were used because the sampling event did not include volatile or semi-volatile compounds.

All laboratory method blank results were reported as non-detected or below applicable assessment levels.

One equipment blank was collected, with all results being below applicable assessment levels.

Surrogate Recoveries

The analytical procedures used did not require surrogates; therefore, surrogate recovery is not applicable.

Laboratory Control Samples

Laboratory control sample (LCS) recoveries were within QC acceptance limits for all LCS analyses.

Matrix Spike/Matrix Spike Duplicates

MS/MSD percent recoveries were within acceptable control limits for all samples with the exception of the following:

For Metals analysis (batch 76817) the matrix spike and matrix spike duplicate had low responses for the internal standard Bismuth. The associated analyte (Lead) was within control limits. No further corrective actions were taken.

For Metals analysis performed on 8/17/2016, 8/19/2016, 8/22/2016, 8/23/2016, and 8/24/2016, the matrix spike and matrix spike duplicate recoveries were outside control limits for a total of nine analytes. These are flagged accordingly in the QC summary report. The samples selected for the MS and MSD were not from this work order. The LCSs were within control limits for these analytes. No further corrective actions were taken.

Serial Dilution/Post Dilution Spikes

For Metals analysis performed on 8/23/2016, the PDS recovery was below control limits for Lithium. This is flagged accordingly. The serial dilution was within control limits for this analyte. No further corrective actions were taken.

Field Precision

Field duplicate precision met the quality objective of RPDs <50% for the pair collected at H-30 for all constituents.

Analytical testing for Radium 226 and 228 has reported inherent variability. The lab reports a result and a margin of error. To determine the acceptability of the duplicate sample, the margin of error for combined Radium is added and subtracted from the result to give a range in which the true result lies. If the parent range and duplicate range overlap, the duplicate data is considered acceptable. The parent and duplicate range overlap, and the duplicate data is considered acceptable.

Field Procedures

Groundwater samples were collected using low-flow procedures with a peristaltic, stainless steel submersible pump, or bladder pump and placed in unpreserved 250-ml plastic bottles and 500-ml plastic bottles preserved with HNO_3. Wells were purged until groundwater parameters (temperature, pH, specific conductivity, dissolved oxygen, redox, and turbidity) stabilized to within +/- 10%.

Summary

Groundwater analytical data are usable for the purpose of determining current COC concentrations in the groundwater at the site with no qualifications added as a result of this evaluation.

Table B-1. Cross-Reference Field Sample Identifications and Laboratory Identifications

Field Identification	Laboratory Identification
H-28	1608133-01
H-29	1608133-02
H-31	1608133-03
H-30	1608133-04
H-32	1608133-05
H-27	1608133-06
H-33	1608133-07
H-26	1608133-08
DUP-01	1608133-09
PDP-25	1608133-10

Field Identification	Laboratory Identification
PDP-24	1608133-11
MW-17A	1608133-12
PDP-23	1608133-13
MW-19	1608133-14
MW-20A	1608133-15
PDP-22	1608133-16
PDP-26	1608133-17
MW-18A	1608133-18
EB-1	1608133-19
BMW-11AR	1608133-20
BMW-19	1608133-21
BMW-18	1608133-22
BMW-20	1608133-23
BMW-24	1608133-24
BMW-23	1608133-25
BMW-22	1608133-26
BMW-21	1608133-27

Prepared by: Lindsey Sydow___ Date: July 6, 2017

Data Usability Summary
Luminant – Martin Lake Steam Electric Station
October 18, 2016
Groundwater Monitoring Event
DHL Analytical Data Package 1610171

Pastor, Behling & Wheeler, LLC reviewed one data package from DHL Analytical for the analysis of groundwater samples collected October 18, 2016 at the Martin Lake Steam Electric Station in Tatum, Texas. Data were reviewed for adherence to project objectives.

Intended Use of Data: To provide current data on concentrations of chemicals of concern (COCs) in the groundwater at the site.

Analyses requested included:

- Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Lead, Lithium, Molybdenum, Selenium, and Thallium by USEPA Method SW6020A – Metals Analysis;
- Chloride, Fluoride, and Sulfate by USEPA Method E300 – Anion Analysis;
- Mercury by USEPA Method SW7470A – Mercury Analysis;
- pH of Water by Standard Method M4500-H + B – pH of Water Analysis;
- Total Dissolved Solids (TDS) by Standard Method M2540C – TDS Analysis; and
- Radium 226 and 228 by USEPA Methods 904.0/SW846 9320 Modified and 903.1 Modified.

Data were reviewed and validated and the results of the review/validation are discussed in this Data Usability Summary (DUS). The following laboratory submittals and field data were examined:

- the reportable data,
- case narratives, and
- field notes with respect to field instrument calibrations, filtering procedures, sampling procedures, and preservation procedures prior to shipping the samples to the laboratory.

The results of supporting quality control (QC) analyses were summarized in the case narrative, included in this review, with the laboratory data package.

Introduction

Eight (8) groundwater samples were analyzed for the constituents listed above (Appendix III and Appendix IV constituents in the Coal Combustion Residuals Federal Rule). Table B-1 lists the field sample identifications cross-referenced to the laboratory identifications.

Project Objectives

Project quality QC objectives were established in conformance to the requirements of *SW-846 Test Methods for Evaluating Solid Waste Physical/Chemical Methods* and *Standard Methods*. Laboratory control sample and sample duplicate recovery QC criteria were 70 – 130% recovery (%R) for metals and inorganics. Laboratory recovery QC criteria were 30% Relative Percent Difference (RPD). Field duplicate recovery QC criteria were 50% RPD.

Data Review / Validation Results

Analytical Results

Non-detected results (ND) are reported as less than the value of the method detection limit (MDL) and received a "U" flag. Analytes detected between the method quantitation limit (MQL) and the MDL were qualified with a "J-flag" to denote that the reported value was considered to be estimated. If a QC result was found outside of the review criteria, the reviewer applied a data qualifier and bias code to the associated sample data if the analyte was detected. Sample data were not qualified if recoveries exceeded QC criteria and the analyte was not detected.

Preservation and Holding Times

Samples were evaluated for agreement with the chain-of-custody (COC). All samples were received in the appropriate containers and in good condition with the paperwork filled out properly. Sample receipt temperatures were within the acceptance criteria of 4 ± 2 °C. Samples were prepared and analyzed within holding times as specified in the analysis methods.

Calibrations

The initial and continuing calibration data met laboratory control limits for all constituents.

Blanks

No field blanks were used because the sampling event did not include volatile or semi-volatile compounds.

All laboratory method blank results were reported as non-detected or below applicable assessment levels.

No equipment blank was collected during this sampling event.

Surrogate Recoveries

The analytical procedures used did not require surrogates; therefore, surrogate recovery is not applicable.

Laboratory Control Samples

Laboratory control sample (LCS) recoveries were within QC acceptance limits for all LCS analyses.

Matrix Spike/Matrix Spike Duplicates

MS/MSD percent recoveries were within acceptable control limits for all samples.

Serial Dilution/Post Dilution Spikes

SD/PDS percent recoveries were within acceptable control limits for all samples.

Field Precision

Field duplicate precision met the quality objective of RPDs <50% for the pair collected at H-31 for all constituents except for Arsenic, Beryllium, Cobalt, and Selenium. The results for these constituents for both the parent and duplicate samples have been J-flagged accordingly in the Appendix III and Appendix IV Baseline Groundwater Analytical Data tables.

Analytical testing for Radium 226 and 228 has reported inherent variability. The lab reports a result and a margin of error. To determine the acceptability of the duplicate sample, the margin of error for combined Radium is added and subtracted from the result to give a range in which the true result lies. If the parent range and duplicate range overlap, the duplicate data is considered acceptable. The parent and duplicate range overlap, and the duplicate data is considered acceptable.

Field Procedures

Groundwater samples were collected using low-flow procedures with a peristaltic, stainless steel submersible pump, or bladder pump and placed in unpreserved 250-ml plastic bottles and 500-ml plastic bottles preserved with HNO_3. Wells were purged until groundwater parameters (temperature, pH, specific conductivity, dissolved oxygen, redox, and turbidity) stabilized to within +/- 10%.

Summary

Groundwater analytical data are usable for the purpose of determining current COC concentrations in the groundwater at the site with no qualifications added as a result of this evaluation.

Table B-1. Cross-Reference Field Sample Identifications and Laboratory Identifications

Field Identification	Laboratory Identification
H-29	1610171-01
H-31	1610171-02
DUP-01	1610171-03
H-32	1610171-04
H-27	1610171-05
H-28	1610171-06
H-26	1610171-07
H-33	1610171-08

Prepared by: Lindsey Sydow___ Date: August 4, 2017

Data Usability Summary
Luminant – Martin Lake Steam Electric Station
December 11, 2016
Groundwater Monitoring Event
DHL Analytical Data Package 1612132

Pastor, Behling & Wheeler, LLC reviewed one data package from DHL Analytical for the analysis of groundwater samples collected December 11, 2016 at the Martin Lake Steam Electric Station in Tatum, Texas. Data were reviewed for adherence to project objectives.

Intended Use of Data: To provide current data on concentrations of chemicals of concern (COCs) in the groundwater at the site.

Analyses requested included:

- Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Lead, Lithium, Molybdenum, Selenium, and Thallium by USEPA Method SW6020A – Metals Analysis;
- Chloride, Fluoride, and Sulfate by USEPA Method E300 – Anion Analysis;
- Mercury by USEPA Method SW7470A – Mercury Analysis;
- pH of Water by Standard Method M4500-H + B – pH of Water Analysis;
- Total Dissolved Solids (TDS) by Standard Method M2540C – TDS Analysis; and
- Radium 226 and 228 by USEPA Methods 904.0/SW846 9320 Modified and 903.1 Modified.

Data were reviewed and validated and the results of the review/validation are discussed in this Data Usability Summary (DUS). The following laboratory submittals and field data were examined:

- the reportable data,
- case narratives, and
- field notes with respect to field instrument calibrations, filtering procedures, sampling procedures, and preservation procedures prior to shipping the samples to the laboratory.

The results of supporting quality control (QC) analyses were summarized in the case narrative, included in this review, with the laboratory data package.

Introduction

Eight (8) groundwater samples were analyzed for the constituents listed above (Appendix III and Appendix IV constituents in the Coal Combustion Residuals Federal Rule). Table B-1 lists the field sample identifications cross-referenced to the laboratory identifications.

Project Objectives

Project quality QC objectives were established in conformance to the requirements of *SW-846 Test Methods for Evaluating Solid Waste Physical/Chemical Methods* and *Standard Methods*. Laboratory control sample and sample duplicate recovery QC criteria were 70 – 130% recovery (%R) for metals and inorganics. Laboratory recovery QC criteria were 30% Relative Percent Difference (RPD). Field duplicate recovery QC criteria were 50% RPD.

Data Review / Validation Results

Analytical Results

Non-detected results (ND) are reported as less than the value of the method detection limit (MDL) and received a "U" flag. Analytes detected between the method quantitation limit (MQL) and the MDL were qualified with a "J-flag" to denote that the reported value was considered to be estimated. If a QC result was found outside of the review criteria, the reviewer applied a data qualifier and bias code to the associated sample data if the analyte was detected. Sample data were not qualified if recoveries exceeded QC criteria and the analyte was not detected.

Preservation and Holding Times

Samples were evaluated for agreement with the chain-of-custody (COC). All samples were received in the appropriate containers and in good condition with the paperwork filled out properly. Sample receipt temperatures were within the acceptance criteria of 4 ± 2 °C. Samples were prepared and analyzed within holding times as specified in the analysis methods.

Calibrations

The initial and continuing calibration data met laboratory control limits for all constituents with the exception of the following:

For Metals analysis performed on 12/15/2016 Boron was detected above the reporting limit in CCV8-161215. The associated samples are QC samples only. No further corrective actions were taken.

For Metals analysis performed on 12/15/2016 CCV7-161215, LCVL7-161215, CCV8-161215, and LCVL8-161215 were above control limits for Boron. These are flagged accordingly. The associated samples were QC samples only. No further corrective actions were taken.

For Metals analysis performed on 12/16/2016 LCVL4-161216 and LCVL5-161216 were out of control limits for Boron. These are flagged accordingly. The associated CCVs were within control limits for this analyte. No further corrective actions were taken.

Blanks

No field blanks were used because the sampling event did not include volatile or semi-volatile compounds.

All laboratory method blank results were reported as non-detected or below applicable assessment levels.

No equipment blank was collected during this sampling event.

Surrogate Recoveries

The analytical procedures used did not require surrogates; therefore, surrogate recovery is not applicable.

Laboratory Control Samples

Laboratory control sample (LCS) recoveries were within QC acceptance limits for all LCS analyses.

Matrix Spike/Matrix Spike Duplicates

MS/MSD percent recoveries were within acceptable control limits for all samples with the exception of the following:

For Metals analysis performed on 12/15/2016 the matrix spike and matrix spike duplicate recoveries were out of control limits for Boron and/or Calcium. These are flagged accordingly in the QC summary report. The sample selected for the MS and MSD was from this work order. The percent recoveries for the LCS were within control limits for these analytes. No further corrective actions were taken.

Serial Dilution/Post Dilution Spikes

SD/PDS percent recoveries were within acceptable control limits for all samples with the exception of the following:

For Metals analysis performed on 12/20/2016 the RPD for the serial dilution was slightly above control limits for Boron. This is flagged accordingly. The PDS was within control limits for this analyte. No further corrective actions were taken.

Field Precision

Field duplicate precision met the quality objective of RPDs <50% for the pair collected at H-31 for all constituents except for Arsenic and Cobalt. The results for these constituents for both the parent and duplicate samples have been J-flagged accordingly in the Appendix III and Appendix IV Baseline Groundwater Analytical Data tables.

Analytical testing for Radium 226 and 228 has reported inherent variability. The lab reports a result and a margin of error. To determine the acceptability of the duplicate sample, the margin of error for combined Radium is added and subtracted from the result to give a range in which the true result lies. If the parent range and duplicate range overlap, the duplicate data is considered acceptable. The parent and duplicate range overlap, and the duplicate data is considered acceptable.

Field Procedures

Groundwater samples were collected using low-flow procedures with a peristaltic, stainless steel submersible pump, or bladder pump and placed in unpreserved 250-ml plastic bottles and 500-ml plastic bottles preserved with HNO_3. Wells were purged until groundwater parameters (temperature, pH, specific conductivity, dissolved oxygen, redox, and turbidity) stabilized to within +/- 10%.

Summary

Groundwater analytical data are usable for the purpose of determining current COC concentrations in the groundwater at the site with no qualifications added as a result of this evaluation.

Table B-1. Cross-Reference Field Sample Identifications and Laboratory Identifications

Field Identification	Laboratory Identification
H-29	1612132-01
H-31	1612132-02
DUP-01	1612132-03

Field Identification	Laboratory Identification
H-32	1612132-04
H-27	1612132-05
H-26	1612132-06
H-33	1612132-07
H-28	1612132-08

Prepared by: Lindsey Sydow___ Date: August 7, 2017

APPENDIX C

Statistical Approach to Establishing Baseline Concentrations

Appendix C. STATISTICAL APPROACH TO ESTABLISHING BASELINE CONCENTRATIONS

This appendix summarizes the statistical approach used for establishing baseline groundwater quality concentrations for the Ash Pond Area Coal Combustion Residual (CCR) groundwater monitoring system. The following statistical approach was selected to demonstrate groundwater compliance under the CCR Rule:

- Use of interwell data evaluations, which compare new sample data to data from upgradient or background monitoring wells.

- Use of upper prediction limits (UPLs) to develop site-specific background concentrations for all Appendix III and Appendix IV constituents. This approach is a common statistical method used to evaluate groundwater compliance for Subtitle D landfill facilities and is one of the approved options for groundwater quality data statistical evaluations under the CCR Rule.

- Appendix III constituent concentrations from each compliance well are compared to background UPLs to ascertain if a statistically significant increase above background exists. Background UPLs are based on a 1-of-2 resampling approach, meaning that if one or more constituent concentrations in a compliance well are above their respective baseline concentration, a resample can be collected to validate or invalidate the baseline concentration exceedance.

- If assessment monitoring is required, the 95% lower confidence limit of the mean (LCL) is calculated after each assessment monitoring event for each Appendix IV constituent and compliance well. The data set used to calculate LCLs is based on current and historical constituent concentrations for a compliance well. A statistically significant increase over the Groundwater Protection Standard (GWPS) has occurred at a CCR unit when the LCL for at least one assessment monitoring constituent at a well is greater than the appropriate GWPS. Development of the GWPSs is discussed in Section C.4.

This approach follows the Statistical Analysis Plan-Revision 1 (SAP) (Golder, 2022) and conforms to the 40 CFR 257 rules as well as EPA's *Unified Guidance: Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities* (EPA, 2009) (hereafter, referred to as the Unified Guidance) and the American Society for Testing and Materials (ASTM) standard D6312-17, *Developing Appropriate Statistical Approaches for Groundwater Detection Monitoring Programs at waste Disposal Facilities* (ASTM, 2017). The statistical methodology is designed to detect a release from the facility at the earliest indication so that it is protective of human health and the environment.

Section 257.94(b) of the CCR Rule requires that a minimum of eight independent groundwater samples from each background and downgradient well be collected and analyzed for the constituents listed in

Appendix III and IV to Part 257 no later than October 17, 2017. To satisfy this requirement, eight groundwater monitoring events were performed from October 2015 through December 2016 using the three upgradient/background wells (H-26, H-27, and H-33) and the four downgradient compliance wells (H-28, H-29, H-31, and H-32) in the Ash Pond Area CCR monitoring well system.

Prior to performing background data evaluations, data from the upgradient wells were prepared for analysis. Methods for handling field duplicate samples and handling non-detects were implemented during this data preparation phase, as presented in Section C.1. Statistical assumptions were evaluated to assess the independence of background data prior to calculating the UPLs, as discussed in Section C.2. In order to calculate UPLs, the distribution of each data set was defined and a site-wide Type I experiment wise error rate was established. UPLs based on a 1-of-2 resampling approach were calculated for detected constituents to establish baseline values for wells hydraulically upgradient of the CCR units, as further described in Section C.3. Details about the approach used to evaluate detection and assessment monitoring data after baseline concentrations were established are provided in Section C.4.

C.1 Data Preparation

Analytical data from wells in the groundwater monitoring network at a CCR unit during each sampling event are first reviewed for usability after final data packages are received from the laboratory. The analytical data are then prepared for statistical analysis. The raw sample data can be found in Tables C-1 and C-2 for the Appendix III and Appendix IV constituents, respectively.

Methods for handling duplicate and non-detect data are implemented during this data preparation phase to comply with the performance standards outlined in 40 CFR 257.93. Field duplicates and data rejected after data validation are removed from the data set. Only the primary samples are retained for the statistical evaluation.

In accordance with EPA guidance, non-detects were handled by using one of two approaches depending on the percentage of detected concentrations:

- If a constituent was detected in at least 85% of samples, a simple substitution method was used in which half of the sample detection limit was substituted as a proxy concentration (EPA, 2009; EPA, 2000).

- If a constituent was detected in at least 50% of the samples but no more than 85% of the samples, the Robust Regression Order Statistics (RROS) method was used to estimate summary statistics such as the mean and standard deviation (EPA, 2009).

If the constituent was detected in fewer than 50% of the samples, non-detects were handled by using nonparametric statistical approaches to evaluate the data and to prepare summary statistics (EPA, 2009; EPA, 2000). J-flagged data, estimated concentrations between the sample detection limit and the reporting limit, were defined as detected concentrations.

C.2 Statistical Assumptions

In accordance with Section 257.94(6), the background groundwater sample data used in calculating the UPLs were evaluated for seasonal and spatial variability as well as temporal correlation in the data to assess the independence and usability of the background data to calculate UPLs. Statistical independence was checked by testing for:

- Spatial stationarity,
- Temporal stationarity,
- Lack of autocorrelation, and
- Lack of statistical data outliers.

The statistical software **R** (The R Foundation, 2023) and the EnvStats package (Envstats, 2023) were used to perform the statistical tests to check the validity of independent samples.

To identify the statistical significance across the wells and/or detected Appendix III or Appendix IV constituents, a Type I experiment wise error rate, α, of 0.05 was used and a single test error rate was defined for each statistical test. The single test error rate, was based on the number of constituents detected (d^*), and in some cases the number of constituents detected at least 50% of the time, for a given constituent list. For instance, the single test error rate associated with a statistical test for one of the seven detected Appendix III constituents (d^*=7) equals $1-(1-\alpha)^{1/d^*} = 1-(1-\alpha)^{1/7} = 0.0073$.

The spatial stationarity, temporal stationarity, and autocorrelation components are considered addressed after evaluation of the background data as a whole, showing general consistency with the

data obtained. Spatial variability was identified for several Appendix III and IV constituents in the background wells; however, the background sample concentrations for these constituents were generally less than or within the natural range of concentrations in the downgradient wells and less than applicable MCLs. There is no obvious source of the spatial variability observed in the well samples other than natural chemical variability in the uppermost aquifer. Constituent and background well combinations did not exhibit temporal trends or autocorrelation for Appendix III or Appendix IV constituents. As such, the background sample concentrations represent the natural range of Appendix III and Appendix IV constituent concentrations in the uppermost aquifer and are considered usable data for calculating background concentrations.

Handling Outliers

Outliers are "extreme, unusual-looking measurements" and the Unified Guidance recommends testing for outliers to attempt to determine whether a suspect outlier was drawn from the same sample population as the rest of the data.

Before establishing baseline values for the detection monitoring or assessment monitoring programs, two steps were taken to check for suspect outliers for each detected constituent across the upgradient wells: a box plot was created to identify suspect outliers as a basis to identify suspect outliers, and if the constituent had at least 50% detected concentrations then the Dixon's test was performed as a formal test to check if a suspect outlier is also a statistical outlier. Box plots and results for the Dixon's test were generated using the statistical software **R** (The R Foundation, 2023). Box plots are provided in Figures C-1 through C-18 and Table C-3 presents the suspect outliers based on the box plots and presents the results from the Dixon's test, based on a 95% level of confidence.

The suspect outliers based on box plots identified for Appendix III are field pH (one low concentration of 4.35 s.u.). The suspect outliers identified for Appendix IV are barium (two high concentrations of 0.0774 and 0.0785 mg/L), beryllium (two high concentrations of 0.00136 and 0.00146 mg/L), chromium (three high concentrations of 0.0194, 0.0309, and 0.0368 mg/L), cobalt (one high concentration of 0.0644 mg/L), lead (one high concentration of 0.000495 J mg/L), molybdenum (one high concentration of 0.00248 mg/L), and selenium (one detected concentration 0.00265 mg/L). The Dixon's test is appropriate for data sets of fewer than 25 samples, and so Dixon's test was used to evaluate outliers in the baseline data sets. Since there were less than 50% detects for chromium, lead, molybdenum and selenium, the Dixon's test was not performed. The Dixon's test assumes that a data set with the suspect

outlier removed is normally distributed (or lognormally distributed if the data are transformed to the natural-log scale). Furthermore, the Dixon's test can only test if one detected concentration (i.e., the minimum or the maximum) is a statistical outlier. Since two high suspect outliers were identified for barium and beryllium, the Dixon's test was performed only for the highest barium and beryllium detection. The Dixon's test was used to test if the suspect outliers for field pH, barium, beryllium, and cobalt and were statistical outliers. For field pH, the results of the Dixon's test did not indicate that the low suspect outlier was a statistical outlier. For barium and cobalt, the results of the Dixon's test did not indicate that the high suspect outlier for each Appendix IV constituent was a statistical outlier. For beryllium, the results of the Dixon's tests did indicate that the highest suspect outlier was also considered a statistical outlier. Although the high beryllium concentration was identified as a statistical outlier, it is below the MCL and within the range of baseline concentrations for downgradient wells. Therefore, suspect and statistical outliers were all kept in the baseline data set.

C.3 Statistical Approach for Calculating UPLs

UPLs were calculated for each detected constituent across the upgradient wells to establish baseline values for background. UPLs were calculated to include a 1-of-2 retesting strategy to ensure comparisons are statistically powerful and to achieve the site-wide false positive rate (SWFPR). A 1-of-2 retesting strategy means that if one or more constituent concentrations in a compliance well are above their respective baseline concentration, a resample can be collected to validate or invalidate the baseline concentration exceedance.

Background data distributions were defined in accordance with EPA guidance (EPA, 2000; EPA, 2002; EPA, 2009; EPA, 2017; SWDIV, 1998). UPLs were calculated based on the SWFPR and defined background data distribution. Power rates were defined for each calculated UPL. The open source, statistical software **R** (The R Foundation, 2023) was used to perform all statistical distribution tests and to calculate UPLs.

<u>Achieving the SWFPR</u>

UPLs were computed using a significance level that ensures a cumulative SWFPR or Type I experiment wise error rate for yearly monitoring that is no more than 10%. That means, a single test error rate for the UPLs must be considerably lower than 0.10. The single test error rate depends on the number of detected constituents and number of compliance wells evaluated in the CCR monitoring program, defined as: $1-(1-\alpha)^{1/cw}$, where

- α=0.10,
- c=7 or 12, the number detected constituents for the monitoring program for Appendix III and Appendix IV constituents, respectively; and
- w=4, the number of downgradient compliance wells at Ash Pond Area.

The single test error rate for the UPLs is 0.0038 and 0.0022 for the detected Appendix III constituents and Appendix IV constituents, respectively. The Unified Guidance recommends defining the single test error rate for nonparametric UPLs as: $1-(1-\alpha)^{1/c}$, and so the single test error rate for nonparametric UPLs is 0.015 and 0.0087 for the detected Appendix III constituents and Appendix IV constituents, respectively. Since field pH has two bounds, a lower and upper prediction limit, the SWPFR for field pH is one-half of the appropriate SWFPR value shown above.

Defining a Distribution and Type of UPL

The type of UPL calculated is based on a data set's defined distribution. Figure C-19 outlines the steps that were taken to define whether a data set follows a normal, gamma, lognormal, or nonparametric distribution. Distributional test results and defined distributions are presented in Table C-4.

The type of UPL computed (e.g., parametric or nonparametric) was based on the detection frequency and the defined data distribution. For a constituent with no detections in the baseline data, the UPL was set to the reporting limit (EPA, 2009). For a constituent with at least 50% detections, the UPL was adjusted for non-detected concentration(s), as described previously in the Data Preparation section, Section C.1, and the appropriate UPL calculation was based on results from the distributional tests. If no parametric distribution (normal, gamma, or lognormal) was appropriate, then a nonparametric UPL was estimated. The confidence level used for each UPL was based on the appropriate single test error rate.

Defining Power Rate associated with each UPL

The power of each UPL was evaluated and a power rate was defined as good, acceptable, or low. A power rate was defined as 'good' when the power at both 3 standard deviations and 4 standard deviations were above 85%; a power rate was defined as 'acceptable' when power at either 3 standard deviations or 4 standard deviations was between 59% and 85%; and a power rate was defined as 'low' occurs when power at both 3 standard deviations and 4 standard deviations were below 85%.

C.4 Detection and Assessment Monitoring Data Evaluations

Detection and assessment monitoring constituent concentrations are compared to the appropriate baseline value for background or GWPS to determine whether a significant difference exists between the initial and current site conditions. The appropriate baseline value for detection monitoring is the Appendix III constituent's UPL and the appropriate baseline value for assessment monitoring is the Appendix IV constituent's GWPS (Table C-5). The GWPS for each Appendix IV constituent is established as follows:

- For constituents with an established MCL, the GWPS is the highest of the MCL, UPL, or reporting limit for that constituent; or
- For constituents with no established MCL, the GWPS is the highest of the UPL, laboratory reporting limit, and alternative GWPS (as applicable for cobalt, lead, lithium, and molybdenum).

For detection monitoring, a well is defined as in-compliance when all the Appendix III constituent concentrations are less than the appropriate baseline value. If any concentration exceeds the appropriate baseline value, then a resample may be collected, analyzed, and compared to the appropriate baseline value—if this resample exceeds the appropriate baseline value, then a statistically significant increase over baseline is indicated.

For assessment monitoring, a 95% confidence interval of the mean is estimated for each detected Appendix IV constituent in a downgradient well using the current and previous sampling event concentrations. The confidence interval contains both a LCL and an upper confidence limit (UCL). The Unified guidance states that "for testing under compliance/assessment monitoring, a [LCL] around the true parameter is utilized. If the LCL exceeds the standard [GWPS], there is statistically significant evidence in favor that the compliance standard has been violated." A constituent is in-compliance when the LCL for the constituent is less than the appropriate GWPS. (EPA, 2009).

The 95% confidence interval (i.e., the LCL and UCL) is based on the constituent concentrations from the current year's sampling events and historical sampling events at a given well. Confidence intervals are calculated based on the defined data distribution. The data distribution is defined in accordance with EPA guidance (EPA, 2000; EPA, 2002; EPA, 2009; EPA, 2017; SWDIV, 1998). The type of confidence interval computed (e.g., parametric or nonparametric) is based on the detection frequency and the defined data distribution for each data set, as described in Section C.3. For a constituent with no detected concentration measurements, the LCL (and UCL) is set to the reporting limit (EPA, 2009). For a

constituent with at least 50% detections, the LCL (and UCL) calculation adjusts for non-detected concentration(s) as described in Section C.1, and the appropriate LCL (and UCL) calculation is used based on results from the distributional tests. If no parametric distribution (normal, lognormal, or gamma) can be defined for a data set or there are fewer than 50% detections, then a nonparametric, approximate 95% confidence interval of the median is estimated for the LCL and UCL.

C.5 REFERENCES

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Table C-1. CCR Groundwater Baseline Detection Monitoring Data Summary - Ash Pond Area

Sample Location	Date Sampled	B	Ca	Cl	F	field pH	SO_4	TDS
Upgradient Wells								
H-26	10/21/2015	0.602	24.2	69.2	<0.1	5.82	154	466
	12/14/2015	0.0679	9.88	40.3	<0.1	5.91	76	280
	2/23/2016	0.206	11.7	17.1	0.151 J	6.84	54	219
	4/5/2016	0.289	11.8	27.8	0.199 J	5.89	57	213
	6/7/2016	0.441	11.7	48.6	<0.1	5.98	72	278
	8/9/2016	0.569	14	70	<0.1	4.63	91	354
	10/18/2016	0.439	13.6	49.1	0.127 J	6.63	70	263
	12/11/2016	0.537	11.9	57.6	0.161 J	6.73	69	236
H-27	10/21/2015	0.58	55.3	117	<0.1	6.24	328	800
	12/14/2015	0.474	57.2	112	0.156 J	6.32	317	857
	2/23/2016	0.523	53.8	113	0.101 J	5.82	344	811
	4/5/2016	0.48	52.7	115	0.124 J	6.04	360	819
	6/7/2016	0.319	10.6	40.5	<0.1	6.32	55	207
	8/9/2016	0.462	54.3	124	<0.1	4.35	365	854
	10/18/2016	0.477	56.5	114	0.144 J	6.87	336	868
	12/11/2016	0.427	52.8	119	0.161 J	6.78	355	805
H-33	10/20/2015	0.0462	17.9	60.5	<0.1	5.78	120	415
	12/14/2015	0.0596	10.7	59.6	0.136 J	5.73	110	403
	2/23/2016	0.0656	11.2	56.1	0.125 J	6.92	111	625
	4/5/2016	0.0659	14.9	58.3	0.14 J	6.31	113	589
	6/7/2016	0.0571	20.1	67.5	<0.1	6.04	121	515
	8/9/2016	0.0431	11.2	64.9	<0.1	5.13	120	442
	10/18/2016	0.0539	11.1	59.2	<0.1	6.86	114	398
	12/11/2016	0.0594	12.1	63.2	0.132 J	6.85	112	395
Downgradient Wells								
H-28	10/21/2015	9.25	113	109	<0.1	5.92	1,010	1,830
	12/14/2015	1.02	17.3	15.5	<0.1	6.02	113	299
	2/23/2016	10.2	123	97.4	<0.1	4.45	1,070	1,910
	4/5/2016	10.3	120	94.4	<0.1	5.97	1,080	1,890
	6/7/2016	3.66	45.4	62.2	<0.1	6.16	465	817
	8/9/2016	9.29	116	98.4	<0.1	3.83	1,080	2,100
	10/18/2016	4.96	67.3	91.4	0.165 J	6.82	643	1,460
	12/11/2016	3.94	45.7	56.7	0.114 J	6.64	445	766
H-29	10/21/2015	0.0788	16	65.2	<0.1	5.78	171	441
	12/14/2015	0.29	165	8.68	0.56	5.92	178	990
	2/23/2016	0.268	59.4	14.6	0.239 J	11.20	156	334
	4/5/2016	0.361	80.8	14.2	0.363 J	6.04	181	489
	6/7/2016	0.311	29.8	19.3	0.27 J	6.13	166	308
	8/9/2016	0.172	64.6	53.1	<0.1	5.97	124	575
	10/18/2016	0.953	150	4.33	1.15	6.63	346	607
	12/11/2016	1.02	130	4.65	1.4	6.59	365	651
H-31	10/20/2015	17.2	194	179	0.889	6.57	1,930	3,270
	12/14/2015	20.4	236	147	0.692	6.60	1,740	2,250
	2/23/2016	22.3	252	199	0.921	5.33	2,510	4,180
	4/5/2016	21.1	250	186	1.36	6.46	2,450	3,920
	6/7/2016	22.2	244	241	0.783	6.42	2,720	4,570
	8/9/2016	24.1	251	217	0.216 J	4.38	2,730	4,440
	10/18/2016	20	236	187	0.298 J	6.82	1,960	3,690
	12/11/2016	22.3	246	201	0.892	6.82	2,640	4,170
H-32	10/20/2015	1.22	42.2	120	0.374 J	6.18	309	797
	12/14/2015	1.39	37.4	122	0.619	6.29	325	860
	2/23/2016	1.48	45.3	123	0.701	4.82	323	842
	4/5/2016	1.65	44.3	125	1.05	6.17	337	831
	6/7/2016	1.82	45.6	137	0.858	6.05	350	829
	8/9/2016	1.69	45.4	132	0.68	3.64	342	839
	10/18/2016	1.72	50.5	121	0.904	6.75	319	888
	12/11/2016	2.5 J	44.3	120	1.00	6.83	341	759

Notes:
1. All concentrations in mg/L. pH in standard units.

Table C-2. CCR Groundwater Baseline Assessment
Monitoring Data Summary - Ash Pond Area

Sample Location	Date Sampled	Sb	As	Ba	Be	Cd	Cr	Co	F	Pb	Li	Hg	Mo	Se	Th	Ra 226/228 Combined
Upgradient Wells																
H-26	10/21/2015	<0.0008	0.00364 J	0.0785	0.000349 J	<0.0003	<0.002	0.0385	<0.1	<0.0003	0.0139	<0.00008	<0.002	<0.002	<0.0005	2.56
	12/14/2015	<0.0008	<0.002	0.0401	0.000458 J	<0.0003	<0.002	0.0244	<0.1	<0.0003	0.0769	<0.00008	<0.002	<0.002	<0.0005	2.57
	2/23/2016	<0.0008	<0.002	0.0423	<0.0003	<0.0003	0.0077	0.00813	0.151 J	0.000315 J	0.0124	<0.00008	0.00248 J	0.0022 J	<0.0005	2.43
	4/5/2016	<0.0008	<0.002	0.0408	<0.0003	<0.0003	0.00798	0.0125	0.199 J	<0.0003	0.0121	<0.00008	<0.002	<0.002	<0.0005	<1.303
	6/7/2016	<0.0008	<0.002	0.0467	0.000721 J	<0.0003	<0.002	0.0217	<0.1	<0.0003	0.0132	<0.00008	<0.002	<0.002	<0.0005	1.92
	8/9/2016	<0.0008	0.0029 J	0.0431	0.00136	<0.0003	<0.002	0.0352	<0.1	<0.0003	0.0155	<0.00008	<0.002	<0.002	<0.0005	<1.132
	10/18/2016	<0.0008	<0.002	0.0497	0.000709 J	<0.0003	<0.002	0.0214	0.127 J	<0.0003	0.0136	<0.00008	<0.002	0.00265 J	<0.0005	0.87
	12/11/2016	<0.0008	<0.002	0.0468	0.00146	<0.0003	0.00311 J	0.0275	0.161 J	0.000358 J	0.014	<0.00008	<0.002	<0.002	<0.0005	2.07
H-27	10/21/2015	<0.0008	<0.002	0.0378	<0.0003	<0.0003	<0.002	0.00432 J	<0.1	<0.0003	0.0607	<0.00008	<0.002	<0.002	<0.0005	<2.223
	12/14/2015	<0.0008	0.0021 J	0.039	<0.0003	<0.0003	<0.002	0.00326 J	0.156 J	0.000339 J	0.0624	<0.00008	<0.002	<0.002	<0.0005	2.15
	2/23/2016	<0.0008	<0.002	0.0266	<0.0003	<0.0003	<0.002	<0.003	0.101 J	<0.0003	0.0601	<0.00008	<0.002	<0.002	<0.0005	2.54
	4/5/2016	<0.0008	<0.002	0.0245	<0.0003	<0.0003	<0.002	<0.003	0.124 J	<0.0003	0.0573	<0.00008	<0.002	<0.002	<0.0005	2.32
	6/7/2016	<0.0008	<0.002	0.0342	0.000609 J	<0.0003	<0.002	0.016	<0.1	<0.0003	0.0107	<0.00008	<0.002	<0.002	<0.0005	0.927
	8/9/2016	<0.0008	<0.002	0.0241	<0.0003	<0.0003	<0.002	<0.003	<0.1	<0.0003	0.0616	<0.00008	<0.002	<0.002	<0.0005	1.04
	10/18/2016	<0.0008	<0.002	0.0248	<0.0003	<0.0003	<0.002	<0.003	0.144J	<0.0003	0.0576	<0.00008	<0.002	<0.002	<0.0005	1.25
	12/11/2016	<0.0008	<0.002	0.0236	<0.0003	<0.0003	<0.002	<0.003	0.161 J	<0.0003	0.0606	<0.00008	<0.002	<0.002	<0.0005	1.68
H-33	10/20/2015	<0.0008	0.00208 J	0.0586	0.000351 J	<0.0003	<0.002	0.0274	<0.1	<0.0003	0.0814	<0.00008	<0.002	<0.002	<0.0005	3.40
	12/14/2015	<0.0008	0.00205 J	0.0473	0.000382 J	<0.0003	<0.002	0.0293	0.136 J	<0.0003	0.0903	<0.00008	<0.002	<0.002	<0.0005	3.73
	2/23/2016	<0.0008	<0.002	0.0529	0.000311 J	<0.0003	0.0194	0.0163	0.125 J	<0.0003	0.182	<0.00008	<0.002	<0.002	<0.0005	3.23
	4/5/2016	<0.0008	<0.002	0.0576	0.000302 J	<0.0003	0.0171	0.016	0.14 J	<0.0003	0.16	<0.00008	<0.002	<0.002	<0.0005	1.41
	6/7/2016	<0.0008	<0.002	0.0774	0.000604 J	<0.0003	0.0153	0.0196	<0.1	<0.0003	0.163	<0.00008	<0.002	<0.002	<0.0005	1.17
	8/9/2016	<0.0008	<0.002	0.0424	0.000519 J	<0.0003	0.00291 J	0.0284	<0.1	<0.0003	0.102	<0.00008	<0.002	<0.002	<0.0005	0.80
	10/18/2016	<0.0008	0.00347 J	0.0464	0.000617 J	<0.0003	0.0309	0.0644	<0.1	0.000329 J	0.118	<0.00008	<0.002	<0.002	<0.0005	0.61
	12/11/2016	<0.0008	0.00218 J	0.0537	0.000865 J	<0.0003	0.0368	0.0408	0.132 J	0.000495 J	0.115	<0.00008	<0.002	<0.002	<0.0005	1.45
Downgradient Wells																
H-28	10/21/2015	<0.0008	0.00278 J	0.0396	0.00148	0.00121	<0.002	0.188	<0.1	0.000491 J	0.154	<0.00008	<0.002	0.00682	<0.0005	<2.208
	12/14/2015	<0.0008	<0.002	0.0224	<0.0003	0.000572 J	<0.002	0.0225	<0.1	<0.0003	0.021	<0.00008	<0.002	<0.002	<0.0005	1.89
	2/23/2016	<0.0008	0.00225 J	0.0202	0.00133	0.00151	<0.002	0.201	<0.1	0.00053 J	0.159	<0.00008	<0.002	0.00222 J	<0.0005	2.64
	4/5/2016	<0.0008	<0.002	0.0173	0.0011	0.00252	<0.002	0.199	<0.1	0.00087 J	0.15	<0.00008	<0.002	0.00237 J	<0.0005	1.99
	6/7/2016	<0.0008	<0.002	0.0468	0.000934 J	0.000664 J	<0.002	0.0944	<0.1	<0.0003	0.0959	<0.00008	<0.002	<0.002	<0.0005	1.79
	8/9/2016	<0.0008	<0.002	0.0155	0.00275	0.0016	<0.002	0.195	<0.1	0.000774 J	0.155	<0.00008	<0.002	0.00286 J	<0.0005	1.86
	10/18/2016	<0.0008	0.00284J	0.0174	0.00685	0.000744 J	<0.002	0.169	0.165J	0.00108	0.155	<0.00008	<0.002	0.00273 J	<0.0005	0.87
	12/11/2016	<0.0008	<0.002	0.0471	0.000698 J	0.000668 J	<0.002	0.0924	0.114 J	<0.0003	0.0869	<0.00008	<0.002	<0.002	<0.0005	1.28
H-29	10/21/2015	<0.0008	<0.002	0.159	0.000359 J	<0.0003	<0.002	0.0301	<0.1	<0.0003	0.0156	<0.00008	<0.002	<0.002	<0.0005	2.28
	12/14/2015	<0.0008	<0.002	0.277	<0.0003	<0.0003	0.062	<0.003	0.56	0.000542 J	0.0202	<0.00008	0.00819	0.0282	<0.0005	<1.78
	2/23/2016	<0.0008	0.00203 J	0.151	<0.0003	<0.0003	0.019	<0.003	0.239 J	<0.0003	0.0135	<0.00008	0.00603	0.0148	<0.0005	<2.594
	4/5/2016	<0.0008	<0.002	0.167	<0.0003	<0.0003	0.042	<0.003	0.363 J	<0.0003	0.0175	<0.00008	0.00697	0.0232	<0.0005	<1.125
	6/7/2016	<0.0008	<0.002	0.136	<0.0003	<0.0003	0.0274	<0.003	0.27 J	<0.0003	0.0188	<0.00008	0.00551	0.0152	<0.0005	1.01
	8/9/2016	<0.0008	0.00995	0.315	<0.0003	<0.0003	0.00297 J	0.00473 J	<0.1	<0.0003	0.0143	<0.00008	<0.002	<0.002	<0.0005	0.84
	10/18/2016	<0.0008	<0.002	0.118	<0.0003	<0.0003	0.00412 J	<0.003	1.15	0.000427J	0.0056 J	<0.00008	0.00305 J	0.0681	<0.0005	0.59
	12/11/2016	<0.0008	<0.002	0.0779	<0.0003	<0.0003	<0.002	<0.003	1.4	<0.0003	<0.005	<0.00008	0.00307 J	0.0642	<0.0005	<0.712
H-31	10/20/2015	<0.0008	0.0168	0.0732	0.0126	0.0032	0.00687	0.434	0.889	<0.0003	0.137	<0.00008	<0.002	0.116	<0.0005	2.82
	12/14/2015	<0.0008	0.00513	0.0388	0.00702	<0.0003	0.00456 J	0.0651	0.692	<0.0003	0.149	<0.00008	<0.002	0.0231	<0.0005	2.90
	2/23/2016	<0.0008	0.00436 J	0.0243	0.0101	<0.0003	<0.002	0.0594	0.921	<0.0003	0.146	<0.00008	<0.002	0.0209	<0.0005	<2.059
	4/5/2016	<0.0008	0.00514	0.0241	0.00925	<0.0003	0.00435 J	0.0685	1.36	<0.0003	0.146	<0.00008	<0.002	0.0226	<0.0005	<1.231
	6/7/2016	<0.0008	0.0038 J	0.0242	0.00789	<0.0003	<0.002	0.0406	0.783	<0.0003	0.157	<0.00008	<0.002	0.0307	<0.0005	0.81
	8/9/2016	<0.0008	0.00886	0.0191	0.00734	<0.0003	<0.002	0.286	0.216 J	<0.0003	0.17	<0.00008	<0.002	0.0202	<0.0005	2.21
	10/18/2016	<0.0008	0.00351 J	0.0215	0.00167 J	<0.0003	<0.002	0.0304 J	0.298 J	<0.0003	0.165	<0.00008	<0.002	0.00567 J	<0.0005	1.35
	12/11/2016	<0.0008	0.00875 J	0.0189	0.0197	<0.0003	0.00386 J	0.23 J	0.892	<0.0003	0.198	<0.00008	<0.002	0.0365	<0.0005	0.95
H-32	10/20/2015	<0.0008	0.0028 J	0.16	0.00266	<0.0003	<0.002	0.163	0.374 J	<0.0003	0.0788	<0.00008	<0.002	0.00303 J	<0.0005	2.95
	12/14/2015	<0.0008	0.0123	0.0384	0.00313	<0.0003	<0.002	0.155	0.619	<0.0003	0.0733	<0.00008	<0.002	<0.002	<0.0005	2.92
	2/23/2016	<0.0008	0.00712	0.0277	0.00452	<0.0003	<0.002	0.188	0.701	0.000326 J	0.0821	<0.00008	<0.002	<0.002	<0.0005	2.72
	4/5/2016	<0.0008	0.00648	0.0237	0.00527	0.00128	<0.002	0.208	1.05	0.00182	0.0818	<0.00008	<0.002	<0.002	<0.0005	<1.514
	6/7/2016	<0.0008	0.00446 J	0.0238	0.00583	0.000997 J	<0.002	0.207	0.858	0.00168	0.087	<0.00008	<0.002	0.00298 J	<0.0005	0.778
	8/9/2016	<0.0008	0.00344 J	0.0234	0.00548	0.000713 J	<0.002	0.19	0.68	0.00115	0.0774	<0.00008	<0.002	0.00281 J	<0.0005	3.01
	10/18/2016	<0.0008	0.00289 J	0.02	0.00567	0.00254	<0.002	0.204	0.904	0.00332	0.0834	<0.00008	<0.002	0.00267 J	<0.0005	0.82
	12/11/2016	<0.0008	0.00246 J	0.0205	0.00609	0.00108	<0.002	0.208	1	0.00137	0.0838	<0.00008	<0.002	0.00237 J	<0.0005	<0.916

Notes:
1. All concentrations in mg/L. Ra combined in pCi/L.

Table C-3. Summary of Observed Suspect Outliers, Dixon's Test and Rosner's Test-Normality Ash Pond Area - Combined Upgradient Wells (H-26, H-27, and H-33)

Constituent List	Constituent	Suspect Outlier for Low or High Concentration?	Suspect Outlier Concentration (Date Sampled)	p-values for Distributional Tests without Outlier, Detect Data - Normality			Is Distribution without Outlier(s) Normal?	p-values for Distributional Tests without Outlier, Detect Data - Lognormality			Is Distribution without Outlier(s) Lognormal?	Conclusion of Dixon Test
				Kolmogorov-Smirnov Test	Shapiro-Wilks Test	Probability Plot Correlation		Kolmogorov-Smirnov Test	Shapiro-Wilks Test	Probability Plot Correlation		
Appendix III	field pH	Low	4.35 s.u. (2016-08-09 at H-27)	0.13	0.014	0.039	Yes	0.15	0.016	0.044	Yes	Not a statistical low outlier (p-value=0.97) Based on Normality
Appendix IV	Barium	High	0.0774 mg/L (2016-06-07 at H-33) 0.0785 mg/L (2015-10-21 at H-26)	0.62	0.17	0.14	Yes	0.091	0.085	0.10	Yes	Not a statistical high outlier (p-value=0.098) Based on Normality
	Beryllium	High	0.00136 mg/L (2016-08-09 at H-26) 0.00146 mg/L (2016-12-11 at H-26)	0.13	0.005	0.0042	Yes	0.71	0.27	0.22	Yes	Statistical high outlier (p-value=0.024) Based on Normality
	Chromium	High	0.0194 mg/L (2016-02-23 at H-33) 0.0309 mg/L (2016-10-18 at H-33) 0.0368 mg/L (2016-12-11 at H-33)	--	--	--	--	--	--	--	--	Not Performed, <50% Detects
	Cobalt	High	0.0644 mg/L (2016-10-18 at H-33)	0.89	0.81	0.93	Yes	0.067	0.024	0.028	Yes	Not a statistical high outlier (p-value=0.051) Based on Normality
	Lead	High	0.000495 J mg/L (2016-12-11 at H-33)	--	--	--	--	--	--	--	--	Not Performed, <50% Detects
	Molybdenum	High	0.00248 J mg/L (2016-02-23 at H-26)	--	--	--	--	--	--	--	--	Not Performed, <50% Detects
	Selenium	High	0.00265 J mg/L (2016-10-18 at H-26)	--	--	--	--	--	--	--	--	Not Performed, <50% Detects

NOTE: APPENDIX F-Revision 2 February 27, 2024

Dixon's Test can be performed for only one value.

Statistical Significance for Distributional tests for Dixon's test are based on 95% level of confidence, or α=0.05.

Table C-4. Summary of Distributional Tests
Ash Pond Area - Combined Upgradient Wells (H-26, H-27, and H-33)

Constituent List	Constituent	# Detects/ # Samples	% Detects	Defined Distribution	Tests for Normality			Can the Data be defined as Normal?
					Kolmogorov-Smirnov Test	Shapiro-Wilks Test	Probability Plot Correlation	
Appendix III	Boron	24/24	100	Nonparametric	8.8E-04	0.0010	0.0038	No
	Calcium	24/24	100	Nonparametric	1.4E-05	8.2E-06	4.7E-05	No
	Chloride	24/24	100	Gamma	0.0018	0.010	0.019	No
	Fluoride	13/24	54	Normal	0.61	0.60	0.29	Yes
	field pH	24/24	100	Normal	0.10	0.013	0.018	Yes
	Sulfate	24/24	100	Nonparametric	7.2E-07	6.9E-05	3.0E-04	No
	Total Dissolved Solids	24/24	100	Gamma	0.038	0.0067	0.021	No
Appendix IV	Antimony	0/24	0	All NDs	--	--	--	--
	Arsenic	7/24	29	Nonparametric, <50% Detects	--	--	--	--
	Barium	24/24	100	Normal	0.46	0.075	0.087	Yes
	Beryllium	15/24	63	Normal	0.071	0.0074	0.010	Yes
	Cadmium	0/24	0	All NDs	--	--	--	--
	Chromium	9/24	38	Nonparametric, <50% Detects	--	--	--	--
	Cobalt	19/24	79	Normal	0.37	0.18	0.10	Yes
	Fluoride	13/24	54	Normal	0.61	0.60	0.29	Yes
	Lead	5/24	21	Nonparametric, <50% Detects	--	--	--	--
	Lithium	24/24	100	Normal	0.056	0.010	0.020	Yes
	Mercury	0/24	0	All NDs	--	--	--	--
	Molybdenum	1/24	4	Nonparametric, <50% Detects	--	--	--	--
	Selenium	2/24	8	Nonparametric, <50% Detects	--	--	--	--
	Thallium	0/24	0	All NDs	--	--	--	--
	Radium-226 + Radium 228	21/24	88	Normal	0.55	0.37	0.49	Yes

Note:
Statistical Significance for Distributional tests are based on 95% level of confidence, or α=0.05.
'-- No Distributional Test performed since <50% Detects

Table C-4. Summary of Distributional Tests
Ash Pond Area - Combined Upgradient Wells (H-26, H-27, and H-33)

Constituent List	Constituent	# Detects/ # Samples	% Detects	Defined Distribution	Tests for Gamma		Can the Data be defined as Gamma?	
					Shapiro-Wilks Test	Probability Plot Correlation		
Appendix III	Boron	24/24	100	Nonparametric	2.9E-04	0.0012	No	
	Calcium	24/24	100	Nonparametric	3.3E-05	1.7E-04	No	
	Chloride	24/24	100	Gamma	0.049	0.057	Yes	
	Fluoride	13/24	54	Normal	0.85	0.48	Yes	
	field pH	24/24	100	Normal	0.0050	0.0069	No	
	Sulfate	24/24	100	Nonparametric	0.0010	0.0034	No	
	Total Dissolved Solids	24/24	100	Gamma	0.025	0.072	Yes	
Appendix IV	Antimony	0/24	0	All NDs	--	--	--	
	Arsenic	7/24	29	Nonparametric, <50% Detects	--	--	--	
	Barium	24/24	100	Normal	0.19	0.23	Yes	
	Beryllium	15/24	63	Normal	0.11	0.14	Yes	
	Cadmium	0/24	0	All NDs	--	--	--	
	Chromium	9/24	38	Nonparametric, <50% Detects	--	--	--	
	Cobalt	19/24	79	Normal	0.69	0.49	Yes	
	Fluoride	13/24	54	Normal	0.85	0.48	Yes	
	Lead	5/24	21	Nonparametric, <50% Detects	--	--	--	
	Lithium	24/24	100	Normal	0.015	0.035	No	
	Mercury	0/24	0	All NDs	--	--	--	
	Molybdenum	1/24	4	Nonparametric, <50% Detects	--	--	--	
	Selenium	2/24	8	Nonparametric, <50% Detects	--	--	--	
	Thallium	0/24	0	All NDs	--	--	--	
	Radium-226 + Radium 228	21/24	88	Normal	0.66	0.82	Yes	

Note:
Statistical Significance for Distributional tests are based on 95% level of confidence, or α=0.05.
'-- No Distributional Test performed since <50% Detects

Table C-4. Summary of Distributional Tests
Ash Pond Area - Combined Upgradient Wells (H-26, H-27, and H-33)

Constituent List	Constituent	# Detects/ # Samples	% Detects	Defined Distribution	Tests for Lognormality			Can the Data be defined as Lognormal?
					Kolmogorov-Smirnov Test	Shapiro-Wilks Test	Probability Plot Correlation	
Appendix III	Boron	24/24	100	Nonparametric	1.9E-04	1.5E-04	6.7E-04	No
	Calcium	24/24	100	Nonparametric	8.6E-04	7.3E-05	3.4E-04	No
	Chloride	24/24	100	Gamma	0.12	0.028	0.028	Yes
	Fluoride	13/24	54	Normal	0.68	0.89	0.53	Yes
	field pH	24/24	100	Normal	0.026	0.0030	0.0042	No
	Sulfate	24/24	100	Nonparametric	0.0027	0.0040	0.012	No
	Total Dissolved Solids	24/24	100	Gamma	0.084	0.033	0.089	Yes
Appendix IV	Antimony	0/24	0	All NDs	--	--	--	--
	Arsenic	7/24	29	Nonparametric, <50% Detects	--	--	--	--
	Barium	24/24	100	Normal	0.33	0.14	0.19	Yes
	Beryllium	15/24	63	Normal	0.78	0.28	0.36	Yes
	Cadmium	0/24	0	All NDs	--	--	--	--
	Chromium	9/24	38	Nonparametric, <50% Detects	--	--	--	--
	Cobalt	19/24	79	Normal	0.079	0.095	0.069	Yes
	Fluoride	13/24	54	Normal	0.68	0.89	0.53	Yes
	Lead	5/24	21	Nonparametric, <50% Detects	--	--	--	--
	Lithium	24/24	100	Normal	3.2E-04	0.0034	0.0094	No
	Mercury	0/24	0	All NDs	--	--	--	--
	Molybdenum	1/24	4	Nonparametric, <50% Detects	--	--	--	--
	Selenium	2/24	8	Nonparametric, <50% Detects	--	--	--	--
	Thallium	0/24	0	All NDs	--	--	--	--
	Radium-226 + Radium 228	21/24	88	Normal	0.52	0.51	0.64	Yes

Note:
Statistical Significance for Distributional tests are based on 95% level of confidence, or α=0.05.
'-- No Distributional Test performed since <50% Detects

Table C-5. Summary Statistics with Baseline Values (UPLs and GWPS)
Ash Pond Area - Combined Upgradient Wells (H-26, H-27, and H-33)

Constituent List	Constituent	# Detects/ # Samples	% Detects	Minimum Detected Result	Maximum Detected Result	Baseline Value (UPL/ GWPS)	MCL or Alternative GWPS	Reporting Limit	UPL 1-of-2	Defined Distribution	single test error rate for annual SWFPR of 10%	Power Rate for UPL 1-of-2
Appendix III	Boron	24/24	100	0.0431	0.602	0.60	--	0.03	0.60	Nonparametric	0.015	GOOD
	Calcium	24/24	100	9.88	57.2	57	--	0.3	57	Nonparametric	0.015	GOOD
	Chloride	24/24	100	17.1	124	150	--	1	150	Gamma	0.0038	GOOD
	Fluoride	13/24	54	0.101	0.199	0.4	4	0.4	0.19	Normal	0.0038	GOOD
	field pH	24/24	100	4.35	6.92	4.6 - 7.6	--	--	4.6 - 7.6	Normal	0.0019	GOOD - LOW
	Sulfate	24/24	100	54	365	370	--	1	370	Nonparametric	0.015	GOOD
	Total Dissolved Solids	24/24	100	207	868	1100	--	10	1100	Gamma	0.0038	GOOD
Appendix IV	Antimony	0/24	0	ND	ND	0.006	0.006	0.0025	0.0025	All NDs	--	--
	Arsenic	7/24	29	0.00205	0.00364	0.01	0.01	0.005	0.0036	Nonparametric, <50% Detects	0.0087	GOOD
	Barium	24/24	100	0.0236	0.0785	2	2	0.01	0.075	Normal	0.0022	GOOD
	Beryllium	15/24	63	0.000302	0.00146	0.004	0.004	0.001	0.0014	Normal	0.0022	GOOD
	Cadmium	0/24	0	ND	ND	0.005	0.005	0.001	0.001	All NDs	--	--
	Chromium	9/24	38	0.00291	0.0368	0.1	0.1	0.005	0.037	Nonparametric, <50% Detects	0.0087	GOOD
	Cobalt	19/24	79	0.00326	0.0644	0.056	0.006	0.005	0.056	Normal	0.0022	GOOD
	Fluoride	13/24	54	0.101	0.199	4	4	0.4	0.2??	Normal	0.0022	GOOD
	Lead	5/24	21	0.000315	0.000495	0.015	0.015	0.001	5.0E-04	Nonparametric, <50% Detects	0.0087	GOOD
	Lithium	24/24	100	0.0107	0.182	0.18	0.04	0.01	0.18	Normal	0.0022	GOOD
	Mercury	0/24	0	ND	ND	0.002	0.002	0.0002	0.0002	All NDs	--	--
	Molybdenum	1/24	4	0.00248	0.00248	0.1	0.1	0.005	0.0025	Nonparametric, <50% Detects	0.0087	GOOD
	Selenium	2/24	8	0.0022	0.00265	0.05	0.05	0.005	0.0027	Nonparametric, <50% Detects	0.0087	GOOD
	Thallium	0/24	0	ND	ND	0.002	0.002	0.0015	0.0015	All NDs	--	--
	Radium-226 + Radium 228	21/24	88	0.61	3.73	5	5	--	3.7	Normal	0.0022	GOOD

Notes:
1. All concentrations in mg/L. pH in standard units. Ra combined in pCi/L.

Figure C−1. Appendix III − Boron

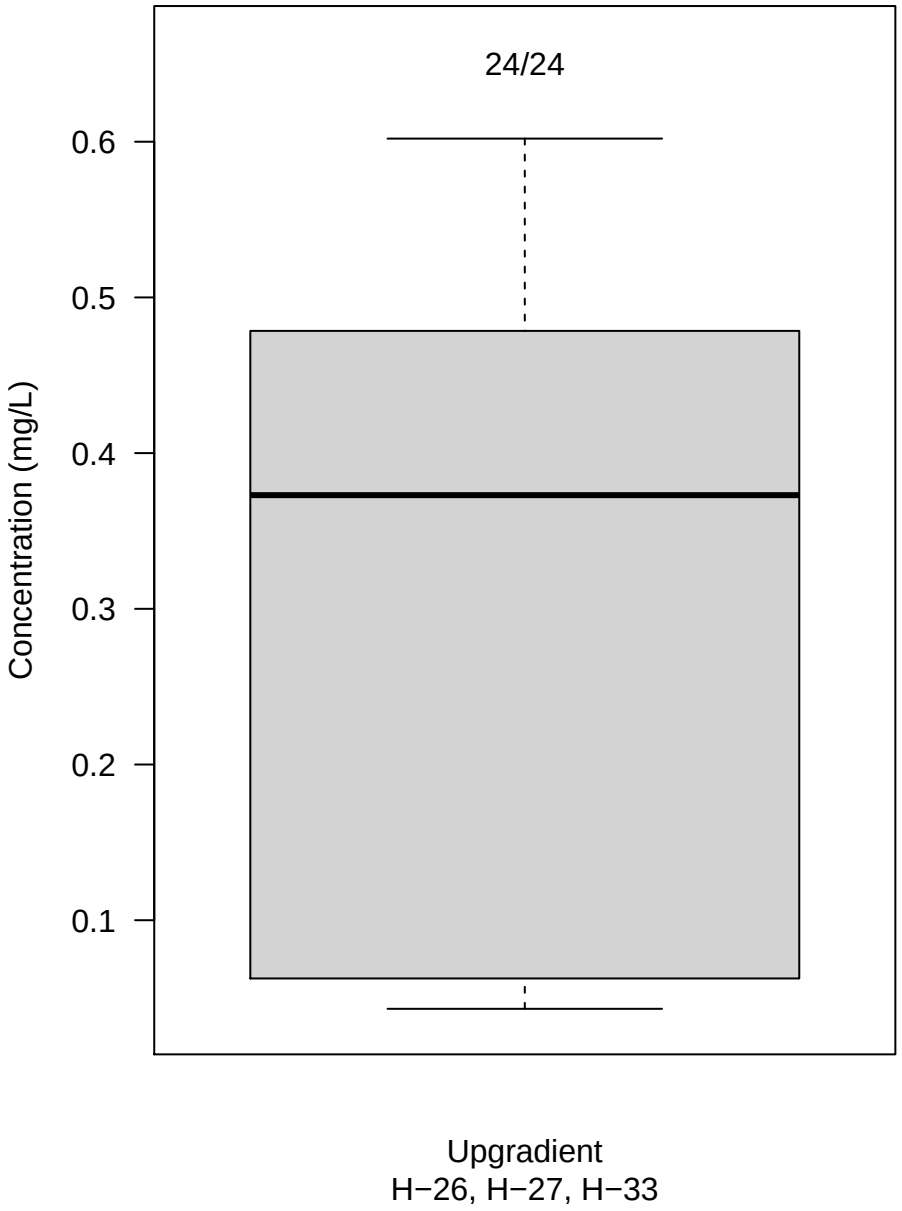


Figure C−2. Appendix III − Calcium

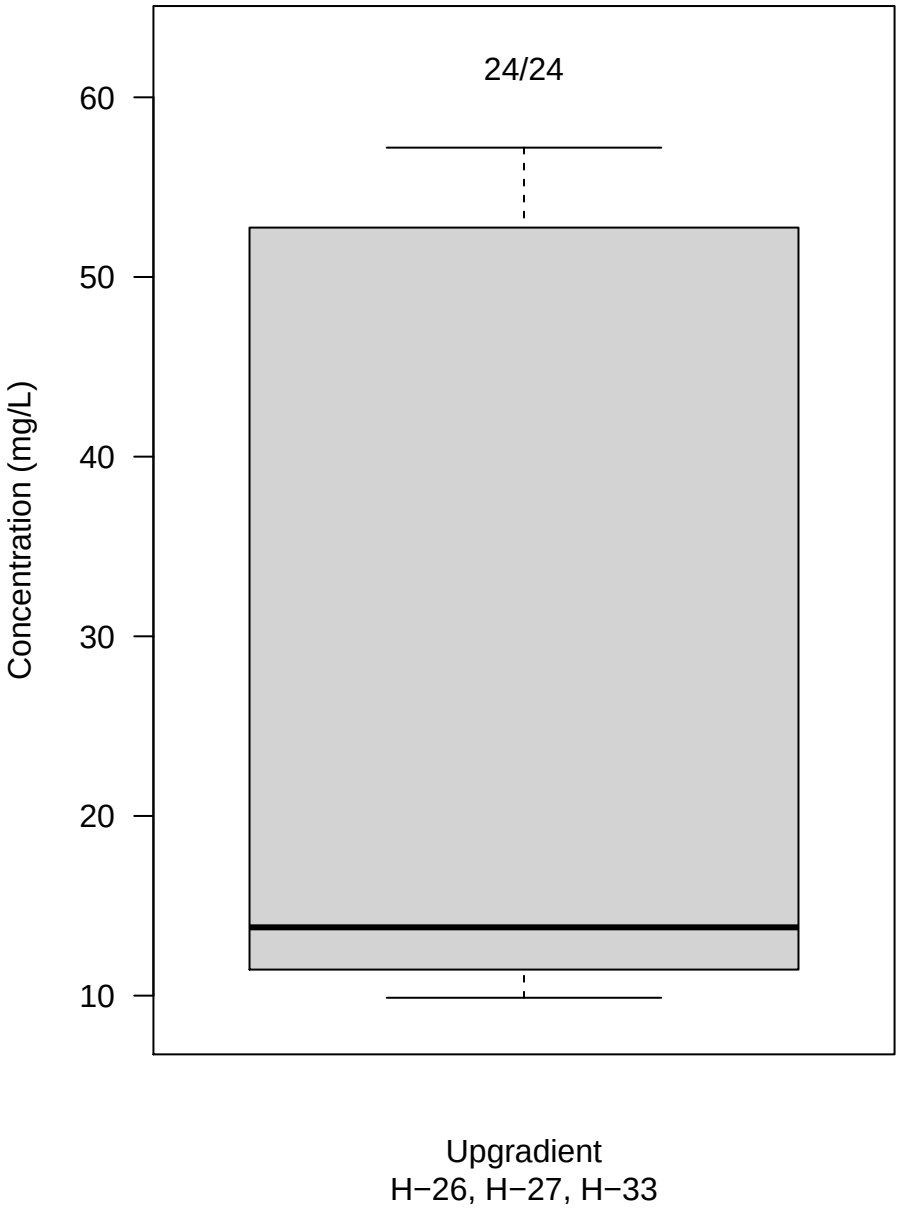


Figure C−3. Appendix III − Chloride

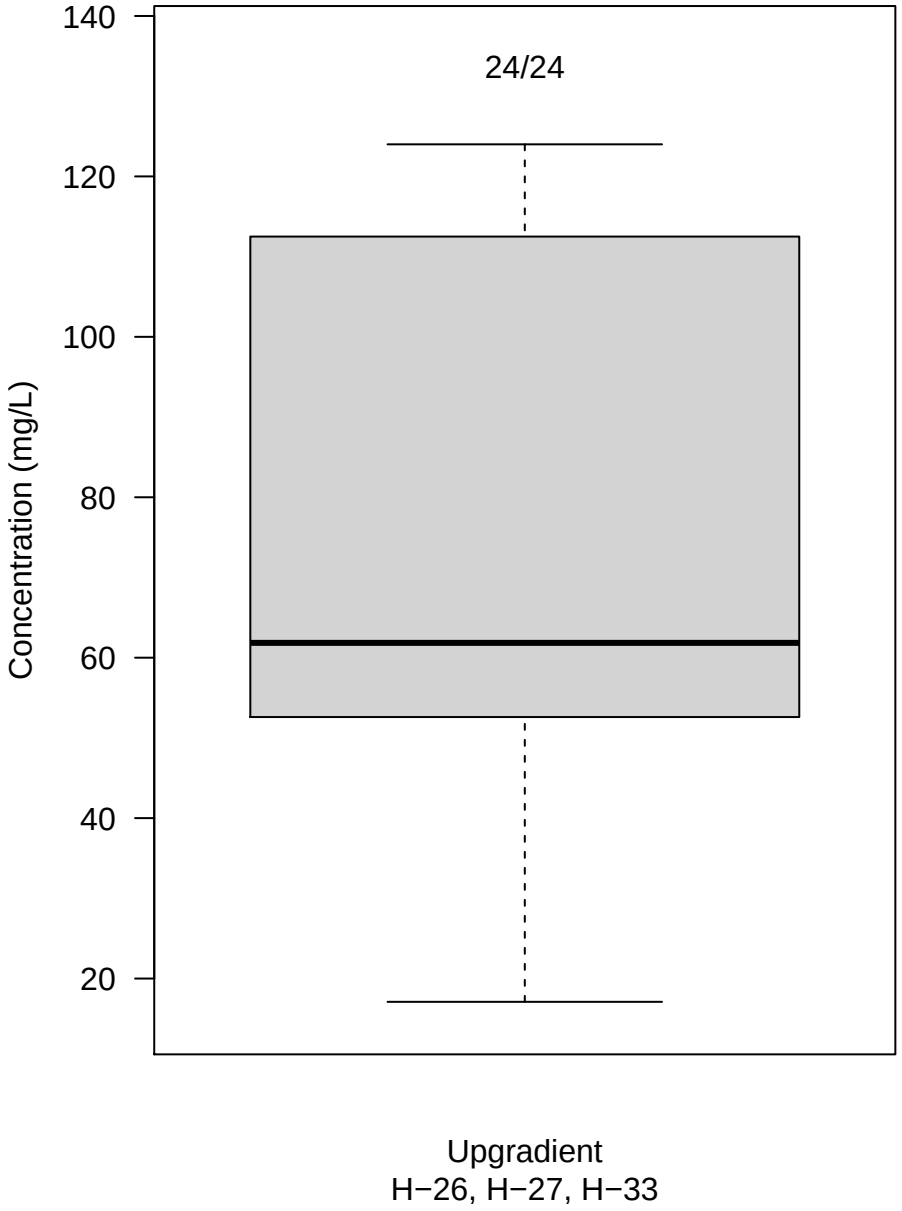


Figure C−4. Appendix III − Fluoride

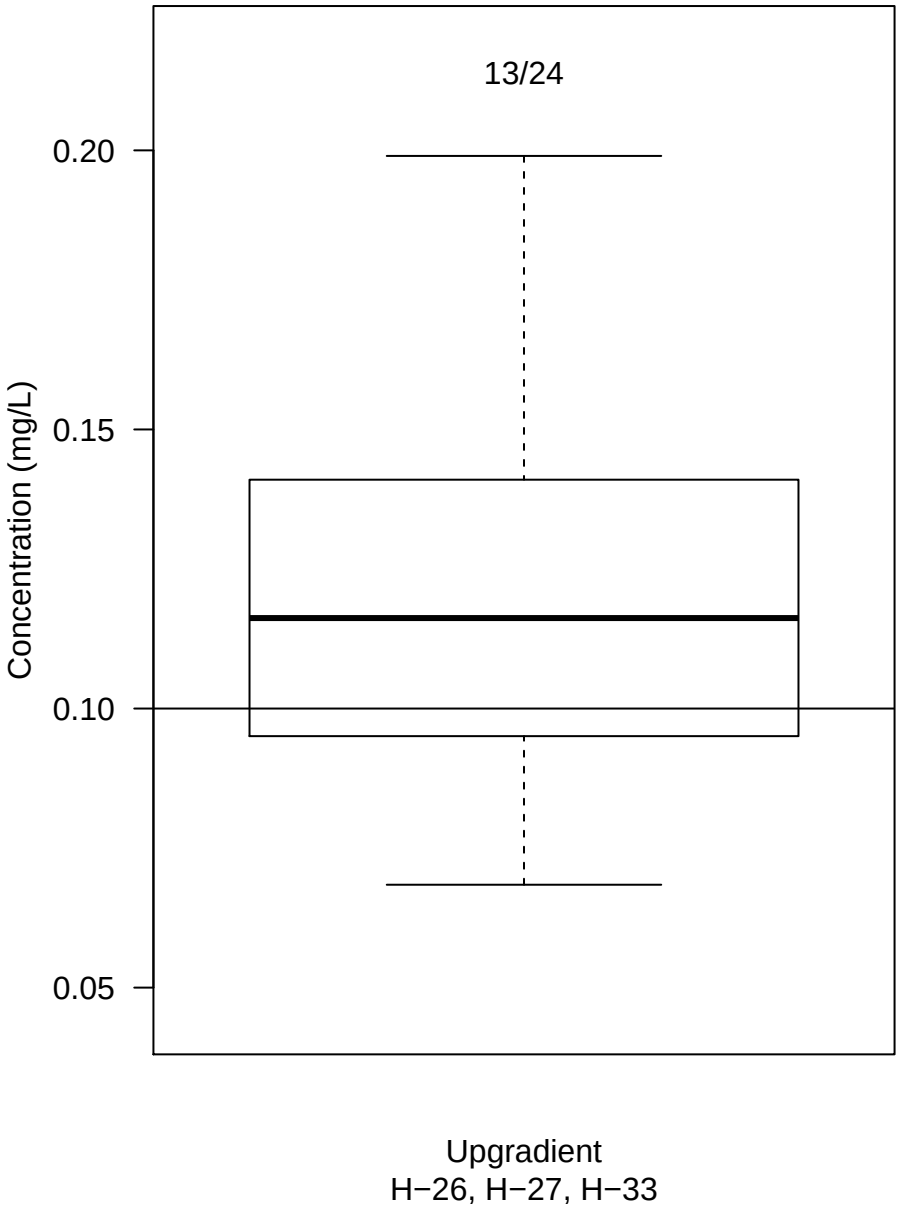


Figure C−5. Appendix III − field pH

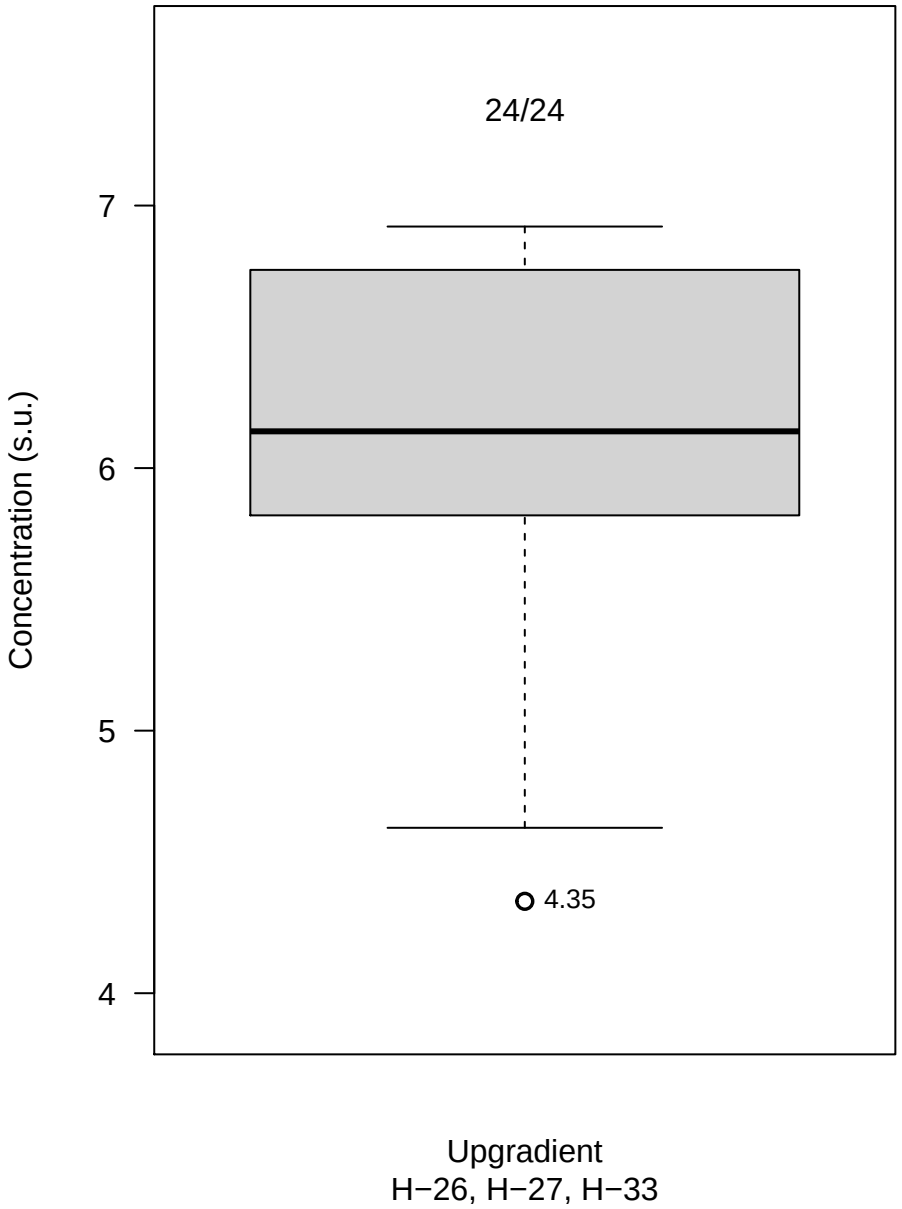


Figure C−6. Appendix III − Sulfate

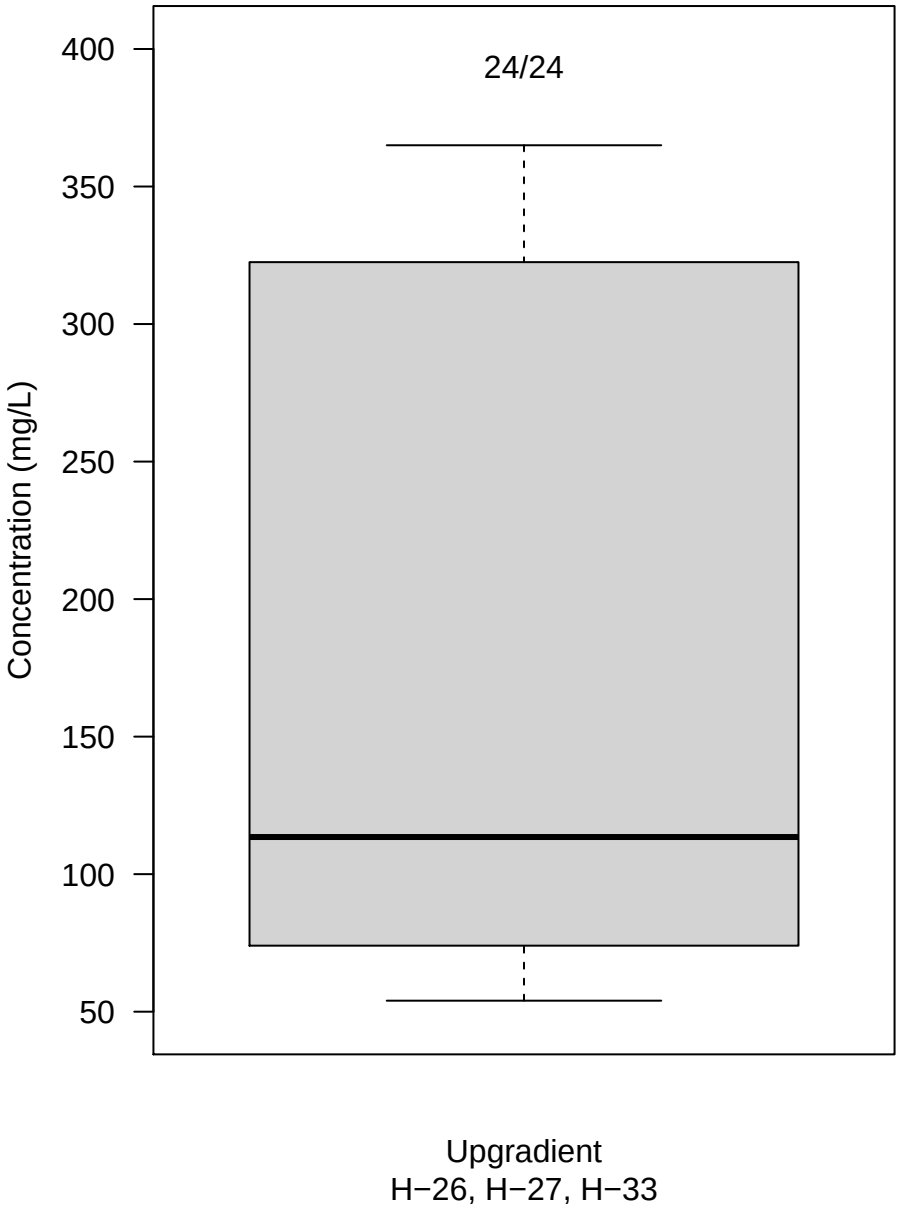


Figure C−7. Appendix III − Total Dissolved Solids

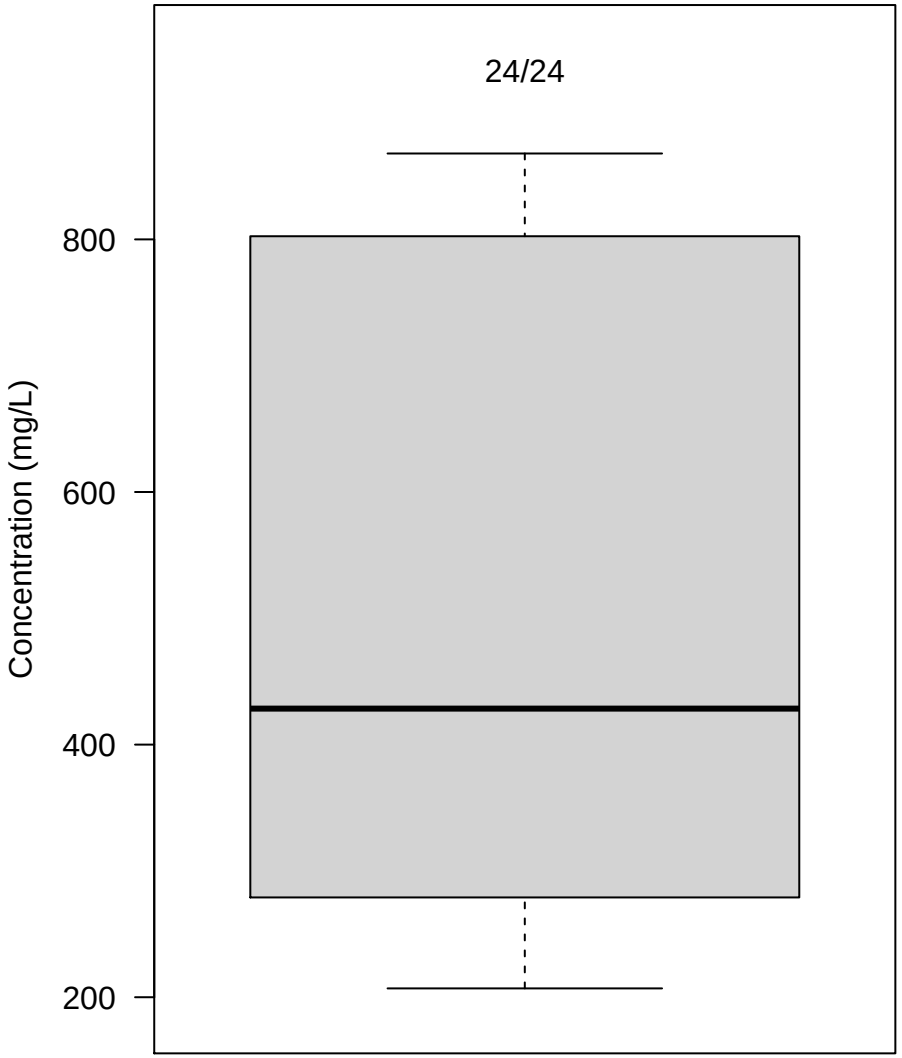


Figure C−8. Appendix IV − Arsenic

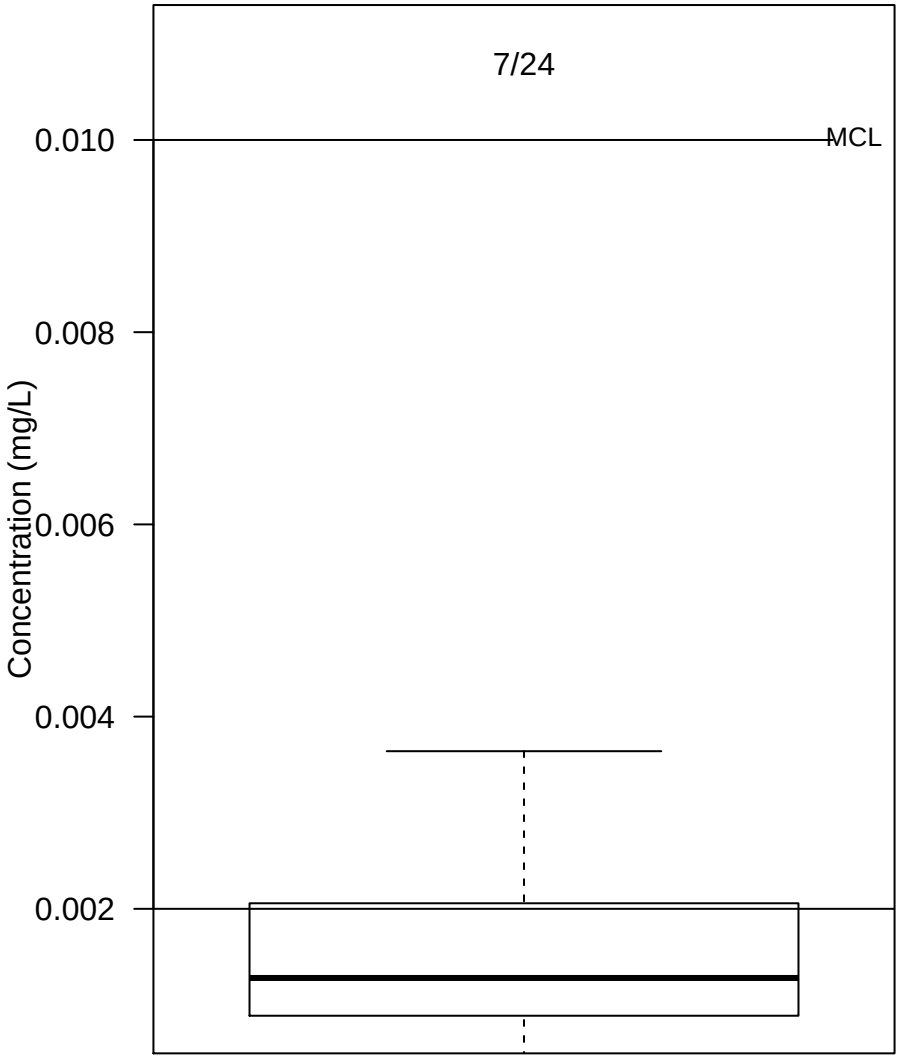


Figure C−9. Appendix IV − Barium

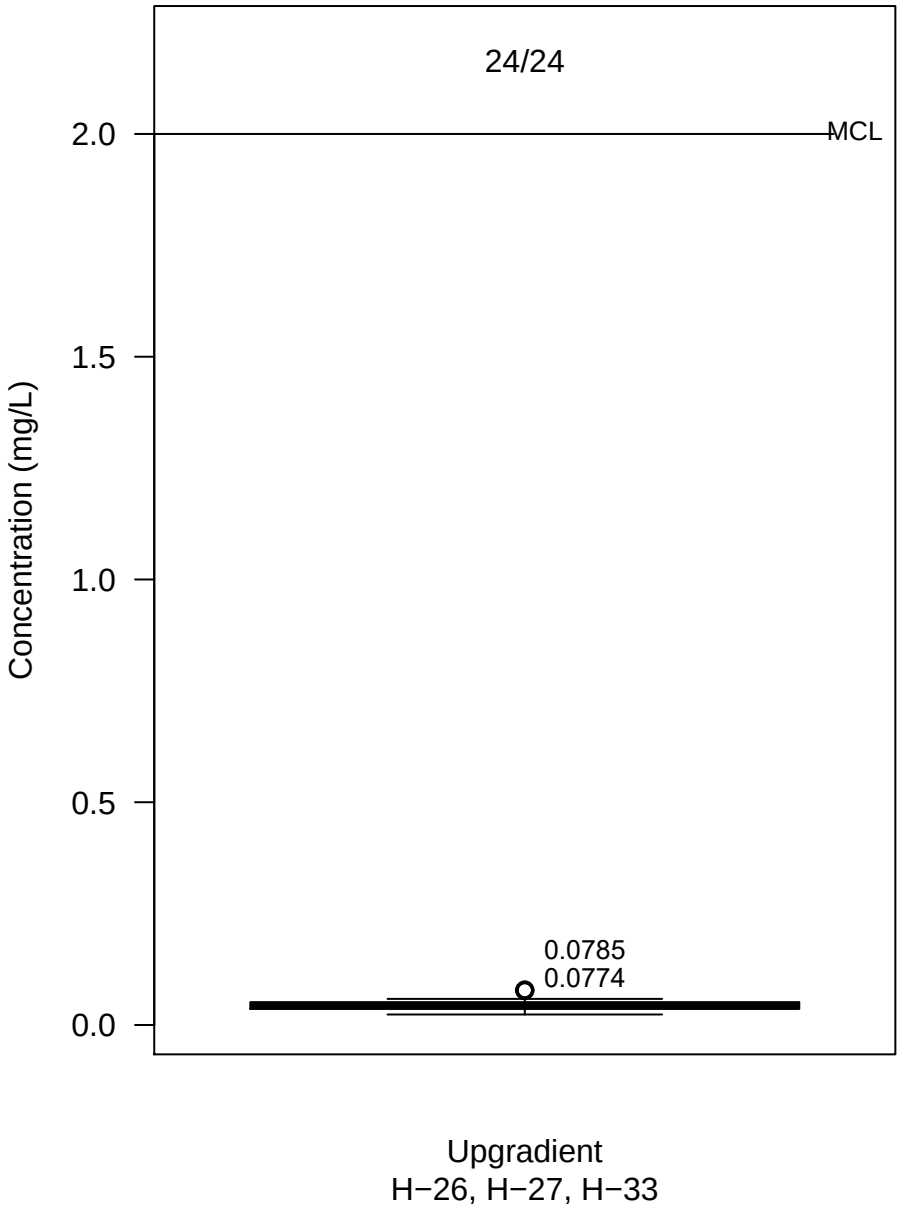


Figure C−10. Appendix IV − Beryllium

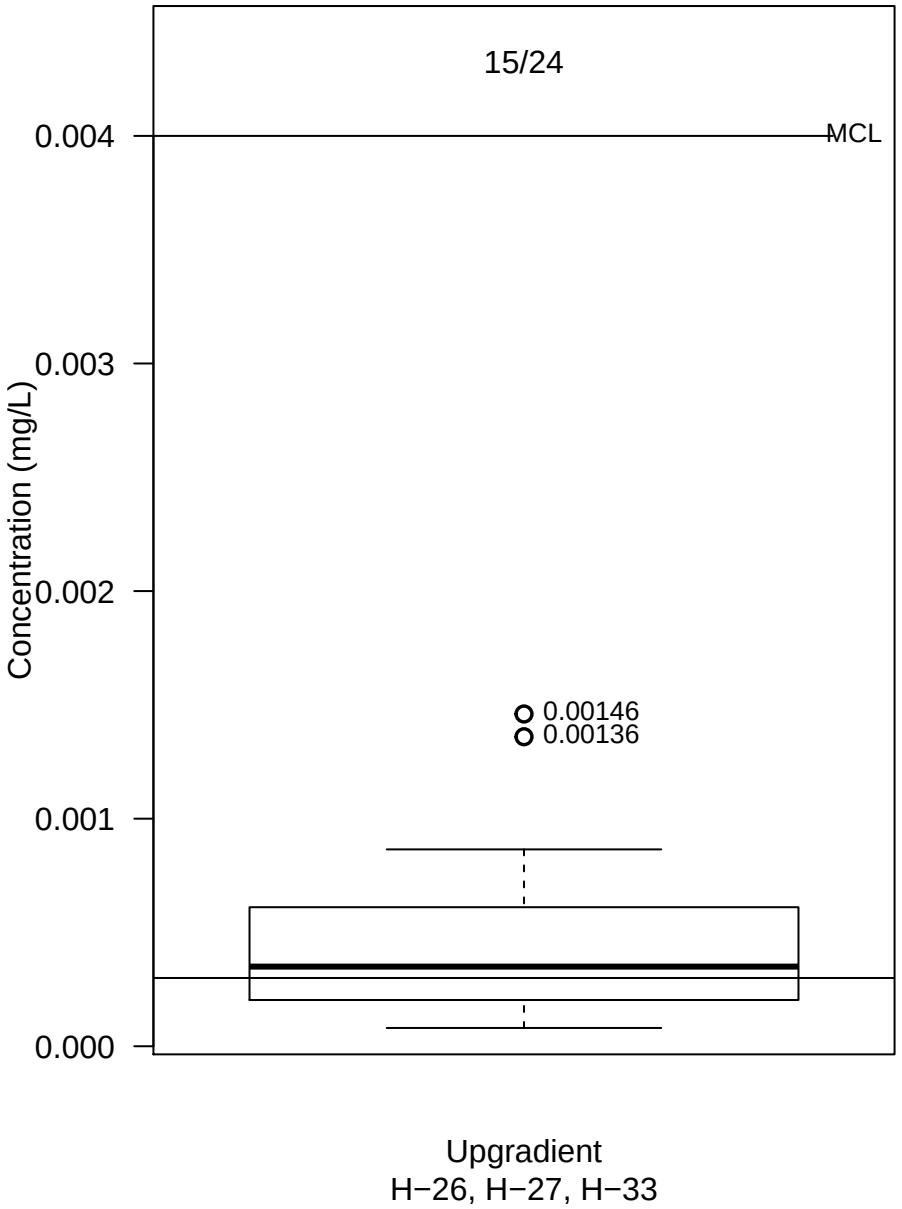


Figure C−11. Appendix IV − Chromium

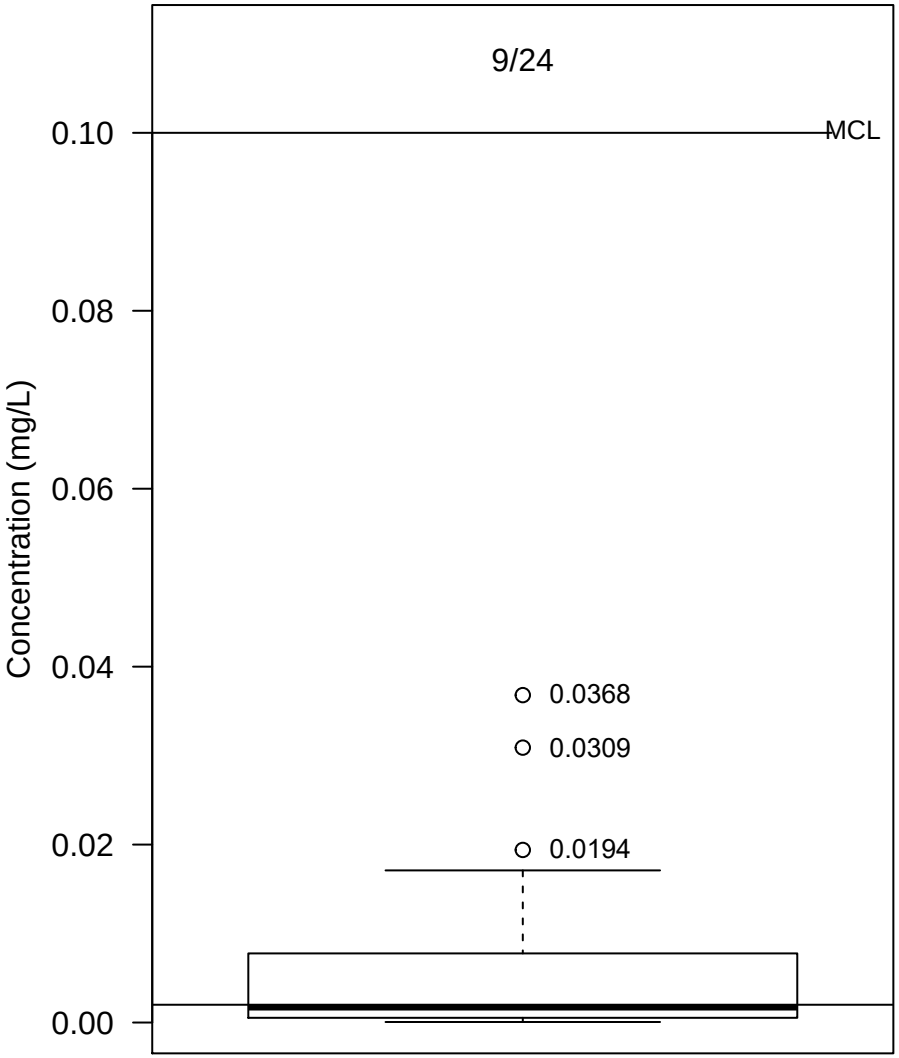


Figure C−12. Appendix IV − Cobalt

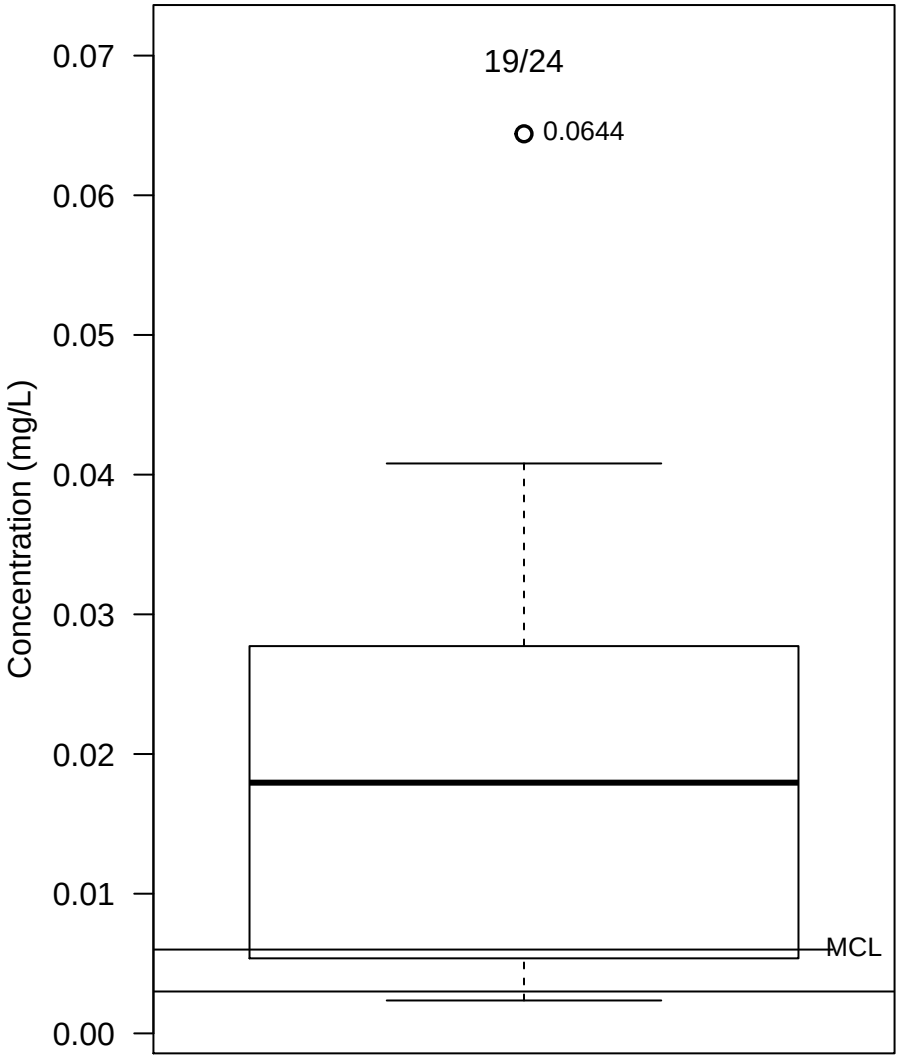


Figure C−13. Appendix IV − Fluoride

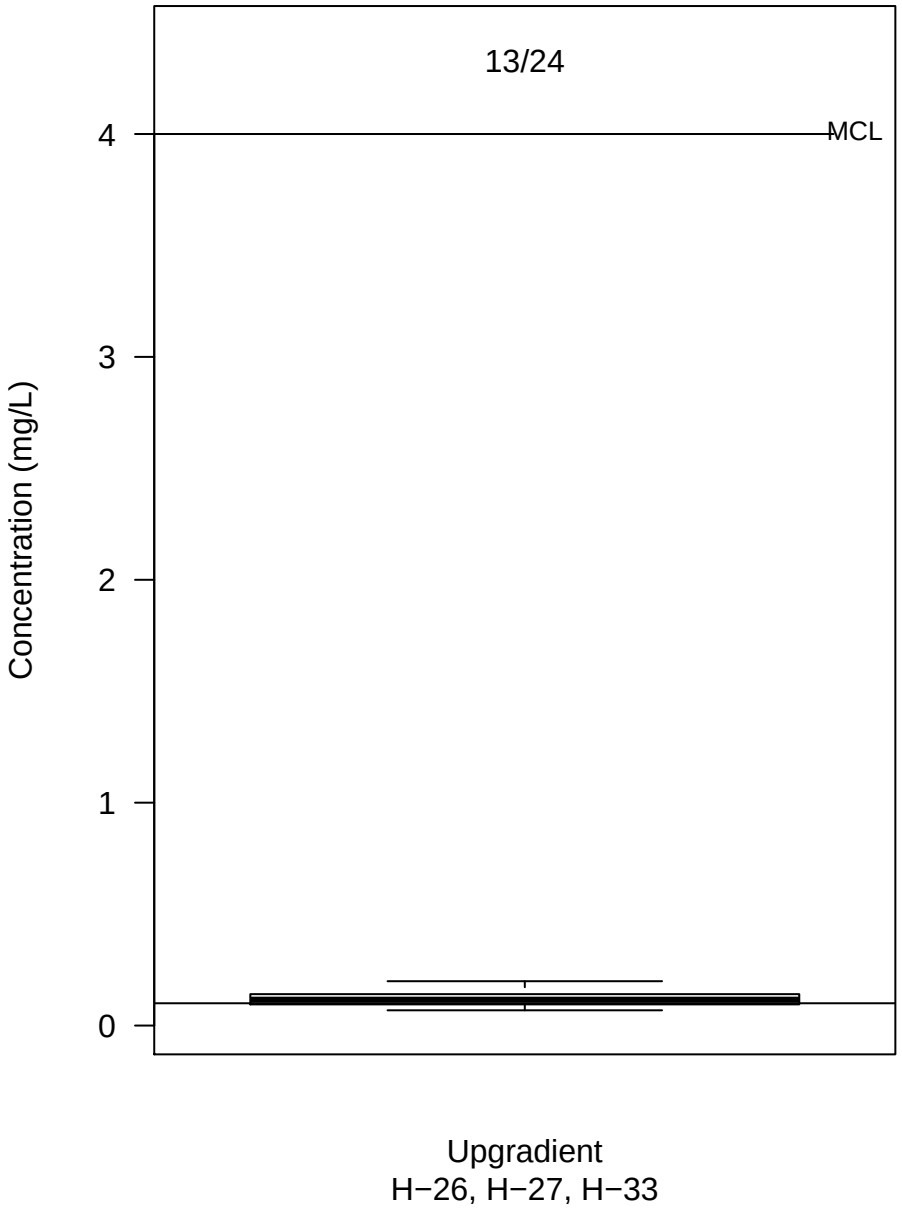


Figure C−14. Appendix IV − Lead

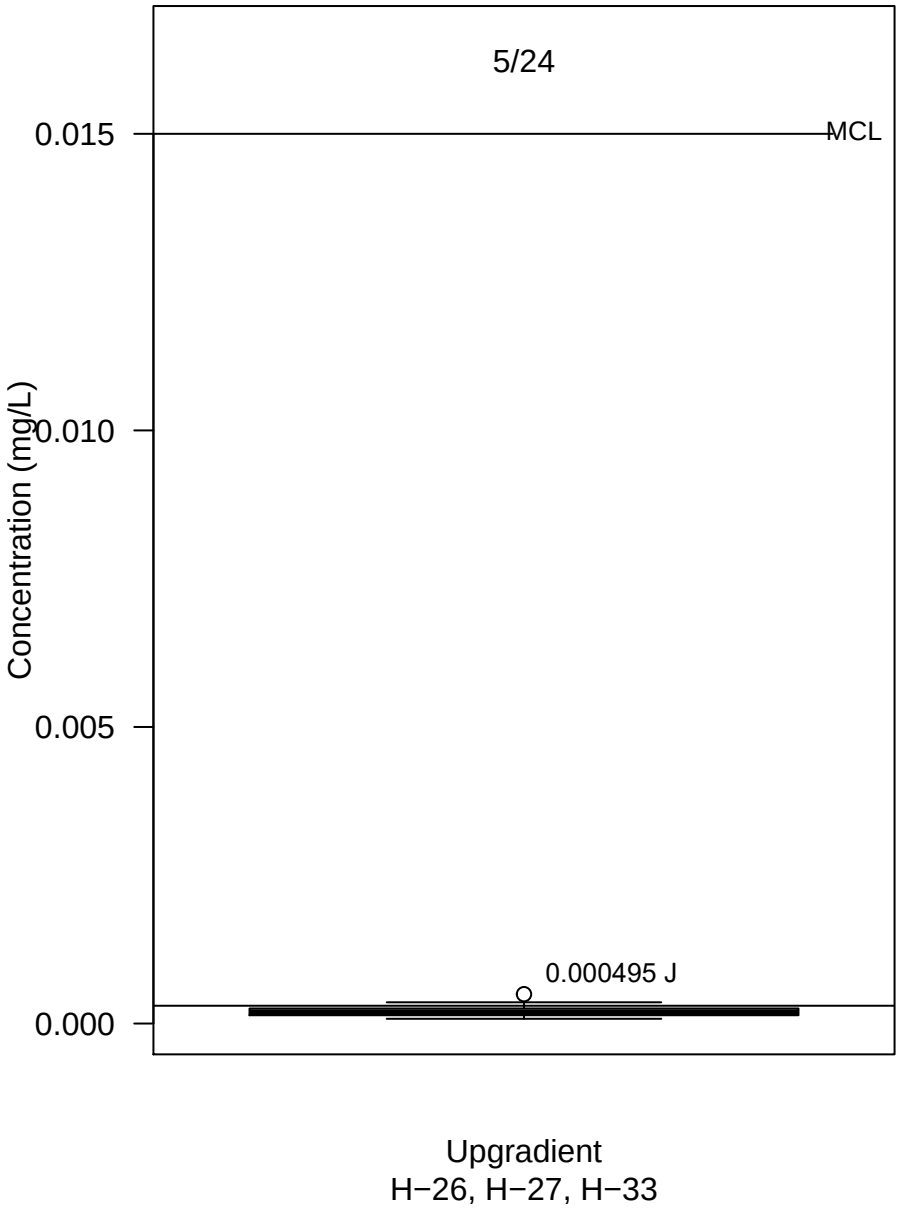


Figure C−15. Appendix IV − Lithium

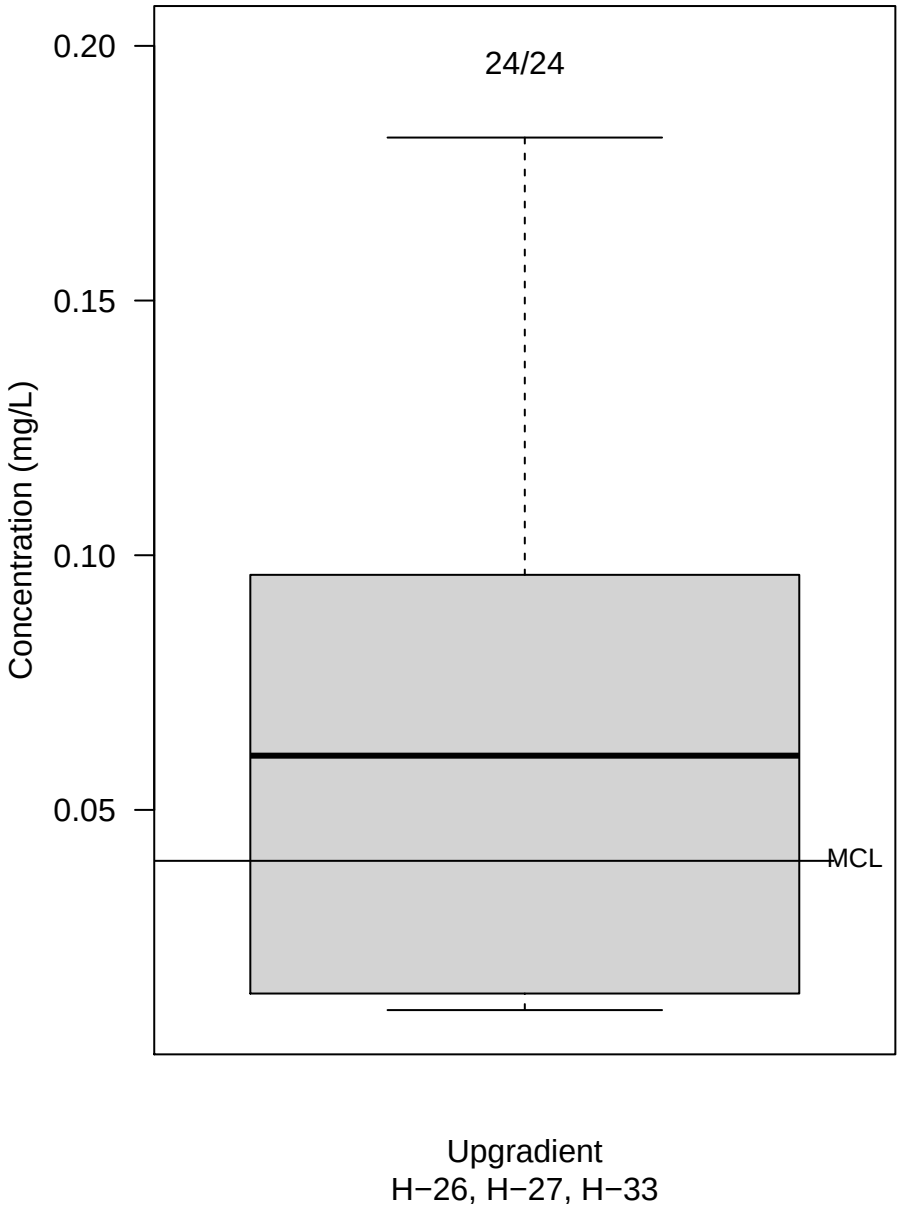


Figure C−16. Appendix IV − Molybdenum

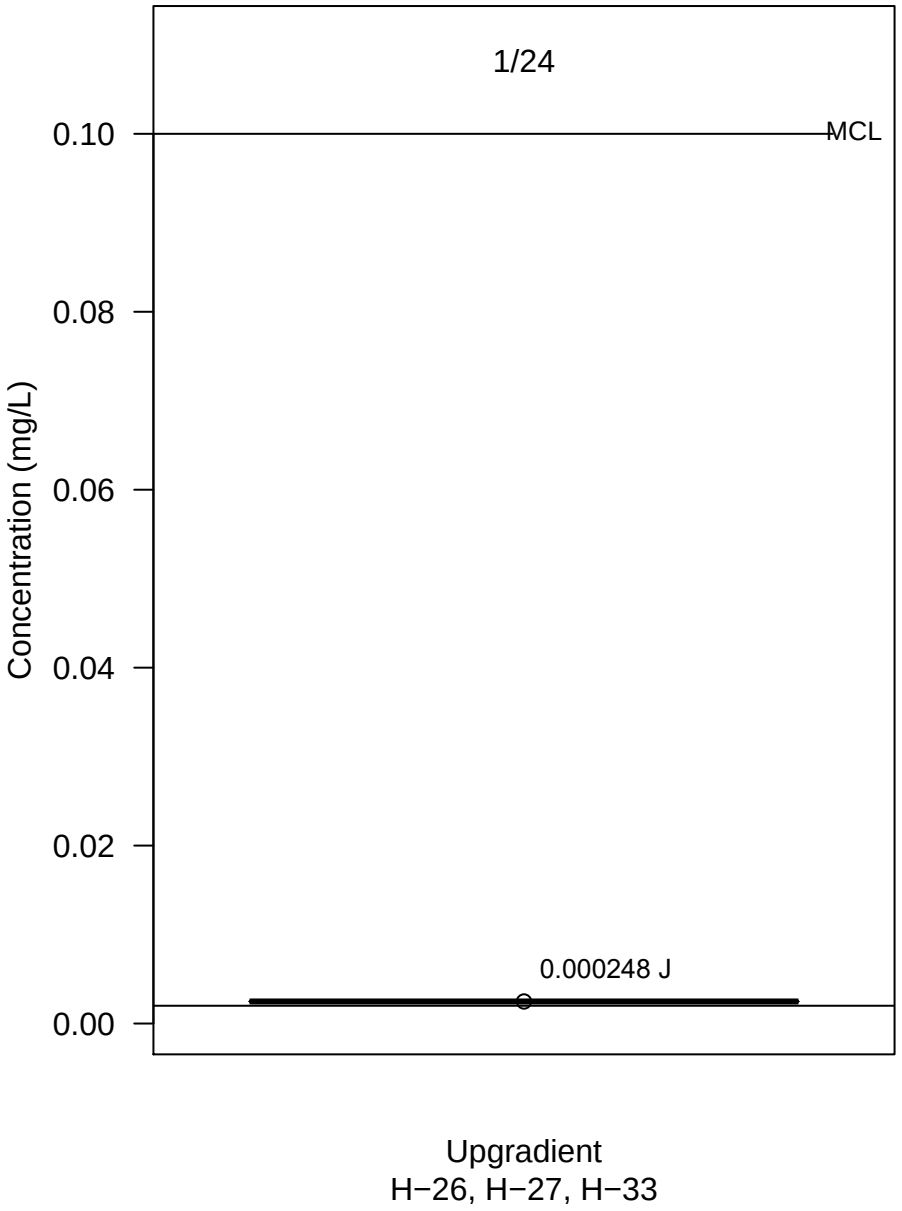


Figure C−17. Appendix IV − Selenium

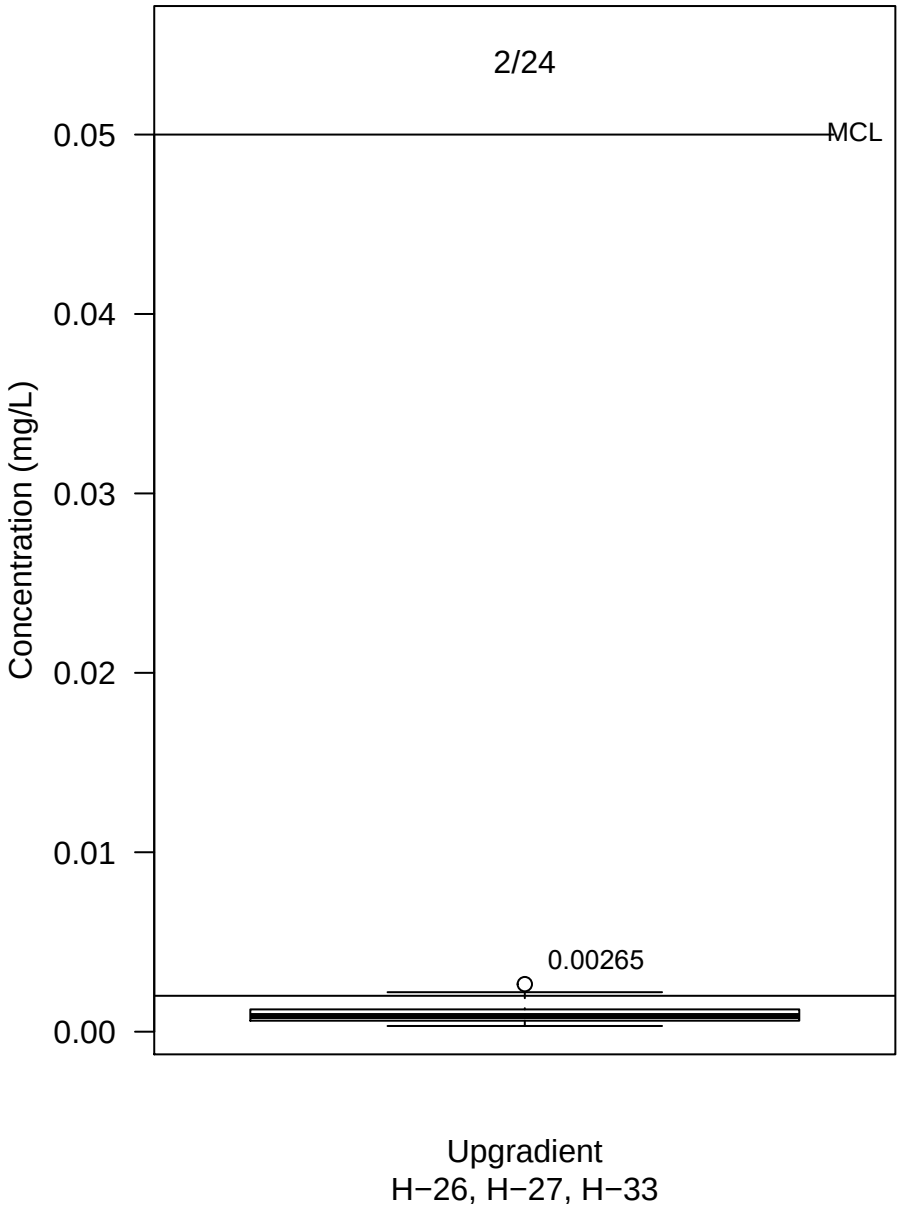
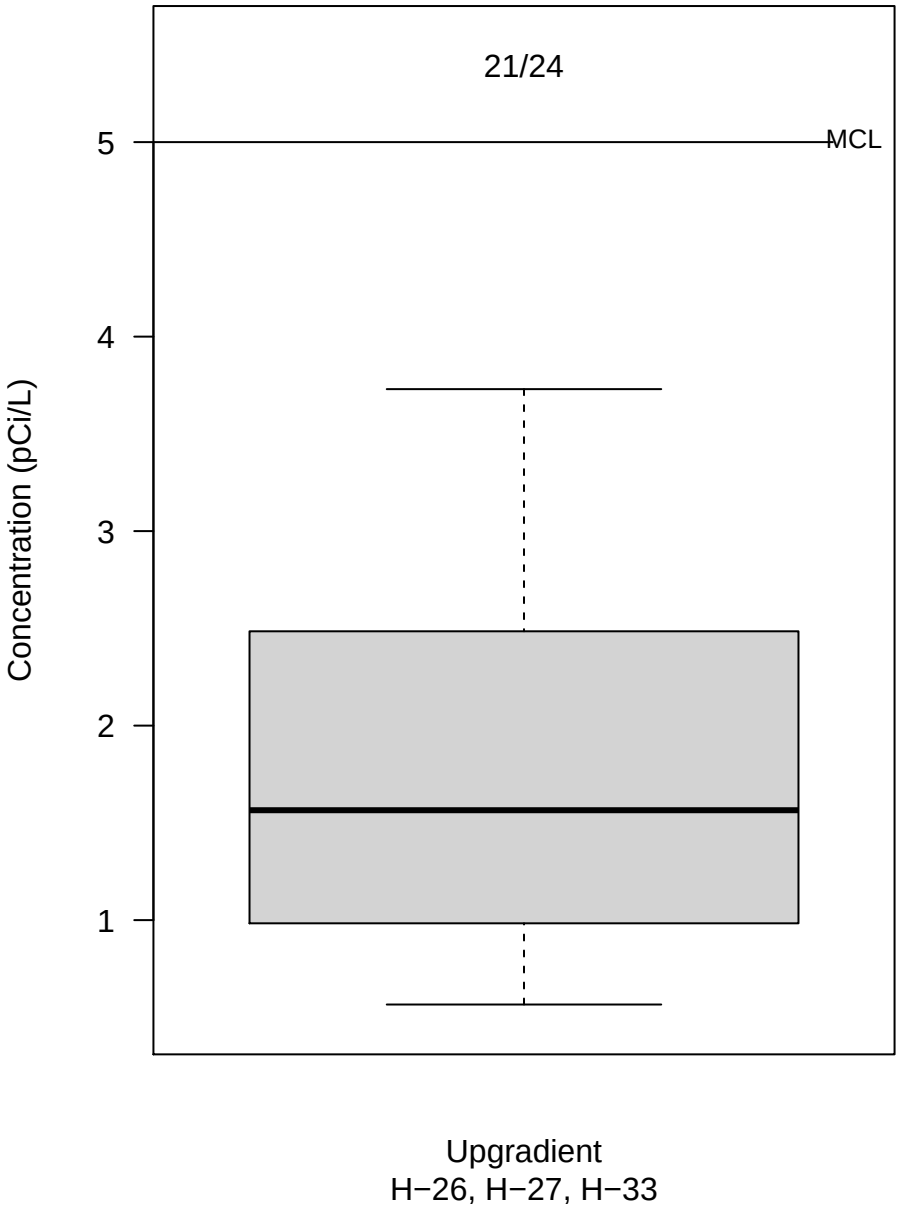
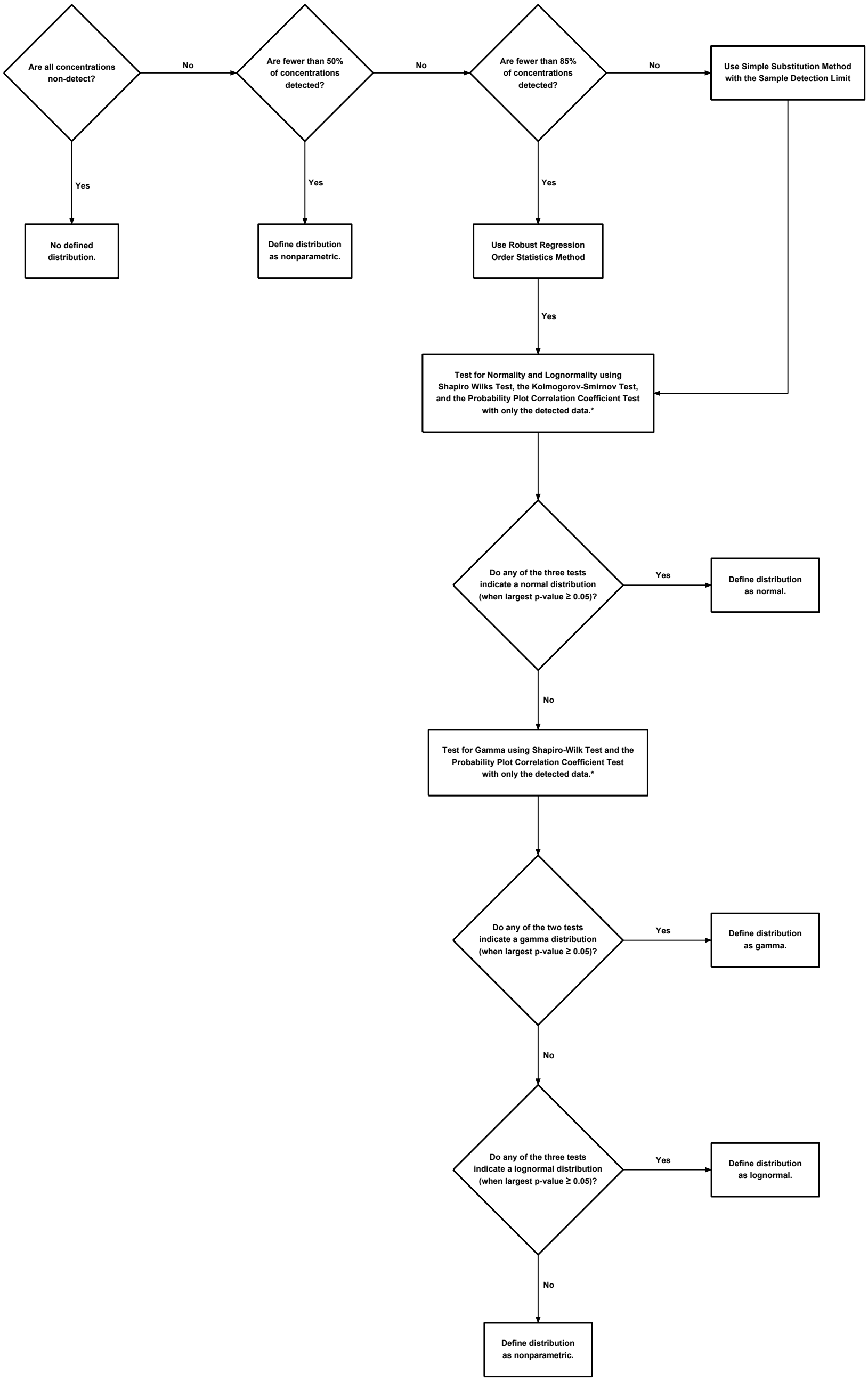


Figure C−18. Appendix IV − Radium−226 + Radium−228





Note:

* - Distributional tests can not be performed for the following cases:

1. For a data group with fewer than five detected samples, the Kolmogorov-Smirnov Test and the Probability Plot Correlation Coefficient Test can not be performed using only the detected concentrations.
2. For a data group with fewer than four detected samples, the Shapiro-Wilks Test can not be performed using only the detected concentrations.

Figure C-19

PROCESS FOR DEFINING A DISTRIBUTION FOR A DATA SET

PROJECT: 5164E	BY: AJD	REVISIONS
DATE: jAN. 2019	CHECKED: PJB	

BULLOCK, BENNETT & ASSOCIATES, LLC

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COAL COMBUSTION RESIDUAL RULE BACKGROUND GROUNDWATER MONITORING AND STATISTICAL ANALYSIS SUMMARY REPORT

PERMANENT DISPOSAL POND 5
MARTIN LAKE STEAM ELECTRIC STATION
RUSK COUNTY, TEXAS

February 26, 2024

Prepared For:

Luminant Generation Company LLC

Prepared By:

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Texas Engineering Firm Registration No. F-8542
Texas Geoscience Firm Registration No. 50127

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B	Laboratory Analytical Reports
C	Statistical Approach to Establishing Baseline Concentrations

1.0 INTRODUCTION

Permanent Disposal Pond 5 (PDP-5) is located at the Martin Lake Steam Electric Station (MLSES) in Rusk County, Texas (the Site). PDP-5 is used to store coal combustion residuals (CCRs) from other MLSES CCR surface impoundments during cleaning cycles and for storage of water from large precipitation events and excess process wastewater from the MLSES flue gas desulfurization (FGD) system (scrubber gypsum) and bottom ash transport systems.

The federal CCR Rule (Title 40 Code of Federal Regulations (CFR) Section 257 Subpart D - *Standards for the Receipt of Coal Combustion Residuals in Landfills and Surface Impoundments*) has been promulgated by the United States Environmental Protection Agency (USEPA) to regulate the management and disposal of CCRs as solid waste under Resource Conservation and Recovery Act (RCRA) Subtitle D. The final CCR Rule was published in the Federal Register on April 17, 2015. The effective date of the CCR Rule is October 19, 2015. TCEQ adopted portions of the Federal CCR Rule at Title 30 Texas Administrative Code (TAC) Chapter 352 (Texas CCR Rule). The USEPA published its final approval of the Texas CCR Rule on June 28, 2021 and the Texas CCR Rule became effective on July 28, 2021. It adopts and incorporates by reference the Federal CCR Program requirements for groundwater monitoring at 30 TAC Sections 352.901 through 352.951.

The CCR Rule establishes national minimum criteria for existing and new CCR landfills, existing and new CCR surface impoundments, and lateral expansions to landfills/impoundments. 40 C.F.R § 257.93(d) of the CCR Rule requires that the owner or operator of the CCR unit must establish background groundwater quality in a hydraulically upgradient or background well(s) for each of the constituents required in the particular groundwater monitoring program that applies to the CCR unit as determined under 40 C.F.R § 257.94(a) (*Detection Monitoring Program)* and 40 C.F.R § 257.95(a) (*Assessment Monitoring Program)*. 40 C.F.R § 257.94(b) of the CCR Rule requires that a minimum of eight independent groundwater samples from each background and downgradient well associated with a CCR unit be collected and analyzed for the constituents listed in Appendix III and IV to Part 257 no later than October 17, 2017. This report presents a summary of the sampling and analytical activities performed to establish background groundwater quality at the Site.

1.1 Description of PDP-5

PDP-5 was constructed in 2010 and is located approximately 3,000 feet west of the MLSES power units (Figure 1). PDP-5 is registered with the Texas Commission on Environmental Quality (TCEQ) as industrial solid waste management unit (WMU) No. 024 under Solid Waste Registration No. 31227. PDP-5 was constructed above grade and is surrounded by earthen embankments that extend approximately 10 to 15 feet above the adjacent ground surface. The elevation of the top of the PDP-5 berms is approximately El. 405.5. The maximum operating water surface elevation in PDP-5 is approximately El. 403.5. PDP-5 was constructed on top of three closed in-place, non-CCR Rule regulated, former coal ash surface impoundments (PDP-1, PDP-2 and PDP-3) and is adjacent to one former coal ash surface impoundment (PDP-4) that historically received wastewater streams and solids similar to those currently managed in PDP-5.

1.2 PDP-5 Groundwater Monitoring System

The PDP-5 CCR groundwater monitoring system has been certified by a professional engineer in accordance with 40 C.F.R § 257.91 of the CCR Rule (PBW, 2017; WSP Golder, 2022a). The PDP-5 CCR groundwater monitoring well system consists of nine monitoring wells (MW-17A, MW-18A, MW-19, MW-20A, PDP-22, PDP-23, PDP-24, PDP-25, PDP-26) that are each screened in the uppermost aquifer at the Site. The locations of the PDP-5 CCR groundwater monitoring wells are shown on Figure 2. Topographic and groundwater elevations at PDP 5 are higher than those in the surrounding area. Based on the inferred direction of groundwater flow, there are no upgradient areas in the vicinity of PDP 5 and all the PDP-5 CCR groundwater monitoring wells are downgradient wells. Groundwater potentiometric surface maps from the background monitoring period are provided in Appendix A.

2.0 BACKGROUND GROUNDWATER MONITORING PROGRAM

This section describes groundwater sampling and analysis procedures used in the background monitoring program.

2.1 Groundwater Sampling Procedures

Groundwater sampling was performed in accordance with the Site Groundwater Monitoring Plan-Revision 2 (WSP Golder, 2022b). Water levels were measured in each well to the nearest 0.01-foot prior to purging or sampling the wells. The wells were purged using low-flow methods until field water quality parameters stabilized, after which a groundwater sample was collected in a laboratory-supplied container. After the samples were collected, the sample containers were placed in a cooler or similar container, preserved with ice, and delivered to the laboratory for analysis.

2.2 Analytes and Analytical Procedures

Groundwater samples collected during the initial background period (October 2015 – December 2016) were analyzed for the constituents listed in Appendix III and IV to Part 257, including:

Appendix III Constituents	Appendix IV Constituents
Boron	Arsenic
Calcium	Barium
Chloride	Beryllium
Fluoride	Cadmium
pH	Chromium
Sulfate	Cobalt
Total Dissolved Solids (TDS)	Fluoride
	Lead
	Lithium
	Mercury
	Molybdenum
	Selenium
	Thallium
	Radium 226 and 228 (combined)

The laboratory methods used to analyze the Appendix III and IV constituents were as follows:

Appendix III Constituents

- Boron and calcium by USEPA Method SW6020;
- Chloride, fluoride, and sulfate by USEPA Method E300;
- pH by Standard Method M4500-H + B (field measurement); and
- TDS by Standard Method M2540.

Appendix IV Constituents

- Antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, lead, lithium, molybdenum, selenium, and thallium by USEPA Method SW6020;
- Fluoride USEPA Method E300;
- Mercury by USEPA Method SW7470; and
- Radium 226 and 228 by USEPA Methods 904.0/SW9320 Modified and 903.1 Modified.

All metals analyses were reported as “total recoverable metals” in accordance with 40 C.F.R § 257.93(1) of the CCR Rule. Samples were not filtered prior to analysis.

2.3 Background Groundwater Monitoring Sampling Results

Eight initial background groundwater monitoring events were performed using the monitoring well system from October 2015 through December 2016. The laboratory analytical reports for the initial background samples are presented in Appendix B and the background sample data are summarized in Appendix C, Table C-1 (Appendix III) and Table C-2 (Appendix IV).

2.4 Establishing Background Assessment Levels

The following statistical evaluation approach was selected to develop background groundwater quality assessment levels for the Site:

- Use of intrawell data evaluations, which compare new sample data to historical data at each groundwater monitoring well independently.

- Use of upper prediction limits (UPLs) to develop site-specific background concentrations for all Appendix III and Appendix IV constituents. This approach is a common statistical method used to evaluate groundwater compliance for Subtitle D landfill facilities and is one of the approved options for groundwater quality data statistical evaluations under the CCR Rule.

Documentation on the statistical procedures used to establish background UPLs is presented in Appendix C.

2.5 Updating Background Assessment Levels

PDP-5 is currently in a Detection Monitoring Program as defined by 40 C.F.R. §257.94. The initial Detection Monitoring Program groundwater samples were collected from the PDP-5 CCR monitoring well network in October 2017. Subsequent Detection Monitoring Program groundwater samples have been collected on a semi-annual basis since that time. Data evaluation is completed using procedures described in the Statistical Analysis Plan (WSP Golder, 2022c) to identify statistically significant increases (SSIs) of Appendix III parameters

over background concentrations.

SSIs of Appendix III parameters were identified during the 2018 through 2023 sampling events. An initial Alternate Source Demonstration was completed in 2019, which indicated that a source other than the CCR unit caused SSIs observed in the 2018 sample data. Similarly, Alternate Source Demonstrations were completed each year from 2020 to 2023 based on the previous year's groundwater sample data and were included as an attachment to the Annual Groundwater Monitoring and Corrective Action Reports in accordance with 40 C.F.R. §257.94(e)(2).

Appendix III background concentrations have been updated as part of this report to address the recurring Appendix III SSIs for which alternate source demonstrations have been successfully completed in the past. The updated background concentrations are based on sampling data collected from the initial background monitoring event in November 2015 through August 2023. Appendix IV sample data have not been collected since the initial background monitoring period because the CCR unit has remained in the Detection Monitoring Program; therefore, only Appendix III background concentrations were updated in this report. The process used for updating the Appendix III background concentrations is discussed further in Appendix C.

3.0 DETECTION AND ASSESSMENT MONITORING DATA EVALUATION PROCEDURES

Statistical analysis of groundwater monitoring data is required as part of detection monitoring and assessment monitoring under 40 C.F.R § 257.93 of the CCR Rule, and adopted by the state of Texas at 30 T.A.C. § 352.931. The CCR Rule provides several options for statistically evaluating groundwater data. The owner or operator of the CCR unit must select one of the following statistical methods specified in paragraphs (f)(1) through (5) of 40 C.F.R § 257.93 to evaluate groundwater monitoring data for each specified constituent:

(1) A parametric analysis of variance followed by multiple comparison procedures to identify statistically significant evidence of contamination. The method must include estimation and testing of the contrasts between each compliance well's mean and the background mean levels for each constituent.

(2) An analysis of variance based on ranks followed by multiple comparison procedures to identify statistically significant evidence of contamination. The method must include estimation and testing of the contrasts between each compliance well's median and the background median levels for each constituent.

(3) A tolerance or prediction interval procedure, in which an interval for each constituent is established from the distribution of the background data and the level of each constituent in each compliance well is compared to the upper tolerance or prediction limit.

(4) A control chart approach that gives control limits for each constituent.

(5) Another statistical test method that meets the performance standards of paragraph (g) of this section.

The following statistical evaluation approaches were selected to demonstrate groundwater compliance for PDP-5 under the CCR Rule:

- Use of intrawell data evaluations, which compare new sample data to historical data at each groundwater monitoring well independently.
- Use of UPLs to develop site-specific background concentrations for all Appendix III and Appendix IV constituents. This approach is a common statistical method used to evaluate groundwater compliance for Subtitle D landfill facilities and is one of the approved options for groundwater quality data statistical evaluations under the CCR Rule.
- After detection monitoring events, Appendix III constituent concentrations from each well are compared to background UPLs to ascertain if a statistically significant increase above background exists. Background UPLs are based on a 1-of-2 resampling

approach, meaning that if one or more constituent concentrations in a compliance well are above their respective background concentration, a resample can be collected to validate or invalidate the background concentration exceedance.

- If in assessment monitoring, the 95% lower confidence limit of the mean (LCL) is calculated after each assessment monitoring event for each Appendix IV constituent. The data set used to calculate LCLs is based on current and historical constituent concentrations. A statistically significant increase over the Groundwater Protection Standard (GWPS) has occurred at a CCR unit when the LCL for at least one assessment monitoring constituent at a well is greater than the appropriate GWPS. Development of the GWPSs is discussed in Section 3.2 and statistical procedures used to develop LCLs are discussed in Appendix C.

The selected statistical evaluation procedures conform with the CCR Rule requirements, as well as the Statistical Analysis Plan for the Site (WSP Golder, 2022c), USEPA's *Unified Guidance: Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities* (USEPA, 2009), and the American Society for Testing and Materials (ASTM) standard D6312-17, *Developing Appropriate Statistical Approaches for Groundwater Detection Monitoring Programs at waste Disposal Facilities* (ASTM, 2017).

3.1 Detection Monitoring Data Evaluation

Background UPLs are based on a 1-of-2 resampling approach, meaning that if zero or one concentration measurements from a series of two independent samples collected from a well do not exceed the appropriate UPL, then a statistically significant increase over background has not occurred at the CCR unit. This conclusion will be reached if the data indicate either of the following:

- All detection monitoring constituent concentrations in a compliance well are less than or equal to their respective background UPL; or

- At least one detection monitoring constituent concentration in a well is above the respective background UPL. If this occurs, the well or wells with constituent concentration(s) above the background UPL(s) may be resampled and analyzed for the detection monitoring constituent(s) with exceedances. If the resample indicates that the target detection monitoring constituent concentration(s) in the well or wells is less than or equal to their respective background UPL(s), then it can be concluded that a statistically significant increase over background for all detection monitoring constituents has not occurred since concentrations in one sample of the two independent samples do not exceed the appropriate background UPL(s).

If the groundwater monitoring data indicate that a statistically significant increase over background has not occurred at the CCR wells, then detection monitoring at all CCR wells will

continue on a semi-annual basis.

If one or more detection monitoring constituent concentration in any well is above the respective background UPL in both the original detection monitoring sample and the resample, then a statistically significant increase over background for the target detection monitoring constituents can be concluded. In accordance with 40 C.F.R. § 257.94(e), if a statistically significant increase is indicated, within 90 days the owner/operator shall:

- Establish an assessment monitoring program, or
- Demonstrate that a source other than the CCR unit caused the statistically significant increase over the background UPL for a constituent, or that the statistically significant increase resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. Per 30 TAC § 352.941, in making an alternative source demonstration, the owner or operator must:
    - Notify the TCEQ executive director, and any local pollution agency with jurisdiction that has requested to be notified, in writing within 14 days that the owner or operator intends to make an alternative source demonstration; and
    - Within 90 days of making a determination of a statistically significant increase over the background value for any Appendix III constituent, submit a report prepared and certified in accordance with 30 TAC § 352.4 (relating to Engineering and Geoscientific Information) to the TCEQ executive director and any local pollution agency with jurisdiction that has requested to be notified, demonstrating that a source other than a CCR unit caused the statistically significant increase or that the statistically significant increase resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality.

The Appendix III detection monitoring prediction limits are summarized in Table 1. Documentation on the statistical procedures used to establish background groundwater quality prediction limits is presented in Appendix C.

3.2 Assessment Monitoring Data Evaluation

Assessment monitoring will be performed at a CCR unit's groundwater monitoring system after a statistically significant increase over background has been confirmed for one or more of the detection monitoring constituents and the statistically significant increase cannot be attributed to a source other than the CCR unit. Within 90 days of obtaining the results from the initial assessment monitoring sampling event, GWPSs will be established for all Appendix IV assessment monitoring constituents as follows:

- For constituents for which an MCL has been established, the GWPS is the highest of the MCL, UPL, or laboratory reporting limit for each constituent; or

- For constituents for which an MCL has not been established, the GWPS is the higher of the UPL, laboratory reporting limit, or alternative GWPS (as applicable for cobalt, lead, lithium, and molybdenum).

The GWPS for each Appendix IV constituent is presented in Table 2.

The 95% LCL for each Appendix IV constituent concentration for each well is compared to the GWPS established for the constituent to ascertain if a statistically significant increase above the GWPS does or does not exist. A statistically significant increase is indicated if the LCL exceeds the GWPS. Additional information on the development of Appendix IV constituent LCLs is provided in Appendix C.

In accordance with 40 C.F.R. § 257.95(g)(3), if a statistically significant increase over GWPSs for any Appendix IV assessment monitoring constituent is confirmed, within 90 days of the initial assessment monitoring event, the owner/operator will either:

- Initiate an assessment of corrective measures for the CCR unit in accordance with 40 C.F.R. § 257.96; or

- Demonstrate that a source other than the CCR unit caused the statistically significant level over the background UPL for a constituent, or that the statistically significant increase resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. Per 30 TAC § 352.951, in making an alternative source demonstration, the owner or operator must:

    - Notify the TCEQ executive director, and any local pollution agency with jurisdiction that has requested to be notified, in writing within 14 days that the owner or operator intends to make an alternative source demonstration; and

    - Within 90 days of making a determination of a statistically significant increase over the GWPS of any Appendix IV constituent, submit a report prepared and certified in accordance with 30 TAC § 352.4 (relating to Engineering and Geoscientific Information) to the TCEQ executive director, and any local pollution agency with jurisdiction that has requested to be notified, demonstrating that a source other than a CCR unit caused the exceedance or that the exceedance resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality.

If one or more Appendix IV assessment monitoring constituents are detected at statistically significant levels above their respective GWPS in any sampling event, and if a source other than

the CCR unit cannot be demonstrated to have caused the exceedance, the nature and extent of the release should be further characterized as follows in accordance with 40 C.F.R § 257.95(g)(1):

- Install additional monitoring wells necessary to define the contaminant plume(s);
- Collect data on the nature and estimated quantity of material released including specific information on the Appendix IV assessment monitoring constituents and the levels at which they are present in the material released;
- Install at least one additional monitoring well at the facility boundary in the direction of contaminant migration and sample this well for all Appendix III detection monitoring parameters and for those Appendix IV assessment monitoring constituents that have been detected as part of assessment monitoring. This monitoring must be performed on at least a semi-annual basis thereafter; and
- Sample all wells in accordance with 40 C.F.R § 257.95(d)(1) to characterize the nature and extent of the release.

4.0 REFERENCES

ASTM, 2017. Standard Guide for Developing Appropriate Statistical Approaches for Groundwater Detection Monitoring Programs at Waste Disposal Facilities - D6312-17.

Pastor, Behling & Wheeler, LLC (PBW), 2017. CCR Groundwater Monitoring System Certification – Martin Lake Steam Electric Station, Permanent Disposal Pond 5, Rusk County, Texas. August.

USEPA, 2009. Unified Guidance Document: Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, EPA 530/R-09-007, March.

WSP Golder, 2022a. Groundwater Monitoring System Certification Addendum No. 1, Martin Lake Steam Electric Station – PDP 5, Rusk County, Texas.

WSP Golder, 2022b. Groundwater Monitoring Plan – Revision 2, Martin Lake Steam Electric Station – Permanent Disposal Pond 5, Rusk County, Texas.

WSP Golder, 2022c. Statistical Analysis Plan – Revision 1, Martin Lake Steam Electric Station – Permanent Disposal Pond 5, Rusk County, Texas.

SIGNATURE PAGE

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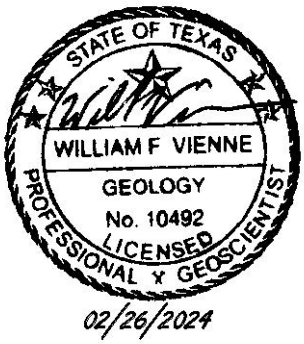
Senior Hydrogeologist



TABLES

Table 1
Appendix III Groundwater Background Upper Prediction Limits
MLSES PDP-5

CCR Well	Constituent	Background Value
MW-17A	Boron	0.57
	Calcium	7.0
	Chloride	10
	Fluoride	0.40
	field pH	4.5, 6.9
	Sulfate	56
	Total Dissolved Solids	160
MW-18A	Boron	0.24
	Calcium	6.5
	Chloride	10
	Fluoride	0.40
	field pH	5.6, 6.9
	Sulfate	10
	Total Dissolved Solids	150
MW-19	Boron	0.88
	Calcium	220
	Chloride	83
	Fluoride	0.40
	field pH	5.4, 6.9
	Sulfate	520
	Total Dissolved Solids	1200
MW-20A	Boron	0.24
	Calcium	33
	Chloride	13
	Fluoride	0.94
	field pH	4.3, 6.8
	Sulfate	180
	Total Dissolved Solids	360
PDP-22	Boron	0.31
	Calcium	190
	Chloride	23
	Fluoride	0.79
	field pH	5.4, 8.8
	Sulfate	280
	Total Dissolved Solids	1200
PDP-23	Boron	0.096
	Calcium	3.5
	Chloride	8.3
	Fluoride	0.40
	field pH	4.9, 6.8
	Sulfate	2.5
	Total Dissolved Solids	120

Table 1
Appendix III Groundwater Background Upper Prediction Limits
MLSES PDP-5

CCR Well	Constituent	Background Value
PDP-24	Boron	4.7
	Calcium	52
	Chloride	24
	Fluoride	0.98
	field pH	3.6, 7.0
	Sulfate	520
	Total Dissolved Solids	850
PDP-25	Boron	0.25
	Calcium	72
	Chloride	160
	Fluoride	0.40
	field pH	5.6, 6.9
	Sulfate	120
	Total Dissolved Solids	650
PDP-26	Boron	0.093
	Calcium	3.9
	Chloride	12
	Fluoride	0.40
	field pH	6.1, 6.9
	Sulfate	37
	Total Dissolved Solids	310

Notes:
1. All values in mg/L except pH (standard units) and radium (pCi/L).

Table 2
Appendix IV Groundwater Protection Standards
MLSES PDP-5

CCR Well	Constituent	Groundwater Protection Standard
MW-17A	Antimony	0.0060
	Arsenic	0.010
	Barium	2.0
	Beryllium	0.0040
	Cadmium	0.0050
	Chromium	0.10
	Cobalt	0.010
	Fluoride	4.0
	Lead	0.015
	Lithium	0.040
	Mercury	0.0020
	Molybdenum	0.10
	Selenium	0.050
	Thallium	0.0020
	Radium-226 + Radium-228	5.0
MW-18A	Antimony	0.0060
	Arsenic	0.010
	Barium	2.0
	Beryllium	0.0040
	Cadmium	0.0050
	Chromium	0.10
	Cobalt	0.006
	Fluoride	4.0
	Lead	0.015
	Lithium	0.040
	Mercury	0.10
	Molybdenum	0.10
	Selenium	0.050
	Thallium	0.0020
	Radium-226 + Radium-228	5.3
MW-19	Antimony	0.0060
	Arsenic	0.036
	Barium	2.0
	Beryllium	0.0040
	Cadmium	0.0050
	Chromium	0.10
	Cobalt	0.0060
	Fluoride	4.0
	Lead	0.015
	Lithium	0.040
	Mercury	0.0020
	Molybdenum	0.10
	Selenium	0.050
	Thallium	0.0020
	Radium-226 + Radium-228	5.0

Table 2
Appendix IV Groundwater Protection Standards
MLSES PDP-5

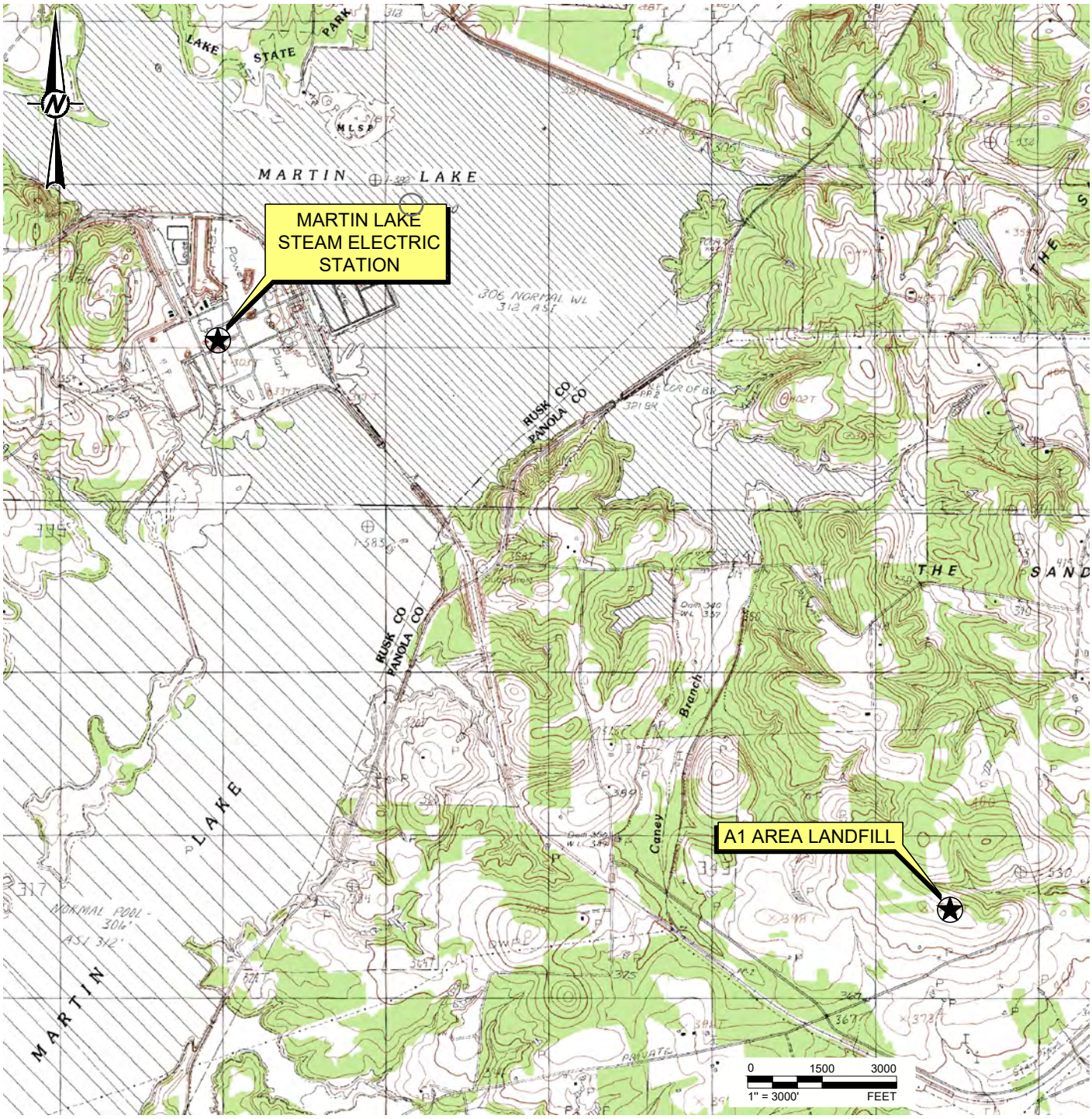
CCR Well	Constituent	Groundwater Protection Standard
MW-20A	Antimony	0.0060
	Arsenic	0.010
	Barium	2.0
	Beryllium	0.0040
	Cadmium	0.0050
	Chromium	0.10
	Cobalt	0.0086
	Fluoride	4.0
	Lead	0.015
	Lithium	0.04
	Mercury	0.0029
	Molybdenum	0.10
	Selenium	0.050
	Thallium	0.0020
	Radium-226 + Radium-228	11.7
PDP-22	Antimony	0.0060
	Arsenic	0.016
	Barium	2.0
	Beryllium	0.0040
	Cadmium	0.0050
	Chromium	0.17
	Cobalt	0.015
	Fluoride	4.0
	Lead	0.015
	Lithium	0.29
	Mercury	0.0020
	Molybdenum	0.10
	Selenium	0.050
	Thallium	0.0020
	Radium-226 + Radium-228	6.5
PDP-23	Antimony	0.0060
	Arsenic	0.010
	Barium	2.0
	Beryllium	0.0040
	Cadmium	0.0050
	Chromium	0.10
	Cobalt	0.006
	Fluoride	4.0
	Lead	0.015
	Lithium	0.040
	Mercury	0.0020
	Molybdenum	0.10
	Selenium	0.050
	Thallium	0.0020
	Radium-226 + Radium-228	5.0

Table 2
Appendix IV Groundwater Protection Standards
MLSES PDP-5

CCR Well	Constituent	Groundwater Protection Standard
PDP-24	Antimony	0.0060
	Arsenic	0.010
	Barium	2.0
	Beryllium	0.0067
	Cadmium	0.0050
	Chromium	0.10
	Cobalt	0.13
	Fluoride	4.0
	Lead	0.015
	Lithium	0.040
	Mercury	0.0032
	Molybdenum	0.10
	Selenium	0.05
	Thallium	0.0020
	Radium-226 + Radium-228	6.7
PDP-25	Antimony	0.0060
	Arsenic	0.010
	Barium	2.0
	Beryllium	0.0040
	Cadmium	0.0050
	Chromium	0.10
	Cobalt	0.013
	Fluoride	4.0
	Lead	0.015
	Lithium	0.26
	Mercury	0.0020
	Molybdenum	0.10
	Selenium	0.050
	Thallium	0.0020
	Radium-226 + Radium-228	5.0
PDP-26	Antimony	0.0060
	Arsenic	0.010
	Barium	2.0
	Beryllium	0.0040
	Cadmium	0.0050
	Chromium	0.10
	Cobalt	0.006
	Fluoride	4.0
	Lead	0.015
	Lithium	0.040
	Mercury	0.0020
	Molybdenum	0.10
	Selenium	0.050
	Thallium	0.0020
	Radium-226 + Radium-228	5.0

Notes:
1. All concentrations in mg/L except radium (pCi/L).

FIGURES



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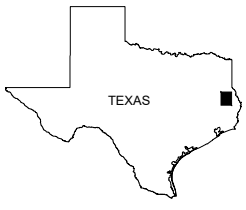


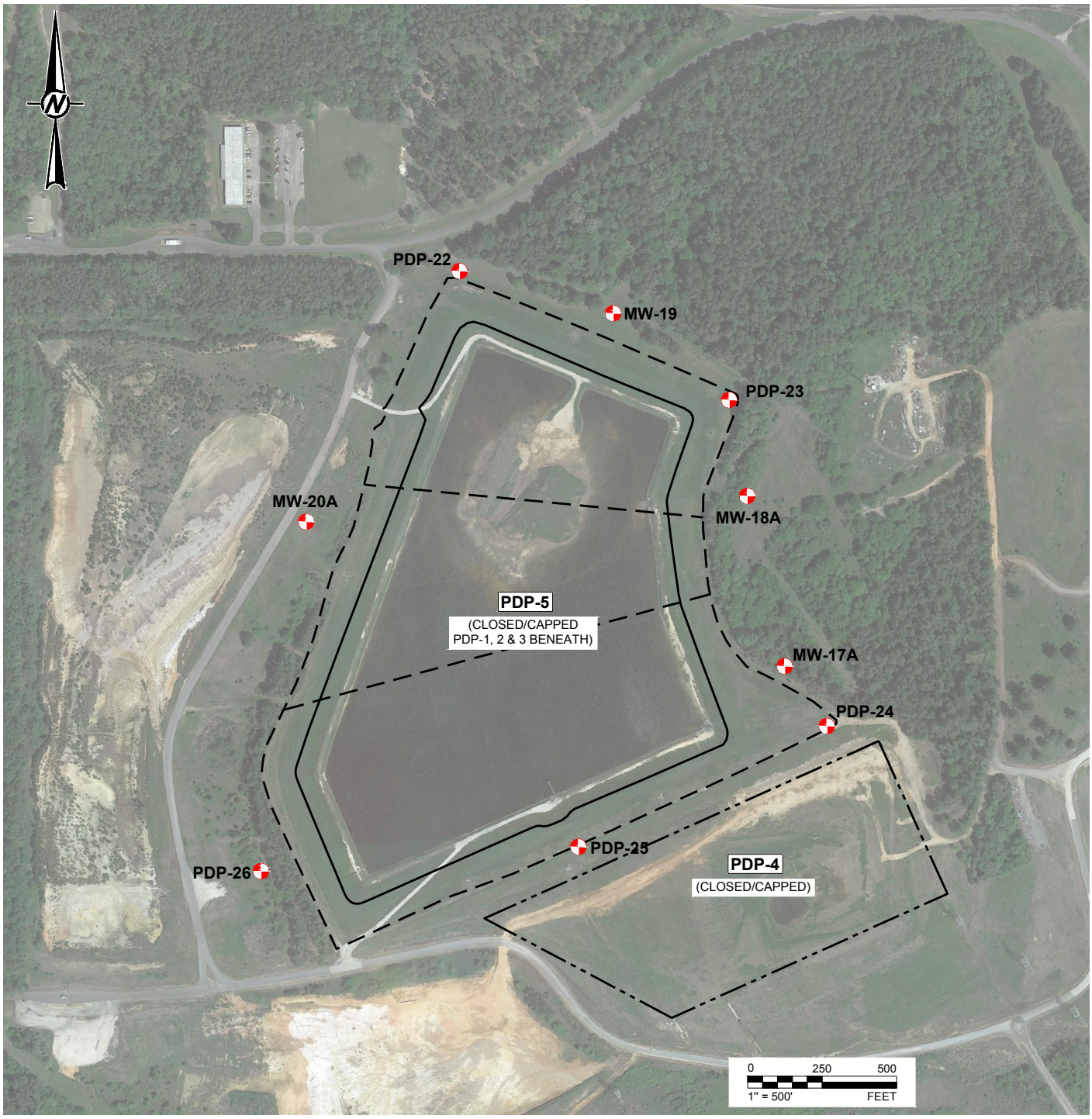
QUADRANGLE LOCATION

LUMINANT
MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

Figure 1
SITE LOCATION MAP

PROJECT: 23643.01	BY: SLB	DATE: 12/14/2023	CHECKED: WV

Bullock, Bennett & Associates, LLC
Engineering and Geoscience
Texas Registrations: Engineering F-8542, Geoscience 50127



LEGEND

- CCR MONITORING WELL
- APPROXIMATE EXTENT OF CLOSED PDP 1, 2 & 3
- EXTERIOR TOE OF PDP-5 BERMS
- APPROXIMATE EXTENT OF CLOSED PDP-4

STATE OF TEXAS
WILLIAM F VIENNE
GEOLOGY
No. 10492
LICENSED
PROFESSIONAL GEOSCIENTIST
12/29/2023

REFERENCE(S)
BASE MAP TAKEN FROM GOOGLE EARTH IMAGERY DATED 4/3/19.

LUMINANT
MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

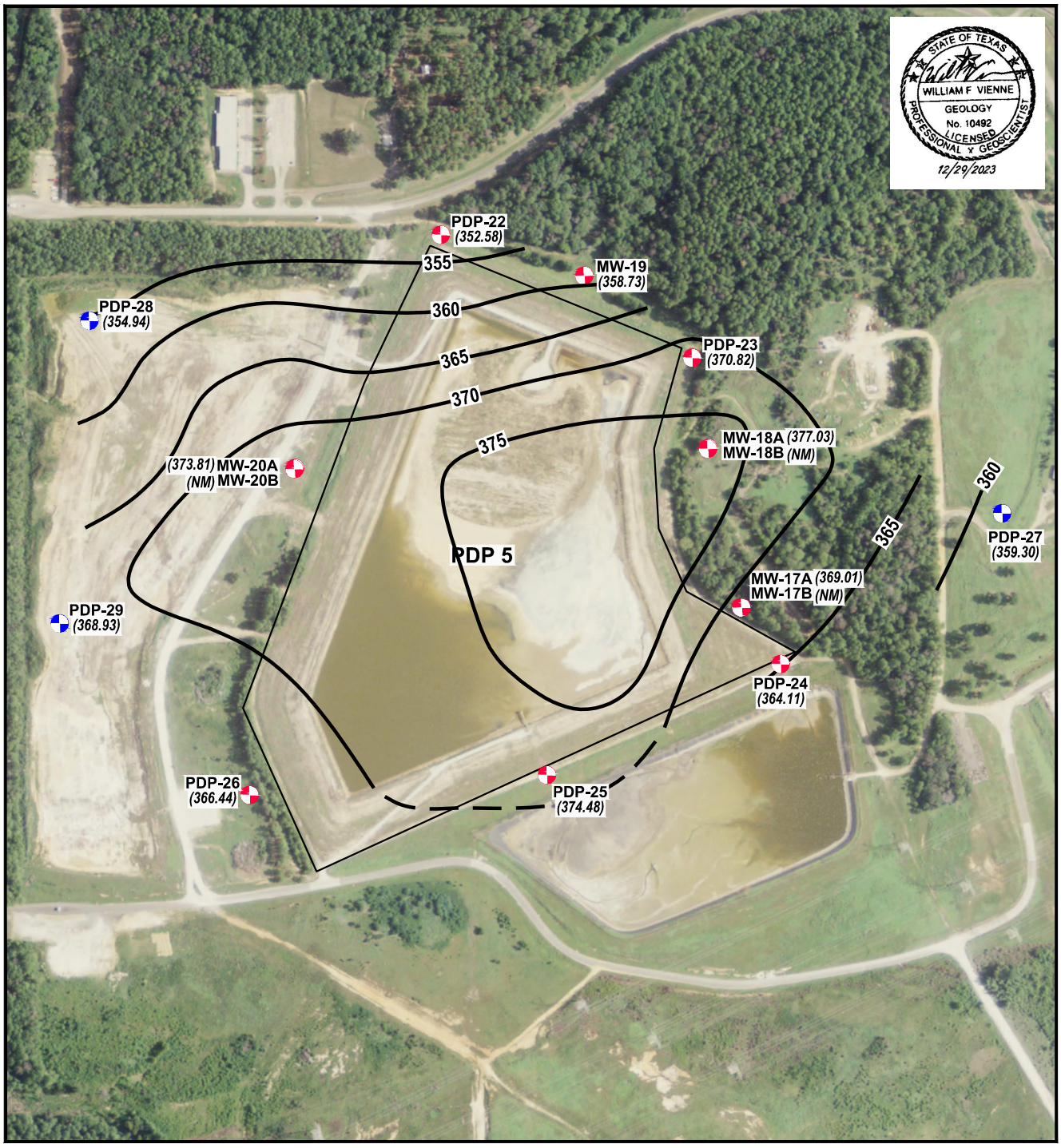
Figure 2
PDP-5 CCR Groundwater Monitoring Network

PROJECT: 23643.01	BY: SLB	DATE: 12/14/2023	CHECKED: WV

Bullock, Bennett & Associates, LLC
Engineering and Geoscience
Texas Registrations: Engineering F-8542, Geoscience 50127

APPENDIX A

Groundwater Potentiometric Surface Maps



STATE OF TEXAS
WILLIAM F VIENNE
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12/29/2023

EXPLANATION

- CCR Monitoring Well Location
- Non-CCR Monitoring Well Used to Further Evaluate Groundwater Flow Direction
- (374.34) Groundwater Potentiometric Surface (ft. MSL)
- — 360 — Groundwater Potentiometric Surface Contour (C.I. = 5 ft.)

Notes:
1. Only Zone A wells were used to construct potentiometric surface contours.

N

Scale in Feet

0 275 550

SOURCE:
Imagery from www.tnris.gov, Rusk County, aerial photographs, 2012.

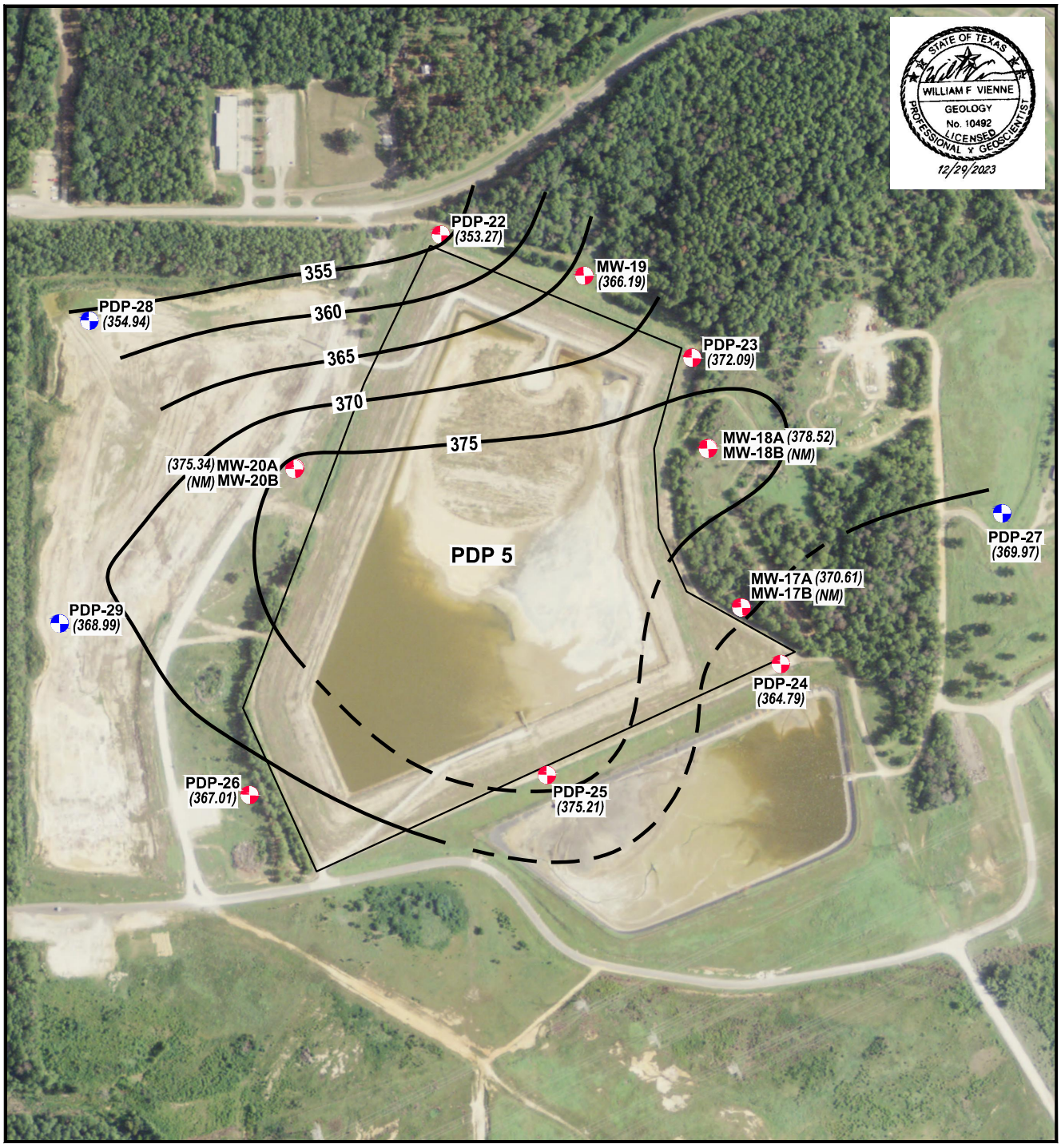
MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

Figure 1

PDP 5 - GROUNDWATER ZONE A POTENTIOMETRIC SURFACE MAP OCTOBER 20, 2015

PROJECT: 5164B	BY: AJD	REVISIONS
DATE: SEPT., 2017	CHECKED: PJB	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS



STATE OF TEXAS
WILLIAM F VIENNE
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No. 10492
LICENSED
PROFESSIONAL GEOSCIENTIST
12/29/2023

EXPLANATION

- CCR Monitoring Well Location
- Non-CCR Monitoring Well Used to Further Evaluate Groundwater Flow Direction
- (374.34) Groundwater Potentiometric Surface (ft. MSL)
- — 360 — Groundwater Potentiometric Surface Contour (C.I. = 5 ft.)

Notes:
1. Only Zone A wells were used to construct potentiometric surface contours.

N

Scale in Feet

0 275 550

SOURCE:
Imagery from www.tnris.gov, Rusk County, aerial photographs, 2012.

MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

Figure 2

PDP 5 - GROUNDWATER ZONE A POTENTIOMETRIC SURFACE MAP - DEC. 14, 2015

PROJECT: 5164B	BY: AJD	REVISIONS
DATE: SEPT., 2017	CHECKED: PJB	

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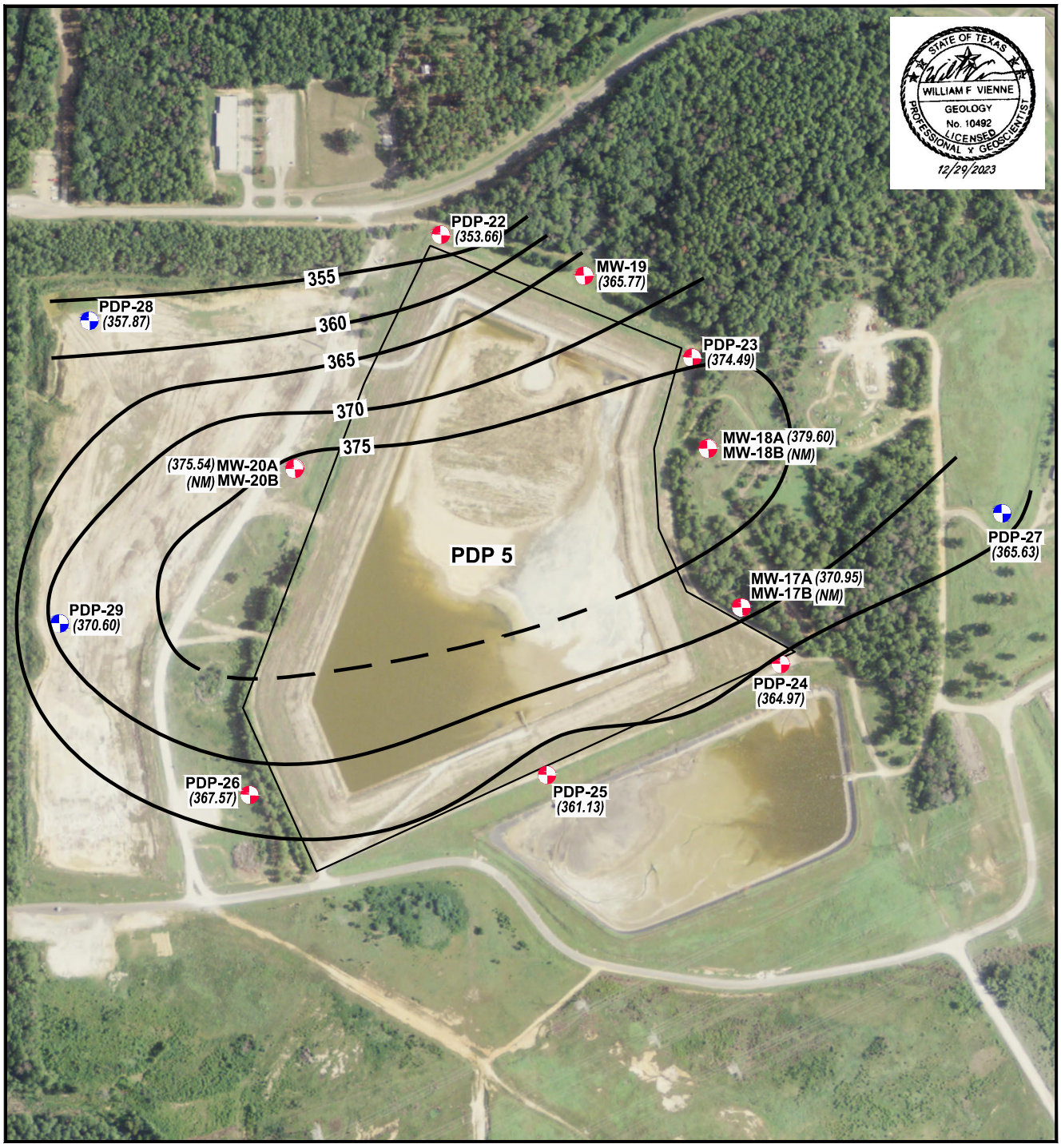

STATE OF TEXAS
WILLIAM F VIENNE
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No. 10492
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12/29/2023

EXPLANATION

- CCR Monitoring Well Location
- Non-CCR Monitoring Well Used to Further Evaluate Groundwater Flow Direction
- (374.34) Groundwater Potentiometric Surface (ft. MSL)
- — 360 — Groundwater Potentiometric Surface Contour (C.I. = 5 ft.)

Notes:
1. Only Zone A wells were used to construct potentiometric surface contours.

N

Scale in Feet

0 275 550

SOURCE:
Imagery from www.tnris.gov, Rusk County, aerial photographs, 2012.

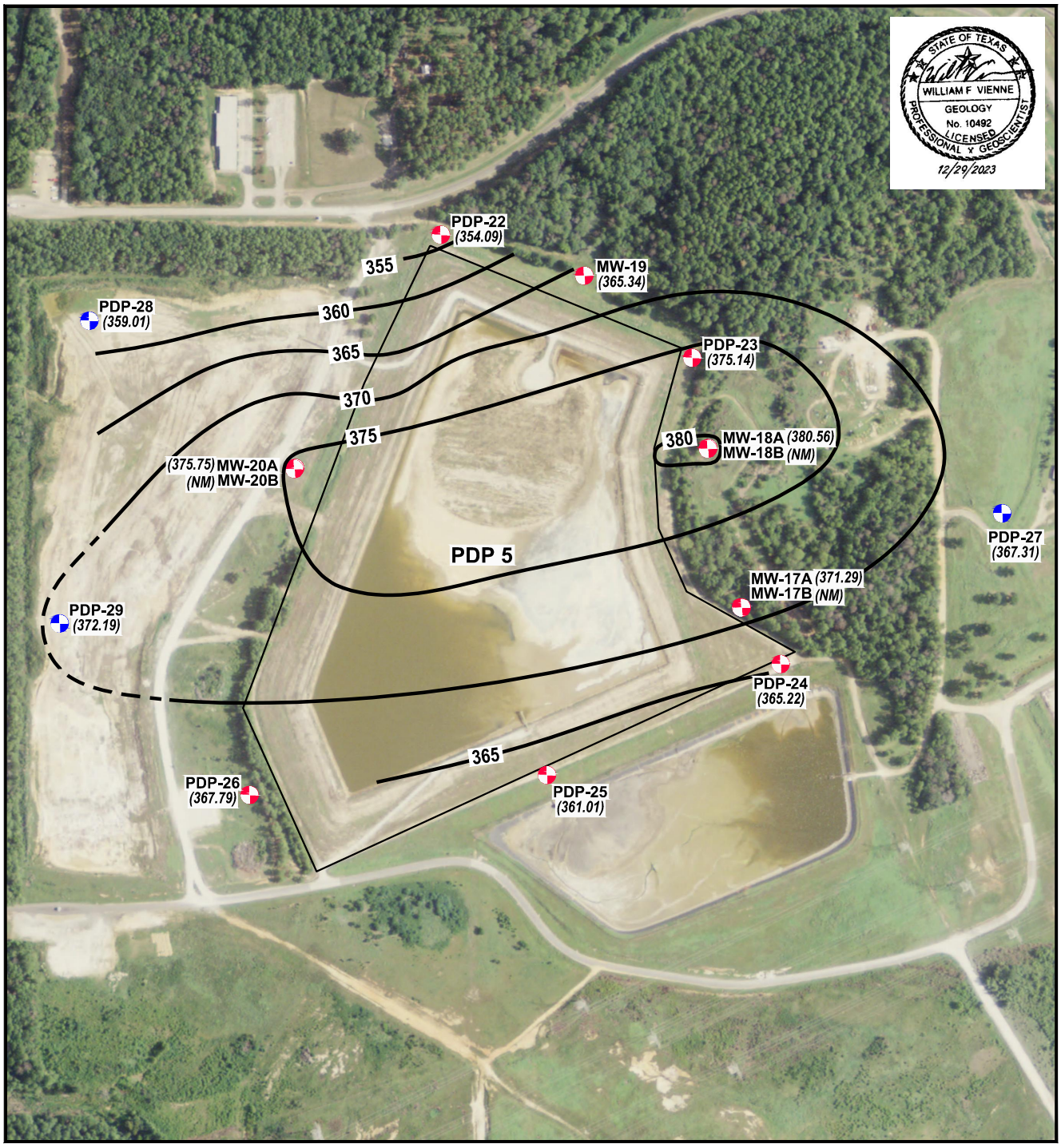
MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

Figure 3

PDP 5 - GROUNDWATER ZONE A POTENTIOMETRIC SURFACE MAP - FEB. 24, 2016

PROJECT: 5164B	BY: AJD	REVISIONS
DATE: SEPT., 2017	CHECKED: PJB	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS



STATE OF TEXAS
WILLIAM F VIENNE
GEOLOGY
No. 10492
LICENSED
PROFESSIONAL GEOSCIENTIST
12/29/2023

EXPLANATION

- CCR Monitoring Well Location
- Non-CCR Monitoring Well Used to Further Evaluate Groundwater Flow Direction
- (374.34) Groundwater Potentiometric Surface (ft. MSL)
- — 360 — Groundwater Potentiometric Surface Contour (C.I. = 5 ft.)

Notes:
1. Only Zone A wells were used to construct potentiometric surface contours.

N

Scale in Feet

0 275 550

SOURCE:
Imagery from www.tnris.gov, Rusk County, aerial photographs, 2012.

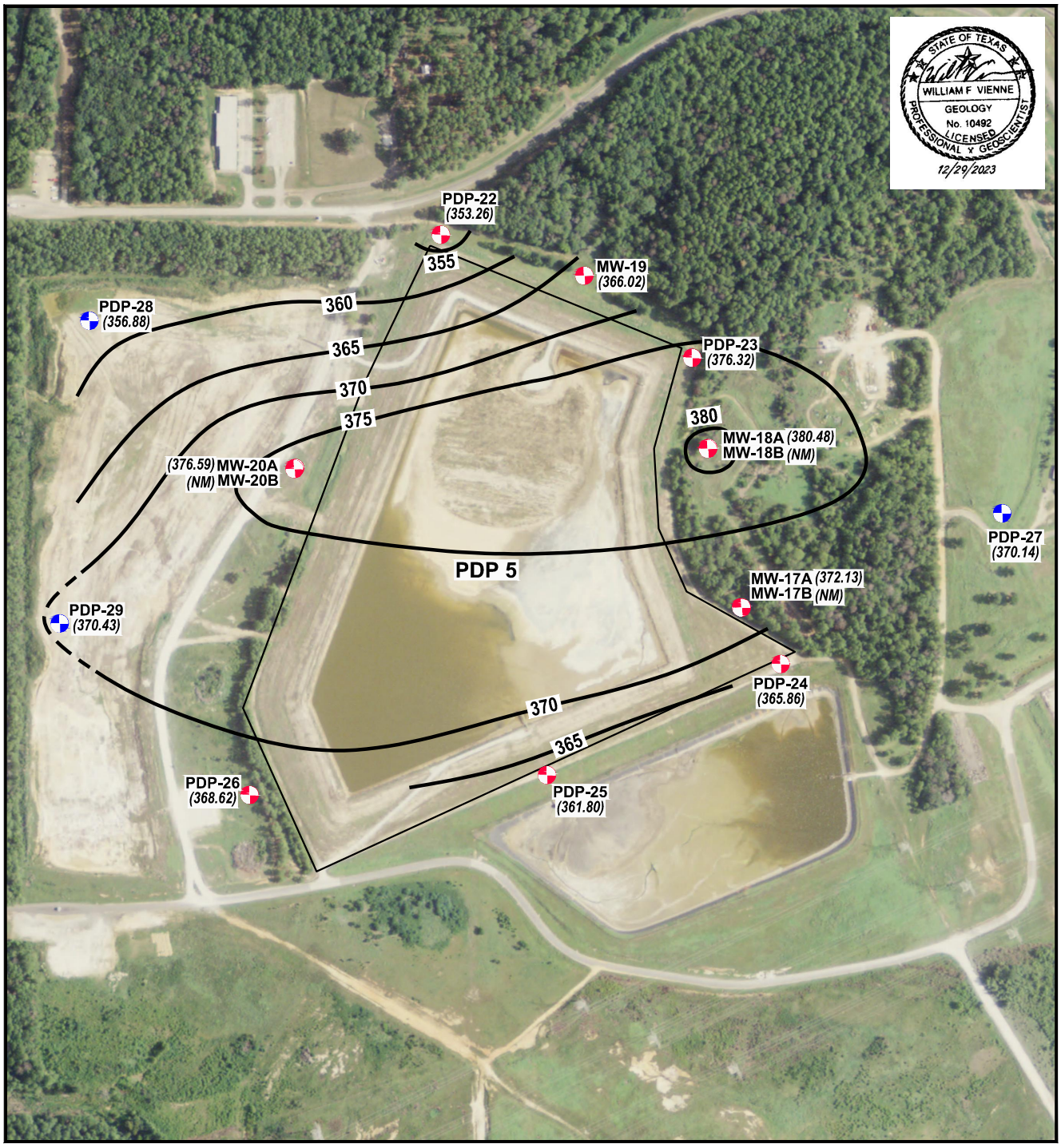
MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

Figure 4

PDP 5 - GROUNDWATER ZONE A POTENTIOMETRIC SURFACE MAP - APRIL 5, 2016

PROJECT: 5164B	BY: AJD	REVISIONS
DATE: SEPT., 2017	CHECKED: PJB	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS



STATE OF TEXAS
WILLIAM F VIENNE
GEOLOGY
No. 10492
LICENSED
PROFESSIONAL GEOSCIENTIST
12/29/2023

EXPLANATION

- CCR Monitoring Well Location
- Non-CCR Monitoring Well Used to Further Evaluate Groundwater Flow Direction
- (374.34) Groundwater Potentiometric Surface (ft. MSL)
- — 360 — Groundwater Potentiometric Surface Contour (C.I. = 5 ft.)

Notes:
1. Only Zone A wells were used to construct potentiometric surface contours.

N

Scale in Feet

0 275 550

SOURCE:
Imagery from www.tnris.gov, Rusk County, aerial photographs, 2012.

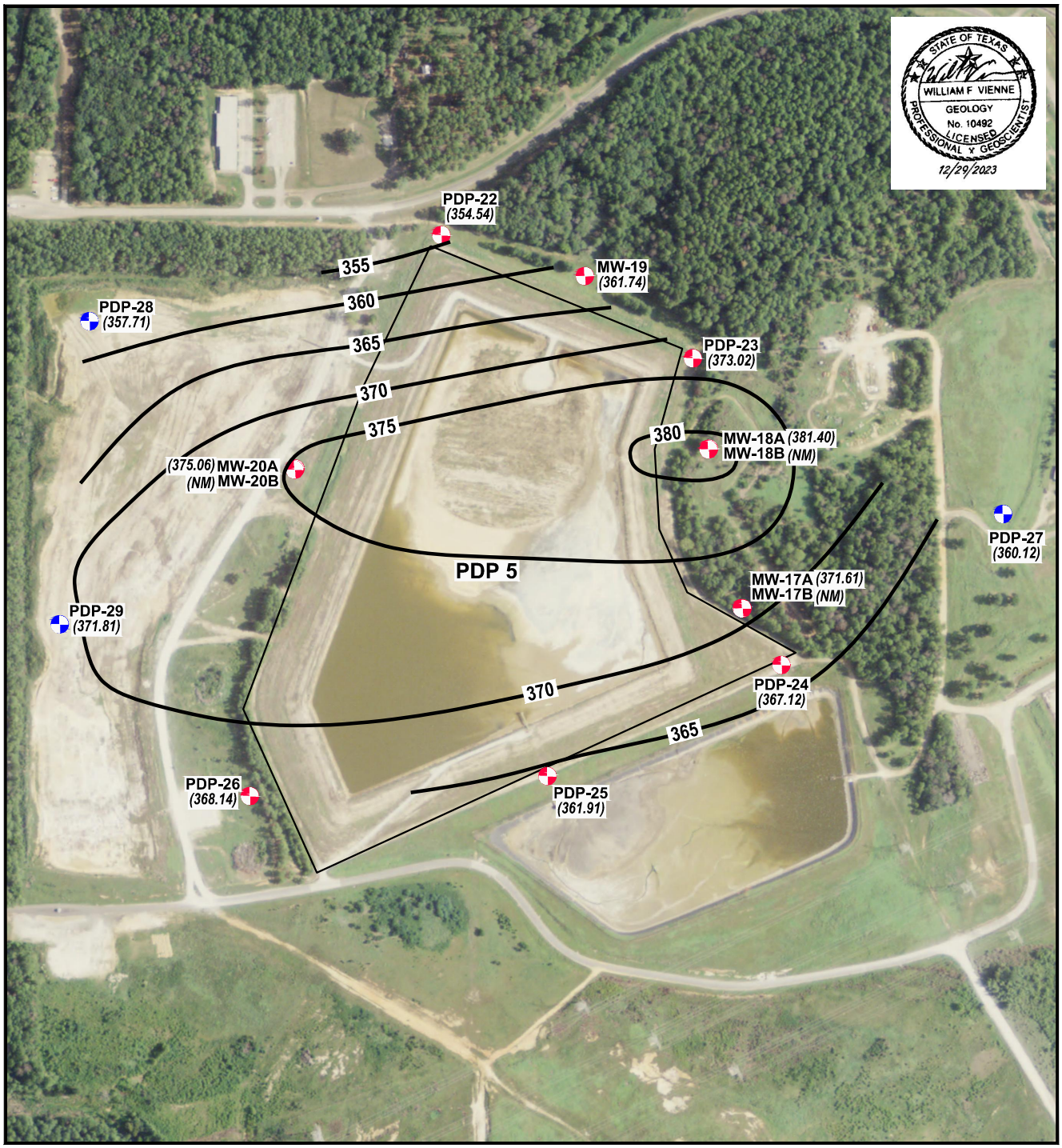
MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

Figure 5

PDP 5 - GROUNDWATER ZONE A POTENTIOMETRIC SURFACE MAP - JUNE 6, 2016

PROJECT: 5164B	BY: AJD	REVISIONS
DATE: SEPT., 2017	CHECKED: PJB	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS



STATE OF TEXAS
WILLIAM F VIENNE
GEOLOGY
No. 10492
LICENSED
PROFESSIONAL GEOSCIENTIST
12/29/2023

EXPLANATION

- CCR Monitoring Well Location
- Non-CCR Monitoring Well Used to Further Evaluate Groundwater Flow Direction
- (374.34) Groundwater Potentiometric Surface (ft. MSL)
- — 360 — Groundwater Potentiometric Surface Contour (C.I. = 5 ft.)

Notes:
1. Only Zone A wells were used to construct potentiometric surface contours.

N

Scale in Feet

0 275 550

SOURCE:
Imagery from www.tnris.gov, Rusk County, aerial photographs, 2012.

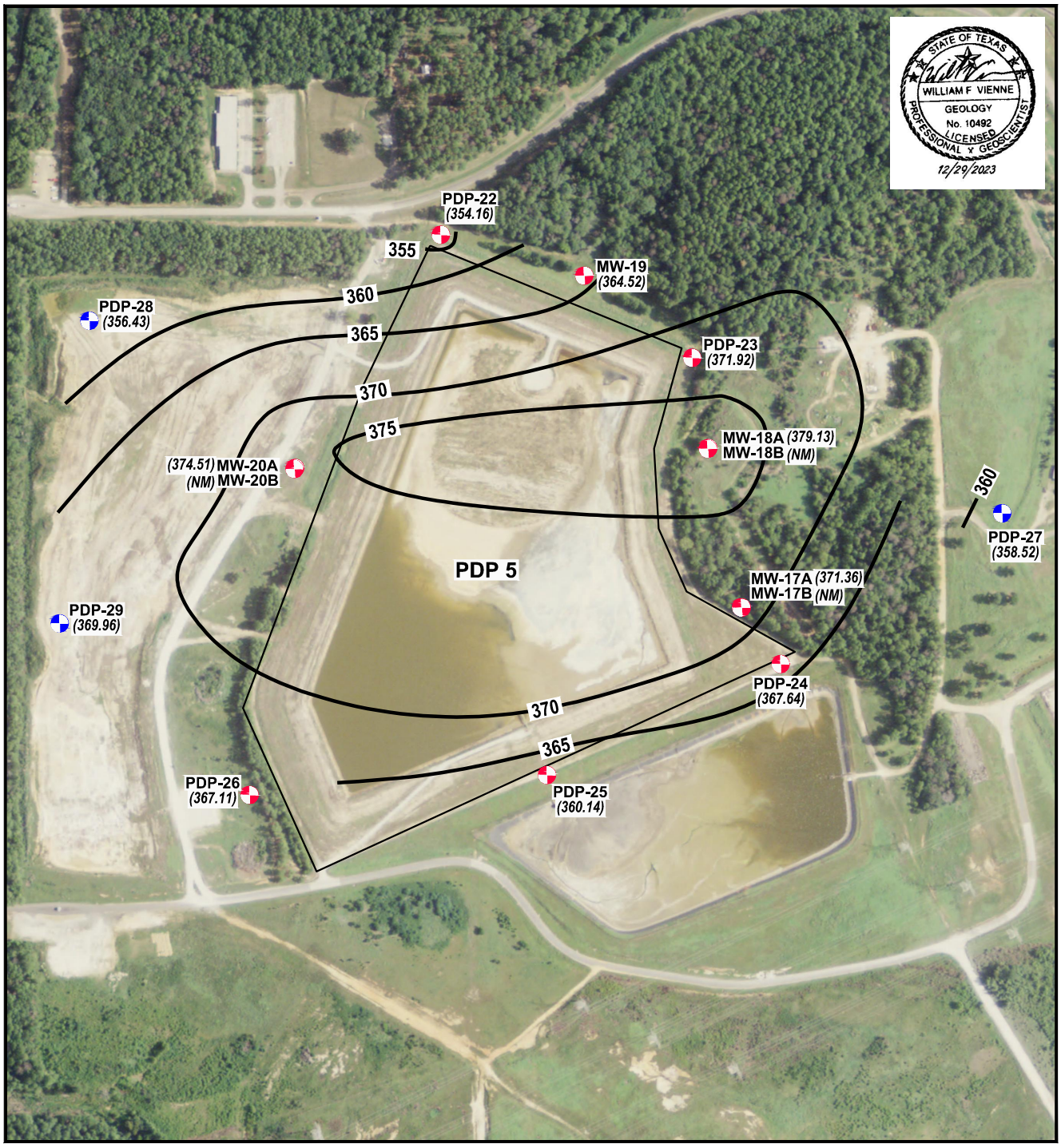
MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

Figure 6

PDP 5 - GROUNDWATER ZONE A POTENTIOMETRIC SURFACE MAP - AUGUST 9, 2016

PROJECT: 5164B	BY: AJD	REVISIONS
DATE: SEPT., 2017	CHECKED: PJB	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS



STATE OF TEXAS
WILLIAM F VIENNE
GEOLOGY
No. 10492
LICENSED
PROFESSIONAL GEOSCIENTIST
12/29/2023

EXPLANATION

- CCR Monitoring Well Location
- Non-CCR Monitoring Well Used to Further Evaluate Groundwater Flow Direction
- (374.34) Groundwater Potentiometric Surface (ft. MSL)
- — 360 — Groundwater Potentiometric Surface Contour (C.I. = 5 ft.)

Notes:
1. Only Zone A wells were used to construct potentiometric surface contours.

N

Scale in Feet

0 275 550

SOURCE:
Imagery from www.tnris.gov, Rusk County, aerial photographs, 2012.

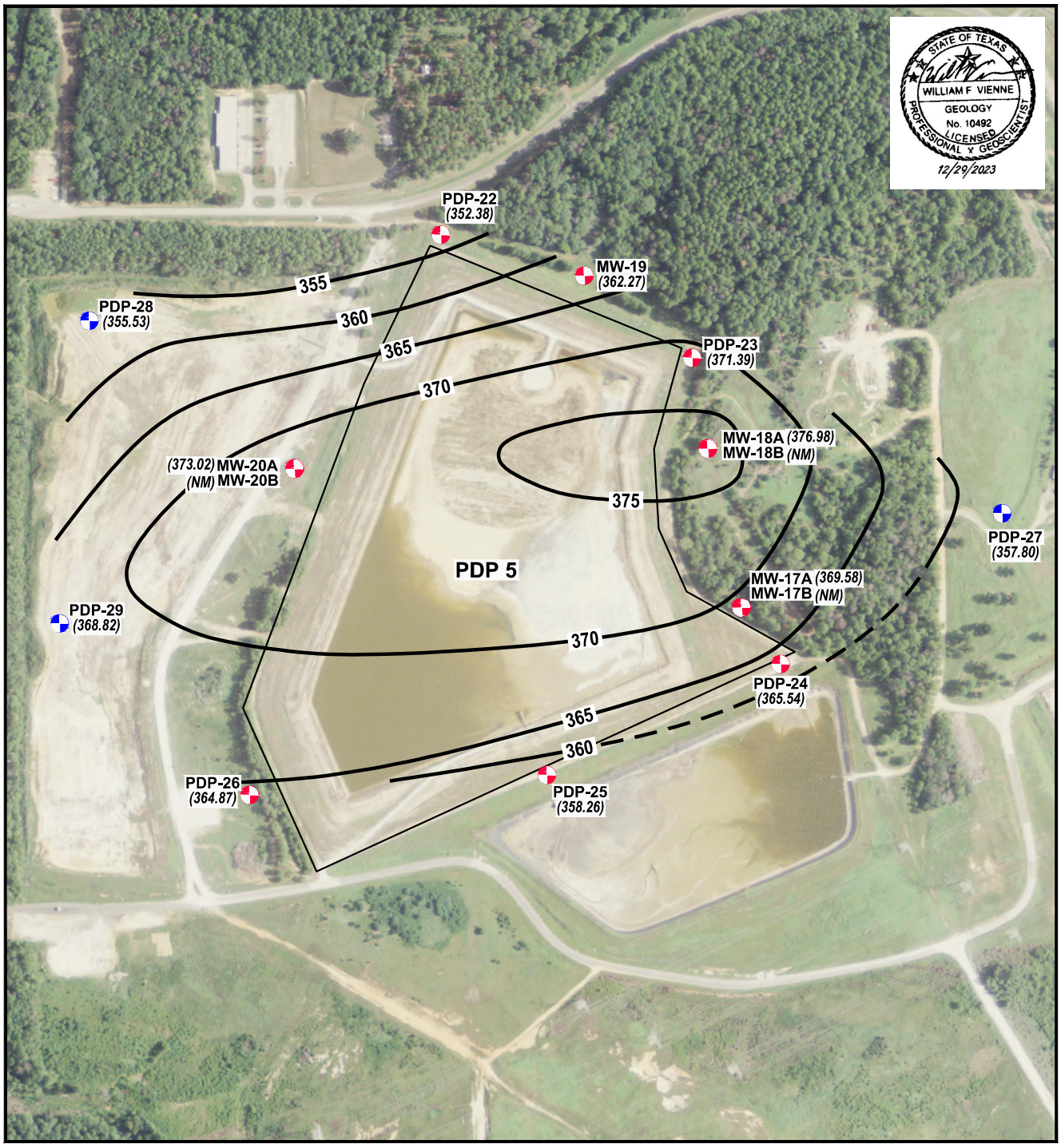
MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

Figure 7

PDP 5 - GROUNDWATER ZONE A POTENTIOMETRIC SURFACE MAP - OCTOBER 17, 2016

PROJECT: 5164B	BY: AJD	REVISIONS
DATE: SEPT., 2017	CHECKED: PJB	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS



STATE OF TEXAS
WILLIAM F VIENNE
GEOLOGY
No. 10492
LICENSED
PROFESSIONAL GEOSCIENTIST
12/29/2023

EXPLANATION

- CCR Monitoring Well Location
- Non-CCR Monitoring Well Used to Further Evaluate Groundwater Flow Direction
- (374.34) Groundwater Potentiometric Surface (ft. MSL)
- — 360 — Groundwater Potentiometric Surface Contour (C.I. = 5 ft.)

Notes:
1. Only Zone A wells were used to construct potentiometric surface contours.

N

Scale in Feet

0 275 550

SOURCE:
Imagery from www.tnris.gov, Rusk County, aerial photographs, 2012.

MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

Figure 8

PDP 5 - GROUNDWATER ZONE A POTENTIOMETRIC SURFACE MAP - DECEMBER 11, 2016

PROJECT: 5164B	BY: AJD	REVISIONS
DATE: SEPT., 2017	CHECKED: PJB	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS

APPENDIX B

Laboratory Analytical Reports

December 04, 2015

Will Vienne
Pastor, Behling & Wheeler
2201 Double Creek Dr #4004
Round Rock, Texas 78664
TEL: (512) 671-3434
FAX (512) 671-3446

Order No.: 1510216

RE: Luminant - Martin Lake

Dear Will Vienne:

DHL Analytical, Inc. received 16 sample(s) on 10/23/2015 for the analyses presented in the following report.

There were no problems with the analyses and all data met requirements of NELAC except where noted in the Case Narrative. All non-NELAC methods will be identified accordingly in the case narrative and all estimated uncertainties of test results are within method or EPA specifications.

If you have any questions regarding these tests results, please feel free to call. Thank you for using DHL Analytical.

Sincerely,

John DuPont
General Manager

This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211-15-15

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DHL ANALYTICAL
2300 Double Creek Dr. ■ Round Rock, TX 78664
Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

№ 68682

CHAIN-OF-CUSTODY

CLIENT: PBW
ADDRESS: 2201 DOUBLE CREEK DR ROUND ROCK, TX 78664
PHONE: 512-671-3434 FAX/E-MAIL: 512-671-3446
DATA REPORTED TO: WILL VIENNE
ADDITIONAL REPORT COPIES TO:

DATE: 10-22-15 PAGE 1 OF 2
PO #: 5164-B DHL WORK ORDER #: 1510214
PROJECT LOCATION OR NAME: LUMINANT - MARTIN LAKE
CLENT PROJECT #: 5164-B COLLECTOR: J. BRAXTON

Authorize 5% surcharge for TRRP Report? ❑ Yes ❑ No

S=SOIL P=PAINT
W=WATER SL=SLUDGE
A=AIR O=OTHER
L=LIQUID SO=SOLID
SE=SEDIMENT

PRESERVATION: HCl, HNO_3, H_2SO_4 ❑ NaOH ❑, ICE, UNPRESERVED

ANALYSES: BTEX ❑ MTBE ❑ [METHOD 8021] | TPH 1005 ❑ TPH 1006 ❑ HOLD 1006 ❑ | GRO [METHOD 8015] ❑ DRO [METHOD 8105] ❑ | VOC 8260 ❑ VOC 624 ❑ VOC 8260/5035 ❑ | SVOC 8270 ❑ PAH 8270 ❑ HOLD PAH ❑ SVOC 625 ❑ | 8270 PEST ❑ 625 PEST/PCB ❑ 608 PCB ❑ 8270 PCB ❑ | 8270 O-P PEST ❑ 8082 PCB ❑ T PHOS, AMMONIA ❑ | 8321 HERB ❑ T PHOS, AMMONIA ❑ | METALS 6020 X METALS 200.8 ❑ DISS. METALS ❑ | RCRA ❑ TX11 ❑ ❑ | PH X HEX CHROM ❑ ALKALINITY ❑ COD ❑ | CHLORIDE X ANIONS E-524 ❑ | TCLP-SVOC ❑ VOC ❑ PEST ❑ HERB ❑ | TCLP-METALS ❑ RCRA 8 ❑ TX-11 ❑ Pb ❑ | RCI ❑ FLASHPOINT ❑ DGAS ❑ | TDS X TSS ❑ % MOISTURE ❑ CYANIDE ❑ | SEE ATTACHED

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	HCl	HNO_3	H_2SO_4 ❑ NaOH ❑	ICE	UNPRESERVED	FIELD NOTES
PDP-23	01	10-20-15	0740	W		4						
PDP-24	02		0835	W		4						
PDP-22	03		0925	W		4						
MW-19	04		1020	W		4						
MW-20A	05		1120	W		4						
~~JB~~	~~JB~~	JB	~~JB~~	~~JB~~	JB	~~JB~~						JB
PDP-26	06		1400	W		4						
PDP-25	07		1520	W		4						
H-30	08		1620	W		4						
H-31	09		1715	W		4						
H-29	10	10-21-15	1245	W		4						
H-28	11		1335	W		4						
H-27	12		1420	W		4						
H-26	13		1525	W		4						
H-33	14	10-22-15	1255	W		4						

RELINQUISHED BY: (Signature) DATE/TIME 10-22-15 1800 RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature) DATE/TIME 10/22/15 1950 RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature) DATE/TIME RECEIVED BY: (Signature)

❑ DHL DISPOSAL @ $5.00 each ❑ Return

TURN AROUND TIME
RUSH ❑ CALL FIRST
1 DAY ❑ CALL FIRST
2 DAY ❑
NORMAL ☒
OTHER ❑ _____

LABORATORY USE ONLY:
RECEIVING TEMP: 4.5, 4.2, 3.4 THERM #: 78
CUSTODY SEALS: ❑ BROKEN ❑ INTACT ☒ NOT USED
CARRIER: ❑ LONE STAR ☒ FEDEX ❑ UPS ❑ OTHER
❑ COURIER DELIVERY
❑ HAND DELIVERED

DHL ANALYTICAL
2300 Double Creek Dr. ■ Round Rock, TX 78664
Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

№ 68683

CHAIN-OF-CUSTODY

CLIENT: PBW
ADDRESS: 2201 DOUBLE CREEK DR ROUND ROCK TX 78664
PHONE: 512-671-3434 FAX/E-MAIL: 512-671-3446
DATA REPORTED TO: WILL VIENNE
ADDITIONAL REPORT COPIES TO:

DATE: 10-22-15 PAGE 2 OF 2
PO #: 5164-B DHL WORK ORDER #: 151024
PROJECT LOCATION OR NAME: LUMINANT- MARTIN LAKE
CLENT PROJECT #: 5164-B COLLECTOR: J. BRANDON

Authorize 5% surcharge for TRRP Report? ☐ Yes ☐ No

S=SOIL W=WATER A=AIR L=LIQUID SE=SEDIMENT P=PAINT SL=SLUDGE O=OTHER SO=SOLID

PRESERVATION: HCl | HNO_3 | H_2SO_4 ☐ NaOH ☐ | ICE | UNPRESERVED

ANALYSES: BTEX ☐ MTBE ☐ (METHOD 8021) | TPH 1005 ☐ TPH 1006 ☐ HOLD 1006 ☐ | GRO (METHOD 8015) ☐ DRO (METHOD 8105) ☐ | VOC 8260 ☐ VOC 624 ☐ VOC 8260/5035 ☐ | SVOC 8270 ☐ PAH 8270 ☐ HOLD PAH ☐ SVOC 625 ☐ | 8270 PEST ☐ 625 PEST/PCB ☐ 608 PCB ☐ | 8270 O-P PEST ☐ 8082 PCB ☐ 8270 PCB ☐ | 8321 HERB ☐ T PHOS, AMMONIA ☐ | METALS 6020 ☐ METALS 200.8 ☐ DISS. METALS ☐ | RCRA ☐ TX11 ☐ ☐ | PH ☐ HEX CHROM ☐ ALKALINITY ☐ COD ☐ | CHLORIDE ☐ ANIONS ☐ SO4 ☐ ☐ | TCLP-SVOC ☐ VOC ☐ PEST ☐ HERB ☐ | TCLP-METALS ☐ RCRA 8 ☐ TX-11 ☐ Pb ☐ | RCI ☐ FLASHPOINT ☐ DGAS ☐ | TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐ | SEE ATTACHED

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	HCl	HNO_3	H_2SO_4 NaOH	ICE	UNPRESERVED	ANALYSES	FIELD NOTES
H-32	15	10-22-15	1355	W		4						1 1 1 1 X	
MW-17A	16	10-21-15	1455	W		4						X	
[illegible] JB		[illegible] JB	[illegible] JB	[illegible] JB		[illegible]	JB					JB	
		JB	JB										

RELINQUISHED BY: (Signature) DATE/TIME: 10-22-15 1800 RECEIVED BY: (Signature) FedEx
RELINQUISHED BY: (Signature) FedEx DATE/TIME: 10/23/15 1050 RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature) DATE/TIME: RECEIVED BY: (Signature)

☐ DHL DISPOSAL @ $5.00 each ☐ Return

TURN AROUND TIME
RUSH ☐ CALL FIRST
1 DAY ☐ CALL FIRST
2 DAY ☐
NORMAL ☒
OTHER ☐ _____

LABORATORY USE ONLY:
RECEIVING TEMP: 4.5, 4.2, 3.4 THERM #: 78
CUSTODY SEALS: ☐ BROKEN ☐ INTACT ☒ NOT USED
CARRIER: ☐ LONE STAR ☐ FEDEX ☐ UPS ☐ OTHER
☐ COURIER DELIVERY
☐ HAND DELIVERED

John Dupont

From: Sara Taube [Sara.Taube@pbwllc.com]
Sent: Wednesday, July 22, 2015 12:05 PM
To: John Dupont
Subject: CCR Appendix III and IV
Follow Up Flag: Follow up
Flag Status: Completed

Hi John,

Here are the Appendix III and Appendix IV constituents that we will need to have analyzed under the CCR Rule.

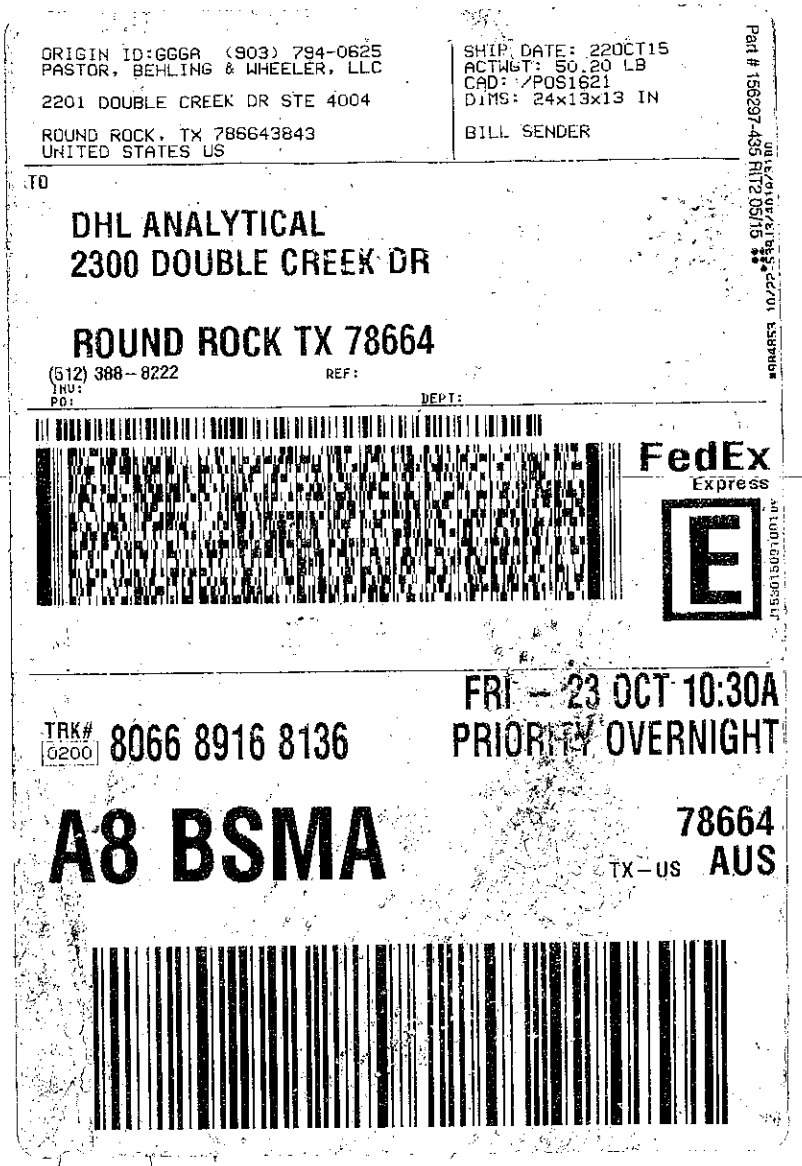
Appendix III
Boron
Calcium
Chloride
Fluoride
pH
sulfate
TDS

Appendix IV
Antimony
Arsenic
Barium
Beryllium
Cadmium
Chromium
Cobalt
Fluoride
Lead
Lithium
Mercury
Molybdenum
Selenium
Thallium
Radium 226 and 228

We are looking to have approximately 74 wells sampled 8 times over the course of the next two years. Please let me know if there is any more information you might need.

Cheers,

Sara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PASTOR, BEHLING & WHEELER, LLC
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ROUND ROCK, TX 786643843
UNITED STATES US
SHIP DATE: 22OCT15
ACTWGT: 50.20 LB
CAD: /POS1621
DIMS: 24x13x13 IN
BILL SENDER
TO
DHL ANALYTICAL
2300 DOUBLE CREEK DR
ROUND ROCK TX 78664
(512) 388-8222
REF:
INV:
PO:
DEPT:
FedEx
Express
TRK# 0200 8066 8916 8136
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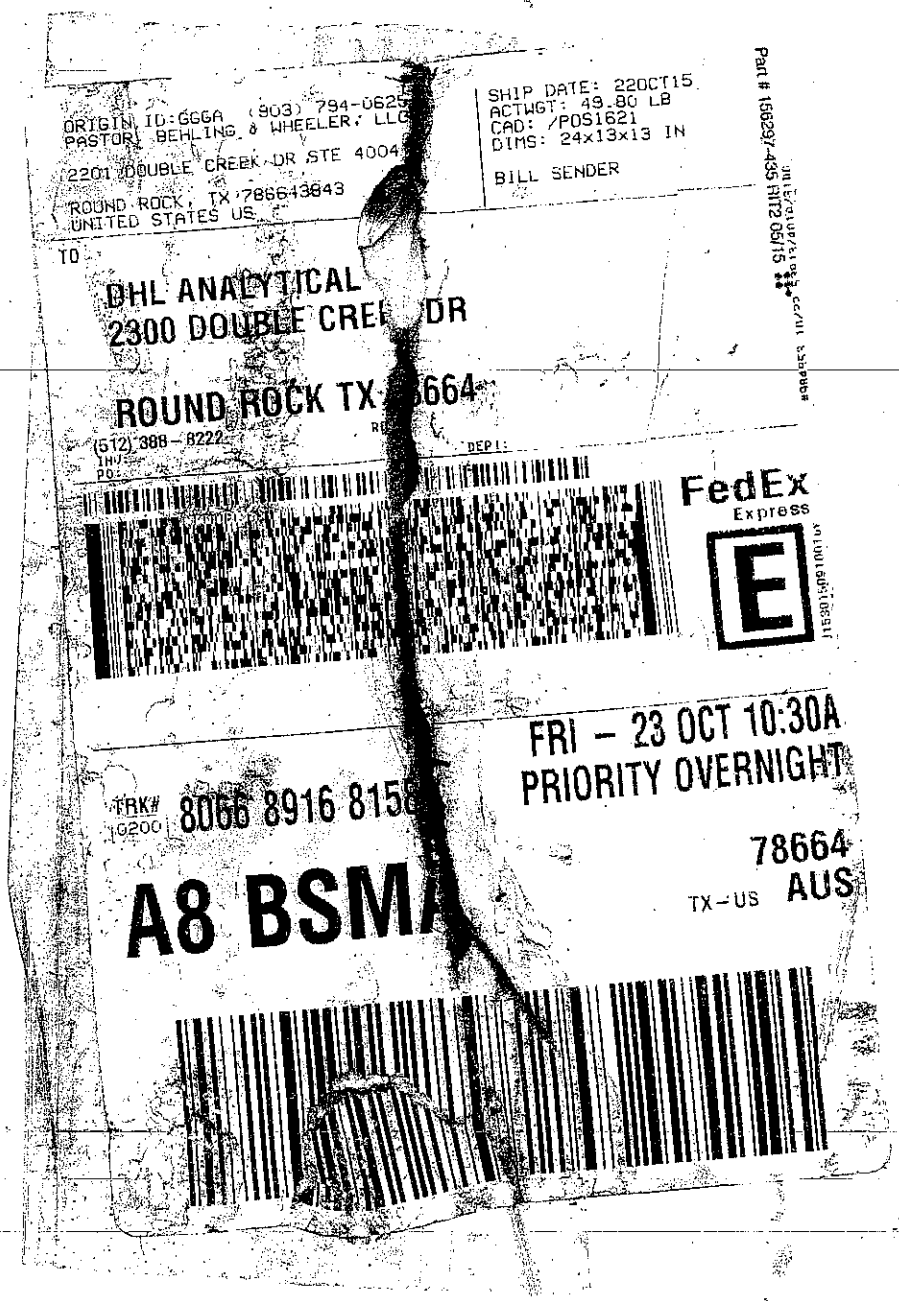
PRIORITY OVERNIGHT
A8 BSMA
78664
TX-US AUS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ROUND ROCK, TX 786643843
UNITED STATES US
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TO
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2300 DOUBLE CREE DR
ROUND ROCK TX 664
(512) 388-8222
DEPT:
FedEx
Express
FRI - 23 OCT 10:30A
PRIORITY OVERNIGHT
TRK# 8066 8916 815
78664
TX-US AUS
A8 BSM

DHL Analytical, Inc.

Sample Receipt Checklist

Client Name **Pastor, Behling & Wheeler** Date Received: **10/23/2015**

Work Order Number **1510216** Received by **JB**

Checklist completed by: _____ 10/23/2015 Reviewed by _____ 10/23/2015
Signature Date Initials Date

Carrier name FedEx 1day

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	4.5 °C 1,4.2.3.4
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH<2 acceptable upon receipt?	Yes ☑	No ☐	NA ☐ LOT # 8086
	Adjusted? NO		Checked by
Water - ph>9 (S) or ph>12 (CN) acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted?		Checked by

Any No response must be detailed in the comments section below.

Client contacted _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding _____

Comments: _____

Corrective Action _____

DHL Analytical, Inc. **Date:** *04-Dec-15*

CLIENT: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake
Lab Order: 1510216

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Method SW6020A - Metals Analysis
Method SW7470A - Mercury Analysis
Method E300 - Anions Analysis
Method M4500-H+ B - pH of a Water Analysis
Method M2540C - TDS Analysis

LOG IN

The samples were received and log-in performed on 10/23/15. A total of 16 samples were received. The samples arrived in good condition and were properly packaged.

METALS ANALYSIS

For Metals analysis performed on 11/5/15 Chromium and Molybdenum were detected above the reporting limits in the method blank (MB-72051). All associated samples were below detection limits for these analytes. No further corrective actions were taken.

For Metals analysis performed on 11/5/15 (batch 72051) the matrix spike duplicate recovery was slightly above control limits for Boron and Calcium. These are flagged accordingly in the QC summary report. The sample selected for the matrix spike and matrix spike duplicate was from this work order. The LCS was within control limits for these analytes. No further corrective actions were taken.

For Metals analysis performed on 11/9/15 (batch 72217) the RPD for the serial dilution was above control limits for Chromium. This is flagged accordingly. The PDS was within control limits for this analyte. No further corrective actions were taken.

For Metals analysis performed on 11/5/15 and 11/9/15 four LCVLs were above control limits for Boron. These are flagged accordingly. The associated CCVs were within control limits for this analyte. No further corrective actions were taken.

ANIONS ANALYSIS

For Anions analysis performed on 11/2/15 the matrix spike duplicate recoveries (1510216-02 MSD & 1510216-07 MSD) were slightly above control limits for Sulfate. These are flagged accordingly in the QC summary report. The samples selected for the matrix spikes and matrix spike duplicates were from this work order. The LCS was within control limits for this analyte. No further corrective actions were taken.

DHL Analytical, Inc.

Date: *04-Dec-15*

CLIENT: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake
Lab Order: 1510216

Work Order Sample Summary

Lab Smp ID	Client Sample ID	Tag Number	Date Collected	Date Recved
1510216-01	PDP-23		10/20/15 07:40 AM	10/23/2015
1510216-02	PDP-24		10/20/15 08:35 AM	10/23/2015
1510216-03	PDP-22		10/20/15 09:25 AM	10/23/2015
1510216-04	MW-19		10/20/15 10:20 AM	10/23/2015
1510216-05	MW-20A		10/20/15 11:20 AM	10/23/2015
1510216-06	PDP-26		10/20/15 02:20 PM	10/23/2015
1510216-07	PDP-25		10/20/15 03:20 PM	10/23/2015
1510216-08	H-30		10/20/15 04:20 PM	10/23/2015
1510216-09	H-31		10/20/15 05:15 PM	10/23/2015
1510216-10	H-29		10/21/15 12:45 PM	10/23/2015
1510216-11	H-28		10/21/15 01:35 PM	10/23/2015
1510216-12	H-27		10/21/15 02:20 PM	10/23/2015
1510216-13	H-26		10/21/15 03:25 PM	10/23/2015
1510216-14	H-33		10/22/15 12:55 PM	10/23/2015
1510216-15	H-32		10/22/15 01:55 PM	10/23/2015
1510216-16	MW-17A		10/21/15 02:55 PM	10/23/2015

Lab Order: 1510216
Client: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1510216-01A	PDP-23	10/20/15 07:40 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/28/15 08:58 AM	72051
	PDP-23	10/20/15 07:40 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/28/15 08:58 AM	72051
	PDP-23	10/20/15 07:40 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	10/28/15 10:56 AM	72061
1510216-01D	PDP-23	10/20/15 07:40 AM	Aqueous	E300	Anion Preparation	11/02/15 08:38 AM	72110
	PDP-23	10/20/15 07:40 AM	Aqueous	M4500-H+ B	pH Preparation	10/23/15 12:13 PM	71998
	PDP-23	10/20/15 07:40 AM	Aqueous	M2540C	TDS Preparation	10/26/15 10:21 AM	72016
1510216-02A	PDP-24	10/20/15 08:35 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/28/15 08:58 AM	72051
	PDP-24	10/20/15 08:35 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/28/15 08:58 AM	72051
	PDP-24	10/20/15 08:35 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/28/15 08:58 AM	72051
	PDP-24	10/20/15 08:35 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	10/28/15 10:56 AM	72061
1510216-02D	PDP-24	10/20/15 08:35 AM	Aqueous	E300	Anion Preparation	11/02/15 08:38 AM	72110
	PDP-24	10/20/15 08:35 AM	Aqueous	E300	Anion Preparation	11/02/15 08:38 AM	72110
	PDP-24	10/20/15 08:35 AM	Aqueous	M4500-H+ B	pH Preparation	10/23/15 12:13 PM	71998
	PDP-24	10/20/15 08:35 AM	Aqueous	M2540C	TDS Preparation	10/26/15 10:21 AM	72016
1510216-03A	PDP-22	10/20/15 09:25 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/28/15 08:58 AM	72051
	PDP-22	10/20/15 09:25 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/28/15 08:58 AM	72051
	PDP-22	10/20/15 09:25 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	10/28/15 10:56 AM	72061
1510216-03D	PDP-22	10/20/15 09:25 AM	Aqueous	E300	Anion Preparation	11/02/15 08:38 AM	72110
	PDP-22	10/20/15 09:25 AM	Aqueous	M4500-H+ B	pH Preparation	10/23/15 12:13 PM	71998
	PDP-22	10/20/15 09:25 AM	Aqueous	M2540C	TDS Preparation	10/26/15 10:21 AM	72016
1510216-04A	MW-19	10/20/15 10:20 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/28/15 08:58 AM	72051
	MW-19	10/20/15 10:20 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/28/15 08:58 AM	72051
	MW-19	10/20/15 10:20 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	10/28/15 10:56 AM	72061
1510216-04D	MW-19	10/20/15 10:20 AM	Aqueous	E300	Anion Preparation	11/02/15 08:38 AM	72110
	MW-19	10/20/15 10:20 AM	Aqueous	M4500-H+ B	pH Preparation	10/23/15 12:13 PM	71998
	MW-19	10/20/15 10:20 AM	Aqueous	M2540C	TDS Preparation	10/26/15 10:21 AM	72016
1510216-05A	MW-20A	10/20/15 11:20 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/28/15 08:58 AM	72051
	MW-20A	10/20/15 11:20 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/28/15 08:58 AM	72051

Lab Order: 1510216
Client: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1510216-05A	MW-20A	10/20/15 11:20 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	10/28/15 10:56 AM	72061
1510216-05D	MW-20A	10/20/15 11:20 AM	Aqueous	E300	Anion Preparation	11/02/15 08:38 AM	72110
	MW-20A	10/20/15 11:20 AM	Aqueous	M4500-H+ B	pH Preparation	10/23/15 12:13 PM	71998
	MW-20A	10/20/15 11:20 AM	Aqueous	M2540C	TDS Preparation	10/26/15 10:21 AM	72016
1510216-06A	PDP-26	10/20/15 02:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/28/15 08:58 AM	72051
	PDP-26	10/20/15 02:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/28/15 08:58 AM	72051
	PDP-26	10/20/15 02:20 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	10/28/15 10:56 AM	72061
1510216-06D	PDP-26	10/20/15 02:20 PM	Aqueous	E300	Anion Preparation	11/02/15 08:38 AM	72110
	PDP-26	10/20/15 02:20 PM	Aqueous	M4500-H+ B	pH Preparation	10/23/15 12:13 PM	71998
	PDP-26	10/20/15 02:20 PM	Aqueous	M2540C	TDS Preparation	10/26/15 10:21 AM	72016
1510216-07A	PDP-25	10/20/15 03:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/28/15 08:58 AM	72051
	PDP-25	10/20/15 03:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/28/15 08:58 AM	72051
	PDP-25	10/20/15 03:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/28/15 08:58 AM	72051
	PDP-25	10/20/15 03:20 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	10/28/15 10:56 AM	72061
1510216-07D	PDP-25	10/20/15 03:20 PM	Aqueous	E300	Anion Preparation	11/02/15 08:38 AM	72110
	PDP-25	10/20/15 03:20 PM	Aqueous	E300	Anion Preparation	11/02/15 08:38 AM	72110
	PDP-25	10/20/15 03:20 PM	Aqueous	M4500-H+ B	pH Preparation	10/23/15 12:13 PM	71998
	PDP-25	10/20/15 03:20 PM	Aqueous	M2540C	TDS Preparation	10/26/15 10:21 AM	72016
1510216-08A	H-30	10/20/15 04:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/28/15 08:58 AM	72051
	H-30	10/20/15 04:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/28/15 08:58 AM	72051
	H-30	10/20/15 04:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	11/09/15 08:08 AM	72217
	H-30	10/20/15 04:20 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	10/28/15 10:56 AM	72061
1510216-08D	H-30	10/20/15 04:20 PM	Aqueous	E300	Anion Preparation	11/02/15 08:38 AM	72110
	H-30	10/20/15 04:20 PM	Aqueous	E300	Anion Preparation	11/02/15 08:38 AM	72110
	H-30	10/20/15 04:20 PM	Aqueous	M4500-H+ B	pH Preparation	10/23/15 12:13 PM	71998
	H-30	10/20/15 04:20 PM	Aqueous	M2540C	TDS Preparation	10/26/15 10:21 AM	72016
1510216-09A	H-31	10/20/15 05:15 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/28/15 08:58 AM	72051
	H-31	10/20/15 05:15 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	11/09/15 08:08 AM	72217

Lab Order: 1510216
Client: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1510216-09A	H-31	10/20/15 05:15 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	11/09/15 08:08 AM	72217
	H-31	10/20/15 05:15 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/28/15 08:58 AM	72051
	H-31	10/20/15 05:15 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	10/28/15 10:56 AM	72061
1510216-09D	H-31	10/20/15 05:15 PM	Aqueous	E300	Anion Preparation	11/02/15 08:38 AM	72110
	H-31	10/20/15 05:15 PM	Aqueous	E300	Anion Preparation	11/02/15 08:38 AM	72110
	H-31	10/20/15 05:15 PM	Aqueous	M4500-H+ B	pH Preparation	10/23/15 12:13 PM	71998
	H-31	10/20/15 05:15 PM	Aqueous	M2540C	TDS Preparation	10/26/15 10:21 AM	72016
1510216-10A	H-29	10/21/15 12:45 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/28/15 08:58 AM	72051
	H-29	10/21/15 12:45 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/28/15 08:58 AM	72051
	H-29	10/21/15 12:45 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	10/28/15 10:56 AM	72061
1510216-10D	H-29	10/21/15 12:45 PM	Aqueous	E300	Anion Preparation	11/02/15 08:38 AM	72110
	H-29	10/21/15 12:45 PM	Aqueous	E300	Anion Preparation	11/02/15 08:38 AM	72110
	H-29	10/21/15 12:45 PM	Aqueous	M4500-H+ B	pH Preparation	10/23/15 12:13 PM	71998
	H-29	10/21/15 12:45 PM	Aqueous	M2540C	TDS Preparation	10/26/15 10:21 AM	72016
1510216-11A	H-28	10/21/15 01:35 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/28/15 08:58 AM	72051
	H-28	10/21/15 01:35 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/28/15 08:58 AM	72051
	H-28	10/21/15 01:35 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	10/28/15 10:56 AM	72061
1510216-11D	H-28	10/21/15 01:35 PM	Aqueous	E300	Anion Preparation	11/02/15 08:38 AM	72110
	H-28	10/21/15 01:35 PM	Aqueous	E300	Anion Preparation	11/02/15 08:38 AM	72110
	H-28	10/21/15 01:35 PM	Aqueous	M4500-H+ B	pH Preparation	10/23/15 12:13 PM	71998
	H-28	10/21/15 01:35 PM	Aqueous	M2540C	TDS Preparation	10/26/15 10:21 AM	72016
1510216-12A	H-27	10/21/15 02:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/28/15 08:58 AM	72051
	H-27	10/21/15 02:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/28/15 08:58 AM	72051
	H-27	10/21/15 02:20 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	10/28/15 10:56 AM	72061
1510216-12D	H-27	10/21/15 02:20 PM	Aqueous	E300	Anion Preparation	11/02/15 08:38 AM	72110
	H-27	10/21/15 02:20 PM	Aqueous	E300	Anion Preparation	11/02/15 08:38 AM	72110
	H-27	10/21/15 02:20 PM	Aqueous	M4500-H+ B	pH Preparation	10/23/15 12:13 PM	71998
	H-27	10/21/15 02:20 PM	Aqueous	M2540C	TDS Preparation	10/26/15 10:21 AM	72016

Lab Order: 1510216
Client: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1510216-13A	H-26	10/21/15 03:25 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/28/15 08:58 AM	72051
	H-26	10/21/15 03:25 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	10/28/15 10:56 AM	72061
1510216-13D	H-26	10/21/15 03:25 PM	Aqueous	E300	Anion Preparation	11/02/15 08:38 AM	72110
	H-26	10/21/15 03:25 PM	Aqueous	E300	Anion Preparation	11/02/15 08:38 AM	72110
	H-26	10/21/15 03:25 PM	Aqueous	M4500-H+ B	pH Preparation	10/23/15 12:13 PM	71998
	H-26	10/21/15 03:25 PM	Aqueous	M2540C	TDS Preparation	10/26/15 10:21 AM	72016
1510216-14A	H-33	10/22/15 12:55 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/28/15 08:58 AM	72051
	H-33	10/22/15 12:55 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/28/15 08:58 AM	72051
	H-33	10/22/15 12:55 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	10/28/15 10:56 AM	72061
1510216-14D	H-33	10/22/15 12:55 PM	Aqueous	E300	Anion Preparation	11/02/15 08:38 AM	72110
	H-33	10/22/15 12:55 PM	Aqueous	E300	Anion Preparation	11/02/15 08:38 AM	72110
	H-33	10/22/15 12:55 PM	Aqueous	M4500-H+ B	pH Preparation	10/23/15 12:13 PM	71998
	H-33	10/22/15 12:55 PM	Aqueous	M2540C	TDS Preparation	10/26/15 10:21 AM	72016
1510216-15A	H-32	10/22/15 01:55 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/28/15 08:58 AM	72051
	H-32	10/22/15 01:55 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/28/15 08:58 AM	72051
	H-32	10/22/15 01:55 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	10/28/15 10:56 AM	72061
1510216-15D	H-32	10/22/15 01:55 PM	Aqueous	E300	Anion Preparation	11/02/15 08:38 AM	72110
	H-32	10/22/15 01:55 PM	Aqueous	E300	Anion Preparation	11/02/15 08:38 AM	72110
	H-32	10/22/15 01:55 PM	Aqueous	M4500-H+ B	pH Preparation	10/23/15 12:13 PM	71998
	H-32	10/22/15 01:55 PM	Aqueous	M2540C	TDS Preparation	10/26/15 10:21 AM	72016
1510216-16A	MW-17A	10/21/15 02:55 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/28/15 08:58 AM	72051
	MW-17A	10/21/15 02:55 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	10/28/15 10:56 AM	72061
1510216-16D	MW-17A	10/21/15 02:55 PM	Aqueous	E300	Anion Preparation	11/02/15 08:38 AM	72110
	MW-17A	10/21/15 02:55 PM	Aqueous	M4500-H+ B	pH Preparation	10/23/15 12:13 PM	71998
	MW-17A	10/21/15 02:55 PM	Aqueous	M2540C	TDS Preparation	10/26/15 10:21 AM	72016

Lab Order: 1510216
Client: Pastor, Behling & Wheeler
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ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1510216-01A	PDP-23	Aqueous	SW7470A	Mercury Total: Aqueous	72061	1	10/29/15 12:36 PM	CETAC2_HG_151029B
	PDP-23	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72051	1	11/05/15 01:33 PM	ICP-MS3_151105A
	PDP-23	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72051	1	11/09/15 03:16 PM	ICP-MS4_151109D
1510216-01D	PDP-23	Aqueous	E300	Anions by IC method - Water	72110	1	11/02/15 10:06 AM	IC2_151102A
	PDP-23	Aqueous	M4500-H+ B	pH	71998	1	10/23/15 12:49 PM	TITRATOR_151023A
	PDP-23	Aqueous	M2540C	Total Dissolved Solids	72016	1	10/27/15 07:30 AM	WC_151026B
1510216-02A	PDP-24	Aqueous	SW7470A	Mercury Total: Aqueous	72061	1	10/29/15 12:47 PM	CETAC2_HG_151029B
	PDP-24	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72051	1	11/05/15 01:20 PM	ICP-MS3_151105A
	PDP-24	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72051	10	11/05/15 05:24 PM	ICP-MS3_151105A
	PDP-24	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72051	10	11/09/15 03:12 PM	ICP-MS4_151109D
1510216-02D	PDP-24	Aqueous	E300	Anions by IC method - Water	72110	1	11/02/15 10:21 AM	IC2_151102A
	PDP-24	Aqueous	E300	Anions by IC method - Water	72110	10	11/02/15 02:52 PM	IC2_151102A
	PDP-24	Aqueous	M4500-H+ B	pH	71998	1	10/23/15 12:51 PM	TITRATOR_151023A
	PDP-24	Aqueous	M2540C	Total Dissolved Solids	72016	1	10/27/15 07:30 AM	WC_151026B
1510216-03A	PDP-22	Aqueous	SW7470A	Mercury Total: Aqueous	72061	1	10/29/15 12:49 PM	CETAC2_HG_151029B
	PDP-22	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72051	1	11/05/15 01:39 PM	ICP-MS3_151105A
	PDP-22	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72051	1	11/09/15 03:18 PM	ICP-MS4_151109D
1510216-03D	PDP-22	Aqueous	E300	Anions by IC method - Water	72110	1	11/02/15 10:35 AM	IC2_151102A
	PDP-22	Aqueous	M4500-H+ B	pH	71998	1	10/23/15 12:53 PM	TITRATOR_151023A
	PDP-22	Aqueous	M2540C	Total Dissolved Solids	72016	1	10/27/15 07:30 AM	WC_151026B
1510216-04A	MW-19	Aqueous	SW7470A	Mercury Total: Aqueous	72061	1	10/29/15 12:52 PM	CETAC2_HG_151029B
	MW-19	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72051	1	11/05/15 01:45 PM	ICP-MS3_151105A
	MW-19	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72051	1	11/09/15 03:20 PM	ICP-MS4_151109D
1510216-04D	MW-19	Aqueous	E300	Anions by IC method - Water	72110	1	11/02/15 10:50 AM	IC2_151102A
	MW-19	Aqueous	M4500-H+ B	pH	71998	1	10/23/15 12:55 PM	TITRATOR_151023A
	MW-19	Aqueous	M2540C	Total Dissolved Solids	72016	1	10/27/15 07:30 AM	WC_151026B

Lab Order: 1510216
Client: Pastor, Behling & Wheeler
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ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1510216-05A	MW-20A	Aqueous	SW7470A	Mercury Total: Aqueous	72061	1	10/29/15 12:54 PM	CETAC2_HG_151029B
	MW-20A	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72051	1	11/09/15 03:22 PM	ICP-MS4_151109D
	MW-20A	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72051	1	11/05/15 01:51 PM	ICP-MS3_151105A
1510216-05D	MW-20A	Aqueous	E300	Anions by IC method - Water	72110	1	11/02/15 11:04 AM	IC2_151102A
	MW-20A	Aqueous	M4500-H+ B	pH	71998	1	10/23/15 12:58 PM	TITRATOR_151023A
	MW-20A	Aqueous	M2540C	Total Dissolved Solids	72016	1	10/27/15 07:30 AM	WC_151026B
1510216-06A	PDP-26	Aqueous	SW7470A	Mercury Total: Aqueous	72061	1	10/29/15 01:01 PM	CETAC2_HG_151029B
	PDP-26	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72051	1	11/05/15 01:57 PM	ICP-MS3_151105A
	PDP-26	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72051	1	11/09/15 03:24 PM	ICP-MS4_151109D
1510216-06D	PDP-26	Aqueous	E300	Anions by IC method - Water	72110	1	11/02/15 11:19 AM	IC2_151102A
	PDP-26	Aqueous	M4500-H+ B	pH	71998	1	10/23/15 12:59 PM	TITRATOR_151023A
	PDP-26	Aqueous	M2540C	Total Dissolved Solids	72016	1	10/27/15 07:30 AM	WC_151026B
1510216-07A	PDP-25	Aqueous	SW7470A	Mercury Total: Aqueous	72061	1	10/29/15 01:03 PM	CETAC2_HG_151029B
	PDP-25	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72051	1	11/05/15 02:03 PM	ICP-MS3_151105A
	PDP-25	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72051	10	11/05/15 05:30 PM	ICP-MS3_151105A
	PDP-25	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72051	1	11/09/15 03:26 PM	ICP-MS4_151109D
1510216-07D	PDP-25	Aqueous	E300	Anions by IC method - Water	72110	1	11/02/15 11:44 AM	IC2_151102A
	PDP-25	Aqueous	E300	Anions by IC method - Water	72110	10	11/02/15 03:06 PM	IC2_151102A
	PDP-25	Aqueous	M4500-H+ B	pH	71998	1	10/23/15 01:00 PM	TITRATOR_151023A
	PDP-25	Aqueous	M2540C	Total Dissolved Solids	72016	1	10/27/15 07:30 AM	WC_151026B
1510216-08A	H-30	Aqueous	SW7470A	Mercury Total: Aqueous	72061	1	10/29/15 01:05 PM	CETAC2_HG_151029B
	H-30	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72051	1	11/05/15 02:09 PM	ICP-MS3_151105A
	H-30	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72051	50	11/05/15 05:36 PM	ICP-MS3_151105A
	H-30	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72217	1	11/09/15 05:48 PM	ICP-MS4_151109D
1510216-08D	H-30	Aqueous	E300	Anions by IC method - Water	72110	1	11/02/15 11:59 AM	IC2_151102A
	H-30	Aqueous	E300	Anions by IC method - Water	72110	10	11/02/15 03:21 PM	IC2_151102A

Lab Order: 1510216
Client: Pastor, Behling & Wheeler
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ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1510216-08D	H-30	Aqueous	M4500-H+ B	pH	71998	1	10/23/15 01:02 PM	TITRATOR_151023A
	H-30	Aqueous	M2540C	Total Dissolved Solids	72016	1	10/27/15 07:30 AM	WC_151026B
1510216-09A	H-31	Aqueous	SW7470A	Mercury Total: Aqueous	72061	1	10/29/15 01:08 PM	CETAC2_HG_151029B
	H-31	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72051	1	11/05/15 02:15 PM	ICP-MS3_151105A
	H-31	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72051	50	11/05/15 05:42 PM	ICP-MS3_151105A
	H-31	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72217	1	11/09/15 05:44 PM	ICP-MS4_151109D
	H-31	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72217	100	11/09/15 06:37 PM	ICP-MS4_151109D
1510216-09D	H-31	Aqueous	E300	Anions by IC method - Water	72110	1	11/02/15 12:13 PM	IC2_151102A
	H-31	Aqueous	E300	Anions by IC method - Water	72110	100	11/02/15 05:22 PM	IC2_151102A
	H-31	Aqueous	M4500-H+ B	pH	71998	1	10/23/15 01:03 PM	TITRATOR_151023A
	H-31	Aqueous	M2540C	Total Dissolved Solids	72016	1	10/27/15 07:30 AM	WC_151026B
1510216-10A	H-29	Aqueous	SW7470A	Mercury Total: Aqueous	72061	1	10/29/15 01:11 PM	CETAC2_HG_151029B
	H-29	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72051	1	11/05/15 02:21 PM	ICP-MS3_151105A
	H-29	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72051	1	11/09/15 03:28 PM	ICP-MS4_151109D
1510216-10D	H-29	Aqueous	E300	Anions by IC method - Water	72110	1	11/02/15 12:28 PM	IC2_151102A
	H-29	Aqueous	E300	Anions by IC method - Water	72110	10	11/02/15 05:36 PM	IC2_151102A
	H-29	Aqueous	M4500-H+ B	pH	71998	1	10/23/15 01:08 PM	TITRATOR_151023A
	H-29	Aqueous	M2540C	Total Dissolved Solids	72016	1	10/27/15 07:30 AM	WC_151026B
1510216-11A	H-28	Aqueous	SW7470A	Mercury Total: Aqueous	72061	1	10/29/15 01:13 PM	CETAC2_HG_151029B
	H-28	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72051	1	11/05/15 03:58 PM	ICP-MS3_151105A
	H-28	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72051	10	11/05/15 05:48 PM	ICP-MS3_151105A
1510216-11D	H-28	Aqueous	E300	Anions by IC method - Water	72110	1	11/02/15 01:18 PM	IC2_151102A
	H-28	Aqueous	E300	Anions by IC method - Water	72110	10	11/02/15 05:51 PM	IC2_151102A
	H-28	Aqueous	M4500-H+ B	pH	71998	1	10/23/15 01:09 PM	TITRATOR_151023A
	H-28	Aqueous	M2540C	Total Dissolved Solids	72016	1	10/27/15 07:30 AM	WC_151026B
1510216-12A	H-27	Aqueous	SW7470A	Mercury Total: Aqueous	72061	1	10/29/15 01:15 PM	CETAC2_HG_151029B

Lab Order: 1510216
Client: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1510216-12A	H-27	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72051	1	11/05/15 04:04 PM	ICP-MS3_151105A
	H-27	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72051	10	11/05/15 05:54 PM	ICP-MS3_151105A
1510216-12D	H-27	Aqueous	E300	Anions by IC method - Water	72110	1	11/02/15 01:33 PM	IC2_151102A
	H-27	Aqueous	E300	Anions by IC method - Water	72110	10	11/02/15 06:20 PM	IC2_151102A
	H-27	Aqueous	M4500-H+ B	pH	71998	1	10/23/15 01:11 PM	TITRATOR_151023A
	H-27	Aqueous	M2540C	Total Dissolved Solids	72016	1	10/27/15 07:30 AM	WC_151026B
1510216-13A	H-26	Aqueous	SW7470A	Mercury Total: Aqueous	72061	1	10/29/15 01:17 PM	CETAC2_HG_151029B
	H-26	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72051	1	11/05/15 04:10 PM	ICP-MS3_151105A
1510216-13D	H-26	Aqueous	E300	Anions by IC method - Water	72110	1	11/02/15 01:48 PM	IC2_151102A
	H-26	Aqueous	E300	Anions by IC method - Water	72110	10	11/02/15 06:34 PM	IC2_151102A
	H-26	Aqueous	M4500-H+ B	pH	71998	1	10/23/15 01:12 PM	TITRATOR_151023A
	H-26	Aqueous	M2540C	Total Dissolved Solids	72016	1	10/27/15 07:30 AM	WC_151026B
1510216-14A	H-33	Aqueous	SW7470A	Mercury Total: Aqueous	72061	1	10/29/15 01:20 PM	CETAC2_HG_151029B
	H-33	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72051	1	11/05/15 04:16 PM	ICP-MS3_151105A
	H-33	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72051	1	11/09/15 03:30 PM	ICP-MS4_151109D
1510216-14D	H-33	Aqueous	E300	Anions by IC method - Water	72110	10	11/02/15 06:49 PM	IC2_151102A
	H-33	Aqueous	E300	Anions by IC method - Water	72110	1	11/02/15 02:02 PM	IC2_151102A
	H-33	Aqueous	M4500-H+ B	pH	71998	1	10/23/15 01:14 PM	TITRATOR_151023A
	H-33	Aqueous	M2540C	Total Dissolved Solids	72016	1	10/27/15 07:30 AM	WC_151026B
1510216-15A	H-32	Aqueous	SW7470A	Mercury Total: Aqueous	72061	1	10/29/15 01:22 PM	CETAC2_HG_151029B
	H-32	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72051	1	11/05/15 04:22 PM	ICP-MS3_151105A
	H-32	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72051	10	11/05/15 06:00 PM	ICP-MS3_151105A
1510216-15D	H-32	Aqueous	E300	Anions by IC method - Water	72110	1	11/02/15 02:17 PM	IC2_151102A
	H-32	Aqueous	E300	Anions by IC method - Water	72110	10	11/02/15 07:04 PM	IC2_151102A
	H-32	Aqueous	M4500-H+ B	pH	71998	1	10/23/15 01:16 PM	TITRATOR_151023A
	H-32	Aqueous	M2540C	Total Dissolved Solids	72016	1	10/27/15 07:30 AM	WC_151026B

Lab Order: 1510216
Client: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1510216-16A	MW-17A	Aqueous	SW7470A	Mercury Total: Aqueous	72061	1	10/29/15 01:29 PM	CETAC2_HG_151029B
	MW-17A	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72051	1	11/05/15 04:34 PM	ICP-MS3_151105A
1510216-16D	MW-17A	Aqueous	E300	Anions by IC method - Water	72110	1	11/02/15 02:31 PM	IC2_151102A
	MW-17A	Aqueous	M4500-H+ B	pH	71998	1	10/23/15 01:17 PM	TITRATOR_151023A
	MW-17A	Aqueous	M2540C	Total Dissolved Solids	72016	1	10/27/15 07:30 AM	WC_151026B

DHL Analytical, Inc.

Date: *04-Dec-15*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	PDP-23
Project:	Luminant - Martin Lake	**Lab ID:**	1510216-01
Project No:	5164-B	**Collection Date:**	10/20/15 07:40 AM
Lab Order:	1510216	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **ABO**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	10/29/15 12:36 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **KL**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	11/05/15 01:33 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	11/05/15 01:33 PM
Barium	0.0423	0.00300	0.0100		mg/L	1	11/05/15 01:33 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	11/05/15 01:33 PM
Boron	0.0310	0.0100	0.0300		mg/L	1	11/09/15 03:16 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	11/05/15 01:33 PM
Calcium	1.80	0.100	0.300		mg/L	1	11/05/15 01:33 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	11/05/15 01:33 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	11/05/15 01:33 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	11/05/15 01:33 PM
Lithium	0.0114	0.00500	0.0100		mg/L	1	11/05/15 01:33 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	11/05/15 01:33 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	11/05/15 01:33 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	11/05/15 01:33 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	5.38	0.300	1.00		mg/L	1	11/02/15 10:06 AM
Fluoride	<0.100	0.100	0.400		mg/L	1	11/02/15 10:06 AM
Sulfate	1.75	1.00	3.00	J	mg/L	1	11/02/15 10:06 AM
PH		**M4500-H+ B**					Analyst: **LM**
pH	5.76	0	0		pH Units@15.2℃	1	10/23/15 12:49 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **BJT**
Total Dissolved Solids (Residue, Filterable)	106	10.0	10.0		mg/L	1	10/27/15 07:30 AM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *04-Dec-15*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	PDP-24
Project:	Luminant - Martin Lake	**Lab ID:**	1510216-02
Project No:	5164-B	**Collection Date:**	10/20/15 08:35 AM
Lab Order:	1510216	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **ABO**
Mercury	0.000734	0.0000800	0.000200		mg/L	1	10/29/15 12:47 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **KL**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	11/05/15 01:20 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	11/05/15 01:20 PM
Barium	0.0214	0.00300	0.0100		mg/L	1	11/05/15 01:20 PM
Beryllium	0.00477	0.000300	0.00100		mg/L	1	11/05/15 01:20 PM
Boron	3.82	0.100	0.300		mg/L	10	11/09/15 03:12 PM
Cadmium	0.00230	0.000300	0.00100		mg/L	1	11/05/15 01:20 PM
Calcium	36.4	1.00	3.00		mg/L	10	11/09/15 03:12 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	11/05/15 01:20 PM
Cobalt	0.0897	0.00300	0.00500		mg/L	1	11/05/15 01:20 PM
Lead	0.000812	0.000300	0.00100	J	mg/L	1	11/05/15 01:20 PM
Lithium	0.0262	0.00500	0.0100		mg/L	1	11/05/15 01:20 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	11/05/15 01:20 PM
Selenium	0.00914	0.00200	0.00500		mg/L	1	11/05/15 01:20 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	11/05/15 01:20 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	21.7	0.300	1.00		mg/L	1	11/02/15 10:21 AM
Fluoride	0.539	0.100	0.400		mg/L	1	11/02/15 10:21 AM
Sulfate	425	10.0	30.0		mg/L	10	11/02/15 02:52 PM
PH		**M4500-H+ B**					Analyst: **LM**
pH	4.60	0	0		pH Units@15.2℃	1	10/23/15 12:51 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **BJT**
Total Dissolved Solids (Residue, Filterable)	711	10.0	10.0		mg/L	1	10/27/15 07:30 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *04-Dec-15*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	PDP-22
Project:	Luminant - Martin Lake	**Lab ID:**	1510216-03
Project No:	5164-B	**Collection Date:**	10/20/15 09:25 AM
Lab Order:	1510216	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **ABO**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	10/29/15 12:49 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **KL**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	11/05/15 01:39 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	11/05/15 01:39 PM
Barium	0.0567	0.00300	0.0100		mg/L	1	11/05/15 01:39 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	11/05/15 01:39 PM
Boron	0.0794	0.0100	0.0300		mg/L	1	11/09/15 03:18 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	11/05/15 01:39 PM
Calcium	3.40	0.100	0.300		mg/L	1	11/05/15 01:39 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	11/05/15 01:39 PM
Cobalt	0.00397	0.00300	0.00500	J	mg/L	1	11/05/15 01:39 PM
Lead	0.00244	0.000300	0.00100		mg/L	1	11/05/15 01:39 PM
Lithium	0.00712	0.00500	0.0100	J	mg/L	1	11/05/15 01:39 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	11/05/15 01:39 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	11/05/15 01:39 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	11/05/15 01:39 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	25.9	0.300	1.00		mg/L	1	11/02/15 10:35 AM
Fluoride	0.108	0.100	0.400	J	mg/L	1	11/02/15 10:35 AM
Sulfate	42.2	1.00	3.00		mg/L	1	11/02/15 10:35 AM
PH		**M4500-H+ B**					Analyst: **LM**
pH	6.17	0	0		pH Units@15.4℃	1	10/23/15 12:53 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **BJT**
Total Dissolved Solids (Residue, Filterable)	270	10.0	10.0		mg/L	1	10/27/15 07:30 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *04-Dec-15*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	MW-19
Project:	Luminant - Martin Lake	**Lab ID:**	1510216-04
Project No:	5164-B	**Collection Date:**	10/20/15 10:20 AM
Lab Order:	1510216	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **ABO**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	10/29/15 12:52 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **KL**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	11/05/15 01:45 PM
Arsenic	0.00502	0.00200	0.00500		mg/L	1	11/05/15 01:45 PM
Barium	0.0396	0.00300	0.0100		mg/L	1	11/05/15 01:45 PM
Beryllium	0.000336	0.000300	0.00100	J	mg/L	1	11/05/15 01:45 PM
Boron	0.117	0.0100	0.0300		mg/L	1	11/09/15 03:20 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	11/05/15 01:45 PM
Calcium	21.7	0.100	0.300		mg/L	1	11/05/15 01:45 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	11/05/15 01:45 PM
Cobalt	0.00304	0.00300	0.00500	J	mg/L	1	11/05/15 01:45 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	11/05/15 01:45 PM
Lithium	0.0158	0.00500	0.0100		mg/L	1	11/05/15 01:45 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	11/05/15 01:45 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	11/05/15 01:45 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	11/05/15 01:45 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	48.2	0.300	1.00		mg/L	1	11/02/15 10:50 AM
Fluoride	0.117	0.100	0.400	J	mg/L	1	11/02/15 10:50 AM
Sulfate	84.1	1.00	3.00		mg/L	1	11/02/15 10:50 AM
PH		**M4500-H+ B**					Analyst: **LM**
pH	6.10	0	0		pH Units@15.8℃	1	10/23/15 12:55 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **BJT**
Total Dissolved Solids (Residue, Filterable)	472	10.0	10.0		mg/L	1	10/27/15 07:30 AM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *04-Dec-15*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	MW-20A
Project:	Luminant - Martin Lake	**Lab ID:**	1510216-05
Project No:	5164-B	**Collection Date:**	10/20/15 11:20 AM
Lab Order:	1510216	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **ABO**
Mercury	0.00289	0.0000800	0.000200		mg/L	1	10/29/15 12:54 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **KL**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	11/05/15 01:51 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	11/05/15 01:51 PM
Barium	0.0357	0.00300	0.0100		mg/L	1	11/05/15 01:51 PM
Beryllium	0.000407	0.000300	0.00100	J	mg/L	1	11/05/15 01:51 PM
Boron	0.102	0.0100	0.0300		mg/L	1	11/09/15 03:22 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	11/05/15 01:51 PM
Calcium	9.16	0.100	0.300		mg/L	1	11/05/15 01:51 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	11/05/15 01:51 PM
Cobalt	0.00346	0.00300	0.00500	J	mg/L	1	11/05/15 01:51 PM
Lead	0.00101	0.000300	0.00100		mg/L	1	11/05/15 01:51 PM
Lithium	0.0164	0.00500	0.0100		mg/L	1	11/05/15 01:51 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	11/05/15 01:51 PM
Selenium	0.00483	0.00200	0.00500	J	mg/L	1	11/05/15 01:51 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	11/05/15 01:51 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	10.7	0.300	1.00		mg/L	1	11/02/15 11:04 AM
Fluoride	0.552	0.100	0.400		mg/L	1	11/02/15 11:04 AM
Sulfate	99.8	1.00	3.00		mg/L	1	11/02/15 11:04 AM
PH		**M4500-H+ B**					Analyst: **LM**
pH	4.67	0	0		pH Units@16.2℃	1	10/23/15 12:58 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **BJT**
Total Dissolved Solids (Residue, Filterable)	236	10.0	10.0		mg/L	1	10/27/15 07:30 AM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *04-Dec-15*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	PDP-26
Project:	Luminant - Martin Lake	**Lab ID:**	1510216-06
Project No:	5164-B	**Collection Date:**	10/20/15 02:20 PM
Lab Order:	1510216	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **ABO**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	10/29/15 01:01 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **KL**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	11/05/15 01:57 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	11/05/15 01:57 PM
Barium	0.0326	0.00300	0.0100		mg/L	1	11/05/15 01:57 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	11/05/15 01:57 PM
Boron	0.0838	0.0100	0.0300		mg/L	1	11/09/15 03:24 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	11/05/15 01:57 PM
Calcium	4.19	0.100	0.300		mg/L	1	11/05/15 01:57 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	11/05/15 01:57 PM
Cobalt	0.00338	0.00300	0.00500	J	mg/L	1	11/05/15 01:57 PM
Lead	0.000983	0.000300	0.00100	J	mg/L	1	11/05/15 01:57 PM
Lithium	0.0111	0.00500	0.0100		mg/L	1	11/05/15 01:57 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	11/05/15 01:57 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	11/05/15 01:57 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	11/05/15 01:57 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	11.8	0.300	1.00		mg/L	1	11/02/15 11:19 AM
Fluoride	0.160	0.100	0.400	J	mg/L	1	11/02/15 11:19 AM
Sulfate	37.2	1.00	3.00		mg/L	1	11/02/15 11:19 AM
PH		**M4500-H+ B**					Analyst: **LM**
pH	6.50	0	0		pH Units@15.7℃	1	10/23/15 12:59 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **BJT**
Total Dissolved Solids (Residue, Filterable)	306	10.0	10.0		mg/L	1	10/27/15 07:30 AM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *04-Dec-15*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	PDP-25
Project:	Luminant - Martin Lake	**Lab ID:**	1510216-07
Project No:	5164-B	**Collection Date:**	10/20/15 03:20 PM
Lab Order:	1510216	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **ABO**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	10/29/15 01:03 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **KL**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	11/05/15 02:03 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	11/05/15 02:03 PM
Barium	0.222	0.00300	0.0100		mg/L	1	11/05/15 02:03 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	11/05/15 02:03 PM
Boron	0.101	0.0100	0.0300		mg/L	1	11/09/15 03:26 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	11/05/15 02:03 PM
Calcium	35.2	1.00	3.00		mg/L	10	11/05/15 05:30 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	11/05/15 02:03 PM
Cobalt	0.0114	0.00300	0.00500		mg/L	1	11/05/15 02:03 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	11/05/15 02:03 PM
Lithium	0.0718	0.00500	0.0100		mg/L	1	11/05/15 02:03 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	11/05/15 02:03 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	11/05/15 02:03 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	11/05/15 02:03 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	137	3.00	10.0		mg/L	10	11/02/15 03:06 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	11/02/15 11:44 AM
Sulfate	105	1.00	3.00		mg/L	1	11/02/15 11:44 AM
PH		**M4500-H+ B**					Analyst: **LM**
pH	5.90	0	0		pH Units@15.5℃	1	10/23/15 01:00 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **BJT**
Total Dissolved Solids (Residue, Filterable)	533	10.0	10.0		mg/L	1	10/27/15 07:30 AM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *04-Dec-15*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	H-30
Project:	Luminant - Martin Lake	**Lab ID:**	1510216-08
Project No:	5164-B	**Collection Date:**	10/20/15 04:20 PM
Lab Order:	1510216	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **ABO**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	10/29/15 01:05 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **KL**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	11/05/15 02:09 PM
Arsenic	0.0120	0.00200	0.00500		mg/L	1	11/05/15 02:09 PM
Barium	0.0675	0.00300	0.0100		mg/L	1	11/05/15 02:09 PM
Beryllium	0.0102	0.000300	0.00100		mg/L	1	11/05/15 02:09 PM
Boron	12.3	0.500	1.50		mg/L	50	11/05/15 05:36 PM
Cadmium	0.00186	0.000300	0.00100		mg/L	1	11/05/15 02:09 PM
Calcium	156	5.00	15.0		mg/L	50	11/05/15 05:36 PM
Chromium	0.00680	0.00200	0.00500		mg/L	1	11/09/15 05:48 PM
Cobalt	0.303	0.00300	0.00500		mg/L	1	11/05/15 02:09 PM
Lead	0.000456	0.000300	0.00100	J	mg/L	1	11/05/15 02:09 PM
Lithium	0.110	0.00500	0.0100		mg/L	1	11/05/15 02:09 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	11/05/15 02:09 PM
Selenium	0.0740	0.00200	0.00500		mg/L	1	11/05/15 02:09 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	11/05/15 02:09 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	131	3.00	10.0		mg/L	10	11/02/15 03:21 PM
Fluoride	0.471	0.100	0.400		mg/L	1	11/02/15 11:59 AM
Sulfate	1400	10.0	30.0		mg/L	10	11/02/15 03:21 PM
PH		**M4500-H+ B**					Analyst: **LM**
pH	5.74	0	0		pH Units@15.7℃	1	10/23/15 01:02 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **BJT**
Total Dissolved Solids (Residue, Filterable)	2410	50.0	50.0		mg/L	1	10/27/15 07:30 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *04-Dec-15*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	H-31
Project:	Luminant - Martin Lake	**Lab ID:**	1510216-09
Project No:	5164-B	**Collection Date:**	10/20/15 05:15 PM
Lab Order:	1510216	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **ABO**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	10/29/15 01:08 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **KL**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	11/05/15 02:15 PM
Arsenic	0.0168	0.00200	0.00500		mg/L	1	11/05/15 02:15 PM
Barium	0.0732	0.00300	0.0100		mg/L	1	11/05/15 02:15 PM
Beryllium	0.0126	0.000300	0.00100		mg/L	1	11/05/15 02:15 PM
Boron	17.2	0.500	1.50		mg/L	50	11/05/15 05:42 PM
Cadmium	0.00320	0.000300	0.00100		mg/L	1	11/05/15 02:15 PM
Calcium	194	5.00	15.0		mg/L	50	11/05/15 05:42 PM
Chromium	0.00687	0.00200	0.00500		mg/L	1	11/09/15 05:44 PM
Cobalt	0.434	0.00300	0.00500		mg/L	1	11/05/15 02:15 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	11/05/15 02:15 PM
Lithium	0.137	0.00500	0.0100		mg/L	1	11/05/15 02:15 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	11/05/15 02:15 PM
Selenium	0.116	0.00200	0.00500		mg/L	1	11/05/15 02:15 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	11/05/15 02:15 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	179	30.0	100		mg/L	100	11/02/15 05:22 PM
Fluoride	0.889	0.100	0.400		mg/L	1	11/02/15 12:13 PM
Sulfate	1930	100	300		mg/L	100	11/02/15 05:22 PM
PH		**M4500-H+ B**					Analyst: **LM**
pH	5.53	0	0		pH Units@15.7℃	1	10/23/15 01:03 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **BJT**
Total Dissolved Solids (Residue, Filterable)	3270	50.0	50.0		mg/L	1	10/27/15 07:30 AM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *04-Dec-15*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	H-29
Project:	Luminant - Martin Lake	**Lab ID:**	1510216-10
Project No:	5164-B	**Collection Date:**	10/21/15 12:45 PM
Lab Order:	1510216	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **ABO**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	10/29/15 01:11 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **KL**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	11/05/15 02:21 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	11/05/15 02:21 PM
Barium	0.159	0.00300	0.0100		mg/L	1	11/05/15 02:21 PM
Beryllium	0.000359	0.000300	0.00100	J	mg/L	1	11/05/15 02:21 PM
Boron	0.0788	0.0100	0.0300		mg/L	1	11/09/15 03:28 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	11/05/15 02:21 PM
Calcium	16.0	0.100	0.300		mg/L	1	11/05/15 02:21 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	11/05/15 02:21 PM
Cobalt	0.0301	0.00300	0.00500		mg/L	1	11/05/15 02:21 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	11/05/15 02:21 PM
Lithium	0.0156	0.00500	0.0100		mg/L	1	11/05/15 02:21 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	11/05/15 02:21 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	11/05/15 02:21 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	11/05/15 02:21 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	65.2	3.00	10.0		mg/L	10	11/02/15 05:36 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	11/02/15 12:28 PM
Sulfate	171	10.0	30.0		mg/L	10	11/02/15 05:36 PM
PH		**M4500-H+ B**					Analyst: **LM**
pH	5.59	0	0		pH Units@17.6℃	1	10/23/15 01:08 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **BJT**
Total Dissolved Solids (Residue, Filterable)	441	10.0	10.0		mg/L	1	10/27/15 07:30 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *04-Dec-15*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	H-28
Project:	Luminant - Martin Lake	**Lab ID:**	1510216-11
Project No:	5164-B	**Collection Date:**	10/21/15 01:35 PM
Lab Order:	1510216	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **ABO**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	10/29/15 01:13 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **KL**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	11/05/15 03:58 PM
Arsenic	0.00278	0.00200	0.00500	J	mg/L	1	11/05/15 03:58 PM
Barium	0.0396	0.00300	0.0100		mg/L	1	11/05/15 03:58 PM
Beryllium	0.00148	0.000300	0.00100		mg/L	1	11/05/15 03:58 PM
Boron	9.25	0.100	0.300		mg/L	10	11/05/15 05:48 PM
Cadmium	0.00121	0.000300	0.00100		mg/L	1	11/05/15 03:58 PM
Calcium	113	1.00	3.00		mg/L	10	11/05/15 05:48 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	11/05/15 03:58 PM
Cobalt	0.188	0.00300	0.00500		mg/L	1	11/05/15 03:58 PM
Lead	0.000491	0.000300	0.00100	J	mg/L	1	11/05/15 03:58 PM
Lithium	0.154	0.00500	0.0100		mg/L	1	11/05/15 03:58 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	11/05/15 03:58 PM
Selenium	0.00682	0.00200	0.00500		mg/L	1	11/05/15 03:58 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	11/05/15 03:58 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	109	3.00	10.0		mg/L	10	11/02/15 05:51 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	11/02/15 01:18 PM
Sulfate	1010	10.0	30.0		mg/L	10	11/02/15 05:51 PM
PH		**M4500-H+ B**					Analyst: **LM**
pH	5.00	0	0		pH Units@17℃	1	10/23/15 01:09 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **BJT**
Total Dissolved Solids (Residue, Filterable)	1830	50.0	50.0		mg/L	1	10/27/15 07:30 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *04-Dec-15*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	H-27
Project:	Luminant - Martin Lake	**Lab ID:**	1510216-12
Project No:	5164-B	**Collection Date:**	10/21/15 02:20 PM
Lab Order:	1510216	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **ABO**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	10/29/15 01:15 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **KL**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	11/05/15 04:04 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	11/05/15 04:04 PM
Barium	0.0378	0.00300	0.0100		mg/L	1	11/05/15 04:04 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	11/05/15 04:04 PM
Boron	0.580	0.0100	0.0300		mg/L	1	11/05/15 04:04 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	11/05/15 04:04 PM
Calcium	55.3	1.00	3.00		mg/L	10	11/05/15 05:54 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	11/05/15 04:04 PM
Cobalt	0.00432	0.00300	0.00500	J	mg/L	1	11/05/15 04:04 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	11/05/15 04:04 PM
Lithium	0.0607	0.00500	0.0100		mg/L	1	11/05/15 04:04 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	11/05/15 04:04 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	11/05/15 04:04 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	11/05/15 04:04 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	117	3.00	10.0		mg/L	10	11/02/15 06:20 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	11/02/15 01:33 PM
Sulfate	328	10.0	30.0		mg/L	10	11/02/15 06:20 PM
PH		**M4500-H+ B**					Analyst: **LM**
pH	6.10	0	0		pH Units@16.9℃	1	10/23/15 01:11 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **BJT**
Total Dissolved Solids (Residue, Filterable)	800	10.0	10.0		mg/L	1	10/27/15 07:30 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *04-Dec-15*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	H-26
Project:	Luminant - Martin Lake	**Lab ID:**	1510216-13
Project No:	5164-B	**Collection Date:**	10/21/15 03:25 PM
Lab Order:	1510216	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **ABO**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	10/29/15 01:17 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **KL**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	11/05/15 04:10 PM
Arsenic	0.00364	0.00200	0.00500	J	mg/L	1	11/05/15 04:10 PM
Barium	0.0785	0.00300	0.0100		mg/L	1	11/05/15 04:10 PM
Beryllium	0.000349	0.000300	0.00100	J	mg/L	1	11/05/15 04:10 PM
Boron	0.602	0.0100	0.0300		mg/L	1	11/05/15 04:10 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	11/05/15 04:10 PM
Calcium	24.2	0.100	0.300		mg/L	1	11/05/15 04:10 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	11/05/15 04:10 PM
Cobalt	0.0385	0.00300	0.00500		mg/L	1	11/05/15 04:10 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	11/05/15 04:10 PM
Lithium	0.0139	0.00500	0.0100		mg/L	1	11/05/15 04:10 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	11/05/15 04:10 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	11/05/15 04:10 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	11/05/15 04:10 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	69.2	3.00	10.0		mg/L	10	11/02/15 06:34 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	11/02/15 01:48 PM
Sulfate	154	10.0	30.0		mg/L	10	11/02/15 06:34 PM
PH		**M4500-H+ B**					Analyst: **LM**
pH	5.71	0	0		pH Units@17.2℃	1	10/23/15 01:12 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **BJT**
Total Dissolved Solids (Residue, Filterable)	466	10.0	10.0		mg/L	1	10/27/15 07:30 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *04-Dec-15*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	H-33
Project:	Luminant - Martin Lake	**Lab ID:**	1510216-14
Project No:	5164-B	**Collection Date:**	10/22/15 12:55 PM
Lab Order:	1510216	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **ABO**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	10/29/15 01:20 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **KL**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	11/05/15 04:16 PM
Arsenic	0.00208	0.00200	0.00500	J	mg/L	1	11/05/15 04:16 PM
Barium	0.0586	0.00300	0.0100		mg/L	1	11/05/15 04:16 PM
Beryllium	0.000351	0.000300	0.00100	J	mg/L	1	11/05/15 04:16 PM
Boron	0.0462	0.0100	0.0300		mg/L	1	11/09/15 03:30 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	11/05/15 04:16 PM
Calcium	17.9	0.100	0.300		mg/L	1	11/05/15 04:16 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	11/05/15 04:16 PM
Cobalt	0.0274	0.00300	0.00500		mg/L	1	11/05/15 04:16 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	11/05/15 04:16 PM
Lithium	0.0814	0.00500	0.0100		mg/L	1	11/05/15 04:16 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	11/05/15 04:16 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	11/05/15 04:16 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	11/05/15 04:16 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	60.5	3.00	10.0		mg/L	10	11/02/15 06:49 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	11/02/15 02:02 PM
Sulfate	120	1.00	3.00		mg/L	1	11/02/15 02:02 PM
PH		**M4500-H+ B**					Analyst: **LM**
pH	5.65	0	0		pH Units@17.1℃	1	10/23/15 01:14 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **BJT**
Total Dissolved Solids (Residue, Filterable)	415	10.0	10.0		mg/L	1	10/27/15 07:30 AM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *04-Dec-15*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	H-32
Project:	Luminant - Martin Lake	**Lab ID:**	1510216-15
Project No:	5164-B	**Collection Date:**	10/22/15 01:55 PM
Lab Order:	1510216	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **ABO**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	10/29/15 01:22 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **KL**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	11/05/15 04:22 PM
Arsenic	0.00280	0.00200	0.00500	J	mg/L	1	11/05/15 04:22 PM
Barium	0.160	0.00300	0.0100		mg/L	1	11/05/15 04:22 PM
Beryllium	0.00266	0.000300	0.00100		mg/L	1	11/05/15 04:22 PM
Boron	1.22	0.0100	0.0300		mg/L	1	11/05/15 04:22 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	11/05/15 04:22 PM
Calcium	42.2	1.00	3.00		mg/L	10	11/05/15 06:00 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	11/05/15 04:22 PM
Cobalt	0.163	0.00300	0.00500		mg/L	1	11/05/15 04:22 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	11/05/15 04:22 PM
Lithium	0.0788	0.00500	0.0100		mg/L	1	11/05/15 04:22 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	11/05/15 04:22 PM
Selenium	0.00303	0.00200	0.00500	J	mg/L	1	11/05/15 04:22 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	11/05/15 04:22 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	120	3.00	10.0		mg/L	10	11/02/15 07:04 PM
Fluoride	0.374	0.100	0.400	J	mg/L	1	11/02/15 02:17 PM
Sulfate	309	10.0	30.0		mg/L	10	11/02/15 07:04 PM
PH		**M4500-H+ B**					Analyst: **LM**
pH	5.65	0	0		pH Units@17.9℃	1	10/23/15 01:16 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **BJT**
Total Dissolved Solids (Residue, Filterable)	797	10.0	10.0		mg/L	1	10/27/15 07:30 AM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *04-Dec-15*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	MW-17A
Project:	Luminant - Martin Lake	**Lab ID:**	1510216-16
Project No:	5164-B	**Collection Date:**	10/21/15 02:55 PM
Lab Order:	1510216	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **ABO**
Mercury	0.000217	0.0000800	0.000200		mg/L	1	10/29/15 01:29 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **KL**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	11/05/15 04:34 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	11/05/15 04:34 PM
Barium	0.101	0.00300	0.0100		mg/L	1	11/05/15 04:34 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	11/05/15 04:34 PM
Boron	0.402	0.0100	0.0300		mg/L	1	11/05/15 04:34 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	11/05/15 04:34 PM
Calcium	4.38	0.100	0.300		mg/L	1	11/05/15 04:34 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	11/05/15 04:34 PM
Cobalt	0.00732	0.00300	0.00500		mg/L	1	11/05/15 04:34 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	11/05/15 04:34 PM
Lithium	0.0145	0.00500	0.0100		mg/L	1	11/05/15 04:34 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	11/05/15 04:34 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	11/05/15 04:34 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	11/05/15 04:34 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	9.10	0.300	1.00		mg/L	1	11/02/15 02:31 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	11/02/15 02:31 PM
Sulfate	37.0	1.00	3.00		mg/L	1	11/02/15 02:31 PM
PH		**M4500-H+ B**					Analyst: **LM**
pH	5.30	0	0		pH Units@17.9℃	1	10/23/15 01:17 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **BJT**
Total Dissolved Solids (Residue, Filterable)	138	10.0	10.0		mg/L	1	10/27/15 07:30 AM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

CLIENT: Pastor, Behling & Wheeler
Work Order: 1510216
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_151029B

The QC data in batch 72061 applies to the following samples: 1510216-01A, 1510216-02A, 1510216-03A, 1510216-04A, 1510216-05A, 1510216-06A, 1510216-07A, 1510216-08A, 1510216-09A, 1510216-10A, 1510216-11A, 1510216-12A, 1510216-13A, 1510216-14A, 1510216-15A, 1510216-16A

Sample ID	**MB-72061**	Batch ID:	**72061**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**CETAC2_HG_151029B**	Analysis Date:	**10/29/2015 12:29:17 P**	Prep Date:	**10/28/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.0000800	0.000200								

Sample ID	**LCS-72061**	Batch ID:	**72061**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**CETAC2_HG_151029B**	Analysis Date:	**10/29/2015 12:31:33 P**	Prep Date:	**10/28/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00211	0.000200	0.00200	0	106	85	115			

Sample ID	**LCSD-72061**	Batch ID:	**72061**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**LCSD**	Run ID:	**CETAC2_HG_151029B**	Analysis Date:	**10/29/2015 12:33:50 P**	Prep Date:	**10/28/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00212	0.000200	0.00200	0	106	85	115	0.473	15	

Sample ID	**1510216-01A SD**	Batch ID:	**72061**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**SD**	Run ID:	**CETAC2_HG_151029B**	Analysis Date:	**10/29/2015 12:38:23 P**	Prep Date:	**10/28/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.000400	0.00100	0	0				0	10	

Sample ID	**1510216-01A PDS**	Batch ID:	**72061**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**PDS**	Run ID:	**CETAC2_HG_151029B**	Analysis Date:	**10/29/2015 12:40:40 P**	Prep Date:	**10/28/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00246	0.000200	0.00250	0	98.4	85	115			

Sample ID	**1510216-01A MS**	Batch ID:	**72061**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**MS**	Run ID:	**CETAC2_HG_151029B**	Analysis Date:	**10/29/2015 12:42:56 P**	Prep Date:	**10/28/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00200	0.000200	0.00200	0	100	80	120			

Sample ID	**1510216-01A MSD**	Batch ID:	**72061**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**MSD**	Run ID:	**CETAC2_HG_151029B**	Analysis Date:	**10/29/2015 12:45:13 P**	Prep Date:	**10/28/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00218	0.000200	0.00200	0	109	80	120	8.61	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1510216
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_151029B

Sample ID	**ICV-151029**	Batch ID:	**R82414**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**ICV**	Run ID:	**CETAC2_HG_151029B**	Analysis Date:	**10/29/2015 11:25:42 A**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00406	0.000200	0.00400	0	102	90	110			

Sample ID	**CCV1-151029**	Batch ID:	**R82414**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**CETAC2_HG_151029B**	Analysis Date:	**10/29/2015 12:06:33 P**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00200	0.000200	0.00200	0	100	90	110			

Sample ID	**CCV2-151029**	Batch ID:	**R82414**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**CETAC2_HG_151029B**	Analysis Date:	**10/29/2015 12:56:38 P**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00204	0.000200	0.00200	0	102	90	110			

Sample ID	**CCV3-151029**	Batch ID:	**R82414**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**CETAC2_HG_151029B**	Analysis Date:	**10/29/2015 1:24:47 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00201	0.000200	0.00200	0	101	90	110			

Sample ID	**CCV4-151029**	Batch ID:	**R82414**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**CETAC2_HG_151029B**	Analysis Date:	**10/29/2015 2:12:20 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00202	0.000200	0.00200	0	101	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1510216
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS3_151105A

The QC data in batch 72051 applies to the following samples: 1510216-01A, 1510216-02A, 1510216-03A, 1510216-04A, 1510216-05A, 1510216-06A, 1510216-07A, 1510216-08A, 1510216-09A, 1510216-10A, 1510216-11A, 1510216-12A, 1510216-13A, 1510216-14A, 1510216-15A, 1510216-16A

Sample ID **MB-72051** Batch ID: **72051** TestNo: **SW6020A** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS3_151105A** Analysis Date: **11/5/2015 12:50:00 PM** Prep Date: **10/28/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.000800	0.00250								
Arsenic	<0.00200	0.00500								
Barium	<0.00300	0.0100								
Beryllium	<0.000300	0.00100								
Boron	<0.0100	0.0300								
Cadmium	<0.000300	0.00100								
Calcium	<0.100	0.300								
Chromium	0.0533	0.00500								
Cobalt	<0.00300	0.00500								
Lead	<0.000300	0.00100								
Lithium	<0.00500	0.0100								
Molybdenum	0.00622	0.00500								
Selenium	<0.00200	0.00500								
Thallium	<0.000500	0.00150								

Sample ID **LCS-72051** Batch ID: **72051** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS3_151105A** Analysis Date: **11/5/2015 12:56:00 PM** Prep Date: **10/28/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.181	0.00250	0.200	0	90.3	80	120			
Arsenic	0.186	0.00500	0.200	0	92.8	80	120			
Barium	0.181	0.0100	0.200	0	90.7	80	120			
Beryllium	0.199	0.00100	0.200	0	99.6	80	120			
Boron	0.181	0.0300	0.200	0	90.6	80	120			
Cadmium	0.179	0.00100	0.200	0	89.4	80	120			
Calcium	4.76	0.300	5.00	0	95.2	80	120			
Chromium	0.184	0.00500	0.200	0	92.1	80	120			
Cobalt	0.189	0.00500	0.200	0	94.6	80	120			
Lead	0.192	0.00100	0.200	0	95.8	80	120			
Lithium	0.192	0.0100	0.200	0	96.2	80	120			
Molybdenum	0.176	0.00500	0.200	0	87.8	80	120			
Selenium	0.184	0.00500	0.200	0	91.9	80	120			
Thallium	0.194	0.00150	0.200	0	96.8	80	120			

Sample ID **LCSD-72051** Batch ID: **72051** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS3_151105A** Analysis Date: **11/5/2015 1:02:00 PM** Prep Date: **10/28/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.182	0.00250	0.200	0	90.9	80	120	0.662	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1510216
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS3_151105A

Sample ID **LCSD-72051**	Batch ID: **72051**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCSD**	Run ID: **ICP-MS3_151105A**	Analysis Date: **11/5/2015 1:02:00 PM**	Prep Date: **10/28/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.189	0.00500	0.200	0	94.3	80	120	1.55	15	
Barium	0.187	0.0100	0.200	0	93.4	80	120	2.99	15	
Beryllium	0.207	0.00100	0.200	0	103	80	120	3.65	15	
Boron	0.193	0.0300	0.200	0	96.6	80	120	6.41	15	
Cadmium	0.184	0.00100	0.200	0	92.0	80	120	2.87	15	
Calcium	4.84	0.300	5.00	0	96.7	80	120	1.52	15	
Chromium	0.190	0.00500	0.200	0	94.8	80	120	2.84	15	
Cobalt	0.198	0.00500	0.200	0	99.0	80	120	4.65	15	
Lead	0.195	0.00100	0.200	0	97.6	80	120	1.81	15	
Lithium	0.201	0.0100	0.200	0	101	80	120	4.52	15	
Molybdenum	0.180	0.00500	0.200	0	90.2	80	120	2.75	15	
Selenium	0.189	0.00500	0.200	0	94.5	80	120	2.79	15	
Thallium	0.199	0.00150	0.200	0	99.5	80	120	2.80	15	

Sample ID **1510216-02A SD**	Batch ID: **72051**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS3_151105A**	Analysis Date: **11/5/2015 1:26:00 PM**	Prep Date: **10/28/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.00400	0.0125	0	0				0	10	
Arsenic	<0.0100	0.0250	0	0				0	10	
Barium	0.0222	0.0500	0	0.0214				3.78	10	
Beryllium	0.00476	0.00500	0	0.00477				0.083	10	
Cadmium	0.00228	0.00500	0	0.00230				0.829	10	
Chromium	<0.0100	0.0250	0	0				0	10	
Cobalt	0.0927	0.0250	0	0.0897				3.19	10	
Lead	<0.00150	0.00500	0	0.000812				0	10	
Lithium	0.0270	0.0500	0	0.0262				3.03	10	
Molybdenum	<0.0100	0.0250	0	0				0	10	
Selenium	<0.0100	0.0250	0	0.00914				0	10	
Thallium	<0.00250	0.00750	0	0				0	10	

Sample ID **1510216-02A PDS**	Batch ID: **72051**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS3_151105A**	Analysis Date: **11/5/2015 2:27:00 PM**	Prep Date: **10/28/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.179	0.00250	0.200	0	89.4	80	120			
Arsenic	0.184	0.00500	0.200	0	92.0	80	120			
Barium	0.209	0.0100	0.200	0.0214	93.6	80	120			
Beryllium	0.197	0.00100	0.200	0.00477	96.2	80	120			
Cadmium	0.182	0.00100	0.200	0.00230	89.8	80	120			
Chromium	0.188	0.00500	0.200	0	93.8	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1510216
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS3_151105A

Sample ID **1510216-02A PDS** Batch ID: **72051** TestNo: **SW6020A** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS3_151105A** Analysis Date: **11/5/2015 2:27:00 PM** Prep Date: **10/28/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cobalt	0.277	0.00500	0.200	0.0897	93.6	80	120			
Lead	0.194	0.00100	0.200	0.000812	96.5	80	120			
Lithium	0.208	0.0100	0.200	0.0262	91.0	80	120			
Molybdenum	0.176	0.00500	0.200	0	88.2	80	120			
Selenium	0.190	0.00500	0.200	0.00914	90.5	80	120			
Thallium	0.194	0.00150	0.200	0	97.2	80	120			

Sample ID **1510216-02A MS** Batch ID: **72051** TestNo: **SW6020A** Units: **mg/L**
SampType: **MS** Run ID: **ICP-MS3_151105A** Analysis Date: **11/5/2015 2:33:00 PM** Prep Date: **10/28/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.184	0.00250	0.200	0	92.2	80	120			
Arsenic	0.185	0.00500	0.200	0	92.5	80	120			
Barium	0.207	0.0100	0.200	0.0214	92.9	80	120			
Beryllium	0.194	0.00100	0.200	0.00477	94.4	80	120			
Boron	3.58	0.0300	0.200	3.37	104	80	120			
Cadmium	0.181	0.00100	0.200	0.00230	89.5	80	120			
Calcium	42.0	0.300	5.00	36.7	107	80	120			
Chromium	0.181	0.00500	0.200	0	90.7	80	120			
Cobalt	0.275	0.00500	0.200	0.0897	92.5	80	120			
Lead	0.190	0.00100	0.200	0.000812	94.5	80	120			
Lithium	0.206	0.0100	0.200	0.0262	90.1	80	120			
Molybdenum	0.175	0.00500	0.200	0	87.6	80	120			
Selenium	0.187	0.00500	0.200	0.00914	89.0	80	120			
Thallium	0.194	0.00150	0.200	0	97.0	80	120			

Sample ID **1510216-02A MSD** Batch ID: **72051** TestNo: **SW6020A** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS3_151105A** Analysis Date: **11/5/2015 2:39:00 PM** Prep Date: **10/28/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.182	0.00250	0.200	0	90.9	80	120	1.37	15	
Arsenic	0.182	0.00500	0.200	0	91.1	80	120	1.53	15	
Barium	0.206	0.0100	0.200	0.0214	92.2	80	120	0.678	15	
Beryllium	0.194	0.00100	0.200	0.00477	94.5	80	120	0.155	15	
Boron	3.63	0.0300	0.200	3.37	129	80	120	1.39	15	S
Cadmium	0.181	0.00100	0.200	0.00230	89.2	80	120	0.331	15	
Calcium	42.8	0.300	5.00	36.7	123	80	120	1.91	15	S
Chromium	0.180	0.00500	0.200	0	90.2	80	120	0.608	15	
Cobalt	0.272	0.00500	0.200	0.0897	91.3	80	120	0.914	15	
Lead	0.191	0.00100	0.200	0.000812	95.0	80	120	0.525	15	
Lithium	0.212	0.0100	0.200	0.0262	92.9	80	120	2.68	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1510216
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS3_151105A

Sample ID **1510216-02A MSD** Batch ID: **72051** TestNo: **SW6020A** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS3_151105A** Analysis Date: **11/5/2015 2:39:00 PM** Prep Date: **10/28/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Molybdenum	0.176	0.00500	0.200	0	87.9	80	120	0.399	15	
Selenium	0.189	0.00500	0.200	0.00914	90.0	80	120	1.01	15	
Thallium	0.195	0.00150	0.200	0	97.4	80	120	0.514	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1510216
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS3_151105A

Sample ID **ICV1-151105**	Batch ID: **R82538**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS3_151105A**	Analysis Date: **11/5/2015 12:26:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.100	0.00250	0.100	0	100	90	110			
Arsenic	0.101	0.00500	0.100	0	101	90	110			
Barium	0.101	0.0100	0.100	0	101	90	110			
Beryllium	0.108	0.00100	0.100	0	108	90	110			
Boron	0.0989	0.0300	0.100	0	98.9	90	110			
Cadmium	0.0994	0.00100	0.100	0	99.4	90	110			
Calcium	2.41	0.300	2.50	0	96.4	90	110			
Chromium	0.105	0.00500	0.100	0	105	90	110			
Cobalt	0.108	0.00500	0.100	0	108	90	110			
Lead	0.104	0.00100	0.100	0	104	90	110			
Lithium	0.104	0.0100	0.100	0	104	90	110			
Molybdenum	0.0943	0.00500	0.100	0	94.3	90	110			
Selenium	0.101	0.00500	0.100	0	101	90	110			
Thallium	0.101	0.00150	0.100	0	101	90	110			

Sample ID **ILCVL-151105**	Batch ID: **R82538**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS3_151105A**	Analysis Date: **11/5/2015 12:38:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00202	0.00250	0.00200	0	101	70	130			
Arsenic	0.00519	0.00500	0.00500	0	104	70	130			
Barium	0.00531	0.0100	0.00500	0	106	70	130			
Beryllium	0.00114	0.00100	0.00100	0	114	70	130			
Boron	0.0194	0.0300	0.0200	0	97.1	70	130			
Cadmium	0.00102	0.00100	0.00100	0	102	70	130			
Calcium	0.111	0.300	0.100	0	111	70	130			
Chromium	0.00528	0.00500	0.00500	0	106	70	130			
Cobalt	0.00549	0.00500	0.00500	0	110	70	130			
Lead	0.00113	0.00100	0.00100	0	113	70	130			
Lithium	0.0108	0.0100	0.0100	0	108	70	130			
Molybdenum	0.00515	0.00500	0.00500	0	103	70	130			
Selenium	0.00533	0.00500	0.00500	0	107	70	130			
Thallium	0.00111	0.00150	0.00100	0	111	70	130			

Sample ID **CCV1-151105**	Batch ID: **R82538**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS3_151105A**	Analysis Date: **11/5/2015 3:40:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.198	0.00250	0.200	0	98.8	90	110			
Arsenic	0.193	0.00500	0.200	0	96.6	90	110			
Barium	0.195	0.0100	0.200	0	97.3	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1510216
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS3_151105A

Sample ID **CCV1-151105** Batch ID: **R82538** TestNo: **SW6020A** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS3_151105A** Analysis Date: **11/5/2015 3:40:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.215	0.00100	0.200	0	108	90	110			
Boron	0.215	0.0300	0.200	0	107	90	110			
Cadmium	0.190	0.00100	0.200	0	95.0	90	110			
Calcium	5.27	0.300	5.00	0	105	90	110			
Chromium	0.197	0.00500	0.200	0	98.3	90	110			
Cobalt	0.205	0.00500	0.200	0	103	90	110			
Lead	0.206	0.00100	0.200	0	103	90	110			
Lithium	0.214	0.0100	0.200	0	107	90	110			
Molybdenum	0.187	0.00500	0.200	0	93.4	90	110			
Selenium	0.200	0.00500	0.200	0	100	90	110			
Thallium	0.209	0.00150	0.200	0	105	90	110			

Sample ID **LCVL1-151105** Batch ID: **R82538** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS3_151105A** Analysis Date: **11/5/2015 3:52:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00204	0.00250	0.00200	0	102	70	130			
Arsenic	0.00506	0.00500	0.00500	0	101	70	130			
Barium	0.00523	0.0100	0.00500	0	105	70	130			
Beryllium	0.00112	0.00100	0.00100	0	112	70	130			
Boron	0.0331	0.0300	0.0200	0	166	70	130			S
Cadmium	0.00100	0.00100	0.00100	0	100	70	130			
Calcium	0.105	0.300	0.100	0	105	70	130			
Chromium	0.00521	0.00500	0.00500	0	104	70	130			
Cobalt	0.00534	0.00500	0.00500	0	107	70	130			
Lead	0.00109	0.00100	0.00100	0	109	70	130			
Lithium	0.0111	0.0100	0.0100	0	110	70	130			
Molybdenum	0.00489	0.00500	0.00500	0	97.8	70	130			
Selenium	0.00523	0.00500	0.00500	0	105	70	130			
Thallium	0.00105	0.00150	0.00100	0	105	70	130			

Sample ID **CCV2-151105** Batch ID: **R82538** TestNo: **SW6020A** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS3_151105A** Analysis Date: **11/5/2015 4:46:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.204	0.00250	0.200	0	102	90	110			
Arsenic	0.198	0.00500	0.200	0	98.8	90	110			
Barium	0.201	0.0100	0.200	0	100	90	110			
Beryllium	0.218	0.00100	0.200	0	109	90	110			
Boron	0.220	0.0300	0.200	0	110	90	110			
Cadmium	0.197	0.00100	0.200	0	98.4	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1510216
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS3_151105A

Sample ID **CCV2-151105** Batch ID: **R82538** TestNo: **SW6020A** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS3_151105A** Analysis Date: **11/5/2015 4:46:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	5.40	0.300	5.00	0	108	90	110			
Chromium	0.203	0.00500	0.200	0	102	90	110			
Cobalt	0.206	0.00500	0.200	0	103	90	110			
Lead	0.209	0.00100	0.200	0	104	90	110			
Lithium	0.217	0.0100	0.200	0	108	90	110			
Molybdenum	0.189	0.00500	0.200	0	94.4	90	110			
Selenium	0.201	0.00500	0.200	0	101	90	110			
Thallium	0.210	0.00150	0.200	0	105	90	110			

Sample ID **LCVL2-151105** Batch ID: **R82538** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS3_151105A** Analysis Date: **11/5/2015 5:12:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00197	0.00250	0.00200	0	98.4	70	130			
Arsenic	0.00469	0.00500	0.00500	0	93.9	70	130			
Barium	0.00521	0.0100	0.00500	0	104	70	130			
Beryllium	0.00109	0.00100	0.00100	0	109	70	130			
Boron	0.0301	0.0300	0.0200	0	150	70	130			S
Cadmium	0.00105	0.00100	0.00100	0	104	70	130			
Calcium	0.102	0.300	0.100	0	102	70	130			
Chromium	0.00523	0.00500	0.00500	0	105	70	130			
Cobalt	0.00526	0.00500	0.00500	0	105	70	130			
Lead	0.00107	0.00100	0.00100	0	107	70	130			
Lithium	0.0118	0.0100	0.0100	0	118	70	130			
Molybdenum	0.00473	0.00500	0.00500	0	94.5	70	130			
Selenium	0.00507	0.00500	0.00500	0	101	70	130			
Thallium	0.00103	0.00150	0.00100	0	103	70	130			

Sample ID **CCV3-151105** Batch ID: **R82538** TestNo: **SW6020A** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS3_151105A** Analysis Date: **11/5/2015 6:07:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.214	0.0300	0.200	0	107	90	110			
Calcium	5.22	0.300	5.00	0	104	90	110			

Sample ID **LCVL3-151105** Batch ID: **R82538** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS3_151105A** Analysis Date: **11/5/2015 6:31:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0283	0.0300	0.0200	0	141	70	130			S
Calcium	0.0945	0.300	0.100	0	94.5	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler

Work Order: 1510216

Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_151109D

The QC data in batch 72051 applies to the following samples: 1510216-01A, 1510216-02A, 1510216-03A, 1510216-04A, 1510216-05A, 1510216-06A, 1510216-07A, 1510216-08A, 1510216-09A, 1510216-10A, 1510216-11A, 1510216-12A, 1510216-13A, 1510216-14A, 1510216-15A, 1510216-16A

Sample ID **1510216-02A SD** Batch ID: **72051** TestNo: **SW6020A** Units: **mg/L**

SampType: **SD** Run ID: **ICP-MS4_151109D** Analysis Date: **11/9/2015 3:14:00 PM** Prep Date: **10/28/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	4.22	1.50	0	3.82				9.82	10	
Calcium	35.8	15.0	0	36.4				1.60	10	

Sample ID **1510216-02A PDS** Batch ID: **72051** TestNo: **SW6020A** Units: **mg/L**

SampType: **PDS** Run ID: **ICP-MS4_151109D** Analysis Date: **11/9/2015 3:32:00 PM** Prep Date: **10/28/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	5.97	0.300	2.00	3.82	107	80	120			
Calcium	80.2	3.00	50.0	36.4	87.6	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1510216
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_151109D

The QC data in batch 72217 applies to the following samples: 1510216-08A, 1510216-09A

Sample ID	**MB-72217**	Batch ID:	**72217**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**ICP-MS4_151109D**	Analysis Date:	**11/9/2015 5:36:00 PM**	Prep Date:	**11/9/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chromium	<0.00200	0.00500								

Sample ID	**LCS-72217**	Batch ID:	**72217**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**ICP-MS4_151109D**	Analysis Date:	**11/9/2015 5:38:00 PM**	Prep Date:	**11/9/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chromium	0.196	0.00500	0.200	0	97.8	80	120			

Sample ID	**LCSD-72217**	Batch ID:	**72217**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**LCSD**	Run ID:	**ICP-MS4_151109D**	Analysis Date:	**11/9/2015 5:40:00 PM**	Prep Date:	**11/9/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chromium	0.196	0.00500	0.200	0	98.0	80	120	0.238	15	

Sample ID	**1510216-09A SD**	Batch ID:	**72217**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**SD**	Run ID:	**ICP-MS4_151109D**	Analysis Date:	**11/9/2015 5:46:00 PM**	Prep Date:	**11/9/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chromium	0.216	0.0250	0	0.00687				188	10	R

Sample ID	**1510216-09A PDS**	Batch ID:	**72217**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**PDS**	Run ID:	**ICP-MS4_151109D**	Analysis Date:	**11/9/2015 6:06:00 PM**	Prep Date:	**11/9/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chromium	0.199	0.00500	0.200	0.00687	96.1	80	120			

Sample ID	**1510216-09A MS**	Batch ID:	**72217**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**MS**	Run ID:	**ICP-MS4_151109D**	Analysis Date:	**11/9/2015 6:07:00 PM**	Prep Date:	**11/9/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chromium	0.194	0.00500	0.200	0.00687	93.7	80	120			

Sample ID	**1510216-09A MSD**	Batch ID:	**72217**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**MSD**	Run ID:	**ICP-MS4_151109D**	Analysis Date:	**11/9/2015 6:09:00 PM**	Prep Date:	**11/9/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chromium	0.196	0.00500	0.200	0.00687	94.6	80	120	0.873	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1510216
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_151109D

Sample ID	**ICV-151109**	Batch ID:	**R82579**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**ICV**	Run ID:	**ICP-MS4_151109D**	Analysis Date:	**11/9/2015 10:39:00 AM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.104	0.0300	0.100	0	104	90	110			
Calcium	2.28	0.300	2.50	0	91.3	90	110			
Chromium	0.107	0.00500	0.100	0	107	90	110			

Sample ID	**LCVL-151109**	Batch ID:	**R82579**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**LCVL**	Run ID:	**ICP-MS4_151109D**	Analysis Date:	**11/9/2015 10:45:00 AM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0338	0.0300	0.0200	0	169	70	130			S
Calcium	0.0913	0.300	0.100	0	91.3	70	130			
Chromium	0.00514	0.00500	0.00500	0	103	70	130			

Sample ID	**CCV2-151109**	Batch ID:	**R82579**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**ICP-MS4_151109D**	Analysis Date:	**11/9/2015 11:55:00 AM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.202	0.0300	0.200	0	101	90	110			

Sample ID	**LCVL2-151109**	Batch ID:	**R82579**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**LCVL**	Run ID:	**ICP-MS4_151109D**	Analysis Date:	**11/9/2015 12:02:00 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0216	0.0300	0.0200	0	108	70	130			

Sample ID	**CCV6-151109**	Batch ID:	**R82579**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**ICP-MS4_151109D**	Analysis Date:	**11/9/2015 3:02:00 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.199	0.0300	0.200	0	99.6	90	110			
Calcium	4.86	0.300	5.00	0	97.3	90	110			

Sample ID	**LCVL6-151109**	Batch ID:	**R82579**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**LCVL**	Run ID:	**ICP-MS4_151109D**	Analysis Date:	**11/9/2015 3:08:00 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0253	0.0300	0.0200	0	126	70	130			
Calcium	0.102	0.300	0.100	0	102	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1510216
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_151109D

Sample ID **CCV7-151109**	Batch ID: **R82579**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_151109D**	Analysis Date: **11/9/2015 3:36:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.209	0.0300	0.200	0	105	90	110			
Calcium	4.77	0.300	5.00	0	95.4	90	110			

Sample ID **LCVL7-151109**	Batch ID: **R82579**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_151109D**	Analysis Date: **11/9/2015 3:53:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0247	0.0300	0.0200	0	124	70	130			
Calcium	0.0965	0.300	0.100	0	96.5	70	130			

Sample ID **CCV9-151109**	Batch ID: **R82579**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_151109D**	Analysis Date: **11/9/2015 5:17:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chromium	0.202	0.00500	0.200	0	101	90	110			

Sample ID **LCVL9-151109**	Batch ID: **R82579**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_151109D**	Analysis Date: **11/9/2015 5:32:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chromium	0.00517	0.00500	0.00500	0	103	70	130			

Sample ID **CCV10-151109**	Batch ID: **R82579**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_151109D**	Analysis Date: **11/9/2015 6:19:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chromium	0.203	0.00500	0.200	0	101	90	110			

Sample ID **LCVL10-151109**	Batch ID: **R82579**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_151109D**	Analysis Date: **11/9/2015 6:33:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chromium	0.00511	0.00500	0.00500	0	102	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1510216
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_151102A

The QC data in batch 72110 applies to the following samples: 1510216-01D, 1510216-02D, 1510216-03D, 1510216-04D, 1510216-05D, 1510216-06D, 1510216-07D, 1510216-08D, 1510216-09D, 1510216-10D, 1510216-11D, 1510216-12D, 1510216-13D, 1510216-14D, 1510216-15D, 1510216-16D

Sample ID **MB-72110** Batch ID: **72110** TestNo: **E300** Units: **mg/L**
SampType: **MBLK** Run ID: **IC2_151102A** Analysis Date: **11/2/2015 9:01:55 AM** Prep Date: **11/2/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00								
Fluoride	<0.100	0.400								
Sulfate	<1.00	3.00								

Sample ID **LCSD-72110** Batch ID: **72110** TestNo: **E300** Units: **mg/L**
SampType: **LCSD** Run ID: **IC2_151102A** Analysis Date: **11/2/2015 9:31:04 AM** Prep Date: **11/2/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.0	1.00	10.00	0	100	90	110	0.071	20	
Fluoride	3.67	0.400	4.000	0	91.7	90	110	0.548	20	
Sulfate	30.9	3.00	30.00	0	103	90	110	0.336	20	

Sample ID **LCS-72110** Batch ID: **72110** TestNo: **E300** Units: **mg/L**
SampType: **LCS** Run ID: **IC2_151102A** Analysis Date: **11/2/2015 9:49:16 AM** Prep Date: **11/2/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.0	1.00	10.00	0	100	90	110			
Fluoride	3.69	0.400	4.000	0	92.2	90	110			
Sulfate	31.0	3.00	30.00	0	103	90	110			

Sample ID **1510216-02DMS** Batch ID: **72110** TestNo: **E300** Units: **mg/L**
SampType: **MS** Run ID: **IC2_151102A** Analysis Date: **11/2/2015 3:52:34 PM** Prep Date: **11/2/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	225	10.0	200.0	21.08	102	90	110			
Fluoride	200	4.00	200.0	0	99.8	90	110			
Sulfate	646	30.0	200.0	424.6	110	90	110			

Sample ID **1510216-02DMSD** Batch ID: **72110** TestNo: **E300** Units: **mg/L**
SampType: **MSD** Run ID: **IC2_151102A** Analysis Date: **11/2/2015 4:07:08 PM** Prep Date: **11/2/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	226	10.0	200.0	21.08	102	90	110	0.173	20	
Fluoride	200	4.00	200.0	0	100	90	110	0.354	20	
Sulfate	646	30.0	200.0	424.6	111	90	110	0.140	20	S

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1510216
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_151102A

Sample ID **1510216-07DMS**	Batch ID: **72110**	TestNo: **E300**	Units: **mg/L**
SampType: **MS**	Run ID: **IC2_151102A**	Analysis Date: **11/2/2015 4:21:42 PM**	Prep Date: **11/2/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	327	10.0	200.0	137.0	95.2	90	110			
Fluoride	202	4.00	200.0	0	101	90	110			
Sulfate	320	30.0	200.0	103.1	108	90	110			

Sample ID **1510216-07DMSD**	Batch ID: **72110**	TestNo: **E300**	Units: **mg/L**
SampType: **MSD**	Run ID: **IC2_151102A**	Analysis Date: **11/2/2015 4:36:17 PM**	Prep Date: **11/2/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	328	10.0	200.0	137.0	95.3	90	110	0.068	20	
Fluoride	202	4.00	200.0	0	101	90	110	0.067	20	
Sulfate	325	30.0	200.0	103.1	111	90	110	1.53	20	S

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1510216
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_151102A

Sample ID **ICV-151102**	Batch ID: **R82477**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC2_151102A**	Analysis Date: **11/2/2015 8:26:46 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	24.8	1.00	25.00	0	99.0	90	110			
Fluoride	9.86	0.400	10.00	0	98.6	90	110			
Sulfate	78.1	3.00	75.00	0	104	90	110			

Sample ID **CCV1-151102**	Batch ID: **R82477**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_151102A**	Analysis Date: **11/2/2015 12:42:58 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.90	1.00	10.00	0	99.0	90	110			
Fluoride	3.92	0.400	4.000	0	98.0	90	110			
Sulfate	30.8	3.00	30.00	0	103	90	110			

Sample ID **CCV2-151102**	Batch ID: **R82477**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_151102A**	Analysis Date: **11/2/2015 4:50:51 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.97	1.00	10.00	0	99.7	90	110			
Fluoride	4.03	0.400	4.000	0	101	90	110			
Sulfate	30.4	3.00	30.00	0	101	90	110			

Sample ID **CCV3-151102**	Batch ID: **R82477**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_151102A**	Analysis Date: **11/2/2015 7:18:42 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.88	1.00	10.00	0	98.8	90	110			
Fluoride	3.99	0.400	4.000	0	99.8	90	110			
Sulfate	29.6	3.00	30.00	0	98.6	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler

Work Order: 1510216

Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_151023A

The QC data in batch 71998 applies to the following samples: 1510216-01D, 1510216-02D, 1510216-03D, 1510216-04D, 1510216-05D, 1510216-06D, 1510216-07D, 1510216-08D, 1510216-09D, 1510216-10D, 1510216-11D, 1510216-12D, 1510216-13D, 1510216-14D, 1510216-15D, 1510216-16D

Sample ID **1510216-09D DUP** Batch ID: **71998** TestNo: **M4500-H+ B** Units: **pH Units@15.7℃**

SampType: **DUP** Run ID: **TITRATOR_151023A** Analysis Date: **10/23/2015 1:05:00 PM** Prep Date: **10/23/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	5.55	0	0	5.530				0.361	5	

Sample ID **1510216-16D DUP** Batch ID: **71998** TestNo: **M4500-H+ B** Units: **pH Units@17.9℃**

SampType: **DUP** Run ID: **TITRATOR_151023A** Analysis Date: **10/23/2015 1:19:00 PM** Prep Date: **10/23/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	5.28	0	0	5.300				0.378	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1510216
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_151023A

Sample ID	**ICV-151023**	Batch ID:	**R82326**	TestNo:	**M4500-H+ B**	Units:	**pH Units@22.7℃**
SampType:	**ICV**	Run ID:	**TITRATOR_151023A**	Analysis Date:	**10/23/2015 12:44:00 P**	Prep Date:	**10/23/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	10.0	0	10.00	0	100	99	101			

Sample ID	**CCV1-151023**	Batch ID:	**R82326**	TestNo:	**M4500-H+ B**	Units:	**pH Units@21.2℃**
SampType:	**CCV**	Run ID:	**TITRATOR_151023A**	Analysis Date:	**10/23/2015 1:06:00 PM**	Prep Date:	**10/23/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	6.99	0	7.000	0	99.9	97.1	102.9			

Sample ID	**CCV2-151023**	Batch ID:	**R82326**	TestNo:	**M4500-H+ B**	Units:	**pH Units@21℃**
SampType:	**CCV**	Run ID:	**TITRATOR_151023A**	Analysis Date:	**10/23/2015 1:24:00 PM**	Prep Date:	**10/23/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	7.00	0	7.000	0	100	97.1	102.9			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1510216
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: WC_151026B

The QC data in batch 72016 applies to the following samples: 1510216-01D, 1510216-02D, 1510216-03D, 1510216-04D, 1510216-05D, 1510216-06D, 1510216-07D, 1510216-08D, 1510216-09D, 1510216-10D, 1510216-11D, 1510216-12D, 1510216-13D, 1510216-14D, 1510216-15D, 1510216-16D

Sample ID **MB-72016** Batch ID: **72016** TestNo: **M2540C** Units: **mg/L**
SampType: **MBLK** Run ID: **WC_151026B** Analysis Date: **10/27/2015 7:30:00 AM** Prep Date: **10/26/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	<10.0	10.0								

Sample ID **LCS-72016** Batch ID: **72016** TestNo: **M2540C** Units: **mg/L**
SampType: **LCS** Run ID: **WC_151026B** Analysis Date: **10/27/2015 7:30:00 AM** Prep Date: **10/26/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	766	10.0	745.6	0	103	90	113			

Sample ID **1510216-01D-DUP** Batch ID: **72016** TestNo: **M2540C** Units: **mg/L**
SampType: **DUP** Run ID: **WC_151026B** Analysis Date: **10/27/2015 7:30:00 AM** Prep Date: **10/26/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	106	10.0	0	106.0				0	5	

Sample ID **1510216-11D-DUP** Batch ID: **72016** TestNo: **M2540C** Units: **mg/L**
SampType: **DUP** Run ID: **WC_151026B** Analysis Date: **10/27/2015 7:30:00 AM** Prep Date: **10/26/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	1820	50.0	0	1830				0.823	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

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gel.com

December 02, 2015

Mr. John DuPont
DHL Analytical
2300 Double Creek Drive
Round Rock, Texas 78664

Re: Routine Analysis
Work Order: 384150
SDG: 1510216

Dear Mr. DuPont:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on October 28, 2015. This original data report has been prepared and reviewed in accordance with GEL's standard operating procedures.

Our policy is to provide high quality, personalized analytical services to enable you to meet your analytical needs on time every time. We trust that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at (843) 556-8171, ext. 4707.

Sincerely,

Anna C Day

Anna Day
Project Manager

Enclosures

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 − (843) 556−8171 − www.gel.com

Certificate of Analysis Report
for

DHLA002 DHL Analytical

Client SDG: 1510216 GEL Work Order: 384150

The Qualifiers in this report are defined as follows:

* A quality control analyte recovery is outside of specified acceptance criteria

** Analyte is a Tracer compound

** Analyte is a surrogate compound

U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the Certificate of Analysis.

The designation ND, if present, appears in the result column when the analyte concentration is not detected above the limit as defined in the 'U' qualifier above.

This data report has been prepared and reviewed in accordance with GEL Laboratories LLC standard operating procedures. Please direct any questions to your Project Manager, Anna Day.

Reviewed by Anna C Day

There are no "Data Exception Reports" associated with this analytical report.

DHL Analytical, Inc.
2300 Double Creek Drive
Round Rock, TX 78664
TEL: *(512) 388-8222* FAX: *(512) 388-8229*

CHAIN-OF-CUSTODY RECORD

Work Order: 1510216

Subcontractor:

GEL Laboratories
PO Box 30712
Charleston, SC 29417

TEL: (843) 556-8171
FAX:
Acct #: 384150

23-Oct-15

Sample Id	Matrix	DHL#	Date Collected	Bottle Type	Requested Tests E903.1 (22Ra)	E904.0 (228Ra)				
PDP-23	Aqueous	-01B	10/20/15 07:40 AM	500HDPEHNO3		1				
PDP-23	Aqueous	-01C	10/20/15 07:40 AM	500HDPEHNO3	1					
PDP-24	Aqueous	-02B	10/20/15 08:35 AM	500HDPEHNO3		1				
PDP-24	Aqueous	-02C	10/20/15 08:35 AM	500HDPEHNO3	1					
PDP-22	Aqueous	-03B	10/20/15 09:25 AM	500HDPEHNO3		1				
PDP-22	Aqueous	-03C	10/20/15 09:25 AM	500HDPEHNO3	1					
MW-19	Aqueous	-04B	10/20/15 10:20 AM	500HDPEHNO3		1				
MW-19	Aqueous	-04C	10/20/15 10:20 AM	500HDPEHNO3	1					
MW-20A	Aqueous	-05B	10/20/15 11:20 AM	500HDPEHNO3		1				
MW-20A	Aqueous	-05C	10/20/15 11:20 AM	500HDPEHNO3	1					
PDP-26	Aqueous	-06B	10/20/15 02:20 PM	500HDPEHNO3		1				
PDP-26	Aqueous	-06C	10/20/15 02:20 PM	500HDPEHNO3	1					
PDP-25	Aqueous	-07B	10/20/15 03:20 PM	500HDPEHNO3		1				
PDP-25	Aqueous	-07C	10/20/15 03:20 PM	500HDPEHNO3	1					
H-30	Aqueous	-08B	10/20/15 04:20 PM	500HDPEHNO3		1				
H-30	Aqueous	-08C	10/20/15 04:20 PM	500HDPEHNO3	1					
H-31	Aqueous	-09B	10/20/15 05:15 PM	500HDPEHNO3		1				
H-31	Aqueous	-09C	10/20/15 05:15 PM	500HDPEHNO3	1					

General Comments:

Please analyze these samples with a Standard Turnaround Time.
Call John DuPont if you have questions.
Quality Control Package Needed: Standard / _____
EMAIL report to both cac@dhlanalytical.com & dupont@dhlanalytical.com

		Date/Time			Date/Time
Relinquished by:		10/23/15 1730	**Received by:**		10/23/15 1730
Relinquished by:			**Received by:**		0920 10/24/15

DHL Analytical, Inc.
2300 Double Creek Drive
Round Rock, TX 78664
TEL: *(512) 388-8222* FAX: *(512) 388-8229*

CHAIN-OF-CUSTODY RECORD

Work Order: 1510216

Subcontractor:

GEL Laboratories
PO Box 30712
Charleston, SC 29417

TEL: (843) 556-8171
FAX:
Acct #:

23-Oct-15

Sample Id	Matrix	DHL#	Date Collected	Bottle Type	Requested Tests 226 E903.1	228 E904.0				
H-29	Aqueous	-10B	10/21/15 12:45 PM	500HDPEHNO3		1				
H-29	Aqueous	-10C	10/21/15 12:45 PM	500HDPEHNO3	1					
H-28	Aqueous	-11B	10/21/15 01:35 PM	500HDPEHNO3		1				
H-28	Aqueous	-11C	10/21/15 01:35 PM	500HDPEHNO3	1					
H-27	Aqueous	-12B	10/21/15 02:20 PM	500HDPEHNO3		1				
H-27	Aqueous	-12C	10/21/15 02:20 PM	500HDPEHNO3	1					
H-26	Aqueous	-13B	10/21/15 03:25 PM	500HDPEHNO3		1				
H-26	Aqueous	-13C	10/21/15 03:25 PM	500HDPEHNO3	1					
H-33	Aqueous	-14B	10/22/15 12:55 PM	500HDPEHNO3		1				
H-33	Aqueous	-14C	10/22/15 12:55 PM	500HDPEHNO3	1					
H-32	Aqueous	-15B	10/22/15 01:55 PM	500HDPEHNO3		1				
H-32	Aqueous	-15C	10/22/15 01:55 PM	500HDPEHNO3	1					
MW-17A	Aqueous	-16B	10/21/15 02:55 PM	500HDPEHNO3		1				
MW-17A	Aqueous	-16C	10/21/15 02:55 PM	500HDPEHNO3	1					

General Comments:

Please analyze these samples with a Standard Turnaround Time.
Call John DuPont if you have questions.
Quality Control Package Needed: Standard / _____
EMAIL report to both cac@dhlanalytical.com & dupont@dhlanalytical.com

		Date/Time			Date/Time
Relinquished by:		10/22/15 1730	**Received by:**		10/23/15 1730
Relinquished by:			**Received by:**		0920 102815

GEL Laboratories LLC

SAMPLE RECEIPT & REVIEW FORM

Client: PHILA			**SDG/AR/COC/Work Order:** 384150	
Received By: H. Taylor			**Date Received:** 102815 0920	
Suspected Hazard Information	**Yes**	**No**	*If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation.	
COC/Samples marked as radioactive?		✓	Maximum Net Counts Observed* (Observed Counts - Area Background Counts): CCPM	
Classified Radioactive II or III by RSO?		✓	If yes, Were swipes taken of sample containers < action levels?	
COC/Samples marked containing PCBs?		✓		
Package, COC, and/or Samples marked as beryllium or asbestos containing?		✓	If yes, samples are to be segregated as Safety Controlled Samples, and opened by the GEL Safety Group.	
Shipped as a DOT Hazardous?		✓	Hazard Class Shipped: UN#:	
Samples identified as Foreign Soil?		✓		

	Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (Required for Non-Conforming Items)
1	Shipping containers received intact and sealed?	✓			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
2	Samples requiring cold preservation within (0 ≤ 6 deg. C)?*			✓	Preservation Method: Ice bags Blue ice Dry ice None Other (describe) *all temperatures are recorded in Celsius
2a	Daily check performed and passed on IR temperature gun?	✓			Temperature Device Serial #: ES03201330 Secondary Temperature Device Serial # (If Applicable):
3	Chain of custody documents included with shipment?	✓			
4	Sample containers intact and sealed?	✓			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
5	Samples requiring chemical preservation at proper pH?	✓			Sample ID's, containers affected and observed pH: If Preservation added, Lot#:
6	Do Low Level Perchlorate samples have headspace as required?			✓	Sample ID's and containers affected:
7	VOA vials contain acid preservation?			✓	(If unknown, select No)
8	VOA vials free of headspace (defined as < 6mm bubble)?			✓	Sample ID's and containers affected:
9	Are Encore containers present?			✓	(If yes, immediately deliver to Volatiles laboratory)
10	Samples received within holding time?	✓			ID's and tests affected:
11	Sample ID's on COC match ID's on bottles?	✓			Sample ID's and containers affected:
12	Date & time on COC match date & time on bottles?	✓			Sample ID's affected:
13	Number of containers received match number indicated on COC?	✓			Sample ID's affected:
14	Are sample containers identifiable as GEL provided?			✓	
15	COC form is properly signed in relinquished/received sections?	✓			
16	Carrier and tracking number.				Circle Applicable: FedEx Air FedEx Ground UPS Field Services Courier Other 7748 1199 6914

Comments (Use Continuation Form if needed):

PM (or PMA) review: Initials HH Date 102515 Page 1 of 1 GL-CHL-SR-001 Rev 2

List of current GEL Certifications as of 02 December 2015

State	Certification
Alaska	UST−110
Arkansas	88−0651
CLIA	42D0904046
California	2940 Interim
Colorado	SC00012
Connecticut	PH−0169
Delaware	SC000122013−10
DoD ELAP/ ISO17025 A2LA	2567.01
Florida NELAP	E87156
Foreign Soils Permit	P330−15−00283, P330−15−00253
Georgia	SC00012
Georgia SDWA	967
Hawaii	SC000122013−10
Idaho Chemistry	SC00012
Idaho Radiochemistry	SC00012
Illinois NELAP	200029
Indiana	C−SC−01
Kansas NELAP	E−10332
Kentucky SDWA	90129
Kentucky Wastewater	90129
Louisiana NELAP	03046 (AI33904)
Louisiana SDWA	LA150001
Maryland	270
Massachusetts	M−SC012
Michigan	9976
Mississippi	SC000122013−10
Nebraska	NE−OS−26−13
Nevada	SC000122016−1
New Hampshire NELAP	2054
New Jersey NELAP	SC002
New Mexico	SC00012
New York NELAP	11501
North Carolina	233
North Carolina SDWA	45709
North Dakota	R−158
Oklahoma	9904
Pennsylvania NELAP	68−00485
S.Carolina Radchem	10120002
South Carolina Chemistry	10120001
Tennessee	TN 02934
Texas NELAP	T104704235−15−10
Utah NELAP	SC000122015−19
Vermont	VT87156
Virginia NELAP	460202
Washington	C780
West Virginia	997404

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: December 2, 2015

Company : DHL Analytical
Address : 2300 Double Creek Drive

Round Rock, Texas 78664
Contact: Mr. John DuPont
Project: Routine Analysis

Client Sample ID: PDP-23
Sample ID: 384150001
Matrix: Water
Collect Date: 20-OCT-15 07:40
Receive Date: 28-OCT-15
Collector: Client

Project: DHLA00112
Client ID: DHLA002

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228	U	-0.554	+/-0.788	1.67	3.00	pCi/L		AXM6	12/02/15	1104	1522094	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226		1.06	+/-0.452	0.537	1.00	pCi/L		CXP3	11/20/15	0450	1518773	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			79	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: December 2, 2015

Company : DHL Analytical
Address : 2300 Double Creek Drive

Round Rock, Texas 78664
Contact: Mr. John DuPont
Project: Routine Analysis

Client Sample ID: PDP-24
Sample ID: 384150002
Matrix: Water
Collect Date: 20-OCT-15 08:35
Receive Date: 28-OCT-15
Collector: Client

Project: DHLA00112
Client ID: DHLA002

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228		3.49	+/-1.81	2.53	3.00	pCi/L		AXM6	12/02/15	1104	1522094	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226		1.29	+/-0.557	0.670	1.00	pCi/L		CXP3	11/20/15	0450	1518773	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			44.7	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

GEL LABORATORIES LLC
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Certificate of Analysis

Report Date: December 2, 2015

Company :	DHL Analytical
Address :	2300 Double Creek Drive
	Round Rock, Texas 78664
Contact:	Mr. John DuPont
Project:	Routine Analysis

Client Sample ID:	PDP-22	Project:	DHLA00112
Sample ID:	384150003	Client ID:	DHLA002
Matrix:	Water		
Collect Date:	20-OCT-15 09:25		
Receive Date:	28-OCT-15		
Collector:	Client		

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228	U	0.730	+/-0.970	1.66	3.00	pCi/L		AXM6	12/02/15	1100	1522094	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226		1.18	+/-0.522	0.634	1.00	pCi/L		CXP3	11/20/15	0450	1518773	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			86.2	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

GEL LABORATORIES LLC
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Certificate of Analysis

Report Date: December 2, 2015

Company :	DHL Analytical
Address :	2300 Double Creek Drive
	Round Rock, Texas 78664
Contact:	Mr. John DuPont
Project:	Routine Analysis

Client Sample ID:	MW-19	Project:	DHLA00112
Sample ID:	384150004	Client ID:	DHLA002
Matrix:	Water		
Collect Date:	20-OCT-15 10:20		
Receive Date:	28-OCT-15		
Collector:	Client		

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228	U	0.211	+/-1.28	2.48	3.00	pCi/L		AXM6	12/02/15	1101	1522094	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226		0.683	+/-0.388	0.525	1.00	pCi/L		CXP3	11/20/15	0450	1518773	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			40.9	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: December 2, 2015

Company : DHL Analytical
Address : 2300 Double Creek Drive

Round Rock, Texas 78664
Contact: Mr. John DuPont
Project: Routine Analysis

Client Sample ID: MW-20A
Sample ID: 384150005
Matrix: Water
Collect Date: 20-OCT-15 11:20
Receive Date: 28-OCT-15
Collector: Client

Project: DHLA00112
Client ID: DHLA002

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228	U	1.38	+/-1.03	1.60	3.00	pCi/L		AXM6	12/02/15	1100	1522094	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226		3.01	+/-0.651	0.507	1.00	pCi/L		CXP3	11/20/15	0450	1518773	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			81.6	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

GEL LABORATORIES LLC
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Certificate of Analysis

Report Date: December 2, 2015

Company : DHL Analytical
Address : 2300 Double Creek Drive

Round Rock, Texas 78664
Contact: Mr. John DuPont
Project: Routine Analysis

Client Sample ID: PDP-26
Sample ID: 384150006
Matrix: Water
Collect Date: 20-OCT-15 14:20
Receive Date: 28-OCT-15
Collector: Client

Project: DHLA00112
Client ID: DHLA002

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228	U	0.237	+/-0.830	1.54	3.00	pCi/L		AXM6	12/02/15	1100	1522094	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226		0.590	+/-0.360	0.502	1.00	pCi/L		CXP3	11/20/15	0645	1518773	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			77.9	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

GEL LABORATORIES LLC
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Certificate of Analysis

Report Date: December 2, 2015

Company : DHL Analytical
Address : 2300 Double Creek Drive

Round Rock, Texas 78664
Contact: Mr. John DuPont
Project: Routine Analysis

Client Sample ID: PDP-25
Sample ID: 384150007
Matrix: Water
Collect Date: 20-OCT-15 15:20
Receive Date: 28-OCT-15
Collector: Client

Project: DHLA00112
Client ID: DHLA002

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228	U	1.11	+/-0.966	1.55	3.00	pCi/L		AXM6	12/02/15	1100	1522094	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226		1.19	+/-0.528	0.642	1.00	pCi/L		CXP3	11/20/15	0645	1518773	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			83.7	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

GEL LABORATORIES LLC
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Certificate of Analysis

Report Date: December 2, 2015

Company : DHL Analytical
Address : 2300 Double Creek Drive

Round Rock, Texas 78664
Contact: Mr. John DuPont
Project: Routine Analysis

Client Sample ID: H-30
Sample ID: 384150008
Matrix: Water
Collect Date: 20-OCT-15 16:20
Receive Date: 28-OCT-15
Collector: Client

Project: DHLA00112
Client ID: DHLA002

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228	U	0.886	+/-1.52	2.67	3.00	pCi/L		AXM6	12/02/15	1105	1522094	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226	U	0.404	+/-0.323	0.485	1.00	pCi/L		CXP3	11/20/15	0645	1518773	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			62	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: December 2, 2015

Company : DHL Analytical
Address : 2300 Double Creek Drive

Round Rock, Texas 78664
Contact: Mr. John DuPont
Project: Routine Analysis

Client Sample ID: H-31
Sample ID: 384150009
Matrix: Water
Collect Date: 20-OCT-15 17:15
Receive Date: 28-OCT-15
Collector: Client

Project: DHLA00112
Client ID: DHLA002

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228	U	-0.476	+/-0.862	1.88	3.00	pCi/L		AXM6	12/02/15	1105	1522094	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226		0.943	+/-0.427	0.525	1.00	pCi/L		CXP3	11/20/15	0645	1518773	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			62.6	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: December 2, 2015

Company : DHL Analytical
Address : 2300 Double Creek Drive

Round Rock, Texas 78664
Contact: Mr. John DuPont
Project: Routine Analysis

Client Sample ID: H-29
Sample ID: 384150010
Matrix: Water
Collect Date: 21-OCT-15 12:45
Receive Date: 28-OCT-15
Collector: Client

Project: DHLA00112
Client ID: DHLA002

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228		1.82	+/-1.18	1.79	3.00	pCi/L		AXM6	12/02/15	1105	1522094	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226		0.464	+/-0.291	0.381	1.00	pCi/L		CXP3	11/20/15	0645	1518773	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			71.8	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: December 2, 2015

Company : DHL Analytical
Address : 2300 Double Creek Drive

Round Rock, Texas 78664
Contact: Mr. John DuPont
Project: Routine Analysis

Client Sample ID: H-28
Sample ID: 384150011
Matrix: Water
Collect Date: 21-OCT-15 13:35
Receive Date: 28-OCT-15
Collector: Client

Project: DHLA00112
Client ID: DHLA002

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228	U	0.653	+/-0.959	1.65	3.00	pCi/L		AXM6	12/02/15	1102	1522094	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226	U	0.207	+/-0.318	0.558	1.00	pCi/L		CXP3	11/20/15	0720	1518773	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			89.8	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: December 2, 2015

Company : DHL Analytical
Address : 2300 Double Creek Drive

Round Rock, Texas 78664
Contact: Mr. John DuPont
Project: Routine Analysis

Client Sample ID: H-27
Sample ID: 384150012
Matrix: Water
Collect Date: 21-OCT-15 14:20
Receive Date: 28-OCT-15
Collector: Client

Project: DHLA00112
Client ID: DHLA002

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228	U	0.245	+/-0.914	1.67	3.00	pCi/L		AXM6	12/02/15	1100	1522094	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226	U	0.445	+/-0.361	0.553	1.00	pCi/L		CXP3	11/20/15	0720	1518773	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			83.7	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: December 2, 2015

Company : DHL Analytical
Address : 2300 Double Creek Drive

Round Rock, Texas 78664
Contact: Mr. John DuPont
Project: Routine Analysis

Client Sample ID: H-26
Sample ID: 384150013
Matrix: Water
Collect Date: 21-OCT-15 15:25
Receive Date: 28-OCT-15
Collector: Client

Project: DHLA00112
Client ID: DHLA002

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228	U	-0.347	+/-0.785	1.64	3.00	pCi/L		AXM6	12/02/15	1105	1522094	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226		0.919	+/-0.475	0.619	1.00	pCi/L		CXP3	11/20/15	0720	1518773	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			73.2	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: December 2, 2015

Company : DHL Analytical
Address : 2300 Double Creek Drive

Round Rock, Texas 78664
Contact: Mr. John DuPont
Project: Routine Analysis

Client Sample ID: H-33
Sample ID: 384150014
Matrix: Water
Collect Date: 21-OCT-15 12:55
Receive Date: 28-OCT-15
Collector: Client

Project: DHLA00112
Client ID: DHLA002

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228		1.64	+/-1.09	1.63	3.00	pCi/L		AXM6	12/02/15	1100	1522094	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226		1.76	+/-0.589	0.617	1.00	pCi/L		CXP3	11/20/15	0720	1518773	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			73	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: December 2, 2015

Company : DHL Analytical
Address : 2300 Double Creek Drive

Round Rock, Texas 78664
Contact: Mr. John DuPont
Project: Routine Analysis

Client Sample ID: H-32
Sample ID: 384150015
Matrix: Water
Collect Date: 21-OCT-15 13:55
Receive Date: 28-OCT-15
Collector: Client

Project: DHLA00112
Client ID: DHLA002

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228	U	-0.0843	+/-0.953	1.90	3.00	pCi/L		AXM6	12/02/15	1105	1522094	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226		1.05	+/-0.445	0.530	1.00	pCi/L		CXP3	11/20/15	0720	1518773	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			60	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: December 2, 2015

Company :	DHL Analytical
Address :	2300 Double Creek Drive
	Round Rock, Texas 78664
Contact:	Mr. John DuPont
Project:	Routine Analysis

Client Sample ID:	MW-17A	Project:	DHLA00112
Sample ID:	384150016	Client ID:	DHLA002
Matrix:	Water		
Collect Date:	21-OCT-15 14:55		
Receive Date:	28-OCT-15		
Collector:	Client		

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228	U	0.722	+/-0.974	1.67	3.00	pCi/L		AXM6	12/02/15	1102	1522094	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226		0.597	+/-0.356	0.477	1.00	pCi/L		CXP3	11/20/15	0755	1518773	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			86.1	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

QC Summary

Report Date: December 2, 2015

DHL Analytical
2300 Double Creek Drive
Round Rock, Texas

Contact: **Mr. John DuPont**

Workorder: **384150**

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Rad Gas Flow										
Batch 1522094										
QC1203430457 384150008 DUP										
Radium-228	U	0.886	U	1.05	pCi/L	N/A		N/A	AXM6	12/02/15 12:45
	Uncertainty	+/-1.52		+/-1.67						
QC1203430458 LCS										
Radium-228	29.2			28.0	pCi/L		95.9	(75%-125%)		12/02/15 11:01
	Uncertainty			+/-2.81						
QC1203430456 MB										
Radium-228			U	-0.145	pCi/L					12/02/15 11:02
	Uncertainty			+/-0.757						
Rad Ra-226										
Batch 1518773										
QC1203421510 384779001 DUP										
Radium-226	U	0.424		0.636	pCi/L	40.1		(0% - 100%)	CXP3	11/20/15 07:55
	Uncertainty	+/-0.362		+/-0.399						
QC1203421512 LCS										
Radium-226	24.4			28.7	pCi/L		117	(75%-125%)		11/20/15 08:25
	Uncertainty			+/-1.97						
QC1203421509 MB										
Radium-226			U	0.197	pCi/L					11/20/15 07:55
	Uncertainty			+/-0.301						
QC1203421511 384779001 MS										
Radium-226	122 U	0.424		92.4	pCi/L		75.7	(75%-125%)		11/20/15 08:25
	Uncertainty	+/-0.362		+/-8.53						

Notes:

Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

The Qualifiers in this report are defined as follows:

**	Analyte is a Tracer compound
<	Result is less than value reported
>	Result is greater than value reported
BD	Results are either below the MDC or tracer recovery is low
FA	Failed analysis.
H	Analytical holding time was exceeded
J	Value is estimated
K	Analyte present. Reported value may be biased high. Actual value is expected to be lower.
L	Analyte present. Reported value may be biased low. Actual value is expected to be higher.
M	M if above MDC and less than LLD
M	REMP Result > MDC/CL and < RDL
N/A	RPD or %Recovery limits do not apply.

QC Summary

Workorder: **384150**

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time

N1	See case narrative
ND	Analyte concentration is not detected above the detection limit
NJ	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
Q	One or more quality control criteria have not been met. Refer to the applicable narrative or DER.
R	Sample results are rejected
U	Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
UI	Gamma Spectroscopy--Uncertain identification
UJ	Gamma Spectroscopy--Uncertain identification
UL	Not considered detected. The associated number is the reported concentration, which may be inaccurate due to a low bias.
X	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
Y	Other specific qualifiers were required to properly define the results. Consult case narrative.
^	RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.
h	Preparation or preservation holding time was exceeded

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.
^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.
* Indicates that a Quality Control parameter was not within specifications.
For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.

January 21, 2016

Will Vienne
Pastor, Behling & Wheeler
2201 Double Creek Dr #4004
Round Rock, Texas 78664
TEL: (512) 671-3434
FAX (512) 671-3446

Order No.: 1512236

RE: Luminant - Martin Lake

Dear Will Vienne:

DHL Analytical, Inc. received 17 sample(s) on 12/17/2015 for the analyses presented in the following report.

There were no problems with the analyses and all data met requirements of NELAC except where noted in the Case Narrative. All non-NELAC methods will be identified accordingly in the case narrative and all estimated uncertainties of test results are within method or EPA specifications.

If you have any questions regarding these tests results, please feel free to call. Thank you for using DHL Analytical.

Sincerely,

John DuPont
General Manager

This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211-15-15

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DHL ANALYTICAL
2300 Double Creek Dr. ■ Round Rock, TX 78664
Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

№69475

CHAIN-OF-CUSTODY

CLIENT: PBW
ADDRESS: 2201 DOUBLE CREEK DR ROUND ROCK TX 78664
PHONE: 512-671-3434 FAX/E-MAIL: 512-671-3446
DATA REPORTED TO: WILL VIENNE
ADDITIONAL REPORT COPIES TO:

DATE: 12-15-15 PAGE 1 OF 2
PO #: S164-B DHL WORK ORDER #: 1512236
PROJECT LOCATION OR NAME: LUMINANT - MARTIN LAKE
CLENT PROJECT #: S164-B COLLECTOR: J. BRAYTON

Authorize 5% surcharge for TRRP Report? ❑ Yes ❑ No

S=SOIL W=WATER A=AIR L=LIQUID SE=SEDIMENT P=PAINT SL=SLUDGE O=OTHER SO=SOLID

PRESERVATION: HCl | HNO_3 | H_2SO_4 ❑ NaOH ❑ | ICE | UNPRESERVED

ANALYSES: BTEX ❑ MTBE ❑ [METHOD 8021] | TPH 1005 ❑ TPH 1006 ❑ HOLD 1006 ❑ | GRO [METHOD 8015] ❑ DRO [METHOD 8105] ❑ | VOC 8260 ❑ VOC 624 ❑ VOC 8260/5035 ❑ | SVOC 8270 ❑ PAH 8270 ❑ HOLD PAH ❑ SVOC 625 ❑ | 8270 PEST ❑ 625 PEST/PCB ❑ 608 PCB ❑ | 8270 O-P PEST ❑ 8082 PCB ❑ 8270 PCB ❑ | 8321 HERB ❑ T PHOS, AMMONIA ❑ | METALS 6020 ❑ METALS 200.8 ❑ DISS. METALS ❑ | RCRA ❑ TX11 ❑ ___ ❑ | PH ❑ HEX CHROM ❑ ALKALINITY ❑ COD ❑ | CHLORIDE ❑ ANIONS ___ ❑ | TCLP-SVOC ❑ VOC ❑ PEST ❑ HERB ❑ | TCLP-METALS ❑ RCRA 8 ❑ TX-11 ❑ Pb ❑ | RCI ❑ FLASHPOINT ❑ DGAS ❑ | TDS ❑ TSS ❑ % MOISTURE ❑ CYANIDE ❑ | SEE ATTACHED

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	HCl	HNO_3	H_2SO_4 ❑ NaOH ❑	ICE	UNPRESERVED	SEE ATTACHED	FIELD NOTES
H-29	01	12-14-15	0905	W	P	4						X	
H-30	02		0950	W	P	4						X	
H-31	03		1040	W	P	4						X	
H-32	04		1130	W	P	4						X	
H-27	05		1220	W	P	4						X	
H-28	06		1315	W	P	4						X	
H-26	07		1405	W	P	4						X	
H-33	08		1455	W	P	4						X	
MW-20A	09		1700	W	P	4						X	
PDP-22	10		1750	W	P	4						X	
MW-19	11		1840	W	P	4						X	
PDP-23	12	↓	1930	W	P	4						X	
PDP-26	13	12-15-15	0750	W	P	4						X	
MW-17A	14		0850	W	P	4						X	
PDP-24	15	↓	0940	W	P	4						X	

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
	12-16-15	1800 Fedex
Fedex	12/17/15	1020
	DATE/TIME	RECEIVED BY: (Signature)

TURN AROUND TIME
RUSH ❑ CALL FIRST
1 DAY ❑ CALL FIRST
2 DAY ❑
NORMAL ☒
OTHER ❑ _____

LABORATORY USE ONLY:
RECEIVING TEMP: 3.5, 4.3, 4.3 THERM #: 23
CUSTODY SEALS: ❑ BROKEN ❑ INTACT ☒ NOT USED
CARRIER: ❑ LONE STAR ☒ FEDEX ❑ UPS ❑ OTHER
❑ COURIER DELIVERY
❑ HAND DELIVERED

❑ DHL DISPOSAL @ $5.00 each ❑ Return

DHL ANALYTICAL
2300 Double Creek Dr. ■ Round Rock, TX 78664
Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

№ 69476

CHAIN-OF-CUSTODY

CLIENT: PBW
ADDRESS: 2201 DOUBLE CREEK DR ROUND ROCK TX 78664
PHONE: 512-671-3434 FAX/E-MAIL: 512-671-3446
DATA REPORTED TO: WILL VIENNE
ADDITIONAL REPORT COPIES TO:

DATE: 12-15-15 PAGE 2 OF 2
PO #: 5164-B DHL WORK ORDER #: 1512236
PROJECT LOCATION OR NAME: LUMINANT - MARTIN LAKE
CLENT PROJECT #: 5164-B COLLECTOR: J. BRAYTON

Authorize 5% surcharge for TRRP Report? ☐ Yes ☐ No

S=SOIL W=WATER A=AIR L=LIQUID SE=SEDIMENT P=PAINT SL=SLUDGE O=OTHER SO=SOLID

PRESERVATION: HCl | HNO_3 | H_2SO_4 ☐ NaOH ☐ | ICE | UNPRESERVED

ANALYSES: BTEX ☐ MTBE ☐ [METHOD 8021] | TPH 1005 ☐ TPH 1006 ☐ HOLD 1006 ☐ | GRO [METHOD 8015] ☐ DRO [METHOD 8105] ☐ | VOC 8260 ☐ VOC 624 ☐ VOC 8260/5035 ☐ | SVOC 8270 ☐ PAH 8270 ☐ HOLD PAH ☐ SVOC 625 ☐ | 8270 PEST ☐ 625 PEST/PCB ☐ 608 PCB ☐ 8270 PCB ☐ | 8270 O-P PEST ☐ 8082 PCB ☐ 8270 PCB ☐ | 8321 HERB ☐ T PHOS, AMMONIA ☐ | METALS 6020 ☐ METALS 200.8 ☐ DISS. METALS ☐ | RCRA ☐ TX11 ☐ ☐ | PH ☐ HEX CHROM ☐ ALKALINITY ☐ COD ☐ | CHLORIDE ☐ ANIONS ☐ | TCLP-SVOC ☐ VOC ☐ PEST ☐ HERB ☐ | TCLP-METALS ☐ RCRA 8 ☐ TX-11 ☐ Pb ☐ | RCI ☐ FLASHPOINT ☐ DGAS ☐ | TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐ | SEE ATTACHED

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	HCl	HNO_3	H_2SO_4 ☐ NaOH ☐	ICE	UNPRESERVED	SEE ATTACHED	FIELD NOTES
MW-18A	16	12-15-15	1030	W	P	4						X	
PDP-25	17	12-15-15	1135	W	P	4						X	

RELINQUISHED BY: (Signature) DATE/TIME 12-16-15 RECEIVED BY: (Signature) 1830
RELINQUISHED BY: (Signature) DATE/TIME 12/17/15 RECEIVED BY: (Signature) 1090
RELINQUISHED BY: (Signature) DATE/TIME RECEIVED BY: (Signature)

☐ DHL DISPOSAL @ $5.00 each ☐ Return

TURN AROUND TIME
RUSH ☐ CALL FIRST
1 DAY ☐ CALL FIRST
2 DAY ☐
NORMAL ☒
OTHER ☐ _____

LABORATORY USE ONLY:
RECEIVING TEMP: _____ THERM #: _____
CUSTODY SEALS: ☐ BROKEN ☐ INTACT ☐ NOT USED
CARRIER: ☐ LONE STAR ☐ FEDEX ☐ UPS ☐ OTHER
☐ COURIER DELIVERY
☐ HAND DELIVERED

John Dupont

From: Sara Taube [Sara.Taube@pbwllc.com]
Sent: Wednesday, July 22, 2015 12:05 PM
To: John Dupont
Subject: CCR Appendix III and IV
Follow Up Flag: Follow up
Flag Status: Completed

Hi John,

Here are the Appendix III and Appendix IV constituents that we will need to have analyzed under the CCR Rule.

Appendix III
Boron
Calcium
Chloride
Fluoride
pH
sulfate
TDS

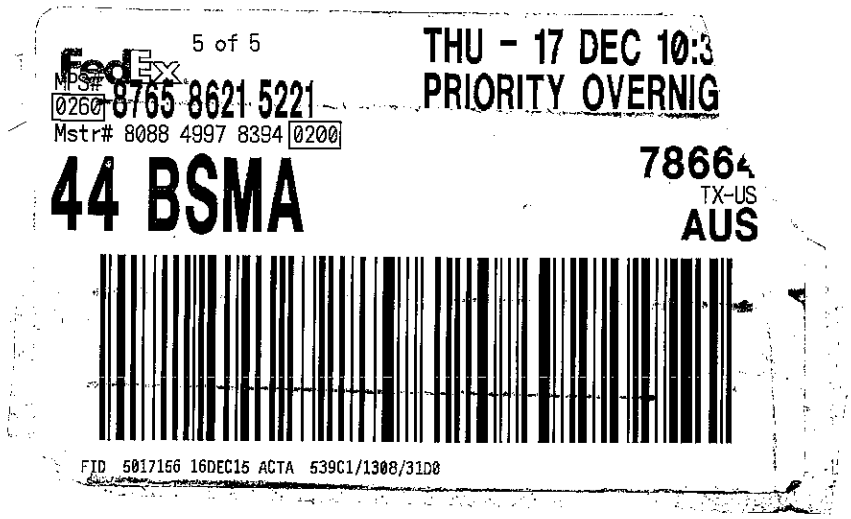
Appendix IV
Antimony
Arsenic
Barium
Beryllium
Cadmium
Chromium
Cobalt
Fluoride
Lead
Lithium
Mercury
Molybdenum
Selenium
Thallium
Radium 226 and 228

We are looking to have approximately 74 wells sampled 8 times over the course of the next two years. Please let me know if there is any more information you might need.

Cheers,

Sara

10/26/2015


5 of 5
FedEx
MPS#
0260 8765 8621 5221
Mstr# 8088 4997 8394 0200
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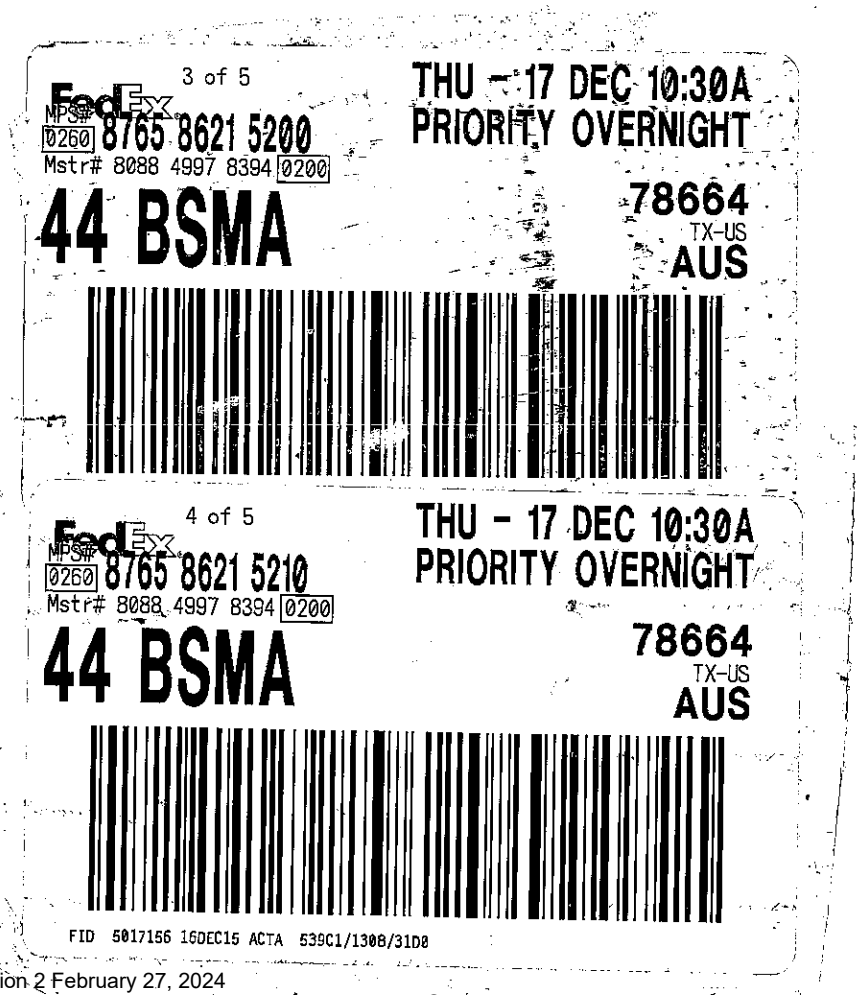
44 BSMA
78664
TX-US
AUS
FID 5017156 16DEC15 ACTA 539C1/1308/31D8


3 of 5
FedEx
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Mstr# 8088 4997 8394 0200
THU - 17 DEC 10:30A
PRIORITY OVERNIGHT
44 BSMA
78664
TX-US
AUS
4 of 5
FedEx
MPS#
0260 8765 8621 5210
Mstr# 8088 4997 8394 0200
THU - 17 DEC 10:30A
PRIORITY OVERNIGHT
44 BSMA
78664
TX-US
AUS
FID 5017156 16DEC15 ACTA 539C1/1308/31D8

DHL Analytical, Inc.

Sample Receipt Checklist

Client Name **Pastor, Behling & Wheeler** Date Received: **12/17/2015**

Work Order Number **1512236** Received by **JB**

Checklist completed by: _____ 12/17/2015 Reviewed by DL 12/17/2015
Signature Date Initials Date

Carrier name FedEx 1day

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	3.5 °C, 4.8, 4.3
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH<2 acceptable upon receipt?	Yes ☑	No ☐	NA ☐ LOT # 8086
	Adjusted? NO		Checked by QD
Water - ph>9 (S) or ph>12 (CN) acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted? _____		Checked by _____

Any No response must be detailed in the comments section below.

Client contacted _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding _____

Comments: _____

Corrective Action _____

DHL Analytical, Inc. **Date:** *21-Jan-16*

CLIENT: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake
Lab Order: 1512236

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Method SW6020A - Metals Analysis
Method SW7470A - Mercury Analysis
Method E300 - Anions Analysis
Method M4500-H+ B - pH of a Water Analysis
Method M2540C - TDS Analysis
Sub-contract - Radium-228 and Radium-226 analyses by methods E904.0/SW8469320 Modified and E903.1 Modified. Analyzed at GEL Laboratory.

LOG IN

The samples were received and log-in performed on 12/17/15. A total of 17 samples were received. The samples arrived in good condition and were properly packaged.

METALS ANALYSIS

For Metals analysis performed on 1/7/16 Boron was detected below the reporting limit in the method blank (MB-72946). All samples were may be biased high for this analyte. No further corrective actions were taken.

For Metals analysis performed on 1/5/16 the matrix spike and matrix spike duplicate recoveries were out of control limits for Calcium. These are flagged accordingly in the QC summary report. The sample selected for the matrix spike and matrix spike duplicate was from this work order. The LCS was within control limits for this analyte. No further corrective actions were taken.

DHL Analytical, Inc.

Date: *21-Jan-16*

CLIENT: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake
Lab Order: 1512236

Work Order Sample Summary

Lab Smp ID	Client Sample ID	Tag Number	Date Collected	Date Recved
1512236-01	H-29		12/14/15 09:05 AM	12/17/2015
1512236-02	H-30		12/14/15 09:50 AM	12/17/2015
1512236-03	H-31		12/14/15 10:40 AM	12/17/2015
1512236-04	H-32		12/14/15 11:30 AM	12/17/2015
1512236-05	H-27		12/14/15 12:20 PM	12/17/2015
1512236-06	H-28		12/14/15 01:15 PM	12/17/2015
1512236-07	H-26		12/14/15 02:05 PM	12/17/2015
1512236-08	H-33		12/14/15 02:55 PM	12/17/2015
1512236-09	MW-20A		12/14/15 05:00 PM	12/17/2015
1512236-10	PDP-22		12/14/15 05:50 PM	12/17/2015
1512236-11	MW-19		12/14/15 06:40 PM	12/17/2015
1512236-12	PDP-23		12/14/15 07:30 PM	12/17/2015
1512236-13	PDP-26		12/15/15 07:50 AM	12/17/2015
1512236-14	MW-17A		12/15/15 08:50 AM	12/17/2015
1512236-15	PDP-24		12/15/15 09:40 AM	12/17/2015
1512236-16	MW-18A		12/15/15 10:30 AM	12/17/2015
1512236-17	PDP-25		12/15/15 11:35 AM	12/17/2015

Lab Order: 1512236
Client: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1512236-01A	H-29	12/14/15 09:05 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	H-29	12/14/15 09:05 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	H-29	12/14/15 09:05 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	H-29	12/14/15 09:05 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	H-29	12/14/15 09:05 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	12/19/15 10:57 AM	72835
1512236-01D	H-29	12/14/15 09:05 AM	Aqueous	E300	Anion Preparation	12/22/15 12:13 PM	72897
	H-29	12/14/15 09:05 AM	Aqueous	E300	Anion Preparation	12/22/15 12:13 PM	72897
	H-29	12/14/15 09:05 AM	Aqueous	M4500-H+ B	pH Preparation	12/18/15 10:36 AM	72710
	H-29	12/14/15 09:05 AM	Aqueous	M2540C	TDS Preparation	12/18/15 02:13 PM	72824
1512236-02A	H-30	12/14/15 09:50 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	H-30	12/14/15 09:50 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	H-30	12/14/15 09:50 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	H-30	12/14/15 09:50 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	H-30	12/14/15 09:50 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	12/19/15 10:57 AM	72835
1512236-02D	H-30	12/14/15 09:50 AM	Aqueous	E300	Anion Preparation	12/22/15 12:13 PM	72897
	H-30	12/14/15 09:50 AM	Aqueous	E300	Anion Preparation	12/22/15 12:13 PM	72897
	H-30	12/14/15 09:50 AM	Aqueous	M4500-H+ B	pH Preparation	12/18/15 10:36 AM	72710
	H-30	12/14/15 09:50 AM	Aqueous	M2540C	TDS Preparation	12/18/15 02:13 PM	72824
1512236-03A	H-31	12/14/15 10:40 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	H-31	12/14/15 10:40 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	H-31	12/14/15 10:40 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	H-31	12/14/15 10:40 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	12/19/15 10:57 AM	72835
1512236-03D	H-31	12/14/15 10:40 AM	Aqueous	E300	Anion Preparation	12/22/15 12:13 PM	72897
	H-31	12/14/15 10:40 AM	Aqueous	E300	Anion Preparation	12/22/15 12:13 PM	72897
	H-31	12/14/15 10:40 AM	Aqueous	M4500-H+ B	pH Preparation	12/18/15 10:36 AM	72710
	H-31	12/14/15 10:40 AM	Aqueous	M2540C	TDS Preparation	12/18/15 02:13 PM	72824
1512236-04A	H-32	12/14/15 11:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	H-32	12/14/15 11:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946

Lab Order: 1512236
Client: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1512236-04A	H-32	12/14/15 11:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	H-32	12/14/15 11:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	H-32	12/14/15 11:30 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	12/19/15 10:57 AM	72835
1512236-04D	H-32	12/14/15 11:30 AM	Aqueous	E300	Anion Preparation	12/22/15 12:13 PM	72897
	H-32	12/14/15 11:30 AM	Aqueous	E300	Anion Preparation	12/22/15 12:13 PM	72897
	H-32	12/14/15 11:30 AM	Aqueous	M4500-H+ B	pH Preparation	12/18/15 10:36 AM	72710
	H-32	12/14/15 11:30 AM	Aqueous	M2540C	TDS Preparation	12/18/15 02:13 PM	72824
1512236-05A	H-27	12/14/15 12:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	H-27	12/14/15 12:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	H-27	12/14/15 12:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	H-27	12/14/15 12:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	H-27	12/14/15 12:20 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	12/19/15 10:57 AM	72835
1512236-05D	H-27	12/14/15 12:20 PM	Aqueous	E300	Anion Preparation	12/22/15 12:13 PM	72897
	H-27	12/14/15 12:20 PM	Aqueous	E300	Anion Preparation	12/22/15 12:13 PM	72897
	H-27	12/14/15 12:20 PM	Aqueous	M4500-H+ B	pH Preparation	12/18/15 10:36 AM	72710
	H-27	12/14/15 12:20 PM	Aqueous	M2540C	TDS Preparation	12/18/15 02:13 PM	72824
1512236-06A	H-28	12/14/15 01:15 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	H-28	12/14/15 01:15 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	H-28	12/14/15 01:15 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	H-28	12/14/15 01:15 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	12/19/15 10:57 AM	72835
1512236-06D	H-28	12/14/15 01:15 PM	Aqueous	E300	Anion Preparation	12/22/15 12:13 PM	72897
	H-28	12/14/15 01:15 PM	Aqueous	M4500-H+ B	pH Preparation	12/18/15 10:36 AM	72710
	H-28	12/14/15 01:15 PM	Aqueous	M2540C	TDS Preparation	12/18/15 02:13 PM	72824
1512236-07A	H-26	12/14/15 02:05 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	H-26	12/14/15 02:05 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	H-26	12/14/15 02:05 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	H-26	12/14/15 02:05 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	12/19/15 10:57 AM	72835
1512236-07D	H-26	12/14/15 02:05 PM	Aqueous	E300	Anion Preparation	12/22/15 12:13 PM	72897

Lab Order: 1512236
Client: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1512236-07D	H-26	12/14/15 02:05 PM	Aqueous	M4500-H+ B	pH Preparation	12/18/15 10:36 AM	72710
	H-26	12/14/15 02:05 PM	Aqueous	M2540C	TDS Preparation	12/18/15 02:13 PM	72824
1512236-08A	H-33	12/14/15 02:55 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	H-33	12/14/15 02:55 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	H-33	12/14/15 02:55 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	H-33	12/14/15 02:55 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	12/19/15 10:57 AM	72835
1512236-08D	H-33	12/14/15 02:55 PM	Aqueous	E300	Anion Preparation	12/22/15 12:13 PM	72897
	H-33	12/14/15 02:55 PM	Aqueous	E300	Anion Preparation	12/22/15 12:13 PM	72897
	H-33	12/14/15 02:55 PM	Aqueous	M4500-H+ B	pH Preparation	12/18/15 10:36 AM	72710
	H-33	12/14/15 02:55 PM	Aqueous	M2540C	TDS Preparation	12/18/15 02:13 PM	72824
1512236-09A	MW-20A	12/14/15 05:00 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	MW-20A	12/14/15 05:00 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	MW-20A	12/14/15 05:00 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	MW-20A	12/14/15 05:00 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	12/19/15 10:57 AM	72835
1512236-09D	MW-20A	12/14/15 05:00 PM	Aqueous	E300	Anion Preparation	12/22/15 12:13 PM	72897
	MW-20A	12/14/15 05:00 PM	Aqueous	M4500-H+ B	pH Preparation	12/18/15 10:36 AM	72710
	MW-20A	12/14/15 05:00 PM	Aqueous	M2540C	TDS Preparation	12/18/15 02:13 PM	72824
1512236-10A	PDP-22	12/14/15 05:50 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	PDP-22	12/14/15 05:50 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	PDP-22	12/14/15 05:50 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	PDP-22	12/14/15 05:50 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	PDP-22	12/14/15 05:50 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	PDP-22	12/14/15 05:50 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	12/19/15 10:57 AM	72835
1512236-10D	PDP-22	12/14/15 05:50 PM	Aqueous	E300	Anion Preparation	12/22/15 12:13 PM	72897
	PDP-22	12/14/15 05:50 PM	Aqueous	E300	Anion Preparation	12/22/15 12:13 PM	72897
	PDP-22	12/14/15 05:50 PM	Aqueous	M4500-H+ B	pH Preparation	12/18/15 10:36 AM	72710
	PDP-22	12/14/15 05:50 PM	Aqueous	M2540C	TDS Preparation	12/18/15 02:13 PM	72824
1512236-11A	MW-19	12/14/15 06:40 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946

Lab Order: 1512236
Client: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1512236-11A	MW-19	12/14/15 06:40 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	MW-19	12/14/15 06:40 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	MW-19	12/14/15 06:40 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	MW-19	12/14/15 06:40 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	12/19/15 10:57 AM	72835
1512236-11D	MW-19	12/14/15 06:40 PM	Aqueous	E300	Anion Preparation	12/22/15 12:13 PM	72897
	MW-19	12/14/15 06:40 PM	Aqueous	E300	Anion Preparation	12/22/15 12:13 PM	72897
	MW-19	12/14/15 06:40 PM	Aqueous	M4500-H+ B	pH Preparation	12/18/15 10:36 AM	72710
	MW-19	12/14/15 06:40 PM	Aqueous	M2540C	TDS Preparation	12/18/15 02:13 PM	72824
1512236-12A	PDP-23	12/14/15 07:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	PDP-23	12/14/15 07:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	PDP-23	12/14/15 07:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	PDP-23	12/14/15 07:30 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	12/19/15 10:57 AM	72835
1512236-12D	PDP-23	12/14/15 07:30 PM	Aqueous	E300	Anion Preparation	12/22/15 12:13 PM	72897
	PDP-23	12/14/15 07:30 PM	Aqueous	M4500-H+ B	pH Preparation	12/18/15 10:36 AM	72710
	PDP-23	12/14/15 07:30 PM	Aqueous	M2540C	TDS Preparation	12/18/15 02:13 PM	72824
1512236-13A	PDP-26	12/15/15 07:50 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	PDP-26	12/15/15 07:50 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	PDP-26	12/15/15 07:50 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	PDP-26	12/15/15 07:50 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	12/19/15 10:57 AM	72835
1512236-13D	PDP-26	12/15/15 07:50 AM	Aqueous	E300	Anion Preparation	12/22/15 12:13 PM	72897
	PDP-26	12/15/15 07:50 AM	Aqueous	M4500-H+ B	pH Preparation	12/18/15 10:36 AM	72710
	PDP-26	12/15/15 07:50 AM	Aqueous	M2540C	TDS Preparation	12/21/15 01:00 PM	72884
1512236-14A	MW-17A	12/15/15 08:50 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	MW-17A	12/15/15 08:50 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	MW-17A	12/15/15 08:50 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	MW-17A	12/15/15 08:50 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	12/19/15 10:57 AM	72835
1512236-14D	MW-17A	12/15/15 08:50 AM	Aqueous	E300	Anion Preparation	12/22/15 12:13 PM	72897
	MW-17A	12/15/15 08:50 AM	Aqueous	M4500-H+ B	pH Preparation	12/18/15 10:36 AM	72710

Lab Order: 1512236
Client: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1512236-14D	MW-17A	12/15/15 08:50 AM	Aqueous	M2540C	TDS Preparation	12/21/15 01:00 PM	72884
1512236-15A	PDP-24	12/15/15 09:40 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	PDP-24	12/15/15 09:40 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	PDP-24	12/15/15 09:40 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	PDP-24	12/15/15 09:40 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	12/19/15 10:57 AM	72835
1512236-15D	PDP-24	12/15/15 09:40 AM	Aqueous	E300	Anion Preparation	12/22/15 12:13 PM	72897
	PDP-24	12/15/15 09:40 AM	Aqueous	E300	Anion Preparation	12/22/15 12:13 PM	72897
	PDP-24	12/15/15 09:40 AM	Aqueous	M4500-H+ B	pH Preparation	12/18/15 10:36 AM	72710
	PDP-24	12/15/15 09:40 AM	Aqueous	M2540C	TDS Preparation	12/21/15 01:00 PM	72884
1512236-16A	MW-18A	12/15/15 10:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	MW-18A	12/15/15 10:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	MW-18A	12/15/15 10:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	MW-18A	12/15/15 10:30 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	12/19/15 10:57 AM	72835
	MW-18A	12/15/15 10:30 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	12/19/15 10:57 AM	72835
1512236-16D	MW-18A	12/15/15 10:30 AM	Aqueous	E300	Anion Preparation	12/22/15 12:13 PM	72897
	MW-18A	12/15/15 10:30 AM	Aqueous	M4500-H+ B	pH Preparation	12/18/15 10:36 AM	72710
	MW-18A	12/15/15 10:30 AM	Aqueous	M2540C	TDS Preparation	12/21/15 01:00 PM	72884
1512236-17A	PDP-25	12/15/15 11:35 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	PDP-25	12/15/15 11:35 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	PDP-25	12/15/15 11:35 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	PDP-25	12/15/15 11:35 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/28/15 09:07 AM	72946
	PDP-25	12/15/15 11:35 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	12/19/15 10:57 AM	72835
1512236-17D	PDP-25	12/15/15 11:35 AM	Aqueous	E300	Anion Preparation	12/22/15 12:13 PM	72897
	PDP-25	12/15/15 11:35 AM	Aqueous	E300	Anion Preparation	12/22/15 12:13 PM	72897
	PDP-25	12/15/15 11:35 AM	Aqueous	M4500-H+ B	pH Preparation	12/18/15 10:36 AM	72710
	PDP-25	12/15/15 11:35 AM	Aqueous	M2540C	TDS Preparation	12/21/15 01:00 PM	72884

Lab Order: 1512236
Client: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1512236-01A	H-29	Aqueous	SW7470A	Mercury Total: Aqueous	72835	1	12/22/15 01:08 PM	CETAC2_HG_151222A
	H-29	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	1	01/05/16 05:10 PM	ICP-MS4_160105A
	H-29	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	1	01/06/16 03:17 PM	ICP-MS4_160106A
	H-29	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	50	01/06/16 04:22 PM	ICP-MS4_160106A
	H-29	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	1	01/07/16 11:15 AM	ICP-MS4_160107A
1512236-01D	H-29	Aqueous	E300	Anions by IC method - Water	72897	1	12/22/15 01:29 PM	IC2_151222B
	H-29	Aqueous	E300	Anions by IC method - Water	72897	10	12/22/15 07:18 PM	IC2_151222B
	H-29	Aqueous	M4500-H+ B	pH	72710	1	12/18/15 03:57 PM	TITRATOR_151218A
	H-29	Aqueous	M2540C	Total Dissolved Solids	72824	1	12/21/15 08:00 AM	WC_151218C
1512236-02A	H-30	Aqueous	SW7470A	Mercury Total: Aqueous	72835	1	12/22/15 01:23 PM	CETAC2_HG_151222A
	H-30	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	1	01/05/16 05:14 PM	ICP-MS4_160105A
	H-30	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	50	01/06/16 02:40 PM	ICP-MS4_160106A
	H-30	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	10	01/06/16 02:42 PM	ICP-MS4_160106A
	H-30	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	1	01/07/16 03:57 PM	ICP-MS4_160107D
1512236-02D	H-30	Aqueous	E300	Anions by IC method - Water	72897	1	12/22/15 01:44 PM	IC2_151222B
	H-30	Aqueous	E300	Anions by IC method - Water	72897	100	12/22/15 07:32 PM	IC2_151222B
	H-30	Aqueous	M4500-H+ B	pH	72710	1	12/18/15 03:59 PM	TITRATOR_151218A
	H-30	Aqueous	M2540C	Total Dissolved Solids	72824	1	12/21/15 08:00 AM	WC_151218C
1512236-03A	H-31	Aqueous	SW7470A	Mercury Total: Aqueous	72835	1	12/22/15 01:25 PM	CETAC2_HG_151222A
	H-31	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	1	01/05/16 05:16 PM	ICP-MS4_160105A
	H-31	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	50	01/06/16 02:44 PM	ICP-MS4_160106A
	H-31	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	1	01/07/16 03:59 PM	ICP-MS4_160107D
1512236-03D	H-31	Aqueous	E300	Anions by IC method - Water	72897	1	12/22/15 01:59 PM	IC2_151222B
	H-31	Aqueous	E300	Anions by IC method - Water	72897	100	12/22/15 07:47 PM	IC2_151222B
	H-31	Aqueous	M4500-H+ B	pH	72710	1	12/18/15 04:02 PM	TITRATOR_151218A
	H-31	Aqueous	M2540C	Total Dissolved Solids	72824	1	12/21/15 08:00 AM	WC_151218C

Lab Order: 1512236
Client: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1512236-04A	H-32	Aqueous	SW7470A	Mercury Total: Aqueous	72835	1	12/22/15 01:27 PM	CETAC2_HG_151222A
	H-32	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	1	01/05/16 05:18 PM	ICP-MS4_160105A
	H-32	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	10	01/06/16 02:46 PM	ICP-MS4_160106A
	H-32	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	1	01/06/16 03:21 PM	ICP-MS4_160106A
	H-32	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	2	01/07/16 11:17 AM	ICP-MS4_160107A
1512236-04D	H-32	Aqueous	E300	Anions by IC method - Water	72897	1	12/22/15 02:13 PM	IC2_151222B
	H-32	Aqueous	E300	Anions by IC method - Water	72897	10	12/23/15 07:54 AM	IC2_151222B
	H-32	Aqueous	M4500-H+ B	pH	72710	1	12/18/15 04:05 PM	TITRATOR_151218A
	H-32	Aqueous	M2540C	Total Dissolved Solids	72824	1	12/21/15 08:00 AM	WC_151218C
1512236-05A	H-27	Aqueous	SW7470A	Mercury Total: Aqueous	72835	1	12/22/15 01:29 PM	CETAC2_HG_151222A
	H-27	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	1	01/05/16 05:20 PM	ICP-MS4_160105A
	H-27	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	10	01/06/16 02:48 PM	ICP-MS4_160106A
	H-27	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	1	01/06/16 03:23 PM	ICP-MS4_160106A
	H-27	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	1	01/07/16 11:19 AM	ICP-MS4_160107A
1512236-05D	H-27	Aqueous	E300	Anions by IC method - Water	72897	10	12/23/15 08:08 AM	IC2_151222B
	H-27	Aqueous	E300	Anions by IC method - Water	72897	1	12/22/15 02:28 PM	IC2_151222B
	H-27	Aqueous	M4500-H+ B	pH	72710	1	12/18/15 04:07 PM	TITRATOR_151218A
	H-27	Aqueous	M2540C	Total Dissolved Solids	72824	1	12/21/15 08:00 AM	WC_151218C
1512236-06A	H-28	Aqueous	SW7470A	Mercury Total: Aqueous	72835	1	12/22/15 01:32 PM	CETAC2_HG_151222A
	H-28	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	1	01/05/16 05:22 PM	ICP-MS4_160105A
	H-28	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	1	01/06/16 03:25 PM	ICP-MS4_160106A
	H-28	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	2	01/07/16 11:21 AM	ICP-MS4_160107A
1512236-06D	H-28	Aqueous	E300	Anions by IC method - Water	72897	1	12/22/15 02:43 PM	IC2_151222B
	H-28	Aqueous	M4500-H+ B	pH	72710	1	12/18/15 04:10 PM	TITRATOR_151218A
	H-28	Aqueous	M2540C	Total Dissolved Solids	72824	1	12/21/15 08:00 AM	WC_151218C
1512236-07A	H-26	Aqueous	SW7470A	Mercury Total: Aqueous	72835	1	12/22/15 01:34 PM	CETAC2_HG_151222A

Lab Order: 1512236
Client: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1512236-07A	H-26	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	1	01/05/16 05:24 PM	ICP-MS4_160105A
	H-26	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	1	01/06/16 03:27 PM	ICP-MS4_160106A
	H-26	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	1	01/07/16 11:23 AM	ICP-MS4_160107A
1512236-07D	H-26	Aqueous	E300	Anions by IC method - Water	72897	1	12/22/15 02:57 PM	IC2_151222B
	H-26	Aqueous	M4500-H+ B	pH	72710	1	12/18/15 04:12 PM	TITRATOR_151218A
	H-26	Aqueous	M2540C	Total Dissolved Solids	72824	1	12/21/15 08:00 AM	WC_151218C
1512236-08A	H-33	Aqueous	SW7470A	Mercury Total: Aqueous	72835	1	12/22/15 01:36 PM	CETAC2_HG_151222A
	H-33	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	1	01/05/16 05:26 PM	ICP-MS4_160105A
	H-33	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	1	01/06/16 03:29 PM	ICP-MS4_160106A
	H-33	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	1	01/07/16 11:25 AM	ICP-MS4_160107A
1512236-08D	H-33	Aqueous	E300	Anions by IC method - Water	72897	1	12/22/15 03:12 PM	IC2_151222B
	H-33	Aqueous	E300	Anions by IC method - Water	72897	10	12/23/15 08:23 AM	IC2_151222B
	H-33	Aqueous	M4500-H+ B	pH	72710	1	12/18/15 04:16 PM	TITRATOR_151218A
	H-33	Aqueous	M2540C	Total Dissolved Solids	72824	1	12/21/15 08:00 AM	WC_151218C
1512236-09A	MW-20A	Aqueous	SW7470A	Mercury Total: Aqueous	72835	1	12/22/15 01:39 PM	CETAC2_HG_151222A
	MW-20A	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	1	01/06/16 03:31 PM	ICP-MS4_160106A
	MW-20A	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	1	01/07/16 11:27 AM	ICP-MS4_160107A
	MW-20A	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	1	01/05/16 05:28 PM	ICP-MS4_160105A
1512236-09D	MW-20A	Aqueous	E300	Anions by IC method - Water	72897	1	12/22/15 03:26 PM	IC2_151222B
	MW-20A	Aqueous	M4500-H+ B	pH	72710	1	12/18/15 04:17 PM	TITRATOR_151218A
	MW-20A	Aqueous	M2540C	Total Dissolved Solids	72824	1	12/21/15 08:00 AM	WC_151218C
1512236-10A	PDP-22	Aqueous	SW7470A	Mercury Total: Aqueous	72835	1	12/22/15 01:41 PM	CETAC2_HG_151222A
	PDP-22	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	1	01/06/16 03:33 PM	ICP-MS4_160106A
	PDP-22	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	1	01/07/16 11:29 AM	ICP-MS4_160107A
	PDP-22	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	10	01/06/16 02:50 PM	ICP-MS4_160106A
	PDP-22	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	1	01/05/16 05:30 PM	ICP-MS4_160105A

Lab Order: 1512236
Client: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1512236-10A	PDP-22	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	50	01/07/16 12:11 PM	ICP-MS4_160107A
1512236-10D	PDP-22	Aqueous	E300	Anions by IC method - Water	72897	1	12/22/15 03:41 PM	IC2_151222B
	PDP-22	Aqueous	E300	Anions by IC method - Water	72897	10	12/23/15 08:44 AM	IC2_151222B
	PDP-22	Aqueous	M4500-H+ B	pH	72710	1	12/18/15 04:20 PM	TITRATOR_151218A
	PDP-22	Aqueous	M2540C	Total Dissolved Solids	72824	1	12/21/15 08:00 AM	WC_151218C
1512236-11A	MW-19	Aqueous	SW7470A	Mercury Total: Aqueous	72835	1	12/22/15 01:48 PM	CETAC2_HG_151222A
	MW-19	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	10	01/06/16 02:52 PM	ICP-MS4_160106A
	MW-19	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	1	01/06/16 03:35 PM	ICP-MS4_160106A
	MW-19	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	1	01/05/16 06:08 PM	ICP-MS4_160105A
	MW-19	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	1	01/07/16 11:31 AM	ICP-MS4_160107A
1512236-11D	MW-19	Aqueous	E300	Anions by IC method - Water	72897	1	12/22/15 04:37 PM	IC2_151222B
	MW-19	Aqueous	E300	Anions by IC method - Water	72897	10	12/23/15 09:57 AM	IC2_151222B
	MW-19	Aqueous	M4500-H+ B	pH	72710	1	12/18/15 04:23 PM	TITRATOR_151218A
	MW-19	Aqueous	M2540C	Total Dissolved Solids	72824	1	12/21/15 08:00 AM	WC_151218C
1512236-12A	PDP-23	Aqueous	SW7470A	Mercury Total: Aqueous	72835	1	12/22/15 01:50 PM	CETAC2_HG_151222A
	PDP-23	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	1	01/05/16 06:10 PM	ICP-MS4_160105A
	PDP-23	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	1	01/06/16 03:37 PM	ICP-MS4_160106A
	PDP-23	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	1	01/07/16 12:13 PM	ICP-MS4_160107A
1512236-12D	PDP-23	Aqueous	E300	Anions by IC method - Water	72897	1	12/22/15 04:52 PM	IC2_151222B
	PDP-23	Aqueous	M4500-H+ B	pH	72710	1	12/18/15 04:26 PM	TITRATOR_151218A
	PDP-23	Aqueous	M2540C	Total Dissolved Solids	72824	1	12/21/15 08:00 AM	WC_151218C
1512236-13A	PDP-26	Aqueous	SW7470A	Mercury Total: Aqueous	72835	1	12/22/15 01:52 PM	CETAC2_HG_151222A
	PDP-26	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	1	01/07/16 11:11 AM	ICP-MS4_160107A
	PDP-26	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	1	01/05/16 06:12 PM	ICP-MS4_160105A
	PDP-26	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	1	01/06/16 04:28 PM	ICP-MS4_160106A
1512236-13D	PDP-26	Aqueous	E300	Anions by IC method - Water	72897	1	12/22/15 05:06 PM	IC2_151222B

Lab Order: 1512236
Client: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1512236-13D	PDP-26	Aqueous	M4500-H+ B	pH	72710	1	12/18/15 04:29 PM	TITRATOR_151218A
	PDP-26	Aqueous	M2540C	Total Dissolved Solids	72884	1	12/22/15 08:00 AM	WC_151221A
1512236-14A	MW-17A	Aqueous	SW7470A	Mercury Total: Aqueous	72835	1	12/22/15 01:54 PM	CETAC2_HG_151222A
	MW-17A	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	1	01/05/16 06:14 PM	ICP-MS4_160105A
	MW-17A	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	1	01/06/16 04:30 PM	ICP-MS4_160106A
	MW-17A	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	1	01/07/16 12:15 PM	ICP-MS4_160107A
1512236-14D	MW-17A	Aqueous	E300	Anions by IC method - Water	72897	1	12/22/15 05:21 PM	IC2_151222B
	MW-17A	Aqueous	M4500-H+ B	pH	72710	1	12/18/15 04:31 PM	TITRATOR_151218A
	MW-17A	Aqueous	M2540C	Total Dissolved Solids	72884	1	12/22/15 08:00 AM	WC_151221A
1512236-15A	PDP-24	Aqueous	SW7470A	Mercury Total: Aqueous	72835	1	12/22/15 01:57 PM	CETAC2_HG_151222A
	PDP-24	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	1	01/05/16 06:16 PM	ICP-MS4_160105A
	PDP-24	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	10	01/06/16 02:54 PM	ICP-MS4_160106A
	PDP-24	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	1	01/07/16 04:01 PM	ICP-MS4_160107D
1512236-15D	PDP-24	Aqueous	E300	Anions by IC method - Water	72897	1	12/22/15 05:36 PM	IC2_151222B
	PDP-24	Aqueous	E300	Anions by IC method - Water	72897	10	12/22/15 06:19 PM	IC2_151222B
	PDP-24	Aqueous	M4500-H+ B	pH	72710	1	12/18/15 04:33 PM	TITRATOR_151218A
	PDP-24	Aqueous	M2540C	Total Dissolved Solids	72884	1	12/22/15 08:00 AM	WC_151221A
1512236-16A	MW-18A	Aqueous	SW7470A	Mercury Total: Aqueous	72835	1	12/22/15 02:03 PM	CETAC2_HG_151222A
	MW-18A	Aqueous	SW7470A	Mercury Total: Aqueous	72835	5	12/22/15 04:30 PM	CETAC2_HG_151222A
	MW-18A	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	1	01/05/16 06:18 PM	ICP-MS4_160105A
	MW-18A	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	1	01/06/16 04:32 PM	ICP-MS4_160106A
	MW-18A	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	1	01/07/16 12:17 PM	ICP-MS4_160107A
1512236-16D	MW-18A	Aqueous	E300	Anions by IC method - Water	72897	1	12/22/15 05:50 PM	IC2_151222B
	MW-18A	Aqueous	M4500-H+ B	pH	72710	1	12/18/15 04:35 PM	TITRATOR_151218A
	MW-18A	Aqueous	M2540C	Total Dissolved Solids	72884	1	12/22/15 08:00 AM	WC_151221A
1512236-17A	PDP-25	Aqueous	SW7470A	Mercury Total: Aqueous	72835	1	12/22/15 02:05 PM	CETAC2_HG_151222A

Lab Order: 1512236
Client: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1512236-17A	PDP-25	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	10	01/06/16 02:56 PM	ICP-MS4_160106A
	PDP-25	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	1	01/06/16 04:34 PM	ICP-MS4_160106A
	PDP-25	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	1	01/07/16 12:19 PM	ICP-MS4_160107A
	PDP-25	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	72946	1	01/05/16 06:20 PM	ICP-MS4_160105A
1512236-17D	PDP-25	Aqueous	E300	Anions by IC method - Water	72897	1	12/22/15 06:05 PM	IC2_151222B
	PDP-25	Aqueous	E300	Anions by IC method - Water	72897	10	12/22/15 06:34 PM	IC2_151222B
	PDP-25	Aqueous	M4500-H+ B	pH	72710	1	12/18/15 04:38 PM	TITRATOR_151218A
	PDP-25	Aqueous	M2540C	Total Dissolved Solids	72884	1	12/22/15 08:00 AM	WC_151221A

DHL Analytical, Inc.

Date: *21-Jan-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	H-29
Project:	Luminant - Martin Lake	**Lab ID:**	1512236-01
Project No:	5164-B	**Collection Date:**	12/14/15 09:05 AM
Lab Order:	1512236	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **ABO**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/22/15 01:08 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	01/05/16 05:10 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	01/05/16 05:10 PM
Barium	0.277	0.00300	0.0100		mg/L	1	01/05/16 05:10 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	01/05/16 05:10 PM
Boron	0.290	0.0100	0.0300		mg/L	1	01/07/16 11:15 AM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	01/05/16 05:10 PM
Calcium	165	5.00	15.0		mg/L	50	01/06/16 04:22 PM
Chromium	0.0620	0.00200	0.00500		mg/L	1	01/05/16 05:10 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	01/05/16 05:10 PM
Lead	0.000542	0.000300	0.00100	J	mg/L	1	01/05/16 05:10 PM
Lithium	0.0202	0.00500	0.0100		mg/L	1	01/05/16 05:10 PM
Molybdenum	0.00819	0.00200	0.00500		mg/L	1	01/05/16 05:10 PM
Selenium	0.0282	0.00200	0.00500		mg/L	1	01/05/16 05:10 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	01/06/16 03:17 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	8.68	0.300	1.00		mg/L	1	12/22/15 01:29 PM
Fluoride	0.560	0.100	0.400		mg/L	1	12/22/15 01:29 PM
Sulfate	178	10.0	30.0		mg/L	10	12/22/15 07:18 PM
PH		**M4500-H+ B**					Analyst: **LM**
pH	11.9	0	0		pH Units@18.5℃	1	12/18/15 03:57 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **BJT**
Total Dissolved Solids (Residue, Filterable)	990	50.0	50.0		mg/L	1	12/21/15 08:00 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *21-Jan-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	H-30
Project:	Luminant - Martin Lake	**Lab ID:**	1512236-02
Project No:	5164-B	**Collection Date:**	12/14/15 09:50 AM
Lab Order:	1512236	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **ABO**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/22/15 01:23 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	01/05/16 05:14 PM
Arsenic	0.0114	0.00200	0.00500		mg/L	1	01/05/16 05:14 PM
Barium	0.129	0.00300	0.0100		mg/L	1	01/05/16 05:14 PM
Beryllium	0.00999	0.000300	0.00100		mg/L	1	01/05/16 05:14 PM
Boron	4.13	0.100	0.300		mg/L	10	01/06/16 02:42 PM
Cadmium	0.00274	0.000300	0.00100		mg/L	1	01/05/16 05:14 PM
Calcium	360	5.00	15.0		mg/L	50	01/06/16 02:40 PM
Chromium	0.185	0.00200	0.00500		mg/L	1	01/05/16 05:14 PM
Cobalt	0.124	0.00300	0.00500		mg/L	1	01/05/16 05:14 PM
Lead	0.0196	0.000300	0.00100		mg/L	1	01/05/16 05:14 PM
Lithium	0.0513	0.00500	0.0100		mg/L	1	01/05/16 05:14 PM
Molybdenum	0.0133	0.00200	0.00500		mg/L	1	01/05/16 05:14 PM
Selenium	0.161	0.00200	0.00500		mg/L	1	01/05/16 05:14 PM
Thallium	0.000571	0.000500	0.00150	J	mg/L	1	01/07/16 03:57 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	45.2	0.300	1.00		mg/L	1	12/22/15 01:44 PM
Fluoride	0.462	0.100	0.400		mg/L	1	12/22/15 01:44 PM
Sulfate	821	100	300		mg/L	100	12/22/15 07:32 PM
PH		**M4500-H+ B**					Analyst: **LM**
pH	11.4	0	0		pH Units@18℃	1	12/18/15 03:59 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **BJT**
Total Dissolved Solids (Residue, Filterable)	1660	50.0	50.0		mg/L	1	12/21/15 08:00 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *21-Jan-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	H-31
Project:	Luminant - Martin Lake	**Lab ID:**	1512236-03
Project No:	5164-B	**Collection Date:**	12/14/15 10:40 AM
Lab Order:	1512236	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **ABO**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/22/15 01:25 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	01/05/16 05:16 PM
Arsenic	0.00513	0.00200	0.00500		mg/L	1	01/05/16 05:16 PM
Barium	0.0388	0.00300	0.0100		mg/L	1	01/05/16 05:16 PM
Beryllium	0.00702	0.000300	0.00100		mg/L	1	01/05/16 05:16 PM
Boron	20.4	0.500	1.50		mg/L	50	01/06/16 02:44 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	01/05/16 05:16 PM
Calcium	236	5.00	15.0		mg/L	50	01/06/16 02:44 PM
Chromium	0.00456	0.00200	0.00500	J	mg/L	1	01/05/16 05:16 PM
Cobalt	0.0651	0.00300	0.00500		mg/L	1	01/05/16 05:16 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	01/05/16 05:16 PM
Lithium	0.149	0.00500	0.0100		mg/L	1	01/05/16 05:16 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	01/05/16 05:16 PM
Selenium	0.0231	0.00200	0.00500		mg/L	1	01/05/16 05:16 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	01/07/16 03:59 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	147	30.0	100		mg/L	100	12/22/15 07:47 PM
Fluoride	0.692	0.100	0.400		mg/L	1	12/22/15 01:59 PM
Sulfate	1740	100	300		mg/L	100	12/22/15 07:47 PM
PH		**M4500-H+ B**					Analyst: **LM**
pH	6.47	0	0		pH Units@18.1℃	1	12/18/15 04:02 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **BJT**
Total Dissolved Solids (Residue, Filterable)	2250	50.0	50.0		mg/L	1	12/21/15 08:00 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *21-Jan-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	H-32
Project:	Luminant - Martin Lake	**Lab ID:**	1512236-04
Project No:	5164-B	**Collection Date:**	12/14/15 11:30 AM
Lab Order:	1512236	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **ABO**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/22/15 01:27 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	01/05/16 05:18 PM
Arsenic	0.0123	0.00200	0.00500		mg/L	1	01/05/16 05:18 PM
Barium	0.0384	0.00300	0.0100		mg/L	1	01/05/16 05:18 PM
Beryllium	0.00313	0.000300	0.00100		mg/L	1	01/05/16 05:18 PM
Boron	1.39	0.0200	0.0600		mg/L	2	01/07/16 11:17 AM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	01/05/16 05:18 PM
Calcium	37.4	1.00	3.00		mg/L	10	01/06/16 02:46 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	01/05/16 05:18 PM
Cobalt	0.155	0.00300	0.00500		mg/L	1	01/05/16 05:18 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	01/05/16 05:18 PM
Lithium	0.0733	0.00500	0.0100		mg/L	1	01/05/16 05:18 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	01/05/16 05:18 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	01/05/16 05:18 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	01/06/16 03:21 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	122	3.00	10.0		mg/L	10	12/23/15 07:54 AM
Fluoride	0.619	0.100	0.400		mg/L	1	12/22/15 02:13 PM
Sulfate	325	10.0	30.0		mg/L	10	12/23/15 07:54 AM
PH		**M4500-H+ B**					Analyst: **LM**
pH	5.82	0	0		pH Units@18.3℃	1	12/18/15 04:05 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **BJT**
Total Dissolved Solids (Residue, Filterable)	860	10.0	10.0		mg/L	1	12/21/15 08:00 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *21-Jan-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	H-27
Project:	Luminant - Martin Lake	**Lab ID:**	1512236-05
Project No:	5164-B	**Collection Date:**	12/14/15 12:20 PM
Lab Order:	1512236	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **ABO**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/22/15 01:29 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	01/05/16 05:20 PM
Arsenic	0.00210	0.00200	0.00500	J	mg/L	1	01/05/16 05:20 PM
Barium	0.0390	0.00300	0.0100		mg/L	1	01/05/16 05:20 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	01/05/16 05:20 PM
Boron	0.474	0.0100	0.0300		mg/L	1	01/07/16 11:19 AM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	01/05/16 05:20 PM
Calcium	57.2	1.00	3.00		mg/L	10	01/06/16 02:48 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	01/05/16 05:20 PM
Cobalt	0.00326	0.00300	0.00500	J	mg/L	1	01/05/16 05:20 PM
Lead	0.000339	0.000300	0.00100	J	mg/L	1	01/05/16 05:20 PM
Lithium	0.0624	0.00500	0.0100		mg/L	1	01/05/16 05:20 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	01/05/16 05:20 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	01/05/16 05:20 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	01/06/16 03:23 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	112	3.00	10.0		mg/L	10	12/23/15 08:08 AM
Fluoride	0.156	0.100	0.400	J	mg/L	1	12/22/15 02:28 PM
Sulfate	317	10.0	30.0		mg/L	10	12/23/15 08:08 AM
PH		**M4500-H+ B**					Analyst: **LM**
pH	6.27	0	0		pH Units@18.4℃	1	12/18/15 04:07 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **BJT**
Total Dissolved Solids (Residue, Filterable)	857	10.0	10.0		mg/L	1	12/21/15 08:00 AM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *21-Jan-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	H-28
Project:	Luminant - Martin Lake	**Lab ID:**	1512236-06
Project No:	5164-B	**Collection Date:**	12/14/15 01:15 PM
Lab Order:	1512236	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **ABO**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/22/15 01:32 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	01/05/16 05:22 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	01/05/16 05:22 PM
Barium	0.0224	0.00300	0.0100		mg/L	1	01/05/16 05:22 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	01/05/16 05:22 PM
Boron	1.02	0.0200	0.0600		mg/L	2	01/07/16 11:21 AM
Cadmium	0.000572	0.000300	0.00100	J	mg/L	1	01/05/16 05:22 PM
Calcium	17.3	0.100	0.300		mg/L	1	01/05/16 05:22 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	01/05/16 05:22 PM
Cobalt	0.0225	0.00300	0.00500		mg/L	1	01/05/16 05:22 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	01/05/16 05:22 PM
Lithium	0.0210	0.00500	0.0100		mg/L	1	01/05/16 05:22 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	01/05/16 05:22 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	01/05/16 05:22 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	01/06/16 03:25 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	15.5	0.300	1.00		mg/L	1	12/22/15 02:43 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	12/22/15 02:43 PM
Sulfate	113	1.00	3.00		mg/L	1	12/22/15 02:43 PM
PH		**M4500-H+ B**					Analyst: **LM**
pH	6.84	0	0		pH Units@18.7℃	1	12/18/15 04:10 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **BJT**
Total Dissolved Solids (Residue, Filterable)	299	10.0	10.0		mg/L	1	12/21/15 08:00 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *21-Jan-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	H-26
Project:	Luminant - Martin Lake	**Lab ID:**	1512236-07
Project No:	5164-B	**Collection Date:**	12/14/15 02:05 PM
Lab Order:	1512236	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **ABO**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/22/15 01:34 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	01/05/16 05:24 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	01/05/16 05:24 PM
Barium	0.0401	0.00300	0.0100		mg/L	1	01/05/16 05:24 PM
Beryllium	0.000458	0.000300	0.00100	J	mg/L	1	01/05/16 05:24 PM
Boron	0.0679	0.0100	0.0300		mg/L	1	01/07/16 11:23 AM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	01/05/16 05:24 PM
Calcium	9.88	0.100	0.300		mg/L	1	01/05/16 05:24 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	01/05/16 05:24 PM
Cobalt	0.0244	0.00300	0.00500		mg/L	1	01/05/16 05:24 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	01/05/16 05:24 PM
Lithium	0.0769	0.00500	0.0100		mg/L	1	01/05/16 05:24 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	01/05/16 05:24 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	01/05/16 05:24 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	01/06/16 03:27 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	40.3	0.300	1.00		mg/L	1	12/22/15 02:57 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	12/22/15 02:57 PM
Sulfate	75.8	1.00	3.00		mg/L	1	12/22/15 02:57 PM
PH		**M4500-H+ B**					Analyst: **LM**
pH	6.06	0	0		pH Units@19.1℃	1	12/18/15 04:12 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **BJT**
Total Dissolved Solids (Residue, Filterable)	280	10.0	10.0		mg/L	1	12/21/15 08:00 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *21-Jan-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	H-33
Project:	Luminant - Martin Lake	**Lab ID:**	1512236-08
Project No:	5164-B	**Collection Date:**	12/14/15 02:55 PM
Lab Order:	1512236	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **ABO**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/22/15 01:36 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	01/05/16 05:26 PM
Arsenic	0.00205	0.00200	0.00500	J	mg/L	1	01/05/16 05:26 PM
Barium	0.0473	0.00300	0.0100		mg/L	1	01/05/16 05:26 PM
Beryllium	0.000382	0.000300	0.00100	J	mg/L	1	01/05/16 05:26 PM
Boron	0.0596	0.0100	0.0300		mg/L	1	01/07/16 11:25 AM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	01/05/16 05:26 PM
Calcium	10.7	0.100	0.300		mg/L	1	01/05/16 05:26 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	01/05/16 05:26 PM
Cobalt	0.0293	0.00300	0.00500		mg/L	1	01/05/16 05:26 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	01/05/16 05:26 PM
Lithium	0.0903	0.00500	0.0100		mg/L	1	01/05/16 05:26 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	01/05/16 05:26 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	01/05/16 05:26 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	01/06/16 03:29 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	59.6	3.00	10.0		mg/L	10	12/23/15 08:23 AM
Fluoride	0.136	0.100	0.400	J	mg/L	1	12/22/15 03:12 PM
Sulfate	110	1.00	3.00		mg/L	1	12/22/15 03:12 PM
PH		**M4500-H+ B**					Analyst: **LM**
pH	5.93	0	0		pH Units@19.4℃	1	12/18/15 04:16 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **BJT**
Total Dissolved Solids (Residue, Filterable)	403	10.0	10.0		mg/L	1	12/21/15 08:00 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *21-Jan-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	MW-20A
Project:	Luminant - Martin Lake	**Lab ID:**	1512236-09
Project No:	5164-B	**Collection Date:**	12/14/15 05:00 PM
Lab Order:	1512236	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **ABO**
Mercury	0.000390	0.0000800	0.000200		mg/L	1	12/22/15 01:39 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	01/05/16 05:28 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	01/05/16 05:28 PM
Barium	0.0291	0.00300	0.0100		mg/L	1	01/05/16 05:28 PM
Beryllium	0.000605	0.000300	0.00100	J	mg/L	1	01/05/16 05:28 PM
Boron	0.147	0.0100	0.0300		mg/L	1	01/07/16 11:27 AM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	01/05/16 05:28 PM
Calcium	14.8	0.100	0.300		mg/L	1	01/05/16 05:28 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	01/05/16 05:28 PM
Cobalt	0.00464	0.00300	0.00500	J	mg/L	1	01/05/16 05:28 PM
Lead	0.00132	0.000300	0.00100		mg/L	1	01/05/16 05:28 PM
Lithium	0.0162	0.00500	0.0100		mg/L	1	01/05/16 05:28 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	01/05/16 05:28 PM
Selenium	0.00682	0.00200	0.00500		mg/L	1	01/05/16 05:28 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	01/06/16 03:31 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	9.98	0.300	1.00		mg/L	1	12/22/15 03:26 PM
Fluoride	0.654	0.100	0.400		mg/L	1	12/22/15 03:26 PM
Sulfate	97.8	1.00	3.00		mg/L	1	12/22/15 03:26 PM
PH		**M4500-H+ B**					Analyst: **LM**
pH	4.72	0	0		pH Units@19.2℃	1	12/18/15 04:17 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **BJT**
Total Dissolved Solids (Residue, Filterable)	201	10.0	10.0		mg/L	1	12/21/15 08:00 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *21-Jan-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	PDP-22
Project:	Luminant - Martin Lake	**Lab ID:**	1512236-10
Project No:	5164-B	**Collection Date:**	12/14/15 05:50 PM
Lab Order:	1512236	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **ABO**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/22/15 01:41 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	01/05/16 05:30 PM
Arsenic	0.0108	0.00200	0.00500		mg/L	1	01/05/16 05:30 PM
Barium	0.469	0.00300	0.0100		mg/L	1	01/05/16 05:30 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	01/05/16 05:30 PM
Boron	0.291	0.0100	0.0300		mg/L	1	01/07/16 11:29 AM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	01/05/16 05:30 PM
Calcium	123	5.00	15.0		mg/L	50	01/07/16 12:11 PM
Chromium	0.0968	0.00200	0.00500		mg/L	1	01/05/16 05:30 PM
Cobalt	0.00434	0.00300	0.00500	J	mg/L	1	01/05/16 05:30 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	01/05/16 05:30 PM
Lithium	0.106	0.00500	0.0100		mg/L	1	01/05/16 05:30 PM
Molybdenum	0.00649	0.00200	0.00500		mg/L	1	01/05/16 05:30 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	01/05/16 05:30 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	01/06/16 03:33 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	21.1	0.300	1.00		mg/L	1	12/22/15 03:41 PM
Fluoride	0.858	0.100	0.400		mg/L	1	12/22/15 03:41 PM
Sulfate	202	10.0	30.0		mg/L	10	12/23/15 08:44 AM
PH		**M4500-H+ B**					Analyst: **LM**
pH	8.23	0	0		pH Units@19.3℃	1	12/18/15 04:20 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **BJT**
Total Dissolved Solids (Residue, Filterable)	1430	50.0	50.0		mg/L	1	12/21/15 08:00 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *21-Jan-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	MW-19
Project:	Luminant - Martin Lake	**Lab ID:**	1512236-11
Project No:	5164-B	**Collection Date:**	12/14/15 06:40 PM
Lab Order:	1512236	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **ABO**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/22/15 01:48 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	01/05/16 06:08 PM
Arsenic	0.00470	0.00200	0.00500	J	mg/L	1	01/05/16 06:08 PM
Barium	0.0591	0.00300	0.0100		mg/L	1	01/05/16 06:08 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	01/05/16 06:08 PM
Boron	0.271	0.0100	0.0300		mg/L	1	01/07/16 11:31 AM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	01/05/16 06:08 PM
Calcium	75.4	1.00	3.00		mg/L	10	01/06/16 02:52 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	01/05/16 06:08 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	01/05/16 06:08 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	01/05/16 06:08 PM
Lithium	0.00593	0.00500	0.0100	J	mg/L	1	01/05/16 06:08 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	01/05/16 06:08 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	01/05/16 06:08 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	01/06/16 03:35 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	28.4	0.300	1.00		mg/L	1	12/22/15 04:37 PM
Fluoride	0.195	0.100	0.400	J	mg/L	1	12/22/15 04:37 PM
Sulfate	200	10.0	30.0		mg/L	10	12/23/15 09:57 AM
PH		**M4500-H+ B**					Analyst: **LM**
pH	7.14	0	0		pH Units@19.4℃	1	12/18/15 04:23 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **BJT**
Total Dissolved Solids (Residue, Filterable)	573	10.0	10.0		mg/L	1	12/21/15 08:00 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *21-Jan-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	PDP-23
Project:	Luminant - Martin Lake	**Lab ID:**	1512236-12
Project No:	5164-B	**Collection Date:**	12/14/15 07:30 PM
Lab Order:	1512236	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **ABO**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/22/15 01:50 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	01/05/16 06:10 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	01/05/16 06:10 PM
Barium	0.0384	0.00300	0.0100		mg/L	1	01/05/16 06:10 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	01/05/16 06:10 PM
Boron	0.0390	0.0100	0.0300		mg/L	1	01/07/16 12:13 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	01/05/16 06:10 PM
Calcium	1.79	0.100	0.300		mg/L	1	01/05/16 06:10 PM
Chromium	0.00275	0.00200	0.00500	J	mg/L	1	01/05/16 06:10 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	01/05/16 06:10 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	01/05/16 06:10 PM
Lithium	0.0162	0.00500	0.0100		mg/L	1	01/05/16 06:10 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	01/05/16 06:10 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	01/05/16 06:10 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	01/06/16 03:37 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	5.09	0.300	1.00		mg/L	1	12/22/15 04:52 PM
Fluoride	0.127	0.100	0.400	J	mg/L	1	12/22/15 04:52 PM
Sulfate	1.45	1.00	3.00	J	mg/L	1	12/22/15 04:52 PM
PH		**M4500-H+ B**					Analyst: **LM**
pH	6.04	0	0		pH Units@19.7℃	1	12/18/15 04:26 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **BJT**
Total Dissolved Solids (Residue, Filterable)	57.0	10.0	10.0		mg/L	1	12/21/15 08:00 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *21-Jan-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	PDP-26
Project:	Luminant - Martin Lake	**Lab ID:**	1512236-13
Project No:	5164-B	**Collection Date:**	12/15/15 07:50 AM
Lab Order:	1512236	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **ABO**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/22/15 01:52 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	01/05/16 06:12 PM
Arsenic	0.00474	0.00200	0.00500	J	mg/L	1	01/05/16 06:12 PM
Barium	0.0284	0.00300	0.0100		mg/L	1	01/05/16 06:12 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	01/05/16 06:12 PM
Boron	0.0429	0.0100	0.0300		mg/L	1	01/07/16 11:11 AM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	01/05/16 06:12 PM
Calcium	2.71	0.100	0.300		mg/L	1	01/05/16 06:12 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	01/05/16 06:12 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	01/05/16 06:12 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	01/05/16 06:12 PM
Lithium	0.0126	0.00500	0.0100		mg/L	1	01/05/16 06:12 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	01/05/16 06:12 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	01/05/16 06:12 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	01/06/16 04:28 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	6.94	0.300	1.00		mg/L	1	12/22/15 05:06 PM
Fluoride	0.391	0.100	0.400	J	mg/L	1	12/22/15 05:06 PM
Sulfate	15.3	1.00	3.00		mg/L	1	12/22/15 05:06 PM
PH		**M4500-H+ B**					Analyst: **LM**
pH	6.71	0	0		pH Units@20℃	1	12/18/15 04:29 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **BJT**
Total Dissolved Solids (Residue, Filterable)	126	10.0	10.0		mg/L	1	12/22/15 08:00 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *21-Jan-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	MW-17A
Project:	Luminant - Martin Lake	**Lab ID:**	1512236-14
Project No:	5164-B	**Collection Date:**	12/15/15 08:50 AM
Lab Order:	1512236	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **ABO**
Mercury	0.0000969	0.0000800	0.000200	J	mg/L	1	12/22/15 01:54 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	01/05/16 06:14 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	01/05/16 06:14 PM
Barium	0.0987	0.00300	0.0100		mg/L	1	01/05/16 06:14 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	01/05/16 06:14 PM
Boron	0.440	0.0100	0.0300		mg/L	1	01/07/16 12:15 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	01/05/16 06:14 PM
Calcium	4.16	0.100	0.300		mg/L	1	01/05/16 06:14 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	01/05/16 06:14 PM
Cobalt	0.00780	0.00300	0.00500		mg/L	1	01/05/16 06:14 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	01/05/16 06:14 PM
Lithium	0.0147	0.00500	0.0100		mg/L	1	01/05/16 06:14 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	01/05/16 06:14 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	01/05/16 06:14 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	01/06/16 04:30 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	8.92	0.300	1.00		mg/L	1	12/22/15 05:21 PM
Fluoride	0.182	0.100	0.400	J	mg/L	1	12/22/15 05:21 PM
Sulfate	37.3	1.00	3.00		mg/L	1	12/22/15 05:21 PM
PH		**M4500-H+ B**					Analyst: **LM**
pH	5.35	0	0		pH Units@20.1℃	1	12/18/15 04:31 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **BJT**
Total Dissolved Solids (Residue, Filterable)	112	10.0	10.0		mg/L	1	12/22/15 08:00 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *21-Jan-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	PDP-24
Project:	Luminant - Martin Lake	**Lab ID:**	1512236-15
Project No:	5164-B	**Collection Date:**	12/15/15 09:40 AM
Lab Order:	1512236	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **ABO**
Mercury	0.000557	0.0000800	0.000200		mg/L	1	12/22/15 01:57 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	01/05/16 06:16 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	01/05/16 06:16 PM
Barium	0.0259	0.00300	0.0100		mg/L	1	01/05/16 06:16 PM
Beryllium	0.00402	0.000300	0.00100		mg/L	1	01/05/16 06:16 PM
Boron	2.96	0.100	0.300		mg/L	10	01/06/16 02:54 PM
Cadmium	0.00176	0.000300	0.00100		mg/L	1	01/05/16 06:16 PM
Calcium	34.9	1.00	3.00		mg/L	10	01/06/16 02:54 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	01/05/16 06:16 PM
Cobalt	0.0786	0.00300	0.00500		mg/L	1	01/05/16 06:16 PM
Lead	0.000507	0.000300	0.00100	J	mg/L	1	01/05/16 06:16 PM
Lithium	0.0256	0.00500	0.0100		mg/L	1	01/05/16 06:16 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	01/05/16 06:16 PM
Selenium	0.00219	0.00200	0.00500	J	mg/L	1	01/05/16 06:16 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	01/07/16 04:01 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	22.6	0.300	1.00		mg/L	1	12/22/15 05:36 PM
Fluoride	0.756	0.100	0.400		mg/L	1	12/22/15 05:36 PM
Sulfate	340	10.0	30.0		mg/L	10	12/22/15 06:19 PM
PH		**M4500-H+ B**					Analyst: **LM**
pH	4.94	0	0		pH Units@20.4℃	1	12/18/15 04:33 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **BJT**
Total Dissolved Solids (Residue, Filterable)	606	10.0	10.0		mg/L	1	12/22/15 08:00 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *21-Jan-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	MW-18A
Project:	Luminant - Martin Lake	**Lab ID:**	1512236-16
Project No:	5164-B	**Collection Date:**	12/15/15 10:30 AM
Lab Order:	1512236	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **ABO**
Mercury	0.00620	0.000400	0.00100		mg/L	5	12/22/15 04:30 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	01/05/16 06:18 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	01/05/16 06:18 PM
Barium	0.0674	0.00300	0.0100		mg/L	1	01/05/16 06:18 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	01/05/16 06:18 PM
Boron	0.142	0.0100	0.0300		mg/L	1	01/07/16 12:17 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	01/05/16 06:18 PM
Calcium	2.06	0.100	0.300		mg/L	1	01/05/16 06:18 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	01/05/16 06:18 PM
Cobalt	0.00346	0.00300	0.00500	J	mg/L	1	01/05/16 06:18 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	01/05/16 06:18 PM
Lithium	0.00873	0.00500	0.0100	J	mg/L	1	01/05/16 06:18 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	01/05/16 06:18 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	01/05/16 06:18 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	01/06/16 04:32 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	8.23	0.300	1.00		mg/L	1	12/22/15 05:50 PM
Fluoride	0.125	0.100	0.400	J	mg/L	1	12/22/15 05:50 PM
Sulfate	6.43	1.00	3.00		mg/L	1	12/22/15 05:50 PM
PH		**M4500-H+ B**					Analyst: **LM**
pH	5.35	0	0		pH Units@20.6℃	1	12/18/15 04:35 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **BJT**
Total Dissolved Solids (Residue, Filterable)	50.0	10.0	10.0		mg/L	1	12/22/15 08:00 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *21-Jan-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	PDP-25
Project:	Luminant - Martin Lake	**Lab ID:**	1512236-17
Project No:	5164-B	**Collection Date:**	12/15/15 11:35 AM
Lab Order:	1512236	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **ABO**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/22/15 02:05 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	01/05/16 06:20 PM
Arsenic	0.00372	0.00200	0.00500	J	mg/L	1	01/05/16 06:20 PM
Barium	0.210	0.00300	0.0100		mg/L	1	01/05/16 06:20 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	01/05/16 06:20 PM
Boron	0.0935	0.0100	0.0300		mg/L	1	01/07/16 12:19 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	01/05/16 06:20 PM
Calcium	33.2	1.00	3.00		mg/L	10	01/06/16 02:56 PM
Chromium	0.0131	0.00200	0.00500		mg/L	1	01/05/16 06:20 PM
Cobalt	0.0110	0.00300	0.00500		mg/L	1	01/05/16 06:20 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	01/05/16 06:20 PM
Lithium	0.128	0.00500	0.0100		mg/L	1	01/05/16 06:20 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	01/05/16 06:20 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	01/05/16 06:20 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	01/06/16 04:34 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	124	3.00	10.0		mg/L	10	12/22/15 06:34 PM
Fluoride	0.259	0.100	0.400	J	mg/L	1	12/22/15 06:05 PM
Sulfate	94.3	1.00	3.00		mg/L	1	12/22/15 06:05 PM
PH		**M4500-H+ B**					Analyst: **LM**
pH	6.28	0	0		pH Units@21℃	1	12/18/15 04:38 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **BJT**
Total Dissolved Solids (Residue, Filterable)	578	10.0	10.0		mg/L	1	12/22/15 08:00 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT: Pastor, Behling & Wheeler
Work Order: 1512236
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_151222A

The QC data in batch 72835 applies to the following samples: 1512236-01A, 1512236-02A, 1512236-03A, 1512236-04A, 1512236-05A, 1512236-06A, 1512236-07A, 1512236-08A, 1512236-09A, 1512236-10A, 1512236-11A, 1512236-12A, 1512236-13A, 1512236-14A, 1512236-15A, 1512236-16A, 1512236-17A

Sample ID	**MB-72835**	Batch ID:	**72835**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**CETAC2_HG_151222A**	Analysis Date:	**12/22/2015 1:01:59 PM**	Prep Date:	**12/19/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.0000800	0.000200								

Sample ID	**LCS-72835**	Batch ID:	**72835**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**CETAC2_HG_151222A**	Analysis Date:	**12/22/2015 1:04:15 PM**	Prep Date:	**12/19/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00191	0.000200	0.00200	0	95.5	85	115			

Sample ID	**LCSD-72835**	Batch ID:	**72835**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**LCSD**	Run ID:	**CETAC2_HG_151222A**	Analysis Date:	**12/22/2015 1:11:49 PM**	Prep Date:	**12/19/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00192	0.000200	0.00200	0	96.0	85	115	0.522	15	

Sample ID	**1512236-01A SD**	Batch ID:	**72835**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**SD**	Run ID:	**CETAC2_HG_151222A**	Analysis Date:	**12/22/2015 1:14:06 PM**	Prep Date:	**12/19/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.000400	0.00100	0	0				0	10	

Sample ID	**1512236-01A PDS**	Batch ID:	**72835**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**PDS**	Run ID:	**CETAC2_HG_151222A**	Analysis Date:	**12/22/2015 1:16:21 PM**	Prep Date:	**12/19/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00245	0.000200	0.00250	0	98.0	85	115			

Sample ID	**1512236-01A MS**	Batch ID:	**72835**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**MS**	Run ID:	**CETAC2_HG_151222A**	Analysis Date:	**12/22/2015 1:18:36 PM**	Prep Date:	**12/19/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00193	0.000200	0.00200	0	96.5	80	120			

Sample ID	**1512236-01A MSD**	Batch ID:	**72835**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**MSD**	Run ID:	**CETAC2_HG_151222A**	Analysis Date:	**12/22/2015 1:20:52 PM**	Prep Date:	**12/19/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00193	0.000200	0.00200	0	96.5	80	120	0	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1512236
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_151222A

Sample ID	**ICV-151222**	Batch ID:	**R83299**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**ICV**	Run ID:	**CETAC2_HG_151222A**	Analysis Date:	**12/22/2015 10:31:35 A**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00397	0.000200	0.00400	0	99.2	90	110			

Sample ID	**CCV4-151222**	Batch ID:	**R83299**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**CETAC2_HG_151222A**	Analysis Date:	**12/22/2015 12:57:25 P**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00190	0.000200	0.00200	0	95.0	90	110			

Sample ID	**CCV5-151222**	Batch ID:	**R83299**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**CETAC2_HG_151222A**	Analysis Date:	**12/22/2015 1:43:34 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00191	0.000200	0.00200	0	95.5	90	110			

Sample ID	**CCV6-151222**	Batch ID:	**R83299**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**CETAC2_HG_151222A**	Analysis Date:	**12/22/2015 2:14:55 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00193	0.000200	0.00200	0	96.5	90	110			

Sample ID	**CCV9-151222**	Batch ID:	**R83299**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**CETAC2_HG_151222A**	Analysis Date:	**12/22/2015 4:14:23 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00190	0.000200	0.00200	0	95.0	90	110			

Sample ID	**CCV10-151222**	Batch ID:	**R83299**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**CETAC2_HG_151222A**	Analysis Date:	**12/22/2015 4:53:05 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00190	0.000200	0.00200	0	95.0	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1512236
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160105A

The QC data in batch 72946 applies to the following samples: 1512236-01A, 1512236-02A, 1512236-03A, 1512236-04A, 1512236-05A, 1512236-06A, 1512236-07A, 1512236-08A, 1512236-09A, 1512236-10A, 1512236-11A, 1512236-12A, 1512236-13A, 1512236-14A, 1512236-15A, 1512236-16A, 1512236-17A

Sample ID **MB-72946** Batch ID: **72946** TestNo: **SW6020A** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_160105A** Analysis Date: **1/5/2016 5:02:00 PM** Prep Date: **12/28/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.000800	0.00250								
Arsenic	<0.00200	0.00500								
Barium	<0.00300	0.0100								
Beryllium	<0.000300	0.00100								
Cadmium	<0.000300	0.00100								
Calcium	<0.100	0.300								
Chromium	<0.00200	0.00500								
Cobalt	<0.00300	0.00500								
Lead	<0.000300	0.00100								
Lithium	<0.00500	0.0100								
Molybdenum	<0.00200	0.00500								
Selenium	<0.00200	0.00500								

Sample ID **LCS-72946** Batch ID: **72946** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_160105A** Analysis Date: **1/5/2016 5:04:00 PM** Prep Date: **12/28/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.186	0.00250	0.200	0	92.9	80	120			
Arsenic	0.200	0.00500	0.200	0	100	80	120			
Barium	0.196	0.0100	0.200	0	97.8	80	120			
Beryllium	0.201	0.00100	0.200	0	100	80	120			
Cadmium	0.194	0.00100	0.200	0	97.1	80	120			
Calcium	4.61	0.300	5.00	0	92.3	80	120			
Chromium	0.197	0.00500	0.200	0	98.4	80	120			
Cobalt	0.204	0.00500	0.200	0	102	80	120			
Lead	0.192	0.00100	0.200	0	96.0	80	120			
Lithium	0.203	0.0100	0.200	0	102	80	120			
Molybdenum	0.187	0.00500	0.200	0	93.4	80	120			
Selenium	0.200	0.00500	0.200	0	99.8	80	120			

Sample ID **LCSD-72946** Batch ID: **72946** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_160105A** Analysis Date: **1/5/2016 5:06:00 PM** Prep Date: **12/28/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.186	0.00250	0.200	0	92.8	80	120	0.111	15	
Arsenic	0.196	0.00500	0.200	0	98.1	80	120	1.88	15	
Barium	0.193	0.0100	0.200	0	96.6	80	120	1.25	15	
Beryllium	0.199	0.00100	0.200	0	99.4	80	120	1.11	15	
Cadmium	0.191	0.00100	0.200	0	95.7	80	120	1.53	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1512236
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160105A

Sample ID **LCSD-72946**	Batch ID: **72946**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCSD**	Run ID: **ICP-MS4_160105A**	Analysis Date: **1/5/2016 5:06:00 PM**	Prep Date: **12/28/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.54	0.300	5.00	0	90.9	80	120	1.56	15	
Chromium	0.194	0.00500	0.200	0	97.1	80	120	1.39	15	
Cobalt	0.202	0.00500	0.200	0	101	80	120	1.06	15	
Lead	0.189	0.00100	0.200	0	94.5	80	120	1.56	15	
Lithium	0.202	0.0100	0.200	0	101	80	120	0.819	15	
Molybdenum	0.185	0.00500	0.200	0	92.6	80	120	0.869	15	
Selenium	0.199	0.00500	0.200	0	99.3	80	120	0.446	15	

Sample ID **1512236-01A SD**	Batch ID: **72946**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS4_160105A**	Analysis Date: **1/5/2016 5:12:00 PM**	Prep Date: **12/28/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.00400	0.0125	0	0				0	10	
Arsenic	<0.0100	0.0250	0	0				0	10	
Barium	0.278	0.0500	0	0.277				0.366	10	
Beryllium	<0.00150	0.00500	0	0				0	10	
Cadmium	<0.00150	0.00500	0	0				0	10	
Chromium	0.0627	0.0250	0	0.0620				1.11	10	
Cobalt	<0.0150	0.0250	0	0				0	10	
Lead	<0.00150	0.00500	0	0.000542				0	10	
Lithium	<0.0250	0.0500	0	0.0202				0	10	
Molybdenum	<0.0100	0.0250	0	0.00819				0	10	
Selenium	0.0300	0.0250	0	0.0282				6.16	10	

Sample ID **1512236-01A PDS**	Batch ID: **72946**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_160105A**	Analysis Date: **1/5/2016 5:32:00 PM**	Prep Date: **12/28/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.169	0.00250	0.200	0	84.6	80	120			
Arsenic	0.204	0.00500	0.200	0	102	80	120			
Barium	0.460	0.0100	0.200	0.277	91.8	80	120			
Beryllium	0.199	0.00100	0.200	0	99.4	80	120			
Cadmium	0.189	0.00100	0.200	0	94.5	80	120			
Chromium	0.259	0.00500	0.200	0.0620	98.4	80	120			
Cobalt	0.205	0.00500	0.200	0	102	80	120			
Lead	0.197	0.00100	0.200	0.000542	98.2	80	120			
Lithium	0.217	0.0100	0.200	0.0202	98.4	80	120			
Molybdenum	0.194	0.00500	0.200	0.00819	92.8	80	120			
Selenium	0.223	0.00500	0.200	0.0282	97.4	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1512236
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160105A

Sample ID **1512236-01A MS**	Batch ID: **72946**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS4_160105A**	Analysis Date: **1/5/2016 5:34:00 PM**	Prep Date: **12/28/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.185	0.00250	0.200	0	92.6	80	120			
Arsenic	0.200	0.00500	0.200	0	99.9	80	120			
Barium	0.462	0.0100	0.200	0.277	92.6	80	120			
Beryllium	0.196	0.00100	0.200	0	98.2	80	120			
Cadmium	0.184	0.00100	0.200	0	91.8	80	120			
Calcium	159	0.300	5.00	159	2.05	80	120			S
Chromium	0.252	0.00500	0.200	0.0620	94.8	80	120			
Cobalt	0.196	0.00500	0.200	0	97.8	80	120			
Lead	0.189	0.00100	0.200	0.000542	94.4	80	120			
Lithium	0.215	0.0100	0.200	0.0202	97.2	80	120			
Molybdenum	0.191	0.00500	0.200	0.00819	91.6	80	120			
Selenium	0.224	0.00500	0.200	0.0282	97.7	80	120			

Sample ID **1512236-01A MSD**	Batch ID: **72946**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS4_160105A**	Analysis Date: **1/5/2016 5:36:00 PM**	Prep Date: **12/28/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.185	0.00250	0.200	0	92.5	80	120	0.080	15	
Arsenic	0.201	0.00500	0.200	0	101	80	120	0.722	15	
Barium	0.461	0.0100	0.200	0.277	92.1	80	120	0.184	15	
Beryllium	0.194	0.00100	0.200	0	97.2	80	120	0.993	15	
Cadmium	0.185	0.00100	0.200	0	92.4	80	120	0.646	15	
Calcium	159	0.300	5.00	159	-4.28	80	120	0.199	15	S
Chromium	0.253	0.00500	0.200	0.0620	95.4	80	120	0.454	15	
Cobalt	0.196	0.00500	0.200	0	98.0	80	120	0.261	15	
Lead	0.192	0.00100	0.200	0.000542	95.5	80	120	1.20	15	
Lithium	0.215	0.0100	0.200	0.0202	97.5	80	120	0.253	15	
Molybdenum	0.191	0.00500	0.200	0.00819	91.5	80	120	0.150	15	
Selenium	0.226	0.00500	0.200	0.0282	98.7	80	120	0.914	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

Sample ID **ICV-160105**	Batch ID: **R83481**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_160105A**	Analysis Date: **1/5/2016 11:22:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.0949	0.00250	0.100	0	94.9	90	110			
Arsenic	0.103	0.00500	0.100	0	103	90	110			
Barium	0.100	0.0100	0.100	0	100	90	110			
Beryllium	0.101	0.00100	0.100	0	101	90	110			
Cadmium	0.101	0.00100	0.100	0	101	90	110			
Calcium	2.30	0.300	2.50	0	92.1	90	110			
Chromium	0.105	0.00500	0.100	0	105	90	110			
Cobalt	0.108	0.00500	0.100	0	108	90	110			
Lead	0.102	0.00100	0.100	0	102	90	110			
Lithium	0.0984	0.0100	0.100	0	98.4	90	110			
Molybdenum	0.0966	0.00500	0.100	0	96.6	90	110			
Selenium	0.102	0.00500	0.100	0	102	90	110			

Sample ID **LCVL-160105**	Batch ID: **R83481**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160105A**	Analysis Date: **1/5/2016 11:26:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00199	0.00250	0.00200	0	99.4	70	130			
Arsenic	0.00495	0.00500	0.00500	0	99.0	70	130			
Barium	0.00489	0.0100	0.00500	0	97.7	70	130			
Beryllium	0.000790	0.00100	0.00100	0	79.0	70	130			
Cadmium	0.000992	0.00100	0.00100	0	99.2	70	130			
Calcium	0.0944	0.300	0.100	0	94.4	70	130			
Chromium	0.00499	0.00500	0.00500	0	99.8	70	130			
Cobalt	0.00520	0.00500	0.00500	0	104	70	130			
Lead	0.000899	0.00100	0.00100	0	89.9	70	130			
Lithium	0.00999	0.0100	0.0100	0	99.9	70	130			
Molybdenum	0.00492	0.00500	0.00500	0	98.5	70	130			
Selenium	0.00551	0.00500	0.00500	0	110	70	130			

Sample ID **CCV5-160105**	Batch ID: **R83481**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160105A**	Analysis Date: **1/5/2016 4:46:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.193	0.00250	0.200	0	96.4	90	110			
Arsenic	0.207	0.00500	0.200	0	104	90	110			
Barium	0.201	0.0100	0.200	0	101	90	110			
Beryllium	0.206	0.00100	0.200	0	103	90	110			
Cadmium	0.199	0.00100	0.200	0	99.3	90	110			
Calcium	4.79	0.300	5.00	0	95.8	90	110			
Chromium	0.204	0.00500	0.200	0	102	90	110			

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160105A

Sample ID **CCV5-160105**	Batch ID: **R83481**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160105A**	Analysis Date: **1/5/2016 4:46:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cobalt	0.210	0.00500	0.200	0	105	90	110			
Lead	0.199	0.00100	0.200	0	99.5	90	110			
Lithium	0.212	0.0100	0.200	0	106	90	110			
Molybdenum	0.193	0.00500	0.200	0	96.6	90	110			
Selenium	0.210	0.00500	0.200	0	105	90	110			

Sample ID **LCVL5-160105**	Batch ID: **R83481**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160105A**	Analysis Date: **1/5/2016 4:56:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00189	0.00250	0.00200	0	94.3	70	130			
Arsenic	0.00501	0.00500	0.00500	0	100	70	130			
Barium	0.00490	0.0100	0.00500	0	97.9	70	130			
Beryllium	0.000974	0.00100	0.00100	0	97.4	70	130			
Cadmium	0.000940	0.00100	0.00100	0	94.0	70	130			
Calcium	0.0993	0.300	0.100	0	99.3	70	130			
Chromium	0.00500	0.00500	0.00500	0	100	70	130			
Cobalt	0.00516	0.00500	0.00500	0	103	70	130			
Lead	0.000807	0.00100	0.00100	0	80.7	70	130			
Lithium	0.0117	0.0100	0.0100	0	117	70	130			
Molybdenum	0.00471	0.00500	0.00500	0	94.2	70	130			
Selenium	0.00519	0.00500	0.00500	0	104	70	130			

Sample ID **CCV6-160105**	Batch ID: **R83481**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160105A**	Analysis Date: **1/5/2016 5:54:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.196	0.00250	0.200	0	98.1	90	110			
Arsenic	0.212	0.00500	0.200	0	106	90	110			
Barium	0.204	0.0100	0.200	0	102	90	110			
Beryllium	0.213	0.00100	0.200	0	106	90	110			
Cadmium	0.203	0.00100	0.200	0	102	90	110			
Calcium	4.84	0.300	5.00	0	96.7	90	110			
Chromium	0.208	0.00500	0.200	0	104	90	110			
Cobalt	0.214	0.00500	0.200	0	107	90	110			
Lead	0.202	0.00100	0.200	0	101	90	110			
Lithium	0.213	0.0100	0.200	0	106	90	110			
Molybdenum	0.197	0.00500	0.200	0	98.5	90	110			
Selenium	0.213	0.00500	0.200	0	106	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

Sample ID **LCVL6-160105**	Batch ID: **R83481**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160105A**	Analysis Date: **1/5/2016 6:04:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00189	0.00250	0.00200	0	94.6	70	130			
Arsenic	0.00500	0.00500	0.00500	0	99.9	70	130			
Barium	0.00486	0.0100	0.00500	0	97.2	70	130			
Beryllium	0.000767	0.00100	0.00100	0	76.7	70	130			
Cadmium	0.00100	0.00100	0.00100	0	100	70	130			
Calcium	0.0950	0.300	0.100	0	95.0	70	130			
Chromium	0.00506	0.00500	0.00500	0	101	70	130			
Cobalt	0.00520	0.00500	0.00500	0	104	70	130			
Lead	0.000806	0.00100	0.00100	0	80.6	70	130			
Lithium	0.0107	0.0100	0.0100	0	107	70	130			
Molybdenum	0.00463	0.00500	0.00500	0	92.6	70	130			
Selenium	0.00496	0.00500	0.00500	0	99.2	70	130			

Sample ID **CCV7-160105**	Batch ID: **R83481**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160105A**	Analysis Date: **1/5/2016 6:30:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.192	0.00250	0.200	0	95.8	90	110			
Arsenic	0.209	0.00500	0.200	0	105	90	110			
Barium	0.199	0.0100	0.200	0	99.5	90	110			
Beryllium	0.207	0.00100	0.200	0	104	90	110			
Cadmium	0.198	0.00100	0.200	0	98.8	90	110			
Calcium	4.70	0.300	5.00	0	94.1	90	110			
Chromium	0.202	0.00500	0.200	0	101	90	110			
Cobalt	0.208	0.00500	0.200	0	104	90	110			
Lead	0.196	0.00100	0.200	0	98.0	90	110			
Lithium	0.204	0.0100	0.200	0	102	90	110			
Molybdenum	0.190	0.00500	0.200	0	94.8	90	110			
Selenium	0.210	0.00500	0.200	0	105	90	110			

Sample ID **LCVL7-160105**	Batch ID: **R83481**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160105A**	Analysis Date: **1/5/2016 6:41:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00187	0.00250	0.00200	0	93.5	70	130			
Arsenic	0.00520	0.00500	0.00500	0	104	70	130			
Barium	0.00495	0.0100	0.00500	0	98.9	70	130			
Beryllium	0.00113	0.00100	0.00100	0	112	70	130			
Cadmium	0.000975	0.00100	0.00100	0	97.5	70	130			
Calcium	0.0960	0.300	0.100	0	96.0	70	130			
Chromium	0.00500	0.00500	0.00500	0	99.9	70	130			

CLIENT: Pastor, Behling & Wheeler
Work Order: 1512236
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160105A

Sample ID **LCVL7-160105** Batch ID: **R83481** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_160105A** Analysis Date: **1/5/2016 6:41:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cobalt	0.00517	0.00500	0.00500	0	103	70	130			
Lead	0.000802	0.00100	0.00100	0	80.2	70	130			
Lithium	0.0113	0.0100	0.0100	0	113	70	130			
Molybdenum	0.00450	0.00500	0.00500	0	90.0	70	130			
Selenium	0.00496	0.00500	0.00500	0	99.2	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1512236
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160106A

The QC data in batch 72946 applies to the following samples: 1512236-01A, 1512236-02A, 1512236-03A, 1512236-04A, 1512236-05A, 1512236-06A, 1512236-07A, 1512236-08A, 1512236-09A, 1512236-10A, 1512236-11A, 1512236-12A, 1512236-13A, 1512236-14A, 1512236-15A, 1512236-16A, 1512236-17A

Sample ID **MB-72946** Batch ID: **72946** TestNo: **SW6020A** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_160106A** Analysis Date: **1/6/2016 3:09:00 PM** Prep Date: **12/28/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Thallium	<0.000500	0.00150								

Sample ID **LCS-72946** Batch ID: **72946** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_160106A** Analysis Date: **1/6/2016 3:11:00 PM** Prep Date: **12/28/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Thallium	0.194	0.00150	0.200	0	97.2	80	120			

Sample ID **LCSD-72946** Batch ID: **72946** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_160106A** Analysis Date: **1/6/2016 3:13:00 PM** Prep Date: **12/28/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Thallium	0.190	0.00150	0.200	0	94.9	80	120	2.47	15	

Sample ID **1512236-01A SD** Batch ID: **72946** TestNo: **SW6020A** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS4_160106A** Analysis Date: **1/6/2016 3:19:00 PM** Prep Date: **12/28/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Thallium	<0.00250	0.00750	0	0				0	10	

Sample ID **1512236-01A PDS** Batch ID: **72946** TestNo: **SW6020A** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS4_160106A** Analysis Date: **1/6/2016 3:39:00 PM** Prep Date: **12/28/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Thallium	0.208	0.00150	0.200	0	104	80	120			

Sample ID **1512236-01A MS** Batch ID: **72946** TestNo: **SW6020A** Units: **mg/L**
SampType: **MS** Run ID: **ICP-MS4_160106A** Analysis Date: **1/6/2016 3:41:00 PM** Prep Date: **12/28/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Thallium	0.190	0.00150	0.200	0	94.9	80	120			

Sample ID **1512236-01A MSD** Batch ID: **72946** TestNo: **SW6020A** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS4_160106A** Analysis Date: **1/6/2016 3:43:00 PM** Prep Date: **12/28/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Thallium	0.190	0.00150	0.200	0	95.2	80	120	0.259	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1512236
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160106A

Sample ID **1512236-01A SD**	Batch ID: **72946**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS4_160106A**	Analysis Date: **1/6/2016 4:24:00 PM**	Prep Date: **12/28/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	166	75.0	0	165				0.704	10	

Sample ID **1512236-01A PDS**	Batch ID: **72946**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_160106A**	Analysis Date: **1/6/2016 4:26:00 PM**	Prep Date: **12/28/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	393	15.0	250	165	91.4	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1512236
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160106A

Sample ID **ICV-160106**	Batch ID: **R83505**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_160106A**	Analysis Date: **1/6/2016 2:25:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0975	0.0300	0.100	0	97.5	90	110			
Calcium	2.33	0.300	2.50	0	93.1	90	110			
Thallium	0.0942	0.00150	0.100	0	94.2	90	110			

Sample ID **LCVL-160106**	Batch ID: **R83505**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160106A**	Analysis Date: **1/6/2016 2:30:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0238	0.0300	0.0200	0	119	70	130			
Calcium	0.0992	0.300	0.100	0	99.2	70	130			
Thallium	0.000864	0.00150	0.00100	0	86.4	70	130			

Sample ID **CCV1-160106**	Batch ID: **R83505**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160106A**	Analysis Date: **1/6/2016 3:00:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.190	0.0300	0.200	0	94.9	90	110			
Calcium	4.84	0.300	5.00	0	96.7	90	110			
Thallium	0.198	0.00150	0.200	0	98.9	90	110			

Sample ID **LCVL1-160106**	Batch ID: **R83505**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160106A**	Analysis Date: **1/6/2016 3:04:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0237	0.0300	0.0200	0	119	70	130			
Calcium	0.104	0.300	0.100	0	104	70	130			
Thallium	0.000908	0.00150	0.00100	0	90.8	70	130			

Sample ID **CCV2-160106**	Batch ID: **R83505**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160106A**	Analysis Date: **1/6/2016 3:57:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.76	0.300	5.00	0	95.3	90	110			
Thallium	0.196	0.00150	0.200	0	97.9	90	110			

Sample ID **LCVL2-160106**	Batch ID: **R83505**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160106A**	Analysis Date: **1/6/2016 4:18:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.104	0.300	0.100	0	104	70	130			
Thallium	0.000909	0.00150	0.00100	0	90.9	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1512236
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160106A

Sample ID **CCV3-160106**	Batch ID: **R83505**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160106A**	Analysis Date: **1/6/2016 4:36:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.89	0.300	5.00	0	97.8	90	110			
Thallium	0.202	0.00150	0.200	0	101	90	110			

Sample ID **LCVL3-160106**	Batch ID: **R83505**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160106A**	Analysis Date: **1/6/2016 4:40:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.100	0.300	0.100	0	100	70	130			
Thallium	0.000920	0.00150	0.00100	0	92.0	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1512236
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160107A

The QC data in batch 72946 applies to the following samples: 1512236-01A, 1512236-02A, 1512236-03A, 1512236-04A, 1512236-05A, 1512236-06A, 1512236-07A, 1512236-08A, 1512236-09A, 1512236-10A, 1512236-11A, 1512236-12A, 1512236-13A, 1512236-14A, 1512236-15A, 1512236-16A, 1512236-17A

Sample ID **MB-72946** Batch ID: **72946** TestNo: **SW6020A** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_160107A** Analysis Date: **1/7/2016 11:03:00 AM** Prep Date: **12/28/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0132	0.0300								

Sample ID **LCS-72946** Batch ID: **72946** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_160107A** Analysis Date: **1/7/2016 11:05:00 AM** Prep Date: **12/28/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.206	0.0300	0.200	0	103	80	120			

Sample ID **LCSD-72946** Batch ID: **72946** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_160107A** Analysis Date: **1/7/2016 11:07:00 AM** Prep Date: **12/28/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.200	0.0300	0.200	0	100	80	120	2.88	15	

Sample ID **1512236-13A SD** Batch ID: **72946** TestNo: **SW6020A** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS4_160107A** Analysis Date: **1/7/2016 11:13:00 AM** Prep Date: **12/28/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	<0.0500	0.150	0	0.0429				0	10	

Sample ID **1512236-13A PDS** Batch ID: **72946** TestNo: **SW6020A** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS4_160107A** Analysis Date: **1/7/2016 11:33:00 AM** Prep Date: **12/28/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.248	0.0300	0.200	0.0429	103	80	120			

Sample ID **1512236-01A MS** Batch ID: **72946** TestNo: **SW6020A** Units: **mg/L**
SampType: **MS** Run ID: **ICP-MS4_160107A** Analysis Date: **1/7/2016 11:35:00 AM** Prep Date: **12/28/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.478	0.0300	0.200	0.290	93.8	80	120			

Sample ID **1512236-01A MSD** Batch ID: **72946** TestNo: **SW6020A** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS4_160107A** Analysis Date: **1/7/2016 11:37:00 AM** Prep Date: **12/28/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.502	0.0300	0.200	0.290	106	80	120	4.89	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160107A

Sample ID **ICV-160107**	Batch ID: **R83509**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_160107A**	Analysis Date: **1/7/2016 10:44:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.103	0.0300	0.100	0	103	90	110			
Calcium	2.38	0.300	2.50	0	95.3	90	110			

Sample ID **LCVL-160107**	Batch ID: **R83509**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160107A**	Analysis Date: **1/7/2016 10:57:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0225	0.0300	0.0200	0	113	70	130			
Calcium	0.107	0.300	0.100	0	107	70	130			

Sample ID **CCV1-160107**	Batch ID: **R83509**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160107A**	Analysis Date: **1/7/2016 11:47:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.205	0.0300	0.200	0	103	90	110			
Calcium	5.03	0.300	5.00	0	101	90	110			

Sample ID **LCVL1-160107**	Batch ID: **R83509**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160107A**	Analysis Date: **1/7/2016 12:06:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0229	0.0300	0.0200	0	115	70	130			
Calcium	0.113	0.300	0.100	0	113	70	130			

Sample ID **CCV2-160107**	Batch ID: **R83509**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160107A**	Analysis Date: **1/7/2016 12:25:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.205	0.0300	0.200	0	103	90	110			
Calcium	4.97	0.300	5.00	0	99.4	90	110			

Sample ID **LCVL2-160107**	Batch ID: **R83509**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160107A**	Analysis Date: **1/7/2016 12:37:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0258	0.0300	0.0200	0	129	70	130			
Calcium	0.110	0.300	0.100	0	110	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1512236
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160107D

Sample ID	**ICV2-160107**	Batch ID:	**R83517**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**ICV**	Run ID:	**ICP-MS4_160107D**	Analysis Date:	**1/7/2016 3:16:00 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Thallium	0.102	0.00150	0.100	0	102	90	110			

Sample ID	**ILCVL2-160107**	Batch ID:	**R83517**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**LCVL**	Run ID:	**ICP-MS4_160107D**	Analysis Date:	**1/7/2016 3:22:00 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Thallium	0.000999	0.00150	0.00100	0	99.9	70	130			

Sample ID	**CCV5-160107**	Batch ID:	**R83517**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**ICP-MS4_160107D**	Analysis Date:	**1/7/2016 4:03:00 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Thallium	0.206	0.00150	0.200	0	103	90	110			

Sample ID	**LCVL5-160107**	Batch ID:	**R83517**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**LCVL**	Run ID:	**ICP-MS4_160107D**	Analysis Date:	**1/7/2016 4:07:00 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Thallium	0.00103	0.00150	0.00100	0	103	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1512236
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_151222B

The QC data in batch 72897 applies to the following samples: 1512236-01D, 1512236-02D, 1512236-03D, 1512236-04D, 1512236-05D, 1512236-06D, 1512236-07D, 1512236-08D, 1512236-09D, 1512236-10D, 1512236-11D, 1512236-12D, 1512236-13D, 1512236-14D, 1512236-15D, 1512236-16D, 1512236-17D

Sample ID **MB-72897** Batch ID: **72897** TestNo: **E300** Units: **mg/L**
SampType: **MBLK** Run ID: **IC2_151222B** Analysis Date: **12/22/2015 12:38:49 P** Prep Date: **12/22/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00								
Fluoride	<0.100	0.400								
Sulfate	<1.00	3.00								

Sample ID **LCS-72897** Batch ID: **72897** TestNo: **E300** Units: **mg/L**
SampType: **LCS** Run ID: **IC2_151222B** Analysis Date: **12/22/2015 12:53:26 P** Prep Date: **12/22/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.94	1.00	10.00	0	99.4	90	110			
Fluoride	4.08	0.400	4.000	0	102	90	110			
Sulfate	29.0	3.00	30.00	0	96.7	90	110			

Sample ID **LCSD-72897** Batch ID: **72897** TestNo: **E300** Units: **mg/L**
SampType: **LCSD** Run ID: **IC2_151222B** Analysis Date: **12/22/2015 1:08:02 PM** Prep Date: **12/22/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.97	1.00	10.00	0	99.7	90	110	0.397	20	
Fluoride	4.10	0.400	4.000	0	103	90	110	0.547	20	
Sulfate	29.0	3.00	30.00	0	96.7	90	110	0.005	20	

Sample ID **1512236-08DMS** Batch ID: **72897** TestNo: **E300** Units: **mg/L**
SampType: **MS** Run ID: **IC2_151222B** Analysis Date: **12/23/2015 8:58:40 AM** Prep Date: **12/22/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	261	10.0	200.0	59.58	101	90	110			
Fluoride	191	4.00	200.0	0	95.5	90	110			
Sulfate	308	30.0	200.0	113.1	97.5	90	110			

Sample ID **1512236-08DMSD** Batch ID: **72897** TestNo: **E300** Units: **mg/L**
SampType: **MSD** Run ID: **IC2_151222B** Analysis Date: **12/23/2015 9:13:17 AM** Prep Date: **12/22/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	261	10.0	200.0	59.58	101	90	110	0.005	20	
Fluoride	198	4.00	200.0	0	98.8	90	110	3.40	20	
Sulfate	309	30.0	200.0	113.1	97.7	90	110	0.173	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1512236
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_151222B

Sample ID **1512236-10DMS**	Batch ID: **72897**	TestNo: **E300**	Units: **mg/L**
SampType: **MS**	Run ID: **IC2_151222B**	Analysis Date: **12/23/2015 9:27:53 AM**	Prep Date: **12/22/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	223	10.0	200.0	21.04	101	90	110			
Fluoride	201	4.00	200.0	0	101	90	110			
Sulfate	398	30.0	200.0	201.9	98.1	90	110			

Sample ID **1512236-10DMSD**	Batch ID: **72897**	TestNo: **E300**	Units: **mg/L**
SampType: **MSD**	Run ID: **IC2_151222B**	Analysis Date: **12/23/2015 9:42:30 AM**	Prep Date: **12/22/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	222	10.0	200.0	21.04	101	90	110	0.369	20	
Fluoride	201	4.00	200.0	0	101	90	110	0.112	20	
Sulfate	400	30.0	200.0	201.9	99.0	90	110	0.430	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1512236
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_151222B

Sample ID **ICV-151222**	Batch ID: **R83318**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC2_151222B**	Analysis Date: **12/22/2015 9:02:57 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	24.5	1.00	25.00	0	97.9	90	110			
Fluoride	9.97	0.400	10.00	0	99.7	90	110			
Sulfate	71.9	3.00	75.00	0	95.8	90	110			

Sample ID **CCV1-151222**	Batch ID: **R83318**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_151222B**	Analysis Date: **12/22/2015 12:03:35 P**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.96	1.00	10.00	0	99.6	90	110			
Fluoride	4.08	0.400	4.000	0	102	90	110			
Sulfate	29.0	3.00	30.00	0	96.8	90	110			

Sample ID **CCV2-151222**	Batch ID: **R83318**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_151222B**	Analysis Date: **12/22/2015 3:56:03 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.83	1.00	10.00	0	98.3	90	110			
Fluoride	4.07	0.400	4.000	0	102	90	110			
Sulfate	29.1	3.00	30.00	0	97.0	90	110			

Sample ID **CCV3-151222**	Batch ID: **R83318**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_151222B**	Analysis Date: **12/22/2015 6:49:08 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.80	1.00	10.00	0	98.0	90	110			
Fluoride	4.08	0.400	4.000	0	102	90	110			
Sulfate	28.9	3.00	30.00	0	96.3	90	110			

Sample ID **CCV4-151222**	Batch ID: **R83318**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_151222B**	Analysis Date: **12/23/2015 10:17:03 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.94	1.00	10.00	0	99.4	90	110			
Fluoride	4.00	0.400	4.000	0	100	90	110			
Sulfate	29.5	3.00	30.00	0	98.2	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler

Work Order: 1512236

Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_151218A

The QC data in batch 72710 applies to the following samples: 1512236-01D, 1512236-02D, 1512236-03D, 1512236-04D, 1512236-05D, 1512236-06D, 1512236-07D, 1512236-08D, 1512236-09D, 1512236-10D, 1512236-11D, 1512236-12D, 1512236-13D, 1512236-14D, 1512236-15D, 1512236-16D, 1512236-17D

Sample ID **1512236-01D DUP** Batch ID: **72710** TestNo: **M4500-H+ B** Units: **pH Units@18.4℃**

SampType: **DUP** Run ID: **TITRATOR_151218A** Analysis Date: **12/18/2015 3:58:00 PM** Prep Date: **12/18/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	11.9	0	0	11.87				0.084	5	

Sample ID **1512236-17D DUP** Batch ID: **72710** TestNo: **M4500-H+ B** Units: **pH Units@21.2℃**

SampType: **DUP** Run ID: **TITRATOR_151218A** Analysis Date: **12/18/2015 4:41:00 PM** Prep Date: **12/18/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	6.40	0	0	6.280				1.89	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1512236
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_151218A

Sample ID	**ICV-151218**	Batch ID:	**R83249**	TestNo:	**M4500-H+ B**	Units:	**pH Units@21.2℃**
SampType:	**ICV**	Run ID:	**TITRATOR_151218A**	Analysis Date:	**12/18/2015 2:48:00 PM**	Prep Date:	**12/18/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	9.96	0	10.00	0	99.6	99	101			

Sample ID	**CCV-151218-PH12**	Batch ID:	**R83249**	TestNo:	**M4500-H+ B**	Units:	**pH Units@21.2℃**
SampType:	**CCV**	Run ID:	**TITRATOR_151218A**	Analysis Date:	**12/18/2015 3:50:00 PM**	Prep Date:	**12/18/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	12.0	0	12.00	0	100	97.1	102.9			

Sample ID	**CCV4-151218**	Batch ID:	**R83249**	TestNo:	**M4500-H+ B**	Units:	**pH Units@19.8℃**
SampType:	**CCV**	Run ID:	**TITRATOR_151218A**	Analysis Date:	**12/18/2015 4:14:00 PM**	Prep Date:	**12/18/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	6.98	0	7.000	0	99.7	97.1	102.9			

Sample ID	**CCV5-151218**	Batch ID:	**R83249**	TestNo:	**M4500-H+ B**	Units:	**pH Units@19.8℃**
SampType:	**CCV**	Run ID:	**TITRATOR_151218A**	Analysis Date:	**12/18/2015 4:39:00 PM**	Prep Date:	**12/18/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	6.96	0	7.000	0	99.4	97.1	102.9			

Sample ID	**CCV6-151218**	Batch ID:	**R83249**	TestNo:	**M4500-H+ B**	Units:	**pH Units@20.8℃**
SampType:	**CCV**	Run ID:	**TITRATOR_151218A**	Analysis Date:	**12/18/2015 4:45:00 PM**	Prep Date:	**12/18/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	6.97	0	7.000	0	99.6	97.1	102.9			

Sample ID	**CCV-151218-PH12**	Batch ID:	**R83249**	TestNo:	**M4500-H+ B**	Units:	**pH Units@21.4℃**
SampType:	**CCV**	Run ID:	**TITRATOR_151218A**	Analysis Date:	**12/18/2015 4:48:00 PM**	Prep Date:	**12/18/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	12.0	0	12.00	0	100	97.1	102.9			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1512236
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: WC_151218C

The QC data in batch 72824 applies to the following samples: 1512236-01D, 1512236-02D, 1512236-03D, 1512236-04D, 1512236-05D, 1512236-06D, 1512236-07D, 1512236-08D, 1512236-09D, 1512236-10D, 1512236-11D, 1512236-12D

Sample ID	**MB-72824**	Batch ID:	**72824**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**WC_151218C**	Analysis Date:	**12/21/2015 8:00:00 AM**	Prep Date:	**12/18/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	<10.0	10.0								

Sample ID	**LCS-72824**	Batch ID:	**72824**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**WC_151218C**	Analysis Date:	**12/21/2015 8:00:00 AM**	Prep Date:	**12/18/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	741	10.0	745.6	0	99.4	90	113			

Sample ID	**1512226-01G-DUP**	Batch ID:	**72824**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**DUP**	Run ID:	**WC_151218C**	Analysis Date:	**12/21/2015 8:00:00 AM**	Prep Date:	**12/18/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	64.0	10.0	0	63.00				1.57	5	

Sample ID	**1512236-03D-DUP**	Batch ID:	**72824**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**DUP**	Run ID:	**WC_151218C**	Analysis Date:	**12/21/2015 8:00:00 AM**	Prep Date:	**12/18/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	2260	50.0	0	2245				0.887	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1512236
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: WC_151221A

The QC data in batch 72884 applies to the following samples: 1512236-13D, 1512236-14D, 1512236-15D, 1512236-16D, 1512236-17D

Sample ID **MB-72884**	Batch ID: **72884**	TestNo: **M2540C**	Units: **mg/L**
SampType: **MBLK**	Run ID: **WC_151221A**	Analysis Date: **12/22/2015 8:00:00 AM**	Prep Date: **12/21/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	<10.0	10.0								

Sample ID **LCS-72884**	Batch ID: **72884**	TestNo: **M2540C**	Units: **mg/L**
SampType: **LCS**	Run ID: **WC_151221A**	Analysis Date: **12/22/2015 8:00:00 AM**	Prep Date: **12/21/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	749	10.0	745.6	0	100	90	113			

Sample ID **1512251-01B-DUP**	Batch ID: **72884**	TestNo: **M2540C**	Units: **mg/L**
SampType: **DUP**	Run ID: **WC_151221A**	Analysis Date: **12/22/2015 8:00:00 AM**	Prep Date: **12/21/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	340	10.0	0	338.0				0.590	5	

Sample ID **1512237-07D-DUP**	Batch ID: **72884**	TestNo: **M2540C**	Units: **mg/L**
SampType: **DUP**	Run ID: **WC_151221A**	Analysis Date: **12/22/2015 8:00:00 AM**	Prep Date: **12/21/2015**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	1900	50.0	0	1875				1.32	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

GEL Laboratories LLC
a member of The GEL Group INC

PO Box 30712 Charleston, SC 29417
2040 Savage Road Charleston, SC 29407
P 843.556.8171
F 843.766.1178

gel.com

January 14, 2016

Mr. John DuPont
DHL Analytical
2300 Double Creek Drive
Round Rock, Texas 78664

Re: Routine Analysis
Work Order: 387924
SDG: 1512236

Dear Mr. DuPont:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on December 22, 2015. This original data report has been prepared and reviewed in accordance with GEL's standard operating procedures.

Our policy is to provide high quality, personalized analytical services to enable you to meet your analytical needs on time every time. We trust that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at (843) 556-8171, ext. 4707.

Sincerely,

Anna C Day

Anna Day
Project Manager

Purchase Order: 14090
Enclosures

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 − (843) 556−8171 − www.gel.com

Certificate of Analysis Report
for

DHLA002 DHL Analytical

Client SDG: 1512236 GEL Work Order: 387924

The Qualifiers in this report are defined as follows:

* A quality control analyte recovery is outside of specified acceptance criteria

** Analyte is a Tracer compound

** Analyte is a surrogate compound

U Analyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the Certificate of Analysis.

The designation ND, if present, appears in the result column when the analyte concentration is not detected above the limit as defined in the 'U' qualifier above.

This data report has been prepared and reviewed in accordance with GEL Laboratories LLC standard operating procedures. Please direct any questions to your Project Manager, Anna Day.

Reviewed by Anna C Day

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: January 14, 2016

Company : DHL Analytical
Address : 2300 Double Creek Drive

Round Rock, Texas 78664
Contact: Mr. John DuPont
Project: Routine Analysis

Client Sample ID: H-29
Sample ID: 387924001
Matrix: Water
Collect Date: 14-DEC-15 09:05
Receive Date: 22-DEC-15
Collector: Client

Project: DHLA00112
Client ID: DHLA002

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228	U	0.669	+/-0.748	1.25	3.00	pCi/L		AXM6	01/08/16	1516	1534780	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226	U	0.230	+/-0.308	0.530	1.00	pCi/L		CXP3	01/14/16	0730	1533728	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			93.4	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: January 14, 2016

Company : DHL Analytical
Address : 2300 Double Creek Drive

Round Rock, Texas 78664
Contact: Mr. John DuPont
Project: Routine Analysis

Client Sample ID: H-30
Sample ID: 387924002
Matrix: Water
Collect Date: 14-DEC-15 09:50
Receive Date: 22-DEC-15
Collector: Client

Project: DHLA00112
Client ID: DHLA002

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228	U	0.956	+/-1.24	2.11	3.00	pCi/L		AXM6	01/08/16	1516	1534780	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226		1.93	+/-0.624	0.638	1.00	pCi/L		CXP3	01/14/16	0730	1533728	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			92.1	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: January 14, 2016

Company : DHL Analytical
Address : 2300 Double Creek Drive

Round Rock, Texas 78664
Contact: Mr. John DuPont
Project: Routine Analysis

Client Sample ID: H-31
Sample ID: 387924003
Matrix: Water
Collect Date: 14-DEC-15 10:40
Receive Date: 22-DEC-15
Collector: Client

Project: DHLA00112
Client ID: DHLA002

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228	U	0.453	+/-0.737	1.29	3.00	pCi/L		AXM6	01/08/16	1516	1534780	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226		1.61	+/-0.562	0.604	1.00	pCi/L		CXP3	01/14/16	0730	1533728	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			104	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: January 14, 2016

Company : DHL Analytical
Address : 2300 Double Creek Drive

Round Rock, Texas 78664
Contact: Mr. John DuPont
Project: Routine Analysis

Client Sample ID: H-32
Sample ID: 387924004
Matrix: Water
Collect Date: 14-DEC-15 11:30
Receive Date: 22-DEC-15
Collector: Client

Project: DHLA00112
Client ID: DHLA002

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228	U	0.120	+/-1.22	2.21	3.00	pCi/L		AXM6	01/08/16	1516	1534780	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226		0.712	+/-0.379	0.500	1.00	pCi/L		CXP3	01/14/16	0730	1533728	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			93.4	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

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Certificate of Analysis

Report Date: January 14, 2016

Company : DHL Analytical
Address : 2300 Double Creek Drive

Round Rock, Texas 78664
Contact: Mr. John DuPont
Project: Routine Analysis

Client Sample ID: H-27
Sample ID: 387924005
Matrix: Water
Collect Date: 14-DEC-15 12:20
Receive Date: 22-DEC-15
Collector: Client

Project: DHLA00112
Client ID: DHLA002

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228	U	0.354	+/-0.941	1.68	3.00	pCi/L		AXM6	01/08/16	1516	1534780	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226		0.468	+/-0.291	0.397	1.00	pCi/L		CXP3	01/14/16	0730	1533728	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			96.1	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

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Certificate of Analysis

Report Date: January 14, 2016

Company : DHL Analytical
Address : 2300 Double Creek Drive

Round Rock, Texas 78664
Contact: Mr. John DuPont
Project: Routine Analysis

Client Sample ID: H-28
Sample ID: 387924006
Matrix: Water
Collect Date: 14-DEC-15 13:15
Receive Date: 22-DEC-15
Collector: Client

Project: DHLA00112
Client ID: DHLA002

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228	U	0.136	+/-0.625	1.18	3.00	pCi/L		AXM6	01/08/16	1516	1534780	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226		0.707	+/-0.388	0.519	1.00	pCi/L		CXP3	01/14/16	0730	1533728	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			89.6	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

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Certificate of Analysis

Report Date: January 14, 2016

Company : DHL Analytical
Address : 2300 Double Creek Drive

Round Rock, Texas 78664
Contact: Mr. John DuPont
Project: Routine Analysis

Client Sample ID: H-26 | Project: DHLA00112
Sample ID: 387924007 | Client ID: DHLA002
Matrix: Water
Collect Date: 14-DEC-15 14:05
Receive Date: 22-DEC-15
Collector: Client

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228	U	0.936	+/-1.15	1.95	3.00	pCi/L		AXM6	01/08/16	1517	1534780	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226		0.619	+/-0.356	0.469	1.00	pCi/L		CXP3	01/14/16	0800	1533728	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			104	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

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Certificate of Analysis

Report Date: January 14, 2016

Company : DHL Analytical
Address : 2300 Double Creek Drive

Round Rock, Texas 78664
Contact: Mr. John DuPont
Project: Routine Analysis

Client Sample ID: H-33
Sample ID: 387924008
Matrix: Water
Collect Date: 14-DEC-15 14:55
Receive Date: 22-DEC-15
Collector: Client

Project: DHLA00112
Client ID: DHLA002

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228	U	-0.663	+/-0.754	1.79	3.00	pCi/L		AXM6	01/12/16	1124	1534780	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226		1.94	+/-0.604	0.604	1.00	pCi/L		CXP3	01/14/16	0800	1533728	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			87.1	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

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Certificate of Analysis

Report Date: January 14, 2016

Company : DHL Analytical
Address : 2300 Double Creek Drive

Round Rock, Texas 78664
Contact: Mr. John DuPont
Project: Routine Analysis

Client Sample ID: MW-20A
Sample ID: 387924009
Matrix: Water
Collect Date: 14-DEC-15 17:00
Receive Date: 22-DEC-15
Collector: Client

Project: DHLA00112
Client ID: DHLA002

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228	U	0.112	+/-1.21	2.20	3.00	pCi/L		AXM6	01/08/16	1517	1534780	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226		0.939	+/-0.459	0.584	1.00	pCi/L		CXP3	01/14/16	0800	1533728	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			92.2	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: January 14, 2016

Company : DHL Analytical
Address : 2300 Double Creek Drive

Round Rock, Texas 78664
Contact: Mr. John DuPont
Project: Routine Analysis

Client Sample ID: PDP-22
Sample ID: 387924010
Matrix: Water
Collect Date: 14-DEC-15 17:50
Receive Date: 22-DEC-15
Collector: Client

Project: DHLA00112
Client ID: DHLA002

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228		2.14	+/-1.10	1.59	3.00	pCi/L		AXM6	01/08/16	1517	1534780	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226		2.12	+/-0.622	0.600	1.00	pCi/L		CXP3	01/14/16	0800	1533728	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			85.6	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

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Certificate of Analysis

Report Date: January 14, 2016

Company : DHL Analytical
Address : 2300 Double Creek Drive

Round Rock, Texas 78664
Contact: Mr. John DuPont
Project: Routine Analysis

Client Sample ID: MW-19
Sample ID: 387924011
Matrix: Water
Collect Date: 14-DEC-15 18:40
Receive Date: 22-DEC-15
Collector: Client

Project: DHLA00112
Client ID: DHLA002

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228	U	0.462	+/-0.687	1.19	3.00	pCi/L		AXM6	01/08/16	1517	1534780	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226	U	0.194	+/-0.261	0.448	1.00	pCi/L		CXP3	01/14/16	0800	1533728	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			90.9	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: January 14, 2016

Company : DHL Analytical
Address : 2300 Double Creek Drive

Round Rock, Texas 78664
Contact: Mr. John DuPont
Project: Routine Analysis

Client Sample ID: PDP-23
Sample ID: 387924012
Matrix: Water
Collect Date: 14-DEC-15 19:30
Receive Date: 22-DEC-15
Collector: Client

Project: DHLA00112
Client ID: DHLA002

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228	U	0.865	+/-0.704	1.11	3.00	pCi/L		AXM6	01/08/16	1517	1534780	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226	U	0.320	+/-0.274	0.419	1.00	pCi/L		CXP3	01/14/16	0800	1533728	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			100	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: January 14, 2016

Company : DHL Analytical
Address : 2300 Double Creek Drive

Round Rock, Texas 78664
Contact: Mr. John DuPont
Project: Routine Analysis

Client Sample ID: PDP-26
Sample ID: 387924013
Matrix: Water
Collect Date: 15-DEC-15 07:50
Receive Date: 22-DEC-15
Collector: Client

Project: DHLA00112
Client ID: DHLA002

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228	U	-0.363	+/-0.651	1.35	3.00	pCi/L		AXM6	01/08/16	1517	1534780	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226	U	0.251	+/-0.301	0.506	1.00	pCi/L		CXP3	01/14/16	0830	1533728	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			99.6	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: January 14, 2016

Company : DHL Analytical
Address : 2300 Double Creek Drive

Round Rock, Texas 78664
Contact: Mr. John DuPont
Project: Routine Analysis

Client Sample ID: MW-17A
Sample ID: 387924014
Matrix: Water
Collect Date: 15-DEC-15 08:50
Receive Date: 22-DEC-15
Collector: Client

Project: DHLA00112
Client ID: DHLA002

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228	U	0.315	+/-0.860	1.54	3.00	pCi/L		AXM6	01/08/16	1517	1534780	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226		0.459	+/-0.273	0.314	1.00	pCi/L		CXP3	01/14/16	0830	1533728	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			96.9	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

GEL LABORATORIES LLC
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Certificate of Analysis

Report Date: January 14, 2016

Company : DHL Analytical
Address : 2300 Double Creek Drive

Round Rock, Texas 78664
Contact: Mr. John DuPont
Project: Routine Analysis

Client Sample ID: PDP-24
Sample ID: 387924015
Matrix: Water
Collect Date: 15-DEC-15 09:40
Receive Date: 22-DEC-15
Collector: Client

Project: DHLA00112
Client ID: DHLA002

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228	U	0.663	+/-1.28	2.23	3.00	pCi/L		AXM6	01/08/16	1518	1534780	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226		1.01	+/-0.419	0.494	1.00	pCi/L		CXP3	01/14/16	0830	1533728	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			86	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: January 14, 2016

Company : DHL Analytical
Address : 2300 Double Creek Drive

Round Rock, Texas 78664
Contact: Mr. John DuPont
Project: Routine Analysis

Client Sample ID: MW-18A
Sample ID: 387924016
Matrix: Water
Collect Date: 15-DEC-15 10:30
Receive Date: 22-DEC-15
Collector: Client

Project: DHLA00112
Client ID: DHLA002

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228	U	0.231	+/-1.06	1.90	3.00	pCi/L		AXM6	01/08/16	1518	1534780	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226		0.805	+/-0.383	0.482	1.00	pCi/L		CXP3	01/14/16	0830	1533728	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			108	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: January 14, 2016

Company : DHL Analytical
Address : 2300 Double Creek Drive

Round Rock, Texas 78664
Contact: Mr. John DuPont
Project: Routine Analysis

Client Sample ID: PDP-25
Sample ID: 387924017
Matrix: Water
Collect Date: 15-DEC-15 11:35
Receive Date: 22-DEC-15
Collector: Client

Project: DHLA00112
Client ID: DHLA002

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228	U	0.465	+/-0.776	1.36	3.00	pCi/L		AXM6	01/08/16	1518	1534780	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226		0.807	+/-0.394	0.502	1.00	pCi/L		CXP3	01/14/16	0830	1533728	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			95.7	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

QC Summary

Report Date: January 14, 2016

DHL Analytical
2300 Double Creek Drive
Round Rock, Texas

Contact: **Mr. John DuPont**

Workorder: **387924**

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Rad Gas Flow										
Batch 1534780										
QC1203462619 387924008 DUP										
Radium-228	U	-0.663	U	-0.512	pCi/L	N/A		N/A	AXM6	01/12/16 11:24
	Uncertainty	+/-0.754		+/-0.808						
QC1203462620 LCS										
Radium-228	28.8			24.6	pCi/L		85.6	(75%-125%)		01/08/16 15:17
	Uncertainty			+/-2.34						
QC1203462618 MB										
Radium-228			U	-0.302	pCi/L					01/08/16 15:17
	Uncertainty			+/-0.708						
Rad Ra-226										
Batch 1533728										
QC1203459854 387939003 DUP										
Radium-226		0.672		1.11	pCi/L	48.8		(0% - 100%)	CXP3	01/14/16 09:40
	Uncertainty	+/-0.358		+/-0.419						
QC1203459856 LCS										
Radium-226	30.5			27.4	pCi/L		89.7	(75%-125%)		01/14/16 10:10
	Uncertainty			+/-1.77						
QC1203459853 MB										
Radium-226			U	0.0947	pCi/L					01/14/16 09:40
	Uncertainty			+/-0.270						
QC1203459855 387939003 MS										
Radium-226	61.0	0.672		54.7	pCi/L		88.6	(75%-125%)		01/14/16 09:40
	Uncertainty	+/-0.358		+/-3.57						

Notes:

Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

The Qualifiers in this report are defined as follows:

**	Analyte is a Tracer compound
<	Result is less than value reported
>	Result is greater than value reported
BD	Results are either below the MDC or tracer recovery is low
FA	Failed analysis.
H	Analytical holding time was exceeded
J	Value is estimated
K	Analyte present. Reported value may be biased high. Actual value is expected to be lower.
L	Analyte present. Reported value may be biased low. Actual value is expected to be higher.
M	M if above MDC and less than LLD
M	REMP Result > MDC/CL and < RDL
N/A	RPD or %Recovery limits do not apply.

QC Summary

Workorder: **387924**

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time

N1	See case narrative
ND	Analyte concentration is not detected above the detection limit
NJ	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
Q	One or more quality control criteria have not been met. Refer to the applicable narrative or DER.
R	Sample results are rejected
U	Analyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD.
UI	Gamma Spectroscopy--Uncertain identification
UJ	Gamma Spectroscopy--Uncertain identification
UL	Not considered detected. The associated number is the reported concentration, which may be inaccurate due to a low bias.
X	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
Y	Other specific qualifiers were required to properly define the results. Consult case narrative.
^	RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.
h	Preparation or preservation holding time was exceeded

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.
^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.
* Indicates that a Quality Control parameter was not within specifications.
For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.

There are no "Data Exception Reports" associated with this analytical report.

DHL Analytical, Inc.
2300 Double Creek Drive
Round Rock, TX 78664
TEL: *(512) 388-8222* FAX: *(512) 388-8229*

CHAIN-OF-CUSTODY RECORD

Work Order: 1512236

Subcontractor:

GEL Laboratories
PO Box 30712
Charleston, SC 29417

TEL: (843) 556-8171
FAX:
Acct #: 387924

18-Dec-15

Sample Id	Matrix	DHL#	Date Collected	Bottle Type	Requested Tests					
					E903.1	E904.0				
H-29	Aqueous	-01B	12/14/15 09:05 AM	500HDPEHNO3		1				
H-29	Aqueous	-01C	12/14/15 09:05 AM	500HDPEHNO3	1					
H-30	Aqueous	-02B	12/14/15 09:50 AM	500HDPEHNO3		1				
H-30	Aqueous	-02C	12/14/15 09:50 AM	500HDPEHNO3	1					
H-31	Aqueous	-03B	12/14/15 10:40 AM	500HDPEHNO3		1				
H-31	Aqueous	-03C	12/14/15 10:40 AM	500HDPEHNO3	1					
H-32	Aqueous	-04B	12/14/15 11:30 AM	500HDPEHNO3		1				
H-32	Aqueous	-04C	12/14/15 11:30 AM	500HDPEHNO3	1					
H-27	Aqueous	-05B	12/14/15 12:20 PM	500HDPEHNO3		1				
H-27	Aqueous	-05C	12/14/15 12:20 PM	500HDPEHNO3	1					
H-28	Aqueous	-06B	12/14/15 01:15 PM	500HDPEHNO3		1				
H-28	Aqueous	-06C	12/14/15 01:15 PM	500HDPEHNO3	1					
H-26	Aqueous	-07B	12/14/15 02:05 PM	500HDPEHNO3		1				
H-26	Aqueous	-07C	12/14/15 02:05 PM	500HDPEHNO3	1					
H-33	Aqueous	-08B	12/14/15 02:55 PM	500HDPEHNO3		1				
H-33	Aqueous	-08C	12/14/15 02:55 PM	500HDPEHNO3	1					
MW-20A	Aqueous	-09B	12/14/15 05:00 PM	500HDPEHNO3		1				
MW-20A	Aqueous	-09C	12/14/15 05:00 PM	500HDPEHNO3	1					

General Comments:

Please analyze these samples with a Standard Turnaround Time.
Call John DuPont if you have questions.
Quality Control Package Needed: Standard / _____
EMAIL report to both cac@dhlanalytical.com & dupont@dhlanalytical.com

		Date/Time			Date/Time
Relinquished by:	[signature]	12/18/15 1730	**Received by:**	Fed ex	12/18/15 1730
Relinquished by:			**Received by:**	B. Luthman	12/22/15 0850

DHL Analytical, Inc.
2300 Double Creek Drive
Round Rock, TX 78664
TEL: *(512) 388-8222* FAX: *(512) 388-8229*

CHAIN-OF-CUSTODY RECORD

Work Order: 1512236

Subcontractor:

GEL Laboratories
PO Box 30712
Charleston, SC 29417

TEL: (843) 556-8171
FAX:
Acct #:

18-Dec-15

Sample Id	Matrix	DHL#	Date Collected	Bottle Type	Requested Tests					
					E903.1	E904.0				
PDP-22	Aqueous	-10B	12/14/15 05:50 PM	500HDPEHNO3		1				
PDP-22	Aqueous	-10C	12/14/15 05:50 PM	500HDPEHNO3	1					
MW-19	Aqueous	-11B	12/14/15 06:40 PM	500HDPEHNO3		1				
MW-19	Aqueous	-11C	12/14/15 06:40 PM	500HDPEHNO3	1					
PDP-23	Aqueous	-12B	12/14/15 07:30 PM	500HDPEHNO3		1				
PDP-23	Aqueous	-12C	12/14/15 07:30 PM	500HDPEHNO3	1					
PDP-26	Aqueous	-13B	12/15/15 07:50 AM	500HDPEHNO3		1				
PDP-26	Aqueous	-13C	12/15/15 07:50 AM	500HDPEHNO3	1					
MW-17A	Aqueous	-14B	12/15/15 08:50 AM	500HDPEHNO3		1				
MW-17A	Aqueous	-14C	12/15/15 08:50 AM	500HDPEHNO3	1					
PDP-24	Aqueous	-15B	12/15/15 09:40 AM	500HDPEHNO3		1				
PDP-24	Aqueous	-15C	12/15/15 09:40 AM	500HDPEHNO3	1					
MW-18A	Aqueous	-16B	12/15/15 10:30 AM	500HDPEHNO3		1				
MW-18A	Aqueous	-16C	12/15/15 10:30 AM	500HDPEHNO3	1					
PDP-25	Aqueous	-17B	12/15/15 11:35 AM	500HDPEHNO3		1				
PDP-25	Aqueous	-17C	12/15/15 11:35 AM	500HDPEHNO3	1					

General Comments:

Please analyze these samples with a Standard Turnaround Time.
Call John DuPont if you have questions.
Quality Control Package Needed: Standard / _____
EMAIL report to both cac@dhlanalytical.com & dupont@dhlanalytical.com

		Date/Time			Date/Time
Relinquished by:		12/18/15 1733	**Received by:**	Fed Ex	12/18/15 (733)
Relinquished by:			**Received by:**	B. Luthman	12/22/15 0852

GEL Laboratories LLC

SAMPLE RECEIPT & REVIEW FORM

Client: DHLA	SDG/AR/COC/Work Order: 387924
Received By: Brielle Luthman	Date Received: 12/22/15 0850

Suspected Hazard Information	Yes	No	*If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation.
COC/Samples marked as radioactive?		✓	Maximum Net Counts Observed* (Observed Counts - Area Background Counts): 0
Classified Radioactive II or III by RSO?		✓	If yes, Were swipes taken of sample containers < action levels?
COC/Samples marked containing PCBs?		✓	
Package, COC, and/or Samples marked as beryllium or asbestos containing?		✓	If yes, samples are to be segregated as Safety Controlled Samples, and opened by the GEL Safety Group.
Shipped as a DOT Hazardous?		✓	Hazard Class Shipped: UN#:
Samples identified as Foreign Soil?		✓	

	Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (Required for Non-Conforming Items)
1	Shipping containers received intact and sealed?	✓			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
2	Samples requiring cold preservation within (0 ≤ 6 deg. C)?*		✓		Preservation Method: Ice bags Blue ice Dry ice (None) Other (describe) *all temperatures are recorded in Celsius 18°
2a	Daily check performed and passed on IR temperature gun?	✓			Temperature Device Serial #: Secondary Temperature Device Serial # (If Applicable): ES032015830
3	Chain of custody documents included with shipment?	✓			
4	Sample containers intact and sealed?	✓			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
5	Samples requiring chemical preservation at proper pH?	✓			Sample ID's, containers affected and observed pH: If Preservation added, Lot#:
6	Do Low Level Perchlorate samples have headspace as required?		✓		Sample ID's and containers affected:
7	VOA vials contain acid preservation?		✓		(If unknown, select No)
8	VOA vials free of headspace (defined as < 6mm bubble)?		✓		Sample ID's and containers affected:
9	Are Encore containers present?			✓	(If yes, immediately deliver to Volatiles laboratory)
10	Samples received within holding time?	✓			ID's and tests affected:
11	Sample ID's on COC match ID's on bottles?	✓			Sample ID's and containers affected:
12	Date & time on COC match date & time on bottles?	✓			Sample ID's affected:
13	Number of containers received match number indicated on COC?	✓			Sample ID's affected:
14	Are sample containers identifiable as GEL provided?			✓	
15	COC form is properly signed in relinquished/received sections?	✓			
16	Carrier and tracking number.				Circle Applicable: FedEx Air (FedEx Ground) UPS Field Services Courier Other 7752 4483 5086

Comments (Use Continuation Form if needed):

PM (or PMA) review: Initials BL Date 12/22/15 Page 1 of 1 GL-CHL-SR-001 Rev 2

List of current GEL Certifications as of 14 January 2016

State	Certification
Alaska	UST−110
Arkansas	88−0651
CLIA	42D0904046
California	2940 Interim
Colorado	SC00012
Connecticut	PH−0169
Delaware	SC000122013−10
DoD ELAP/ ISO17025 A2LA	2567.01
Florida NELAP	E87156
Foreign Soils Permit	P330−15−00283, P330−15−00253
Georgia	SC00012
Georgia SDWA	967
Hawaii	SC000122013−10
Idaho Chemistry	SC00012
Idaho Radiochemistry	SC00012
Illinois NELAP	200029
Indiana	C−SC−01
Kansas NELAP	E−10332
Kentucky SDWA	90129
Kentucky Wastewater	90129
Louisiana NELAP	03046 (AI33904)
Louisiana SDWA	LA150001
Maryland	270
Massachusetts	M−SC012
Michigan	9976
Mississippi	SC000122013−10
Nebraska	NE−OS−26−13
Nevada	SC000122016−1
New Hampshire NELAP	2054
New Jersey NELAP	SC002
New Mexico	SC00012
New York NELAP	11501
North Carolina	233
North Carolina SDWA	45709
North Dakota	R−158
Oklahoma	9904
Pennsylvania NELAP	68−00485
S.Carolina Radchem	10120002
South Carolina Chemistry	10120001
Tennessee	TN 02934
Texas NELAP	T104704235−15−10
Utah NELAP	SC000122015−19
Vermont	VT87156
Virginia NELAP	460202
Washington	C780
West Virginia	997404

March 29, 2016

Will Vienne
Pastor, Behling & Wheeler
2201 Double Creek Dr #4004
Round Rock, Texas 78664
TEL: (512) 671-3434
FAX (512) 671-3446

Order No.: 1602269

RE: Luminant - Martin Lake

Dear Will Vienne:

DHL Analytical, Inc. received 17 sample(s) on 2/25/2016 for the analyses presented in the following report.

There were no problems with the analyses and all data met requirements of NELAC except where noted in the Case Narrative. All non-NELAC methods will be identified accordingly in the case narrative and all estimated uncertainties of test results are within method or EPA specifications.

If you have any questions regarding these tests results, please feel free to call. Thank you for using DHL Analytical.

Sincerely,

John DuPont
General Manager

This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211-15-15

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DHL ANALYTICAL
2300 Double Creek Dr. ■ Round Rock, TX 78664
Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

№ 70379

CHAIN-OF-CUSTODY

CLIENT: PBW
ADDRESS: 2201 DOUBLE CREEK DR ROUND ROCK, A 78664
PHONE: 512-671-3434 FAX/E-MAIL: 512-671-3446
DATA REPORTED TO: WILL VIENNE
ADDITIONAL REPORT COPIES TO:

DATE: 2-24-16 PAGE 1 OF 2
PO #: 5164-B DHL WORK ORDER #: 1602269
PROJECT LOCATION OR NAME: LUMINANT - MARTIN LAKE
CLENT PROJECT #: 5164-B COLLECTOR: J. BRAYTON/CK

Authorize 5% surcharge for TRRP Report? ☐ Yes ☐ No

S=SOIL W=WATER A=AIR L=LIQUID SE=SEDIMENT P=PAINT SL=SLUDGE O=OTHER SO=SOLID

PRESERVATION: HCl, HNO_3, H_2SO_4 ☐ NaOH ☐, ICE, UNPRESERVED

ANALYSES: BTEX ☐ MTBE ☐ [METHOD 8021] TPH 1005 ☐ TPH 1006 ☐ HOLD 1006 ☐ GRO [METHOD 8015] ☐ DRO [METHOD 8105] ☐ VOC 8260 ☐ VOC 624 ☐ VOC 8260/5035 ☐ SVOC 8270 ☐ PAH 8270 ☐ HOLD PAH ☐ SVOC 625 ☐ 8270 PEST ☐ 625 PEST/PCB ☐ 608 PCB ☐ 8270 PCB ☐ 8270 O-P PEST ☐ 8082 PCB ☐ 8270 PCB ☐ 8321 HERB ☐ T PHOS, AMMONIA ☐ METALS 6020 ☐ METALS 200.8 ☐ DISS. METALS ☐ RCRA ☐ TX11 ☐ PH ☐ HEX CHROM ☐ ALKALINITY ☐ COD ☐ CHLORIDE ☐ ANIONS ☐ TCLP-SVOC ☐ VOC ☐ PEST ☐ HERB ☐ TCLP-METALS ☐ RCRA 8 ☐ TX-11 ☐ Pb ☐ RCI ☐ FLASHPOINT ☐ DGAS ☐ TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐ SEE ATTACHED

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	HCl	HNO_3	H_2SO_4 ☐ NaOH ☐	ICE	UNPRESERVED	ANALYSES	FIELD NOTES
MW-19	01	2-24-16	1210	W	P	4						X	
PDP-22	02	↓	1115	W	P	4						X	
MW-18A	03		1015	W	P	4						X	
PDP-26	04		0910	W	P	4						X	
MW-20A	05	↓	0810	W	P	4						X	
H-30	06	2-23-16	1220	W	P	4						X	
H-33	07	↓	1125	W	P	4						X	
H-26	08		1035	W	P	4						X	
H-31	09		1125	W	P	4						X	
H-32	10		1235	W	P	4						X	
H-28	11		1530	W	P	4						X	
H-29	12		1620	W	P	4						X	
H-27	13	↓	17:30	W	P	4						X	
PDP-23	14	2/24/16	945	W	P	4						X	
PDP-25	15	↓	1055	W	P	4						X	

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
[signature]	2-24-16 1830	Fedex
Fedex	2/25/16 930	[signature]

TURN AROUND TIME
RUSH ☐ CALL FIRST
1 DAY ☐ CALL FIRST
2 DAY ☐
NORMAL ☒
OTHER ☐

LABORATORY USE ONLY:
RECEIVING TEMP: 5.3, 1.5, 1.8 THERM #: 73
CUSTODY SEALS: ☐ BROKEN ☐ INTACT ☐ NOT USED
CARRIER: ☐ LONE STAR ☐ FEDEX ☐ UPS ☐ OTHER
☐ COURIER DELIVERY
☐ HAND DELIVERED

APPENDIX F-Revision 2 February 27, 2024 ☐ DHL DISPOSAL @ $4.00 each ☐ Return

DHL ANALYTICAL
2300 Double Creek Dr. ■ Round Rock, TX 78664
Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

nelap

№ 70375

CHAIN-OF-CUSTODY

CLIENT: PBW
ADDRESS: 2201 Double Creek Dr. Round Rock, TX 78664
PHONE: 512 671 3434 FAX/E-MAIL: 512 671 3446
DATA REPORTED TO: Will Vienne
ADDITIONAL REPORT COPIES TO:

DATE: 2/24/16 PAGE 2 OF 2
PO #: 5164-B DHL WORK ORDER #: 1602269
PROJECT LOCATION OR NAME: Luminant-Martin Lake
CLENT PROJECT #: 5164-B COLLECTOR: Chris Kakolewski

Authorize 5% surcharge for TRRP Report? ☐ Yes ☐ No

S=SOIL W=WATER A=AIR L=LIQUID SE=SEDIMENT P=PAINT SL=SLUDGE O=OTHER SO=SOLID

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	HCl	HNO_3	H_2SO_4 ☐ NaOH ☐	ICE	UNPRESERVED	BTEX ☐ MTBE ☐ [METHOD 8021]	TPH 1005 ☐ TPH 1006 ☐ HOLD 1006 ☐	GRO [METHOD 8015] ☐ DRO [METHOD 8105] ☐	VOC 8260 ☐ VOC 624 ☐ VOC 8260/5035 ☐	SVOC 8270 ☐ PAH 8270 ☐ HOLD PAH ☐ SVOC 625 ☐	8270 PEST ☐ 625 PEST/PCB ☐ 608 PCB ☐	8270 O-P PEST ☐ 8082 PCB ☐ 8270 PCB ☐	8321 HERB ☐ T PHOS, AMMONIA ☐	METALS 6020 ☐ METALS 200.8 ☐ DISS. METALS ☐	RCRA ☐ TX11 ☐	PH ☐ HEX CHROM ☐ ALKALINITY ☐ COD ☐	CHLORIDE ☐ ANIONS	TCLP-SVOC ☐ VOC ☐ PEST ☐ HERB ☐	TCLP-METALS ☐ RCRA 8 ☐ TX-11 ☐ Pb ☐	RCI ☐ FLASHPOINT ☐ DGAS ☐	TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐	SEE ATTACHED	FIELD NOTES
MW-17A	16	2/24/16	1200	W	P	4																							X		
PDP-24	17	2/24/16	1430	W	P	4																							X		

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
[signature]	2-24-16 1830	[signature]
[signature]	2/25/16 930	[signature]

TURN AROUND TIME
RUSH ☐ CALL FIRST
1 DAY ☐ CALL FIRST
2 DAY ☐
NORMAL ☒
OTHER ☐

LABORATORY USE ONLY:
RECEIVING TEMP: 5.3, 1.9, 1.8 THERM #: 78
CUSTODY SEALS: ☐ BROKEN ☐ INTACT ☒ NOT USED
CARRIER: ☐ LONE STAR ☒ FEDEX ☐ UPS ☐ OTHER
☐ COURIER DELIVERY
☐ HAND DELIVERED

APPENDIX F-Revision 2 February 27, 2014 ☐ DHL DISPOSAL @ $2.00 each ☐ Return

John Dupont

From: Sara Taube [Sara.Taube@pbwllc.com]
Sent: Wednesday, July 22, 2015 12:05 PM
To: John Dupont
Subject: CCR Appendix III and IV
Follow Up Flag: Follow up
Flag Status: Completed

Hi John,

Here are the Appendix III and Appendix IV constituents that we will need to have analyzed under the CCR Rule.

Appendix III
Boron
Calcium
Chloride
Fluoride
pH
sulfate
TDS

Appendix IV
Antimony
Arsenic
Barium
Beryllium
Cadmium
Chromium
Cobalt
Fluoride
Lead
Lithium
Mercury
Molybdenum
Selenium
Thallium
Radium 226 and 228

We are looking to have approximately 74 wells sampled 8 times over the course of the next two years. Please let me know if there is any more information you might need.

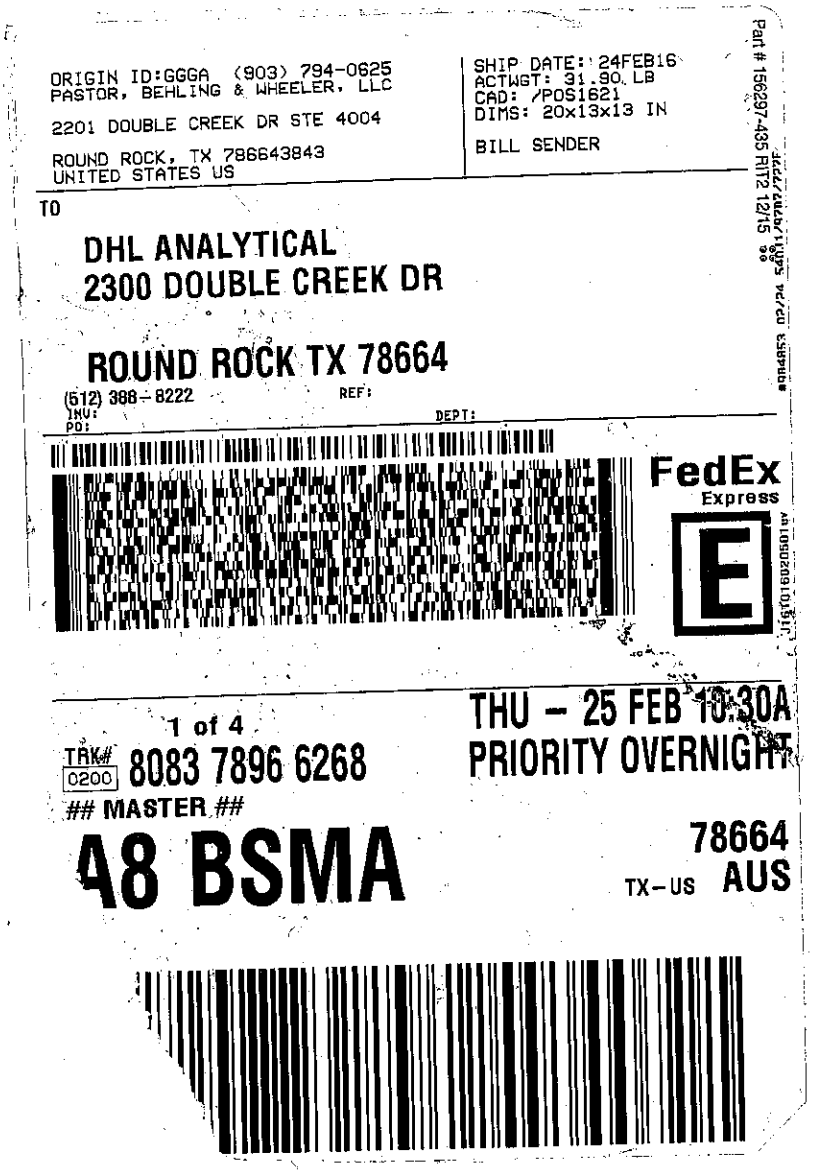
Cheers,

Sara

10/26/2015

ORIGIN ID:GGGA (903) 794-0625
PASTOR, BEHLING & WHEELER, LLC
2201 DOUBLE CREEK DR STE 4004
ROUND ROCK, TX 786643843
UNITED STATES US
SHIP
ACTWG
CAD:
DIMS:
BILL SENDER
TO
DHL ANALYTICAL
2300 DOUBLE CREEK DR
ROUND ROCK TX 78664
(512) 388-8222
INV:
PO:
REF:
DEPT:
FedEx
Express
3 of 4
MPS# 0681 7824 5489 3168
Mstr# 8083 7896 6268
0200
THU - 25 FEB 10:30A
PRIORITY OVERNIGHT
A8 BSMA
78664
TX-US AUS

FZ
10:30 C
3179
02.25
ORIGIN ID:GGGA (903) 794-0625
PASTOR, BEHLING & WHEELER, LLC
2201 DOUBLE CREEK DR STE 4004
ROUND ROCK, TX 786643843
UNITED STATES US
CAD: /POSIBC
DIMS: 24x13x13 IN
BILL SENDER
TO
DHL ANALYTICAL
2300 DOUBLE CREEK DR
ROUND ROCK TX 78664
(612) 388-6222
REF:
INV:
PO:
DEPT
FedEx
Express
4 of 4
MPS# 7824 5489 3179
0681
Mstr# 8083 7896 6268
0200
THU - 25 FEB 10:30A
PRIORITY OVERNIGHT
78664
TX-US AUS
A8 BSMA


ORIGIN ID:GGGA (903) 794-0625
PASTOR, BEHLING & WHEELER, LLC
2201 DOUBLE CREEK DR STE 4004
ROUND ROCK, TX 786643843
UNITED STATES US
SHIP DATE: 24FEB16
ACTWGT: 31.90 LB
CAD: /POS1621
DIMS: 20x13x13 IN
BILL SENDER
TO
DHL ANALYTICAL
2300 DOUBLE CREEK DR
ROUND ROCK TX 78664
(512) 388-8222
REF:
INV:
PO:
DEPT:
FedEx
Express
1 of 4
TRK# 0200 8083 7896 6268
MASTER
THU - 25 FEB 10:30A
PRIORITY OVERNIGHT
48 BSMA
78664
TX-US AUS

DHL Analytical, Inc.

Sample Receipt Checklist

Client Name **Pastor, Behling & Wheeler** Date Received: **2/25/2016**

Work Order Number **1602269** Received by **JB**

Checklist completed by: 2/25/2016 (Signature / Date) Reviewed by (PL) 2/25/2016 (Initials / Date)

Carrier name FedEx 1day

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	1.9 °C 5.3.1.B
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH<2 acceptable upon receipt?	Yes ☑	No ☐	NA ☐ LOT # 8086
	Adjusted? NO		Checked by
Water - ph>9 (S) or ph>12 (CN) acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted?		Checked by

Any No response must be detailed in the comments section below.

Client contacted _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments: _____

Corrective Action _____

DHL Analytical, Inc. **Date:** *29-Mar-16*

CLIENT: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake
Lab Order: 1602269

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Method SW6020A - Metals Analysis
Method SW7470A - Mercury Analysis
Method E300 - Anions Analysis
Method M4500-H+ B - pH of a Water Analysis
Method M2540C - TDS Analysis
Sub-contract - Radium-228 and Radium-226 analyses by methods E904.0/SW8469320 Modified and E903.1 Modified. Analyzed at GEL Laboratory.

LOG IN

The samples were received and log-in performed on 2/25/16. A total of 17 samples were received. The samples arrived in good condition and were properly packaged.

METALS ANALYSIS

For Metals analysis performed on 3/7/16 (batches 73869 & 73881) Boron was detected below the reporting limit in the method blanks (MB-73869 & 73878). All associated samples may be biased high for this analyte. No further corrective actions were taken.

For Metals analysis performed on 3/7/16 (batch 73869) the matrix spike and matrix spike duplicate recoveries were above control limits for Boron. These are flagged accordingly in the QC summary report. The sample selected for the matrix spike and matrix spike duplicate was not from this work order. The LCS was within control limits for this analyte. No further corrective actions were taken.

For Metals analysis performed on 3/4/16 (batch 73869) the RPD for the serial dilution was above control limits for Lead. This is flagged accordingly. The PDS was within control limits for this analyte. No further corrective actions were taken.

For Metals analysis performed on 3/3/16 (batch 73881) the PDS recovery was slightly below control limits for Calcium. This is flagged accordingly. The serial dilution was within control limits for this analyte. No further corrective actions were taken.

MERCURY ANALYSIS

For Mercury analysis performed on 3/8/16 (batch 73953) the LCS/LCSD had the RPD slightly above control limits. This is flagged accordingly in the QC summary report. The percent recoveries were within control limits. No further corrective actions were taken.

ANIONS ANALYSIS

For Anions analysis performed on 3/3/16 (batch 73960) the matrix spike and matrix spike duplicate recoveries (1602269-01 MS/MSD) were slightly above control limits for Sulfate. These are flagged accordingly in the QC summary report. The sample selected for the matrix spike and matrix spike duplicate was from this work order. The LCS was within control limits for this analyte. No further corrective actions were taken.

TDS ANALYSIS

For TDS analysis performed on 2/26/16 (batch 73878) TDS was detected below the reporting limit in the method blank (MB-73878). All associated samples were detected greater than 10 times the amount in the blank. No further corrective actions were taken.

DHL Analytical, Inc.

Date: *29-Mar-16*

CLIENT: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake
Lab Order: 1602269

Work Order Sample Summary

Lab Smp ID	Client Sample ID	Tag Number	Date Collected	Date Recved
1602269-01	MW-19		02/24/16 12:10 PM	2/25/2016
1602269-02	PDP-22		02/24/16 11:15 AM	2/25/2016
1602269-03	MW-18A		02/24/16 10:15 AM	2/25/2016
1602269-04	PDP-26		02/24/16 09:10 AM	2/25/2016
1602269-05	MW-20A		02/24/16 08:10 AM	2/25/2016
1602269-06	H-30		02/23/16 12:20 PM	2/25/2016
1602269-07	H-33		02/23/16 11:25 AM	2/25/2016
1602269-08	H-26		02/23/16 10:35 AM	2/25/2016
1602269-09	H-31		02/23/16 11:25 AM	2/25/2016
1602269-10	H-32		02/23/16 12:35 PM	2/25/2016
1602269-11	H-28		02/23/16 03:30 PM	2/25/2016
1602269-12	H-29		02/23/16 04:20 PM	2/25/2016
1602269-13	H-27		02/23/16 05:30 PM	2/25/2016
1602269-14	PDP-23		02/24/16 09:45 AM	2/25/2016
1602269-15	PDP-25		02/24/16 10:55 AM	2/25/2016
1602269-16	MW-17A		02/24/16 12:00 PM	2/25/2016
1602269-17	PDP-24		02/24/16 02:30 PM	2/25/2016

Lab Order: 1602269
Client: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1602269-01A	MW-19	02/24/16 12:10 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/26/16 08:39 AM	73869
	MW-19	02/24/16 12:10 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/26/16 08:39 AM	73869
	MW-19	02/24/16 12:10 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/26/16 08:39 AM	73869
	MW-19	02/24/16 12:10 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	03/02/16 01:57 PM	73953
1602269-01D	MW-19	02/24/16 12:10 PM	Aqueous	E300	Anion Preparation	03/03/16 08:45 AM	73960
	MW-19	02/24/16 12:10 PM	Aqueous	E300	Anion Preparation	03/03/16 08:45 AM	73960
	MW-19	02/24/16 12:10 PM	Aqueous	M4500-H+ B	pH Preparation	02/26/16 08:07 AM	73868
	MW-19	02/24/16 12:10 PM	Aqueous	M2540C	TDS Preparation	02/26/16 10:17 AM	73878
1602269-02A	PDP-22	02/24/16 11:15 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/26/16 08:39 AM	73869
	PDP-22	02/24/16 11:15 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/26/16 08:39 AM	73869
	PDP-22	02/24/16 11:15 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/26/16 08:39 AM	73869
	PDP-22	02/24/16 11:15 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	03/02/16 09:00 AM	73940
1602269-02D	PDP-22	02/24/16 11:15 AM	Aqueous	E300	Anion Preparation	03/03/16 08:45 AM	73960
	PDP-22	02/24/16 11:15 AM	Aqueous	E300	Anion Preparation	03/03/16 08:45 AM	73960
	PDP-22	02/24/16 11:15 AM	Aqueous	M4500-H+ B	pH Preparation	02/26/16 08:07 AM	73868
	PDP-22	02/24/16 11:15 AM	Aqueous	M2540C	TDS Preparation	02/26/16 10:17 AM	73878
1602269-03A	MW-18A	02/24/16 10:15 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/26/16 08:39 AM	73869
	MW-18A	02/24/16 10:15 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/26/16 08:39 AM	73869
	MW-18A	02/24/16 10:15 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	03/02/16 09:00 AM	73940
1602269-03D	MW-18A	02/24/16 10:15 AM	Aqueous	E300	Anion Preparation	03/03/16 08:45 AM	73960
	MW-18A	02/24/16 10:15 AM	Aqueous	M4500-H+ B	pH Preparation	02/26/16 08:07 AM	73868
	MW-18A	02/24/16 10:15 AM	Aqueous	M2540C	TDS Preparation	02/26/16 10:17 AM	73878
1602269-04A	PDP-26	02/24/16 09:10 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/26/16 08:39 AM	73869
	PDP-26	02/24/16 09:10 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/26/16 08:39 AM	73869
	PDP-26	02/24/16 09:10 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	03/02/16 09:00 AM	73940
1602269-04D	PDP-26	02/24/16 09:10 AM	Aqueous	E300	Anion Preparation	03/03/16 08:45 AM	73960
	PDP-26	02/24/16 09:10 AM	Aqueous	M4500-H+ B	pH Preparation	02/26/16 08:07 AM	73868
	PDP-26	02/24/16 09:10 AM	Aqueous	M2540C	TDS Preparation	02/26/16 10:17 AM	73878

Lab Order: 1602269
Client: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1602269-05A	MW-20A	02/24/16 08:10 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/26/16 08:39 AM	73869
	MW-20A	02/24/16 08:10 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/26/16 08:39 AM	73869
	MW-20A	02/24/16 08:10 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	03/02/16 09:00 AM	73940
1602269-05D	MW-20A	02/24/16 08:10 AM	Aqueous	E300	Anion Preparation	03/03/16 08:45 AM	73960
	MW-20A	02/24/16 08:10 AM	Aqueous	M4500-H+ B	pH Preparation	02/26/16 08:07 AM	73868
	MW-20A	02/24/16 08:10 AM	Aqueous	M2540C	TDS Preparation	02/26/16 10:17 AM	73878
1602269-06A	H-30	02/23/16 12:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/26/16 08:39 AM	73869
	H-30	02/23/16 12:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/26/16 08:39 AM	73869
	H-30	02/23/16 12:20 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	03/02/16 09:00 AM	73940
1602269-06D	H-30	02/23/16 12:20 PM	Aqueous	E300	Anion Preparation	03/03/16 08:45 AM	73960
	H-30	02/23/16 12:20 PM	Aqueous	E300	Anion Preparation	03/03/16 08:45 AM	73960
	H-30	02/23/16 12:20 PM	Aqueous	M4500-H+ B	pH Preparation	02/26/16 08:07 AM	73868
	H-30	02/23/16 12:20 PM	Aqueous	M2540C	TDS Preparation	02/26/16 10:17 AM	73878
1602269-07A	H-33	02/23/16 11:25 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/26/16 08:39 AM	73869
	H-33	02/23/16 11:25 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/26/16 08:39 AM	73869
	H-33	02/23/16 11:25 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	03/02/16 09:00 AM	73940
1602269-07D	H-33	02/23/16 11:25 AM	Aqueous	E300	Anion Preparation	03/03/16 08:45 AM	73960
	H-33	02/23/16 11:25 AM	Aqueous	E300	Anion Preparation	03/03/16 08:45 AM	73960
	H-33	02/23/16 11:25 AM	Aqueous	M4500-H+ B	pH Preparation	02/26/16 08:07 AM	73868
	H-33	02/23/16 11:25 AM	Aqueous	M2540C	TDS Preparation	02/26/16 10:17 AM	73878
1602269-08A	H-26	02/23/16 10:35 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/26/16 11:11 AM	73881
	H-26	02/23/16 10:35 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/26/16 11:11 AM	73881
	H-26	02/23/16 10:35 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	03/02/16 09:00 AM	73940
1602269-08D	H-26	02/23/16 10:35 AM	Aqueous	E300	Anion Preparation	03/03/16 08:45 AM	73960
	H-26	02/23/16 10:35 AM	Aqueous	M4500-H+ B	pH Preparation	02/26/16 08:07 AM	73868
	H-26	02/23/16 10:35 AM	Aqueous	M2540C	TDS Preparation	02/26/16 10:17 AM	73878
1602269-09A	H-31	02/23/16 11:25 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/26/16 11:11 AM	73881
	H-31	02/23/16 11:25 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/26/16 11:11 AM	73881

Lab Order: 1602269
Client: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1602269-09A	H-31	02/23/16 11:25 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	03/02/16 01:57 PM	73953
1602269-09D	H-31	02/23/16 11:25 AM	Aqueous	E300	Anion Preparation	03/03/16 08:45 AM	73960
	H-31	02/23/16 11:25 AM	Aqueous	E300	Anion Preparation	03/03/16 08:45 AM	73960
	H-31	02/23/16 11:25 AM	Aqueous	M4500-H+ B	pH Preparation	02/26/16 08:07 AM	73868
	H-31	02/23/16 11:25 AM	Aqueous	M2540C	TDS Preparation	02/29/16 09:40 AM	73900
1602269-10A	H-32	02/23/16 12:35 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/26/16 11:11 AM	73881
	H-32	02/23/16 12:35 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/26/16 11:11 AM	73881
	H-32	02/23/16 12:35 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/26/16 11:11 AM	73881
	H-32	02/23/16 12:35 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	03/02/16 01:57 PM	73953
1602269-10D	H-32	02/23/16 12:35 PM	Aqueous	E300	Anion Preparation	03/03/16 08:45 AM	73960
	H-32	02/23/16 12:35 PM	Aqueous	E300	Anion Preparation	03/03/16 08:45 AM	73960
	H-32	02/23/16 12:35 PM	Aqueous	M4500-H+ B	pH Preparation	02/26/16 08:07 AM	73868
	H-32	02/23/16 12:35 PM	Aqueous	M2540C	TDS Preparation	02/29/16 09:40 AM	73900
1602269-11A	H-28	02/23/16 03:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/26/16 11:11 AM	73881
	H-28	02/23/16 03:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/26/16 11:11 AM	73881
	H-28	02/23/16 03:30 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	03/02/16 01:57 PM	73953
1602269-11D	H-28	02/23/16 03:30 PM	Aqueous	E300	Anion Preparation	03/03/16 08:45 AM	73960
	H-28	02/23/16 03:30 PM	Aqueous	E300	Anion Preparation	03/03/16 08:45 AM	73960
	H-28	02/23/16 03:30 PM	Aqueous	M4500-H+ B	pH Preparation	02/26/16 08:07 AM	73868
	H-28	02/23/16 03:30 PM	Aqueous	M2540C	TDS Preparation	02/29/16 09:40 AM	73900
1602269-12A	H-29	02/23/16 04:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/26/16 11:11 AM	73881
	H-29	02/23/16 04:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/26/16 11:11 AM	73881
	H-29	02/23/16 04:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/26/16 11:11 AM	73881
	H-29	02/23/16 04:20 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	03/02/16 01:57 PM	73953
1602269-12D	H-29	02/23/16 04:20 PM	Aqueous	E300	Anion Preparation	03/03/16 08:45 AM	73960
	H-29	02/23/16 04:20 PM	Aqueous	E300	Anion Preparation	03/03/16 08:45 AM	73960
	H-29	02/23/16 04:20 PM	Aqueous	M4500-H+ B	pH Preparation	02/26/16 08:07 AM	73868
	H-29	02/23/16 04:20 PM	Aqueous	M2540C	TDS Preparation	02/29/16 09:40 AM	73900

Lab Order: 1602269
Client: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1602269-13A	H-27	02/23/16 05:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/26/16 11:11 AM	73881
	H-27	02/23/16 05:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/26/16 11:11 AM	73881
	H-27	02/23/16 05:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/26/16 11:11 AM	73881
	H-27	02/23/16 05:30 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	03/02/16 01:57 PM	73953
1602269-13D	H-27	02/23/16 05:30 PM	Aqueous	E300	Anion Preparation	03/03/16 08:45 AM	73960
	H-27	02/23/16 05:30 PM	Aqueous	E300	Anion Preparation	03/03/16 08:45 AM	73960
	H-27	02/23/16 05:30 PM	Aqueous	M4500-H+ B	pH Preparation	02/26/16 08:07 AM	73868
	H-27	02/23/16 05:30 PM	Aqueous	M2540C	TDS Preparation	02/29/16 09:40 AM	73900
1602269-14A	PDP-23	02/24/16 09:45 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/26/16 11:11 AM	73881
	PDP-23	02/24/16 09:45 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/26/16 11:11 AM	73881
	PDP-23	02/24/16 09:45 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	03/02/16 01:57 PM	73953
1602269-14D	PDP-23	02/24/16 09:45 AM	Aqueous	E300	Anion Preparation	03/03/16 08:45 AM	73960
	PDP-23	02/24/16 09:45 AM	Aqueous	M4500-H+ B	pH Preparation	02/26/16 10:40 AM	73880
	PDP-23	02/24/16 09:45 AM	Aqueous	M2540C	TDS Preparation	02/29/16 09:40 AM	73900
1602269-15A	PDP-25	02/24/16 10:55 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/26/16 11:11 AM	73881
	PDP-25	02/24/16 10:55 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/26/16 11:11 AM	73881
	PDP-25	02/24/16 10:55 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/26/16 11:11 AM	73881
	PDP-25	02/24/16 10:55 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	03/02/16 01:57 PM	73953
1602269-15D	PDP-25	02/24/16 10:55 AM	Aqueous	E300	Anion Preparation	03/03/16 08:45 AM	73960
	PDP-25	02/24/16 10:55 AM	Aqueous	E300	Anion Preparation	03/03/16 08:45 AM	73960
	PDP-25	02/24/16 10:55 AM	Aqueous	M4500-H+ B	pH Preparation	02/26/16 10:40 AM	73880
	PDP-25	02/24/16 10:55 AM	Aqueous	M2540C	TDS Preparation	02/29/16 09:40 AM	73900
1602269-16A	MW-17A	02/24/16 12:00 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/26/16 11:11 AM	73881
	MW-17A	02/24/16 12:00 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/26/16 11:11 AM	73881
	MW-17A	02/24/16 12:00 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	03/02/16 01:57 PM	73953
1602269-16D	MW-17A	02/24/16 12:00 PM	Aqueous	E300	Anion Preparation	03/03/16 08:45 AM	73960
	MW-17A	02/24/16 12:00 PM	Aqueous	M4500-H+ B	pH Preparation	02/26/16 10:40 AM	73880
	MW-17A	02/24/16 12:00 PM	Aqueous	M2540C	TDS Preparation	02/29/16 09:40 AM	73900

Lab Order: 1602269
Client: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1602269-17A	PDP-24	02/24/16 02:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/26/16 11:11 AM	73881
	PDP-24	02/24/16 02:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/26/16 11:11 AM	73881
	PDP-24	02/24/16 02:30 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	03/02/16 01:57 PM	73953
1602269-17D	PDP-24	02/24/16 02:30 PM	Aqueous	E300	Anion Preparation	03/03/16 08:45 AM	73960
	PDP-24	02/24/16 02:30 PM	Aqueous	E300	Anion Preparation	03/03/16 08:45 AM	73960
	PDP-24	02/24/16 02:30 PM	Aqueous	M4500-H+ B	pH Preparation	02/26/16 10:40 AM	73880
	PDP-24	02/24/16 02:30 PM	Aqueous	M2540C	TDS Preparation	02/29/16 09:40 AM	73900

Lab Order: 1602269
Client: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1602269-01A	MW-19	Aqueous	SW7470A	Mercury Total: Aqueous	73953	1	03/08/16 10:54 AM	CETAC2_HG_160308C
	MW-19	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73869	1	03/04/16 08:49 PM	ICP-MS4_160304C
	MW-19	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73869	1	03/07/16 06:52 PM	ICP-MS4_160307A
	MW-19	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73869	10	03/07/16 07:38 PM	ICP-MS4_160307A
1602269-01D	MW-19	Aqueous	E300	Anions by IC method - Water	73960	1	03/03/16 10:07 AM	IC2_160303A
	MW-19	Aqueous	E300	Anions by IC method - Water	73960	10	03/03/16 03:45 PM	IC2_160303A
	MW-19	Aqueous	M4500-H+ B	pH	73868	1	02/26/16 09:16 AM	TITRATOR_160226A
	MW-19	Aqueous	M2540C	Total Dissolved Solids	73878	1	02/29/16 08:55 AM	WC_160226B
1602269-02A	PDP-22	Aqueous	SW7470A	Mercury Total: Aqueous	73940	1	03/03/16 11:59 AM	CETAC2_HG_160303A
	PDP-22	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73869	1	03/04/16 08:51 PM	ICP-MS4_160304C
	PDP-22	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73869	1	03/07/16 06:53 PM	ICP-MS4_160307A
	PDP-22	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73869	10	03/07/16 07:40 PM	ICP-MS4_160307A
1602269-02D	PDP-22	Aqueous	E300	Anions by IC method - Water	73960	10	03/03/16 04:29 PM	IC2_160303A
	PDP-22	Aqueous	E300	Anions by IC method - Water	73960	1	03/03/16 10:22 AM	IC2_160303A
	PDP-22	Aqueous	M4500-H+ B	pH	73868	1	02/26/16 09:18 AM	TITRATOR_160226A
	PDP-22	Aqueous	M2540C	Total Dissolved Solids	73878	1	02/29/16 08:55 AM	WC_160226B
1602269-03A	MW-18A	Aqueous	SW7470A	Mercury Total: Aqueous	73940	1	03/03/16 12:10 PM	CETAC2_HG_160303A
	MW-18A	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73869	1	03/04/16 08:53 PM	ICP-MS4_160304C
	MW-18A	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73869	1	03/07/16 07:42 PM	ICP-MS4_160307A
1602269-03D	MW-18A	Aqueous	E300	Anions by IC method - Water	73960	1	03/03/16 10:37 AM	IC2_160303A
	MW-18A	Aqueous	M4500-H+ B	pH	73868	1	02/26/16 09:21 AM	TITRATOR_160226A
	MW-18A	Aqueous	M2540C	Total Dissolved Solids	73878	1	02/29/16 08:55 AM	WC_160226B
1602269-04A	PDP-26	Aqueous	SW7470A	Mercury Total: Aqueous	73940	1	03/03/16 12:12 PM	CETAC2_HG_160303A
	PDP-26	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73869	1	03/04/16 08:55 PM	ICP-MS4_160304C
	PDP-26	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73869	1	03/07/16 07:44 PM	ICP-MS4_160307A
1602269-04D	PDP-26	Aqueous	E300	Anions by IC method - Water	73960	1	03/03/16 10:51 AM	IC2_160303A

Lab Order: 1602269
Client: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1602269-04D	PDP-26	Aqueous	M4500-H+ B	pH	73868	1	02/26/16 09:23 AM	TITRATOR_160226A
	PDP-26	Aqueous	M2540C	Total Dissolved Solids	73878	1	02/29/16 08:55 AM	WC_160226B
1602269-05A	MW-20A	Aqueous	SW7470A	Mercury Total: Aqueous	73940	1	03/03/16 12:15 PM	CETAC2_HG_160303A
	MW-20A	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73869	1	03/07/16 07:46 PM	ICP-MS4_160307A
	MW-20A	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73869	1	03/04/16 08:57 PM	ICP-MS4_160304C
1602269-05D	MW-20A	Aqueous	E300	Anions by IC method - Water	73960	1	03/03/16 11:06 AM	IC2_160303A
	MW-20A	Aqueous	M4500-H+ B	pH	73868	1	02/26/16 09:26 AM	TITRATOR_160226A
	MW-20A	Aqueous	M2540C	Total Dissolved Solids	73878	1	02/29/16 08:55 AM	WC_160226B
1602269-06A	H-30	Aqueous	SW7470A	Mercury Total: Aqueous	73940	1	03/03/16 12:17 PM	CETAC2_HG_160303A
	H-30	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73869	1	03/04/16 08:59 PM	ICP-MS4_160304C
	H-30	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73869	10	03/07/16 07:48 PM	ICP-MS4_160307A
1602269-06D	H-30	Aqueous	E300	Anions by IC method - Water	73960	1	03/03/16 11:22 AM	IC2_160303A
	H-30	Aqueous	E300	Anions by IC method - Water	73960	10	03/03/16 05:13 PM	IC2_160303A
	H-30	Aqueous	M4500-H+ B	pH	73868	1	02/26/16 09:28 AM	TITRATOR_160226A
	H-30	Aqueous	M2540C	Total Dissolved Solids	73878	1	02/29/16 08:55 AM	WC_160226B
1602269-07A	H-33	Aqueous	SW7470A	Mercury Total: Aqueous	73940	1	03/03/16 12:19 PM	CETAC2_HG_160303A
	H-33	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73869	1	03/07/16 07:50 PM	ICP-MS4_160307A
	H-33	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73869	1	03/04/16 09:01 PM	ICP-MS4_160304C
1602269-07D	H-33	Aqueous	E300	Anions by IC method - Water	73960	1	03/03/16 11:37 AM	IC2_160303A
	H-33	Aqueous	E300	Anions by IC method - Water	73960	10	03/03/16 05:42 PM	IC2_160303A
	H-33	Aqueous	M4500-H+ B	pH	73868	1	02/26/16 09:31 AM	TITRATOR_160226A
	H-33	Aqueous	M2540C	Total Dissolved Solids	73878	1	02/29/16 08:55 AM	WC_160226B
1602269-08A	H-26	Aqueous	SW7470A	Mercury Total: Aqueous	73940	1	03/03/16 12:21 PM	CETAC2_HG_160303A
	H-26	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73881	1	03/03/16 07:35 PM	ICP-MS4_160303F
	H-26	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73881	1	03/07/16 02:56 PM	ICP-MS4_160307A
1602269-08D	H-26	Aqueous	E300	Anions by IC method - Water	73960	1	03/03/16 11:51 AM	IC2_160303A

Lab Order: 1602269
Client: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1602269-08D	H-26	Aqueous	M4500-H+ B	pH	73868	1	02/26/16 09:33 AM	TITRATOR_160226A
	H-26	Aqueous	M2540C	Total Dissolved Solids	73878	1	02/29/16 08:55 AM	WC_160226B
1602269-09A	H-31	Aqueous	SW7470A	Mercury Total: Aqueous	73953	1	03/08/16 10:56 AM	CETAC2_HG_160308C
	H-31	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73881	1	03/03/16 07:45 PM	ICP-MS4_160303F
	H-31	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73881	50	03/07/16 03:00 PM	ICP-MS4_160307A
1602269-09D	H-31	Aqueous	E300	Anions by IC method - Water	73960	100	03/03/16 05:57 PM	IC2_160303A
	H-31	Aqueous	E300	Anions by IC method - Water	73960	1	03/03/16 12:06 PM	IC2_160303A
	H-31	Aqueous	M4500-H+ B	pH	73868	1	02/26/16 09:35 AM	TITRATOR_160226A
	H-31	Aqueous	M2540C	Total Dissolved Solids	73900	1	03/01/16 08:43 AM	WC_160229D
1602269-10A	H-32	Aqueous	SW7470A	Mercury Total: Aqueous	73953	1	03/08/16 10:59 AM	CETAC2_HG_160308C
	H-32	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73881	1	03/03/16 07:47 PM	ICP-MS4_160303F
	H-32	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73881	1	03/07/16 03:02 PM	ICP-MS4_160307A
	H-32	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73881	10	03/07/16 04:52 PM	ICP-MS4_160307A
1602269-10D	H-32	Aqueous	E300	Anions by IC method - Water	73960	1	03/03/16 12:53 PM	IC2_160303A
	H-32	Aqueous	E300	Anions by IC method - Water	73960	10	03/03/16 06:11 PM	IC2_160303A
	H-32	Aqueous	M4500-H+ B	pH	73868	1	02/26/16 09:37 AM	TITRATOR_160226A
	H-32	Aqueous	M2540C	Total Dissolved Solids	73900	1	03/01/16 08:43 AM	WC_160229D
1602269-11A	H-28	Aqueous	SW7470A	Mercury Total: Aqueous	73953	1	03/08/16 11:01 AM	CETAC2_HG_160308C
	H-28	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73881	1	03/03/16 07:49 PM	ICP-MS4_160303F
	H-28	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73881	10	03/07/16 03:04 PM	ICP-MS4_160307A
1602269-11D	H-28	Aqueous	E300	Anions by IC method - Water	73960	10	03/03/16 06:26 PM	IC2_160303A
	H-28	Aqueous	E300	Anions by IC method - Water	73960	1	03/03/16 01:07 PM	IC2_160303A
	H-28	Aqueous	M4500-H+ B	pH	73868	1	02/26/16 09:38 AM	TITRATOR_160226A
	H-28	Aqueous	M2540C	Total Dissolved Solids	73900	1	03/01/16 08:43 AM	WC_160229D
1602269-12A	H-29	Aqueous	SW7470A	Mercury Total: Aqueous	73953	1	03/08/16 11:03 AM	CETAC2_HG_160308C
	H-29	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73881	1	03/03/16 07:51 PM	ICP-MS4_160303F

Lab Order: 1602269
Client: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1602269-12A	H-29	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73881	1	03/07/16 03:06 PM	ICP-MS4_160307A
	H-29	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73881	10	03/07/16 04:54 PM	ICP-MS4_160307A
1602269-12D	H-29	Aqueous	E300	Anions by IC method - Water	73960	1	03/03/16 01:22 PM	IC2_160303A
	H-29	Aqueous	E300	Anions by IC method - Water	73960	10	03/03/16 06:55 PM	IC2_160303A
	H-29	Aqueous	M4500-H+ B	pH	73868	1	02/26/16 09:42 AM	TITRATOR_160226A
	H-29	Aqueous	M2540C	Total Dissolved Solids	73900	1	03/01/16 08:43 AM	WC_160229D
1602269-13A	H-27	Aqueous	SW7470A	Mercury Total: Aqueous	73953	1	03/08/16 11:06 AM	CETAC2_HG_160308C
	H-27	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73881	1	03/03/16 07:53 PM	ICP-MS4_160303F
	H-27	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73881	1	03/07/16 03:08 PM	ICP-MS4_160307A
	H-27	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73881	10	03/07/16 04:56 PM	ICP-MS4_160307A
1602269-13D	H-27	Aqueous	E300	Anions by IC method - Water	73960	1	03/03/16 01:36 PM	IC2_160303A
	H-27	Aqueous	E300	Anions by IC method - Water	73960	10	03/03/16 07:39 PM	IC2_160303A
	H-27	Aqueous	M4500-H+ B	pH	73868	1	02/26/16 09:45 AM	TITRATOR_160226A
	H-27	Aqueous	M2540C	Total Dissolved Solids	73900	1	03/01/16 08:43 AM	WC_160229D
1602269-14A	PDP-23	Aqueous	SW7470A	Mercury Total: Aqueous	73953	1	03/08/16 11:08 AM	CETAC2_HG_160308C
	PDP-23	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73881	1	03/03/16 07:55 PM	ICP-MS4_160303F
	PDP-23	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73881	1	03/07/16 03:10 PM	ICP-MS4_160307A
1602269-14D	PDP-23	Aqueous	E300	Anions by IC method - Water	73960	1	03/03/16 01:51 PM	IC2_160303A
	PDP-23	Aqueous	M4500-H+ B	pH	73880	1	02/26/16 11:02 AM	TITRATOR_160226B
	PDP-23	Aqueous	M2540C	Total Dissolved Solids	73900	1	03/01/16 08:43 AM	WC_160229D
1602269-15A	PDP-25	Aqueous	SW7470A	Mercury Total: Aqueous	73953	1	03/08/16 11:11 AM	CETAC2_HG_160308C
	PDP-25	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73881	1	03/03/16 08:11 PM	ICP-MS4_160303F
	PDP-25	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73881	1	03/07/16 03:13 PM	ICP-MS4_160307A
	PDP-25	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73881	10	03/07/16 06:49 PM	ICP-MS4_160307A
1602269-15D	PDP-25	Aqueous	E300	Anions by IC method - Water	73960	10	03/03/16 07:53 PM	IC2_160303A
	PDP-25	Aqueous	E300	Anions by IC method - Water	73960	1	03/03/16 02:06 PM	IC2_160303A

Lab Order: 1602269
Client: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1602269-15D	PDP-25	Aqueous	M4500-H+ B	pH	73880	1	02/26/16 11:07 AM	TITRATOR_160226B
	PDP-25	Aqueous	M2540C	Total Dissolved Solids	73900	1	03/01/16 08:43 AM	WC_160229D
1602269-16A	MW-17A	Aqueous	SW7470A	Mercury Total: Aqueous	73953	1	03/08/16 11:13 AM	CETAC2_HG_160308C
	MW-17A	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73881	1	03/03/16 08:13 PM	ICP-MS4_160303F
	MW-17A	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73881	1	03/07/16 03:14 PM	ICP-MS4_160307A
1602269-16D	MW-17A	Aqueous	E300	Anions by IC method - Water	73960	1	03/03/16 02:20 PM	IC2_160303A
	MW-17A	Aqueous	M4500-H+ B	pH	73880	1	02/26/16 11:09 AM	TITRATOR_160226B
	MW-17A	Aqueous	M2540C	Total Dissolved Solids	73900	1	03/01/16 08:43 AM	WC_160229D
1602269-17A	PDP-24	Aqueous	SW7470A	Mercury Total: Aqueous	73953	1	03/08/16 11:15 AM	CETAC2_HG_160308C
	PDP-24	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73881	1	03/03/16 08:15 PM	ICP-MS4_160303F
	PDP-24	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	73881	10	03/07/16 03:17 PM	ICP-MS4_160307A
1602269-17D	PDP-24	Aqueous	E300	Anions by IC method - Water	73960	1	03/03/16 02:35 PM	IC2_160303A
	PDP-24	Aqueous	E300	Anions by IC method - Water	73960	10	03/03/16 08:08 PM	IC2_160303A
	PDP-24	Aqueous	M4500-H+ B	pH	73880	1	02/26/16 11:10 AM	TITRATOR_160226B
	PDP-24	Aqueous	M2540C	Total Dissolved Solids	73900	1	03/01/16 08:43 AM	WC_160229D

DHL Analytical, Inc.

Date: *29-Mar-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	MW-19
Project:	Luminant - Martin Lake	**Lab ID:**	1602269-01
Project No:	5164-B	**Collection Date:**	02/24/16 12:10 PM
Lab Order:	1602269	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	03/08/16 10:54 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	03/04/16 08:49 PM
Arsenic	0.0147	0.00200	0.00500		mg/L	1	03/04/16 08:49 PM
Barium	0.0878	0.00300	0.0100		mg/L	1	03/04/16 08:49 PM
Beryllium	0.000679	0.000300	0.00100	J	mg/L	1	03/04/16 08:49 PM
Boron	0.516	0.0100	0.0300		mg/L	1	03/07/16 06:52 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	03/04/16 08:49 PM
Calcium	155	1.00	3.00		mg/L	10	03/07/16 07:38 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	03/04/16 08:49 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	03/04/16 08:49 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	03/04/16 08:49 PM
Lithium	<0.00500	0.00500	0.0100		mg/L	1	03/04/16 08:49 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	03/04/16 08:49 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	03/04/16 08:49 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	03/04/16 08:49 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	30.0	0.300	1.00		mg/L	1	03/03/16 10:07 AM
Fluoride	0.144	0.100	0.400	J	mg/L	1	03/03/16 10:07 AM
Sulfate	372	10.0	30.0		mg/L	10	03/03/16 03:45 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.88	0	0		pH Units@13.9℃	1	02/26/16 09:16 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	978	10.0	10.0		mg/L	1	02/29/16 08:55 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *29-Mar-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	PDP-22
Project:	Luminant - Martin Lake	**Lab ID:**	1602269-02
Project No:	5164-B	**Collection Date:**	02/24/16 11:15 AM
Lab Order:	1602269	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **KL**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	03/03/16 11:59 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	03/04/16 08:51 PM
Arsenic	0.00742	0.00200	0.00500		mg/L	1	03/04/16 08:51 PM
Barium	0.332	0.00300	0.0100		mg/L	1	03/04/16 08:51 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	03/04/16 08:51 PM
Boron	0.250	0.0100	0.0300		mg/L	1	03/07/16 06:53 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	03/04/16 08:51 PM
Calcium	160	1.00	3.00		mg/L	10	03/07/16 07:40 PM
Chromium	0.0375	0.00200	0.00500		mg/L	1	03/04/16 08:51 PM
Cobalt	0.00608	0.00300	0.00500		mg/L	1	03/04/16 08:51 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	03/04/16 08:51 PM
Lithium	0.0229	0.00500	0.0100		mg/L	1	03/04/16 08:51 PM
Molybdenum	0.00213	0.00200	0.00500	J	mg/L	1	03/04/16 08:51 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	03/04/16 08:51 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	03/04/16 08:51 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	16.5	0.300	1.00		mg/L	1	03/03/16 10:22 AM
Fluoride	0.264	0.100	0.400	J	mg/L	1	03/03/16 10:22 AM
Sulfate	211	10.0	30.0		mg/L	10	03/03/16 04:29 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	7.01	0	0		pH Units@14.5℃	1	02/26/16 09:18 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	883	10.0	10.0		mg/L	1	02/29/16 08:55 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *29-Mar-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	MW-18A
Project:	Luminant - Martin Lake	**Lab ID:**	1602269-03
Project No:	5164-B	**Collection Date:**	02/24/16 10:15 AM
Lab Order:	1602269	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **KL**
Mercury	0.00354	0.0000800	0.000200		mg/L	1	03/03/16 12:10 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	03/04/16 08:53 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	03/04/16 08:53 PM
Barium	0.0591	0.00300	0.0100		mg/L	1	03/04/16 08:53 PM
Beryllium	0.000344	0.000300	0.00100	J	mg/L	1	03/04/16 08:53 PM
Boron	0.133	0.0100	0.0300		mg/L	1	03/07/16 07:42 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	03/04/16 08:53 PM
Calcium	1.78	0.100	0.300		mg/L	1	03/04/16 08:53 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	03/04/16 08:53 PM
Cobalt	0.00318	0.00300	0.00500	J	mg/L	1	03/04/16 08:53 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	03/04/16 08:53 PM
Lithium	0.00858	0.00500	0.0100	J	mg/L	1	03/04/16 08:53 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	03/04/16 08:53 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	03/04/16 08:53 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	03/04/16 08:53 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	8.10	0.300	1.00		mg/L	1	03/03/16 10:37 AM
Fluoride	0.104	0.100	0.400	J	mg/L	1	03/03/16 10:37 AM
Sulfate	6.44	1.00	3.00		mg/L	1	03/03/16 10:37 AM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	5.43	0	0		pH Units@14.5℃	1	02/26/16 09:21 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	125	10.0	10.0		mg/L	1	02/29/16 08:55 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *29-Mar-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	PDP-26
Project:	Luminant - Martin Lake	**Lab ID:**	1602269-04
Project No:	5164-B	**Collection Date:**	02/24/16 09:10 AM
Lab Order:	1602269	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **KL**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	03/03/16 12:12 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	03/04/16 08:55 PM
Arsenic	0.00334	0.00200	0.00500	J	mg/L	1	03/04/16 08:55 PM
Barium	0.0277	0.00300	0.0100		mg/L	1	03/04/16 08:55 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	03/04/16 08:55 PM
Boron	0.0446	0.0100	0.0300		mg/L	1	03/07/16 07:44 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	03/04/16 08:55 PM
Calcium	2.33	0.100	0.300		mg/L	1	03/04/16 08:55 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	03/04/16 08:55 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	03/04/16 08:55 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	03/04/16 08:55 PM
Lithium	0.0141	0.00500	0.0100		mg/L	1	03/04/16 08:55 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	03/04/16 08:55 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	03/04/16 08:55 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	03/04/16 08:55 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	5.99	0.300	1.00		mg/L	1	03/03/16 10:51 AM
Fluoride	0.246	0.100	0.400	J	mg/L	1	03/03/16 10:51 AM
Sulfate	10.5	1.00	3.00		mg/L	1	03/03/16 10:51 AM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.56	0	0		pH Units@14.2℃	1	02/26/16 09:23 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	186	10.0	10.0		mg/L	1	02/29/16 08:55 AM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *29-Mar-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	MW-20A
Project:	Luminant - Martin Lake	**Lab ID:**	1602269-05
Project No:	5164-B	**Collection Date:**	02/24/16 08:10 AM
Lab Order:	1602269	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **KL**
Mercury	0.000352	0.0000800	0.000200		mg/L	1	03/03/16 12:15 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	03/04/16 08:57 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	03/04/16 08:57 PM
Barium	0.0289	0.00300	0.0100		mg/L	1	03/04/16 08:57 PM
Beryllium	0.000632	0.000300	0.00100	J	mg/L	1	03/04/16 08:57 PM
Boron	0.159	0.0100	0.0300		mg/L	1	03/07/16 07:46 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	03/04/16 08:57 PM
Calcium	15.4	0.100	0.300		mg/L	1	03/04/16 08:57 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	03/04/16 08:57 PM
Cobalt	0.00539	0.00300	0.00500		mg/L	1	03/04/16 08:57 PM
Lead	0.00166	0.000300	0.00100		mg/L	1	03/04/16 08:57 PM
Lithium	0.0163	0.00500	0.0100		mg/L	1	03/04/16 08:57 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	03/04/16 08:57 PM
Selenium	0.00680	0.00200	0.00500		mg/L	1	03/04/16 08:57 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	03/04/16 08:57 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	10.2	0.300	1.00		mg/L	1	03/03/16 11:06 AM
Fluoride	0.608	0.100	0.400		mg/L	1	03/03/16 11:06 AM
Sulfate	107	1.00	3.00		mg/L	1	03/03/16 11:06 AM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	4.64	0	0		pH Units@14.6℃	1	02/26/16 09:26 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	309	10.0	10.0		mg/L	1	02/29/16 08:55 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *29-Mar-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	H-30
Project:	Luminant - Martin Lake	**Lab ID:**	1602269-06
Project No:	5164-B	**Collection Date:**	02/23/16 12:20 PM
Lab Order:	1602269	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **KL**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	03/03/16 12:17 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	03/04/16 08:59 PM
Arsenic	0.00588	0.00200	0.00500		mg/L	1	03/04/16 08:59 PM
Barium	0.0226	0.00300	0.0100		mg/L	1	03/04/16 08:59 PM
Beryllium	0.00555	0.000300	0.00100		mg/L	1	03/04/16 08:59 PM
Boron	7.28	0.100	0.300		mg/L	10	03/07/16 07:48 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	03/04/16 08:59 PM
Calcium	145	1.00	3.00		mg/L	10	03/07/16 07:48 PM
Chromium	0.00223	0.00200	0.00500	J	mg/L	1	03/04/16 08:59 PM
Cobalt	0.179	0.00300	0.00500		mg/L	1	03/04/16 08:59 PM
Lead	0.00133	0.000300	0.00100		mg/L	1	03/04/16 08:59 PM
Lithium	0.0902	0.00500	0.0100		mg/L	1	03/04/16 08:59 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	03/04/16 08:59 PM
Selenium	0.00937	0.00200	0.00500		mg/L	1	03/04/16 08:59 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	03/04/16 08:59 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	101	3.00	10.0		mg/L	10	03/03/16 05:13 PM
Fluoride	0.251	0.100	0.400	J	mg/L	1	03/03/16 11:22 AM
Sulfate	1150	10.0	30.0		mg/L	10	03/03/16 05:13 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	5.32	0	0		pH Units@14.5℃	1	02/26/16 09:28 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	2400	50.0	50.0		mg/L	1	02/29/16 08:55 AM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *29-Mar-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	H-33
Project:	Luminant - Martin Lake	**Lab ID:**	1602269-07
Project No:	5164-B	**Collection Date:**	02/23/16 11:25 AM
Lab Order:	1602269	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **KL**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	03/03/16 12:19 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	03/04/16 09:01 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	03/04/16 09:01 PM
Barium	0.0529	0.00300	0.0100		mg/L	1	03/04/16 09:01 PM
Beryllium	0.000311	0.000300	0.00100	J	mg/L	1	03/04/16 09:01 PM
Boron	0.0656	0.0100	0.0300		mg/L	1	03/07/16 07:50 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	03/04/16 09:01 PM
Calcium	11.2	0.100	0.300		mg/L	1	03/04/16 09:01 PM
Chromium	0.0194	0.00200	0.00500		mg/L	1	03/04/16 09:01 PM
Cobalt	0.0163	0.00300	0.00500		mg/L	1	03/04/16 09:01 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	03/04/16 09:01 PM
Lithium	0.182	0.00500	0.0100		mg/L	1	03/04/16 09:01 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	03/04/16 09:01 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	03/04/16 09:01 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	03/04/16 09:01 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	56.1	3.00	10.0		mg/L	10	03/03/16 05:42 PM
Fluoride	0.125	0.100	0.400	J	mg/L	1	03/03/16 11:37 AM
Sulfate	111	1.00	3.00		mg/L	1	03/03/16 11:37 AM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.59	0	0		pH Units@15.3℃	1	02/26/16 09:31 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	625	10.0	10.0		mg/L	1	02/29/16 08:55 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *29-Mar-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	H-26
Project:	Luminant - Martin Lake	**Lab ID:**	1602269-08
Project No:	5164-B	**Collection Date:**	02/23/16 10:35 AM
Lab Order:	1602269	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **KL**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	03/03/16 12:21 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	03/03/16 07:35 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	03/03/16 07:35 PM
Barium	0.0423	0.00300	0.0100		mg/L	1	03/03/16 07:35 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	03/03/16 07:35 PM
Boron	0.206	0.0100	0.0300		mg/L	1	03/07/16 02:56 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	03/03/16 07:35 PM
Calcium	11.7	0.100	0.300		mg/L	1	03/03/16 07:35 PM
Chromium	0.00770	0.00200	0.00500		mg/L	1	03/03/16 07:35 PM
Cobalt	0.00813	0.00300	0.00500		mg/L	1	03/03/16 07:35 PM
Lead	0.000315	0.000300	0.00100	J	mg/L	1	03/03/16 07:35 PM
Lithium	0.0124	0.00500	0.0100		mg/L	1	03/03/16 07:35 PM
Molybdenum	0.00248	0.00200	0.00500	J	mg/L	1	03/03/16 07:35 PM
Selenium	0.00220	0.00200	0.00500	J	mg/L	1	03/03/16 07:35 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	03/03/16 07:35 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	17.1	0.300	1.00		mg/L	1	03/03/16 11:51 AM
Fluoride	0.151	0.100	0.400	J	mg/L	1	03/03/16 11:51 AM
Sulfate	54.0	1.00	3.00		mg/L	1	03/03/16 11:51 AM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.58	0	0		pH Units@16.3℃	1	02/26/16 09:33 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	219	10.0	10.0		mg/L	1	02/29/16 08:55 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *29-Mar-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	H-31
Project:	Luminant - Martin Lake	**Lab ID:**	1602269-09
Project No:	5164-B	**Collection Date:**	02/23/16 11:25 AM
Lab Order:	1602269	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	03/08/16 10:56 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	03/03/16 07:45 PM
Arsenic	0.00436	0.00200	0.00500	J	mg/L	1	03/03/16 07:45 PM
Barium	0.0243	0.00300	0.0100		mg/L	1	03/03/16 07:45 PM
Beryllium	0.0101	0.000300	0.00100		mg/L	1	03/03/16 07:45 PM
Boron	22.3	0.500	1.50		mg/L	50	03/07/16 03:00 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	03/03/16 07:45 PM
Calcium	252	5.00	15.0		mg/L	50	03/07/16 03:00 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	03/03/16 07:45 PM
Cobalt	0.0594	0.00300	0.00500		mg/L	1	03/03/16 07:45 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	03/03/16 07:45 PM
Lithium	0.146	0.00500	0.0100		mg/L	1	03/03/16 07:45 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	03/03/16 07:45 PM
Selenium	0.0209	0.00200	0.00500		mg/L	1	03/03/16 07:45 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	03/03/16 07:45 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	199	30.0	100		mg/L	100	03/03/16 05:57 PM
Fluoride	0.921	0.100	0.400		mg/L	1	03/03/16 12:06 PM
Sulfate	2510	100	300		mg/L	100	03/03/16 05:57 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	5.97	0	0		pH Units@16.3℃	1	02/26/16 09:35 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	4180	50.0	50.0		mg/L	1	03/01/16 08:43 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *29-Mar-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	H-32
Project:	Luminant - Martin Lake	**Lab ID:**	1602269-10
Project No:	5164-B	**Collection Date:**	02/23/16 12:35 PM
Lab Order:	1602269	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	03/08/16 10:59 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	03/03/16 07:47 PM
Arsenic	0.00712	0.00200	0.00500		mg/L	1	03/03/16 07:47 PM
Barium	0.0277	0.00300	0.0100		mg/L	1	03/03/16 07:47 PM
Beryllium	0.00452	0.000300	0.00100		mg/L	1	03/03/16 07:47 PM
Boron	1.48	0.0100	0.0300		mg/L	1	03/07/16 03:02 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	03/03/16 07:47 PM
Calcium	45.3	1.00	3.00		mg/L	10	03/07/16 04:52 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	03/03/16 07:47 PM
Cobalt	0.188	0.00300	0.00500		mg/L	1	03/03/16 07:47 PM
Lead	0.000326	0.000300	0.00100	J	mg/L	1	03/03/16 07:47 PM
Lithium	0.0821	0.00500	0.0100		mg/L	1	03/03/16 07:47 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	03/03/16 07:47 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	03/03/16 07:47 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	03/03/16 07:47 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	123	3.00	10.0		mg/L	10	03/03/16 06:11 PM
Fluoride	0.701	0.100	0.400		mg/L	1	03/03/16 12:53 PM
Sulfate	323	10.0	30.0		mg/L	10	03/03/16 06:11 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	5.53	0	0		pH Units@16.4℃	1	02/26/16 09:37 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	842	10.0	10.0		mg/L	1	03/01/16 08:43 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *29-Mar-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	H-28
Project:	Luminant - Martin Lake	**Lab ID:**	1602269-11
Project No:	5164-B	**Collection Date:**	02/23/16 03:30 PM
Lab Order:	1602269	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	03/08/16 11:01 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	03/03/16 07:49 PM
Arsenic	0.00225	0.00200	0.00500	J	mg/L	1	03/03/16 07:49 PM
Barium	0.0202	0.00300	0.0100		mg/L	1	03/03/16 07:49 PM
Beryllium	0.00133	0.000300	0.00100		mg/L	1	03/03/16 07:49 PM
Boron	10.2	0.100	0.300		mg/L	10	03/07/16 03:04 PM
Cadmium	0.00151	0.000300	0.00100		mg/L	1	03/03/16 07:49 PM
Calcium	123	1.00	3.00		mg/L	10	03/07/16 03:04 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	03/03/16 07:49 PM
Cobalt	0.201	0.00300	0.00500		mg/L	1	03/03/16 07:49 PM
Lead	0.000530	0.000300	0.00100	J	mg/L	1	03/03/16 07:49 PM
Lithium	0.159	0.00500	0.0100		mg/L	1	03/03/16 07:49 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	03/03/16 07:49 PM
Selenium	0.00222	0.00200	0.00500	J	mg/L	1	03/03/16 07:49 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	03/03/16 07:49 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	97.4	3.00	10.0		mg/L	10	03/03/16 06:26 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	03/03/16 01:07 PM
Sulfate	1070	10.0	30.0		mg/L	10	03/03/16 06:26 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	5.25	0	0		pH Units@17℃	1	02/26/16 09:38 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	1910	50.0	50.0		mg/L	1	03/01/16 08:43 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *29-Mar-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	H-29
Project:	Luminant - Martin Lake	**Lab ID:**	1602269-12
Project No:	5164-B	**Collection Date:**	02/23/16 04:20 PM
Lab Order:	1602269	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	03/08/16 11:03 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	03/03/16 07:51 PM
Arsenic	0.00203	0.00200	0.00500	J	mg/L	1	03/03/16 07:51 PM
Barium	0.151	0.00300	0.0100		mg/L	1	03/03/16 07:51 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	03/03/16 07:51 PM
Boron	0.268	0.0100	0.0300		mg/L	1	03/07/16 03:06 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	03/03/16 07:51 PM
Calcium	59.4	1.00	3.00		mg/L	10	03/07/16 04:54 PM
Chromium	0.0190	0.00200	0.00500		mg/L	1	03/03/16 07:51 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	03/03/16 07:51 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	03/03/16 07:51 PM
Lithium	0.0135	0.00500	0.0100		mg/L	1	03/03/16 07:51 PM
Molybdenum	0.00603	0.00200	0.00500		mg/L	1	03/03/16 07:51 PM
Selenium	0.0148	0.00200	0.00500		mg/L	1	03/03/16 07:51 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	03/03/16 07:51 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	14.6	0.300	1.00		mg/L	1	03/03/16 01:22 PM
Fluoride	0.239	0.100	0.400	J	mg/L	1	03/03/16 01:22 PM
Sulfate	156	10.0	30.0		mg/L	10	03/03/16 06:55 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	10.7	0	0		pH Units@17.4℃	1	02/26/16 09:42 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	334	10.0	10.0		mg/L	1	03/01/16 08:43 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *29-Mar-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	H-27
Project:	Luminant - Martin Lake	**Lab ID:**	1602269-13
Project No:	5164-B	**Collection Date:**	02/23/16 05:30 PM
Lab Order:	1602269	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	03/08/16 11:06 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	03/03/16 07:53 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	03/03/16 07:53 PM
Barium	0.0266	0.00300	0.0100		mg/L	1	03/03/16 07:53 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	03/03/16 07:53 PM
Boron	0.523	0.0100	0.0300		mg/L	1	03/07/16 03:08 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	03/03/16 07:53 PM
Calcium	53.8	1.00	3.00		mg/L	10	03/07/16 04:56 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	03/03/16 07:53 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	03/03/16 07:53 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	03/03/16 07:53 PM
Lithium	0.0601	0.00500	0.0100		mg/L	1	03/03/16 07:53 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	03/03/16 07:53 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	03/03/16 07:53 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	03/03/16 07:53 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	113	3.00	10.0		mg/L	10	03/03/16 07:39 PM
Fluoride	0.101	0.100	0.400	J	mg/L	1	03/03/16 01:36 PM
Sulfate	344	10.0	30.0		mg/L	10	03/03/16 07:39 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.54	0	0		pH Units@17.8℃	1	02/26/16 09:45 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	811	10.0	10.0		mg/L	1	03/01/16 08:43 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *29-Mar-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	PDP-23
Project:	Luminant - Martin Lake	**Lab ID:**	1602269-14
Project No:	5164-B	**Collection Date:**	02/24/16 09:45 AM
Lab Order:	1602269	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	03/08/16 11:08 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	03/03/16 07:55 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	03/03/16 07:55 PM
Barium	0.0433	0.00300	0.0100		mg/L	1	03/03/16 07:55 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	03/03/16 07:55 PM
Boron	0.0556	0.0100	0.0300		mg/L	1	03/07/16 03:10 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	03/03/16 07:55 PM
Calcium	1.61	0.100	0.300		mg/L	1	03/03/16 07:55 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	03/03/16 07:55 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	03/03/16 07:55 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	03/03/16 07:55 PM
Lithium	0.0115	0.00500	0.0100		mg/L	1	03/03/16 07:55 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	03/03/16 07:55 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	03/03/16 07:55 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	03/03/16 07:55 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	5.63	0.300	1.00		mg/L	1	03/03/16 01:51 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	03/03/16 01:51 PM
Sulfate	2.52	1.00	3.00	J	mg/L	1	03/03/16 01:51 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	5.76	0	0		pH Units@16.3℃	1	02/26/16 11:02 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	60.0	10.0	10.0		mg/L	1	03/01/16 08:43 AM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *29-Mar-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	PDP-25
Project:	Luminant - Martin Lake	**Lab ID:**	1602269-15
Project No:	5164-B	**Collection Date:**	02/24/16 10:55 AM
Lab Order:	1602269	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	03/08/16 11:11 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	03/03/16 08:11 PM
Arsenic	0.00239	0.00200	0.00500	J	mg/L	1	03/03/16 08:11 PM
Barium	0.218	0.00300	0.0100		mg/L	1	03/03/16 08:11 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	03/03/16 08:11 PM
Boron	0.113	0.0100	0.0300		mg/L	1	03/07/16 03:13 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	03/03/16 08:11 PM
Calcium	36.6	1.00	3.00		mg/L	10	03/07/16 06:49 PM
Chromium	0.0231	0.00200	0.00500		mg/L	1	03/03/16 08:11 PM
Cobalt	0.00978	0.00300	0.00500		mg/L	1	03/03/16 08:11 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	03/03/16 08:11 PM
Lithium	0.176	0.00500	0.0100		mg/L	1	03/03/16 08:11 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	03/03/16 08:11 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	03/03/16 08:11 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	03/03/16 08:11 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	116	3.00	10.0		mg/L	10	03/03/16 07:53 PM
Fluoride	0.151	0.100	0.400	J	mg/L	1	03/03/16 02:06 PM
Sulfate	97.8	1.00	3.00		mg/L	1	03/03/16 02:06 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.50	0	0		pH Units@16.7℃	1	02/26/16 11:07 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	602	10.0	10.0		mg/L	1	03/01/16 08:43 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *29-Mar-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	MW-17A
Project:	Luminant - Martin Lake	**Lab ID:**	1602269-16
Project No:	5164-B	**Collection Date:**	02/24/16 12:00 PM
Lab Order:	1602269	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	0.000232	0.0000800	0.000200		mg/L	1	03/08/16 11:13 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	03/03/16 08:13 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	03/03/16 08:13 PM
Barium	0.111	0.00300	0.0100		mg/L	1	03/03/16 08:13 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	03/03/16 08:13 PM
Boron	0.458	0.0100	0.0300		mg/L	1	03/07/16 03:14 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	03/03/16 08:13 PM
Calcium	4.56	0.100	0.300		mg/L	1	03/03/16 08:13 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	03/03/16 08:13 PM
Cobalt	0.00790	0.00300	0.00500		mg/L	1	03/03/16 08:13 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	03/03/16 08:13 PM
Lithium	0.0146	0.00500	0.0100		mg/L	1	03/03/16 08:13 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	03/03/16 08:13 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	03/03/16 08:13 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	03/03/16 08:13 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	8.39	0.300	1.00		mg/L	1	03/03/16 02:20 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	03/03/16 02:20 PM
Sulfate	39.5	1.00	3.00		mg/L	1	03/03/16 02:20 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	5.35	0	0		pH Units@16.3℃	1	02/26/16 11:09 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	118	10.0	10.0		mg/L	1	03/01/16 08:43 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *29-Mar-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	PDP-24
Project:	Luminant - Martin Lake	**Lab ID:**	1602269-17
Project No:	5164-B	**Collection Date:**	02/24/16 02:30 PM
Lab Order:	1602269	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	0.00152	0.0000800	0.000200		mg/L	1	03/08/16 11:15 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	03/03/16 08:15 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	03/03/16 08:15 PM
Barium	0.0188	0.00300	0.0100		mg/L	1	03/03/16 08:15 PM
Beryllium	0.00486	0.000300	0.00100		mg/L	1	03/03/16 08:15 PM
Boron	3.81	0.100	0.300		mg/L	10	03/07/16 03:17 PM
Cadmium	0.00226	0.000300	0.00100		mg/L	1	03/03/16 08:15 PM
Calcium	35.3	1.00	3.00		mg/L	10	03/07/16 03:17 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	03/03/16 08:15 PM
Cobalt	0.0901	0.00300	0.00500		mg/L	1	03/03/16 08:15 PM
Lead	0.000965	0.000300	0.00100	J	mg/L	1	03/03/16 08:15 PM
Lithium	0.0270	0.00500	0.0100		mg/L	1	03/03/16 08:15 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	03/03/16 08:15 PM
Selenium	0.00294	0.00200	0.00500	J	mg/L	1	03/03/16 08:15 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	03/03/16 08:15 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	19.1	0.300	1.00		mg/L	1	03/03/16 02:35 PM
Fluoride	0.732	0.100	0.400		mg/L	1	03/03/16 02:35 PM
Sulfate	410	10.0	30.0		mg/L	10	03/03/16 08:08 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	4.51	0	0		pH Units@16.7℃	1	02/26/16 11:10 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	688	10.0	10.0		mg/L	1	03/01/16 08:43 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT: Pastor, Behling & Wheeler
Work Order: 1602269
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_160303A

The QC data in batch 73940 applies to the following samples: 1602269-02A, 1602269-03A, 1602269-04A, 1602269-05A, 1602269-06A, 1602269-07A, 1602269-08A

Sample ID	**MB-73940**	Batch ID:	**73940**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**CETAC2_HG_160303A**	Analysis Date:	**3/3/2016 11:52:24 AM**	Prep Date:	**3/2/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.0000800	0.000200								

Sample ID	**LCS-73940**	Batch ID:	**73940**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**CETAC2_HG_160303A**	Analysis Date:	**3/3/2016 11:54:39 AM**	Prep Date:	**3/2/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00198	0.000200	0.00200	0	99.0	85	115			

Sample ID	**LCSD-73940**	Batch ID:	**73940**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**LCSD**	Run ID:	**CETAC2_HG_160303A**	Analysis Date:	**3/3/2016 11:56:55 AM**	Prep Date:	**3/2/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00201	0.000200	0.00200	0	101	85	115	1.50	15	

Sample ID	**1602269-02A SD**	Batch ID:	**73940**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**SD**	Run ID:	**CETAC2_HG_160303A**	Analysis Date:	**3/3/2016 12:01:28 PM**	Prep Date:	**3/2/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.000400	0.00100	0	0				0	10	

Sample ID	**1602269-02A PDS**	Batch ID:	**73940**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**PDS**	Run ID:	**CETAC2_HG_160303A**	Analysis Date:	**3/3/2016 12:03:43 PM**	Prep Date:	**3/2/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00218	0.000200	0.00250	0	87.2	85	115			

Sample ID	**1602269-02A MS**	Batch ID:	**73940**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**MS**	Run ID:	**CETAC2_HG_160303A**	Analysis Date:	**3/3/2016 12:05:59 PM**	Prep Date:	**3/2/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00177	0.000200	0.00200	0	88.5	80	120			

Sample ID	**1602269-02A MSD**	Batch ID:	**73940**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**MSD**	Run ID:	**CETAC2_HG_160303A**	Analysis Date:	**3/3/2016 12:08:14 PM**	Prep Date:	**3/2/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00181	0.000200	0.00200	0	90.5	80	120	2.23	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1602269
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_160303A

Sample ID	**ICV-160303**	Batch ID:	**R84495**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**ICV**	Run ID:	**CETAC2_HG_160303A**	Analysis Date:	**3/3/2016 10:37:24 AM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00395	0.000200	0.00400	0	98.8	90	110			

Sample ID	**CCV2-160303**	Batch ID:	**R84495**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**CETAC2_HG_160303A**	Analysis Date:	**3/3/2016 11:47:50 AM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00199	0.000200	0.00200	0	99.5	90	110			

Sample ID	**CCV3-160303**	Batch ID:	**R84495**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**CETAC2_HG_160303A**	Analysis Date:	**3/3/2016 12:30:56 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00202	0.000200	0.00200	0	101	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1602269
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_160308C

The QC data in batch 73953 applies to the following samples: 1602269-01A, 1602269-09A, 1602269-10A, 1602269-11A, 1602269-12A, 1602269-13A, 1602269-14A, 1602269-15A, 1602269-16A, 1602269-17A

Sample ID **MB-73953** Batch ID: **73953** TestNo: **SW7470A** Units: **mg/L**
SampType: **MBLK** Run ID: **CETAC2_HG_160308C** Analysis Date: **3/8/2016 10:47:52 AM** Prep Date: **3/2/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.0000800	0.000200								

Sample ID **LCS-73953** Batch ID: **73953** TestNo: **SW7470A** Units: **mg/L**
SampType: **LCS** Run ID: **CETAC2_HG_160308C** Analysis Date: **3/8/2016 10:50:07 AM** Prep Date: **3/2/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00172	0.000200	0.00200	0	86.0	85	115			

Sample ID **LCSD-73953** Batch ID: **73953** TestNo: **SW7470A** Units: **mg/L**
SampType: **LCSD** Run ID: **CETAC2_HG_160308C** Analysis Date: **3/8/2016 10:52:23 AM** Prep Date: **3/2/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00207	0.000200	0.00200	0	104	85	115	18.5	15	R

Sample ID **1603013-04C SD** Batch ID: **73953** TestNo: **SW7470A** Units: **mg/L**
SampType: **SD** Run ID: **CETAC2_HG_160308C** Analysis Date: **3/8/2016 11:47:35 AM** Prep Date: **3/2/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.000400	0.00100	0	0				0	10	

Sample ID **1603013-04C PDS** Batch ID: **73953** TestNo: **SW7470A** Units: **mg/L**
SampType: **PDS** Run ID: **CETAC2_HG_160308C** Analysis Date: **3/8/2016 11:49:52 AM** Prep Date: **3/2/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00238	0.000200	0.00250	0	95.2	85	115			

Sample ID **1603013-04C MS** Batch ID: **73953** TestNo: **SW7470A** Units: **mg/L**
SampType: **MS** Run ID: **CETAC2_HG_160308C** Analysis Date: **3/8/2016 11:52:09 AM** Prep Date: **3/2/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00210	0.000200	0.00200	0	105	80	120			

Sample ID **1603013-04C MSD** Batch ID: **73953** TestNo: **SW7470A** Units: **mg/L**
SampType: **MSD** Run ID: **CETAC2_HG_160308C** Analysis Date: **3/8/2016 11:54:26 AM** Prep Date: **3/2/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00201	0.000200	0.00200	0	101	80	120	4.38	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1602269
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_160308C

Sample ID **ICV-160308**	Batch ID: **R84579**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **ICV**	Run ID: **CETAC2_HG_160308C**	Analysis Date: **3/8/2016 10:11:57 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00394	0.000200	0.00400	0	98.5	90	110			

Sample ID **CCV1-160308**	Batch ID: **R84579**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_160308C**	Analysis Date: **3/8/2016 10:43:17 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00192	0.000200	0.00200	0	96.0	90	110			

Sample ID **CCV2-160308**	Batch ID: **R84579**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_160308C**	Analysis Date: **3/8/2016 11:17:58 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00188	0.000200	0.00200	0	94.0	90	110			

Sample ID **CCV3-160308**	Batch ID: **R84579**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_160308C**	Analysis Date: **3/8/2016 11:59:01 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00195	0.000200	0.00200	0	97.5	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1602269
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: **ICP-MS4_160303F**

The QC data in batch 73881 applies to the following samples: 1602269-08A, 1602269-09A, 1602269-10A, 1602269-11A, 1602269-12A, 1602269-13A, 1602269-14A, 1602269-15A, 1602269-16A, 1602269-17A

Sample ID **MB-73881** Batch ID: **73881** TestNo: **SW6020A** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_160303F** Analysis Date: **3/3/2016 7:27:00 PM** Prep Date: **2/26/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.000800	0.00250								
Arsenic	<0.00200	0.00500								
Barium	<0.00300	0.0100								
Beryllium	<0.000300	0.00100								
Cadmium	<0.000300	0.00100								
Calcium	<0.100	0.300								
Chromium	<0.00200	0.00500								
Cobalt	<0.00300	0.00500								
Lead	<0.000300	0.00100								
Lithium	<0.00500	0.0100								
Molybdenum	<0.00200	0.00500								
Selenium	<0.00200	0.00500								
Thallium	<0.000500	0.00150								

Sample ID **LCS-73881** Batch ID: **73881** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_160303F** Analysis Date: **3/3/2016 7:29:00 PM** Prep Date: **2/26/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.203	0.00250	0.200	0	102	80	120			
Arsenic	0.199	0.00500	0.200	0	99.7	80	120			
Barium	0.206	0.0100	0.200	0	103	80	120			
Beryllium	0.197	0.00100	0.200	0	98.7	80	120			
Cadmium	0.205	0.00100	0.200	0	102	80	120			
Calcium	4.74	0.300	5.00	0	94.9	80	120			
Chromium	0.200	0.00500	0.200	0	100	80	120			
Cobalt	0.201	0.00500	0.200	0	100	80	120			
Lead	0.205	0.00100	0.200	0	103	80	120			
Lithium	0.197	0.0100	0.200	0	98.5	80	120			
Molybdenum	0.200	0.00500	0.200	0	99.9	80	120			
Selenium	0.200	0.00500	0.200	0	100	80	120			
Thallium	0.205	0.00150	0.200	0	102	80	120			

Sample ID **LCSD-73881** Batch ID: **73881** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_160303F** Analysis Date: **3/3/2016 7:31:00 PM** Prep Date: **2/26/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.199	0.00250	0.200	0	99.7	80	120	1.98	15	
Arsenic	0.200	0.00500	0.200	0	100	80	120	0.487	15	
Barium	0.203	0.0100	0.200	0	102	80	120	1.14	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1602269
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160303F

Sample ID **LCSD-73881**	Batch ID: **73881**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCSD**	Run ID: **ICP-MS4_160303F**	Analysis Date: **3/3/2016 7:31:00 PM**	Prep Date: **2/26/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.196	0.00100	0.200	0	98.2	80	120	0.502	15	
Cadmium	0.203	0.00100	0.200	0	101	80	120	0.771	15	
Calcium	4.70	0.300	5.00	0	94.0	80	120	0.921	15	
Chromium	0.201	0.00500	0.200	0	100	80	120	0.358	15	
Cobalt	0.199	0.00500	0.200	0	99.6	80	120	0.675	15	
Lead	0.206	0.00100	0.200	0	103	80	120	0.258	15	
Lithium	0.202	0.0100	0.200	0	101	80	120	2.55	15	
Molybdenum	0.199	0.00500	0.200	0	99.4	80	120	0.464	15	
Selenium	0.200	0.00500	0.200	0	100	80	120	0.088	15	
Thallium	0.206	0.00150	0.200	0	103	80	120	0.441	15	

Sample ID **1602269-08A SD**	Batch ID: **73881**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS4_160303F**	Analysis Date: **3/3/2016 7:37:00 PM**	Prep Date: **2/26/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.00400	0.0125	0	0				0	10	
Arsenic	<0.0100	0.0250	0	0				0	10	
Barium	0.0429	0.0500	0	0.0423				1.42	10	
Beryllium	<0.00150	0.00500	0	0				0	10	
Cadmium	<0.00150	0.00500	0	0				0	10	
Calcium	11.9	1.50	0	11.7				2.04	10	
Chromium	<0.0100	0.0250	0	0.00770				0	10	
Cobalt	<0.0150	0.0250	0	0.00813				0	10	
Lead	<0.00150	0.00500	0	0.000315				0	10	
Lithium	<0.0250	0.0500	0	0.0124				0	10	
Molybdenum	<0.0100	0.0250	0	0.00248				0	10	
Selenium	<0.0100	0.0250	0	0.00220				0	10	
Thallium	<0.00250	0.00750	0	0				0	10	

Sample ID **1602269-08A PDS**	Batch ID: **73881**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_160303F**	Analysis Date: **3/3/2016 7:57:00 PM**	Prep Date: **2/26/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.205	0.00250	0.200	0	102	80	120			
Arsenic	0.191	0.00500	0.200	0	95.3	80	120			
Barium	0.236	0.0100	0.200	0.0423	97.1	80	120			
Beryllium	0.194	0.00100	0.200	0	97.2	80	120			
Cadmium	0.193	0.00100	0.200	0	96.7	80	120			
Calcium	15.5	0.300	5.00	11.7	76.3	80	120			S
Chromium	0.208	0.00500	0.200	0.00770	100	80	120			
Cobalt	0.199	0.00500	0.200	0.00813	95.3	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1602269
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160303F

Sample ID **1602269-08A PDS**	Batch ID: **73881**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_160303F**	Analysis Date: **3/3/2016 7:57:00 PM**	Prep Date: **2/26/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.199	0.00100	0.200	0.000315	99.4	80	120			
Lithium	0.206	0.0100	0.200	0.0124	96.9	80	120			
Molybdenum	0.193	0.00500	0.200	0.00248	95.2	80	120			
Selenium	0.192	0.00500	0.200	0.00220	94.7	80	120			
Thallium	0.195	0.00150	0.200	0	97.7	80	120			

Sample ID **1602269-08A MS**	Batch ID: **73881**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS4_160303F**	Analysis Date: **3/3/2016 7:59:00 PM**	Prep Date: **2/26/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.203	0.00250	0.200	0	101	80	120			
Arsenic	0.203	0.00500	0.200	0	102	80	120			
Barium	0.249	0.0100	0.200	0.0423	104	80	120			
Beryllium	0.204	0.00100	0.200	0	102	80	120			
Cadmium	0.205	0.00100	0.200	0	103	80	120			
Calcium	16.6	0.300	5.00	11.7	99.0	80	120			
Chromium	0.213	0.00500	0.200	0.00770	102	80	120			
Cobalt	0.206	0.00500	0.200	0.00813	98.9	80	120			
Lead	0.210	0.00100	0.200	0.000315	105	80	120			
Lithium	0.218	0.0100	0.200	0.0124	103	80	120			
Molybdenum	0.204	0.00500	0.200	0.00248	101	80	120			
Selenium	0.199	0.00500	0.200	0.00220	98.3	80	120			
Thallium	0.210	0.00150	0.200	0	105	80	120			

Sample ID **1602269-08A MSD**	Batch ID: **73881**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS4_160303F**	Analysis Date: **3/3/2016 8:01:00 PM**	Prep Date: **2/26/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.205	0.00250	0.200	0	103	80	120	1.02	15	
Arsenic	0.201	0.00500	0.200	0	101	80	120	0.950	15	
Barium	0.252	0.0100	0.200	0.0423	105	80	120	0.866	15	
Beryllium	0.203	0.00100	0.200	0	102	80	120	0.589	15	
Cadmium	0.206	0.00100	0.200	0	103	80	120	0.141	15	
Calcium	16.7	0.300	5.00	11.7	100	80	120	0.444	15	
Chromium	0.211	0.00500	0.200	0.00770	101	80	120	0.961	15	
Cobalt	0.205	0.00500	0.200	0.00813	98.7	80	120	0.196	15	
Lead	0.207	0.00100	0.200	0.000315	103	80	120	1.47	15	
Lithium	0.212	0.0100	0.200	0.0124	99.8	80	120	2.82	15	
Molybdenum	0.205	0.00500	0.200	0.00248	101	80	120	0.819	15	
Selenium	0.201	0.00500	0.200	0.00220	99.6	80	120	1.28	15	
Thallium	0.206	0.00150	0.200	0	103	80	120	2.03	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1602269
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160303F

Sample ID **ICV-160303**	Batch ID: **R84524**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_160303F**	Analysis Date: **3/3/2016 11:22:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.0989	0.00250	0.100	0	98.9	90	110			
Arsenic	0.0988	0.00500	0.100	0	98.8	90	110			
Barium	0.0991	0.0100	0.100	0	99.1	90	110			
Beryllium	0.0997	0.00100	0.100	0	99.7	90	110			
Cadmium	0.0995	0.00100	0.100	0	99.5	90	110			
Calcium	2.32	0.300	2.50	0	92.8	90	110			
Chromium	0.105	0.00500	0.100	0	105	90	110			
Cobalt	0.102	0.00500	0.100	0	102	90	110			
Lead	0.102	0.00100	0.100	0	102	90	110			
Lithium	0.0978	0.0100	0.100	0	97.8	90	110			
Molybdenum	0.0976	0.00500	0.100	0	97.6	90	110			
Selenium	0.101	0.00500	0.100	0	101	90	110			
Thallium	0.101	0.00150	0.100	0	101	90	110			

Sample ID **LCVL-160303**	Batch ID: **R84524**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160303F**	Analysis Date: **3/3/2016 11:29:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00209	0.00250	0.00200	0	105	70	130			
Arsenic	0.00531	0.00500	0.00500	0	106	70	130			
Barium	0.00531	0.0100	0.00500	0	106	70	130			
Beryllium	0.000991	0.00100	0.00100	0	99.1	70	130			
Cadmium	0.00109	0.00100	0.00100	0	109	70	130			
Calcium	0.107	0.300	0.100	0	107	70	130			
Chromium	0.00539	0.00500	0.00500	0	108	70	130			
Cobalt	0.00533	0.00500	0.00500	0	107	70	130			
Lead	0.00103	0.00100	0.00100	0	103	70	130			
Lithium	0.0104	0.0100	0.0100	0	104	70	130			
Molybdenum	0.00523	0.00500	0.00500	0	105	70	130			
Selenium	0.00567	0.00500	0.00500	0	113	70	130			
Thallium	0.00106	0.00150	0.00100	0	106	70	130			

Sample ID **CCV9-160303**	Batch ID: **R84524**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160303F**	Analysis Date: **3/3/2016 7:19:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.205	0.00250	0.200	0	102	90	110			
Arsenic	0.202	0.00500	0.200	0	101	90	110			
Barium	0.207	0.0100	0.200	0	103	90	110			
Beryllium	0.198	0.00100	0.200	0	98.8	90	110			
Cadmium	0.207	0.00100	0.200	0	103	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1602269
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160303F

Sample ID **CCV9-160303**	Batch ID: **R84524**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160303F**	Analysis Date: **3/3/2016 7:19:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	5.12	0.300	5.00	0	102	90	110			
Chromium	0.210	0.00500	0.200	0	105	90	110			
Cobalt	0.201	0.00500	0.200	0	101	90	110			
Lead	0.206	0.00100	0.200	0	103	90	110			
Lithium	0.197	0.0100	0.200	0	98.3	90	110			
Molybdenum	0.202	0.00500	0.200	0	101	90	110			
Selenium	0.206	0.00500	0.200	0	103	90	110			
Thallium	0.205	0.00150	0.200	0	103	90	110			

Sample ID **LCVL9-160303**	Batch ID: **R84524**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160303F**	Analysis Date: **3/3/2016 7:23:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00217	0.00250	0.00200	0	108	70	130			
Arsenic	0.00515	0.00500	0.00500	0	103	70	130			
Barium	0.00524	0.0100	0.00500	0	105	70	130			
Beryllium	0.000979	0.00100	0.00100	0	97.9	70	130			
Cadmium	0.00103	0.00100	0.00100	0	103	70	130			
Calcium	0.105	0.300	0.100	0	105	70	130			
Chromium	0.00512	0.00500	0.00500	0	102	70	130			
Cobalt	0.00500	0.00500	0.00500	0	99.9	70	130			
Lead	0.000985	0.00100	0.00100	0	98.5	70	130			
Lithium	0.0110	0.0100	0.0100	0	110	70	130			
Molybdenum	0.00506	0.00500	0.00500	0	101	70	130			
Selenium	0.00600	0.00500	0.00500	0	120	70	130			
Thallium	0.00102	0.00150	0.00100	0	102	70	130			

Sample ID **CCV10-160303**	Batch ID: **R84524**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160303F**	Analysis Date: **3/3/2016 8:03:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.208	0.00250	0.200	0	104	90	110			
Arsenic	0.203	0.00500	0.200	0	101	90	110			
Barium	0.210	0.0100	0.200	0	105	90	110			
Beryllium	0.204	0.00100	0.200	0	102	90	110			
Cadmium	0.210	0.00100	0.200	0	105	90	110			
Calcium	4.90	0.300	5.00	0	98.1	90	110			
Chromium	0.211	0.00500	0.200	0	105	90	110			
Cobalt	0.202	0.00500	0.200	0	101	90	110			
Lead	0.206	0.00100	0.200	0	103	90	110			
Lithium	0.209	0.0100	0.200	0	104	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1602269
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160303F

Sample ID **CCV10-160303**	Batch ID: **R84524**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160303F**	Analysis Date: **3/3/2016 8:03:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Molybdenum	0.203	0.00500	0.200	0	102	90	110			
Selenium	0.205	0.00500	0.200	0	103	90	110			
Thallium	0.206	0.00150	0.200	0	103	90	110			

Sample ID **LCVL10-160303**	Batch ID: **R84524**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160303F**	Analysis Date: **3/3/2016 8:07:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00215	0.00250	0.00200	0	107	70	130			
Arsenic	0.00522	0.00500	0.00500	0	104	70	130			
Barium	0.00535	0.0100	0.00500	0	107	70	130			
Beryllium	0.00130	0.00100	0.00100	0	130	70	130			
Cadmium	0.00107	0.00100	0.00100	0	107	70	130			
Calcium	0.103	0.300	0.100	0	103	70	130			
Chromium	0.00523	0.00500	0.00500	0	105	70	130			
Cobalt	0.00509	0.00500	0.00500	0	102	70	130			
Lead	0.00103	0.00100	0.00100	0	103	70	130			
Lithium	0.0115	0.0100	0.0100	0	115	70	130			
Molybdenum	0.00495	0.00500	0.00500	0	98.9	70	130			
Selenium	0.00572	0.00500	0.00500	0	114	70	130			
Thallium	0.00106	0.00150	0.00100	0	106	70	130			

Sample ID **CCV11-160303**	Batch ID: **R84524**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160303F**	Analysis Date: **3/3/2016 8:31:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.206	0.00250	0.200	0	103	90	110			
Arsenic	0.203	0.00500	0.200	0	102	90	110			
Barium	0.209	0.0100	0.200	0	104	90	110			
Beryllium	0.207	0.00100	0.200	0	103	90	110			
Cadmium	0.207	0.00100	0.200	0	104	90	110			
Calcium	4.88	0.300	5.00	0	97.6	90	110			
Chromium	0.211	0.00500	0.200	0	105	90	110			
Cobalt	0.203	0.00500	0.200	0	102	90	110			
Lead	0.210	0.00100	0.200	0	105	90	110			
Lithium	0.207	0.0100	0.200	0	104	90	110			
Molybdenum	0.202	0.00500	0.200	0	101	90	110			
Selenium	0.205	0.00500	0.200	0	102	90	110			
Thallium	0.210	0.00150	0.200	0	105	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1602269
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160303F

Sample ID **LCVL11-160303** Batch ID: **R84524** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_160303F** Analysis Date: **3/3/2016 8:35:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00209	0.00250	0.00200	0	105	70	130			
Arsenic	0.00509	0.00500	0.00500	0	102	70	130			
Barium	0.00528	0.0100	0.00500	0	106	70	130			
Beryllium	0.000994	0.00100	0.00100	0	99.4	70	130			
Cadmium	0.00103	0.00100	0.00100	0	103	70	130			
Calcium	0.105	0.300	0.100	0	105	70	130			
Chromium	0.00522	0.00500	0.00500	0	104	70	130			
Cobalt	0.00511	0.00500	0.00500	0	102	70	130			
Lead	0.00100	0.00100	0.00100	0	100	70	130			
Lithium	0.0109	0.0100	0.0100	0	109	70	130			
Molybdenum	0.00496	0.00500	0.00500	0	99.2	70	130			
Selenium	0.00620	0.00500	0.00500	0	124	70	130			
Thallium	0.00104	0.00150	0.00100	0	104	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1602269
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: **ICP-MS4_160304C**

The QC data in batch 73869 applies to the following samples: 1602269-01A, 1602269-02A, 1602269-03A, 1602269-04A, 1602269-05A, 1602269-06A, 1602269-07A

Sample ID **MB-73869** Batch ID: **73869** TestNo: **SW6020A** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_160304C** Analysis Date: **3/4/2016 8:36:00 PM** Prep Date: **2/26/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.000800	0.00250								
Arsenic	<0.00200	0.00500								
Barium	<0.00300	0.0100								
Beryllium	<0.000300	0.00100								
Cadmium	<0.000300	0.00100								
Calcium	<0.100	0.300								
Chromium	<0.00200	0.00500								
Cobalt	<0.00300	0.00500								
Lead	<0.000300	0.00100								
Lithium	<0.00500	0.0100								
Molybdenum	<0.00200	0.00500								
Selenium	<0.00200	0.00500								
Thallium	<0.000500	0.00150								

Sample ID **LCS-73869** Batch ID: **73869** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_160304C** Analysis Date: **3/4/2016 8:38:00 PM** Prep Date: **2/26/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.198	0.00250	0.200	0	98.8	80	120			
Arsenic	0.201	0.00500	0.200	0	101	80	120			
Barium	0.200	0.0100	0.200	0	100	80	120			
Beryllium	0.210	0.00100	0.200	0	105	80	120			
Cadmium	0.202	0.00100	0.200	0	101	80	120			
Calcium	4.80	0.300	5.00	0	96.0	80	120			
Chromium	0.206	0.00500	0.200	0	103	80	120			
Cobalt	0.210	0.00500	0.200	0	105	80	120			
Lead	0.203	0.00100	0.200	0	101	80	120			
Lithium	0.211	0.0100	0.200	0	106	80	120			
Molybdenum	0.199	0.00500	0.200	0	99.7	80	120			
Selenium	0.202	0.00500	0.200	0	101	80	120			
Thallium	0.204	0.00150	0.200	0	102	80	120			

Sample ID **LCSD-73869** Batch ID: **73869** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_160304C** Analysis Date: **3/4/2016 8:40:00 PM** Prep Date: **2/26/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.194	0.00250	0.200	0	96.9	80	120	1.92	15	
Arsenic	0.202	0.00500	0.200	0	101	80	120	0.158	15	
Barium	0.200	0.0100	0.200	0	100	80	120	0.014	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1602269
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160304C

Sample ID **LCSD-73869**	Batch ID: **73869**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCSD**	Run ID: **ICP-MS4_160304C**	Analysis Date: **3/4/2016 8:40:00 PM**	Prep Date: **2/26/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.209	0.00100	0.200	0	105	80	120	0.197	15	
Cadmium	0.202	0.00100	0.200	0	101	80	120	0.080	15	
Calcium	4.82	0.300	5.00	0	96.4	80	120	0.428	15	
Chromium	0.205	0.00500	0.200	0	103	80	120	0.584	15	
Cobalt	0.211	0.00500	0.200	0	105	80	120	0.480	15	
Lead	0.203	0.00100	0.200	0	101	80	120	0.065	15	
Lithium	0.210	0.0100	0.200	0	105	80	120	0.784	15	
Molybdenum	0.198	0.00500	0.200	0	98.9	80	120	0.823	15	
Selenium	0.204	0.00500	0.200	0	102	80	120	0.985	15	
Thallium	0.204	0.00150	0.200	0	102	80	120	0.218	15	

Sample ID **1602265-08A SD**	Batch ID: **73869**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS4_160304C**	Analysis Date: **3/4/2016 8:47:00 PM**	Prep Date: **2/26/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.00400	0.0125	0	0				0	10	
Arsenic	<0.0100	0.0250	0	0				0	10	
Barium	0.0466	0.0500	0	0.0460				1.24	10	
Beryllium	<0.00150	0.00500	0	0				0	10	
Cadmium	<0.00150	0.00500	0	0				0	10	
Chromium	<0.0100	0.0250	0	0				0	10	
Cobalt	<0.0150	0.0250	0	0				0	10	
Lead	0.00272	0.00500	0	0.00338				21.5	10	R
Lithium	0.144	0.0500	0	0.135				6.58	10	
Molybdenum	<0.0100	0.0250	0	0				0	10	
Selenium	<0.0100	0.0250	0	0				0	10	
Thallium	<0.00250	0.00750	0	0				0	10	

Sample ID **1602265-08A PDS**	Batch ID: **73869**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_160304C**	Analysis Date: **3/4/2016 9:07:00 PM**	Prep Date: **2/26/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.204	0.00250	0.200	0	102	80	120			
Arsenic	0.195	0.00500	0.200	0	97.6	80	120			
Barium	0.241	0.0100	0.200	0.0460	97.3	80	120			
Beryllium	0.199	0.00100	0.200	0	99.4	80	120			
Cadmium	0.191	0.00100	0.200	0	95.3	80	120			
Chromium	0.199	0.00500	0.200	0	99.6	80	120			
Cobalt	0.198	0.00500	0.200	0	99.0	80	120			
Lead	0.203	0.00100	0.200	0.00338	99.8	80	120			
Lithium	0.320	0.0100	0.200	0.135	92.8	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1602269
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160304C

Sample ID **1602265-08A PDS**	Batch ID: **73869**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_160304C**	Analysis Date: **3/4/2016 9:07:00 PM**	Prep Date: **2/26/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Molybdenum	0.198	0.00500	0.200	0	98.9	80	120			
Selenium	0.194	0.00500	0.200	0	97.2	80	120			
Thallium	0.199	0.00150	0.200	0	99.3	80	120			

Sample ID **1602265-08AMS**	Batch ID: **73869**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS4_160304C**	Analysis Date: **3/4/2016 9:08:00 PM**	Prep Date: **2/26/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.195	0.00250	0.200	0	97.6	80	120			
Arsenic	0.201	0.00500	0.200	0	100	80	120			
Barium	0.244	0.0100	0.200	0.0460	98.9	80	120			
Beryllium	0.204	0.00100	0.200	0	102	80	120			
Cadmium	0.194	0.00100	0.200	0	97.2	80	120			
Calcium	207	0.300	5.00	203	87.0	80	120			
Chromium	0.200	0.00500	0.200	0	99.8	80	120			
Cobalt	0.200	0.00500	0.200	0	99.8	80	120			
Lead	0.207	0.00100	0.200	0.00338	102	80	120			
Lithium	0.334	0.0100	0.200	0.135	99.4	80	120			
Molybdenum	0.202	0.00500	0.200	0	101	80	120			
Selenium	0.200	0.00500	0.200	0	100	80	120			
Thallium	0.203	0.00150	0.200	0	101	80	120			

Sample ID **1602265-08AMSD**	Batch ID: **73869**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS4_160304C**	Analysis Date: **3/4/2016 9:10:00 PM**	Prep Date: **2/26/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.199	0.00250	0.200	0	99.5	80	120	1.95	15	
Arsenic	0.199	0.00500	0.200	0	99.7	80	120	0.635	15	
Barium	0.249	0.0100	0.200	0.0460	101	80	120	1.90	15	
Beryllium	0.202	0.00100	0.200	0	101	80	120	1.33	15	
Cadmium	0.198	0.00100	0.200	0	98.9	80	120	1.74	15	
Calcium	208	0.300	5.00	203	107	80	120	0.478	15	
Chromium	0.200	0.00500	0.200	0	100	80	120	0.215	15	
Cobalt	0.199	0.00500	0.200	0	99.5	80	120	0.315	15	
Lead	0.202	0.00100	0.200	0.00338	99.5	80	120	2.10	15	
Lithium	0.337	0.0100	0.200	0.135	101	80	120	1.13	15	
Molybdenum	0.205	0.00500	0.200	0	102	80	120	1.26	15	
Selenium	0.194	0.00500	0.200	0	97.2	80	120	2.95	15	
Thallium	0.200	0.00150	0.200	0	100	80	120	1.16	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1602269
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160304C

Sample ID **ICV2-160304**	Batch ID: **R84540**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_160304C**	Analysis Date: **3/4/2016 7:22:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.0990	0.00250	0.100	0	99.0	90	110			
Arsenic	0.101	0.00500	0.100	0	101	90	110			
Barium	0.0993	0.0100	0.100	0	99.3	90	110			
Beryllium	0.101	0.00100	0.100	0	101	90	110			
Cadmium	0.0986	0.00100	0.100	0	98.6	90	110			
Calcium	2.30	0.300	2.50	0	92.1	90	110			
Chromium	0.104	0.00500	0.100	0	104	90	110			
Cobalt	0.105	0.00500	0.100	0	105	90	110			
Lead	0.101	0.00100	0.100	0	101	90	110			
Lithium	0.102	0.0100	0.100	0	102	90	110			
Molybdenum	0.0968	0.00500	0.100	0	96.8	90	110			
Selenium	0.101	0.00500	0.100	0	101	90	110			
Thallium	0.0988	0.00150	0.100	0	98.8	90	110			

Sample ID **ILCVL2-160304**	Batch ID: **R84540**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160304C**	Analysis Date: **3/4/2016 7:27:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00199	0.00250	0.00200	0	99.4	70	130			
Arsenic	0.00514	0.00500	0.00500	0	103	70	130			
Barium	0.00517	0.0100	0.00500	0	103	70	130			
Beryllium	0.000955	0.00100	0.00100	0	95.5	70	130			
Cadmium	0.00104	0.00100	0.00100	0	104	70	130			
Calcium	0.107	0.300	0.100	0	107	70	130			
Chromium	0.00527	0.00500	0.00500	0	105	70	130			
Cobalt	0.00540	0.00500	0.00500	0	108	70	130			
Lead	0.000898	0.00100	0.00100	0	89.8	70	130			
Lithium	0.0113	0.0100	0.0100	0	113	70	130			
Molybdenum	0.00507	0.00500	0.00500	0	101	70	130			
Selenium	0.00580	0.00500	0.00500	0	116	70	130			
Thallium	0.00101	0.00150	0.00100	0	101	70	130			

Sample ID **CCV2-160304**	Batch ID: **R84540**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160304C**	Analysis Date: **3/4/2016 8:28:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.198	0.00250	0.200	0	99.1	90	110			
Arsenic	0.202	0.00500	0.200	0	101	90	110			
Barium	0.203	0.0100	0.200	0	101	90	110			
Beryllium	0.210	0.00100	0.200	0	105	90	110			
Cadmium	0.204	0.00100	0.200	0	102	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1602269
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160304C

Sample ID **CCV2-160304**	Batch ID: **R84540**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160304C**	Analysis Date: **3/4/2016 8:28:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.82	0.300	5.00	0	96.4	90	110			
Chromium	0.208	0.00500	0.200	0	104	90	110			
Cobalt	0.209	0.00500	0.200	0	104	90	110			
Lead	0.204	0.00100	0.200	0	102	90	110			
Lithium	0.213	0.0100	0.200	0	107	90	110			
Molybdenum	0.200	0.00500	0.200	0	99.8	90	110			
Selenium	0.201	0.00500	0.200	0	100	90	110			
Thallium	0.204	0.00150	0.200	0	102	90	110			

Sample ID **LCVL2-160304**	Batch ID: **R84540**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160304C**	Analysis Date: **3/4/2016 8:32:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00205	0.00250	0.00200	0	102	70	130			
Arsenic	0.00515	0.00500	0.00500	0	103	70	130			
Barium	0.00503	0.0100	0.00500	0	101	70	130			
Beryllium	0.00104	0.00100	0.00100	0	104	70	130			
Cadmium	0.00106	0.00100	0.00100	0	106	70	130			
Calcium	0.101	0.300	0.100	0	101	70	130			
Chromium	0.00522	0.00500	0.00500	0	104	70	130			
Cobalt	0.00536	0.00500	0.00500	0	107	70	130			
Lead	0.000910	0.00100	0.00100	0	91.0	70	130			
Lithium	0.0111	0.0100	0.0100	0	111	70	130			
Molybdenum	0.00490	0.00500	0.00500	0	98.0	70	130			
Selenium	0.00547	0.00500	0.00500	0	109	70	130			
Thallium	0.00103	0.00150	0.00100	0	103	70	130			

Sample ID **CCV3-160304**	Batch ID: **R84540**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160304C**	Analysis Date: **3/4/2016 9:12:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.197	0.00250	0.200	0	98.7	90	110			
Arsenic	0.202	0.00500	0.200	0	101	90	110			
Barium	0.202	0.0100	0.200	0	101	90	110			
Beryllium	0.211	0.00100	0.200	0	105	90	110			
Cadmium	0.203	0.00100	0.200	0	101	90	110			
Calcium	4.82	0.300	5.00	0	96.4	90	110			
Chromium	0.209	0.00500	0.200	0	105	90	110			
Cobalt	0.212	0.00500	0.200	0	106	90	110			
Lead	0.207	0.00100	0.200	0	104	90	110			
Lithium	0.216	0.0100	0.200	0	108	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1602269
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160304C

Sample ID **CCV3-160304**	Batch ID: **R84540**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160304C**	Analysis Date: **3/4/2016 9:12:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Molybdenum	0.199	0.00500	0.200	0	99.6	90	110			
Selenium	0.203	0.00500	0.200	0	102	90	110			
Thallium	0.208	0.00150	0.200	0	104	90	110			

Sample ID **LCVL3-160304**	Batch ID: **R84540**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160304C**	Analysis Date: **3/4/2016 9:16:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00205	0.00250	0.00200	0	103	70	130			
Arsenic	0.00507	0.00500	0.00500	0	101	70	130			
Barium	0.00522	0.0100	0.00500	0	104	70	130			
Beryllium	0.00112	0.00100	0.00100	0	112	70	130			
Cadmium	0.000999	0.00100	0.00100	0	99.9	70	130			
Calcium	0.100	0.300	0.100	0	100	70	130			
Chromium	0.00528	0.00500	0.00500	0	106	70	130			
Cobalt	0.00536	0.00500	0.00500	0	107	70	130			
Lead	0.000897	0.00100	0.00100	0	89.7	70	130			
Lithium	0.0112	0.0100	0.0100	0	112	70	130			
Molybdenum	0.00512	0.00500	0.00500	0	102	70	130			
Selenium	0.00535	0.00500	0.00500	0	107	70	130			
Thallium	0.00100	0.00150	0.00100	0	100	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1602269
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160307A

The QC data in batch 73869 applies to the following samples: 1602269-01A, 1602269-02A, 1602269-03A, 1602269-04A, 1602269-05A, 1602269-06A, 1602269-07A

Sample ID **MB-73869** Batch ID: **73869** TestNo: **SW6020A** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_160307A** Analysis Date: **3/7/2016 7:26:00 PM** Prep Date: **2/26/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0214	0.0300								

Sample ID **LCS-73869** Batch ID: **73869** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_160307A** Analysis Date: **3/7/2016 7:28:00 PM** Prep Date: **2/26/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.218	0.0300	0.200	0	109	80	120			

Sample ID **LCSD-73869** Batch ID: **73869** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_160307A** Analysis Date: **3/7/2016 7:30:00 PM** Prep Date: **2/26/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.229	0.0300	0.200	0	115	80	120	5.28	15	

Sample ID **1602265-08A SD** Batch ID: **73869** TestNo: **SW6020A** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS4_160307A** Analysis Date: **3/7/2016 7:36:00 PM** Prep Date: **2/26/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	<2.50	7.50	0	1.18				0	10	
Calcium	207	75.0	0	207				0.002	10	

Sample ID **1602265-08A PDS** Batch ID: **73869** TestNo: **SW6020A** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS4_160307A** Analysis Date: **3/7/2016 7:57:00 PM** Prep Date: **2/26/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	12.0	1.50	10.0	1.18	108	80	120			
Calcium	438	15.0	250	207	92.1	80	120			

Sample ID **1602265-08AMS** Batch ID: **73869** TestNo: **SW6020A** Units: **mg/L**
SampType: **MS** Run ID: **ICP-MS4_160307A** Analysis Date: **3/7/2016 7:59:00 PM** Prep Date: **2/26/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	1.88	1.50	0.200	1.18	347	80	120			S

Sample ID **1602265-08AMSD** Batch ID: **73869** TestNo: **SW6020A** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS4_160307A** Analysis Date: **3/7/2016 8:01:00 PM** Prep Date: **2/26/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	1.96	1.50	0.200	1.18	389	80	120	4.42	15	S

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1602269
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160307A

The QC data in batch 73881 applies to the following samples: 1602269-08A, 1602269-09A, 1602269-10A, 1602269-11A, 1602269-12A, 1602269-13A, 1602269-14A, 1602269-15A, 1602269-16A, 1602269-17A

Sample ID **MB-73881** Batch ID: **73881** TestNo: **SW6020A** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_160307A** Analysis Date: **3/7/2016 2:46:00 PM** Prep Date: **2/26/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0276	0.0300								

Sample ID **LCS-73881** Batch ID: **73881** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_160307A** Analysis Date: **3/7/2016 2:48:00 PM** Prep Date: **2/26/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.224	0.0300	0.200	0	112	80	120			

Sample ID **LCSD-73881** Batch ID: **73881** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_160307A** Analysis Date: **3/7/2016 2:50:00 PM** Prep Date: **2/26/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.223	0.0300	0.200	0	111	80	120	0.504	15	

Sample ID **1602269-08A SD** Batch ID: **73881** TestNo: **SW6020A** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS4_160307A** Analysis Date: **3/7/2016 2:58:00 PM** Prep Date: **2/26/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.228	0.150	0	0.206				10.0	10	

Sample ID **1602269-08A PDS** Batch ID: **73881** TestNo: **SW6020A** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS4_160307A** Analysis Date: **3/7/2016 3:19:00 PM** Prep Date: **2/26/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.398	0.0300	0.200	0.206	96.0	80	120			

Sample ID **1602269-08A MS** Batch ID: **73881** TestNo: **SW6020A** Units: **mg/L**
SampType: **MS** Run ID: **ICP-MS4_160307A** Analysis Date: **3/7/2016 3:21:00 PM** Prep Date: **2/26/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.405	0.0300	0.200	0.206	99.5	80	120			

Sample ID **1602269-08A MSD** Batch ID: **73881** TestNo: **SW6020A** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS4_160307A** Analysis Date: **3/7/2016 3:23:00 PM** Prep Date: **2/26/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.419	0.0300	0.200	0.206	106	80	120	3.37	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1602269
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160307A

Sample ID **ICV-160307**	Batch ID: **R84569**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_160307A**	Analysis Date: **3/7/2016 11:53:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.103	0.0300	0.100	0	103	90	110			
Calcium	2.32	0.300	2.50	0	93.0	90	110			

Sample ID **LCVL-160307**	Batch ID: **R84569**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160307A**	Analysis Date: **3/7/2016 11:58:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0240	0.0300	0.0200	0	120	70	130			
Calcium	0.101	0.300	0.100	0	101	70	130			

Sample ID **CCV3-160307**	Batch ID: **R84569**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160307A**	Analysis Date: **3/7/2016 2:27:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.190	0.0300	0.200	0	95.0	90	110			
Calcium	4.70	0.300	5.00	0	94.0	90	110			

Sample ID **LCVL3-160307**	Batch ID: **R84569**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160307A**	Analysis Date: **3/7/2016 2:41:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0246	0.0300	0.0200	0	123	70	130			
Calcium	0.0986	0.300	0.100	0	98.6	70	130			

Sample ID **CCV4-160307**	Batch ID: **R84569**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160307A**	Analysis Date: **3/7/2016 3:33:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.216	0.0300	0.200	0	108	90	110			
Calcium	4.81	0.300	5.00	0	96.2	90	110			

Sample ID **LCVL4-160307**	Batch ID: **R84569**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160307A**	Analysis Date: **3/7/2016 4:33:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0249	0.0300	0.0200	0	125	70	130			
Calcium	0.0916	0.300	0.100	0	91.6	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160307A

Sample ID **CCV5-160307**	Batch ID: **R84569**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160307A**	Analysis Date: **3/7/2016 5:10:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.76	0.300	5.00	0	95.1	90	110			

Sample ID **LCVL5-160307**	Batch ID: **R84569**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160307A**	Analysis Date: **3/7/2016 5:24:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.103	0.300	0.100	0	103	70	130			

Sample ID **CCV6-160307**	Batch ID: **R84569**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160307A**	Analysis Date: **3/7/2016 6:17:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.204	0.0300	0.200	0	102	90	110			
Calcium	4.87	0.300	5.00	0	97.5	90	110			

Sample ID **LCVL6-160307**	Batch ID: **R84569**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160307A**	Analysis Date: **3/7/2016 6:31:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0211	0.0300	0.0200	0	106	70	130			
Calcium	0.100	0.300	0.100	0	100	70	130			

Sample ID **CCV7-160307**	Batch ID: **R84569**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160307A**	Analysis Date: **3/7/2016 7:08:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.194	0.0300	0.200	0	97.2	90	110			
Calcium	4.77	0.300	5.00	0	95.4	90	110			

Sample ID **LCVL7-160307**	Batch ID: **R84569**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160307A**	Analysis Date: **3/7/2016 7:22:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0228	0.0300	0.0200	0	114	70	130			
Calcium	0.103	0.300	0.100	0	103	70	130			

Sample ID **CCV8-160307**	Batch ID: **R84569**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160307A**	Analysis Date: **3/7/2016 8:15:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.206	0.0300	0.200	0	103	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1602269
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160307A

Sample ID **CCV8-160307**	Batch ID: **R84569**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160307A**	Analysis Date: **3/7/2016 8:15:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.78	0.300	5.00	0	95.7	90	110			

Sample ID **LCVL8-160307**	Batch ID: **R84569**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160307A**	Analysis Date: **3/7/2016 8:29:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0222	0.0300	0.0200	0	111	70	130			
Calcium	0.101	0.300	0.100	0	101	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1602269
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_160303A

The QC data in batch 73960 applies to the following samples: 1602269-01D, 1602269-02D, 1602269-03D, 1602269-04D, 1602269-05D, 1602269-06D, 1602269-07D, 1602269-08D, 1602269-09D, 1602269-10D, 1602269-11D, 1602269-12D, 1602269-13D, 1602269-14D, 1602269-15D, 1602269-16D, 1602269-17D

Sample ID **MB-73960** Batch ID: **73960** TestNo: **E300** Units: **mg/L**
SampType: **MBLK** Run ID: **IC2_160303A** Analysis Date: **3/3/2016 9:06:25 AM** Prep Date: **3/3/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00								
Fluoride	<0.100	0.400								
Sulfate	<1.00	3.00								

Sample ID **LCS-73960** Batch ID: **73960** TestNo: **E300** Units: **mg/L**
SampType: **LCS** Run ID: **IC2_160303A** Analysis Date: **3/3/2016 9:21:02 AM** Prep Date: **3/3/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.36	1.00	10.00	0	93.6	90	110			
Fluoride	3.80	0.400	4.000	0	95.1	90	110			
Sulfate	29.9	3.00	30.00	0	99.5	90	110			

Sample ID **LCSD-73960** Batch ID: **73960** TestNo: **E300** Units: **mg/L**
SampType: **LCSD** Run ID: **IC2_160303A** Analysis Date: **3/3/2016 9:35:38 AM** Prep Date: **3/3/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.30	1.00	10.00	0	93.0	90	110	0.670	20	
Fluoride	3.80	0.400	4.000	0	95.1	90	110	0.001	20	
Sulfate	29.8	3.00	30.00	0	99.5	90	110	0.087	20	

Sample ID **1602269-01DMS** Batch ID: **73960** TestNo: **E300** Units: **mg/L**
SampType: **MS** Run ID: **IC2_160303A** Analysis Date: **3/3/2016 4:00:14 PM** Prep Date: **3/3/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	227	10.0	200.0	27.67	99.5	90	110			
Fluoride	201	4.00	200.0	0	101	90	110			
Sulfate	599	30.0	200.0	372.5	113	90	110			S

Sample ID **1602269-01DMSD** Batch ID: **73960** TestNo: **E300** Units: **mg/L**
SampType: **MSD** Run ID: **IC2_160303A** Analysis Date: **3/3/2016 4:14:50 PM** Prep Date: **3/3/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	225	10.0	200.0	27.67	98.4	90	110	0.916	20	
Fluoride	200	4.00	200.0	0	100	90	110	0.529	20	
Sulfate	595	30.0	200.0	372.5	111	90	110	0.732	20	S

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1602269
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_160303A

Sample ID **1602269-02DMS**	Batch ID: **73960**	TestNo: **E300**	Units: **mg/L**
SampType: **MS**	Run ID: **IC2_160303A**	Analysis Date: **3/3/2016 4:44:03 PM**	Prep Date: **3/3/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	211	10.0	200.0	15.89	97.6	90	110			
Fluoride	199	4.00	200.0	1.001	98.9	90	110			
Sulfate	419	30.0	200.0	210.6	104	90	110			

Sample ID **1602269-02DMSD**	Batch ID: **73960**	TestNo: **E300**	Units: **mg/L**
SampType: **MSD**	Run ID: **IC2_160303A**	Analysis Date: **3/3/2016 4:58:40 PM**	Prep Date: **3/3/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	213	10.0	200.0	15.89	98.3	90	110	0.650	20	
Fluoride	200	4.00	200.0	1.001	99.4	90	110	0.483	20	
Sulfate	419	30.0	200.0	210.6	104	90	110	0.161	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_160303A

Sample ID **ICV-160303**	Batch ID: **R84523**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC2_160303A**	Analysis Date: **3/3/2016 8:30:12 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	23.9	1.00	25.00	0	95.8	90	110			
Fluoride	9.55	0.400	10.00	0	95.5	90	110			
Sulfate	75.5	3.00	75.00	0	101	90	110			

Sample ID **CCV1-160303**	Batch ID: **R84523**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_160303A**	Analysis Date: **3/3/2016 12:20:50 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.22	1.00	10.00	0	92.2	90	110			
Fluoride	3.67	0.400	4.000	0	91.8	90	110			
Sulfate	32.1	3.00	30.00	0	107	90	110			

Sample ID **CCV2-160303**	Batch ID: **R84523**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_160303A**	Analysis Date: **3/3/2016 3:09:01 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.26	1.00	10.00	0	92.6	90	110			
Fluoride	3.88	0.400	4.000	0	97.1	90	110			
Sulfate	29.8	3.00	30.00	0	99.2	90	110			

Sample ID **CCV3-160303**	Batch ID: **R84523**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_160303A**	Analysis Date: **3/3/2016 7:10:09 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.44	1.00	10.00	0	94.4	90	110			
Fluoride	3.96	0.400	4.000	0	99.1	90	110			
Sulfate	30.0	3.00	30.00	0	99.9	90	110			

Sample ID **CCV4-160303**	Batch ID: **R84523**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_160303A**	Analysis Date: **3/3/2016 8:23:12 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.39	1.00	10.00	0	93.9	90	110			
Sulfate	30.0	3.00	30.00	0	99.8	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1602269
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_160226A

The QC data in batch 73868 applies to the following samples: 1602269-01D, 1602269-02D, 1602269-03D, 1602269-04D, 1602269-05D, 1602269-06D, 1602269-07D, 1602269-08D, 1602269-09D, 1602269-10D, 1602269-11D, 1602269-12D, 1602269-13D

Sample ID **1602239-01D-DUP** Batch ID: **73868** TestNo: **M4500-H+ B** Units: **pH Units@11.1℃**
SampType: **DUP** Run ID: **TITRATOR_160226A** Analysis Date: **2/26/2016 8:48:00 AM** Prep Date: **2/26/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	7.71	0	0	7.720				0.130	5	

Sample ID **1602269-04D-DUP** Batch ID: **73868** TestNo: **M4500-H+ B** Units: **pH Units@14.3℃**
SampType: **DUP** Run ID: **TITRATOR_160226A** Analysis Date: **2/26/2016 9:25:00 AM** Prep Date: **2/26/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	6.71	0	0	6.560				2.26	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1602269
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_160226A

Sample ID	**ICV-160226**	Batch ID:	**R84382**	TestNo:	**M4500-H+ B**	Units:	**pH Units@20.9℃**
SampType:	**ICV**	Run ID:	**TITRATOR_160226A**	Analysis Date:	**2/26/2016 8:43:00 AM**	Prep Date:	**2/26/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	10.0	0	10.00	0	100	99	101			

Sample ID	**CCV1-160226**	Batch ID:	**R84382**	TestNo:	**M4500-H+ B**	Units:	**pH Units@20.5℃**
SampType:	**CCV**	Run ID:	**TITRATOR_160226A**	Analysis Date:	**2/26/2016 9:19:00 AM**	Prep Date:	**2/26/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	7.04	0	7.000	0	101	97.1	102.9			

Sample ID	**CCV2-160226**	Batch ID:	**R84382**	TestNo:	**M4500-H+ B**	Units:	**pH Units@20.4℃**
SampType:	**CCV**	Run ID:	**TITRATOR_160226A**	Analysis Date:	**2/26/2016 9:40:00 AM**	Prep Date:	**2/26/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	7.02	0	7.000	0	100	97.1	102.9			

Sample ID	**CCV3-160226**	Batch ID:	**R84382**	TestNo:	**M4500-H+ B**	Units:	**pH Units@20.3℃**
SampType:	**CCV**	Run ID:	**TITRATOR_160226A**	Analysis Date:	**2/26/2016 9:46:00 AM**	Prep Date:	**2/26/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	7.03	0	7.000	0	100	97.1	102.9			

Sample ID	**CCV4-160226-PH12**	Batch ID:	**R84382**	TestNo:	**M4500-H+ B**	Units:	**pH Units@21.3℃**
SampType:	**CCV**	Run ID:	**TITRATOR_160226A**	Analysis Date:	**2/26/2016 9:49:00 AM**	Prep Date:	**2/26/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	12.0	0	12.00	0	99.6	97.1	102.9			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1602269
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_160226B

The QC data in batch 73880 applies to the following samples: 1602269-14D, 1602269-15D, 1602269-16D, 1602269-17D

Sample ID **1602269-14D-DUP** Batch ID: **73880** TestNo: **M4500-H+ B** Units: **pH Units@16.2℃**
SampType: **DUP** Run ID: **TITRATOR_160226B** Analysis Date: **2/26/2016 11:04:00 AM** Prep Date: **2/26/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	5.75	0	0	5.760				0.174	5	

Sample ID **1602270-07D-DUP** Batch ID: **73880** TestNo: **M4500-H+ B** Units: **pH Units@17℃**
SampType: **DUP** Run ID: **TITRATOR_160226B** Analysis Date: **2/26/2016 11:29:00 AM** Prep Date: **2/26/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	5.47	0	0	5.490				0.365	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1602269
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_160226B

Sample ID	**ICV-160226**	Batch ID:	**R84386**	TestNo:	**M4500-H+ B**	Units:	**pH Units@20.9℃**
SampType:	**ICV**	Run ID:	**TITRATOR_160226B**	Analysis Date:	**2/26/2016 8:43:00 AM**	Prep Date:	**2/26/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	10.0	0	10.00	0	100	99	101			

Sample ID	**CCV5-160226**	Batch ID:	**R84386**	TestNo:	**M4500-H+ B**	Units:	**pH Units@20.6℃**
SampType:	**CCV**	Run ID:	**TITRATOR_160226B**	Analysis Date:	**2/26/2016 11:23:00 AM**	Prep Date:	**2/26/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	7.03	0	7.000	0	100	97.1	102.9			

Sample ID	**CCV6-160226**	Batch ID:	**R84386**	TestNo:	**M4500-H+ B**	Units:	**pH Units@20.6℃**
SampType:	**CCV**	Run ID:	**TITRATOR_160226B**	Analysis Date:	**2/26/2016 11:30:00 AM**	Prep Date:	**2/26/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	7.02	0	7.000	0	100	97.1	102.9			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1602269
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: WC_160226B

The QC data in batch 73878 applies to the following samples: 1602269-01D, 1602269-02D, 1602269-03D, 1602269-04D, 1602269-05D, 1602269-06D, 1602269-07D, 1602269-08D

Sample ID	**MB-73878**	Batch ID:	**73878**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**WC_160226B**	Analysis Date:	**2/29/2016 8:55:00 AM**	Prep Date:	**2/26/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	10.0	10.0								

Sample ID	**LCS-73878**	Batch ID:	**73878**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**WC_160226B**	Analysis Date:	**2/29/2016 8:55:00 AM**	Prep Date:	**2/26/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	802	10.0	745.6	0	108	90	113			

Sample ID	**1602262-01D-DUP**	Batch ID:	**73878**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**DUP**	Run ID:	**WC_160226B**	Analysis Date:	**2/29/2016 8:55:00 AM**	Prep Date:	**2/26/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	2010	50.0	0	2025				0.743	5	

Sample ID	**1602270-01D-DUP**	Batch ID:	**73878**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**DUP**	Run ID:	**WC_160226B**	Analysis Date:	**2/29/2016 8:55:00 AM**	Prep Date:	**2/26/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	1610	50.0	0	1570				2.52	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1602269
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: WC_160229D

The QC data in batch 73900 applies to the following samples: 1602269-09D, 1602269-10D, 1602269-11D, 1602269-12D, 1602269-13D, 1602269-14D, 1602269-15D, 1602269-16D, 1602269-17D

Sample ID	**MB-73900**	Batch ID:	**73900**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**WC_160229D**	Analysis Date:	**3/1/2016 8:43:00 AM**	Prep Date:	**2/29/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	<10.0	10.0								

Sample ID	**LCS-73900**	Batch ID:	**73900**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**WC_160229D**	Analysis Date:	**3/1/2016 8:43:00 AM**	Prep Date:	**2/29/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	760	10.0	745.6	0	102	90	113			

Sample ID	**1602269-09D-DUP**	Batch ID:	**73900**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**DUP**	Run ID:	**WC_160229D**	Analysis Date:	**3/1/2016 8:43:00 AM**	Prep Date:	**2/29/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	4190	50.0	0	4175				0.239	5	

Sample ID	**1602278-01E-DUP**	Batch ID:	**73900**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**DUP**	Run ID:	**WC_160229D**	Analysis Date:	**3/1/2016 8:43:00 AM**	Prep Date:	**2/29/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	1920	50.0	0	1895				1.05	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

GEL Laboratories LLC
a member of The GEL Group INC

PO Box 30712 Charleston, SC 29417
2040 Savage Road Charleston, SC 29407
P 843.556.8171
F 843.766.1178

gel.com

March 23, 2016

Mr. John DuPont
DHL Analytical
2300 Double Creek Drive
Round Rock, Texas 78664

Re: Routine Analysis
Work Order: 392232
SDG: 1602269

Dear Mr. DuPont:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on March 01, 2016. This original data report has been prepared and reviewed in accordance with GEL's standard operating procedures.

Our policy is to provide high quality, personalized analytical services to enable you to meet your analytical needs on time every time. We trust that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at (843) 556-8171, ext. 4707.

Sincerely,

Hope Taylor for
Anna Day
Project Manager

Purchase Order: 14273
Chain of Custody: 1602269
Enclosures

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 − (843) 556−8171 − www.gel.com

Certificate of Analysis Report
for

DHLA002 DHL Analytical

Client SDG: 1602269 GEL Work Order: 392232

The Qualifiers in this report are defined as follows:

* A quality control analyte recovery is outside of specified acceptance criteria

** Analyte is a Tracer compound

** Analyte is a surrogate compound

U Analyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the Certificate of Analysis.

The designation ND, if present, appears in the result column when the analyte concentration is not detected above the limit as defined in the 'U' qualifier above.

This data report has been prepared and reviewed in accordance with GEL Laboratories LLC standard operating procedures. Please direct any questions to your Project Manager, Anna Day.

Reviewed by _____

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: March 23, 2016

Company : DHL Analytical
Address : 2300 Double Creek Drive

Round Rock, Texas 78664
Contact: Mr. John DuPont
Project: Routine Analysis

Client Sample ID: MW-19
Sample ID: 392232001
Matrix: Water
Collect Date: 24-FEB-16 12:10
Receive Date: 01-MAR-16
Collector: Client

Project: DHLA00112
Client ID: DHLA002

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228	U	1.07	+/-0.980	1.60	3.00	pCi/L		AXM6	03/22/16	1658	1550814	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226		1.49	+/-0.459	0.456	1.00	pCi/L		CXP3	03/22/16	0735	1549017	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			99.7	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: March 23, 2016

Company : DHL Analytical
Address : 2300 Double Creek Drive

Round Rock, Texas 78664
Contact: Mr. John DuPont
Project: Routine Analysis

Client Sample ID: PDP-22
Sample ID: 392232002
Matrix: Water
Collect Date: 24-FEB-16 11:15
Receive Date: 01-MAR-16
Collector: Client

Project: DHLA00112
Client ID: DHLA002

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228	U	0.945	+/-0.966	1.60	3.00	pCi/L		AXM6	03/22/16	1658	1550814	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226		1.27	+/-0.427	0.383	1.00	pCi/L		CXP3	03/22/16	0735	1549017	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			95.7	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

GEL LABORATORIES LLC
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Certificate of Analysis

Report Date: March 23, 2016

Company : DHL Analytical
Address : 2300 Double Creek Drive

Round Rock, Texas 78664
Contact: Mr. John DuPont
Project: Routine Analysis

Client Sample ID: MW-18A
Sample ID: 392232003
Matrix: Water
Collect Date: 24-FEB-16 10:15
Receive Date: 01-MAR-16
Collector: Client

Project: DHLA00112
Client ID: DHLA002

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228	U	0.680	+/-1.05	1.82	3.00	pCi/L		AXM6	03/22/16	1658	1550814	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226	U	0.419	+/-0.340	0.521	1.00	pCi/L		CXP3	03/22/16	0735	1549017	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			99.5	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: March 23, 2016

Company : DHL Analytical
Address : 2300 Double Creek Drive

Round Rock, Texas 78664
Contact: Mr. John DuPont
Project: Routine Analysis

Client Sample ID: PDP-26
Sample ID: 392232004
Matrix: Water
Collect Date: 24-FEB-16 09:10
Receive Date: 01-MAR-16
Collector: Client

Project: DHLA00112
Client ID: DHLA002

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228	U	0.354	+/-0.907	1.64	3.00	pCi/L		AXM6	03/22/16	1658	1550814	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226		0.793	+/-0.388	0.493	1.00	pCi/L		CXP3	03/22/16	0735	1549017	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			88.8	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: March 23, 2016

Company : DHL Analytical
Address : 2300 Double Creek Drive

Round Rock, Texas 78664
Contact: Mr. John DuPont
Project: Routine Analysis

Client Sample ID: MW-20A
Sample ID: 392232005
Matrix: Water
Collect Date: 24-FEB-16 08:10
Receive Date: 01-MAR-16
Collector: Client

Project: DHLA00112
Client ID: DHLA002

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228		2.21	+/-0.996	1.31	3.00	pCi/L		AXM6	03/22/16	1658	1550814	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226		0.643	+/-0.314	0.400	1.00	pCi/L		CXP3	03/22/16	0735	1549017	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			95.6	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

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Certificate of Analysis

Report Date: March 23, 2016

Company : DHL Analytical
Address : 2300 Double Creek Drive

Round Rock, Texas 78664
Contact: Mr. John DuPont
Project: Routine Analysis

Client Sample ID: H-30
Sample ID: 392232006
Matrix: Water
Collect Date: 23-FEB-16 12:20
Receive Date: 01-MAR-16
Collector: Client

Project: DHLA00112
Client ID: DHLA002

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228	U	0.946	+/-1.39	2.38	3.00	pCi/L		AXM6	03/22/16	1659	1550814	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226		0.585	+/-0.321	0.430	1.00	pCi/L		CXP3	03/22/16	0735	1549017	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			91.3	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

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Certificate of Analysis

Report Date: March 23, 2016

Company : DHL Analytical
Address : 2300 Double Creek Drive

Round Rock, Texas 78664
Contact: Mr. John DuPont
Project: Routine Analysis

Client Sample ID: H-33
Sample ID: 392232007
Matrix: Water
Collect Date: 23-FEB-16 11:25
Receive Date: 01-MAR-16
Collector: Client

Project: DHLA00112
Client ID: DHLA002

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228	U	2.26	+/-1.48	2.32	3.00	pCi/L		AXM6	03/22/16	1659	1550814	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226		0.906	+/-0.393	0.472	1.00	pCi/L		CXP3	03/22/16	0810	1549017	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			94.2	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

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Certificate of Analysis

Report Date: March 23, 2016

Company : DHL Analytical
Address : 2300 Double Creek Drive

Round Rock, Texas 78664
Contact: Mr. John DuPont
Project: Routine Analysis

Client Sample ID: H-26
Sample ID: 392232008
Matrix: Water
Collect Date: 23-FEB-16 10:35
Receive Date: 01-MAR-16
Collector: Client

Project: DHLA00112
Client ID: DHLA002

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228	U	0.212	+/-1.10	2.06	3.00	pCi/L		AXM6	03/22/16	1659	1550814	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226		0.372	+/-0.243	0.297	1.00	pCi/L		CXP3	03/22/16	0810	1549017	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			100	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

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Certificate of Analysis

Report Date: March 23, 2016

Company : DHL Analytical
Address : 2300 Double Creek Drive

Round Rock, Texas 78664
Contact: Mr. John DuPont
Project: Routine Analysis

Client Sample ID: H-31
Sample ID: 392232009
Matrix: Water
Collect Date: 23-FEB-16 11:25
Receive Date: 01-MAR-16
Collector: Client

Project: DHLA00112
Client ID: DHLA002

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228	U	0.746	+/-0.963	1.64	3.00	pCi/L		AXM6	03/22/16	1659	1550814	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226	U	0.311	+/-0.269	0.419	1.00	pCi/L		CXP3	03/22/16	0810	1549017	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			90.2	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

GEL LABORATORIES LLC
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Certificate of Analysis

Report Date: March 23, 2016

Company : DHL Analytical
Address : 2300 Double Creek Drive

Round Rock, Texas 78664
Contact: Mr. John DuPont
Project: Routine Analysis

Client Sample ID: H-32
Sample ID: 392232010
Matrix: Water
Collect Date: 23-FEB-16 12:35
Receive Date: 01-MAR-16
Collector: Client

Project: DHLA00112
Client ID: DHLA002

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228		1.60	+/-0.969	1.45	3.00	pCi/L		AXM6	03/22/16	1659	1550814	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226		1.12	+/-0.450	0.519	1.00	pCi/L		CXP3	03/22/16	0810	1549017	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			101	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: March 23, 2016

Company : DHL Analytical
Address : 2300 Double Creek Drive

Round Rock, Texas 78664
Contact: Mr. John DuPont
Project: Routine Analysis

Client Sample ID: H-28
Sample ID: 392232011
Matrix: Water
Collect Date: 23-FEB-16 15:30
Receive Date: 01-MAR-16
Collector: Client

Project: DHLA00112
Client ID: DHLA002

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228		2.24	+/-1.14	1.65	3.00	pCi/L		AXM6	03/22/16	1659	1550814	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226	U	0.294	+/-0.254	0.396	1.00	pCi/L		CXP3	03/22/16	0810	1549017	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			93.6	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: March 23, 2016

Company : DHL Analytical
Address : 2300 Double Creek Drive

Round Rock, Texas 78664
Contact: Mr. John DuPont
Project: Routine Analysis

Client Sample ID: H-29
Sample ID: 392232012
Matrix: Water
Collect Date: 23-FEB-16 16:20
Receive Date: 01-MAR-16
Collector: Client

Project: DHLA00112
Client ID: DHLA002

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228	U	1.49	+/-1.35	2.22	3.00	pCi/L		AXM6	03/22/16	1659	1550814	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226	U	0.337	+/-0.254	0.374	1.00	pCi/L		CXP3	03/22/16	0810	1549017	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			90.5	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: March 23, 2016

Company : DHL Analytical
Address : 2300 Double Creek Drive

Round Rock, Texas 78664
Contact: Mr. John DuPont
Project: Routine Analysis

Client Sample ID: H-27
Sample ID: 392232013
Matrix: Water
Collect Date: 23-FEB-16 17:30
Receive Date: 01-MAR-16
Collector: Client

Project: DHLA00112
Client ID: DHLA002

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228	U	0.533	+/-0.924	1.62	3.00	pCi/L		AXM6	03/22/16	1659	1550814	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226		0.921	+/-0.383	0.451	1.00	pCi/L		CXP3	03/22/16	0840	1549017	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			84.9	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: March 23, 2016

Company : DHL Analytical
Address : 2300 Double Creek Drive

Round Rock, Texas 78664
Contact: Mr. John DuPont
Project: Routine Analysis

Client Sample ID: PDP-23
Sample ID: 392232014
Matrix: Water
Collect Date: 24-FEB-16 09:45
Receive Date: 01-MAR-16
Collector: Client

Project: DHLA00112
Client ID: DHLA002

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228	U	-0.208	+/-0.825	1.61	3.00	pCi/L		AXM6	03/22/16	1659	1550814	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226		1.06	+/-0.440	0.519	1.00	pCi/L		CXP3	03/22/16	0840	1549017	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			102	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: March 23, 2016

Company : DHL Analytical
Address : 2300 Double Creek Drive

Round Rock, Texas 78664
Contact: Mr. John DuPont
Project: Routine Analysis

Client Sample ID: PDP-25
Sample ID: 392232015
Matrix: Water
Collect Date: 24-FEB-16 10:55
Receive Date: 01-MAR-16
Collector: Client

Project: DHLA00112
Client ID: DHLA002

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228	U	2.13	+/-1.44	2.28	3.00	pCi/L		AXM6	03/22/16	1703	1550814	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226		0.613	+/-0.274	0.223	1.00	pCi/L		CXP3	03/22/16	0840	1549017	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			102	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: March 23, 2016

Company : DHL Analytical
Address : 2300 Double Creek Drive

Round Rock, Texas 78664
Contact: Mr. John DuPont
Project: Routine Analysis

Client Sample ID: MW-17A
Sample ID: 392232016
Matrix: Water
Collect Date: 24-FEB-16 12:00
Receive Date: 01-MAR-16
Collector: Client

Project: DHLA00112
Client ID: DHLA002

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228		3.07	+/-1.12	1.42	3.00	pCi/L		AXM6	03/22/16	1703	1550814	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226	U	0.436	+/-0.302	0.440	1.00	pCi/L		CXP3	03/22/16	0840	1549017	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			103	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: March 23, 2016

Company : DHL Analytical
Address : 2300 Double Creek Drive

Round Rock, Texas 78664
Contact: Mr. John DuPont
Project: Routine Analysis

Client Sample ID: PDP-24
Sample ID: 392232017
Matrix: Water
Collect Date: 24-FEB-16 14:30
Receive Date: 01-MAR-16
Collector: Client

Project: DHLA00112
Client ID: DHLA002

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC, Ra228, Liquid "As Received"												
Radium-228	U	0.498	+/-1.04	1.83	3.00	pCi/L		AXM6	03/22/16	1703	1550814	1
Rad Radium-226												
Lucas Cell, Ra226, liquid "As Received"												
Radium-226		0.622	+/-0.353	0.479	1.00	pCi/L		CXP3	03/22/16	0840	1549017	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC, Ra228, Liquid "As Received"			94.2	(15%-125%)

Notes:
Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

QC Summary

Report Date: March 23, 2016

DHL Analytical
2300 Double Creek Drive
Round Rock, Texas

Contact: **Mr. John DuPont**

Workorder: **392232**

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Rad Gas Flow										
Batch 1550814										
QC1203504569 392232008 DUP										
Radium-228	U	0.212	U	0.772	pCi/L	N/A		N/A	AXM6	03/22/16 17:03
	Uncertainty	+/-1.10		+/-1.04						
QC1203504570 LCS										
Radium-228	47.0			44.9	pCi/L		95.5	(75%-125%)		03/22/16 17:03
	Uncertainty			+/-3.39						
QC1203504568 MB										
Radium-228			U	0.687	pCi/L					03/22/16 17:03
	Uncertainty			+/-0.831						
Rad Ra-226										
Batch 1549017										
QC1203499953 392929001 DUP										
Radium-226		1.82		1.56	pCi/L	15.5		(0% - 100%)	CXP3	03/22/16 09:15
	Uncertainty	+/-0.560		+/-0.507						
QC1203499955 LCS										
Radium-226	24.4			19.7	pCi/L		80.9	(75%-125%)		03/22/16 09:15
	Uncertainty			+/-1.41						
QC1203499952 MB										
Radium-226			U	0.398	pCi/L					03/22/16 09:15
	Uncertainty			+/-0.290						
QC1203499954 392929001 MS										
Radium-226	122	1.82		97.3	pCi/L		78.2	(75%-125%)		03/22/16 09:15
	Uncertainty	+/-0.560		+/-7.24						

Notes:

Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

The Qualifiers in this report are defined as follows:

**	Analyte is a Tracer compound
<	Result is less than value reported
>	Result is greater than value reported
BD	Results are either below the MDC or tracer recovery is low
FA	Failed analysis.
H	Analytical holding time was exceeded
J	Value is estimated
K	Analyte present. Reported value may be biased high. Actual value is expected to be lower.
L	Analyte present. Reported value may be biased low. Actual value is expected to be higher.
M	M if above MDC and less than LLD
M	REMP Result > MDC/CL and < RDL
N/A	RPD or %Recovery limits do not apply.

QC Summary

Workorder: **392232**

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time

N1 See case narrative

ND Analyte concentration is not detected above the detection limit

NJ Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier

Q One or more quality control criteria have not been met. Refer to the applicable narrative or DER.

R Sample results are rejected

U Analyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD.

UI Gamma Spectroscopy--Uncertain identification

UJ Gamma Spectroscopy--Uncertain identification

UL Not considered detected. The associated number is the reported concentration, which may be inaccurate due to a low bias.

X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier

Y Other specific qualifiers were required to properly define the results. Consult case narrative.

^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.

h Preparation or preservation holding time was exceeded

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.
^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.
* Indicates that a Quality Control parameter was not within specifications.
For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.

There are no "Data Exception Reports" associated with this analytical report.

392232

DHL Analytical, Inc.
2300 Double Creek Drive
Round Rock, TX 78664
TEL: *(512) 388-8222* FAX: *(512) 388-8229*

CHAIN-OF-CUSTODY RECORD

Work Order: 1602269

Subcontractor:

GEL Laboratories
PO Box 30712
Charleston, SC 29417

TEL: (843) 556-8171
FAX:
Acct #:

25-Feb-16

Sample Id	Matrix	DHL#	Date Collected	Bottle Type	Requested Tests					
					E903.1	E904.0				
MW-19	Aqueous	-01B	02/24/16 12:10 PM	500HDPEHNO3		1				
MW-19	Aqueous	-01C	02/24/16 12:10 PM	500HDPEHNO3	1					
PDP-22	Aqueous	-02B	02/24/16 11:15 AM	500HDPEHNO3		1				
PDP-22	Aqueous	-02C	02/24/16 11:15 AM	500HDPEHNO3	1					
MW-18A	Aqueous	-03B	02/24/16 10:15 AM	500HDPEHNO3		1				
MW-18A	Aqueous	-03C	02/24/16 10:15 AM	500HDPEHNO3	1					
PDP-26	Aqueous	-04B	02/24/16 09:10 AM	500HDPEHNO3		1				
PDP-26	Aqueous	-04C	02/24/16 09:10 AM	500HDPEHNO3	1					
MW-20A	Aqueous	-05B	02/24/16 08:10 AM	500HDPEHNO3		1				
MW-20A	Aqueous	-05C	02/24/16 08:10 AM	500HDPEHNO3	1					
H-30	Aqueous	-06B	02/23/16 12:20 PM	500HDPEHNO3		1				
H-30	Aqueous	-06C	02/23/16 12:20 PM	500HDPEHNO3	1					
H-33	Aqueous	-07B	02/23/16 11:25 AM	500HDPEHNO3		1				
H-33	Aqueous	-07C	02/23/16 11:25 AM	500HDPEHNO3	1					
H-26	Aqueous	-08B	02/23/16 10:35 AM	500HDPEHNO3		1				
H-26	Aqueous	-08C	02/23/16 10:35 AM	500HDPEHNO3	1					
H-31	Aqueous	-09B	02/23/16 11:25 AM	500HDPEHNO3		1				
H-31	Aqueous	-09C	02/23/16 11:25 AM	500HDPEHNO3	1					

General Comments:

Please analyze these samples with a Standard Turnaround Time.
Call John DuPont if you have questions.
Quality Control Package Needed: Standard / _____
EMAIL report to both cac@dhlanalytical.com & dupont@dhlanalytical.com

		Date/Time			Date/Time
Relinquished by:		2/25/16 1730	**Received by:**	Fed ex	2/23/16 1730
Relinquished by:			**Received by:**		3-1-16 8:50

DHL Analytical, Inc.
2300 Double Creek Drive
Round Rock, TX 78664
TEL: *(512) 388-8222* FAX: *(512) 388-8229*

CHAIN-OF-CUSTODY RECORD

Work Order: 1602269

Subcontractor:

GEL Laboratories
PO Box 30712
Charleston, SC 29417

TEL: (843) 556-8171
FAX:
Acct #:

25-Feb-16

Sample Id	Matrix	DHL#	Date Collected	Bottle Type	Requested Tests					
					E903.1	E904.0				
H-32	Aqueous	-10B	02/23/16 12:35 PM	500HDPEHNO3		1				
H-32	Aqueous	-10C	02/23/16 12:35 PM	500HDPEHNO3	1					
H-28	Aqueous	-11B	02/23/16 03:30 PM	500HDPEHNO3		1				
H-28	Aqueous	-11C	02/23/16 03:30 PM	500HDPEHNO3	1					
H-29	Aqueous	-12B	02/23/16 04:20 PM	500HDPEHNO3		1				
H-29	Aqueous	-12C	02/23/16 04:20 PM	500HDPEHNO3	1					
H-27	Aqueous	-13B	02/23/16 05:30 PM	500HDPEHNO3		1				
H-27	Aqueous	-13C	02/23/16 05:30 PM	500HDPEHNO3	1					
PDP-23	Aqueous	-14B	02/24/16 09:45 AM	500HDPEHNO3		1				
PDP-23	Aqueous	-14C	02/24/16 09:45 AM	500HDPEHNO3	1					
PDP-25	Aqueous	-15B	02/24/16 10:55 AM	500HDPEHNO3		1				
PDP-25	Aqueous	-15C	02/24/16 10:55 AM	500HDPEHNO3	1					
MW-17A	Aqueous	-16B	02/24/16 12:00 PM	500HDPEHNO3		1				
MW-17A	Aqueous	-16C	02/24/16 12:00 PM	500HDPEHNO3	1					
PDP-24	Aqueous	-17B	02/24/16 02:30 PM	500HDPEHNO3		1				
PDP-24	Aqueous	-17C	02/24/16 02:30 PM	500HDPEHNO3	1					

General Comments:

Please analyze these samples with a Standard Turnaround Time.
Call John DuPont if you have questions.
Quality Control Package Needed: Standard / _____
EMAIL report to both cac@dhlanalytical.com & dupont@dhlanalytical.com

		Date/Time		Date/Time
Relinquished by:		2/25/16 1730	**Received by:**	2/25/16 1735
Relinquished by:			**Received by:**	3-1-16 8:50

GEL Laboratories LLC

SAMPLE RECEIPT & REVIEW FORM

Client: DHLA	**SDG/AR/COC/Work Order:** 392232
Received By: Shanta mack	**Date Received:** 3-1-16 8:50

Suspected Hazard Information	Yes	No	*If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation.
COC/Samples marked as radioactive?		✓	Maximum Net Counts Observed* (Observed Counts - Area Background Counts): 90 cpm
Classified Radioactive II or III by RSO?		✓	If yes, Were swipes taken of sample containers < action levels?
COC/Samples marked containing PCBs?		✓	
Package, COC, and/or Samples marked as beryllium or asbestos containing?		✓	If yes, samples are to be segregated as Safety Controlled Samples, and opened by the GEL Safety Group.
Shipped as a DOT Hazardous?		✓	Hazard Class Shipped: UN#:
Samples identified as Foreign Soil?		✓	

	Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (Required for Non-Conforming Items)
1	Shipping containers received intact and sealed?	✓			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
2	Samples requiring cold preservation within (0 ≤ 6 deg. C)?*		✓		Preservation Method: Ice bags Blue ice Dry ice None Other (describe) *all temperatures are recorded in Celsius 16C
2a	Daily check performed and passed on IR temperature gun?	✓			Temperature Device Serial #: Secondary Temperature Device Serial # (If Applicable): 150320158 35
3	Chain of custody documents included with shipment?	✓			
4	Sample containers intact and sealed?	✓			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
5	Samples requiring chemical preservation at proper pH?	✓			Sample ID's, containers affected and observed pH: If Preservation added, Lot#:
6	Do Low Level Perchlorate samples have headspace as required?		✓		Sample ID's and containers affected:
7	VOA vials contain acid preservation?		✓		(If unknown, select No)
8	VOA vials free of headspace (defined as < 6mm bubble)?		✓		Sample ID's and containers affected:
9	Are Encore containers present?			✓	(If yes, immediately deliver to Volatiles laboratory)
10	Samples received within holding time?	✓			ID's and tests affected:
11	Sample ID's on COC match ID's on bottles?	✓			Sample ID's and containers affected:
12	Date & time on COC match date & time on bottles?	✓			Sample ID's affected:
13	Number of containers received match number indicated on COC?	✓			Sample ID's affected:
14	Are sample containers identifiable as GEL provided?			✓	
15	COC form is properly signed in relinquished/received sections?	✓			
16	Carrier and tracking number.				Circle Applicable: FedEx Air FedEx Ground UPS Field Services Courier Other 7757 3717 4362 7757 3716 0138

Comments (Use Continuation Form if needed):

PM (or PMA) review: Initials ACD Date 3/2/16 Page 1 of 1 GL-CHL-SR-001 Rev 2

List of current GEL Certifications as of 23 March 2016

State	Certification
Alaska	UST−0110
Arkansas	88−0651
CLIA	42D0904046
California	2940
Colorado	SC00012
Connecticut	PH−0169
Delaware	SC00012
DoD ELAP/ ISO17025 A2LA	2567.01
Florida NELAP	E87156
Foreign Soils Permit	P330−15−00283, P330−15−00253
Georgia	SC00012
Georgia SDWA	967
Hawaii	SC00012
Idaho Chemistry	SC00012
Idaho Radiochemistry	SC00012
Illinois NELAP	200029
Indiana	C−SC−01
Kansas NELAP	E−10332
Kentucky SDWA	90129
Kentucky Wastewater	90129
Louisiana NELAP	03046 (AI33904)
Louisiana SDWA	LA160006
Maryland	270
Massachusetts	M−SC012
Michigan	9976
Mississippi	SC00012
Nebraska	NE−OS−26−13
Nevada	SC000122016−1
New Hampshire NELAP	205415
New Jersey NELAP	SC002
New Mexico	SC00012
New York NELAP	11501
North Carolina	233
North Carolina SDWA	45709
North Dakota	R−158
Oklahoma	9904
Pennsylvania NELAP	68−00485
S.Carolina Radchem	10120002
South Carolina Chemistry	10120001
Tennessee	TN 02934
Texas NELAP	T104704235−16−11
Utah NELAP	SC000122016−20
Vermont	VT87156
Virginia NELAP	460202
Washington	C780
West Virginia	997404

May 09, 2016

Will Vienne
Pastor, Behling & Wheeler
2201 Double Creek Dr #4004
Round Rock, Texas 78664
TEL: (512) 671-3434
FAX (512) 671-3446

Order No.: 1604071

RE: Luminant-Martin Lake

Dear Will Vienne:

DHL Analytical, Inc. received 12 sample(s) on 4/7/2016 for the analyses presented in the following report.

There were no problems with the analyses and all data met requirements of NELAC except where noted in the Case Narrative. All non-NELAC methods will be identified accordingly in the case narrative and all estimated uncertainties of test results are within method or EPA specifications.

If you have any questions regarding these tests results, please feel free to call. Thank you for using DHL Analytical.

Sincerely,

John DuPont
General Manager

This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211-16-16

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Miscellaneous Documents **3**

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DHL ANALYTICAL
2300 Double Creek Dr. ■ Round Rock, TX 78664
Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

№ 70867

CHAIN-OF-CUSTODY

CLIENT: PBW
ADDRESS: 2201 DOUBLE CREEK DR ROUND ROCK TX 78664
PHONE: 512-671-3434 FAX/E-MAIL: 512-671-3446
DATA REPORTED TO: WILL VIENNE
ADDITIONAL REPORT COPIES TO:

DATE: 4-6-16 PAGE 1 OF 1
PO #: 5164-B DHL WORK ORDER #: 1604071
PROJECT LOCATION OR NAME: LUMINANT - MARTIN LAKE
CLENT PROJECT #: 5164-B COLLECTOR: J BRAYTON

Authorize 5% surcharge for TRRP Report? ☐ Yes ☐ No

S=SOIL W=WATER A=AIR L=LIQUID SE=SEDIMENT P=PAINT SL=SLUDGE O=OTHER SO=SOLID

PRESERVATION: HCl | HNO_3 | H_2SO_4 ☐ NaOH ☐ | ICE | UNPRESERVED

ANALYSES: BTEX ☐ MTBE ☐ (METHOD 8021) | TPH 1005 ☐ TPH 1006 ☐ HOLD 1006 ☐ | GRO (METHOD 8015) ☐ DRO (METHOD 8105) ☐ | VOC 8260 ☐ VOC 624 ☐ VOC 8260/5035 ☐ | SVOC 8270 ☐ PAH 8270 ☐ HOLD PAH ☐ SVOC 625 ☐ | 8270 PEST ☐ 625 PEST/PCB ☐ 608 PCB ☐ | 8270 O-P PEST ☐ 8082 PCB ☐ 8270 PCB ☐ | 8321 HERB ☐ T PHOS, AMMONIA ☐ | METALS 6020 ☐ METALS 200.8 ☐ DISS. METALS ☐ | RCRA ☐ TX11 ☐ ☐ | PH ☐ HEX CHROM ☐ ALKALINITY ☐ COD ☐ | CHLORIDE ☐ ANIONS ☐ | TCLP-SVOC ☐ VOC ☐ PEST ☐ HERB ☐ | TCLP-METALS ☐ RCRA 8 ☐ TX-11 ☐ Pb ☐ | RCI ☐ FLASHPOINT ☐ DGAS ☐ | TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐ | SEE ATTACHED

	Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	HCl	HNO_3	H_2SO_4 ☐ NaOH ☐	ICE	UNPRESERVED	ANALYSES	FIELD NOTES
01	H-26	01	4-5-16	1305	W	P	4						X	
02	H-33	02		1445	W	P	4						X	
03	MW-17A	03		1655	W	P	4						X	
04	PDP-24	04	↓	1745	W	P	4						X	
05	MW-19	05	4-6-16	0740	W	P	4						X	
06	PDP-22	06		0835	W	P	4						X	
07	PDP-23	07		0930	W	P	4						X	
08	MW-20A	08		1020	W	P	4						X	
09	PDP-26	09		1115	W	P	4						X	
10	PDP-25	10		1200	W	P	4						X	
11	MW-18A	11		1255	W	P	4						X	
12	EB-1	12	↓	1315	W	P	4						X	

RELINQUISHED BY: (Signature) DATE/TIME 4-6-16 1730 RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature) DATE/TIME 4/7/16 1000 RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature) DATE/TIME RECEIVED BY: (Signature)

☐ DHL DISPOSAL @ $5.00 each ☐ Return

TURN AROUND TIME
RUSH ☐ CALL FIRST
1 DAY ☐ CALL FIRST
2 DAY ☐
NORMAL ☒
OTHER ☐ _____

LABORATORY USE ONLY:
RECEIVING TEMP: 1.6, 1.8 THERM #: 78
CUSTODY SEALS: ☐ BROKEN ☐ INTACT ☒ NOT USED
CARRIER: ☐ LONE STAR ☒ FEDEX ☐ UPS ☐ OTHER
☐ COURIER DELIVERY
☐ HAND DELIVERED

John Dupont

From: Sara Taube [Sara.Taube@pbwllc.com]
Sent: Wednesday, July 22, 2015 12:05 PM
To: John Dupont
Subject: CCR Appendix III and IV
Follow Up Flag: Follow up
Flag Status: Completed

Hi John,

Here are the Appendix III and Appendix IV constituents that we will need to have analyzed under the CCR Rule.

Appendix III
Boron
Calcium
Chloride
Fluoride
pH
sulfate
TDS

Appendix IV
Antimony
Arsenic
Barium
Beryllium
Cadmium
Chromium
Cobalt
Fluoride
Lead
Lithium
Mercury
Molybdenum
Selenium
Thallium
Radium 226 and 228

We are looking to have approximately 74 wells sampled 8 times over the course of the next two years. Please let me know if there is any more information you might need.

Cheers,

Sara

10/26/2015

ORIGIN ID:GGGA (555) 555-5555
PBW
2201 DOUBLE CREEK DR STE 4004
ROUND ROCK, TX 78664
UNITED STATES US
SHIP DATE: 06APR16
ACTWGT: 55.00 LB
CAD: 006994166/SSFE1
DIMS: 24x13x13 IN
BILL THIRD PARTY
TO DHL ANALYTICAL
DHL ANALYTICAL
2300 DOUBLE CREEK DR
ROUND ROCK TX 78664
(512) 388-8222
INV:
PO:
REF:
DEPT:
FedEx
Express
TRK# 0201 7827 6477 3276
THU - 07 APR 10:30A
PRIORITY OVERNIGHT
A8 BSMA
78664
TX-US AUS

ORIGIN ID:GGGA (555) 555-5555
PBW
2201 DOUBLE CREEK DR STE 4004
ROUND ROCK, TX 78664
UNITED STATES US
TO DHL ANALYTICAL
DHL ANALYTICAL
2300 DOUBLE CREEK DR
ROUND ROCK TX 78664
(512) 388-8222
INV:
PO:
REF:
DEPT:
FedEx
Express
TRK# 0201 7827 6476 0817
THU - 07 APR 10:30A
PRIORITY OVERNIGHT
A8 BSMA
78664
TX-US AUS

DHL Analytical, Inc.

Sample Receipt Checklist

Client Name **Pastor, Behling & Wheeler**

Date Received: **4/7/2016**

Work Order Number **1604071**

Received by **JB**

Checklist completed by: _____ 4/7/2016
Signature | Date

Reviewed by: JD 4/7/2016
Initials | Date

Carrier name FedEx 1day

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	1.6 °C
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH<2 acceptable upon receipt?	Yes ☑	No ☐	NA ☐ LOT # 8086
	Adjusted? no		Checked by JB
Water - ph>9 (S) or ph>12 (CN) acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted? _____		Checked by _____

Any No response must be detailed in the comments section below.

Client contacted _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments: _____

Corrective Action _____

DHL Analytical, Inc. **Date:** *09-May-16*

CLIENT: Pastor, Behling & Wheeler
Project: Luminant-Martin Lake
Lab Order: 1604071

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Method SW6020A - Metals Analysis
Method SW7470A - Mercury Analysis
Method E300 - Anions Analysis
Method M4500-H+ B - pH of a Water Analysis
Method M2540C - TDS Analysis
Sub-contract - Radium-228 and Radium-226 analyses by methods E904/9320 and SM 7500 Ra B M. Analyzed at ESC Lab Sciences.

LOG IN

The samples were received and log-in performed on 4/7/16. A total of 12 samples were received. The samples arrived in good condition and were properly packaged.

METALS ANALYSIS

For Metals analysis performed on 4/11/16, 4/15/16 and 4/20/16 (batches 74482 & 74505) the matrix spikes and/or matrix spike duplicate recoveries were out of control limits for Boron and/or Calcium. These are flagged accordingly in the QC summary report. The samples selected for the matrix spikes and matrix spike duplicates (batches 74482 & 74505) were not from this work order. The LCSs were within control limits for these analytes. No further corrective actions were taken.

For Metals analysis performed on 4/15/16 (batch 74482) the RPD for the serial dilution was slightly above control limits for Boron. This is flagged accordingly. The PDS was within control limits for this analyte. No further corrective actions were taken.

DHL Analytical, Inc.

Date: *09-May-16*

CLIENT: Pastor, Behling & Wheeler
Project: Luminant-Martin Lake
Lab Order: 1604071

Work Order Sample Summary

Lab Smp ID	Client Sample ID	Tag Number	Date Collected	Date Recved
1604071-01	H-26		04/05/16 01:05 PM	4/7/2016
1604071-02	H-33		04/05/16 02:45 PM	4/7/2016
1604071-03	MW-17A		04/05/16 04:55 PM	4/7/2016
1604071-04	PDP-24		04/05/16 05:45 PM	4/7/2016
1604071-05	MW-19		04/06/16 07:40 AM	4/7/2016
1604071-06	PDP-22		04/06/16 08:35 AM	4/7/2016
1604071-07	PDP-23		04/06/16 09:30 AM	4/7/2016
1604071-08	MW-20A		04/06/16 10:20 AM	4/7/2016
1604071-09	PDP-26		04/06/16 11:15 AM	4/7/2016
1604071-10	PDP-25		04/06/16 12:00 PM	4/7/2016
1604071-11	MW-18A		04/06/16 12:55 PM	4/7/2016
1604071-12	EB-1		04/06/16 01:15 PM	4/7/2016

Lab Order: 1604071
Client: Pastor, Behling & Wheeler
Project: Luminant-Martin Lake

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1604071-01A	H-26	04/05/16 01:05 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/07/16 11:20 AM	74482
	H-26	04/05/16 01:05 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/07/16 11:20 AM	74482
	H-26	04/05/16 01:05 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	04/07/16 01:49 PM	74488
1604071-01D	H-26	04/05/16 01:05 PM	Aqueous	E300	Anion Preparation	04/14/16 10:21 AM	74597
	H-26	04/05/16 01:05 PM	Aqueous	M4500-H+ B	pH Preparation	04/11/16 08:50 AM	74521
	H-26	04/05/16 01:05 PM	Aqueous	M2540C	TDS Preparation	04/11/16 09:22 AM	74527
1604071-02A	H-33	04/05/16 02:45 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/07/16 11:20 AM	74482
	H-33	04/05/16 02:45 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/07/16 11:20 AM	74482
	H-33	04/05/16 02:45 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	04/07/16 01:49 PM	74488
1604071-02D	H-33	04/05/16 02:45 PM	Aqueous	E300	Anion Preparation	04/14/16 10:21 AM	74597
	H-33	04/05/16 02:45 PM	Aqueous	E300	Anion Preparation	04/14/16 10:21 AM	74597
	H-33	04/05/16 02:45 PM	Aqueous	M4500-H+ B	pH Preparation	04/11/16 08:50 AM	74521
	H-33	04/05/16 02:45 PM	Aqueous	M2540C	TDS Preparation	04/11/16 09:22 AM	74527
1604071-03A	MW-17A	04/05/16 04:55 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/07/16 11:20 AM	74482
	MW-17A	04/05/16 04:55 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/07/16 11:20 AM	74482
	MW-17A	04/05/16 04:55 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	04/07/16 01:49 PM	74488
1604071-03D	MW-17A	04/05/16 04:55 PM	Aqueous	E300	Anion Preparation	04/14/16 10:21 AM	74597
	MW-17A	04/05/16 04:55 PM	Aqueous	M4500-H+ B	pH Preparation	04/11/16 08:50 AM	74521
	MW-17A	04/05/16 04:55 PM	Aqueous	M2540C	TDS Preparation	04/11/16 09:22 AM	74527
1604071-04A	PDP-24	04/05/16 05:45 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/07/16 11:20 AM	74482
	PDP-24	04/05/16 05:45 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/07/16 11:20 AM	74482
	PDP-24	04/05/16 05:45 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/07/16 11:20 AM	74482
	PDP-24	04/05/16 05:45 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	04/07/16 01:49 PM	74488
1604071-04D	PDP-24	04/05/16 05:45 PM	Aqueous	E300	Anion Preparation	04/14/16 10:21 AM	74597
	PDP-24	04/05/16 05:45 PM	Aqueous	E300	Anion Preparation	04/14/16 10:21 AM	74597
	PDP-24	04/05/16 05:45 PM	Aqueous	M4500-H+ B	pH Preparation	04/11/16 08:50 AM	74521
	PDP-24	04/05/16 05:45 PM	Aqueous	M2540C	TDS Preparation	04/11/16 09:22 AM	74527
1604071-05A	MW-19	04/06/16 07:40 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/08/16 10:16 AM	74505

Lab Order: 1604071
Client: Pastor, Behling & Wheeler
Project: Luminant-Martin Lake

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1604071-05A	MW-19	04/06/16 07:40 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/08/16 10:16 AM	74505
	MW-19	04/06/16 07:40 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/08/16 10:16 AM	74505
	MW-19	04/06/16 07:40 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	04/07/16 01:49 PM	74488
1604071-05D	MW-19	04/06/16 07:40 AM	Aqueous	E300	Anion Preparation	04/14/16 10:21 AM	74597
	MW-19	04/06/16 07:40 AM	Aqueous	E300	Anion Preparation	04/14/16 10:21 AM	74597
	MW-19	04/06/16 07:40 AM	Aqueous	M4500-H+ B	pH Preparation	04/11/16 08:50 AM	74521
	MW-19	04/06/16 07:40 AM	Aqueous	M2540C	TDS Preparation	04/11/16 09:22 AM	74527
1604071-06A	PDP-22	04/06/16 08:35 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/08/16 10:16 AM	74505
	PDP-22	04/06/16 08:35 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/08/16 10:16 AM	74505
	PDP-22	04/06/16 08:35 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/08/16 10:16 AM	74505
	PDP-22	04/06/16 08:35 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	04/07/16 01:49 PM	74488
1604071-06D	PDP-22	04/06/16 08:35 AM	Aqueous	E300	Anion Preparation	04/14/16 10:21 AM	74597
	PDP-22	04/06/16 08:35 AM	Aqueous	E300	Anion Preparation	04/14/16 10:21 AM	74597
	PDP-22	04/06/16 08:35 AM	Aqueous	M4500-H+ B	pH Preparation	04/11/16 08:50 AM	74521
	PDP-22	04/06/16 08:35 AM	Aqueous	M2540C	TDS Preparation	04/11/16 09:22 AM	74527
1604071-07A	PDP-23	04/06/16 09:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/08/16 10:16 AM	74505
	PDP-23	04/06/16 09:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/08/16 10:16 AM	74505
	PDP-23	04/06/16 09:30 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	04/07/16 01:49 PM	74488
1604071-07D	PDP-23	04/06/16 09:30 AM	Aqueous	E300	Anion Preparation	04/14/16 10:21 AM	74597
	PDP-23	04/06/16 09:30 AM	Aqueous	M4500-H+ B	pH Preparation	04/11/16 08:50 AM	74521
	PDP-23	04/06/16 09:30 AM	Aqueous	M2540C	TDS Preparation	04/11/16 09:22 AM	74527
1604071-08A	MW-20A	04/06/16 10:20 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/08/16 10:16 AM	74505
	MW-20A	04/06/16 10:20 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/08/16 10:16 AM	74505
	MW-20A	04/06/16 10:20 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	04/07/16 01:49 PM	74488
1604071-08D	MW-20A	04/06/16 10:20 AM	Aqueous	E300	Anion Preparation	04/14/16 10:21 AM	74597
	MW-20A	04/06/16 10:20 AM	Aqueous	M4500-H+ B	pH Preparation	04/11/16 08:50 AM	74521
	MW-20A	04/06/16 10:20 AM	Aqueous	M2540C	TDS Preparation	04/11/16 09:22 AM	74527
1604071-09A	PDP-26	04/06/16 11:15 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/08/16 10:16 AM	74505

Lab Order: 1604071
Client: Pastor, Behling & Wheeler
Project: Luminant-Martin Lake

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1604071-09A	PDP-26	04/06/16 11:15 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/08/16 10:16 AM	74505
	PDP-26	04/06/16 11:15 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	04/07/16 01:49 PM	74488
1604071-09D	PDP-26	04/06/16 11:15 AM	Aqueous	E300	Anion Preparation	04/14/16 10:21 AM	74597
	PDP-26	04/06/16 11:15 AM	Aqueous	M4500-H+ B	pH Preparation	04/11/16 08:50 AM	74521
	PDP-26	04/06/16 11:15 AM	Aqueous	M2540C	TDS Preparation	04/11/16 09:22 AM	74527
1604071-10A	PDP-25	04/06/16 12:00 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/08/16 10:16 AM	74505
	PDP-25	04/06/16 12:00 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/08/16 10:16 AM	74505
	PDP-25	04/06/16 12:00 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/08/16 10:16 AM	74505
	PDP-25	04/06/16 12:00 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	04/07/16 01:49 PM	74488
1604071-10D	PDP-25	04/06/16 12:00 PM	Aqueous	E300	Anion Preparation	04/14/16 10:21 AM	74597
	PDP-25	04/06/16 12:00 PM	Aqueous	E300	Anion Preparation	04/14/16 10:21 AM	74597
	PDP-25	04/06/16 12:00 PM	Aqueous	M4500-H+ B	pH Preparation	04/11/16 08:50 AM	74521
	PDP-25	04/06/16 12:00 PM	Aqueous	M2540C	TDS Preparation	04/11/16 09:22 AM	74527
1604071-11A	MW-18A	04/06/16 12:55 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/08/16 10:16 AM	74505
	MW-18A	04/06/16 12:55 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/08/16 10:16 AM	74505
	MW-18A	04/06/16 12:55 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	04/07/16 01:49 PM	74488
1604071-11D	MW-18A	04/06/16 12:55 PM	Aqueous	E300	Anion Preparation	04/14/16 09:11 AM	74589
	MW-18A	04/06/16 12:55 PM	Aqueous	M4500-H+ B	pH Preparation	04/11/16 08:50 AM	74521
	MW-18A	04/06/16 12:55 PM	Aqueous	M2540C	TDS Preparation	04/11/16 09:22 AM	74527
1604071-12A	EB-1	04/06/16 01:15 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/08/16 10:16 AM	74505
	EB-1	04/06/16 01:15 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	04/08/16 10:16 AM	74505
	EB-1	04/06/16 01:15 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	04/07/16 01:49 PM	74488
1604071-12D	EB-1	04/06/16 01:15 PM	Aqueous	E300	Anion Preparation	04/14/16 09:11 AM	74589
	EB-1	04/06/16 01:15 PM	Aqueous	M4500-H+ B	pH Preparation	04/11/16 08:50 AM	74521
	EB-1	04/06/16 01:15 PM	Aqueous	M2540C	TDS Preparation	04/12/16 10:57 AM	74560

Lab Order: 1604071
Client: Pastor, Behling & Wheeler
Project: Luminant-Martin Lake

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1604071-01A	H-26	Aqueous	SW7470A	Mercury Total: Aqueous	74488	1	04/12/16 01:48 PM	CETAC2_HG_160412A
	H-26	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	74482	1	04/11/16 02:54 PM	ICP-MS4_160411D
	H-26	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	74482	1	04/15/16 10:43 AM	ICP-MS4_160415A
1604071-01D	H-26	Aqueous	E300	Anions by IC method - Water	74597	1	04/14/16 12:06 PM	IC3_160414A
	H-26	Aqueous	M4500-H+ B	pH	74521	1	04/11/16 09:54 AM	TITRATOR_160411A
	H-26	Aqueous	M2540C	Total Dissolved Solids	74527	1	04/12/16 08:45 AM	WC_160411C
1604071-02A	H-33	Aqueous	SW7470A	Mercury Total: Aqueous	74488	1	04/12/16 01:50 PM	CETAC2_HG_160412A
	H-33	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	74482	1	04/11/16 02:56 PM	ICP-MS4_160411D
	H-33	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	74482	1	04/15/16 10:45 AM	ICP-MS4_160415A
1604071-02D	H-33	Aqueous	E300	Anions by IC method - Water	74597	1	04/14/16 12:27 PM	IC3_160414A
	H-33	Aqueous	E300	Anions by IC method - Water	74597	10	04/14/16 05:10 PM	IC3_160414A
	H-33	Aqueous	M4500-H+ B	pH	74521	1	04/11/16 09:59 AM	TITRATOR_160411A
	H-33	Aqueous	M2540C	Total Dissolved Solids	74527	1	04/12/16 08:45 AM	WC_160411C
1604071-03A	MW-17A	Aqueous	SW7470A	Mercury Total: Aqueous	74488	1	04/12/16 01:57 PM	CETAC2_HG_160412A
	MW-17A	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	74482	1	04/11/16 02:58 PM	ICP-MS4_160411D
	MW-17A	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	74482	1	04/15/16 10:47 AM	ICP-MS4_160415A
1604071-03D	MW-17A	Aqueous	E300	Anions by IC method - Water	74597	1	04/14/16 12:47 PM	IC3_160414A
	MW-17A	Aqueous	M4500-H+ B	pH	74521	1	04/11/16 10:01 AM	TITRATOR_160411A
	MW-17A	Aqueous	M2540C	Total Dissolved Solids	74527	1	04/12/16 08:45 AM	WC_160411C
1604071-04A	PDP-24	Aqueous	SW7470A	Mercury Total: Aqueous	74488	1	04/12/16 01:59 PM	CETAC2_HG_160412A
	PDP-24	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	74482	10	04/15/16 10:49 AM	ICP-MS4_160415A
	PDP-24	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	74482	10	04/13/16 12:24 PM	ICP-MS4_160413A
	PDP-24	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	74482	1	04/11/16 03:14 PM	ICP-MS4_160411D
1604071-04D	PDP-24	Aqueous	E300	Anions by IC method - Water	74597	1	04/14/16 01:08 PM	IC3_160414A
	PDP-24	Aqueous	E300	Anions by IC method - Water	74597	10	04/14/16 06:12 PM	IC3_160414A
	PDP-24	Aqueous	M4500-H+ B	pH	74521	1	04/11/16 10:02 AM	TITRATOR_160411A

Lab Order: 1604071
Client: Pastor, Behling & Wheeler
Project: Luminant-Martin Lake

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1604071-04D	PDP-24	Aqueous	M2540C	Total Dissolved Solids	74527	1	04/12/16 08:45 AM	WC_160411C
1604071-05A	MW-19	Aqueous	SW7470A	Mercury Total: Aqueous	74488	1	04/12/16 02:01 PM	CETAC2_HG_160412A
	MW-19	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	74505	10	04/20/16 12:55 PM	ICP-MS4_160420A
	MW-19	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	74505	1	04/20/16 01:01 PM	ICP-MS4_160420A
	MW-19	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	74505	1	04/11/16 01:34 PM	ICP-MS4_160411D
1604071-05D	MW-19	Aqueous	E300	Anions by IC method - Water	74597	10	04/14/16 07:14 PM	IC3_160414A
	MW-19	Aqueous	E300	Anions by IC method - Water	74597	1	04/14/16 01:28 PM	IC3_160414A
	MW-19	Aqueous	M4500-H+ B	pH	74521	1	04/11/16 10:05 AM	TITRATOR_160411A
	MW-19	Aqueous	M2540C	Total Dissolved Solids	74527	1	04/12/16 08:45 AM	WC_160411C
1604071-06A	PDP-22	Aqueous	SW7470A	Mercury Total: Aqueous	74488	1	04/12/16 02:04 PM	CETAC2_HG_160412A
	PDP-22	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	74505	1	04/11/16 01:36 PM	ICP-MS4_160411D
	PDP-22	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	74505	10	04/20/16 12:57 PM	ICP-MS4_160420A
	PDP-22	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	74505	1	04/20/16 01:03 PM	ICP-MS4_160420A
1604071-06D	PDP-22	Aqueous	E300	Anions by IC method - Water	74597	10	04/14/16 07:35 PM	IC3_160414A
	PDP-22	Aqueous	E300	Anions by IC method - Water	74597	1	04/14/16 01:52 PM	IC3_160414A
	PDP-22	Aqueous	M4500-H+ B	pH	74521	1	04/11/16 10:08 AM	TITRATOR_160411A
	PDP-22	Aqueous	M2540C	Total Dissolved Solids	74527	1	04/12/16 08:45 AM	WC_160411C
1604071-07A	PDP-23	Aqueous	SW7470A	Mercury Total: Aqueous	74488	1	04/12/16 02:06 PM	CETAC2_HG_160412A
	PDP-23	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	74505	1	04/11/16 01:58 PM	ICP-MS4_160411D
	PDP-23	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	74505	1	04/20/16 01:05 PM	ICP-MS4_160420A
1604071-07D	PDP-23	Aqueous	E300	Anions by IC method - Water	74597	1	04/14/16 02:16 PM	IC3_160414A
	PDP-23	Aqueous	M4500-H+ B	pH	74521	1	04/11/16 10:11 AM	TITRATOR_160411A
	PDP-23	Aqueous	M2540C	Total Dissolved Solids	74527	1	04/12/16 08:45 AM	WC_160411C
1604071-08A	MW-20A	Aqueous	SW7470A	Mercury Total: Aqueous	74488	1	04/12/16 02:08 PM	CETAC2_HG_160412A
	MW-20A	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	74505	1	04/11/16 02:00 PM	ICP-MS4_160411D
	MW-20A	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	74505	1	04/20/16 01:07 PM	ICP-MS4_160420A

Lab Order: 1604071
Client: Pastor, Behling & Wheeler
Project: Luminant-Martin Lake

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1604071-08D	MW-20A	Aqueous	E300	Anions by IC method - Water	74597	1	04/14/16 02:36 PM	IC3_160414A
	MW-20A	Aqueous	M4500-H+ B	pH	74521	1	04/11/16 10:12 AM	TITRATOR_160411A
	MW-20A	Aqueous	M2540C	Total Dissolved Solids	74527	1	04/12/16 08:45 AM	WC_160411C
1604071-09A	PDP-26	Aqueous	SW7470A	Mercury Total: Aqueous	74488	1	04/12/16 02:10 PM	CETAC2_HG_160412A
	PDP-26	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	74505	1	04/11/16 02:02 PM	ICP-MS4_160411D
	PDP-26	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	74505	1	04/20/16 01:09 PM	ICP-MS4_160420A
1604071-09D	PDP-26	Aqueous	E300	Anions by IC method - Water	74597	1	04/14/16 08:16 PM	IC3_160414A
	PDP-26	Aqueous	M4500-H+ B	pH	74521	1	04/11/16 10:13 AM	TITRATOR_160411A
	PDP-26	Aqueous	M2540C	Total Dissolved Solids	74527	1	04/12/16 08:45 AM	WC_160411C
1604071-10A	PDP-25	Aqueous	SW7470A	Mercury Total: Aqueous	74488	1	04/12/16 02:13 PM	CETAC2_HG_160412A
	PDP-25	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	74505	1	04/11/16 02:04 PM	ICP-MS4_160411D
	PDP-25	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	74505	10	04/20/16 12:59 PM	ICP-MS4_160420A
	PDP-25	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	74505	1	04/20/16 01:11 PM	ICP-MS4_160420A
1604071-10D	PDP-25	Aqueous	E300	Anions by IC method - Water	74597	1	04/14/16 08:57 PM	IC3_160414A
	PDP-25	Aqueous	E300	Anions by IC method - Water	74597	10	04/14/16 09:18 PM	IC3_160414A
	PDP-25	Aqueous	M4500-H+ B	pH	74521	1	04/11/16 10:18 AM	TITRATOR_160411A
	PDP-25	Aqueous	M2540C	Total Dissolved Solids	74527	1	04/12/16 08:45 AM	WC_160411C
1604071-11A	MW-18A	Aqueous	SW7470A	Mercury Total: Aqueous	74488	1	04/12/16 02:15 PM	CETAC2_HG_160412A
	MW-18A	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	74505	1	04/11/16 02:06 PM	ICP-MS4_160411D
	MW-18A	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	74505	1	04/20/16 01:58 PM	ICP-MS4_160420A
1604071-11D	MW-18A	Aqueous	E300	Anions by IC method - Water	74589	1	04/14/16 03:00 PM	IC2_160414A
	MW-18A	Aqueous	M4500-H+ B	pH	74521	1	04/11/16 10:20 AM	TITRATOR_160411A
	MW-18A	Aqueous	M2540C	Total Dissolved Solids	74527	1	04/12/16 08:45 AM	WC_160411C
1604071-12A	EB-1	Aqueous	SW7470A	Mercury Total: Aqueous	74488	1	04/12/16 02:17 PM	CETAC2_HG_160412A
	EB-1	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	74505	1	04/11/16 02:08 PM	ICP-MS4_160411D
	EB-1	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	74505	1	04/20/16 02:00 PM	ICP-MS4_160420A

Lab Order: 1604071
Client: Pastor, Behling & Wheeler
Project: Luminant-Martin Lake

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1604071-12D	EB-1	Aqueous	E300	Anions by IC method - Water	74589	1	04/14/16 03:15 PM	IC2_160414A
	EB-1	Aqueous	M4500-H+ B	pH	74521	1	04/11/16 10:23 AM	TITRATOR_160411A
	EB-1	Aqueous	M2540C	Total Dissolved Solids	74560	1	04/13/16 08:45 AM	WC_160412B

DHL Analytical, Inc.

Date: *09-May-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	H-26
Project:	Luminant-Martin Lake	**Lab ID:**	1604071-01
Project No:	5164-B	**Collection Date:**	04/05/16 01:05 PM
Lab Order:	1604071	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	04/12/16 01:48 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	04/11/16 02:54 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	04/11/16 02:54 PM
Barium	0.0408	0.00300	0.0100		mg/L	1	04/11/16 02:54 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	04/11/16 02:54 PM
Boron	0.289	0.0100	0.0300		mg/L	1	04/15/16 10:43 AM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	04/11/16 02:54 PM
Calcium	11.8	0.100	0.300		mg/L	1	04/11/16 02:54 PM
Chromium	0.00798	0.00200	0.00500		mg/L	1	04/11/16 02:54 PM
Cobalt	0.0125	0.00300	0.00500		mg/L	1	04/11/16 02:54 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	04/11/16 02:54 PM
Lithium	0.0121	0.00500	0.0100		mg/L	1	04/11/16 02:54 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	04/11/16 02:54 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	04/11/16 02:54 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	04/11/16 02:54 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	27.8	0.300	1.00		mg/L	1	04/14/16 12:06 PM
Fluoride	0.199	0.100	0.400	J	mg/L	1	04/14/16 12:06 PM
Sulfate	56.8	1.00	3.00		mg/L	1	04/14/16 12:06 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.22	0	0		pH Units@19.3℃	1	04/11/16 09:54 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	213	10.0	10.0		mg/L	1	04/12/16 08:45 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *09-May-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	H-33
Project:	Luminant-Martin Lake	**Lab ID:**	1604071-02
Project No:	5164-B	**Collection Date:**	04/05/16 02:45 PM
Lab Order:	1604071	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	04/12/16 01:50 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	04/11/16 02:56 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	04/11/16 02:56 PM
Barium	0.0576	0.00300	0.0100		mg/L	1	04/11/16 02:56 PM
Beryllium	0.000302	0.000300	0.00100	J	mg/L	1	04/11/16 02:56 PM
Boron	0.0659	0.0100	0.0300		mg/L	1	04/15/16 10:45 AM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	04/11/16 02:56 PM
Calcium	14.9	0.100	0.300		mg/L	1	04/11/16 02:56 PM
Chromium	0.0171	0.00200	0.00500		mg/L	1	04/11/16 02:56 PM
Cobalt	0.0160	0.00300	0.00500		mg/L	1	04/11/16 02:56 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	04/11/16 02:56 PM
Lithium	0.160	0.00500	0.0100		mg/L	1	04/11/16 02:56 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	04/11/16 02:56 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	04/11/16 02:56 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	04/11/16 02:56 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	58.3	3.00	10.0		mg/L	10	04/14/16 05:10 PM
Fluoride	0.140	0.100	0.400	J	mg/L	1	04/14/16 12:27 PM
Sulfate	113	1.00	3.00		mg/L	1	04/14/16 12:27 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.72	0	0		pH Units@19.3℃	1	04/11/16 09:59 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	589	10.0	10.0		mg/L	1	04/12/16 08:45 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *09-May-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	MW-17A
Project:	Luminant-Martin Lake	**Lab ID:**	1604071-03
Project No:	5164-B	**Collection Date:**	04/05/16 04:55 PM
Lab Order:	1604071	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	0.000196	0.0000800	0.000200	J	mg/L	1	04/12/16 01:57 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	04/11/16 02:58 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	04/11/16 02:58 PM
Barium	0.103	0.00300	0.0100		mg/L	1	04/11/16 02:58 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	04/11/16 02:58 PM
Boron	0.459	0.0100	0.0300		mg/L	1	04/15/16 10:47 AM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	04/11/16 02:58 PM
Calcium	4.64	0.100	0.300		mg/L	1	04/11/16 02:58 PM
Chromium	0.00550	0.00200	0.00500		mg/L	1	04/11/16 02:58 PM
Cobalt	0.00829	0.00300	0.00500		mg/L	1	04/11/16 02:58 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	04/11/16 02:58 PM
Lithium	0.0137	0.00500	0.0100		mg/L	1	04/11/16 02:58 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	04/11/16 02:58 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	04/11/16 02:58 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	04/11/16 02:58 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	7.82	0.300	1.00		mg/L	1	04/14/16 12:47 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	04/14/16 12:47 PM
Sulfate	41.4	1.00	3.00		mg/L	1	04/14/16 12:47 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	5.47	0	0		pH Units@19.5℃	1	04/11/16 10:01 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	132	10.0	10.0		mg/L	1	04/12/16 08:45 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *09-May-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	PDP-24
Project:	Luminant-Martin Lake	**Lab ID:**	1604071-04
Project No:	5164-B	**Collection Date:**	04/05/16 05:45 PM
Lab Order:	1604071	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	0.000469	0.0000800	0.000200		mg/L	1	04/12/16 01:59 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	04/11/16 03:14 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	04/11/16 03:14 PM
Barium	0.0186	0.00300	0.0100		mg/L	1	04/11/16 03:14 PM
Beryllium	0.00485	0.000300	0.00100		mg/L	1	04/11/16 03:14 PM
Boron	3.99	0.100	0.300		mg/L	10	04/15/16 10:49 AM
Cadmium	0.00207	0.000300	0.00100		mg/L	1	04/11/16 03:14 PM
Calcium	34.5	1.00	3.00		mg/L	10	04/13/16 12:24 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	04/11/16 03:14 PM
Cobalt	0.0894	0.00300	0.00500		mg/L	1	04/11/16 03:14 PM
Lead	0.000769	0.000300	0.00100	J	mg/L	1	04/11/16 03:14 PM
Lithium	0.0261	0.00500	0.0100		mg/L	1	04/11/16 03:14 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	04/11/16 03:14 PM
Selenium	0.00276	0.00200	0.00500	J	mg/L	1	04/11/16 03:14 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	04/11/16 03:14 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	18.0	0.300	1.00		mg/L	1	04/14/16 01:08 PM
Fluoride	0.817	0.100	0.400		mg/L	1	04/14/16 01:08 PM
Sulfate	416	10.0	30.0		mg/L	10	04/14/16 06:12 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	4.31	0	0		pH Units@20.1℃	1	04/11/16 10:02 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	711	10.0	10.0		mg/L	1	04/12/16 08:45 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *09-May-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	MW-19
Project:	Luminant-Martin Lake	**Lab ID:**	1604071-05
Project No:	5164-B	**Collection Date:**	04/06/16 07:40 AM
Lab Order:	1604071	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	04/12/16 02:01 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	04/11/16 01:34 PM
Arsenic	0.00689	0.00200	0.00500		mg/L	1	04/11/16 01:34 PM
Barium	0.0517	0.00300	0.0100		mg/L	1	04/11/16 01:34 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	04/11/16 01:34 PM
Boron	0.473	0.0100	0.0300		mg/L	1	04/20/16 01:01 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	04/11/16 01:34 PM
Calcium	134	1.00	3.00		mg/L	10	04/20/16 12:55 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	04/11/16 01:34 PM
Cobalt	0.00434	0.00300	0.00500	J	mg/L	1	04/11/16 01:34 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	04/11/16 01:34 PM
Lithium	0.00622	0.00500	0.0100	J	mg/L	1	04/11/16 01:34 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	04/11/16 01:34 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	04/11/16 01:34 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	04/11/16 01:34 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	31.3	0.300	1.00		mg/L	1	04/14/16 01:28 PM
Fluoride	0.221	0.100	0.400	J	mg/L	1	04/14/16 01:28 PM
Sulfate	362	10.0	30.0		mg/L	10	04/14/16 07:14 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.70	0	0		pH Units@19.8℃	1	04/11/16 10:05 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	836	10.0	10.0		mg/L	1	04/12/16 08:45 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *09-May-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	PDP-22
Project:	Luminant-Martin Lake	**Lab ID:**	1604071-06
Project No:	5164-B	**Collection Date:**	04/06/16 08:35 AM
Lab Order:	1604071	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	04/12/16 02:04 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	04/11/16 01:36 PM
Arsenic	0.00536	0.00200	0.00500		mg/L	1	04/11/16 01:36 PM
Barium	0.146	0.00300	0.0100		mg/L	1	04/11/16 01:36 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	04/11/16 01:36 PM
Boron	0.218	0.0100	0.0300		mg/L	1	04/20/16 01:03 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	04/11/16 01:36 PM
Calcium	97.9	1.00	3.00		mg/L	10	04/20/16 12:57 PM
Chromium	0.0170	0.00200	0.00500		mg/L	1	04/11/16 01:36 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	04/11/16 01:36 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	04/11/16 01:36 PM
Lithium	0.0874	0.00500	0.0100		mg/L	1	04/11/16 01:36 PM
Molybdenum	0.00205	0.00200	0.00500	J	mg/L	1	04/11/16 01:36 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	04/11/16 01:36 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	04/11/16 01:36 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	13.7	0.300	1.00		mg/L	1	04/14/16 01:52 PM
Fluoride	0.349	0.100	0.400	J	mg/L	1	04/14/16 01:52 PM
Sulfate	209	10.0	30.0		mg/L	10	04/14/16 07:35 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	7.20	0	0		pH Units@19.9℃	1	04/11/16 10:08 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	767	10.0	10.0		mg/L	1	04/12/16 08:45 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *09-May-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	PDP-23
Project:	Luminant-Martin Lake	**Lab ID:**	1604071-07
Project No:	5164-B	**Collection Date:**	04/06/16 09:30 AM
Lab Order:	1604071	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	04/12/16 02:06 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	04/11/16 01:58 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	04/11/16 01:58 PM
Barium	0.0375	0.00300	0.0100		mg/L	1	04/11/16 01:58 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	04/11/16 01:58 PM
Boron	0.0476	0.0100	0.0300		mg/L	1	04/20/16 01:05 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	04/11/16 01:58 PM
Calcium	1.57	0.100	0.300		mg/L	1	04/11/16 01:58 PM
Chromium	0.00200	0.00200	0.00500	J	mg/L	1	04/11/16 01:58 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	04/11/16 01:58 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	04/11/16 01:58 PM
Lithium	0.0126	0.00500	0.0100		mg/L	1	04/11/16 01:58 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	04/11/16 01:58 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	04/11/16 01:58 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	04/11/16 01:58 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	4.17	0.300	1.00		mg/L	1	04/14/16 02:16 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	04/14/16 02:16 PM
Sulfate	1.46	1.00	3.00	J	mg/L	1	04/14/16 02:16 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.04	0	0		pH Units@20.3℃	1	04/11/16 10:11 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	88.0	10.0	10.0		mg/L	1	04/12/16 08:45 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *09-May-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	MW-20A
Project:	Luminant-Martin Lake	**Lab ID:**	1604071-08
Project No:	5164-B	**Collection Date:**	04/06/16 10:20 AM
Lab Order:	1604071	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	0.000371	0.0000800	0.000200		mg/L	1	04/12/16 02:08 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	04/11/16 02:00 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	04/11/16 02:00 PM
Barium	0.0300	0.00300	0.0100		mg/L	1	04/11/16 02:00 PM
Beryllium	0.000519	0.000300	0.00100	J	mg/L	1	04/11/16 02:00 PM
Boron	0.150	0.0100	0.0300		mg/L	1	04/20/16 01:07 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	04/11/16 02:00 PM
Calcium	17.1	0.100	0.300		mg/L	1	04/11/16 02:00 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	04/11/16 02:00 PM
Cobalt	0.00575	0.00300	0.00500		mg/L	1	04/11/16 02:00 PM
Lead	0.00209	0.000300	0.00100		mg/L	1	04/11/16 02:00 PM
Lithium	0.0166	0.00500	0.0100		mg/L	1	04/11/16 02:00 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	04/11/16 02:00 PM
Selenium	0.00739	0.00200	0.00500		mg/L	1	04/11/16 02:00 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	04/11/16 02:00 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	9.65	0.300	1.00		mg/L	1	04/14/16 02:36 PM
Fluoride	0.804	0.100	0.400		mg/L	1	04/14/16 02:36 PM
Sulfate	118	1.00	3.00		mg/L	1	04/14/16 02:36 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	4.65	0	0		pH Units@19.8℃	1	04/11/16 10:12 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	313	10.0	10.0		mg/L	1	04/12/16 08:45 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *09-May-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	PDP-26
Project:	Luminant-Martin Lake	**Lab ID:**	1604071-09
Project No:	5164-B	**Collection Date:**	04/06/16 11:15 AM
Lab Order:	1604071	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	04/12/16 02:10 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	04/11/16 02:02 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	04/11/16 02:02 PM
Barium	0.0242	0.00300	0.0100		mg/L	1	04/11/16 02:02 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	04/11/16 02:02 PM
Boron	0.0441	0.0100	0.0300		mg/L	1	04/20/16 01:09 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	04/11/16 02:02 PM
Calcium	2.62	0.100	0.300		mg/L	1	04/11/16 02:02 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	04/11/16 02:02 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	04/11/16 02:02 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	04/11/16 02:02 PM
Lithium	0.0138	0.00500	0.0100		mg/L	1	04/11/16 02:02 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	04/11/16 02:02 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	04/11/16 02:02 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	04/11/16 02:02 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	5.26	0.300	1.00		mg/L	1	04/14/16 08:16 PM
Fluoride	0.187	0.100	0.400	J	mg/L	1	04/14/16 08:16 PM
Sulfate	8.55	1.00	3.00		mg/L	1	04/14/16 08:16 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.52	0	0		pH Units@20℃	1	04/11/16 10:13 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	126	10.0	10.0		mg/L	1	04/12/16 08:45 AM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *09-May-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	PDP-25
Project:	Luminant-Martin Lake	**Lab ID:**	1604071-10
Project No:	5164-B	**Collection Date:**	04/06/16 12:00 PM
Lab Order:	1604071	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	04/12/16 02:13 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	04/11/16 02:04 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	04/11/16 02:04 PM
Barium	0.197	0.00300	0.0100		mg/L	1	04/11/16 02:04 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	04/11/16 02:04 PM
Boron	0.100	0.0100	0.0300		mg/L	1	04/20/16 01:11 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	04/11/16 02:04 PM
Calcium	38.3	1.00	3.00		mg/L	10	04/20/16 12:59 PM
Chromium	0.0165	0.00200	0.00500		mg/L	1	04/11/16 02:04 PM
Cobalt	0.0103	0.00300	0.00500		mg/L	1	04/11/16 02:04 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	04/11/16 02:04 PM
Lithium	0.171	0.00500	0.0100		mg/L	1	04/11/16 02:04 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	04/11/16 02:04 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	04/11/16 02:04 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	04/11/16 02:04 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	124	3.00	10.0		mg/L	10	04/14/16 09:18 PM
Fluoride	0.149	0.100	0.400	J	mg/L	1	04/14/16 08:57 PM
Sulfate	102	1.00	3.00		mg/L	1	04/14/16 08:57 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.48	0	0		pH Units@20.4℃	1	04/11/16 10:18 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	646	10.0	10.0		mg/L	1	04/12/16 08:45 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *09-May-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	MW-18A
Project:	Luminant-Martin Lake	**Lab ID:**	1604071-11
Project No:	5164-B	**Collection Date:**	04/06/16 12:55 PM
Lab Order:	1604071	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	0.00252	0.0000800	0.000200		mg/L	1	04/12/16 02:15 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	04/11/16 02:06 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	04/11/16 02:06 PM
Barium	0.0487	0.00300	0.0100		mg/L	1	04/11/16 02:06 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	04/11/16 02:06 PM
Boron	0.0961	0.0100	0.0300		mg/L	1	04/20/16 01:58 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	04/11/16 02:06 PM
Calcium	1.45	0.100	0.300		mg/L	1	04/11/16 02:06 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	04/11/16 02:06 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	04/11/16 02:06 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	04/11/16 02:06 PM
Lithium	0.00907	0.00500	0.0100	J	mg/L	1	04/11/16 02:06 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	04/11/16 02:06 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	04/11/16 02:06 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	04/11/16 02:06 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	7.07	0.300	1.00		mg/L	1	04/14/16 03:00 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	04/14/16 03:00 PM
Sulfate	5.26	1.00	3.00		mg/L	1	04/14/16 03:00 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	5.49	0	0		pH Units@20.6℃	1	04/11/16 10:20 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	79.0	10.0	10.0		mg/L	1	04/12/16 08:45 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *09-May-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	EB-1
Project:	Luminant-Martin Lake	**Lab ID:**	1604071-12
Project No:	5164-B	**Collection Date:**	04/06/16 01:15 PM
Lab Order:	1604071	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	04/12/16 02:17 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	04/11/16 02:08 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	04/11/16 02:08 PM
Barium	0.0641	0.00300	0.0100		mg/L	1	04/11/16 02:08 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	04/11/16 02:08 PM
Boron	0.0324	0.0100	0.0300		mg/L	1	04/20/16 02:00 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	04/11/16 02:08 PM
Calcium	2.98	0.100	0.300		mg/L	1	04/11/16 02:08 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	04/11/16 02:08 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	04/11/16 02:08 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	04/11/16 02:08 PM
Lithium	<0.00500	0.00500	0.0100		mg/L	1	04/11/16 02:08 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	04/11/16 02:08 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	04/11/16 02:08 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	04/11/16 02:08 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	7.93	0.300	1.00		mg/L	1	04/14/16 03:15 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	04/14/16 03:15 PM
Sulfate	1.66	1.00	3.00	J	mg/L	1	04/14/16 03:15 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	5.94	0	0		pH Units@20.7℃	1	04/11/16 10:23 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	13.0	10.0	10.0		mg/L	1	04/13/16 08:45 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT: Pastor, Behling & Wheeler
Work Order: 1604071
Project: Luminant-Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_160412A

The QC data in batch 74488 applies to the following samples: 1604071-01A, 1604071-02A, 1604071-03A, 1604071-04A, 1604071-05A, 1604071-06A, 1604071-07A, 1604071-08A, 1604071-09A, 1604071-10A, 1604071-11A, 1604071-12A

Sample ID **MB-74488** Batch ID: **74488** TestNo: **SW7470A** Units: **mg/L**
SampType: **MBLK** Run ID: **CETAC2_HG_160412A** Analysis Date: **4/12/2016 1:23:16 PM** Prep Date: **4/7/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.0000800	0.000200								

Sample ID **LCS-74488** Batch ID: **74488** TestNo: **SW7470A** Units: **mg/L**
SampType: **LCS** Run ID: **CETAC2_HG_160412A** Analysis Date: **4/12/2016 1:25:31 PM** Prep Date: **4/7/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00203	0.000200	0.00200	0	102	85	115			

Sample ID **LCSD-74488** Batch ID: **74488** TestNo: **SW7470A** Units: **mg/L**
SampType: **LCSD** Run ID: **CETAC2_HG_160412A** Analysis Date: **4/12/2016 1:27:48 PM** Prep Date: **4/7/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00201	0.000200	0.00200	0	101	85	115	0.990	15	

Sample ID **1604071-12A SD** Batch ID: **74488** TestNo: **SW7470A** Units: **mg/L**
SampType: **SD** Run ID: **CETAC2_HG_160412A** Analysis Date: **4/12/2016 2:20:00 PM** Prep Date: **4/7/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.000400	0.00100	0	0				0	10	

Sample ID **1604071-12A PDS** Batch ID: **74488** TestNo: **SW7470A** Units: **mg/L**
SampType: **PDS** Run ID: **CETAC2_HG_160412A** Analysis Date: **4/12/2016 2:22:16 PM** Prep Date: **4/7/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00242	0.000200	0.00250	0	96.8	85	115			

Sample ID **1604071-12A MS** Batch ID: **74488** TestNo: **SW7470A** Units: **mg/L**
SampType: **MS** Run ID: **CETAC2_HG_160412A** Analysis Date: **4/12/2016 2:24:33 PM** Prep Date: **4/7/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00201	0.000200	0.00200	0	101	80	120			

Sample ID **1604071-12A MSD** Batch ID: **74488** TestNo: **SW7470A** Units: **mg/L**
SampType: **MSD** Run ID: **CETAC2_HG_160412A** Analysis Date: **4/12/2016 2:26:49 PM** Prep Date: **4/7/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00198	0.000200	0.00200	0	99.0	80	120	1.50	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1604071
Project: Luminant-Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_160412A

Sample ID	**ICV-160412**	Batch ID:	**R85189**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**ICV**	Run ID:	**CETAC2_HG_160412A**	Analysis Date:	**4/12/2016 10:31:03 AM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00395	0.000200	0.00400	0	98.8	90	110			

Sample ID	**CCV4-160412**	Batch ID:	**R85189**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**CETAC2_HG_160412A**	Analysis Date:	**4/12/2016 1:18:41 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00202	0.000200	0.00200	0	101	90	110			

Sample ID	**CCV5-160412**	Batch ID:	**R85189**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**CETAC2_HG_160412A**	Analysis Date:	**4/12/2016 1:52:44 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00199	0.000200	0.00200	0	99.5	90	110			

Sample ID	**CCV6-160412**	Batch ID:	**R85189**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**CETAC2_HG_160412A**	Analysis Date:	**4/12/2016 2:29:07 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00203	0.000200	0.00200	0	102	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1604071
Project: Luminant-Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160411D

The QC data in batch 74482 applies to the following samples: 1604071-01A, 1604071-02A, 1604071-03A, 1604071-04A

Sample ID **MB-74482** Batch ID: **74482** TestNo: **SW6020A** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_160411D** Analysis Date: **4/11/2016 2:30:00 PM** Prep Date: **4/7/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.000800	0.00250								
Arsenic	<0.00200	0.00500								
Barium	<0.00300	0.0100								
Beryllium	<0.000300	0.00100								
Cadmium	<0.000300	0.00100								
Calcium	<0.100	0.300								
Chromium	<0.00200	0.00500								
Cobalt	<0.00300	0.00500								
Lead	<0.000300	0.00100								
Lithium	<0.00500	0.0100								
Molybdenum	<0.00200	0.00500								
Selenium	<0.00200	0.00500								
Thallium	<0.000500	0.00150								

Sample ID **LCS-74482** Batch ID: **74482** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_160411D** Analysis Date: **4/11/2016 2:32:00 PM** Prep Date: **4/7/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.188	0.00250	0.200	0	94.1	80	120			
Arsenic	0.165	0.00500	0.200	0	82.5	80	120			
Barium	0.186	0.0100	0.200	0	93.2	80	120			
Beryllium	0.194	0.00100	0.200	0	96.9	80	120			
Cadmium	0.190	0.00100	0.200	0	94.8	80	120			
Calcium	4.98	0.300	5.00	0	99.5	80	120			
Chromium	0.190	0.00500	0.200	0	94.9	80	120			
Cobalt	0.203	0.00500	0.200	0	101	80	120			
Lead	0.192	0.00100	0.200	0	96.0	80	120			
Lithium	0.194	0.0100	0.200	0	96.9	80	120			
Molybdenum	0.170	0.00500	0.200	0	85.2	80	120			
Selenium	0.189	0.00500	0.200	0	94.5	80	120			
Thallium	0.194	0.00150	0.200	0	97.2	80	120			

Sample ID **LCSD-74482** Batch ID: **74482** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_160411D** Analysis Date: **4/11/2016 2:34:00 PM** Prep Date: **4/7/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.190	0.00250	0.200	0	94.9	80	120	0.895	15	
Arsenic	0.175	0.00500	0.200	0	87.6	80	120	5.95	15	
Barium	0.187	0.0100	0.200	0	93.6	80	120	0.445	15	
Beryllium	0.193	0.00100	0.200	0	96.4	80	120	0.525	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1604071
Project: Luminant-Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160411D

Sample ID **LCSD-74482**	Batch ID: **74482**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCSD**	Run ID: **ICP-MS4_160411D**	Analysis Date: **4/11/2016 2:34:00 PM**	Prep Date: **4/7/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cadmium	0.192	0.00100	0.200	0	95.8	80	120	1.03	15	
Calcium	4.96	0.300	5.00	0	99.2	80	120	0.351	15	
Chromium	0.193	0.00500	0.200	0	96.4	80	120	1.49	15	
Cobalt	0.204	0.00500	0.200	0	102	80	120	0.761	15	
Lead	0.193	0.00100	0.200	0	96.6	80	120	0.589	15	
Lithium	0.193	0.0100	0.200	0	96.5	80	120	0.486	15	
Molybdenum	0.176	0.00500	0.200	0	87.9	80	120	3.17	15	
Selenium	0.193	0.00500	0.200	0	96.5	80	120	2.07	15	
Thallium	0.198	0.00150	0.200	0	98.9	80	120	1.75	15	

Sample ID **1604052-03A SD**	Batch ID: **74482**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS4_160411D**	Analysis Date: **4/11/2016 2:40:00 PM**	Prep Date: **4/7/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.00400	0.0125	0	0				0	10	
Arsenic	<0.0100	0.0250	0	0.00648				0	10	
Barium	0.0229	0.0500	0	0.0237				3.71	10	
Beryllium	0.00542	0.00500	0	0.00527				2.83	10	
Cadmium	<0.00150	0.00500	0	0.00128				0	10	
Chromium	<0.0100	0.0250	0	0				0	10	
Cobalt	0.210	0.0250	0	0.208				0.962	10	
Lead	0.00181	0.00500	0	0.00182				0.825	10	
Lithium	0.0862	0.0500	0	0.0818				5.33	10	
Molybdenum	<0.0100	0.0250	0	0				0	10	
Selenium	<0.0100	0.0250	0	0				0	10	
Thallium	<0.00250	0.00750	0	0				0	10	

Sample ID **1604052-03A PDS**	Batch ID: **74482**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_160411D**	Analysis Date: **4/11/2016 3:00:00 PM**	Prep Date: **4/7/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.182	0.00250	0.200	0	91.0	80	120			
Arsenic	0.197	0.00500	0.200	0.00648	95.4	80	120			
Barium	0.202	0.0100	0.200	0.0237	88.9	80	120			
Beryllium	0.188	0.00100	0.200	0.00527	91.4	80	120			
Cadmium	0.177	0.00100	0.200	0.00128	87.6	80	120			
Chromium	0.183	0.00500	0.200	0	91.4	80	120			
Cobalt	0.382	0.00500	0.200	0.208	87.5	80	120			
Lead	0.186	0.00100	0.200	0.00182	92.0	80	120			
Lithium	0.252	0.0100	0.200	0.0818	85.1	80	120			
Molybdenum	0.178	0.00500	0.200	0	88.8	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1604071
Project: Luminant-Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160411D

Sample ID **1604052-03A PDS**	Batch ID: **74482**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_160411D**	Analysis Date: **4/11/2016 3:00:00 PM**	Prep Date: **4/7/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.195	0.00500	0.200	0	97.6	80	120			
Thallium	0.185	0.00150	0.200	0	92.6	80	120			

Sample ID **1604052-03A MS**	Batch ID: **74482**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS4_160411D**	Analysis Date: **4/11/2016 3:02:00 PM**	Prep Date: **4/7/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.189	0.00250	0.200	0	94.7	80	120			
Arsenic	0.199	0.00500	0.200	0.00648	96.3	80	120			
Barium	0.205	0.0100	0.200	0.0237	90.6	80	120			
Beryllium	0.188	0.00100	0.200	0.00527	91.5	80	120			
Cadmium	0.179	0.00100	0.200	0.00128	89.0	80	120			
Calcium	48.4	0.300	5.00	46.3	43.1	80	120			S
Chromium	0.179	0.00500	0.200	0	89.3	80	120			
Cobalt	0.393	0.00500	0.200	0.208	92.6	80	120			
Lead	0.187	0.00100	0.200	0.00182	92.6	80	120			
Lithium	0.257	0.0100	0.200	0.0818	87.4	80	120			
Molybdenum	0.180	0.00500	0.200	0	90.2	80	120			
Selenium	0.195	0.00500	0.200	0	97.6	80	120			
Thallium	0.188	0.00150	0.200	0	94.2	80	120			

Sample ID **1604052-03A MSD**	Batch ID: **74482**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS4_160411D**	Analysis Date: **4/11/2016 3:04:00 PM**	Prep Date: **4/7/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.192	0.00250	0.200	0	95.8	80	120	1.21	15	
Arsenic	0.203	0.00500	0.200	0.00648	98.4	80	120	2.09	15	
Barium	0.207	0.0100	0.200	0.0237	91.6	80	120	0.985	15	
Beryllium	0.191	0.00100	0.200	0.00527	92.9	80	120	1.47	15	
Cadmium	0.183	0.00100	0.200	0.00128	90.7	80	120	1.88	15	
Calcium	50.4	0.300	5.00	46.3	82.3	80	120	3.97	15	
Chromium	0.182	0.00500	0.200	0	91.1	80	120	1.94	15	
Cobalt	0.400	0.00500	0.200	0.208	96.4	80	120	1.92	15	
Lead	0.189	0.00100	0.200	0.00182	93.6	80	120	1.13	15	
Lithium	0.260	0.0100	0.200	0.0818	89.3	80	120	1.43	15	
Molybdenum	0.184	0.00500	0.200	0	91.9	80	120	1.81	15	
Selenium	0.199	0.00500	0.200	0	99.4	80	120	1.84	15	
Thallium	0.191	0.00150	0.200	0	95.7	80	120	1.57	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1604071
Project: Luminant-Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160411D

The QC data in batch 74505 applies to the following samples: 1604071-05A, 1604071-06A, 1604071-07A, 1604071-08A, 1604071-09A, 1604071-10A, 1604071-11A, 1604071-12A

Sample ID **MB-74505** Batch ID: **74505** TestNo: **SW6020A** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_160411D** Analysis Date: **4/11/2016 1:06:00 PM** Prep Date: **4/8/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.000800	0.00250								
Arsenic	<0.00200	0.00500								
Barium	<0.00300	0.0100								
Beryllium	<0.000300	0.00100								
Cadmium	<0.000300	0.00100								
Calcium	<0.100	0.300								
Chromium	<0.00200	0.00500								
Cobalt	<0.00300	0.00500								
Lead	<0.000300	0.00100								
Lithium	<0.00500	0.0100								
Molybdenum	<0.00200	0.00500								
Selenium	<0.00200	0.00500								
Thallium	<0.000500	0.00150								

Sample ID **LCS-74505** Batch ID: **74505** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_160411D** Analysis Date: **4/11/2016 1:10:00 PM** Prep Date: **4/8/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.200	0.00250	0.200	0	99.9	80	120			
Arsenic	0.192	0.00500	0.200	0	96.2	80	120			
Barium	0.189	0.0100	0.200	0	94.7	80	120			
Beryllium	0.201	0.00100	0.200	0	101	80	120			
Cadmium	0.194	0.00100	0.200	0	96.9	80	120			
Calcium	4.92	0.300	5.00	0	98.5	80	120			
Chromium	0.197	0.00500	0.200	0	98.5	80	120			
Cobalt	0.200	0.00500	0.200	0	99.9	80	120			
Lead	0.195	0.00100	0.200	0	97.3	80	120			
Lithium	0.203	0.0100	0.200	0	101	80	120			
Molybdenum	0.194	0.00500	0.200	0	96.8	80	120			
Selenium	0.193	0.00500	0.200	0	96.3	80	120			
Thallium	0.198	0.00150	0.200	0	98.8	80	120			

Sample ID **LCSD-74505** Batch ID: **74505** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_160411D** Analysis Date: **4/11/2016 1:12:00 PM** Prep Date: **4/8/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.199	0.00250	0.200	0	99.4	80	120	0.564	15	
Arsenic	0.193	0.00500	0.200	0	96.4	80	120	0.181	15	
Barium	0.186	0.0100	0.200	0	93.1	80	120	1.64	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

Sample ID **LCSD-74505**	Batch ID: **74505**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCSD**	Run ID: **ICP-MS4_160411D**	Analysis Date: **4/11/2016 1:12:00 PM**	Prep Date: **4/8/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.201	0.00100	0.200	0	100	80	120	0.397	15	
Cadmium	0.189	0.00100	0.200	0	94.6	80	120	2.47	15	
Calcium	4.97	0.300	5.00	0	99.5	80	120	1.02	15	
Chromium	0.195	0.00500	0.200	0	97.5	80	120	1.03	15	
Cobalt	0.202	0.00500	0.200	0	101	80	120	1.08	15	
Lead	0.195	0.00100	0.200	0	97.3	80	120	0.026	15	
Lithium	0.198	0.0100	0.200	0	99.1	80	120	2.39	15	
Molybdenum	0.190	0.00500	0.200	0	95.2	80	120	1.63	15	
Selenium	0.193	0.00500	0.200	0	96.7	80	120	0.464	15	
Thallium	0.197	0.00150	0.200	0	98.7	80	120	0.154	15	

Sample ID **1604073-01A SD**	Batch ID: **74505**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS4_160411D**	Analysis Date: **4/11/2016 1:18:00 PM**	Prep Date: **4/8/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.00400	0.0125	0	0				0	10	
Arsenic	<0.0100	0.0250	0	0				0	10	
Barium	0.125	0.0500	0	0.127				1.27	10	
Beryllium	<0.00150	0.00500	0	0				0	10	
Cadmium	<0.00150	0.00500	0	0				0	10	
Chromium	<0.0100	0.0250	0	0				0	10	
Cobalt	<0.0150	0.0250	0	0				0	10	
Lead	<0.00150	0.00500	0	0				0	10	
Lithium	0.0761	0.0500	0	0.0715				6.22	10	
Molybdenum	<0.0100	0.0250	0	0				0	10	
Selenium	<0.0100	0.0250	0	0				0	10	
Thallium	<0.00250	0.00750	0	0				0	10	

Sample ID **1604073-01A PDS**	Batch ID: **74505**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_160411D**	Analysis Date: **4/11/2016 1:38:00 PM**	Prep Date: **4/8/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.192	0.00250	0.200	0	96.1	80	120			
Arsenic	0.191	0.00500	0.200	0	95.6	80	120			
Barium	0.310	0.0100	0.200	0.127	91.4	80	120			
Beryllium	0.195	0.00100	0.200	0	97.7	80	120			
Cadmium	0.187	0.00100	0.200	0	93.4	80	120			
Chromium	0.197	0.00500	0.200	0	98.4	80	120			
Cobalt	0.198	0.00500	0.200	0	98.9	80	120			
Lead	0.193	0.00100	0.200	0	96.6	80	120			
Lithium	0.256	0.0100	0.200	0.0715	92.4	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1604071
Project: Luminant-Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160411D

Sample ID **1604073-01A PDS**	Batch ID: **74505**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_160411D**	Analysis Date: **4/11/2016 1:38:00 PM**	Prep Date: **4/8/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Molybdenum	0.194	0.00500	0.200	0	97.1	80	120			
Selenium	0.190	0.00500	0.200	0	95.0	80	120			
Thallium	0.195	0.00150	0.200	0	97.5	80	120			

Sample ID **1604073-01A MS**	Batch ID: **74505**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS4_160411D**	Analysis Date: **4/11/2016 1:40:00 PM**	Prep Date: **4/8/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.208	0.00250	0.200	0	104	80	120			
Arsenic	0.197	0.00500	0.200	0	98.4	80	120			
Barium	0.324	0.0100	0.200	0.127	98.4	80	120			
Beryllium	0.199	0.00100	0.200	0	99.3	80	120			
Cadmium	0.192	0.00100	0.200	0	96.1	80	120			
Calcium	92.3	0.300	5.00	88.6	74.7	80	120			S
Chromium	0.198	0.00500	0.200	0	98.9	80	120			
Cobalt	0.200	0.00500	0.200	0	99.9	80	120			
Lead	0.196	0.00100	0.200	0	97.8	80	120			
Lithium	0.269	0.0100	0.200	0.0715	98.5	80	120			
Molybdenum	0.200	0.00500	0.200	0	100	80	120			
Selenium	0.197	0.00500	0.200	0	98.3	80	120			
Thallium	0.199	0.00150	0.200	0	99.7	80	120			

Sample ID **1604073-01A MSD**	Batch ID: **74505**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS4_160411D**	Analysis Date: **4/11/2016 1:42:00 PM**	Prep Date: **4/8/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.205	0.00250	0.200	0	102	80	120	1.36	15	
Arsenic	0.194	0.00500	0.200	0	97.1	80	120	1.37	15	
Barium	0.320	0.0100	0.200	0.127	96.4	80	120	1.28	15	
Beryllium	0.198	0.00100	0.200	0	99.1	80	120	0.179	15	
Cadmium	0.191	0.00100	0.200	0	95.6	80	120	0.590	15	
Calcium	93.7	0.300	5.00	88.6	101	80	120	1.43	15	
Chromium	0.195	0.00500	0.200	0	97.6	80	120	1.27	15	
Cobalt	0.198	0.00500	0.200	0	98.8	80	120	1.15	15	
Lead	0.197	0.00100	0.200	0	98.4	80	120	0.629	15	
Lithium	0.271	0.0100	0.200	0.0715	99.9	80	120	1.04	15	
Molybdenum	0.199	0.00500	0.200	0	99.4	80	120	0.826	15	
Selenium	0.193	0.00500	0.200	0	96.3	80	120	2.07	15	
Thallium	0.200	0.00150	0.200	0	100	80	120	0.412	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1604071
Project: Luminant-Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160411D

Sample ID **ICV-160411**	Batch ID: **R85180**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_160411D**	Analysis Date: **4/11/2016 12:01:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.0967	0.00250	0.100	0	96.7	90	110			
Arsenic	0.0981	0.00500	0.100	0	98.1	90	110			
Barium	0.0939	0.0100	0.100	0	93.9	90	110			
Beryllium	0.0994	0.00100	0.100	0	99.4	90	110			
Cadmium	0.0937	0.00100	0.100	0	93.7	90	110			
Calcium	2.37	0.300	2.50	0	94.9	90	110			
Chromium	0.101	0.00500	0.100	0	101	90	110			
Cobalt	0.103	0.00500	0.100	0	103	90	110			
Lead	0.0981	0.00100	0.100	0	98.1	90	110			
Lithium	0.0981	0.0100	0.100	0	98.1	90	110			
Molybdenum	0.0925	0.00500	0.100	0	92.5	90	110			
Selenium	0.0996	0.00500	0.100	0	99.6	90	110			
Thallium	0.0967	0.00150	0.100	0	96.7	90	110			

Sample ID **LCVL-160411**	Batch ID: **R85180**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160411D**	Analysis Date: **4/11/2016 12:14:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00210	0.00250	0.00200	0	105	70	130			
Arsenic	0.00512	0.00500	0.00500	0	102	70	130			
Barium	0.00513	0.0100	0.00500	0	103	70	130			
Beryllium	0.000966	0.00100	0.00100	0	96.6	70	130			
Cadmium	0.00100	0.00100	0.00100	0	100	70	130			
Calcium	0.110	0.300	0.100	0	110	70	130			
Chromium	0.00535	0.00500	0.00500	0	107	70	130			
Cobalt	0.00539	0.00500	0.00500	0	108	70	130			
Lead	0.00102	0.00100	0.00100	0	102	70	130			
Lithium	0.0104	0.0100	0.0100	0	104	70	130			
Molybdenum	0.00504	0.00500	0.00500	0	101	70	130			
Selenium	0.00554	0.00500	0.00500	0	111	70	130			
Thallium	0.00101	0.00150	0.00100	0	101	70	130			

Sample ID **CCV1-160411**	Batch ID: **R85180**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160411D**	Analysis Date: **4/11/2016 12:47:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.197	0.00250	0.200	0	98.6	90	110			
Arsenic	0.193	0.00500	0.200	0	96.6	90	110			
Barium	0.185	0.0100	0.200	0	92.5	90	110			
Beryllium	0.187	0.00100	0.200	0	93.4	90	110			
Cadmium	0.187	0.00100	0.200	0	93.4	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1604071
Project: Luminant-Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160411D

Sample ID **CCV1-160411**	Batch ID: **R85180**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160411D**	Analysis Date: **4/11/2016 12:47:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.77	0.300	5.00	0	95.5	90	110			
Chromium	0.190	0.00500	0.200	0	94.8	90	110			
Cobalt	0.199	0.00500	0.200	0	99.5	90	110			
Lead	0.189	0.00100	0.200	0	94.7	90	110			
Lithium	0.191	0.0100	0.200	0	95.5	90	110			
Molybdenum	0.186	0.00500	0.200	0	93.0	90	110			
Selenium	0.194	0.00500	0.200	0	96.9	90	110			
Thallium	0.192	0.00150	0.200	0	95.8	90	110			

Sample ID **LCVL1-160411**	Batch ID: **R85180**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160411D**	Analysis Date: **4/11/2016 12:52:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00228	0.00250	0.00200	0	114	70	130			
Arsenic	0.00517	0.00500	0.00500	0	103	70	130			
Barium	0.00498	0.0100	0.00500	0	99.7	70	130			
Beryllium	0.00113	0.00100	0.00100	0	113	70	130			
Cadmium	0.00102	0.00100	0.00100	0	102	70	130			
Calcium	0.112	0.300	0.100	0	112	70	130			
Chromium	0.00516	0.00500	0.00500	0	103	70	130			
Cobalt	0.00538	0.00500	0.00500	0	108	70	130			
Lead	0.00100	0.00100	0.00100	0	100	70	130			
Lithium	0.0108	0.0100	0.0100	0	108	70	130			
Molybdenum	0.00499	0.00500	0.00500	0	99.8	70	130			
Selenium	0.00534	0.00500	0.00500	0	107	70	130			
Thallium	0.00101	0.00150	0.00100	0	101	70	130			

Sample ID **CCV2-160411**	Batch ID: **R85180**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160411D**	Analysis Date: **4/11/2016 1:44:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.194	0.00250	0.200	0	96.8	90	110			
Arsenic	0.192	0.00500	0.200	0	95.8	90	110			
Barium	0.185	0.0100	0.200	0	92.5	90	110			
Beryllium	0.190	0.00100	0.200	0	95.1	90	110			
Cadmium	0.186	0.00100	0.200	0	92.8	90	110			
Calcium	4.79	0.300	5.00	0	95.9	90	110			
Chromium	0.191	0.00500	0.200	0	95.6	90	110			
Cobalt	0.201	0.00500	0.200	0	101	90	110			
Lead	0.191	0.00100	0.200	0	95.5	90	110			
Lithium	0.194	0.0100	0.200	0	96.8	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1604071
Project: Luminant-Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160411D

Sample ID **CCV2-160411**	Batch ID: **R85180**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160411D**	Analysis Date: **4/11/2016 1:44:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Molybdenum	0.187	0.00500	0.200	0	93.4	90	110			
Selenium	0.193	0.00500	0.200	0	96.5	90	110			
Thallium	0.194	0.00150	0.200	0	97.2	90	110			

Sample ID **LCVL2-160411**	Batch ID: **R85180**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160411D**	Analysis Date: **4/11/2016 1:52:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00214	0.00250	0.00200	0	107	70	130			
Arsenic	0.00504	0.00500	0.00500	0	101	70	130			
Barium	0.00508	0.0100	0.00500	0	102	70	130			
Beryllium	0.00114	0.00100	0.00100	0	114	70	130			
Cadmium	0.000959	0.00100	0.00100	0	95.9	70	130			
Calcium	0.107	0.300	0.100	0	107	70	130			
Chromium	0.00528	0.00500	0.00500	0	106	70	130			
Cobalt	0.00537	0.00500	0.00500	0	107	70	130			
Lead	0.000997	0.00100	0.00100	0	99.7	70	130			
Lithium	0.0106	0.0100	0.0100	0	106	70	130			
Molybdenum	0.00495	0.00500	0.00500	0	99.0	70	130			
Selenium	0.00563	0.00500	0.00500	0	113	70	130			
Thallium	0.00100	0.00150	0.00100	0	100	70	130			

Sample ID **CCV3-160411**	Batch ID: **R85180**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160411D**	Analysis Date: **4/11/2016 2:18:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.195	0.00250	0.200	0	97.3	90	110			
Arsenic	0.191	0.00500	0.200	0	95.4	90	110			
Barium	0.185	0.0100	0.200	0	92.7	90	110			
Beryllium	0.196	0.00100	0.200	0	97.9	90	110			
Cadmium	0.186	0.00100	0.200	0	92.9	90	110			
Calcium	5.05	0.300	5.00	0	101	90	110			
Chromium	0.194	0.00500	0.200	0	97.0	90	110			
Cobalt	0.202	0.00500	0.200	0	101	90	110			
Lead	0.188	0.00100	0.200	0	93.8	90	110			
Lithium	0.199	0.0100	0.200	0	99.7	90	110			
Molybdenum	0.187	0.00500	0.200	0	93.5	90	110			
Selenium	0.192	0.00500	0.200	0	96.2	90	110			
Thallium	0.191	0.00150	0.200	0	95.4	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1604071
Project: Luminant-Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160411D

Sample ID **LCVL3-160411**	Batch ID: **R85180**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160411D**	Analysis Date: **4/11/2016 2:25:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00213	0.00250	0.00200	0	106	70	130			
Arsenic	0.00515	0.00500	0.00500	0	103	70	130			
Barium	0.00496	0.0100	0.00500	0	99.3	70	130			
Beryllium	0.00106	0.00100	0.00100	0	106	70	130			
Cadmium	0.000968	0.00100	0.00100	0	96.8	70	130			
Calcium	0.107	0.300	0.100	0	107	70	130			
Chromium	0.00518	0.00500	0.00500	0	104	70	130			
Cobalt	0.00540	0.00500	0.00500	0	108	70	130			
Lead	0.000992	0.00100	0.00100	0	99.2	70	130			
Lithium	0.0111	0.0100	0.0100	0	111	70	130			
Molybdenum	0.00507	0.00500	0.00500	0	101	70	130			
Selenium	0.00510	0.00500	0.00500	0	102	70	130			
Thallium	0.000997	0.00150	0.00100	0	99.7	70	130			

Sample ID **CCV4-160411**	Batch ID: **R85180**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160411D**	Analysis Date: **4/11/2016 3:06:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.198	0.00250	0.200	0	98.8	90	110			
Arsenic	0.198	0.00500	0.200	0	99.2	90	110			
Barium	0.187	0.0100	0.200	0	93.5	90	110			
Beryllium	0.197	0.00100	0.200	0	98.5	90	110			
Cadmium	0.188	0.00100	0.200	0	93.8	90	110			
Calcium	4.79	0.300	5.00	0	95.8	90	110			
Chromium	0.192	0.00500	0.200	0	96.1	90	110			
Cobalt	0.203	0.00500	0.200	0	101	90	110			
Lead	0.192	0.00100	0.200	0	96.2	90	110			
Lithium	0.192	0.0100	0.200	0	95.9	90	110			
Molybdenum	0.189	0.00500	0.200	0	94.5	90	110			
Selenium	0.198	0.00500	0.200	0	99.1	90	110			
Thallium	0.196	0.00150	0.200	0	98.2	90	110			

Sample ID **LCVL4-160411**	Batch ID: **R85180**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160411D**	Analysis Date: **4/11/2016 3:10:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00228	0.00250	0.00200	0	114	70	130			
Arsenic	0.00541	0.00500	0.00500	0	108	70	130			
Barium	0.00498	0.0100	0.00500	0	99.5	70	130			
Beryllium	0.00119	0.00100	0.00100	0	119	70	130			
Cadmium	0.000981	0.00100	0.00100	0	98.1	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1604071
Project: Luminant-Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160411D

Sample ID **LCVL4-160411**	Batch ID: **R85180**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160411D**	Analysis Date: **4/11/2016 3:10:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.107	0.300	0.100	0	107	70	130			
Chromium	0.00519	0.00500	0.00500	0	104	70	130			
Cobalt	0.00538	0.00500	0.00500	0	108	70	130			
Lead	0.000990	0.00100	0.00100	0	99.0	70	130			
Lithium	0.0106	0.0100	0.0100	0	106	70	130			
Molybdenum	0.00503	0.00500	0.00500	0	101	70	130			
Selenium	0.00572	0.00500	0.00500	0	114	70	130			
Thallium	0.000991	0.00150	0.00100	0	99.1	70	130			

Sample ID **CCV5-160411**	Batch ID: **R85180**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160411D**	Analysis Date: **4/11/2016 3:34:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.197	0.00250	0.200	0	98.3	90	110			
Arsenic	0.201	0.00500	0.200	0	101	90	110			
Barium	0.186	0.0100	0.200	0	93.2	90	110			
Beryllium	0.189	0.00100	0.200	0	94.6	90	110			
Cadmium	0.183	0.00100	0.200	0	91.3	90	110			
Chromium	0.186	0.00500	0.200	0	93.1	90	110			
Cobalt	0.195	0.00500	0.200	0	97.7	90	110			
Lead	0.187	0.00100	0.200	0	93.5	90	110			
Lithium	0.186	0.0100	0.200	0	92.9	90	110			
Molybdenum	0.183	0.00500	0.200	0	91.5	90	110			
Selenium	0.201	0.00500	0.200	0	100	90	110			
Thallium	0.187	0.00150	0.200	0	93.6	90	110			

Sample ID **LCVL5-160411**	Batch ID: **R85180**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160411D**	Analysis Date: **4/11/2016 4:06:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00209	0.00250	0.00200	0	105	70	130			
Arsenic	0.00544	0.00500	0.00500	0	109	70	130			
Barium	0.00499	0.0100	0.00500	0	99.8	70	130			
Beryllium	0.00111	0.00100	0.00100	0	111	70	130			
Cadmium	0.000970	0.00100	0.00100	0	97.0	70	130			
Chromium	0.00516	0.00500	0.00500	0	103	70	130			
Cobalt	0.00545	0.00500	0.00500	0	109	70	130			
Lead	0.00100	0.00100	0.00100	0	100	70	130			
Lithium	0.0110	0.0100	0.0100	0	110	70	130			
Molybdenum	0.00500	0.00500	0.00500	0	100	70	130			
Selenium	0.00561	0.00500	0.00500	0	112	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1604071
Project: Luminant-Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160411D

Sample ID **LCVL5-160411**	Batch ID: **R85180**	TestNo: **SW6020A**	Units: **mg/L**		
SampType: **LCVL**	Run ID: **ICP-MS4_160411D**	Analysis Date: **4/11/2016 4:06:00 PM**	Prep Date:		

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Thallium	0.000984	0.00150	0.00100	0	98.4	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1604071
Project: Luminant-Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160413A

The QC data in batch 74482 applies to the following samples: 1604071-01A, 1604071-02A, 1604071-03A, 1604071-04A

Sample ID **1604052-03A SD**	Batch ID: **74482**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS4_160413A**	Analysis Date: **4/13/2016 12:18:00 PM**	Prep Date: **4/7/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	44.5	15.0	0	44.3				0.489	10	

Sample ID **1604052-03A PDS**	Batch ID: **74482**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_160413A**	Analysis Date: **4/13/2016 12:20:00 PM**	Prep Date: **4/7/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	88.7	3.00	50.0	44.3	88.8	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1604071
Project: Luminant-Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160413A

Sample ID **ICV-160413**	Batch ID: **R85219**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_160413A**	Analysis Date: **4/13/2016 10:50:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	2.34	0.300	2.50	0	93.7	90	110			

Sample ID **LCVL-160413**	Batch ID: **R85219**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160413A**	Analysis Date: **4/13/2016 10:56:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.0872	0.300	0.100	0	87.2	70	130			

Sample ID **CCV1-160413**	Batch ID: **R85219**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160413A**	Analysis Date: **4/13/2016 11:56:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.72	0.300	5.00	0	94.4	90	110			

Sample ID **LCVL1-160413**	Batch ID: **R85219**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160413A**	Analysis Date: **4/13/2016 12:11:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.0903	0.300	0.100	0	90.3	70	130			

Sample ID **CCV2-160413**	Batch ID: **R85219**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160413A**	Analysis Date: **4/13/2016 12:34:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.67	0.300	5.00	0	93.4	90	110			

Sample ID **LCVL2-160413**	Batch ID: **R85219**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160413A**	Analysis Date: **4/13/2016 12:40:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.0979	0.300	0.100	0	97.9	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1604071
Project: Luminant-Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160415A

The QC data in batch 74482 applies to the following samples: 1604071-01A, 1604071-02A, 1604071-03A, 1604071-04A

Sample ID	**MB-74482**	Batch ID:	**74482**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**ICP-MS4_160415A**	Analysis Date:	**4/15/2016 10:23:00 AM**	Prep Date:	**4/7/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	<0.0100	0.0300								

Sample ID	**LCS-74482**	Batch ID:	**74482**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**ICP-MS4_160415A**	Analysis Date:	**4/15/2016 10:25:00 AM**	Prep Date:	**4/7/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.175	0.0300	0.200	0	87.7	80	120			

Sample ID	**LCSD-74482**	Batch ID:	**74482**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**LCSD**	Run ID:	**ICP-MS4_160415A**	Analysis Date:	**4/15/2016 10:27:00 AM**	Prep Date:	**4/7/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.192	0.0300	0.200	0	95.8	80	120	8.82	15	

Sample ID	**1604052-06A SD**	Batch ID:	**74482**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**SD**	Run ID:	**ICP-MS4_160415A**	Analysis Date:	**4/15/2016 10:33:00 AM**	Prep Date:	**4/7/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.546	0.150	0	0.480				12.9	10	R

Sample ID	**1604052-06A PDS**	Batch ID:	**74482**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**PDS**	Run ID:	**ICP-MS4_160415A**	Analysis Date:	**4/15/2016 10:52:00 AM**	Prep Date:	**4/7/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.657	0.0300	0.200	0.480	88.8	80	120			

Sample ID	**1604052-03A MS**	Batch ID:	**74482**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**MS**	Run ID:	**ICP-MS4_160415A**	Analysis Date:	**4/15/2016 10:54:00 AM**	Prep Date:	**4/7/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	1.90	0.150	0.200	1.65	127	80	120			S

Sample ID	**1604052-03A MSD**	Batch ID:	**74482**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**MSD**	Run ID:	**ICP-MS4_160415A**	Analysis Date:	**4/15/2016 10:56:00 AM**	Prep Date:	**4/7/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	1.93	0.150	0.200	1.65	140	80	120	1.42	15	S

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1604071
Project: Luminant-Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160415A

Sample ID **ICV-160415**	Batch ID: **R85266**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_160415A**	Analysis Date: **4/15/2016 10:11:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.103	0.0300	0.100	0	103	90	110			

Sample ID **LCVL-160415**	Batch ID: **R85266**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160415A**	Analysis Date: **4/15/2016 10:17:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0236	0.0300	0.0200	0	118	70	130			

Sample ID **CCV1-160415**	Batch ID: **R85266**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160415A**	Analysis Date: **4/15/2016 11:06:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.209	0.0300	0.200	0	104	90	110			

Sample ID **LCVL1-160415**	Batch ID: **R85266**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160415A**	Analysis Date: **4/15/2016 11:33:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0228	0.0300	0.0200	0	114	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1604071
Project: Luminant-Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160420A

The QC data in batch 74505 applies to the following samples: 1604071-05A, 1604071-06A, 1604071-07A, 1604071-08A, 1604071-09A, 1604071-10A, 1604071-11A, 1604071-12A

Sample ID **MB-74505**	Batch ID: **74505**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MBLK**	Run ID: **ICP-MS4_160420A**	Analysis Date: **4/20/2016 12:43:00 PM**	Prep Date: **4/8/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	<0.0100	0.0300								

Sample ID **LCS-74505**	Batch ID: **74505**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCS**	Run ID: **ICP-MS4_160420A**	Analysis Date: **4/20/2016 12:45:00 PM**	Prep Date: **4/8/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.197	0.0300	0.200	0	98.7	80	120			

Sample ID **LCSD-74505**	Batch ID: **74505**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCSD**	Run ID: **ICP-MS4_160420A**	Analysis Date: **4/20/2016 12:47:00 PM**	Prep Date: **4/8/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.193	0.0300	0.200	0	96.6	80	120	2.14	15	

Sample ID **1604073-01A SD**	Batch ID: **74505**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS4_160420A**	Analysis Date: **4/20/2016 12:53:00 PM**	Prep Date: **4/8/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	<0.500	1.50	0	0.191				0	10	
Calcium	90.1	15.0	0	89.0				1.22	10	

Sample ID **1604073-01A PDS**	Batch ID: **74505**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_160420A**	Analysis Date: **4/20/2016 1:17:00 PM**	Prep Date: **4/8/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	2.17	0.300	2.00	0.191	99.1	80	120			
Calcium	136	3.00	50.0	89.0	94.0	80	120			

Sample ID **1604073-01A MS**	Batch ID: **74505**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS4_160420A**	Analysis Date: **4/20/2016 1:19:00 PM**	Prep Date: **4/8/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.474	0.300	0.200	0.191	141	80	120			S

Sample ID **1604073-01A MSD**	Batch ID: **74505**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS4_160420A**	Analysis Date: **4/20/2016 1:21:00 PM**	Prep Date: **4/8/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.426	0.300	0.200	0.191	117	80	120	10.6	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1604071
Project: Luminant-Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160420A

Sample ID **ICV-160420**	Batch ID: **R85336**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_160420A**	Analysis Date: **4/20/2016 12:30:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.103	0.0300	0.100	0	103	90	110			
Calcium	2.42	0.300	2.50	0	96.7	90	110			

Sample ID **LCVL-160420**	Batch ID: **R85336**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160420A**	Analysis Date: **4/20/2016 12:37:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0182	0.0300	0.0200	0	91.1	70	130			
Calcium	0.0969	0.300	0.100	0	96.9	70	130			

Sample ID **CCV1-160420**	Batch ID: **R85336**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160420A**	Analysis Date: **4/20/2016 1:31:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.199	0.0300	0.200	0	99.6	90	110			
Calcium	4.90	0.300	5.00	0	98.0	90	110			

Sample ID **LCVL1-160420**	Batch ID: **R85336**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160420A**	Analysis Date: **4/20/2016 1:46:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0204	0.0300	0.0200	0	102	70	130			
Calcium	0.0967	0.300	0.100	0	96.7	70	130			

Sample ID **CCV2-160420**	Batch ID: **R85336**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160420A**	Analysis Date: **4/20/2016 2:10:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.194	0.0300	0.200	0	97.1	90	110			

Sample ID **LCVL2-160420**	Batch ID: **R85336**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160420A**	Analysis Date: **4/20/2016 2:20:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0215	0.0300	0.0200	0	107	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1604071
Project: Luminant-Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_160414A

The QC data in batch 74589 applies to the following samples: 1604071-11D, 1604071-12D

Sample ID	**MB-74589**	Batch ID:	**74589**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**IC2_160414A**	Analysis Date:	**4/14/2016 9:48:16 AM**	Prep Date:	**4/14/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00								
Fluoride	<0.100	0.400								
Sulfate	<1.00	3.00								

Sample ID	**LCS-74589**	Batch ID:	**74589**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**IC2_160414A**	Analysis Date:	**4/14/2016 10:02:53 AM**	Prep Date:	**4/14/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.83	1.00	10.00	0	98.3	90	110			
Fluoride	3.79	0.400	4.000	0	94.9	90	110			
Sulfate	31.1	3.00	30.00	0	104	90	110			

Sample ID	**LCSD-74589**	Batch ID:	**74589**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**LCSD**	Run ID:	**IC2_160414A**	Analysis Date:	**4/14/2016 10:17:30 AM**	Prep Date:	**4/14/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.83	1.00	10.00	0	98.3	90	110	0.081	20	
Fluoride	3.87	0.400	4.000	0	96.8	90	110	2.02	20	
Sulfate	31.2	3.00	30.00	0	104	90	110	0.231	20	

Sample ID	**1604071-11DMS**	Batch ID:	**74589**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**MS**	Run ID:	**IC2_160414A**	Analysis Date:	**4/14/2016 3:43:26 PM**	Prep Date:	**4/14/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	26.5	1.00	20.00	7.068	97.1	90	110			
Fluoride	19.9	0.400	20.00	0	99.4	90	110			
Sulfate	23.3	3.00	20.00	5.260	90.0	90	110			

Sample ID	**1604071-11DMSD**	Batch ID:	**74589**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**MSD**	Run ID:	**IC2_160414A**	Analysis Date:	**4/14/2016 3:58:02 PM**	Prep Date:	**4/14/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	26.9	1.00	20.00	7.068	99.1	90	110	1.52	20	
Fluoride	20.4	0.400	20.00	0	102	90	110	2.45	20	
Sulfate	23.5	3.00	20.00	5.260	91.3	90	110	1.15	20	

Sample ID	**1604071-12DMS**	Batch ID:	**74589**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**MS**	Run ID:	**IC2_160414A**	Analysis Date:	**4/14/2016 4:12:39 PM**	Prep Date:	**4/14/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1604071
Project: Luminant-Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_160414A

Sample ID **1604071-12DMS**	Batch ID: **74589**	TestNo: **E300**	Units: **mg/L**
SampType: **MS**	Run ID: **IC2_160414A**	Analysis Date: **4/14/2016 4:12:39 PM**	Prep Date: **4/14/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	27.4	1.00	20.00	7.933	97.5	90	110			
Fluoride	20.1	0.400	20.00	0	100	90	110			
Sulfate	19.8	3.00	20.00	1.659	90.7	90	110			

Sample ID **1604071-12DMSD**	Batch ID: **74589**	TestNo: **E300**	Units: **mg/L**
SampType: **MSD**	Run ID: **IC2_160414A**	Analysis Date: **4/14/2016 4:27:15 PM**	Prep Date: **4/14/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	27.7	1.00	20.00	7.933	99.0	90	110	1.11	20	
Fluoride	20.4	0.400	20.00	0	102	90	110	1.52	20	
Sulfate	20.0	3.00	20.00	1.659	91.8	90	110	1.05	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1604071
Project: Luminant-Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_160414A

Sample ID **ICV-160414**	Batch ID: **R85263**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC2_160414A**	Analysis Date: **4/14/2016 9:12:51 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	24.0	1.00	25.00	0	96.0	90	110			
Fluoride	9.60	0.400	10.00	0	96.0	90	110			
Sulfate	75.9	3.00	75.00	0	101	90	110			

Sample ID **CCV1-160414**	Batch ID: **R85263**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_160414A**	Analysis Date: **4/14/2016 1:12:49 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.76	1.00	10.00	0	97.6	90	110			
Fluoride	4.00	0.400	4.000	0	100	90	110			
Sulfate	31.3	3.00	30.00	0	104	90	110			

Sample ID **CCV2-160414**	Batch ID: **R85263**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_160414A**	Analysis Date: **4/14/2016 4:41:52 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.57	1.00	10.00	0	95.7	90	110			
Fluoride	4.00	0.400	4.000	0	100	90	110			
Sulfate	30.8	3.00	30.00	0	103	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1604071
Project: Luminant-Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: IC3_160414A

The QC data in batch 74597 applies to the following samples: 1604071-01D, 1604071-02D, 1604071-03D, 1604071-04D, 1604071-05D, 1604071-06D, 1604071-07D, 1604071-08D, 1604071-09D, 1604071-10D

Sample ID **MB-74597** Batch ID: **74597** TestNo: **E300** Units: **mg/L**
SampType: **MBLK** Run ID: **IC3_160414A** Analysis Date: **4/14/2016 10:35:39 AM** Prep Date: **4/14/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00								
Fluoride	<0.100	0.400								
Sulfate	<1.00	3.00								

Sample ID **LCS-74597** Batch ID: **74597** TestNo: **E300** Units: **mg/L**
SampType: **LCS** Run ID: **IC3_160414A** Analysis Date: **4/14/2016 10:59:09 AM** Prep Date: **4/14/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.62	1.00	10.00	0	96.2	90	110			
Fluoride	4.25	0.400	4.000	0	106	90	110			
Sulfate	31.1	3.00	30.00	0	104	90	110			

Sample ID **LCSD-74597** Batch ID: **74597** TestNo: **E300** Units: **mg/L**
SampType: **LCSD** Run ID: **IC3_160414A** Analysis Date: **4/14/2016 11:19:49 AM** Prep Date: **4/14/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.60	1.00	10.00	0	96.0	90	110	0.192	20	
Fluoride	4.12	0.400	4.000	0	103	90	110	3.06	20	
Sulfate	30.5	3.00	30.00	0	102	90	110	2.08	20	

Sample ID **1604071-02DMS** Batch ID: **74597** TestNo: **E300** Units: **mg/L**
SampType: **MS** Run ID: **IC3_160414A** Analysis Date: **4/14/2016 5:31:13 PM** Prep Date: **4/14/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	254	10.0	200.0	58.30	97.6	90	110			
Fluoride	196	4.00	200.0	0	97.8	90	110			
Sulfate	325	30.0	200.0	113.2	106	90	110			

Sample ID **1604071-02DMSD** Batch ID: **74597** TestNo: **E300** Units: **mg/L**
SampType: **MSD** Run ID: **IC3_160414A** Analysis Date: **4/14/2016 5:51:54 PM** Prep Date: **4/14/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	256	10.0	200.0	58.30	98.6	90	110	0.790	20	
Fluoride	198	4.00	200.0	0	99.2	90	110	1.46	20	
Sulfate	328	30.0	200.0	113.2	107	90	110	0.845	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1604071
Project: Luminant-Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: IC3_160414A

Sample ID **1604071-04DMS**	Batch ID: **74597**	TestNo: **E300**	Units: **mg/L**
SampType: **MS**	Run ID: **IC3_160414A**	Analysis Date: **4/14/2016 6:33:14 PM**	Prep Date: **4/14/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	212	10.0	200.0	17.56	97.3	90	110			
Fluoride	198	4.00	200.0	1.462	98.4	90	110			
Sulfate	627	30.0	200.0	415.9	106	90	110			

Sample ID **1604071-04DMSD**	Batch ID: **74597**	TestNo: **E300**	Units: **mg/L**
SampType: **MSD**	Run ID: **IC3_160414A**	Analysis Date: **4/14/2016 6:53:53 PM**	Prep Date: **4/14/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	212	10.0	200.0	17.56	97.4	90	110	0.090	20	
Fluoride	199	4.00	200.0	1.462	98.8	90	110	0.359	20	
Sulfate	629	30.0	200.0	415.9	106	90	110	0.273	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1604071
Project: Luminant-Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: IC3_160414A

Sample ID **ICV-160414**	Batch ID: **R85265**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC3_160414A**	Analysis Date: **4/14/2016 9:43:15 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	24.5	1.00	25.00	0	97.8	90	110			
Fluoride	10.2	0.400	10.00	0	102	90	110			
Sulfate	76.5	3.00	75.00	0	102	90	110			

Sample ID **CCV1-160414**	Batch ID: **R85265**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC3_160414A**	Analysis Date: **4/14/2016 3:38:37 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.63	1.00	10.00	0	96.3	90	110			
Fluoride	4.08	0.400	4.000	0	102	90	110			
Sulfate	29.7	3.00	30.00	0	99.1	90	110			

Sample ID **CCV2-160414**	Batch ID: **R85265**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC3_160414A**	Analysis Date: **4/14/2016 9:59:44 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.79	1.00	10.00	0	97.9	90	110			
Fluoride	4.14	0.400	4.000	0	103	90	110			
Sulfate	30.9	3.00	30.00	0	103	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1604071
Project: Luminant-Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_160411A

The QC data in batch 74521 applies to the following samples: 1604071-01D, 1604071-02D, 1604071-03D, 1604071-04D, 1604071-05D, 1604071-06D, 1604071-07D, 1604071-08D, 1604071-09D, 1604071-10D, 1604071-11D, 1604071-12D

Sample ID	**1604071-01D-DUP**	Batch ID:	**74521**	TestNo:	**M4500-H+ B**	Units:	**pH Units@19.8℃**
SampType:	**DUP**	Run ID:	**TITRATOR_160411A**	Analysis Date:	**4/11/2016 9:56:00 AM**	Prep Date:	**4/11/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	6.31	0	0	6.220				1.44	5	

Sample ID	**1604078-02D-DUP**	Batch ID:	**74521**	TestNo:	**M4500-H+ B**	Units:	**pH Units@20.9℃**
SampType:	**DUP**	Run ID:	**TITRATOR_160411A**	Analysis Date:	**4/11/2016 10:35:00 AM**	Prep Date:	**4/11/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	7.76	0	0	7.740				0.258	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1604071
Project: Luminant-Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_160411A

Sample ID	**ICV-160411**	Batch ID:	**R85150**	TestNo:	**M4500-H+ B**	Units:	**pH Units@22.6℃**
SampType:	**ICV**	Run ID:	**TITRATOR_160411A**	Analysis Date:	**4/11/2016 9:03:00 AM**	Prep Date:	**4/11/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	9.98	0	10.00	0	99.8	99	101			

Sample ID	**CCV1-160411**	Batch ID:	**R85150**	TestNo:	**M4500-H+ B**	Units:	**pH Units@21.2℃**
SampType:	**CCV**	Run ID:	**TITRATOR_160411A**	Analysis Date:	**4/11/2016 10:15:00 AM**	Prep Date:	**4/11/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	7.00	0	7.000	0	100	97.1	102.9			

Sample ID	**CCV2-160411**	Batch ID:	**R85150**	TestNo:	**M4500-H+ B**	Units:	**pH Units@21.5℃**
SampType:	**CCV**	Run ID:	**TITRATOR_160411A**	Analysis Date:	**4/11/2016 10:59:00 AM**	Prep Date:	**4/11/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	7.01	0	7.000	0	100	97.1	102.9			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1604071
Project: Luminant-Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: WC_160411C

The QC data in batch 74527 applies to the following samples: 1604071-01D, 1604071-02D, 1604071-03D, 1604071-04D, 1604071-05D, 1604071-06D, 1604071-07D, 1604071-08D, 1604071-09D, 1604071-10D, 1604071-11D

Sample ID **MB-74527**	Batch ID: **74527**	TestNo: **M2540C**	Units: **mg/L**
SampType: **MBLK**	Run ID: **WC_160411C**	Analysis Date: **4/12/2016 8:45:00 AM**	Prep Date: **4/11/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	<10.0	10.0								

Sample ID **LCS-74527**	Batch ID: **74527**	TestNo: **M2540C**	Units: **mg/L**
SampType: **LCS**	Run ID: **WC_160411C**	Analysis Date: **4/12/2016 8:45:00 AM**	Prep Date: **4/11/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	750	10.0	745.6	0	101	90	113			

Sample ID **1604044-08B-DUP**	Batch ID: **74527**	TestNo: **M2540C**	Units: **mg/L**
SampType: **DUP**	Run ID: **WC_160411C**	Analysis Date: **4/12/2016 8:45:00 AM**	Prep Date: **4/11/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	1330	50.0	0	1315				1.51	5	

Sample ID **1604071-01D-DUP**	Batch ID: **74527**	TestNo: **M2540C**	Units: **mg/L**
SampType: **DUP**	Run ID: **WC_160411C**	Analysis Date: **4/12/2016 8:45:00 AM**	Prep Date: **4/11/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	217	10.0	0	213.0				1.86	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1604071
Project: Luminant-Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: WC_160412B

The QC data in batch 74560 applies to the following samples: 1604071-12D

Sample ID	**MB-74560**	Batch ID:	**74560**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**WC_160412B**	Analysis Date:	**4/13/2016 8:45:00 AM**	Prep Date:	**4/12/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	<10.0	10.0								

Sample ID	**LCS-74560**	Batch ID:	**74560**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**WC_160412B**	Analysis Date:	**4/13/2016 8:45:00 AM**	Prep Date:	**4/12/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	758	10.0	745.6	0	102	90	113			

Sample ID	**1604108-01C-DUP**	Batch ID:	**74560**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**DUP**	Run ID:	**WC_160412B**	Analysis Date:	**4/13/2016 8:45:00 AM**	Prep Date:	**4/12/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	1200	10.0	0	1149				3.92	5	

Sample ID	**1604108-06C-DUP**	Batch ID:	**74560**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**DUP**	Run ID:	**WC_160412B**	Analysis Date:	**4/13/2016 8:45:00 AM**	Prep Date:	**4/12/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	680	10.0	0	684.0				0.587	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

Case Narrative

Lab No: 20160337

This report contains the analytical results for the 12 sample(s) received under chain of custody by ESC Lab Sciences on 04/11/16 14:12:37. These samples are associated with your 16040 project.

The analytical results included in this report meet all applicable quality control procedure requirements except as noted below:

The test results in this report meet all NELAC requirements unless noted below:

This report shall not be reproduced, except in full, without the written approval of ESC Lab Sciences.

All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client.

Results have been reviewed by the Director of Radiochemistry or their designees and is approved for release.

Observations / Nonconformances

The following QC parameters are outside method control limits: Ra226 MSD RPD

OUTREACH LABORATORY, A Divsion of ESC Lab Sciences
Address: 311 North Aspen Avenue, Broken Arrow, OK, 74012 EMail: outreach@esclabsciences.com - Tel: (918) 251-2515

Analytical Report

	Method	Result	DL	Units	Qual	Prep Date	Analysis Date	Analyst
Lab ID : **20160337-01**								
Client ID : **H-26**								
Date Sampled : **04/05/16 13:05:00**								
Matrix : **NPW**								
Radiochemical Analyses								
Combined Radium		0.788 +/- 1.10	1.30	pCi/l				
Radium-226	SM 7500 Ra B M*	0.201 +/- 0.173	0.243	pCi/l		04/13/16	04/15/16	AK
Radium-228	EPA 904*/9320*	0.587 +/- 0.926	1.06	pCi/l		04/20/16	04/25/16	JR
Lab ID : **20160337-02**								
Client ID : **H-33**								
Date Sampled : **04/05/16 14:45:00**								
Matrix : **NPW**								
Radiochemical Analyses								
Combined Radium		1.41 +/- 1.01	1.21	pCi/l				
Radium-226	SM 7500 Ra B M*	0.328 +/- 0.173	0.168	pCi/l		04/13/16	04/15/16	AK
Radium-228	EPA 904*/9320*	1.08 +/- 0.837	1.04	pCi/l		04/20/16	04/25/16	JR
Lab ID : **20160337-03**								
Client ID : **MW-17A**								
Date Sampled : **04/05/16 16:55:00**								
Matrix : **NPW**								
Radiochemical Analyses								
Combined Radium		0.544 +/- 0.880	1.13	pCi/l				
Radium-226	SM 7500 Ra B M*	0.280 +/- 0.200	0.267	pCi/l		04/13/16	04/15/16	RE
Radium-228	EPA 904*/9320*	0.264 +/- 0.681	0.863	pCi/l		04/20/16	04/25/16	JR
Lab ID : **20160337-04**								
Client ID : **PDP-24**								
Date Sampled : **04/05/16 17:45:00**								
Matrix : **NPW**								
Radiochemical Analyses								
Combined Radium		2.21 +/- 0.889	1.07	pCi/l				
Radium-226	SM 7500 Ra B M*	0.344 +/- 0.226	0.258	pCi/l		04/20/16	04/22/16	AK
Radium-228	EPA 904*/9320*	1.86 +/- 0.663	0.808	pCi/l		04/20/16	04/25/16	JR

Analytical Report

	Method	Result	DL	Units	Qual	Prep Date	Analysis Date	Analyst
Lab ID : **20160337-05**								
Client ID : **MW-19**								
Date Sampled : **04/06/16 07:40:00**								
Matrix : **NPW**								
Radiochemical Analyses								
Combined Radium		0.307 +/- 1.00	1.22	pCi/l				
Radium-226	SM 7500 Ra B M*	0.307 +/- 0.160	0.176	pCi/l		04/20/16	04/22/16	AK
Radium-228	EPA 904*/9320*	-0.048 +/- 0.844	1.05	pCi/l		04/20/16	04/25/16	JR
Lab ID : **20160337-06**								
Client ID : **PDP-22**								
Date Sampled : **04/06/16 08:35:00**								
Matrix : **NPW**								
Radiochemical Analyses								
Combined Radium		0.859 +/- 0.884	1.36	pCi/l				
Radium-226	SM 7500 Ra B M*	0.354 +/- 0.184	0.199	pCi/l		04/20/16	04/22/16	AK
Radium-228	EPA 904*/9320*	0.505 +/- 0.700	1.16	pCi/l		04/20/16	04/25/16	JR
Lab ID : **20160337-07**								
Client ID : **PDP-23**								
Date Sampled : **04/06/16 09:30:00**								
Matrix : **NPW**								
Radiochemical Analyses								
Combined Radium		0.000 +/- 0.984	1.36	pCi/l				
Radium-226	SM 7500 Ra B M*	-0.035 +/- 0.108	0.247	pCi/l		04/20/16	04/22/16	AK
Radium-228	EPA 904*/9320*	-0.711 +/- 0.876	1.11	pCi/l		04/20/16	04/25/16	JR
Lab ID : **20160337-08**								
Client ID : **MW-20A**								
Date Sampled : **04/06/16 10:20:00**								
Matrix : **NPW**								
Radiochemical Analyses								
Combined Radium		0.778 +/- 1.13	1.42	pCi/l				
Radium-226	SM 7500 Ra B M*	0.778 +/- 0.255	0.189	pCi/l		04/20/16	04/22/16	AK
Radium-228	EPA 904*/9320*	-0.051 +/- 0.878	1.23	pCi/l		04/20/16	04/25/16	JR

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Analytical Report

	Method	Result	DL	Units	Qual	Prep Date	Analysis Date	Analyst
Lab ID : **20160337-09**								
Client ID : **PDP-26**								
Date Sampled : **04/06/16 11:15:00**								
Matrix : **NPW**								
Radiochemical Analyses								
Combined Radium		0.149 +/- 0.903	1.27	pCi/l				
Radium-226	SM 7500 Ra B M*	0.149 +/- 0.138	0.187	pCi/l		04/20/16	04/22/16	AK
Radium-228	EPA 904*/9320*	-0.637 +/- 0.765	1.08	pCi/l		04/20/16	04/25/16	JR
Lab ID : **20160337-10**								
Client ID : **PDP-25**								
Date Sampled : **04/06/16 12:00:00**								
Matrix : **NPW**								
Radiochemical Analyses								
Combined Radium		1.40 +/- 1.24	1.56	pCi/l				
Radium-226	SM 7500 Ra B M*	0.568 +/- 0.305	0.341	pCi/l		04/20/16	04/22/16	AK
Radium-228	EPA 904*/9320*	0.828 +/- 0.935	1.22	pCi/l		04/20/16	04/25/16	JR
Lab ID : **20160337-11**								
Client ID : **MW-18A**								
Date Sampled : **04/06/16 12:55:00**								
Matrix : **NPW**								
Radiochemical Analyses								
Combined Radium		1.23 +/- 1.12	1.48	pCi/l				
Radium-226	SM 7500 Ra B M*	0.294 +/- 0.304	0.443	pCi/l		04/20/16	04/22/16	AK
Radium-228	EPA 904*/9320*	0.935 +/- 0.820	1.04	pCi/l		04/20/16	04/25/16	JR
Lab ID : **20160337-12**								
Client ID : **EB-1**								
Date Sampled : **04/06/16 13:15:00**								
Matrix : **NPW**								
Radiochemical Analyses								
Combined Radium		0.000 +/- 0.902	1.25	pCi/l				
Radium-226	SM 7500 Ra B M*	-0.029 +/- 0.247	0.409	pCi/l		04/20/16	04/22/16	AK
Radium-228	EPA 904*/9320*	-0.499 +/- 0.654	0.838	pCi/l		04/20/16	04/25/16	JR

*NELAC Certified Parameter BDL = Below Detection Limit

QC Report

Parameter	Blank	LCS %REC	LCSD %REC	LCSD RPD	DUP RPD	RER, NAD or DER	MS %REC	MSD %REC	MSD RPD	Date
Radium-226	0.00	108.0			NC	0.621	84.0	85.5	1.8	04/22/16
Radium-226	0.016	116.0			11.8	0.750	119.0			04/15/16
Radium-226	0.033	117.0			42.8	1.060	106.0	82.7	23.3	04/14/16
Radium-228	0.153	86.1			NC	0.302	104.0	99.2	4.5	04/25/16

Lab Approval:

*NELAC Certified Parameter BDL = Below Detection Limit

OUTREACH LABORATORY, A Divsion of ESC Lab Sciences
Address: 311 North Aspen Avenue, Broken Arrow, OK, 74012 EMail: outreach@esclabsciences.com - Tel: (918) 251-2515

DHL Analytical, Inc.
2300 Double Creek Drive
Round Rock, TX 78664
TEL: *(512) 388-8222* FAX: *(512) 388-8229*

CHAIN-OF-CUSTODY RECORD

Work Order: 1604071

Subcontractor:

ESC Laboratory
311 North Aspen
Broken Arrow, Oklahoma 74012

TEL: (918) 251-2515
FAX:
Acct #: DHLRRTX

07-Apr-16

Sample Id	Matrix	DHL#	Date Collected	Bottle Type	Requested Tests					
					E904.0	SM7500Ra-B M				
H-26	Aqueous	-01B	04/05/16 01:05 PM	500HDPEHNO3	1					
H-26	Aqueous	-01C	04/05/16 01:05 PM	500HDPEHNO3		1				
H-33	Aqueous	-02B	04/05/16 02:45 PM	500HDPEHNO3	1					
H-33	Aqueous	-02C	04/05/16 02:45 PM	500HDPEHNO3		1				
MW-17A	Aqueous	-03B	04/05/16 04:55 PM	500HDPEHNO3	1					
MW-17A	Aqueous	-03C	04/05/16 04:55 PM	500HDPEHNO3		1				
PDP-24	Aqueous	-04B	04/05/16 05:45 PM	500HDPEHNO3	1					
PDP-24	Aqueous	-04C	04/05/16 05:45 PM	500HDPEHNO3		1				
MW-19	Aqueous	-05B	04/06/16 07:40 AM	500HDPEHNO3	1					
MW-19	Aqueous	-05C	04/06/16 07:40 AM	500HDPEHNO3		1				
PDP-22	Aqueous	-06B	04/06/16 08:35 AM	500HDPEHNO3	1					
PDP-22	Aqueous	-06C	04/06/16 08:35 AM	500HDPEHNO3		1				
PDP-23	Aqueous	-07B	04/06/16 09:30 AM	500HDPEHNO3	1					
PDP-23	Aqueous	-07C	04/06/16 09:30 AM	500HDPEHNO3		1				
MW-20A	Aqueous	-08B	04/06/16 10:20 AM	500HDPEHNO3	1					
MW-20A	Aqueous	-08C	04/06/16 10:20 AM	500HDPEHNO3		1				
PDP-26	Aqueous	-09B	04/06/16 11:15 AM	500HDPEHNO3	1					
PDP-26	Aqueous	-09C	04/06/16 11:15 AM	500HDPEHNO3		1				

General Comments:

Please analyze these samples with Normal Turnaround Time.
Report RA-226, Ra-228 & Combined per Specs DHLRRTX033116S.
Quality Control Package Needed: Standard - NELAC Rad Test compliant
Email to cac@dhlanalytical.com & dupont@dhlanalytical.com

(829295
20160337-1

		Date/Time			Date/Time
Relinquished by:	J Torres	4/7/16 1730	Received by:	Lonestar	4/7/16 1730
Relinquished by:			Received by:		4/11/16 13:40

DHL Analytical, Inc.
2300 Double Creek Drive
Round Rock, TX 78664
TEL: *(512) 388-8222* FAX: *(512) 388-8229*

CHAIN-OF-CUSTODY RECORD

Work Order: 1604071

Subcontractor:

ESC Laboratory
311 North Aspen
Broken Arrow, Oklahoma 74012

TEL: (918) 251-2515
FAX:
Acct #: DHLRRTX

07-Apr-16

Sample Id	Matrix	DHL#	Date Collected	Bottle Type	Requested Tests					
					E904.0	SM7500Ra-B M				
PDP-25	Aqueous	-10B	04/06/16 12:00 PM	500HDPEHNO3	1					
PDP-25	Aqueous	-10C	04/06/16 12:00 PM	500HDPEHNO3		1				
MW-18A	Aqueous	-11B	04/06/16 12:55 PM	500HDPEHNO3	1					
MW-18A	Aqueous	-11C	04/06/16 12:55 PM	500HDPEHNO3		1				
EB-1	Aqueous	-12B	04/06/16 01:15 PM	500HDPEHNO3	1					
EB-1	Aqueous	-12C	04/06/16 01:15 PM	500HDPEHNO3		1				

General Comments:

Please analyze these samples with Normal Turnaround Time.
Report RA-226, Ra-228 & Combined per Specs DHLRRTX033116S.
Quality Control Package Needed: Standard - NELAC Rad Test compliant
Email to cac@dhlanalytical.com & dupont@dhlanalytical.com

L 825295
201604337 -2

		Date/Time			Date/Time
Relinquished by:		4/7/16 1730	Received by:	Lonestar	4/7/16 1730
Relinquished by:			Received by:		4/11/16 1340

July 21, 2016

Will Vienne
Pastor, Behling & Wheeler
2201 Double Creek Dr #4004
Round Rock, Texas 78664
TEL: (512) 671-3434
FAX (512) 671-3446

Order No.: 1606100

RE: Luminant - MLSES

Dear Will Vienne:

DHL Analytical, Inc. received 10 sample(s) on 6/9/2016 for the analyses presented in the following report.

There were no problems with the analyses and all data met requirements of NELAC except where noted in the Case Narrative. All non-NELAC methods will be identified accordingly in the case narrative and all estimated uncertainties of test results are within method or EPA specifications.

If you have any questions regarding these tests results, please feel free to call. Thank you for using DHL Analytical.

Sincerely,

John DuPont
General Manager

This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211-16-16

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DHL ANALYTICAL
2300 Double Creek Dr. ■ Round Rock, TX 78664
Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

CHAIN-OF-CUSTODY

№ 71536

CLIENT: PBW
ADDRESS: 2201 DOUBLE CREEK DR ROUND ROCK TX 78664
PHONE: 512-671-3434 FAX/E-MAIL: 512-671-3446
DATA REPORTED TO: WILL VIENE
ADDITIONAL REPORT COPIES TO:

DATE: 6-8-16 PAGE 1 OF 1
PO #: 5164-B DHL WORK ORDER #: 1606100
PROJECT LOCATION OR NAME: Luminant - MLSES
CLENT PROJECT #: 5164-B COLLECTOR: J. BRAXTON

Authorize 5% surcharge for TRRP Report? ☐ Yes ☐ No

S=SOIL W=WATER A=AIR L=LIQUID SE=SEDIMENT P=PAINT SL=SLUDGE O=OTHER SO=SOLID

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	PRESERVATION: HCl	HNO_3	H_2SO_4 ☐ NaOH ☐	ICE	UNPRESERVED	ANALYSES	FIELD NOTES
MW-17A	01	6-7-16	1550	W	P	4				X		SEE ATTACHED	
PDP-24	02		1620	W	P	4				X			
MW-18A	03		1715	W	P	4				X			
PDP-25	04	6-8-16	0745	W	P	4				X			
PDP-26	05		0815	W	P	4				X			
MW-20A	06		0945	W	P	4				X			
PDP-23	07		1040	W	P	4				X			
EB-1	08		1105	W	P	4				X			
PDP-22	09		1150	W	P	4				X			
MW-19	10		1240	W	P	4				X			

RELINQUISHED BY: (Signature) DATE/TIME 6-8-16 1830 RECEIVED BY: (Signature) Fedex
RELINQUISHED BY: (Signature) DATE/TIME 6/9/16 10:05 RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature) DATE/TIME RECEIVED BY: (Signature)

☐ DHL DISPOSAL @ $5.00 each ☐ Return

TURN AROUND TIME
RUSH ☐ CALL FIRST
1 DAY ☐ CALL FIRST
2 DAY ☐
NORMAL ☒
OTHER ☐

LABORATORY USE ONLY:
RECEIVING TEMP: 1.1/0.2 THERM #: 78
CUSTODY SEALS: ☐ BROKEN ☐ INTACT ☒ NOT USED
CARRIER: ☐ LONE STAR ☒ FEDEX ☐ UPS ☐ OTHER
☐ COURIER DELIVERY
☐ HAND DELIVERED

John Duport

From: Sara Taube [Sara.Taube@pbwllc.com]
Sent: Wednesday, July 22, 2015 12:05 PM
To: John Duport
Subject: CCR Appendix III and IV
Follow Up Flag: Follow up
Flag Status: Completed

Hi John,

Here are the Appendix III and Appendix IV constituents that we will need to have analyzed under the CCR Rule.

Appendix III
Boron
Calcium
Chloride
Fluoride
pH
sulfate
TDS

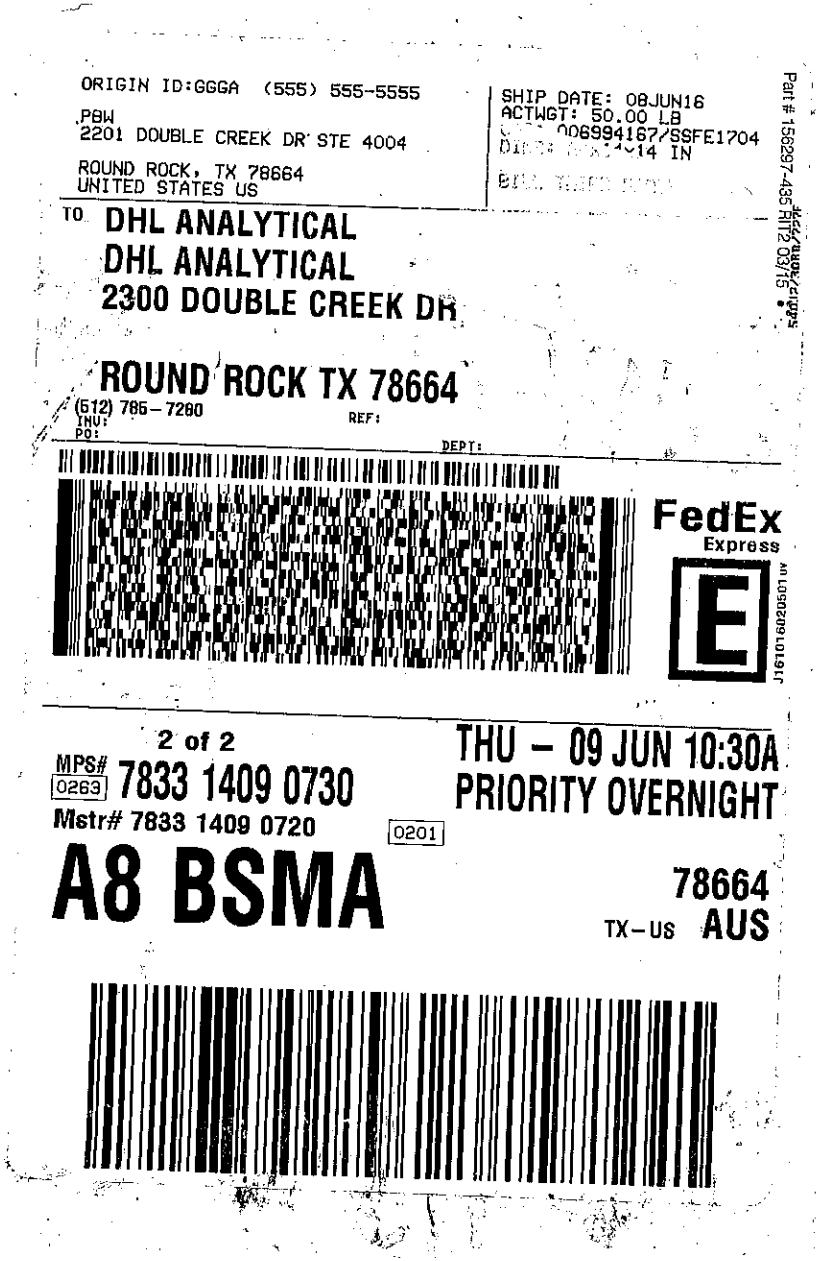
Appendix IV
Antimony
Arsenic
Barium
Beryllium
Cadmium
Chromium
Cobalt
Fluoride
Lead
Lithium
Mercury
Molybdenum
Selenium
Thallium
Radium 226 and 228

We are looking to have approximately 74 wells sampled 8 times over the course of the next two years. Please let me know if there is any more information you might need.

Cheers,

Sara

10/26/2015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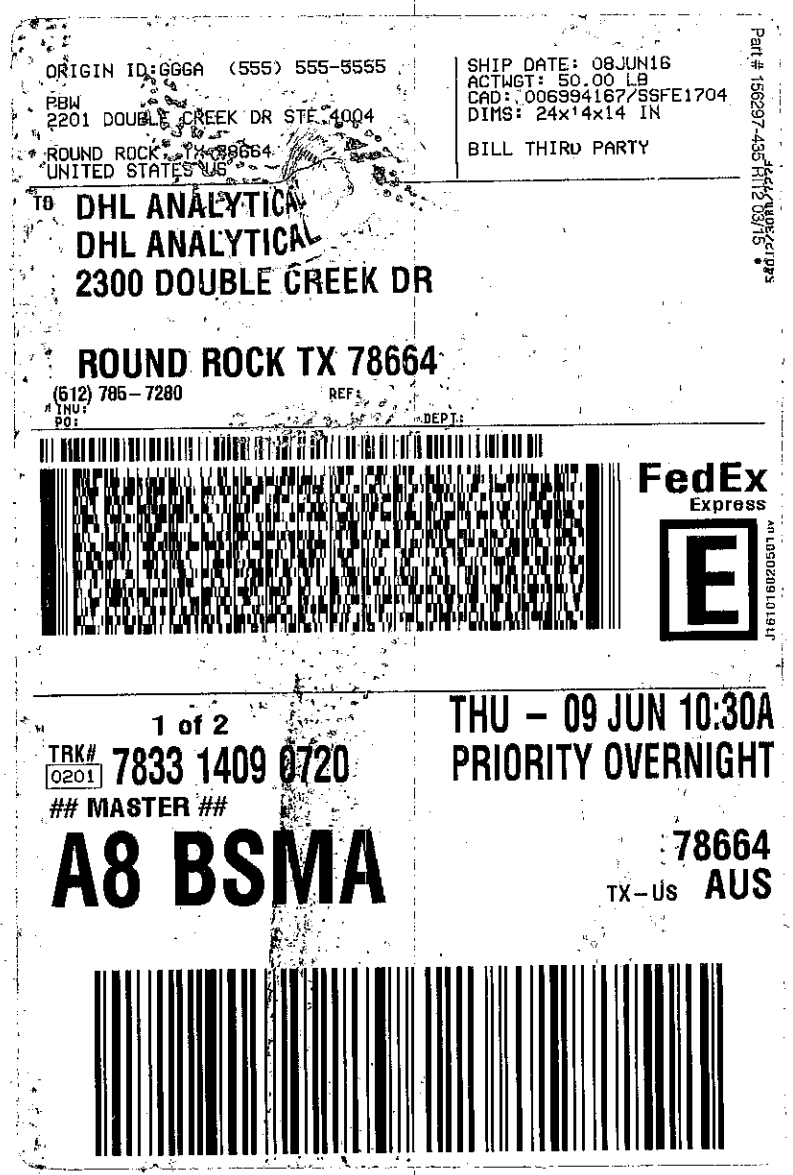
PBW
2201 DOUBLE CREEK DR STE 4004
ROUND ROCK, TX 78664
UNITED STATES US
SHIP DATE: 08JUN16
ACTWGT: 50.00 LB
006994167/SSFE1704
14 IN
TO DHL ANALYTICAL
DHL ANALYTICAL
2300 DOUBLE CREEK DR
ROUND ROCK TX 78664
(512) 785-7280
INV:
PO:
REF:
DEPT:
FedEx
Express
2 of 2
MPS# 0263 7833 1409 0730
Mstr# 7833 1409 0720
0201
THU - 09 JUN 10:30A
PRIORITY OVERNIGHT
A8 BSMA
78664
TX-US AUS


ORIGIN ID:GGGA (555) 555-5555
PBW
2201 DOUBLE CREEK DR STE 4004
ROUND ROCK, TX 78664
UNITED STATES US
SHIP DATE: 08JUN16
ACTWGT: 50.00 LB
CAD: 006994167/SSFE1704
DIMS: 24x14x14 IN
BILL THIRD PARTY
TO DHL ANALYTICAL
DHL ANALYTICAL
2300 DOUBLE CREEK DR
ROUND ROCK TX 78664
(512) 785-7280
INV:
PO:
REF:
DEPT:
FedEx
Express
1 of 2
TRK# 0201 7833 1409 0720
MASTER
THU - 09 JUN 10:30A
PRIORITY OVERNIGHT
A8 BSMA
78664
TX-US AUS

DHL Analytical, Inc.

Sample Receipt Checklist

Client Name Pastor, Behling & Wheeler | Date Received: 6/9/2016

Work Order Number 1606100 | Received by JT

Checklist completed by: Signature 6/9/2016 Date | Reviewed by Initials 6/9/2016 Date

Carrier name FedEx 1day

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	1.1 °C 0.2
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH<2 acceptable upon receipt?	Yes ☑	No ☐	NA ☐ LOT # 8086
	Adjusted? No		Checked by
Water - ph>9 (S) or ph>12 (CN) acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted?		Checked by

Any No response must be detailed in the comments section below.

Client contacted _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments: _____

Corrective Action _____

DHL Analytical, Inc. **Date:** *21-Jul-16*

CLIENT: Pastor, Behling & Wheeler
Project: Luminant - MLSES
Lab Order: 1606100

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Method SW6020A - Metals Analysis
Method SW7470A - Mercury Analysis
Method E300 - Anions Analysis
Method M4500-H+ B - pH of a Water Analysis
Method M2540C - TDS Analysis

LOG IN

The samples were received and log-in performed on 6/9/16. A total of 10 samples were received. The samples arrived in good condition and were properly packaged.

METALS ANALYSIS

For Metals analysis performed on 6/9/16 and 6/13/16 the PDS recoveries were below control limits for Selenium and Boron. These are flagged accordingly in the QC summary report. The serial dilution was within control limits for these analytes. No further corrective actions were taken.

DHL Analytical, Inc.

Date: *21-Jul-16*

CLIENT: Pastor, Behling & Wheeler
Project: Luminant - MLSES
Lab Order: 1606100

Work Order Sample Summary

Lab Smp ID	Client Sample ID	Tag Number	Date Collected	Date Recved
1606100-01	MW-17A		06/07/16 03:30 PM	6/9/2016
1606100-02	PDP-24		06/07/16 04:20 PM	6/9/2016
1606100-03	MW-18A		06/07/16 05:15 PM	6/9/2016
1606100-04	PDP-25		06/08/16 07:45 AM	6/9/2016
1606100-05	PDP-26		06/08/16 08:45 AM	6/9/2016
1606100-06	MW-20A		06/08/16 09:45 AM	6/9/2016
1606100-07	PDP-23		06/08/16 10:40 AM	6/9/2016
1606100-08	EB-1		06/08/16 11:05 AM	6/9/2016
1606100-09	PDP-22		06/08/16 11:50 AM	6/9/2016
1606100-10	MW-19		06/08/16 12:40 PM	6/9/2016

Lab Order: 1606100
Client: Pastor, Behling & Wheeler
Project: Luminant - MLSES

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1606100-01A	MW-17A	06/07/16 03:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/09/16 11:08 AM	75544
	MW-17A	06/07/16 03:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/09/16 11:08 AM	75544
	MW-17A	06/07/16 03:30 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	06/10/16 04:29 PM	75586
1606100-01D	MW-17A	06/07/16 03:30 PM	Aqueous	E300	Anion Preparation	06/15/16 10:17 AM	75663
	MW-17A	06/07/16 03:30 PM	Aqueous	M4500-H+ B	pH Preparation	06/10/16 08:19 AM	75556
	MW-17A	06/07/16 03:30 PM	Aqueous	M2540C	TDS Preparation	06/10/16 11:35 AM	75574
1606100-02A	PDP-24	06/07/16 04:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/09/16 11:08 AM	75544
	PDP-24	06/07/16 04:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/09/16 11:08 AM	75544
	PDP-24	06/07/16 04:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/09/16 11:08 AM	75544
	PDP-24	06/07/16 04:20 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	06/10/16 04:29 PM	75586
1606100-02D	PDP-24	06/07/16 04:20 PM	Aqueous	E300	Anion Preparation	06/15/16 10:17 AM	75663
	PDP-24	06/07/16 04:20 PM	Aqueous	E300	Anion Preparation	06/15/16 10:17 AM	75663
	PDP-24	06/07/16 04:20 PM	Aqueous	M4500-H+ B	pH Preparation	06/10/16 08:19 AM	75556
	PDP-24	06/07/16 04:20 PM	Aqueous	M2540C	TDS Preparation	06/10/16 11:35 AM	75574
1606100-03A	MW-18A	06/07/16 05:15 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/09/16 11:08 AM	75544
	MW-18A	06/07/16 05:15 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/09/16 11:08 AM	75544
	MW-18A	06/07/16 05:15 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	06/10/16 04:29 PM	75586
1606100-03D	MW-18A	06/07/16 05:15 PM	Aqueous	E300	Anion Preparation	06/15/16 10:17 AM	75663
	MW-18A	06/07/16 05:15 PM	Aqueous	M4500-H+ B	pH Preparation	06/10/16 08:19 AM	75556
	MW-18A	06/07/16 05:15 PM	Aqueous	M2540C	TDS Preparation	06/10/16 11:35 AM	75574
1606100-04A	PDP-25	06/08/16 07:45 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/09/16 11:08 AM	75544
	PDP-25	06/08/16 07:45 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/09/16 11:08 AM	75544
	PDP-25	06/08/16 07:45 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/09/16 11:08 AM	75544
	PDP-25	06/08/16 07:45 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	06/10/16 04:29 PM	75586
1606100-04D	PDP-25	06/08/16 07:45 AM	Aqueous	E300	Anion Preparation	06/15/16 10:17 AM	75663
	PDP-25	06/08/16 07:45 AM	Aqueous	E300	Anion Preparation	06/15/16 10:17 AM	75663
	PDP-25	06/08/16 07:45 AM	Aqueous	M4500-H+ B	pH Preparation	06/10/16 08:19 AM	75556
	PDP-25	06/08/16 07:45 AM	Aqueous	M2540C	TDS Preparation	06/10/16 11:35 AM	75574

Lab Order: 1606100
Client: Pastor, Behling & Wheeler
Project: Luminant - MLSES

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1606100-05A	PDP-26	06/08/16 08:45 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/09/16 11:08 AM	75544
	PDP-26	06/08/16 08:45 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/09/16 11:08 AM	75544
	PDP-26	06/08/16 08:45 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	06/10/16 04:29 PM	75586
1606100-05D	PDP-26	06/08/16 08:45 AM	Aqueous	E300	Anion Preparation	06/15/16 10:17 AM	75663
	PDP-26	06/08/16 08:45 AM	Aqueous	M4500-H+ B	pH Preparation	06/10/16 08:19 AM	75556
	PDP-26	06/08/16 08:45 AM	Aqueous	M2540C	TDS Preparation	06/10/16 11:35 AM	75574
1606100-06A	MW-20A	06/08/16 09:45 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/09/16 11:08 AM	75544
	MW-20A	06/08/16 09:45 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/09/16 11:08 AM	75544
	MW-20A	06/08/16 09:45 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	06/10/16 04:29 PM	75586
1606100-06D	MW-20A	06/08/16 09:45 AM	Aqueous	E300	Anion Preparation	06/15/16 10:17 AM	75663
	MW-20A	06/08/16 09:45 AM	Aqueous	M4500-H+ B	pH Preparation	06/10/16 08:19 AM	75556
	MW-20A	06/08/16 09:45 AM	Aqueous	M2540C	TDS Preparation	06/10/16 11:35 AM	75574
1606100-07A	PDP-23	06/08/16 10:40 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/09/16 11:08 AM	75544
	PDP-23	06/08/16 10:40 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/09/16 11:08 AM	75544
	PDP-23	06/08/16 10:40 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	06/10/16 04:29 PM	75586
1606100-07D	PDP-23	06/08/16 10:40 AM	Aqueous	E300	Anion Preparation	06/15/16 10:17 AM	75663
	PDP-23	06/08/16 10:40 AM	Aqueous	M4500-H+ B	pH Preparation	06/10/16 08:19 AM	75556
	PDP-23	06/08/16 10:40 AM	Aqueous	M2540C	TDS Preparation	06/10/16 11:35 AM	75574
1606100-08A	EB-1	06/08/16 11:05 AM	Equip Blank	SW3005A	Aq Prep Metals : ICP-MS	06/09/16 11:08 AM	75544
	EB-1	06/08/16 11:05 AM	Equip Blank	SW3005A	Aq Prep Metals : ICP-MS	06/09/16 11:08 AM	75544
	EB-1	06/08/16 11:05 AM	Equip Blank	SW7470A	Mercury Aq Prep, Total	06/10/16 04:29 PM	75586
1606100-08D	EB-1	06/08/16 11:05 AM	Equip Blank	E300	Anion Preparation	06/15/16 10:17 AM	75663
	EB-1	06/08/16 11:05 AM	Equip Blank	M4500-H+ B	pH Preparation	06/10/16 08:19 AM	75556
	EB-1	06/08/16 11:05 AM	Equip Blank	M2540C	TDS Preparation	06/10/16 11:35 AM	75574
1606100-09A	PDP-22	06/08/16 11:50 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/09/16 11:08 AM	75544
	PDP-22	06/08/16 11:50 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/09/16 11:08 AM	75544
	PDP-22	06/08/16 11:50 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/09/16 11:08 AM	75544
	PDP-22	06/08/16 11:50 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	06/10/16 04:29 PM	75586

Lab Order: 1606100
Client: Pastor, Behling & Wheeler
Project: Luminant - MLSES

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1606100-09D	PDP-22	06/08/16 11:50 AM	Aqueous	E300	Anion Preparation	06/15/16 10:17 AM	75663
	PDP-22	06/08/16 11:50 AM	Aqueous	E300	Anion Preparation	06/15/16 10:17 AM	75663
	PDP-22	06/08/16 11:50 AM	Aqueous	M4500-H+ B	pH Preparation	06/10/16 08:19 AM	75556
	PDP-22	06/08/16 11:50 AM	Aqueous	M2540C	TDS Preparation	06/10/16 11:35 AM	75574
1606100-10A	MW-19	06/08/16 12:40 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/09/16 11:08 AM	75544
	MW-19	06/08/16 12:40 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/09/16 11:08 AM	75544
	MW-19	06/08/16 12:40 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	06/10/16 04:29 PM	75586
1606100-10D	MW-19	06/08/16 12:40 PM	Aqueous	E300	Anion Preparation	06/15/16 10:17 AM	75663
	MW-19	06/08/16 12:40 PM	Aqueous	M4500-H+ B	pH Preparation	06/10/16 08:19 AM	75556
	MW-19	06/08/16 12:40 PM	Aqueous	M2540C	TDS Preparation	06/10/16 11:35 AM	75574

Lab Order: 1606100
Client: Pastor, Behling & Wheeler
Project: Luminant - MLSES

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1606100-01A	MW-17A	Aqueous	SW7470A	Mercury Total: Aqueous	75586	1	06/13/16 12:12 PM	CETAC2_HG_160613B
	MW-17A	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	75544	1	06/09/16 07:16 PM	ICP-MS4_160609B
	MW-17A	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	75544	1	06/13/16 03:26 PM	ICP-MS4_160613A
1606100-01D	MW-17A	Aqueous	E300	Anions by IC method - Water	75663	1	06/15/16 12:02 PM	IC4_160615A
	MW-17A	Aqueous	M4500-H+ B	pH	75556	1	06/10/16 09:24 AM	TITRATOR_160610A
	MW-17A	Aqueous	M2540C	Total Dissolved Solids	75574	1	06/13/16 08:45 AM	WC_160610C
1606100-02A	PDP-24	Aqueous	SW7470A	Mercury Total: Aqueous	75586	1	06/13/16 12:14 PM	CETAC2_HG_160613B
	PDP-24	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	75544	1	06/09/16 07:18 PM	ICP-MS4_160609B
	PDP-24	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	75544	10	06/13/16 03:28 PM	ICP-MS4_160613A
	PDP-24	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	75544	1	06/15/16 02:08 PM	ICP-MS4_160615A
1606100-02D	PDP-24	Aqueous	E300	Anions by IC method - Water	75663	1	06/15/16 12:17 PM	IC4_160615A
	PDP-24	Aqueous	E300	Anions by IC method - Water	75663	10	06/15/16 03:20 PM	IC4_160615A
	PDP-24	Aqueous	M4500-H+ B	pH	75556	1	06/10/16 09:27 AM	TITRATOR_160610A
	PDP-24	Aqueous	M2540C	Total Dissolved Solids	75574	1	06/13/16 08:45 AM	WC_160610C
1606100-03A	MW-18A	Aqueous	SW7470A	Mercury Total: Aqueous	75586	20	06/13/16 12:36 PM	CETAC2_HG_160613B
	MW-18A	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	75544	1	06/09/16 07:20 PM	ICP-MS4_160609B
	MW-18A	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	75544	1	06/13/16 03:30 PM	ICP-MS4_160613A
1606100-03D	MW-18A	Aqueous	E300	Anions by IC method - Water	75663	1	06/15/16 12:32 PM	IC4_160615A
	MW-18A	Aqueous	M4500-H+ B	pH	75556	1	06/10/16 09:29 AM	TITRATOR_160610A
	MW-18A	Aqueous	M2540C	Total Dissolved Solids	75574	1	06/13/16 08:45 AM	WC_160610C
1606100-04A	PDP-25	Aqueous	SW7470A	Mercury Total: Aqueous	75586	1	06/13/16 12:26 PM	CETAC2_HG_160613B
	PDP-25	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	75544	1	06/13/16 03:34 PM	ICP-MS4_160613A
	PDP-25	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	75544	1	06/09/16 07:22 PM	ICP-MS4_160609B
	PDP-25	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	75544	10	06/13/16 03:32 PM	ICP-MS4_160613A
1606100-04D	PDP-25	Aqueous	E300	Anions by IC method - Water	75663	1	06/15/16 12:47 PM	IC4_160615A
	PDP-25	Aqueous	E300	Anions by IC method - Water	75663	10	06/15/16 03:35 PM	IC4_160615A

Lab Order: 1606100
Client: Pastor, Behling & Wheeler
Project: Luminant - MLSES

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1606100-04D	PDP-25	Aqueous	M4500-H+ B	pH	75556	1	06/10/16 09:32 AM	TITRATOR_160610A
	PDP-25	Aqueous	M2540C	Total Dissolved Solids	75574	1	06/13/16 08:45 AM	WC_160610C
1606100-05A	PDP-26	Aqueous	SW7470A	Mercury Total: Aqueous	75586	1	06/13/16 12:28 PM	CETAC2_HG_160613B
	PDP-26	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	75544	1	06/09/16 07:24 PM	ICP-MS4_160609B
	PDP-26	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	75544	1	06/13/16 04:34 PM	ICP-MS4_160613A
1606100-05D	PDP-26	Aqueous	E300	Anions by IC method - Water	75663	1	06/15/16 01:02 PM	IC4_160615A
	PDP-26	Aqueous	M4500-H+ B	pH	75556	1	06/10/16 09:35 AM	TITRATOR_160610A
	PDP-26	Aqueous	M2540C	Total Dissolved Solids	75574	1	06/13/16 08:45 AM	WC_160610C
1606100-06A	MW-20A	Aqueous	SW7470A	Mercury Total: Aqueous	75586	1	06/13/16 12:39 PM	CETAC2_HG_160613B
	MW-20A	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	75544	1	06/09/16 07:40 PM	ICP-MS4_160609B
	MW-20A	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	75544	1	06/13/16 04:36 PM	ICP-MS4_160613A
1606100-06D	MW-20A	Aqueous	E300	Anions by IC method - Water	75663	1	06/15/16 01:17 PM	IC4_160615A
	MW-20A	Aqueous	M4500-H+ B	pH	75556	1	06/10/16 09:36 AM	TITRATOR_160610A
	MW-20A	Aqueous	M2540C	Total Dissolved Solids	75574	1	06/13/16 08:45 AM	WC_160610C
1606100-07A	PDP-23	Aqueous	SW7470A	Mercury Total: Aqueous	75586	1	06/13/16 12:41 PM	CETAC2_HG_160613B
	PDP-23	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	75544	1	06/09/16 07:42 PM	ICP-MS4_160609B
	PDP-23	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	75544	1	06/13/16 04:38 PM	ICP-MS4_160613A
1606100-07D	PDP-23	Aqueous	E300	Anions by IC method - Water	75663	1	06/15/16 01:32 PM	IC4_160615A
	PDP-23	Aqueous	M4500-H+ B	pH	75556	1	06/10/16 09:39 AM	TITRATOR_160610A
	PDP-23	Aqueous	M2540C	Total Dissolved Solids	75574	1	06/13/16 08:45 AM	WC_160610C
1606100-08A	EB-1	Equip Blank	SW7470A	Mercury Total: Aqueous	75586	1	06/13/16 12:43 PM	CETAC2_HG_160613B
	EB-1	Equip Blank	SW6020A	Trace Metals: ICP-MS - Water	75544	1	06/13/16 04:40 PM	ICP-MS4_160613A
	EB-1	Equip Blank	SW6020A	Trace Metals: ICP-MS - Water	75544	1	06/09/16 07:44 PM	ICP-MS4_160609B
1606100-08D	EB-1	Equip Blank	E300	Anions by IC method - Water	75663	1	06/15/16 11:47 AM	IC4_160615A
	EB-1	Equip Blank	M4500-H+ B	pH	75556	1	06/10/16 09:40 AM	TITRATOR_160610A
	EB-1	Equip Blank	M2540C	Total Dissolved Solids	75574	1	06/13/16 08:45 AM	WC_160610C

Lab Order: 1606100
Client: Pastor, Behling & Wheeler
Project: Luminant - MLSES

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1606100-09A	PDP-22	Aqueous	SW7470A	Mercury Total: Aqueous	75586	1	06/13/16 12:46 PM	CETAC2_HG_160613B
	PDP-22	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	75544	1	06/09/16 07:46 PM	ICP-MS4_160609B
	PDP-22	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	75544	50	06/13/16 04:42 PM	ICP-MS4_160613A
	PDP-22	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	75544	1	06/13/16 04:44 PM	ICP-MS4_160613A
1606100-09D	PDP-22	Aqueous	E300	Anions by IC method - Water	75663	1	06/15/16 01:47 PM	IC4_160615A
	PDP-22	Aqueous	E300	Anions by IC method - Water	75663	10	06/15/16 03:50 PM	IC4_160615A
	PDP-22	Aqueous	M4500-H+ B	pH	75556	1	06/10/16 09:42 AM	TITRATOR_160610A
	PDP-22	Aqueous	M2540C	Total Dissolved Solids	75574	1	06/13/16 08:45 AM	WC_160610C
1606100-10A	MW-19	Aqueous	SW7470A	Mercury Total: Aqueous	75586	1	06/13/16 12:48 PM	CETAC2_HG_160613B
	MW-19	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	75544	1	06/09/16 07:48 PM	ICP-MS4_160609B
	MW-19	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	75544	1	06/13/16 04:46 PM	ICP-MS4_160613A
1606100-10D	MW-19	Aqueous	E300	Anions by IC method - Water	75663	1	06/15/16 02:02 PM	IC4_160615A
	MW-19	Aqueous	M4500-H+ B	pH	75556	1	06/10/16 09:46 AM	TITRATOR_160610A
	MW-19	Aqueous	M2540C	Total Dissolved Solids	75574	1	06/13/16 08:45 AM	WC_160610C

DHL Analytical, Inc.

Date: *21-Jul-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	MW-17A
Project:	Luminant - MLSES	**Lab ID:**	1606100-01
Project No:	5164-B	**Collection Date:**	06/07/16 03:30 PM
Lab Order:	1606100	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	0.000174	0.0000800	0.000200	J	mg/L	1	06/13/16 12:12 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	06/09/16 07:16 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	06/09/16 07:16 PM
Barium	0.115	0.00300	0.0100		mg/L	1	06/09/16 07:16 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	06/09/16 07:16 PM
Boron	0.455	0.0100	0.0300		mg/L	1	06/13/16 03:26 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	06/09/16 07:16 PM
Calcium	5.02	0.100	0.300		mg/L	1	06/09/16 07:16 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	06/09/16 07:16 PM
Cobalt	0.00869	0.00300	0.00500		mg/L	1	06/09/16 07:16 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	06/09/16 07:16 PM
Lithium	0.0128	0.00500	0.0100		mg/L	1	06/13/16 03:26 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	06/09/16 07:16 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	06/09/16 07:16 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	06/09/16 07:16 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	8.96	0.300	1.00		mg/L	1	06/15/16 12:02 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	06/15/16 12:02 PM
Sulfate	43.4	1.00	3.00		mg/L	1	06/15/16 12:02 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	5.39	0	0		pH Units@16.4℃	1	06/10/16 09:24 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	141	10.0	10.0		mg/L	1	06/13/16 08:45 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *21-Jul-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	PDP-24
Project:	Luminant - MLSES	**Lab ID:**	1606100-02
Project No:	5164-B	**Collection Date:**	06/07/16 04:20 PM
Lab Order:	1606100	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	0.000126	0.0000800	0.000200	J	mg/L	1	06/13/16 12:14 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	06/09/16 07:18 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	06/09/16 07:18 PM
Barium	0.0301	0.00300	0.0100		mg/L	1	06/09/16 07:18 PM
Beryllium	0.00418	0.000300	0.00100		mg/L	1	06/09/16 07:18 PM
Boron	2.83	0.100	0.300		mg/L	10	06/13/16 03:28 PM
Cadmium	0.00114	0.000300	0.00100		mg/L	1	06/09/16 07:18 PM
Calcium	27.6	1.00	3.00		mg/L	10	06/13/16 03:28 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	06/09/16 07:18 PM
Cobalt	0.0594	0.00300	0.00500		mg/L	1	06/09/16 07:18 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	06/09/16 07:18 PM
Lithium	0.0257	0.00500	0.0100		mg/L	1	06/15/16 02:08 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	06/09/16 07:18 PM
Selenium	0.00207	0.00200	0.00500	J	mg/L	1	06/09/16 07:18 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	06/09/16 07:18 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	22.5	0.300	1.00		mg/L	1	06/15/16 12:17 PM
Fluoride	0.689	0.100	0.400		mg/L	1	06/15/16 12:17 PM
Sulfate	308	10.0	30.0		mg/L	10	06/15/16 03:20 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	5.04	0	0		pH Units@16.2℃	1	06/10/16 09:27 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	596	10.0	10.0		mg/L	1	06/13/16 08:45 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *21-Jul-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	MW-18A
Project:	Luminant - MLSES	**Lab ID:**	1606100-03
Project No:	5164-B	**Collection Date:**	06/07/16 05:15 PM
Lab Order:	1606100	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	0.0378	0.00160	0.00400		mg/L	20	06/13/16 12:36 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	06/09/16 07:20 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	06/09/16 07:20 PM
Barium	0.0505	0.00300	0.0100		mg/L	1	06/09/16 07:20 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	06/09/16 07:20 PM
Boron	0.113	0.0100	0.0300		mg/L	1	06/13/16 03:30 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	06/09/16 07:20 PM
Calcium	2.32	0.100	0.300		mg/L	1	06/09/16 07:20 PM
Chromium	0.00326	0.00200	0.00500	J	mg/L	1	06/09/16 07:20 PM
Cobalt	0.00308	0.00300	0.00500	J	mg/L	1	06/09/16 07:20 PM
Lead	0.000403	0.000300	0.00100	J	mg/L	1	06/09/16 07:20 PM
Lithium	0.00768	0.00500	0.0100	J	mg/L	1	06/13/16 03:30 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	06/09/16 07:20 PM
Selenium	0.00251	0.00200	0.00500	J	mg/L	1	06/09/16 07:20 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	06/09/16 07:20 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	7.43	0.300	1.00		mg/L	1	06/15/16 12:32 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	06/15/16 12:32 PM
Sulfate	6.11	1.00	3.00		mg/L	1	06/15/16 12:32 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	5.48	0	0		pH Units@17.6℃	1	06/10/16 09:29 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	81.0	10.0	10.0		mg/L	1	06/13/16 08:45 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *21-Jul-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	PDP-25
Project:	Luminant - MLSES	**Lab ID:**	1606100-04
Project No:	5164-B	**Collection Date:**	06/08/16 07:45 AM
Lab Order:	1606100	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/13/16 12:26 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	06/09/16 07:22 PM
Arsenic	0.00214	0.00200	0.00500	J	mg/L	1	06/09/16 07:22 PM
Barium	0.201	0.00300	0.0100		mg/L	1	06/09/16 07:22 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	06/09/16 07:22 PM
Boron	0.102	0.0100	0.0300		mg/L	1	06/13/16 03:34 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	06/09/16 07:22 PM
Calcium	36.3	1.00	3.00		mg/L	10	06/13/16 03:32 PM
Chromium	0.0250	0.00200	0.00500		mg/L	1	06/09/16 07:22 PM
Cobalt	0.0114	0.00300	0.00500		mg/L	1	06/09/16 07:22 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	06/09/16 07:22 PM
Lithium	0.164	0.00500	0.0100		mg/L	1	06/13/16 03:34 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	06/09/16 07:22 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	06/09/16 07:22 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	06/09/16 07:22 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	132	3.00	10.0		mg/L	10	06/15/16 03:35 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	06/15/16 12:47 PM
Sulfate	106	1.00	3.00		mg/L	1	06/15/16 12:47 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.36	0	0		pH Units@17℃	1	06/10/16 09:32 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	626	10.0	10.0		mg/L	1	06/13/16 08:45 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *21-Jul-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	PDP-26
Project:	Luminant - MLSES	**Lab ID:**	1606100-05
Project No:	5164-B	**Collection Date:**	06/08/16 08:45 AM
Lab Order:	1606100	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/13/16 12:28 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	06/09/16 07:24 PM
Arsenic	0.00302	0.00200	0.00500	J	mg/L	1	06/09/16 07:24 PM
Barium	0.0290	0.00300	0.0100		mg/L	1	06/09/16 07:24 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	06/09/16 07:24 PM
Boron	0.0365	0.0100	0.0300		mg/L	1	06/13/16 04:34 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	06/09/16 07:24 PM
Calcium	2.23	0.100	0.300		mg/L	1	06/09/16 07:24 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	06/09/16 07:24 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	06/09/16 07:24 PM
Lead	0.000377	0.000300	0.00100	J	mg/L	1	06/09/16 07:24 PM
Lithium	0.0129	0.00500	0.0100		mg/L	1	06/13/16 04:34 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	06/09/16 07:24 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	06/09/16 07:24 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	06/09/16 07:24 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	6.22	0.300	1.00		mg/L	1	06/15/16 01:02 PM
Fluoride	0.102	0.100	0.400	J	mg/L	1	06/15/16 01:02 PM
Sulfate	8.41	1.00	3.00		mg/L	1	06/15/16 01:02 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.74	0	0		pH Units@17.7℃	1	06/10/16 09:35 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	118	10.0	10.0		mg/L	1	06/13/16 08:45 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *21-Jul-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	MW-20A
Project:	Luminant - MLSES	**Lab ID:**	1606100-06
Project No:	5164-B	**Collection Date:**	06/08/16 09:45 AM
Lab Order:	1606100	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	0.000690	0.0000800	0.000200		mg/L	1	06/13/16 12:39 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	06/09/16 07:40 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	06/09/16 07:40 PM
Barium	0.106	0.00300	0.0100		mg/L	1	06/09/16 07:40 PM
Beryllium	0.000570	0.000300	0.00100	J	mg/L	1	06/09/16 07:40 PM
Boron	0.177	0.0100	0.0300		mg/L	1	06/13/16 04:36 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	06/09/16 07:40 PM
Calcium	20.8	0.100	0.300		mg/L	1	06/09/16 07:40 PM
Chromium	0.00249	0.00200	0.00500	J	mg/L	1	06/09/16 07:40 PM
Cobalt	0.00672	0.00300	0.00500		mg/L	1	06/09/16 07:40 PM
Lead	0.00471	0.000300	0.00100		mg/L	1	06/09/16 07:40 PM
Lithium	0.0147	0.00500	0.0100		mg/L	1	06/09/16 07:40 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	06/09/16 07:40 PM
Selenium	0.0105	0.00200	0.00500		mg/L	1	06/09/16 07:40 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	06/09/16 07:40 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	11.0	0.300	1.00		mg/L	1	06/15/16 01:17 PM
Fluoride	0.583	0.100	0.400		mg/L	1	06/15/16 01:17 PM
Sulfate	119	1.00	3.00		mg/L	1	06/15/16 01:17 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	4.75	0	0		pH Units@17.7℃	1	06/10/16 09:36 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	261	10.0	10.0		mg/L	1	06/13/16 08:45 AM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *21-Jul-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	PDP-23
Project:	Luminant - MLSES	**Lab ID:**	1606100-07
Project No:	5164-B	**Collection Date:**	06/08/16 10:40 AM
Lab Order:	1606100	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/13/16 12:41 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	06/09/16 07:42 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	06/09/16 07:42 PM
Barium	0.0435	0.00300	0.0100		mg/L	1	06/09/16 07:42 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	06/09/16 07:42 PM
Boron	0.0388	0.0100	0.0300		mg/L	1	06/13/16 04:38 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	06/09/16 07:42 PM
Calcium	1.59	0.100	0.300		mg/L	1	06/09/16 07:42 PM
Chromium	0.00225	0.00200	0.00500	J	mg/L	1	06/09/16 07:42 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	06/09/16 07:42 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	06/09/16 07:42 PM
Lithium	0.0125	0.00500	0.0100		mg/L	1	06/09/16 07:42 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	06/09/16 07:42 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	06/09/16 07:42 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	06/09/16 07:42 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	5.68	0.300	1.00		mg/L	1	06/15/16 01:32 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	06/15/16 01:32 PM
Sulfate	1.72	1.00	3.00	J	mg/L	1	06/15/16 01:32 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	5.69	0	0		pH Units@17.4℃	1	06/10/16 09:39 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	104	10.0	10.0		mg/L	1	06/13/16 08:45 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *21-Jul-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	EB-1
Project:	Luminant - MLSES	**Lab ID:**	1606100-08
Project No:	5164-B	**Collection Date:**	06/08/16 11:05 AM
Lab Order:	1606100	**Matrix:**	EQUIP BLANK

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/13/16 12:43 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	06/09/16 07:44 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	06/09/16 07:44 PM
Barium	<0.00300	0.00300	0.0100		mg/L	1	06/09/16 07:44 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	06/09/16 07:44 PM
Boron	0.0247	0.0100	0.0300	J	mg/L	1	06/13/16 04:40 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	06/09/16 07:44 PM
Calcium	7.71	0.100	0.300		mg/L	1	06/09/16 07:44 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	06/09/16 07:44 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	06/09/16 07:44 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	06/09/16 07:44 PM
Lithium	<0.00500	0.00500	0.0100		mg/L	1	06/09/16 07:44 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	06/09/16 07:44 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	06/09/16 07:44 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	06/09/16 07:44 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	17.5	0.300	1.00		mg/L	1	06/15/16 11:47 AM
Fluoride	<0.100	0.100	0.400		mg/L	1	06/15/16 11:47 AM
Sulfate	15.9	1.00	3.00		mg/L	1	06/15/16 11:47 AM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.54	0	0		pH Units@17.9℃	1	06/10/16 09:40 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	36.0	10.0	10.0		mg/L	1	06/13/16 08:45 AM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *21-Jul-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	PDP-22
Project:	Luminant - MLSES	**Lab ID:**	1606100-09
Project No:	5164-B	**Collection Date:**	06/08/16 11:50 AM
Lab Order:	1606100	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/13/16 12:46 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	06/09/16 07:46 PM
Arsenic	0.00774	0.00200	0.00500		mg/L	1	06/09/16 07:46 PM
Barium	0.521	0.00300	0.0100		mg/L	1	06/09/16 07:46 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	06/09/16 07:46 PM
Boron	0.213	0.0100	0.0300		mg/L	1	06/13/16 04:44 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	06/09/16 07:46 PM
Calcium	216	5.00	15.0		mg/L	50	06/13/16 04:42 PM
Chromium	0.0995	0.00200	0.00500		mg/L	1	06/09/16 07:46 PM
Cobalt	0.00404	0.00300	0.00500	J	mg/L	1	06/09/16 07:46 PM
Lead	0.000532	0.000300	0.00100	J	mg/L	1	06/09/16 07:46 PM
Lithium	0.184	0.00500	0.0100		mg/L	1	06/09/16 07:46 PM
Molybdenum	0.00236	0.00200	0.00500	J	mg/L	1	06/09/16 07:46 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	06/09/16 07:46 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	06/09/16 07:46 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	14.1	0.300	1.00		mg/L	1	06/15/16 01:47 PM
Fluoride	0.113	0.100	0.400	J	mg/L	1	06/15/16 01:47 PM
Sulfate	200	10.0	30.0		mg/L	10	06/15/16 03:50 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	8.90	0	0		pH Units@18.5℃	1	06/10/16 09:42 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	778	10.0	10.0		mg/L	1	06/13/16 08:45 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *21-Jul-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	MW-19
Project:	Luminant - MLSES	**Lab ID:**	1606100-10
Project No:	5164-B	**Collection Date:**	06/08/16 12:40 PM
Lab Order:	1606100	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/13/16 12:48 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	06/09/16 07:48 PM
Arsenic	0.00761	0.00200	0.00500		mg/L	1	06/09/16 07:48 PM
Barium	0.0223	0.00300	0.0100		mg/L	1	06/09/16 07:48 PM
Beryllium	0.000430	0.000300	0.00100	J	mg/L	1	06/09/16 07:48 PM
Boron	0.0965	0.0100	0.0300		mg/L	1	06/13/16 04:46 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	06/09/16 07:48 PM
Calcium	17.8	0.100	0.300		mg/L	1	06/09/16 07:48 PM
Chromium	0.00266	0.00200	0.00500	J	mg/L	1	06/09/16 07:48 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	06/09/16 07:48 PM
Lead	0.000501	0.000300	0.00100	J	mg/L	1	06/09/16 07:48 PM
Lithium	0.0153	0.00500	0.0100		mg/L	1	06/09/16 07:48 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	06/09/16 07:48 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	06/09/16 07:48 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	06/09/16 07:48 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	25.5	0.300	1.00		mg/L	1	06/15/16 02:02 PM
Fluoride	0.258	0.100	0.400	J	mg/L	1	06/15/16 02:02 PM
Sulfate	29.1	1.00	3.00		mg/L	1	06/15/16 02:02 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.29	0	0		pH Units@19.2℃	1	06/10/16 09:46 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	311	10.0	10.0		mg/L	1	06/13/16 08:45 AM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

CLIENT: Pastor, Behling & Wheeler
Work Order: 1606100
Project: Luminant - MLSES

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_160613B

The QC data in batch 75586 applies to the following samples: 1606100-01A, 1606100-02A, 1606100-03A, 1606100-04A, 1606100-05A, 1606100-06A, 1606100-07A, 1606100-08A, 1606100-09A, 1606100-10A

Sample ID **MB-75586** Batch ID: **75586** TestNo: **SW7470A** Units: **mg/L**
SampType: **MBLK** Run ID: **CETAC2_HG_160613B** Analysis Date: **6/13/2016 11:38:28 AM** Prep Date: **6/10/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.0000800	0.000200								

Sample ID **LCS-75586** Batch ID: **75586** TestNo: **SW7470A** Units: **mg/L**
SampType: **LCS** Run ID: **CETAC2_HG_160613B** Analysis Date: **6/13/2016 11:40:44 AM** Prep Date: **6/10/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00197	0.000200	0.00200	0	98.5	85	115			

Sample ID **LCSD-75586** Batch ID: **75586** TestNo: **SW7470A** Units: **mg/L**
SampType: **LCSD** Run ID: **CETAC2_HG_160613B** Analysis Date: **6/13/2016 11:43:00 AM** Prep Date: **6/10/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00195	0.000200	0.00200	0	97.5	85	115	1.02	15	

Sample ID **1606073-28B SD** Batch ID: **75586** TestNo: **SW7470A** Units: **mg/L**
SampType: **SD** Run ID: **CETAC2_HG_160613B** Analysis Date: **6/13/2016 11:58:52 AM** Prep Date: **6/10/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.000400	0.00100	0	0				0	10	

Sample ID **1606073-28B PDS** Batch ID: **75586** TestNo: **SW7470A** Units: **mg/L**
SampType: **PDS** Run ID: **CETAC2_HG_160613B** Analysis Date: **6/13/2016 12:01:07 PM** Prep Date: **6/10/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00228	0.000200	0.00250	0	91.2	85	115			

Sample ID **1606073-28B MS** Batch ID: **75586** TestNo: **SW7470A** Units: **mg/L**
SampType: **MS** Run ID: **CETAC2_HG_160613B** Analysis Date: **6/13/2016 12:03:23 PM** Prep Date: **6/10/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00182	0.000200	0.00200	0	91.0	80	120			

Sample ID **1606073-28B MSD** Batch ID: **75586** TestNo: **SW7470A** Units: **mg/L**
SampType: **MSD** Run ID: **CETAC2_HG_160613B** Analysis Date: **6/13/2016 12:05:39 PM** Prep Date: **6/10/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00186	0.000200	0.00200	0	93.0	80	120	2.17	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1606100
Project: Luminant - MLSES

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_160613B

Sample ID	**ICV-160613**	Batch ID:	**R86289**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**ICV**	Run ID:	**CETAC2_HG_160613B**	Analysis Date:	**6/13/2016 10:29:25 AM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00390	0.000200	0.00400	0	97.5	90	110			

Sample ID	**CCV2-160613**	Batch ID:	**R86289**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**CETAC2_HG_160613B**	Analysis Date:	**6/13/2016 11:28:29 AM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00195	0.000200	0.00200	0	97.5	90	110			

Sample ID	**CCV3-160613**	Batch ID:	**R86289**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**CETAC2_HG_160613B**	Analysis Date:	**6/13/2016 12:17:01 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00193	0.000200	0.00200	0	96.5	90	110			

Sample ID	**CCV4-160613**	Batch ID:	**R86289**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**CETAC2_HG_160613B**	Analysis Date:	**6/13/2016 12:55:10 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00193	0.000200	0.00200	0	96.5	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1606100
Project: Luminant - MLSES

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160609B

The QC data in batch 75544 applies to the following samples: 1606100-01A, 1606100-02A, 1606100-03A, 1606100-04A, 1606100-05A, 1606100-06A, 1606100-07A, 1606100-08A, 1606100-09A, 1606100-10A

Sample ID **MB-75544** Batch ID: **75544** TestNo: **SW6020A** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_160609B** Analysis Date: **6/9/2016 6:55:00 PM** Prep Date: **6/9/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.000800	0.00250								
Arsenic	<0.00200	0.00500								
Barium	<0.00300	0.0100								
Beryllium	<0.000300	0.00100								
Cadmium	<0.000300	0.00100								
Calcium	<0.100	0.300								
Chromium	<0.00200	0.00500								
Cobalt	<0.00300	0.00500								
Lead	<0.000300	0.00100								
Molybdenum	<0.00200	0.00500								
Selenium	<0.00200	0.00500								
Thallium	<0.000500	0.00150								

Sample ID **LCS-75544** Batch ID: **75544** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_160609B** Analysis Date: **6/9/2016 6:58:00 PM** Prep Date: **6/9/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.199	0.00250	0.200	0	99.4	80	120			
Arsenic	0.196	0.00500	0.200	0	98.2	80	120			
Barium	0.190	0.0100	0.200	0	95.0	80	120			
Beryllium	0.182	0.00100	0.200	0	91.0	80	120			
Cadmium	0.193	0.00100	0.200	0	96.6	80	120			
Calcium	4.69	0.300	5.00	0	93.8	80	120			
Chromium	0.201	0.00500	0.200	0	100	80	120			
Cobalt	0.206	0.00500	0.200	0	103	80	120			
Lead	0.211	0.00100	0.200	0	106	80	120			
Molybdenum	0.198	0.00500	0.200	0	98.9	80	120			
Selenium	0.197	0.00500	0.200	0	98.3	80	120			
Thallium	0.213	0.00150	0.200	0	107	80	120			

Sample ID **LCSD-75544** Batch ID: **75544** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_160609B** Analysis Date: **6/9/2016 7:00:00 PM** Prep Date: **6/9/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.204	0.00250	0.200	0	102	80	120	2.35	15	
Arsenic	0.197	0.00500	0.200	0	98.5	80	120	0.241	15	
Barium	0.195	0.0100	0.200	0	97.7	80	120	2.76	15	
Beryllium	0.181	0.00100	0.200	0	90.6	80	120	0.420	15	
Cadmium	0.196	0.00100	0.200	0	97.9	80	120	1.39	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1606100
Project: Luminant - MLSES

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160609B

Sample ID **LCSD-75544**	Batch ID: **75544**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCSD**	Run ID: **ICP-MS4_160609B**	Analysis Date: **6/9/2016 7:00:00 PM**	Prep Date: **6/9/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.73	0.300	5.00	0	94.7	80	120	0.938	15	
Chromium	0.202	0.00500	0.200	0	101	80	120	0.827	15	
Cobalt	0.207	0.00500	0.200	0	104	80	120	0.622	15	
Lead	0.212	0.00100	0.200	0	106	80	120	0.117	15	
Molybdenum	0.202	0.00500	0.200	0	101	80	120	1.97	15	
Selenium	0.196	0.00500	0.200	0	98.0	80	120	0.239	15	
Thallium	0.214	0.00150	0.200	0	107	80	120	0.327	15	

Sample ID **1606096-01A SD**	Batch ID: **75544**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS4_160609B**	Analysis Date: **6/9/2016 7:06:00 PM**	Prep Date: **6/9/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.00400	0.0125	0	0				0	10	
Arsenic	<0.0100	0.0250	0	0				0	10	
Barium	<0.0150	0.0500	0	0.00468				0	10	
Beryllium	<0.00150	0.00500	0	0				0	10	
Cadmium	<0.00150	0.00500	0	0				0	10	
Calcium	<0.500	1.50	0	0.351				0	10	
Chromium	<0.0100	0.0250	0	0				0	10	
Cobalt	<0.0150	0.0250	0	0				0	10	
Lead	<0.00150	0.00500	0	0.000645				0	10	
Molybdenum	<0.0100	0.0250	0	0				0	10	
Selenium	0.666	0.0250	0	0.643				3.39	10	
Thallium	<0.00250	0.00750	0	0				0	10	

Sample ID **1606096-01A PDS**	Batch ID: **75544**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_160609B**	Analysis Date: **6/9/2016 7:26:00 PM**	Prep Date: **6/9/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.195	0.00250	0.200	0	97.4	80	120			
Arsenic	0.198	0.00500	0.200	0	98.8	80	120			
Barium	0.199	0.0100	0.200	0.00468	97.4	80	120			
Beryllium	0.200	0.00100	0.200	0	100	80	120			
Cadmium	0.196	0.00100	0.200	0	97.9	80	120			
Calcium	4.96	0.300	5.00	0.351	92.1	80	120			
Chromium	0.215	0.00500	0.200	0	107	80	120			
Cobalt	0.214	0.00500	0.200	0	107	80	120			
Lead	0.214	0.00100	0.200	0.000645	107	80	120			
Molybdenum	0.196	0.00500	0.200	0	97.8	80	120			
Selenium	0.791	0.00500	0.200	0.643	73.7	80	120			S
Thallium	0.204	0.00150	0.200	0	102	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1606100
Project: Luminant - MLSES

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160609B

Sample ID **1606096-01A MS**	Batch ID: **75544**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS4_160609B**	Analysis Date: **6/9/2016 7:28:00 PM**	Prep Date: **6/9/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.201	0.00250	0.200	0	101	80	120			
Arsenic	0.194	0.00500	0.200	0	97.0	80	120			
Barium	0.191	0.0100	0.200	0.00468	92.9	80	120			
Beryllium	0.195	0.00100	0.200	0	97.6	80	120			
Cadmium	0.191	0.00100	0.200	0	95.4	80	120			
Calcium	4.94	0.300	5.00	0.351	91.7	80	120			
Chromium	0.203	0.00500	0.200	0	102	80	120			
Cobalt	0.206	0.00500	0.200	0	103	80	120			
Lead	0.210	0.00100	0.200	0.000645	105	80	120			
Molybdenum	0.193	0.00500	0.200	0	96.4	80	120			
Selenium	0.822	0.00500	0.200	0.643	89.5	80	120			
Thallium	0.206	0.00150	0.200	0	103	80	120			

Sample ID **1606096-01A MSD**	Batch ID: **75544**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS4_160609B**	Analysis Date: **6/9/2016 7:30:00 PM**	Prep Date: **6/9/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.201	0.00250	0.200	0	100	80	120	0.052	15	
Arsenic	0.195	0.00500	0.200	0	97.3	80	120	0.294	15	
Barium	0.195	0.0100	0.200	0.00468	95.1	80	120	2.31	15	
Beryllium	0.195	0.00100	0.200	0	97.3	80	120	0.318	15	
Cadmium	0.195	0.00100	0.200	0	97.6	80	120	2.31	15	
Calcium	4.91	0.300	5.00	0.351	91.2	80	120	0.495	15	
Chromium	0.203	0.00500	0.200	0	101	80	120	0.374	15	
Cobalt	0.207	0.00500	0.200	0	103	80	120	0.181	15	
Lead	0.207	0.00100	0.200	0.000645	103	80	120	1.60	15	
Molybdenum	0.196	0.00500	0.200	0	98.1	80	120	1.75	15	
Selenium	0.821	0.00500	0.200	0.643	88.9	80	120	0.124	15	
Thallium	0.198	0.00150	0.200	0	99.1	80	120	3.99	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1606100
Project: Luminant - MLSES

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160609B

Sample ID **ICV-160609**	Batch ID: **R86243**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_160609B**	Analysis Date: **6/9/2016 5:10:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.101	0.00250	0.100	0	101	90	110			
Arsenic	0.0997	0.00500	0.100	0	99.7	90	110			
Barium	0.0973	0.0100	0.100	0	97.3	90	110			
Beryllium	0.0938	0.00100	0.100	0	93.8	90	110			
Cadmium	0.0970	0.00100	0.100	0	97.0	90	110			
Calcium	2.43	0.300	2.50	0	97.4	90	110			
Chromium	0.105	0.00500	0.100	0	105	90	110			
Cobalt	0.107	0.00500	0.100	0	107	90	110			
Lead	0.109	0.00100	0.100	0	109	90	110			
Lithium	0.0914	0.0100	0.100	0	91.4	90	110			
Molybdenum	0.0996	0.00500	0.100	0	99.6	90	110			
Selenium	0.101	0.00500	0.100	0	101	90	110			
Thallium	0.108	0.00150	0.100	0	108	90	110			

Sample ID **LCVL-160609**	Batch ID: **R86243**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160609B**	Analysis Date: **6/9/2016 5:14:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00194	0.00250	0.00200	0	97.2	70	130			
Arsenic	0.00499	0.00500	0.00500	0	99.8	70	130			
Barium	0.00472	0.0100	0.00500	0	94.4	70	130			
Beryllium	0.00113	0.00100	0.00100	0	112	70	130			
Cadmium	0.000954	0.00100	0.00100	0	95.4	70	130			
Calcium	0.101	0.300	0.100	0	101	70	130			
Chromium	0.00515	0.00500	0.00500	0	103	70	130			
Cobalt	0.00526	0.00500	0.00500	0	105	70	130			
Lead	0.00104	0.00100	0.00100	0	104	70	130			
Lithium	0.0103	0.0100	0.0100	0	103	70	130			
Molybdenum	0.00517	0.00500	0.00500	0	103	70	130			
Selenium	0.00490	0.00500	0.00500	0	98.0	70	130			
Thallium	0.00103	0.00150	0.00100	0	103	70	130			

Sample ID **CCV5-160609**	Batch ID: **R86243**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160609B**	Analysis Date: **6/9/2016 6:47:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.207	0.00250	0.200	0	104	90	110			
Arsenic	0.206	0.00500	0.200	0	103	90	110			
Barium	0.198	0.0100	0.200	0	99.1	90	110			
Beryllium	0.185	0.00100	0.200	0	92.6	90	110			
Cadmium	0.198	0.00100	0.200	0	99.2	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1606100
Project: Luminant - MLSES

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160609B

Sample ID **CCV5-160609**	Batch ID: **R86243**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160609B**	Analysis Date: **6/9/2016 6:47:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.80	0.300	5.00	0	95.9	90	110			
Chromium	0.205	0.00500	0.200	0	103	90	110			
Cobalt	0.212	0.00500	0.200	0	106	90	110			
Lead	0.217	0.00100	0.200	0	108	90	110			
Molybdenum	0.204	0.00500	0.200	0	102	90	110			
Selenium	0.204	0.00500	0.200	0	102	90	110			
Thallium	0.214	0.00150	0.200	0	107	90	110			

Sample ID **LCVL5-160609**	Batch ID: **R86243**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160609B**	Analysis Date: **6/9/2016 6:51:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00206	0.00250	0.00200	0	103	70	130			
Arsenic	0.00520	0.00500	0.00500	0	104	70	130			
Barium	0.00484	0.0100	0.00500	0	96.8	70	130			
Beryllium	0.000819	0.00100	0.00100	0	81.9	70	130			
Cadmium	0.000961	0.00100	0.00100	0	96.1	70	130			
Calcium	0.114	0.300	0.100	0	114	70	130			
Chromium	0.00525	0.00500	0.00500	0	105	70	130			
Cobalt	0.00525	0.00500	0.00500	0	105	70	130			
Lead	0.00106	0.00100	0.00100	0	106	70	130			
Molybdenum	0.00507	0.00500	0.00500	0	101	70	130			
Selenium	0.00526	0.00500	0.00500	0	105	70	130			
Thallium	0.00109	0.00150	0.00100	0	109	70	130			

Sample ID **CCV6-160609**	Batch ID: **R86243**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160609B**	Analysis Date: **6/9/2016 7:32:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.208	0.00250	0.200	0	104	90	110			
Arsenic	0.206	0.00500	0.200	0	103	90	110			
Barium	0.199	0.0100	0.200	0	99.4	90	110			
Beryllium	0.204	0.00100	0.200	0	102	90	110			
Cadmium	0.202	0.00100	0.200	0	101	90	110			
Calcium	4.73	0.300	5.00	0	94.5	90	110			
Chromium	0.212	0.00500	0.200	0	106	90	110			
Cobalt	0.215	0.00500	0.200	0	108	90	110			
Lead	0.221	0.00100	0.200	0	110	90	110			
Molybdenum	0.206	0.00500	0.200	0	103	90	110			
Selenium	0.204	0.00500	0.200	0	102	90	110			
Thallium	0.206	0.00150	0.200	0	103	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

Sample ID **LCVL6-160609** Batch ID: **R86243** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_160609B** Analysis Date: **6/9/2016 7:36:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00230	0.00250	0.00200	0	115	70	130			
Arsenic	0.00509	0.00500	0.00500	0	102	70	130			
Barium	0.00492	0.0100	0.00500	0	98.5	70	130			
Beryllium	0.00120	0.00100	0.00100	0	120	70	130			
Cadmium	0.00101	0.00100	0.00100	0	101	70	130			
Calcium	0.105	0.300	0.100	0	105	70	130			
Chromium	0.00539	0.00500	0.00500	0	108	70	130			
Cobalt	0.00527	0.00500	0.00500	0	105	70	130			
Lead	0.00105	0.00100	0.00100	0	105	70	130			
Molybdenum	0.00514	0.00500	0.00500	0	103	70	130			
Selenium	0.00528	0.00500	0.00500	0	106	70	130			
Thallium	0.00106	0.00150	0.00100	0	106	70	130			

Sample ID **CCV7-160609** Batch ID: **R86243** TestNo: **SW6020A** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_160609B** Analysis Date: **6/9/2016 7:52:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.209	0.00250	0.200	0	105	90	110			
Arsenic	0.205	0.00500	0.200	0	103	90	110			
Barium	0.201	0.0100	0.200	0	101	90	110			
Beryllium	0.202	0.00100	0.200	0	101	90	110			
Cadmium	0.201	0.00100	0.200	0	101	90	110			
Calcium	4.81	0.300	5.00	0	96.2	90	110			
Chromium	0.210	0.00500	0.200	0	105	90	110			
Cobalt	0.214	0.00500	0.200	0	107	90	110			
Lead	0.217	0.00100	0.200	0	109	90	110			
Lithium	0.201	0.0100	0.200	0	101	90	110			
Molybdenum	0.205	0.00500	0.200	0	103	90	110			
Selenium	0.201	0.00500	0.200	0	101	90	110			
Thallium	0.205	0.00150	0.200	0	103	90	110			

Sample ID **LCVL7-160609** Batch ID: **R86243** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_160609B** Analysis Date: **6/9/2016 7:56:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00215	0.00250	0.00200	0	107	70	130			
Arsenic	0.00501	0.00500	0.00500	0	100	70	130			
Barium	0.00502	0.0100	0.00500	0	100	70	130			
Beryllium	0.000752	0.00100	0.00100	0	75.2	70	130			
Cadmium	0.00101	0.00100	0.00100	0	101	70	130			
Calcium	0.100	0.300	0.100	0	100	70	130			

CLIENT: Pastor, Behling & Wheeler
Work Order: 1606100
Project: Luminant - MLSES

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160609B

Sample ID **LCVL7-160609** Batch ID: **R86243** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_160609B** Analysis Date: **6/9/2016 7:56:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chromium	0.00521	0.00500	0.00500	0	104	70	130			
Cobalt	0.00526	0.00500	0.00500	0	105	70	130			
Lead	0.00105	0.00100	0.00100	0	105	70	130			
Lithium	0.0101	0.0100	0.0100	0	101	70	130			
Molybdenum	0.00520	0.00500	0.00500	0	104	70	130			
Selenium	0.00491	0.00500	0.00500	0	98.2	70	130			
Thallium	0.00108	0.00150	0.00100	0	108	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank
J	Analyte detected between MDL and RL
ND	Not Detected at the Method Detection Limit
RL	Reporting Limit
J	Analyte detected between SDL and RL
DF	Dilution Factor
MDL	Method Detection Limit
R	RPD outside accepted control limits
S	Spike Recovery outside control limits
N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler

Work Order: 1606100

Project: Luminant - MLSES

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160613A

The QC data in batch 75544 applies to the following samples: 1606100-01A, 1606100-02A, 1606100-03A, 1606100-04A, 1606100-05A, 1606100-06A, 1606100-07A, 1606100-08A, 1606100-09A, 1606100-10A

Sample ID **MB-75544** Batch ID: **75544** TestNo: **SW6020A** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_160613A** Analysis Date: **6/13/2016 3:06:00 PM** Prep Date: **6/9/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	<0.0100	0.0300								
Lithium	<0.00500	0.0100								

Sample ID **LCS-75544** Batch ID: **75544** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_160613A** Analysis Date: **6/13/2016 3:08:00 PM** Prep Date: **6/9/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.191	0.0300	0.200	0	95.3	80	120			
Lithium	0.202	0.0100	0.200	0	101	80	120			

Sample ID **LCSD-75544** Batch ID: **75544** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_160613A** Analysis Date: **6/13/2016 3:10:00 PM** Prep Date: **6/9/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.204	0.0300	0.200	0	102	80	120	6.90	15	
Lithium	0.194	0.0100	0.200	0	96.8	80	120	4.36	15	

Sample ID **1606096-01A SD** Batch ID: **75544** TestNo: **SW6020A** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS4_160613A** Analysis Date: **6/13/2016 3:16:00 PM** Prep Date: **6/9/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	1.36	0.150	0	1.28				5.82	10	
Lithium	<0.0250	0.0500	0	0				0	10	

Sample ID **1606096-01A PDS** Batch ID: **75544** TestNo: **SW6020A** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS4_160613A** Analysis Date: **6/13/2016 3:36:00 PM** Prep Date: **6/9/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	1.40	0.0300	0.200	1.28	59.7	80	120			S
Lithium	0.209	0.0100	0.200	0	105	80	120			

Sample ID **1606096-01A MS** Batch ID: **75544** TestNo: **SW6020A** Units: **mg/L**
SampType: **MS** Run ID: **ICP-MS4_160613A** Analysis Date: **6/13/2016 3:38:00 PM** Prep Date: **6/9/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	1.49	0.0300	0.200	1.28	108	80	120			
Lithium	0.198	0.0100	0.200	0	98.8	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1606100
Project: Luminant - MLSES

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160613A

Sample ID **1606096-01A MSD** Batch ID: **75544** TestNo: **SW6020A** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS4_160613A** Analysis Date: **6/13/2016 3:40:00 PM** Prep Date: **6/9/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	1.48	0.0300	0.200	1.28	101	80	120	0.872	15	
Lithium	0.202	0.0100	0.200	0	101	80	120	2.06	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160613A

Sample ID **ICV-160613**	Batch ID: **R86298**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_160613A**	Analysis Date: **6/13/2016 2:47:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.104	0.0300	0.100	0	104	90	110			
Calcium	2.28	0.300	2.50	0	91.4	90	110			
Lithium	0.0992	0.0100	0.100	0	99.2	90	110			

Sample ID **LCVL-160613**	Batch ID: **R86298**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160613A**	Analysis Date: **6/13/2016 2:52:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0253	0.0300	0.0200	0	126	70	130			
Calcium	0.0900	0.300	0.100	0	90.0	70	130			
Lithium	0.0107	0.0100	0.0100	0	107	70	130			

Sample ID **CCV1-160613**	Batch ID: **R86298**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160613A**	Analysis Date: **6/13/2016 4:08:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.204	0.0300	0.200	0	102	90	110			
Calcium	4.68	0.300	5.00	0	93.6	90	110			
Lithium	0.210	0.0100	0.200	0	105	90	110			

Sample ID **LCVL1-160613**	Batch ID: **R86298**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160613A**	Analysis Date: **6/13/2016 4:28:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0255	0.0300	0.0200	0	128	70	130			
Calcium	0.100	0.300	0.100	0	100	70	130			
Lithium	0.00936	0.0100	0.0100	0	93.6	70	130			

Sample ID **CCV2-160613**	Batch ID: **R86298**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160613A**	Analysis Date: **6/13/2016 4:58:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.189	0.0300	0.200	0	94.6	90	110			
Calcium	4.48	0.300	5.00	0	89.5	90	110			
Lithium	0.200	0.0100	0.200	0	100	90	110			

Sample ID **LCVL2-160613**	Batch ID: **R86298**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160613A**	Analysis Date: **6/13/2016 5:04:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0205	0.0300	0.0200	0	103	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1606100
Project: Luminant - MLSES

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160613A

Sample ID **LCVL2-160613** Batch ID: **R86298** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_160613A** Analysis Date: **6/13/2016 5:04:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.0934	0.300	0.100	0	93.4	70	130			
Lithium	0.00781	0.0100	0.0100	0	78.1	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160615A

Sample ID **ICV-160615**	Batch ID: **R86351**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_160615A**	Analysis Date: **6/15/2016 11:05:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lithium	0.0937	0.0100	0.100	0	93.7	90	110			

Sample ID **LCVL-160615**	Batch ID: **R86351**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160615A**	Analysis Date: **6/15/2016 11:11:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lithium	0.00905	0.0100	0.0100	0	90.5	70	130			

Sample ID **CCV3-160615**	Batch ID: **R86351**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160615A**	Analysis Date: **6/15/2016 1:45:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lithium	0.201	0.0100	0.200	0	101	90	110			

Sample ID **LCVL3-160615**	Batch ID: **R86351**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160615A**	Analysis Date: **6/15/2016 1:49:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lithium	0.0111	0.0100	0.0100	0	111	70	130			

Sample ID **CCV4-160615**	Batch ID: **R86351**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160615A**	Analysis Date: **6/15/2016 2:16:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lithium	0.214	0.0100	0.200	0	107	90	110			

Sample ID **LCVL4-160615**	Batch ID: **R86351**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160615A**	Analysis Date: **6/15/2016 2:28:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lithium	0.0110	0.0100	0.0100	0	110	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1606100
Project: Luminant - MLSES

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_160615A

The QC data in batch 75663 applies to the following samples: 1606100-01D, 1606100-02D, 1606100-03D, 1606100-04D, 1606100-05D, 1606100-06D, 1606100-07D, 1606100-08D, 1606100-09D, 1606100-10D

Sample ID **MB-75663** Batch ID: **75663** TestNo: **E300** Units: **mg/L**
SampType: **MBLK** Run ID: **IC4_160615A** Analysis Date: **6/15/2016 10:57:57 AM** Prep Date: **6/15/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00								
Fluoride	<0.100	0.400								
Sulfate	<1.00	3.00								

Sample ID **LCS-75663** Batch ID: **75663** TestNo: **E300** Units: **mg/L**
SampType: **LCS** Run ID: **IC4_160615A** Analysis Date: **6/15/2016 11:12:57 AM** Prep Date: **6/15/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.1	1.00	10.00	0	101	90	110			
Fluoride	4.02	0.400	4.000	0	101	90	110			
Sulfate	30.5	3.00	30.00	0	102	90	110			

Sample ID **LCSD-75663** Batch ID: **75663** TestNo: **E300** Units: **mg/L**
SampType: **LCSD** Run ID: **IC4_160615A** Analysis Date: **6/15/2016 11:27:57 AM** Prep Date: **6/15/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.1	1.00	10.00	0	101	90	110	0.301	20	
Fluoride	4.01	0.400	4.000	0	100	90	110	0.219	20	
Sulfate	30.7	3.00	30.00	0	102	90	110	0.817	20	

Sample ID **1606100-07DMS** Batch ID: **75663** TestNo: **E300** Units: **mg/L**
SampType: **MS** Run ID: **IC4_160615A** Analysis Date: **6/15/2016 4:05:19 PM** Prep Date: **6/15/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	26.1	1.00	20.00	5.675	102	90	110			
Fluoride	20.4	0.400	20.00	0	102	90	110			
Sulfate	22.7	3.00	20.00	1.724	105	90	110			

Sample ID **1606100-07DMSD** Batch ID: **75663** TestNo: **E300** Units: **mg/L**
SampType: **MSD** Run ID: **IC4_160615A** Analysis Date: **6/15/2016 4:20:19 PM** Prep Date: **6/15/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	26.4	1.00	20.00	5.675	103	90	110	1.13	20	
Fluoride	20.6	0.400	20.00	0	103	90	110	1.36	20	
Sulfate	23.0	3.00	20.00	1.724	106	90	110	1.15	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1606100
Project: Luminant - MLSES

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_160615A

Sample ID **ICV-160615**	Batch ID: **R86356**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC4_160615A**	Analysis Date: **6/15/2016 10:08:20 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	25.5	1.00	25.00	0	102	90	110			
Fluoride	10.0	0.400	10.00	0	100	90	110			
Sulfate	78.1	3.00	75.00	0	104	90	110			

Sample ID **CCV1-160615**	Batch ID: **R86356**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC4_160615A**	Analysis Date: **6/15/2016 2:38:27 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.2	1.00	10.00	0	102	90	110			
Fluoride	4.04	0.400	4.000	0	101	90	110			
Sulfate	31.0	3.00	30.00	0	103	90	110			

Sample ID **CCV2-160615**	Batch ID: **R86356**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC4_160615A**	Analysis Date: **6/15/2016 4:50:19 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.3	1.00	10.00	0	103	90	110			
Fluoride	4.05	0.400	4.000	0	101	90	110			
Sulfate	31.2	3.00	30.00	0	104	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler

Work Order: 1606100

Project: Luminant - MLSES

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_160610A

The QC data in batch 75556 applies to the following samples: 1606100-01D, 1606100-02D, 1606100-03D, 1606100-04D, 1606100-05D, 1606100-06D, 1606100-07D, 1606100-08D, 1606100-09D, 1606100-10D

Sample ID	**1606100-01D-DUP**	Batch ID:	**75556**	TestNo:	**M4500-H+ B**	Units:	**pH Units@16.3℃**
SampType:	**DUP**	Run ID:	**TITRATOR_160610A**	Analysis Date:	**6/10/2016 9:26:00 AM**	Prep Date:	**6/10/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	5.35	0	0	5.390				0.745	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1606100
Project: Luminant - MLSES

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_160610A

Sample ID	**ICV-160610**	Batch ID:	**R86248**	TestNo:	**M4500-H+ B**	Units:	**pH Units@21.8℃**
SampType:	**ICV**	Run ID:	**TITRATOR_160610A**	Analysis Date:	**6/10/2016 8:40:00 AM**	Prep Date:	**6/10/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	10.0	0	10.00	0	100	99	101			

Sample ID	**CCV1-160610**	Batch ID:	**R86248**	TestNo:	**M4500-H+ B**	Units:	**pH Units@21.6℃**
SampType:	**CCV**	Run ID:	**TITRATOR_160610A**	Analysis Date:	**6/10/2016 9:44:00 AM**	Prep Date:	**6/10/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	7.03	0	7.000	0	100	97.1	102.9			

Sample ID	**CCV2-160610**	Batch ID:	**R86248**	TestNo:	**M4500-H+ B**	Units:	**pH Units@21.5℃**
SampType:	**CCV**	Run ID:	**TITRATOR_160610A**	Analysis Date:	**6/10/2016 9:47:00 AM**	Prep Date:	**6/10/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	7.02	0	7.000	0	100	97.1	102.9			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1606100
Project: Luminant - MLSES

ANALYTICAL QC SUMMARY REPORT

RunID: WC_160610C

The QC data in batch 75574 applies to the following samples: 1606100-01D, 1606100-02D, 1606100-03D, 1606100-04D, 1606100-05D, 1606100-06D, 1606100-07D, 1606100-08D, 1606100-09D, 1606100-10D

Sample ID	**MB-75574**	Batch ID:	**75574**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**WC_160610C**	Analysis Date:	**6/13/2016 8:45:00 AM**	Prep Date:	**6/10/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	<10.0	10.0								

Sample ID	**LCS-75574**	Batch ID:	**75574**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**WC_160610C**	Analysis Date:	**6/13/2016 8:45:00 AM**	Prep Date:	**6/10/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	748	10.0	745.6	0	100	90	113			

Sample ID	**1606078-08D-DUP**	Batch ID:	**75574**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**DUP**	Run ID:	**WC_160610C**	Analysis Date:	**6/13/2016 8:45:00 AM**	Prep Date:	**6/10/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	1490	50.0	0	1460				2.03	5	

Sample ID	**1606098-01D-DUP**	Batch ID:	**75574**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**DUP**	Run ID:	**WC_160610C**	Analysis Date:	**6/13/2016 8:45:00 AM**	Prep Date:	**6/10/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	161	10.0	0	164.0				1.85	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

Case Narrative

Lab No: 20160566

[illegible]

Observations / Nonconformances

[illegible]

Analytical Report

Method	Result	DL	Units	Qual	Prep Date	Analysis Date	Analyst

Lab ID 20160566-01
Client ID MW-17A
Date Sampled 6/7/2016 3:30:00 PM
Matrix NPW

Radiochemical Analyses

[illegible]		[illegible]	[illegible]	[illegible]			
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Lab ID 20160566-02
Client ID PDP-24
Date Sampled 6/7/2016 4:20:00 PM
Matrix NPW

Radiochemical Analyses

[illegible]		[illegible]	[illegible]	[illegible]			
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Lab ID 20160566-03
Client ID MW-18A
Date Sampled 6/7/2016 5:15:00 PM
Matrix NPW

Radiochemical Analyses

[illegible]		[illegible]	[illegible]	[illegible]			
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Lab ID 20160566-04
Client ID PDP-25
Date Sampled 6/8/2016 7:45:00 AM
Matrix NPW

Radiochemical Analyses

[illegible]		[illegible]	[illegible]	[illegible]			
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

OUTREACH LABORATORY, A Divsion of ESC Lab Sciences
Address: 311 North Aspen Avenue, Broken Arrow, OK, 74012 - EMail: outreach@esclabsciences.com - Tel: (918) 251-2515

Analytical Report

Method	Result	DL	Units	Qual	Prep Date	Analysis Date	Analyst

Lab ID 20160566-05
Client ID PDP-26
Date Sampled 6/8/2016 8:45:00 AM
Matrix NPW

Radiochemical Analyses

[illegible]		[illegible]	[illegible]	[illegible]			
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Lab ID 20160566-06
Client ID MW-20A
Date Sampled 6/8/2016 9:45:00 AM
Matrix NPW

Radiochemical Analyses

[illegible]		[illegible]	[illegible]	[illegible]			
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Lab ID 20160566-07
Client ID PDP-23
Date Sampled 6/8/2016 10:40:00 AM
Matrix NPW

Radiochemical Analyses

[illegible]		[illegible]	[illegible]	[illegible]			
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Lab ID 20160566-08
Client ID EB-1
Date Sampled 6/8/2016 11:05:00 AM
Matrix NPW

Radiochemical Analyses

[illegible]		[illegible]	[illegible]	[illegible]			
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

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Analytical Report

	Method	Result	DL	Units	Qual	Prep Date	Analysis Date	Analyst
Lab ID	**20160566-09**							
Client ID	**PDP-22**							
Date Sampled	**6/8/2016 11:50:00 AM**							
Matrix	**NPW**							

Radiochemical Analyses

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di				i				

Lab ID	**20160566-10**
Client ID	**MW-19**
Date Sampled	**6/8/2016 12:40:00 PM**
Matrix	**NPW**

Radiochemical Analyses

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di	M M			i				
di				i				

QC Report

Parameter	Blank	LCS %REC	LCSD %REC	LCSD RPD	DUP RPD	RER, NAD or DER	MS %REC	MSD %REC	MSD RPD	Batch ID
di										
di										

Lab Approval: _____

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OUTREACH LABORATORY, A Divsion of ESC Lab Sciences
Address: 311 North Aspen Avenue, Broken Arrow, OK, 74012 - EMail: outreach@esclabsciences.com - Tel: (918) 251-2515

DHL Analytical, Inc.
2300 Double Creek Drive
Round Rock, TX 78664
TEL: *(512) 388-8222* FAX: *(512) 388-8229*

CHAIN-OF-CUSTODY RECORD

Work Order: 1606100

Subcontractor:

ESC Laboratory
311 North Aspen
Broken Arrow, Oklahoma 74012

TEL: (918) 251-2515
FAX:
Acct #: DHLRRTX

09-Jun-16

Sample Id	Matrix	DHL#	Date Collected	Bottle Type	Requested Tests					
					E904.0	SM7500Ra-B M				
MW-17A	Aqueous	-01B	06/07/16 03:30 PM	500HDPEHNO3	1					
MW-17A	Aqueous	-01C	06/07/16 03:30 PM	500HDPEHNO3		1				
PDP-24	Aqueous	-02B	06/07/16 04:20 PM	500HDPEHNO3	1					
PDP-24	Aqueous	-02C	06/07/16 04:20 PM	500HDPEHNO3		1				
MW-18A	Aqueous	-03B	06/07/16 05:15 PM	500HDPEHNO3	1					
MW-18A	Aqueous	-03C	06/07/16 05:15 PM	500HDPEHNO3		1				
PDP-25	Aqueous	-04B	06/08/16 07:45 AM	500HDPEHNO3	1					
PDP-25	Aqueous	-04C	06/08/16 07:45 AM	500HDPEHNO3		1				
PDP-26	Aqueous	-05B	06/08/16 08:45 AM	500HDPEHNO3	1					
PDP-26	Aqueous	-05C	06/08/16 08:45 AM	500HDPEHNO3		1				
MW-20A	Aqueous	-06B	06/08/16 09:45 AM	500HDPEHNO3	1					
MW-20A	Aqueous	-06C	06/08/16 09:45 AM	500HDPEHNO3		1				
PDP-23	Aqueous	-07B	06/08/16 10:40 AM	500HDPEHNO3	1					
PDP-23	Aqueous	-07C	06/08/16 10:40 AM	500HDPEHNO3		1				
EB-1	Equip Blank	-08B	06/08/16 11:05 AM	500HDPEHNO3	1					
EB-1	Equip Blank	-08C	06/08/16 11:05 AM	500HDPEHNO3		1				
PDP-22	Aqueous	-09B	06/08/16 11:50 AM	500HDPEHNO3	1					
PDP-22	Aqueous	-09C	06/08/16 11:50 AM	500HDPEHNO3		1				

General Comments:

Please analyze these samples with Normal Turnaround Time.
Report RA-226, Ra-228 & Combined per Specs DHLRRTX033116S.
Quality Control Package Needed: Standard - NELAC Rad Test compliant
Email to cac@dhlanalytical.com & dupont@dhlanalytical.com

L841156

		Date/Time			Date/Time
Relinquished by:		6/9/16 1733	**Received by:**		6/9/16 1733
Relinquished by:			**Received by:**		6/13/16 1049

7116R66

DHL Analytical, Inc.
2300 Double Creek Drive
Round Rock, TX 78664

TEL: *(512) 388-8222* FAX: *(512) 388-8229*

Work Order: 1606100

CHAIN-OF-CUSTODY RECORD

Subcontractor:

ESC Laboratory
311 North Aspen
Broken Arrow, Oklahoma 74012

TEL: (918) 251-2515
FAX:
Acct #: DHLRRTX

09-Jun-16

Sample Id	Matrix	DHL#	Date Collected	Bottle Type	Requested Tests					
					E904.0	SM7500Ra-B M				
MW-19	Aqueous	-10B	06/08/16 12:40 PM	500HDPEHNO3	1					
MW-19	Aqueous	-10C	06/08/16 12:40 PM	500HDPEHNO3		1				

General Comments:

Please analyze these samples with Normal Turnaround Time.
Report RA-226, Ra-228 & Combined per Specs DHLRRTX033116S.
Quality Control Package Needed: Standard - NELAC Rad Test compliant
Email to cac@dhlanalytical.com & dupont@dhlanalytical.com

C841156

		Date/Time			Date/Time
Relinquished by:	[signature]	6/9/16 1730	**Received by:**	[signature]	6/9/16 1730
Relinquished by:			**Received by:**	[signature]	6/13/16 1049

1016 0066

SAMPLE LOGIN

Date Received: *06/13/16 10:49:16* **Lab Number:** 20160566 **Due:** 07/12/16

Sample Number	Client Sample ID	Matrix	Date Sampled	Container Type	Container Size	Preservation	Preserved Upon Receipt	Custody Seal	Seal Intact
20160566-01 B	MW-17A	NPW	06/07/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
20160566-01 A	MW-17A	NPW	06/07/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160566-02 A	PDP-24 Time 16:20	NPW	06/07/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
20160566-02 B	PDP-24 RM 06-13-16 ✓	NPW	06/07/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160566-03 A	MW-18A	NPW	06/07/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
20160566-03 B	MW-18A	NPW	06/07/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160566-04 A	PDP-25	NPW	06/08/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
20160566-04 B	PDP-25	NPW	06/08/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160566-05 B	PDP-26	NPW	06/08/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
20160566-05 A	PDP-26	NPW	06/08/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160566-06 B	MW-20A	NPW	06/08/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
20160566-06 A	MW-20A	NPW	06/08/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160566-07 A	PDP-23	NPW	06/08/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
20160566-07 B	PDP-23	NPW	06/08/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						

20160566-08 A	EB-1	NPW	06/08/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
20160566-08 B	EB-1	NPW	06/08/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160566-09 A	PDP-22	NPW	06/08/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
20160566-09 B	PDP-22	NPW	06/08/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160566-10 B	MW-19	NPW	06/08/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
20160566-10 A	MW-19	NPW	06/08/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						

CONTAINER INSPECTION

 # Coolers **Custody Seals Broken** ☐ **Temperature:** **C** **Ice** **Radiation Survey:** <300 cpm

SAMPLE INSPECTION

Sample Seal Broken **Chain of Custody Record** ☐ **Labels in Tact** ☐ **Radiation Survey Complete** ☐

Anomalies

Inspected By: _____ **DATE** 6/13/16

QA or Designee Review: Raymond Thomas **DATE** 06/13/16

Sample Custodian Review: Ben Mahony **DATE** 06.13.16

Project Notes:

September 14, 2016

Will Vienne
Pastor, Behling & Wheeler
2201 Double Creek Dr #4004
Round Rock, Texas 78664
TEL: (512) 671-3434
FAX (512) 671-3446

Order No.: 1608133

RE: Luminant - Martin Lake

Dear Will Vienne:

DHL Analytical, Inc. received 27 sample(s) on 8/11/2016 for the analyses presented in the following report.

There were no problems with the analyses and all data met requirements of NELAC except where noted in the Case Narrative. All non-NELAC methods will be identified accordingly in the case narrative and all estimated uncertainties of test results are within method or EPA specifications.

If you have any questions regarding these tests results, please feel free to call. Thank you for using DHL Analytical.

Sincerely,

John DuPont
General Manager

This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211-16-16

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DHL ANALYTICAL
2300 Double Creek Dr. ■ Round Rock, TX 78664
Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

№ 72291

CHAIN-OF-CUSTODY

CLIENT: DBW
ADDRESS: 2201 Double Creek Dr Ste 4004 Round Rock TX 78664
PHONE: 512 671 3434 FAX/E-MAIL: 512 671 3446
DATA REPORTED TO: WILL VIENNE
ADDITIONAL REPORT COPIES TO:

DATE: 8/9/16 PAGE ____ OF ____
PO #: 5164-B DHL WORK ORDER #: 1100833
PROJECT LOCATION OR NAME: Luminant - Martin Lake
CLENT PROJECT #: 5164-B COLLECTOR: C KAKOLEWSKI

Authorize 5% surcharge for TRRP Report? ☐ Yes ☐ No

S=SOIL W=WATER A=AIR L=LIQUID SE=SEDIMENT P=PAINT SL=SLUDGE O=OTHER SO=SOLID

PRESERVATION: HCl | HNO_3 | H_2SO_4 ☐ NaOH ☐ | ICE | UNPRESERVED

ANALYSES: BTEX ☐ MTBE ☐ [METHOD 8021] | TPH 1005 ☐ TPH 1006 ☐ HOLD 1006 ☐ | GRO [METHOD 8015] ☐ DRO [METHOD 8105] ☐ | VOC 8260 ☐ VOC 624 ☐ VOC 8260/5035 ☐ | SVOC 8270 ☐ PAH 8270 ☐ HOLD PAH ☐ SVOC 625 ☐ | 8270 PEST ☐ 625 PEST/PCB ☐ 608 PCB ☐ | 8270 O-P PEST ☐ 8082 PCB ☐ 8270 PCB ☐ | 8321 HERB ☐ T PHOS, AMMONIA ☐ | METALS 6020 ☐ METALS 200.8 ☐ DISS. METALS ☐ | RCRA ☐ TX11 ☐ _____ ☐ | PH ☐ HEX CHROM ☐ ALKALINITY ☐ COD ☐ | CHLORIDE ☐ ANIONS _____ ☐ | TCLP-SVOC ☐ VOC ☐ PEST ☐ HERB ☐ | TCLP-METALS ☐ RCRA 8 ☐ TX-11 ☐ Pb ☐ | RCI ☐ FLASHPOINT ☐ DGAS ☐ | TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐ | SEE ATTACHED

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	HCl	HNO_3	H_2SO_4 ☐ NaOH ☐	ICE	UNPRESERVED	FIELD NOTES
H-28	01	8/9/16	0903 8/12/16 0904	W	P	4		3		X	1	9:30
H-29	02		1003									10:35
H-31	03		1115									11:50
H-30	04		1219									12:45
H-32	05		1325									13:50
H-27	06		1421									14:50
H-33	07		1531									15:55
H-26	08		1614								X	16:45
DUP-01	09	8/9/16	1438	W	P	4		3		X	1	14:30
PDP-25	10	8/10/16	1330	W	P	4		3		X	1	13:30
PDP-24	11		1100									11:00
MW-17A	12		1020									10:20
PDP-23	13		910									9:10
MW-19	14		1500									15:00
MW-20A	15		1410									14:10

per chris 8/12/16 gg

RELINQUISHED BY: (Signature) 17:20 DATE/TIME 8/11/16 RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature) DATE/TIME RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature) DATE/TIME RECEIVED BY: (Signature)

TURN AROUND TIME
RUSH ☐ CALL FIRST
1 DAY ☐ CALL FIRST
2 DAY ☐
NORMAL ☒
OTHER ☐ _____

LABORATORY USE ONLY:
RECEIVING TEMP: 3.1 | 0.2 | 0.6 THERM #: 78
CUSTODY SEALS: ☐ BROKEN ☐ INTACT ☒ NOT USED
CARRIER: ☐ LONE STAR ☐ FEDEX ☐ UPS ☐ OTHER
☐ COURIER DELIVERY
☒ HAND DELIVERED

APPENDIX F-Revision 2 February 27, 2014 ☐ DHL DISPOSAL @ $5.00 each ☐ Return

DHL ANALYTICAL
2300 Double Creek Dr. ■ Round Rock, TX 78664
Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

№ 72452

CHAIN-OF-CUSTODY

CLIENT: PBW
ADDRESS: 2201 DOUBLE CREEK DR ROUND ROCK, TX 78664
PHONE: 512-671-3434 FAX/E-MAIL: 512-671-3446
DATA REPORTED TO: WILL VIENNE
ADDITIONAL REPORT COPIES TO:

DATE: 8-11-16 PAGE 1 OF 1
PO #: 5164-B DHL WORK ORDER #: 1608133
PROJECT LOCATION OR NAME: LUMINANT - MCSES
CLENT PROJECT #: 5164-B COLLECTOR: J. BRAYTON

Authorize 5% surcharge for TRRP Report? ❑ Yes ❑ No

S=SOIL P=PAINT
W=WATER SL=SLUDGE
A=AIR O=OTHER
L=LIQUID SO=SOLID
SE=SEDIMENT

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	PRESERVATION: HCl	HNO_3	H_2SO_4 ❑ NaOH ❑	ICE	UNPRESERVED	ANALYSES: BTEX ❑ MTBE ❑ [METHOD 8021] ❑ TPH 1005 ❑ TPH 1006 ❑ HOLD 1006 ❑ GRO [METHOD 8015] ❑ DRO [METHOD 8105] ❑ VOC 8260 ❑ VOC 624 ❑ VOC 8260/5035 ❑ SVOC 8270 ❑ PAH 8270 ❑ HOLD PAH ❑ SVOC 625 ❑ 8270 PEST ❑ 625 PEST/PCB ❑ 608 PCB ❑ 8270 PCB ❑ 8270 O-P PEST ❑ 8082 PCB ❑ 8270 PCB ❑ 8321 HERB ❑ T PHOS, AMMONIA ❑ METALS 6020 ❑ METALS 200.8 ❑ DISS. METALS ❑ ____ ❑ RCRA ❑ TX11 ❑ ____ PH ❑ HEX CHROM ❑ ALKALINITY ❑ COD ❑ CHLORIDE ❑ ANIONS ____ ❑ TCLP-SVOC ❑ VOC ❑ PEST ❑ HERB ❑ TCLP-METALS ❑ RCRA 8 ❑ TX-11 ❑ Pb ❑ RCI ❑ FLASHPOINT ❑ DGAS ❑ TDS ❑ TSS ❑ % MOISTURE ❑ CYANIDE ❑ SEE ATTACHED	FIELD NOTES
PDP-22	16	8-10-16	0920	W	P	4		X		X	X		
PDP-26	17		1030	W	P	4		X		X	X		
MW-18A	18		1130	W	P	4		X		X	X		
EB-1	19		1145	W	P	4		X		X	X		
BMW-11AR	20	8-11-16	0825	W	P	4		X		X	X		
BMW-19	21		0920	W	P	4		X		X	X		
BMW-18	22		1015	W	P	4		X		X	X		
BMW-20	23		1050	W	P	4		X		X	X		

RELINQUISHED BY: (Signature) DATE/TIME 8-11-16 17:20 RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature) DATE/TIME 8-11-16 17:20 RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature) DATE/TIME RECEIVED BY: (Signature)

APPENDIX F-Revision 2 February 27, 2024 ❑ EMAIL RESULTS @ $5.00 each ❑ Return

TURN AROUND TIME
RUSH ❑ CALL FIRST
1 DAY ❑ CALL FIRST
2 DAY ❑
NORMAL ☒
OTHER ❑ ____

LABORATORY USE ONLY:
RECEIVING TEMP: 3.1 | 0.2 | 0.6 THERM #: 78
CUSTODY SEALS: 2@ ❑ BROKEN ❑ INTACT ☒ NOT USED
CARRIER: ❑ LONE STAR ❑ FEDEX ❑ UPS ❑ OTHER
❑ COURIER DELIVERY
☒ HAND DELIVERED

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№ 72290

CHAIN-OF-CUSTODY

CLIENT: PBW
ADDRESS: 2301 Double Creek Dr. Ste 4004 Round Rock, TX 78664
PHONE: 512 671 3434 FAX/E-MAIL: 512 671 3446
DATA REPORTED TO: Will Vienne
ADDITIONAL REPORT COPIES TO:

DATE: 8/11/16 PAGE ___ OF ___
PO #: 5164-B DHL WORK ORDER #: 1608133
PROJECT LOCATION OR NAME: Luminant - Martin Lake
CLENT PROJECT #: 5164-B COLLECTOR: C Kakolewski

Authorize 5% surcharge for TRRP Report? ☐ Yes ☐ No

S=SOIL P=PAINT
W=WATER SL=SLUDGE
A=AIR O=OTHER
L=LIQUID SO=SOLID
SE=SEDIMENT

PRESERVATION: HCl | HNO_3 | H_2SO_4 ☐ NaOH ☐ | ICE | UNPRESERVED

ANALYSES: BTEX ☐ MTBE ☐ [METHOD 8021] | TPH 1005 ☐ TPH 1006 ☐ HOLD 1006 ☐ | GRO [METHOD 8015] ☐ DRO [METHOD 8105] ☐ | VOC 8260 ☐ VOC 624 ☐ VOC 8260/5035 ☐ | SVOC 8270 ☐ PAH 8270 ☐ HOLD PAH ☐ SVOC 625 ☐ | 8270 PEST ☐ 625 PEST/PCB ☐ 608 PCB ☐ | 8270 O-P PEST ☐ 8082 PCB ☐ 8270 PCB ☐ | 8321 HERB ☐ T PHOS, AMMONIA ☐ | METALS 6020 ☐ METALS 200.8 ☐ DISS. METALS ☐ | RCRA ☐ TX11 ☐ ___ ☐ | PH ☐ HEX CHROM ☐ ALKALINITY ☐ COD ☐ | CHLORIDE ☐ ANIONS ___ ☐ | TCLP-SVOC ☐ VOC ☐ PEST ☐ HERB ☐ | TCLP-METALS ☐ RCRA 8 ☐ TX-11 ☐ Pb ☐ | RCI ☐ FLASHPOINT ☐ DGAS ☐ | TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐ | see Attached

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	HCl	HNO_3	H_2SO_4 ☐ NaOH ☐	ICE	UNPRESERVED	FIELD NOTES
BMW-24	24	8/11/16	850 EST	W	P	4		3		X	1	X
BMW-23	25		920									
BMW-22	26		1000									
BMW-21	27		1030									

RELINQUISHED BY: (Signature) DATE/TIME RECEIVED BY: (Signature)
[signature] 17:20 8/11/16 5:20 [signature]
RELINQUISHED BY: (Signature) DATE/TIME RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature) DATE/TIME RECEIVED BY: (Signature)

☐ DHL DISPOSAL @ $5.00 each ☐ Return

TURN AROUND TIME
RUSH ☐ CALL FIRST
1 DAY ☐ CALL FIRST
2 DAY ☐
NORMAL ☒
OTHER ☐ ___

LABORATORY USE ONLY:
RECEIVING TEMP: 3.1 | 0.2 | 0.4 THERM #: 78
CUSTODY SEALS: ☐ BROKEN ☐ INTACT ☒ NOT USED
CARRIER: ☐ LONE STAR ☐ FEDEX ☐ UPS ☐ OTHER
☐ COURIER DELIVERY
☒ HAND DELIVERED

John Dupont

From:	Sara Taube [Sara.Taube@pbwllc.com]
Sent:	Wednesday, July 22, 2015 12:06 PM
To:	John Dupont
Subject:	CCR Appendix III and IV
Follow Up Flag:	Follow up
Flag Status:	Completed

Hi John,

Here are the Appendix III and Appendix IV constituents that we will need to have analyzed under the CCR Rule.

Appendix III
Boron
Calcium
Chloride
Fluoride
pH
sulfate
TDS

Appendix IV
Antimony
Arsenic
Barium
Beryllium
Cadmium
Chromium
Cobalt
Fluoride
Lead
Lithium
Mercury
Molybdenum
Selenium
Thallium
Radium 226 and 228

We are looking to have approximately 74 wells sampled 8 times over the course of the next two years. Please let me know if there is any more information you might need.

Cheers,

Sara

10/26/2015

DHL Analytical, Inc.

Sample Receipt Checklist

Client Name **Pastor, Behling & Wheeler** Date Received: **8/11/2016**

Work Order Number **1608133** Received by **JT**

Checklist completed by: Signature 8/12/2016 Date Reviewed by Initials 8/12/2016 Date

Carrier name Hand Delivered

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	3.1 °C 10.2.16
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH<2 acceptable upon receipt?	Yes ☑	No ☐	NA ☐ LOT # 8086
	Adjusted? NO		Checked by
Water - ph>9 (S) or ph>12 (CN) acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted?		Checked by

Any No response must be detailed in the comments section below.

Client contacted _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments: _____

Corrective Action _____

DHL Analytical, Inc. **Date:** *14-Sep-16*

CLIENT: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake
Lab Order: 1608133

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Method SW6020A - Metals Analysis
Method SW7470A - Mercury Analysis
Method E300 - Anions Analysis
Method M4500-H+ B - pH of a Water Analysis
Method M2540C - TDS Analysis
Sub-contract - Radium-228 and Radium-226 analyses by methods E904/9320 and SM 7500 Ra B M. Analyzed at ESC Lab Sciences.

LOG IN

The samples were received and log-in performed on 8/11/16. A total of 27 samples were received. The samples arrived in good condition and were properly packaged.

METALS ANALYSIS

For Metals analysis (batch 76817) the matrix spike and matrix spike duplicate had low responses for the internal standard Bismuth. The associated analyte (Lead) was within control limits. No further corrective actions were taken.

For Metals analysis performed on 8/17/16, 8/19/16, 8/22/16, 8/23/16 and 8/24/16 (batches 76816, 76817, 76893 and 76895) the matrix spikes and matrix spike duplicate recoveries were out of control limits for a total of nine analytes. In addition, the matrix spikes and matrix spike duplicates (batches 76893 & 76895) had the RPD slightly above control limits for Boron or Selenium. These are flagged accordingly in the QC summary report. The samples selected for the matrix spikes and matrix spike duplicates were not from this work order. The LCSs were within control limits for these analytes. No further corrective actions were taken.

For Metals analysis performed on 8/22/16 and 8/24/16 (batches 76817 & 76893) the RPDs for the serial dilutions were slightly above control limits for Boron. These are flagged accordingly. The PDSs were within control limits for this analyte. No further corrective actions were taken.

For Metals analysis performed on 8/19/16 and 8/23/16 (batches 76817 & 76893) the PDS recoveries were below control limits for Molybdenum or Lithium. These are flagged accordingly. The serial dilutions were within control limits for these analytes. No further corrective actions were taken.

For Metals analysis performed on 8/18/16 and 8/22/16 LCVL3-160818 and LCVL2-160822 were out of control limits for Boron or Beryllium. These are flagged accordingly. The associated CCV3-160818

and CCV2-160822 were within control limits for these analytes. No further corrective actions were taken.

DHL Analytical, Inc.

Date: *14-Sep-16*

CLIENT: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake
Lab Order: 1608133

Work Order Sample Summary

Lab Smp ID	Client Sample ID	Tag Number	Date Collected	Date Recved
1608133-01	H-28		08/09/16 09:30 AM	8/11/2016
1608133-02	H-29		08/09/16 10:35 AM	8/11/2016
1608133-03	H-31		08/09/16 11:50 AM	8/11/2016
1608133-04	H-30		08/09/16 12:45 PM	8/11/2016
1608133-05	H-32		08/09/16 01:50 PM	8/11/2016
1608133-06	H-27		08/09/16 02:50 PM	8/11/2016
1608133-07	H-33		08/09/16 03:55 PM	8/11/2016
1608133-08	H-26		08/09/16 04:45 PM	8/11/2016
1608133-09	DUP-01		08/09/16 02:38 PM	8/11/2016
1608133-10	PDP-25		08/10/16 01:30 PM	8/11/2016
1608133-11	PDP-24		08/10/16 11:00 AM	8/11/2016
1608133-12	MW-17A		08/10/16 10:20 AM	8/11/2016
1608133-13	PDP-23		08/10/16 09:10 AM	8/11/2016
1608133-14	MW-19		08/10/16 03:00 PM	8/11/2016
1608133-15	MW-20A		08/10/16 02:10 PM	8/11/2016
1608133-16	PDP-22		08/10/16 09:20 AM	8/11/2016
1608133-17	PDP-26		08/10/16 10:30 AM	8/11/2016
1608133-18	MW-18A		08/10/16 11:30 AM	8/11/2016
1608133-19	EB-1		08/10/16 11:45 AM	8/11/2016
1608133-20	BMW-11AR		08/11/16 08:25 AM	8/11/2016
1608133-21	BMW-19		08/11/16 09:20 AM	8/11/2016
1608133-22	BMW-18		08/11/16 10:15 AM	8/11/2016
1608133-23	BMW-20		08/11/16 10:50 AM	8/11/2016
1608133-24	BMW-24		08/11/16 08:50 AM	8/11/2016
1608133-25	BMW-23		08/11/16 09:20 AM	8/11/2016
1608133-26	BMW-22		08/11/16 10:00 AM	8/11/2016
1608133-27	BMW-21		08/11/16 10:30 AM	8/11/2016

Lab Order: 1608133
Client: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1608133-01A	H-28	08/09/16 09:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:53 AM	76816
	H-28	08/09/16 09:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:53 AM	76816
	H-28	08/09/16 09:30 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	08/17/16 09:07 AM	76835
1608133-01D	H-28	08/09/16 09:30 AM	Aqueous	E300	Anion Preparation	08/15/16 10:13 AM	76808
	H-28	08/09/16 09:30 AM	Aqueous	E300	Anion Preparation	08/15/16 10:13 AM	76808
	H-28	08/09/16 09:30 AM	Aqueous	M4500-H+ B	pH Preparation	08/16/16 08:41 AM	76818
	H-28	08/09/16 09:30 AM	Aqueous	M2540C	TDS Preparation	08/15/16 03:45 PM	76803
1608133-02A	H-29	08/09/16 10:35 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:53 AM	76816
	H-29	08/09/16 10:35 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:53 AM	76816
	H-29	08/09/16 10:35 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:53 AM	76816
	H-29	08/09/16 10:35 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	08/17/16 09:07 AM	76835
1608133-02D	H-29	08/09/16 10:35 AM	Aqueous	E300	Anion Preparation	08/15/16 10:13 AM	76808
	H-29	08/09/16 10:35 AM	Aqueous	E300	Anion Preparation	08/15/16 10:13 AM	76808
	H-29	08/09/16 10:35 AM	Aqueous	M4500-H+ B	pH Preparation	08/16/16 08:41 AM	76818
	H-29	08/09/16 10:35 AM	Aqueous	M2540C	TDS Preparation	08/15/16 03:45 PM	76803
1608133-03A	H-31	08/09/16 11:50 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:58 AM	76817
	H-31	08/09/16 11:50 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:58 AM	76817
	H-31	08/09/16 11:50 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:58 AM	76817
	H-31	08/09/16 11:50 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	08/17/16 09:07 AM	76835
1608133-03D	H-31	08/09/16 11:50 AM	Aqueous	E300	Anion Preparation	08/15/16 10:13 AM	76808
	H-31	08/09/16 11:50 AM	Aqueous	E300	Anion Preparation	08/15/16 10:13 AM	76808
	H-31	08/09/16 11:50 AM	Aqueous	M4500-H+ B	pH Preparation	08/16/16 08:41 AM	76818
	H-31	08/09/16 11:50 AM	Aqueous	M2540C	TDS Preparation	08/15/16 03:45 PM	76803
1608133-04A	H-30	08/09/16 12:45 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:58 AM	76817
	H-30	08/09/16 12:45 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:58 AM	76817
	H-30	08/09/16 12:45 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:58 AM	76817
	H-30	08/09/16 12:45 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	08/17/16 09:07 AM	76835
1608133-04D	H-30	08/09/16 12:45 PM	Aqueous	E300	Anion Preparation	08/15/16 10:13 AM	76808

Lab Order: 1608133
Client: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1608133-04D	H-30	08/09/16 12:45 PM	Aqueous	E300	Anion Preparation	08/15/16 10:13 AM	76808
	H-30	08/09/16 12:45 PM	Aqueous	M4500-H+ B	pH Preparation	08/16/16 08:41 AM	76818
	H-30	08/09/16 12:45 PM	Aqueous	M2540C	TDS Preparation	08/15/16 03:45 PM	76803
1608133-05A	H-32	08/09/16 01:50 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:58 AM	76817
	H-32	08/09/16 01:50 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:58 AM	76817
	H-32	08/09/16 01:50 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:58 AM	76817
	H-32	08/09/16 01:50 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	08/17/16 09:07 AM	76835
1608133-05D	H-32	08/09/16 01:50 PM	Aqueous	E300	Anion Preparation	08/15/16 10:13 AM	76808
	H-32	08/09/16 01:50 PM	Aqueous	E300	Anion Preparation	08/15/16 10:13 AM	76808
	H-32	08/09/16 01:50 PM	Aqueous	M4500-H+ B	pH Preparation	08/16/16 08:41 AM	76818
	H-32	08/09/16 01:50 PM	Aqueous	M2540C	TDS Preparation	08/15/16 03:45 PM	76803
1608133-06A	H-27	08/09/16 02:50 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:58 AM	76817
	H-27	08/09/16 02:50 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:58 AM	76817
	H-27	08/09/16 02:50 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:58 AM	76817
	H-27	08/09/16 02:50 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	08/17/16 09:07 AM	76835
1608133-06D	H-27	08/09/16 02:50 PM	Aqueous	E300	Anion Preparation	08/15/16 10:13 AM	76808
	H-27	08/09/16 02:50 PM	Aqueous	E300	Anion Preparation	08/15/16 10:13 AM	76808
	H-27	08/09/16 02:50 PM	Aqueous	M4500-H+ B	pH Preparation	08/16/16 08:41 AM	76818
	H-27	08/09/16 02:50 PM	Aqueous	M2540C	TDS Preparation	08/16/16 02:51 PM	76831
1608133-07A	H-33	08/09/16 03:55 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:58 AM	76817
	H-33	08/09/16 03:55 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:58 AM	76817
	H-33	08/09/16 03:55 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:58 AM	76817
	H-33	08/09/16 03:55 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	08/17/16 09:07 AM	76835
1608133-07D	H-33	08/09/16 03:55 PM	Aqueous	E300	Anion Preparation	08/15/16 10:13 AM	76808
	H-33	08/09/16 03:55 PM	Aqueous	E300	Anion Preparation	08/15/16 10:13 AM	76808
	H-33	08/09/16 03:55 PM	Aqueous	M4500-H+ B	pH Preparation	08/16/16 08:41 AM	76818
	H-33	08/09/16 03:55 PM	Aqueous	M2540C	TDS Preparation	08/16/16 02:51 PM	76831
1608133-08A	H-26	08/09/16 04:45 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:58 AM	76817

Lab Order: 1608133
Client: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1608133-08A	H-26	08/09/16 04:45 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:58 AM	76817
	H-26	08/09/16 04:45 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:58 AM	76817
	H-26	08/09/16 04:45 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	08/17/16 09:07 AM	76835
1608133-08D	H-26	08/09/16 04:45 PM	Aqueous	E300	Anion Preparation	08/15/16 10:13 AM	76808
	H-26	08/09/16 04:45 PM	Aqueous	E300	Anion Preparation	08/15/16 10:13 AM	76808
	H-26	08/09/16 04:45 PM	Aqueous	M4500-H+ B	pH Preparation	08/16/16 08:41 AM	76818
	H-26	08/09/16 04:45 PM	Aqueous	M2540C	TDS Preparation	08/16/16 02:51 PM	76831
1608133-09A	DUP-01	08/09/16 02:38 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:58 AM	76817
	DUP-01	08/09/16 02:38 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:58 AM	76817
	DUP-01	08/09/16 02:38 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:58 AM	76817
	DUP-01	08/09/16 02:38 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	08/17/16 09:07 AM	76835
1608133-09D	DUP-01	08/09/16 02:38 PM	Aqueous	E300	Anion Preparation	08/15/16 10:13 AM	76808
	DUP-01	08/09/16 02:38 PM	Aqueous	E300	Anion Preparation	08/15/16 10:13 AM	76808
	DUP-01	08/09/16 02:38 PM	Aqueous	M4500-H+ B	pH Preparation	08/16/16 08:41 AM	76818
	DUP-01	08/09/16 02:38 PM	Aqueous	M2540C	TDS Preparation	08/16/16 02:51 PM	76831
1608133-10A	PDP-25	08/10/16 01:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:58 AM	76817
	PDP-25	08/10/16 01:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:58 AM	76817
	PDP-25	08/10/16 01:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:58 AM	76817
	PDP-25	08/10/16 01:30 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	08/17/16 09:07 AM	76835
1608133-10D	PDP-25	08/10/16 01:30 PM	Aqueous	E300	Anion Preparation	08/16/16 09:28 AM	76820
	PDP-25	08/10/16 01:30 PM	Aqueous	E300	Anion Preparation	08/16/16 09:28 AM	76820
	PDP-25	08/10/16 01:30 PM	Aqueous	M4500-H+ B	pH Preparation	08/16/16 08:41 AM	76818
	PDP-25	08/10/16 01:30 PM	Aqueous	M2540C	TDS Preparation	08/16/16 02:51 PM	76831
1608133-11A	PDP-24	08/10/16 11:00 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:58 AM	76817
	PDP-24	08/10/16 11:00 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:58 AM	76817
	PDP-24	08/10/16 11:00 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:58 AM	76817
	PDP-24	08/10/16 11:00 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:58 AM	76817
	PDP-24	08/10/16 11:00 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	08/23/16 08:44 AM	76918

Lab Order: 1608133
Client: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1608133-11D	PDP-24	08/10/16 11:00 AM	Aqueous	E300	Anion Preparation	08/16/16 09:28 AM	76820
	PDP-24	08/10/16 11:00 AM	Aqueous	E300	Anion Preparation	08/16/16 09:28 AM	76820
	PDP-24	08/10/16 11:00 AM	Aqueous	M4500-H+ B	pH Preparation	08/17/16 10:19 AM	76839
	PDP-24	08/10/16 11:00 AM	Aqueous	M2540C	TDS Preparation	08/16/16 02:51 PM	76831
1608133-12A	MW-17A	08/10/16 10:20 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:58 AM	76817
	MW-17A	08/10/16 10:20 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:58 AM	76817
	MW-17A	08/10/16 10:20 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	08/23/16 08:44 AM	76918
1608133-12D	MW-17A	08/10/16 10:20 AM	Aqueous	E300	Anion Preparation	08/16/16 09:28 AM	76820
	MW-17A	08/10/16 10:20 AM	Aqueous	M4500-H+ B	pH Preparation	08/17/16 10:19 AM	76839
	MW-17A	08/10/16 10:20 AM	Aqueous	M2540C	TDS Preparation	08/16/16 02:51 PM	76831
1608133-13A	PDP-23	08/10/16 09:10 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:58 AM	76817
	PDP-23	08/10/16 09:10 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:58 AM	76817
	PDP-23	08/10/16 09:10 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	08/23/16 08:44 AM	76918
1608133-13D	PDP-23	08/10/16 09:10 AM	Aqueous	E300	Anion Preparation	08/16/16 09:28 AM	76820
	PDP-23	08/10/16 09:10 AM	Aqueous	M4500-H+ B	pH Preparation	08/17/16 10:19 AM	76839
	PDP-23	08/10/16 09:10 AM	Aqueous	M2540C	TDS Preparation	08/16/16 02:51 PM	76831
1608133-14A	MW-19	08/10/16 03:00 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:58 AM	76817
	MW-19	08/10/16 03:00 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:58 AM	76817
	MW-19	08/10/16 03:00 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	08/23/16 08:44 AM	76918
1608133-14D	MW-19	08/10/16 03:00 PM	Aqueous	E300	Anion Preparation	08/16/16 09:28 AM	76820
	MW-19	08/10/16 03:00 PM	Aqueous	M4500-H+ B	pH Preparation	08/17/16 10:19 AM	76839
	MW-19	08/10/16 03:00 PM	Aqueous	M2540C	TDS Preparation	08/16/16 02:51 PM	76831
1608133-15A	MW-20A	08/10/16 02:10 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:58 AM	76817
	MW-20A	08/10/16 02:10 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:58 AM	76817
	MW-20A	08/10/16 02:10 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/16/16 07:58 AM	76817
	MW-20A	08/10/16 02:10 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	08/23/16 08:44 AM	76918
1608133-15D	MW-20A	08/10/16 02:10 PM	Aqueous	E300	Anion Preparation	08/16/16 09:28 AM	76820
	MW-20A	08/10/16 02:10 PM	Aqueous	M4500-H+ B	pH Preparation	08/17/16 10:19 AM	76839

Lab Order: 1608133
Client: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1608133-15D	MW-20A	08/10/16 02:10 PM	Aqueous	M2540C	TDS Preparation	08/16/16 02:51 PM	76831
1608133-16A	PDP-22	08/10/16 09:20 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/22/16 08:54 AM	76893
	PDP-22	08/10/16 09:20 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/22/16 08:54 AM	76893
	PDP-22	08/10/16 09:20 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/22/16 08:54 AM	76893
	PDP-22	08/10/16 09:20 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	08/23/16 08:44 AM	76918
1608133-16D	PDP-22	08/10/16 09:20 AM	Aqueous	E300	Anion Preparation	08/16/16 09:28 AM	76820
	PDP-22	08/10/16 09:20 AM	Aqueous	E300	Anion Preparation	08/16/16 09:28 AM	76820
	PDP-22	08/10/16 09:20 AM	Aqueous	M4500-H+ B	pH Preparation	08/17/16 10:19 AM	76839
	PDP-22	08/10/16 09:20 AM	Aqueous	M2540C	TDS Preparation	08/16/16 02:51 PM	76831
1608133-17A	PDP-26	08/10/16 10:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/22/16 08:54 AM	76893
	PDP-26	08/10/16 10:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/22/16 08:54 AM	76893
	PDP-26	08/10/16 10:30 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	08/23/16 08:44 AM	76918
1608133-17D	PDP-26	08/10/16 10:30 AM	Aqueous	E300	Anion Preparation	08/16/16 09:28 AM	76820
	PDP-26	08/10/16 10:30 AM	Aqueous	M4500-H+ B	pH Preparation	08/17/16 10:19 AM	76839
	PDP-26	08/10/16 10:30 AM	Aqueous	M2540C	TDS Preparation	08/16/16 02:51 PM	76831
1608133-18A	MW-18A	08/10/16 11:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/22/16 08:54 AM	76893
	MW-18A	08/10/16 11:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/22/16 08:54 AM	76893
	MW-18A	08/10/16 11:30 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	08/23/16 08:44 AM	76918
	MW-18A	08/10/16 11:30 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	08/23/16 08:44 AM	76918
1608133-18D	MW-18A	08/10/16 11:30 AM	Aqueous	E300	Anion Preparation	08/16/16 09:28 AM	76820
	MW-18A	08/10/16 11:30 AM	Aqueous	M4500-H+ B	pH Preparation	08/17/16 10:19 AM	76839
	MW-18A	08/10/16 11:30 AM	Aqueous	M2540C	TDS Preparation	08/16/16 02:51 PM	76831
1608133-19A	EB-1	08/10/16 11:45 AM	Equip Blank	SW3005A	Aq Prep Metals : ICP-MS	08/22/16 08:54 AM	76893
	EB-1	08/10/16 11:45 AM	Equip Blank	SW3005A	Aq Prep Metals : ICP-MS	08/22/16 08:54 AM	76893
	EB-1	08/10/16 11:45 AM	Equip Blank	SW7470A	Mercury Aq Prep, Total	08/23/16 08:44 AM	76918
1608133-19D	EB-1	08/10/16 11:45 AM	Equip Blank	E300	Anion Preparation	08/17/16 09:55 AM	76838
	EB-1	08/10/16 11:45 AM	Equip Blank	M4500-H+ B	pH Preparation	08/17/16 10:19 AM	76839
	EB-1	08/10/16 11:45 AM	Equip Blank	M2540C	TDS Preparation	08/16/16 02:51 PM	76831

Lab Order: 1608133
Client: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1608133-20A	BMW-11AR	08/11/16 08:25 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/22/16 08:54 AM	76893
	BMW-11AR	08/11/16 08:25 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/22/16 08:54 AM	76893
	BMW-11AR	08/11/16 08:25 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/22/16 08:54 AM	76893
	BMW-11AR	08/11/16 08:25 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	08/23/16 08:44 AM	76918
1608133-20D	BMW-11AR	08/11/16 08:25 AM	Aqueous	E300	Anion Preparation	08/17/16 09:55 AM	76838
	BMW-11AR	08/11/16 08:25 AM	Aqueous	E300	Anion Preparation	08/17/16 09:55 AM	76838
	BMW-11AR	08/11/16 08:25 AM	Aqueous	M4500-H+ B	pH Preparation	08/17/16 10:19 AM	76839
	BMW-11AR	08/11/16 08:25 AM	Aqueous	M2540C	TDS Preparation	08/16/16 02:51 PM	76831
1608133-21A	BMW-19	08/11/16 09:20 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/22/16 08:54 AM	76893
	BMW-19	08/11/16 09:20 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/22/16 08:54 AM	76893
	BMW-19	08/11/16 09:20 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/22/16 08:54 AM	76893
	BMW-19	08/11/16 09:20 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/22/16 08:54 AM	76893
	BMW-19	08/11/16 09:20 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	08/23/16 08:44 AM	76918
1608133-21D	BMW-19	08/11/16 09:20 AM	Aqueous	E300	Anion Preparation	08/17/16 09:55 AM	76838
	BMW-19	08/11/16 09:20 AM	Aqueous	E300	Anion Preparation	08/17/16 09:55 AM	76838
	BMW-19	08/11/16 09:20 AM	Aqueous	M4500-H+ B	pH Preparation	08/17/16 10:19 AM	76839
	BMW-19	08/11/16 09:20 AM	Aqueous	M2540C	TDS Preparation	08/16/16 02:51 PM	76831
1608133-22A	BMW-18	08/11/16 10:15 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/22/16 08:54 AM	76893
	BMW-18	08/11/16 10:15 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/22/16 08:54 AM	76893
	BMW-18	08/11/16 10:15 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	08/23/16 08:44 AM	76918
1608133-22D	BMW-18	08/11/16 10:15 AM	Aqueous	E300	Anion Preparation	08/17/16 09:55 AM	76838
	BMW-18	08/11/16 10:15 AM	Aqueous	M4500-H+ B	pH Preparation	08/17/16 10:19 AM	76839
	BMW-18	08/11/16 10:15 AM	Aqueous	M2540C	TDS Preparation	08/16/16 02:51 PM	76831
1608133-23A	BMW-20	08/11/16 10:50 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/22/16 08:57 AM	76895
	BMW-20	08/11/16 10:50 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/22/16 08:57 AM	76895
	BMW-20	08/11/16 10:50 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/22/16 08:57 AM	76895
	BMW-20	08/11/16 10:50 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/22/16 08:57 AM	76895
	BMW-20	08/11/16 10:50 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	08/23/16 08:44 AM	76918

Lab Order: 1608133
Client: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1608133-23D	BMW-20	08/11/16 10:50 AM	Aqueous	E300	Anion Preparation	08/17/16 09:55 AM	76838
	BMW-20	08/11/16 10:50 AM	Aqueous	E300	Anion Preparation	08/17/16 09:55 AM	76838
	BMW-20	08/11/16 10:50 AM	Aqueous	M4500-H+ B	pH Preparation	08/17/16 10:19 AM	76839
	BMW-20	08/11/16 10:50 AM	Aqueous	M2540C	TDS Preparation	08/16/16 02:51 PM	76831
1608133-24A	BMW-24	08/11/16 08:50 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/22/16 08:57 AM	76895
	BMW-24	08/11/16 08:50 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/22/16 08:57 AM	76895
	BMW-24	08/11/16 08:50 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/22/16 08:57 AM	76895
	BMW-24	08/11/16 08:50 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/22/16 08:57 AM	76895
	BMW-24	08/11/16 08:50 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	08/23/16 08:44 AM	76918
1608133-24D	BMW-24	08/11/16 08:50 AM	Aqueous	E300	Anion Preparation	08/17/16 09:55 AM	76838
	BMW-24	08/11/16 08:50 AM	Aqueous	E300	Anion Preparation	08/17/16 09:55 AM	76838
	BMW-24	08/11/16 08:50 AM	Aqueous	M4500-H+ B	pH Preparation	08/17/16 10:19 AM	76839
	BMW-24	08/11/16 08:50 AM	Aqueous	M2540C	TDS Preparation	08/16/16 02:51 PM	76831
1608133-25A	BMW-23	08/11/16 09:20 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/22/16 08:57 AM	76895
	BMW-23	08/11/16 09:20 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/22/16 08:57 AM	76895
	BMW-23	08/11/16 09:20 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/22/16 08:57 AM	76895
	BMW-23	08/11/16 09:20 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	08/23/16 08:44 AM	76918
1608133-25D	BMW-23	08/11/16 09:20 AM	Aqueous	E300	Anion Preparation	08/17/16 09:55 AM	76838
	BMW-23	08/11/16 09:20 AM	Aqueous	E300	Anion Preparation	08/17/16 09:55 AM	76838
	BMW-23	08/11/16 09:20 AM	Aqueous	M4500-H+ B	pH Preparation	08/17/16 10:19 AM	76839
	BMW-23	08/11/16 09:20 AM	Aqueous	M2540C	TDS Preparation	08/18/16 08:44 AM	76858
1608133-26A	BMW-22	08/11/16 10:00 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/22/16 08:57 AM	76895
	BMW-22	08/11/16 10:00 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/22/16 08:57 AM	76895
	BMW-22	08/11/16 10:00 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/22/16 08:57 AM	76895
	BMW-22	08/11/16 10:00 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	08/23/16 08:44 AM	76918
1608133-26D	BMW-22	08/11/16 10:00 AM	Aqueous	E300	Anion Preparation	08/17/16 09:55 AM	76838
	BMW-22	08/11/16 10:00 AM	Aqueous	E300	Anion Preparation	08/17/16 09:55 AM	76838
	BMW-22	08/11/16 10:00 AM	Aqueous	M4500-H+ B	pH Preparation	08/17/16 10:19 AM	76839

Lab Order: 1608133
Client: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1608133-26D	BMW-22	08/11/16 10:00 AM	Aqueous	M2540C	TDS Preparation	08/18/16 08:44 AM	76858
1608133-27A	BMW-21	08/11/16 10:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/22/16 08:57 AM	76895
	BMW-21	08/11/16 10:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/22/16 08:57 AM	76895
	BMW-21	08/11/16 10:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/22/16 08:57 AM	76895
	BMW-21	08/11/16 10:30 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	08/23/16 08:44 AM	76918
1608133-27D	BMW-21	08/11/16 10:30 AM	Aqueous	E300	Anion Preparation	08/17/16 09:55 AM	76838
	BMW-21	08/11/16 10:30 AM	Aqueous	E300	Anion Preparation	08/17/16 09:55 AM	76838
	BMW-21	08/11/16 10:30 AM	Aqueous	M4500-H+ B	pH Preparation	08/17/16 10:19 AM	76839
	BMW-21	08/11/16 10:30 AM	Aqueous	M2540C	TDS Preparation	08/18/16 08:44 AM	76858

Lab Order: 1608133
Client: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1608133-01A	H-28	Aqueous	SW7470A	Mercury Total: Aqueous	76835	1	08/18/16 10:36 AM	CETAC2_HG_160818B
	H-28	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76816	1	08/17/16 02:05 PM	ICP-MS4_160817A
	H-28	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76816	50	08/18/16 03:36 PM	ICP-MS4_160818B
1608133-01D	H-28	Aqueous	E300	Anions by IC method - Water	76808	1	08/15/16 12:24 PM	IC4_160815A
	H-28	Aqueous	E300	Anions by IC method - Water	76808	10	08/15/16 03:58 PM	IC4_160815A
	H-28	Aqueous	M4500-H+ B	pH	76818	1	08/16/16 10:17 AM	TITRATOR_160816A
	H-28	Aqueous	M2540C	Total Dissolved Solids	76803	1	08/16/16 08:42 AM	WC_160815A
1608133-02A	H-29	Aqueous	SW7470A	Mercury Total: Aqueous	76835	1	08/18/16 10:43 AM	CETAC2_HG_160818B
	H-29	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76816	1	08/17/16 02:07 PM	ICP-MS4_160817A
	H-29	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76816	10	08/18/16 03:38 PM	ICP-MS4_160818B
	H-29	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76816	1	08/18/16 03:40 PM	ICP-MS4_160818B
1608133-02D	H-29	Aqueous	E300	Anions by IC method - Water	76808	1	08/15/16 12:39 PM	IC4_160815A
	H-29	Aqueous	E300	Anions by IC method - Water	76808	10	08/15/16 04:28 PM	IC4_160815A
	H-29	Aqueous	M4500-H+ B	pH	76818	1	08/16/16 10:20 AM	TITRATOR_160816A
	H-29	Aqueous	M2540C	Total Dissolved Solids	76803	1	08/16/16 08:42 AM	WC_160815A
1608133-03A	H-31	Aqueous	SW7470A	Mercury Total: Aqueous	76835	1	08/18/16 10:45 AM	CETAC2_HG_160818B
	H-31	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76817	1	08/19/16 05:50 PM	ICP-MS4_160819A
	H-31	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76817	100	08/22/16 02:05 PM	ICP-MS4_160822B
	H-31	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76817	1	08/22/16 03:22 PM	ICP-MS4_160822B
1608133-03D	H-31	Aqueous	E300	Anions by IC method - Water	76808	1	08/15/16 12:54 PM	IC4_160815A
	H-31	Aqueous	E300	Anions by IC method - Water	76808	100	08/15/16 04:43 PM	IC4_160815A
	H-31	Aqueous	M4500-H+ B	pH	76818	1	08/16/16 10:23 AM	TITRATOR_160816A
	H-31	Aqueous	M2540C	Total Dissolved Solids	76803	1	08/16/16 08:42 AM	WC_160815A
1608133-04A	H-30	Aqueous	SW7470A	Mercury Total: Aqueous	76835	1	08/18/16 10:48 AM	CETAC2_HG_160818B
	H-30	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76817	1	08/19/16 05:52 PM	ICP-MS4_160819A
	H-30	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76817	1	08/22/16 03:24 PM	ICP-MS4_160822B

Lab Order: 1608133
Client: Pastor, Behling & Wheeler
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ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1608133-04A	H-30	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76817	10	08/22/16 02:07 PM	ICP-MS4_160822B
1608133-04D	H-30	Aqueous	E300	Anions by IC method - Water	76808	1	08/15/16 01:09 PM	IC4_160815A
	H-30	Aqueous	E300	Anions by IC method - Water	76808	10	08/15/16 04:58 PM	IC4_160815A
	H-30	Aqueous	M4500-H+ B	pH	76818	1	08/16/16 10:25 AM	TITRATOR_160816A
	H-30	Aqueous	M2540C	Total Dissolved Solids	76803	1	08/16/16 08:42 AM	WC_160815A
1608133-05A	H-32	Aqueous	SW7470A	Mercury Total: Aqueous	76835	1	08/18/16 10:50 AM	CETAC2_HG_160818B
	H-32	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76817	1	08/19/16 05:54 PM	ICP-MS4_160819A
	H-32	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76817	10	08/22/16 02:09 PM	ICP-MS4_160822B
	H-32	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76817	1	08/22/16 03:26 PM	ICP-MS4_160822B
1608133-05D	H-32	Aqueous	E300	Anions by IC method - Water	76808	1	08/15/16 01:24 PM	IC4_160815A
	H-32	Aqueous	E300	Anions by IC method - Water	76808	10	08/15/16 05:28 PM	IC4_160815A
	H-32	Aqueous	M4500-H+ B	pH	76818	1	08/16/16 10:27 AM	TITRATOR_160816A
	H-32	Aqueous	M2540C	Total Dissolved Solids	76803	1	08/16/16 08:42 AM	WC_160815A
1608133-06A	H-27	Aqueous	SW7470A	Mercury Total: Aqueous	76835	1	08/18/16 10:52 AM	CETAC2_HG_160818B
	H-27	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76817	1	08/19/16 06:10 PM	ICP-MS4_160819A
	H-27	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76817	10	08/22/16 02:11 PM	ICP-MS4_160822B
	H-27	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76817	1	08/22/16 02:59 PM	ICP-MS4_160822B
1608133-06D	H-27	Aqueous	E300	Anions by IC method - Water	76808	1	08/15/16 01:39 PM	IC4_160815A
	H-27	Aqueous	E300	Anions by IC method - Water	76808	10	08/15/16 05:43 PM	IC4_160815A
	H-27	Aqueous	M4500-H+ B	pH	76818	1	08/16/16 10:29 AM	TITRATOR_160816A
	H-27	Aqueous	M2540C	Total Dissolved Solids	76831	1	08/17/16 08:42 AM	WC_160816D
1608133-07A	H-33	Aqueous	SW7470A	Mercury Total: Aqueous	76835	1	08/18/16 10:54 AM	CETAC2_HG_160818B
	H-33	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76817	1	08/22/16 02:13 PM	ICP-MS4_160822B
	H-33	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76817	1	08/24/16 05:45 PM	ICP-MS3_160824B
	H-33	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76817	1	08/19/16 06:12 PM	ICP-MS4_160819A
1608133-07D	H-33	Aqueous	E300	Anions by IC method - Water	76808	10	08/15/16 05:58 PM	IC4_160815A

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ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1608133-07D	H-33	Aqueous	E300	Anions by IC method - Water	76808	1	08/15/16 01:54 PM	IC4_160815A
	H-33	Aqueous	M4500-H+ B	pH	76818	1	08/16/16 10:32 AM	TITRATOR_160816A
	H-33	Aqueous	M2540C	Total Dissolved Solids	76831	1	08/17/16 08:42 AM	WC_160816D
1608133-08A	H-26	Aqueous	SW7470A	Mercury Total: Aqueous	76835	1	08/18/16 10:57 AM	CETAC2_HG_160818B
	H-26	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76817	1	08/24/16 05:51 PM	ICP-MS3_160824B
	H-26	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76817	1	08/19/16 06:14 PM	ICP-MS4_160819A
	H-26	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76817	1	08/22/16 02:15 PM	ICP-MS4_160822B
1608133-08D	H-26	Aqueous	E300	Anions by IC method - Water	76808	1	08/15/16 02:09 PM	IC4_160815A
	H-26	Aqueous	E300	Anions by IC method - Water	76808	10	08/15/16 07:28 PM	IC4_160815A
	H-26	Aqueous	M4500-H+ B	pH	76818	1	08/16/16 10:34 AM	TITRATOR_160816A
	H-26	Aqueous	M2540C	Total Dissolved Solids	76831	1	08/17/16 08:42 AM	WC_160816D
1608133-09A	DUP-01	Aqueous	SW7470A	Mercury Total: Aqueous	76835	1	08/18/16 10:59 AM	CETAC2_HG_160818B
	DUP-01	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76817	10	08/22/16 02:17 PM	ICP-MS4_160822B
	DUP-01	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76817	1	08/22/16 03:28 PM	ICP-MS4_160822B
	DUP-01	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76817	1	08/19/16 06:17 PM	ICP-MS4_160819A
1608133-09D	DUP-01	Aqueous	E300	Anions by IC method - Water	76808	1	08/15/16 02:24 PM	IC4_160815A
	DUP-01	Aqueous	E300	Anions by IC method - Water	76808	10	08/15/16 07:43 PM	IC4_160815A
	DUP-01	Aqueous	M4500-H+ B	pH	76818	1	08/16/16 10:36 AM	TITRATOR_160816A
	DUP-01	Aqueous	M2540C	Total Dissolved Solids	76831	1	08/17/16 08:42 AM	WC_160816D
1608133-10A	PDP-25	Aqueous	SW7470A	Mercury Total: Aqueous	76835	1	08/18/16 11:01 AM	CETAC2_HG_160818B
	PDP-25	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76817	1	08/19/16 06:19 PM	ICP-MS4_160819A
	PDP-25	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76817	10	08/22/16 02:19 PM	ICP-MS4_160822B
	PDP-25	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76817	1	08/22/16 03:01 PM	ICP-MS4_160822B
1608133-10D	PDP-25	Aqueous	E300	Anions by IC method - Water	76820	1	08/16/16 11:27 AM	IC4_160816A
	PDP-25	Aqueous	E300	Anions by IC method - Water	76820	10	08/16/16 02:52 PM	IC4_160816A
	PDP-25	Aqueous	M4500-H+ B	pH	76818	1	08/16/16 10:53 AM	TITRATOR_160816A

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ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1608133-10D	PDP-25	Aqueous	M2540C	Total Dissolved Solids	76831	1	08/17/16 08:42 AM	WC_160816D
1608133-11A	PDP-24	Aqueous	SW7470A	Mercury Total: Aqueous	76918	1	08/24/16 10:23 AM	CETAC2_HG_160824B
	PDP-24	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76817	1	08/24/16 05:57 PM	ICP-MS3_160824B
	PDP-24	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76817	1	08/19/16 06:21 PM	ICP-MS4_160819A
	PDP-24	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76817	10	08/22/16 02:21 PM	ICP-MS4_160822B
	PDP-24	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76817	1	08/22/16 03:30 PM	ICP-MS4_160822B
1608133-11D	PDP-24	Aqueous	E300	Anions by IC method - Water	76820	1	08/16/16 11:42 AM	IC4_160816A
	PDP-24	Aqueous	E300	Anions by IC method - Water	76820	10	08/16/16 03:37 PM	IC4_160816A
	PDP-24	Aqueous	M4500-H+ B	pH	76839	1	08/17/16 11:15 AM	TITRATOR_160817B
	PDP-24	Aqueous	M2540C	Total Dissolved Solids	76831	1	08/17/16 08:42 AM	WC_160816D
1608133-12A	MW-17A	Aqueous	SW7470A	Mercury Total: Aqueous	76918	1	08/24/16 10:26 AM	CETAC2_HG_160824B
	MW-17A	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76817	1	08/19/16 06:23 PM	ICP-MS4_160819A
	MW-17A	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76817	1	08/22/16 02:51 PM	ICP-MS4_160822B
1608133-12D	MW-17A	Aqueous	E300	Anions by IC method - Water	76820	1	08/16/16 11:57 AM	IC4_160816A
	MW-17A	Aqueous	M4500-H+ B	pH	76839	1	08/17/16 11:19 AM	TITRATOR_160817B
	MW-17A	Aqueous	M2540C	Total Dissolved Solids	76831	1	08/17/16 08:42 AM	WC_160816D
1608133-13A	PDP-23	Aqueous	SW7470A	Mercury Total: Aqueous	76918	1	08/24/16 10:28 AM	CETAC2_HG_160824B
	PDP-23	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76817	1	08/19/16 06:25 PM	ICP-MS4_160819A
	PDP-23	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76817	1	08/22/16 02:53 PM	ICP-MS4_160822B
1608133-13D	PDP-23	Aqueous	E300	Anions by IC method - Water	76820	1	08/16/16 12:12 PM	IC4_160816A
	PDP-23	Aqueous	M4500-H+ B	pH	76839	1	08/17/16 11:21 AM	TITRATOR_160817B
	PDP-23	Aqueous	M2540C	Total Dissolved Solids	76831	1	08/17/16 08:42 AM	WC_160816D
1608133-14A	MW-19	Aqueous	SW7470A	Mercury Total: Aqueous	76918	1	08/24/16 10:30 AM	CETAC2_HG_160824B
	MW-19	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76817	1	08/22/16 02:55 PM	ICP-MS4_160822B
	MW-19	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76817	1	08/19/16 06:27 PM	ICP-MS4_160819A
1608133-14D	MW-19	Aqueous	E300	Anions by IC method - Water	76820	1	08/16/16 12:27 PM	IC4_160816A

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ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1608133-14D	MW-19	Aqueous	M4500-H+ B	pH	76839	1	08/17/16 11:24 AM	TITRATOR_160817B
	MW-19	Aqueous	M2540C	Total Dissolved Solids	76831	1	08/17/16 08:42 AM	WC_160816D
1608133-15A	MW-20A	Aqueous	SW7470A	Mercury Total: Aqueous	76918	1	08/24/16 10:32 AM	CETAC2_HG_160824B
	MW-20A	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76817	1	08/19/16 06:29 PM	ICP-MS4_160819A
	MW-20A	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76817	1	08/22/16 02:57 PM	ICP-MS4_160822B
	MW-20A	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76817	1	08/26/16 12:27 PM	ICP-MS4_160826B
1608133-15D	MW-20A	Aqueous	E300	Anions by IC method - Water	76820	1	08/16/16 12:42 PM	IC4_160816A
	MW-20A	Aqueous	M4500-H+ B	pH	76839	1	08/17/16 11:26 AM	TITRATOR_160817B
	MW-20A	Aqueous	M2540C	Total Dissolved Solids	76831	1	08/17/16 08:42 AM	WC_160816D
1608133-16A	PDP-22	Aqueous	SW7470A	Mercury Total: Aqueous	76918	1	08/24/16 10:35 AM	CETAC2_HG_160824B
	PDP-22	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76893	1	08/24/16 04:31 PM	ICP-MS4_160824B
	PDP-22	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76893	1	08/23/16 12:40 PM	ICP-MS4_160823B
	PDP-22	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76893	10	08/24/16 03:46 PM	ICP-MS4_160824B
1608133-16D	PDP-22	Aqueous	E300	Anions by IC method - Water	76820	1	08/16/16 12:57 PM	IC4_160816A
	PDP-22	Aqueous	E300	Anions by IC method - Water	76820	10	08/16/16 03:52 PM	IC4_160816A
	PDP-22	Aqueous	M4500-H+ B	pH	76839	1	08/17/16 11:28 AM	TITRATOR_160817B
	PDP-22	Aqueous	M2540C	Total Dissolved Solids	76831	1	08/17/16 08:42 AM	WC_160816D
1608133-17A	PDP-26	Aqueous	SW7470A	Mercury Total: Aqueous	76918	1	08/24/16 10:46 AM	CETAC2_HG_160824B
	PDP-26	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76893	1	08/23/16 01:14 PM	ICP-MS4_160823B
	PDP-26	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76893	1	08/24/16 04:33 PM	ICP-MS4_160824B
1608133-17D	PDP-26	Aqueous	E300	Anions by IC method - Water	76820	1	08/16/16 01:12 PM	IC4_160816A
	PDP-26	Aqueous	M4500-H+ B	pH	76839	1	08/17/16 11:31 AM	TITRATOR_160817B
	PDP-26	Aqueous	M2540C	Total Dissolved Solids	76831	1	08/17/16 08:42 AM	WC_160816D
1608133-18A	MW-18A	Aqueous	SW7470A	Mercury Total: Aqueous	76918	20	08/24/16 11:31 AM	CETAC2_HG_160824B
	MW-18A	Aqueous	SW7470A	Mercury Total: Aqueous	76918	1	08/24/16 10:48 AM	CETAC2_HG_160824B
	MW-18A	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76893	1	08/23/16 01:16 PM	ICP-MS4_160823B

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ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1608133-18A	MW-18A	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76893	1	08/24/16 05:29 PM	ICP-MS4_160824B
1608133-18D	MW-18A	Aqueous	E300	Anions by IC method - Water	76820	1	08/16/16 01:27 PM	IC4_160816A
	MW-18A	Aqueous	M4500-H+ B	pH	76839	1	08/17/16 11:34 AM	TITRATOR_160817B
	MW-18A	Aqueous	M2540C	Total Dissolved Solids	76831	1	08/17/16 08:42 AM	WC_160816D
1608133-19A	EB-1	Equip Blank	SW7470A	Mercury Total: Aqueous	76918	1	08/24/16 10:53 AM	CETAC2_HG_160824B
	EB-1	Equip Blank	SW6020A	Trace Metals: ICP-MS - Water	76893	1	08/23/16 01:18 PM	ICP-MS4_160823B
	EB-1	Equip Blank	SW6020A	Trace Metals: ICP-MS - Water	76893	1	08/24/16 05:31 PM	ICP-MS4_160824B
1608133-19D	EB-1	Equip Blank	E300	Anions by IC method - Water	76838	1	08/17/16 11:24 AM	IC4_160817A
	EB-1	Equip Blank	M4500-H+ B	pH	76839	1	08/17/16 11:36 AM	TITRATOR_160817B
	EB-1	Equip Blank	M2540C	Total Dissolved Solids	76831	1	08/17/16 08:42 AM	WC_160816D
1608133-20A	BMW-11AR	Aqueous	SW7470A	Mercury Total: Aqueous	76918	1	08/24/16 10:56 AM	CETAC2_HG_160824B
	BMW-11AR	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76893	10	08/24/16 05:33 PM	ICP-MS4_160824B
	BMW-11AR	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76893	1	08/24/16 05:35 PM	ICP-MS4_160824B
	BMW-11AR	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76893	1	08/23/16 01:20 PM	ICP-MS4_160823B
1608133-20D	BMW-11AR	Aqueous	E300	Anions by IC method - Water	76838	1	08/17/16 11:39 AM	IC4_160817A
	BMW-11AR	Aqueous	E300	Anions by IC method - Water	76838	10	08/17/16 02:41 PM	IC4_160817A
	BMW-11AR	Aqueous	M4500-H+ B	pH	76839	1	08/17/16 11:40 AM	TITRATOR_160817B
	BMW-11AR	Aqueous	M2540C	Total Dissolved Solids	76831	1	08/17/16 08:42 AM	WC_160816D
1608133-21A	BMW-19	Aqueous	SW7470A	Mercury Total: Aqueous	76918	1	08/24/16 11:04 AM	CETAC2_HG_160824B
	BMW-19	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76893	50	08/25/16 02:49 PM	ICP-MS4_160825A
	BMW-19	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76893	1	08/23/16 01:22 PM	ICP-MS4_160823B
	BMW-19	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76893	10	08/24/16 05:37 PM	ICP-MS4_160824B
	BMW-19	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76893	1	08/24/16 05:39 PM	ICP-MS4_160824B
1608133-21D	BMW-19	Aqueous	E300	Anions by IC method - Water	76838	100	08/17/16 02:56 PM	IC4_160817A
	BMW-19	Aqueous	E300	Anions by IC method - Water	76838	1	08/17/16 11:54 AM	IC4_160817A
	BMW-19	Aqueous	M4500-H+ B	pH	76839	1	08/17/16 11:42 AM	TITRATOR_160817B

Lab Order: 1608133
Client: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1608133-21D	BMW-19	Aqueous	M2540C	Total Dissolved Solids	76831	1	08/17/16 08:42 AM	WC_160816D
1608133-22A	BMW-18	Aqueous	SW7470A	Mercury Total: Aqueous	76918	1	08/24/16 11:06 AM	CETAC2_HG_160824B
	BMW-18	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76893	1	08/23/16 01:24 PM	ICP-MS4_160823B
	BMW-18	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76893	1	08/24/16 05:41 PM	ICP-MS4_160824B
1608133-22D	BMW-18	Aqueous	E300	Anions by IC method - Water	76838	1	08/17/16 12:09 PM	IC4_160817A
	BMW-18	Aqueous	M4500-H+ B	pH	76839	1	08/17/16 11:46 AM	TITRATOR_160817B
	BMW-18	Aqueous	M2540C	Total Dissolved Solids	76831	1	08/17/16 08:42 AM	WC_160816D
1608133-23A	BMW-20	Aqueous	SW7470A	Mercury Total: Aqueous	76918	1	08/24/16 11:08 AM	CETAC2_HG_160824B
	BMW-20	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76895	10	08/24/16 07:14 PM	ICP-MS4_160824B
	BMW-20	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76895	1	08/24/16 08:48 PM	ICP-MS4_160824B
	BMW-20	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76895	1	08/23/16 02:11 PM	ICP-MS4_160823B
	BMW-20	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76895	1	08/25/16 02:51 PM	ICP-MS4_160825A
1608133-23D	BMW-20	Aqueous	E300	Anions by IC method - Water	76838	1	08/17/16 12:24 PM	IC4_160817A
	BMW-20	Aqueous	E300	Anions by IC method - Water	76838	10	08/17/16 03:11 PM	IC4_160817A
	BMW-20	Aqueous	M4500-H+ B	pH	76839	1	08/17/16 11:48 AM	TITRATOR_160817B
	BMW-20	Aqueous	M2540C	Total Dissolved Solids	76831	1	08/17/16 08:42 AM	WC_160816D
1608133-24A	BMW-24	Aqueous	SW7470A	Mercury Total: Aqueous	76918	1	08/24/16 11:10 AM	CETAC2_HG_160824B
	BMW-24	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76895	1	08/23/16 02:13 PM	ICP-MS4_160823B
	BMW-24	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76895	10	08/24/16 07:16 PM	ICP-MS4_160824B
	BMW-24	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76895	1	08/24/16 08:50 PM	ICP-MS4_160824B
	BMW-24	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76895	1	08/25/16 02:53 PM	ICP-MS4_160825A
1608133-24D	BMW-24	Aqueous	E300	Anions by IC method - Water	76838	100	08/17/16 03:26 PM	IC4_160817A
	BMW-24	Aqueous	E300	Anions by IC method - Water	76838	1	08/17/16 12:39 PM	IC4_160817A
	BMW-24	Aqueous	M4500-H+ B	pH	76839	1	08/17/16 11:50 AM	TITRATOR_160817B
	BMW-24	Aqueous	M2540C	Total Dissolved Solids	76831	1	08/17/16 08:42 AM	WC_160816D
1608133-25A	BMW-23	Aqueous	SW7470A	Mercury Total: Aqueous	76918	1	08/24/16 11:13 AM	CETAC2_HG_160824B

Lab Order: 1608133
Client: Pastor, Behling & Wheeler
Project: Luminant - Martin Lake

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1608133-25A	BMW-23	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76895	1	08/23/16 02:15 PM	ICP-MS4_160823B
	BMW-23	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76895	10	08/24/16 07:18 PM	ICP-MS4_160824B
	BMW-23	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76895	1	08/25/16 02:55 PM	ICP-MS4_160825A
1608133-25D	BMW-23	Aqueous	E300	Anions by IC method - Water	76838	1	08/17/16 12:54 PM	IC4_160817A
	BMW-23	Aqueous	E300	Anions by IC method - Water	76838	10	08/17/16 03:41 PM	IC4_160817A
	BMW-23	Aqueous	M4500-H+ B	pH	76839	1	08/17/16 11:52 AM	TITRATOR_160817B
	BMW-23	Aqueous	M2540C	Total Dissolved Solids	76858	1	08/22/16 08:40 AM	WC_160818B
1608133-26A	BMW-22	Aqueous	SW7470A	Mercury Total: Aqueous	76918	1	08/24/16 11:15 AM	CETAC2_HG_160824B
	BMW-22	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76895	10	08/24/16 07:20 PM	ICP-MS4_160824B
	BMW-22	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76895	1	08/25/16 02:57 PM	ICP-MS4_160825A
	BMW-22	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76895	1	08/23/16 02:17 PM	ICP-MS4_160823B
1608133-26D	BMW-22	Aqueous	E300	Anions by IC method - Water	76838	100	08/17/16 03:56 PM	IC4_160817A
	BMW-22	Aqueous	E300	Anions by IC method - Water	76838	1	08/17/16 01:09 PM	IC4_160817A
	BMW-22	Aqueous	M4500-H+ B	pH	76839	1	08/17/16 11:53 AM	TITRATOR_160817B
	BMW-22	Aqueous	M2540C	Total Dissolved Solids	76858	1	08/22/16 08:40 AM	WC_160818B
1608133-27A	BMW-21	Aqueous	SW7470A	Mercury Total: Aqueous	76918	1	08/24/16 11:17 AM	CETAC2_HG_160824B
	BMW-21	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76895	1	08/23/16 02:19 PM	ICP-MS4_160823B
	BMW-21	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76895	10	08/24/16 07:22 PM	ICP-MS4_160824B
	BMW-21	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	76895	1	08/25/16 02:58 PM	ICP-MS4_160825A
1608133-27D	BMW-21	Aqueous	E300	Anions by IC method - Water	76838	1	08/17/16 01:24 PM	IC4_160817A
	BMW-21	Aqueous	E300	Anions by IC method - Water	76838	100	08/17/16 04:11 PM	IC4_160817A
	BMW-21	Aqueous	M4500-H+ B	pH	76839	1	08/17/16 11:56 AM	TITRATOR_160817B
	BMW-21	Aqueous	M2540C	Total Dissolved Solids	76858	1	08/22/16 08:40 AM	WC_160818B

DHL Analytical, Inc.

Date: *14-Sep-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	H-28
Project:	Luminant - Martin Lake	**Lab ID:**	1608133-01
Project No:	5164-B	**Collection Date:**	08/09/16 09:30 AM
Lab Order:	1608133	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	08/18/16 10:36 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	08/17/16 02:05 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	08/17/16 02:05 PM
Barium	0.0155	0.00300	0.0100		mg/L	1	08/17/16 02:05 PM
Beryllium	0.00275	0.000300	0.00100		mg/L	1	08/17/16 02:05 PM
Boron	9.29	0.500	1.50		mg/L	50	08/18/16 03:36 PM
Cadmium	0.00160	0.000300	0.00100		mg/L	1	08/17/16 02:05 PM
Calcium	116	5.00	15.0		mg/L	50	08/18/16 03:36 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	08/17/16 02:05 PM
Cobalt	0.195	0.00300	0.00500		mg/L	1	08/17/16 02:05 PM
Lead	0.000774	0.000300	0.00100	J	mg/L	1	08/17/16 02:05 PM
Lithium	0.155	0.00500	0.0100		mg/L	1	08/17/16 02:05 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	08/17/16 02:05 PM
Selenium	0.00286	0.00200	0.00500	J	mg/L	1	08/17/16 02:05 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	08/17/16 02:05 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	98.4	3.00	10.0		mg/L	10	08/15/16 03:58 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	08/15/16 12:24 PM
Sulfate	1080	10.0	30.0		mg/L	10	08/15/16 03:58 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	5.29	0	0		pH Units@19.6℃	1	08/16/16 10:17 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	2100	50.0	50.0		mg/L	1	08/16/16 08:42 AM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *14-Sep-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	H-29
Project:	Luminant - Martin Lake	**Lab ID:**	1608133-02
Project No:	5164-B	**Collection Date:**	08/09/16 10:35 AM
Lab Order:	1608133	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	08/18/16 10:43 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	08/17/16 02:07 PM
Arsenic	0.00995	0.00200	0.00500		mg/L	1	08/17/16 02:07 PM
Barium	0.315	0.00300	0.0100		mg/L	1	08/17/16 02:07 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	08/17/16 02:07 PM
Boron	0.172	0.0100	0.0300		mg/L	1	08/18/16 03:40 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	08/17/16 02:07 PM
Calcium	64.6	1.00	3.00		mg/L	10	08/18/16 03:38 PM
Chromium	0.00297	0.00200	0.00500	J	mg/L	1	08/17/16 02:07 PM
Cobalt	0.00473	0.00300	0.00500	J	mg/L	1	08/17/16 02:07 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	08/17/16 02:07 PM
Lithium	0.0143	0.00500	0.0100		mg/L	1	08/17/16 02:07 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	08/17/16 02:07 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	08/17/16 02:07 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	08/17/16 02:07 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	53.1	3.00	10.0		mg/L	10	08/15/16 04:28 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	08/15/16 12:39 PM
Sulfate	124	1.00	3.00		mg/L	1	08/15/16 12:39 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.75	0	0		pH Units@19.7℃	1	08/16/16 10:20 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	575	10.0	10.0		mg/L	1	08/16/16 08:42 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *14-Sep-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	H-31
Project:	Luminant - Martin Lake	**Lab ID:**	1608133-03
Project No:	5164-B	**Collection Date:**	08/09/16 11:50 AM
Lab Order:	1608133	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	08/18/16 10:45 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **CVD**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	08/19/16 05:50 PM
Arsenic	0.00886	0.00200	0.00500		mg/L	1	08/19/16 05:50 PM
Barium	0.0191	0.00300	0.0100		mg/L	1	08/19/16 05:50 PM
Beryllium	0.00734	0.000300	0.00100		mg/L	1	08/22/16 03:22 PM
Boron	24.1	1.00	3.00		mg/L	100	08/22/16 02:05 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	08/19/16 05:50 PM
Calcium	251	10.0	30.0		mg/L	100	08/22/16 02:05 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	08/19/16 05:50 PM
Cobalt	0.286	0.00300	0.00500		mg/L	1	08/19/16 05:50 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	08/19/16 05:50 PM
Lithium	0.170	0.00500	0.0100		mg/L	1	08/22/16 03:22 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	08/19/16 05:50 PM
Selenium	0.0202	0.00200	0.00500		mg/L	1	08/19/16 05:50 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	08/19/16 05:50 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	217	30.0	100		mg/L	100	08/15/16 04:43 PM
Fluoride	0.216	0.100	0.400	J	mg/L	1	08/15/16 12:54 PM
Sulfate	2730	100	300		mg/L	100	08/15/16 04:43 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.07	0	0		pH Units@19.7℃	1	08/16/16 10:23 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	4440	50.0	50.0		mg/L	1	08/16/16 08:42 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *14-Sep-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	H-30
Project:	Luminant - Martin Lake	**Lab ID:**	1608133-04
Project No:	5164-B	**Collection Date:**	08/09/16 12:45 PM
Lab Order:	1608133	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	08/18/16 10:48 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **CVD**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	08/19/16 05:52 PM
Arsenic	0.00447	0.00200	0.00500	J	mg/L	1	08/19/16 05:52 PM
Barium	0.0233	0.00300	0.0100		mg/L	1	08/19/16 05:52 PM
Beryllium	0.00483	0.000300	0.00100		mg/L	1	08/22/16 03:24 PM
Boron	6.75	0.100	0.300		mg/L	10	08/22/16 02:07 PM
Cadmium	0.000380	0.000300	0.00100	J	mg/L	1	08/19/16 05:52 PM
Calcium	139	1.00	3.00		mg/L	10	08/22/16 02:07 PM
Chromium	0.00282	0.00200	0.00500	J	mg/L	1	08/19/16 05:52 PM
Cobalt	0.162	0.00300	0.00500		mg/L	1	08/19/16 05:52 PM
Lead	0.00363	0.000300	0.00100		mg/L	1	08/19/16 05:52 PM
Lithium	0.0819	0.00500	0.0100		mg/L	1	08/22/16 03:24 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	08/19/16 05:52 PM
Selenium	0.0195	0.00200	0.00500		mg/L	1	08/19/16 05:52 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	08/19/16 05:52 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	109	3.00	10.0		mg/L	10	08/15/16 04:58 PM
Fluoride	0.152	0.100	0.400	J	mg/L	1	08/15/16 01:09 PM
Sulfate	1230	10.0	30.0		mg/L	10	08/15/16 04:58 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	5.22	0	0		pH Units@19.7℃	1	08/16/16 10:25 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	2160	50.0	50.0		mg/L	1	08/16/16 08:42 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *14-Sep-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	H-32
Project:	Luminant - Martin Lake	**Lab ID:**	1608133-05
Project No:	5164-B	**Collection Date:**	08/09/16 01:50 PM
Lab Order:	1608133	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	08/18/16 10:50 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **CVD**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	08/19/16 05:54 PM
Arsenic	0.00344	0.00200	0.00500	J	mg/L	1	08/19/16 05:54 PM
Barium	0.0234	0.00300	0.0100		mg/L	1	08/19/16 05:54 PM
Beryllium	0.00548	0.000300	0.00100		mg/L	1	08/22/16 03:26 PM
Boron	1.69	0.100	0.300		mg/L	10	08/22/16 02:09 PM
Cadmium	0.000713	0.000300	0.00100	J	mg/L	1	08/19/16 05:54 PM
Calcium	45.4	1.00	3.00		mg/L	10	08/22/16 02:09 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	08/19/16 05:54 PM
Cobalt	0.190	0.00300	0.00500		mg/L	1	08/19/16 05:54 PM
Lead	0.00115	0.000300	0.00100		mg/L	1	08/19/16 05:54 PM
Lithium	0.0774	0.00500	0.0100		mg/L	1	08/22/16 03:26 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	08/19/16 05:54 PM
Selenium	0.00281	0.00200	0.00500	J	mg/L	1	08/19/16 05:54 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	08/19/16 05:54 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	132	3.00	10.0		mg/L	10	08/15/16 05:28 PM
Fluoride	0.680	0.100	0.400		mg/L	1	08/15/16 01:24 PM
Sulfate	342	10.0	30.0		mg/L	10	08/15/16 05:28 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	5.46	0	0		pH Units@20℃	1	08/16/16 10:27 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	839	10.0	10.0		mg/L	1	08/16/16 08:42 AM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *14-Sep-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	H-27
Project:	Luminant - Martin Lake	**Lab ID:**	1608133-06
Project No:	5164-B	**Collection Date:**	08/09/16 02:50 PM
Lab Order:	1608133	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	08/18/16 10:52 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **CVD**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	08/19/16 06:10 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	08/19/16 06:10 PM
Barium	0.0241	0.00300	0.0100		mg/L	1	08/19/16 06:10 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	08/22/16 02:59 PM
Boron	0.462	0.0100	0.0300		mg/L	1	08/22/16 02:59 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	08/19/16 06:10 PM
Calcium	54.3	1.00	3.00		mg/L	10	08/22/16 02:11 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	08/19/16 06:10 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	08/19/16 06:10 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	08/19/16 06:10 PM
Lithium	0.0616	0.00500	0.0100		mg/L	1	08/22/16 02:59 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	08/19/16 06:10 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	08/19/16 06:10 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	08/19/16 06:10 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	124	3.00	10.0		mg/L	10	08/15/16 05:43 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	08/15/16 01:39 PM
Sulfate	365	10.0	30.0		mg/L	10	08/15/16 05:43 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.10	0	0		pH Units@20.2℃	1	08/16/16 10:29 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	854	10.0	10.0		mg/L	1	08/17/16 08:42 AM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *14-Sep-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	H-33
Project:	Luminant - Martin Lake	**Lab ID:**	1608133-07
Project No:	5164-B	**Collection Date:**	08/09/16 03:55 PM
Lab Order:	1608133	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	08/18/16 10:54 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **CVD**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	08/19/16 06:12 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	08/19/16 06:12 PM
Barium	0.0424	0.00300	0.0100		mg/L	1	08/19/16 06:12 PM
Beryllium	0.000519	0.000300	0.00100	J	mg/L	1	08/24/16 05:45 PM
Boron	0.0431	0.0100	0.0300		mg/L	1	08/22/16 02:13 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	08/19/16 06:12 PM
Calcium	11.2	0.100	0.300		mg/L	1	08/19/16 06:12 PM
Chromium	0.00291	0.00200	0.00500	J	mg/L	1	08/19/16 06:12 PM
Cobalt	0.0284	0.00300	0.00500		mg/L	1	08/19/16 06:12 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	08/19/16 06:12 PM
Lithium	0.102	0.00500	0.0100		mg/L	1	08/22/16 02:13 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	08/19/16 06:12 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	08/19/16 06:12 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	08/19/16 06:12 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	64.9	3.00	10.0		mg/L	10	08/15/16 05:58 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	08/15/16 01:54 PM
Sulfate	120	10.0	30.0		mg/L	10	08/15/16 05:58 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.04	0	0		pH Units@20.5℃	1	08/16/16 10:32 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	442	10.0	10.0		mg/L	1	08/17/16 08:42 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *14-Sep-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	H-26
Project:	Luminant - Martin Lake	**Lab ID:**	1608133-08
Project No:	5164-B	**Collection Date:**	08/09/16 04:45 PM
Lab Order:	1608133	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	08/18/16 10:57 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **CVD**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	08/19/16 06:14 PM
Arsenic	0.00290	0.00200	0.00500	J	mg/L	1	08/19/16 06:14 PM
Barium	0.0431	0.00300	0.0100		mg/L	1	08/19/16 06:14 PM
Beryllium	0.00136	0.000300	0.00100		mg/L	1	08/24/16 05:51 PM
Boron	0.569	0.0100	0.0300		mg/L	1	08/22/16 02:15 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	08/19/16 06:14 PM
Calcium	14.0	0.100	0.300		mg/L	1	08/19/16 06:14 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	08/19/16 06:14 PM
Cobalt	0.0352	0.00300	0.00500		mg/L	1	08/19/16 06:14 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	08/19/16 06:14 PM
Lithium	0.0155	0.00500	0.0100		mg/L	1	08/22/16 02:15 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	08/19/16 06:14 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	08/19/16 06:14 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	08/19/16 06:14 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	70.0	3.00	10.0		mg/L	10	08/15/16 07:28 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	08/15/16 02:09 PM
Sulfate	90.9	1.00	3.00		mg/L	1	08/15/16 02:09 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	5.60	0	0		pH Units@20.7℃	1	08/16/16 10:34 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	354	10.0	10.0		mg/L	1	08/17/16 08:42 AM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *14-Sep-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	DUP-01
Project:	Luminant - Martin Lake	**Lab ID:**	1608133-09
Project No:	5164-B	**Collection Date:**	08/09/16 02:38 PM
Lab Order:	1608133	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	08/18/16 10:59 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **CVD**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	08/19/16 06:17 PM
Arsenic	0.00437	0.00200	0.00500	J	mg/L	1	08/19/16 06:17 PM
Barium	0.0212	0.00300	0.0100		mg/L	1	08/19/16 06:17 PM
Beryllium	0.00543	0.000300	0.00100		mg/L	1	08/22/16 03:28 PM
Boron	7.04	0.100	0.300		mg/L	10	08/22/16 02:17 PM
Cadmium	0.000367	0.000300	0.00100	J	mg/L	1	08/19/16 06:17 PM
Calcium	138	1.00	3.00		mg/L	10	08/22/16 02:17 PM
Chromium	0.00210	0.00200	0.00500	J	mg/L	1	08/19/16 06:17 PM
Cobalt	0.165	0.00300	0.00500		mg/L	1	08/19/16 06:17 PM
Lead	0.00341	0.000300	0.00100		mg/L	1	08/19/16 06:17 PM
Lithium	0.0809	0.00500	0.0100		mg/L	1	08/22/16 03:28 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	08/19/16 06:17 PM
Selenium	0.0166	0.00200	0.00500		mg/L	1	08/19/16 06:17 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	08/19/16 06:17 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	112	3.00	10.0		mg/L	10	08/15/16 07:43 PM
Fluoride	0.180	0.100	0.400	J	mg/L	1	08/15/16 02:24 PM
Sulfate	1260	10.0	30.0		mg/L	10	08/15/16 07:43 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	5.11	0	0		pH Units@21℃	1	08/16/16 10:36 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	2080	50.0	50.0		mg/L	1	08/17/16 08:42 AM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *14-Sep-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	PDP-25
Project:	Luminant - Martin Lake	**Lab ID:**	1608133-10
Project No:	5164-B	**Collection Date:**	08/10/16 01:30 PM
Lab Order:	1608133	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	08/18/16 11:01 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **CVD**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	08/19/16 06:19 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	08/19/16 06:19 PM
Barium	0.193	0.00300	0.0100		mg/L	1	08/19/16 06:19 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	08/22/16 03:01 PM
Boron	0.119	0.0100	0.0300		mg/L	1	08/22/16 03:01 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	08/19/16 06:19 PM
Calcium	37.7	1.00	3.00		mg/L	10	08/22/16 02:19 PM
Chromium	0.00527	0.00200	0.00500		mg/L	1	08/19/16 06:19 PM
Cobalt	0.0109	0.00300	0.00500		mg/L	1	08/19/16 06:19 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	08/19/16 06:19 PM
Lithium	0.120	0.00500	0.0100		mg/L	1	08/22/16 03:01 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	08/19/16 06:19 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	08/19/16 06:19 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	08/19/16 06:19 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	136	3.00	10.0		mg/L	10	08/16/16 02:52 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	08/16/16 11:27 AM
Sulfate	110	1.00	3.00		mg/L	1	08/16/16 11:27 AM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.19	0	0		pH Units@17.4℃	1	08/16/16 10:53 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	612	10.0	10.0		mg/L	1	08/17/16 08:42 AM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *14-Sep-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	PDP-24
Project:	Luminant - Martin Lake	**Lab ID:**	1608133-11
Project No:	5164-B	**Collection Date:**	08/10/16 11:00 AM
Lab Order:	1608133	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	0.00214	0.0000800	0.000200		mg/L	1	08/24/16 10:23 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **CVD**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	08/19/16 06:21 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	08/19/16 06:21 PM
Barium	0.0206	0.00300	0.0100		mg/L	1	08/19/16 06:21 PM
Beryllium	0.00427	0.000300	0.00100		mg/L	1	08/22/16 03:30 PM
Boron	3.80	0.100	0.300		mg/L	10	08/22/16 02:21 PM
Cadmium	0.00185	0.000300	0.00100		mg/L	1	08/19/16 06:21 PM
Calcium	32.6	1.00	3.00		mg/L	10	08/22/16 02:21 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	08/19/16 06:21 PM
Cobalt	0.0826	0.00300	0.00500		mg/L	1	08/19/16 06:21 PM
Lead	0.00121	0.000300	0.00100		mg/L	1	08/19/16 06:21 PM
Lithium	0.0241	0.00500	0.0100		mg/L	1	08/22/16 03:30 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	08/19/16 06:21 PM
Selenium	0.00377	0.00200	0.00500	J	mg/L	1	08/19/16 06:21 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	08/19/16 06:21 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	21.4	0.300	1.00		mg/L	1	08/16/16 11:42 AM
Fluoride	0.693	0.100	0.400		mg/L	1	08/16/16 11:42 AM
Sulfate	432	10.0	30.0		mg/L	10	08/16/16 03:37 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	4.53	0	0		pH Units@20℃	1	08/17/16 11:15 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	747	10.0	10.0		mg/L	1	08/17/16 08:42 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *14-Sep-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	MW-17A
Project:	Luminant - Martin Lake	**Lab ID:**	1608133-12
Project No:	5164-B	**Collection Date:**	08/10/16 10:20 AM
Lab Order:	1608133	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	0.000114	0.0000800	0.000200	J	mg/L	1	08/24/16 10:26 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **CVD**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	08/19/16 06:23 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	08/19/16 06:23 PM
Barium	0.108	0.00300	0.0100		mg/L	1	08/19/16 06:23 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	08/22/16 02:51 PM
Boron	0.410	0.0100	0.0300		mg/L	1	08/22/16 02:51 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	08/19/16 06:23 PM
Calcium	4.46	0.100	0.300		mg/L	1	08/19/16 06:23 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	08/19/16 06:23 PM
Cobalt	0.00795	0.00300	0.00500		mg/L	1	08/19/16 06:23 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	08/19/16 06:23 PM
Lithium	0.0153	0.00500	0.0100		mg/L	1	08/22/16 02:51 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	08/19/16 06:23 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	08/19/16 06:23 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	08/19/16 06:23 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	9.52	0.300	1.00		mg/L	1	08/16/16 11:57 AM
Fluoride	<0.100	0.100	0.400		mg/L	1	08/16/16 11:57 AM
Sulfate	42.9	1.00	3.00		mg/L	1	08/16/16 11:57 AM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	5.57	0	0		pH Units@20℃	1	08/17/16 11:19 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	143	10.0	10.0		mg/L	1	08/17/16 08:42 AM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *14-Sep-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	PDP-23
Project:	Luminant - Martin Lake	**Lab ID:**	1608133-13
Project No:	5164-B	**Collection Date:**	08/10/16 09:10 AM
Lab Order:	1608133	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	08/24/16 10:28 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **CVD**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	08/19/16 06:25 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	08/19/16 06:25 PM
Barium	0.0449	0.00300	0.0100		mg/L	1	08/19/16 06:25 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	08/22/16 02:53 PM
Boron	0.0357	0.0100	0.0300		mg/L	1	08/22/16 02:53 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	08/19/16 06:25 PM
Calcium	1.77	0.100	0.300		mg/L	1	08/19/16 06:25 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	08/19/16 06:25 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	08/19/16 06:25 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	08/19/16 06:25 PM
Lithium	0.0124	0.00500	0.0100		mg/L	1	08/22/16 02:53 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	08/19/16 06:25 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	08/19/16 06:25 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	08/19/16 06:25 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	6.61	0.300	1.00		mg/L	1	08/16/16 12:12 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	08/16/16 12:12 PM
Sulfate	2.37	1.00	3.00	J	mg/L	1	08/16/16 12:12 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	5.91	0	0		pH Units@20.1℃	1	08/17/16 11:21 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	99.0	10.0	10.0		mg/L	1	08/17/16 08:42 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *14-Sep-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	MW-19
Project:	Luminant - Martin Lake	**Lab ID:**	1608133-14
Project No:	5164-B	**Collection Date:**	08/10/16 03:00 PM
Lab Order:	1608133	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	08/24/16 10:30 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **CVD**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	08/19/16 06:27 PM
Arsenic	0.00286	0.00200	0.00500	J	mg/L	1	08/19/16 06:27 PM
Barium	0.0188	0.00300	0.0100		mg/L	1	08/19/16 06:27 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	08/22/16 02:55 PM
Boron	0.0539	0.0100	0.0300		mg/L	1	08/22/16 02:55 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	08/19/16 06:27 PM
Calcium	8.62	0.100	0.300		mg/L	1	08/19/16 06:27 PM
Chromium	0.00346	0.00200	0.00500	J	mg/L	1	08/19/16 06:27 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	08/19/16 06:27 PM
Lead	0.000807	0.000300	0.00100	J	mg/L	1	08/19/16 06:27 PM
Lithium	0.0144	0.00500	0.0100		mg/L	1	08/22/16 02:55 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	08/19/16 06:27 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	08/19/16 06:27 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	08/19/16 06:27 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	30.8	0.300	1.00		mg/L	1	08/16/16 12:27 PM
Fluoride	0.152	0.100	0.400	J	mg/L	1	08/16/16 12:27 PM
Sulfate	31.6	1.00	3.00		mg/L	1	08/16/16 12:27 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.24	0	0		pH Units@20.1℃	1	08/17/16 11:24 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	323	10.0	10.0		mg/L	1	08/17/16 08:42 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *14-Sep-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	MW-20A
Project:	Luminant - Martin Lake	**Lab ID:**	1608133-15
Project No:	5164-B	**Collection Date:**	08/10/16 02:10 PM
Lab Order:	1608133	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	0.000325	0.0000800	0.000200		mg/L	1	08/24/16 10:32 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **CVD**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	08/19/16 06:29 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	08/19/16 06:29 PM
Barium	0.0313	0.00300	0.0100		mg/L	1	08/19/16 06:29 PM
Beryllium	0.000502	0.000300	0.00100	J	mg/L	1	08/26/16 12:27 PM
Boron	0.123	0.0100	0.0300		mg/L	1	08/22/16 02:57 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	08/19/16 06:29 PM
Calcium	12.7	0.100	0.300		mg/L	1	08/19/16 06:29 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	08/19/16 06:29 PM
Cobalt	0.00427	0.00300	0.00500	J	mg/L	1	08/19/16 06:29 PM
Lead	0.00141	0.000300	0.00100		mg/L	1	08/19/16 06:29 PM
Lithium	0.0166	0.00500	0.0100		mg/L	1	08/22/16 02:57 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	08/19/16 06:29 PM
Selenium	0.00518	0.00200	0.00500		mg/L	1	08/19/16 06:29 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	08/19/16 06:29 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	11.2	0.300	1.00		mg/L	1	08/16/16 12:42 PM
Fluoride	0.389	0.100	0.400	J	mg/L	1	08/16/16 12:42 PM
Sulfate	77.8	1.00	3.00		mg/L	1	08/16/16 12:42 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	4.91	0	0		pH Units@20.1℃	1	08/17/16 11:26 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	210	10.0	10.0		mg/L	1	08/17/16 08:42 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *14-Sep-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	PDP-22
Project:	Luminant - Martin Lake	**Lab ID:**	1608133-16
Project No:	5164-B	**Collection Date:**	08/10/16 09:20 AM
Lab Order:	1608133	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	08/24/16 10:35 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	08/23/16 12:40 PM
Arsenic	0.00488	0.00200	0.00500	J	mg/L	1	08/23/16 12:40 PM
Barium	0.141	0.00300	0.0100		mg/L	1	08/23/16 12:40 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	08/23/16 12:40 PM
Boron	0.255	0.0100	0.0300		mg/L	1	08/24/16 04:31 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	08/23/16 12:40 PM
Calcium	104	1.00	3.00		mg/L	10	08/24/16 03:46 PM
Chromium	0.0121	0.00200	0.00500		mg/L	1	08/23/16 12:40 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	08/23/16 12:40 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	08/23/16 12:40 PM
Lithium	0.0219	0.00500	0.0100		mg/L	1	08/23/16 12:40 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 12:40 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 12:40 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	08/23/16 12:40 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	15.2	0.300	1.00		mg/L	1	08/16/16 12:57 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	08/16/16 12:57 PM
Sulfate	216	10.0	30.0		mg/L	10	08/16/16 03:52 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	7.08	0	0		pH Units@20.3℃	1	08/17/16 11:28 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	750	10.0	10.0		mg/L	1	08/17/16 08:42 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *14-Sep-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	PDP-26
Project:	Luminant - Martin Lake	**Lab ID:**	1608133-17
Project No:	5164-B	**Collection Date:**	08/10/16 10:30 AM
Lab Order:	1608133	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	08/24/16 10:46 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	08/23/16 01:14 PM
Arsenic	0.00589	0.00200	0.00500		mg/L	1	08/23/16 01:14 PM
Barium	0.0355	0.00300	0.0100		mg/L	1	08/23/16 01:14 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	08/23/16 01:14 PM
Boron	0.0671	0.0100	0.0300		mg/L	1	08/24/16 04:33 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	08/23/16 01:14 PM
Calcium	3.04	0.100	0.300		mg/L	1	08/23/16 01:14 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 01:14 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	08/23/16 01:14 PM
Lead	0.000675	0.000300	0.00100	J	mg/L	1	08/23/16 01:14 PM
Lithium	0.0151	0.00500	0.0100		mg/L	1	08/23/16 01:14 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 01:14 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 01:14 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	08/23/16 01:14 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	5.62	0.300	1.00		mg/L	1	08/16/16 01:12 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	08/16/16 01:12 PM
Sulfate	7.79	1.00	3.00		mg/L	1	08/16/16 01:12 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.97	0	0		pH Units@20.4℃	1	08/17/16 11:31 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	114	10.0	10.0		mg/L	1	08/17/16 08:42 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *14-Sep-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	MW-18A
Project:	Luminant - Martin Lake	**Lab ID:**	1608133-18
Project No:	5164-B	**Collection Date:**	08/10/16 11:30 AM
Lab Order:	1608133	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	0.0312	0.00160	0.00400		mg/L	20	08/24/16 11:31 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	08/23/16 01:16 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 01:16 PM
Barium	0.0447	0.00300	0.0100		mg/L	1	08/23/16 01:16 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	08/23/16 01:16 PM
Boron	0.0755	0.0100	0.0300		mg/L	1	08/24/16 05:29 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	08/23/16 01:16 PM
Calcium	1.13	0.100	0.300		mg/L	1	08/23/16 01:16 PM
Chromium	0.00251	0.00200	0.00500	J	mg/L	1	08/23/16 01:16 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	08/23/16 01:16 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	08/23/16 01:16 PM
Lithium	0.00806	0.00500	0.0100	J	mg/L	1	08/23/16 01:16 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 01:16 PM
Selenium	0.00292	0.00200	0.00500	J	mg/L	1	08/23/16 01:16 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	08/23/16 01:16 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	7.04	0.300	1.00		mg/L	1	08/16/16 01:27 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	08/16/16 01:27 PM
Sulfate	4.78	1.00	3.00		mg/L	1	08/16/16 01:27 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	5.86	0	0		pH Units@20.6℃	1	08/17/16 11:34 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	62.0	10.0	10.0		mg/L	1	08/17/16 08:42 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *14-Sep-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	EB-1
Project:	Luminant - Martin Lake	**Lab ID:**	1608133-19
Project No:	5164-B	**Collection Date:**	08/10/16 11:45 AM
Lab Order:	1608133	**Matrix:**	EQUIP BLANK

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	08/24/16 10:53 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	08/23/16 01:18 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 01:18 PM
Barium	<0.00300	0.00300	0.0100		mg/L	1	08/23/16 01:18 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	08/23/16 01:18 PM
Boron	0.0375	0.0100	0.0300		mg/L	1	08/24/16 05:31 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	08/23/16 01:18 PM
Calcium	5.33	0.100	0.300		mg/L	1	08/23/16 01:18 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 01:18 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	08/23/16 01:18 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	08/23/16 01:18 PM
Lithium	<0.00500	0.00500	0.0100		mg/L	1	08/23/16 01:18 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 01:18 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 01:18 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	08/23/16 01:18 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	11.4	0.300	1.00		mg/L	1	08/17/16 11:24 AM
Fluoride	<0.100	0.100	0.400		mg/L	1	08/17/16 11:24 AM
Sulfate	24.7	1.00	3.00		mg/L	1	08/17/16 11:24 AM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.97	0	0		pH Units@20.7℃	1	08/17/16 11:36 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	<10.0	10.0	10.0		mg/L	1	08/17/16 08:42 AM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *14-Sep-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	BMW-11AR
Project:	Luminant - Martin Lake	**Lab ID:**	1608133-20
Project No:	5164-B	**Collection Date:**	08/11/16 08:25 AM
Lab Order:	1608133	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	08/24/16 10:56 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	08/23/16 01:20 PM
Arsenic	0.00271	0.00200	0.00500	J	mg/L	1	08/23/16 01:20 PM
Barium	0.0772	0.00300	0.0100		mg/L	1	08/23/16 01:20 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	08/23/16 01:20 PM
Boron	0.389	0.0100	0.0300		mg/L	1	08/24/16 05:35 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	08/23/16 01:20 PM
Calcium	170	1.00	3.00		mg/L	10	08/24/16 05:33 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 01:20 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	08/23/16 01:20 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	08/23/16 01:20 PM
Lithium	0.0147	0.00500	0.0100		mg/L	1	08/23/16 01:20 PM
Molybdenum	0.00346	0.00200	0.00500	J	mg/L	1	08/23/16 01:20 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 01:20 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	08/23/16 01:20 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	20.8	0.300	1.00		mg/L	1	08/17/16 11:39 AM
Fluoride	<0.100	0.100	0.400		mg/L	1	08/17/16 11:39 AM
Sulfate	682	10.0	30.0		mg/L	10	08/17/16 02:41 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	7.24	0	0		pH Units@20.8℃	1	08/17/16 11:40 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	1790	50.0	50.0		mg/L	1	08/17/16 08:42 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *14-Sep-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	BMW-19
Project:	Luminant - Martin Lake	**Lab ID:**	1608133-21
Project No:	5164-B	**Collection Date:**	08/11/16 09:20 AM
Lab Order:	1608133	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	08/24/16 11:04 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	08/23/16 01:22 PM
Arsenic	0.00711	0.00200	0.00500		mg/L	1	08/23/16 01:22 PM
Barium	0.0158	0.00300	0.0100		mg/L	1	08/23/16 01:22 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	08/23/16 01:22 PM
Boron	0.419	0.0100	0.0300		mg/L	1	08/24/16 05:39 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	08/23/16 01:22 PM
Calcium	458	5.00	15.0		mg/L	50	08/25/16 02:49 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 01:22 PM
Cobalt	0.0128	0.00300	0.00500		mg/L	1	08/23/16 01:22 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	08/23/16 01:22 PM
Lithium	0.0568	0.00500	0.0100		mg/L	1	08/23/16 01:22 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 01:22 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 01:22 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	08/23/16 01:22 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	8.26	0.300	1.00		mg/L	1	08/17/16 11:54 AM
Fluoride	<0.100	0.100	0.400		mg/L	1	08/17/16 11:54 AM
Sulfate	2370	100	300		mg/L	100	08/17/16 02:56 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.75	0	0		pH Units@20.7℃	1	08/17/16 11:42 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	3780	50.0	50.0		mg/L	1	08/17/16 08:42 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *14-Sep-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	BMW-18
Project:	Luminant - Martin Lake	**Lab ID:**	1608133-22
Project No:	5164-B	**Collection Date:**	08/11/16 10:15 AM
Lab Order:	1608133	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	08/24/16 11:06 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	08/23/16 01:24 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 01:24 PM
Barium	0.0291	0.00300	0.0100		mg/L	1	08/23/16 01:24 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	08/23/16 01:24 PM
Boron	0.415	0.0100	0.0300		mg/L	1	08/24/16 05:41 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	08/23/16 01:24 PM
Calcium	7.02	0.100	0.300		mg/L	1	08/23/16 01:24 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 01:24 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	08/23/16 01:24 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	08/23/16 01:24 PM
Lithium	0.0147	0.00500	0.0100		mg/L	1	08/23/16 01:24 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 01:24 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 01:24 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	08/23/16 01:24 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	18.5	0.300	1.00		mg/L	1	08/17/16 12:09 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	08/17/16 12:09 PM
Sulfate	100	1.00	3.00		mg/L	1	08/17/16 12:09 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	8.48	0	0		pH Units@20.8℃	1	08/17/16 11:46 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	493	10.0	10.0		mg/L	1	08/17/16 08:42 AM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *14-Sep-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	BMW-20
Project:	Luminant - Martin Lake	**Lab ID:**	1608133-23
Project No:	5164-B	**Collection Date:**	08/11/16 10:50 AM
Lab Order:	1608133	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	08/24/16 11:08 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	08/23/16 02:11 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 02:11 PM
Barium	0.0637	0.00300	0.0100		mg/L	1	08/23/16 02:11 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	08/23/16 02:11 PM
Boron	0.106	0.0100	0.0300		mg/L	1	08/24/16 08:48 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	08/23/16 02:11 PM
Calcium	107	1.00	3.00		mg/L	10	08/24/16 07:14 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 02:11 PM
Cobalt	0.0513	0.00300	0.00500		mg/L	1	08/23/16 02:11 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	08/23/16 02:11 PM
Lithium	<0.00500	0.00500	0.0100		mg/L	1	08/25/16 02:51 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 02:11 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 02:11 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	08/23/16 02:11 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	39.4	0.300	1.00		mg/L	1	08/17/16 12:24 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	08/17/16 12:24 PM
Sulfate	602	10.0	30.0		mg/L	10	08/17/16 03:11 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.38	0	0		pH Units@20.8℃	1	08/17/16 11:48 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	1310	50.0	50.0		mg/L	1	08/17/16 08:42 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *14-Sep-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	BMW-24
Project:	Luminant - Martin Lake	**Lab ID:**	1608133-24
Project No:	5164-B	**Collection Date:**	08/11/16 08:50 AM
Lab Order:	1608133	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	08/24/16 11:10 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	08/23/16 02:13 PM
Arsenic	0.00414	0.00200	0.00500	J	mg/L	1	08/23/16 02:13 PM
Barium	1.26	0.00300	0.0100		mg/L	1	08/23/16 02:13 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	08/23/16 02:13 PM
Boron	0.248	0.0100	0.0300		mg/L	1	08/24/16 08:50 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	08/23/16 02:13 PM
Calcium	58.5	1.00	3.00		mg/L	10	08/24/16 07:16 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 02:13 PM
Cobalt	0.00707	0.00300	0.00500		mg/L	1	08/23/16 02:13 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	08/23/16 02:13 PM
Lithium	0.00938	0.00500	0.0100	J	mg/L	1	08/25/16 02:53 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 02:13 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 02:13 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	08/23/16 02:13 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	481	30.0	100		mg/L	100	08/17/16 03:26 PM
Fluoride	0.225	0.100	0.400	J	mg/L	1	08/17/16 12:39 PM
Sulfate	97.8	1.00	3.00		mg/L	1	08/17/16 12:39 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.52	0	0		pH Units@20.9℃	1	08/17/16 11:50 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	1150	50.0	50.0		mg/L	1	08/17/16 08:42 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *14-Sep-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	BMW-23
Project:	Luminant - Martin Lake	**Lab ID:**	1608133-25
Project No:	5164-B	**Collection Date:**	08/11/16 09:20 AM
Lab Order:	1608133	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	08/24/16 11:13 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	08/23/16 02:15 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 02:15 PM
Barium	0.0458	0.00300	0.0100		mg/L	1	08/23/16 02:15 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	08/23/16 02:15 PM
Boron	1.28	0.100	0.300		mg/L	10	08/24/16 07:18 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	08/23/16 02:15 PM
Calcium	90.4	1.00	3.00		mg/L	10	08/24/16 07:18 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 02:15 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	08/23/16 02:15 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	08/23/16 02:15 PM
Lithium	0.0770	0.00500	0.0100		mg/L	1	08/25/16 02:55 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 02:15 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 02:15 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	08/23/16 02:15 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	242	3.00	10.0		mg/L	10	08/17/16 03:41 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	08/17/16 12:54 PM
Sulfate	539	10.0	30.0		mg/L	10	08/17/16 03:41 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.69	0	0		pH Units@21℃	1	08/17/16 11:52 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	1430	50.0	50.0		mg/L	1	08/22/16 08:40 AM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *14-Sep-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	BMW-22
Project:	Luminant - Martin Lake	**Lab ID:**	1608133-26
Project No:	5164-B	**Collection Date:**	08/11/16 10:00 AM
Lab Order:	1608133	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	08/24/16 11:15 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	08/23/16 02:17 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 02:17 PM
Barium	0.0679	0.00300	0.0100		mg/L	1	08/23/16 02:17 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	08/23/16 02:17 PM
Boron	3.18	0.100	0.300		mg/L	10	08/24/16 07:20 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	08/23/16 02:17 PM
Calcium	198	1.00	3.00		mg/L	10	08/24/16 07:20 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 02:17 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	08/23/16 02:17 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	08/23/16 02:17 PM
Lithium	0.0675	0.00500	0.0100		mg/L	1	08/25/16 02:57 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 02:17 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 02:17 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	08/23/16 02:17 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	311	30.0	100		mg/L	100	08/17/16 03:56 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	08/17/16 01:09 PM
Sulfate	946	100	300		mg/L	100	08/17/16 03:56 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.78	0	0		pH Units@21.1℃	1	08/17/16 11:53 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	2520	50.0	50.0		mg/L	1	08/22/16 08:40 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *14-Sep-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	BMW-21
Project:	Luminant - Martin Lake	**Lab ID:**	1608133-27
Project No:	5164-B	**Collection Date:**	08/11/16 10:30 AM
Lab Order:	1608133	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	08/24/16 11:17 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	08/23/16 02:19 PM
Arsenic	0.00373	0.00200	0.00500	J	mg/L	1	08/23/16 02:19 PM
Barium	0.0445	0.00300	0.0100		mg/L	1	08/23/16 02:19 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	08/23/16 02:19 PM
Boron	1.04	0.100	0.300		mg/L	10	08/24/16 07:22 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	08/23/16 02:19 PM
Calcium	143	1.00	3.00		mg/L	10	08/24/16 07:22 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 02:19 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	08/23/16 02:19 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	08/23/16 02:19 PM
Lithium	0.0527	0.00500	0.0100		mg/L	1	08/25/16 02:58 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 02:19 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	08/23/16 02:19 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	08/23/16 02:19 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	425	30.0	100		mg/L	100	08/17/16 04:11 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	08/17/16 01:24 PM
Sulfate	484	100	300		mg/L	100	08/17/16 04:11 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	7.28	0	0		pH Units@21.7℃	1	08/17/16 11:56 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	1860	50.0	50.0		mg/L	1	08/22/16 08:40 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_160818B

The QC data in batch 76835 applies to the following samples: 1608133-01A, 1608133-02A, 1608133-03A, 1608133-04A, 1608133-05A, 1608133-06A, 1608133-07A, 1608133-08A, 1608133-09A, 1608133-10A

Sample ID **MB-76835**	Batch ID: **76835**		TestNo: **SW7470A**				Units: **mg/L**				
SampType: **MBLK**	Run ID: **CETAC2_HG_160818B**		Analysis Date: **8/18/2016 9:58:12 AM**				Prep Date: **8/17/2016**				
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Mercury	<0.0000800	0.000200									

Sample ID **LCS-76835**	Batch ID: **76835**		TestNo: **SW7470A**				Units: **mg/L**				
SampType: **LCS**	Run ID: **CETAC2_HG_160818B**		Analysis Date: **8/18/2016 10:02:44 AM**				Prep Date: **8/17/2016**				
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Mercury	0.00192	0.000200	0.00200	0	96.0	85	115				

Sample ID **LCSD-76835**	Batch ID: **76835**		TestNo: **SW7470A**				Units: **mg/L**				
SampType: **LCSD**	Run ID: **CETAC2_HG_160818B**		Analysis Date: **8/18/2016 10:05:00 AM**				Prep Date: **8/17/2016**				
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Mercury	0.00197	0.000200	0.00200	0	98.5	85	115	2.57	15		

Sample ID **1608119-02A SD**	Batch ID: **76835**		TestNo: **SW7470A**				Units: **mg/L**				
SampType: **SD**	Run ID: **CETAC2_HG_160818B**		Analysis Date: **8/18/2016 10:11:47 AM**				Prep Date: **8/17/2016**				
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Mercury	<0.000400	0.00100	0	0				0	10		

Sample ID **1608119-02A PDS**	Batch ID: **76835**		TestNo: **SW7470A**				Units: **mg/L**				
SampType: **PDS**	Run ID: **CETAC2_HG_160818B**		Analysis Date: **8/18/2016 10:14:03 AM**				Prep Date: **8/17/2016**				
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Mercury	0.00235	0.000200	0.00250	0	94.0	85	115				

Sample ID **1608119-02A MS**	Batch ID: **76835**		TestNo: **SW7470A**				Units: **mg/L**				
SampType: **MS**	Run ID: **CETAC2_HG_160818B**		Analysis Date: **8/18/2016 10:16:19 AM**				Prep Date: **8/17/2016**				
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Mercury	0.00199	0.000200	0.00200	0	99.5	80	120				

Sample ID **1608119-02A MSD**	Batch ID: **76835**		TestNo: **SW7470A**				Units: **mg/L**				
SampType: **MSD**	Run ID: **CETAC2_HG_160818B**		Analysis Date: **8/18/2016 10:18:35 AM**				Prep Date: **8/17/2016**				
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Mercury	0.00199	0.000200	0.00200	0	99.5	80	120	0	15		

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_160818B

Sample ID	**ICV-160818**	Batch ID:	**R87672**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**ICV**	Run ID:	**CETAC2_HG_160818B**	Analysis Date:	**8/18/2016 9:53:38 AM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00388	0.000200	0.00400	0	97.0	90	110			

Sample ID	**CCV1-160818**	Batch ID:	**R87672**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**CETAC2_HG_160818B**	Analysis Date:	**8/18/2016 10:39:00 AM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00190	0.000200	0.00200	0	95.0	90	110			

Sample ID	**CCV2-160818**	Batch ID:	**R87672**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**CETAC2_HG_160818B**	Analysis Date:	**8/18/2016 11:06:20 AM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00193	0.000200	0.00200	0	96.5	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_160824B

The QC data in batch 76918 applies to the following samples: 1608133-11A, 1608133-12A, 1608133-13A, 1608133-14A, 1608133-15A, 1608133-16A, 1608133-17A, 1608133-18A, 1608133-19A , 1608133-20A, 1608133-21A, 1608133-22A, 1608133-23A, 1608133-24A, 1608133-25A, 1608133-26A, 1608133-27A

Sample ID **MB-76918** Batch ID: **76918** TestNo: **SW7470A** Units: **mg/L**
SampType: **MBLK** Run ID: **CETAC2_HG_160824B** Analysis Date: **8/24/2016 10:14:50 AM** Prep Date: **8/23/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.0000800	0.000200								

Sample ID **LCS-76918** Batch ID: **76918** TestNo: **SW7470A** Units: **mg/L**
SampType: **LCS** Run ID: **CETAC2_HG_160824B** Analysis Date: **8/24/2016 10:19:22 AM** Prep Date: **8/23/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00201	0.000200	0.00200	0	101	85	115			

Sample ID **LCSD-76918** Batch ID: **76918** TestNo: **SW7470A** Units: **mg/L**
SampType: **LCSD** Run ID: **CETAC2_HG_160824B** Analysis Date: **8/24/2016 10:21:38 AM** Prep Date: **8/23/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00207	0.000200	0.00200	0	104	85	115	2.94	15	

Sample ID **1608133-16A SD** Batch ID: **76918** TestNo: **SW7470A** Units: **mg/L**
SampType: **SD** Run ID: **CETAC2_HG_160824B** Analysis Date: **8/24/2016 10:37:29 AM** Prep Date: **8/23/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.000400	0.00100	0	0				0	10	

Sample ID **1608133-16A PDS** Batch ID: **76918** TestNo: **SW7470A** Units: **mg/L**
SampType: **PDS** Run ID: **CETAC2_HG_160824B** Analysis Date: **8/24/2016 10:39:45 AM** Prep Date: **8/23/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00228	0.000200	0.00250	0	91.2	85	115			

Sample ID **1608133-16A MS** Batch ID: **76918** TestNo: **SW7470A** Units: **mg/L**
SampType: **MS** Run ID: **CETAC2_HG_160824B** Analysis Date: **8/24/2016 10:42:01 AM** Prep Date: **8/23/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00186	0.000200	0.00200	0	93.0	80	120			

Sample ID **1608133-16A MSD** Batch ID: **76918** TestNo: **SW7470A** Units: **mg/L**
SampType: **MSD** Run ID: **CETAC2_HG_160824B** Analysis Date: **8/24/2016 10:44:17 AM** Prep Date: **8/23/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00186	0.000200	0.00200	0	93.0	80	120	0	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_160824B

Sample ID **ICV-160824**	Batch ID: **R87769**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **ICV**	Run ID: **CETAC2_HG_160824B**	Analysis Date: **8/24/2016 10:10:16 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00395	0.000200	0.00400	0	98.8	90	110			

Sample ID **CCV1-160824**	Batch ID: **R87769**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_160824B**	Analysis Date: **8/24/2016 10:58:25 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00201	0.000200	0.00200	0	101	90	110			

Sample ID **CCV2-160824**	Batch ID: **R87769**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_160824B**	Analysis Date: **8/24/2016 11:26:52 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00198	0.000200	0.00200	0	99.0	90	110			

Sample ID **CCV3-160824**	Batch ID: **R87769**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_160824B**	Analysis Date: **8/24/2016 11:33:45 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00198	0.000200	0.00200	0	99.0	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS3_160824B

Sample ID **ICV1-160824**	Batch ID: **R87792**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS3_160824B**	Analysis Date: **8/24/2016 1:49:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.103	0.00100	0.100	0	103	90	110			

Sample ID **ILCVL-160824**	Batch ID: **R87792**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS3_160824B**	Analysis Date: **8/24/2016 1:55:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.00108	0.00100	0.00100	0	108	70	130			

Sample ID **CCV1-160824**	Batch ID: **R87792**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS3_160824B**	Analysis Date: **8/24/2016 4:35:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.217	0.00100	0.200	0	108	90	110			

Sample ID **LCVL1-160824**	Batch ID: **R87792**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS3_160824B**	Analysis Date: **8/24/2016 4:47:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.00107	0.00100	0.00100	0	107	70	130			

Sample ID **CCV2-160824**	Batch ID: **R87792**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS3_160824B**	Analysis Date: **8/24/2016 6:51:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.203	0.00100	0.200	0	102	90	110			

Sample ID **LCVL2-160824**	Batch ID: **R87792**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS3_160824B**	Analysis Date: **8/24/2016 7:02:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.00112	0.00100	0.00100	0	112	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160817A

The QC data in batch 76816 applies to the following samples: 1608133-01A, 1608133-02A

Sample ID **MB-76816** Batch ID: **76816** TestNo: **SW6020A** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_160817A** Analysis Date: **8/17/2016 12:55:00 PM** Prep Date: **8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.000800	0.00250								
Arsenic	<0.00200	0.00500								
Barium	<0.00300	0.0100								
Beryllium	<0.000300	0.00100								
Cadmium	<0.000300	0.00100								
Calcium	<0.100	0.300								
Chromium	<0.00200	0.00500								
Cobalt	<0.00300	0.00500								
Lead	<0.000300	0.00100								
Lithium	<0.00500	0.0100								
Molybdenum	<0.00200	0.00500								
Selenium	<0.00200	0.00500								
Thallium	<0.000500	0.00150								

Sample ID **LCS-76816** Batch ID: **76816** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_160817A** Analysis Date: **8/17/2016 12:57:00 PM** Prep Date: **8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.209	0.00250	0.200	0	105	80	120			
Arsenic	0.184	0.00500	0.200	0	91.9	80	120			
Barium	0.197	0.0100	0.200	0	98.5	80	120			
Beryllium	0.200	0.00100	0.200	0	100	80	120			
Cadmium	0.200	0.00100	0.200	0	99.8	80	120			
Calcium	4.73	0.300	5.00	0	94.5	80	120			
Chromium	0.198	0.00500	0.200	0	99.1	80	120			
Cobalt	0.180	0.00500	0.200	0	89.8	80	120			
Lead	0.196	0.00100	0.200	0	97.9	80	120			
Lithium	0.199	0.0100	0.200	0	99.4	80	120			
Molybdenum	0.194	0.00500	0.200	0	96.9	80	120			
Selenium	0.180	0.00500	0.200	0	90.0	80	120			
Thallium	0.202	0.00150	0.200	0	101	80	120			

Sample ID **LCSD-76816** Batch ID: **76816** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_160817A** Analysis Date: **8/17/2016 12:59:00 PM** Prep Date: **8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.210	0.00250	0.200	0	105	80	120	0.364	15	
Arsenic	0.192	0.00500	0.200	0	96.2	80	120	4.61	15	
Barium	0.194	0.0100	0.200	0	97.2	80	120	1.39	15	
Beryllium	0.199	0.00100	0.200	0	99.6	80	120	0.495	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

Sample ID **LCSD-76816**	Batch ID: **76816**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCSD**	Run ID: **ICP-MS4_160817A**	Analysis Date: **8/17/2016 12:59:00 PM**	Prep Date: **8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cadmium	0.197	0.00100	0.200	0	98.5	80	120	1.30	15	
Calcium	4.70	0.300	5.00	0	94.0	80	120	0.549	15	
Chromium	0.196	0.00500	0.200	0	98.2	80	120	0.920	15	
Cobalt	0.186	0.00500	0.200	0	93.0	80	120	3.45	15	
Lead	0.191	0.00100	0.200	0	95.5	80	120	2.54	15	
Lithium	0.197	0.0100	0.200	0	98.5	80	120	0.885	15	
Molybdenum	0.193	0.00500	0.200	0	96.6	80	120	0.298	15	
Selenium	0.189	0.00500	0.200	0	94.3	80	120	4.76	15	
Thallium	0.194	0.00150	0.200	0	96.9	80	120	4.14	15	

Sample ID **1608135-04A SD**	Batch ID: **76816**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS4_160817A**	Analysis Date: **8/17/2016 1:05:00 PM**	Prep Date: **8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.0400	0.125	0	0				0	10	
Arsenic	0.667	0.250	0	0.668				0.086	10	
Barium	<0.150	0.500	0	0				0	10	
Beryllium	<0.0150	0.0500	0	0				0	10	
Cadmium	<0.0150	0.0500	0	0				0	10	
Calcium	5.38	15.0	0	5.68				5.39	10	
Chromium	<0.100	0.250	0	0				0	10	
Cobalt	<0.150	0.250	0	0				0	10	
Lead	<0.0150	0.0500	0	0				0	10	
Lithium	<0.250	0.500	0	0				0	10	
Molybdenum	1.25	0.250	0	1.21				3.01	10	
Selenium	<0.100	0.250	0	0				0	10	
Thallium	<0.0250	0.0750	0	0				0	10	

Sample ID **1608135-04A PDS**	Batch ID: **76816**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_160817A**	Analysis Date: **8/17/2016 1:25:00 PM**	Prep Date: **8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	2.10	0.0250	2.00	0	105	80	120			
Arsenic	2.66	0.0500	2.00	0.668	99.7	80	120			
Barium	1.97	0.100	2.00	0	98.6	80	120			
Beryllium	1.86	0.0100	2.00	0	93.2	80	120			
Cadmium	1.87	0.0100	2.00	0	93.7	80	120			
Calcium	50.3	3.00	50.0	5.68	89.2	80	120			
Chromium	1.93	0.0500	2.00	0	96.7	80	120			
Cobalt	1.90	0.0500	2.00	0	95.1	80	120			
Lead	1.97	0.0100	2.00	0	98.7	80	120			

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160817A

Sample ID **1608135-04A PDS** Batch ID: **76816** TestNo: **SW6020A** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS4_160817A** Analysis Date: **8/17/2016 1:25:00 PM** Prep Date: **8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lithium	1.81	0.100	2.00	0	90.4	80	120			
Molybdenum	3.08	0.0500	2.00	1.21	93.4	80	120			
Selenium	1.94	0.0500	2.00	0	96.8	80	120			
Thallium	1.97	0.0150	2.00	0	98.3	80	120			

Sample ID **1608135-04A MS** Batch ID: **76816** TestNo: **SW6020A** Units: **mg/L**
SampType: **MS** Run ID: **ICP-MS4_160817A** Analysis Date: **8/17/2016 1:27:00 PM** Prep Date: **8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.219	0.0250	0.200	0	110	80	120			
Arsenic	0.891	0.0500	0.200	0.668	112	80	120			
Barium	0.215	0.100	0.200	0	107	80	120			
Beryllium	0.186	0.0100	0.200	0	92.9	80	120			
Cadmium	0.196	0.0100	0.200	0	97.9	80	120			
Calcium	10.3	3.00	5.00	5.68	92.9	80	120			
Chromium	0.191	0.0500	0.200	0	95.6	80	120			
Cobalt	0.195	0.0500	0.200	0	97.4	80	120			
Lead	0.204	0.0100	0.200	0	102	80	120			
Lithium	0.215	0.100	0.200	0	108	80	120			
Molybdenum	1.48	0.0500	0.200	1.21	135	80	120			S
Selenium	0.175	0.0500	0.200	0	87.3	80	120			
Thallium	0.199	0.0150	0.200	0	99.5	80	120			

Sample ID **1608135-04A MSD** Batch ID: **76816** TestNo: **SW6020A** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS4_160817A** Analysis Date: **8/17/2016 1:29:00 PM** Prep Date: **8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.213	0.0250	0.200	0	106	80	120	3.19	15	
Arsenic	0.873	0.0500	0.200	0.668	103	80	120	2.08	15	
Barium	0.213	0.100	0.200	0	106	80	120	0.965	15	
Beryllium	0.184	0.0100	0.200	0	91.8	80	120	1.18	15	
Cadmium	0.192	0.0100	0.200	0	95.9	80	120	2.08	15	
Calcium	10.3	3.00	5.00	5.68	91.6	80	120	0.674	15	
Chromium	0.189	0.0500	0.200	0	94.7	80	120	0.972	15	
Cobalt	0.192	0.0500	0.200	0	95.8	80	120	1.70	15	
Lead	0.199	0.0100	0.200	0	99.4	80	120	2.38	15	
Lithium	0.206	0.100	0.200	0	103	80	120	4.42	15	
Molybdenum	1.48	0.0500	0.200	1.21	134	80	120	0.179	15	S
Selenium	0.164	0.0500	0.200	0	82.1	80	120	6.17	15	
Thallium	0.200	0.0150	0.200	0	99.8	80	120	0.341	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160817A

Sample ID **ICV-160817**	Batch ID: **R87663**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_160817A**	Analysis Date: **8/17/2016 10:42:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.104	0.00250	0.100	0	104	90	110			
Arsenic	0.101	0.00500	0.100	0	101	90	110			
Barium	0.0993	0.0100	0.100	0	99.3	90	110			
Beryllium	0.100	0.00100	0.100	0	100	90	110			
Cadmium	0.0985	0.00100	0.100	0	98.5	90	110			
Calcium	2.34	0.300	2.50	0	93.8	90	110			
Chromium	0.104	0.00500	0.100	0	104	90	110			
Cobalt	0.103	0.00500	0.100	0	103	90	110			
Lead	0.101	0.00100	0.100	0	101	90	110			
Lithium	0.0976	0.0100	0.100	0	97.6	90	110			
Molybdenum	0.0952	0.00500	0.100	0	95.2	90	110			
Selenium	0.101	0.00500	0.100	0	101	90	110			
Thallium	0.101	0.00150	0.100	0	101	90	110			

Sample ID **LCVL-160817**	Batch ID: **R87663**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160817A**	Analysis Date: **8/17/2016 10:46:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00221	0.00250	0.00200	0	110	70	130			
Arsenic	0.00526	0.00500	0.00500	0	105	70	130			
Barium	0.00513	0.0100	0.00500	0	103	70	130			
Beryllium	0.000783	0.00100	0.00100	0	78.3	70	130			
Cadmium	0.00104	0.00100	0.00100	0	104	70	130			
Calcium	0.105	0.300	0.100	0	105	70	130			
Chromium	0.00526	0.00500	0.00500	0	105	70	130			
Cobalt	0.00522	0.00500	0.00500	0	104	70	130			
Lead	0.00111	0.00100	0.00100	0	110	70	130			
Lithium	0.0100	0.0100	0.0100	0	100	70	130			
Molybdenum	0.00524	0.00500	0.00500	0	105	70	130			
Selenium	0.00555	0.00500	0.00500	0	111	70	130			
Thallium	0.00105	0.00150	0.00100	0	105	70	130			

Sample ID **CCV2-160817**	Batch ID: **R87663**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160817A**	Analysis Date: **8/17/2016 12:28:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.205	0.00250	0.200	0	103	90	110			
Arsenic	0.214	0.00500	0.200	0	107	90	110			
Barium	0.204	0.0100	0.200	0	102	90	110			
Beryllium	0.210	0.00100	0.200	0	105	90	110			
Cadmium	0.208	0.00100	0.200	0	104	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160817A

Sample ID **CCV2-160817** Batch ID: **R87663** TestNo: **SW6020A** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_160817A** Analysis Date: **8/17/2016 12:28:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.66	0.300	5.00	0	93.1	90	110			
Chromium	0.208	0.00500	0.200	0	104	90	110			
Cobalt	0.211	0.00500	0.200	0	106	90	110			
Lead	0.210	0.00100	0.200	0	105	90	110			
Lithium	0.215	0.0100	0.200	0	107	90	110			
Molybdenum	0.207	0.00500	0.200	0	103	90	110			
Selenium	0.212	0.00500	0.200	0	106	90	110			
Thallium	0.217	0.00150	0.200	0	108	90	110			

Sample ID **LCVL2-160817** Batch ID: **R87663** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_160817A** Analysis Date: **8/17/2016 12:38:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00214	0.00250	0.00200	0	107	70	130			
Arsenic	0.00520	0.00500	0.00500	0	104	70	130			
Barium	0.00517	0.0100	0.00500	0	103	70	130			
Beryllium	0.00109	0.00100	0.00100	0	109	70	130			
Cadmium	0.00104	0.00100	0.00100	0	104	70	130			
Calcium	0.0990	0.300	0.100	0	99.0	70	130			
Chromium	0.00514	0.00500	0.00500	0	103	70	130			
Cobalt	0.00494	0.00500	0.00500	0	98.9	70	130			
Lead	0.00103	0.00100	0.00100	0	103	70	130			
Lithium	0.0104	0.0100	0.0100	0	104	70	130			
Molybdenum	0.00489	0.00500	0.00500	0	97.8	70	130			
Selenium	0.00491	0.00500	0.00500	0	98.1	70	130			
Thallium	0.00105	0.00150	0.00100	0	105	70	130			

Sample ID **CCV3-160817** Batch ID: **R87663** TestNo: **SW6020A** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_160817A** Analysis Date: **8/17/2016 1:39:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.203	0.00250	0.200	0	102	90	110			
Arsenic	0.210	0.00500	0.200	0	105	90	110			
Barium	0.203	0.0100	0.200	0	102	90	110			
Beryllium	0.209	0.00100	0.200	0	104	90	110			
Cadmium	0.206	0.00100	0.200	0	103	90	110			
Calcium	4.76	0.300	5.00	0	95.3	90	110			
Chromium	0.209	0.00500	0.200	0	105	90	110			
Cobalt	0.206	0.00500	0.200	0	103	90	110			
Lead	0.202	0.00100	0.200	0	101	90	110			
Lithium	0.217	0.0100	0.200	0	109	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160817A

Sample ID **CCV3-160817**	Batch ID: **R87663**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160817A**	Analysis Date: **8/17/2016 1:39:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Molybdenum	0.202	0.00500	0.200	0	101	90	110			
Selenium	0.205	0.00500	0.200	0	103	90	110			
Thallium	0.208	0.00150	0.200	0	104	90	110			

Sample ID **LCVL3-160817**	Batch ID: **R87663**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160817A**	Analysis Date: **8/17/2016 1:46:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00226	0.00250	0.00200	0	113	70	130			
Arsenic	0.00537	0.00500	0.00500	0	107	70	130			
Barium	0.00514	0.0100	0.00500	0	103	70	130			
Beryllium	0.000885	0.00100	0.00100	0	88.5	70	130			
Cadmium	0.00103	0.00100	0.00100	0	103	70	130			
Calcium	0.103	0.300	0.100	0	103	70	130			
Chromium	0.00517	0.00500	0.00500	0	103	70	130			
Cobalt	0.00528	0.00500	0.00500	0	106	70	130			
Lead	0.000995	0.00100	0.00100	0	99.5	70	130			
Lithium	0.0101	0.0100	0.0100	0	101	70	130			
Molybdenum	0.00491	0.00500	0.00500	0	98.2	70	130			
Selenium	0.00497	0.00500	0.00500	0	99.5	70	130			
Thallium	0.00101	0.00150	0.00100	0	101	70	130			

Sample ID **CCV4-160817**	Batch ID: **R87663**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160817A**	Analysis Date: **8/17/2016 2:11:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.207	0.00250	0.200	0	103	90	110			
Arsenic	0.209	0.00500	0.200	0	105	90	110			
Barium	0.208	0.0100	0.200	0	104	90	110			
Beryllium	0.207	0.00100	0.200	0	103	90	110			
Cadmium	0.208	0.00100	0.200	0	104	90	110			
Chromium	0.207	0.00500	0.200	0	103	90	110			
Cobalt	0.208	0.00500	0.200	0	104	90	110			
Lead	0.204	0.00100	0.200	0	102	90	110			
Lithium	0.214	0.0100	0.200	0	107	90	110			
Molybdenum	0.205	0.00500	0.200	0	103	90	110			
Selenium	0.203	0.00500	0.200	0	101	90	110			
Thallium	0.210	0.00150	0.200	0	105	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160817A

Sample ID **LCVL4-160817**	Batch ID: **R87663**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160817A**	Analysis Date: **8/17/2016 2:15:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00226	0.00250	0.00200	0	113	70	130			
Arsenic	0.00509	0.00500	0.00500	0	102	70	130			
Barium	0.00516	0.0100	0.00500	0	103	70	130			
Beryllium	0.00123	0.00100	0.00100	0	123	70	130			
Cadmium	0.00108	0.00100	0.00100	0	108	70	130			
Chromium	0.00521	0.00500	0.00500	0	104	70	130			
Cobalt	0.00503	0.00500	0.00500	0	101	70	130			
Lead	0.00103	0.00100	0.00100	0	103	70	130			
Lithium	0.0104	0.0100	0.0100	0	104	70	130			
Molybdenum	0.00495	0.00500	0.00500	0	99.0	70	130			
Selenium	0.00460	0.00500	0.00500	0	91.9	70	130			
Thallium	0.00104	0.00150	0.00100	0	104	70	130			

Sample ID **CCV6-160817**	Batch ID: **R87663**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160817A**	Analysis Date: **8/17/2016 3:33:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.203	0.00250	0.200	0	102	90	110			
Arsenic	0.204	0.00500	0.200	0	102	90	110			
Barium	0.208	0.0100	0.200	0	104	90	110			
Beryllium	0.202	0.00100	0.200	0	101	90	110			
Cadmium	0.202	0.00100	0.200	0	101	90	110			
Chromium	0.201	0.00500	0.200	0	101	90	110			
Cobalt	0.195	0.00500	0.200	0	97.7	90	110			
Lead	0.206	0.00100	0.200	0	103	90	110			
Molybdenum	0.200	0.00500	0.200	0	99.8	90	110			
Selenium	0.198	0.00500	0.200	0	99.2	90	110			
Thallium	0.210	0.00150	0.200	0	105	90	110			

Sample ID **LCVL6-160817**	Batch ID: **R87663**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160817A**	Analysis Date: **8/17/2016 3:38:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00230	0.00250	0.00200	0	115	70	130			
Arsenic	0.00526	0.00500	0.00500	0	105	70	130			
Barium	0.00533	0.0100	0.00500	0	107	70	130			
Beryllium	0.00128	0.00100	0.00100	0	128	70	130			
Cadmium	0.000952	0.00100	0.00100	0	95.2	70	130			
Chromium	0.00519	0.00500	0.00500	0	104	70	130			
Cobalt	0.00517	0.00500	0.00500	0	103	70	130			
Lead	0.00101	0.00100	0.00100	0	101	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160817A

Sample ID **LCVL6-160817** Batch ID: **R87663** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_160817A** Analysis Date: **8/17/2016 3:38:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Molybdenum	0.00482	0.00500	0.00500	0	96.4	70	130			
Selenium	0.00483	0.00500	0.00500	0	96.7	70	130			
Thallium	0.00102	0.00150	0.00100	0	102	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: **ICP-MS4_160818B**

The QC data in batch 76816 applies to the following samples: 1608133-01A, 1608133-02A

Sample ID	**MB-76816**	Batch ID:	**76816**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**ICP-MS4_160818B**	Analysis Date:	**8/18/2016 2:32:00 PM**	Prep Date:	**8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	<0.0100	0.0300								

Sample ID	**LCS-76816**	Batch ID:	**76816**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**ICP-MS4_160818B**	Analysis Date:	**8/18/2016 2:34:00 PM**	Prep Date:	**8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.193	0.0300	0.200	0	96.3	80	120			

Sample ID	**LCSD-76816**	Batch ID:	**76816**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**LCSD**	Run ID:	**ICP-MS4_160818B**	Analysis Date:	**8/18/2016 2:36:00 PM**	Prep Date:	**8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.185	0.0300	0.200	0	92.7	80	120	3.82	15	

Sample ID	**1608135-04A SD**	Batch ID:	**76816**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**SD**	Run ID:	**ICP-MS4_160818B**	Analysis Date:	**8/18/2016 2:42:00 PM**	Prep Date:	**8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	1.97	1.50	0	1.87				5.13	10	

Sample ID	**1608135-04A PDS**	Batch ID:	**76816**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**PDS**	Run ID:	**ICP-MS4_160818B**	Analysis Date:	**8/18/2016 2:44:00 PM**	Prep Date:	**8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	3.60	0.300	2.00	1.87	86.7	80	120			

Sample ID	**1608135-04A MS**	Batch ID:	**76816**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**MS**	Run ID:	**ICP-MS4_160818B**	Analysis Date:	**8/18/2016 3:04:00 PM**	Prep Date:	**8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	2.18	0.300	0.200	1.87	158	80	120			S

Sample ID	**1608135-04A MSD**	Batch ID:	**76816**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**MSD**	Run ID:	**ICP-MS4_160818B**	Analysis Date:	**8/18/2016 3:06:00 PM**	Prep Date:	**8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	2.07	0.300	0.200	1.87	102	80	120	5.26	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160818B

Sample ID **ICV2-160818**	Batch ID: **R87690**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_160818B**	Analysis Date: **8/18/2016 2:06:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0920	0.0300	0.100	0	92.0	90	110			
Calcium	2.39	0.300	2.50	0	95.8	90	110			

Sample ID **ILCVL2-160818**	Batch ID: **R87690**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160818B**	Analysis Date: **8/18/2016 2:11:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0190	0.0300	0.0200	0	95.0	70	130			
Calcium	0.102	0.300	0.100	0	102	70	130			

Sample ID **CCV2-160818**	Batch ID: **R87690**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160818B**	Analysis Date: **8/18/2016 3:08:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.195	0.0300	0.200	0	97.6	90	110			
Calcium	4.88	0.300	5.00	0	97.6	90	110			

Sample ID **LCVL2-160818**	Batch ID: **R87690**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160818B**	Analysis Date: **8/18/2016 3:16:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0176	0.0300	0.0200	0	87.8	70	130			
Calcium	0.0995	0.300	0.100	0	99.5	70	130			

Sample ID **CCV3-160818**	Batch ID: **R87690**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160818B**	Analysis Date: **8/18/2016 3:42:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.193	0.0300	0.200	0	96.6	90	110			
Calcium	4.89	0.300	5.00	0	97.8	90	110			

Sample ID **LCVL3-160818**	Batch ID: **R87690**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160818B**	Analysis Date: **8/18/2016 3:54:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.00902	0.0300	0.0200	0	45.1	70	130			S
Calcium	0.100	0.300	0.100	0	100	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160819A

The QC data in batch 76817 applies to the following samples: 1608133-03A, 1608133-04A, 1608133-05A, 1608133-06A, 1608133-07A, 1608133-08A, 1608133-09A, 1608133-10A, 1608133-11A, 1608133-12A, 1608133-13A, 1608133-14A, 1608133-15A

Sample ID **MB-76817** Batch ID: **76817** TestNo: **SW6020A** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_160819A** Analysis Date: **8/19/2016 5:26:00 PM** Prep Date: **8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.000800	0.00250								
Arsenic	<0.00200	0.00500								
Barium	<0.00300	0.0100								
Cadmium	<0.000300	0.00100								
Calcium	<0.100	0.300								
Chromium	<0.00200	0.00500								
Cobalt	<0.00300	0.00500								
Lead	<0.000300	0.00100								
Molybdenum	<0.00200	0.00500								
Selenium	<0.00200	0.00500								
Thallium	<0.000500	0.00150								

Sample ID **LCS-76817** Batch ID: **76817** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_160819A** Analysis Date: **8/19/2016 5:28:00 PM** Prep Date: **8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.199	0.00250	0.200	0	99.6	80	120			
Arsenic	0.200	0.00500	0.200	0	100	80	120			
Barium	0.194	0.0100	0.200	0	97.1	80	120			
Cadmium	0.190	0.00100	0.200	0	95.2	80	120			
Calcium	4.76	0.300	5.00	0	95.3	80	120			
Chromium	0.196	0.00500	0.200	0	97.9	80	120			
Cobalt	0.200	0.00500	0.200	0	100	80	120			
Lead	0.200	0.00100	0.200	0	99.8	80	120			
Molybdenum	0.186	0.00500	0.200	0	93.2	80	120			
Selenium	0.203	0.00500	0.200	0	102	80	120			
Thallium	0.200	0.00150	0.200	0	100	80	120			

Sample ID **LCSD-76817** Batch ID: **76817** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_160819A** Analysis Date: **8/19/2016 5:30:00 PM** Prep Date: **8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.200	0.00250	0.200	0	100	80	120	0.615	15	
Arsenic	0.201	0.00500	0.200	0	100	80	120	0.198	15	
Barium	0.195	0.0100	0.200	0	97.3	80	120	0.243	15	
Cadmium	0.192	0.00100	0.200	0	96.0	80	120	0.767	15	
Calcium	4.81	0.300	5.00	0	96.2	80	120	0.929	15	
Chromium	0.196	0.00500	0.200	0	97.8	80	120	0.039	15	
Cobalt	0.201	0.00500	0.200	0	100	80	120	0.213	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160819A

Sample ID **LCSD-76817**	Batch ID: **76817**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCSD**	Run ID: **ICP-MS4_160819A**	Analysis Date: **8/19/2016 5:30:00 PM**	Prep Date: **8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.199	0.00100	0.200	0	99.3	80	120	0.462	15	
Molybdenum	0.189	0.00500	0.200	0	94.5	80	120	1.31	15	
Selenium	0.203	0.00500	0.200	0	102	80	120	0.159	15	
Thallium	0.199	0.00150	0.200	0	99.3	80	120	0.824	15	

Sample ID **1608136-06A SD**	Batch ID: **76817**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS4_160819A**	Analysis Date: **8/19/2016 5:36:00 PM**	Prep Date: **8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.00400	0.0125	0	0				0	10	
Arsenic	0.190	0.0250	0	0.193				1.47	10	
Barium	0.0413	0.0500	0	0.0412				0.187	10	
Cadmium	<0.00150	0.00500	0	0				0	10	
Calcium	5.17	1.50	0	5.22				0.967	10	
Chromium	<0.0100	0.0250	0	0				0	10	
Cobalt	<0.0150	0.0250	0	0.00742				0	10	
Lead	<0.00150	0.00500	0	0.000484				0	10	
Molybdenum	0.364	0.0250	0	0.374				2.56	10	
Selenium	<0.0100	0.0250	0	0.00282				0	10	
Thallium	<0.00250	0.00750	0	0				0	10	

Sample ID **1608136-06A PDS**	Batch ID: **76817**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_160819A**	Analysis Date: **8/19/2016 5:56:00 PM**	Prep Date: **8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.209	0.00250	0.200	0	104	80	120			
Arsenic	0.386	0.00500	0.200	0.193	96.6	80	120			
Barium	0.238	0.0100	0.200	0.0412	98.6	80	120			
Cadmium	0.177	0.00100	0.200	0	88.4	80	120			
Calcium	9.50	0.300	5.00	5.22	85.7	80	120			
Chromium	0.186	0.00500	0.200	0	93.0	80	120			
Cobalt	0.197	0.00500	0.200	0.00742	94.6	80	120			
Lead	0.202	0.00100	0.200	0.000484	101	80	120			
Molybdenum	0.524	0.00500	0.200	0.374	74.9	80	120			S
Selenium	0.210	0.00500	0.200	0.00282	103	80	120			
Thallium	0.201	0.00150	0.200	0	101	80	120			

Sample ID **1608136-06A MS**	Batch ID: **76817**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS4_160819A**	Analysis Date: **8/19/2016 5:58:00 PM**	Prep Date: **8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160819A

Sample ID **1608136-06A MS**	Batch ID: **76817**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS4_160819A**	Analysis Date: **8/19/2016 5:58:00 PM**	Prep Date: **8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.204	0.00250	0.200	0	102	80	120			
Arsenic	0.633	0.00500	0.200	0.193	220	80	120			S
Barium	0.535	0.0100	0.200	0.0412	247	80	120			S
Cadmium	0.173	0.00100	0.200	0	86.5	80	120			
Calcium	5.64	0.300	5.00	5.22	8.36	80	120			S
Chromium	0.174	0.00500	0.200	0	87.1	80	120			
Cobalt	0.181	0.00500	0.200	0.00742	86.7	80	120			
Lead	0.201	0.00100	0.200	0.000484	100	80	120			
Molybdenum	2.66	0.00500	0.200	0.374	1140	80	120			S
Selenium	0.206	0.00500	0.200	0.00282	102	80	120			
Thallium	0.201	0.00150	0.200	0	101	80	120			

Sample ID **1608136-06A MSD**	Batch ID: **76817**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS4_160819A**	Analysis Date: **8/19/2016 6:00:00 PM**	Prep Date: **8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.198	0.00250	0.200	0	99.2	80	120	2.74	15	
Arsenic	0.612	0.00500	0.200	0.193	210	80	120	3.36	15	S
Barium	0.506	0.0100	0.200	0.0412	232	80	120	5.57	15	S
Cadmium	0.167	0.00100	0.200	0	83.7	80	120	3.24	15	
Calcium	5.63	0.300	5.00	5.22	8.09	80	120	0.238	15	S
Chromium	0.171	0.00500	0.200	0	85.6	80	120	1.72	15	
Cobalt	0.178	0.00500	0.200	0.00742	85.3	80	120	1.57	15	
Lead	0.199	0.00100	0.200	0.000484	99.2	80	120	1.03	15	
Molybdenum	2.51	0.00500	0.200	0.374	1070	80	120	5.76	15	S
Selenium	0.207	0.00500	0.200	0.00282	102	80	120	0.267	15	
Thallium	0.198	0.00150	0.200	0	98.9	80	120	1.84	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160819A

Sample ID **ICV-160819**	Batch ID: **R87706**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_160819A**	Analysis Date: **8/19/2016 12:09:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.104	0.00250	0.100	0	104	90	110			
Arsenic	0.101	0.00500	0.100	0	101	90	110			
Barium	0.101	0.0100	0.100	0	101	90	110			
Cadmium	0.0995	0.00100	0.100	0	99.5	90	110			
Calcium	2.40	0.300	2.50	0	96.1	90	110			
Chromium	0.105	0.00500	0.100	0	105	90	110			
Cobalt	0.105	0.00500	0.100	0	105	90	110			
Lead	0.0999	0.00100	0.100	0	99.9	90	110			
Molybdenum	0.0938	0.00500	0.100	0	93.8	90	110			
Selenium	0.103	0.00500	0.100	0	103	90	110			
Thallium	0.0989	0.00150	0.100	0	98.9	90	110			

Sample ID **LCVL-160819**	Batch ID: **R87706**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160819A**	Analysis Date: **8/19/2016 12:13:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00224	0.00250	0.00200	0	112	70	130			
Arsenic	0.00546	0.00500	0.00500	0	109	70	130			
Barium	0.00533	0.0100	0.00500	0	107	70	130			
Cadmium	0.00105	0.00100	0.00100	0	105	70	130			
Calcium	0.103	0.300	0.100	0	103	70	130			
Chromium	0.00543	0.00500	0.00500	0	109	70	130			
Cobalt	0.00554	0.00500	0.00500	0	111	70	130			
Lead	0.00113	0.00100	0.00100	0	113	70	130			
Molybdenum	0.00515	0.00500	0.00500	0	103	70	130			
Selenium	0.00608	0.00500	0.00500	0	122	70	130			
Thallium	0.00106	0.00150	0.00100	0	106	70	130			

Sample ID **CCV5-160819**	Batch ID: **R87706**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160819A**	Analysis Date: **8/19/2016 5:18:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.208	0.00250	0.200	0	104	90	110			
Arsenic	0.206	0.00500	0.200	0	103	90	110			
Barium	0.201	0.0100	0.200	0	100	90	110			
Cadmium	0.195	0.00100	0.200	0	97.3	90	110			
Calcium	4.99	0.300	5.00	0	99.9	90	110			
Chromium	0.202	0.00500	0.200	0	101	90	110			
Cobalt	0.204	0.00500	0.200	0	102	90	110			
Lead	0.203	0.00100	0.200	0	102	90	110			
Molybdenum	0.193	0.00500	0.200	0	96.7	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160819A

Sample ID **CCV5-160819**	Batch ID: **R87706**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160819A**	Analysis Date: **8/19/2016 5:18:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.207	0.00500	0.200	0	104	90	110			
Thallium	0.207	0.00150	0.200	0	104	90	110			

Sample ID **LCVL5-160819**	Batch ID: **R87706**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160819A**	Analysis Date: **8/19/2016 5:22:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00232	0.00250	0.00200	0	116	70	130			
Arsenic	0.00549	0.00500	0.00500	0	110	70	130			
Barium	0.00536	0.0100	0.00500	0	107	70	130			
Cadmium	0.00103	0.00100	0.00100	0	103	70	130			
Calcium	0.108	0.300	0.100	0	108	70	130			
Chromium	0.00549	0.00500	0.00500	0	110	70	130			
Cobalt	0.00548	0.00500	0.00500	0	110	70	130			
Lead	0.00113	0.00100	0.00100	0	113	70	130			
Molybdenum	0.00488	0.00500	0.00500	0	97.5	70	130			
Selenium	0.00563	0.00500	0.00500	0	113	70	130			
Thallium	0.00111	0.00150	0.00100	0	111	70	130			

Sample ID **CCV6-160819**	Batch ID: **R87706**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160819A**	Analysis Date: **8/19/2016 6:02:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.205	0.00250	0.200	0	103	90	110			
Arsenic	0.207	0.00500	0.200	0	103	90	110			
Barium	0.196	0.0100	0.200	0	97.9	90	110			
Cadmium	0.185	0.00100	0.200	0	92.6	90	110			
Calcium	5.07	0.300	5.00	0	101	90	110			
Chromium	0.188	0.00500	0.200	0	93.9	90	110			
Cobalt	0.196	0.00500	0.200	0	97.9	90	110			
Lead	0.202	0.00100	0.200	0	101	90	110			
Molybdenum	0.189	0.00500	0.200	0	94.5	90	110			
Selenium	0.215	0.00500	0.200	0	108	90	110			
Thallium	0.203	0.00150	0.200	0	102	90	110			

Sample ID **LCVL6-160819**	Batch ID: **R87706**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160819A**	Analysis Date: **8/19/2016 6:06:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00238	0.00250	0.00200	0	119	70	130			
Arsenic	0.00547	0.00500	0.00500	0	109	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160819A

Sample ID **LCVL6-160819** Batch ID: **R87706** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_160819A** Analysis Date: **8/19/2016 6:06:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.00542	0.0100	0.00500	0	108	70	130			
Cadmium	0.00101	0.00100	0.00100	0	101	70	130			
Calcium	0.109	0.300	0.100	0	109	70	130			
Chromium	0.00524	0.00500	0.00500	0	105	70	130			
Cobalt	0.00530	0.00500	0.00500	0	106	70	130			
Lead	0.00109	0.00100	0.00100	0	109	70	130			
Molybdenum	0.00510	0.00500	0.00500	0	102	70	130			
Selenium	0.00645	0.00500	0.00500	0	129	70	130			
Thallium	0.00111	0.00150	0.00100	0	111	70	130			

Sample ID **CCV7-160819** Batch ID: **R87706** TestNo: **SW6020A** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_160819A** Analysis Date: **8/19/2016 6:31:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.205	0.00250	0.200	0	102	90	110			
Arsenic	0.208	0.00500	0.200	0	104	90	110			
Barium	0.198	0.0100	0.200	0	99.0	90	110			
Cadmium	0.190	0.00100	0.200	0	94.9	90	110			
Calcium	4.94	0.300	5.00	0	98.8	90	110			
Chromium	0.200	0.00500	0.200	0	99.8	90	110			
Cobalt	0.205	0.00500	0.200	0	102	90	110			
Lead	0.204	0.00100	0.200	0	102	90	110			
Molybdenum	0.189	0.00500	0.200	0	94.3	90	110			
Selenium	0.208	0.00500	0.200	0	104	90	110			
Thallium	0.204	0.00150	0.200	0	102	90	110			

Sample ID **LCVL7-160819** Batch ID: **R87706** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_160819A** Analysis Date: **8/19/2016 6:35:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00228	0.00250	0.00200	0	114	70	130			
Arsenic	0.00552	0.00500	0.00500	0	110	70	130			
Barium	0.00510	0.0100	0.00500	0	102	70	130			
Cadmium	0.000970	0.00100	0.00100	0	97.0	70	130			
Calcium	0.104	0.300	0.100	0	104	70	130			
Chromium	0.00536	0.00500	0.00500	0	107	70	130			
Cobalt	0.00541	0.00500	0.00500	0	108	70	130			
Lead	0.00108	0.00100	0.00100	0	108	70	130			
Molybdenum	0.00480	0.00500	0.00500	0	96.1	70	130			
Selenium	0.00607	0.00500	0.00500	0	121	70	130			
Thallium	0.00111	0.00150	0.00100	0	111	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160822B

The QC data in batch 76817 applies to the following samples: 1608133-03A, 1608133-04A, 1608133-05A, 1608133-06A, 1608133-07A, 1608133-08A, 1608133-09A, 1608133-10A, 1608133-11A, 1608133-12A, 1608133-13A, 1608133-14A, 1608133-15A

Sample ID **MB-76817** Batch ID: **76817** TestNo: **SW6020A** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_160822B** Analysis Date: **8/22/2016 1:51:00 PM** Prep Date: **8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	<0.000300	0.00100								
Boron	<0.0100	0.0300								
Lithium	<0.00500	0.0100								

Sample ID **LCS-76817** Batch ID: **76817** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_160822B** Analysis Date: **8/22/2016 1:53:00 PM** Prep Date: **8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.200	0.00100	0.200	0	99.8	80	120			
Boron	0.196	0.0300	0.200	0	98.2	80	120			
Lithium	0.200	0.0100	0.200	0	100	80	120			

Sample ID **LCSD-76817** Batch ID: **76817** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_160822B** Analysis Date: **8/22/2016 1:55:00 PM** Prep Date: **8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.201	0.00100	0.200	0	100	80	120	0.617	15	
Boron	0.199	0.0300	0.200	0	99.4	80	120	1.23	15	
Lithium	0.207	0.0100	0.200	0	104	80	120	3.27	15	

Sample ID **1608136-06A SD** Batch ID: **76817** TestNo: **SW6020A** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS4_160822B** Analysis Date: **8/22/2016 2:01:00 PM** Prep Date: **8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	<0.0150	0.0500	0	0				0	10	
Boron	1.40	1.50	0	1.19				16.8	10	R
Lithium	<0.250	0.500	0	0				0	10	

Sample ID **1608136-06A PDS** Batch ID: **76817** TestNo: **SW6020A** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS4_160822B** Analysis Date: **8/22/2016 2:03:00 PM** Prep Date: **8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	1.86	0.0100	2.00	0	93.0	80	120			
Boron	3.08	0.300	2.00	1.19	94.9	80	120			
Lithium	1.82	0.100	2.00	0	91.1	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160822B

Sample ID **1608136-06A MS**	Batch ID: **76817**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS4_160822B**	Analysis Date: **8/22/2016 2:23:00 PM**	Prep Date: **8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.171	0.0100	0.200	0	85.3	80	120			
Boron	1.15	0.300	0.200	1.19	-18.0	80	120			S
Lithium	0.189	0.100	0.200	0	94.3	80	120			

Sample ID **1608136-06A MSD**	Batch ID: **76817**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS4_160822B**	Analysis Date: **8/22/2016 2:25:00 PM**	Prep Date: **8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.174	0.0100	0.200	0	87.2	80	120	2.20	15	
Boron	1.15	0.300	0.200	1.19	-18.1	80	120	0.025	15	S
Lithium	0.176	0.100	0.200	0	87.9	80	120	7.03	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160822B

Sample ID **ICV2-160822**	Batch ID: **R87729**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_160822B**	Analysis Date: **8/22/2016 1:35:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.100	0.00100	0.100	0	100	90	110			
Boron	0.0948	0.0300	0.100	0	94.8	90	110			
Calcium	2.32	0.300	2.50	0	92.9	90	110			
Lithium	0.0966	0.0100	0.100	0	96.6	90	110			

Sample ID **ILCVL2-160822**	Batch ID: **R87729**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160822B**	Analysis Date: **8/22/2016 1:44:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.00125	0.00100	0.00100	0	125	70	130			
Boron	0.0215	0.0300	0.0200	0	108	70	130			
Calcium	0.106	0.300	0.100	0	106	70	130			
Lithium	0.0114	0.0100	0.0100	0	114	70	130			

Sample ID **CCV2-160822**	Batch ID: **R87729**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160822B**	Analysis Date: **8/22/2016 2:35:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.209	0.00100	0.200	0	105	90	110			
Boron	0.213	0.0300	0.200	0	106	90	110			
Calcium	4.78	0.300	5.00	0	95.5	90	110			
Lithium	0.213	0.0100	0.200	0	107	90	110			

Sample ID **LCVL2-160822**	Batch ID: **R87729**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160822B**	Analysis Date: **8/22/2016 2:46:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.00131	0.00100	0.00100	0	131	70	130			S
Boron	0.0245	0.0300	0.0200	0	123	70	130			
Calcium	0.0981	0.300	0.100	0	98.1	70	130			
Lithium	0.0113	0.0100	0.0100	0	113	70	130			

Sample ID **CCV3-160822**	Batch ID: **R87729**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160822B**	Analysis Date: **8/22/2016 3:07:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.208	0.00100	0.200	0	104	90	110			
Boron	0.220	0.0300	0.200	0	110	90	110			
Lithium	0.219	0.0100	0.200	0	110	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160822B

Sample ID **LCVL3-160822**	Batch ID: **R87729**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160822B**	Analysis Date: **8/22/2016 3:17:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.00108	0.00100	0.00100	0	108	70	130			
Boron	0.0214	0.0300	0.0200	0	107	70	130			
Lithium	0.0113	0.0100	0.0100	0	113	70	130			

Sample ID **CCV4-160822**	Batch ID: **R87729**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160822B**	Analysis Date: **8/22/2016 3:35:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.192	0.00100	0.200	0	96.0	90	110			
Lithium	0.202	0.0100	0.200	0	101	90	110			

Sample ID **LCVL4-160822**	Batch ID: **R87729**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160822B**	Analysis Date: **8/22/2016 3:46:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.00104	0.00100	0.00100	0	104	70	130			
Lithium	0.0101	0.0100	0.0100	0	101	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: **ICP-MS4_160823B**

The QC data in batch 76893 applies to the following samples: 1608133-16A, 1608133-17A, 1608133-18A, 1608133-19A, 1608133-20A, 1608133-21A, 1608133-22A

Sample ID **MB-76893** Batch ID: **76893** TestNo: **SW6020A** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_160823B** Analysis Date: **8/23/2016 12:12:00 PM** Prep Date: **8/22/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.000800	0.00250								
Arsenic	<0.00200	0.00500								
Barium	<0.00300	0.0100								
Beryllium	<0.000300	0.00100								
Cadmium	<0.000300	0.00100								
Calcium	<0.100	0.300								
Chromium	<0.00200	0.00500								
Cobalt	<0.00300	0.00500								
Lead	<0.000300	0.00100								
Lithium	<0.00500	0.0100								
Molybdenum	<0.00200	0.00500								
Selenium	<0.00200	0.00500								
Thallium	<0.000500	0.00150								

Sample ID **LCS-76893** Batch ID: **76893** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_160823B** Analysis Date: **8/23/2016 12:14:00 PM** Prep Date: **8/22/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.203	0.00250	0.200	0	101	80	120			
Arsenic	0.199	0.00500	0.200	0	99.5	80	120			
Barium	0.196	0.0100	0.200	0	97.8	80	120			
Beryllium	0.201	0.00100	0.200	0	101	80	120			
Cadmium	0.203	0.00100	0.200	0	101	80	120			
Calcium	4.82	0.300	5.00	0	96.4	80	120			
Chromium	0.203	0.00500	0.200	0	101	80	120			
Cobalt	0.202	0.00500	0.200	0	101	80	120			
Lead	0.196	0.00100	0.200	0	98.2	80	120			
Lithium	0.199	0.0100	0.200	0	99.6	80	120			
Molybdenum	0.201	0.00500	0.200	0	100	80	120			
Selenium	0.197	0.00500	0.200	0	98.5	80	120			
Thallium	0.196	0.00150	0.200	0	98.0	80	120			

Sample ID **LCSD-76893** Batch ID: **76893** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_160823B** Analysis Date: **8/23/2016 12:16:00 PM** Prep Date: **8/22/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.208	0.00250	0.200	0	104	80	120	2.52	15	
Arsenic	0.199	0.00500	0.200	0	99.3	80	120	0.240	15	
Barium	0.196	0.0100	0.200	0	98.1	80	120	0.297	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160823B

Sample ID **LCSD-76893**	Batch ID: **76893**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCSD**	Run ID: **ICP-MS4_160823B**	Analysis Date: **8/23/2016 12:16:00 PM**	Prep Date: **8/22/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.198	0.00100	0.200	0	98.9	80	120	1.69	15	
Cadmium	0.202	0.00100	0.200	0	101	80	120	0.195	15	
Calcium	4.79	0.300	5.00	0	95.9	80	120	0.478	15	
Chromium	0.201	0.00500	0.200	0	101	80	120	0.842	15	
Cobalt	0.203	0.00500	0.200	0	101	80	120	0.425	15	
Lead	0.200	0.00100	0.200	0	99.8	80	120	1.66	15	
Lithium	0.197	0.0100	0.200	0	98.4	80	120	1.20	15	
Molybdenum	0.202	0.00500	0.200	0	101	80	120	0.688	15	
Selenium	0.198	0.00500	0.200	0	98.9	80	120	0.390	15	
Thallium	0.197	0.00150	0.200	0	98.4	80	120	0.336	15	

Sample ID **1608181-05A SD**	Batch ID: **76893**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS4_160823B**	Analysis Date: **8/23/2016 12:22:00 PM**	Prep Date: **8/22/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00722	0.0125	0	0.00670				7.61	10	
Arsenic	0.0275	0.0250	0	0.0274				0.353	10	
Barium	0.0761	0.0500	0	0.0743				2.38	10	
Beryllium	<0.00150	0.00500	0	0.000692				0	10	
Cadmium	<0.00150	0.00500	0	0.000325				0	10	
Chromium	<0.0100	0.0250	0	0.00533				0	10	
Cobalt	<0.0150	0.0250	0	0.00556				0	10	
Lead	0.00462	0.00500	0	0.00469				1.55	10	
Lithium	0.267	0.0500	0	0.242				9.42	10	
Molybdenum	<0.0100	0.0250	0	0.00903				0	10	
Selenium	<0.0100	0.0250	0	0				0	10	
Thallium	<0.00250	0.00750	0	0				0	10	

Sample ID **1608181-05A PDS**	Batch ID: **76893**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_160823B**	Analysis Date: **8/23/2016 12:42:00 PM**	Prep Date: **8/22/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.219	0.00250	0.200	0.00670	106	80	120			
Arsenic	0.235	0.00500	0.200	0.0274	104	80	120			
Barium	0.267	0.0100	0.200	0.0743	96.4	80	120			
Beryllium	0.174	0.00100	0.200	0.000692	86.7	80	120			
Cadmium	0.185	0.00100	0.200	0.000325	92.6	80	120			
Chromium	0.193	0.00500	0.200	0.00533	93.6	80	120			
Cobalt	0.191	0.00500	0.200	0.00556	92.9	80	120			
Lead	0.203	0.00100	0.200	0.00469	99.3	80	120			
Lithium	0.368	0.0100	0.200	0.243	63.0	80	120			S

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160823B

Sample ID **1608181-05A PDS** Batch ID: **76893** TestNo: **SW6020A** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS4_160823B** Analysis Date: **8/23/2016 12:42:00 PM** Prep Date: **8/22/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Molybdenum	0.197	0.00500	0.200	0.00903	93.9	80	120			
Selenium	0.210	0.00500	0.200	0	105	80	120			
Thallium	0.198	0.00150	0.200	0	98.8	80	120			

Sample ID **1608181-05A MS** Batch ID: **76893** TestNo: **SW6020A** Units: **mg/L**
SampType: **MS** Run ID: **ICP-MS4_160823B** Analysis Date: **8/23/2016 12:44:00 PM** Prep Date: **8/22/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.207	0.00250	0.200	0.00670	100	80	120			
Arsenic	0.241	0.00500	0.200	0.0274	107	80	120			
Barium	0.269	0.0100	0.200	0.0743	97.2	80	120			
Beryllium	0.178	0.00100	0.200	0.000692	88.7	80	120			
Cadmium	0.188	0.00100	0.200	0.000325	93.6	80	120			
Calcium	587	0.300	5.00	573	282	80	120			S
Chromium	0.191	0.00500	0.200	0.00533	92.6	80	120			
Cobalt	0.192	0.00500	0.200	0.00556	93.0	80	120			
Lead	0.203	0.00100	0.200	0.00469	99.1	80	120			
Lithium	0.388	0.0100	0.200	0.243	72.5	80	120			S
Molybdenum	0.207	0.00500	0.200	0.00903	98.8	80	120			
Selenium	0.210	0.00500	0.200	0	105	80	120			
Thallium	0.198	0.00150	0.200	0	98.8	80	120			

Sample ID **1608181-05A MSD** Batch ID: **76893** TestNo: **SW6020A** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS4_160823B** Analysis Date: **8/23/2016 12:46:00 PM** Prep Date: **8/22/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.209	0.00250	0.200	0.00670	101	80	120	0.721	15	
Arsenic	0.240	0.00500	0.200	0.0274	106	80	120	0.404	15	
Barium	0.270	0.0100	0.200	0.0743	97.9	80	120	0.517	15	
Beryllium	0.175	0.00100	0.200	0.000692	86.9	80	120	1.95	15	
Cadmium	0.185	0.00100	0.200	0.000325	92.5	80	120	1.27	15	
Calcium	591	0.300	5.00	573	357	80	120	0.637	15	S
Chromium	0.190	0.00500	0.200	0.00533	92.1	80	120	0.519	15	
Cobalt	0.191	0.00500	0.200	0.00556	92.9	80	120	0.044	15	
Lead	0.206	0.00100	0.200	0.00469	100	80	120	1.30	15	
Lithium	0.392	0.0100	0.200	0.243	74.9	80	120	1.21	15	S
Molybdenum	0.205	0.00500	0.200	0.00903	98.2	80	120	0.647	15	
Selenium	0.218	0.00500	0.200	0	109	80	120	3.68	15	
Thallium	0.200	0.00150	0.200	0	100	80	120	1.23	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160823B

The QC data in batch 76895 applies to the following samples: 1608133-23A, 1608133-24A, 1608133-25A, 1608133-26A, 1608133-27A

Sample ID **MB-76895** Batch ID: **76895** TestNo: **SW6020A** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_160823B** Analysis Date: **8/23/2016 2:47:00 PM** Prep Date: **8/22/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.000800	0.00250								
Barium	<0.00300	0.0100								
Beryllium	<0.000300	0.00100								
Cadmium	<0.000300	0.00100								
Calcium	<0.100	0.300								
Chromium	<0.00200	0.00500								
Cobalt	<0.00300	0.00500								
Lead	<0.000300	0.00100								
Lithium	<0.00500	0.0100								
Molybdenum	<0.00200	0.00500								
Thallium	<0.000500	0.00150								

Sample ID **LCS-76895** Batch ID: **76895** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_160823B** Analysis Date: **8/23/2016 2:49:00 PM** Prep Date: **8/22/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.211	0.00250	0.200	0	106	80	120			
Barium	0.199	0.0100	0.200	0	99.7	80	120			
Beryllium	0.195	0.00100	0.200	0	97.6	80	120			
Cadmium	0.200	0.00100	0.200	0	100	80	120			
Calcium	4.95	0.300	5.00	0	98.9	80	120			
Chromium	0.200	0.00500	0.200	0	99.8	80	120			
Cobalt	0.199	0.00500	0.200	0	99.6	80	120			
Lead	0.199	0.00100	0.200	0	99.3	80	120			
Lithium	0.193	0.0100	0.200	0	96.7	80	120			
Molybdenum	0.195	0.00500	0.200	0	97.6	80	120			
Thallium	0.197	0.00150	0.200	0	98.5	80	120			

Sample ID **LCSD-76895** Batch ID: **76895** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_160823B** Analysis Date: **8/23/2016 2:51:00 PM** Prep Date: **8/22/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.210	0.00250	0.200	0	105	80	120	0.404	15	
Barium	0.199	0.0100	0.200	0	99.6	80	120	0.096	15	
Beryllium	0.194	0.00100	0.200	0	97.1	80	120	0.534	15	
Cadmium	0.200	0.00100	0.200	0	99.8	80	120	0.137	15	
Calcium	4.83	0.300	5.00	0	96.7	80	120	2.29	15	
Chromium	0.196	0.00500	0.200	0	98.2	80	120	1.60	15	
Cobalt	0.200	0.00500	0.200	0	99.9	80	120	0.293	15	
Lead	0.198	0.00100	0.200	0	98.8	80	120	0.463	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160823B

Sample ID **LCSD-76895**	Batch ID: **76895**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCSD**	Run ID: **ICP-MS4_160823B**	Analysis Date: **8/23/2016 2:51:00 PM**	Prep Date: **8/22/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lithium	0.195	0.0100	0.200	0	97.5	80	120	0.771	15	
Molybdenum	0.196	0.00500	0.200	0	98.2	80	120	0.676	15	
Thallium	0.197	0.00150	0.200	0	98.4	80	120	0.125	15	

Sample ID **1608210-05A MS**	Batch ID: **76895**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS4_160823B**	Analysis Date: **8/23/2016 3:18:00 PM**	Prep Date: **8/22/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.186	0.00250	0.200	0.00110	92.5	80	120			
Barium	0.366	0.0100	0.200	0.175	95.9	80	120			
Beryllium	0.123	0.00100	0.200	0.00194	60.3	80	120			S
Cadmium	0.177	0.00100	0.200	0.000340	88.5	80	120			
Calcium	1100	0.300	5.00	1070	657	80	120			S
Chromium	0.329	0.00500	0.200	0.191	68.8	80	120			S
Cobalt	0.190	0.00500	0.200	0.0273	81.1	80	120			
Lead	0.225	0.00100	0.200	0.0238	101	80	120			
Lithium	1.82	0.0100	0.200	1.98	-80.3	80	120			S
Molybdenum	0.197	0.00500	0.200	0.00359	96.6	80	120			
Thallium	0.201	0.00150	0.200	0	100	80	120			

Sample ID **1608210-05A MSD**	Batch ID: **76895**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS4_160823B**	Analysis Date: **8/23/2016 3:20:00 PM**	Prep Date: **8/22/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.175	0.00250	0.200	0.00110	87.1	80	120	6.01	15	
Barium	0.364	0.0100	0.200	0.175	94.5	80	120	0.800	15	
Beryllium	0.118	0.00100	0.200	0.00194	58.0	80	120	3.79	15	S
Cadmium	0.178	0.00100	0.200	0.000340	88.9	80	120	0.375	15	
Calcium	1090	0.300	5.00	1070	503	80	120	0.700	15	S
Chromium	0.318	0.00500	0.200	0.191	63.1	80	120	3.49	15	S
Cobalt	0.189	0.00500	0.200	0.0273	80.6	80	120	0.584	15	
Lead	0.224	0.00100	0.200	0.0238	100	80	120	0.170	15	
Lithium	1.70	0.0100	0.200	1.98	-138	80	120	6.61	15	S
Molybdenum	0.195	0.00500	0.200	0.00359	95.6	80	120	0.984	15	
Thallium	0.202	0.00150	0.200	0	101	80	120	0.458	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160823B

Sample ID **ICV-160823**	Batch ID: **R87756**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_160823B**	Analysis Date: **8/23/2016 11:07:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.104	0.00250	0.100	0	104	90	110			
Arsenic	0.0998	0.00500	0.100	0	99.8	90	110			
Barium	0.0969	0.0100	0.100	0	96.9	90	110			
Beryllium	0.0994	0.00100	0.100	0	99.4	90	110			
Cadmium	0.0990	0.00100	0.100	0	99.0	90	110			
Calcium	2.36	0.300	2.50	0	94.3	90	110			
Chromium	0.105	0.00500	0.100	0	105	90	110			
Cobalt	0.104	0.00500	0.100	0	104	90	110			
Lead	0.101	0.00100	0.100	0	101	90	110			
Lithium	0.0931	0.0100	0.100	0	93.1	90	110			
Molybdenum	0.0962	0.00500	0.100	0	96.2	90	110			
Selenium	0.0991	0.00500	0.100	0	99.1	90	110			
Thallium	0.0984	0.00150	0.100	0	98.4	90	110			

Sample ID **LCVL-160823**	Batch ID: **R87756**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160823B**	Analysis Date: **8/23/2016 11:11:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00222	0.00250	0.00200	0	111	70	130			
Arsenic	0.00516	0.00500	0.00500	0	103	70	130			
Barium	0.00518	0.0100	0.00500	0	104	70	130			
Beryllium	0.00109	0.00100	0.00100	0	109	70	130			
Cadmium	0.00103	0.00100	0.00100	0	103	70	130			
Calcium	0.105	0.300	0.100	0	105	70	130			
Chromium	0.00544	0.00500	0.00500	0	109	70	130			
Cobalt	0.00534	0.00500	0.00500	0	107	70	130			
Lead	0.00107	0.00100	0.00100	0	107	70	130			
Lithium	0.0102	0.0100	0.0100	0	102	70	130			
Molybdenum	0.00527	0.00500	0.00500	0	105	70	130			
Selenium	0.00562	0.00500	0.00500	0	112	70	130			
Thallium	0.00104	0.00150	0.00100	0	104	70	130			

Sample ID **CCV1-160823**	Batch ID: **R87756**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160823B**	Analysis Date: **8/23/2016 11:55:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.203	0.00250	0.200	0	102	90	110			
Arsenic	0.207	0.00500	0.200	0	103	90	110			
Barium	0.204	0.0100	0.200	0	102	90	110			
Beryllium	0.205	0.00100	0.200	0	103	90	110			
Cadmium	0.209	0.00100	0.200	0	104	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160823B

Sample ID **CCV1-160823**	Batch ID: **R87756**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160823B**	Analysis Date: **8/23/2016 11:55:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.78	0.300	5.00	0	95.6	90	110			
Chromium	0.209	0.00500	0.200	0	105	90	110			
Cobalt	0.211	0.00500	0.200	0	106	90	110			
Lead	0.207	0.00100	0.200	0	104	90	110			
Lithium	0.205	0.0100	0.200	0	102	90	110			
Molybdenum	0.210	0.00500	0.200	0	105	90	110			
Selenium	0.203	0.00500	0.200	0	101	90	110			
Thallium	0.205	0.00150	0.200	0	103	90	110			

Sample ID **LCVL1-160823**	Batch ID: **R87756**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160823B**	Analysis Date: **8/23/2016 12:00:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00243	0.00250	0.00200	0	121	70	130			
Arsenic	0.00524	0.00500	0.00500	0	105	70	130			
Barium	0.00523	0.0100	0.00500	0	105	70	130			
Beryllium	0.000968	0.00100	0.00100	0	96.8	70	130			
Cadmium	0.00105	0.00100	0.00100	0	105	70	130			
Calcium	0.0995	0.300	0.100	0	99.5	70	130			
Chromium	0.00534	0.00500	0.00500	0	107	70	130			
Cobalt	0.00537	0.00500	0.00500	0	107	70	130			
Lead	0.00104	0.00100	0.00100	0	104	70	130			
Lithium	0.00961	0.0100	0.0100	0	96.1	70	130			
Molybdenum	0.00520	0.00500	0.00500	0	104	70	130			
Selenium	0.00528	0.00500	0.00500	0	106	70	130			
Thallium	0.00102	0.00150	0.00100	0	102	70	130			

Sample ID **CCV2-160823**	Batch ID: **R87756**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160823B**	Analysis Date: **8/23/2016 12:56:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.210	0.00250	0.200	0	105	90	110			
Arsenic	0.220	0.00500	0.200	0	110	90	110			
Barium	0.210	0.0100	0.200	0	105	90	110			
Beryllium	0.207	0.00100	0.200	0	103	90	110			
Cadmium	0.209	0.00100	0.200	0	105	90	110			
Calcium	4.92	0.300	5.00	0	98.4	90	110			
Chromium	0.206	0.00500	0.200	0	103	90	110			
Cobalt	0.207	0.00500	0.200	0	104	90	110			
Lead	0.208	0.00100	0.200	0	104	90	110			
Lithium	0.214	0.0100	0.200	0	107	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160823B

Sample ID **CCV2-160823**	Batch ID: **R87756**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160823B**	Analysis Date: **8/23/2016 12:56:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Molybdenum	0.205	0.00500	0.200	0	103	90	110			
Selenium	0.216	0.00500	0.200	0	108	90	110			
Thallium	0.206	0.00150	0.200	0	103	90	110			

Sample ID **LCVL2-160823**	Batch ID: **R87756**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160823B**	Analysis Date: **8/23/2016 1:10:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00218	0.00250	0.00200	0	109	70	130			
Arsenic	0.00551	0.00500	0.00500	0	110	70	130			
Barium	0.00522	0.0100	0.00500	0	104	70	130			
Beryllium	0.00101	0.00100	0.00100	0	101	70	130			
Cadmium	0.00106	0.00100	0.00100	0	106	70	130			
Calcium	0.106	0.300	0.100	0	106	70	130			
Chromium	0.00524	0.00500	0.00500	0	105	70	130			
Cobalt	0.00534	0.00500	0.00500	0	107	70	130			
Lead	0.00106	0.00100	0.00100	0	106	70	130			
Lithium	0.00967	0.0100	0.0100	0	96.7	70	130			
Molybdenum	0.00483	0.00500	0.00500	0	96.5	70	130			
Selenium	0.00610	0.00500	0.00500	0	122	70	130			
Thallium	0.00102	0.00150	0.00100	0	102	70	130			

Sample ID **CCV3-160823**	Batch ID: **R87756**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160823B**	Analysis Date: **8/23/2016 1:48:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.210	0.00250	0.200	0	105	90	110			
Arsenic	0.214	0.00500	0.200	0	107	90	110			
Barium	0.211	0.0100	0.200	0	105	90	110			
Beryllium	0.211	0.00100	0.200	0	106	90	110			
Cadmium	0.211	0.00100	0.200	0	106	90	110			
Calcium	4.87	0.300	5.00	0	97.4	90	110			
Chromium	0.211	0.00500	0.200	0	105	90	110			
Cobalt	0.209	0.00500	0.200	0	105	90	110			
Lead	0.208	0.00100	0.200	0	104	90	110			
Lithium	0.213	0.0100	0.200	0	107	90	110			
Molybdenum	0.212	0.00500	0.200	0	106	90	110			
Selenium	0.211	0.00500	0.200	0	105	90	110			
Thallium	0.206	0.00150	0.200	0	103	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160823B

Sample ID **LCVL3-160823**	Batch ID: **R87756**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160823B**	Analysis Date: **8/23/2016 1:58:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00218	0.00250	0.00200	0	109	70	130			
Arsenic	0.00574	0.00500	0.00500	0	115	70	130			
Barium	0.00526	0.0100	0.00500	0	105	70	130			
Beryllium	0.00110	0.00100	0.00100	0	110	70	130			
Cadmium	0.00107	0.00100	0.00100	0	107	70	130			
Calcium	0.104	0.300	0.100	0	104	70	130			
Chromium	0.00545	0.00500	0.00500	0	109	70	130			
Cobalt	0.00536	0.00500	0.00500	0	107	70	130			
Lead	0.00106	0.00100	0.00100	0	106	70	130			
Lithium	0.0114	0.0100	0.0100	0	114	70	130			
Molybdenum	0.00520	0.00500	0.00500	0	104	70	130			
Selenium	0.00575	0.00500	0.00500	0	115	70	130			
Thallium	0.00103	0.00150	0.00100	0	103	70	130			

Sample ID **CCV4-160823**	Batch ID: **R87756**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160823B**	Analysis Date: **8/23/2016 2:23:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.208	0.00250	0.200	0	104	90	110			
Arsenic	0.215	0.00500	0.200	0	108	90	110			
Barium	0.209	0.0100	0.200	0	104	90	110			
Beryllium	0.202	0.00100	0.200	0	101	90	110			
Cadmium	0.207	0.00100	0.200	0	103	90	110			
Calcium	4.84	0.300	5.00	0	96.9	90	110			
Chromium	0.204	0.00500	0.200	0	102	90	110			
Cobalt	0.206	0.00500	0.200	0	103	90	110			
Lead	0.205	0.00100	0.200	0	103	90	110			
Lithium	0.206	0.0100	0.200	0	103	90	110			
Molybdenum	0.204	0.00500	0.200	0	102	90	110			
Selenium	0.214	0.00500	0.200	0	107	90	110			
Thallium	0.203	0.00150	0.200	0	101	90	110			

Sample ID **LCVL4-160823**	Batch ID: **R87756**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160823B**	Analysis Date: **8/23/2016 2:42:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00221	0.00250	0.00200	0	111	70	130			
Arsenic	0.00570	0.00500	0.00500	0	114	70	130			
Barium	0.00543	0.0100	0.00500	0	109	70	130			
Beryllium	0.00108	0.00100	0.00100	0	108	70	130			
Cadmium	0.00105	0.00100	0.00100	0	105	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

Sample ID **LCVL4-160823** Batch ID: **R87756** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_160823B** Analysis Date: **8/23/2016 2:42:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.110	0.300	0.100	0	110	70	130			
Chromium	0.00543	0.00500	0.00500	0	109	70	130			
Cobalt	0.00541	0.00500	0.00500	0	108	70	130			
Lead	0.00109	0.00100	0.00100	0	109	70	130			
Lithium	0.0103	0.0100	0.0100	0	103	70	130			
Molybdenum	0.00510	0.00500	0.00500	0	102	70	130			
Selenium	0.00616	0.00500	0.00500	0	123	70	130			
Thallium	0.00103	0.00150	0.00100	0	103	70	130			

Sample ID **CCV5-160823** Batch ID: **R87756** TestNo: **SW6020A** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_160823B** Analysis Date: **8/23/2016 3:42:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.212	0.00250	0.200	0	106	90	110			
Barium	0.213	0.0100	0.200	0	106	90	110			
Beryllium	0.194	0.00100	0.200	0	97.1	90	110			
Cadmium	0.207	0.00100	0.200	0	103	90	110			
Calcium	4.86	0.300	5.00	0	97.1	90	110			
Chromium	0.202	0.00500	0.200	0	101	90	110			
Cobalt	0.200	0.00500	0.200	0	99.8	90	110			
Lead	0.206	0.00100	0.200	0	103	90	110			
Lithium	0.190	0.0100	0.200	0	94.8	90	110			
Molybdenum	0.201	0.00500	0.200	0	101	90	110			
Thallium	0.204	0.00150	0.200	0	102	90	110			

Sample ID **LCVL5-160823** Batch ID: **R87756** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_160823B** Analysis Date: **8/23/2016 3:52:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00221	0.00250	0.00200	0	111	70	130			
Barium	0.00522	0.0100	0.00500	0	104	70	130			
Beryllium	0.00102	0.00100	0.00100	0	102	70	130			
Cadmium	0.00105	0.00100	0.00100	0	105	70	130			
Calcium	0.111	0.300	0.100	0	111	70	130			
Chromium	0.00518	0.00500	0.00500	0	104	70	130			
Cobalt	0.00517	0.00500	0.00500	0	103	70	130			
Lead	0.00103	0.00100	0.00100	0	103	70	130			
Lithium	0.0111	0.0100	0.0100	0	111	70	130			
Molybdenum	0.00497	0.00500	0.00500	0	99.4	70	130			
Thallium	0.00100	0.00150	0.00100	0	100	70	130			

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160824B

The QC data in batch 76893 applies to the following samples: 1608133-16A, 1608133-17A, 1608133-18A, 1608133-19A, 1608133-20A, 1608133-21A, 1608133-22A

Sample ID **MB-76893** Batch ID: **76893** TestNo: **SW6020A** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_160824B** Analysis Date: **8/24/2016 3:18:00 PM** Prep Date: **8/22/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	<0.0100	0.0300								

Sample ID **LCS-76893** Batch ID: **76893** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_160824B** Analysis Date: **8/24/2016 3:20:00 PM** Prep Date: **8/22/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.206	0.0300	0.200	0	103	80	120			

Sample ID **LCSD-76893** Batch ID: **76893** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_160824B** Analysis Date: **8/24/2016 3:22:00 PM** Prep Date: **8/22/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.195	0.0300	0.200	0	97.3	80	120	5.62	15	

Sample ID **1608181-05A SD** Batch ID: **76893** TestNo: **SW6020A** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS4_160824B** Analysis Date: **8/24/2016 3:28:00 PM** Prep Date: **8/22/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	548	150	0	544				0.634	10	

Sample ID **1608181-05A PDS** Batch ID: **76893** TestNo: **SW6020A** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS4_160824B** Analysis Date: **8/24/2016 3:49:00 PM** Prep Date: **8/22/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	1010	30.0	500	544	92.7	80	120			

Sample ID **1608181-05A MS** Batch ID: **76893** TestNo: **SW6020A** Units: **mg/L**
SampType: **MS** Run ID: **ICP-MS4_160824B** Analysis Date: **8/24/2016 3:51:00 PM** Prep Date: **8/22/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	1.18	3.00	0.200	1.11	36.1	80	120			S

Sample ID **1608181-05A MSD** Batch ID: **76893** TestNo: **SW6020A** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS4_160824B** Analysis Date: **8/24/2016 3:53:00 PM** Prep Date: **8/22/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	1.43	3.00	0.200	1.11	161	80	120	19.1	15	SR

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160824B

Sample ID **1608181-05A SD**	Batch ID: **76893**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS4_160824B**	Analysis Date: **8/24/2016 4:14:00 PM**	Prep Date: **8/22/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.669	0.300	0	0.596				11.6	10	R

Sample ID **1608181-05A PDS**	Batch ID: **76893**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_160824B**	Analysis Date: **8/24/2016 4:16:00 PM**	Prep Date: **8/22/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.979	0.0600	0.400	0.596	95.8	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160824B

The QC data in batch 76895 applies to the following samples: 1608133-23A, 1608133-24A, 1608133-25A, 1608133-26A, 1608133-27A

Sample ID **MB-76895** Batch ID: **76895** TestNo: **SW6020A** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_160824B** Analysis Date: **8/24/2016 6:11:00 PM** Prep Date: **8/22/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	<0.00200	0.00500								
Boron	<0.0100	0.0300								
Selenium	<0.00200	0.00500								

Sample ID **LCS-76895** Batch ID: **76895** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_160824B** Analysis Date: **8/24/2016 6:13:00 PM** Prep Date: **8/22/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.191	0.00500	0.200	0	95.6	80	120			
Boron	0.206	0.0300	0.200	0	103	80	120			
Selenium	0.196	0.00500	0.200	0	97.9	80	120			

Sample ID **LCSD-76895** Batch ID: **76895** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_160824B** Analysis Date: **8/24/2016 6:15:00 PM** Prep Date: **8/22/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.190	0.00500	0.200	0	95.1	80	120	0.519	15	
Boron	0.205	0.0300	0.200	0	103	80	120	0.554	15	
Selenium	0.194	0.00500	0.200	0	97.1	80	120	0.779	15	

Sample ID **1608210-05A SD** Batch ID: **76895** TestNo: **SW6020A** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS4_160824B** Analysis Date: **8/24/2016 7:51:00 PM** Prep Date: **8/22/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	1020	150	0	1020				0.169	10	
Lithium	3.35	5.00	0	3.44				2.39	10	

Sample ID **1608210-05A PDS** Batch ID: **76895** TestNo: **SW6020A** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS4_160824B** Analysis Date: **8/24/2016 8:11:00 PM** Prep Date: **8/22/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	1500	30.0	500	1020	96.1	80	120			
Lithium	24.0	1.00	20.0	3.44	103	80	120			

Sample ID **1608210-05A MS** Batch ID: **76895** TestNo: **SW6020A** Units: **mg/L**
SampType: **MS** Run ID: **ICP-MS4_160824B** Analysis Date: **8/24/2016 8:13:00 PM** Prep Date: **8/22/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.238	0.500	0.200	0	119	80	120			
Boron	5.34	3.00	0.200	4.69	326	80	120			S

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160824B

Sample ID **1608210-05A MS**	Batch ID: **76895**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS4_160824B**	Analysis Date: **8/24/2016 8:13:00 PM**	Prep Date: **8/22/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.266	0.500	0.200	0	133	80	120			S

Sample ID **1608210-05A MSD**	Batch ID: **76895**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS4_160824B**	Analysis Date: **8/24/2016 8:15:00 PM**	Prep Date: **8/22/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.216	0.500	0.200	0	108	80	120	9.91	15	
Boron	5.41	3.00	0.200	4.69	357	80	120	1.18	15	S
Selenium	0.211	0.500	0.200	0	105	80	120	23.1	15	R

Sample ID **1608210-05A SD**	Batch ID: **76895**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS4_160824B**	Analysis Date: **8/24/2016 8:41:00 PM**	Prep Date: **8/22/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.0400	0.125	0	0				0	10	
Arsenic	<0.100	0.250	0	0				0	10	
Barium	0.170	0.500	0	0.164				3.63	10	
Beryllium	<0.0150	0.0500	0	0				0	10	
Boron	4.57	1.50	0	4.16				9.40	10	
Cadmium	<0.0150	0.0500	0	0				0	10	
Chromium	0.224	0.250	0	0.220				2.14	10	
Cobalt	<0.150	0.250	0	0.0308				0	10	
Lead	0.0218	0.0500	0	0.0219				0.137	10	
Molybdenum	<0.100	0.250	0	0				0	10	
Selenium	<0.100	0.250	0	0				0	10	
Thallium	<0.0250	0.0750	0	0				0	10	

Sample ID **1608210-05A PDS**	Batch ID: **76895**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_160824B**	Analysis Date: **8/24/2016 8:51:00 PM**	Prep Date: **8/22/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	1.97	0.0250	2.00	0	98.3	80	120			
Arsenic	2.00	0.0500	2.00	0	100	80	120			
Barium	2.07	0.100	2.00	0.164	95.2	80	120			
Beryllium	1.84	0.0100	2.00	0	92.0	80	120			
Boron	5.78	0.300	2.00	4.16	80.9	80	120			
Cadmium	1.73	0.0100	2.00	0	86.5	80	120			
Chromium	2.08	0.0500	2.00	0.220	93.0	80	120			
Cobalt	1.90	0.0500	2.00	0.0308	93.6	80	120			
Lead	1.84	0.0100	2.00	0.0219	90.7	80	120			
Molybdenum	1.79	0.0500	2.00	0	89.5	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160824B

Sample ID **1608210-05A PDS** Batch ID: **76895** TestNo: **SW6020A** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS4_160824B** Analysis Date: **8/24/2016 8:51:00 PM** Prep Date: **8/22/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	2.00	0.0500	2.00	0	99.9	80	120			
Thallium	1.82	0.0150	2.00	0	90.8	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank
J	Analyte detected between MDL and RL
ND	Not Detected at the Method Detection Limit
RL	Reporting Limit
J	Analyte detected between SDL and RL
DF	Dilution Factor
MDL	Method Detection Limit
R	RPD outside accepted control limits
S	Spike Recovery outside control limits
N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160824B

Sample ID **ICV2-160824**	Batch ID: **R87787**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_160824B**	Analysis Date: **8/24/2016 1:09:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.105	0.00250	0.100	0	105	90	110			
Arsenic	0.102	0.00500	0.100	0	102	90	110			
Barium	0.101	0.0100	0.100	0	101	90	110			
Beryllium	0.102	0.00100	0.100	0	102	90	110			
Boron	0.0984	0.0300	0.100	0	98.4	90	110			
Cadmium	0.0993	0.00100	0.100	0	99.3	90	110			
Calcium	2.41	0.300	2.50	0	96.5	90	110			
Chromium	0.107	0.00500	0.100	0	107	90	110			
Cobalt	0.105	0.00500	0.100	0	105	90	110			
Lead	0.100	0.00100	0.100	0	100	90	110			
Lithium	0.0948	0.0100	0.100	0	94.8	90	110			
Molybdenum	0.0973	0.00500	0.100	0	97.3	90	110			
Selenium	0.101	0.00500	0.100	0	101	90	110			
Thallium	0.0998	0.00150	0.100	0	99.8	90	110			

Sample ID **ILCVL2-160824**	Batch ID: **R87787**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160824B**	Analysis Date: **8/24/2016 1:23:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00205	0.00250	0.00200	0	103	70	130			
Arsenic	0.00513	0.00500	0.00500	0	103	70	130			
Barium	0.00491	0.0100	0.00500	0	98.2	70	130			
Beryllium	0.00105	0.00100	0.00100	0	105	70	130			
Boron	0.0223	0.0300	0.0200	0	111	70	130			
Cadmium	0.000996	0.00100	0.00100	0	99.6	70	130			
Calcium	0.0954	0.300	0.100	0	95.4	70	130			
Chromium	0.00509	0.00500	0.00500	0	102	70	130			
Cobalt	0.00515	0.00500	0.00500	0	103	70	130			
Lead	0.000995	0.00100	0.00100	0	99.5	70	130			
Lithium	0.00919	0.0100	0.0100	0	91.9	70	130			
Molybdenum	0.00496	0.00500	0.00500	0	99.2	70	130			
Selenium	0.00548	0.00500	0.00500	0	110	70	130			
Thallium	0.000998	0.00150	0.00100	0	99.8	70	130			

Sample ID **CCV3-140402**	Batch ID: **R87787**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160824B**	Analysis Date: **8/24/2016 2:50:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.207	0.0300	0.200	0	103	90	110			
Calcium	4.75	0.300	5.00	0	95.0	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160824B

Sample ID **LCVL3-140402**	Batch ID: **R87787**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160824B**	Analysis Date: **8/24/2016 3:05:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0234	0.0300	0.0200	0	117	70	130			
Calcium	0.0955	0.300	0.100	0	95.5	70	130			

Sample ID **CCV4-160824**	Batch ID: **R87787**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160824B**	Analysis Date: **8/24/2016 3:55:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.209	0.0300	0.200	0	104	90	110			
Calcium	4.79	0.300	5.00	0	95.8	90	110			

Sample ID **LCVL4-160824**	Batch ID: **R87787**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160824B**	Analysis Date: **8/24/2016 4:03:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0229	0.0300	0.0200	0	115	70	130			
Calcium	0.0911	0.300	0.100	0	91.1	70	130			

Sample ID **CCV5-160824**	Batch ID: **R87787**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160824B**	Analysis Date: **8/24/2016 5:12:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.217	0.0300	0.200	0	109	90	110			
Calcium	4.74	0.300	5.00	0	94.7	90	110			

Sample ID **LCVL5-160824**	Batch ID: **R87787**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160824B**	Analysis Date: **8/24/2016 5:24:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0246	0.0300	0.0200	0	123	70	130			
Calcium	0.0910	0.300	0.100	0	91.0	70	130			

Sample ID **CCV6-160824**	Batch ID: **R87787**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160824B**	Analysis Date: **8/24/2016 5:57:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.193	0.00500	0.200	0	96.6	90	110			
Boron	0.211	0.0300	0.200	0	105	90	110			
Calcium	4.75	0.300	5.00	0	95.0	90	110			
Selenium	0.196	0.00500	0.200	0	98.1	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160824B

Sample ID **LCVL6-160824** Batch ID: **R87787** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_160824B** Analysis Date: **8/24/2016 6:07:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.00490	0.00500	0.00500	0	98.1	70	130			
Boron	0.0223	0.0300	0.0200	0	111	70	130			
Calcium	0.0897	0.300	0.100	0	89.7	70	130			
Selenium	0.00526	0.00500	0.00500	0	105	70	130			

Sample ID **CCV7-160824** Batch ID: **R87787** TestNo: **SW6020A** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_160824B** Analysis Date: **8/24/2016 6:52:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.192	0.00500	0.200	0	96.2	90	110			
Boron	0.210	0.0300	0.200	0	105	90	110			
Calcium	4.77	0.300	5.00	0	95.4	90	110			
Selenium	0.199	0.00500	0.200	0	99.3	90	110			

Sample ID **LCVL7-160824** Batch ID: **R87787** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_160824B** Analysis Date: **8/24/2016 7:02:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.00485	0.00500	0.00500	0	97.0	70	130			
Boron	0.0239	0.0300	0.0200	0	120	70	130			
Calcium	0.0928	0.300	0.100	0	92.8	70	130			
Selenium	0.00478	0.00500	0.00500	0	95.6	70	130			

Sample ID **CCV8-160824** Batch ID: **R87787** TestNo: **SW6020A** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_160824B** Analysis Date: **8/24/2016 7:35:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.190	0.00500	0.200	0	95.2	90	110			
Boron	0.206	0.0300	0.200	0	103	90	110			
Calcium	4.69	0.300	5.00	0	93.9	90	110			
Lithium	0.216	0.0100	0.200	0	108	90	110			
Selenium	0.194	0.00500	0.200	0	97.1	90	110			

Sample ID **LCVL8-160824** Batch ID: **R87787** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_160824B** Analysis Date: **8/24/2016 7:45:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.00499	0.00500	0.00500	0	99.7	70	130			
Boron	0.0223	0.0300	0.0200	0	111	70	130			
Calcium	0.0958	0.300	0.100	0	95.8	70	130			
Lithium	0.0105	0.0100	0.0100	0	105	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160824B

Sample ID **LCVL8-160824**	Batch ID: **R87787**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160824B**	Analysis Date: **8/24/2016 7:45:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.00528	0.00500	0.00500	0	106	70	130			

Sample ID **CCV9-160824**	Batch ID: **R87787**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160824B**	Analysis Date: **8/24/2016 8:25:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.193	0.00250	0.200	0	96.7	90	110			
Arsenic	0.194	0.00500	0.200	0	96.8	90	110			
Barium	0.193	0.0100	0.200	0	96.5	90	110			
Beryllium	0.203	0.00100	0.200	0	101	90	110			
Boron	0.212	0.0300	0.200	0	106	90	110			
Cadmium	0.187	0.00100	0.200	0	93.4	90	110			
Calcium	4.81	0.300	5.00	0	96.2	90	110			
Chromium	0.193	0.00500	0.200	0	96.6	90	110			
Cobalt	0.194	0.00500	0.200	0	97.1	90	110			
Lead	0.185	0.00100	0.200	0	92.6	90	110			
Lithium	0.219	0.0100	0.200	0	110	90	110			
Molybdenum	0.188	0.00500	0.200	0	94.0	90	110			
Selenium	0.200	0.00500	0.200	0	99.9	90	110			
Thallium	0.185	0.00150	0.200	0	92.7	90	110			

Sample ID **LCVL9-160824**	Batch ID: **R87787**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160824B**	Analysis Date: **8/24/2016 8:35:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00200	0.00250	0.00200	0	100	70	130			
Arsenic	0.00502	0.00500	0.00500	0	100	70	130			
Barium	0.00491	0.0100	0.00500	0	98.2	70	130			
Beryllium	0.000978	0.00100	0.00100	0	97.8	70	130			
Boron	0.0235	0.0300	0.0200	0	117	70	130			
Cadmium	0.00100	0.00100	0.00100	0	100	70	130			
Calcium	0.101	0.300	0.100	0	101	70	130			
Chromium	0.00504	0.00500	0.00500	0	101	70	130			
Cobalt	0.00506	0.00500	0.00500	0	101	70	130			
Lead	0.000944	0.00100	0.00100	0	94.4	70	130			
Lithium	0.0103	0.0100	0.0100	0	103	70	130			
Molybdenum	0.00456	0.00500	0.00500	0	91.1	70	130			
Selenium	0.00508	0.00500	0.00500	0	102	70	130			
Thallium	0.000931	0.00150	0.00100	0	93.1	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160824B

Sample ID **CCV10-160824**	Batch ID: **R87787**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160824B**	Analysis Date: **8/24/2016 9:02:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.191	0.00250	0.200	0	95.4	90	110			
Arsenic	0.195	0.00500	0.200	0	97.3	90	110			
Barium	0.193	0.0100	0.200	0	96.5	90	110			
Beryllium	0.204	0.00100	0.200	0	102	90	110			
Boron	0.213	0.0300	0.200	0	106	90	110			
Cadmium	0.185	0.00100	0.200	0	92.4	90	110			
Chromium	0.193	0.00500	0.200	0	96.4	90	110			
Cobalt	0.193	0.00500	0.200	0	96.7	90	110			
Lead	0.184	0.00100	0.200	0	92.1	90	110			
Molybdenum	0.185	0.00500	0.200	0	92.6	90	110			
Selenium	0.201	0.00500	0.200	0	100	90	110			
Thallium	0.185	0.00150	0.200	0	92.7	90	110			

Sample ID **LCVL10-160824**	Batch ID: **R87787**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160824B**	Analysis Date: **8/24/2016 9:12:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00192	0.00250	0.00200	0	96.2	70	130			
Arsenic	0.00497	0.00500	0.00500	0	99.4	70	130			
Barium	0.00487	0.0100	0.00500	0	97.5	70	130			
Beryllium	0.00120	0.00100	0.00100	0	120	70	130			
Boron	0.0213	0.0300	0.0200	0	107	70	130			
Cadmium	0.000888	0.00100	0.00100	0	88.8	70	130			
Chromium	0.00499	0.00500	0.00500	0	99.7	70	130			
Cobalt	0.00504	0.00500	0.00500	0	101	70	130			
Lead	0.000929	0.00100	0.00100	0	92.9	70	130			
Molybdenum	0.00454	0.00500	0.00500	0	90.7	70	130			
Selenium	0.00556	0.00500	0.00500	0	111	70	130			
Thallium	0.000937	0.00150	0.00100	0	93.7	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_160825A

Sample ID **ICV-160825**	Batch ID: **R87816**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_160825A**	Analysis Date: **8/25/2016 2:28:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	2.34	0.300	2.50	0	93.6	90	110			
Lithium	0.100	0.0100	0.100	0	100	90	110			

Sample ID **LCVL-160825**	Batch ID: **R87816**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160825A**	Analysis Date: **8/25/2016 2:33:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.0943	0.300	0.100	0	94.3	70	130			
Lithium	0.0110	0.0100	0.0100	0	110	70	130			

Sample ID **CCV1-160825**	Batch ID: **R87816**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160825A**	Analysis Date: **8/25/2016 3:19:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.63	0.300	5.00	0	92.5	90	110			
Lithium	0.187	0.0100	0.200	0	93.3	90	110			

Sample ID **LCVL1-160825**	Batch ID: **R87816**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160825A**	Analysis Date: **8/25/2016 3:34:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.0931	0.300	0.100	0	93.1	70	130			
Lithium	0.00905	0.0100	0.0100	0	90.5	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

Sample ID **ICV-160826**	Batch ID: **R87821**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_160826B**	Analysis Date: **8/26/2016 11:10:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.100	0.00100	0.100	0	100	90	110			

Sample ID **LCVL-160826**	Batch ID: **R87821**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160826B**	Analysis Date: **8/26/2016 11:15:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.000927	0.00100	0.00100	0	92.7	70	130			

Sample ID **CCV1-160826**	Batch ID: **R87821**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160826B**	Analysis Date: **8/26/2016 11:41:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.197	0.00100	0.200	0	98.7	90	110			

Sample ID **LCVL1-160826**	Batch ID: **R87821**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160826B**	Analysis Date: **8/26/2016 11:52:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.000948	0.00100	0.00100	0	94.8	70	130			

Sample ID **CCV2-160826**	Batch ID: **R87821**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_160826B**	Analysis Date: **8/26/2016 12:36:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.207	0.00100	0.200	0	103	90	110			

Sample ID **LCVL2-160826**	Batch ID: **R87821**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_160826B**	Analysis Date: **8/26/2016 12:41:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.00119	0.00100	0.00100	0	119	70	130			

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_160815A

The QC data in batch 76808 applies to the following samples: 1608133-01D, 1608133-02D, 1608133-03D, 1608133-04D, 1608133-05D, 1608133-06D, 1608133-07D, 1608133-08D, 1608133-09D

Sample ID **MB-76808** Batch ID: **76808** TestNo: **E300** Units: **mg/L**
SampType: **MBLK** Run ID: **IC4_160815A** Analysis Date: **8/15/2016 10:51:35 AM** Prep Date: **8/15/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00								
Fluoride	<0.100	0.400								
Sulfate	<1.00	3.00								

Sample ID **LCS-76808** Batch ID: **76808** TestNo: **E300** Units: **mg/L**
SampType: **LCS** Run ID: **IC4_160815A** Analysis Date: **8/15/2016 11:06:35 AM** Prep Date: **8/15/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.2	1.00	10.00	0	102	90	110			
Fluoride	3.99	0.400	4.000	0	99.7	90	110			
Sulfate	31.4	3.00	30.00	0	105	90	110			

Sample ID **LCSD-76808** Batch ID: **76808** TestNo: **E300** Units: **mg/L**
SampType: **LCSD** Run ID: **IC4_160815A** Analysis Date: **8/15/2016 11:21:35 AM** Prep Date: **8/15/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.2	1.00	10.00	0	102	90	110	0.064	20	
Fluoride	4.00	0.400	4.000	0	99.9	90	110	0.229	20	
Sulfate	31.5	3.00	30.00	0	105	90	110	0.566	20	

Sample ID **1608133-07DMS** Batch ID: **76808** TestNo: **E300** Units: **mg/L**
SampType: **MS** Run ID: **IC4_160815A** Analysis Date: **8/15/2016 6:13:34 PM** Prep Date: **8/15/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	278	10.0	200.0	64.88	107	90	110			
Fluoride	202	4.00	200.0	0	101	90	110			
Sulfate	334	30.0	200.0	119.9	107	90	110			

Sample ID **1608133-07DMSD** Batch ID: **76808** TestNo: **E300** Units: **mg/L**
SampType: **MSD** Run ID: **IC4_160815A** Analysis Date: **8/15/2016 6:28:34 PM** Prep Date: **8/15/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	280	10.0	200.0	64.88	107	90	110	0.468	20	
Fluoride	203	4.00	200.0	0	101	90	110	0.428	20	
Sulfate	335	30.0	200.0	119.9	107	90	110	0.194	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_160815A

Sample ID **ICV-160815**	Batch ID: **R87629**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC4_160815A**	Analysis Date: **8/15/2016 10:15:59 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	25.6	1.00	25.00	0	102	90	110			
Fluoride	9.79	0.400	10.00	0	97.9	90	110			
Sulfate	78.7	3.00	75.00	0	105	90	110			

Sample ID **CCV1-160815**	Batch ID: **R87629**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC4_160815A**	Analysis Date: **8/15/2016 2:54:08 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.5	1.00	10.00	0	105	90	110			
Fluoride	4.05	0.400	4.000	0	101	90	110			
Sulfate	32.5	3.00	30.00	0	108	90	110			

Sample ID **CCV2-160815**	Batch ID: **R87629**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC4_160815A**	Analysis Date: **8/15/2016 6:58:34 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.5	1.00	10.00	0	105	90	110			
Fluoride	4.07	0.400	4.000	0	102	90	110			
Sulfate	32.1	3.00	30.00	0	107	90	110			

Sample ID **CCV3-160815**	Batch ID: **R87629**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC4_160815A**	Analysis Date: **8/15/2016 8:28:34 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.5	1.00	10.00	0	105	90	110			
Fluoride	4.09	0.400	4.000	0	102	90	110			
Sulfate	32.1	3.00	30.00	0	107	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_160816A

The QC data in batch 76820 applies to the following samples: 1608133-10D, 1608133-11D, 1608133-12D, 1608133-13D, 1608133-14D, 1608133-15D, 1608133-16D, 1608133-17D, 1608133-18D

Sample ID	**MB-76820**	Batch ID:	**76820**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**IC4_160816A**	Analysis Date:	**8/16/2016 10:21:13 AM**	Prep Date:	**8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00								
Fluoride	<0.100	0.400								
Sulfate	<1.00	3.00								

Sample ID	**LCS-76820**	Batch ID:	**76820**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**IC4_160816A**	Analysis Date:	**8/16/2016 10:36:13 AM**	Prep Date:	**8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.5	1.00	10.00	0	105	90	110			
Fluoride	4.00	0.400	4.000	0	99.9	90	110			
Sulfate	32.1	3.00	30.00	0	107	90	110			

Sample ID	**LCSD-76820**	Batch ID:	**76820**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**LCSD**	Run ID:	**IC4_160816A**	Analysis Date:	**8/16/2016 10:51:13 AM**	Prep Date:	**8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.5	1.00	10.00	0	105	90	110	0.125	20	
Fluoride	4.02	0.400	4.000	0	100	90	110	0.579	20	
Sulfate	32.1	3.00	30.00	0	107	90	110	0.230	20	

Sample ID	**1608133-10DMS**	Batch ID:	**76820**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**MS**	Run ID:	**IC4_160816A**	Analysis Date:	**8/16/2016 3:07:33 PM**	Prep Date:	**8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	345	10.0	200.0	135.6	105	90	110			
Fluoride	201	4.00	200.0	0	101	90	110			
Sulfate	321	30.0	200.0	104.7	108	90	110			

Sample ID	**1608133-10DMSD**	Batch ID:	**76820**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**MSD**	Run ID:	**IC4_160816A**	Analysis Date:	**8/16/2016 3:22:33 PM**	Prep Date:	**8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	346	10.0	200.0	135.6	105	90	110	0.130	20	
Fluoride	202	4.00	200.0	0	101	90	110	0.556	20	
Sulfate	322	30.0	200.0	104.7	109	90	110	0.536	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_160816A

Sample ID **ICV-160816**	Batch ID: **R87647**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC4_160816A**	Analysis Date: **8/16/2016 9:44:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	26.1	1.00	25.00	0	104	90	110			
Fluoride	9.82	0.400	10.00	0	98.2	90	110			
Sulfate	80.4	3.00	75.00	0	107	90	110			

Sample ID **CCV1-160816**	Batch ID: **R87647**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC4_160816A**	Analysis Date: **8/16/2016 1:57:44 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.5	1.00	10.00	0	105	90	110			
Fluoride	4.06	0.400	4.000	0	102	90	110			
Sulfate	32.3	3.00	30.00	0	108	90	110			

Sample ID **CCV2-160816**	Batch ID: **R87647**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC4_160816A**	Analysis Date: **8/16/2016 4:22:33 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.6	1.00	10.00	0	106	90	110			
Fluoride	4.06	0.400	4.000	0	102	90	110			
Sulfate	32.4	3.00	30.00	0	108	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_160817A

The QC data in batch 76838 applies to the following samples: 1608133-19D, 1608133-20D, 1608133-21D, 1608133-22D, 1608133-23D, 1608133-24D, 1608133-25D, 1608133-26D, 1608133-27D

Sample ID **MB-76838** Batch ID: **76838** TestNo: **E300** Units: **mg/L**
SampType: **MBLK** Run ID: **IC4_160817A** Analysis Date: **8/17/2016 10:32:13 AM** Prep Date: **8/17/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00								
Fluoride	<0.100	0.400								
Sulfate	<1.00	3.00								

Sample ID **LCS-76838** Batch ID: **76838** TestNo: **E300** Units: **mg/L**
SampType: **LCS** Run ID: **IC4_160817A** Analysis Date: **8/17/2016 10:47:13 AM** Prep Date: **8/17/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.4	1.00	10.00	0	104	90	110			
Fluoride	3.90	0.400	4.000	0	97.4	90	110			
Sulfate	31.7	3.00	30.00	0	106	90	110			

Sample ID **LCSD-76838** Batch ID: **76838** TestNo: **E300** Units: **mg/L**
SampType: **LCSD** Run ID: **IC4_160817A** Analysis Date: **8/17/2016 11:02:13 AM** Prep Date: **8/17/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.5	1.00	10.00	0	105	90	110	0.354	20	
Fluoride	4.04	0.400	4.000	0	101	90	110	3.66	20	
Sulfate	31.8	3.00	30.00	0	106	90	110	0.411	20	

Sample ID **1608133-27DMS** Batch ID: **76838** TestNo: **E300** Units: **mg/L**
SampType: **MS** Run ID: **IC4_160817A** Analysis Date: **8/17/2016 4:26:31 PM** Prep Date: **8/17/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	2540	100	2000	424.7	106	90	110			
Fluoride	1990	40.0	2000	0	99.5	90	110			
Sulfate	2600	300	2000	483.6	106	90	110			

Sample ID **1608133-27DMSD** Batch ID: **76838** TestNo: **E300** Units: **mg/L**
SampType: **MSD** Run ID: **IC4_160817A** Analysis Date: **8/17/2016 4:41:31 PM** Prep Date: **8/17/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	2570	100	2000	424.7	107	90	110	1.18	20	
Fluoride	2020	40.0	2000	0	101	90	110	1.31	20	
Sulfate	2630	300	2000	483.6	107	90	110	1.16	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_160817A

Sample ID **ICV-160817**	Batch ID: **R87682**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC4_160817A**	Analysis Date: **8/17/2016 9:50:02 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	26.1	1.00	25.00	0	104	90	110			
Fluoride	9.78	0.400	10.00	0	97.8	90	110			
Sulfate	80.2	3.00	75.00	0	107	90	110			

Sample ID **CCV1-160817**	Batch ID: **R87682**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC4_160817A**	Analysis Date: **8/17/2016 2:01:29 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.6	1.00	10.00	0	106	90	110			
Fluoride	3.95	0.400	4.000	0	98.6	90	110			
Sulfate	32.3	3.00	30.00	0	108	90	110			

Sample ID **CCV2-160817**	Batch ID: **R87682**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC4_160817A**	Analysis Date: **8/17/2016 5:11:31 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.5	1.00	10.00	0	105	90	110			
Fluoride	3.97	0.400	4.000	0	99.2	90	110			
Sulfate	32.1	3.00	30.00	0	107	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_160816A

The QC data in batch 76818 applies to the following samples: 1608133-01D, 1608133-02D, 1608133-03D, 1608133-04D, 1608133-05D, 1608133-06D, 1608133-07D, 1608133-08D, 1608133-09D, 1608133-10D

Sample ID	**1608119-02D-DUP**	Batch ID:	**76818**	TestNo:	**M4500-H+ B**	Units:	**pH Units@18.9℃**
SampType:	**DUP**	Run ID:	**TITRATOR_160816A**	Analysis Date:	**8/16/2016 9:53:00 AM**	Prep Date:	**8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	7.34	0	0	7.360				0.272	5	

Sample ID	**1608133-10D-DUP**	Batch ID:	**76818**	TestNo:	**M4500-H+ B**	Units:	**pH Units@17.7℃**
SampType:	**DUP**	Run ID:	**TITRATOR_160816A**	Analysis Date:	**8/16/2016 10:55:00 AM**	Prep Date:	**8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	6.18	0	0	6.190				0.162	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_160816A

Sample ID	**ICV-160816**	Batch ID:	**R87635**	TestNo:	**M4500-H+ B**	Units:	**pH Units@22℃**
SampType:	**ICV**	Run ID:	**TITRATOR_160816A**	Analysis Date:	**8/16/2016 8:52:00 AM**	Prep Date:	**8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	9.93	0	10.00	0	99.3	99	101			

Sample ID	**CCV1-160816**	Batch ID:	**R87635**	TestNo:	**M4500-H+ B**	Units:	**pH Units@20.6℃**
SampType:	**CCV**	Run ID:	**TITRATOR_160816A**	Analysis Date:	**8/16/2016 10:11:00 AM**	Prep Date:	**8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	6.97	0	7.000	0	99.6	97.1	102.9			

Sample ID	**CCV2-160816**	Batch ID:	**R87635**	TestNo:	**M4500-H+ B**	Units:	**pH Units@21℃**
SampType:	**CCV**	Run ID:	**TITRATOR_160816A**	Analysis Date:	**8/16/2016 10:45:00 AM**	Prep Date:	**8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	6.96	0	7.000	0	99.4	97.1	102.9			

Sample ID	**CCV3-160816**	Batch ID:	**R87635**	TestNo:	**M4500-H+ B**	Units:	**pH Units@21.4℃**
SampType:	**CCV**	Run ID:	**TITRATOR_160816A**	Analysis Date:	**8/16/2016 10:56:00 AM**	Prep Date:	**8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	6.96	0	7.000	0	99.4	97.1	102.9			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_160817B

The QC data in batch 76839 applies to the following samples: 1608133-11D, 1608133-12D, 1608133-13D, 1608133-14D, 1608133-15D, 1608133-16D, 1608133-17D, 1608133-18D, 1608133-19D, 1608133-20D, 1608133-21D, 1608133-22D, 1608133-23D, 1608133-24D, 1608133-25D, 1608133-26D, 1608133-27D

Sample ID **1608133-11D-DUP** Batch ID: **76839** TestNo: **M4500-H+ B** Units: **pH Units@20℃**
SampType: **DUP** Run ID: **TITRATOR_160817B** Analysis Date: **8/17/2016 11:16:00 AM** Prep Date: **8/17/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	4.54	0	0	4.530				0.221	5	

Sample ID **1608133-21D-DUP** Batch ID: **76839** TestNo: **M4500-H+ B** Units: **pH Units@20.7℃**
SampType: **DUP** Run ID: **TITRATOR_160817B** Analysis Date: **8/17/2016 11:43:00 AM** Prep Date: **8/17/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	6.77	0	0	6.750				0.296	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_160817B

Sample ID	**ICV-160817**	Batch ID:	**R87653**	TestNo:	**M4500-H+ B**	Units:	**pH Units@22.2℃**
SampType:	**ICV**	Run ID:	**TITRATOR_160817B**	Analysis Date:	**8/17/2016 9:01:00 AM**	Prep Date:	**8/17/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	9.93	0	10.00	0	99.3	99	101			

Sample ID	**CCV1-160817**	Batch ID:	**R87653**	TestNo:	**M4500-H+ B**	Units:	**pH Units@22.3℃**
SampType:	**CCV**	Run ID:	**TITRATOR_160817B**	Analysis Date:	**8/17/2016 10:30:00 AM**	Prep Date:	**8/17/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	6.98	0	7.000	0	99.7	97.1	102.9			

Sample ID	**CCV2-160817**	Batch ID:	**R87653**	TestNo:	**M4500-H+ B**	Units:	**pH Units@21.7℃**
SampType:	**CCV**	Run ID:	**TITRATOR_160817B**	Analysis Date:	**8/17/2016 11:37:00 AM**	Prep Date:	**8/17/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	6.96	0	7.000	0	99.4	97.1	102.9			

Sample ID	**CCV3-160817**	Batch ID:	**R87653**	TestNo:	**M4500-H+ B**	Units:	**pH Units@22℃**
SampType:	**CCV**	Run ID:	**TITRATOR_160817B**	Analysis Date:	**8/17/2016 11:58:00 AM**	Prep Date:	**8/17/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	6.97	0	7.000	0	99.6	97.1	102.9			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: WC_160815A

The QC data in batch 76803 applies to the following samples: 1608133-01D, 1608133-02D, 1608133-03D, 1608133-04D, 1608133-05D

Sample ID **MB-76803**	Batch ID: **76803**	TestNo: **M2540C**	Units: **mg/L**
SampType: **MBLK**	Run ID: **WC_160815A**	Analysis Date: **8/16/2016 8:42:00 AM**	Prep Date: **8/15/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	<10.0	10.0								

Sample ID **LCS-76803**	Batch ID: **76803**	TestNo: **M2540C**	Units: **mg/L**
SampType: **LCS**	Run ID: **WC_160815A**	Analysis Date: **8/16/2016 8:42:00 AM**	Prep Date: **8/15/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	761	10.0	745.6	0	102	90	113			

Sample ID **1608117-05C-DUP**	Batch ID: **76803**	TestNo: **M2540C**	Units: **mg/L**
SampType: **DUP**	Run ID: **WC_160815A**	Analysis Date: **8/16/2016 8:42:00 AM**	Prep Date: **8/15/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	782	10.0	0	801.0				2.40	5	

Sample ID **1608117-06C-DUP**	Batch ID: **76803**	TestNo: **M2540C**	Units: **mg/L**
SampType: **DUP**	Run ID: **WC_160815A**	Analysis Date: **8/16/2016 8:42:00 AM**	Prep Date: **8/15/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	1590	50.0	0	1600				0.627	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: WC_160816D

The QC data in batch 76831 applies to the following samples: 1608133-06D, 1608133-07D, 1608133-08D, 1608133-09D, 1608133-10D, 1608133-11D, 1608133-12D, 1608133-13D, 1608133-14D, 1608133-15D, 1608133-16D, 1608133-17D, 1608133-18D, 1608133-19D, 1608133-20D, 1608133-21D, 1608133-22D, 1608133-23D, 1608133-24D

Sample ID **MB-76831** Batch ID: **76831** TestNo: **M2540C** Units: **mg/L**
SampType: **MBLK** Run ID: **WC_160816D** Analysis Date: **8/17/2016 8:42:00 AM** Prep Date: **8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	<10.0	10.0								

Sample ID **LCS-76831** Batch ID: **76831** TestNo: **M2540C** Units: **mg/L**
SampType: **LCS** Run ID: **WC_160816D** Analysis Date: **8/17/2016 8:42:00 AM** Prep Date: **8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	741	10.0	745.6	0	99.4	90	113			

Sample ID **1608133-21D-DUP** Batch ID: **76831** TestNo: **M2540C** Units: **mg/L**
SampType: **DUP** Run ID: **WC_160816D** Analysis Date: **8/17/2016 8:42:00 AM** Prep Date: **8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	3640	50.0	0	3780				3.77	5	

Sample ID **1608133-24D-DUP** Batch ID: **76831** TestNo: **M2540C** Units: **mg/L**
SampType: **DUP** Run ID: **WC_160816D** Analysis Date: **8/17/2016 8:42:00 AM** Prep Date: **8/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	1120	50.0	0	1150				3.09	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1608133
Project: Luminant - Martin Lake

ANALYTICAL QC SUMMARY REPORT

RunID: WC_160818B

The QC data in batch 76858 applies to the following samples: 1608133-25D, 1608133-26D, 1608133-27D

Sample ID **MB-76858**	Batch ID: **76858**	TestNo: **M2540C**	Units: **mg/L**
SampType: **MBLK**	Run ID: **WC_160818B**	Analysis Date: **8/22/2016 8:40:00 AM**	Prep Date: **8/18/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	<10.0	10.0								

Sample ID **LCS-76858**	Batch ID: **76858**	TestNo: **M2540C**	Units: **mg/L**
SampType: **LCS**	Run ID: **WC_160818B**	Analysis Date: **8/22/2016 8:40:00 AM**	Prep Date: **8/18/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	747	10.0	745.6	0	100	90	113			

Sample ID **1608133-25D-DUP**	Batch ID: **76858**	TestNo: **M2540C**	Units: **mg/L**
SampType: **DUP**	Run ID: **WC_160818B**	Analysis Date: **8/22/2016 8:40:00 AM**	Prep Date: **8/18/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	1380	50.0	0	1430				3.56	5	

Sample ID **1608181-01B-DUP**	Batch ID: **76858**	TestNo: **M2540C**	Units: **mg/L**
SampType: **DUP**	Run ID: **WC_160818B**	Analysis Date: **8/22/2016 8:40:00 AM**	Prep Date: **8/18/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	22900	200	0	22720				0.702	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

Case Narrative

Lab No: 20160784

This report contains the analytical results for the 27 sample(s) received under chain of custody by ESC Lab Sciences on 8/16/2016 10:12:00 AM. These samples are associated with your 1608133 project.

The analytical results included in this report meet all applicable quality control procedure requirements except as noted below:

The test results in this report meet all NELAC requirements unless noted below:

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All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client.

Results have been reviewed by the Director of Radiochemistry or their designees and is approved for release.

Observations / Nonconformances

Analytical Report

	Method	Result	DL	Units	Qual	Prep Date	Analysis Date	Analyst
Lab ID : **20160784-01**								
Client ID : **H-28**								
Date Sampled : **8/9/2016 9:30:00 AM**								
Matrix : **NPW**								
		Radiochemical Analyses						
Combined Radium		1.68 +/- 0.969	0.847	pCi/l				
Radium-226	SM 7500 Ra B M*	0.265 +/- 0.306	0.451	pCi/l		08/24/16	08/26/16	AK
Radium-228	EPA 904*/9320*	1.41 +/- 0.663	0.396	pCi/l		09/07/16	09/10/16	JR
Lab ID : **20160784-02**								
Client ID : **H-29**								
Date Sampled : **8/9/2016 10:35:00 AM**								
Matrix : **NPW**								
		Radiochemical Analyses						
Combined Radium		0.261 +/- 1.12	0.752	pCi/l				
Radium-226	SM 7500 Ra B M*	0.261 +/- 0.150	0.174	pCi/l		08/24/16	08/31/16	AK
Radium-228	EPA 904*/9320*	-0.009 +/- 0.967	0.578	pCi/l		09/07/16	09/10/16	JR
Lab ID : **20160784-03**								
Client ID : **H-31**								
Date Sampled : **8/9/2016 11:50:00 AM**								
Matrix : **NPW**								
		Radiochemical Analyses						
Combined Radium		2.21 +/- 0.942	0.523	pCi/l				
Radium-226	SM 7500 Ra B M*	1.31 +/- 0.276	0.135	pCi/l		08/24/16	08/31/16	AK
Radium-228	EPA 904*/9320*	0.900 +/- 0.666	0.388	pCi/l		09/07/16	09/10/16	JR
Lab ID : **20160784-04**								
Client ID : **H-30**								
Date Sampled : **8/9/2016 12:45:00 PM**								
Matrix : **NPW**								
		Radiochemical Analyses						
Combined Radium		0.927 +/- 1.00	0.813	pCi/l				
Radium-226	SM 7500 Ra B M*	0.203 +/- 0.140	0.171	pCi/l		08/24/16	08/31/16	AK
Radium-228	EPA 904*/9320*	0.724 +/- 0.860	0.642	pCi/l		09/07/16	09/10/16	JR

Analytical Report

	Method	Result	DL	Units	Qual	Prep Date	Analysis Date	Analyst
Lab ID : **20160784-05**								
Client ID : **H-32**								
Date Sampled : **8/9/2016 1:50:00 PM**								
Matrix : **NPW**								
Radiochemical Analyses								
Combined Radium		2.56 +/- 1.35	0.870	pCi/l				
Radium-226	SM 7500 Ra B M*	2.56 +/- 0.576	0.424	pCi/l		08/24/16	08/31/16	AK
Radium-228	EPA 904*/9320*	-0.008 +/- 0.769	0.446	pCi/l		09/07/16	09/10/16	JR
Lab ID : **20160784-06**								
Client ID : **H-27**								
Date Sampled : **8/9/2016 2:50:00 PM**								
Matrix : **NPW**								
Radiochemical Analyses								
Combined Radium		0.952 +/- 1.23	0.797	pCi/l				
Radium-226	SM 7500 Ra B M*	0.408 +/- 0.217	0.165	pCi/l		08/24/16	08/31/16	AK
Radium-228	EPA 904*/9320*	0.544 +/- 1.01	0.632	pCi/l		09/07/16	09/10/16	JR
Lab ID : **20160784-07**								
Client ID : **H-33**								
Date Sampled : **8/9/2016 3:55:00 PM**								
Matrix : **NPW**								
Radiochemical Analyses								
Combined Radium		0.759 +/- 0.958	0.660	pCi/l				
Radium-226	SM 7500 Ra B M*	0.110 +/- 0.106	0.149	pCi/l		08/24/16	08/31/16	AK
Radium-228	EPA 904*/9320*	0.649 +/- 0.852	0.511	pCi/l		09/07/16	09/10/16	JR
Lab ID : **20160784-08**								
Client ID : **H-26**								
Date Sampled : **8/9/2016 4:45:00 PM**								
Matrix : **NPW**								
Radiochemical Analyses								
Combined Radium		0.172 +/- 1.68	1.13	pCi/l				
Radium-226	SM 7500 Ra B M*	0.172 +/- 0.145	0.200	pCi/l		08/24/16	08/31/16	AK
Radium-228	EPA 904*/9320*	-0.529 +/- 1.53	0.932	pCi/l		09/07/16	09/10/16	JR

Analytical Report

	Method	Result	DL	Units	Qual	Prep Date	Analysis Date	Analyst
Lab ID : **20160784-09**								
Client ID : **DUP-01**								
Date Sampled : **8/9/2016 2:38:00 PM**								
Matrix : **NPW**								
		Radiochemical Analyses						
Combined Radium		2.61 +/- 0.977	0.641	pCi/l				
Radium-226	SM 7500 Ra B M*	0.685 +/- 0.229	0.208	pCi/l		08/24/16	08/31/16	AK
Radium-228	EPA 904*/9320*	1.92 +/- 0.748	0.433	pCi/l		09/07/16	09/10/16	JR
Lab ID : **20160784-10**								
Client ID : **PDP-25**								
Date Sampled : **8/10/2016 1:30:00 PM**								
Matrix : **NPW**								
		Radiochemical Analyses						
Combined Radium		0.658 +/- 0.998	0.657	pCi/l				
Radium-226	SM 7500 Ra B M*	0.417 +/- 0.199	0.170	pCi/l		08/24/16	08/31/16	AK
Radium-228	EPA 904*/9320*	0.241 +/- 0.799	0.487	pCi/l		09/07/16	09/10/16	JR
Lab ID : **20160784-11**								
Client ID : **PDP-24**								
Date Sampled : **8/10/2016 11:00:00 AM**								
Matrix : **NPW**								
		Radiochemical Analyses						
Combined Radium		3.10 +/- 1.26	0.825	pCi/l				
Radium-226	SM 7500 Ra B M*	0.735 +/- 0.219	0.197	pCi/l		08/24/16	08/31/16	AK
Radium-228	EPA 904*/9320*	2.36 +/- 1.04	0.628	pCi/l		09/07/16	09/10/16	JR
Lab ID : **20160784-12**								
Client ID : **MW-17A**								
Date Sampled : **8/10/2016 10:20:00 AM**								
Matrix : **NPW**								
		Radiochemical Analyses						
Combined Radium		0.871 +/- 1.25	0.827	pCi/l				
Radium-226	SM 7500 Ra B M*	0.343 +/- 0.158	0.120	pCi/l		08/24/16	08/31/16	AK
Radium-228	EPA 904*/9320*	0.528 +/- 1.09	0.707	pCi/l		09/07/16	09/10/16	JR

Analytical Report

	Method	Result	DL	Units	Qual	Prep Date	Analysis Date	Analyst
Lab ID : **20160784-13**								
Client ID : **PDP-23**								
Date Sampled : **8/10/2016 9:10:00 AM**								
Matrix : **NPW**								
		Radiochemical Analyses						
Combined Radium		0.670 +/- 1.90	1.42	pCi/l				
Radium-226	SM 7500 Ra B M*	-0.105 +/- 0.115	0.267	pCi/l		08/24/16	08/31/16	AK
Radium-228	EPA 904*/9320*	0.670 +/- 1.78	1.15	pCi/l		09/07/16	09/10/16	JR
Lab ID : **20160784-14**								
Client ID : **MW-19**								
Date Sampled : **8/10/2016 3:00:00 PM**								
Matrix : **NPW**								
		Radiochemical Analyses						
Combined Radium		0.304 +/- 1.183	0.767	pCi/l				
Radium-226	SM 7500 Ra B M*	0.223 +/- 0.133	0.144	pCi/l		08/24/16	08/31/16	AK
Radium-228	EPA 904*/9320*	0.081 +/- 1.05	0.623	pCi/l		09/07/16	09/12/16	JR
Lab ID : **20160784-15**								
Client ID : **MW-20A**								
Date Sampled : **8/10/2016 2:10:00 PM**								
Matrix : **NPW**								
		Radiochemical Analyses						
Combined Radium		1.66 +/- 1.16	0.715	pCi/l				
Radium-226	SM 7500 Ra B M*	0.607 +/- 0.242	0.200	pCi/l		08/24/16	08/31/16	AK
Radium-228	EPA 904*/9320*	1.05 +/- 0.918	0.515	pCi/l		09/07/16	09/12/16	JR
Lab ID : **20160784-16**								
Client ID : **PDP-22**								
Date Sampled : **8/10/2016 9:20:00 AM**								
Matrix : **NPW**								
		Radiochemical Analyses						
Combined Radium		1.42 +/- 1.04	0.567	pCi/l				
Radium-226	SM 7500 Ra B M*	0.793 +/- 0.221	0.092	pCi/l		08/24/16	08/31/16	AK
Radium-228	EPA 904*/9320*	0.628 +/- 0.817	0.475	pCi/l		09/07/16	09/12/16	JR

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Analytical Report

	Method	Result	DL	Units	Qual	Prep Date	Analysis Date	Analyst
Lab ID : **20160784-17**								
Client ID : **PDP-26**								
Date Sampled : **8/10/2016 10:30:00 AM**								
Matrix : **NPW**								
		Radiochemical Analyses						
Combined Radium		0.581 +/- 0.935	0.617	pCi/l				
Radium-226	SM 7500 Ra B M*	0.133 +/- 0.104	0.133	pCi/l		08/24/16	08/31/16	AK
Radium-228	EPA 904*/9320*	0.448 +/- 0.831	0.484	pCi/l		09/07/16	09/12/16	JR
Lab ID : **20160784-18**								
Client ID : **MW-18A**								
Date Sampled : **8/10/2016 11:30:00 AM**								
Matrix : **NPW**								
		Radiochemical Analyses						
Combined Radium		0.742 +/- 1.22	0.771	pCi/l				
Radium-226	SM 7500 Ra B M*	0.288 +/- 0.149	0.164	pCi/l		08/24/16	08/31/16	AK
Radium-228	EPA 904*/9320*	0.454 +/- 1.07	0.607	pCi/l		09/07/16	09/12/16	JR
Lab ID : **20160784-19**								
Client ID : **EB-1**								
Date Sampled : **8/10/2016 11:45:00 AM**								
Matrix : **NPW**								
		Radiochemical Analyses						
Combined Radium		1.45 +/- 0.992	0.729	pCi/l				
Radium-226	SM 7500 Ra B M*	0.000 +/- 0.115	0.239	pCi/l		08/24/16	08/31/16	AK
Radium-228	EPA 904*/9320*	1.45 +/- 0.877	0.490	pCi/l		09/07/16	09/12/16	JR
Lab ID : **20160784-20**								
Client ID : **BMW-11AR**								
Date Sampled : **8/11/2016 8:25:00 AM**								
Matrix : **NPW**								
		Radiochemical Analyses						
Combined Radium		3.23 +/- 1.45	0.838	pCi/l				
Radium-226	SM 7500 Ra B M*	0.810 +/- 0.204	0.116	pCi/l		08/24/16	08/31/16	AK
Radium-228	EPA 904*/9320*	2.42 +/- 1.25	0.722	pCi/l		09/07/16	09/12/16	JR

Analytical Report

	Method	Result	DL	Units	Qual	Prep Date	Analysis Date	Analyst
Lab ID : **20160784-21**								
Client ID : **BMW-19**								
Date Sampled : **8/11/2016 9:20:00 AM**								
Matrix : **NPW**								
		Radiochemical Analyses						
Combined Radium		1.19 +/- 1.17	0.933	pCi/l				
Radium-226	SM 7500 Ra B M*	0.927 +/- 0.200	0.118	pCi/l		08/25/16	08/29/16	AK
Radium-228	EPA 904*/9320*	0.262 +/- 0.695	0.815	pCi/l		09/02/16	09/08/16	JR
Lab ID : **20160784-22**								
Client ID : **BMW-18**								
Date Sampled : **8/11/2016 10:15:00 AM**								
Matrix : **NPW**								
		Radiochemical Analyses						
Combined Radium		0.117 +/- 0.983	1.29	pCi/l				
Radium-226	SM 7500 Ra B M*	0.117 +/- 0.146	0.220	pCi/l		08/25/16	08/29/16	AK
Radium-228	EPA 904*/9320*	-0.353 +/- 0.837	1.07	pCi/l		09/02/16	09/08/16	JR
Lab ID : **20160784-23**								
Client ID : **BMW-20**								
Date Sampled : **8/11/2016 10:50:00 AM**								
Matrix : **NPW**								
		Radiochemical Analyses						
Combined Radium		1.72 +/- 0.838	0.980	pCi/l				
Radium-226	SM 7500 Ra B M*	0.322 +/- 0.140	0.147	pCi/l		08/25/16	08/29/16	AK
Radium-228	EPA 904*/9320*	1.40 +/- 0.698	0.833	pCi/l		09/02/16	09/08/16	JR
Lab ID : **20160784-24**								
Client ID : **BMW-24**								
Date Sampled : **8/11/2016 8:50:00 AM**								
Matrix : **NPW**								
		Radiochemical Analyses						
Combined Radium		1.36 +/- 0.937	1.06	pCi/l				
Radium-226	SM 7500 Ra B M*	0.564 +/- 0.185	0.116	pCi/l		08/25/16	08/29/16	AK
Radium-228	EPA 904*/9320*	0.791 +/- 0.752	0.942	pCi/l		09/02/16	09/08/16	JR

Analytical Report

	Method	Result	DL	Units	Qual	Prep Date	Analysis Date	Analyst
Lab ID : **20160784-25**								
Client ID : **BMW-23**								
Date Sampled : **8/11/2016 9:20:00 AM**								
Matrix : **NPW**								
		Radiochemical Analyses						
Combined Radium		2.90 +/- 0.992	1.07	pCi/l				
Radium-226	SM 7500 Ra B M*	0.963 +/- 0.218	0.164	pCi/l		08/25/16	08/29/16	AK
Radium-228	EPA 904*/9320*	1.94 +/- 0.774	0.904	pCi/l		09/02/16	09/08/16	JR
Lab ID : **20160784-26**								
Client ID : **BMW-22**								
Date Sampled : **8/11/2016 10:00:00 AM**								
Matrix : **NPW**								
		Radiochemical Analyses						
Combined Radium		2.54 +/- 0.798	0.823	pCi/l				
Radium-226	SM 7500 Ra B M*	0.607 +/- 0.190	0.104	pCi/l		08/25/16	08/29/16	AK
Radium-228	EPA 904*/9320*	1.93 +/- 0.608	0.719	pCi/l		09/02/16	09/08/16	JR
Lab ID : **20160784-27**								
Client ID : **BMW-21**								
Date Sampled : **8/11/2016 10:30:00 AM**								
Matrix : **NPW**								
		Radiochemical Analyses						
Combined Radium		1.25 +/- 0.875	1.04	pCi/l				
Radium-226	SM 7500 Ra B M*	0.655 +/- 0.290	0.312	pCi/l		08/25/16	08/29/16	AK
Radium-228	EPA 904*/9320*	0.632 +/- 0.585	0.728	pCi/l		09/02/16	09/08/16	JR

QC Report

Parameter	Blank	LCS %REC	LCSD %REC	LCSD RPD	DUP RPD	RER, NAD or DER	MS %REC	MSD %REC	MSD RPD	Batch ID
Radium-226	-0.024	94.7			NC	0.923	108.0	101.0	6.5	R1125
Radium-226	-0.021	108.0			0.6	0.022	95.6	101.0	5.2	R1126
Radium-228	0.406	95.4			NC	0.159	95.1	98.8	3.8	R3850
Radium-228	0.402	84.4			NC	0.580	84.3	87.6	3.8	R3851

Lab Approval:

Ron Eidson
Director of Radiochemistry

*NELAC Certified Parameter BDL = Below Detection Limit

OUTREACH LABORATORY, A Divsion of ESC Lab Sciences
Address: 311 North Aspen Avenue, Broken Arrow, OK, 74012 EMail: outreach@esclabsciences.com - Tel: (918) 251-2515

DHL Analytical, Inc.
2300 Double Creek Drive
Round Rock, TX 78664
TEL: *(512) 388-8222* FAX: *(512) 388-8229*

CHAIN-OF-CUSTODY RECORD

Work Order: 1608133

Subcontractor:

ESC Laboratory
311 North Aspen
Broken Arrow, Oklahoma 74012

TEL: (918) 251-2515
FAX:
Acct #: DHLRRTX

12-Aug-16

Sample Id	Matrix	DHL#	Date Collected	Bottle Type	Requested Tests					
					E904.0	SM7500Ra-B M				
H-28	Aqueous	-01B	08/09/16 09:30 AM	500HDPEHNO3	1					
H-28	Aqueous	-01C	08/09/16 09:30 AM	500HDPEHNO3		1				
H-29	Aqueous	-02B	08/09/16 10:35 AM	500HDPEHNO3	1					
H-29	Aqueous	-02C	08/09/16 10:35 AM	500HDPEHNO3		1				
H-31	Aqueous	-03B	08/09/16 11:50 AM	500HDPEHNO3	1					
H-31	Aqueous	-03C	08/09/16 11:50 AM	500HDPEHNO3		1				
H-30	Aqueous	-04B	08/09/16 12:45 PM	500HDPEHNO3	1					
H-30	Aqueous	-04C	08/09/16 12:45 PM	500HDPEHNO3		1				
H-32	Aqueous	-05B	08/09/16 01:50 PM	500HDPEHNO3	1					
H-32	Aqueous	-05C	08/09/16 01:50 PM	500HDPEHNO3		1				
H-27	Aqueous	-06B	08/09/16 02:50 PM	500HDPEHNO3	1					
H-27	Aqueous	-06C	08/09/16 02:50 PM	500HDPEHNO3		1				
H-33	Aqueous	-07B	08/09/16 03:55 PM	500HDPEHNO3	1					
H-33	Aqueous	-07C	08/09/16 03:55 PM	500HDPEHNO3		1				
H-26	Aqueous	-08B	08/09/16 04:45 PM	500HDPEHNO3	1					
H-26	Aqueous	-08C	08/09/16 04:45 PM	500HDPEHNO3		1				
DUP-01	Aqueous	-09B	08/09/16 02:38 PM	500HDPEHNO3	1					
DUP-01	Aqueous	-09C	08/09/16 02:38 PM	500HDPEHNO3		1				

General Comments:

Please analyze these samples with Normal Turnaround Time.
Report RA-226, Ra-228 & Combined per Specs DHLRRTX033116S.
Quality Control Package Needed: Standard - NELAC Rad Test compliant
Email to cac@dhlanalytical.com & dupont@dhlanalytical.com

1608078
L854111

	Date/Time		Date/Time
Relinquished by:	8/12/16 17:30	**Received by:**	8/12/16 17:30
Relinquished by:		**Received by:**	8/12/16 1012

DHL Analytical, Inc.
2300 Double Creek Drive
Round Rock, TX 78664
TEL: *(512) 388-8222* FAX: *(512) 388-8229*

CHAIN-OF-CUSTODY RECORD

Work Order: 1608133

Subcontractor:

ESC Laboratory
311 North Aspen
Broken Arrow, Oklahoma 74012

TEL: (918) 251-2515
FAX:
Acct #: DHLRRTX

12-Aug-16

Sample Id	Matrix	DHL#	Date Collected	Bottle Type	Requested Tests					
					E904.0	SM7500Ra-B M				
PDP-25	Aqueous	-10B	08/10/16 01:30 PM	500HDPEHNO3	1					
PDP-25	Aqueous	-10C	08/10/16 01:30 PM	500HDPEHNO3		1				
PDP-24	Aqueous	-11B	08/10/16 11:00 AM	500HDPEHNO3	1					
PDP-24	Aqueous	-11C	08/10/16 11:00 AM	500HDPEHNO3		1				
MW-17A	Aqueous	-12B	08/10/16 10:20 AM	500HDPEHNO3	1					
MW-17A	Aqueous	-12C	08/10/16 10:20 AM	500HDPEHNO3		1				
PDP-23	Aqueous	-13B	08/10/16 09:10 AM	500HDPEHNO3	1					
PDP-23	Aqueous	-13C	08/10/16 09:10 AM	500HDPEHNO3		1				
MW-19	Aqueous	-14B	08/10/16 03:00 PM	500HDPEHNO3	1					
MW-19	Aqueous	-14C	08/10/16 03:00 PM	500HDPEHNO3		1				
MW-20A	Aqueous	-15B	08/10/16 02:10 PM	500HDPEHNO3	1					
MW-20A	Aqueous	-15C	08/10/16 02:10 PM	500HDPEHNO3		1				
PDP-22	Aqueous	-16B	08/10/16 09:20 AM	500HDPEHNO3	1					
PDP-22	Aqueous	-16C	08/10/16 09:20 AM	500HDPEHNO3		1				
PDP-26	Aqueous	-17B	08/10/16 10:30 AM	500HDPEHNO3	1					
PDP-26	Aqueous	-17C	08/10/16 10:30 AM	500HDPEHNO3		1				
MW-18A	Aqueous	-18B	08/10/16 11:30 AM	500HDPEHNO3	1					
MW-18A	Aqueous	-18C	08/10/16 11:30 AM	500HDPEHNO3		1				

General Comments:

Please analyze these samples with Normal Turnaround Time.
Report RA-226, Ra-228 & Combined per Specs DHLRRTX033116S.
Quality Control Package Needed: Standard - NELAC Rad Test compliant
Email to cac@dhlanalytical.com & dupont@dhlanalytical.com

		Date/Time			Date/Time
Relinquished by:	[signature]	8/12/16 17:30	**Received by:**	[signature]	8/12/16 17:30
Relinquished by:			**Received by:**	Amber Taylor	8/16/16 1012

DHL Analytical, Inc.
2300 Double Creek Drive
Round Rock, TX 78664
TEL: *(512) 388-8222* FAX: *(512) 388-8229*

CHAIN-OF-CUSTODY RECORD

Work Order: 1608133

Subcontractor:

ESC Laboratory
311 North Aspen
Broken Arrow, Oklahoma 74012

TEL: (918) 251-2515
FAX:
Acct #: DHLRRTX

12-Aug-16

Sample Id	Matrix	DHL#	Date Collected	Bottle Type	Requested Tests					
					E904.0	SM7500Ra-B M				
EB-1	Aqueous	-19B	08/10/16 11:45 AM	500HDPEHNO3	1					
EB-1	Aqueous	-19C	08/10/16 11:45 AM	500HDPEHNO3		1				
BMW-11AR	Aqueous	-20B	08/11/16 08:25 AM	500HDPEHNO3	1					
BMW-11AR	Aqueous	-20C	08/11/16 08:25 AM	500HDPEHNO3		1				
BMW-19	Aqueous	-21B	08/11/16 09:20 AM	500HDPEHNO3	1					
BMW-19	Aqueous	-21C	08/11/16 09:20 AM	500HDPEHNO3		1				
BMW-18	Aqueous	-22B	08/11/16 10:15 AM	500HDPEHNO3	1					
BMW-18	Aqueous	-22C	08/11/16 10:15 AM	500HDPEHNO3		1				
BMW-20	Aqueous	-23B	08/11/16 10:50 AM	500HDPEHNO3	1					
BMW-20	Aqueous	-23C	08/11/16 10:50 AM	500HDPEHNO3		1				
BMW-24	Aqueous	-24B	08/11/16 08:50 AM	500HDPEHNO3	1					
BMW-24	Aqueous	-24C	08/11/16 08:50 AM	500HDPEHNO3		1				
BMW-23	Aqueous	-25B	08/11/16 09:20 AM	500HDPEHNO3	1					
BMW-23	Aqueous	-25C	08/11/16 09:20 AM	500HDPEHNO3		1				
BMW-22	Aqueous	-26B	08/11/16 10:00 AM	500HDPEHNO3	1					
BMW-22	Aqueous	-26C	08/11/16 10:00 AM	500HDPEHNO3		1				
BMW-21	Aqueous	-27B	08/11/16 10:30 AM	500HDPEHNO3	1					
BMW-21	Aqueous	-27C	08/11/16 10:30 AM	500HDPEHNO3		1				

General Comments:

Please analyze these samples with Normal Turnaround Time.
Report RA-226, Ra-228 & Combined per Specs DHLRRTX033116S.
Quality Control Package Needed: Standard - NELAC Rad Test compliant
Email to cac@dhlanalytical.com & dupont@dhlanalytical.com

		Date/Time			Date/Time
Relinquished by:	Jtorrar	8/12/16 17:30	**Received by:**	FedEx	8/12/16 17:30
Relinquished by:			**Received by:**	Amber Taylor	8/16/16 1012

SAMPLE LOGIN

Date Received: *8/16/2016 10:12:0* **Lab Number:** 20160784 **Due:** 9/13/2016

Sample Number	Client Sample ID	Matrix	Date Sampled	Container Type	Container Size	Preservation	Preserved Upon Receipt	Custody Seal	Seal Intact
20160784-01 B	H-28	NPW	08/09/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
20160784-01 A	H-28	NPW	08/09/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160784-02 A	H-29	NPW	08/09/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
20160784-02 B	H-29	NPW	08/09/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160784-03 A	H-31	NPW	08/09/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
20160784-03 B	H-31	NPW	08/09/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160784-04 A	H-30	NPW	08/09/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
20160784-04 B	H-30	NPW	08/09/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160784-05 A	H-32	NPW	08/09/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
20160784-05 B	H-32	NPW	08/09/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160784-06 A	H-27	NPW	08/09/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
20160784-06 B	H-27	NPW	08/09/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160784-07 A	H-33	NPW	08/09/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
20160784-07 B	H-33	NPW	08/09/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						

20160784-08 B	H-26	NPW	08/09/16	Plastic	500 ml	HNO3, pH < 2	✓	Yes	Yes
20160784-08 A	H-26	NPW	08/09/16	Plastic	500 ml	HNO3, pH < 2	✓	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160784-09 A	DUP-01	NPW	08/09/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
20160784-09 B	DUP-01	NPW	08/09/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160784-10 A	PDP-25	NPW	08/10/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
20160784-10 B	PDP-25	NPW	08/10/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160784-11 A	PDP-24	NPW	08/10/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
20160784-11 B	PDP-24	NPW	08/10/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160784-12 A	MW-17A	NPW	08/10/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
20160784-12 B	MW-17A	NPW	08/10/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160784-13 A	PDP-23	NPW	08/10/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
20160784-13 B	PDP-23	NPW	08/10/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160784-14 B	MW-19	NPW	08/10/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
20160784-14 A	MW-19	NPW	08/10/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160784-15 A	MW-20A	NPW	08/10/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
20160784-15 B	MW-20A	NPW	08/10/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160784-16 A	PDP-22	NPW	08/10/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
20160784-16 B	PDP-22	NPW	08/10/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes

Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160784-17 A	PDP-26	NPW	08/10/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
20160784-17 B	PDP-26	NPW	08/10/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160784-18 A	MW-18A	NPW	08/10/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
20160784-18 B	MW-18A	NPW	08/10/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160784-19 A	EB-1	NPW	08/10/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
20160784-19 B	EB-1	NPW	08/10/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160784-20 B	BMW-11AR	NPW	08/11/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
20160784-20 A	BMW-11AR	NPW	08/11/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160784-21 A	BMW-19	NPW	08/11/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
20160784-21 B	BMW-19	NPW	08/11/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160784-22 A	BMW-18	NPW	08/11/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
20160784-22 B	BMW-18	NPW	08/11/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160784-23 A	BMW-20	NPW	08/11/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
20160784-23 B	BMW-20	NPW	08/11/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160784-24 A	BMW-24	NPW	08/11/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
20160784-24 B	BMW-24	NPW	08/11/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes

Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160784-25 A	BMW-23	NPW	08/11/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
20160784-25 B	BMW-23	NPW	08/11/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160784-26 A	BMW-22	NPW	08/11/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
20160784-26 B	BMW-22	NPW	08/11/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20160784-27 B	BMW-21	NPW	08/11/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
20160784-27 A	BMW-21	NPW	08/11/16	Plastic	500 ml	HNO3, pH < 2	☐	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						

CONTAINER INSPECTION

 # Coolers 2 **Custody Seals Broken** ☑ **Temperature:** AMB °C **Ice** **Radiation Survey:** <300 cpm

SAMPLE INSPECTION

Sample Seal Broken ☑ **Chain of Custody Record** ☑ **Labels in Tact** ☑ **Radiation Survey Complete** N/A

Anomalies

Inspected By: Amber Taylor **DATE** 8/16/16

QA or Designee Review: Raymond Thomas **DATE** 08/16/16

Sample Custodian Review: Stan Ur **DATE** 8/16/16

Project Notes:

November 17, 2016

Will Vienne
Pastor, Behling & Wheeler
2201 Double Creek Dr #4004
Round Rock, Texas 78664
TEL: (512) 671-3434
FAX (512) 671-3446

Order No.: 1610170

RE: MLSES-PDP-5

Dear Will Vienne:

DHL Analytical, Inc. received 6 sample(s) on 10/20/2016 for the analyses presented in the following report.

There were no problems with the analyses and all data met requirements of NELAC except where noted in the Case Narrative. All non-NELAC methods will be identified accordingly in the case narrative and all estimated uncertainties of test results are within method or EPA specifications.

If you have any questions regarding these tests results, please feel free to call. Thank you for using DHL Analytical.

Sincerely,

John DuPont
General Manager

This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211-16-17

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DHL ANALYTICAL
2300 Double Creek Dr. ■ Round Rock, TX 78664
Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

№ 69944

CHAIN-OF-CUSTODY

CLIENT: PBW
ADDRESS: 2201 DOUBLE CREEK DR ROUND ROCK, TX 78664
PHONE: 512-671-3434 FAX/E-MAIL: 512-671-3446
DATA REPORTED TO: WILL VIENNE
ADDITIONAL REPORT COPIES TO:

DATE: 10/19/16 PAGE 1 OF 1
PO #: 5164-B DHL WORK ORDER #: 1610170
PROJECT LOCATION OR NAME: MLSES - PDP-5
CLENT PROJECT #: 5164-B COLLECTOR: J. BRAYTON

Authorize 5% surcharge for TRRP Report? ☐ Yes ☐ No

S=SOIL W=WATER A=AIR L=LIQUID SE=SEDIMENT
P=PAINT SL=SLUDGE O=OTHER SO=SOLID

PRESERVATION: HCl, HNO_3, H_2SO_4 ☐ NaOH ☐, ICE, UNPRESERVED

ANALYSES: BTEX ☐ MTBE ☐ [METHOD 8021]; TPH 1005 ☐ TPH 1006 ☐ HOLD 1006 ☐; GRO [METHOD 8015] ☐ DRO [METHOD 8105] ☐; VOC 8260 ☐ VOC 624 ☐ VOC 8260/5035 ☐; SVOC 8270 ☐ PAH 8270 ☐ HOLD PAH ☐ SVOC 625 ☐; 8270 PEST ☐ 625 PEST/PCB ☐ 608 PCB ☐; 8270 O-P PEST ☐ 8082 PCB ☐ 8270 PCB ☐; 8321 HERB ☐ T PHOS, AMMONIA ☐; METALS 6020 ☐ METALS 200.8 ☐ DISS. METALS ☐; RCRA ☐ TX11 ☐ _____; PH ☐ HEX CHROM ☐ ALKALINITY ☐ COD ☐; CHLORIDE ☐ ANIONS _____ ☐; TCLP-SVOC ☐ VOC ☐ PEST ☐ HERB ☐; TCLP-METALS ☐ RCRA 8 ☐ TX-11 ☐ Pb ☐; RCI ☐ FLASHPOINT ☐ DGAS ☐; TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐; CCR

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	HCl	HNO_3	H_2SO_4 ☐ NaOH ☐	ICE	UNPRESERVED	CCR	FIELD NOTES
MW-17A	01	10/18/16	1540	W	P	4		X		X	X	X	
PDP-24	02	10/18/16	1630	W	P	4		X		X	X	X	
PDP-25	03	10/19/16	0750	W	P	4		X		X	X	X	
PDP-26	04	↓	0845	W	P	4		X		X	X	X	
MW-20A	05		0935	W	P	4		X		X	X	X	
PDP-23	06	↓	1030	W	P	4		X		X	X	X	

RELINQUISHED BY: (Signature) DATE/TIME 10/19/16 1730 RECEIVED BY: (Signature) Fedex
RELINQUISHED BY: (Signature) DATE/TIME 10/20/16 925 RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature) DATE/TIME RECEIVED BY: (Signature)

☐ DHL DISPOSAL @ $5.00 each ☐ Return

TURN AROUND TIME
RUSH ☐ CALL FIRST
1 DAY ☐ CALL FIRST
2 DAY ☐
NORMAL ☑
OTHER ☐ _____

LABORATORY USE ONLY:
RECEIVING TEMP: 4.6, 4.5 THERM #: 78
CUSTODY SEALS: ☐ BROKEN ☐ INTACT ☑ NOT USED
CARRIER: ☐ LONE STAR ☑ FEDEX ☐ UPS ☐ OTHER
☐ COURIER DELIVERY
☐ HAND DELIVERED

John Dupont

From: Sara Taube [Sara.Taube@pbwllc.com]
Sent: Wednesday, July 22, 2015 12:05 PM
To: John Dupont
Subject: CCR Appendix III and IV
Follow Up Flag: Follow up
Flag Status: Completed

Hi John,

Here are the Appendix III and Appendix IV constituents that we will need to have analyzed under the CCR Rule.

Appendix III
Boron
Calcium
Chloride
Fluoride
pH
sulfate
TDS

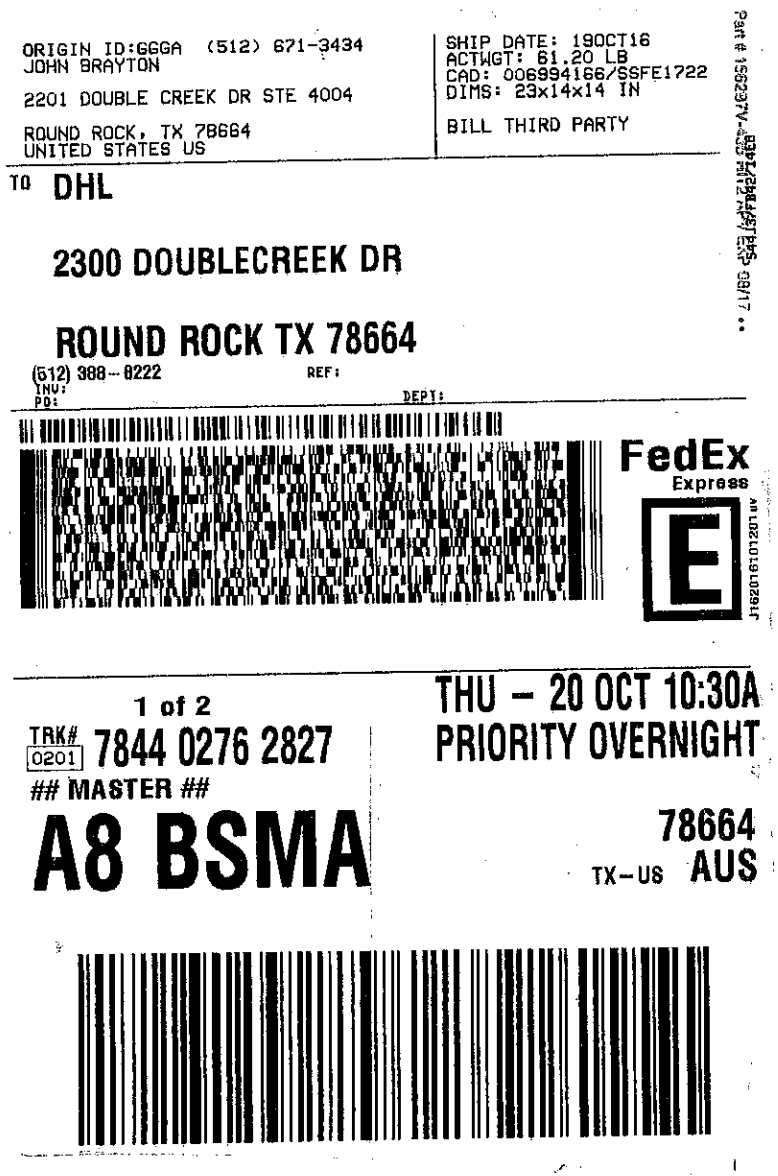
Appendix IV
Antimony
Arsenic
Barium
Beryllium
Cadmium
Chromium
Cobalt
Fluoride
Lead
Lithium
Mercury
Molybdenum
Selenium
Thallium
Radium 226 and 228

We are looking to have approximately 74 wells sampled 8 times over the course of the next two years. Please let me know if there is any more information you might need.

Cheers,

Sara

10/26/2015



ORIGIN ID:GGGA (512) 671-3434
JOHN BRAYTON

2201 DOUBLE CREEK DR STE 4004

ROUND ROCK, TX 78664
UNITED STATES US

SHIP DATE: 19OCT16
ACTWGT: 61.20 LB
CAD: 006994166/SSFE1722
DIMS: 23x14x14 IN

BILL THIRD PARTY

TO DHL

2300 DOUBLECREEK DR

ROUND ROCK TX 78664

(512) 388-8222 REF:
INV:
PO: DEPT:

FedEx Express

1 of 2

TRK# 0201 7844 0276 2827

MASTER

A8 BSMA

THU - 20 OCT 10:30A
PRIORITY OVERNIGHT

78664
TX-US AUS

ORIGIN ID:GGGA (512) 671-3434
JOHN BRAYTON

2201 DOUBLE CREEK DR STE 4004

ROUND ROCK, TX 78664
UNITED STATES US

19OCT16
0 LB
6/SSFE1722
IN

TO DHL

2300 DOUBLECREEK DR

ROUND ROCK TX 78664

(512) 388-8222 REF:
INV:
PO: DEPT:

FedEx Express

2 of 2

MPS# 0263 7844 0276 2838

Mstr# 7844 0276 2827 0201

A8 BSMA

THU - 20 OCT 10:30A
PRIORITY OVERNIGHT

78664
TX-US AUS

DHL Analytical, Inc.

Sample Receipt Checklist

Client Name Pastor, Behling & Wheeler | Date Received: 10/20/2016

Work Order Number 1610179 | Received by JB

Checklist completed by: [signature] Signature | 10/20/2016 Date | Reviewed by [initials] Initials | 10/20/2016 Date

Carrier name FedEx 1day

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	4.6 °C
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH<2 acceptable upon receipt?	Yes ☑	No ☐	NA ☐ LOT # 8086
	Adjusted? NO		Checked by [initials]
Water - ph>9 (S) or ph>12 (CN) acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted?		Checked by

Any No response must be detailed in the comments section below.

Client contacted _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments: _____

Corrective Action _____

DHL Analytical, Inc. **Date:** *17-Nov-16*

CLIENT: Pastor, Behling & Wheeler
Project: MLSES-PDP-5
Lab Order: 1610170

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Method SW6020A - Metals Analysis
Method SW7470A - Mercury Analysis
Method E300 - Anions Analysis
Method M4500-H+ B - pH of a Water Analysis
Method M2540C - TDS Analysis
Sub-contract - Radium-228 and Radium-226 analyses by methods E904/9320 and SM 7500 Ra B M. Analyzed at ESC Lab Sciences.

LOG IN

The samples were received and log-in performed on 10/20/16. A total of 6 samples were received. The samples arrived in good condition and were properly packaged.

METALS ANALYSIS

For Metals analysis performed on 10/28/16 the RPD for the serial dilution was above control limits for Boron. This is flagged accordingly in the QC summary report. The PDS was within control limits for this analyte. No further corrective actions were taken.

DHL Analytical, Inc.

Date: *17-Nov-16*

CLIENT: Pastor, Behling & Wheeler
Project: MLSES-PDP-5
Lab Order: 1610170

Work Order Sample Summary

Lab Smp ID	Client Sample ID	Tag Number	Date Collected	Date Recved
1610170-01	MW-17A		10/18/16 03:40 PM	10/20/2016
1610170-02	PDP-24		10/18/16 04:30 PM	10/20/2016
1610170-03	PDP-25		10/19/16 07:50 AM	10/20/2016
1610170-04	PDP-26		10/19/16 08:45 AM	10/20/2016
1610170-05	MW-20A		10/19/16 09:35 AM	10/20/2016
1610170-06	PDP-23		10/19/16 10:30 AM	10/20/2016

Lab Order: 1610170
Client: Pastor, Behling & Wheeler
Project: MLSES-PDP-5

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1610170-01A	MW-17A	10/18/16 03:40 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/27/16 08:21 AM	77689
	MW-17A	10/18/16 03:40 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/27/16 08:21 AM	77689
	MW-17A	10/18/16 03:40 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	10/24/16 12:40 PM	77658
1610170-01D	MW-17A	10/18/16 03:40 PM	Aqueous	E300	Anion Preparation	10/24/16 08:56 AM	77652
	MW-17A	10/18/16 03:40 PM	Aqueous	M4500-H+ B	pH Preparation	10/21/16 08:50 AM	77638
	MW-17A	10/18/16 03:40 PM	Aqueous	M2540C	TDS Preparation	10/25/16 03:41 PM	77673
1610170-02A	PDP-24	10/18/16 04:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/27/16 08:21 AM	77689
	PDP-24	10/18/16 04:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/27/16 08:21 AM	77689
	PDP-24	10/18/16 04:30 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	10/24/16 12:40 PM	77658
1610170-02D	PDP-24	10/18/16 04:30 PM	Aqueous	E300	Anion Preparation	10/24/16 08:56 AM	77652
	PDP-24	10/18/16 04:30 PM	Aqueous	E300	Anion Preparation	10/24/16 08:56 AM	77652
	PDP-24	10/18/16 04:30 PM	Aqueous	M4500-H+ B	pH Preparation	10/21/16 08:50 AM	77638
	PDP-24	10/18/16 04:30 PM	Aqueous	M2540C	TDS Preparation	10/25/16 03:41 PM	77673
1610170-03A	PDP-25	10/19/16 07:50 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/27/16 08:21 AM	77689
	PDP-25	10/19/16 07:50 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/27/16 08:21 AM	77689
	PDP-25	10/19/16 07:50 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/27/16 08:21 AM	77689
	PDP-25	10/19/16 07:50 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	10/24/16 12:40 PM	77658
1610170-03D	PDP-25	10/19/16 07:50 AM	Aqueous	E300	Anion Preparation	10/24/16 08:56 AM	77652
	PDP-25	10/19/16 07:50 AM	Aqueous	E300	Anion Preparation	10/24/16 08:56 AM	77652
	PDP-25	10/19/16 07:50 AM	Aqueous	M4500-H+ B	pH Preparation	10/21/16 08:50 AM	77638
	PDP-25	10/19/16 07:50 AM	Aqueous	M2540C	TDS Preparation	10/25/16 03:41 PM	77673
1610170-04A	PDP-26	10/19/16 08:45 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/27/16 08:21 AM	77689
	PDP-26	10/19/16 08:45 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	10/24/16 12:40 PM	77658
1610170-04D	PDP-26	10/19/16 08:45 AM	Aqueous	E300	Anion Preparation	10/24/16 08:56 AM	77652
	PDP-26	10/19/16 08:45 AM	Aqueous	M4500-H+ B	pH Preparation	10/21/16 08:50 AM	77638
	PDP-26	10/19/16 08:45 AM	Aqueous	M2540C	TDS Preparation	10/25/16 03:41 PM	77673
1610170-05A	MW-20A	10/19/16 09:35 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/27/16 08:21 AM	77689
	MW-20A	10/19/16 09:35 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/27/16 08:21 AM	77689

Lab Order: 1610170
Client: Pastor, Behling & Wheeler
Project: MLSES-PDP-5

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1610170-05A	MW-20A	10/19/16 09:35 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/27/16 08:21 AM	77689
	MW-20A	10/19/16 09:35 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	10/24/16 12:40 PM	77658
1610170-05D	MW-20A	10/19/16 09:35 AM	Aqueous	E300	Anion Preparation	10/24/16 08:56 AM	77652
	MW-20A	10/19/16 09:35 AM	Aqueous	M4500-H+ B	pH Preparation	10/21/16 08:50 AM	77638
	MW-20A	10/19/16 09:35 AM	Aqueous	M2540C	TDS Preparation	10/25/16 03:41 PM	77673
1610170-06A	PDP-23	10/19/16 10:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/27/16 08:21 AM	77689
	PDP-23	10/19/16 10:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/27/16 08:21 AM	77689
	PDP-23	10/19/16 10:30 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	10/24/16 12:40 PM	77658
1610170-06D	PDP-23	10/19/16 10:30 AM	Aqueous	E300	Anion Preparation	10/24/16 08:56 AM	77652
	PDP-23	10/19/16 10:30 AM	Aqueous	M4500-H+ B	pH Preparation	10/21/16 08:50 AM	77638
	PDP-23	10/19/16 10:30 AM	Aqueous	M2540C	TDS Preparation	10/25/16 03:41 PM	77673

Lab Order: 1610170
Client: Pastor, Behling & Wheeler
Project: MLSES-PDP-5

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1610170-01A	MW-17A	Aqueous	SW7470A	Mercury Total: Aqueous	77658	1	10/26/16 12:48 PM	CETAC2_HG_161026A
	MW-17A	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	77689	1	10/31/16 01:50 PM	ICP-MS3_161031A
	MW-17A	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	77689	1	10/28/16 04:36 PM	ICP-MS4_161028B
1610170-01D	MW-17A	Aqueous	E300	Anions by IC method - Water	77652	1	10/24/16 10:58 AM	IC2_161024A
	MW-17A	Aqueous	M4500-H+ B	pH	77638	1	10/21/16 10:40 AM	TITRATOR_161021A
	MW-17A	Aqueous	M2540C	Total Dissolved Solids	77673	1	10/26/16 08:43 AM	WC_161025B
1610170-02A	PDP-24	Aqueous	SW7470A	Mercury Total: Aqueous	77658	1	10/26/16 12:50 PM	CETAC2_HG_161026A
	PDP-24	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	77689	1	10/28/16 04:38 PM	ICP-MS4_161028B
	PDP-24	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	77689	10	10/31/16 01:56 PM	ICP-MS3_161031A
1610170-02D	PDP-24	Aqueous	E300	Anions by IC method - Water	77652	1	10/24/16 11:13 AM	IC2_161024A
	PDP-24	Aqueous	E300	Anions by IC method - Water	77652	10	10/24/16 03:28 PM	IC2_161024A
	PDP-24	Aqueous	M4500-H+ B	pH	77638	1	10/21/16 10:44 AM	TITRATOR_161021A
	PDP-24	Aqueous	M2540C	Total Dissolved Solids	77673	1	10/26/16 08:43 AM	WC_161025B
1610170-03A	PDP-25	Aqueous	SW7470A	Mercury Total: Aqueous	77658	1	10/26/16 12:53 PM	CETAC2_HG_161026A
	PDP-25	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	77689	10	10/31/16 02:02 PM	ICP-MS3_161031A
	PDP-25	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	77689	1	10/31/16 04:08 PM	ICP-MS3_161031A
	PDP-25	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	77689	1	10/28/16 04:40 PM	ICP-MS4_161028B
1610170-03D	PDP-25	Aqueous	E300	Anions by IC method - Water	77652	10	10/24/16 03:43 PM	IC2_161024A
	PDP-25	Aqueous	E300	Anions by IC method - Water	77652	1	10/24/16 11:27 AM	IC2_161024A
	PDP-25	Aqueous	M4500-H+ B	pH	77638	1	10/21/16 10:47 AM	TITRATOR_161021A
	PDP-25	Aqueous	M2540C	Total Dissolved Solids	77673	1	10/26/16 08:43 AM	WC_161025B
1610170-04A	PDP-26	Aqueous	SW7470A	Mercury Total: Aqueous	77658	1	10/26/16 12:55 PM	CETAC2_HG_161026A
	PDP-26	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	77689	1	10/28/16 11:17 AM	ICP-MS4_161028A
1610170-04D	PDP-26	Aqueous	E300	Anions by IC method - Water	77652	1	10/24/16 11:42 AM	IC2_161024A
	PDP-26	Aqueous	M4500-H+ B	pH	77638	1	10/21/16 10:50 AM	TITRATOR_161021A
	PDP-26	Aqueous	M2540C	Total Dissolved Solids	77673	1	10/26/16 08:43 AM	WC_161025B

Lab Order: 1610170
Client: Pastor, Behling & Wheeler
Project: MLSES-PDP-5

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1610170-05A	MW-20A	Aqueous	SW7470A	Mercury Total: Aqueous	77658	1	10/26/16 12:57 PM	CETAC2_HG_161026A
	MW-20A	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	77689	1	10/31/16 04:14 PM	ICP-MS3_161031A
	MW-20A	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	77689	1	10/28/16 04:42 PM	ICP-MS4_161028B
	MW-20A	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	77689	10	10/31/16 02:08 PM	ICP-MS3_161031A
1610170-05D	MW-20A	Aqueous	E300	Anions by IC method - Water	77652	1	10/24/16 11:56 AM	IC2_161024A
	MW-20A	Aqueous	M4500-H+ B	pH	77638	1	10/21/16 10:52 AM	TITRATOR_161021A
	MW-20A	Aqueous	M2540C	Total Dissolved Solids	77673	1	10/26/16 08:43 AM	WC_161025B
1610170-06A	PDP-23	Aqueous	SW7470A	Mercury Total: Aqueous	77658	1	10/26/16 12:59 PM	CETAC2_HG_161026A
	PDP-23	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	77689	1	10/31/16 02:14 PM	ICP-MS3_161031A
	PDP-23	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	77689	1	10/28/16 04:44 PM	ICP-MS4_161028B
1610170-06D	PDP-23	Aqueous	E300	Anions by IC method - Water	77652	1	10/24/16 12:11 PM	IC2_161024A
	PDP-23	Aqueous	M4500-H+ B	pH	77638	1	10/21/16 10:54 AM	TITRATOR_161021A
	PDP-23	Aqueous	M2540C	Total Dissolved Solids	77673	1	10/26/16 08:43 AM	WC_161025B

DHL Analytical, Inc.

Date: *17-Nov-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	MW-17A
Project:	MLSES-PDP-5	**Lab ID:**	1610170-01
Project No:	5164-B	**Collection Date:**	10/18/16 03:40 PM
Lab Order:	1610170	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	0.0000846	0.0000800	0.000200	J	mg/L	1	10/26/16 12:48 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	10/28/16 04:36 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	10/28/16 04:36 PM
Barium	0.0908	0.00300	0.0100		mg/L	1	10/28/16 04:36 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	10/28/16 04:36 PM
Boron	0.375	0.0100	0.0300		mg/L	1	10/31/16 01:50 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	10/28/16 04:36 PM
Calcium	6.05	0.100	0.300		mg/L	1	10/28/16 04:36 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	10/28/16 04:36 PM
Cobalt	0.00617	0.00300	0.00500		mg/L	1	10/28/16 04:36 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	10/28/16 04:36 PM
Lithium	0.00886	0.00500	0.0100	J	mg/L	1	10/28/16 04:36 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	10/28/16 04:36 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	10/28/16 04:36 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	10/28/16 04:36 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	8.01	0.300	1.00		mg/L	1	10/24/16 10:58 AM
Fluoride	0.182	0.100	0.400	J	mg/L	1	10/24/16 10:58 AM
Sulfate	30.4	1.00	3.00		mg/L	1	10/24/16 10:58 AM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.13	0	0		pH Units@20.3℃	1	10/21/16 10:40 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	108	10.0	10.0		mg/L	1	10/26/16 08:43 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *17-Nov-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	PDP-24
Project:	MLSES-PDP-5	**Lab ID:**	1610170-02
Project No:	5164-B	**Collection Date:**	10/18/16 04:30 PM
Lab Order:	1610170	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	0.000178	0.0000800	0.000200	J	mg/L	1	10/26/16 12:50 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	10/28/16 04:38 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	10/28/16 04:38 PM
Barium	0.0261	0.00300	0.0100		mg/L	1	10/28/16 04:38 PM
Beryllium	0.00271	0.000300	0.00100		mg/L	1	10/28/16 04:38 PM
Boron	3.03	0.100	0.300		mg/L	10	10/31/16 01:56 PM
Cadmium	0.00104	0.000300	0.00100		mg/L	1	10/28/16 04:38 PM
Calcium	23.5	1.00	3.00		mg/L	10	10/31/16 01:56 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	10/28/16 04:38 PM
Cobalt	0.0592	0.00300	0.00500		mg/L	1	10/28/16 04:38 PM
Lead	0.00244	0.000300	0.00100		mg/L	1	10/28/16 04:38 PM
Lithium	0.0302	0.00500	0.0100		mg/L	1	10/28/16 04:38 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	10/28/16 04:38 PM
Selenium	0.00204	0.00200	0.00500	J	mg/L	1	10/28/16 04:38 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	10/28/16 04:38 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	21.9	0.300	1.00		mg/L	1	10/24/16 11:13 AM
Fluoride	0.869	0.100	0.400		mg/L	1	10/24/16 11:13 AM
Sulfate	319	10.0	30.0		mg/L	10	10/24/16 03:28 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	4.68	0	0		pH Units@20.9℃	1	10/21/16 10:44 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	516	10.0	10.0		mg/L	1	10/26/16 08:43 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *17-Nov-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	PDP-25
Project:	MLSES-PDP-5	**Lab ID:**	1610170-03
Project No:	5164-B	**Collection Date:**	10/19/16 07:50 AM
Lab Order:	1610170	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	10/26/16 12:53 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	10/28/16 04:40 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	10/28/16 04:40 PM
Barium	0.178	0.00300	0.0100		mg/L	1	10/28/16 04:40 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	10/28/16 04:40 PM
Boron	0.117	0.0100	0.0300		mg/L	1	10/31/16 04:08 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	10/28/16 04:40 PM
Calcium	37.2	1.00	3.00		mg/L	10	10/31/16 02:02 PM
Chromium	0.00684	0.00200	0.00500		mg/L	1	10/28/16 04:40 PM
Cobalt	0.0104	0.00300	0.00500		mg/L	1	10/28/16 04:40 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	10/28/16 04:40 PM
Lithium	0.0974	0.00500	0.0100		mg/L	1	10/28/16 04:40 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	10/28/16 04:40 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	10/28/16 04:40 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	10/28/16 04:40 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	129	3.00	10.0		mg/L	10	10/24/16 03:43 PM
Fluoride	0.198	0.100	0.400	J	mg/L	1	10/24/16 11:27 AM
Sulfate	98.6	1.00	3.00		mg/L	1	10/24/16 11:27 AM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.17	0	0		pH Units@20.4℃	1	10/21/16 10:47 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	590	10.0	10.0		mg/L	1	10/26/16 08:43 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *17-Nov-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	PDP-26
Project:	MLSES-PDP-5	**Lab ID:**	1610170-04
Project No:	5164-B	**Collection Date:**	10/19/16 08:45 AM
Lab Order:	1610170	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	10/26/16 12:55 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	10/28/16 11:17 AM
Arsenic	0.00271	0.00200	0.00500	J	mg/L	1	10/28/16 11:17 AM
Barium	0.0287	0.00300	0.0100		mg/L	1	10/28/16 11:17 AM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	10/28/16 11:17 AM
Boron	0.0483	0.0100	0.0300		mg/L	1	10/28/16 11:17 AM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	10/28/16 11:17 AM
Calcium	2.31	0.100	0.300		mg/L	1	10/28/16 11:17 AM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	10/28/16 11:17 AM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	10/28/16 11:17 AM
Lead	<0.000300	0.000300	0.00100		mg/L	1	10/28/16 11:17 AM
Lithium	0.0122	0.00500	0.0100		mg/L	1	10/28/16 11:17 AM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	10/28/16 11:17 AM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	10/28/16 11:17 AM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	10/28/16 11:17 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	5.22	0.300	1.00		mg/L	1	10/24/16 11:42 AM
Fluoride	<0.100	0.100	0.400		mg/L	1	10/24/16 11:42 AM
Sulfate	6.19	1.00	3.00		mg/L	1	10/24/16 11:42 AM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.61	0	0		pH Units@20.3℃	1	10/21/16 10:50 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	87.0	10.0	10.0		mg/L	1	10/26/16 08:43 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *17-Nov-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	MW-20A
Project:	MLSES-PDP-5	**Lab ID:**	1610170-05
Project No:	5164-B	**Collection Date:**	10/19/16 09:35 AM
Lab Order:	1610170	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	0.000362	0.0000800	0.000200		mg/L	1	10/26/16 12:57 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	10/28/16 04:42 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	10/28/16 04:42 PM
Barium	0.0282	0.00300	0.0100		mg/L	1	10/28/16 04:42 PM
Beryllium	0.000541	0.000300	0.00100	J	mg/L	1	10/28/16 04:42 PM
Boron	0.126	0.0100	0.0300		mg/L	1	10/31/16 04:14 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	10/28/16 04:42 PM
Calcium	10.8	1.00	3.00		mg/L	10	10/31/16 02:08 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	10/28/16 04:42 PM
Cobalt	0.00382	0.00300	0.00500	J	mg/L	1	10/28/16 04:42 PM
Lead	0.00136	0.000300	0.00100		mg/L	1	10/28/16 04:42 PM
Lithium	0.0194	0.00500	0.0100		mg/L	1	10/28/16 04:42 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	10/28/16 04:42 PM
Selenium	0.00478	0.00200	0.00500	J	mg/L	1	10/28/16 04:42 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	10/28/16 04:42 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	10.9	0.300	1.00		mg/L	1	10/24/16 11:56 AM
Fluoride	0.520	0.100	0.400		mg/L	1	10/24/16 11:56 AM
Sulfate	79.6	1.00	3.00		mg/L	1	10/24/16 11:56 AM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	4.80	0	0		pH Units@20.1℃	1	10/21/16 10:52 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	229	10.0	10.0		mg/L	1	10/26/16 08:43 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *17-Nov-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	PDP-23
Project:	MLSES-PDP-5	**Lab ID:**	1610170-06
Project No:	5164-B	**Collection Date:**	10/19/16 10:30 AM
Lab Order:	1610170	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	10/26/16 12:59 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	10/28/16 04:44 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	10/28/16 04:44 PM
Barium	0.0413	0.00300	0.0100		mg/L	1	10/28/16 04:44 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	10/28/16 04:44 PM
Boron	0.0456	0.0100	0.0300		mg/L	1	10/31/16 02:14 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	10/28/16 04:44 PM
Calcium	1.70	0.100	0.300		mg/L	1	10/28/16 04:44 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	10/28/16 04:44 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	10/28/16 04:44 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	10/28/16 04:44 PM
Lithium	0.0126	0.00500	0.0100		mg/L	1	10/28/16 04:44 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	10/28/16 04:44 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	10/28/16 04:44 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	10/28/16 04:44 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	5.09	0.300	1.00		mg/L	1	10/24/16 12:11 PM
Fluoride	0.129	0.100	0.400	J	mg/L	1	10/24/16 12:11 PM
Sulfate	1.31	1.00	3.00	J	mg/L	1	10/24/16 12:11 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	5.85	0	0		pH Units@20℃	1	10/21/16 10:54 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	78.0	10.0	10.0		mg/L	1	10/26/16 08:43 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT: Pastor, Behling & Wheeler
Work Order: 1610170
Project: MLSES-PDP-5

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_161026A

The QC data in batch 77658 applies to the following samples: 1610170-01A, 1610170-02A, 1610170-03A , 1610170-04A, 1610170-05A, 1610170-06A

Sample ID	**MB-77658**	Batch ID:	**77658**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**CETAC2_HG_161026A**	Analysis Date:	**10/26/2016 12:41:45 P**	Prep Date:	**10/24/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.0000800	0.000200								

Sample ID	**LCS-77658**	Batch ID:	**77658**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**CETAC2_HG_161026A**	Analysis Date:	**10/26/2016 12:44:01 P**	Prep Date:	**10/24/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00213	0.000200	0.00200	0	106	85	115			

Sample ID	**LCSD-77658**	Batch ID:	**77658**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**LCSD**	Run ID:	**CETAC2_HG_161026A**	Analysis Date:	**10/26/2016 12:46:17 P**	Prep Date:	**10/24/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00215	0.000200	0.00200	0	108	85	115	0.935	15	

Sample ID	**1610190-01B SD**	Batch ID:	**77658**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**SD**	Run ID:	**CETAC2_HG_161026A**	Analysis Date:	**10/26/2016 1:27:09 PM**	Prep Date:	**10/24/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.000400	0.00100	0	0				0	10	

Sample ID	**1610190-01B PDS**	Batch ID:	**77658**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**PDS**	Run ID:	**CETAC2_HG_161026A**	Analysis Date:	**10/26/2016 1:29:25 PM**	Prep Date:	**10/24/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00242	0.000200	0.00250	0	96.8	85	115			

Sample ID	**1610190-01B MS**	Batch ID:	**77658**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**MS**	Run ID:	**CETAC2_HG_161026A**	Analysis Date:	**10/26/2016 1:31:41 PM**	Prep Date:	**10/24/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00204	0.000200	0.00200	0	102	80	120			

Sample ID	**1610190-01B MSD**	Batch ID:	**77658**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**MSD**	Run ID:	**CETAC2_HG_161026A**	Analysis Date:	**10/26/2016 1:33:58 PM**	Prep Date:	**10/24/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00202	0.000200	0.00200	0	101	80	120	0.985	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1610170
Project: MLSES-PDP-5

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_161026A

Sample ID **ICV-161026**	Batch ID: **R88716**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **ICV**	Run ID: **CETAC2_HG_161026A**	Analysis Date: **10/26/2016 11:18:56 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00400	0.000200	0.00400	0	100	90	110			

Sample ID **CCV2-161026**	Batch ID: **R88716**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_161026A**	Analysis Date: **10/26/2016 12:31:38 P**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00196	0.000200	0.00200	0	98.0	90	110			

Sample ID **CCV3-161026**	Batch ID: **R88716**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_161026A**	Analysis Date: **10/26/2016 1:11:14 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00197	0.000200	0.00200	0	98.5	90	110			

Sample ID **CCV4-161026**	Batch ID: **R88716**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_161026A**	Analysis Date: **10/26/2016 1:47:38 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00200	0.000200	0.00200	0	100	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1610170
Project: MLSES-PDP-5

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS3_161031A

Sample ID **ICV1-161031**	Batch ID: **R88782**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS3_161031A**	Analysis Date: **10/31/2016 1:26:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.104	0.0300	0.100	0	104	90	110			
Calcium	2.43	0.300	2.50	0	97.2	90	110			

Sample ID **ILCVL-161031**	Batch ID: **R88782**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS3_161031A**	Analysis Date: **10/31/2016 1:38:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0217	0.0300	0.0200	0	109	70	130			
Calcium	0.0944	0.300	0.100	0	94.4	70	130			

Sample ID **CCV1-161031**	Batch ID: **R88782**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS3_161031A**	Analysis Date: **10/31/2016 2:50:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.197	0.0300	0.200	0	98.3	90	110			
Calcium	4.93	0.300	5.00	0	98.6	90	110			

Sample ID **LCVL1-161031**	Batch ID: **R88782**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS3_161031A**	Analysis Date: **10/31/2016 3:38:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0218	0.0300	0.0200	0	109	70	130			
Calcium	0.0870	0.300	0.100	0	87.0	70	130			

Sample ID **CCV2-161031**	Batch ID: **R88782**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS3_161031A**	Analysis Date: **10/31/2016 4:45:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.190	0.0300	0.200	0	95.2	90	110			
Calcium	4.88	0.300	5.00	0	97.6	90	110			

Sample ID **LCVL2-161031**	Batch ID: **R88782**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS3_161031A**	Analysis Date: **10/31/2016 4:57:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0221	0.0300	0.0200	0	110	70	130			
Calcium	0.0909	0.300	0.100	0	90.9	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1610170
Project: MLSES-PDP-5

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161028A

The QC data in batch 77689 applies to the following samples: 1610170-01A, 1610170-02A, 1610170-03A, 1610170-04A, 1610170-05A, 1610170-06A

Sample ID **MB-77689**	Batch ID: **77689**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MBLK**	Run ID: **ICP-MS4_161028A**	Analysis Date: **10/28/2016 11:09:00 A**	Prep Date: **10/27/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.000800	0.00250								
Arsenic	<0.00200	0.00500								
Barium	<0.00300	0.0100								
Beryllium	<0.000300	0.00100								
Boron	<0.0100	0.0300								
Cadmium	<0.000300	0.00100								
Calcium	<0.100	0.300								
Chromium	<0.00200	0.00500								
Cobalt	<0.00300	0.00500								
Lead	<0.000300	0.00100								
Lithium	<0.00500	0.0100								
Molybdenum	<0.00200	0.00500								
Selenium	<0.00200	0.00500								
Thallium	<0.000500	0.00150								

Sample ID **LCS-77689**	Batch ID: **77689**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCS**	Run ID: **ICP-MS4_161028A**	Analysis Date: **10/28/2016 11:11:00 A**	Prep Date: **10/27/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.201	0.00250	0.200	0	101	80	120			
Arsenic	0.205	0.00500	0.200	0	102	80	120			
Barium	0.203	0.0100	0.200	0	101	80	120			
Beryllium	0.209	0.00100	0.200	0	104	80	120			
Boron	0.195	0.0300	0.200	0	97.4	80	120			
Cadmium	0.204	0.00100	0.200	0	102	80	120			
Calcium	5.06	0.300	5.00	0	101	80	120			
Chromium	0.213	0.00500	0.200	0	106	80	120			
Cobalt	0.210	0.00500	0.200	0	105	80	120			
Lead	0.205	0.00100	0.200	0	103	80	120			
Lithium	0.197	0.0100	0.200	0	98.7	80	120			
Molybdenum	0.201	0.00500	0.200	0	101	80	120			
Selenium	0.206	0.00500	0.200	0	103	80	120			
Thallium	0.203	0.00150	0.200	0	101	80	120			

Sample ID **LCSD-77689**	Batch ID: **77689**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCSD**	Run ID: **ICP-MS4_161028A**	Analysis Date: **10/28/2016 11:13:00 A**	Prep Date: **10/27/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.198	0.00250	0.200	0	99.2	80	120	1.50	15	
Arsenic	0.204	0.00500	0.200	0	102	80	120	0.410	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1610170
Project: MLSES-PDP-5

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161028A

Sample ID **LCSD-77689**	Batch ID: **77689**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCSD**	Run ID: **ICP-MS4_161028A**	Analysis Date: **10/28/2016 11:13:00 A**	Prep Date: **10/27/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.201	0.0100	0.200	0	100	80	120	0.998	15	
Beryllium	0.205	0.00100	0.200	0	103	80	120	1.73	15	
Boron	0.199	0.0300	0.200	0	99.5	80	120	2.13	15	
Cadmium	0.201	0.00100	0.200	0	100	80	120	1.58	15	
Calcium	4.92	0.300	5.00	0	98.5	80	120	2.73	15	
Chromium	0.211	0.00500	0.200	0	105	80	120	1.08	15	
Cobalt	0.209	0.00500	0.200	0	104	80	120	0.781	15	
Lead	0.207	0.00100	0.200	0	103	80	120	0.506	15	
Lithium	0.202	0.0100	0.200	0	101	80	120	2.12	15	
Molybdenum	0.200	0.00500	0.200	0	99.8	80	120	0.769	15	
Selenium	0.206	0.00500	0.200	0	103	80	120	0.244	15	
Thallium	0.205	0.00150	0.200	0	103	80	120	1.35	15	

Sample ID **1610170-04A SD**	Batch ID: **77689**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS4_161028A**	Analysis Date: **10/28/2016 11:19:00 A**	Prep Date: **10/27/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.00400	0.0125	0	0				0	10	
Arsenic	<0.0100	0.0250	0	0.00271				0	10	
Barium	0.0288	0.0500	0	0.0287				0.279	10	
Beryllium	<0.00150	0.00500	0	0				0	10	
Boron	0.0600	0.150	0	0.0483				21.5	10	R
Cadmium	<0.00150	0.00500	0	0				0	10	
Calcium	2.34	1.50	0	2.31				1.36	10	
Chromium	<0.0100	0.0250	0	0				0	10	
Cobalt	<0.0150	0.0250	0	0				0	10	
Lead	<0.00150	0.00500	0	0				0	10	
Lithium	<0.0250	0.0500	0	0.0122				0	10	
Molybdenum	<0.0100	0.0250	0	0				0	10	
Selenium	<0.0100	0.0250	0	0				0	10	
Thallium	<0.00250	0.00750	0	0				0	10	

Sample ID **1610170-04A PDS**	Batch ID: **77689**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_161028A**	Analysis Date: **10/28/2016 11:21:00 A**	Prep Date: **10/27/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.182	0.00250	0.200	0	90.8	80	120			
Arsenic	0.193	0.00500	0.200	0.00271	95.2	80	120			
Barium	0.227	0.0100	0.200	0.0287	99.4	80	120			
Beryllium	0.198	0.00100	0.200	0	99.2	80	120			
Boron	0.237	0.0300	0.200	0.0483	94.3	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1610170
Project: MLSES-PDP-5

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161028A

Sample ID **1610170-04A PDS**	Batch ID: **77689**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_161028A**	Analysis Date: **10/28/2016 11:21:00 A**	Prep Date: **10/27/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cadmium	0.194	0.00100	0.200	0	96.9	80	120			
Calcium	6.81	0.300	5.00	2.31	90.0	80	120			
Chromium	0.208	0.00500	0.200	0	104	80	120			
Cobalt	0.200	0.00500	0.200	0	99.9	80	120			
Lead	0.200	0.00100	0.200	0	99.8	80	120			
Lithium	0.215	0.0100	0.200	0.0122	101	80	120			
Molybdenum	0.189	0.00500	0.200	0	94.5	80	120			
Selenium	0.190	0.00500	0.200	0	94.8	80	120			
Thallium	0.198	0.00150	0.200	0	98.8	80	120			

Sample ID **1610170-04A MS**	Batch ID: **77689**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS4_161028A**	Analysis Date: **10/28/2016 11:25:00 A**	Prep Date: **10/27/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.206	0.00250	0.200	0	103	80	120			
Arsenic	0.204	0.00500	0.200	0.00271	101	80	120			
Barium	0.238	0.0100	0.200	0.0287	105	80	120			
Beryllium	0.204	0.00100	0.200	0	102	80	120			
Boron	0.282	0.0300	0.200	0.0483	117	80	120			
Cadmium	0.206	0.00100	0.200	0	103	80	120			
Calcium	7.25	0.300	5.00	2.31	98.8	80	120			
Chromium	0.212	0.00500	0.200	0	106	80	120			
Cobalt	0.210	0.00500	0.200	0	105	80	120			
Lead	0.209	0.00100	0.200	0	105	80	120			
Lithium	0.220	0.0100	0.200	0.0122	104	80	120			
Molybdenum	0.206	0.00500	0.200	0	103	80	120			
Selenium	0.201	0.00500	0.200	0	101	80	120			
Thallium	0.208	0.00150	0.200	0	104	80	120			

Sample ID **1610170-04A MSD**	Batch ID: **77689**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS4_161028A**	Analysis Date: **10/28/2016 11:27:00 A**	Prep Date: **10/27/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.201	0.00250	0.200	0	101	80	120	2.24	15	
Arsenic	0.204	0.00500	0.200	0.00271	101	80	120	0.079	15	
Barium	0.233	0.0100	0.200	0.0287	102	80	120	2.29	15	
Beryllium	0.208	0.00100	0.200	0	104	80	120	2.07	15	
Boron	0.271	0.0300	0.200	0.0483	111	80	120	4.32	15	
Cadmium	0.204	0.00100	0.200	0	102	80	120	0.913	15	
Calcium	7.37	0.300	5.00	2.31	101	80	120	1.58	15	
Chromium	0.214	0.00500	0.200	0	107	80	120	0.945	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1610170
Project: MLSES-PDP-5

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161028A

Sample ID **1610170-04A MSD** Batch ID: **77689** TestNo: **SW6020A** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS4_161028A** Analysis Date: **10/28/2016 11:27:00 A** Prep Date: **10/27/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cobalt	0.208	0.00500	0.200	0	104	80	120	0.756	15	
Lead	0.212	0.00100	0.200	0	106	80	120	1.21	15	
Lithium	0.219	0.0100	0.200	0.0122	103	80	120	0.468	15	
Molybdenum	0.202	0.00500	0.200	0	101	80	120	2.09	15	
Selenium	0.201	0.00500	0.200	0	101	80	120	0.110	15	
Thallium	0.210	0.00150	0.200	0	105	80	120	1.20	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1610170
Project: MLSES-PDP-5

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161028A

Sample ID **ICV-161028**	Batch ID: **R88745**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_161028A**	Analysis Date: **10/28/2016 10:46:00 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.0994	0.00250	0.100	0	99.4	90	110			
Arsenic	0.0952	0.00500	0.100	0	95.2	90	110			
Barium	0.0946	0.0100	0.100	0	94.6	90	110			
Beryllium	0.0978	0.00100	0.100	0	97.8	90	110			
Boron	0.0954	0.0300	0.100	0	95.4	90	110			
Cadmium	0.0943	0.00100	0.100	0	94.3	90	110			
Calcium	2.37	0.300	2.50	0	94.9	90	110			
Chromium	0.103	0.00500	0.100	0	103	90	110			
Cobalt	0.100	0.00500	0.100	0	100	90	110			
Lead	0.0988	0.00100	0.100	0	98.8	90	110			
Lithium	0.0955	0.0100	0.100	0	95.5	90	110			
Molybdenum	0.0917	0.00500	0.100	0	91.7	90	110			
Selenium	0.0981	0.00500	0.100	0	98.1	90	110			
Thallium	0.0982	0.00150	0.100	0	98.2	90	110			

Sample ID **LCVL-161028**	Batch ID: **R88745**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_161028A**	Analysis Date: **10/28/2016 11:02:00 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00194	0.00250	0.00200	0	97.2	70	130			
Arsenic	0.00510	0.00500	0.00500	0	102	70	130			
Barium	0.00511	0.0100	0.00500	0	102	70	130			
Beryllium	0.00126	0.00100	0.00100	0	126	70	130			
Boron	0.0206	0.0300	0.0200	0	103	70	130			
Cadmium	0.00102	0.00100	0.00100	0	102	70	130			
Calcium	0.0946	0.300	0.100	0	94.6	70	130			
Chromium	0.00522	0.00500	0.00500	0	104	70	130			
Cobalt	0.00519	0.00500	0.00500	0	104	70	130			
Lead	0.00104	0.00100	0.00100	0	104	70	130			
Lithium	0.0106	0.0100	0.0100	0	106	70	130			
Molybdenum	0.00499	0.00500	0.00500	0	99.9	70	130			
Selenium	0.00486	0.00500	0.00500	0	97.1	70	130			
Thallium	0.00101	0.00150	0.00100	0	101	70	130			

Sample ID **CCV1-161028**	Batch ID: **R88745**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_161028A**	Analysis Date: **10/28/2016 11:29:00 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.201	0.00250	0.200	0	100	90	110			
Arsenic	0.200	0.00500	0.200	0	99.9	90	110			
Barium	0.200	0.0100	0.200	0	100	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1610170
Project: MLSES-PDP-5

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161028A

Sample ID **CCV1-161028** Batch ID: **R88745** TestNo: **SW6020A** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_161028A** Analysis Date: **10/28/2016 11:29:00 A** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.196	0.00100	0.200	0	97.9	90	110			
Boron	0.207	0.0300	0.200	0	103	90	110			
Cadmium	0.201	0.00100	0.200	0	101	90	110			
Calcium	4.62	0.300	5.00	0	92.4	90	110			
Chromium	0.209	0.00500	0.200	0	104	90	110			
Cobalt	0.205	0.00500	0.200	0	102	90	110			
Lead	0.205	0.00100	0.200	0	103	90	110			
Lithium	0.203	0.0100	0.200	0	101	90	110			
Molybdenum	0.198	0.00500	0.200	0	99.0	90	110			
Selenium	0.201	0.00500	0.200	0	100	90	110			
Thallium	0.204	0.00150	0.200	0	102	90	110			

Sample ID **LCVL1-161028** Batch ID: **R88745** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_161028A** Analysis Date: **10/28/2016 11:46:00 A** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00194	0.00250	0.00200	0	97.0	70	130			
Arsenic	0.00505	0.00500	0.00500	0	101	70	130			
Barium	0.00490	0.0100	0.00500	0	98.0	70	130			
Beryllium	0.00107	0.00100	0.00100	0	107	70	130			
Boron	0.0227	0.0300	0.0200	0	114	70	130			
Cadmium	0.000981	0.00100	0.00100	0	98.1	70	130			
Calcium	0.0930	0.300	0.100	0	93.0	70	130			
Chromium	0.00524	0.00500	0.00500	0	105	70	130			
Cobalt	0.00522	0.00500	0.00500	0	104	70	130			
Lead	0.00103	0.00100	0.00100	0	103	70	130			
Lithium	0.0109	0.0100	0.0100	0	109	70	130			
Molybdenum	0.00488	0.00500	0.00500	0	97.5	70	130			
Selenium	0.00562	0.00500	0.00500	0	112	70	130			
Thallium	0.000994	0.00150	0.00100	0	99.4	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161028B

Sample ID **ICV-161028**	Batch ID: **R88760**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_161028B**	Analysis Date: **10/28/2016 10:46:00 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.0994	0.00250	0.100	0	99.4	90	110			
Arsenic	0.0952	0.00500	0.100	0	95.2	90	110			
Barium	0.0946	0.0100	0.100	0	94.6	90	110			
Beryllium	0.0978	0.00100	0.100	0	97.8	90	110			
Cadmium	0.0943	0.00100	0.100	0	94.3	90	110			
Calcium	2.37	0.300	2.50	0	94.9	90	110			
Chromium	0.103	0.00500	0.100	0	103	90	110			
Cobalt	0.100	0.00500	0.100	0	100	90	110			
Lead	0.0988	0.00100	0.100	0	98.8	90	110			
Lithium	0.0955	0.0100	0.100	0	95.5	90	110			
Molybdenum	0.0917	0.00500	0.100	0	91.7	90	110			
Selenium	0.0981	0.00500	0.100	0	98.1	90	110			
Thallium	0.0982	0.00150	0.100	0	98.2	90	110			

Sample ID **LCVL-161028**	Batch ID: **R88760**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_161028B**	Analysis Date: **10/28/2016 11:02:00 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00194	0.00250	0.00200	0	97.2	70	130			
Arsenic	0.00510	0.00500	0.00500	0	102	70	130			
Barium	0.00511	0.0100	0.00500	0	102	70	130			
Beryllium	0.00126	0.00100	0.00100	0	126	70	130			
Cadmium	0.00102	0.00100	0.00100	0	102	70	130			
Calcium	0.0946	0.300	0.100	0	94.6	70	130			
Chromium	0.00522	0.00500	0.00500	0	104	70	130			
Cobalt	0.00519	0.00500	0.00500	0	104	70	130			
Lead	0.00104	0.00100	0.00100	0	104	70	130			
Lithium	0.0106	0.0100	0.0100	0	106	70	130			
Molybdenum	0.00499	0.00500	0.00500	0	99.9	70	130			
Selenium	0.00486	0.00500	0.00500	0	97.1	70	130			
Thallium	0.00101	0.00150	0.00100	0	101	70	130			

Sample ID **CCV8-161028**	Batch ID: **R88760**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_161028B**	Analysis Date: **10/28/2016 4:14:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.206	0.00250	0.200	0	103	90	110			
Arsenic	0.203	0.00500	0.200	0	101	90	110			
Barium	0.202	0.0100	0.200	0	101	90	110			
Beryllium	0.200	0.00100	0.200	0	99.8	90	110			
Cadmium	0.203	0.00100	0.200	0	101	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1610170
Project: MLSES-PDP-5

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161028B

Sample ID **CCV8-161028** Batch ID: **R88760** TestNo: **SW6020A** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_161028B** Analysis Date: **10/28/2016 4:14:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.77	0.300	5.00	0	95.4	90	110			
Chromium	0.208	0.00500	0.200	0	104	90	110			
Cobalt	0.206	0.00500	0.200	0	103	90	110			
Lead	0.205	0.00100	0.200	0	102	90	110			
Lithium	0.199	0.0100	0.200	0	99.5	90	110			
Molybdenum	0.201	0.00500	0.200	0	101	90	110			
Selenium	0.204	0.00500	0.200	0	102	90	110			
Thallium	0.201	0.00150	0.200	0	101	90	110			

Sample ID **LCVL8-161028** Batch ID: **R88760** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_161028B** Analysis Date: **10/28/2016 4:21:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00224	0.00250	0.00200	0	112	70	130			
Arsenic	0.00499	0.00500	0.00500	0	99.7	70	130			
Barium	0.00508	0.0100	0.00500	0	102	70	130			
Beryllium	0.00103	0.00100	0.00100	0	103	70	130			
Cadmium	0.00104	0.00100	0.00100	0	104	70	130			
Calcium	0.0974	0.300	0.100	0	97.4	70	130			
Chromium	0.00544	0.00500	0.00500	0	109	70	130			
Cobalt	0.00509	0.00500	0.00500	0	102	70	130			
Lead	0.00102	0.00100	0.00100	0	102	70	130			
Lithium	0.0104	0.0100	0.0100	0	104	70	130			
Molybdenum	0.00503	0.00500	0.00500	0	101	70	130			
Selenium	0.00580	0.00500	0.00500	0	116	70	130			
Thallium	0.00102	0.00150	0.00100	0	102	70	130			

Sample ID **CCV9-161028** Batch ID: **R88760** TestNo: **SW6020A** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_161028B** Analysis Date: **10/28/2016 4:56:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.201	0.00250	0.200	0	100	90	110			
Arsenic	0.199	0.00500	0.200	0	99.7	90	110			
Barium	0.199	0.0100	0.200	0	99.7	90	110			
Beryllium	0.197	0.00100	0.200	0	98.3	90	110			
Cadmium	0.203	0.00100	0.200	0	102	90	110			
Calcium	4.65	0.300	5.00	0	93.1	90	110			
Chromium	0.210	0.00500	0.200	0	105	90	110			
Cobalt	0.206	0.00500	0.200	0	103	90	110			
Lead	0.203	0.00100	0.200	0	101	90	110			
Lithium	0.189	0.0100	0.200	0	94.7	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1610170
Project: MLSES-PDP-5

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161028B

Sample ID **CCV9-161028** Batch ID: **R88760** TestNo: **SW6020A** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_161028B** Analysis Date: **10/28/2016 4:56:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Molybdenum	0.204	0.00500	0.200	0	102	90	110			
Selenium	0.200	0.00500	0.200	0	100	90	110			
Thallium	0.202	0.00150	0.200	0	101	90	110			

Sample ID **LCVL9-161028** Batch ID: **R88760** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_161028B** Analysis Date: **10/28/2016 5:08:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00197	0.00250	0.00200	0	98.4	70	130			
Arsenic	0.00491	0.00500	0.00500	0	98.1	70	130			
Barium	0.00513	0.0100	0.00500	0	103	70	130			
Beryllium	0.000934	0.00100	0.00100	0	93.4	70	130			
Cadmium	0.00103	0.00100	0.00100	0	103	70	130			
Calcium	0.0970	0.300	0.100	0	97.0	70	130			
Chromium	0.00540	0.00500	0.00500	0	108	70	130			
Cobalt	0.00517	0.00500	0.00500	0	103	70	130			
Lead	0.000984	0.00100	0.00100	0	98.4	70	130			
Lithium	0.0112	0.0100	0.0100	0	112	70	130			
Molybdenum	0.00504	0.00500	0.00500	0	101	70	130			
Selenium	0.00522	0.00500	0.00500	0	104	70	130			
Thallium	0.00103	0.00150	0.00100	0	103	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1610170
Project: MLSES-PDP-5

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_161024A

The QC data in batch 77652 applies to the following samples: 1610170-01D, 1610170-02D, 1610170-03D, 1610170-04D, 1610170-05D, 1610170-06D

Sample ID	**MB-77652**	Batch ID:	**77652**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**IC2_161024A**	Analysis Date:	**10/24/2016 9:41:08 AM**	Prep Date:	**10/24/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00								
Fluoride	<0.100	0.400								
Sulfate	<1.00	3.00								

Sample ID	**LCS-77652**	Batch ID:	**77652**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**IC2_161024A**	Analysis Date:	**10/24/2016 9:55:44 AM**	Prep Date:	**10/24/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.57	1.00	10.00	0	95.7	90	110			
Fluoride	3.72	0.400	4.000	0	93.0	90	110			
Sulfate	29.1	3.00	30.00	0	96.8	90	110			

Sample ID	**LCSD-77652**	Batch ID:	**77652**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**LCSD**	Run ID:	**IC2_161024A**	Analysis Date:	**10/24/2016 10:10:21 A**	Prep Date:	**10/24/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.57	1.00	10.00	0	95.7	90	110	0.028	20	
Fluoride	3.81	0.400	4.000	0	95.2	90	110	2.36	20	
Sulfate	29.1	3.00	30.00	0	96.9	90	110	0.099	20	

Sample ID	**1610184-02DMS**	Batch ID:	**77652**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**MS**	Run ID:	**IC2_161024A**	Analysis Date:	**10/24/2016 4:12:46 PM**	Prep Date:	**10/24/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	217	10.0	200.0	12.98	102	90	110			
Fluoride	200	4.00	200.0	0	100	90	110			
Sulfate	366	30.0	200.0	159.6	103	90	110			

Sample ID	**1610184-02DMSD**	Batch ID:	**77652**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**MSD**	Run ID:	**IC2_161024A**	Analysis Date:	**10/24/2016 4:27:23 PM**	Prep Date:	**10/24/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	217	10.0	200.0	12.98	102	90	110	0.099	20	
Fluoride	201	4.00	200.0	0	101	90	110	0.428	20	
Sulfate	366	30.0	200.0	159.6	103	90	110	0.113	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1610170
Project: MLSES-PDP-5

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_161024A

Sample ID **ICV-161024**	Batch ID: **R88687**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC2_161024A**	Analysis Date: **10/24/2016 9:01:50 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	24.8	1.00	25.00	0	99.2	90	110			
Fluoride	9.44	0.400	10.00	0	94.4	90	110			
Sulfate	75.0	3.00	75.00	0	100	90	110			

Sample ID **CCV1-161024**	Batch ID: **R88687**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_161024A**	Analysis Date: **10/24/2016 1:11:06 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.73	1.00	10.00	0	97.3	90	110			
Fluoride	3.92	0.400	4.000	0	98.1	90	110			
Sulfate	29.6	3.00	30.00	0	98.8	90	110			

Sample ID **CCV2-161024**	Batch ID: **R88687**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_161024A**	Analysis Date: **10/24/2016 4:41:59 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.83	1.00	10.00	0	98.3	90	110			
Fluoride	4.01	0.400	4.000	0	100	90	110			
Sulfate	29.8	3.00	30.00	0	99.2	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1610170
Project: MLSES-PDP-5

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_161021A

The QC data in batch 77638 applies to the following samples: 1610170-01D, 1610170-02D, 1610170-03D, 1610170-04D, 1610170-05D, 1610170-06D

Sample ID **1610170-01D-DUP** Batch ID: **77638** TestNo: **M4500-H+ B** Units: **pH Units@20.4℃**
SampType: **DUP** Run ID: **TITRATOR_161021A** Analysis Date: **10/21/2016 10:43:00 A** Prep Date: **10/21/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	5.91	0	0	6.130				3.65	5	

Sample ID **1610171-08D-DUP** Batch ID: **77638** TestNo: **M4500-H+ B** Units: **pH Units@20.9℃**
SampType: **DUP** Run ID: **TITRATOR_161021A** Analysis Date: **10/21/2016 11:14:00 A** Prep Date: **10/21/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	6.19	0	0	6.190				0	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1610170
Project: MLSES-PDP-5

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_161021A

Sample ID	**ICV-161021**	Batch ID:	**R88654**	TestNo:	**M4500-H+ B**	Units:	**pH Units@21.6℃**
SampType:	**ICV**	Run ID:	**TITRATOR_161021A**	Analysis Date:	**10/21/2016 9:37:00 AM**	Prep Date:	**10/21/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	9.90	0	10.00	0	99.0	99	101			

Sample ID	**CCV-161021**	Batch ID:	**R88654**	TestNo:	**M4500-H+ B**	Units:	**pH Units@21.1℃**
SampType:	**CCV**	Run ID:	**TITRATOR_161021A**	Analysis Date:	**10/21/2016 11:01:00 A**	Prep Date:	**10/21/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	6.95	0	7.000	0	99.3	97.1	102.9			

Sample ID	**CCV2-161021**	Batch ID:	**R88654**	TestNo:	**M4500-H+ B**	Units:	**pH Units@21.5℃**
SampType:	**CCV**	Run ID:	**TITRATOR_161021A**	Analysis Date:	**10/21/2016 11:28:00 A**	Prep Date:	**10/21/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	6.95	0	7.000	0	99.3	97.1	102.9			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1610170
Project: MLSES-PDP-5

ANALYTICAL QC SUMMARY REPORT

RunID: WC_161025B

The QC data in batch 77673 applies to the following samples: 1610170-01D, 1610170-02D, 1610170-03D, 1610170-04D, 1610170-05D, 1610170-06D

Sample ID **MB-77673**	Batch ID: **77673**	TestNo: **M2540C**	Units: **mg/L**
SampType: **MBLK**	Run ID: **WC_161025B**	Analysis Date: **10/26/2016 8:43:00 AM**	Prep Date: **10/25/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	<10.0	10.0								

Sample ID **LCS-77673**	Batch ID: **77673**	TestNo: **M2540C**	Units: **mg/L**
SampType: **LCS**	Run ID: **WC_161025B**	Analysis Date: **10/26/2016 8:43:00 AM**	Prep Date: **10/25/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	757	10.0	745.6	0	102	90	113			

Sample ID **1610176-01B-DUP**	Batch ID: **77673**	TestNo: **M2540C**	Units: **mg/L**
SampType: **DUP**	Run ID: **WC_161025B**	Analysis Date: **10/26/2016 8:43:00 AM**	Prep Date: **10/25/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	1800	50.0	0	1735				3.40	5	

Sample ID **1610181-01D-DUP**	Batch ID: **77673**	TestNo: **M2540C**	Units: **mg/L**
SampType: **DUP**	Run ID: **WC_161025B**	Analysis Date: **10/26/2016 8:43:00 AM**	Prep Date: **10/25/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	2510	50.0	0	2395				4.49	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

Case Narrative

Lab No: 20161032

This report contains the analytical results for the 6 sample(s) received under chain of custody by ESC Lab Sciences on 10/24/2016 8:30:40 AM. These samples are associated with your 1610170 project.

The analytical results included in this report meet all applicable quality control procedure requirements except as noted below:

The test results in this report meet all NELAC requirements unless noted below:

This report shall not be reproduced, except in full, without the written approval of ESC Lab Sciences.

All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client.

Results have been reviewed by the Director of Radiochemistry or their designees and is approved for release.

Observations / Nonconformances

L867982

Analytical Report

	Method	Result	DL	Units	Qual	Prep Date	Analysis Date	Analyst
Lab ID : **20161032-01**								
Client ID : **MW-17A**								
Date Sampled : **10/18/2016 3:40:00 AM**								
Matrix : **NPW**								
		Radiochemical Analyses						
Combined Radium		1.19 +/- 1.01	0.641	pCi/l				
Radium-226	SM 7500 Ra B M*	0.215 +/- 0.127	0.097	pCi/l		11/09/16	11/14/16	AK
Radium-228	EPA 904*/9320*	0.975 +/- 0.881	0.544	pCi/l		10/31/16	11/03/16	JR
Lab ID : **20161032-02**								
Client ID : **PDP-24**								
Date Sampled : **10/18/2016 4:30:00 AM**								
Matrix : **NPW**								
		Radiochemical Analyses						
Combined Radium		1.21 +/- 0.926	0.571	pCi/l				
Radium-226	SM 7500 Ra B M*	0.497 +/- 0.208	0.115	pCi/l		11/09/16	11/14/16	AK
Radium-228	EPA 904*/9320*	0.713 +/- 0.718	0.456	pCi/l		10/31/16	11/03/16	JR
Lab ID : **20161032-03**								
Client ID : **PDP-25**								
Date Sampled : **10/19/2016 7:50:00 AM**								
Matrix : **NPW**								
		Radiochemical Analyses						
Combined Radium		1.78 +/- 1.12	0.803	pCi/l				
Radium-226	SM 7500 Ra B M*	0.021 +/- 0.059	0.112	pCi/l		11/09/16	11/10/16	AK
Radium-228	EPA 904*/9320*	1.76 +/- 1.06	0.691	pCi/l		10/31/16	11/03/16	JR
Lab ID : **20161032-04**								
Client ID : **PDP-26**								
Date Sampled : **10/19/2016 8:45:00 AM**								
Matrix : **NPW**								
		Radiochemical Analyses						
Combined Radium		0.705 +/- 0.861	0.647	pCi/l				
Radium-226	SM 7500 Ra B M*	-0.027 +/- 0.053	0.136	pCi/l		11/09/16	11/10/16	AK
Radium-228	EPA 904*/9320*	0.705 +/- 0.808	0.511	pCi/l		10/31/16	11/03/16	JR

Client	:	DHL Analytical, Inc.
Client Project	:	1610170
Lab Number	:	20161032
Date Reported	:	11/16/16
Date Received	:	10/24/16
Page Number	:	3 of 3

Analytical Report

	Method	Result	DL	Units	Qual	Prep Date	Analysis Date	Analyst
Lab ID :	**20161032-05**							
Client ID :	**MW-20A**							
Date Sampled :	**10/19/2016 9:35:00 AM**							
Matrix :	**NPW**							
	Radiochemical Analyses							
Combined Radium		1.47 +/- 1.16	0.780	pCi/l				
Radium-226	SM 7500 Ra B M*	0.301 +/- 0.162	0.141	pCi/l		11/09/16	11/10/16	AK
Radium-228	EPA 904*/9320*	1.17 +/- 1.00	0.639	pCi/l		10/31/16	11/03/16	JR
Lab ID :	**20161032-06**							
Client ID :	**PDP-23**							
Date Sampled :	**10/19/2016 10:30:00 AM**							
Matrix :	**NPW**							
	Radiochemical Analyses							
Combined Radium		0.664 +/- 0.744	0.603	pCi/l				
Radium-226	SM 7500 Ra B M*	-0.029 +/- 0.082	0.165	pCi/l		11/09/16	11/10/16	AK
Radium-228	EPA 904*/9320*	0.664 +/- 0.662	0.438	pCi/l		10/31/16	11/03/16	JR

QC Report

Parameter	Blank	LCS %REC	LCSD %REC	LCSD RPD	DUP RPD	RER, NAD or DER	MS %REC	MSD %REC	MSD RPD	Batch ID
Radium-226	0.013	106.0			11.2	0.690	106.0	104.0	1.8	R1158
Radium-228	-0.354	84.5			NC	0.300	99.7	98.2	1.4	R3874

Lab Approval:

Ron Eidson
Director of Radiochemistry

*NELAC Certified Parameter BDL = Below Detection Limit

OUTREACH LABORATORY, A Divsion of ESC Lab Sciences
Address: 311 North Aspen Avenue, Broken Arrow, OK, 74012 EMail: outreach@esclabsciences.com - Tel: (918) 251-2515

DHL Analytical, Inc.
2300 Double Creek Drive
Round Rock, TX 78664
TEL: *(512) 388-8222* FAX: *(512) 388-8229*

CHAIN-OF-CUSTODY RECORD

Work Order: 1610170

Subcontractor:

ESC Laboratory
311 North Aspen
Broken Arrow, Oklahoma 74012

TEL: (918) 251-2515
FAX:
Acct #: DHLRRTX

20-Oct-16

	Sample Id	Matrix	DHL#	Date Collected	Bottle Type	Requested Tests					
						E904.0	SM7500Ra-B M				
1	MW-17A	Aqueous	-01B	10/18/16 03:40 PM	500HDPEHNO3	1					
	MW-17A	Aqueous	-01C	10/18/16 03:40 PM	500HDPEHNO3		1				
2	PDP-24	Aqueous	-02B	10/18/16 04:30 PM	500HDPEHNO3	1					
	PDP-24	Aqueous	-02C	10/18/16 04:30 PM	500HDPEHNO3		1				
3	PDP-25	Aqueous	-03B	10/19/16 07:50 AM	500HDPEHNO3	1					
	PDP-25	Aqueous	-03C	10/19/16 07:50 AM	500HDPEHNO3		1				
4	PDP-26	Aqueous	-04B	10/19/16 08:45 AM	500HDPEHNO3	1					
	PDP-26	Aqueous	-04C	10/19/16 08:45 AM	500HDPEHNO3		1				
5	MW-20A	Aqueous	-05B	10/19/16 09:35 AM	500HDPEHNO3	1					
	MW-20A	Aqueous	-05C	10/19/16 09:35 AM	500HDPEHNO3		1				
6	PDP-23	Aqueous	-06B	10/19/16 10:30 AM	500HDPEHNO3	1					
	PDP-23	Aqueous	-06C	10/19/16 10:30 AM	500HDPEHNO3		1				

General Comments:

Please analyze these samples with Normal Turnaround Time.
Report RA-226, Ra-228 & Combined per Specs DHLRRTX033116S.
Quality Control Package Needed: Standard - NELAC Rad Test compliant
Email to cac@dhlanalytical.com & dupont@dhlanalytical.com

L847982

	Date/Time		Date/Time
Relinquished by:	10/20/16 17:30	**Received by:**	10/20/16 17:30
Relinquished by:		**Received by:**	10/24/16 830

20161032

SAMPLE LOGIN

Date Received: *10/24/2016 8:30:4*

Lab Number: 20161032

Due: 11/21/2016

Sample Number	Client Sample ID	Matrix	Date Sampled	Container Type	Container Size	Preservation	Preserved Upon Receipt	Custody Seal	Seal Intact
20161032-01 B	MW-17A	NPW	10/18/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
20161032-01 A	MW-17A	NPW	10/18/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20161032-02 B	PDP-24	NPW	10/18/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
20161032-02 A	PDP-24	NPW	10/18/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20161032-03 B	PDP-25	NPW	10/19/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
20161032-03 A	PDP-25	NPW	10/19/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20161032-04 B	PDP-26	NPW	10/19/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
20161032-04 A	PDP-26	NPW	10/19/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20161032-05 B	MW-20A	NPW	10/19/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
20161032-05 A	MW-20A	NPW	10/19/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20161032-06 B	PDP-23	NPW	10/19/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
20161032-06 A	PDP-23	NPW	10/19/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						

CONTAINER INSPECTION

Coolers 1 Custody Seals Broken Ø Temperature: Amb C Ice Radiation Survey: <300 cpm

SAMPLE INSPECTION

Sample Seal Broken Ø Chain of Custody Record ✓ Labels in Tact ✓ Radiation Survey Complete N/A

Anomalies

Inspected By: [signature] DATE 10/24/16

QA or Designee Review: Raymond Thomas DATE 10/24/16

Sample Custodian Review: [signature] DATE 10/24/16

Project Notes:

November 18, 2016

Will Vienne
Pastor, Behling & Wheeler
2201 Double Creek Dr #4004
Round Rock, Texas 78664
TEL: (512) 671-3434
FAX (512) 671-3446

Order No.: 1610184

RE: MLSES-PDP-5

Dear Will Vienne:

DHL Analytical, Inc. received 4 sample(s) on 10/21/2016 for the analyses presented in the following report.

There were no problems with the analyses and all data met requirements of NELAC except where noted in the Case Narrative. All non-NELAC methods will be identified accordingly in the case narrative and all estimated uncertainties of test results are within method or EPA specifications.

If you have any questions regarding these tests results, please feel free to call. Thank you for using DHL Analytical.

Sincerely,

John DuPont
General Manager

This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211-16-17

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DHL ANALYTICAL
2300 Double Creek Dr. ■ Round Rock, TX 78664
Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

№ 69945

CHAIN-OF-CUSTODY

CLIENT: PBW
ADDRESS: 2201 DOUBLE CREEK DR ROUND ROCK TX 78664
PHONE: 512-671-3434 FAX/E-MAIL: 512-671-3446
DATA REPORTED TO: WILL VIENNE
ADDITIONAL REPORT COPIES TO:

DATE: 10-19-16 PAGE 1 OF 1
PO #: 5164-B DHL WORK ORDER #: 1610184
PROJECT LOCATION OR NAME: MLSES - PDP-5
CLENT PROJECT #: 5164-B COLLECTOR: J. BEAYTON

Authorize 5% surcharge for TRRP Report? ☐ Yes ☐ No

S=SOIL W=WATER A=AIR L=LIQUID SE=SEDIMENT P=PAINT SL=SLUDGE O=OTHER SO=SOLID

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	PRESERVATION: HCl	HNO_3	H_2SO_4 ☐ NaOH ☐	ICE	UNPRESERVED	ANALYSES: BTEX ☐ MTBE ☐ (METHOD 8021)	TPH 1005 ☐ TPH 1006 ☐ HOLD 1006 ☐	GRO (METHOD 8015) ☐ DRO (METHOD 8105) ☐	VOC 8260 ☐ VOC 624 ☐ VOC 8260/5035 ☐	SVOC 8270 ☐ PAH 8270 ☐ HOLD PAH ☐ SVOC 625 ☐	8270 PEST ☐ 625 PEST/PCB ☐ 608 PCB ☐ 8270 PCB ☐	8270 O-P PEST ☐ 8082 PCB ☐ 8270 PCB ☐	8321 HERB ☐ T PHOS, AMMONIA ☐	METALS 6020 ☐ METALS 200.8 ☐ DISS. METALS ☐	RCRA ☐ TX1T ☐	PH ☐ HEX CHROM ☐ ALKALINITY ☐ COD ☐	CHLORIDE ☐ ANIONS ☐	TCLP-SVOC ☐ VOC ☐ PEST ☐ HERB ☐	TCLP-METALS ☐ RCRA 8 ☐ TX-11 ☐ Pb ☐	RCI ☐ FLASHPOINT ☐ DGAS ☐	TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐	CCR	FIELD NOTES
MW-19	01	10-19-16	1125	W	P	4		X		X	X																	X	
PDP-22	02	↓	1215	W	P	4		X		X	X																	X	
MW-18A	03		1310	W	P	4		X		X	X																	X	
EB-1	01		1330	W	P	4		X		X	X																	X	

RELINQUISHED BY: (Signature) DATE/TIME 10/19/16 RECEIVED BY: (Signature) 1730
RELINQUISHED BY: (Signature) DATE/TIME 10/21/16 RECEIVED BY: (Signature) 910
RELINQUISHED BY: (Signature) DATE/TIME RECEIVED BY: (Signature)

APPENDIX F-Revision 2, February 27, 2014 ☐ DHL DISPOSAL @ $5.00 each ☐ Return

TURN AROUND TIME
RUSH ☐ CALL FIRST
1 DAY ☐ CALL FIRST
2 DAY ☐
NORMAL ☒
OTHER ☐ _____

LABORATORY USE ONLY:
RECEIVING TEMP: 2.4 THERM #: 78
CUSTODY SEALS: ☐ BROKEN ☐ INTACT ☒ NOT USED
CARRIER: ☐ LONE STAR ☐ FEDEX ☐ UPS ☐ OTHER
☐ COURIER DELIVERY
☐ HAND DELIVERED

John Dupont

From: Sara Taube [Sara.Taube@pbwllc.com]
Sent: Wednesday, July 22, 2015 12:05 PM
To: John Dupont
Subject: CCR Appendix III and IV
Follow Up Flag: Follow up
Flag Status: Completed

Hi John,

Here are the Appendix III and Appendix IV constituents that we will need to have analyzed under the CCR Rule.

Appendix III
Boron
Calcium
Chloride
Fluoride
pH
sulfate
TDS

Appendix IV
Antimony
Arsenic
Barium
Beryllium
Cadmium
Chromium
Cobalt
Fluoride
Lead
Lithium
Mercury
Molybdenum
Selenium
Thallium
Radium 226 and 228

We are looking to have approximately 74 wells sampled 8 times over the course of the next two years. Please let me know if there is any more information you might need.

Cheers,

Sara

10/26/2015

ORIGIN ID:FWHA (512) 671-3434
JOHN BRAYTON
2201 DOUBLE CREEK DR
ROUND ROCK, TX 78664
UNITED STATES US
SHIP DATE: 20OCT16
ACTWGT: 49.60 LB
CAD: 6991003/SSFO1722
DIMS: 26x14x14 IN
BILL THIRD PARTY
Part # 156297-435 RITZ EXP 06/17
TO DHL
2300 DOUBLE CREEK DR
ROUND ROCK TX 78664
(512) 388-8222
INV:
PO:
REF:
DEPT:
FedEx
Express
TRK# 0201 7844 1358 8380
FRI - 21 OCT 10:30A
PRIORITY OVERNIGHT
44 BSMA
78664
TX-US AUS

DHL Analytical, Inc.

Sample Receipt Checklist

Client Name Pastor, Behling & Wheeler | Date Received: 10/21/2016

Work Order Number 1610184 | Received by JB

Checklist completed by: Signature 10/21/2016 Date | Reviewed by Initials 10/21/2016 Date

Carrier name FedEx 1day

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	2.4 °C
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH<2 acceptable upon receipt?	Yes ☑	No ☐	NA ☐ LOT # 8086
	Adjusted?		Checked by
Water - ph>9 (S) or ph>12 (CN) acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted?		Checked by

Any No response must be detailed in the comments section below.

Client contacted _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments: _____

Corrective Action _____

DHL Analytical, Inc. **Date:** *18-Nov-16*

CLIENT: Pastor, Behling & Wheeler
Project: MLSES-PDP-5
Lab Order: 1610184

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Method SW6020A - Metals Analysis
Method SW7470A - Mercury Analysis
Method E300 - Anions Analysis
Method M4500-H+ B - pH of a Water Analysis
Method M2540C - TDS Analysis
Sub-contract - Radium-228 and Radium-226 analyses by methods E904/9320 and SM 7500 Ra B M. Analyzed at ESC Lab Sciences.

LOG IN

The samples were received and log-in performed on 10/21/16. A total of 4 samples were received. The samples arrived in good condition and were properly packaged.

METALS ANALYSIS

For Metals analysis performed on 11/1/16 the matrix spike and matrix spike duplicate recoveries were below control limits for Calcium. These are flagged accordingly in the QC summary report. The sample selected for the matrix spike and matrix spike duplicate was from this work order. The LCS was within control limits for this analyte. No further corrective actions were taken.

For Metals analysis performed on 11/1/16 the RPD for the serial dilution was above control limits for Boron. This is flagged accordingly. The PDS was within control limits for this analyte. No further corrective actions were taken.

For Metals analysis performed on 11/1/16 the PDS recovery was slightly above control limits for six analytes. These are flagged accordingly. The serial dilution was within control limits for these analytes. No further corrective actions were taken.

DHL Analytical, Inc.

Date: *18-Nov-16*

CLIENT: Pastor, Behling & Wheeler
Project: MLSES-PDP-5
Lab Order: 1610184

Work Order Sample Summary

Lab Smp ID	Client Sample ID	Tag Number	Date Collected	Date Recved
1610184-01	MW-19		10/19/16 11:25 AM	10/21/2016
1610184-02	PDP-22		10/19/16 12:15 PM	10/21/2016
1610184-03	MW-18A		10/19/16 01:10 PM	10/21/2016
1610184-04	EB-1		10/19/16 01:30 PM	10/21/2016

Lab Order: 1610184
Client: Pastor, Behling & Wheeler
Project: MLSES-PDP-5

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1610184-01A	MW-19	10/19/16 11:25 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/31/16 08:22 AM	77725
	MW-19	10/19/16 11:25 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	10/24/16 12:42 PM	77659
1610184-01D	MW-19	10/19/16 11:25 AM	Aqueous	E300	Anion Preparation	10/24/16 08:56 AM	77652
	MW-19	10/19/16 11:25 AM	Aqueous	M4500-H+ B	pH Preparation	10/21/16 10:10 AM	77638
	MW-19	10/19/16 11:25 AM	Aqueous	M2540C	TDS Preparation	10/25/16 03:41 PM	77673
1610184-02A	PDP-22	10/19/16 12:15 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/31/16 08:22 AM	77725
	PDP-22	10/19/16 12:15 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/31/16 08:22 AM	77725
	PDP-22	10/19/16 12:15 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	10/24/16 12:42 PM	77659
1610184-02D	PDP-22	10/19/16 12:15 PM	Aqueous	E300	Anion Preparation	10/24/16 08:56 AM	77652
	PDP-22	10/19/16 12:15 PM	Aqueous	E300	Anion Preparation	10/24/16 08:56 AM	77652
	PDP-22	10/19/16 12:15 PM	Aqueous	M4500-H+ B	pH Preparation	10/21/16 10:10 AM	77638
	PDP-22	10/19/16 12:15 PM	Aqueous	M2540C	TDS Preparation	10/25/16 03:41 PM	77673
1610184-03A	MW-18A	10/19/16 01:10 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/31/16 08:22 AM	77725
	MW-18A	10/19/16 01:10 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	10/24/16 12:42 PM	77659
	MW-18A	10/19/16 01:10 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	10/24/16 12:42 PM	77659
1610184-03D	MW-18A	10/19/16 01:10 PM	Aqueous	E300	Anion Preparation	10/24/16 08:56 AM	77652
	MW-18A	10/19/16 01:10 PM	Aqueous	M4500-H+ B	pH Preparation	10/21/16 10:10 AM	77638
	MW-18A	10/19/16 01:10 PM	Aqueous	M2540C	TDS Preparation	10/25/16 03:41 PM	77673
1610184-04A	EB-1	10/19/16 01:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/31/16 08:22 AM	77725
	EB-1	10/19/16 01:30 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	10/24/16 12:42 PM	77659
1610184-04D	EB-1	10/19/16 01:30 PM	Aqueous	E300	Anion Preparation	10/24/16 08:56 AM	77652
	EB-1	10/19/16 01:30 PM	Aqueous	M4500-H+ B	pH Preparation	10/21/16 10:10 AM	77638
	EB-1	10/19/16 01:30 PM	Aqueous	M2540C	TDS Preparation	10/26/16 11:15 AM	77702

Lab Order: 1610184
Client: Pastor, Behling & Wheeler
Project: MLSES-PDP-5

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1610184-01A	MW-19	Aqueous	SW7470A	Mercury Total: Aqueous	77659	1	10/31/16 12:50 PM	CETAC2_HG_161031A
	MW-19	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	77725	1	11/01/16 01:37 PM	ICP-MS4_161101A
1610184-01D	MW-19	Aqueous	E300	Anions by IC method - Water	77652	1	10/24/16 01:50 PM	IC2_161024A
	MW-19	Aqueous	M4500-H+ B	pH	77638	1	10/21/16 11:16 AM	TITRATOR_161021A
	MW-19	Aqueous	M2540C	Total Dissolved Solids	77673	1	10/26/16 08:43 AM	WC_161025B
1610184-02A	PDP-22	Aqueous	SW7470A	Mercury Total: Aqueous	77659	1	10/31/16 12:52 PM	CETAC2_HG_161031A
	PDP-22	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	77725	1	11/01/16 01:33 PM	ICP-MS4_161101A
	PDP-22	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	77725	5	11/01/16 04:03 PM	ICP-MS4_161101A
1610184-02D	PDP-22	Aqueous	E300	Anions by IC method - Water	77652	1	10/24/16 02:05 PM	IC2_161024A
	PDP-22	Aqueous	E300	Anions by IC method - Water	77652	10	10/24/16 03:58 PM	IC2_161024A
	PDP-22	Aqueous	M4500-H+ B	pH	77638	1	10/21/16 11:19 AM	TITRATOR_161021A
	PDP-22	Aqueous	M2540C	Total Dissolved Solids	77673	1	10/26/16 08:43 AM	WC_161025B
1610184-03A	MW-18A	Aqueous	SW7470A	Mercury Total: Aqueous	77659	20	10/31/16 01:16 PM	CETAC2_HG_161031A
	MW-18A	Aqueous	SW7470A	Mercury Total: Aqueous	77659	1	10/31/16 12:54 PM	CETAC2_HG_161031A
	MW-18A	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	77725	1	11/01/16 01:39 PM	ICP-MS4_161101A
1610184-03D	MW-18A	Aqueous	E300	Anions by IC method - Water	77652	1	10/24/16 02:19 PM	IC2_161024A
	MW-18A	Aqueous	M4500-H+ B	pH	77638	1	10/21/16 11:23 AM	TITRATOR_161021A
	MW-18A	Aqueous	M2540C	Total Dissolved Solids	77673	1	10/26/16 08:43 AM	WC_161025B
1610184-04A	EB-1	Aqueous	SW7470A	Mercury Total: Aqueous	77659	1	10/31/16 12:59 PM	CETAC2_HG_161031A
	EB-1	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	77725	1	11/01/16 01:41 PM	ICP-MS4_161101A
1610184-04D	EB-1	Aqueous	E300	Anions by IC method - Water	77652	1	10/24/16 02:34 PM	IC2_161024A
	EB-1	Aqueous	M4500-H+ B	pH	77638	1	10/21/16 11:39 AM	TITRATOR_161021A
	EB-1	Aqueous	M2540C	Total Dissolved Solids	77702	1	10/27/16 08:43 AM	WC_161026D

DHL Analytical, Inc.

Date: *18-Nov-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	MW-19
Project:	MLSES-PDP-5	**Lab ID:**	1610184-01
Project No:	5164-B	**Collection Date:**	10/19/16 11:25 AM
Lab Order:	1610184	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	10/31/16 12:50 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **CVD**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	11/01/16 01:37 PM
Arsenic	0.0125	0.00200	0.00500		mg/L	1	11/01/16 01:37 PM
Barium	0.0307	0.00300	0.0100		mg/L	1	11/01/16 01:37 PM
Beryllium	0.000539	0.000300	0.00100	J	mg/L	1	11/01/16 01:37 PM
Boron	0.106	0.0100	0.0300		mg/L	1	11/01/16 01:37 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	11/01/16 01:37 PM
Calcium	24.5	0.100	0.300		mg/L	1	11/01/16 01:37 PM
Chromium	0.00385	0.00200	0.00500	J	mg/L	1	11/01/16 01:37 PM
Cobalt	0.00325	0.00300	0.00500	J	mg/L	1	11/01/16 01:37 PM
Lead	0.00122	0.000300	0.00100		mg/L	1	11/01/16 01:37 PM
Lithium	0.0151	0.00500	0.0100		mg/L	1	11/01/16 01:37 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	11/01/16 01:37 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	11/01/16 01:37 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	11/01/16 01:37 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	39.1	0.300	1.00		mg/L	1	10/24/16 01:50 PM
Fluoride	0.420	0.100	0.400		mg/L	1	10/24/16 01:50 PM
Sulfate	97.8	1.00	3.00		mg/L	1	10/24/16 01:50 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.08	0	0		pH Units@20.5℃	1	10/21/16 11:16 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	381	10.0	10.0		mg/L	1	10/26/16 08:43 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *18-Nov-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	PDP-22
Project:	MLSES-PDP-5	**Lab ID:**	1610184-02
Project No:	5164-B	**Collection Date:**	10/19/16 12:15 PM
Lab Order:	1610184	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	10/31/16 12:52 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **CVD**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	11/01/16 01:33 PM
Arsenic	0.00518	0.00200	0.00500		mg/L	1	11/01/16 01:33 PM
Barium	0.0963	0.0150	0.0500		mg/L	5	11/01/16 04:03 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	11/01/16 01:33 PM
Boron	0.185	0.0100	0.0300		mg/L	1	11/01/16 01:33 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	11/01/16 01:33 PM
Calcium	68.4	0.500	1.50		mg/L	5	11/01/16 04:03 PM
Chromium	0.0259	0.0100	0.0250		mg/L	5	11/01/16 04:03 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	11/01/16 01:33 PM
Lead	0.000417	0.000300	0.00100	J	mg/L	1	11/01/16 01:33 PM
Lithium	<0.0250	0.0250	0.0500		mg/L	5	11/01/16 04:03 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	11/01/16 01:33 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	11/01/16 01:33 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	11/01/16 01:33 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	13.4	0.300	1.00		mg/L	1	10/24/16 02:05 PM
Fluoride	0.264	0.100	0.400	J	mg/L	1	10/24/16 02:05 PM
Sulfate	160	10.0	30.0		mg/L	10	10/24/16 03:58 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.87	0	0		pH Units@20.9℃	1	10/21/16 11:19 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	607	10.0	10.0		mg/L	1	10/26/16 08:43 AM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *18-Nov-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	MW-18A
Project:	MLSES-PDP-5	**Lab ID:**	1610184-03
Project No:	5164-B	**Collection Date:**	10/19/16 01:10 PM
Lab Order:	1610184	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	0.0428	0.00160	0.00400		mg/L	20	10/31/16 01:16 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **CVD**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	11/01/16 01:39 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	11/01/16 01:39 PM
Barium	0.0453	0.00300	0.0100		mg/L	1	11/01/16 01:39 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	11/01/16 01:39 PM
Boron	0.0998	0.0100	0.0300		mg/L	1	11/01/16 01:39 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	11/01/16 01:39 PM
Calcium	1.45	0.100	0.300		mg/L	1	11/01/16 01:39 PM
Chromium	0.00313	0.00200	0.00500	J	mg/L	1	11/01/16 01:39 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	11/01/16 01:39 PM
Lead	0.000375	0.000300	0.00100	J	mg/L	1	11/01/16 01:39 PM
Lithium	0.00852	0.00500	0.0100	J	mg/L	1	11/01/16 01:39 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	11/01/16 01:39 PM
Selenium	0.00234	0.00200	0.00500	J	mg/L	1	11/01/16 01:39 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	11/01/16 01:39 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	6.52	0.300	1.00		mg/L	1	10/24/16 02:19 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	10/24/16 02:19 PM
Sulfate	4.26	1.00	3.00		mg/L	1	10/24/16 02:19 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	5.74	0	0		pH Units@21.1℃	1	10/21/16 11:23 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	37.0	10.0	10.0		mg/L	1	10/26/16 08:43 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *18-Nov-16*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	EB-1
Project:	MLSES-PDP-5	**Lab ID:**	1610184-04
Project No:	5164-B	**Collection Date:**	10/19/16 01:30 PM
Lab Order:	1610184	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	10/31/16 12:59 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **CVD**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	11/01/16 01:41 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	11/01/16 01:41 PM
Barium	<0.00300	0.00300	0.0100		mg/L	1	11/01/16 01:41 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	11/01/16 01:41 PM
Boron	0.0810	0.0100	0.0300		mg/L	1	11/01/16 01:41 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	11/01/16 01:41 PM
Calcium	0.129	0.100	0.300	J	mg/L	1	11/01/16 01:41 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	11/01/16 01:41 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	11/01/16 01:41 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	11/01/16 01:41 PM
Lithium	<0.00500	0.00500	0.0100		mg/L	1	11/01/16 01:41 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	11/01/16 01:41 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	11/01/16 01:41 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	11/01/16 01:41 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	1.07	0.300	1.00		mg/L	1	10/24/16 02:34 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	10/24/16 02:34 PM
Sulfate	<1.00	1.00	3.00		mg/L	1	10/24/16 02:34 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.88	0	0		pH Units@21.8℃	1	10/21/16 11:39 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	43.0	10.0	10.0		mg/L	1	10/27/16 08:43 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT: Pastor, Behling & Wheeler
Work Order: 1610184
Project: MLSES-PDP-5

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_161031A

The QC data in batch 77659 applies to the following samples: 1610184-01A, 1610184-02A, 1610184-03A, 1610184-04A

Sample ID **MB-77659**	Batch ID: **77659**		TestNo: **SW7470A**				Units: **mg/L**				
SampType: **MBLK**	Run ID: **CETAC2_HG_161031A**		Analysis Date: **10/31/2016 12:04:54 P**				Prep Date: **10/24/2016**				
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Mercury	<0.0000800	0.000200									

Sample ID **LCS-77659**	Batch ID: **77659**		TestNo: **SW7470A**				Units: **mg/L**				
SampType: **LCS**	Run ID: **CETAC2_HG_161031A**		Analysis Date: **10/31/2016 12:07:10 P**				Prep Date: **10/24/2016**				
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Mercury	0.00213	0.000200	0.00200	0	106	85	115				

Sample ID **LCSD-77659**	Batch ID: **77659**		TestNo: **SW7470A**				Units: **mg/L**				
SampType: **LCSD**	Run ID: **CETAC2_HG_161031A**		Analysis Date: **10/31/2016 12:09:27 P**				Prep Date: **10/24/2016**				
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Mercury	0.00218	0.000200	0.00200	0	109	85	115	2.32	15		

Sample ID **1610183-01B SD**	Batch ID: **77659**		TestNo: **SW7470A**				Units: **mg/L**				
SampType: **SD**	Run ID: **CETAC2_HG_161031A**		Analysis Date: **10/31/2016 12:27:34 P**				Prep Date: **10/24/2016**				
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Mercury	<0.000400	0.00100	0	0				0	10		

Sample ID **1610183-01B PDS**	Batch ID: **77659**		TestNo: **SW7470A**				Units: **mg/L**				
SampType: **PDS**	Run ID: **CETAC2_HG_161031A**		Analysis Date: **10/31/2016 12:29:50 P**				Prep Date: **10/24/2016**				
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Mercury	0.00229	0.000200	0.00250	0	91.6	85	115				

Sample ID **1610183-01B MS**	Batch ID: **77659**		TestNo: **SW7470A**				Units: **mg/L**				
SampType: **MS**	Run ID: **CETAC2_HG_161031A**		Analysis Date: **10/31/2016 12:32:05 P**				Prep Date: **10/24/2016**				
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Mercury	0.00202	0.000200	0.00200	0	101	80	120				

Sample ID **1610183-01B MSD**	Batch ID: **77659**		TestNo: **SW7470A**				Units: **mg/L**				
SampType: **MSD**	Run ID: **CETAC2_HG_161031A**		Analysis Date: **10/31/2016 12:34:21 P**				Prep Date: **10/24/2016**				
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Mercury	0.00201	0.000200	0.00200	0	101	80	120	0.496	15		

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1610184
Project: MLSES-PDP-5

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_161031A

Sample ID	**ICV-161031**	Batch ID:	**R88776**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**ICV**	Run ID:	**CETAC2_HG_161031A**	Analysis Date:	**10/31/2016 10:38:29 A**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00399	0.000200	0.00400	0	99.8	90	110			

Sample ID	**CCV2-161031**	Batch ID:	**R88776**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**CETAC2_HG_161031A**	Analysis Date:	**10/31/2016 11:51:11 A**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00200	0.000200	0.00200	0	100	90	110			

Sample ID	**CCV3-161031**	Batch ID:	**R88776**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**CETAC2_HG_161031A**	Analysis Date:	**10/31/2016 12:43:28 P**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00198	0.000200	0.00200	0	99.0	90	110			

Sample ID	**CCV4-161031**	Batch ID:	**R88776**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**CETAC2_HG_161031A**	Analysis Date:	**10/31/2016 1:01:31 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00198	0.000200	0.00200	0	99.0	90	110			

Sample ID	**CCV5-161031**	Batch ID:	**R88776**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**CETAC2_HG_161031A**	Analysis Date:	**10/31/2016 1:19:00 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00198	0.000200	0.00200	0	99.0	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1610184
Project: MLSES-PDP-5

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161101A

The QC data in batch 77725 applies to the following samples: 1610184-01A, 1610184-02A, 1610184-03A, 1610184-04A

Sample ID	**MB-77725**	Batch ID:	**77725**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**ICP-MS4_161101A**	Analysis Date:	**11/1/2016 1:25:00 PM**	Prep Date:	**10/31/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.000800	0.00250								
Arsenic	<0.00200	0.00500								
Barium	<0.00300	0.0100								
Beryllium	<0.000300	0.00100								
Boron	<0.0100	0.0300								
Cadmium	<0.000300	0.00100								
Calcium	<0.100	0.300								
Chromium	<0.00200	0.00500								
Cobalt	<0.00300	0.00500								
Lead	<0.000300	0.00100								
Lithium	<0.00500	0.0100								
Molybdenum	<0.00200	0.00500								
Selenium	<0.00200	0.00500								
Thallium	<0.000500	0.00150								

Sample ID	**LCS-77725**	Batch ID:	**77725**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**ICP-MS4_161101A**	Analysis Date:	**11/1/2016 1:27:00 PM**	Prep Date:	**10/31/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.192	0.00250	0.200	0	96.2	80	120			
Arsenic	0.204	0.00500	0.200	0	102	80	120			
Barium	0.197	0.0100	0.200	0	98.5	80	120			
Beryllium	0.202	0.00100	0.200	0	101	80	120			
Boron	0.181	0.0300	0.200	0	90.7	80	120			
Cadmium	0.200	0.00100	0.200	0	100	80	120			
Calcium	4.56	0.300	5.00	0	91.2	80	120			
Chromium	0.202	0.00500	0.200	0	101	80	120			
Cobalt	0.200	0.00500	0.200	0	100	80	120			
Lead	0.194	0.00100	0.200	0	97.0	80	120			
Lithium	0.192	0.0100	0.200	0	95.9	80	120			
Molybdenum	0.194	0.00500	0.200	0	97.1	80	120			
Selenium	0.201	0.00500	0.200	0	100	80	120			
Thallium	0.189	0.00150	0.200	0	94.6	80	120			

Sample ID	**LCSD-77725**	Batch ID:	**77725**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**LCSD**	Run ID:	**ICP-MS4_161101A**	Analysis Date:	**11/1/2016 1:29:00 PM**	Prep Date:	**10/31/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.191	0.00250	0.200	0	95.7	80	120	0.510	15	
Arsenic	0.205	0.00500	0.200	0	102	80	120	0.379	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1610184
Project: MLSES-PDP-5

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161101A

Sample ID **LCSD-77725** Batch ID: **77725** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_161101A** Analysis Date: **11/1/2016 1:29:00 PM** Prep Date: **10/31/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.195	0.0100	0.200	0	97.6	80	120	0.917	15	
Beryllium	0.204	0.00100	0.200	0	102	80	120	0.936	15	
Boron	0.198	0.0300	0.200	0	99.2	80	120	8.99	15	
Cadmium	0.199	0.00100	0.200	0	99.3	80	120	0.713	15	
Calcium	4.58	0.300	5.00	0	91.6	80	120	0.449	15	
Chromium	0.205	0.00500	0.200	0	102	80	120	1.42	15	
Cobalt	0.200	0.00500	0.200	0	99.9	80	120	0.156	15	
Lead	0.194	0.00100	0.200	0	96.8	80	120	0.134	15	
Lithium	0.200	0.0100	0.200	0	99.9	80	120	4.05	15	
Molybdenum	0.192	0.00500	0.200	0	96.2	80	120	0.992	15	
Selenium	0.203	0.00500	0.200	0	101	80	120	1.07	15	
Thallium	0.191	0.00150	0.200	0	95.4	80	120	0.864	15	

Sample ID **1610184-02A SD** Batch ID: **77725** TestNo: **SW6020A** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS4_161101A** Analysis Date: **11/1/2016 1:35:00 PM** Prep Date: **10/31/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.00400	0.0125	0	0				0	10	
Arsenic	<0.0100	0.0250	0	0.00518				0	10	
Beryllium	<0.00150	0.00500	0	0				0	10	
Boron	0.241	0.150	0	0.185				26.6	10	R
Cadmium	<0.00150	0.00500	0	0				0	10	
Cobalt	<0.0150	0.0250	0	0				0	10	
Lead	<0.00150	0.00500	0	0.000417				0	10	
Molybdenum	<0.0100	0.0250	0	0				0	10	
Selenium	<0.0100	0.0250	0	0				0	10	
Thallium	<0.00250	0.00750	0	0				0	10	

Sample ID **1610184-02A PDS** Batch ID: **77725** TestNo: **SW6020A** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS4_161101A** Analysis Date: **11/1/2016 1:57:00 PM** Prep Date: **10/31/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.195	0.00250	0.200	0	97.5	80	120			
Arsenic	0.259	0.00500	0.200	0.00518	127	80	120			S
Beryllium	0.257	0.00100	0.200	0	128	80	120			S
Boron	0.423	0.0300	0.200	0.185	119	80	120			
Cadmium	0.244	0.00100	0.200	0	122	80	120			S
Cobalt	0.246	0.00500	0.200	0	123	80	120			S
Lead	0.243	0.00100	0.200	0.000417	121	80	120			S
Molybdenum	0.244	0.00500	0.200	0	122	80	120			S
Selenium	0.239	0.00500	0.200	0	119	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1610184
Project: MLSES-PDP-5

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161101A

Sample ID **1610184-02A PDS**	Batch ID: **77725**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_161101A**	Analysis Date: **11/1/2016 1:57:00 PM**	Prep Date: **10/31/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Thallium	0.238	0.00150	0.200	0	119	80	120			

Sample ID **1610184-02A MS**	Batch ID: **77725**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS4_161101A**	Analysis Date: **11/1/2016 1:59:00 PM**	Prep Date: **10/31/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.196	0.00250	0.200	0	98.0	80	120			
Arsenic	0.211	0.00500	0.200	0.00518	103	80	120			
Barium	0.295	0.0100	0.200	0.0969	99.0	80	120			
Beryllium	0.204	0.00100	0.200	0	102	80	120			
Boron	0.406	0.0300	0.200	0.185	110	80	120			
Cadmium	0.198	0.00100	0.200	0	98.9	80	120			
Calcium	71.2	0.300	5.00	67.8	67.5	80	120			S
Chromium	0.226	0.00500	0.200	0.0253	100	80	120			
Cobalt	0.195	0.00500	0.200	0	97.6	80	120			
Lead	0.196	0.00100	0.200	0.000417	97.9	80	120			
Lithium	0.213	0.0100	0.200	0.0182	97.5	80	120			
Molybdenum	0.200	0.00500	0.200	0	100	80	120			
Selenium	0.193	0.00500	0.200	0	96.5	80	120			
Thallium	0.193	0.00150	0.200	0	96.6	80	120			

Sample ID **1610184-02A MSD**	Batch ID: **77725**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS4_161101A**	Analysis Date: **11/1/2016 2:01:00 PM**	Prep Date: **10/31/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.200	0.00250	0.200	0	99.8	80	120	1.84	15	
Arsenic	0.213	0.00500	0.200	0.00518	104	80	120	0.625	15	
Barium	0.299	0.0100	0.200	0.0969	101	80	120	1.42	15	
Beryllium	0.204	0.00100	0.200	0	102	80	120	0.084	15	
Boron	0.391	0.0300	0.200	0.185	103	80	120	3.60	15	
Cadmium	0.200	0.00100	0.200	0	100	80	120	1.21	15	
Calcium	70.9	0.300	5.00	67.8	61.0	80	120	0.461	15	S
Chromium	0.229	0.00500	0.200	0.0253	102	80	120	1.31	15	
Cobalt	0.197	0.00500	0.200	0	98.5	80	120	0.905	15	
Lead	0.199	0.00100	0.200	0.000417	99.3	80	120	1.39	15	
Lithium	0.211	0.0100	0.200	0.0182	96.4	80	120	1.06	15	
Molybdenum	0.203	0.00500	0.200	0	102	80	120	1.48	15	
Selenium	0.194	0.00500	0.200	0	97.2	80	120	0.746	15	
Thallium	0.197	0.00150	0.200	0	98.4	80	120	1.89	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1610184
Project: MLSES-PDP-5

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161101A

Sample ID **1610184-02A SD**	Batch ID: **77725**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS4_161101A**	Analysis Date: **11/1/2016 4:05:00 PM**	Prep Date: **10/31/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.0964	0.250	0	0.0963				0.046	10	
Calcium	70.2	7.50	0	68.4				2.69	10	
Chromium	<0.0500	0.125	0	0.0259				0	10	
Lithium	<0.125	0.250	0	0				0	10	

Sample ID **1610184-02A PDS**	Batch ID: **77725**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_161101A**	Analysis Date: **11/1/2016 4:07:00 PM**	Prep Date: **10/31/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	1.06	0.0500	1.00	0.0963	96.0	80	120			
Calcium	89.8	1.50	25.0	68.4	86.0	80	120			
Chromium	1.04	0.0250	1.00	0.0259	101	80	120			
Lithium	0.972	0.0500	1.00	0	97.2	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

Sample ID **ICV-161101**	Batch ID: **R88812**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_161101A**	Analysis Date: **11/1/2016 11:53:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.0978	0.00250	0.100	0	97.8	90	110			
Arsenic	0.105	0.00500	0.100	0	105	90	110			
Barium	0.100	0.0100	0.100	0	100	90	110			
Beryllium	0.103	0.00100	0.100	0	103	90	110			
Boron	0.106	0.0300	0.100	0	106	90	110			
Cadmium	0.101	0.00100	0.100	0	101	90	110			
Calcium	2.29	0.300	2.50	0	91.6	90	110			
Chromium	0.109	0.00500	0.100	0	109	90	110			
Cobalt	0.104	0.00500	0.100	0	104	90	110			
Lead	0.0996	0.00100	0.100	0	99.6	90	110			
Lithium	0.0986	0.0100	0.100	0	98.6	90	110			
Molybdenum	0.0975	0.00500	0.100	0	97.5	90	110			
Selenium	0.102	0.00500	0.100	0	102	90	110			
Thallium	0.0969	0.00150	0.100	0	96.9	90	110			

Sample ID **LCVL-161101**	Batch ID: **R88812**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_161101A**	Analysis Date: **11/1/2016 11:57:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00228	0.00250	0.00200	0	114	70	130			
Arsenic	0.00545	0.00500	0.00500	0	109	70	130			
Barium	0.00526	0.0100	0.00500	0	105	70	130			
Beryllium	0.000903	0.00100	0.00100	0	90.3	70	130			
Boron	0.0230	0.0300	0.0200	0	115	70	130			
Cadmium	0.000982	0.00100	0.00100	0	98.2	70	130			
Calcium	0.0987	0.300	0.100	0	98.7	70	130			
Chromium	0.00551	0.00500	0.00500	0	110	70	130			
Cobalt	0.00522	0.00500	0.00500	0	104	70	130			
Lead	0.00105	0.00100	0.00100	0	105	70	130			
Lithium	0.00996	0.0100	0.0100	0	99.6	70	130			
Molybdenum	0.00521	0.00500	0.00500	0	104	70	130			
Selenium	0.00543	0.00500	0.00500	0	109	70	130			
Thallium	0.00102	0.00150	0.00100	0	102	70	130			

Sample ID **CCV1-161101**	Batch ID: **R88812**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_161101A**	Analysis Date: **11/1/2016 12:42:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.198	0.00250	0.200	0	98.9	90	110			
Arsenic	0.207	0.00500	0.200	0	104	90	110			
Barium	0.201	0.0100	0.200	0	100	90	110			

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161101A

Sample ID **CCV1-161101** Batch ID: **R88812** TestNo: **SW6020A** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_161101A** Analysis Date: **11/1/2016 12:42:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.204	0.00100	0.200	0	102	90	110			
Boron	0.202	0.0300	0.200	0	101	90	110			
Cadmium	0.202	0.00100	0.200	0	101	90	110			
Calcium	4.56	0.300	5.00	0	91.1	90	110			
Chromium	0.206	0.00500	0.200	0	103	90	110			
Cobalt	0.200	0.00500	0.200	0	100	90	110			
Lead	0.200	0.00100	0.200	0	99.9	90	110			
Lithium	0.198	0.0100	0.200	0	99.1	90	110			
Molybdenum	0.198	0.00500	0.200	0	98.9	90	110			
Selenium	0.204	0.00500	0.200	0	102	90	110			
Thallium	0.197	0.00150	0.200	0	98.6	90	110			

Sample ID **LCVL1-161101** Batch ID: **R88812** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_161101A** Analysis Date: **11/1/2016 1:08:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00200	0.00250	0.00200	0	100	70	130			
Arsenic	0.00508	0.00500	0.00500	0	102	70	130			
Barium	0.00487	0.0100	0.00500	0	97.3	70	130			
Beryllium	0.000992	0.00100	0.00100	0	99.2	70	130			
Boron	0.0247	0.0300	0.0200	0	123	70	130			
Cadmium	0.00102	0.00100	0.00100	0	102	70	130			
Calcium	0.0890	0.300	0.100	0	89.0	70	130			
Chromium	0.00511	0.00500	0.00500	0	102	70	130			
Cobalt	0.00503	0.00500	0.00500	0	101	70	130			
Lead	0.000971	0.00100	0.00100	0	97.1	70	130			
Lithium	0.0103	0.0100	0.0100	0	103	70	130			
Molybdenum	0.00475	0.00500	0.00500	0	95.0	70	130			
Selenium	0.00537	0.00500	0.00500	0	107	70	130			
Thallium	0.000957	0.00150	0.00100	0	95.7	70	130			

Sample ID **CCV2-161101** Batch ID: **R88812** TestNo: **SW6020A** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_161101A** Analysis Date: **11/1/2016 2:03:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.203	0.00250	0.200	0	102	90	110			
Arsenic	0.213	0.00500	0.200	0	106	90	110			
Barium	0.206	0.0100	0.200	0	103	90	110			
Beryllium	0.208	0.00100	0.200	0	104	90	110			
Boron	0.215	0.0300	0.200	0	107	90	110			
Cadmium	0.208	0.00100	0.200	0	104	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1610184
Project: MLSES-PDP-5

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161101A

Sample ID **CCV2-161101**	Batch ID: **R88812**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_161101A**	Analysis Date: **11/1/2016 2:03:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.61	0.300	5.00	0	92.3	90	110			
Chromium	0.210	0.00500	0.200	0	105	90	110			
Cobalt	0.205	0.00500	0.200	0	103	90	110			
Lead	0.197	0.00100	0.200	0	98.5	90	110			
Lithium	0.199	0.0100	0.200	0	99.5	90	110			
Molybdenum	0.203	0.00500	0.200	0	102	90	110			
Selenium	0.208	0.00500	0.200	0	104	90	110			
Thallium	0.196	0.00150	0.200	0	97.9	90	110			

Sample ID **LCVL2-161101**	Batch ID: **R88812**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_161101A**	Analysis Date: **11/1/2016 2:37:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00198	0.00250	0.00200	0	98.9	70	130			
Arsenic	0.00520	0.00500	0.00500	0	104	70	130			
Barium	0.00510	0.0100	0.00500	0	102	70	130			
Beryllium	0.00126	0.00100	0.00100	0	126	70	130			
Boron	0.0235	0.0300	0.0200	0	117	70	130			
Cadmium	0.000964	0.00100	0.00100	0	96.4	70	130			
Calcium	0.0916	0.300	0.100	0	91.6	70	130			
Chromium	0.00519	0.00500	0.00500	0	104	70	130			
Cobalt	0.00508	0.00500	0.00500	0	102	70	130			
Lead	0.000931	0.00100	0.00100	0	93.1	70	130			
Lithium	0.00981	0.0100	0.0100	0	98.1	70	130			
Molybdenum	0.00489	0.00500	0.00500	0	97.8	70	130			
Selenium	0.00482	0.00500	0.00500	0	96.4	70	130			
Thallium	0.000962	0.00150	0.00100	0	96.2	70	130			

Sample ID **CCV5-161101**	Batch ID: **R88812**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_161101A**	Analysis Date: **11/1/2016 3:52:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.207	0.0100	0.200	0	103	90	110			
Calcium	4.67	0.300	5.00	0	93.4	90	110			
Chromium	0.210	0.00500	0.200	0	105	90	110			
Lithium	0.205	0.0100	0.200	0	102	90	110			

Sample ID **LCVL5-161101**	Batch ID: **R88812**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_161101A**	Analysis Date: **11/1/2016 3:56:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1610184
Project: MLSES-PDP-5

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161101A

Sample ID **LCVL5-161101** Batch ID: **R88812** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_161101A** Analysis Date: **11/1/2016 3:56:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.00516	0.0100	0.00500	0	103	70	130			
Calcium	0.0963	0.300	0.100	0	96.3	70	130			
Chromium	0.00561	0.00500	0.00500	0	112	70	130			
Lithium	0.0107	0.0100	0.0100	0	107	70	130			

Sample ID **CCV6-161101** Batch ID: **R88812** TestNo: **SW6020A** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_161101A** Analysis Date: **11/1/2016 4:09:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.204	0.0100	0.200	0	102	90	110			
Calcium	4.58	0.300	5.00	0	91.7	90	110			
Chromium	0.208	0.00500	0.200	0	104	90	110			
Lithium	0.205	0.0100	0.200	0	102	90	110			

Sample ID **LCVL6-161101** Batch ID: **R88812** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_161101A** Analysis Date: **11/1/2016 4:13:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.00508	0.0100	0.00500	0	102	70	130			
Calcium	0.0937	0.300	0.100	0	93.7	70	130			
Chromium	0.00540	0.00500	0.00500	0	108	70	130			
Lithium	0.0103	0.0100	0.0100	0	103	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1610184
Project: MLSES-PDP-5

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_161024A

The QC data in batch 77652 applies to the following samples: 1610184-01D, 1610184-02D, 1610184-03D, 1610184-04D

Sample ID **MB-77652** Batch ID: **77652** TestNo: **E300** Units: **mg/L**
SampType: **MBLK** Run ID: **IC2_161024A** Analysis Date: **10/24/2016 9:41:08 AM** Prep Date: **10/24/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00								
Fluoride	<0.100	0.400								
Sulfate	<1.00	3.00								

Sample ID **LCS-77652** Batch ID: **77652** TestNo: **E300** Units: **mg/L**
SampType: **LCS** Run ID: **IC2_161024A** Analysis Date: **10/24/2016 9:55:44 AM** Prep Date: **10/24/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.57	1.00	10.00	0	95.7	90	110			
Fluoride	3.72	0.400	4.000	0	93.0	90	110			
Sulfate	29.1	3.00	30.00	0	96.8	90	110			

Sample ID **LCSD-77652** Batch ID: **77652** TestNo: **E300** Units: **mg/L**
SampType: **LCSD** Run ID: **IC2_161024A** Analysis Date: **10/24/2016 10:10:21 A** Prep Date: **10/24/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.57	1.00	10.00	0	95.7	90	110	0.028	20	
Fluoride	3.81	0.400	4.000	0	95.2	90	110	2.36	20	
Sulfate	29.1	3.00	30.00	0	96.9	90	110	0.099	20	

Sample ID **1610184-02DMS** Batch ID: **77652** TestNo: **E300** Units: **mg/L**
SampType: **MS** Run ID: **IC2_161024A** Analysis Date: **10/24/2016 4:12:46 PM** Prep Date: **10/24/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	217	10.0	200.0	12.98	102	90	110			
Fluoride	200	4.00	200.0	0	100	90	110			
Sulfate	366	30.0	200.0	159.6	103	90	110			

Sample ID **1610184-02DMSD** Batch ID: **77652** TestNo: **E300** Units: **mg/L**
SampType: **MSD** Run ID: **IC2_161024A** Analysis Date: **10/24/2016 4:27:23 PM** Prep Date: **10/24/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	217	10.0	200.0	12.98	102	90	110	0.099	20	
Fluoride	201	4.00	200.0	0	101	90	110	0.428	20	
Sulfate	366	30.0	200.0	159.6	103	90	110	0.113	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1610184
Project: MLSES-PDP-5

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_161024A

Sample ID **ICV-161024**	Batch ID: **R88687**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC2_161024A**	Analysis Date: **10/24/2016 9:01:50 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	24.8	1.00	25.00	0	99.2	90	110			
Fluoride	9.44	0.400	10.00	0	94.4	90	110			
Sulfate	75.0	3.00	75.00	0	100	90	110			

Sample ID **CCV1-161024**	Batch ID: **R88687**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_161024A**	Analysis Date: **10/24/2016 1:11:06 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.73	1.00	10.00	0	97.3	90	110			
Fluoride	3.92	0.400	4.000	0	98.1	90	110			
Sulfate	29.6	3.00	30.00	0	98.8	90	110			

Sample ID **CCV2-161024**	Batch ID: **R88687**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_161024A**	Analysis Date: **10/24/2016 4:41:59 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.83	1.00	10.00	0	98.3	90	110			
Fluoride	4.01	0.400	4.000	0	100	90	110			
Sulfate	29.8	3.00	30.00	0	99.2	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1610184
Project: MLSES-PDP-5

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_161021A

The QC data in batch 77638 applies to the following samples: 1610184-01D, 1610184-02D, 1610184-03D, 1610184-04D

Sample ID	**1610170-01D-DUP**	Batch ID:	**77638**	TestNo:	**M4500-H+ B**	Units:	**pH Units@20.4℃**
SampType:	**DUP**	Run ID:	**TITRATOR_161021A**	Analysis Date:	**10/21/2016 10:43:00 A**	Prep Date:	**10/21/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	5.91	0	0	6.130				3.65	5	

Sample ID	**1610171-08D-DUP**	Batch ID:	**77638**	TestNo:	**M4500-H+ B**	Units:	**pH Units@20.9℃**
SampType:	**DUP**	Run ID:	**TITRATOR_161021A**	Analysis Date:	**10/21/2016 11:14:00 A**	Prep Date:	**10/21/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	6.19	0	0	6.190				0	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1610184
Project: MLSES-PDP-5

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_161021A

Sample ID	**ICV-161021**	Batch ID:	**R88654**	TestNo:	**M4500-H+ B**	Units:	**pH Units@21.6℃**
SampType:	**ICV**	Run ID:	**TITRATOR_161021A**	Analysis Date:	**10/21/2016 9:37:00 AM**	Prep Date:	**10/21/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	9.90	0	10.00	0	99.0	99	101			

Sample ID	**CCV-161021**	Batch ID:	**R88654**	TestNo:	**M4500-H+ B**	Units:	**pH Units@21.1℃**
SampType:	**CCV**	Run ID:	**TITRATOR_161021A**	Analysis Date:	**10/21/2016 11:01:00 A**	Prep Date:	**10/21/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	6.95	0	7.000	0	99.3	97.1	102.9			

Sample ID	**CCV2-161021**	Batch ID:	**R88654**	TestNo:	**M4500-H+ B**	Units:	**pH Units@21.5℃**
SampType:	**CCV**	Run ID:	**TITRATOR_161021A**	Analysis Date:	**10/21/2016 11:28:00 A**	Prep Date:	**10/21/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	6.95	0	7.000	0	99.3	97.1	102.9			

Sample ID	**CCV3-161021**	Batch ID:	**R88654**	TestNo:	**M4500-H+ B**	Units:	**pH Units@21.7℃**
SampType:	**CCV**	Run ID:	**TITRATOR_161021A**	Analysis Date:	**10/21/2016 11:41:00 A**	Prep Date:	**10/21/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	6.95	0	7.000	0	99.3	97.1	102.9			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1610184
Project: MLSES-PDP-5

ANALYTICAL QC SUMMARY REPORT

RunID: WC_161025B

The QC data in batch 77673 applies to the following samples: 1610184-01D, 1610184-02D, 1610184-03D

Sample ID **MB-77673**	Batch ID: **77673**	TestNo: **M2540C**	Units: **mg/L**
SampType: **MBLK**	Run ID: **WC_161025B**	Analysis Date: **10/26/2016 8:43:00 AM**	Prep Date: **10/25/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	<10.0	10.0								

Sample ID **LCS-77673**	Batch ID: **77673**	TestNo: **M2540C**	Units: **mg/L**
SampType: **LCS**	Run ID: **WC_161025B**	Analysis Date: **10/26/2016 8:43:00 AM**	Prep Date: **10/25/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	757	10.0	745.6	0	102	90	113			

Sample ID **1610176-01B-DUP**	Batch ID: **77673**	TestNo: **M2540C**	Units: **mg/L**
SampType: **DUP**	Run ID: **WC_161025B**	Analysis Date: **10/26/2016 8:43:00 AM**	Prep Date: **10/25/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	1800	50.0	0	1735				3.40	5	

Sample ID **1610181-01D-DUP**	Batch ID: **77673**	TestNo: **M2540C**	Units: **mg/L**
SampType: **DUP**	Run ID: **WC_161025B**	Analysis Date: **10/26/2016 8:43:00 AM**	Prep Date: **10/25/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	2510	50.0	0	2395				4.49	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1610184
Project: MLSES-PDP-5

ANALYTICAL QC SUMMARY REPORT

RunID: WC_161026D

The QC data in batch 77702 applies to the following samples: 1610184-04D

Sample ID	**MB-77702**	Batch ID:	**77702**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**WC_161026D**	Analysis Date:	**10/27/2016 8:43:00 AM**	Prep Date:	**10/26/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	<10.0	10.0								

Sample ID	**LCS-77702**	Batch ID:	**77702**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**WC_161026D**	Analysis Date:	**10/27/2016 8:43:00 AM**	Prep Date:	**10/26/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	754	10.0	745.6	0	101	90	113			

Sample ID	**1610213-01D-DUP**	Batch ID:	**77702**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**DUP**	Run ID:	**WC_161026D**	Analysis Date:	**10/27/2016 8:43:00 AM**	Prep Date:	**10/26/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	1560	50.0	0	1545				0.966	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

Case Narrative

Lab No: 20161043

This report contains the analytical results for the 4 sample(s) received under chain of custody by ESC Lab Sciences on 10/25/2016 3:59:11 PM. These samples are associated with your 1610184 project.

The analytical results included in this report meet all applicable quality control procedure requirements except as noted below:

The test results in this report meet all NELAC requirements unless noted below:

This report shall not be reproduced, except in full, without the written approval of ESC Lab Sciences.

All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client.

Results have been reviewed by the Director of Radiochemistry or their designees and is approved for release.

Observations / Nonconformances

L868917

Analytical Report

	Method	Result	DL	Units	Qual	Prep Date	Analysis Date	Analyst
Lab ID : **20161043-01**								
Client ID : **MW-19**								
Date Sampled : **10/19/2016 11:25:00 AM**								
Matrix : **NPW**								
		Radiochemical Analyses						
Combined Radium		2.02 +/- 1.37	0.883	pCi/l				
Radium-226	SM 7500 Ra B M*	0.151 +/- 0.091	0.077	pCi/l		11/02/16	11/07/16	AK
Radium-228	EPA 904*/9320*	1.87 +/- 1.28	0.806	pCi/l		11/02/16	11/08/16	JR
Lab ID : **20161043-02**								
Client ID : **PDP-22**								
Date Sampled : **10/19/2016 12:15:00 PM**								
Matrix : **NPW**								
		Radiochemical Analyses						
Combined Radium		1.63 +/- 1.05	0.714	pCi/l				
Radium-226	SM 7500 Ra B M*	0.231 +/- 0.159	0.182	pCi/l		11/02/16	11/07/16	AK
Radium-228	EPA 904*/9320*	1.40 +/- 0.894	0.532	pCi/l		11/02/16	11/08/16	JR
Lab ID : **20161043-03**								
Client ID : **MW-18A**								
Date Sampled : **10/19/2016 1:10:00 PM**								
Matrix : **NPW**								
		Radiochemical Analyses						
Combined Radium		0.360 +/- 1.14	0.764	pCi/l				
Radium-226	SM 7500 Ra B M*	0.267 +/- 0.128	0.116	pCi/l		11/02/16	11/07/16	AK
Radium-228	EPA 904*/9320*	0.093 +/- 1.01	0.648	pCi/l		11/02/16	11/08/16	JR
Lab ID : **20161043-04**								
Client ID : **EB-1**								
Date Sampled : **10/19/2016 1:30:00 PM**								
Matrix : **NPW**								
		Radiochemical Analyses						
Combined Radium		1.14 +/- 0.965	0.669	pCi/l				
Radium-226	SM 7500 Ra B M*	0.053 +/- 0.077	0.123	pCi/l		11/02/16	11/07/16	AK
Radium-228	EPA 904*/9320*	1.09 +/- 0.888	0.546	pCi/l		11/02/16	11/08/16	JR

QC Report

Parameter	Blank	LCS %REC	LCSD %REC	LCSD RPD	DUP RPD	RER, NAD or DER	MS %REC	MSD %REC	MSD RPD	Batch ID
Radium-226	-0.019	107.0			NC	0.357	123.0	115.0	6.4	R1153
Radium-228	0.091	98.8			NC	0.200	98.1	101.0	2.4	R3875

Lab Approval:

Ron Eidson
Director of Radiochemistry

DHL Analytical, Inc.
2300 Double Creek Drive
Round Rock, TX 78664
TEL: *(512) 388-8222* FAX: *(512) 388-8229*

CHAIN-OF-CUSTODY RECORD

Work Order: 1610184

Subcontractor:

ESC Laboratory
311 North Aspen
Broken Arrow, Oklahoma 74012

TEL: (918) 251-2515
FAX:
Acct #: DHLRRTX

21-Oct-16

Sample Id	Matrix	DHL#	Date Collected	Bottle Type	Requested Tests					
					E904.0	SM7500Ra-B M				
MW-19	Aqueous	-01B	10/19/16 11:25 AM	500HDPEHNO3	1					
MW-19	Aqueous	-01C	10/19/16 11:25 AM	500HDPEHNO3		1				
PDP-22	Aqueous	-02B	10/19/16 12 15 PM	500HDPEHNO3	1					
PDP-22	Aqueous	-02C	10/19/16 12 15 PM	500HDPEHNO3		1				
MW-18A	Aqueous	-03B	10/19/16 01:10 PM	500HDPEHNO3	1					
MW-18A	Aqueous	-03C	10/19/16 01:10 PM	500HDPEHNO3		1				
EB-1	Aqueous	-04B	10/19/16 01 30 PM	500HDPEHNO3	1					
EB-1	Aqueous	-04C	10/19/16 01.30 PM	500HDPEHNO3		1				

General Comments:

Please analyze these samples with Normal Turnaround Time.
Report RA-226, Ra-228 & Combined per Specs DHLRRTX033116S.
Quality Control Package Needed: Standard - NELAC Rad Test compliant
Email to cac@dhlanalytical.com & dupont@dhlanalytical.com

20160043
C868917

		Date/Time			Date/Time
Relinquished by:		10/21/16 1730	**Received by:**	Lonestar	10/21/16 1730
Relinquished by:			**Received by:**		10/22/16 1539

SAMPLE LOGIN

Date Received: 10/25/2016 3:59:1

Lab Number: 20161043

Due: 11/22/2016

Sample Number	Client Sample ID	Matrix	Date Sampled	Container Type	Container Size	Preservation	Preserved Upon Receipt	Custody Seal	Seal Intact
20161043-01 B	MW-19	NPW	10/19/16	Plastic	500 ml	HNO3, pH < 2		Yes	Yes
20161043-01 A	MW-19	NPW	10/19/16	Plastic	500 ml	HNO3, pH < 2		Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20161043-02 B	PDP-22	NPW	10/19/16	Plastic	500 ml	HNO3, pH < 2		Yes	Yes
20161043-02 A	PDP-22	NPW	10/19/16	Plastic	500 ml	HNO3, pH < 2		Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20161043-03 B	MW-18A	NPW	10/19/16	Plastic	500 ml	HNO3, pH < 2		Yes	Yes
20161043-03 A	MW-18A	NPW	10/19/16	Plastic	500 ml	HNO3, pH < 2		Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20161043-04 B	EB-1	NPW	10/19/16	Plastic	500 ml	HNO3, pH < 2		Yes	Yes
20161043-04 A	EB-1	NPW	10/19/16	Plastic	500 ml	HNO3, pH < 2		Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						

CONTAINER INSPECTION

Coolers Custody Seals Broken Temperature: C Ice Radiation Survey: <300 cpm

SAMPLE INSPECTION

Sample Seal Broken Chain of Custody Record Labels in Tact Radiation Survey Complete

Anomalies

Inspected By: _____ DATE 10/25/16

QA or Designee Review: _____ DATE 10/25/16

Sample Custodian Review: _____ DATE _____

Project Notes:

January 17, 2017

Will Vienne
Pastor, Behling & Wheeler
2201 Double Creek Dr #4004
Round Rock, Texas 78664
TEL: (512) 671-3434
FAX (512) 671-3446

Order No.: 1612133

RE: MLSES - PDP-5 Area

Dear Will Vienne:

DHL Analytical, Inc. received 3 sample(s) on 12/13/2016 for the analyses presented in the following report.

There were no problems with the analyses and all data met requirements of NELAC except where noted in the Case Narrative. All non-NELAC methods will be identified accordingly in the case narrative and all estimated uncertainties of test results are within method or EPA specifications.

If you have any questions regarding these tests results, please feel free to call. Thank you for using DHL Analytical.

Sincerely,

John DuPont
General Manager

This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211-16-17

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DHL ANALYTICAL
2300 Double Creek Dr. ■ Round Rock, TX 78664
Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

CHAIN-OF-CUSTODY

№ 73580

CLIENT: PBW
ADDRESS: 2201 DOUBLE CREEK DR ROUND ROCK, TX 78664
PHONE: 512-671-3434 FAX/E-MAIL: 512-671-3446
DATA REPORTED TO: WILL VIENNE
ADDITIONAL REPORT COPIES TO:

DATE: 12-12-16 PAGE 1 OF 1
PO #: 5164-B DHL WORK ORDER #: 161213
PROJECT LOCATION OR NAME: MLSES - PDP-5 AREA
CLENT PROJECT #: 5164-B COLLECTOR: J. BRAYTON

Authorize 5% surcharge for TRRP Report? ❑ Yes ❑ No

S=SOIL P=PAINT
W=WATER SL=SLUDGE
A=AIR O=OTHER
L=LIQUID SO=SOLID
SE=SEDIMENT

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	PRESERVATION: HCl	HNO_3	H_2SO_4 ❑ NaOH ❑	ICE	UNPRESERVED	ANALYSES: COR SAMPLING	FIELD NOTES
MW-18A	01	12-12-16	0850	W	P	4		X				X	
PDP-26	02	12-12-16	1010	W	P	4		X				X	
PDP-22	03	12-12-16	1115	W	P	4		X				X	

ANALYSES: BTEX ❑ MTBE ❑ [METHOD 8021] TPH 1005 ❑ TPH 1006 ❑ HOLD 1006 ❑ GRO [METHOD 8015] ❑ DRO [METHOD 8105] ❑ VOC 8260 ❑ VOC 624 ❑ VOC 8260/5035 ❑ SVOC 8270 ❑ PAH 8270 ❑ HOLD PAH ❑ SVOC 625 ❑ 8270 PEST ❑ 625 PEST/PCB ❑ 608 PCB ❑ 8270 PCB ❑ 8270 O-P PEST ❑ 8082 PCB ❑ T PHOS, AMMONIA ❑ 8321 HERB ❑ METALS 6020 ❑ METALS 200.8 ❑ DISS. METALS ❑ RCRA ❑ TX11 ❑ PH ❑ HEX CHROM ❑ ALKALINITY ❑ COD ❑ CHLORIDE ❑ ANIONS ❑ TCLP-SVOC ❑ VOC ❑ PEST ❑ HERB ❑ TCLP-METALS ❑ RCRA 8 ❑ TX-11 ❑ Pb ❑ RCI ❑ FLASHPOINT ❑ DGAS ❑ TDS ❑ TSS ❑ % MOISTURE ❑ CYANIDE ❑

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
[signature]	12-12-16 1800	Fedex
Fedex	12/13/16 1040	[signature]
RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)

TURN AROUND TIME
RUSH ❑ CALL FIRST
1 DAY ❑ CALL FIRST
2 DAY ❑
NORMAL ☒
OTHER ❑

LABORATORY USE ONLY:
RECEIVING TEMP: 4.1/5.4 12/13/16 THERM #: 78
CUSTODY SEALS: ❑ BROKEN ☒ INTACT ☒ NOT USED 12/13/16
CARRIER: ❑ LONE STAR ☒ FEDEX ❑ UPS ❑ OTHER
❑ COURIER DELIVERY
❑ HAND DELIVERED

❑ DHL DISPOSAL @ $5.00 each ❑ Return

John Dupont

From:	Sara Taube [Sara.Taube@pbwllc.com]
Sent:	Wednesday, July 22, 2015 12:06 PM
To:	John Dupont
Subject:	CCR Appendix III and IV
Follow Up Flag:	Follow up
Flag Status:	Completed

Hi John,

Here are the Appendix III and Appendix IV constituents that we will need to have analyzed under the CCR Rule.

Appendix III
Boron
Calcium
Chloride
Fluoride
pH
sulfate
TDS

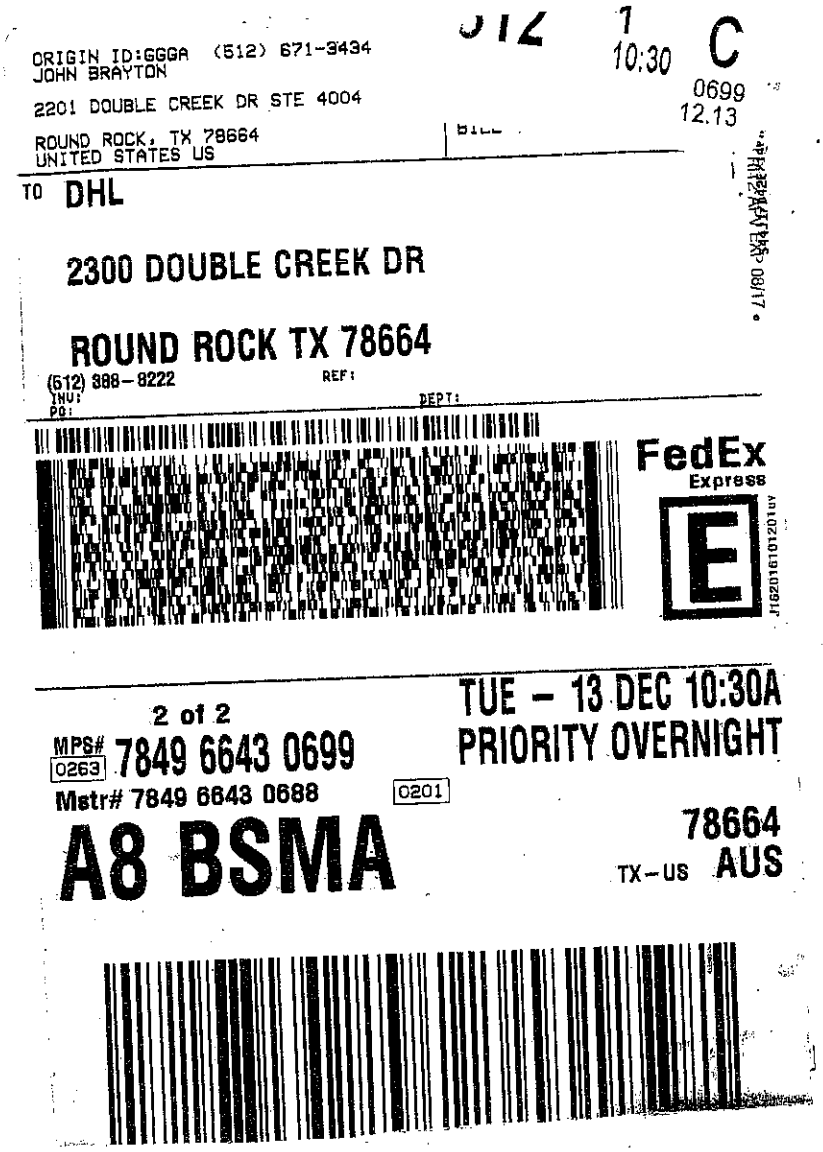
Appendix IV
Antimony
Arsenic
Barium
Beryllium
Cadmium
Chromium
Cobalt
Fluoride
Lead
Lithium
Mercury
Molybdenum
Selenium
Thallium
Radium 226 and 228

We are looking to have approximately 74 wells sampled 8 times over the course of the next two years. Please let me know if there is any more information you might need.

Cheers,

Sara

10/26/2015


ORIGIN ID:GGGA (512) 671-9434
JOHN BRAYTON
2201 DOUBLE CREEK DR STE 4004
ROUND ROCK, TX 78664
UNITED STATES US

TO DHL

2300 DOUBLE CREEK DR

ROUND ROCK TX 78664

(512) 388-8222 REF:

INV: PO: DEPT:

FedEx Express

2 of 2

MPS# 0263 7849 6643 0699

Mstr# 7849 6643 0688 0201

TUE - 13 DEC 10:30A
PRIORITY OVERNIGHT

A8 BSMA

78664
TX-US AUS

DHL Analytical, Inc.

Sample Receipt Checklist

Client Name Pastor, Behling & Wheeler

Date Received: 12/13/2016

Work Order Number 1612133

Received by JT

Checklist completed by: _____ 12/13/2016
Signature | Date

Reviewed by _____ 12/13/2016
Initials | Date

Carrier name FedEx 1day

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	4.1 °C
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH<2 acceptable upon receipt?	Yes ☑	No ☐	NA ☐ LOT # 8086
	Adjusted? NO		Checked by _____
Water - ph>9 (S) or ph>12 (CN) acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted? _____		Checked by _____

Any No response must be detailed in the comments section below.

Client contacted _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments: _____

Corrective Action _____

CLIENT: Pastor, Behling & Wheeler
Project: MLSES - PDP-5 Area
Lab Order: 1612133

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Method SW6020A - Metals Analysis
Method SW7470A - Mercury Analysis
Method E300 - Anions Analysis
Method M4500-H+ B - pH of a Water Analysis
Method M2540C - TDS Analysis
Sub-contract - Radium-228 and Radium-226 analyses by methods E904/9320 and SM 7500 Ra B M. Analyzed at ESC Lab Sciences.

LOG IN

The samples were received and log-in performed on 12/13/16. A total of 3 samples were received. The samples arrived in good condition and were properly packaged.

METALS ANALYSIS

For Metals analysis performed on 12/15/16 the matrix spike and matrix spike duplicate recoveries were out of control limits for Boron and/or Calcium. These are flagged accordingly in the QC summary report. The sample selected for the matrix spike and matrix spike duplicate was not from this work order. The percent recoveries for the LCS were within control limits for these analytes. No further corrective actions were taken.

For Metals analysis performed on 12/16/16 the LCS/LCSD had the RPD slightly above control limits for twelve analytes. These are flagged accordingly. The percent recoveries were within control limits. No further corrective actions were taken.

For Metals analysis performed on 12/20/16 the RPD for the serial dilution was above control limits for Boron. This is flagged accordingly. The PDS was within control limits for this analyte. No further corrective actions were taken.

For Metals analysis performed on 12/15/16 Boron was detected above the reporting limit in CCB8-161215. The associated samples are QC samples only. No further corrective actions were taken.

For Metals analysis performed on 12/15/16 CCV7-161215, LCVL7-161215, CCV8-161215 and LCVL8-16215 were above control limits for Boron. These are flagged accordingly. The associated samples were QC samples only. No further corrective actions were taken.

For Metals analysis performed on 12/16/16 LCVL4-161216 and LCVL5-16216 were out of control

limits for Boron. These are flagged accordingly. The associated CCVs were within control limits for this analyte. No further corrective actions were taken.

DHL Analytical, Inc.

Date: *17-Jan-17*

CLIENT: Pastor, Behling & Wheeler
Project: MLSES - PDP-5 Area
Lab Order: 1612133

Work Order Sample Summary

Lab Smp ID	Client Sample ID	Tag Number	Date Collected	Date Recved
1612133-01	MW-18A		12/12/16 08:50 AM	12/13/2016
1612133-02	PDP-26		12/12/16 10:10 AM	12/13/2016
1612133-03	PDP-22		12/12/16 11:15 AM	12/13/2016

Lab Order: 1612133
Client: Pastor, Behling & Wheeler
Project: MLSES - PDP-5 Area

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1612133-01A	MW-18A	12/12/16 08:50 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/14/16 08:47 AM	78271
	MW-18A	12/12/16 08:50 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/14/16 08:47 AM	78271
	MW-18A	12/12/16 08:50 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	12/16/16 08:55 AM	78325
	MW-18A	12/12/16 08:50 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	12/16/16 08:55 AM	78325
1612133-01D	MW-18A	12/12/16 08:50 AM	Aqueous	E300	Anion Preparation	12/16/16 09:14 AM	78329
	MW-18A	12/12/16 08:50 AM	Aqueous	M4500-H+ B	pH Preparation	12/14/16 08:12 AM	78265
	MW-18A	12/12/16 08:50 AM	Aqueous	M2540C	TDS Preparation	12/16/16 02:55 PM	78334
1612133-02A	PDP-26	12/12/16 10:10 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/14/16 08:47 AM	78271
	PDP-26	12/12/16 10:10 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/14/16 08:47 AM	78271
	PDP-26	12/12/16 10:10 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	12/16/16 08:55 AM	78325
1612133-02D	PDP-26	12/12/16 10:10 AM	Aqueous	E300	Anion Preparation	12/16/16 09:14 AM	78329
	PDP-26	12/12/16 10:10 AM	Aqueous	M4500-H+ B	pH Preparation	12/14/16 08:12 AM	78265
	PDP-26	12/12/16 10:10 AM	Aqueous	M2540C	TDS Preparation	12/16/16 10:42 AM	78334
1612133-03A	PDP-22	12/12/16 11:15 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/14/16 08:47 AM	78271
	PDP-22	12/12/16 11:15 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/14/16 08:47 AM	78271
	PDP-22	12/12/16 11:15 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/14/16 08:47 AM	78271
	PDP-22	12/12/16 11:15 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	12/16/16 08:55 AM	78325
1612133-03D	PDP-22	12/12/16 11:15 AM	Aqueous	E300	Anion Preparation	12/16/16 09:14 AM	78329
	PDP-22	12/12/16 11:15 AM	Aqueous	M4500-H+ B	pH Preparation	12/14/16 08:12 AM	78265
	PDP-22	12/12/16 11:15 AM	Aqueous	M2540C	TDS Preparation	12/16/16 10:42 AM	78334

Lab Order: 1612133
Client: Pastor, Behling & Wheeler
Project: MLSES - PDP-5 Area

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1612133-01A	MW-18A	Aqueous	SW7470A	Mercury Total: Aqueous	78325	50	12/20/16 05:38 PM	CETAC2_HG_161220B
	MW-18A	Aqueous	SW7470A	Mercury Total: Aqueous	78325	1	12/20/16 04:47 PM	CETAC2_HG_161220B
	MW-18A	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	78271	1	12/15/16 05:19 PM	ICP-MS4_161215D
	MW-18A	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	78271	1	12/21/16 01:32 PM	ICP-MS4_161221A
1612133-01D	MW-18A	Aqueous	E300	Anions by IC method - Water	78329	1	12/16/16 11:05 AM	IC2_161216A
	MW-18A	Aqueous	M4500-H+ B	pH	78265	1	12/14/16 09:20 AM	TITRATOR_161214A
	MW-18A	Aqueous	M2540C	Total Dissolved Solids	78334	1	12/19/16 08:42 AM	WC_161216B
1612133-02A	PDP-26	Aqueous	SW7470A	Mercury Total: Aqueous	78325	1	12/20/16 04:53 PM	CETAC2_HG_161220B
	PDP-26	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	78271	1	12/21/16 01:34 PM	ICP-MS4_161221A
	PDP-26	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	78271	1	12/15/16 05:21 PM	ICP-MS4_161215D
1612133-02D	PDP-26	Aqueous	E300	Anions by IC method - Water	78329	1	12/16/16 11:19 AM	IC2_161216A
	PDP-26	Aqueous	M4500-H+ B	pH	78265	1	12/14/16 09:26 AM	TITRATOR_161214A
	PDP-26	Aqueous	M2540C	Total Dissolved Solids	78334	1	12/19/16 08:42 AM	WC_161216B
1612133-03A	PDP-22	Aqueous	SW7470A	Mercury Total: Aqueous	78325	1	12/20/16 04:55 PM	CETAC2_HG_161220B
	PDP-22	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	78271	1	12/15/16 05:37 PM	ICP-MS4_161215D
	PDP-22	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	78271	10	12/21/16 01:36 PM	ICP-MS4_161221A
	PDP-22	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	78271	1	12/21/16 01:38 PM	ICP-MS4_161221A
1612133-03D	PDP-22	Aqueous	E300	Anions by IC method - Water	78329	1	12/16/16 11:34 AM	IC2_161216A
	PDP-22	Aqueous	M4500-H+ B	pH	78265	1	12/14/16 09:28 AM	TITRATOR_161214A
	PDP-22	Aqueous	M2540C	Total Dissolved Solids	78334	1	12/19/16 08:42 AM	WC_161216B

DHL Analytical, Inc.

Date: *17-Jan-17*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	MW-18A
Project:	MLSES - PDP-5 Area	**Lab ID:**	1612133-01
Project No:	5164-B	**Collection Date:**	12/12/16 08:50 AM
Lab Order:	1612133	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	0.0610	0.00400	0.0100		mg/L	50	12/20/16 05:38 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	12/15/16 05:19 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	12/15/16 05:19 PM
Barium	0.0413	0.00300	0.0100		mg/L	1	12/15/16 05:19 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	12/15/16 05:19 PM
Boron	0.113	0.0100	0.0300		mg/L	1	12/21/16 01:32 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	12/15/16 05:19 PM
Calcium	2.28	0.100	0.300		mg/L	1	12/15/16 05:19 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	12/15/16 05:19 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	12/15/16 05:19 PM
Lead	0.000353	0.000300	0.00100	J	mg/L	1	12/15/16 05:19 PM
Lithium	0.00908	0.00500	0.0100	J	mg/L	1	12/15/16 05:19 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	12/15/16 05:19 PM
Selenium	0.00311	0.00200	0.00500	J	mg/L	1	12/15/16 05:19 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	12/15/16 05:19 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	7.68	0.300	1.00		mg/L	1	12/16/16 11:05 AM
Fluoride	<0.100	0.100	0.400		mg/L	1	12/16/16 11:05 AM
Sulfate	5.48	1.00	3.00		mg/L	1	12/16/16 11:05 AM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	5.78	0	0		pH Units@18.5℃	1	12/14/16 09:20 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	80.0	10.0	10.0		mg/L	1	12/19/16 08:42 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *17-Jan-17*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	PDP-26
Project:	MLSES - PDP-5 Area	**Lab ID:**	1612133-02
Project No:	5164-B	**Collection Date:**	12/12/16 10:10 AM
Lab Order:	1612133	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/20/16 04:53 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	12/15/16 05:21 PM
Arsenic	0.00206	0.00200	0.00500	J	mg/L	1	12/15/16 05:21 PM
Barium	0.0286	0.00300	0.0100		mg/L	1	12/15/16 05:21 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	12/15/16 05:21 PM
Boron	0.0470	0.0100	0.0300		mg/L	1	12/21/16 01:34 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	12/15/16 05:21 PM
Calcium	2.43	0.100	0.300		mg/L	1	12/15/16 05:21 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	12/15/16 05:21 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	12/15/16 05:21 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	12/15/16 05:21 PM
Lithium	0.0134	0.00500	0.0100		mg/L	1	12/15/16 05:21 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	12/15/16 05:21 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	12/15/16 05:21 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	12/15/16 05:21 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	5.56	0.300	1.00		mg/L	1	12/16/16 11:19 AM
Fluoride	0.251	0.100	0.400	J	mg/L	1	12/16/16 11:19 AM
Sulfate	6.69	1.00	3.00		mg/L	1	12/16/16 11:19 AM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.51	0	0		pH Units@18.8℃	1	12/14/16 09:26 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	84.0	10.0	10.0		mg/L	1	12/19/16 08:42 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *17-Jan-17*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	PDP-22
Project:	MLSES - PDP-5 Area	**Lab ID:**	1612133-03
Project No:	5164-B	**Collection Date:**	12/12/16 11:15 AM
Lab Order:	1612133	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/20/16 04:55 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	12/15/16 05:37 PM
Arsenic	0.00470	0.00200	0.00500	J	mg/L	1	12/15/16 05:37 PM
Barium	0.258	0.00300	0.0100		mg/L	1	12/15/16 05:37 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	12/15/16 05:37 PM
Boron	0.163	0.0100	0.0300		mg/L	1	12/21/16 01:38 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	12/15/16 05:37 PM
Calcium	122	1.00	3.00		mg/L	10	12/21/16 01:36 PM
Chromium	0.0361	0.00200	0.00500		mg/L	1	12/15/16 05:37 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	12/15/16 05:37 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	12/15/16 05:37 PM
Lithium	0.116	0.00500	0.0100		mg/L	1	12/15/16 05:37 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	12/15/16 05:37 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	12/15/16 05:37 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	12/15/16 05:37 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Chloride	8.27	0.300	1.00		mg/L	1	12/16/16 11:34 AM
Fluoride	0.201	0.100	0.400	J	mg/L	1	12/16/16 11:34 AM
Sulfate	105	1.00	3.00		mg/L	1	12/16/16 11:34 AM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	11.7	0	0		pH Units@18.9℃	1	12/14/16 09:28 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	710	50.0	50.0		mg/L	1	12/19/16 08:42 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT: Pastor, Behling & Wheeler
Work Order: 1612133
Project: MLSES - PDP-5 Area

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_161220B

The QC data in batch 78325 applies to the following samples: 1612133-01A, 1612133-02A, 1612133-03A

Sample ID **MB-78325** Batch ID: **78325** TestNo: **SW7470A** Units: **mg/L**
SampType: **MBLK** Run ID: **CETAC2_HG_161220B** Analysis Date: **12/20/2016 4:22:41 PM** Prep Date: **12/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.0000800	0.000200								

Sample ID **LCS-78325** Batch ID: **78325** TestNo: **SW7470A** Units: **mg/L**
SampType: **LCS** Run ID: **CETAC2_HG_161220B** Analysis Date: **12/20/2016 4:24:56 PM** Prep Date: **12/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00193	0.000200	0.00200	0	96.5	85	115			

Sample ID **LCSD-78325** Batch ID: **78325** TestNo: **SW7470A** Units: **mg/L**
SampType: **LCSD** Run ID: **CETAC2_HG_161220B** Analysis Date: **12/20/2016 4:27:13 PM** Prep Date: **12/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00192	0.000200	0.00200	0	96.0	85	115	0.519	15	

Sample ID **1612083-03B SD** Batch ID: **78325** TestNo: **SW7470A** Units: **mg/L**
SampType: **SD** Run ID: **CETAC2_HG_161220B** Analysis Date: **12/20/2016 4:36:17 PM** Prep Date: **12/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.000400	0.00100	0	0				0	10	

Sample ID **1612083-03B PDS** Batch ID: **78325** TestNo: **SW7470A** Units: **mg/L**
SampType: **PDS** Run ID: **CETAC2_HG_161220B** Analysis Date: **12/20/2016 4:38:32 PM** Prep Date: **12/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00228	0.000200	0.00250	0	91.2	85	115			

Sample ID **1612083-03B MS** Batch ID: **78325** TestNo: **SW7470A** Units: **mg/L**
SampType: **MS** Run ID: **CETAC2_HG_161220B** Analysis Date: **12/20/2016 4:40:48 PM** Prep Date: **12/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00188	0.000200	0.00200	0	94.0	80	120			

Sample ID **1612083-03B MSD** Batch ID: **78325** TestNo: **SW7470A** Units: **mg/L**
SampType: **MSD** Run ID: **CETAC2_HG_161220B** Analysis Date: **12/20/2016 4:43:05 PM** Prep Date: **12/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00189	0.000200	0.00200	0	94.5	80	120	0.531	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1612133
Project: MLSES - PDP-5 Area

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_161220B

Sample ID **ICV-161220**	Batch ID: **R89562**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **ICV**	Run ID: **CETAC2_HG_161220B**	Analysis Date: **12/20/2016 3:03:08 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00395	0.000200	0.00400	0	98.8	90	110			

Sample ID **CCV2-161220**	Batch ID: **R89562**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_161220B**	Analysis Date: **12/20/2016 4:18:07 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00200	0.000200	0.00200	0	100	90	110			

Sample ID **CCV3-161220**	Batch ID: **R89562**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_161220B**	Analysis Date: **12/20/2016 5:07:07 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00204	0.000200	0.00200	0	102	90	110			

Sample ID **CCV4-161220**	Batch ID: **R89562**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_161220B**	Analysis Date: **12/20/2016 5:33:34 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00205	0.000200	0.00200	0	103	90	110			

Sample ID **CCV5-161220**	Batch ID: **R89562**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_161220B**	Analysis Date: **12/20/2016 5:40:27 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00204	0.000200	0.00200	0	102	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1612133
Project: MLSES - PDP-5 Area

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161215D

The QC data in batch 78271 applies to the following samples: 1612133-01A, 1612133-02A, 1612133-03A

Sample ID **MB-78271** Batch ID: **78271** TestNo: **SW6020A** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_161215D** Analysis Date: **12/15/2016 4:53:00 PM** Prep Date: **12/14/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.000800	0.00250								
Arsenic	<0.00200	0.00500								
Barium	<0.00300	0.0100								
Beryllium	<0.000300	0.00100								
Boron	<0.0100	0.0300								
Cadmium	<0.000300	0.00100								
Calcium	<0.100	0.300								
Chromium	<0.00200	0.00500								
Cobalt	<0.00300	0.00500								
Lead	<0.000300	0.00100								
Lithium	<0.00500	0.0100								
Molybdenum	<0.00200	0.00500								
Selenium	<0.00200	0.00500								
Thallium	<0.000500	0.00150								

Sample ID **1612132-02A SD** Batch ID: **78271** TestNo: **SW6020A** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS4_161215D** Analysis Date: **12/15/2016 5:03:00 PM** Prep Date: **12/14/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.00400	0.0125	0	0				0	10	
Arsenic	<0.0100	0.0250	0	0.00875				0	10	
Barium	0.0188	0.0500	0	0.0189				0.903	10	
Beryllium	0.0211	0.00500	0	0.0197				6.80	10	
Cadmium	<0.00150	0.00500	0	0				0	10	
Chromium	<0.0100	0.0250	0	0.00386				0	10	
Cobalt	0.237	0.0250	0	0.230				3.00	10	
Lead	<0.00150	0.00500	0	0				0	10	
Lithium	0.205	0.0500	0	0.198				3.89	10	
Molybdenum	<0.0100	0.0250	0	0				0	10	
Selenium	0.0381	0.0250	0	0.0365				4.28	10	
Thallium	<0.00250	0.00750	0	0				0	10	

Sample ID **1612132-02A PDS** Batch ID: **78271** TestNo: **SW6020A** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS4_161215D** Analysis Date: **12/15/2016 5:23:00 PM** Prep Date: **12/14/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.202	0.00250	0.200	0	101	80	120			
Arsenic	0.210	0.00500	0.200	0.00875	101	80	120			
Barium	0.219	0.0100	0.200	0.0189	100	80	120			
Beryllium	0.211	0.00100	0.200	0.0197	95.9	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1612133
Project: MLSES - PDP-5 Area

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161215D

Sample ID **1612132-02A PDS** Batch ID: **78271** TestNo: **SW6020A** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS4_161215D** Analysis Date: **12/15/2016 5:23:00 PM** Prep Date: **12/14/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cadmium	0.187	0.00100	0.200	0	93.5	80	120			
Chromium	0.201	0.00500	0.200	0.00386	98.7	80	120			
Cobalt	0.408	0.00500	0.200	0.230	89.2	80	120			
Lead	0.200	0.00100	0.200	0	99.8	80	120			
Lithium	0.367	0.0100	0.200	0.198	84.8	80	120			
Molybdenum	0.193	0.00500	0.200	0	96.5	80	120			
Selenium	0.246	0.00500	0.200	0.0365	105	80	120			
Thallium	0.197	0.00150	0.200	0	98.3	80	120			

Sample ID **1612132-02A MS** Batch ID: **78271** TestNo: **SW6020A** Units: **mg/L**
SampType: **MS** Run ID: **ICP-MS4_161215D** Analysis Date: **12/15/2016 5:25:00 PM** Prep Date: **12/14/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.199	0.00250	0.200	0	99.4	80	120			
Arsenic	0.210	0.00500	0.200	0.00875	100	80	120			
Barium	0.213	0.0100	0.200	0.0189	96.9	80	120			
Beryllium	0.204	0.00100	0.200	0.0197	92.1	80	120			
Boron	22.0	0.0300	0.200	22.2	-120	80	120			S
Cadmium	0.184	0.00100	0.200	0	91.9	80	120			
Calcium	255	0.300	5.00	251	90.0	80	120			
Chromium	0.189	0.00500	0.200	0.00386	92.8	80	120			
Cobalt	0.413	0.00500	0.200	0.230	91.8	80	120			
Lead	0.196	0.00100	0.200	0	98.1	80	120			
Lithium	0.367	0.0100	0.200	0.198	84.9	80	120			
Molybdenum	0.194	0.00500	0.200	0	97.2	80	120			
Selenium	0.231	0.00500	0.200	0.0365	97.5	80	120			
Thallium	0.195	0.00150	0.200	0	97.4	80	120			

Sample ID **1612132-02A MSD** Batch ID: **78271** TestNo: **SW6020A** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS4_161215D** Analysis Date: **12/15/2016 5:27:00 PM** Prep Date: **12/14/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.200	0.00250	0.200	0	99.9	80	120	0.497	15	
Arsenic	0.216	0.00500	0.200	0.00875	104	80	120	3.10	15	
Barium	0.218	0.0100	0.200	0.0189	99.6	80	120	2.46	15	
Beryllium	0.207	0.00100	0.200	0.0197	93.7	80	120	1.57	15	
Boron	21.7	0.0300	0.200	22.2	-227	80	120	0.981	15	S
Cadmium	0.190	0.00100	0.200	0	94.8	80	120	3.10	15	
Calcium	260	0.300	5.00	251	181	80	120	1.76	15	S
Chromium	0.194	0.00500	0.200	0.00386	94.8	80	120	2.13	15	
Cobalt	0.417	0.00500	0.200	0.230	93.6	80	120	0.851	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1612133
Project: MLSES - PDP-5 Area

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161215D

Sample ID **1612132-02A MSD** Batch ID: **78271** TestNo: **SW6020A** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS4_161215D** Analysis Date: **12/15/2016 5:27:00 PM** Prep Date: **12/14/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.203	0.00100	0.200	0	102	80	120	3.44	15	
Lithium	0.371	0.0100	0.200	0.198	86.8	80	120	1.02	15	
Molybdenum	0.197	0.00500	0.200	0	98.4	80	120	1.31	15	
Selenium	0.241	0.00500	0.200	0.0365	102	80	120	4.09	15	
Thallium	0.200	0.00150	0.200	0	100	80	120	2.67	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1612133
Project: MLSES - PDP-5 Area

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161215D

Sample ID **ICV-161215**	Batch ID: **R89469**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_161215D**	Analysis Date: **12/15/2016 11:10:00 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.101	0.00250	0.100	0	101	90	110			
Arsenic	0.0999	0.00500	0.100	0	99.9	90	110			
Barium	0.102	0.0100	0.100	0	102	90	110			
Beryllium	0.102	0.00100	0.100	0	102	90	110			
Boron	0.0983	0.0300	0.100	0	98.3	90	110			
Cadmium	0.101	0.00100	0.100	0	101	90	110			
Calcium	2.30	0.300	2.50	0	92.0	90	110			
Chromium	0.106	0.00500	0.100	0	106	90	110			
Cobalt	0.104	0.00500	0.100	0	104	90	110			
Lead	0.101	0.00100	0.100	0	101	90	110			
Lithium	0.102	0.0100	0.100	0	102	90	110			
Molybdenum	0.0978	0.00500	0.100	0	97.8	90	110			
Selenium	0.0995	0.00500	0.100	0	99.5	90	110			
Thallium	0.0993	0.00150	0.100	0	99.3	90	110			

Sample ID **LCVL-161215**	Batch ID: **R89469**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_161215D**	Analysis Date: **12/15/2016 11:16:00 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00209	0.00250	0.00200	0	104	70	130			
Arsenic	0.00529	0.00500	0.00500	0	106	70	130			
Barium	0.00526	0.0100	0.00500	0	105	70	130			
Beryllium	0.000885	0.00100	0.00100	0	88.5	70	130			
Boron	0.0171	0.0300	0.0200	0	85.5	70	130			
Cadmium	0.00107	0.00100	0.00100	0	107	70	130			
Calcium	0.105	0.300	0.100	0	105	70	130			
Chromium	0.00548	0.00500	0.00500	0	110	70	130			
Cobalt	0.00544	0.00500	0.00500	0	109	70	130			
Lead	0.00109	0.00100	0.00100	0	109	70	130			
Lithium	0.0108	0.0100	0.0100	0	108	70	130			
Molybdenum	0.00513	0.00500	0.00500	0	103	70	130			
Selenium	0.00571	0.00500	0.00500	0	114	70	130			
Thallium	0.00103	0.00150	0.00100	0	103	70	130			

Sample ID **CCV7-161215**	Batch ID: **R89469**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_161215D**	Analysis Date: **12/15/2016 4:30:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.201	0.00250	0.200	0	101	90	110			
Arsenic	0.206	0.00500	0.200	0	103	90	110			
Barium	0.200	0.0100	0.200	0	99.8	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161215D

Sample ID **CCV7-161215** Batch ID: **R89469** TestNo: **SW6020A** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_161215D** Analysis Date: **12/15/2016 4:30:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.206	0.00100	0.200	0	103	90	110			
Boron	0.241	0.0300	0.200	0	120	90	110			S
Cadmium	0.199	0.00100	0.200	0	99.6	90	110			
Calcium	5.11	0.300	5.00	0	102	90	110			
Chromium	0.205	0.00500	0.200	0	102	90	110			
Cobalt	0.205	0.00500	0.200	0	103	90	110			
Lead	0.199	0.00100	0.200	0	99.4	90	110			
Lithium	0.205	0.0100	0.200	0	102	90	110			
Molybdenum	0.196	0.00500	0.200	0	97.8	90	110			
Selenium	0.209	0.00500	0.200	0	104	90	110			
Thallium	0.197	0.00150	0.200	0	98.6	90	110			

Sample ID **LCVL7-161215** Batch ID: **R89469** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_161215D** Analysis Date: **12/15/2016 4:35:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00215	0.00250	0.00200	0	108	70	130			
Arsenic	0.00532	0.00500	0.00500	0	106	70	130			
Barium	0.00528	0.0100	0.00500	0	106	70	130			
Beryllium	0.00108	0.00100	0.00100	0	108	70	130			
Boron	0.0406	0.0300	0.0200	0	203	70	130			S
Cadmium	0.00100	0.00100	0.00100	0	100	70	130			
Calcium	0.113	0.300	0.100	0	113	70	130			
Chromium	0.00531	0.00500	0.00500	0	106	70	130			
Cobalt	0.00531	0.00500	0.00500	0	106	70	130			
Lead	0.00102	0.00100	0.00100	0	102	70	130			
Lithium	0.0114	0.0100	0.0100	0	114	70	130			
Molybdenum	0.00488	0.00500	0.00500	0	97.5	70	130			
Selenium	0.00561	0.00500	0.00500	0	112	70	130			
Thallium	0.00106	0.00150	0.00100	0	106	70	130			

Sample ID **CCV8-161215** Batch ID: **R89469** TestNo: **SW6020A** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_161215D** Analysis Date: **12/15/2016 5:29:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.202	0.00250	0.200	0	101	90	110			
Arsenic	0.207	0.00500	0.200	0	104	90	110			
Barium	0.203	0.0100	0.200	0	101	90	110			
Beryllium	0.198	0.00100	0.200	0	98.9	90	110			
Boron	0.735	0.0300	0.200	0	368	90	110			S
Cadmium	0.198	0.00100	0.200	0	98.9	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1612133
Project: MLSES - PDP-5 Area

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161215D

Sample ID **CCV8-161215** Batch ID: **R89469** TestNo: **SW6020A** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_161215D** Analysis Date: **12/15/2016 5:29:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	5.06	0.300	5.00	0	101	90	110			
Chromium	0.204	0.00500	0.200	0	102	90	110			
Cobalt	0.203	0.00500	0.200	0	102	90	110			
Lead	0.201	0.00100	0.200	0	101	90	110			
Lithium	0.194	0.0100	0.200	0	97.0	90	110			
Molybdenum	0.195	0.00500	0.200	0	97.3	90	110			
Selenium	0.210	0.00500	0.200	0	105	90	110			
Thallium	0.197	0.00150	0.200	0	98.5	90	110			

Sample ID **LCVL8-161215** Batch ID: **R89469** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_161215D** Analysis Date: **12/15/2016 5:33:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00212	0.00250	0.00200	0	106	70	130			
Arsenic	0.00548	0.00500	0.00500	0	110	70	130			
Barium	0.00525	0.0100	0.00500	0	105	70	130			
Beryllium	0.000848	0.00100	0.00100	0	84.8	70	130			
Boron	0.328	0.0300	0.0200	0	1640	70	130			S
Cadmium	0.00106	0.00100	0.00100	0	106	70	130			
Calcium	0.116	0.300	0.100	0	116	70	130			
Chromium	0.00534	0.00500	0.00500	0	107	70	130			
Cobalt	0.00538	0.00500	0.00500	0	108	70	130			
Lead	0.00102	0.00100	0.00100	0	102	70	130			
Lithium	0.0112	0.0100	0.0100	0	112	70	130			
Molybdenum	0.00487	0.00500	0.00500	0	97.3	70	130			
Selenium	0.00612	0.00500	0.00500	0	122	70	130			
Thallium	0.00104	0.00150	0.00100	0	104	70	130			

Sample ID **CCV9-161215** Batch ID: **R89469** TestNo: **SW6020A** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_161215D** Analysis Date: **12/15/2016 5:57:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.199	0.00250	0.200	0	99.6	90	110			
Arsenic	0.209	0.00500	0.200	0	104	90	110			
Barium	0.201	0.0100	0.200	0	100	90	110			
Beryllium	0.196	0.00100	0.200	0	98.1	90	110			
Cadmium	0.197	0.00100	0.200	0	98.6	90	110			
Chromium	0.200	0.00500	0.200	0	100	90	110			
Cobalt	0.204	0.00500	0.200	0	102	90	110			
Lead	0.197	0.00100	0.200	0	98.4	90	110			
Lithium	0.198	0.0100	0.200	0	98.9	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1612133
Project: MLSES - PDP-5 Area

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161215D

Sample ID **CCV9-161215**	Batch ID: **R89469**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_161215D**	Analysis Date: **12/15/2016 5:57:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Molybdenum	0.191	0.00500	0.200	0	95.3	90	110			
Selenium	0.210	0.00500	0.200	0	105	90	110			
Thallium	0.195	0.00150	0.200	0	97.4	90	110			

Sample ID **LCVL9-161215**	Batch ID: **R89469**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_161215D**	Analysis Date: **12/15/2016 6:01:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00202	0.00250	0.00200	0	101	70	130			
Arsenic	0.00550	0.00500	0.00500	0	110	70	130			
Barium	0.00518	0.0100	0.00500	0	104	70	130			
Beryllium	0.000899	0.00100	0.00100	0	89.9	70	130			
Cadmium	0.00101	0.00100	0.00100	0	101	70	130			
Chromium	0.00537	0.00500	0.00500	0	107	70	130			
Cobalt	0.00529	0.00500	0.00500	0	106	70	130			
Lead	0.000975	0.00100	0.00100	0	97.5	70	130			
Lithium	0.0108	0.0100	0.0100	0	108	70	130			
Molybdenum	0.00468	0.00500	0.00500	0	93.7	70	130			
Selenium	0.00590	0.00500	0.00500	0	118	70	130			
Thallium	0.00100	0.00150	0.00100	0	100	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1612133
Project: MLSES - PDP-5 Area

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161216D

The QC data in batch 78271 applies to the following samples: 1612133-01A, 1612133-02A, 1612133-03A

Sample ID **LCS-78271** Batch ID: **78271** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_161216D** Analysis Date: **12/16/2016 3:22:00 PM** Prep Date: **12/14/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.200	0.00250	0.200	0	100	80	120			
Arsenic	0.204	0.00500	0.200	0	102	80	120			
Barium	0.200	0.0100	0.200	0	100	80	120			
Beryllium	0.210	0.00100	0.200	0	105	80	120			
Boron	0.206	0.0300	0.200	0	103	80	120			
Cadmium	0.202	0.00100	0.200	0	101	80	120			
Calcium	4.86	0.300	5.00	0	97.3	80	120			
Chromium	0.204	0.00500	0.200	0	102	80	120			
Cobalt	0.209	0.00500	0.200	0	105	80	120			
Lead	0.195	0.00100	0.200	0	97.7	80	120			
Lithium	0.199	0.0100	0.200	0	99.4	80	120			
Molybdenum	0.199	0.00500	0.200	0	99.5	80	120			
Selenium	0.208	0.00500	0.200	0	104	80	120			
Thallium	0.196	0.00150	0.200	0	98.0	80	120			

Sample ID **LCSD-78271** Batch ID: **78271** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_161216D** Analysis Date: **12/16/2016 3:24:00 PM** Prep Date: **12/14/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.196	0.00250	0.200	0	98.1	80	120	1.95	15	
Arsenic	0.168	0.00500	0.200	0	84.2	80	120	19.1	15	R
Barium	0.163	0.0100	0.200	0	81.4	80	120	20.6	15	R
Beryllium	0.170	0.00100	0.200	0	84.8	80	120	21.4	15	R
Boron	0.166	0.0300	0.200	0	83.2	80	120	21.4	15	R
Cadmium	0.164	0.00100	0.200	0	81.8	80	120	20.9	15	R
Calcium	4.85	0.300	5.00	0	97.1	80	120	0.204	15	
Chromium	0.166	0.00500	0.200	0	82.9	80	120	20.6	15	R
Cobalt	0.171	0.00500	0.200	0	85.4	80	120	20.3	15	R
Lead	0.163	0.00100	0.200	0	81.3	80	120	18.3	15	R
Lithium	0.162	0.0100	0.200	0	80.8	80	120	20.6	15	R
Molybdenum	0.162	0.00500	0.200	0	81.0	80	120	20.6	15	R
Selenium	0.168	0.00500	0.200	0	83.9	80	120	21.5	15	R
Thallium	0.163	0.00150	0.200	0	81.7	80	120	18.2	15	R

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161216D

Sample ID **ICV-161216** Batch ID: **R89509** TestNo: **SW6020A** Units: **mg/L**
SampType: **ICV** Run ID: **ICP-MS4_161216D** Analysis Date: **12/16/2016 11:21:00 A** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.100	0.00250	0.100	0	100	90	110			
Arsenic	0.101	0.00500	0.100	0	101	90	110			
Barium	0.101	0.0100	0.100	0	101	90	110			
Beryllium	0.103	0.00100	0.100	0	103	90	110			
Boron	0.0983	0.0300	0.100	0	98.3	90	110			
Cadmium	0.102	0.00100	0.100	0	102	90	110			
Calcium	2.31	0.300	2.50	0	92.2	90	110			
Chromium	0.107	0.00500	0.100	0	107	90	110			
Cobalt	0.106	0.00500	0.100	0	106	90	110			
Lead	0.101	0.00100	0.100	0	101	90	110			
Lithium	0.0990	0.0100	0.100	0	99.0	90	110			
Molybdenum	0.0976	0.00500	0.100	0	97.6	90	110			
Selenium	0.103	0.00500	0.100	0	103	90	110			
Thallium	0.101	0.00150	0.100	0	101	90	110			

Sample ID **LCVL-161216** Batch ID: **R89509** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_161216D** Analysis Date: **12/16/2016 11:33:00 A** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00207	0.00250	0.00200	0	103	70	130			
Arsenic	0.00548	0.00500	0.00500	0	110	70	130			
Barium	0.00541	0.0100	0.00500	0	108	70	130			
Beryllium	0.00120	0.00100	0.00100	0	120	70	130			
Cadmium	0.00110	0.00100	0.00100	0	110	70	130			
Calcium	0.103	0.300	0.100	0	103	70	130			
Chromium	0.00564	0.00500	0.00500	0	113	70	130			
Cobalt	0.00561	0.00500	0.00500	0	112	70	130			
Lead	0.00111	0.00100	0.00100	0	111	70	130			
Lithium	0.0112	0.0100	0.0100	0	112	70	130			
Molybdenum	0.00530	0.00500	0.00500	0	106	70	130			
Selenium	0.00575	0.00500	0.00500	0	115	70	130			
Thallium	0.00110	0.00150	0.00100	0	110	70	130			

Sample ID **CCV4-161216** Batch ID: **R89509** TestNo: **SW6020A** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_161216D** Analysis Date: **12/16/2016 2:52:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.196	0.00250	0.200	0	97.9	90	110			
Arsenic	0.206	0.00500	0.200	0	103	90	110			
Barium	0.199	0.0100	0.200	0	99.6	90	110			
Beryllium	0.208	0.00100	0.200	0	104	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161216D

Sample ID **CCV4-161216** Batch ID: **R89509** TestNo: **SW6020A** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_161216D** Analysis Date: **12/16/2016 2:52:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.220	0.0300	0.200	0	110	90	110			
Cadmium	0.200	0.00100	0.200	0	99.9	90	110			
Calcium	4.92	0.300	5.00	0	98.4	90	110			
Chromium	0.204	0.00500	0.200	0	102	90	110			
Cobalt	0.209	0.00500	0.200	0	104	90	110			
Lead	0.198	0.00100	0.200	0	98.8	90	110			
Lithium	0.202	0.0100	0.200	0	101	90	110			
Molybdenum	0.199	0.00500	0.200	0	99.5	90	110			
Selenium	0.207	0.00500	0.200	0	103	90	110			
Thallium	0.199	0.00150	0.200	0	99.5	90	110			

Sample ID **LCVL4-161216** Batch ID: **R89509** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_161216D** Analysis Date: **12/16/2016 3:01:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00206	0.00250	0.00200	0	103	70	130			
Arsenic	0.00549	0.00500	0.00500	0	110	70	130			
Barium	0.00528	0.0100	0.00500	0	106	70	130			
Beryllium	0.00119	0.00100	0.00100	0	119	70	130			
Boron	0.0312	0.0300	0.0200	0	156	70	130			S
Cadmium	0.00107	0.00100	0.00100	0	107	70	130			
Calcium	0.110	0.300	0.100	0	110	70	130			
Chromium	0.00543	0.00500	0.00500	0	109	70	130			
Cobalt	0.00552	0.00500	0.00500	0	110	70	130			
Lead	0.00105	0.00100	0.00100	0	105	70	130			
Lithium	0.0105	0.0100	0.0100	0	105	70	130			
Molybdenum	0.00521	0.00500	0.00500	0	104	70	130			
Selenium	0.00549	0.00500	0.00500	0	110	70	130			
Thallium	0.00106	0.00150	0.00100	0	106	70	130			

Sample ID **CCV5-161216** Batch ID: **R89509** TestNo: **SW6020A** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_161216D** Analysis Date: **12/16/2016 3:58:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.201	0.00250	0.200	0	100	90	110			
Arsenic	0.206	0.00500	0.200	0	103	90	110			
Barium	0.202	0.0100	0.200	0	101	90	110			
Beryllium	0.200	0.00100	0.200	0	100	90	110			
Boron	0.202	0.0300	0.200	0	101	90	110			
Cadmium	0.203	0.00100	0.200	0	102	90	110			
Calcium	4.98	0.300	5.00	0	99.6	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1612133
Project: MLSES - PDP-5 Area

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161216D

Sample ID **CCV5-161216**	Batch ID: **R89509**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_161216D**	Analysis Date: **12/16/2016 3:58:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chromium	0.203	0.00500	0.200	0	102	90	110			
Cobalt	0.208	0.00500	0.200	0	104	90	110			
Lead	0.197	0.00100	0.200	0	98.4	90	110			
Lithium	0.199	0.0100	0.200	0	99.5	90	110			
Molybdenum	0.203	0.00500	0.200	0	101	90	110			
Selenium	0.206	0.00500	0.200	0	103	90	110			
Thallium	0.198	0.00150	0.200	0	98.8	90	110			

Sample ID **LCVL5-161216**	Batch ID: **R89509**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_161216D**	Analysis Date: **12/16/2016 4:18:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00198	0.00250	0.00200	0	99.0	70	130			
Arsenic	0.00526	0.00500	0.00500	0	105	70	130			
Barium	0.00525	0.0100	0.00500	0	105	70	130			
Beryllium	0.000977	0.00100	0.00100	0	97.7	70	130			
Boron	0.00708	0.0300	0.0200	0	35.4	70	130			S
Cadmium	0.00107	0.00100	0.00100	0	107	70	130			
Calcium	0.109	0.300	0.100	0	109	70	130			
Chromium	0.00540	0.00500	0.00500	0	108	70	130			
Cobalt	0.00553	0.00500	0.00500	0	111	70	130			
Lead	0.00103	0.00100	0.00100	0	103	70	130			
Lithium	0.0108	0.0100	0.0100	0	108	70	130			
Molybdenum	0.00501	0.00500	0.00500	0	100	70	130			
Selenium	0.00586	0.00500	0.00500	0	117	70	130			
Thallium	0.00103	0.00150	0.00100	0	103	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1612133
Project: MLSES - PDP-5 Area

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161220B

The QC data in batch 78271 applies to the following samples: 1612133-01A, 1612133-02A, 1612133-03A

Sample ID **1612132-02A SD** Batch ID: **78271** TestNo: **SW6020A** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS4_161220B** Analysis Date: **12/20/2016 2:03:00 PM** Prep Date: **12/14/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	30.9	15.0	0	22.3				32.3	10	R
Calcium	257	150	0	246				4.41	10	

Sample ID **1612132-02A PDS** Batch ID: **78271** TestNo: **SW6020A** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS4_161220B** Analysis Date: **12/20/2016 2:10:00 PM** Prep Date: **12/14/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	43.9	3.00	20.0	22.3	108	80	120			
Calcium	725	30.0	500	246	95.8	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1612133
Project: MLSES - PDP-5 Area

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161220B

Sample ID **ICV-161220** Batch ID: **R89557** TestNo: **SW6020A** Units: **mg/L**
SampType: **ICV** Run ID: **ICP-MS4_161220B** Analysis Date: **12/20/2016 11:39:00 A** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.102	0.0300	0.100	0	102	90	110			
Calcium	2.37	0.300	2.50	0	95.0	90	110			

Sample ID **LCVL-161220** Batch ID: **R89557** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_161220B** Analysis Date: **12/20/2016 11:49:00 A** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0230	0.0300	0.0200	0	115	70	130			
Calcium	0.0965	0.300	0.100	0	96.5	70	130			

Sample ID **CCV1-161220** Batch ID: **R89557** TestNo: **SW6020A** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_161220B** Analysis Date: **12/20/2016 1:02:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.215	0.0300	0.200	0	108	90	110			
Calcium	4.94	0.300	5.00	0	98.8	90	110			

Sample ID **LCVL1-161220** Batch ID: **R89557** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_161220B** Analysis Date: **12/20/2016 1:08:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0236	0.0300	0.0200	0	118	70	130			
Calcium	0.109	0.300	0.100	0	109	70	130			

Sample ID **CCV2-161220** Batch ID: **R89557** TestNo: **SW6020A** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_161220B** Analysis Date: **12/20/2016 2:52:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.208	0.0300	0.200	0	104	90	110			
Calcium	4.97	0.300	5.00	0	99.3	90	110			

Sample ID **LCVL2-161220** Batch ID: **R89557** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_161220B** Analysis Date: **12/20/2016 2:59:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0231	0.0300	0.0200	0	115	70	130			
Calcium	0.103	0.300	0.100	0	103	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161221A

Sample ID **ICV-161221**	Batch ID: **R89593**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_161221A**	Analysis Date: **12/21/2016 10:50:00 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.103	0.0300	0.100	0	103	90	110			
Calcium	2.28	0.300	2.50	0	91.1	90	110			

Sample ID **LCVL-161221**	Batch ID: **R89593**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_161221A**	Analysis Date: **12/21/2016 11:06:00 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0234	0.0300	0.0200	0	117	70	130			
Calcium	0.104	0.300	0.100	0	104	70	130			

Sample ID **CCV2-161221**	Batch ID: **R89593**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_161221A**	Analysis Date: **12/21/2016 12:49:00 P**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.208	0.0300	0.200	0	104	90	110			
Calcium	4.71	0.300	5.00	0	94.2	90	110			

Sample ID **LCVL2-161221**	Batch ID: **R89593**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_161221A**	Analysis Date: **12/21/2016 1:06:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0259	0.0300	0.0200	0	130	70	130			
Calcium	0.0983	0.300	0.100	0	98.3	70	130			

Sample ID **CCV3-161221**	Batch ID: **R89593**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_161221A**	Analysis Date: **12/21/2016 1:42:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.214	0.0300	0.200	0	107	90	110			
Calcium	4.70	0.300	5.00	0	94.1	90	110			

Sample ID **LCVL3-161221**	Batch ID: **R89593**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_161221A**	Analysis Date: **12/21/2016 1:59:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0234	0.0300	0.0200	0	117	70	130			
Calcium	0.100	0.300	0.100	0	100	70	130			

CLIENT: Pastor, Behling & Wheeler
Work Order: 1612133
Project: MLSES - PDP-5 Area

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_161216A

The QC data in batch 78329 applies to the following samples: 1612133-01D, 1612133-02D, 1612133-03D

Sample ID	**MB-78329**	Batch ID:	**78329**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**IC2_161216A**	Analysis Date:	**12/16/2016 10:04:36 A**	Prep Date:	**12/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00								
Fluoride	<0.100	0.400								
Sulfate	<1.00	3.00								

Sample ID	**LCS-78329**	Batch ID:	**78329**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**IC2_161216A**	Analysis Date:	**12/16/2016 10:19:12 A**	Prep Date:	**12/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.84	1.00	10.00	0	98.4	90	110			
Fluoride	3.75	0.400	4.000	0	93.7	90	110			
Sulfate	30.2	3.00	30.00	0	101	90	110			

Sample ID	**LCSD-78329**	Batch ID:	**78329**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**LCSD**	Run ID:	**IC2_161216A**	Analysis Date:	**12/16/2016 10:33:49 A**	Prep Date:	**12/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.1	1.00	10.00	0	101	90	110	2.91	20	
Fluoride	3.92	0.400	4.000	0	98.0	90	110	4.46	20	
Sulfate	30.9	3.00	30.00	0	103	90	110	2.29	20	

Sample ID	**1612133-02DMS**	Batch ID:	**78329**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**MS**	Run ID:	**IC2_161216A**	Analysis Date:	**12/16/2016 12:01:55 P**	Prep Date:	**12/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	26.3	1.00	20.00	5.560	104	90	110			
Fluoride	20.1	0.400	20.00	0.2512	99.4	90	110			
Sulfate	27.5	3.00	20.00	6.690	104	90	110			

Sample ID	**1612133-02DMSD**	Batch ID:	**78329**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**MSD**	Run ID:	**IC2_161216A**	Analysis Date:	**12/16/2016 12:16:31 P**	Prep Date:	**12/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	26.6	1.00	20.00	5.560	105	90	110	1.27	20	
Fluoride	20.7	0.400	20.00	0.2512	102	90	110	2.77	20	
Sulfate	28.0	3.00	20.00	6.690	106	90	110	1.67	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1612133
Project: MLSES - PDP-5 Area

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_161216A

Sample ID **ICV-161216**	Batch ID: **R89500**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC2_161216A**	Analysis Date: **12/16/2016 9:10:38 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	25.8	1.00	25.00	0	103	90	110			
Fluoride	10.1	0.400	10.00	0	101	90	110			
Sulfate	79.6	3.00	75.00	0	106	90	110			

Sample ID **CCV1-161216**	Batch ID: **R89500**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_161216A**	Analysis Date: **12/16/2016 1:57:56 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.85	1.00	10.00	0	98.5	90	110			
Fluoride	3.94	0.400	4.000	0	98.6	90	110			
Sulfate	30.3	3.00	30.00	0	101	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1612133
Project: MLSES - PDP-5 Area

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_161214A

The QC data in batch 78265 applies to the following samples: 1612133-01D, 1612133-02D, 1612133-03D

Sample ID	**1612132-01D-DUP**	Batch ID:	**78265**	TestNo:	**M4500-H+ B**	Units:	**pH Units@17℃**
SampType:	**DUP**	Run ID:	**TITRATOR_161214A**	Analysis Date:	**12/14/2016 9:00:00 AM**	Prep Date:	**12/14/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	7.60	0	0	7.380				2.94	5	

Sample ID	**1612133-01D-DUP**	Batch ID:	**78265**	TestNo:	**M4500-H+ B**	Units:	**pH Units@18.9℃**
SampType:	**DUP**	Run ID:	**TITRATOR_161214A**	Analysis Date:	**12/14/2016 9:24:00 AM**	Prep Date:	**12/14/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	5.69	0	0	5.780				1.57	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1612133
Project: MLSES - PDP-5 Area

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_161214A

Sample ID	**ICV-161214**	Batch ID:	**R89416**	TestNo:	**M4500-H+ B**	Units:	**pH Units@22.2℃**
SampType:	**ICV**	Run ID:	**TITRATOR_161214A**	Analysis Date:	**12/14/2016 8:31:00 AM**	Prep Date:	**12/14/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	9.91	0	10.00	0	99.1	99	101			

Sample ID	**CCV1-161214**	Batch ID:	**R89416**	TestNo:	**M4500-H+ B**	Units:	**pH Units@21.4℃**
SampType:	**CCV**	Run ID:	**TITRATOR_161214A**	Analysis Date:	**12/14/2016 9:21:00 AM**	Prep Date:	**12/14/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	6.96	0	7.000	0	99.4	97.1	102.9			

Sample ID	**CCV2-161214**	Batch ID:	**R89416**	TestNo:	**M4500-H+ B**	Units:	**pH Units@21.6℃**
SampType:	**CCV**	Run ID:	**TITRATOR_161214A**	Analysis Date:	**12/14/2016 9:30:00 AM**	Prep Date:	**12/14/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	6.99	0	7.000	0	99.9	97.1	102.9			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1612133
Project: MLSES - PDP-5 Area

ANALYTICAL QC SUMMARY REPORT

RunID: WC_161216B

The QC data in batch 78334 applies to the following samples: 1612133-01D, 1612133-02D, 1612133-03D

Sample ID **MB-78334**	Batch ID: **78334**	TestNo: **M2540C**	Units: **mg/L**
SampType: **MBLK**	Run ID: **WC_161216B**	Analysis Date: **12/19/2016 8:42:00 AM**	Prep Date: **12/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	<10.0	10.0								

Sample ID **LCS-78334**	Batch ID: **78334**	TestNo: **M2540C**	Units: **mg/L**
SampType: **LCS**	Run ID: **WC_161216B**	Analysis Date: **12/19/2016 8:42:00 AM**	Prep Date: **12/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	751	10.0	745.6	0	101	90	113			

Sample ID **1612137-01C-DUP**	Batch ID: **78334**	TestNo: **M2540C**	Units: **mg/L**
SampType: **DUP**	Run ID: **WC_161216B**	Analysis Date: **12/19/2016 8:42:00 AM**	Prep Date: **12/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	3580	50.0	0	3515				1.83	5	

Sample ID **1612137-04C-DUP**	Batch ID: **78334**	TestNo: **M2540C**	Units: **mg/L**
SampType: **DUP**	Run ID: **WC_161216B**	Analysis Date: **12/19/2016 8:42:00 AM**	Prep Date: **12/16/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	3600	50.0	0	3445				4.26	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

Case Narrative

Lab No: 20161234

This report contains the analytical results for the 3 sample(s) received under chain of custody by ESC Lab Sciences on 12/15/2016 1:00:18 PM. These samples are associated with your 1612133 project.

The analytical results included in this report meet all applicable quality control procedure requirements except as noted below:

The test results in this report meet all NELAC requirements unless noted below:

This report shall not be reproduced, except in full, without the written approval of ESC Lab Sciences.

All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client.

Results have been reviewed by the Director of Radiochemistry or their designees and is approved for release.

Observations / Nonconformances

L879332

Analytical Report

	Method	Result	DL	Units	Qual	Prep Date	Analysis Date	Analyst
Lab ID : **20161234-01**								
Client ID : **MW-18A**								
Date Sampled : **12/12/2016 8:50:00 AM**								
Matrix : **NPW**								
		Radiochemical Analyses						
Combined Radium		0.118 +/- 0.749	0.889	pCi/l				
Radium-226	SM 7500 Ra B M*	0.118 +/- 0.125	0.181	pCi/l		12/27/16	01/05/17	AK
Radium-228	EPA 904*/9320*	-0.109 +/- 0.624	0.708	pCi/l		01/09/17	01/14/17	JR
Lab ID : **20161234-02**								
Client ID : **PDP-26**								
Date Sampled : **12/12/2016 10:10:00 AM**								
Matrix : **NPW**								
		Radiochemical Analyses						
Combined Radium		0.193 +/- 0.663	0.796	pCi/l				
Radium-226	SM 7500 Ra B M*	0.193 +/- 0.129	0.165	pCi/l		12/27/16	01/05/17	AK
Radium-228	EPA 904*/9320*	-0.537 +/- 0.534	0.631	pCi/l		01/09/17	01/14/17	JR
Lab ID : **20161234-03**								
Client ID : **PDP-22**								
Date Sampled : **12/12/2016 11:15:00 AM**								
Matrix : **NPW**								
		Radiochemical Analyses						
Combined Radium		3.46 +/- 1.00	1.02	pCi/l				
Radium-226	SM 7500 Ra B M*	1.16 +/- 0.275	0.214	pCi/l		12/27/16	01/05/17	AK
Radium-228	EPA 904*/9320*	2.30 +/- 0.727	0.802	pCi/l		01/09/17	01/14/17	JR

Client	:	DHL Analytical, Inc.
Client Project	:	1612133
Lab Number	:	20161234
Date Reported	:	01/16/17
Date Received	:	12/15/16
Page Number	:	3 of 3

QC Report

Parameter	Blank	LCS %REC	LCSD %REC	LCSD RPD	DUP RPD	RER, NAD or DER	MS %REC	MSD %REC	MSD RPD	Batch ID
Radium-226	0.000	120.0			NC	0.321	118.0	110.0	6.7	R1175
Radium-228	0.018	98.4			140.0	1.680	97.1	92.1	4.5	R3904

Lab Approval:

Ron Eidson
Director of Radiochemistry

*NELAC Certified Parameter BDL = Below Detection Limit

OUTREACH LABORATORY, A Divsion of ESC Lab Sciences
Address: 311 North Aspen Avenue, Broken Arrow, OK, 74012 EMail: outreach@esclabsciences.com - Tel: (918) 251-2515

DHL Analytical, Inc.
2300 Double Creek Drive
Round Rock, TX 78664
TEL: *(512) 388-8222* FAX: *(512) 388-8229*

CHAIN-OF-CUSTODY RECORD

Work Order: 1612133

Subcontractor:

ESC Laboratory
311 North Aspen
Broken Arrow, Oklahoma 74012

TEL: (918) 251-2515
FAX:
Acct #: DHLRRTX

13-Dec-16

	Sample Id	Matrix	DHL#	Date Collected	Bottle Type	Requested Tests					
						E904.0	SM7500Ra-B M				
1	MW-18A	Aqueous	-01B	12/12/16 08:50 AM	1LHDPEHNO3	1					
	MW-18A	Aqueous	-01C	12/12/16 08:50 AM	500HDPEHNO3		1				
2	PDP-26	Aqueous	-02B	12/12/16 10:10 AM	1LHDPEHNO3	1					
	PDP-26	Aqueous	-02C	12/12/16 10:10 AM	500HDPEHNO3		1				
3	PDP-22	Aqueous	-03B	12/12/16 11:15 AM	1LHDPEHNO3	1					
	PDP-22	Aqueous	-03C	12/12/16 11:15 AM	500HDPEHNO3		1				

General Comments:

Please analyze these samples with Normal Turnaround Time.
Report RA-226, Ra-228 & Combined per Specs.
Quality Control Package Needed: Standard - NELAC Rad Test compliant
Email to cac@dhlanalytical.com & dupont@dhlanalytical.com

L879332

		Date/Time			Date/Time
Relinquished by:		12/13/16 1730	**Received by:**		12/13/16 1730
Relinquished by:			**Received by:**		12/15/16 1240

2016 1234

SAMPLE LOGIN

Date Received: *12/15/2016 1:00:1* **Lab Number:** 20161234 **Due:** 1/16/2017

Sample Number	Client Sample ID	Matrix	Date Sampled	Container Type	Container Size	Preservation	Preserved Upon Receipt	Custody Seal	Seal Intact
20161234-01 B	MW-18A	NPW	12/12/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
20161234-01 A	MW-18A	NPW	12/12/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20161234-02 B	PDP-26	NPW	12/12/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
20161234-02 A	PDP-26	NPW	12/12/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20161234-03 B	PDP-22	NPW	12/12/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
20161234-03 A	PDP-22	NPW	12/12/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						

CONTAINER INSPECTION

 # Coolers 1 **Custody Seals Broken** ☒ **Temperature:** 4.5 C **Ice** **Radiation Survey:** <300 cpm

SAMPLE INSPECTION

Sample Seal Broken ☒ **Chain of Custody Record** ☑ **Labels in Tact** ☑ **Radiation Survey Complete** ☑ N/A

Anomalies

Inspected By: _____ **DATE** 12/15/16

QA or Designee Review: Raymond Thomas **DATE** 12/15/16

Sample Custodian Review: Luis Morales **DATE** 12/15/16

Project Notes:

January 26, 2017

Will Vienne
Pastor, Behling & Wheeler
2201 Double Creek Dr #4004
Round Rock, Texas 78664
TEL: (512) 671-3434
FAX (512) 671-3446

Order No.: 1612144

RE: MLSES - PDP-5 Area

Dear Will Vienne:

DHL Analytical, Inc. received 6 sample(s) on 12/14/2016 for the analyses presented in the following report.

There were no problems with the analyses and all data met requirements of NELAC except where noted in the Case Narrative. All non-NELAC methods will be identified accordingly in the case narrative and all estimated uncertainties of test results are within method or EPA specifications.

If you have any questions regarding these tests results, please feel free to call. Thank you for using DHL Analytical.

Sincerely,

John DuPont
General Manager

This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211-16-17

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DHL ANALYTICAL
2300 Double Creek Dr. ■ Round Rock, TX 78664
Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

№ 73581

CHAIN-OF-CUSTODY

CLIENT: PBW
ADDRESS: 2201 DOUBLE CREEK DR ROUND ROCK, TX 78664
PHONE: 512-671-3434 FAX/E-MAIL: 512-671-3446
DATA REPORTED TO: WILL VIENNE
ADDITIONAL REPORT COPIES TO:

DATE: 12-13-16 PAGE 1 OF 1
PO #: 5164-B DHL WORK ORDER #: 1612144
PROJECT LOCATION OR NAME: MLSES - PDP 5 AREA
CLENT PROJECT #: 5164-B COLLECTOR: J. BRAYTON

Authorize 5% surcharge for TRRP Report? ❑ Yes ❑ No

S=SOIL W=WATER A=AIR L=LIQUID SE=SEDIMENT P=PAINT SL=SLUDGE O=OTHER SO=SOLID

PRESERVATION: HCl | HNO_3 | H_2SO_4 ❑ NaOH ❑ | ICE | UNPRESERVED

ANALYSES: BTEX ❑ MTBE ❑ [METHOD 8021] | TPH 1005 ❑ TPH 1006 ❑ HOLD 1006 ❑ | GRO [METHOD 8015] ❑ DRO [METHOD 8105] ❑ | VOC 8260 ❑ VOC 624 ❑ VOC 8260/5035 ❑ | SVOC 8270 ❑ PAH 8270 ❑ HOLD PAH ❑ SVOC 625 ❑ | 8270 PEST ❑ 625 PEST/PCB ❑ 608 PCB ❑ | 8270 O-P PEST ❑ 8082 PCB ❑ 8270 PCB ❑ | 8321 HERB ❑ T PHOS, AMMONIA ❑ | METALS 6020 ❑ METALS 200.8 ❑ DISS. METALS ❑ | RCRA ❑ TX1 ❑ | PH ❑ HEX CHROM ❑ ALKALINITY ❑ COD ❑ | CHLORIDE ❑ ANIONS ❑ | TCLP-SVOC ❑ VOC ❑ PEST ❑ HERB ❑ | TCLP-METALS ❑ RCRA 8 ❑ TX-11 ❑ Pb ❑ | RCI ❑ FLASHPOINT ❑ DGAS ❑ | TDS ❑ TSS ❑ % MOISTURE ❑ CYANIDE ❑ | CCR

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	HCl	HNO_3	H_2SO_4 ❑ NaOH ❑	ICE	UNPRESERVED	CCR	FIELD NOTES
PDP-25	01	12-12-16	1220	W	P	4		X				X	
MW-20A	02	"	1425	W	P	4		X				X	
PDP-23	03	"	1520	W	P	4		X				X	
MW-19	04	"	1630	W	P	4		X				X	
MW-17A	05	12-13-16	0845	W	P	4		X				X	
PDP-24	06	12-13-16	0945	W	P	4		X				X	

RELINQUISHED BY: (Signature) DATE/TIME 12-13-16 1800 RECEIVED BY: (Signature) Fedex
RELINQUISHED BY: (Signature) Fedex DATE/TIME 12/14/16 1010 RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature) DATE/TIME RECEIVED BY: (Signature)

TURN AROUND TIME
RUSH ❑ CALL FIRST
1 DAY ❑ CALL FIRST
2 DAY ❑
NORMAL ☒
OTHER ❑ _____

LABORATORY USE ONLY:
RECEIVING TEMP: 2.6 THERM #: 78 @ 12/14/16
CUSTODY SEALS: ❑ BROKEN ☒ INTACT ☒ NOT USED
CARRIER: ❑ LONE STAR ☒ FEDEX ❑ UPS ❑ OTHER
❑ COURIER DELIVERY
❑ HAND DELIVERED

❑ DHL DISPOSAL @ $5.00 each ❑ Return

John Dupont

From:	Sara Taube [Sara.Taube@pbwllc.com]
Sent:	Wednesday, July 22, 2015 12:05 PM
To:	John Dupont
Subject:	CCR Appendix III and IV
Follow Up Flag:	Follow up
Flag Status:	Completed

Hi John,

Here are the Appendix III and Appendix IV constituents that we will need to have analyzed under the CCR Rule.

Appendix III
Boron
Calcium
Chloride
Fluoride
pH
sulfate
TDS

Appendix IV
Antimony
Arsenic
Barium
Beryllium
Cadmium
Chromium
Cobalt
Fluoride
Lead
Lithium
Mercury
Molybdenum
Selenium
Thallium
Radium 226 and 228

We are looking to have approximately 74 wells sampled 8 times over the course of the next two years. Please let me know if there is any more information you might need.

Cheers,

Sara

10/26/2015

ORIGIN ID:GGGA (512) 671-3434
PBW
2201 DOUBLE CREEK DR STE 4004
ROUND ROCK, TX 78664
UNITED STATES US
SHIP DATE: 13DEC
ACTWGT: 63.20
CAD: 0068994
DIMS: 25x
BILL
RT 512 1 10:30 C
FZ
TO DHL
2300 DOUBLE CREEK DR
ROUND ROCK TX 78664
(512) 388-8222
REF:
INV:
PO:
DEPT:
FedEx
Express
2 of 2
MPS# 0263 7849 8448 6565
Mstr# 7849 8448 6554
0201
WED - 14 DEC 10:30A
PRIORITY OVERNIGHT
78664
TX-US AUS
A8 BSMA

DHL Analytical, Inc.

Sample Receipt Checklist

Client Name **Pastor, Behling & Wheeler** Date Received: **12/14/2016**

Work Order Number **1612144** Received by **JT**

Checklist completed by: _____ 12/14/2016 Reviewed by _____ 12/14/2016
Signature Date Initials Date

Carrier name FedEx 1day

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	**3.6** °C
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH<2 acceptable upon receipt?	Yes ☑	No ☐	NA ☐ LOT # 8086
	Adjusted? no		Checked by
Water - ph>9 (S) or ph>12 (CN) acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted?		Checked by

Any No response must be detailed in the comments section below.

Client contacted _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments: _____

Corrective Action _____

CLIENT: Pastor, Behling & Wheeler
Project: MLSES - PDP-5 Area
Lab Order: 1612144

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Method SW6020A - Metals Analysis
Method SW7470A - Mercury Analysis
Method E300 - Anions Analysis
Method M4500-H+ B - pH of a Water Analysis
Method M2540C - TDS Analysis
Sub-contract - Radium-228 and Radium-226 analyses by methods E904/9320 and SM 7500 Ra B M. Analyzed at ESC Lab Sciences.

LOG IN

The samples were received and log-in performed on 12/14/16. A total of 6 samples were received. The samples arrived in good condition and were properly packaged.

METALS ANALYSIS

For Metals analysis performed on 12/23/16 LCVL6-161223 was slightly above control limits for Beryllium. This is flagged accordingly in the QC summary report. The associated CCV was within control limits for this analyte. No further corrective actions were taken.

ANIONS ANALYSIS

For Anions analysis performed on 12/21/16 the matrix spike and matrix spike duplicate recoveries were below control limits for Chloride. These are flagged accordingly in the QC summary report. The sample selected for the matrix spike and matrix spike duplicate was from this work order. The LCS was within control limits for this analyte. No further corrective actions were taken.

DHL Analytical, Inc.

Date: *26-Jan-17*

CLIENT: Pastor, Behling & Wheeler
Project: MLSES - PDP-5 Area
Lab Order: 1612144

Work Order Sample Summary

Lab Smp ID	Client Sample ID	Tag Number	Date Collected	Date Recved
1612144-01	PDP-25		12/12/16 12:20 PM	12/14/2016
1612144-02	MW-20A		12/12/16 02:25 PM	12/14/2016
1612144-03	PDP-23		12/12/16 03:20 PM	12/14/2016
1612144-04	MW-19		12/12/16 04:30 PM	12/14/2016
1612144-05	MW-17A		12/13/16 08:45 AM	12/14/2016
1612144-06	PDP-24		12/13/16 09:45 AM	12/14/2016

Lab Order: 1612144
Client: Pastor, Behling & Wheeler
Project: MLSES - PDP-5 Area

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1612144-01A	PDP-25	12/12/16 12:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/20/16 09:03 AM	78380
	PDP-25	12/12/16 12:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/20/16 09:03 AM	78380
	PDP-25	12/12/16 12:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/20/16 09:03 AM	78380
	PDP-25	12/12/16 12:20 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	12/20/16 10:36 AM	78390
1612144-01D	PDP-25	12/12/16 12:20 PM	Aqueous	E300	Anion Preparation	12/21/16 11:54 AM	78420
	PDP-25	12/12/16 12:20 PM	Aqueous	E300	Anion Preparation	12/21/16 11:54 AM	78420
	PDP-25	12/12/16 12:20 PM	Aqueous	M4500-H+ B	pH Preparation	12/15/16 07:51 AM	78292
	PDP-25	12/12/16 12:20 PM	Aqueous	M2540C	TDS Preparation	12/19/16 03:40 PM	78352
1612144-02A	MW-20A	12/12/16 02:25 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/20/16 09:03 AM	78380
	MW-20A	12/12/16 02:25 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/20/16 09:03 AM	78380
	MW-20A	12/12/16 02:25 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/20/16 09:03 AM	78380
	MW-20A	12/12/16 02:25 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	12/20/16 10:36 AM	78390
1612144-02D	MW-20A	12/12/16 02:25 PM	Aqueous	E300	Anion Preparation	12/21/16 11:54 AM	78420
	MW-20A	12/12/16 02:25 PM	Aqueous	M4500-H+ B	pH Preparation	12/15/16 07:51 AM	78292
	MW-20A	12/12/16 02:25 PM	Aqueous	M2540C	TDS Preparation	12/19/16 03:40 PM	78352
1612144-03A	PDP-23	12/12/16 03:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/20/16 09:03 AM	78380
	PDP-23	12/12/16 03:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/20/16 09:03 AM	78380
	PDP-23	12/12/16 03:20 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	12/20/16 10:36 AM	78390
1612144-03D	PDP-23	12/12/16 03:20 PM	Aqueous	E300	Anion Preparation	12/21/16 11:54 AM	78420
	PDP-23	12/12/16 03:20 PM	Aqueous	M4500-H+ B	pH Preparation	12/15/16 07:51 AM	78292
	PDP-23	12/12/16 03:20 PM	Aqueous	M2540C	TDS Preparation	12/19/16 03:40 PM	78352
1612144-04A	MW-19	12/12/16 04:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/20/16 09:03 AM	78380
	MW-19	12/12/16 04:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/20/16 09:03 AM	78380
	MW-19	12/12/16 04:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/20/16 09:03 AM	78380
	MW-19	12/12/16 04:30 PM	Aqueous	SW7470A	Mercury Aq Prep, Total	12/20/16 10:36 AM	78390
1612144-04D	MW-19	12/12/16 04:30 PM	Aqueous	E300	Anion Preparation	12/21/16 11:54 AM	78420
	MW-19	12/12/16 04:30 PM	Aqueous	E300	Anion Preparation	12/21/16 11:54 AM	78420
	MW-19	12/12/16 04:30 PM	Aqueous	M4500-H+ B	pH Preparation	12/15/16 07:51 AM	78292

Lab Order: 1612144
Client: Pastor, Behling & Wheeler
Project: MLSES - PDP-5 Area

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1612144-04D	MW-19	12/12/16 04:30 PM	Aqueous	M2540C	TDS Preparation	12/19/16 03:40 PM	78352
1612144-05A	MW-17A	12/13/16 08:45 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/20/16 09:03 AM	78380
	MW-17A	12/13/16 08:45 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/20/16 09:03 AM	78380
	MW-17A	12/13/16 08:45 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	12/20/16 10:36 AM	78390
1612144-05D	MW-17A	12/13/16 08:45 AM	Aqueous	E300	Anion Preparation	12/21/16 11:54 AM	78420
	MW-17A	12/13/16 08:45 AM	Aqueous	M4500-H+ B	pH Preparation	12/15/16 07:51 AM	78292
	MW-17A	12/13/16 08:45 AM	Aqueous	M2540C	TDS Preparation	12/19/16 03:40 PM	78352
1612144-06A	PDP-24	12/13/16 09:45 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/20/16 09:03 AM	78380
	PDP-24	12/13/16 09:45 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/20/16 09:03 AM	78380
	PDP-24	12/13/16 09:45 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	12/20/16 09:03 AM	78380
	PDP-24	12/13/16 09:45 AM	Aqueous	SW7470A	Mercury Aq Prep, Total	12/20/16 10:36 AM	78390
1612144-06D	PDP-24	12/13/16 09:45 AM	Aqueous	E300	Anion Preparation	12/21/16 11:54 AM	78420
	PDP-24	12/13/16 09:45 AM	Aqueous	E300	Anion Preparation	12/21/16 11:54 AM	78420
	PDP-24	12/13/16 09:45 AM	Aqueous	M4500-H+ B	pH Preparation	12/15/16 07:51 AM	78292
	PDP-24	12/13/16 09:45 AM	Aqueous	M2540C	TDS Preparation	12/19/16 03:40 PM	78352

Lab Order: 1612144
Client: Pastor, Behling & Wheeler
Project: MLSES - PDP-5 Area

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1612144-01A	PDP-25	Aqueous	SW7470A	Mercury Total: Aqueous	78390	1	12/21/16 12:13 PM	CETAC2_HG_161221A
	PDP-25	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	78380	1	12/23/16 05:36 PM	ICP-MS4_161223B
	PDP-25	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	78380	1	12/28/16 05:07 PM	ICP-MS4_161228C
	PDP-25	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	78380	10	12/28/16 11:26 PM	ICP-MS4_161228C
1612144-01D	PDP-25	Aqueous	E300	Anions by IC method - Water	78420	1	12/21/16 12:27 PM	IC2_161221A
	PDP-25	Aqueous	E300	Anions by IC method - Water	78420	10	12/21/16 02:56 PM	IC2_161221A
	PDP-25	Aqueous	M4500-H+ B	pH	78292	1	12/15/16 09:09 AM	TITRATOR_161215A
	PDP-25	Aqueous	M2540C	Total Dissolved Solids	78352	1	12/20/16 08:41 AM	WC_161219C
1612144-02A	MW-20A	Aqueous	SW7470A	Mercury Total: Aqueous	78390	1	12/21/16 12:15 PM	CETAC2_HG_161221A
	MW-20A	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	78380	1	12/23/16 02:13 PM	ICP-MS4_161223B
	MW-20A	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	78380	1	12/28/16 02:29 PM	ICP-MS4_161228B
	MW-20A	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	78380	10	12/28/16 11:22 PM	ICP-MS4_161228C
1612144-02D	MW-20A	Aqueous	E300	Anions by IC method - Water	78420	1	12/21/16 12:42 PM	IC2_161221A
	MW-20A	Aqueous	M4500-H+ B	pH	78292	1	12/15/16 09:12 AM	TITRATOR_161215A
	MW-20A	Aqueous	M2540C	Total Dissolved Solids	78352	1	12/20/16 08:41 AM	WC_161219C
1612144-03A	PDP-23	Aqueous	SW7470A	Mercury Total: Aqueous	78390	1	12/21/16 12:26 PM	CETAC2_HG_161221A
	PDP-23	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	78380	1	12/23/16 05:38 PM	ICP-MS4_161223B
	PDP-23	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	78380	1	12/28/16 05:09 PM	ICP-MS4_161228C
1612144-03D	PDP-23	Aqueous	E300	Anions by IC method - Water	78420	1	12/21/16 12:57 PM	IC2_161221A
	PDP-23	Aqueous	M4500-H+ B	pH	78292	1	12/15/16 09:15 AM	TITRATOR_161215A
	PDP-23	Aqueous	M2540C	Total Dissolved Solids	78352	1	12/20/16 08:41 AM	WC_161219C
1612144-04A	MW-19	Aqueous	SW7470A	Mercury Total: Aqueous	78390	1	12/21/16 12:29 PM	CETAC2_HG_161221A
	MW-19	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	78380	1	12/23/16 05:40 PM	ICP-MS4_161223B
	MW-19	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	78380	1	12/28/16 05:11 PM	ICP-MS4_161228C
	MW-19	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	78380	10	12/28/16 11:28 PM	ICP-MS4_161228C
1612144-04D	MW-19	Aqueous	E300	Anions by IC method - Water	78420	1	12/21/16 01:42 PM	IC2_161221A

Lab Order: 1612144
Client: Pastor, Behling & Wheeler
Project: MLSES - PDP-5 Area

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1612144-04D	MW-19	Aqueous	E300	Anions by IC method - Water	78420	10	12/21/16 03:40 PM	IC2_161221A
	MW-19	Aqueous	M4500-H+ B	pH	78292	1	12/15/16 09:18 AM	TITRATOR_161215A
	MW-19	Aqueous	M2540C	Total Dissolved Solids	78352	1	12/20/16 08:41 AM	WC_161219C
1612144-05A	MW-17A	Aqueous	SW7470A	Mercury Total: Aqueous	78390	1	12/21/16 12:31 PM	CETAC2_HG_161221A
	MW-17A	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	78380	1	12/28/16 05:13 PM	ICP-MS4_161228C
	MW-17A	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	78380	1	12/23/16 05:42 PM	ICP-MS4_161223B
1612144-05D	MW-17A	Aqueous	E300	Anions by IC method - Water	78420	1	12/21/16 01:57 PM	IC2_161221A
	MW-17A	Aqueous	M4500-H+ B	pH	78292	1	12/15/16 09:20 AM	TITRATOR_161215A
	MW-17A	Aqueous	M2540C	Total Dissolved Solids	78352	1	12/20/16 08:41 AM	WC_161219C
1612144-06A	PDP-24	Aqueous	SW7470A	Mercury Total: Aqueous	78390	1	12/21/16 12:33 PM	CETAC2_HG_161221A
	PDP-24	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	78380	1	12/23/16 05:45 PM	ICP-MS4_161223B
	PDP-24	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	78380	1	12/28/16 05:15 PM	ICP-MS4_161228C
	PDP-24	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	78380	10	12/28/16 08:41 PM	ICP-MS4_161228C
1612144-06D	PDP-24	Aqueous	E300	Anions by IC method - Water	78420	1	12/21/16 02:12 PM	IC2_161221A
	PDP-24	Aqueous	E300	Anions by IC method - Water	78420	10	12/21/16 03:55 PM	IC2_161221A
	PDP-24	Aqueous	M4500-H+ B	pH	78292	1	12/15/16 09:22 AM	TITRATOR_161215A
	PDP-24	Aqueous	M2540C	Total Dissolved Solids	78352	1	12/20/16 08:41 AM	WC_161219C

DHL Analytical, Inc.

Date: *26-Jan-17*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	PDP-25
Project:	MLSES - PDP-5 Area	**Lab ID:**	1612144-01
Project No:	5164-B	**Collection Date:**	12/12/16 12:20 PM
Lab Order:	1612144	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/21/16 12:13 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	12/23/16 05:36 PM
Arsenic	0.00378	0.00200	0.00500	J	mg/L	1	12/23/16 05:36 PM
Barium	0.196	0.00300	0.0100		mg/L	1	12/23/16 05:36 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	12/23/16 05:36 PM
Boron	0.0955	0.0100	0.0300		mg/L	1	12/28/16 05:07 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	12/23/16 05:36 PM
Calcium	36.3	1.00	3.00		mg/L	10	12/28/16 11:26 PM
Chromium	0.0593	0.00200	0.00500		mg/L	1	12/23/16 05:36 PM
Cobalt	0.0112	0.00300	0.00500		mg/L	1	12/23/16 05:36 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	12/23/16 05:36 PM
Lithium	0.109	0.00500	0.0100		mg/L	1	12/23/16 05:36 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	12/23/16 05:36 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	12/23/16 05:36 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	12/23/16 05:36 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **BJT**
Chloride	176	3.00	10.0		mg/L	10	12/21/16 02:56 PM
Fluoride	0.135	0.100	0.400	J	mg/L	1	12/21/16 12:27 PM
Sulfate	102	1.00	3.00		mg/L	1	12/21/16 12:27 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.16	0	0		pH Units@19.9℃	1	12/15/16 09:09 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	565	10.0	10.0		mg/L	1	12/20/16 08:41 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *26-Jan-17*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	MW-20A
Project:	MLSES - PDP-5 Area	**Lab ID:**	1612144-02
Project No:	5164-B	**Collection Date:**	12/12/16 02:25 PM
Lab Order:	1612144	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	0.000412	0.0000800	0.000200		mg/L	1	12/21/16 12:15 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	12/23/16 02:13 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	12/23/16 02:13 PM
Barium	0.0315	0.00300	0.0100		mg/L	1	12/23/16 02:13 PM
Beryllium	0.000553	0.000300	0.00100	J	mg/L	1	12/23/16 02:13 PM
Boron	0.131	0.0100	0.0300		mg/L	1	12/28/16 02:29 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	12/23/16 02:13 PM
Calcium	14.4	1.00	3.00		mg/L	10	12/28/16 11:22 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	12/23/16 02:13 PM
Cobalt	0.00494	0.00300	0.00500	J	mg/L	1	12/23/16 02:13 PM
Lead	0.00186	0.000300	0.00100		mg/L	1	12/23/16 02:13 PM
Lithium	0.0186	0.00500	0.0100		mg/L	1	12/23/16 02:13 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	12/23/16 02:13 PM
Selenium	0.00801	0.00200	0.00500		mg/L	1	12/23/16 02:13 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	12/23/16 02:13 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **BJT**
Chloride	11.0	0.300	1.00		mg/L	1	12/21/16 12:42 PM
Fluoride	0.510	0.100	0.400		mg/L	1	12/21/16 12:42 PM
Sulfate	101	1.00	3.00		mg/L	1	12/21/16 12:42 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	4.69	0	0		pH Units@19.9℃	1	12/15/16 09:12 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	245	10.0	10.0		mg/L	1	12/20/16 08:41 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *26-Jan-17*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	PDP-23
Project:	MLSES - PDP-5 Area	**Lab ID:**	1612144-03
Project No:	5164-B	**Collection Date:**	12/12/16 03:20 PM
Lab Order:	1612144	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/21/16 12:26 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	12/23/16 05:38 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	12/23/16 05:38 PM
Barium	0.0423	0.00300	0.0100		mg/L	1	12/23/16 05:38 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	12/23/16 05:38 PM
Boron	0.0294	0.0100	0.0300	J	mg/L	1	12/28/16 05:09 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	12/23/16 05:38 PM
Calcium	1.77	0.100	0.300		mg/L	1	12/23/16 05:38 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	12/23/16 05:38 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	12/23/16 05:38 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	12/23/16 05:38 PM
Lithium	0.0137	0.00500	0.0100		mg/L	1	12/23/16 05:38 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	12/23/16 05:38 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	12/23/16 05:38 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	12/23/16 05:38 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **BJT**
Chloride	4.87	0.300	1.00		mg/L	1	12/21/16 12:57 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	12/21/16 12:57 PM
Sulfate	1.10	1.00	3.00	J	mg/L	1	12/21/16 12:57 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	5.93	0	0		pH Units@20.3℃	1	12/15/16 09:15 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	78.0	10.0	10.0		mg/L	1	12/20/16 08:41 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *26-Jan-17*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	MW-19
Project:	MLSES - PDP-5 Area	**Lab ID:**	1612144-04
Project No:	5164-B	**Collection Date:**	12/12/16 04:30 PM
Lab Order:	1612144	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	12/21/16 12:29 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	12/23/16 05:40 PM
Arsenic	0.0259	0.00200	0.00500		mg/L	1	12/23/16 05:40 PM
Barium	0.0548	0.00300	0.0100		mg/L	1	12/23/16 05:40 PM
Beryllium	0.000660	0.000300	0.00100	J	mg/L	1	12/28/16 05:11 PM
Boron	0.203	0.0100	0.0300		mg/L	1	12/28/16 05:11 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	12/23/16 05:40 PM
Calcium	65.4	1.00	3.00		mg/L	10	12/28/16 11:28 PM
Chromium	0.00336	0.00200	0.00500	J	mg/L	1	12/23/16 05:40 PM
Cobalt	0.00328	0.00300	0.00500	J	mg/L	1	12/23/16 05:40 PM
Lead	0.00106	0.000300	0.00100		mg/L	1	12/23/16 05:40 PM
Lithium	0.00976	0.00500	0.0100	J	mg/L	1	12/23/16 05:40 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	12/23/16 05:40 PM
Selenium	0.00257	0.00200	0.00500	J	mg/L	1	12/23/16 05:40 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	12/23/16 05:40 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **BJT**
Chloride	39.9	0.300	1.00		mg/L	1	12/21/16 01:42 PM
Fluoride	0.145	0.100	0.400	J	mg/L	1	12/21/16 01:42 PM
Sulfate	369	10.0	30.0		mg/L	10	12/21/16 03:40 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	6.59	0	0		pH Units@20.6℃	1	12/15/16 09:18 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	786	10.0	10.0		mg/L	1	12/20/16 08:41 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *26-Jan-17*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	MW-17A
Project:	MLSES - PDP-5 Area	**Lab ID:**	1612144-05
Project No:	5164-B	**Collection Date:**	12/13/16 08:45 AM
Lab Order:	1612144	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	0.0000996	0.0000800	0.000200	J	mg/L	1	12/21/16 12:31 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	12/23/16 05:42 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	12/23/16 05:42 PM
Barium	0.116	0.00300	0.0100		mg/L	1	12/23/16 05:42 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	12/23/16 05:42 PM
Boron	0.366	0.0100	0.0300		mg/L	1	12/28/16 05:13 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	12/23/16 05:42 PM
Calcium	4.47	0.100	0.300		mg/L	1	12/23/16 05:42 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	12/23/16 05:42 PM
Cobalt	0.00820	0.00300	0.00500		mg/L	1	12/23/16 05:42 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	12/23/16 05:42 PM
Lithium	0.0161	0.00500	0.0100		mg/L	1	12/23/16 05:42 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	12/23/16 05:42 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	12/23/16 05:42 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	12/23/16 05:42 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **BJT**
Chloride	8.58	0.300	1.00		mg/L	1	12/21/16 01:57 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	12/21/16 01:57 PM
Sulfate	39.4	1.00	3.00		mg/L	1	12/21/16 01:57 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	5.45	0	0		pH Units@20.6℃	1	12/15/16 09:20 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	131	10.0	10.0		mg/L	1	12/20/16 08:41 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *26-Jan-17*

CLIENT:	Pastor, Behling & Wheeler	**Client Sample ID:**	PDP-24
Project:	MLSES - PDP-5 Area	**Lab ID:**	1612144-06
Project No:	5164-B	**Collection Date:**	12/13/16 09:45 AM
Lab Order:	1612144	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **AH**
Mercury	0.000397	0.0000800	0.000200		mg/L	1	12/21/16 12:33 PM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	12/23/16 05:45 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	12/23/16 05:45 PM
Barium	0.0198	0.00300	0.0100		mg/L	1	12/23/16 05:45 PM
Beryllium	0.00434	0.000300	0.00100		mg/L	1	12/28/16 05:15 PM
Boron	3.58	0.100	0.300		mg/L	10	12/28/16 08:41 PM
Cadmium	0.00215	0.000300	0.00100		mg/L	1	12/23/16 05:45 PM
Calcium	32.4	1.00	3.00		mg/L	10	12/28/16 08:41 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	12/23/16 05:45 PM
Cobalt	0.0876	0.00300	0.00500		mg/L	1	12/23/16 05:45 PM
Lead	0.00109	0.000300	0.00100		mg/L	1	12/23/16 05:45 PM
Lithium	0.0276	0.00500	0.0100		mg/L	1	12/23/16 05:45 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	12/23/16 05:45 PM
Selenium	0.00325	0.00200	0.00500	J	mg/L	1	12/23/16 05:45 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	12/23/16 05:45 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **BJT**
Chloride	21.7	0.300	1.00		mg/L	1	12/21/16 02:12 PM
Fluoride	0.690	0.100	0.400		mg/L	1	12/21/16 02:12 PM
Sulfate	351	10.0	30.0		mg/L	10	12/21/16 03:55 PM
PH		**M4500-H+ B**					Analyst: **BJT**
pH	4.46	0	0		pH Units@20.6℃	1	12/15/16 09:22 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **AJH**
Total Dissolved Solids (Residue, Filterable)	588	10.0	10.0		mg/L	1	12/20/16 08:41 AM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

CLIENT: Pastor, Behling & Wheeler
Work Order: 1612144
Project: MLSES - PDP-5 Area

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_161221A

The QC data in batch 78390 applies to the following samples: 1612144-01A, 1612144-02A, 1612144-03A, 1612144-04A, 1612144-05A, 1612144-06A

Sample ID	**MB-78390**	Batch ID:	**78390**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**CETAC2_HG_161221A**	Analysis Date:	**12/21/2016 12:06:32 P**	Prep Date:	**12/20/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.0000800	0.000200								

Sample ID	**LCS-78390**	Batch ID:	**78390**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**CETAC2_HG_161221A**	Analysis Date:	**12/21/2016 12:08:48 P**	Prep Date:	**12/20/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00197	0.000200	0.00200	0	98.5	85	115			

Sample ID	**LCSD-78390**	Batch ID:	**78390**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**LCSD**	Run ID:	**CETAC2_HG_161221A**	Analysis Date:	**12/21/2016 12:11:04 P**	Prep Date:	**12/20/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00199	0.000200	0.00200	0	99.5	85	115	1.01	15	

Sample ID	**1612144-02A SD**	Batch ID:	**78390**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**SD**	Run ID:	**CETAC2_HG_161221A**	Analysis Date:	**12/21/2016 12:17:51 P**	Prep Date:	**12/20/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.000374	0.00100	0	0.000412				9.80	10	

Sample ID	**1612144-02A PDS**	Batch ID:	**78390**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**PDS**	Run ID:	**CETAC2_HG_161221A**	Analysis Date:	**12/21/2016 12:20:08 P**	Prep Date:	**12/20/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00262	0.000200	0.00250	0.000412	88.3	85	115			

Sample ID	**1612144-02A MS**	Batch ID:	**78390**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**MS**	Run ID:	**CETAC2_HG_161221A**	Analysis Date:	**12/21/2016 12:22:24 P**	Prep Date:	**12/20/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00234	0.000200	0.00200	0.000412	96.4	80	120			

Sample ID	**1612144-02A MSD**	Batch ID:	**78390**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**MSD**	Run ID:	**CETAC2_HG_161221A**	Analysis Date:	**12/21/2016 12:24:40 P**	Prep Date:	**12/20/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00233	0.000200	0.00200	0.000412	95.9	80	120	0.428	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1612144
Project: MLSES - PDP-5 Area

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_161221A

Sample ID **ICV-161221**	Batch ID: **R89576**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **ICV**	Run ID: **CETAC2_HG_161221A**	Analysis Date: **12/21/2016 11:43:51 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00396	0.000200	0.00400	0	99.0	90	110			

Sample ID **CCV1-161221**	Batch ID: **R89576**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_161221A**	Analysis Date: **12/21/2016 12:42:51 P**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00198	0.000200	0.00200	0	99.0	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1612144
Project: MLSES - PDP-5 Area

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161223B

The QC data in batch 78380 applies to the following samples: 1612144-01A, 1612144-02A, 1612144-03A, 1612144-04A, 1612144-05A, 1612144-06A

Sample ID **MB-78380** Batch ID: **78380** TestNo: **SW6020A** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_161223B** Analysis Date: **12/23/2016 2:04:00 PM** Prep Date: **12/20/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.000800	0.00250								
Arsenic	<0.00200	0.00500								
Barium	<0.00300	0.0100								
Beryllium	<0.000300	0.00100								
Cadmium	<0.000300	0.00100								
Calcium	<0.100	0.300								
Chromium	<0.00200	0.00500								
Cobalt	<0.00300	0.00500								
Lead	<0.000300	0.00100								
Lithium	<0.00500	0.0100								
Molybdenum	<0.00200	0.00500								
Selenium	<0.00200	0.00500								
Thallium	<0.000500	0.00150								

Sample ID **LCS-78380** Batch ID: **78380** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_161223B** Analysis Date: **12/23/2016 2:06:00 PM** Prep Date: **12/20/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.206	0.00250	0.200	0	103	80	120			
Arsenic	0.209	0.00500	0.200	0	104	80	120			
Barium	0.208	0.0100	0.200	0	104	80	120			
Beryllium	0.213	0.00100	0.200	0	107	80	120			
Cadmium	0.209	0.00100	0.200	0	104	80	120			
Calcium	5.05	0.300	5.00	0	101	80	120			
Chromium	0.208	0.00500	0.200	0	104	80	120			
Cobalt	0.209	0.00500	0.200	0	104	80	120			
Lead	0.202	0.00100	0.200	0	101	80	120			
Lithium	0.208	0.0100	0.200	0	104	80	120			
Molybdenum	0.205	0.00500	0.200	0	103	80	120			
Selenium	0.209	0.00500	0.200	0	105	80	120			
Thallium	0.204	0.00150	0.200	0	102	80	120			

Sample ID **LCSD-78380** Batch ID: **78380** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_161223B** Analysis Date: **12/23/2016 2:08:00 PM** Prep Date: **12/20/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.205	0.00250	0.200	0	102	80	120	0.460	15	
Arsenic	0.212	0.00500	0.200	0	106	80	120	1.33	15	
Barium	0.206	0.0100	0.200	0	103	80	120	0.593	15	
Beryllium	0.219	0.00100	0.200	0	109	80	120	2.37	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1612144
Project: MLSES - PDP-5 Area

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161223B

Sample ID **LCSD-78380**	Batch ID: **78380**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCSD**	Run ID: **ICP-MS4_161223B**	Analysis Date: **12/23/2016 2:08:00 PM**	Prep Date: **12/20/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cadmium	0.209	0.00100	0.200	0	105	80	120	0.353	15	
Calcium	5.08	0.300	5.00	0	102	80	120	0.570	15	
Chromium	0.208	0.00500	0.200	0	104	80	120	0.305	15	
Cobalt	0.210	0.00500	0.200	0	105	80	120	0.492	15	
Lead	0.203	0.00100	0.200	0	102	80	120	0.341	15	
Lithium	0.213	0.0100	0.200	0	107	80	120	2.34	15	
Molybdenum	0.203	0.00500	0.200	0	101	80	120	1.35	15	
Selenium	0.214	0.00500	0.200	0	107	80	120	2.42	15	
Thallium	0.206	0.00150	0.200	0	103	80	120	0.604	15	

Sample ID **1612144-02A SD**	Batch ID: **78380**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS4_161223B**	Analysis Date: **12/23/2016 2:15:00 PM**	Prep Date: **12/20/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.00400	0.0125	0	0				0	10	
Arsenic	<0.0100	0.0250	0	0				0	10	
Barium	0.0306	0.0500	0	0.0315				2.87	10	
Beryllium	<0.00150	0.00500	0	0.000553				0	10	
Cadmium	<0.00150	0.00500	0	0				0	10	
Chromium	<0.0100	0.0250	0	0				0	10	
Cobalt	<0.0150	0.0250	0	0.00494				0	10	
Lead	0.00192	0.00500	0	0.00186				2.91	10	
Lithium	<0.0250	0.0500	0	0.0186				0	10	
Molybdenum	<0.0100	0.0250	0	0				0	10	
Selenium	<0.0100	0.0250	0	0.00801				0	10	
Thallium	<0.00250	0.00750	0	0				0	10	

Sample ID **1612144-02A PDS**	Batch ID: **78380**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_161223B**	Analysis Date: **12/23/2016 2:35:00 PM**	Prep Date: **12/20/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.200	0.00250	0.200	0	100	80	120			
Arsenic	0.206	0.00500	0.200	0	103	80	120			
Barium	0.237	0.0100	0.200	0.0315	103	80	120			
Beryllium	0.212	0.00100	0.200	0.000553	106	80	120			
Cadmium	0.202	0.00100	0.200	0	101	80	120			
Chromium	0.206	0.00500	0.200	0	103	80	120			
Cobalt	0.207	0.00500	0.200	0.00494	101	80	120			
Lead	0.199	0.00100	0.200	0.00186	98.5	80	120			
Lithium	0.223	0.0100	0.200	0.0186	102	80	120			
Molybdenum	0.194	0.00500	0.200	0	97.1	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1612144
Project: MLSES - PDP-5 Area

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161223B

Sample ID **1612144-02A PDS**	Batch ID: **78380**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_161223B**	Analysis Date: **12/23/2016 2:35:00 PM**	Prep Date: **12/20/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.214	0.00500	0.200	0.00801	103	80	120			
Thallium	0.199	0.00150	0.200	0	99.4	80	120			

Sample ID **1612144-02A MS**	Batch ID: **78380**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS4_161223B**	Analysis Date: **12/23/2016 2:37:00 PM**	Prep Date: **12/20/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.203	0.00250	0.200	0	101	80	120			
Arsenic	0.208	0.00500	0.200	0	104	80	120			
Barium	0.233	0.0100	0.200	0.0315	101	80	120			
Beryllium	0.211	0.00100	0.200	0.000553	105	80	120			
Cadmium	0.203	0.00100	0.200	0	101	80	120			
Calcium	19.4	0.300	5.00	15.1	86.8	80	120			
Chromium	0.198	0.00500	0.200	0	99.2	80	120			
Cobalt	0.204	0.00500	0.200	0.00494	99.7	80	120			
Lead	0.196	0.00100	0.200	0.00186	97.1	80	120			
Lithium	0.217	0.0100	0.200	0.0186	99.2	80	120			
Molybdenum	0.197	0.00500	0.200	0	98.7	80	120			
Selenium	0.216	0.00500	0.200	0.00801	104	80	120			
Thallium	0.195	0.00150	0.200	0	97.3	80	120			

Sample ID **1612144-02A MSD**	Batch ID: **78380**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS4_161223B**	Analysis Date: **12/23/2016 2:39:00 PM**	Prep Date: **12/20/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.203	0.00250	0.200	0	101	80	120	0.092	15	
Arsenic	0.210	0.00500	0.200	0	105	80	120	0.776	15	
Barium	0.234	0.0100	0.200	0.0315	101	80	120	0.181	15	
Beryllium	0.214	0.00100	0.200	0.000553	107	80	120	1.49	15	
Cadmium	0.203	0.00100	0.200	0	102	80	120	0.238	15	
Calcium	19.7	0.300	5.00	15.1	91.8	80	120	1.27	15	
Chromium	0.203	0.00500	0.200	0	102	80	120	2.57	15	
Cobalt	0.208	0.00500	0.200	0.00494	101	80	120	1.69	15	
Lead	0.202	0.00100	0.200	0.00186	100	80	120	3.08	15	
Lithium	0.219	0.0100	0.200	0.0186	100	80	120	1.11	15	
Molybdenum	0.199	0.00500	0.200	0	99.4	80	120	0.673	15	
Selenium	0.212	0.00500	0.200	0.00801	102	80	120	1.82	15	
Thallium	0.202	0.00150	0.200	0	101	80	120	3.77	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161223B

Sample ID **ICV-161223** Batch ID: **R89638** TestNo: **SW6020A** Units: **mg/L**
SampType: **ICV** Run ID: **ICP-MS4_161223B** Analysis Date: **12/23/2016 10:19:00 A** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.103	0.00250	0.100	0	103	90	110			
Arsenic	0.103	0.00500	0.100	0	103	90	110			
Barium	0.105	0.0100	0.100	0	105	90	110			
Beryllium	0.103	0.00100	0.100	0	103	90	110			
Cadmium	0.104	0.00100	0.100	0	104	90	110			
Calcium	2.41	0.300	2.50	0	96.3	90	110			
Chromium	0.107	0.00500	0.100	0	107	90	110			
Cobalt	0.107	0.00500	0.100	0	107	90	110			
Lead	0.102	0.00100	0.100	0	102	90	110			
Lithium	0.0998	0.0100	0.100	0	99.8	90	110			
Molybdenum	0.101	0.00500	0.100	0	101	90	110			
Selenium	0.105	0.00500	0.100	0	105	90	110			
Thallium	0.102	0.00150	0.100	0	102	90	110			

Sample ID **LCVL-161223** Batch ID: **R89638** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_161223B** Analysis Date: **12/23/2016 10:28:00 A** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00206	0.00250	0.00200	0	103	70	130			
Arsenic	0.00549	0.00500	0.00500	0	110	70	130			
Barium	0.00547	0.0100	0.00500	0	109	70	130			
Beryllium	0.00117	0.00100	0.00100	0	117	70	130			
Cadmium	0.00109	0.00100	0.00100	0	109	70	130			
Calcium	0.105	0.300	0.100	0	105	70	130			
Chromium	0.00535	0.00500	0.00500	0	107	70	130			
Cobalt	0.00555	0.00500	0.00500	0	111	70	130			
Lead	0.00112	0.00100	0.00100	0	112	70	130			
Lithium	0.0114	0.0100	0.0100	0	114	70	130			
Molybdenum	0.00539	0.00500	0.00500	0	108	70	130			
Selenium	0.00566	0.00500	0.00500	0	113	70	130			
Thallium	0.00110	0.00150	0.00100	0	110	70	130			

Sample ID **CCV4-161223** Batch ID: **R89638** TestNo: **SW6020A** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_161223B** Analysis Date: **12/23/2016 1:52:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.201	0.00250	0.200	0	101	90	110			
Arsenic	0.208	0.00500	0.200	0	104	90	110			
Barium	0.206	0.0100	0.200	0	103	90	110			
Beryllium	0.215	0.00100	0.200	0	108	90	110			
Cadmium	0.207	0.00100	0.200	0	104	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1612144
Project: MLSES - PDP-5 Area

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161223B

Sample ID **CCV4-161223** Batch ID: **R89638** TestNo: **SW6020A** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_161223B** Analysis Date: **12/23/2016 1:52:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.92	0.300	5.00	0	98.4	90	110			
Chromium	0.207	0.00500	0.200	0	104	90	110			
Cobalt	0.209	0.00500	0.200	0	105	90	110			
Lead	0.200	0.00100	0.200	0	100	90	110			
Lithium	0.210	0.0100	0.200	0	105	90	110			
Molybdenum	0.203	0.00500	0.200	0	101	90	110			
Selenium	0.208	0.00500	0.200	0	104	90	110			
Thallium	0.201	0.00150	0.200	0	101	90	110			

Sample ID **LCVL4-161223** Batch ID: **R89638** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_161223B** Analysis Date: **12/23/2016 1:57:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00216	0.00250	0.00200	0	108	70	130			
Arsenic	0.00550	0.00500	0.00500	0	110	70	130			
Barium	0.00536	0.0100	0.00500	0	107	70	130			
Beryllium	0.00107	0.00100	0.00100	0	107	70	130			
Cadmium	0.00114	0.00100	0.00100	0	114	70	130			
Calcium	0.110	0.300	0.100	0	110	70	130			
Chromium	0.00553	0.00500	0.00500	0	111	70	130			
Cobalt	0.00556	0.00500	0.00500	0	111	70	130			
Lead	0.00108	0.00100	0.00100	0	108	70	130			
Lithium	0.0106	0.0100	0.0100	0	106	70	130			
Molybdenum	0.00530	0.00500	0.00500	0	106	70	130			
Selenium	0.00550	0.00500	0.00500	0	110	70	130			
Thallium	0.00110	0.00150	0.00100	0	110	70	130			

Sample ID **CCV5-161223** Batch ID: **R89638** TestNo: **SW6020A** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_161223B** Analysis Date: **12/23/2016 2:41:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.203	0.00250	0.200	0	101	90	110			
Arsenic	0.212	0.00500	0.200	0	106	90	110			
Barium	0.207	0.0100	0.200	0	104	90	110			
Beryllium	0.213	0.00100	0.200	0	106	90	110			
Cadmium	0.206	0.00100	0.200	0	103	90	110			
Calcium	4.99	0.300	5.00	0	99.8	90	110			
Chromium	0.207	0.00500	0.200	0	103	90	110			
Cobalt	0.209	0.00500	0.200	0	104	90	110			
Lead	0.204	0.00100	0.200	0	102	90	110			
Lithium	0.205	0.0100	0.200	0	102	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161223B

Sample ID **CCV5-161223** Batch ID: **R89638** TestNo: **SW6020A** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_161223B** Analysis Date: **12/23/2016 2:41:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Molybdenum	0.202	0.00500	0.200	0	101	90	110			
Selenium	0.213	0.00500	0.200	0	107	90	110			
Thallium	0.206	0.00150	0.200	0	103	90	110			

Sample ID **LCVL5-161223** Batch ID: **R89638** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_161223B** Analysis Date: **12/23/2016 5:32:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00213	0.00250	0.00200	0	107	70	130			
Arsenic	0.00559	0.00500	0.00500	0	112	70	130			
Barium	0.00552	0.0100	0.00500	0	110	70	130			
Beryllium	0.00114	0.00100	0.00100	0	114	70	130			
Cadmium	0.00108	0.00100	0.00100	0	108	70	130			
Calcium	0.111	0.300	0.100	0	111	70	130			
Chromium	0.00549	0.00500	0.00500	0	110	70	130			
Cobalt	0.00560	0.00500	0.00500	0	112	70	130			
Lead	0.000999	0.00100	0.00100	0	99.9	70	130			
Lithium	0.0109	0.0100	0.0100	0	109	70	130			
Molybdenum	0.00518	0.00500	0.00500	0	104	70	130			
Selenium	0.00556	0.00500	0.00500	0	111	70	130			
Thallium	0.00104	0.00150	0.00100	0	104	70	130			

Sample ID **CCV6-161223** Batch ID: **R89638** TestNo: **SW6020A** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_161223B** Analysis Date: **12/23/2016 5:55:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.201	0.00250	0.200	0	100	90	110			
Arsenic	0.211	0.00500	0.200	0	106	90	110			
Barium	0.206	0.0100	0.200	0	103	90	110			
Beryllium	0.211	0.00100	0.200	0	105	90	110			
Cadmium	0.205	0.00100	0.200	0	103	90	110			
Calcium	5.00	0.300	5.00	0	100	90	110			
Chromium	0.204	0.00500	0.200	0	102	90	110			
Cobalt	0.208	0.00500	0.200	0	104	90	110			
Lead	0.200	0.00100	0.200	0	99.8	90	110			
Lithium	0.204	0.0100	0.200	0	102	90	110			
Molybdenum	0.199	0.00500	0.200	0	99.5	90	110			
Selenium	0.212	0.00500	0.200	0	106	90	110			
Thallium	0.199	0.00150	0.200	0	99.7	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1612144
Project: MLSES - PDP-5 Area

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161223B

Sample ID **LCVL6-161223** Batch ID: **R89638** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_161223B** Analysis Date: **12/23/2016 5:59:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00208	0.00250	0.00200	0	104	70	130			
Arsenic	0.00582	0.00500	0.00500	0	116	70	130			
Barium	0.00543	0.0100	0.00500	0	109	70	130			
Beryllium	0.00136	0.00100	0.00100	0	136	70	130			S
Cadmium	0.00107	0.00100	0.00100	0	107	70	130			
Calcium	0.115	0.300	0.100	0	115	70	130			
Chromium	0.00550	0.00500	0.00500	0	110	70	130			
Cobalt	0.00561	0.00500	0.00500	0	112	70	130			
Lead	0.00105	0.00100	0.00100	0	105	70	130			
Lithium	0.0113	0.0100	0.0100	0	113	70	130			
Molybdenum	0.00528	0.00500	0.00500	0	106	70	130			
Selenium	0.00556	0.00500	0.00500	0	111	70	130			
Thallium	0.00108	0.00150	0.00100	0	108	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1612144
Project: MLSES - PDP-5 Area

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161228B

The QC data in batch 78380 applies to the following samples: 1612144-01A, 1612144-02A, 1612144-03A, 1612144-04A, 1612144-05A, 1612144-06A

Sample ID	**MB-78380**	Batch ID:	**78380**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**ICP-MS4_161228B**	Analysis Date:	**12/28/2016 2:23:00 PM**	Prep Date:	**12/20/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	<0.0100	0.0300								

Sample ID	**LCS-78380**	Batch ID:	**78380**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**ICP-MS4_161228B**	Analysis Date:	**12/28/2016 2:25:00 PM**	Prep Date:	**12/20/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.182	0.0300	0.200	0	90.9	80	120			

Sample ID	**LCSD-78380**	Batch ID:	**78380**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**LCSD**	Run ID:	**ICP-MS4_161228B**	Analysis Date:	**12/28/2016 2:27:00 PM**	Prep Date:	**12/20/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.185	0.0300	0.200	0	92.7	80	120	2.05	15	

Sample ID	**1612144-02A SD**	Batch ID:	**78380**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**SD**	Run ID:	**ICP-MS4_161228B**	Analysis Date:	**12/28/2016 2:31:00 PM**	Prep Date:	**12/20/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.145	0.150	0	0.131				10.0	10	

Sample ID	**1612144-02A PDS**	Batch ID:	**78380**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**PDS**	Run ID:	**ICP-MS4_161228B**	Analysis Date:	**12/28/2016 2:49:00 PM**	Prep Date:	**12/20/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.292	0.0300	0.200	0.131	80.4	80	120			

Sample ID	**1612144-02A MS**	Batch ID:	**78380**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**MS**	Run ID:	**ICP-MS4_161228B**	Analysis Date:	**12/28/2016 2:51:00 PM**	Prep Date:	**12/20/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.312	0.0300	0.200	0.131	90.3	80	120			

Sample ID	**1612144-02A MSD**	Batch ID:	**78380**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**MSD**	Run ID:	**ICP-MS4_161228B**	Analysis Date:	**12/28/2016 2:53:00 PM**	Prep Date:	**12/20/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.319	0.0300	0.200	0.131	94.1	80	120	2.43	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1612144
Project: MLSES - PDP-5 Area

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161228B

Sample ID **ICV-161228**	Batch ID: **R89683**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_161228B**	Analysis Date: **12/28/2016 10:59:00 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0958	0.0300	0.100	0	95.8	90	110			

Sample ID **LCVL-161228**	Batch ID: **R89683**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_161228B**	Analysis Date: **12/28/2016 11:04:00 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0187	0.0300	0.0200	0	93.3	70	130			

Sample ID **CCV3-161228**	Batch ID: **R89683**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_161228B**	Analysis Date: **12/28/2016 1:52:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.194	0.0300	0.200	0	97.1	90	110			

Sample ID **LCVL3-161228**	Batch ID: **R89683**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_161228B**	Analysis Date: **12/28/2016 2:11:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0210	0.0300	0.0200	0	105	70	130			

Sample ID **CCV4-161228**	Batch ID: **R89683**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_161228B**	Analysis Date: **12/28/2016 3:05:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.187	0.0300	0.200	0	93.7	90	110			

Sample ID **LCVL4-161228**	Batch ID: **R89683**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_161228B**	Analysis Date: **12/28/2016 3:09:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0215	0.0300	0.0200	0	108	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1612144
Project: MLSES - PDP-5 Area

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161228C

The QC data in batch 78380 applies to the following samples: 1612144-01A, 1612144-02A, 1612144-03A, 1612144-04A, 1612144-05A, 1612144-06A

Sample ID **1612144-02A SD**	Batch ID: **78380**	TestNo: **SW6020A**	Units: **mg/L**				
SampType: **SD**	Run ID: **ICP-MS4_161228C**	Analysis Date: **12/28/2016 11:24:00 P**	Prep Date: **12/20/2016**				

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	14.9	15.0	0	14.4				3.08	10	

Sample ID **1612144-02A PDS**	Batch ID: **78380**	TestNo: **SW6020A**	Units: **mg/L**				
SampType: **PDS**	Run ID: **ICP-MS4_161228C**	Analysis Date: **12/28/2016 11:45:00 P**	Prep Date: **12/20/2016**				

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	60.4	3.00	50.0	14.4	92.0	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161228C

Sample ID **ICV-161228**	Batch ID: **R89687**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_161228C**	Analysis Date: **12/28/2016 10:59:00 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.101	0.00100	0.100	0	101	90	110			
Boron	0.0958	0.0300	0.100	0	95.8	90	110			
Calcium	2.37	0.300	2.50	0	94.8	90	110			

Sample ID **LCVL-161228**	Batch ID: **R89687**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_161228C**	Analysis Date: **12/28/2016 11:04:00 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.000953	0.00100	0.00100	0	95.3	70	130			
Boron	0.0187	0.0300	0.0200	0	93.3	70	130			
Calcium	0.107	0.300	0.100	0	107	70	130			

Sample ID **CCV5-161228**	Batch ID: **R89687**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_161228C**	Analysis Date: **12/28/2016 4:14:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.182	0.00100	0.200	0	90.8	90	110			
Boron	0.213	0.0300	0.200	0	107	90	110			

Sample ID **LCVL5-161228**	Batch ID: **R89687**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_161228C**	Analysis Date: **12/28/2016 4:59:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.00106	0.00100	0.00100	0	106	70	130			
Boron	0.0209	0.0300	0.0200	0	104	70	130			

Sample ID **CCV6-161228**	Batch ID: **R89687**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_161228C**	Analysis Date: **12/28/2016 5:28:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.186	0.00100	0.200	0	92.9	90	110			
Boron	0.203	0.0300	0.200	0	101	90	110			

Sample ID **LCVL6-161228**	Batch ID: **R89687**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_161228C**	Analysis Date: **12/28/2016 6:15:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.00125	0.00100	0.00100	0	125	70	130			
Boron	0.0212	0.0300	0.0200	0	106	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

Sample ID	**CCV8-161228**	Batch ID:	**R89687**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**ICP-MS4_161228C**	Analysis Date:	**12/28/2016 7:44:00 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.215	0.0300	0.200	0	107	90	110			
Calcium	4.85	0.300	5.00	0	97.1	90	110			

Sample ID	**LCVL8-161228**	Batch ID:	**R89687**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**LCVL**	Run ID:	**ICP-MS4_161228C**	Analysis Date:	**12/28/2016 8:15:00 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0260	0.0300	0.0200	0	130	70	130			
Calcium	0.110	0.300	0.100	0	110	70	130			

Sample ID	**CCV9-161228**	Batch ID:	**R89687**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**ICP-MS4_161228C**	Analysis Date:	**12/28/2016 8:55:00 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.203	0.0300	0.200	0	101	90	110			
Calcium	4.89	0.300	5.00	0	97.8	90	110			

Sample ID	**LCVL9-161228**	Batch ID:	**R89687**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**LCVL**	Run ID:	**ICP-MS4_161228C**	Analysis Date:	**12/28/2016 9:12:00 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0240	0.0300	0.0200	0	120	70	130			
Calcium	0.110	0.300	0.100	0	110	70	130			

Sample ID	**CCV13-161228**	Batch ID:	**R89687**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**ICP-MS4_161228C**	Analysis Date:	**12/28/2016 11:14:00 P**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.80	0.300	5.00	0	95.9	90	110			

Sample ID	**LCVL13-161228**	Batch ID:	**R89687**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**LCVL**	Run ID:	**ICP-MS4_161228C**	Analysis Date:	**12/28/2016 11:18:00 P**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.128	0.300	0.100	0	128	70	130			

Sample ID	**CCV14-161228**	Batch ID:	**R89687**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**ICP-MS4_161228C**	Analysis Date:	**12/28/2016 11:47:00 P**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.79	0.300	5.00	0	95.7	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1612144
Project: MLSES - PDP-5 Area

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_161228C

Sample ID **LCVL14-161228** Batch ID: **R89687** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_161228C** Analysis Date: **12/28/2016 11:51:00 P** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.0995	0.300	0.100	0	99.5	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1612144
Project: MLSES - PDP-5 Area

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_161221A

The QC data in batch 78420 applies to the following samples: 1612144-01D, 1612144-02D, 1612144-03D, 1612144-04D, 1612144-05D, 1612144-06D

Sample ID **MB-78420** Batch ID: **78420** TestNo: **E300** Units: **mg/L**
SampType: **MBLK** Run ID: **IC2_161221A** Analysis Date: **12/21/2016 8:38:00 AM** Prep Date: **12/21/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00								
Fluoride	<0.100	0.400								
Sulfate	<1.00	3.00								

Sample ID **LCS-78420** Batch ID: **78420** TestNo: **E300** Units: **mg/L**
SampType: **LCS** Run ID: **IC2_161221A** Analysis Date: **12/21/2016 8:52:37 AM** Prep Date: **12/21/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.5	1.00	10.00	0	105	90	110			
Fluoride	3.99	0.400	4.000	0	99.8	90	110			
Sulfate	31.6	3.00	30.00	0	105	90	110			

Sample ID **LCSD-78420** Batch ID: **78420** TestNo: **E300** Units: **mg/L**
SampType: **LCSD** Run ID: **IC2_161221A** Analysis Date: **12/21/2016 9:30:55 AM** Prep Date: **12/21/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.4	1.00	10.00	0	104	90	110	1.00	20	
Fluoride	4.01	0.400	4.000	0	100	90	110	0.385	20	
Sulfate	31.5	3.00	30.00	0	105	90	110	0.288	20	

Sample ID **1612144-01DMS** Batch ID: **78420** TestNo: **E300** Units: **mg/L**
SampType: **MS** Run ID: **IC2_161221A** Analysis Date: **12/21/2016 3:11:30 PM** Prep Date: **12/21/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	335	10.0	200.0	175.9	79.5	90	110			S
Fluoride	206	4.00	200.0	0	103	90	110			
Sulfate	309	30.0	200.0	97.57	106	90	110			

Sample ID **1612144-01DMSD** Batch ID: **78420** TestNo: **E300** Units: **mg/L**
SampType: **MSD** Run ID: **IC2_161221A** Analysis Date: **12/21/2016 3:26:06 PM** Prep Date: **12/21/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	343	10.0	200.0	175.9	83.5	90	110	2.33	20	S
Fluoride	212	4.00	200.0	0	106	90	110	3.01	20	
Sulfate	317	30.0	200.0	97.57	110	90	110	2.36	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1612144
Project: MLSES - PDP-5 Area

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_161221A

Sample ID **ICV-161221**	Batch ID: **R89574**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC2_161221A**	Analysis Date: **12/21/2016 8:08:47 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	26.1	1.00	25.00	0	104	90	110			
Fluoride	9.68	0.400	10.00	0	96.8	90	110			
Sulfate	79.4	3.00	75.00	0	106	90	110			

Sample ID **CCV1-161221**	Batch ID: **R89574**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_161221A**	Analysis Date: **12/21/2016 4:09:56 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.2	1.00	10.00	0	102	90	110			
Fluoride	4.10	0.400	4.000	0	102	90	110			
Sulfate	30.9	3.00	30.00	0	103	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1612144
Project: MLSES - PDP-5 Area

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_161215A

The QC data in batch 78292 applies to the following samples: 1612144-01D, 1612144-02D, 1612144-03D, 1612144-04D, 1612144-05D, 1612144-06D

Sample ID	**1612144-01D-DUP**	Batch ID:	**78292**	TestNo:	**M4500-H+ B**	Units:	**pH Units@19.8℃**
SampType:	**DUP**	Run ID:	**TITRATOR_161215A**	Analysis Date:	**12/15/2016 9:11:00 AM**	Prep Date:	**12/15/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	6.18	0	0	6.160				0.324	5	

Sample ID	**1612145-01D-DUP**	Batch ID:	**78292**	TestNo:	**M4500-H+ B**	Units:	**pH Units@20.2℃**
SampType:	**DUP**	Run ID:	**TITRATOR_161215A**	Analysis Date:	**12/15/2016 9:26:00 AM**	Prep Date:	**12/15/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	6.62	0	0	6.620				0	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1612144
Project: MLSES - PDP-5 Area

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_161215A

Sample ID **ICV-161215**	Batch ID: **R89460**	TestNo: **M4500-H+ B**	Units: **pH Units@21.6℃**
SampType: **ICV**	Run ID: **TITRATOR_161215A**	Analysis Date: **12/15/2016 8:14:00 AM**	Prep Date: **12/15/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	9.91	0	10.00	0	99.1	99	101			

Sample ID **CCV1-161215**	Batch ID: **R89460**	TestNo: **M4500-H+ B**	Units: **pH Units@21.6℃**
SampType: **CCV**	Run ID: **TITRATOR_161215A**	Analysis Date: **12/15/2016 9:28:00 AM**	Prep Date: **12/15/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	6.98	0	7.000	0	99.7	97.1	102.9			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1612144
Project: MLSES - PDP-5 Area

ANALYTICAL QC SUMMARY REPORT

RunID: WC_161219C

The QC data in batch 78352 applies to the following samples: 1612144-01D, 1612144-02D, 1612144-03D, 1612144-04D, 1612144-05D, 1612144-06D

Sample ID **MB-78352**	Batch ID: **78352**	TestNo: **M2540C**	Units: **mg/L**
SampType: **MBLK**	Run ID: **WC_161219C**	Analysis Date: **12/20/2016 8:41:00 AM**	Prep Date: **12/19/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	<10.0	10.0								

Sample ID **LCS-78352**	Batch ID: **78352**	TestNo: **M2540C**	Units: **mg/L**
SampType: **LCS**	Run ID: **WC_161219C**	Analysis Date: **12/20/2016 8:41:00 AM**	Prep Date: **12/19/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	750	10.0	745.6	0	101	90	113			

Sample ID **1612144-02D-DUP**	Batch ID: **78352**	TestNo: **M2540C**	Units: **mg/L**
SampType: **DUP**	Run ID: **WC_161219C**	Analysis Date: **12/20/2016 8:41:00 AM**	Prep Date: **12/19/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	239	10.0	0	245.0				2.48	5	

Sample ID **1612167-02D-DUP**	Batch ID: **78352**	TestNo: **M2540C**	Units: **mg/L**
SampType: **DUP**	Run ID: **WC_161219C**	Analysis Date: **12/20/2016 8:41:00 AM**	Prep Date: **12/19/2016**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	1100	10.0	0	1128				2.15	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

Case Narrative

Lab No: 20161248

This report contains the analytical results for the 6 sample(s) received under chain of custody by ESC Lab Sciences on 12/16/2016 11:25:16 AM. These samples are associated with your 1612144 project.

The analytical results included in this report meet all applicable quality control procedure requirements except as noted below:

The test results in this report meet all NELAC requirements unless noted below:

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All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client.

Results have been reviewed by the Director of Radiochemistry or their designees and is approved for release.

Observations / Nonconformances

L879372

OUTREACH LABORATORY, A Divsion of ESC Lab Sciences
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Analytical Report

	Method	Result	DL	Units	Qual	Prep Date	Analysis Date	Analyst
Lab ID : **20161248-01**								
Client ID : **PDP-25**								
Date Sampled : **12/12/2016 12:20:00 PM**								
Matrix : **NPW**								
Radiochemical Analyses								
Combined Radium		2.44 +/- 0.809	1.20	pCi/l				
Radium-226	SM 7500 Ra B M*	0.511 +/- 0.181	0.170	pCi/l		01/07/17	01/10/17	AK
Radium-228	EPA 904*/9320*	1.93 +/- 0.628	1.03	pCi/l		01/13/17	01/23/17	JR
Lab ID : **20161248-02**								
Client ID : **MW-20A**								
Date Sampled : **12/12/2016 2:25:00 PM**								
Matrix : **NPW**								
Radiochemical Analyses								
Combined Radium		0.668 +/- 0.691	1.06	pCi/l				
Radium-226	SM 7500 Ra B M*	0.365 +/- 0.158	0.168	pCi/l		01/07/17	01/10/17	AK
Radium-228	EPA 904*/9320*	0.303 +/- 0.533	0.895	pCi/l		01/13/17	01/23/17	JR
Lab ID : **20161248-03**								
Client ID : **PDP-23**								
Date Sampled : **12/12/2016 3:20:00 PM**								
Matrix : **NPW**								
Radiochemical Analyses								
Combined Radium		2.62 +/- 0.868	1.41	pCi/l				
Radium-226	SM 7500 Ra B M*	-0.008 +/- 0.078	0.165	pCi/l		01/07/17	01/10/17	AK
Radium-228	EPA 904*/9320*	2.62 +/- 0.790	1.24	pCi/l		01/13/17	01/23/17	JR
Lab ID : **20161248-04**								
Client ID : **MW-19**								
Date Sampled : **12/12/2016 4:30:00 PM**								
Matrix : **NPW**								
Radiochemical Analyses								
Combined Radium		0.393 +/- 0.769	1.36	pCi/l				
Radium-226	SM 7500 Ra B M*	0.393 +/- 0.186	0.229	pCi/l		01/07/17	01/10/17	AK
Radium-228	EPA 904*/9320*	-0.316 +/- 0.583	1.13	pCi/l		01/13/17	01/23/17	JR

Client	:	DHL Analytical, Inc.
Client Project	:	1612144
Lab Number	:	20161248
Date Reported	:	01/25/17
Date Received	:	12/16/16
Page Number	:	3 of 3

Analytical Report

	Method	Result	DL	Units	Qual	Prep Date	Analysis Date	Analyst
Lab ID : **20161248-05**								
Client ID : **MW-17A**								
Date Sampled : **12/13/2016 8:45:00 AM**								
Matrix : **NPW**								
Radiochemical Analyses								
Combined Radium		0.407 +/- 0.896	1.52	pCi/l				
Radium-226	SM 7500 Ra B M*	-0.162 +/- 0.212	0.404	pCi/l		01/07/17	01/10/17	AK
Radium-228	EPA 904*/9320*	0.407 +/- 0.684	1.12	pCi/l		01/13/17	01/23/17	JR
Lab ID : **20161248-06**								
Client ID : **PDP-24**								
Date Sampled : **12/13/2016 9:45:00 AM**								
Matrix : **NPW**								
Radiochemical Analyses								
Combined Radium		1.74 +/- 0.651	1.09	pCi/l				
Radium-226	SM 7500 Ra B M*	0.168 +/- 0.132	0.168	pCi/l		01/07/17	01/10/17	AK
Radium-228	EPA 904*/9320*	1.57 +/- 0.519	0.920	pCi/l		01/13/17	01/23/17	JR

QC Report

Parameter	Blank	LCS %REC	LCSD %REC	LCSD RPD	DUP RPD	RER, NAD or DER	MS %REC	MSD %REC	MSD RPD	Batch ID
Radium-226	0.016	105.0			NC	0.688	108.0	111.0	1.7	R1177
Radium-228	0.421	85.6			NC	0.720	74.0	82.2	8.7	R3907

Lab Approval:

Ron Eidson
Director of Radiochemistry

*NELAC Certified Parameter BDL = Below Detection Limit

OUTREACH LABORATORY, A Divsion of ESC Lab Sciences
Address: 311 North Aspen Avenue, Broken Arrow, OK, 74012 EMail: outreach@esclabsciences.com - Tel: (918) 251-2515

DHL Analytical, Inc.
2300 Double Creek Drive
Round Rock, TX 78664
TEL: *(512) 388-8222* FAX: *(512) 388-8229*

CHAIN-OF-CUSTODY RECORD

Work Order: 1612144

Subcontractor:

ESC Laboratory
311 North Aspen
Broken Arrow, Oklahoma 74012

TEL: (918) 251-2515
FAX:
Acct #: DHLRRTX

14-Dec-16

	Sample Id	Matrix	DHL#	Date Collected	Bottle Type	Requested Tests					
						E904.0	SM7500Ra-B M				
1	PDP-25	Aqueous	-01B	12/12/16 12:20 PM	1LHDPEHNO3	1					
	PDP-25	Aqueous	-01C	12/12/16 12:20 PM	500HDPEHNO3		1				
2	MW-20A	Aqueous	-02B	12/12/16 02:25 PM	1LHDPEHNO3	1					
	MW-20A	Aqueous	-02C	12/12/16 02:25 PM	500HDPEHNO3		1				
3	PDP-23	Aqueous	-03B	12/12/16 03:20 PM	1LHDPEHNO3	1					
	PDP-23	Aqueous	-03C	12/12/16 03:20 PM	500HDPEHNO3		1				
4	MW-19	Aqueous	-04B	12/12/16 04:30 PM	1LHDPEHNO3	1					
	MW-19	Aqueous	-04C	12/12/16 04:30 PM	500HDPEHNO3		1				
5	MW-17A	Aqueous	-05B	12/13/16 08:45 AM	1LHDPEHNO3	1					
	MW-17A	Aqueous	-05C	12/13/16 08:45 AM	500HDPEHNO3		1				
6	PDP-24	Aqueous	-06B	12/13/16 09:45 AM	1LHDPEHNO3	1					
	PDP-24	Aqueous	-06C	12/13/16 09:45 AM	500HDPEHNO3		1				

General Comments:

Please analyze these samples with Normal Turnaround Time.
Report RA-226, Ra-228 & Combined per Specs.
Quality Control Package Needed: Standard - NELAC Rad Test compliant
Email to cac@dhlanalytical.com & dupont@dhlanalytical.com

C879372

		Date/Time			Date/Time
Relinquished by:	J Barker	12/14/16 1730	**Received by:**	Lorena	12/14/16 1730
Relinquished by:			**Received by:**		12/16/16 1125

20161248

SAMPLE LOGIN

Date Received: *12/16/2016 11:25:* **Lab Number: 20161248** **Due: 1/17/2017**

Sample Number	Client Sample ID	Matrix	Date Sampled	Container Type	Container Size	Preservation	Preserved Upon Receipt	Custody Seal	Seal Intact
20161248-01 B	PDP-25	NPW	12/12/16	Plastic	1 L	HNO3, pH < 2	☑	Yes	Yes
20161248-01 A	PDP-25	NPW	12/12/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20161248-02 B	MW-20A	NPW	12/12/16	Plastic	1 L	HNO3, pH < 2	☑	Yes	Yes
20161248-02 A	MW-20A	NPW	12/12/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20161248-03 B	PDP-23	NPW	12/12/16	Plastic	1 L	HNO3, pH < 2	☑	Yes	Yes
20161248-03 A	PDP-23	NPW	12/12/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20161248-04 B	MW-19	NPW	12/12/16	Plastic	1 L	HNO3, pH < 2	☑	Yes	Yes
20161248-04 A	MW-19	NPW	12/12/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20161248-05 B	MW-17A	NPW	12/13/16	Plastic	1 L	HNO3, pH < 2	☑	Yes	Yes
20161248-05 A	MW-17A	NPW	12/13/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						
20161248-06 B	PDP-24	NPW	12/13/16	Plastic	1 L	HNO3, pH < 2	☑	Yes	Yes
20161248-06 A	PDP-24	NPW	12/13/16	Plastic	500 ml	HNO3, pH < 2	☑	Yes	Yes
Radium-226			SM 7500 Ra B M*						
Radium-228			EPA 904*/9320*						

CONTAINER INSPECTION

 # Coolers ~~Ao~~ 1 1/16/16 **Custody Seals Broken** Ø **Temperature:** Amb **C** **Ice** **Radiation Survey:** <300 cpm

SAMPLE INSPECTION

Sample Seal Broken Ø **Chain of Custody Record** ✓ **Labels in Tact** ✓ **Radiation Survey Complete** N/A

Anomalies

Inspected By: [signature] **DATE** 12/16/16

QA or Designee Review: Raymond Thomas **DATE** 12/16/16

Sample Custodian Review: Zuntre Nomadu **DATE** 12/16/16

Project Notes:

Data Usability Summary
Luminant – Martin Lake Steam Electric Station
October 20-30, 2015
Groundwater Monitoring Event
DHL Analytical Data Packages 1510216, 1510228, and 1511007

Pastor, Behling & Wheeler, LLC reviewed three data packages from DHL Analytical for the analysis of groundwater samples collected October 20-30, 2015 at the Martin Lake Steam Electric Station in Tatum, Texas. Data were reviewed for adherence to project objectives.

Intended Use of Data: To provide current data on concentrations of chemicals of concern (COCs) in the groundwater at the site.

Analyses requested included:

- Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Lead, Lithium, Molybdenum, Selenium, and Thallium by USEPA Method SW6020A – Metals Analysis;
- Chloride, Fluoride, and Sulfate by USEPA Method E300 – Anion Analysis;
- Mercury by USEPA Method SW7470A – Mercury Analysis;
- pH of Water by Standard Method M4500-H + B – pH of Water Analysis;
- Total Dissolved Solids (TDS) by Standard Method M2540C – TDS Analysis; and
- Radium 226 and 228 by USEPA Methods 904.0/SW846 9320 Modified and 903.1 Modified.

Data were reviewed and validated and the results of the review/validation are discussed in this Data Usability Summary (DUS). The following laboratory submittals and field data were examined:

- the reportable data,
- case narratives, and
- field notes with respect to field instrument calibrations, filtering procedures, sampling procedures, and preservation procedures prior to shipping the samples to the laboratory.

The results of supporting quality control (QC) analyses were summarized in the case narrative, included in this review, with the laboratory data package.

Introduction

Twenty five (25) groundwater samples were analyzed for the constituents listed above (Appendix III and Appendix IV constituents in the Coal Combustion Residuals Federal Rule). Table B-1 lists the field sample identifications cross-referenced to the laboratory identifications.

Project Objectives

Project quality QC objectives were established in conformance to the requirements of *SW-846 Test Methods for Evaluating Solid Waste Physical/Chemical Methods* and *Standard Methods*. Laboratory control sample and sample duplicate recovery QC criteria were 70 – 130% recovery (%R) for metals and inorganics. Laboratory recovery QC criteria were 30% Relative Percent Difference (RPD). Field duplicate recovery QC criteria were 50% RPD.

Data Review / Validation Results

Analytical Results

Non-detected results (ND) are reported as less than the value of the method detection limit (MDL) and received a "U" flag. Analytes detected between the method quantitation limit (MQL) and the MDL were qualified with a "J-flag" to denote that the reported value was considered to be estimated. If a QC result was found outside of the review criteria, the reviewer applied a data qualifier and bias code to the associated sample data if the analyte was detected. Sample data were not qualified if recoveries exceeded QC criteria and the analyte was not detected.

Preservation and Holding Times

Samples were evaluated for agreement with the chain-of-custody (COC). All samples were received in the appropriate containers and in good condition with the paperwork filled out properly. Sample receipt temperatures were within the acceptance criteria of 4 ± 2 °C. Samples were prepared and analyzed within holding times as specified in the analysis methods.

Calibrations

The initial and continuing calibration data met laboratory control limits with the exception of the following:

For Metals analysis performed on 11/5/2015 and 11/9/2015, four LCVLs were above control limits for Boron. These are flagged accordingly. The associated CCVs were within control limits for this analyte. No further corrective actions were taken.

For Metals analysis performed on 11/3/2015, LCVL3-151103 was above control limits for Boron and Calcium. This was due to sample carryover. The affected samples were the matrix spike and matrix spike duplicate. No further corrective actions were taken.

For Metals analysis performed on 11/9/2015, LCVL2-151109 was slightly above control limits for Calcium. This is flagged accordingly. The associated CCV2-151109 was within control limits for this analyte. No further corrective actions were taken.

Blanks

No field blanks were used because the sampling event did not include volatile or semi-volatile compounds.

All laboratory method blank results were reported as non-detected or below applicable assessment levels with the exception of the following:

For Metals analysis performed on 11/5/2015 Chromium and Molybdenum were detected above the reporting limits in the method blank. All associated samples were below detection limits for these analytes. No further corrective actions were taken.

For Metals analysis performed on 11/9/2015 Boron was detected below the reporting limit in the method blank. All samples were detected greater than 10 times the amount in the blank for this analyte. No further corrective actions were taken.

No equipment blank was collected

Internal Standards

For Metals analysis samples BMW-19 and BMW-18 had low responses for the internal standards Indium and Bismuth. All associated analytes (Barium, Cadmium, Molybdenum, and Lead) were not reported from this analytical run and were re-analyzed.

Surrogate Recoveries

The analytical procedures used did not require surrogates; therefore, surrogate recovery is not applicable.

Laboratory Control Samples

Laboratory control sample (LCS) recoveries were within QC acceptance limits for all LCS analyses.

Matrix Spike/Matrix Spike Duplicates

MS/MSD percent recoveries were within acceptable control limits for all samples with the exception of the following:

For Metals analysis performed on 11/3/2015 the matrix spike and matrix spike duplicate recoveries were out of control limits for Calcium, and the matrix spike duplicate recovery was out of control limits for Antimony. In addition, the matrix spike and matrix spike duplicate had the RPD above control limits for Antimony. These are flagged accordingly in the QC summary report. The sample selected for the MS and MSD was not from this work order. The LCS was within control limits for these analytes. No further corrective actions were taken.

For Metals analysis performed on 11/9/2015 the matrix spike and matrix spike duplicate recoveries were out of control limits for Calcium. These are flagged accordingly in the QC summary report. The sample selected for the MS and MSD was not from this work order. The LCS was within control limits for this analyte. No further corrective actions were taken.

For Mercury analysis for lab package 1511007 the matrix spike and matrix spike duplicate was re-prepped and re-analyzed on 11/10/2015. This was due to a prep error. This exceeded the 24 hour prep window.

Serial Dilution/Post Dilution Spike

For Metals analysis performed on 11/9/2015 the RPD for the serial dilution was above control limits for Chromium. This is flagged accordingly. The PDS was within control limits for this analyte. No further corrective actions were taken.

Field Precision

No sample duplicates were taken during this sampling event.

Field Procedures

Groundwater samples were collected using low-flow procedures with a peristaltic, stainless steel submersible pump, or bladder pump and placed in unpreserved 250-ml plastic bottles and 500-ml plastic bottles preserved with HNO_3. Wells were purged until groundwater parameters (temperature, pH, specific conductivity, dissolved oxygen, redox, and turbidity) stabilized to within +/- 10%.

Summary

Groundwater analytical data are usable for the purpose of determining current COC concentrations in the groundwater at the site with no qualifications added as a result of this evaluation.

Table B-1. Cross-Reference Field Sample Identifications and Laboratory Identifications

Field Identification	Laboratory Identification
PDP-23	1510216-01
PDP-24	1510216-02
PDP-22	1510216-03
MW-19	1510216-04
MW-20A	1510216-05
PDP-26	1510216-06
PDP-25	1510216-07
H-30	1510216-08
H-31	1510216-09
H-29	1510216-10
H-28	1510216-11
H-27	1510216-12
H-26	1510216-13
H-33	1510216-14
H-32	1510216-15
MW-17A	1510216-16
BMW-22	1510228-01
BMW-23	1510228-02
BMW-24	1510228-03
BMW-20	1510228-04
BMW-21	1510228-05
BMW-19	1511007-01
BMW-11AR	1511007-02
MW-18A	1511007-03
BMW-18	1511007-04

Prepared by: Lindsey Sydow___ Date: June 2, 2017

Data Usability Summary
Luminant – Martin Lake Steam Electric Station
December 14-15, 2015
Groundwater Monitoring Event
DHL Analytical Data Package 1512236

Pastor, Behling & Wheeler, LLC reviewed one data package from DHL Analytical for the analysis of groundwater samples collected December 14-15, 2015 at the Martin Lake Steam Electric Station in Tatum, Texas. Data were reviewed for adherence to project objectives.

Intended Use of Data: To provide current data on concentrations of chemicals of concern (COCs) in the groundwater at the site.

Analyses requested included:

- Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Lead, Lithium, Molybdenum, Selenium, and Thallium by USEPA Method SW6020A – Metals Analysis;
- Chloride, Fluoride, and Sulfate by USEPA Method E300 – Anion Analysis;
- Mercury by USEPA Method SW7470A – Mercury Analysis;
- pH of Water by Standard Method M4500-H + B – pH of Water Analysis;
- Total Dissolved Solids (TDS) by Standard Method M2540C – TDS Analysis; and
- Radium 226 and 228 by USEPA Methods 904.0/SW846 9320 Modified and 903.1 Modified.

Data were reviewed and validated and the results of the review/validation are discussed in this Data Usability Summary (DUS). The following laboratory submittals and field data were examined:

- the reportable data,
- case narratives, and
- field notes with respect to field instrument calibrations, filtering procedures, sampling procedures, and preservation procedures prior to shipping the samples to the laboratory.

The results of supporting quality control (QC) analyses were summarized in the case narrative, included in this review, with the laboratory data package.

Introduction

Seventeen (17) groundwater samples were analyzed for the constituents listed above (Appendix III and Appendix IV constituents in the Coal Combustion Residuals Federal Rule). Table B-1 lists the field sample identifications cross-referenced to the laboratory identifications.

Project Objectives

Project quality QC objectives were established in conformance to the requirements of *SW-846 Test Methods for Evaluating Solid Waste Physical/Chemical Methods* and *Standard Methods*. Laboratory control sample and sample duplicate recovery QC criteria were 70 – 130% recovery (%R) for metals and inorganics. Laboratory recovery QC criteria were 30% Relative Percent Difference (RPD). Field duplicate recovery QC criteria were 50% RPD.

Data Review / Validation Results

Analytical Results

Non-detected results (ND) are reported as less than the value of the method detection limit (MDL) and received a "U" flag. Analytes detected between the method quantitation limit (MQL) and the MDL were qualified with a "J-flag" to denote that the reported value was considered to be estimated. If a QC result was found outside of the review criteria, the reviewer applied a data qualifier and bias code to the associated sample data if the analyte was detected. Sample data were not qualified if recoveries exceeded QC criteria and the analyte was not detected.

Preservation and Holding Times

Samples were evaluated for agreement with the chain-of-custody (COC). All samples were received in the appropriate containers and in good condition with the paperwork filled out properly. Sample receipt temperatures were within the acceptance criteria of 4 ± 2 °C. Samples were prepared and analyzed within holding times as specified in the analysis methods.

Calibrations

The initial and continuing calibration data met laboratory control limits.

Blanks

No field blanks were used because the sampling event did not include volatile or semi-volatile compounds.

All laboratory method blank results were reported as non-detected or below applicable assessment levels with the exception of the following:

For Metals analysis performed on 1/7/2016 Boron was detected below the reporting limit in the method blank. All samples may be biased high for this analyte. No further corrective actions were taken.

No equipment blank was collected

Surrogate Recoveries

The analytical procedures used did not require surrogates; therefore, surrogate recovery is not applicable.

Laboratory Control Samples

Laboratory control sample (LCS) recoveries were within QC acceptance limits for all LCS analyses.

Matrix Spike/Matrix Spike Duplicates

MS/MSD percent recoveries were within acceptable control limits for all samples with the exception of the following:

For Metals analysis performed on 1/5/2016 the matrix spike and matrix spike duplicate recoveries were out of control limits for Calcium. These are flagged accordingly in the QC summary report. The sample selected for the MS and MSD was from this work order. The LCS was within control limits for these analytes. No further corrective actions were taken.

Field Precision

No sample duplicates were taken during this sampling event.

Field Procedures

Groundwater samples were collected using low-flow procedures with a peristaltic, stainless steel submersible pump, or bladder pump and placed in unpreserved 250-ml plastic bottles and 500-ml plastic bottles preserved with HNO_3. Wells were purged until groundwater parameters (temperature, pH, specific conductivity, dissolved oxygen, redox, and turbidity) stabilized to within +/- 10%.

Summary

Groundwater analytical data are usable for the purpose of determining current COC concentrations in the groundwater at the site with no qualifications added as a result of this evaluation.

Table B-1. Cross-Reference Field Sample Identifications and Laboratory Identifications

Field Identification	Laboratory Identification
H-29	1512236-01
H-30	1512236-02
H-31	1512236-03
H-32	1512236-04
H-27	1512236-05
H-28	1512236-06
H-26	1512236-07
H-33	1512236-08
MW-20A	1512236-09
PDP-22	1512236-10
MW-19	1512236-11
PDP-23	1512236-12
PDP-26	1512236-13
MW-17A	1512236-14
PDP-24	1512236-15
MW-18A	1512236-16
PDP-25	1512236-17

Prepared by: Lindsey Sydow___ Date: June 6, 2017

Data Usability Summary
Luminant – Martin Lake Steam Electric Station
February 23-24, 2016
Groundwater Monitoring Event
DHL Analytical Data Package 1602269

Pastor, Behling & Wheeler, LLC reviewed one data package from DHL Analytical for the analysis of groundwater samples collected February 23-24, 2016 at the Martin Lake Steam Electric Station in Tatum, Texas. Data were reviewed for adherence to project objectives.

Intended Use of Data: To provide current data on concentrations of chemicals of concern (COCs) in the groundwater at the site.

Analyses requested included:

- Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Lead, Lithium, Molybdenum, Selenium, and Thallium by USEPA Method SW6020A – Metals Analysis;
- Chloride, Fluoride, and Sulfate by USEPA Method E300 – Anion Analysis;
- Mercury by USEPA Method SW7470A – Mercury Analysis;
- pH of Water by Standard Method M4500-H + B – pH of Water Analysis;
- Total Dissolved Solids (TDS) by Standard Method M2540C – TDS Analysis; and
- Radium 226 and 228 by USEPA Methods 904.0/SW846 9320 Modified and 903.1 Modified.

Data were reviewed and validated and the results of the review/validation are discussed in this Data Usability Summary (DUS). The following laboratory submittals and field data were examined:

- the reportable data,
- case narratives, and
- field notes with respect to field instrument calibrations, filtering procedures, sampling procedures, and preservation procedures prior to shipping the samples to the laboratory.

The results of supporting quality control (QC) analyses were summarized in the case narrative, included in this review, with the laboratory data package.

Introduction

Seventeen (17) groundwater samples were analyzed for the constituents listed above (Appendix III and Appendix IV constituents in the Coal Combustion Residuals Federal Rule). Table B-1 lists the field sample identifications cross-referenced to the laboratory identifications.

Project Objectives

Project quality QC objectives were established in conformance to the requirements of *SW-846 Test Methods for Evaluating Solid Waste Physical/Chemical Methods* and *Standard Methods*. Laboratory control sample and sample duplicate recovery QC criteria were 70 – 130% recovery (%R) for metals and inorganics. Laboratory recovery QC criteria were 30% Relative Percent Difference (RPD). Field duplicate recovery QC criteria were 50% RPD.

Data Review / Validation Results

Analytical Results

Non-detected results (ND) are reported as less than the value of the method detection limit (MDL) and received a "U" flag. Analytes detected between the method quantitation limit (MQL) and the MDL were qualified with a "J-flag" to denote that the reported value was considered to be estimated. If a QC result was found outside of the review criteria, the reviewer applied a data qualifier and bias code to the associated sample data if the analyte was detected. Sample data were not qualified if recoveries exceeded QC criteria and the analyte was not detected.

Preservation and Holding Times

Samples were evaluated for agreement with the chain-of-custody (COC). All samples were received in the appropriate containers and in good condition with the paperwork filled out properly. Sample receipt temperatures were within the acceptance criteria of 4 ± 2 °C. Samples were prepared and analyzed within holding times as specified in the analysis methods.

Calibrations

The initial and continuing calibration data met laboratory control limits.

Blanks

No field blanks were used because the sampling event did not include volatile or semi-volatile compounds.

All laboratory method blank results were reported as non-detected or below applicable assessment levels with the exception of the following:

For Metals analysis performed on 3/7/2016 Boron was detected below the reporting limit in the method blanks. All associated samples may be biased high for this analyte. No further corrective actions were taken.

For TDS analysis performed on 2/26/2016 TDS was detected at the reporting limit in the method blank. All associated samples were detected greater than 10 times the amount in the blank. No further corrective actions were taken.

No equipment blank was collected

Surrogate Recoveries

The analytical procedures used did not require surrogates; therefore, surrogate recovery is not applicable.

Laboratory Control Samples

Laboratory control sample (LCS) recoveries were within QC acceptance limits for all LCS analyses.

Matrix Spike/Matrix Spike Duplicates

MS/MSD percent recoveries were within acceptable control limits for all samples with the exception of the following:

For Metals analysis performed on 3/7/2016 the matrix spike and matrix spike duplicate recoveries were above control limits for Boron. These are flagged accordingly in the QC summary report. The sample selected for the MS and MSD was not from this work order. The LCS was within control limits for this analyte. No further corrective actions were taken.

Field Precision

No sample duplicates were taken during this sampling event.

Field Procedures

Groundwater samples were collected using low-flow procedures with a peristaltic, stainless steel submersible pump, or bladder pump and placed in unpreserved 250-ml plastic bottles and 500-ml plastic bottles preserved with HNO_3. Wells were purged until groundwater parameters (temperature, pH, specific conductivity, dissolved oxygen, redox, and turbidity) stabilized to within +/- 10%.

Summary

Groundwater analytical data are usable for the purpose of determining current COC concentrations in the groundwater at the site with no qualifications added as a result of this evaluation.

Table B-1. Cross-Reference Field Sample Identifications and Laboratory Identifications

Field Identification	Laboratory Identification
MW-19	1602269-01
PDP-22	1602269-02
MW-18A	1602269-03
PDP-26	1602269-04
MW-20A	1602269-05
H-30	1602269-06
H-33	1602269-07
H-26	1602269-08
H-31	1602269-09
H-32	1602269-10
H-28	1602269-11
H-29	1602269-12
H-27	1602269-13
PDP-23	1602269-14
PDP-25	1602269-15
MW-17A	1602269-16
PDP-24	1602269-17

Prepared by: Lindsey Sydow___ Date: June 6, 2017

Data Usability Summary
Luminant – Martin Lake Steam Electric Station
April 5-6, 2016
Groundwater Monitoring Event
DHL Analytical Data Packages 1604052 and 1604071

Pastor, Behling & Wheeler, LLC reviewed two data packages from DHL Analytical for the analysis of groundwater samples collected April 5-6, 2016 at the Martin Lake Steam Electric Station in Tatum, Texas. Data were reviewed for adherence to project objectives.

Intended Use of Data: To provide current data on concentrations of chemicals of concern (COCs) in the groundwater at the site.

Analyses requested included:

- Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Lead, Lithium, Molybdenum, Selenium, and Thallium by USEPA Method SW6020A – Metals Analysis;
- Chloride, Fluoride, and Sulfate by USEPA Method E300 – Anion Analysis;
- Mercury by USEPA Method SW7470A – Mercury Analysis;
- pH of Water by Standard Method M4500-H + B – pH of Water Analysis;
- Total Dissolved Solids (TDS) by Standard Method M2540C – TDS Analysis; and
- Radium 226 and 228 by USEPA Methods 904.0/SW846 9320 Modified and 903.1 Modified.

Data were reviewed and validated and the results of the review/validation are discussed in this Data Usability Summary (DUS). The following laboratory submittals and field data were examined:

- the reportable data,
- case narratives, and
- field notes with respect to field instrument calibrations, filtering procedures, sampling procedures, and preservation procedures prior to shipping the samples to the laboratory.

The results of supporting quality control (QC) analyses were summarized in the case narrative, included in this review, with the laboratory data package.

Introduction

Nineteen (19) groundwater samples were analyzed for the constituents listed above (Appendix III and Appendix IV constituents in the Coal Combustion Residuals Federal Rule). Table B-1 lists the field sample identifications cross-referenced to the laboratory identifications.

Project Objectives

Project quality QC objectives were established in conformance to the requirements of *SW-846 Test Methods for Evaluating Solid Waste Physical/Chemical Methods* and *Standard Methods*. Laboratory control sample and sample duplicate recovery QC criteria were 70 – 130% recovery (%R) for metals and inorganics. Laboratory recovery QC criteria were 30% Relative Percent Difference (RPD). Field duplicate recovery QC criteria were 50% RPD.

Data Review / Validation Results

Analytical Results

Non-detected results (ND) are reported as less than the value of the method detection limit (MDL) and received a "U" flag. Analytes detected between the method quantitation limit (MQL) and the MDL were qualified with a "J-flag" to denote that the reported value was considered to be estimated. If a QC result was found outside of the review criteria, the reviewer applied a data qualifier and bias code to the associated sample data if the analyte was detected. Sample data were not qualified if recoveries exceeded QC criteria and the analyte was not detected.

Preservation and Holding Times

Samples were evaluated for agreement with the chain-of-custody (COC). All samples were received in the appropriate containers and in good condition with the paperwork filled out properly. Sample receipt temperatures were within the acceptance criteria of 4 ± 2 °C. Samples were prepared and analyzed within holding times as specified in the analysis methods.

Calibrations

The initial and continuing calibration data met laboratory control limits.

Blanks

No field blanks were used because the sampling event did not include volatile or semi-volatile compounds.

All laboratory method blank results were reported as non-detected or below applicable assessment levels.

One equipment blank was collected, with all results being below applicable assessment levels.

Surrogate Recoveries

The analytical procedures used did not require surrogates; therefore, surrogate recovery is not applicable.

Laboratory Control Samples

Laboratory control sample (LCS) recoveries were within QC acceptance limits for all LCS analyses.

Matrix Spike/Matrix Spike Duplicates

MS/MSD percent recoveries were within acceptable control limits for all samples with the exception of the following:

For Metals analysis performed on 4/8/2016, 4/11/2016, and 4/15/2016 (data package 1604052) the matrix spike and matrix spike duplicate recoveries were out of control limits for Boron and/or Calcium. These are flagged accordingly in the QC summary report. The sample selected for the MS and MSD on 4/8/2016 was not from this work order. The sample selected for the MS and MSD on 4/11/2016 and 4/15/2016 was from this work order. The LCSs were within control limits for these analytes. No further corrective actions were taken.

For Metals analysis performed on 4/11/2016, 4/15/2016, and 4/20/2016 (data package 1604071) the matrix spike or matrix spike duplicate recoveries were out of control limits for Boron and/or Calcium

These are flagged accordingly in the QC summary report. The samples selected for the MSs and MSDs were not from this work order. The LCSs were within control limits for these analytes. No further corrective actions were taken.

Field Precision

Field duplicate precision met the quality objective of RPDs <50% for the pair collected at H-30 for all constituents except for Lead. The results for this constituent for both the parent and duplicate samples have been flagged accordingly in the Appendix III and Appendix IV Baseline Groundwater Analytical Data tables.

Analytical testing for Radium 226 and 228 has reported inherent variability. The lab reports a result and a margin of error. To determine the acceptability of the duplicate sample, the margin of error for combined Radium is added and subtracted from the result to give a range in which the true result lies. If the parent range and duplicate range overlap, the duplicate data is considered acceptable. The parent and duplicate range overlap, and the duplicate data is considered acceptable.

Field Procedures

Groundwater samples were collected using low-flow procedures with a peristaltic, stainless steel submersible pump, or bladder pump and placed in unpreserved 250-ml plastic bottles and 500-ml plastic bottles preserved with HNO_3. Wells were purged until groundwater parameters (temperature, pH, specific conductivity, dissolved oxygen, redox, and turbidity) stabilized to within +/- 10%.

Summary

Groundwater analytical data are usable for the purpose of determining current COC concentrations in the groundwater at the site with no qualifications added as a result of this evaluation.

Table B-1. Cross-Reference Field Sample Identifications and Laboratory Identifications

Field Identification	Laboratory Identification
H-29	1604052-01
H-31	1604052-02
H-32	1604052-03
H-30	1604052-04
DUP-1	1604052-05
H-27	1604052-06
H-28	1604052-07
H-26	1604071-01
H-33	1604071-02
MW-17A	1604071-03
PDP-24	1604071-04
MW-19	1604071-05
PDP-22	1604071-06
PDP-23	1604071-07
MW-20A	1604071-08

Field Identification	Laboratory Identification
PDP-26	1604071-09
PDP-25	1604071-10
MW-18A	1604071-11
EB-1	1604071-12

Prepared by: Lindsey Sydow___ Date: June 9, 2017

Data Usability Summary
Luminant – Martin Lake Steam Electric Station
June 8-9, 2016
Groundwater Monitoring Event
DHL Analytical Data Package 1606122

Pastor, Behling & Wheeler, LLC reviewed one data package from DHL Analytical for the analysis of groundwater samples collected June 8-9, 2016 at the Martin Lake Steam Electric Station in Tatum, Texas. Data were reviewed for adherence to project objectives.

Intended Use of Data: To provide current data on concentrations of chemicals of concern (COCs) in the groundwater at the site.

Analyses requested included:

- Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Lead, Lithium, Molybdenum, Selenium, and Thallium by USEPA Method SW6020A – Metals Analysis;
- Chloride, Fluoride, and Sulfate by USEPA Method E300 – Anion Analysis;
- Mercury by USEPA Method SW7470A – Mercury Analysis;
- pH of Water by Standard Method M4500-H + B – pH of Water Analysis;
- Total Dissolved Solids (TDS) by Standard Method M2540C – TDS Analysis; and
- Radium 226 and 228 by USEPA Methods 904.0/SW846 9320 Modified and 903.1 Modified.

Data were reviewed and validated and the results of the review/validation are discussed in this Data Usability Summary (DUS). The following laboratory submittals and field data were examined:

- the reportable data,
- case narratives, and
- field notes with respect to field instrument calibrations, filtering procedures, sampling procedures, and preservation procedures prior to shipping the samples to the laboratory.

The results of supporting quality control (QC) analyses were summarized in the case narrative, included in this review, with the laboratory data package.

Introduction

Ten (10) groundwater samples were analyzed for the constituents listed above (Appendix III and Appendix IV constituents in the Coal Combustion Residuals Federal Rule). Table B-1 lists the field sample identifications cross-referenced to the laboratory identifications.

Project Objectives

Project quality QC objectives were established in conformance to the requirements of *SW-846 Test Methods for Evaluating Solid Waste Physical/Chemical Methods* and *Standard Methods*. Laboratory control sample and sample duplicate recovery QC criteria were 70 – 130% recovery (%R) for metals and inorganics. Laboratory recovery QC criteria were 30% Relative Percent Difference (RPD). Field duplicate recovery QC criteria were 50% RPD.

Data Review / Validation Results

Analytical Results

Non-detected results (ND) are reported as less than the value of the method detection limit (MDL) and received a "U" flag. Analytes detected between the method quantitation limit (MQL) and the MDL were qualified with a "J-flag" to denote that the reported value was considered to be estimated. If a QC result was found outside of the review criteria, the reviewer applied a data qualifier and bias code to the associated sample data if the analyte was detected. Sample data were not qualified if recoveries exceeded QC criteria and the analyte was not detected.

Preservation and Holding Times

Samples were evaluated for agreement with the chain-of-custody (COC). All samples were received in the appropriate containers and in good condition with the paperwork filled out properly. Sample receipt temperatures were within the acceptance criteria of 4 ± 2 °C. Samples were prepared and analyzed within holding times as specified in the analysis methods.

Calibrations

The initial and continuing calibration data met laboratory control limits.

Blanks

No field blanks were used because the sampling event did not include volatile or semi-volatile compounds.

All laboratory method blank results were reported as non-detected or below applicable assessment levels.

One equipment blank was collected, with all results being below applicable assessment levels.

Surrogate Recoveries

The analytical procedures used did not require surrogates; therefore, surrogate recovery is not applicable.

Laboratory Control Samples

Laboratory control sample (LCS) recoveries were within QC acceptance limits for all LCS analyses.

Matrix Spike/Matrix Spike Duplicates

MS/MSD percent recoveries were within acceptable control limits for all samples.

Serial Dilution/Post Dilution Spike

For Metals analysis performed on 6/13/2016 the PDS recovery was below control limits for Boron. This is flagged accordingly. The serial dilution was within control limits. No further corrective actions were taken.

Field Precision

No sample duplicates were taken during this sampling event.

Field Procedures

Groundwater samples were collected using low-flow procedures with a peristaltic, stainless steel submersible pump, or bladder pump and placed in unpreserved 250-ml plastic bottles and 500-ml plastic bottles preserved with HNO_3. Wells were purged until groundwater parameters (temperature, pH, specific conductivity, dissolved oxygen, redox, and turbidity) stabilized to within +/- 10%.

Summary

Groundwater analytical data are usable for the purpose of determining current COC concentrations in the groundwater at the site with no qualifications added as a result of this evaluation.

Table B-1. Cross-Reference Field Sample Identifications and Laboratory Identifications

Field Identification	Laboratory Identification
MW-17A	1606100-01
PDP-24	1606100-02
MW-18A	1606100-03
PDP-25	1606100-04
PDP-26	1606100-05
MW-20A	1606100-06
PDP-23	1606100-07
EB-1	1606100-08
PDP-22	1606100-09
MW-19	1606100-10

Prepared by: Lindsey Sydow___ Date: July 6, 2017

Data Usability Summary
Luminant – Martin Lake Steam Electric Station
August 9-11, 2016
Groundwater Monitoring Event
DHL Analytical Data Package 1608133

Pastor, Behling & Wheeler, LLC reviewed one data package from DHL Analytical for the analysis of groundwater samples collected August 9-11, 2016 at the Martin Lake Steam Electric Station in Tatum, Texas. Data were reviewed for adherence to project objectives.

Intended Use of Data: To provide current data on concentrations of chemicals of concern (COCs) in the groundwater at the site.

Analyses requested included:

- Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Lead, Lithium, Molybdenum, Selenium, and Thallium by USEPA Method SW6020A – Metals Analysis;
- Chloride, Fluoride, and Sulfate by USEPA Method E300 – Anion Analysis;
- Mercury by USEPA Method SW7470A – Mercury Analysis;
- pH of Water by Standard Method M4500-H + B – pH of Water Analysis;
- Total Dissolved Solids (TDS) by Standard Method M2540C – TDS Analysis; and
- Radium 226 and 228 by USEPA Methods 904.0/SW846 9320 Modified and 903.1 Modified.

Data were reviewed and validated and the results of the review/validation are discussed in this Data Usability Summary (DUS). The following laboratory submittals and field data were examined:

- the reportable data,
- case narratives, and
- field notes with respect to field instrument calibrations, filtering procedures, sampling procedures, and preservation procedures prior to shipping the samples to the laboratory.

The results of supporting quality control (QC) analyses were summarized in the case narrative, included in this review, with the laboratory data package.

Introduction

Twenty seven (27) groundwater samples were analyzed for the constituents listed above (Appendix III and Appendix IV constituents in the Coal Combustion Residuals Federal Rule). Table B-1 lists the field sample identifications cross-referenced to the laboratory identifications.

Project Objectives

Project quality QC objectives were established in conformance to the requirements of *SW-846 Test Methods for Evaluating Solid Waste Physical/Chemical Methods* and *Standard Methods*. Laboratory control sample and sample duplicate recovery QC criteria were 70 – 130% recovery (%R) for metals and inorganics. Laboratory recovery QC criteria were 30% Relative Percent Difference (RPD). Field duplicate recovery QC criteria were 50% RPD.

Data Review / Validation Results

Analytical Results

Non-detected results (ND) are reported as less than the value of the method detection limit (MDL) and received a "U" flag. Analytes detected between the method quantitation limit (MQL) and the MDL were qualified with a "J-flag" to denote that the reported value was considered to be estimated. If a QC result was found outside of the review criteria, the reviewer applied a data qualifier and bias code to the associated sample data if the analyte was detected. Sample data were not qualified if recoveries exceeded QC criteria and the analyte was not detected.

Preservation and Holding Times

Samples were evaluated for agreement with the chain-of-custody (COC). All samples were received in the appropriate containers and in good condition with the paperwork filled out properly. Sample receipt temperatures were within the acceptance criteria of 4 ± 2 °C. Samples were prepared and analyzed within holding times as specified in the analysis methods.

Calibrations

The initial and continuing calibration data met laboratory control limits with the exception of the following:

For Metals analysis performed on 8/18/2016 and 8/22/2016 LCVL3-160818 and LCVL2-160822 were out of control limits for Boron and Beryllium, respectively. These are flagged accordingly. The associated CCV3-160818 and CCV2-160822 were within control limits for these analytes. No further corrective actions were taken.

Blanks

No field blanks were used because the sampling event did not include volatile or semi-volatile compounds.

All laboratory method blank results were reported as non-detected or below applicable assessment levels.

One equipment blank was collected, with all results being below applicable assessment levels.

Surrogate Recoveries

The analytical procedures used did not require surrogates; therefore, surrogate recovery is not applicable.

Laboratory Control Samples

Laboratory control sample (LCS) recoveries were within QC acceptance limits for all LCS analyses.

Matrix Spike/Matrix Spike Duplicates

MS/MSD percent recoveries were within acceptable control limits for all samples with the exception of the following:

For Metals analysis (batch 76817) the matrix spike and matrix spike duplicate had low responses for the internal standard Bismuth. The associated analyte (Lead) was within control limits. No further corrective actions were taken.

For Metals analysis performed on 8/17/2016, 8/19/2016, 8/22/2016, 8/23/2016, and 8/24/2016, the matrix spike and matrix spike duplicate recoveries were outside control limits for a total of nine analytes. These are flagged accordingly in the QC summary report. The samples selected for the MS and MSD were not from this work order. The LCSs were within control limits for these analytes. No further corrective actions were taken.

Serial Dilution/Post Dilution Spikes

For Metals analysis performed on 8/23/2016, the PDS recovery was below control limits for Lithium. This is flagged accordingly. The serial dilution was within control limits for this analyte. No further corrective actions were taken.

Field Precision

Field duplicate precision met the quality objective of RPDs <50% for the pair collected at H-30 for all constituents.

Analytical testing for Radium 226 and 228 has reported inherent variability. The lab reports a result and a margin of error. To determine the acceptability of the duplicate sample, the margin of error for combined Radium is added and subtracted from the result to give a range in which the true result lies. If the parent range and duplicate range overlap, the duplicate data is considered acceptable. The parent and duplicate range overlap, and the duplicate data is considered acceptable.

Field Procedures

Groundwater samples were collected using low-flow procedures with a peristaltic, stainless steel submersible pump, or bladder pump and placed in unpreserved 250-ml plastic bottles and 500-ml plastic bottles preserved with HNO_3. Wells were purged until groundwater parameters (temperature, pH, specific conductivity, dissolved oxygen, redox, and turbidity) stabilized to within +/- 10%.

Summary

Groundwater analytical data are usable for the purpose of determining current COC concentrations in the groundwater at the site with no qualifications added as a result of this evaluation.

Table B-1. Cross-Reference Field Sample Identifications and Laboratory Identifications

Field Identification	Laboratory Identification
H-28	1608133-01
H-29	1608133-02
H-31	1608133-03
H-30	1608133-04
H-32	1608133-05
H-27	1608133-06
H-33	1608133-07
H-26	1608133-08
DUP-01	1608133-09
PDP-25	1608133-10

Field Identification	Laboratory Identification
PDP-24	1608133-11
MW-17A	1608133-12
PDP-23	1608133-13
MW-19	1608133-14
MW-20A	1608133-15
PDP-22	1608133-16
PDP-26	1608133-17
MW-18A	1608133-18
EB-1	1608133-19
BMW-11AR	1608133-20
BMW-19	1608133-21
BMW-18	1608133-22
BMW-20	1608133-23
BMW-24	1608133-24
BMW-23	1608133-25
BMW-22	1608133-26
BMW-21	1608133-27

Prepared by: Lindsey Sydow___ Date: July 6, 2017

Data Usability Summary
Luminant – Martin Lake Steam Electric Station
October 18-19, 2016
Groundwater Monitoring Event
DHL Analytical Data Packages 1610170 & 1610184

Pastor, Behling & Wheeler, LLC reviewed one data package from DHL Analytical for the analysis of groundwater samples collected October 18-19, 2016 at the Martin Lake Steam Electric Station in Tatum, Texas. Data were reviewed for adherence to project objectives.

Intended Use of Data: To provide current data on concentrations of chemicals of concern (COCs) in the groundwater at the site.

Analyses requested included:

- Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Lead, Lithium, Molybdenum, Selenium, and Thallium by USEPA Method SW6020A – Metals Analysis;
- Chloride, Fluoride, and Sulfate by USEPA Method E300 – Anion Analysis;
- Mercury by USEPA Method SW7470A – Mercury Analysis;
- pH of Water by Standard Method M4500-H + B – pH of Water Analysis;
- Total Dissolved Solids (TDS) by Standard Method M2540C – TDS Analysis; and
- Radium 226 and 228 by USEPA Methods 904.0/SW846 9320 Modified and 903.1 Modified.

Data were reviewed and validated and the results of the review/validation are discussed in this Data Usability Summary (DUS). The following laboratory submittals and field data were examined:

- the reportable data,
- case narratives, and
- field notes with respect to field instrument calibrations, filtering procedures, sampling procedures, and preservation procedures prior to shipping the samples to the laboratory.

The results of supporting quality control (QC) analyses were summarized in the case narrative, included in this review, with the laboratory data package.

Introduction

Ten (10) groundwater samples were analyzed for the constituents listed above (Appendix III and Appendix IV constituents in the Coal Combustion Residuals Federal Rule). Table B-1 lists the field sample identifications cross-referenced to the laboratory identifications.

Project Objectives

Project quality QC objectives were established in conformance to the requirements of *SW-846 Test Methods for Evaluating Solid Waste Physical/Chemical Methods* and *Standard Methods*. Laboratory control sample and sample duplicate recovery QC criteria were 70 – 130% recovery (%R) for metals and inorganics. Laboratory recovery QC criteria were 30% Relative Percent Difference (RPD). Field duplicate recovery QC criteria were 50% RPD.

Data Review / Validation Results

Analytical Results

Non-detected results (ND) are reported as less than the value of the method detection limit (MDL) and received a "U" flag. Analytes detected between the method quantitation limit (MQL) and the MDL were qualified with a "J-flag" to denote that the reported value was considered to be estimated. If a QC result was found outside of the review criteria, the reviewer applied a data qualifier and bias code to the associated sample data if the analyte was detected. Sample data were not qualified if recoveries exceeded QC criteria and the analyte was not detected.

Preservation and Holding Times

Samples were evaluated for agreement with the chain-of-custody (COC). All samples were received in the appropriate containers and in good condition with the paperwork filled out properly. Sample receipt temperatures were within the acceptance criteria of 4 ± 2 °C. Samples were prepared and analyzed within holding times as specified in the analysis methods.

Calibrations

The initial and continuing calibration data met laboratory control limits for all constituents.

Blanks

No field blanks were used because the sampling event did not include volatile or semi-volatile compounds.

All laboratory method blank results were reported as non-detected or below applicable assessment levels.

One equipment blank was collected, with all results being below applicable assessment levels.

Surrogate Recoveries

The analytical procedures used did not require surrogates; therefore, surrogate recovery is not applicable.

Laboratory Control Samples

Laboratory control sample (LCS) recoveries were within QC acceptance limits for all LCS analyses.

Matrix Spike/Matrix Spike Duplicates

MS/MSD percent recoveries were within acceptable control limits for all samples with the exception of the following:

For Metals analysis performed on 11/1/2016 the matrix spike and matrix spike duplicate recoveries were below control limits for Calcium. These are flagged accordingly in the QC summary report. The sample selected for the MS and MSD was from this work order. The LCS was within control limits for this analyte. No further corrective actions were taken.

Serial Dilution/Post Dilution Spikes

SD/PDS recoveries were within acceptable control limits for all samples.

Field Precision

No sample duplicates were collected during this sampling event.

Field Procedures

Groundwater samples were collected using low-flow procedures with a peristaltic, stainless steel submersible pump, or bladder pump and placed in unpreserved 250-ml plastic bottles and 500-ml plastic bottles preserved with HNO_3. Wells were purged until groundwater parameters (temperature, pH, specific conductivity, dissolved oxygen, redox, and turbidity) stabilized to within +/- 10%.

Summary

Groundwater analytical data are usable for the purpose of determining current COC concentrations in the groundwater at the site with no qualifications added as a result of this evaluation.

Table B-1. Cross-Reference Field Sample Identifications and Laboratory Identifications

Field Identification	Laboratory Identification
MW-17A	1610170-01
PDP-24	1610170-02
PDP-25	1610170-03
PDP-26	1610170-04
MW-20A	1610170-05
PDP-23	1610170-06
MW-19	1610184-01
PDP-22	1610184-02
MW-18A	1610184-03
EB-1	1610184-04

Prepared by: Lindsey Sydow___ Date: August 4, 2017

Data Usability Summary
Luminant – Martin Lake Steam Electric Station
December 12-13, 2016
Groundwater Monitoring Event
DHL Analytical Data Packages 1612133 & 1612144

Pastor, Behling & Wheeler, LLC reviewed one data package from DHL Analytical for the analysis of groundwater samples collected December 12-13, 2016 at the Martin Lake Steam Electric Station in Tatum, Texas. Data were reviewed for adherence to project objectives.

Intended Use of Data: To provide current data on concentrations of chemicals of concern (COCs) in the groundwater at the site.

Analyses requested included:

- Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Lead, Lithium, Molybdenum, Selenium, and Thallium by USEPA Method SW6020A – Metals Analysis;
- Chloride, Fluoride, and Sulfate by USEPA Method E300 – Anion Analysis;
- Mercury by USEPA Method SW7470A – Mercury Analysis;
- pH of Water by Standard Method M4500-H + B – pH of Water Analysis;
- Total Dissolved Solids (TDS) by Standard Method M2540C – TDS Analysis; and
- Radium 226 and 228 by USEPA Methods 904.0/SW846 9320 Modified and 903.1 Modified.

Data were reviewed and validated and the results of the review/validation are discussed in this Data Usability Summary (DUS). The following laboratory submittals and field data were examined:

- the reportable data,
- case narratives, and
- field notes with respect to field instrument calibrations, filtering procedures, sampling procedures, and preservation procedures prior to shipping the samples to the laboratory.

The results of supporting quality control (QC) analyses were summarized in the case narrative, included in this review, with the laboratory data package.

Introduction

Nine (9) groundwater samples were analyzed for the constituents listed above (Appendix III and Appendix IV constituents in the Coal Combustion Residuals Federal Rule). Table B-1 lists the field sample identifications cross-referenced to the laboratory identifications.

Project Objectives

Project quality QC objectives were established in conformance to the requirements of *SW-846 Test Methods for Evaluating Solid Waste Physical/Chemical Methods* and *Standard Methods*. Laboratory control sample and sample duplicate recovery QC criteria were 70 – 130% recovery (%R) for metals and inorganics. Laboratory recovery QC criteria were 30% Relative Percent Difference (RPD). Field duplicate recovery QC criteria were 50% RPD.

Data Review / Validation Results

Analytical Results

Non-detected results (ND) are reported as less than the value of the method detection limit (MDL) and received a "U" flag. Analytes detected between the method quantitation limit (MQL) and the MDL were qualified with a "J-flag" to denote that the reported value was considered to be estimated. If a QC result was found outside of the review criteria, the reviewer applied a data qualifier and bias code to the associated sample data if the analyte was detected. Sample data were not qualified if recoveries exceeded QC criteria and the analyte was not detected.

Preservation and Holding Times

Samples were evaluated for agreement with the chain-of-custody (COC). All samples were received in the appropriate containers and in good condition with the paperwork filled out properly. Sample receipt temperatures were within the acceptance criteria of 4 ± 2 °C. Samples were prepared and analyzed within holding times as specified in the analysis methods.

Calibrations

The initial and continuing calibration data met laboratory control limits for all constituents with the exception of the following:

For Metals analysis performed on 12/15/2016 Boron was detected above the reporting limit in CCV8-161215. The associated samples are QC samples only. No further corrective actions were taken.

For Metals analysis performed on 12/15/2016 CCV7-161215, LCVL7-161215, CCV8-161215, and LCVL8-161215 were above control limits for Boron. These are flagged accordingly. The associated samples were QC samples only. No further corrective actions were taken.

For Metals analysis performed on 12/16/2016 LCVL4-161216 and LCVL5-161216 were out of control limits for Boron. These are flagged accordingly. The associated CCVs were within control limits for this analyte. No further corrective actions were taken.

For Metals analysis performed on 12/23/2016 LCVL6-161223 was slightly above control limits for Beryllium. This is flagged accordingly in the QC summary report. The associated CCV was within control limits for this analyte. No further corrective actions were taken.

Blanks

No field blanks were used because the sampling event did not include volatile or semi-volatile compounds.

All laboratory method blank results were reported as non-detected or below applicable assessment levels.

No equipment blank was collected for this sampling event.

Surrogate Recoveries

The analytical procedures used did not require surrogates; therefore, surrogate recovery is not applicable.

Laboratory Control Samples

Laboratory control sample (LCS) recoveries were within QC acceptance limits for all LCS analyses.

Matrix Spike/Matrix Spike Duplicates

MS/MSD percent recoveries were within acceptable control limits for all samples with the exception of the following:

For Metals analysis performed on 12/15/2016 the matrix spike and matrix spike duplicate recoveries were out ofcontrol limits for Boron and/or Calcium. These are flagged accordingly in the QC summary report. The sample selected for the MS and MSD was not from this work order. The LCS was within control limits for this analyte. No further corrective actions were taken.

Serial Dilution/Post Dilution Spikes

SD/PDS recoveries were within acceptable control limits for all samples with the exception of the following:

For Metals analysis performed on 12/20/2016 the RPD for the serial dilution was slightly above control limits for Boron. This is flagged accordingly. The PDS was within control limits for this analyte. No further corrective actions were taken.

Field Precision

No sample duplicates were collected during this sampling event.

Field Procedures

Groundwater samples were collected using low-flow procedures with a peristaltic, stainless steel submersible pump, or bladder pump and placed in unpreserved 250-ml plastic bottles and 500-ml plastic bottles preserved with HNO_3. Wells were purged until groundwater parameters (temperature, pH, specific conductivity, dissolved oxygen, redox, and turbidity) stabilized to within +/- 10%.

Summary

Groundwater analytical data are usable for the purpose of determining current COC concentrations in the groundwater at the site with no qualifications added as a result of this evaluation.

Table B-1. Cross-Reference Field Sample Identifications and Laboratory Identifications

Field Identification	Laboratory Identification
MW-18A	1612133-01
PDP-26	1612133-02
PDP-22	1612133-03
PDP-25	1612144-01
MW-20A	1612144-02
PDP-23	1612144-03
MW-19	1612144-04
MW-17A	1612144-05

Field Identification	Laboratory Identification
PDP-24	1612144-06

Prepared by: Lindsey Sydow___ Date: August 8, 2017

APPENDIX C

Statistical Approach to Establishing Baseline Concentrations

Appendix C. STATISTICAL APPROACH TO ESTABLISHING BASELINE CONCENTRATIONS

This appendix summarizes the statistical approach used for establishing baseline groundwater quality concentrations for the PDP-5 Coal Combustion Residual (CCR) groundwater monitoring system. The following statistical approach was selected to demonstrate groundwater compliance under the CCR Rule:

- Use of intrawell data evaluations, which compare new sample data to data from baseline sampling events at each compliance well.

- Use of upper prediction limits (UPLs) to develop site-specific background concentrations for all Appendix III and Appendix IV constituents. This approach is a common statistical method used to evaluate groundwater compliance for Subtitle D landfill facilities and is one of the approved options for groundwater quality data statistical evaluations under the CCR Rule.

- After every detection monitoring event, Appendix III constituent concentrations from each compliance well are compared to background UPLs to ascertain if a statistically significant increase above background exists. Background UPLs are based on a 1-of-2 resampling approach, meaning that if one or more constituent concentrations in a compliance well are above their respective baseline concentration, a resample can be collected to validate or invalidate the baseline concentration exceedance.

- If assessment monitoring is required, the 95% lower confidence limit of the mean (LCL) is calculated after each assessment monitoring event for each Appendix IV constituent and compliance well. The data set used to calculate LCLs is based on current and historical constituent concentrations for a compliance well. A statistically significant increase over the Groundwater Protection Standard (GWPS) has occurred at a CCR unit when the LCL for at least one assessment monitoring constituent at a well is greater than the appropriate GWPS. Development of the GWPSs is discussed in Section C.4.

This approach follows the Statistical Analysis Plan-Revision 1 (SAP) (WSP Golder, 2022) and conforms to the 40 CFR 257 rules as well as EPA's *Unified Guidance: Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities* (EPA, 2009) (hereafter, referred to as the Unified Guidance) and the American Society for Testing and Materials (ASTM) standard D6312-17, *Developing Appropriate Statistical Approaches for Groundwater Detection Monitoring Programs at waste Disposal Facilities* (ASTM, 2017). The statistical methodology is designed to detect a release from the facility at the earliest indication so that it is protective of human health and the environment.

Section 257.94(b) of the CCR Rule requires that a minimum of eight independent groundwater samples from each compliance well be collected and analyzed for the constituents listed in Appendix III and IV to

Part 257 no later than October 17, 2017. To satisfy this requirement, eight groundwater monitoring events were performed from October 2015 through December 2016 using the nine compliance wells (MW-17A, MW-18A, MW-19, MW-20A, PDP-22, PDP-23, PDP-24, PDP-25, and PDP-26) in the PDP-5 CCR monitoring well system.

Prior to performing background data evaluations, data from the compliance wells were prepared for analysis. Methods for handling field duplicate samples and handling non-detects were implemented during this data preparation phase, as presented in Section C.1. Since detection monitoring has been ongoing since 2017, additional data are available from compliance wells for Appendix III constituents, and may be used with baseline data to establish background values (EPA, 2009). The baseline data (2015-2016) and newer detection monitoring data from 2017 through 2023 were compared to evaluate how baseline data and detection monitoring data may be used to establish background values, as discussed in Section C.2. Once the background data sets were determined, statistical assumptions were evaluated to assess the independence of background data prior to calculating the UPLs, as discussed in Section C.3. In order to calculate UPLs, the distribution of each data set was defined and a site-wide Type I experiment wise error rate was established. UPLs based on a 1-of-2 resampling approach were calculated for detected constituents to establish baseline values for compliance wells, as further described in Section C.4. Details about the approach used to evaluate detection and assessment monitoring data after baseline concentrations were established are provided in Section C.5.

C.1 Data Preparation

Analytical data from wells in the groundwater monitoring network at a CCR unit during each sampling event are first reviewed for usability after final data packages are received from the laboratory. The analytical data are then prepared for statistical analysis. The raw sample data can be found in Tables C-1 and C-2 for the Appendix III and Appendix IV constituents, respectively.

Methods for handling duplicate and non-detect data are implemented during this data preparation phase to comply with the performance standards outlined in 40 CFR 257.93. Field duplicates and data rejected after data validation are removed from the data set. Only the primary samples are retained for the statistical evaluation. For each case where a constituent/well was resampled, the lower of the two concentrations was used in the background evaluation and calculation so that the estimated background value was not overestimated.

In accordance with EPA guidance, non-detects were handled by using one of two approaches depending on the percentage of detected concentrations:

- If a constituent was detected in at least 85% of samples, a simple substitution method was used in which half of the sample detection limit was substituted as a proxy concentration (EPA, 2009; EPA, 2000).
- If a constituent was detected in at least 50% of the samples but no more than 85% of the samples, the Robust Regression Order Statistics (RROS) method was used to estimate summary statistics such as the mean and standard deviation (EPA, 2009).

If the constituent was detected in fewer than 50% of the samples, non-detects were handled by using nonparametric statistical approaches to evaluate the data and to prepare summary statistics (EPA, 2009; EPA, 2000). J-flagged data, estimated concentrations between the sample detection limit and the reporting limit, were defined as detected concentrations.

C.2 Establishing Appendix III Background Data Set

In accordance with Section 257.94(b), nine groundwater samples were collected from 2015 through 2016 from each of the compliance wells and analyzed for Appendix III and Appendix IV constituents. Since 2017, groundwater has been sampled and Appendix III constituents have been analyzed as part of the detection monitoring program. The detection monitoring program does not include analyzing Appendix IV constituents, and so no additional data were available after 2016 for the Appendix IV constituents. Since there are a sufficient number of post-background analytical data for the Appendix III constituents, background values may be estimated using the initial baseline data as well as the newer data. A two-way analysis of variance (ANOVA) or Kruskal-Wallis test was performed to identify statistical difference between the baseline and newer sampling data. ANOVA and Kruskal-Wallis tests are appropriate to determine if, on average, there are statistical differences in concentrations between the sampling events (initial baseline vs. newer data). The Fligner or Levene test was performed to test for lack of equal variances between compliance wells, using α=0.01 error rate. To maintain a 95% level of confidence for the ANOVA and Kruskal-Wallis tests for each compliance well across the seven Appendix III constituents, a statistical significant difference was identified using a single test error rate of $1-(1-0.05)^{1/7}=0.0073$.

Background data sets were evaluated based on the results of the ANOVA and Kruskal-Wallis tests. If a constituent's concentrations are statistically different between the sampling events (baseline vs. newer

data), then data that most represent current, unaffected concentrations were used. Results of the ANOVA and Kruskal-Wallis tests are presented in Table C-3. The ANOVA and Kruskal-Wallis test results indicate constituent concentrations during the initial baseline and post-baseline periods are generally similar. The Appendix III constituent concentrations at each compliance well from the sampling events through 2023 are within a reasonable range of concentrations, and although the Appendix III constituent concentrations fluctuate over time from 2015 through 2023, the combined data set can provide a better reflection of the variability of the constituent concentrations at each well. Therefore, the combined data from 2015 to 2023 were used to estimate baseline conditions at each PDP-5 compliance well.

C.3 Statistical Assumptions

In accordance with Section 257.94(6), the background groundwater sample data used in calculating the UPLs were evaluated for seasonal variability as well as temporal correlation in the data to assess the independence and usability of the background data to calculate UPLs. An evaluation of spatial variation was not necessary and not conducted for PDP-5 since baseline concentrations were estimated for each monitoring well and not for a combination of wells. Statistical independence was checked by testing for:

- Temporal stationarity,
- Autocorrelation, and
- Statistical data outliers.

The statistical software **R** (The R Foundation, 2023) and the EnvStats package (Envstats, 2023) were used to perform the statistical tests to check the validity of independent samples.

To identify the statistical significance across the wells and/or detected Appendix III or Appendix IV constituents, a Type I experiment wise error rate, α, of 0.05 was used and a single test error rate was defined for each statistical test. The single test error rate, was based on the number of constituents detected (d^*), and in some cases the number of constituents detected at least 50% of the time, for a given constituent list. For instance, the single test error rate associated with a statistical test for one of the seven detected Appendix III constituents ($d^*=7$) equals $1-(1-\alpha)^{1/d^*} = 1-(1-\alpha)^{1/7} = 0.0073$.

The spatial stationarity component is not considered applicable to intrawell analyses, which was the statistical analysis method adopted in the Statistical Analysis Plan for PDP-5 (WSP Golder, 2022). The temporal stationarity and autocorrelation component is considered addressed after evaluation of the background data as a whole, showing general consistency with the data obtained. Constituent and well combinations did not exhibit decreasing or increasing temporal trends or autocorrelation in most cases. In cases where potential trends and/or autocorrelation were identified, the constituent concentrations were generally within the range of detected concentrations in the other compliance wells or less than MCLs. As such, the data are considered usable.

Handling Outliers

Outliers are "extreme, unusual-looking measurements" and the Unified Guidance recommends testing for outliers to attempt to determine whether a suspect outlier was drawn from the same sample population as the rest of the data.

Before establishing baseline values for the detection monitoring or assessment monitoring programs, two steps were taken to check for suspect outliers for each detected constituent for each compliance well: a box plot was created to identify suspect outliers and if the constituent had at least 50% detected concentrations without the suspect outlier then the Dixon's test was performed as a formal test to check if a suspect outlier is also a statistical outlier. Box plots and results for the Dixon's test were generated using the statistical software **R** (The R Foundation, 2023). Box plots are provided in Figures C-1 through C-138 and Table C-4 presents the suspect outliers based on the box plots and presents the results from the Dixon's test, based on a 95% level of confidence.

Several Appendix III constituent results were identified as statistical outliers for some compliance wells; however, the concentrations are within the range of detected baseline concentrations in the compliance wells at PDP-5 and other background wells in the area (e.g., at the Martin Lake Ash Ponds); therefore the Appendix III statistical outliers were not removed from the baseline data set. For the Appendix IV constituents that were identified as statistical outliers for some compliance wells, the concentrations are all below appropriate MCL or EPA Regional Screening Level (RSL) and so none of the Appendix IV statistical outliers were removed from the baseline data set. For cases where the Dixon's test could not be performed on the suspect outliers, the suspect outliers are typically within the concentration range of other compliance wells and/or are below MCLs, and do not have concentrations that may unfairly affect the estimated baseline values for background.

C.4 Statistical Approach for Calculating UPLs

UPLs were calculated for each detected constituent and compliance well to establish baseline values for background. UPLs were calculated to include a 1-of-2 retesting strategy to ensure comparisons are statistically powerful and to achieve the site-wide false positive rate (SWFPR). A 1-of-2 retesting strategy means that if one or more constituent concentrations in a compliance well are above their respective baseline concentration, a resample can be collected to validate or invalidate the baseline concentration exceedance.

Background data distributions were defined in accordance with EPA guidance (EPA, 2000; EPA, 2002; EPA, 2009; EPA, 2017; SWDIV, 1998). UPLs were calculated based on the SWFPR and defined background data distribution. Power rates were defined for each calculated UPL. The open source, statistical software **R** (The R Foundation, 2023) was used to perform all statistical distribution tests and to calculate UPLs.

Achieving the SWFPR

UPLs were computed using a significance level that ensures a cumulative SWFPR or Type I experiment wise error rate for yearly monitoring that is no more than 10%. That means, a single test error rate for the UPLs must be considerably lower than 0.10. The single test error rate depends on the number of detected constituents and number of compliance wells evaluated in the CCR monitoring program, defined as: $1-(1-\alpha)^{1/cw}$, where

- α=0.10,
- c=7 or 13, the number detected constituents for the monitoring program for Appendix III and Appendix IV constituents, respectively; and
- w=9, the number of compliance wells at PDP-5.

The single test error rate for the UPLs is 0.0017 and 0.00090 for the detected Appendix III constituents and Appendix IV constituents, respectively. Since field pH has two bounds, a lower and upper prediction limit, the SWPFR for field pH is one-half of the appropriate SWFPR value shown above.

Defining a Distribution and Type of UPL

The type of UPL calculated is based on a data set's defined distribution. Figure C-139 outlines the steps that were taken to define whether a data set follows a normal, gamma, lognormal, or nonparametric distribution. Distributional test results and defined distributions are presented in Table C-5.

The type of UPL computed (e.g., parametric or nonparametric) was based on the detection frequency and the defined data distribution. For a constituent with no detections in the baseline data, the UPL was set to the reporting limit (EPA, 2009). For a constituent with at least 50% detections, the UPL was adjusted for non-detected concentration(s), as described previously in the Data Preparation section, Section C.1, and the appropriate UPL calculation was based on results from the distributional tests. If no parametric distribution (normal, gamma, or lognormal) was appropriate, then a nonparametric UPL was estimated. The confidence level used for each UPL was based on the appropriate single test error rate.

Defining Power Rate associated with each UPL

The power of each UPL was evaluated and a power rate was defined as good, acceptable, or low. A power rate was defined as 'good' when the power at both 3 standard deviations and 4 standard deviations were above 85%; a power rate was defined as 'acceptable' when power at either 3 standard deviations or 4 standard deviations was between 59% and 85%; and a power rate was defined as 'low' occurs when power at both 3 standard deviations and 4 standard deviations were below 85%.

C.5 Detection and Assessment Monitoring Data Evaluations

Detection and assessment monitoring constituent concentrations are compared to the appropriate baseline value for background or GWPS to determine whether a significant difference exists between the initial and current site conditions. The appropriate baseline value for detection monitoring is the Appendix III constituent's UPL and the appropriate baseline value for assessment monitoring is the Appendix IV constituent's GWPS (Table C-6). The GWPS for each Appendix IV constituent is established as follows:

- For constituents with an established MCL, the GWPS is the highest of the MCL, UPL, or reporting limit for that constituent; or
- For constituents with no established MCL, the GWPS is the highest of the UPL, laboratory reporting limit, or alternative GWPS (as applicable for cobalt, lead, lithium, and molybdenum).

For detection monitoring, a well is defined as in-compliance when all the Appendix III constituent concentrations are less than the appropriate baseline value. If any concentration exceeds the appropriate baseline value, then a resample may be collected, analyzed, and compared to the appropriate baseline value—if this resample exceeds the appropriate baseline value, then a statistically significant increase over baseline is indicated.

For assessment monitoring, a 95% confidence interval of the mean is estimated for each detected Appendix IV constituent in a compliance well using the current and previous sampling event concentrations. The confidence interval contains both an LCL and an upper confidence limit (UCL). The Unified guidance states that "for testing under compliance/assessment monitoring, a [LCL] around the true parameter is utilized. If the LCL exceeds the standard [GWPS], there is statistically significant evidence in favor that the compliance standard has been violated." A constituent is in-compliance when the LCL for the constituent is less than the appropriate GWPS. (EPA, 2009).

The 95% confidence interval (i.e., the LCL and UCL) is based on the constituent concentrations from the current year's sampling events and historical sampling events at a given well. Confidence intervals are calculated based on the defined data distribution. The data distribution is defined in accordance with EPA guidance (EPA, 2000; EPA, 2002; EPA, 2009; EPA, 2017; SWDIV, 1998). The type of confidence interval computed (e.g., parametric or nonparametric) is based on the detection frequency and the defined data distribution for each data set, as described in Section C.3. For a constituent with no detected concentration measurements, the LCL (and UCL) is set to the reporting limit (EPA, 2009). For a constituent with at least 50% detections, the LCL (and UCL) calculation adjusts for non-detected concentration(s) as described in Section C.1, and the appropriate LCL (and UCL) calculation is used based on results from the distributional tests. If no parametric distribution (normal, lognormal, or gamma) can be defined for a data set or there are fewer than 50% detections, then a nonparametric, approximate 95% confidence interval of the median is estimated for the LCL and UCL.

C.6 REFERENCES

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Table C-1. CCR Groundwater Baseline Detection Monitoring
Data Summary - PDP 5

Sample Location	Date Sampled	B	Ca	Cl	Fl	field pH	SO_4	TDS
MW-17A	10/21/2015	0.402	4.38	9.1	<0.1	5.00	37	138
	12/15/2015	0.44	4.16	8.92	0.182 J	6.23	37.3	112
	2/24/2016	0.458	4.56	8.39	<0.1	4.52	39.5	118
	4/5/2016	0.459	4.64	7.82	<0.1	6.31	41.4	132
	6/7/2016	0.455	5.02	8.96	<0.1	6.29	43.4	141
	8/10/2016	0.41	4.46	9.52	<0.1	4.73	42.9	143
	10/19/2016	0.375	6.05	8.01	0.182 J	6.84	30.4	108
	12/13/2016	0.366	4.47	8.58	<0.1	6.83	39.4	131
	9/22/2017	0.402	3.1	8.3	<0.1	6.78	31.2	111
	6/14/2018	0.485	6.48	9.16	<0.1	6.87	45.9	129
	9/11/2018	0.523	5.06	8.82	0.179 J	5.03	43.1	137
	5/13/2019	0.497	4.88	9.18	<0.1	6.79	44.7	145
	11/7/2019	0.52	5.05	8.81	<0.100	6.44	43.9	127
	5/19/2020	0.521	5.09	8.74	<0.100	6.57	46.8	140
	9/25/2020	0.477	5.76	10.1	<0.100	6.57	47.7	133
	6/3/2021	0.534	6.21	7.83	<0.100	6.69	50.4	146
	10/5/2021	0.393	3.95	8.42	<0.100	6.57	34.3	115
	5/25/2022	0.487	6.27	8.67	<0.100	6.94	49.4	149
	9/22/2022	0.386	3.83	8.73	<0.100	6.83	32.6	98
	5/18/2023	0.504	5.89	9.67	<0.100	6.71	52.8	149
	8/14/2023	0.432	4.21	9.1	<0.100	6.43	36.8	117
MW-18A	10/29/2015	0.158	1.75	9.34	<0.1	6.12	7.59	83
	12/15/2015	0.142	2.06	8.23	0.125 J	5.62	6.43	50
	2/24/2016	0.133	1.78	8.1	0.104 J	6.10	6.44	125
	4/6/2016	0.0961	1.45	7.07	<0.1	6.42	5.26	79
	6/7/2016	0.113	2.32	7.43	<0.1	6.52	6.11	81
	8/10/2016	0.0755	1.13	7.04	<0.1	6.78	4.78	62
	10/19/2016	0.0998	1.45	6.52	<0.1	6.72	4.26	37
	12/12/2016	0.113	2.28	7.68	<0.1	6.90	5.48	80
	9/21/2017	0.0654	1.04	5.27	<0.1	6.94	3.23	45
	6/14/2018	0.102	2	6.56	<0.1	6.92	3.48	71
	9/12/2018	NS	3.23	9.06	<0.1	5.69	4.82	150
	11/7/2018	0.128	NS	NS	NS	NS	NS	NS
	5/13/2019	0.117	1.01	6.17	0.138 J	6.64	3.23	73
	11/7/2019	0.127	11.5	6.34	<0.100	6.23	3.67	68
	5/19/2020	0.225	1.54	7.09	<0.100	6.89	5.97	86
	9/25/2020	0.188	1.66	8.13	<0.100	6.78	6.03	77
	6/3/2021	0.188	1.73	6.2	<0.100	6.69	6.20	76
	10/5/2021	0.159	1.49	6.63	<0.100	6.59	5.73	76
	5/25/2022	0.176	2.01	7.31	<0.100	6.52	6.83	86
	9/21/2022	0.186	3.6	8.18	<0.100	6.59	11.7	89
	5/18/2023	0.20	2.83	9.8	<0.100	6.88	7.59	100
	8/15/2023	0.20	2.58	8.37	<0.100	6.58	6.79	87
MW-19	10/20/2015	0.117	21.7	48.2	0.117 J	6.07	84.1	472
	12/14/2015	0.271	75.4	28.4	0.195 J	6.25	200	573
	2/24/2016	0.516	155	30	0.144 J	6.16	372	978
	4/6/2016	0.473	134	31.3	0.221 J	6.34	362	836
	6/8/2016	0.0965	17.8	25.5	0.258 J	6.77	29.1	311
	8/10/2016	0.0539	8.62	30.8	0.152 J	5.42	31.6	323
	10/19/2016	0.106	24.5	39.1	0.42	6.87	97.8	381
	12/12/2016	0.203	65.4	39.9	0.145 J	6.85	369	786
	9/22/2017	0.0677	2.74	5.36	<0.1	6.94	1.46 J	98
	6/14/2018	0.577	133	24.4	0.216 J	6.78	328	758
	9/11/2018	0.243	38	NS	0.228 J	6.04	166	597
	11/7/2018	NS	NS	5.22	NS	NS	NS	NS
	5/13/2019	0.429	122	26.8	0.229 J	6.72	349	813
	11/8/2019	0.529	77.8	49.3	0.189 J	6.87	310	844
	5/19/2020	0.0724	1.49	5.84	<0.100	6.91	1.02 J	85
	9/25/2020	0.412	94.6	14.3	0.111 J	6.92	160	462
	6/3/2021	0.56	140	19.5	0.352 J	6.75	336	751
	10/5/2021	0.495	124	62.9	0.180 J	6.74	323	896
	5/25/2022	0.711	189	47.3	0.192 J	6.79	346	1010
	9/21/2022	0.382	45.0	92.2	0.108 J	6.93	212	723
	5/18/2023	0.788	173	22.5	0.104	6.77	244	724
	8/14/2023	0.627	113	67.5	0.142	6.59	275	877

Notes:
NS - not sampled.
All concentrations in mg/L. pH in standard units.

Table C-1. CCR Groundwater Baseline Detection Monitoring
Data Summary - PDP 5

Sample Location	Date Sampled	B	Ca	Cl	Fl	field pH	SO_4	TDS
MW-20A	10/20/2015	0.102	9.16	10.7	0.552	5.67	99.8	236
	12/14/2015	0.147	14.8	9.98	0.654	5.69	97.8	201
	2/24/2016	0.159	15.4	10.2	0.608	5.72	107	309
	4/6/2016	0.15	17.1	9.65	0.804	6.06	118	313
	6/8/2016	0.177	20.8	11	0.583	6.32	119	261
	8/10/2016	0.123	12.7	11.2	0.389 J	4.28	77.8	210
	10/19/2016	0.126	10.8	10.9	0.52	6.78	79.6	229
	12/12/2016	0.131	14.4	11	0.51	6.79	101	245
	9/22/2017	0.0807	17.4	NS	0.175 J	6.71	74.2	237
	2/21/2018	NS	NS	10.7	NS	NS	NS	NS
	6/13/2018	0.171	24	10.9	0.672	6.72	132	250
	9/11/2018	0.141	7.16	11	0.235 J	4.70	39.1	154
	5/13/2019	0.239	37.4	10.2	0.731	6.81	178	328
	11/8/2019	0.132	9.9	10.2	0.465	6.51	88	205
	5/19/2020	0.220	24	10.4	0.413	6.83	133	270
	9/25/2020	0.107	8.94	12.6	0.132 J	6.68	54.3	162
	6/3/2021	0.152	26.1	9.63	0.324	6.73	93.2	218
	10/5/2021	0.0724	6.12	10.8	0.127 J	6.44	32.8	139
	5/25/2022	0.102	15.3	10.6	0.239 J	6.75	65.7	207
	9/22/2022	0.0466	2.93	6.68	<0.100	6.48	1.42 J	84
	5/18/2023	0.0711	9.65	11.3	<0.100	6.83	38.9	169
	8/14/2023	0.0715	4.72	11.4	<0.100	6.58	21	130
PDP-22	10/20/2015	0.0794	3.4	25.9	0.108 J	5.47	42.2	270
	12/14/2015	0.291	123	21.1	0.858	5.43	202	1,430
	2/24/2016	0.25	160	16.5	0.264 J	6.22	211	883
	4/6/2016	0.218	97.9	13.7	0.349 J	6.19	209	767
	6/8/2016	0.213	216	14.1	0.113 J	6.72	200	778
	8/10/2016	0.255	104	15.2	<0.1	7.12	216	750
	10/19/2016	0.185	68.4	13.4	0.264 J	6.93	160	607
	12/12/2016	0.163	122	8.27	0.201 J	6.74	105	710
	9/22/2017	0.221	92.5	12.3	0.321 J	6.98	178	558
	6/14/2018	0.115	7.78	11.8	0.239	6.63	186	491
	9/12/2018	0.164	61.1	10.9	0.216 J	5.88	143	476
	5/13/2019	0.158	98.2	10.1	0.303 J	6.86	184	615
	11/12/2019	0.226	34.3	12.6	0.218 J	6.93	215	482
	5/19/2020	0.0646	54.9	1.06	<0.100	6.55	5.21	205
	9/25/2020	0.206	25.1	12.7	0.128 J	6.73	186	398
	6/3/2021	0.121	73.1	6.64	<0.100	6.52	118	415
	10/5/2021	0.166	27.1	10.1	0.223 J	6.78	170	376
	5/25/2022	0.137	16.4	9.92	0.183 J	8.82	104	289
	9/21/2022	0.141	14.9	10.4	0.106 J	6.42	112	280
	5/18/2023	0.160	39.1	10.1	<0.100	6.93	109	379
	8/15/2023	0.116	10.4	8.19	<0.100	6.81	68.4	223
PDP-23	10/20/2015	0.031	1.8	5.38	<0.1	5.75	1.75 J	106
	12/14/2015	0.039	1.79	5.09	0.127 J	5.70	1.45	57
	2/24/2016	0.0556	1.61	5.63	<0.1	4.85	2.52 J	60
	4/6/2016	0.0476	1.57	4.17	<0.1	6.29	1.46 J	88
	6/8/2016	0.0388	1.59	5.68	<0.1	6.38	1.72 J	104
	8/10/2016	0.0357	1.77	6.61	<0.1	5.00	2.37 J	99
	10/19/2016	0.0456	1.7	5.09	0.129 J	6.62	1.31 J	78
	12/12/2016	0.0294 J	1.77	4.87	<0.1	6.74	1.1 J	78
	9/22/2017	0.0463	2.34	4.48	0.147 J	6.77	1.47 J	111
	6/13/2018	0.0357	2.29	6.21	<0.1	6.82	1.26 J	98
	9/11/2018	NS	1.96	6.38	<0.1	5.32	1.52 J	98
	11/7/2018	0.0683	NS	NS	NS	NS	NS	NS
	5/13/2019	0.0628	1.89	6.98	<0.1	6.68	1.28 J	103
	11/12/2019	0.0675	2.14	4.98	<0.100	6.72	1.41 J	93
	5/19/2020	0.0709	2.03	6.86	<0.100	6.83	1.19 J	104
	9/25/2020	0.0617	2.31	7.29	<0.100	6.74	<1.00	94
	6/3/2021	0.0818	2.32	6.88	<0.100	6.57	1.42 J	101
	10/5/2021	0.0661	2.38	6.58	<0.100	6.59	1.02 J	97
	5/25/2022	0.0441	4.03	5.9	<0.100	6.20	1.44 J	110
	9/21/2022	0.0663	2.53	6.72	<0.100	6.63	1.18 J	104
	5/18/2023	0.0976	2.88	6.65	<0.100	6.75	1.35	115
	8/15/2023	0.0681	2.37	8.12	<0.100	6.76	1.20	118

Notes:
NS - not sampled.
All concentrations in mg/L. pH in standard units.

Table C-1. CCR Groundwater Baseline Detection Monitoring
Data Summary - PDP 5

Sample Location	Date Sampled	B	Ca	Cl	Fl	field pH	SO_4	TDS
PDP-24	10/20/2015	3.82	36.4	21.7	0.539	5.90	425	711
	12/15/2015	2.96	34.9	22.6	0.756	5.72	340	606
	2/24/2016	3.81	35.3	19.1	0.732	3.57	410	688
	4/5/2016	3.99	34.5	18	0.817	6.17	416	711
	6/7/2016	2.83	27.6	22.5	0.689	6.42	308	596
	8/10/2016	3.8	32.6	21.4	0.693	3.97	432	747
	10/19/2016	3.03	23.5	21.9	0.869	6.86	319	516
	12/12/2016	3.58	32.4	21.7	0.69	6.57	351	588
	9/22/2017	3.01	25.8	17.5	0.898	6.95	231	440
	6/14/2018	2.71	23.9	21.1	0.629	6.82	284	481
	9/11/2018	4.08	41.6	19.4	0.832	4.20	460	760
	5/13/2019	3.23	23	21	0.871	6.95	300	537
	11/12/2019	3	21.9	20.6	0.751	6.87	295	520
	5/19/2020	3.17	21.4	21	0.61	6.79	286	512
	9/25/2020	4.04	40.7	19.6	0.776	6.83	445	699
	6/3/2021	3.56	26.4	19.3	0.934	6.57	350	615
	10/5/2021	4.24	46.9	17.8	0.782	6.72	432	681
	5/25/2022	4.2	47.7	15.6	0.789	6.73	449	736
	9/21/2022	4.23	46.7	17.8	0.771	6.72	456	744
	5/18/2023	4.02	41.6	18.2	0.729	6.63	411	720
	8/14/2023	3.36	29.8	19.1	0.817	6.52	353	640
PDP-25	10/20/2015	0.101	35.2	137	<0.1	6.20	105	533
	12/15/2015	0.0935	33.2	124	0.259 J	6.12	94.3	578
	2/24/2016	0.113	36.6	116	0.151 J	5.76	97.8	602
	4/6/2016	0.1	38.3	124	0.149 J	6.42	102	646
	6/8/2016	0.102	36.3	132	<0.1	6.73	106	626
	8/10/2016	0.119	37.7	136	<0.1	5.60	110	612
	10/19/2016	0.117	37.2	129	0.198 J	6.93	98.6	590
	12/12/2016	0.0955	36.3	176	0.135 J	6.58	102	565
	9/22/2017	0.133	36.8	130	0.157 J	6.81	89.1	481
	6/14/2018	0.119	40.4	111	<0.1	6.78	73.4	439
	9/11/2018	NS	36.2	135	0.115 J	5.87	90.3	469
	11/7/2018	0.142	NS	NS	NS	NS	NS	NS
	5/13/2019	0.144	44.4	108	0.121 J	6.84	69	469
	11/12/2019	0.184	38.6	117	<0.100	6.82	71.4	454
	5/19/2020	0.202	53.7	105	<0.100	6.61	62.2	442
	9/25/2020	0.174	46.3	123	<0.100	6.77	67.5	445
	6/3/2021	0.234	45.2	101	0.236 J	6.78	61.2	431
	10/5/2021	0.159	40.4	115	<0.100	6.73	62.7	427
	5/25/2022	0.151	47.5	102	<0.100	6.64	58.4	454
	9/21/2022	0.166	52.8	109	<0.100	6.52	61.6	436
	5/18/2023	0.266	56.3	107	<0.100	6.82	59.9	478
	8/14/2023	0.15	71.5	93.6	<0.100	6.68	51.3	457
PDP-26	10/20/2015	0.0838	4.19	11.8	0.16 J	6.18	37.2	306
	12/15/2015	0.0429	2.71	6.94	0.391 J	6.22	15.3	126
	2/24/2016	0.0446	2.33	5.99	0.246 J	6.07	10.5	186
	4/6/2016	0.0441	2.62	5.26	0.187 J	6.26	8.55	126
	6/8/2016	0.0365	2.23	6.22	0.102 J	6.53	8.41	118
	8/10/2016	0.0671	3.04	5.62	<0.1	6.86	7.79	114
	10/19/2016	0.0483	2.31	5.22	<0.1	6.76	6.19	87
	12/12/2016	0.047	2.43	5.56	0.251 J	6.78	6.69	84
	9/22/2017	0.0343	2.32	5.24	0.157 J	6.84	5.88	107
	6/14/2018	0.0225 J	2.93	4.8	<0.1	6.89	4.27	100
	9/12/2018	0.0371	2.37	4.88	<0.1	6.07	2.66 J	107
	5/13/2019	0.0528	1.9	4.59	0.217 J	6.86	2.7 J	106
	11/12/2019	0.0622	2.25	4.64	0.122 J	6.77	2.1 J	102
	5/19/2020	0.0538	2.09	4.52	<0.100	6.64	2.1 J	108
	9/25/2020	0.0549	2.71	5.07	<0.100	6.83	1.91	92
	6/3/2021	0.0516	2.37	4.05	<0.100	6.84	2.18 J	104
	10/5/2021	0.0486	3.85	4.48	0.194 J	6.74	3.28	104
	5/25/2022	0.0424	2.62	4.08	0.109 J	6.73	2.46 J	111
	9/22/2022	0.05	2.61	4.4	<0.100	6.47	2.08 J	92
	5/18/2023	0.0965	2.76	4.59	<0.100	6.67	2.58 J	101
	8/14/2023	0.0451	2.99	4.58	<0.100	6.74	2.12 J	106

Notes:
NS - not sampled
All concentrations in mg/L. pH in standard units.

Table C-2. CCR Groundwater Baseline Assessment Monitoring
Data Summary - PDP 5

Sample Location	Date Sampled	Sb	As	Ba	Be	Cd	Cr	Co	Fl	Pb	Li	Hg	Mo	Se	Th	Ra 226/228 Combined
MW-17A	10/21/2015	<0.0008	<0.002	0.101	<0.0003	<0.0003	<0.002	0.00732	<0.100	<0.0003	0.0145	0.000217	<0.002	<0.002	<0.0005	2.27
	12/15/2015	<0.0008	<0.002	0.0987	<0.0003	<0.0003	<0.002	0.0078	0.182 J	<0.0003	0.0147	0.000097 J	<0.002	<0.002	<0.0005	2.00
	2/24/2016	<0.0008	<0.002	0.111	<0.0003	<0.0003	<0.002	0.0079	<0.100	<0.0003	0.0146	0.000232	<0.002	<0.002	<0.0005	3.51
	4/5/2016	<0.0008	<0.002	0.103	<0.0003	<0.0003	0.0055	0.00829	<0.100	<0.0003	0.0137	0.000196 J	<0.002	<0.002	<0.0005	1.14
	6/7/2016	<0.0008	<0.002	0.115	<0.0003	<0.0003	<0.002	0.00869	<0.100	<0.0003	0.0128	0.000174 J	<0.002	<0.002	<0.0005	1.59
	8/10/2016	<0.0008	<0.002	0.108	<0.0003	<0.0003	<0.002	0.00795	<0.100	<0.0003	0.0153	0.000114 J	<0.002	<0.002	<0.0005	1.05
	10/19/2016	<0.0008	<0.002	0.0908	<0.0003	<0.0003	<0.002	0.00617	0.182 J	<0.0003	0.00886 J	0.000085 J	<0.002	<0.002	<0.0005	1.19
	12/13/2016	<0.0008	<0.002	0.116	<0.0003	<0.0003	<0.002	0.0082	<0.100	<0.0003	0.0161	0.00010 J	<0.002	<0.002	<0.0005	1.52
MW-18A	10/29/2015	<0.0008	<0.002	0.063	<0.0003	<0.0003	<0.002	0.00321 J	<0.100	<0.0003	0.00901 J	0.0035	<0.002	<0.002	<0.0005	3.05
	12/15/2015	<0.0008	<0.002	0.0674	<0.0003	<0.0003	<0.002	0.00346 J	0.125 J	<0.0003	0.00873 J	0.0062	<0.002	<0.002	<0.0005	2.71
	2/24/2016	<0.0008	<0.002	0.0591	0.000344 J	<0.0003	<0.002	0.00318 J	0.104 J	<0.0003	0.00858 J	0.00354	<0.002	<0.002	<0.0005	<2.341
	4/6/2016	<0.0008	<0.002	0.0487	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.00907 J	0.00252	<0.002	<0.002	<0.0005	<1.483
	6/7/2016	<0.0008	<0.002	0.0505	<0.0003	<0.0003	0.00326 J	0.00308 J	<0.100	0.000403 J	0.00768 J	0.0378	<0.002	0.00251 J	<0.0005	1.76
	8/10/2016	<0.0008	<0.002	0.0447	<0.0003	<0.0003	0.00251 J	<0.003	<0.100	<0.0003	0.00806 J	0.0312	<0.002	0.00292 J	<0.0005	0.90
	10/19/2016	<0.0008	<0.002	0.0453	<0.0003	<0.0003	0.00313 J	<0.003	<0.100	0.000375 J	0.00852 J	0.0428	<0.002	0.00234 J	<0.0005	0.92
	12/12/2016	<0.0008	<0.002	0.0413	<0.0003	<0.0003	<0.002	<0.003	<0.100	0.000353 J	0.00908 J	0.061	<0.002	0.00311 J	<0.0005	<0.749
MW-19	10/20/2015	<0.0008	0.00502	0.0396	0.000336 J	<0.0003	<0.002	0.00304 J	0.117 J	<0.0003	0.0158	<0.00008	<0.002	<0.002	<0.0005	3.16
	12/14/2015	<0.0008	0.0047 J	0.0591	<0.0003	<0.0003	<0.002	<0.003	0.195 J	<0.0003	0.00593 J	<0.00008	<0.002	<0.002	<0.0005	1.64
	2/24/2016	<0.0008	0.0147	0.0878	0.000679 J	<0.0003	<0.002	<0.003	0.144 J	<0.0003	<0.005	<0.00008	<0.002	<0.002	<0.0005	3.09
	4/6/2016	<0.0008	0.00689	0.0517	<0.0003	<0.0003	<0.002	0.00434 J	0.221 J	<0.0003	0.00622 J	<0.00008	<0.002	<0.002	<0.0005	1.36
	6/8/2016	<0.0008	0.00761	0.0223	0.00043 J	<0.0003	0.00266 J	<0.003	0.258 J	0.000501 J	0.0153	<0.00008	<0.002	<0.002	<0.0005	0.96
	8/10/2016	<0.0008	0.00286 J	0.0188	<0.0003	<0.0003	0.00346 J	<0.003	0.152 J	0.000807 J	0.0144	<0.00008	<0.002	<0.002	<0.0005	0.85
	10/19/2016	<0.0008	0.0125	0.0307	0.000539 J	<0.0003	0.00385 J	0.00325 J	0.42	0.00122	0.0151	<0.00008	<0.002	<0.002	<0.0005	2.02
	12/12/2016	<0.0008	0.0259	0.0548	0.00066 J	<0.0003	0.00336 J	0.00328 J	0.145 J	0.00106	0.00976 J	<0.00008	<0.002	0.00257 J	<0.0005	1.36
MW-20A	10/20/2015	<0.0008	<0.002	0.0357	0.000407 J	<0.0003	<0.002	0.00346 J	0.552	0.00101	0.0164	0.00289	<0.002	0.00483 J	<0.0005	4.61
	12/14/2015	<0.0008	<0.002	0.0291	0.000605 J	<0.0003	<0.002	0.00464 J	0.654	0.00132	0.0162	0.00039	<0.002	0.00682	<0.0005	3.14
	2/24/2016	<0.0008	<0.002	0.0289	0.000632 J	<0.0003	<0.002	0.00539	0.608	0.00166	0.0163	0.000352	<0.002	0.0068	<0.0005	2.85
	4/6/2016	<0.0008	<0.002	0.03	0.000519 J	<0.0003	<0.002	0.00575	0.804	0.00209	0.0166	0.000371	<0.002	0.00739	<0.0005	2.01
	6/8/2016	<0.0008	<0.002	0.106	0.00057 J	<0.0003	0.00249 J	0.00672	0.583	0.00471	0.0147	0.00069	<0.002	0.0105	<0.0005	8.50
	8/10/2016	<0.0008	<0.002	0.0313	0.000502 J	<0.0003	<0.002	0.00427 J	0.389 J	0.00141	0.0166	0.000325	<0.002	0.00518	<0.0005	1.66
	10/19/2016	<0.0008	<0.002	0.0282	0.000541 J	<0.0003	<0.002	0.00382 J	0.52	0.00136	0.0194	0.000362	<0.002	0.00478 J	<0.0005	1.47
	12/12/2016	<0.0008	<0.002	0.0315	0.000553 J	<0.0003	<0.002	0.00494 J	0.51	0.00186	0.0186	0.000412	<0.002	0.00801	<0.0005	1.06
PDP-22	10/20/2015	<0.0008	<0.002	0.0567	<0.0003	<0.0003	<0.002	0.00397 J	0.108 J	0.00244	0.00712 J	<0.00008	<0.002	<0.002	<0.0005	2.84
	12/14/2015	<0.0008	0.0108	0.469	<0.0003	<0.0003	0.0968	0.00434 J	0.858	<0.0003	0.106	<0.00008	0.00649	<0.002	<0.0005	4.26
	2/24/2016	<0.0008	0.00742	0.332	<0.0003	<0.0003	0.0375	0.00608	0.264 J	<0.0003	0.0229	<0.00008	0.00213 J	<0.002	<0.0005	2.87
	4/6/2016	<0.0008	0.00536	0.146	<0.0003	<0.0003	0.017	<0.003	0.349 J	<0.0003	0.0874	<0.00008	0.00205 J	<0.002	<0.0005	1.51
	6/8/2016	<0.0008	0.00774	0.521	<0.0003	<0.0003	0.0995	0.00404 J	0.113 J	0.000532 J	0.184	<0.00008	0.00236 J	<0.002	<0.0005	3.66
	8/10/2016	<0.0008	0.00488 J	0.141	<0.0003	<0.0003	0.0121	<0.003	<0.1	<0.0003	0.0219	<0.00008	<0.002	<0.002	<0.0005	1.42
	10/19/2016	<0.0008	0.00518	0.0963	<0.0003	<0.0003	0.0259	<0.003	0.264 J	0.000417 J	<0.025	<0.00008	<0.002	<0.002	<0.0005	1.63
	12/12/2016	<0.0008	0.0047 J	0.258	<0.0003	<0.0003	0.0361	<0.003	0.201 J	<0.0003	0.116	<0.00008	<0.002	<0.002	<0.0005	3.46

Notes:
All concentrations in mg/L. Ra combined in pCi/L.

Table C-2. CCR Groundwater Baseline Assessment Monitoring
Data Summary - PDP 5

Sample Location	Date Sampled	Sb	As	Ba	Be	Cd	Cr	Co	Fl	Pb	Li	Hg	Mo	Se	Th	Ra 226/228 Combined
PDP-23	10/20/2015	<0.0008	<0.002	0.0423	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.0114	<0.00008	<0.002	<0.002	<0.0005	2.73
	12/14/2015	<0.0008	<0.002	0.0384	<0.0003	<0.0003	0.00275 J	<0.003	0.127 J	<0.0003	0.0162	<0.00008	<0.002	<0.002	<0.0005	<1.529
	2/24/2016	<0.0008	<0.002	0.0433	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.0115	<0.00008	<0.002	<0.002	<0.0005	2.67
	4/6/2016	<0.0008	<0.002	0.0375	<0.0003	<0.0003	0.002 J	<0.003	<0.100	<0.0003	0.0126	<0.00008	<0.002	<0.002	<0.0005	<1.357
	6/8/2016	<0.0008	<0.002	0.0435	<0.0003	<0.0003	0.00225 J	<0.003	<0.100	<0.0003	0.0125	<0.00008	<0.002	<0.002	<0.0005	<1.126
	8/10/2016	<0.0008	<0.002	0.0449	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.0124	<0.00008	<0.002	<0.002	<0.0005	<1.417
	10/19/2016	<0.0008	<0.002	0.0413	<0.0003	<0.0003	<0.002	<0.003	0.129 J	<0.0003	0.0126	<0.00008	<0.002	<0.002	<0.0005	0.83
	12/12/2016	<0.0008	<0.002	0.0423	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.0137	<0.00008	<0.002	<0.002	<0.0005	1.41
PDP-24	10/20/2015	<0.0008	<0.002	0.0214	0.00477	0.0023	<0.002	0.0897	0.539	0.000812 J	0.0262	0.000734	<0.002	0.00914	<0.0005	4.78
	12/15/2015	<0.0008	<0.002	0.0259	0.00402	0.00176	<0.002	0.0786	0.756	0.000507 J	0.0256	0.000557	<0.002	0.00219 J	<0.0005	3.24
	2/24/2016	<0.0008	<0.002	0.0188	0.00486	0.00226	<0.002	0.0901	0.732	0.000965 J	0.027	0.00152	<0.002	0.00294 J	<0.0005	2.49
	4/5/2016	<0.0008	<0.002	0.0186	0.00485	0.00207	<0.002	0.0894	0.817	0.000769 J	0.0261	0.000469	<0.002	0.00276 J	<0.0005	2.20
	6/7/2016	<0.0008	<0.002	0.0301	0.00418	0.00114	<0.002	0.0594	0.689	<0.0003	0.0257	0.000126 J	<0.002	0.00207 J	<0.0005	1.83
	8/10/2016	<0.0008	<0.002	0.0206	0.00427	0.00185	<0.002	0.0826	0.693	0.00121	0.0241	0.00214	<0.002	0.00377 J	<0.0005	3.10
	10/19/2016	<0.0008	<0.002	0.0261	0.00271	0.00104	<0.002	0.0592	0.869	0.00244	0.0302	0.000178 J	<0.002	0.00204 J	<0.0005	1.21
	12/12/2016	<0.0008	<0.002	0.0198	0.00434	0.00215	<0.002	0.0876	0.69	0.00109	0.0276	0.000397	<0.002	0.00325 J	<0.0005	1.09
PDP-25	10/20/2015	<0.0008	<0.002	0.222	<0.0003	<0.0003	<0.002	0.0114	<0.1	<0.0003	0.0718	<0.00008	<0.002	<0.002	<0.0005	2.74
	12/15/2015	<0.0008	0.00372 J	0.21	<0.0003	<0.0003	0.0131	0.011	0.259 J	<0.0003	0.128	<0.00008	<0.002	<0.002	<0.0005	2.17
	2/24/2016	<0.0008	0.00239 J	0.218	<0.0003	<0.0003	0.0231	0.00978	0.151 J	<0.0003	0.176	<0.00008	<0.002	<0.002	<0.0005	2.89
	4/6/2016	<0.0008	<0.002	0.197	<0.0003	<0.0003	0.0165	0.0103	0.149 J	<0.0003	0.171	<0.00008	<0.002	<0.002	<0.0005	1.79
	6/8/2016	<0.0008	0.00214 J	0.201	<0.0003	<0.0003	0.025	0.0114	<0.100	<0.0003	0.164	<0.00008	<0.002	<0.002	<0.0005	3.00
	8/10/2016	<0.0008	<0.002	0.193	<0.0003	<0.0003	0.00527	0.0109	<0.100	<0.0003	0.12	<0.00008	<0.002	<0.002	<0.0005	1.63
	10/19/2016	<0.0008	<0.002	0.178	<0.0003	<0.0003	0.00684	0.0104	0.198 J	<0.0003	0.0974	<0.00008	<0.002	<0.002	<0.0005	1.87
	12/12/2016	<0.0008	0.00378 J	0.196	<0.0003	<0.0003	0.0593	0.0112	0.135 J	<0.0003	0.109	<0.00008	<0.002	<0.002	<0.0005	1.21
PDP-26	10/20/2015	<0.0008	<0.002	0.0326	<0.0003	<0.0003	<0.002	0.00338 J	0.16 J	0.000983 J	0.0111	<0.00008	<0.002	<0.002	<0.0005	2.13
	12/15/2015	<0.0008	0.00474 J	0.0284	<0.0003	<0.0003	<0.002	<0.003	0.391 J	<0.0003	0.0126	<0.00008	<0.002	<0.002	<0.0005	<1.856
	2/24/2016	<0.0008	0.00334 J	0.0277	<0.0003	<0.0003	<0.002	<0.003	0.246 J	<0.0003	0.0141	<0.00008	<0.002	<0.002	<0.0005	2.43
	4/6/2016	<0.0008	<0.002	0.0242	<0.0003	<0.0003	<0.002	<0.003	0.187 J	<0.0003	0.0138	<0.00008	<0.002	<0.002	<0.0005	<1.267
	6/8/2016	<0.0008	0.00302 J	0.029	<0.0003	<0.0003	<0.002	<0.003	0.102 J	0.000377 J	0.0129	<0.00008	<0.002	<0.002	<0.0005	<0.9264
	8/10/2016	<0.0008	0.00589	0.0355	<0.0003	<0.0003	<0.002	<0.003	<0.100	0.000675 J	0.0151	<0.00008	<0.002	<0.002	<0.0005	<0.65
	10/19/2016	<0.0008	0.00271 J	0.0287	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.0122	<0.00008	<0.002	<0.002	<0.0005	0.84
	12/12/2016	<0.0008	0.00206 J	0.0286	<0.0003	<0.0003	<0.002	<0.003	0.251 J	<0.0003	0.0134	<0.00008	<0.002	<0.002	<0.0005	0.73

Notes:
All concentrations in mg/L. Ra combined in pCi/L.

Table C-3. Evaluation for Appendix III Background Data
Comparing Baseline (2015-2016) vs. Newer (2017-2023) Data
Martin Lake - PDP 5

Well	Constituent	# Detects/ # Samples	Baseline			Newer Data			Defined Distribution for Residuals[1]	Levene's or Fligner's Test[2]		ANOVA or Kruskal-Wallis[3] Statistically Significant between Events: Baseline vs New Data (p-
			# Detects/ # Samples	Minimum Detect	Maximum Detect	# Detects/ # Samples	Minimum Detect	Maximum Detect		p-value	Hetero-scedasticity present?	
MW-17A	Boron	21/21	8/8	0.366	0.459	13/13	0.386	0.534	Normal	0.30	No	No (0.022)
MW-17A	Calcium	21/21	8/8	4.16	6.05	13/13	3.1	6.48	Normal	0.11	No	No (0.41)
MW-17A	Chloride	21/21	8/8	7.82	9.52	13/13	7.83	10.1	Normal	0.82	No	No (0.40)
MW-17A	Fluoride	3/21	2/8	0.182	0.182	1/13	0.179	0.179	Nonparametric	0.19	No	No (0.24)
MW-17A	field pH	21/21	8/8	4.52	6.84	13/13	5.03	6.94	Not Determined, Heteroscedasticity present (Normal)	0.0044	Yes	--
MW-17A	Sulfate	21/21	8/8	30.4	43.4	13/13	31.2	52.8	Normal	0.093	No	No (0.15)
MW-17A	Total Dissolved Solids	21/21	8/8	108	143	13/13	98	149	Normal	0.61	No	No (0.71)
MW-18A	Boron	21/21	8/8	0.0755	0.158	13/13	0.0654	0.225	Normal	0.065	No	No (0.032)
MW-18A	Calcium	21/21	8/8	1.13	2.32	13/13	1.01	11.5	Lognormal	0.11	No	No (0.33)
MW-18A	Chloride	21/21	8/8	6.52	9.34	13/13	5.27	9.8	Normal	0.16	No	No (0.50)
MW-18A	Fluoride	3/21	2/8	0.104	0.125	1/13	0.138	0.138	Nonparametric	0.45	No	No (0.35)
MW-18A	field pH	21/21	8/8	5.62	6.9	13/13	5.69	6.94	Normal	0.31	No	No (0.22)
MW-18A	Sulfate	21/21	8/8	4.26	7.59	13/13	3.23	11.7	Normal	0.20	No	No (1.0)
MW-18A	Total Dissolved Solids	21/21	8/8	37	125	13/13	45	150	Normal	0.65	No	No (0.44)
MW-19	Boron	21/21	8/8	0.0539	0.516	13/13	0.0677	0.788	Normal	0.60	No	No (0.026)
MW-19	Calcium	21/21	8/8	8.62	155	13/13	1.49	189	Normal	0.75	No	No (0.22)
MW-19	Chloride	21/21	8/8	25.5	48.2	13/13	5.22	92.2	Not Determined, Heteroscedasticity present (Normal)	0.0035	Yes	--
MW-19	Fluoride	19/21	8/8	0.117	0.42	11/13	0.104	0.352	Lognormal	0.74	No	No (0.36)
MW-19	field pH	21/21	8/8	5.42	6.87	13/13	6.04	6.94	Normal	0.043	No	No (0.018)
MW-19	Sulfate	21/21	8/8	29.1	372	13/13	1.02	349	Normal	0.25	No	No (0.50)
MW-19	Total Dissolved Solids	21/21	8/8	311	978	13/13	85	1010	Normal	0.95	No	No (0.52)
MW-20A	Boron	21/21	8/8	0.102	0.177	13/13	0.0466	0.239	Normal	0.024	No	No (0.49)
MW-20A	Calcium	21/21	8/8	9.16	20.8	13/13	2.93	37.4	Normal	0.010	No	No (0.90)
MW-20A	Chloride	21/21	8/8	9.65	11.2	13/13	6.68	12.6	Nonparametric	0.57	No	No (0.94)
MW-20A	Fluoride	18/21	8/8	0.389	0.804	10/13	0.127	0.731	Normal	0.072	No	Yes (0.0032)
MW-20A	field pH	21/21	8/8	4.28	6.79	13/13	4.7	6.83	Nonparametric	0.040	No	No (0.047)
MW-20A	Sulfate	21/21	8/8	77.8	119	13/13	1.42	178	Normal	0.015	No	No (0.17)
MW-20A	Total Dissolved Solids	21/21	8/8	201	313	13/13	84	328	Normal	0.20	No	No (0.052)
PDP-22	Boron	21/21	8/8	0.0794	0.291	13/13	0.0646	0.226	Normal	0.38	No	No (0.040)
PDP-22	Calcium	21/21	8/8	3.4	216	13/13	7.78	98.2	Normal	0.17	No	Yes (0.0029)
PDP-22	Chloride	21/21	8/8	8.27	25.9	13/13	1.06	12.7	Normal	0.16	No	Yes (0.0029)
PDP-22	Fluoride	16/21	7/8	0.108	0.858	9/13	0.106	0.321	Lognormal	0.26	No	No (0.28)
PDP-22	field pH	21/21	8/8	5.43	7.12	13/13	5.88	8.82	Normal	0.45	No	No (0.12)
PDP-22	Sulfate	21/21	8/8	42.2	216	13/13	5.21	215	Normal	0.87	No	No (0.26)
PDP-22	Total Dissolved Solids	21/21	8/8	270	1430	13/13	205	615	Normal	0.22	No	Yes (0.0012)
PDP-23	Boron	21/21	8/8	0.0294	0.0556	13/13	0.0357	0.0976	Normal	0.35	No	Yes (0.0010)
PDP-23	Calcium	21/21	8/8	1.57	1.8	13/13	1.89	4.03	Nonparametric	0.23	No	Yes (2.1E-6)
PDP-23	Chloride	21/21	8/8	4.17	6.61	13/13	4.48	8.12	Normal	0.54	No	No (0.0080)
PDP-23	Fluoride	3/21	2/8	0.127	0.129	1/13	0.147	0.147	Nonparametric	0.45	No	No (0.35)
PDP-23	field pH	21/21	8/8	4.85	6.74	13/13	5.32	6.83	Normal	0.029	No	No (0.015)
PDP-23	Sulfate	20/21	8/8	1.1	2.52	12/13	1.02	1.52	Normal	0.010	No	No (0.011)
PDP-23	Total Dissolved Solids	21/21	8/8	57	106	13/13	93	118	Not Determined, Heteroscedasticity present (Normal)	0.0055	Yes	--

1-a=0.01, Distribution Test
2-Heteroscedasticity based on Levene when data Normal or Lognormal, otherwise Fligner Test; a=0.01
3-ANOVA used when residuals are Normal or Lognormal, otherwise Kruskal-Wallis Test
4-α=0.05

Table C-3. Evaluation for Appendix III Background Data
Comparing Baseline (2015-2016) vs. Newer (2017-2023) Data
Martin Lake - PDP 5

PDP-24	Boron	21/21	8/8	2.83	3.99	13/13	2.71	4.24	Normal	0.33	No	No (0.60)
PDP-24	Calcium	21/21	8/8	23.5	36.4	13/13	21.4	47.7	Not Determined, Heteroscedasticity present (Normal)	9.4E-05	Yes	--
PDP-24	Chloride	21/21	8/8	18	22.6	13/13	15.6	21.1	Normal	0.96	No	No (0.013)
PDP-24	Fluoride	21/21	8/8	0.539	0.869	13/13	0.61	0.934	Normal	0.92	No	No (0.17)
PDP-24	field pH	21/21	8/8	3.57	6.86	13/13	4.2	6.95	Nonparametric	0.028	No	Yes (0.0063)
PDP-24	Sulfate	21/21	8/8	308	432	13/13	231	460	Normal	0.054	No	No (0.77)
PDP-24	Total Dissolved Solids	21/21	8/8	516	747	13/13	440	760	Normal	0.17	No	No (0.61)
PDP-25	Boron	21/21	8/8	0.0935	0.119	13/13	0.119	0.266	Normal	0.022	No	Yes (0.00034)
PDP-25	Calcium	21/21	8/8	33.2	38.3	13/13	36.2	71.5	Lognormal	0.013	No	Yes (0.0031)
PDP-25	Chloride	21/21	8/8	116	176	13/13	93.6	135	Normal	0.60	No	Yes (0.0030)
PDP-25	Fluoride	9/21	5/8	0.135	0.259	4/13	0.115	0.236	Nonparametric	0.065	No	No (0.12)
PDP-25	field pH	21/21	8/8	5.6	6.93	13/13	5.87	6.84	Normal	0.037	No	No (0.027)
PDP-25	Sulfate	21/21	8/8	94.3	110	13/13	51.3	90.3	Normal	0.094	No	Yes (1.7E-7)
PDP-25	Total Dissolved Solids	21/21	8/8	533	646	13/13	427	481	Normal	0.059	No	Yes (2.9E-10)
PDP-26	Boron	21/21	8/8	0.0365	0.0838	13/13	0.0225	0.0965	Normal	0.87	No	No (0.83)
PDP-26	Calcium	21/21	8/8	2.23	4.19	13/13	1.9	3.85	Lognormal	0.83	No	No (0.60)
PDP-26	Chloride	21/21	8/8	5.22	11.8	13/13	4.05	5.24	Nonparametric	0.043	No	Yes (4.0E-6)
PDP-26	Fluoride	11/21	6/8	0.102	0.391	5/13	0.109	0.217	Lognormal	0.040	No	No (0.043)
PDP-26	field pH	21/21	8/8	6.07	6.86	13/13	6.07	6.89	Normal	0.058	No	No (0.051)
PDP-26	Sulfate	21/21	8/8	6.19	37.2	13/13	1.91	5.88	Nonparametric	0.072	No	Yes (1.7E-6)
PDP-26	Total Dissolved Solids	21/21	8/8	84	306	13/13	92	111	Not Determined, Heteroscedasticity present (Nonparametric)	0.0049	Yes	--

1-a=0.01, Distribution Test
2-Heteroscedasticity based on Levene when data Normal or Lognormal, otherwise Fligner Test; a=0.01
3-ANOVA used when residuals are Normal or Lognormal, otherwise Kruskal-Wallis Test
4-α=0.05

Table C-4. Summary of Observed Suspect Outliers, Dixon's Test -PDP 5

Well	Constituent List	Constituent	Suspect Outlier for Low or High Concentration?	Suspect Outlier Concentration (Date Sampled)	p-values for Distributional Tests without Outlier, Detect Data - Normality			Is Distribution without Outlier(s) Normal?	p-values for Distributional Tests without Outlier, Detect Data - Lognormality			Is Distribution without Outlier(s) Lognormal?	Conclusion of Dixon Test
					Kolmogorov-Smirnov (K-S) Test	Shapiro-Wilks Test	Probability Plot Correlation (PPCC)		Kolmogorov-Smirnov (K-S) Test	Shapiro-Wilks Test	Probability Plot Correlation (PPCC)		
MW-17A	Appendix III	field pH	Low	4.52 s.u. (2016-02-24) 4.73 s.u. (2016-08-10) 5 s.u. (2015-10-21) 5.03 s.u. (2018-09-11)	0.00073	0.000076	0.00019	No	0.000099	0.000033	0.000092	No	Not performed, data Not Normal or Lognormal
	Appendix IV	Chromium	High	0.0055 mg/L (2016-04-05)	--	--	--	--	--	--	--	--	Not performed, data has <50% detects
		Cobalt	Low	0.00617 mg/L (2016-10-19)	0.85	0.96	0.91	Yes	0.80	0.95	0.89	Yes	Not a statistical low outlier (p-value=0.34) Based on Normality
		Lithium	Low	0.00886 mg/L (2016-10-19)	0.51	0.93	0.90	Yes	0.41	0.89	0.83	Yes	Not a statistical low outlier (p-value=0.43) Based on Normality
		Radium-226 + Radium-228	High	3.51 NTU (2016-02-24)	0.51	0.42	0.51	Yes	0.53	0.57	0.75	Yes	Not a statistical high outlier (p-value=0.068) Based on Normality
MW-18A	Appendix III	Calcium	High	3.6 mg/L (2022-09-21) 11.5 mg/L (2019-11-07)	0.33	0.19	0.19	Yes	0.87	0.88	0.93	Yes	Statistical high outlier (p-value<0.00010) Based on Normality
		Fluoride	High	0.138 J mg/L (2019-05-13)	--	--	--	--	--	--	--	--	Not performed, data has <50% detects
		field pH	Low	5.62 s.u. (2015-12-15) 5.69 s.u. (2018-09-12)	0.077	0.026	0.027	Yes	0.046	0.014	0.015	No	Not a statistical low outlier (p-value=0.96) Based on Normality
		Sulfate	High	11.7 mg/L (2022-09-21)	0.44	0.24	0.39	Yes	0.17	0.050	0.089	Yes	Statistical high outlier (p-value=0.017) Based on Normality
		Total Dissolved Solids	Low	37 mg/L (2016-10-19) 45 mg/L (2017-09-21)	0.0052	0.010	0.0066	No	0.073	0.17	0.078	Yes	Not a statistical low outlier (p-value=0.13) Based on Lognormality
			High	125 mg/L (2016-02-24) 150 mg/L (2018-09-12)	0.21	0.23	0.10	Yes	0.060	0.051	0.029	Yes	Statistical high outlier (p-value=0.017) Based on Normality
	Appendix IV	Beryllium	High	0.000344 J mg/L (2016-02-24)	--	--	--	--	--	--	--	--	Not performed, data has <50% detects

NOTE:
Dixon's Test can be performed for only one value.
Statistical Significance for Distributional tests for Dixon's test are based on 95% level of confidence, or a=0.05.
'-- No Test performed since <50% Detects, or (for K-S, PPCC methods) <5 Detects.

Table C-4. Summary of Observed Suspect Outliers, Dixon's Test -PDP 5

Well	Constituent List	Constituent	Suspect Outlier for Low or High Concentration?	Suspect Outlier Concentration (Date Sampled)	p-values for Distributional Tests without Outlier, Detect Data - Normality			Is Distribution without Outlier(s) Normal?	p-values for Distributional Tests without Outlier, Detect Data - Lognormality			Is Distribution without Outlier(s) Lognormal?	Conclusion of Dixon Test
					Kolmogorov-Smirnov (K-S) Test	Shapiro-Wilks Test	Probability Plot Correlation (PPCC)		Kolmogorov-Smirnov (K-S) Test	Shapiro-Wilks Test	Probability Plot Correlation (PPCC)		
MW-19	Appendix III	Chloride	High	92.2 mg/L (2022-09-21)	0.30	0.47	0.54	Yes	0.053	0.012	0.018	Yes	Not a statistical high outlier (p-value=0.18) Based on Normality
		Fluoride	High	0.42 mg/L (2016-10-19)	0.60	0.12	0.092	Yes	0.86	0.58	0.60	Yes	Statistical high outlier (p-value=0.013) Based on Normality
		field pH	Low	5.42 s.u. (2016-08-10)	0.00013	0.00090	0.0022	No	0.000083	0.00070	0.0018	No	Not performed, data Not Normal or Lognormal
	Appendix IV	Arsenic	High	0.0259 mg/L (2016-12-12)	0.33	0.39	0.42	Yes	0.93	0.87	0.96	Yes	Not a statistical high outlier (p-value=0.065) Based on Normality
		Fluoride	High	0.42 mg/L (2016-10-19)	0.18	0.49	0.51	Yes	0.33	0.69	0.76	Yes	Statistical high outlier (p-value=0.035) Based on Normality
		Selenium	High	0.00257 J mg/L (2016-12-12)	--	--	--	--	--	--	--	--	Not performed, data has <50% detects
MW-20A	Appendix III	Boron	High	0.239 mg/L (2019-05-13)	0.92	0.90	0.81	Yes	0.22	0.35	0.27	Yes	Not a statistical high outlier (p-value=0.13) Based on Normality
		Calcium	High	37.4 mg/L (2019-05-13)	0.73	0.58	0.70	Yes	0.46	0.36	0.32	Yes	Not a statistical high outlier (p-value=0.060) Based on Normality
		Chloride	Low	6.68 mg/L (2022-09-22)	0.40	0.19	0.10	Yes	0.54	0.34	0.19	Yes	Statistical low outlier (p-value=0.049) Based on Normality
			High	12.6 mg/L (2020-09-25)	0.017	0.000051	0.000077	No	0.0028	0.0000067	0.000014	No	Not performed, data Not Normal or Lognormal
		field pH	Low	4.28 s.u. (2016-08-10) 4.7 s.u. (2018-09-11)	0.0049	0.00028	0.00048	No	0.0020	0.00011	0.00020	No	Not performed, data Not Normal or Lognormal
	Appendix IV	Barium	High	0.106 mg/L (2016-06-08)	0.32	0.17	0.11	Yes	0.44	0.25	0.18	Yes	Statistical high outlier (p-value<0.0001) Based on Normality
		Beryllium	Low	0.000407 mg/L (2015-10-20)	0.96	0.88	0.98	Yes	0.99	0.93	1.0	Yes	Not a statistical low outlier (p-value=0.50) Based on Normality
		Chromium	High	0.00249 J mg/L (2016-06-08)	--	--	--	--	--	--	--	--	Not performed, data has <50% detects
		Fluoride	High	0.804 mg/L (2016-04-06)	0.56	0.76	0.65	Yes	0.33	0.41	0.28	Yes	Not a statistical high outlier (p-value=0.076) Based on Normality
		Lead	High	0.00471 mg/L (2016-06-08)	0.54	0.89	0.93	Yes	0.82	0.91	0.93	Yes	Statistical high outlier (p-value<0.0001) Based on Normality
		Lithium	Low	0.0147 mg/L (2016-06-08)	0.0027	0.011	0.016	No	0.0031	0.012	0.018	No	Not performed, data Not Normal or Lognormal
			High	0.0186 mg/L (2016-12-12) 0.0194 mg/L (2016-10-19)	0.032	0.16	0.060	Yes	0.048	0.18	0.068	Yes	Not a statistical high outlier (p-value=0.42) Based on Normality
		Mercury	High	0.00069 mg/L (2016-06-08) 0.00289 mg/L (2015-10-20)	0.0053	0.0017	0.0029	No No	0.030	0.011	0.0097	No	Not performed, data Not Normal or Lognormal

NOTE:
Dixon's Test can be performed for only one value.
Statistical Significance for Distributional tests for Dixon's test are based on 95% level of confidence, or a=0.05.
'-- No Test performed since <50% Detects, or (for K-S, PPCC methods) <5 Detects.

Table C-4. Summary of Observed Suspect Outliers, Dixon's Test -PDP 5

Well	Constituent List	Constituent	Suspect Outlier for Low or High Concentration?	Suspect Outlier Concentration (Date Sampled)	p-values for Distributional Tests without Outlier, Detect Data - Normality			Is Distribution without Outlier(s) Normal?	p-values for Distributional Tests without Outlier, Detect Data - Lognormality			Is Distribution without Outlier(s) Lognormal?	Conclusion of Dixon Test
					Kolmogorov-Smirnov (K-S) Test	Shapiro-Wilks Test	Probability Plot Correlation (PPCC)		Kolmogorov-Smirnov (K-S) Test	Shapiro-Wilks Test	Probability Plot Correlation (PPCC)		
		Radium-226 + Radium-228	High	8.5 NTU (2016-06-08)	0.57	0.52	0.48	Yes	0.95	0.97	1.0	Yes	Not a statistical high outlier (p-value=0.050) Based on Normality
PDP-22	Appendix III	Calcium	High	216 mg/L (2016-06-08)	0.39	0.20	0.27	Yes	0.24	0.11	0.13	Yes	Statistical high outlier (p-value=0.041) Based on Normality
		Chloride	Low	1.06 mg/L (2020-05-19)	0.10	0.0097	0.0076	Yes	0.65	0.65	0.41	Yes	Statistical low outlier (p-value=0.035) Based on Normality
			High	21.1 mg/L (2015-12-14) 25.9 mg/L (2015-10-20)	0.25	0.41	0.13	Yes	0.00033	0.000015	0.000024	No	Statistical high outlier (p-value=0.0086) Based on Normality
		Fluoride	High	0.858 mg/L (2015-12-14)	0.63	0.44	0.60	Yes	0.29	0.12	0.19	Yes	Statistical high outlier (p-value<0.0001) Based on Normality
		field pH	Low	5.43 s.u. (2015-12-14) 5.47 s.u. (2015-10-20)	0.0044	0.0017	0.00097	No	0.014	0.0076	0.0033	No	Not performed, data Not Normal or Lognormal
			High	8.82 s.u. (2022-05-25)	0.046	0.0066	0.0094	No	0.036	0.0029	0.0044	No	Not performed, data Not Normal or Lognormal
		Total Dissolved Solids	High	1430 mg/L (2015-12-14)	0.72	0.37	0.53	Yes	0.84	0.46	0.64	Yes	Statistical high outlier (p-value=0.0030) Based on Normality
	Appendix IV	Fluoride	High	0.858 mg/L (2015-12-14)	0.66	0.50	0.61	Yes	0.44	0.29	0.36	Yes	Statistical high outlier (p-value=0.011) Based on Normality
		Lead	High	0.00244 mg/L (2015-10-20)	--	--	--	--	--	--	--	--	Not performed, data has <50% detects
		Molybdenum	High	0.00649 mg/L (2015-12-14)	--	--	--	--	--	--	--	--	Not performed, data has <50% detects
PDP-23	Appendix III	Calcium	High	4.03 mg/L (2022-05-25)	0.23	0.18	0.21	Yes	0.18	0.28	0.36	Yes	Statistical high outlier (p-value<0.0001) Based on Normality
		field pH	Low	4.85 s.u. (2016-02-24) 5 s.u. (2016-08-10) 5.32 s.u. (2018-09-11)	0.00024	0.00028	0.00058	No	0.00016	0.00016	0.00034	No	Not performed, data Not Normal or Lognormal
		Sulfate	High	2.37 mg/L (2016-08-10) 2.52 mg/L (2016-02-24)	0.019	0.0050	0.0036	No	0.14	0.16	0.078	Yes	Statistical high outlier (p-value<0.0001) Based on Lognormality
		Total Dissolved Solids	Low	57 mg/L (2015-12-14) 60 mg/L (2016-02-24)	0.1200	0.072	0.049	Yes	0.031	0.0056	0.0047	No	Not a statistical low outlier (p-value=0.64) Based on Normality
	Appendix IV	Lithium	High	0.0162 mg/L (2015-12-14)	0.22	0.32	0.23	Yes	0.27	0.33	0.25	Yes	Not a statistical high outlier (p-value=0.062) Based on Normality

NOTE:
Dixon's Test can be performed for only one value.
Statistical Significance for Distributional tests for Dixon's test are based on 95% level of confidence, or a=0.05.
'-- No Test performed since <50% Detects, or (for K-S, PPCC methods) <5 Detects.

Table C-4. Summary of Observed Suspect Outliers, Dixon's Test -PDP 5

Well	Constituent List	Constituent	Suspect Outlier for Low or High Concentration?	Suspect Outlier Concentration (Date Sampled)	p-values for Distributional Tests without Outlier, Detect Data - Normality			Is Distribution without Outlier(s) Normal?	p-values for Distributional Tests without Outlier, Detect Data - Lognormality			Is Distribution without Outlier(s) Lognormal?	Conclusion of Dixon Test
					Kolmogorov-Smirnov (K-S) Test	Shapiro-Wilks Test	Probability Plot Correlation (PPCC)		Kolmogorov-Smirnov (K-S) Test	Shapiro-Wilks Test	Probability Plot Correlation (PPCC)		
PDP-24	Appendix III	field pH	Low	3.57 s.u. (2016-02-24) 3.97 s.u. (2016-08-10) 4.2 s.u. (2018-09-11)	0.00016	0.000017	0.000047	No	0.000030	0.0000051	0.000016	No	Not performed, data Not Normal or Lognormal
	Appendix IV	Beryllium	Low	0.00271 mg/L (2016-10-19)	0.29	0.19	0.27	Yes	0.28	0.21	0.30	Yes	Not a statistical low outlier (p-value=0.97) Based on Normality
		Fluoride	Low	0.539 mg/L (2015-10-20)	0.40	0.15	0.18	Yes	0.37	0.18	0.21	Yes	Not a statistical low outlier (p-value=0.35) Based on Normality
		Lead	High	0.00244 mg/L (2016-10-19)	0.96	0.95	0.99	Yes	0.69	0.66	0.64	Yes	Statistical high outlier (p-value=0.019) Based on Normality
		Lithium	High	0.0302 mg/L (2016-10-19)	0.52	0.82	0.71	Yes	0.46	0.77	0.64	Yes	Statistical high outlier (p-value=0.045) Based on Normality
		Mercury	High	0.00214 mg/L (2016-08-10)	0.36	0.12	0.082	Yes	0.71	0.89	0.93	Yes	Not a statistical high outlier (p-value=0.30) Based on Normality
		Selenium	High	0.00914 mg/L (2015-10-20)	0.41	0.42	0.53	Yes	0.42	0.43	0.58	Yes	Statistical high outlier (p-value=0.00089) Based on Normality
PDP-25	Appendix III	Boron	High	0.266 mg/L (2023-05-18)	0.22	0.16	0.17	Yes	0.42	0.52	0.64	Yes	Not a statistical high outlier (p-value=0.11) Based on Normality
		Calcium	High	71.5 mg/L (2023-08-14)	0.017	0.010	0.016	No	0.033	0.031	0.044	No	Not performed, data Not Normal or Lognormal
		Chloride	High	176 mg/L (2016-12-12)	0.79	0.47	0.66	Yes	0.61	0.46	0.62	Yes	Statistical high outlier (p-value=0.0068) Based on Normality
		field pH	Low	5.6 s.u. (2016-08-10) 5.76 s.u. (2016-02-24) 5.87 s.u. (2018-09-11)	0.019	0.0018	0.0029	No	0.012	0.0011	0.0019	No	Not performed, data Not Normal or Lognormal
	Appendix IV	Chromium	High	0.0593 mg/L (2016-12-12)	0.82	0.55	0.80	Yes	0.79	0.44	0.60	Yes	Statistical high outlier (p-value=0.019) Based on Normality

NOTE:
Dixon's Test can be performed for only one value.
Statistical Significance for Distributional tests for Dixon's test are based on 95% level of confidence, or a=0.05.
'-- No Test performed since <50% Detects, or (for K-S, PPCC methods) <5 Detects.

Table C-4. Summary of Observed Suspect Outliers, Dixon's Test -PDP 5

Well	Constituent List	Constituent	Suspect Outlier for Low or High Concentration?	Suspect Outlier Concentration (Date Sampled)	p-values for Distributional Tests without Outlier, Detect Data - Normality			Is Distribution without Outlier(s) Normal?	p-values for Distributional Tests without Outlier, Detect Data - Lognormality			Is Distribution without Outlier(s) Lognormal?	Conclusion of Dixon Test
					Kolmogorov-Smirnov (K-S) Test	Shapiro-Wilks Test	Probability Plot Correlation (PPCC)		Kolmogorov-Smirnov (K-S) Test	Shapiro-Wilks Test	Probability Plot Correlation (PPCC)		
PDP-26	Appendix III	Boron	Low	0.0225 mg/L (2018-06-14)	0.0069	0.0026	0.0029	No	0.13	0.12	0.092	Yes	Not a statistical low outlier (p-value=0.12) Based on Lognormality
			High	0.0838 mg/L (2015-10-20) 0.0965 mg/L (2023-05-18)	0.21	0.24	0.093	Yes	0.23	0.34	0.12	Yes	Statistical high outlier (p-value=0.020) Based on Normality
		Calcium	High	3.85 mg/L (2021-10-05) 4.19 mg/L (2015-10-20)	0.47	0.051	0.026	Yes	0.59	0.46	0.22	Yes	Statistical high outlier (p-value<0.0001) Based on Normality
		Chloride	High	11.8 mg/L (2015-10-20)	0.24	0.11	0.098	Yes	0.31	0.40	0.36	Yes	Statistical high outlier (p-value<0.0001) Based on Normality
		Fluoride	High	0.391 J mg/L (2015-12-15)	--	--	--	--	--	--	--	--	Not performed, data has <50% detects
		Sulfate	High	37.2 mg/L (2015-10-20)	0.0050	0.0012	0.0019	No	0.0092	0.017	0.033	No	Not performed, data Not Normal or Lognormal
		Total Dissolved Solids	High	186 mg/L (2016-02-24) 306 mg/L (2015-10-20)	0.012	0.00012	0.00014	No	0.062	0.0046	0.003	Yes	Statistical high outlier (p-value<0.0001) Based on Lognormality
	Appendix IV	Barium	Low	0.0242 mg/L (2016-04-06)	0.0066	0.023	0.023	No	0.0084	0.030	0.030	No	Not performed, data Not Normal or Lognormal
			High	0.0326 mg/L (2015-10-20) 0.0355 mg/L (2016-08-10)	0.13	0.26	0.10	Yes	0.17	0.23	0.093	Yes	Not a statistical high outlier (p-value=0.22) Based on Normality
		Cobalt	High	0.00338 J mg/L (2015-10-20)	--	--	--	--	--	--	--	--	Not performed, data has <50% detects
		Radium-226 + Radium-228	High	2.43 NTU (2016-02-24)	--	--	--	--	--	--	--	--	Not performed, data has <50% detects

NOTE:
Dixon's Test can be performed for only one value.
Statistical Significance for Distributional tests for Dixon's test are based on 95% level of confidence, or a=0.05.
'-- No Test performed since <50% Detects, or (for K-S, PPCC methods) <5 Detects.

Table C-5. Summary of Distributional Tests
PDP 5

Well	Consituent List	Constituent	# Detects/ # Samples	% Detects	Defined Distribution	Tests for Normality			Can the Data be defined as Normal?
						Kolmogorov-Smirnov Test	Shapiro-Wilks Test	Probability Plot Correlation	
MW-17A	Appendix III	Boron	21/21	100	Normal	0.52	0.23	0.43	Yes
		Calcium	21/21	100	Normal	0.31	0.54	0.56	Yes
		Chloride	21/21	100	Normal	0.70	0.85	0.78	Yes
		Fluoride	3/21	14	Nonparametric, <50% Detects	--	--	--	--
		field pH	21/21	100	Nonparametric	0.00014	8.4E-05	0.00024	No
		Sulfate	21/21	100	Normal	0.69	0.84	0.96	Yes
		Total Dissolved Solids	21/21	100	Normal	0.58	0.21	0.30	Yes
	Appendix IV	Antimony	0/8	0	All NDs	--	--	--	--
		Arsenic	0/8	0	All NDs	--	--	--	--
		Barium	8/8	100	Normal	0.99	0.79	0.90	Yes
		Beryllium	0/8	0	All NDs	--	--	--	--
		Cadmium	0/8	0	All NDs	--	--	--	--
		Chromium	1/8	13	Nonparametric, <50% Detects	--	--	--	--
		Cobalt	8/8	100	Normal	0.13	0.20	0.11	Yes
		Fluoride	2/8	25	Nonparametric, <50% Detects	--	--	--	--
		Lead	0/8	0	All NDs	--	--	--	--
		Lithium	8/8	100	Normal	0.17	0.048	0.030	Yes
		Mercury	8/8	100	Normal	0.20	0.17	0.27	Yes
		Molybdenum	0/8	0	All NDs	--	--	--	--
		Selenium	0/8	0	All NDs	--	--	--	--
		Thallium	0/8	0	All NDs	--	--	--	--
		Radium-226 + Radium-228	8/8	100	Normal	0.31	0.092	0.072	Yes
MW-18A	Appendix III	Boron	21/21	100	Normal	0.59	0.60	0.71	Yes
		Calcium	21/21	100	Lognormal	0.00015	2.4E-07	9.4E-07	No
		Chloride	21/21	100	Normal	0.84	0.85	0.81	Yes
		Fluoride	3/21	14	Nonparametric, <50% Detects	--	--	--	--
		field pH	21/21	100	Nonparametric	0.022	0.0090	0.014	No
		Sulfate	21/21	100	Normal	0.25	0.022	0.015	Yes
		Total Dissolved Solids	21/21	100	Gamma	0.012	0.031	0.017	No
	Appendix IV	Antimony	0/8	0	All NDs	--	--	--	--
		Arsenic	0/8	0	All NDs	--	--	--	--
		Barium	8/8	100	Normal	0.39	0.42	0.52	Yes
		Beryllium	1/8	13	Nonparametric, <50% Detects	--	--	--	--
		Cadmium	0/8	0	All NDs	--	--	--	--
		Chromium	3/8	38	Nonparametric, <50% Detects	--	--	--	--
		Cobalt	4/8	50	Normal	--	0.46	--	Yes
		Fluoride	2/8	25	Nonparametric, <50% Detects	--	--	--	--
		Lead	3/8	38	Nonparametric, <50% Detects	--	--	--	--
		Lithium	8/8	100	Normal	0.50	0.25	0.27	Yes
		Mercury	8/8	100	Normal	0.067	0.099	0.13	Yes
		Molybdenum	0/8	0	All NDs	--	--	--	--
		Selenium	4/8	50	Normal	--	0.64	--	Yes
		Thallium	0/8	0	All NDs	--	--	--	--
		Radium-226 + Radium-228	5/8	63	Normal	0.52	0.29	0.43	Yes
MW-19	Appendix III	Boron	21/21	100	Normal	0.26	0.15	0.27	Yes
		Calcium	21/21	100	Normal	0.53	0.19	0.34	Yes
		Chloride	21/21	100	Normal	0.11	0.14	0.11	Yes
		Fluoride	19/21	90	Normal	0.10	0.014	0.014	Yes
		field pH	21/21	100	Nonparametric	6.5E-05	0.00046	0.00077	No
		Sulfate	21/21	100	Normal	0.068	0.017	0.045	Yes
		Total Dissolved Solids	21/21	100	Normal	0.027	0.12	0.17	Yes
	Appendix IV	Antimony	0/8	0	All NDs	--	--	--	--
		Arsenic	8/8	100	Normal	0.15	0.096	0.072	Yes
		Barium	8/8	100	Normal	0.85	0.64	0.63	Yes
		Beryllium	5/8	63	Normal	0.64	0.57	0.79	Yes
		Cadmium	0/8	0	All NDs	--	--	--	--
		Chromium	4/8	50	Normal	--	0.68	--	Yes
		Cobalt	4/8	50	Normal	--	0.080	--	Yes
		Fluoride	8/8	100	Normal	0.37	0.049	0.037	Yes
		Lead	4/8	50	Normal	--	0.85	--	Yes
		Lithium	7/8	88	Normal	0.065	0.047	0.078	Yes
		Mercury	0/8	0	All NDs	--	--	--	--
		Molybdenum	0/8	0	All NDs	--	--	--	--
		Selenium	1/8	13	Nonparametric, <50% Detects	--	--	--	--
		Thallium	0/8	0	All NDs	--	--	--	--
		Radium-226 + Radium-228	8/8	100	Normal	0.47	0.15	0.20	Yes

NOTE:
Statistical Significance for Distributional tests are based on 95% level of confidence, or a=0.05.
'-- No Distributional Test performed since <50% Detects, or (for Kolmogorov-Smirnov and Probability Plot Correlation methods) <5 Detects.

Table C-5. Summary of Distributional Tests
PDP 5

Well	Consituent List	Constituent	# Detects/ # Samples	% Detects	Defined Distribution	Tests for Normality			Can the Data be defined as Normal?
						Kolmogorov-Smirnov Test	Shapiro-Wilks Test	Probability Plot Correlation	
MW-20A	Appendix III	Boron	21/21	100	Normal	0.96	0.68	0.61	Yes
		Calcium	21/21	100	Normal	0.42	0.16	0.11	Yes
		Chloride	21/21	100	Nonparametric	0.040	0.00065	0.00044	No
		Fluoride	18/21	86	Normal	0.68	0.53	0.75	Yes
		field pH	21/21	100	Nonparametric	0.0013	0.00012	0.00026	No
		Sulfate	21/21	100	Normal	0.93	0.98	0.91	Yes
		Total Dissolved Solids	21/21	100	Normal	0.68	0.94	0.92	Yes
	Appendix IV	Antimony	0/8	0	All NDs	--	--	--	--
		Arsenic	0/8	0	All NDs	--	--	--	--
		Barium	8/8	100	Nonparametric	5.1E-05	8.8E-06	0.00017	No
		Beryllium	8/8	100	Normal	0.79	0.75	0.62	Yes
		Cadmium	0/8	0	All NDs	--	--	--	--
		Chromium	1/8	13	Nonparametric, <50% Detects	--	--	--	--
		Cobalt	8/8	100	Normal	1.0	0.96	0.99	Yes
		Fluoride	8/8	100	Normal	0.77	0.85	0.62	Yes
		Lead	8/8	100	Lognormal	0.016	0.0018	0.0029	No
		Lithium	8/8	100	Normal	0.017	0.20	0.13	Yes
		Mercury	8/8	100	Nonparametric	0.00071	1.4E-05	0.00022	No
		Molybdenum	0/8	0	All NDs	--	--	--	--
		Selenium	8/8	100	Normal	0.69	0.31	0.28	Yes
		Thallium	0/8	0	All NDs	--	--	--	--
		Radium-226 + Radium-228	8/8	100	Normal	0.14	0.037	0.029	Yes
PDP-22	Appendix III	Boron	21/21	100	Normal	0.54	0.95	0.96	Yes
		Calcium	21/21	100	Normal	0.43	0.071	0.072	Yes
		Chloride	21/21	100	Normal	0.18	0.095	0.035	Yes
		Fluoride	16/21	76	Lognormal	0.016	9.7E-05	0.00013	No
		field pH	21/21	100	Nonparametric	0.0095	0.0032	0.0020	No
		Sulfate	21/21	100	Normal	0.16	0.038	0.053	Yes
		Total Dissolved Solids	21/21	100	Normal	0.32	0.013	0.010	Yes
	Appendix IV	Antimony	0/8	0	All NDs	--	--	--	--
		Arsenic	7/8	88	Normal	0.099	0.090	0.080	Yes
		Barium	8/8	100	Normal	0.24	0.34	0.45	Yes
		Beryllium	0/8	0	All NDs	--	--	--	--
		Cadmium	0/8	0	All NDs	--	--	--	--
		Chromium	7/8	88	Normal	0.040	0.046	0.064	Yes
		Cobalt	4/8	50	Gamma	--	0.046	--	No
		Fluoride	7/8	88	Normal	0.068	0.014	0.013	Yes
		Lead	3/8	38	Nonparametric, <50% Detects	--	--	--	--
		Lithium	7/8	88	Normal	0.30	0.43	0.46	Yes
		Mercury	0/8	0	All NDs	--	--	--	--
		Molybdenum	4/8	50	Nonparametric	--	0.0072	--	No
		Selenium	0/8	0	All NDs	--	--	--	--
		Thallium	0/8	0	All NDs	--	--	--	--
		Radium-226 + Radium-228	8/8	100	Normal	0.34	0.32	0.44	Yes
PDP-23	Appendix III	Boron	21/21	100	Normal	0.34	0.26	0.26	Yes
		Calcium	21/21	100	Lognormal	0.037	0.00091	0.00098	No
		Chloride	21/21	100	Normal	0.40	0.77	0.74	Yes
		Fluoride	3/21	14	Nonparametric, <50% Detects	--	--	--	--
		field pH	21/21	100	Nonparametric	0.00020	0.00022	0.00056	No
		Sulfate	20/21	95	Nonparametric	0.0018	0.00098	0.0013	No
		Total Dissolved Solids	21/21	100	Nonparametric	0.043	0.019	0.020	No
	Appendix IV	Antimony	0/8	0	All NDs	--	--	--	--
		Arsenic	0/8	0	All NDs	--	--	--	--
		Barium	8/8	100	Normal	0.30	0.37	0.38	Yes
		Beryllium	0/8	0	All NDs	--	--	--	--
		Cadmium	0/8	0	All NDs	--	--	--	--
		Chromium	3/8	38	Nonparametric, <50% Detects	--	--	--	--
		Cobalt	0/8	0	All NDs	--	--	--	--
		Fluoride	2/8	25	Nonparametric, <50% Detects	--	--	--	--
		Lead	0/8	0	All NDs	--	--	--	--
		Lithium	8/8	100	Gamma	0.017	0.039	0.028	No
		Mercury	0/8	0	All NDs	--	--	--	--
		Molybdenum	0/8	0	All NDs	--	--	--	--
		Selenium	0/8	0	All NDs	--	--	--	--
		Thallium	0/8	0	All NDs	--	--	--	--
		Radium-226 + Radium-228	4/8	50	Normal	--	0.26	--	Yes

NOTE:
Statistical Significance for Distributional tests are based on 95% level of confidence, or a=0.05.
'-- No Distributional Test performed since <50% Detects, or (for Kolmogorov-Smirnov and Probability Plot Correlation methods) <5 Detects.

Table C-5. Summary of Distributional Tests
PDP 5

Well	Consituent List	Constituent	# Detects/ # Samples	% Detects	Defined Distribution	Tests for Normality			Can the Data be defined as Normal?
						Kolmogorov-Smirnov Test	Shapiro-Wilks Test	Probability Plot Correlation	
PDP-24	Appendix III	Boron	21/21	100	Normal	0.17	0.072	0.16	Yes
		Calcium	21/21	100	Normal	0.63	0.14	0.28	Yes
		Chloride	21/21	100	Normal	0.21	0.33	0.37	Yes
		Fluoride	21/21	100	Normal	0.93	0.96	0.90	Yes
		field pH	21/21	100	Nonparametric	4.5E-05	1.8E-05	5.6E-05	No
		Sulfate	21/21	100	Normal	0.031	0.085	0.14	Yes
		Total Dissolved Solids	21/21	100	Normal	0.12	0.10	0.18	Yes
	Appendix IV	Antimony	0/8	0	All NDs	--	--	--	--
		Arsenic	0/8	0	All NDs	--	--	--	--
		Barium	8/8	100	Normal	0.18	0.17	0.19	Yes
		Beryllium	8/8	100	Normal	0.16	0.038	0.030	Yes
		Cadmium	8/8	100	Normal	0.45	0.12	0.15	Yes
		Chromium	0/8	0	All NDs	--	--	--	--
		Cobalt	8/8	100	Normal	0.25	0.013	0.025	Yes
		Fluoride	8/8	100	Normal	0.19	0.65	0.45	Yes
		Lead	7/8	88	Normal	0.064	0.042	0.026	Yes
		Lithium	8/8	100	Normal	0.41	0.43	0.24	Yes
		Mercury	8/8	100	Normal	0.095	0.070	0.066	Yes
		Molybdenum	0/8	0	All NDs	--	--	--	--
		Selenium	8/8	100	Lognormal	0.0095	0.00067	0.0017	No
		Thallium	0/8	0	All NDs	--	--	--	--
		Radium-226 + Radium-228	8/8	100	Normal	0.90	0.63	0.61	Yes
PDP-25	Appendix III	Boron	21/21	100	Normal	0.27	0.038	0.042	Yes
		Calcium	21/21	100	Nonparametric	0.0068	0.0011	0.0014	No
		Chloride	21/21	100	Normal	0.45	0.037	0.021	Yes
		Fluoride	9/21	43	Nonparametric, <50% Detects	--	--	--	--
		field pH	21/21	100	Nonparametric	0.0073	0.0012	0.0022	No
		Sulfate	21/21	100	Normal	0.12	0.021	0.048	Yes
		Total Dissolved Solids	21/21	100	Nonparametric	0.0012	0.0036	0.0089	No
	Appendix IV	Antimony	0/8	0	All NDs	--	--	--	--
		Arsenic	4/8	50	Normal	--	0.13	--	Yes
		Barium	8/8	100	Normal	0.86	0.83	0.85	Yes
		Beryllium	0/8	0	All NDs	--	--	--	--
		Cadmium	0/8	0	All NDs	--	--	--	--
		Chromium	7/8	88	Normal	0.11	0.059	0.042	Yes
		Cobalt	8/8	100	Normal	0.50	0.37	0.44	Yes
		Fluoride	5/8	63	Normal	0.13	0.21	0.18	Yes
		Lead	0/8	0	All NDs	--	--	--	--
		Lithium	8/8	100	Normal	0.50	0.56	0.71	Yes
		Mercury	0/8	0	All NDs	--	--	--	--
		Molybdenum	0/8	0	All NDs	--	--	--	--
		Selenium	0/8	0	All NDs	--	--	--	--
		Thallium	0/8	0	All NDs	--	--	--	--
		Radium-226 + Radium-228	8/8	100	Normal	0.56	0.52	0.67	Yes
PDP-26	Appendix III	Boron	21/21	100	Gamma	0.017	0.021	0.013	No
		Calcium	21/21	100	Normal	0.070	0.0048	0.0044	Yes
		Chloride	21/21	100	Nonparametric	0.0018	3.5E-06	8.5E-06	No
		Fluoride	11/21	52	Normal	0.64	0.16	0.11	Yes
		field pH	21/21	100	Nonparametric	0.0024	0.0015	0.0039	No
		Sulfate	21/21	100	Nonparametric	0.00016	1.5E-06	4.6E-06	No
		Total Dissolved Solids	21/21	100	Nonparametric	6.1E-07	5.4E-07	1.9E-06	No
	Appendix IV	Antimony	0/8	0	All NDs	--	--	--	--
		Arsenic	6/8	75	Normal	0.30	0.56	0.58	Yes
		Barium	8/8	100	Normal	0.047	0.33	0.19	Yes
		Beryllium	0/8	0	All NDs	--	--	--	--
		Cadmium	0/8	0	All NDs	--	--	--	--
		Chromium	0/8	0	All NDs	--	--	--	--
		Cobalt	1/8	13	Nonparametric, <50% Detects	--	--	--	--
		Fluoride	6/8	75	Normal	0.47	0.73	0.65	Yes
		Lead	3/8	38	Nonparametric, <50% Detects	--	--	--	--
		Lithium	8/8	100	Normal	1.0	1.0	1.0	Yes
		Mercury	0/8	0	All NDs	--	--	--	--
		Molybdenum	0/8	0	All NDs	--	--	--	--
		Selenium	0/8	0	All NDs	--	--	--	--
		Thallium	0/8	0	All NDs	--	--	--	--
		Radium-226 + Radium-228	4/8	50	Normal	--	0.19	--	Yes

NOTE:
Statistical Significance for Distributional tests are based on 95% level of confidence, or a=0.05.
'-- No Distributional Test performed since <50% Detects, or (for Kolmogorov-Smirnov and Probability Plot Correlation methods) <5 Detects.

(continued) Table C-5. Summary of Distributional Tests
PDP 5

Well	Consituent List	Constituent	# Detects/ # Samples	% Detects	Defined Distribution	Test for Gamma		Can the Data be defined as Gamma?
						Shapiro-Wilks Test	Probability Plot Correlation	
MW-17A	Appendix III	Boron	21/21	100	Normal	0.21	0.39	Yes
		Calcium	21/21	100	Normal	0.59	0.57	Yes
		Chloride	21/21	100	Normal	0.87	0.82	Yes
		Fluoride	3/21	14	Nonparametric, <50% Detects	--	--	--
		field pH	21/21	100	Nonparametric	5.0E-05	0.00015	No
		Sulfate	21/21	100	Normal	0.70	0.84	Yes
		Total Dissolved Solids	21/21	100	Normal	0.15	0.20	Yes
	Appendix IV	Antimony	0/8	0	All NDs	--	--	--
		Arsenic	0/8	0	All NDs	--	--	--
		Barium	8/8	100	Normal	0.75	0.85	Yes
		Beryllium	0/8	0	All NDs	--	--	--
		Cadmium	0/8	0	All NDs	--	--	--
		Chromium	1/8	13	Nonparametric, <50% Detects	--	--	--
		Cobalt	8/8	100	Normal	0.12	0.068	Yes
		Fluoride	2/8	25	Nonparametric, <50% Detects	--	--	--
		Lead	0/8	0	All NDs	--	--	--
		Lithium	8/8	100	Normal	0.017	0.013	No
		Mercury	8/8	100	Normal	0.19	0.29	Yes
		Molybdenum	0/8	0	All NDs	--	--	--
		Selenium	0/8	0	All NDs	--	--	--
		Thallium	0/8	0	All NDs	--	--	--
		Radium-226 + Radium-228	8/8	100	Normal	0.35	0.31	Yes
MW-18A	Appendix III	Boron	21/21	100	Normal	0.63	0.71	Yes
		Calcium	21/21	100	Lognormal	7.7E-05	0.00011	No
		Chloride	21/21	100	Normal	0.94	0.90	Yes
		Fluoride	3/21	14	Nonparametric, <50% Detects	--	--	--
		field pH	21/21	100	Nonparametric	0.0058	0.0090	No
		Sulfate	21/21	100	Normal	0.21	0.14	Yes
		Total Dissolved Solids	21/21	100	Gamma	0.16	0.076	Yes
	Appendix IV	Antimony	0/8	0	All NDs	--	--	--
		Arsenic	0/8	0	All NDs	--	--	--
		Barium	8/8	100	Normal	0.50	0.64	Yes
		Beryllium	1/8	13	Nonparametric, <50% Detects	--	--	--
		Cadmium	0/8	0	All NDs	--	--	--
		Chromium	3/8	38	Nonparametric, <50% Detects	--	--	--
		Cobalt	4/8	50	Normal	0.49	--	Yes
		Fluoride	2/8	25	Nonparametric, <50% Detects	--	--	--
		Lead	3/8	38	Nonparametric, <50% Detects	--	--	--
		Lithium	8/8	100	Normal	0.22	0.24	Yes
		Mercury	8/8	100	Normal	0.095	0.15	Yes
		Molybdenum	0/8	0	All NDs	--	--	--
		Selenium	4/8	50	Normal	0.64	--	Yes
		Thallium	0/8	0	All NDs	--	--	--
		Radium-226 + Radium-228	5/8	63	Normal	0.26	0.39	Yes
MW-19	Appendix III	Boron	21/21	100	Normal	0.047	0.091	Yes
		Calcium	21/21	100	Normal	0.053	0.075	Yes
		Chloride	21/21	100	Normal	0.39	0.39	Yes
		Fluoride	19/21	90	Normal	0.22	0.21	Yes
		field pH	21/21	100	Nonparametric	0.00031	0.00054	No
		Sulfate	21/21	100	Normal	0.00032	0.00072	No
		Total Dissolved Solids	21/21	100	Normal	0.0023	0.0036	No
	Appendix IV	Antimony	0/8	0	All NDs	--	--	--
		Arsenic	8/8	100	Normal	0.74	0.72	Yes
		Barium	8/8	100	Normal	0.87	0.95	Yes
		Beryllium	5/8	63	Normal	0.55	0.74	Yes
		Cadmium	0/8	0	All NDs	--	--	--
		Chromium	4/8	50	Normal	0.59	--	Yes
		Cobalt	4/8	50	Normal	0.11	--	Yes
		Fluoride	8/8	100	Normal	0.27	0.19	Yes
		Lead	4/8	50	Normal	0.72	--	Yes
		Lithium	7/8	88	Normal	0.036	0.060	Yes
		Mercury	0/8	0	All NDs	--	--	--
		Molybdenum	0/8	0	All NDs	--	--	--
		Selenium	1/8	13	Nonparametric, <50% Detects	--	--	--
		Thallium	0/8	0	All NDs	--	--	--
		Radium-226 + Radium-228	8/8	100	Normal	0.40	0.54	Yes
MW-20A	Appendix III	Boron	21/21	100	Normal	0.87	0.80	Yes
		Calcium	21/21	100	Normal	1.0	0.98	Yes
		Chloride	21/21	100	Nonparametric	0.00011	0.00011	No
		Fluoride	18/21	86	Normal	0.15	0.24	Yes
		field pH	21/21	100	Nonparametric	5.8E-05	0.00013	No
		Sulfate	21/21	100	Normal	0.0048	0.0035	No
		Total Dissolved Solids	21/21	100	Normal	0.45	0.35	Yes
	Appendix IV	Antimony	0/8	0	All NDs	--	--	--
		Arsenic	0/8	0	All NDs	--	--	--
		Barium	8/8	100	Nonparametric	2.8E-05	0.00030	No
		Beryllium	8/8	100	Normal	0.54	0.39	Yes
		Cadmium	0/8	0	All NDs	--	--	--
		Chromium	1/8	13	Nonparametric, <50% Detects	--	--	--
		Cobalt	8/8	100	Normal	0.99	1.0	Yes
		Fluoride	8/8	100	Normal	0.93	0.74	Yes
		Lead	8/8	100	Lognormal	0.033	0.022	No
		Lithium	8/8	100	Normal	0.23	0.15	Yes
		Mercury	8/8	100	Nonparametric	0.00013	0.00067	No
		Molybdenum	0/8	0	All NDs	--	--	--
		Selenium	8/8	100	Normal	0.44	0.46	Yes
		Thallium	0/8	0	All NDs	--	--	--

NOTE: APPENDIX F-Revision 2 February 27, 2024
Statistical Significance for Distributional tests are based on 95% level of confidence, or a=0.05.
'-- No Distributional Test performed since <50% Detects, or (for Kolmogorov-Smirnov and Probability Plot Correlation methods) <5 Detects.

(continued) Table C-5. Summary of Distributional Tests
PDP 5

Well	Consituent List	Constituent	# Detects/ # Samples	% Detects	Defined Distribution	Test for Gamma		Can the Data be defined as Gamma?
						Shapiro-Wilks Test	Probability Plot Correlation	
		Radium-226 + Radium-228	8/8	100	Normal	0.51	0.44	Yes
PDP-22	Appendix III	Boron	21/21	100	Normal	0.70	0.63	Yes
		Calcium	21/21	100	Normal	0.90	0.93	Yes
		Chloride	21/21	100	Normal	0.0031	0.0017	No
		Fluoride	16/21	76	Lognormal	0.017	0.012	No
		field pH	21/21	100	Nonparametric	0.0077	0.0043	No
		Sulfate	21/21	100	Normal	0.00014	0.00022	No
		Total Dissolved Solids	21/21	100	Normal	0.62	0.50	Yes
	Appendix IV	Antimony	0/8	0	All NDs	--	--	--
		Arsenic	7/8	88	Normal	0.16	0.15	Yes
		Barium	8/8	100	Normal	0.72	0.91	Yes
		Beryllium	0/8	0	All NDs	--	--	--
		Cadmium	0/8	0	All NDs	--	--	--
		Chromium	7/8	88	Normal	0.30	0.39	Yes
		Cobalt	4/8	50	Gamma	0.062	--	Yes
		Fluoride	7/8	88	Normal	0.25	0.18	Yes
		Lead	3/8	38	Nonparametric, <50% Detects	--	--	--
		Lithium	7/8	88	Normal	0.52	0.59	Yes
		Mercury	0/8	0	All NDs	--	--	--
		Molybdenum	4/8	50	Nonparametric	0.014	--	No
		Selenium	0/8	0	All NDs	--	--	--
		Thallium	0/8	0	All NDs	--	--	--
		Radium-226 + Radium-228	8/8	100	Normal	0.22	0.31	Yes
PDP-23	Appendix III	Boron	21/21	100	Normal	0.45	0.49	Yes
		Calcium	21/21	100	Lognormal	0.013	0.011	No
		Chloride	21/21	100	Normal	0.69	0.67	Yes
		Fluoride	3/21	14	Nonparametric, <50% Detects	--	--	--
		field pH	21/21	100	Nonparametric	0.00015	0.00039	No
		Sulfate	20/21	95	Nonparametric	0.010	0.0097	No
		Total Dissolved Solids	21/21	100	Nonparametric	0.0033	0.0043	No
	Appendix IV	Antimony	0/8	0	All NDs	--	--	--
		Arsenic	0/8	0	All NDs	--	--	--
		Barium	8/8	100	Normal	0.33	0.32	Yes
		Beryllium	0/8	0	All NDs	--	--	--
		Cadmium	0/8	0	All NDs	--	--	--
		Chromium	3/8	38	Nonparametric, <50% Detects	--	--	--
		Cobalt	0/8	0	All NDs	--	--	--
		Fluoride	2/8	25	Nonparametric, <50% Detects	--	--	--
		Lead	0/8	0	All NDs	--	--	--
		Lithium	8/8	100	Gamma	0.066	0.045	Yes
		Mercury	0/8	0	All NDs	--	--	--
		Molybdenum	0/8	0	All NDs	--	--	--
		Selenium	0/8	0	All NDs	--	--	--
		Thallium	0/8	0	All NDs	--	--	--
		Radium-226 + Radium-228	4/8	50	Normal	0.31	--	Yes
PDP-24	Appendix III	Boron	21/21	100	Normal	0.068	0.14	Yes
		Calcium	21/21	100	Normal	0.20	0.40	Yes
		Chloride	21/21	100	Normal	0.26	0.27	Yes
		Fluoride	21/21	100	Normal	0.73	0.59	Yes
		field pH	21/21	100	Nonparametric	8.4E-06	2.9E-05	No
		Sulfate	21/21	100	Normal	0.073	0.11	Yes
		Total Dissolved Solids	21/21	100	Normal	0.078	0.13	Yes
	Appendix IV	Antimony	0/8	0	All NDs	--	--	--
		Arsenic	0/8	0	All NDs	--	--	--
		Barium	8/8	100	Normal	0.22	0.26	Yes
		Beryllium	8/8	100	Normal	0.015	0.013	No
		Cadmium	8/8	100	Normal	0.059	0.078	Yes
		Chromium	0/8	0	All NDs	--	--	--
		Cobalt	8/8	100	Normal	0.0090	0.019	No
		Fluoride	8/8	100	Normal	0.49	0.31	Yes
		Lead	7/8	88	Normal	0.38	0.22	Yes
		Lithium	8/8	100	Normal	0.52	0.30	Yes
		Mercury	8/8	100	Normal	0.72	0.80	Yes
		Molybdenum	0/8	0	All NDs	--	--	--
		Selenium	8/8	100	Lognormal	0.010	0.010	No
		Thallium	0/8	0	All NDs	--	--	--
		Radium-226 + Radium-228	8/8	100	Normal	0.89	0.96	Yes
PDP-25	Appendix III	Boron	21/21	100	Normal	0.22	0.26	Yes
		Calcium	21/21	100	Nonparametric	0.0054	0.0059	No
		Chloride	21/21	100	Normal	0.18	0.096	Yes
		Fluoride	9/21	43	Nonparametric, <50% Detects	--	--	--
		field pH	21/21	100	Nonparametric	0.00088	0.0017	No
		Sulfate	21/21	100	Normal	0.027	0.056	Yes
		Total Dissolved Solids	21/21	100	Nonparametric	0.0047	0.012	No
	Appendix IV	Antimony	0/8	0	All NDs	--	--	--
		Arsenic	4/8	50	Normal	0.14	--	Yes
		Barium	8/8	100	Normal	0.82	0.83	Yes
		Beryllium	0/8	0	All NDs	--	--	--
		Cadmium	0/8	0	All NDs	--	--	--
		Chromium	7/8	88	Normal	0.70	0.66	Yes
		Cobalt	8/8	100	Normal	0.35	0.40	Yes
		Fluoride	5/8	63	Normal	0.30	0.28	Yes
		Lead	0/8	0	All NDs	--	--	--
		Lithium	8/8	100	Normal	0.58	0.68	Yes
		Mercury	0/8	0	All NDs	--	--	--
		Molybdenum	0/8	0	All NDs	--	--	--
		Selenium	0/8	0	All NDs	--	--	--

NOTE:
Statistical Significance for Distributional tests are based on 95% level of confidence, or a=0.05.
'-- No Distributional Test performed since <50% Detects, or (for Kolmogorov-Smirnov and Probability Plot Correlation methods) <5 Detects.

(continued) Table C-5. Summary of Distributional Tests
PDP 5

Well	Consituent List	Constituent	# Detects/ # Samples	% Detects	Defined Distribution	Test for Gamma		Can the Data be defined as Gamma?
						Shapiro-Wilks Test	Probability Plot Correlation	
		Thallium	0/8	0	All NDs	--	--	--
		Radium-226 + Radium-228	8/8	100	Normal	0.59	0.71	Yes
PDP-26	Appendix III	Boron	21/21	100	Gamma	0.25	0.11	Yes
		Calcium	21/21	100	Normal	0.037	0.027	No
		Chloride	21/21	100	Nonparametric	5.8E-05	8.6E-05	No
		Fluoride	11/21	52	Normal	0.68	0.61	Yes
		field pH	21/21	100	Nonparametric	0.0013	0.0034	No
		Sulfate	21/21	100	Nonparametric	0.00088	0.0012	No
		Total Dissolved Solids	21/21	100	Nonparametric	6.3E-06	1.4E-05	No
	Appendix IV	Antimony	0/8	0	All NDs	--	--	--
		Arsenic	6/8	75	Normal	0.82	0.91	Yes
		Barium	8/8	100	Normal	0.39	0.22	Yes
		Beryllium	0/8	0	All NDs	--	--	--
		Cadmium	0/8	0	All NDs	--	--	--
		Chromium	0/8	0	All NDs	--	--	--
		Cobalt	1/8	13	Nonparametric, <50% Detects	--	--	--
		Fluoride	6/8	75	Normal	0.96	0.96	Yes
		Lead	3/8	38	Nonparametric, <50% Detects	--	--	--
		Lithium	8/8	100	Normal	1.0	1.0	Yes
		Mercury	0/8	0	All NDs	--	--	--
		Molybdenum	0/8	0	All NDs	--	--	--
		Selenium	0/8	0	All NDs	--	--	--
		Thallium	0/8	0	All NDs	--	--	--
		Radium-226 + Radium-228	4/8	50	Normal	0.18	--	Yes

NOTE:
Statistical Significance for Distributional tests are based on 95% level of confidence, or a=0.05.
'-- No Distributional Test performed since <50% Detects, or (for Kolmogorov-Smirnov and Probability Plot Correlation methods) <5 Detects.

(continued) Table C-5. Summary of Distributional Tests
PDP 5

Well	Consituent List	Constituent	# Detects/ # Samples	% Detects	Defined Distribution	Tests for Lognormality			Can the Data be defined as Lognormal?
						Kolmogorov-Smirnov Test	Shapiro-Wilks Test	Probability Plot Correlation	
MW-17A	Appendix III	Boron	21/21	100	Normal	0.63	0.20	0.36	Yes
		Calcium	21/21	100	Normal	0.70	0.54	0.48	Yes
		Chloride	21/21	100	Normal	0.77	0.87	0.82	Yes
		Fluoride	3/21	14	Nonparametric, <50% Detects	--	--	--	--
		field pH	21/21	100	Nonparametric	1.50E-05	4.00E-05	0.00012	No
		Sulfate	21/21	100	Normal	0.38	0.59	0.73	Yes
		Total Dissolved Solids	21/21	100	Normal	0.44	0.12	0.16	Yes
	Appendix IV	Antimony	0/8	0	All NDs	--	--	--	--
		Arsenic	0/8	0	All NDs	--	--	--	--
		Barium	8/8	100	Normal	0.97	0.73	0.82	Yes
		Beryllium	0/8	0	All NDs	--	--	--	--
		Cadmium	0/8	0	All NDs	--	--	--	--
		Chromium	1/8	13	Nonparametric, <50% Detects	--	--	--	--
		Cobalt	8/8	100	Normal	0.082	0.090	0.053	Yes
		Fluoride	2/8	25	Nonparametric, <50% Detects	--	--	--	--
		Lead	0/8	0	All NDs	--	--	--	--
		Lithium	8/8	100	Normal	0.11	0.0098	0.0089	Yes
		Mercury	8/8	100	Normal	0.42	0.19	0.29	Yes
		Molybdenum	0/8	0	All NDs	--	--	--	--
		Selenium	0/8	0	All NDs	--	--	--	--
		Thallium	0/8	0	All NDs	--	--	--	--
		Radium-226 + Radium-228	8/8	100	Normal	0.76	0.53	0.54	Yes
MW-18A	Appendix III	Boron	21/21	100	Normal	0.65	0.48	0.52	Yes
		Calcium	21/21	100	Lognormal	0.23	0.0049	0.0036	Yes
		Chloride	21/21	100	Normal	0.73	0.94	0.89	Yes
		Fluoride	3/21	14	Nonparametric, <50% Detects	--	--	--	--
		field pH	21/21	100	Nonparametric	0.012	0.0047	0.0073	No
		Sulfate	21/21	100	Normal	0.58	0.28	0.22	Yes
		Total Dissolved Solids	21/21	100	Gamma	0.12	0.15	0.071	Yes
	Appendix IV	Antimony	0/8	0	All NDs	--	--	--	--
		Arsenic	0/8	0	All NDs	--	--	--	--
		Barium	8/8	100	Normal	0.62	0.54	0.69	Yes
		Beryllium	1/8	13	Nonparametric, <50% Detects	--	--	--	--
		Cadmium	0/8	0	All NDs	--	--	--	--
		Chromium	3/8	38	Nonparametric, <50% Detects	--	--	--	--
		Cobalt	4/8	50	Normal	--	0.50	--	Yes
		Fluoride	2/8	25	Nonparametric, <50% Detects	--	--	--	--
		Lead	3/8	38	Nonparametric, <50% Detects	--	--	--	--
		Lithium	8/8	100	Normal	0.41	0.21	0.23	Yes
		Mercury	8/8	100	Normal	0.13	0.079	0.13	Yes
		Molybdenum	0/8	0	All NDs	--	--	--	--
		Selenium	4/8	50	Normal	--	0.64	--	Yes
		Thallium	0/8	0	All NDs	--	--	--	--
		Radium-226 + Radium-228	5/8	63	Normal	0.43	0.23	0.34	Yes
MW-19	Appendix III	Boron	21/21	100	Normal	0.012	0.013	0.027	No
		Calcium	21/21	100	Normal	0.031	0.0022	0.0036	No
		Chloride	21/21	100	Normal	0.092	0.037	0.045	Yes
		Fluoride	19/21	90	Normal	0.76	0.47	0.49	Yes
		field pH	21/21	100	Nonparametric	4.50E-05	0.00025	0.00045	No
		Sulfate	21/21	100	Normal	0.00016	1.30E-05	3.90E-05	No
		Total Dissolved Solids	21/21	100	Normal	0.0036	0.00022	0.00044	No
	Appendix IV	Antimony	0/8	0	All NDs	--	--	--	--
		Arsenic	8/8	100	Normal	0.84	0.96	0.98	Yes
		Barium	8/8	100	Normal	0.65	0.83	0.92	Yes
		Beryllium	5/8	63	Normal	0.70	0.53	0.69	Yes
		Cadmium	0/8	0	All NDs	--	--	--	--
		Chromium	4/8	50	Normal	--	0.54	--	Yes
		Cobalt	4/8	50	Normal	--	0.12	--	Yes
		Fluoride	8/8	100	Normal	0.38	0.48	0.39	Yes
		Lead	4/8	50	Normal	--	0.63	--	Yes
		Lithium	7/8	88	Normal	0.045	0.031	0.052	Yes
		Mercury	0/8	0	All NDs	--	--	--	--
		Molybdenum	0/8	0	All NDs	--	--	--	--
		Selenium	1/8	13	Nonparametric, <50% Detects	--	--	--	--
		Thallium	0/8	0	All NDs	--	--	--	--
		Radium-226 + Radium-228	8/8	100	Normal	0.82	0.52	0.71	Yes
MW-20A	Appendix III	Boron	21/21	100	Normal	0.35	0.58	0.48	Yes
		Calcium	21/21	100	Normal	0.67	0.88	0.72	Yes
		Chloride	21/21	100	Nonparametric	0.0066	4.50E-05	5.40E-05	No
		Fluoride	18/21	86	Normal	0.18	0.048	0.076	Yes
		field pH	21/21	100	Nonparametric	0.00056	4.00E-05	9.70E-05	No
		Sulfate	21/21	100	Normal	0.0077	2.50E-05	4.30E-05	No
		Total Dissolved Solids	21/21	100	Normal	0.082	0.14	0.10	Yes
	Appendix IV	Antimony	0/8	0	All NDs	--	--	--	--
		Arsenic	0/8	0	All NDs	--	--	--	--
		Barium	8/8	100	Nonparametric	0.0014	5.80E-05	0.00043	No
		Beryllium	8/8	100	Normal	0.59	0.43	0.29	Yes
		Cadmium	0/8	0	All NDs	--	--	--	--
		Chromium	1/8	13	Nonparametric, <50% Detects	--	--	--	--
		Cobalt	8/8	100	Normal	1.0	1.0	1.0	Yes
		Fluoride	8/8	100	Normal	0.59	0.91	0.72	Yes
		Lead	8/8	100	Lognormal	0.35	0.13	0.071	Yes
		Lithium	8/8	100	Normal	0.029	0.25	0.16	Yes
		Mercury	8/8	100	Nonparametric	0.0020	0.00053	0.0015	No
		Molybdenum	0/8	0	All NDs	--	--	--	--
		Selenium	8/8	100	Normal	0.62	0.47	0.52	Yes
		Thallium	0/8	0	All NDs	--	--	--	--

NOTE:
Statistical Significance for Distributional tests are based on 95% level of confidence, or a=0.05.
'-- No Distributional Test performed since <50% Detects, or (for Kolmogorov-Smirnov and Probability Plot Correlation methods) <5 Detects.

(continued) Table C-5. Summary of Distributional Tests
PDP 5

Well	Consituent List	Constituent	# Detects/ # Samples	% Detects	Defined Distribution	Tests for Lognormality			Can the Data be defined as Lognormal?
						Kolmogorov-Smirnov Test	Shapiro-Wilks Test	Probability Plot Correlation	
		Radium-226 + Radium-228	8/8	100	Normal	0.92	0.89	0.91	Yes
PDP-22	Appendix III	Boron	21/21	100	Normal	0.43	0.29	0.24	Yes
		Calcium	21/21	100	Normal	0.30	0.23	0.23	Yes
		Chloride	21/21	100	Normal	0.00080	5.00E-05	6.00E-05	No
		Fluoride	16/21	76	Lognormal	0.66	0.14	0.091	Yes
		field pH	21/21	100	Nonparametric	0.025	0.011	0.0057	No
		Sulfate	21/21	100	Normal	0.00021	5.10E-06	1.30E-05	No
		Total Dissolved Solids	21/21	100	Normal	0.94	0.91	0.88	Yes
	Appendix IV	Antimony	0/8	0	All NDs	--	--	--	--
		Arsenic	7/8	88	Normal	0.12	0.20	0.20	Yes
		Barium	8/8	100	Normal	0.85	0.73	0.88	Yes
		Beryllium	0/8	0	All NDs	--	--	--	--
		Cadmium	0/8	0	All NDs	--	--	--	--
		Chromium	7/8	88	Normal	0.66	0.51	0.66	Yes
		Cobalt	4/8	50	Gamma	--	0.073	--	Yes
		Fluoride	7/8	88	Normal	0.79	0.52	0.47	Yes
		Lead	3/8	38	Nonparametric, <50% Detects	--	--	--	--
		Lithium	7/8	88	Normal	0.17	0.34	0.35	Yes
		Mercury	0/8	0	All NDs	--	--	--	--
		Molybdenum	4/8	50	Nonparametric	--	0.021	--	No
		Selenium	0/8	0	All NDs	--	--	--	--
		Thallium	0/8	0	All NDs	--	--	--	--
		Radium-226 + Radium-228	8/8	100	Normal	0.19	0.17	0.24	Yes
PDP-23	Appendix III	Boron	21/21	100	Normal	0.15	0.42	0.48	Yes
		Calcium	21/21	100	Lognormal	0.34	0.044	0.035	Yes
		Chloride	21/21	100	Normal	0.25	0.60	0.58	Yes
		Fluoride	3/21	14	Nonparametric, <50% Detects	--	--	--	--
		field pH	21/21	100	Nonparametric	0.00014	0.00012	0.00032	No
		Sulfate	20/21	95	Nonparametric	0.028	0.033	0.028	No
		Total Dissolved Solids	21/21	100	Nonparametric	0.0053	0.0014	0.0020	No
	Appendix IV	Antimony	0/8	0	All NDs	--	--	--	--
		Arsenic	0/8	0	All NDs	--	--	--	--
		Barium	8/8	100	Normal	0.26	0.30	0.30	Yes
		Beryllium	0/8	0	All NDs	--	--	--	--
		Cadmium	0/8	0	All NDs	--	--	--	--
		Chromium	3/8	38	Nonparametric, <50% Detects	--	--	--	--
		Cobalt	0/8	0	All NDs	--	--	--	--
		Fluoride	2/8	25	Nonparametric, <50% Detects	--	--	--	--
		Lead	0/8	0	All NDs	--	--	--	--
		Lithium	8/8	100	Gamma	0.029	0.085	0.057	Yes
		Mercury	0/8	0	All NDs	--	--	--	--
		Molybdenum	0/8	0	All NDs	--	--	--	--
		Selenium	0/8	0	All NDs	--	--	--	--
		Thallium	0/8	0	All NDs	--	--	--	--
		Radium-226 + Radium-228	4/8	50	Normal	--	0.32	--	Yes
PDP-24	Appendix III	Boron	21/21	100	Normal	0.093	0.064	0.13	Yes
		Calcium	21/21	100	Normal	0.79	0.20	0.40	Yes
		Chloride	21/21	100	Normal	0.17	0.22	0.22	Yes
		Fluoride	21/21	100	Normal	0.68	0.54	0.41	Yes
		field pH	21/21	100	Nonparametric	9.30E-06	6.00E-06	2.10E-05	No
		Sulfate	21/21	100	Normal	0.017	0.061	0.086	Yes
		Total Dissolved Solids	21/21	100	Normal	0.068	0.064	0.10	Yes
	Appendix IV	Antimony	0/8	0	All NDs	--	--	--	--
		Arsenic	0/8	0	All NDs	--	--	--	--
		Barium	8/8	100	Normal	0.30	0.24	0.29	Yes
		Beryllium	8/8	100	Normal	0.048	0.0088	0.0092	No
		Cadmium	8/8	100	Normal	0.13	0.042	0.056	Yes
		Chromium	0/8	0	All NDs	--	--	--	--
		Cobalt	8/8	100	Normal	0.14	0.0074	0.016	Yes
		Fluoride	8/8	100	Normal	0.099	0.41	0.24	Yes
		Lead	7/8	88	Normal	0.52	0.71	0.50	Yes
		Lithium	8/8	100	Normal	0.49	0.57	0.34	Yes
		Mercury	8/8	100	Normal	0.93	0.87	0.96	Yes
		Molybdenum	0/8	0	All NDs	--	--	--	--
		Selenium	8/8	100	Lognormal	0.31	0.039	0.031	Yes
		Thallium	0/8	0	All NDs	--	--	--	--
		Radium-226 + Radium-228	8/8	100	Normal	0.92	0.85	0.94	Yes
PDP-25	Appendix III	Boron	21/21	100	Normal	0.41	0.39	0.48	Yes
		Calcium	21/21	100	Nonparametric	0.024	0.011	0.012	No
		Chloride	21/21	100	Normal	0.66	0.34	0.18	Yes
		Fluoride	9/21	43	Nonparametric, <50% Detects	--	--	--	--
		field pH	21/21	100	Nonparametric	0.0042	0.00075	0.0015	No
		Sulfate	21/21	100	Normal	0.094	0.029	0.058	Yes
		Total Dissolved Solids	21/21	100	Nonparametric	0.0041	0.0054	0.014	No
	Appendix IV	Antimony	0/8	0	All NDs	--	--	--	--
		Arsenic	4/8	50	Normal	--	0.15	--	Yes
		Barium	8/8	100	Normal	0.86	0.81	0.82	Yes
		Beryllium	0/8	0	All NDs	--	--	--	--
		Cadmium	0/8	0	All NDs	--	--	--	--
		Chromium	7/8	88	Normal	0.90	0.90	0.94	Yes
		Cobalt	8/8	100	Normal	0.43	0.34	0.38	Yes
		Fluoride	5/8	63	Normal	0.16	0.35	0.33	Yes
		Lead	0/8	0	All NDs	--	--	--	--
		Lithium	8/8	100	Normal	0.57	0.53	0.60	Yes
		Mercury	0/8	0	All NDs	--	--	--	--
		Molybdenum	0/8	0	All NDs	--	--	--	--
		Selenium	0/8	0	All NDs	--	--	--	--

Statistical Significance for Distributional tests are based on 95% level of confidence, or a=0.05.
'-- No Distributional Test performed since <50% Detects, or (for Kolmogorov-Smirnov and Probability Plot Correlation methods) <5 Detects.

(continued) Table C-5. Summary of Distributional Tests
PDP 5

Well	Consituent List	Constituent	# Detects/ # Samples	% Detects	Defined Distribution	Tests for Lognormality			Can the Data be defined as Lognormal?
						Kolmogorov-Smirnov Test	Shapiro-Wilks Test	Probability Plot Correlation	
		Thallium	0/8	0	All NDs	--	--	--	--
		Radium-226 + Radium-228	8/8	100	Normal	0.58	0.58	0.67	Yes
PDP-26	Appendix III	Boron	21/21	100	Gamma	0.22	0.35	0.14	Yes
		Calcium	21/21	100	Normal	0.36	0.097	0.063	Yes
		Chloride	21/21	100	Nonparametric	0.039	0.00029	0.00034	No
		Fluoride	11/21	52	Normal	0.96	0.85	0.85	Yes
		field pH	21/21	100	Nonparametric	0.0020	0.0012	0.0032	No
		Sulfate	21/21	100	Nonparametric	0.017	0.013	0.016	No
		Total Dissolved Solids	21/21	100	Nonparametric	0.0011	2.90E-05	4.90E-05	No
	Appendix IV	Antimony	0/8	0	All NDs	--	--	--	--
		Arsenic	6/8	75	Normal	0.73	0.90	0.97	Yes
		Barium	8/8	100	Normal	0.087	0.41	0.23	Yes
		Beryllium	0/8	0	All NDs	--	--	--	--
		Cadmium	0/8	0	All NDs	--	--	--	--
		Chromium	0/8	0	All NDs	--	--	--	--
		Cobalt	1/8	13	Nonparametric, <50% Detects	--	--	--	--
		Fluoride	6/8	75	Normal	0.89	0.96	0.96	Yes
		Lead	3/8	38	Nonparametric, <50% Detects	--	--	--	--
		Lithium	8/8	100	Normal	1.0	1.0	0.99	Yes
		Mercury	0/8	0	All NDs	--	--	--	--
		Molybdenum	0/8	0	All NDs	--	--	--	--
		Selenium	0/8	0	All NDs	--	--	--	--
		Thallium	0/8	0	All NDs	--	--	--	--
		Radium-226 + Radium-228	4/8	50	Normal	--	0.18	--	Yes

NOTE:
Statistical Significance for Distributional tests are based on 95% level of confidence, or a=0.05.
'-- No Distributional Test performed since <50% Detects, or (for Kolmogorov-Smirnov and Probability Plot Correlation methods) <5 Detects.

Table C-6. Summary Statistics with Baseline Values[1] (UPLs)
PDP 5

Well	Constituent List	Constituent	# Detects/ # Samples	% Detects	Minimum Detected Result	Maximum Detected Result	Baseline Value (UPL)	MCL or Alt. GWPS[2]	Reporting Limit	UPL 1-of-2	Defined Distribution	single test error rate for annual SWFPR of 10%	Power Rate for UPL 1-of-2
MW-17A	Appendix III	Boron	21/21	100	0.366	0.534	0.57	--	0.03	0.57	Normal	0.0017	GOOD
		Calcium	21/21	100	3.1	6.48	7.0	--	0.3	7.0	Normal	0.0017	GOOD
		Chloride	21/21	100	7.82	10.1	10	--	1	10	Normal	0.0017	GOOD
		Fluoride	3/21	14	0.179	0.182	0.40	4	0.4	0.18	Nonparametric, <50% Detects	0.0017	GOOD
		field pH	21/21	100	4.52	6.94	4.5, 6.9	--	--	4.5, 6.9	Nonparametric	0.00084	GOOD
		Sulfate	21/21	100	30.4	52.8	56	--	1	56	Normal	0.0017	GOOD
		Total Dissolved Solids	21/21	100	98	149	160	--	10	160	Normal	0.0017	GOOD
	Appendix IV	Antimony	0/8	0	ND	ND	0.006	0.006	0.0025	0.0025	All NDs	--	--
		Arsenic	0/8	0	ND	ND	0.01	0.01	0.005	0.005	All NDs	--	--
		Barium	8/8	100	0.0908	0.116	2	2	0.01	0.14	Normal	0.00090	LOW
		Beryllium	0/8	0	ND	ND	0.004	0.004	0.001	0.001	All NDs	--	--
		Cadmium	0/8	0	ND	ND	0.005	0.005	0.001	0.001	All NDs	--	--
		Chromium	1/8	13	0.0055	0.0055	0.1	0.1	0.005	0.0055	Nonparametric, <50% Detects	0.00090	GOOD
		Cobalt	8/8	100	0.00617	0.00869	0.010	0.006	0.005	0.010	Normal	0.00090	LOW
		Fluoride	2/8	25	0.182	0.182	4	4	0.4	0.18	Nonparametric, <50% Detects	0.00090	GOOD
		Lead	0/8	0	ND	ND	0.015	0.015	0.001	0.001	All NDs	--	--
		Lithium	8/8	100	0.00886	0.0161	0.04	0.04	0.01	0.022	Normal	0.00090	LOW
		Mercury	8/8	100	0.000085	0.000232	0.002	0.002	0.0002	0.00036	Normal	0.00090	LOW
		Molybdenum	0/8	0	ND	ND	0.1	0.1	0.005	0.005	All NDs	--	--
		Selenium	0/8	0	ND	ND	0.05	0.05	0.005	0.005	All NDs	--	--
		Thallium	0/8	0	ND	ND	0.002	0.002	0.0015	0.0015	All NDs	--	--
		Radium-226 + Radium-228	8/8	100	1.05	3.51	5	5	0	4.6	Normal	0.00090	LOW
MW-18A	Appendix III	Boron	21/21	100	0.0654	0.225	0.24	--	0.03	0.24	Normal	0.0017	GOOD
		Calcium	21/21	100	1.01	11.5	6.5	--	0.3	6.5	Lognormal	0.0017	GOOD
		Chloride	21/21	100	5.27	9.8	10	--	1	10	Normal	0.0017	GOOD
		Fluoride	3/21	14	0.104	0.138	0.4	4	0.4	0.14	Nonparametric, <50% Detects	0.0017	GOOD
		field pH	21/21	100	5.62	6.94	5.6, 6.9	--	--	5.6, 6.9	Nonparametric	0.00084	GOOD
		Sulfate	21/21	100	3.23	11.7	10	--	1	10	Normal	0.0017	GOOD
		Total Dissolved Solids	21/21	100	37	150	150	--	10	150	Gamma	0.0017	GOOD
	Appendix IV	Antimony	0/8	0	ND	ND	0.006	0.006	0.0025	0.0025	All NDs	--	--
		Arsenic	0/8	0	ND	ND	0.01	0.01	0.005	0.005	All NDs	--	--
		Barium	8/8	100	0.0413	0.0674	2	2	0.01	0.086	Normal	0.00090	LOW
		Beryllium	1/8	13	0.000344	0.000344	0.004	0.004	0.001	0.00034	Nonparametric, <50% Detects	0.00090	GOOD
		Cadmium	0/8	0	ND	ND	0.005	0.005	0.001	0.001	All NDs	--	--
		Chromium	3/8	38	0.00251	0.00326	0.1	0.1	0.005	0.0033	Nonparametric, <50% Detects	0.00090	GOOD
		Cobalt	4/8	50	0.00308	0.00346	0.006	0.006	0.005	0.004	Normal	0.00090	LOW
		Fluoride	2/8	25	0.104	0.125	4	4	0.4	0.13	Nonparametric, <50% Detects	0.00090	GOOD
		Lead	3/8	38	0.000353	0.000403	0.015	0.015	0.001	0.00040	Nonparametric, <50% Detects	0.00090	GOOD
		Lithium	8/8	100	0.00768	0.00908	0.04	0.04	0.01	0.01	Normal	0.00090	LOW
		Mercury	8/8	100	0.00252	0.061	0.10	0.002	0.0002	0.10	Normal	0.00090	LOW
		Molybdenum	0/8	0	ND	ND	0.1	0.1	0.005	0.005	All NDs	--	--
		Selenium	4/8	50	0.00234	0.00311	0.05	0.05	0.005	0.0044	Normal	0.00090	LOW
		Thallium	0/8	0	ND	ND	0.002	0.002	0.0015	0.0015	All NDs	--	--
		Radium-226 + Radium-228	5/8	63	0.9	3.05	5.3	5	0	5.3	Normal	0.00090	LOW

Notes:
1. All concentrations in mg/L. pH in standard units. Ra combined in pCi/L.
2. Alternative GWPS provided for Cobalt, Lithium, Lead, and Molybdenum

Table C-6. Summary Statistics with Baseline Values[1] (UPLs)
PDP 5

Well	Constituent List	Constituent	# Detects/ # Samples	% Detects	Minimum Detected Result	Maximum Detected Result	Baseline Value (UPL)	MCL or Alt. GWPS[2]	Reporting Limit	UPL 1-of-2	Defined Distribution	single test error rate for annual SWFPR of 10%	Power Rate for UPL 1-of-2
MW-19	Appendix III	Boron	21/21	100	0.0539	0.788	0.88	--	0.03	0.88	Normal	0.0017	GOOD
		Calcium	21/21	100	1.49	189	220	--	0.3	220	Normal	0.0017	GOOD
		Chloride	21/21	100	5.22	92.2	83	--	1	83	Normal	0.0017	GOOD
		Fluoride	19/21	90	0.104	0.42	0.4	4	0.4	0.38	Normal	0.0017	GOOD
		field pH	21/21	100	5.42	6.94	5.4, 6.9	--	--	5.4, 6.9	Nonparametric	0.00084	GOOD
		Sulfate	21/21	100	1.02	372	520	--	1	520	Normal	0.0017	GOOD
		Total Dissolved Solids	21/21	100	85	1010	1200	--	10	1200	Normal	0.0017	GOOD
	Appendix IV	Antimony	0/8	0	ND	ND	0.006	0.006	0.0025	0.0025	All NDs	--	--
		Arsenic	8/8	100	0.00286	0.0259	0.036	0.01	0.005	0.036	Normal	0.00090	LOW
		Barium	8/8	100	0.0188	0.0878	2	2	0.01	0.12	Normal	0.00090	LOW
		Beryllium	5/8	63	0.000336	0.000679	0.004	0.004	0.001	0.0012	Normal	0.00090	LOW
		Cadmium	0/8	0	ND	ND	0.005	0.005	0.001	0.001	All NDs	--	--
		Chromium	4/8	50	0.00266	0.00385	0.1	0.1	0.005	0.0055	Normal	0.00090	LOW
		Cobalt	4/8	50	0.00304	0.00434	0.0060	0.006	0.005	0.0060	Normal	0.00090	LOW
		Fluoride	8/8	100	0.117	0.42	4	4	0.4	0.55	Normal	0.00090	LOW
		Lead	4/8	50	0.000501	0.00122	0.015	0.015	0.001	0.0023	Normal	0.00090	LOW
		Lithium	7/8	88	0.00593	0.0158	0.04	0.04	0.01	0.029	Normal	0.00090	LOW
		Mercury	0/8	0	ND	ND	0.002	0.002	0.0002	0.0002	All NDs	--	--
		Molybdenum	0/8	0	ND	ND	0.1	0.1	0.005	0.005	All NDs	--	--
		Selenium	1/8	13	0.00257	0.00257	0.05	0.05	0.005	0.0026	Nonparametric, <50% Detects	0.00090	GOOD
		Thallium	0/8	0	ND	ND	0.002	0.002	0.0015	0.0015	All NDs	--	--
		Radium-226 + Radium-228	8/8	100	0.85	3.16	5	5	0	4.9	Normal	0.00090	LOW
MW-20A	Appendix III	Boron	21/21	100	0.0466	0.239	0.24	--	0.03	0.24	Normal	0.0017	GOOD
		Calcium	21/21	100	2.93	37.4	33	--	0.3	33	Normal	0.0017	GOOD
		Chloride	21/21	100	6.68	12.6	13	--	1	13	Nonparametric	0.0017	GOOD
		Fluoride	18/21	86	0.127	0.804	0.94	4	0.4	0.94	Normal	0.0017	GOOD
		field pH	21/21	100	4.28	6.83	4.3, 6.8	--	--	4.3, 6.8	Nonparametric	0.00084	GOOD
		Sulfate	21/21	100	1.42	178	180	--	1	180	Normal	0.0017	GOOD
		Total Dissolved Solids	21/21	100	84	328	360	--	10	360	Normal	0.0017	GOOD
	Appendix IV	Antimony	0/8	0	ND	ND	0.006	0.006	0.0025	0.0025	All NDs	--	--
		Arsenic	0/8	0	ND	ND	0.01	0.01	0.005	0.005	All NDs	--	--
		Barium	8/8	100	0.0282	0.106	2	2	0.01	0.11	Nonparametric	0.00090	GOOD
		Beryllium	8/8	100	0.000407	0.000632	0.004	0.004	0.001	0.00078	Normal	0.00090	LOW
		Cadmium	0/8	0	ND	ND	0.005	0.005	0.001	0.001	All NDs	--	--
		Chromium	1/8	13	0.00249	0.00249	0.1	0.1	0.005	0.0025	Nonparametric, <50% Detects	0.00090	GOOD
		Cobalt	8/8	100	0.00346	0.00672	0.0086	0.006	0.005	0.0086	Normal	0.00090	LOW
		Fluoride	8/8	100	0.389	0.804	4	4	0.4	1	Normal	0.00090	LOW
		Lead	8/8	100	0.00101	0.00471	0.015	0.015	0.001	0.0087	Lognormal	0.00090	LOW
		Lithium	8/8	100	0.0147	0.0194	0.04	0.04	0.01	0.022	Normal	0.00090	LOW
		Mercury	8/8	100	0.000325	0.00289	0.0029	0.002	0.0002	0.0029	Nonparametric	0.00090	GOOD
		Molybdenum	0/8	0	ND	ND	0.1	0.1	0.005	0.005	All NDs	--	--
		Selenium	8/8	100	0.00478	0.0105	0.05	0.05	0.005	0.014	Normal	0.00090	LOW
		Thallium	0/8	0	ND	ND	0.002	0.002	0.0015	0.0015	All NDs	--	--
		Radium-226 + Radium-228	8/8	100	1.06	8.5	12	5	0	12	Normal	0.00090	LOW

Notes:
1. All concentrations in mg/L. pH in standard units. Ra combined in pCi/L.
2. Alternative GWPS provided for Cobalt, Lithium, Lead, and Molybdenum

Table C-6. Summary Statistics with Baseline Values[1] (UPLs)
PDP 5

Well	Constituent List	Constituent	# Detects/ # Samples	% Detects	Minimum Detected Result	Maximum Detected Result	Baseline Value (UPL)	MCL or Alt. GWPS[2]	Reporting Limit	UPL 1-of-2	Defined Distribution	single test error rate for annual SWFPR of 10%	Power Rate for UPL 1-of-2
PDP-22	Appendix III	Boron	21/21	100	0.0646	0.291	0.31	--	0.03	0.31	Normal	0.0017	GOOD
		Calcium	21/21	100	3.4	216	190	--	0.3	190	Normal	0.0017	GOOD
		Chloride	21/21	100	1.06	25.9	23	--	1	23	Normal	0.0017	GOOD
		Fluoride	16/21	76	0.106	0.858	0.79	4	0.4	0.79	Lognormal	0.0017	GOOD
		field pH	21/21	100	5.43	8.82	5.4, 8.8	--	--	5.4, 8.8	Nonparametric	0.00084	GOOD
		Sulfate	21/21	100	5.21	216	280	--	1	280	Normal	0.0017	GOOD
		Total Dissolved Solids	21/21	100	205	1430	1200	--	10	1200	Normal	0.0017	GOOD
	Appendix IV	Antimony	0/8	0	ND	ND	0.006	0.006	0.0025	0.0025	All NDs	--	--
		Arsenic	7/8	88	0.0047	0.0108	0.016	0.01	0.005	0.016	Normal	0.00090	LOW
		Barium	8/8	100	0.0567	0.521	2	2	0.01	0.86	Normal	0.00090	LOW
		Beryllium	0/8	0	ND	ND	0.004	0.004	0.001	0.001	All NDs	--	--
		Cadmium	0/8	0	ND	ND	0.005	0.005	0.001	0.001	All NDs	--	--
		Chromium	7/8	88	0.0121	0.0995	0.17	0.1	0.005	0.17	Normal	0.00090	LOW
		Cobalt	4/8	50	0.00397	0.00608	0.015	0.006	0.005	0.015	Gamma	0.00090	LOW
		Fluoride	7/8	88	0.108	0.858	4	4	0.4	1.2	Normal	0.00090	LOW
		Lead	3/8	38	0.000417	0.00244	0.015	0.015	0.001	0.0024	Nonparametric, <50% Detects	0.00090	GOOD
		Lithium	7/8	88	0.00712	0.184	0.29	0.04	0.01	0.29	Normal	0.00090	LOW
		Mercury	0/8	0	ND	ND	0.002	0.002	0.0002	0.0002	All NDs	--	--
		Molybdenum	4/8	50	0.00205	0.00649	0.1	0.1	0.005	0.0065	Nonparametric	0.00090	GOOD
		Selenium	0/8	0	ND	ND	0.05	0.05	0.005	0.005	All NDs	--	--
		Thallium	0/8	0	ND	ND	0.002	0.002	0.0015	0.0015	All NDs	--	--
		Radium-226 + Radium-228	8/8	100	1.42	4.26	6.5	5	0	6.5	Normal	0.00090	LOW
PDP-23	Appendix III	Boron	21/21	100	0.0294	0.0976	0.096	--	0.03	0.096	Normal	0.0017	GOOD
		Calcium	21/21	100	1.57	4.03	3.5	--	0.3	3.5	Lognormal	0.0017	GOOD
		Chloride	21/21	100	4.17	8.12	8.3	--	1	8.3	Normal	0.0017	GOOD
		Fluoride	3/21	14	0.127	0.147	0.4	4	0.4	0.15	Nonparametric, <50% Detects	0.0017	GOOD
		field pH	21/21	100	4.85	6.83	4.9, 6.8	--	--	4.9, 6.8	Nonparametric	0.00084	GOOD
		Sulfate	20/21	95	1.02	2.52	2.5	--	1	2.5	Nonparametric	0.0017	GOOD
		Total Dissolved Solids	21/21	100	57	118	120	--	10	120	Nonparametric	0.0017	GOOD
	Appendix IV	Antimony	0/8	0	ND	ND	0.006	0.006	0.0025	0.0025	All NDs	--	--
		Arsenic	0/8	0	ND	ND	0.01	0.01	0.005	0.005	All NDs	--	--
		Barium	8/8	100	0.0375	0.0449	2	2	0.01	0.051	Normal	0.00090	LOW
		Beryllium	0/8	0	ND	ND	0.004	0.004	0.001	0.001	All NDs	--	--
		Cadmium	0/8	0	ND	ND	0.005	0.005	0.001	0.001	All NDs	--	--
		Chromium	3/8	38	0.002	0.00275	0.1	0.1	0.005	0.0028	Nonparametric, <50% Detects	0.00090	GOOD
		Cobalt	0/8	0	ND	ND	0.006	0.006	0.005	0.005	All NDs	--	--
		Fluoride	2/8	25	0.127	0.129	4	4	0.4	0.13	Nonparametric, <50% Detects	0.00090	GOOD
		Lead	0/8	0	ND	ND	0.015	0.015	0.001	0.001	All NDs	--	--
		Lithium	8/8	100	0.0114	0.0162	0.04	0.04	0.01	0.019	Gamma	0.00090	LOW
		Mercury	0/8	0	ND	ND	0.002	0.002	0.0002	0.0002	All NDs	--	--
		Molybdenum	0/8	0	ND	ND	0.1	0.1	0.005	0.005	All NDs	--	--
		Selenium	0/8	0	ND	ND	0.05	0.05	0.005	0.005	All NDs	--	--
		Thallium	0/8	0	ND	ND	0.002	0.002	0.0015	0.0015	All NDs	--	--
		Radium-226 + Radium-228	4/8	50	0.83	2.73	5	5	0	4.3	Normal	0.00090	LOW

Notes:
1. All concentrations in mg/L. pH in standard units. Ra combined in pCi/L.
2. Alternative GWPS provided for Cobalt, Lithium, Lead, and Molybdenum

Table C-6. Summary Statistics with Baseline Values[1] (UPLs)
PDP 5

Well	Constituent List	Constituent	# Detects/ # Samples	% Detects	Minimum Detected Result	Maximum Detected Result	Baseline Value (UPL)	MCL or Alt. GWPS[2]	Reporting Limit	UPL 1-of-2	Defined Distribution	single test error rate for annual SWFPR of 10%	Power Rate for UPL 1-of-2
PDP-24	Appendix III	Boron	21/21	100	2.71	4.24	4.7	--	0.03	4.7	Normal	0.0017	GOOD
		Calcium	21/21	100	21.4	47.7	52	--	0.3	52	Normal	0.0017	GOOD
		Chloride	21/21	100	15.6	22.6	24	--	1	24	Normal	0.0017	GOOD
		Fluoride	21/21	100	0.539	0.934	0.98	4	0.4	0.98	Normal	0.0017	GOOD
		field pH	21/21	100	3.57	6.95	3.6, 7.0	--	--	3.6, 7.0	Nonparametric	0.00084	GOOD
		Sulfate	21/21	100	231	460	520	--	1	520	Normal	0.0017	GOOD
		Total Dissolved Solids	21/21	100	440	760	850	--	10	850	Normal	0.0017	GOOD
	Appendix IV	Antimony	0/8	0	ND	ND	0.006	0.006	0.0025	0.0025	All NDs	--	--
		Arsenic	0/8	0	ND	ND	0.01	0.01	0.005	0.005	All NDs	--	--
		Barium	8/8	100	0.0186	0.0301	2	2	0.01	0.037	Normal	0.00090	LOW
		Beryllium	8/8	100	0.00271	0.00486	0.0067	0.004	0.001	0.0067	Normal	0.00090	LOW
		Cadmium	8/8	100	0.00104	0.0023	0.005	0.005	0.001	0.0035	Normal	0.00090	LOW
		Chromium	0/8	0	ND	ND	0.1	0.1	0.005	0.005	All NDs	--	--
		Cobalt	8/8	100	0.0592	0.0901	0.13	0.006	0.005	0.13	Normal	0.00090	LOW
		Fluoride	8/8	100	0.539	0.869	4	4	0.4	1.1	Normal	0.00090	LOW
		Lead	7/8	88	0.000507	0.00244	0.015	0.015	0.001	0.0034	Normal	0.00090	LOW
		Lithium	8/8	100	0.0241	0.0302	0.04	0.04	0.01	0.033	Normal	0.00090	LOW
		Mercury	8/8	100	0.000126	0.00214	0.0032	0.002	0.0002	0.0032	Normal	0.00090	LOW
		Molybdenum	0/8	0	ND	ND	0.1	0.1	0.005	0.005	All NDs	--	--
		Selenium	8/8	100	0.00204	0.00914	0.05	0.05	0.005	0.017	Lognormal	0.00090	LOW
		Thallium	0/8	0	ND	ND	0.002	0.002	0.0015	0.0015	All NDs	--	--
		Radium-226 + Radium-228	8/8	100	1.09	4.78	6.7	5	0	6.7	Normal	0.00090	LOW
PDP-25	Appendix III	Boron	21/21	100	0.0935	0.266	0.25	--	0.03	0.25	Normal	0.0017	GOOD
		Calcium	21/21	100	33.2	71.5	72	--	0.3	72	Nonparametric	0.0017	GOOD
		Chloride	21/21	100	93.6	176	160	--	1	160	Normal	0.0017	GOOD
		Fluoride	9/21	43	0.115	0.259	0.4	4	0.4	0.26	Nonparametric, <50% Detects	0.0017	GOOD
		field pH	21/21	100	5.6	6.93	5.6, 6.9	--	--	5.6, 6.9	Nonparametric	0.00084	GOOD
		Sulfate	21/21	100	51.3	110	120	--	1	120	Normal	0.0017	GOOD
		Total Dissolved Solids	21/21	100	427	646	650	--	10	650	Nonparametric	0.0017	GOOD
	Appendix IV	Antimony	0/8	0	ND	ND	0.006	0.006	0.0025	0.0025	All NDs	--	--
		Arsenic	4/8	50	0.00214	0.00378	0.01	0.01	0.005	0.0068	Normal	0.00090	LOW
		Barium	8/8	100	0.178	0.222	2	2	0.01	0.25	Normal	0.00090	LOW
		Beryllium	0/8	0	ND	ND	0.004	0.004	0.001	0.001	All NDs	--	--
		Cadmium	0/8	0	ND	ND	0.005	0.005	0.001	0.001	All NDs	--	--
		Chromium	7/8	88	0.00527	0.0593	0.1	0.1	0.005	0.083	Normal	0.00090	LOW
		Cobalt	8/8	100	0.00978	0.0114	0.013	0.006	0.005	0.013	Normal	0.00090	LOW
		Fluoride	5/8	63	0.135	0.259	4	4	0.4	0.4	Normal	0.00090	LOW
		Lead	0/8	0	ND	ND	0.015	0.015	0.001	0.001	All NDs	--	--
		Lithium	8/8	100	0.0718	0.176	0.26	0.04	0.01	0.26	Normal	0.00090	LOW
		Mercury	0/8	0	ND	ND	0.002	0.002	0.0002	0.0002	All NDs	--	--
		Molybdenum	0/8	0	ND	ND	0.1	0.1	0.005	0.005	All NDs	--	--
		Selenium	0/8	0	ND	ND	0.05	0.05	0.005	0.005	All NDs	--	--
		Thallium	0/8	0	ND	ND	0.002	0.002	0.0015	0.0015	All NDs	--	--
		Radium-226 + Radium-228	8/8	100	1.21	3	5	5	0	4.4	Normal	0.00090	LOW

Notes:
1. All concentrations in mg/L, pH in standard units, Ra combined in pCi/L.
2. Alternative GWPS provided for Cobalt, Lithium, Lead, and Molybdenum

Table C-6. Summary Statistics with Baseline Values[1] (UPLs)
PDP 5

Well	Constituent List	Constituent	# Detects/ # Samples	% Detects	Minimum Detected Result	Maximum Detected Result	Baseline Value (UPL)	MCL or Alt. GWPS[2]	Reporting Limit	UPL 1-of-2	Defined Distribution	single test error rate for annual SWFPR of 10%	Power Rate for UPL 1-of-2
PDP-26	Appendix III	Boron	21/21	100	0.0225	0.0965	0.093	--	0.03	0.093	Gamma	0.0017	GOOD
		Calcium	21/21	100	1.9	4.19	3.9	--	0.3	3.9	Normal	0.0017	GOOD
		Chloride	21/21	100	4.05	11.8	12	--	1	12	Nonparametric	0.0017	GOOD
		Fluoride	11/21	52	0.102	0.391	0.40	4	0.4	0.4	Normal	0.0017	GOOD
		field pH	21/21	100	6.07	6.89	6.1, 6.9	--	--	6.1, 6.9	Nonparametric	0.00084	GOOD
		Sulfate	21/21	100	1.91	37.2	37	--	1	37	Nonparametric	0.0017	GOOD
		Total Dissolved Solids	21/21	100	84	306	310	--	10	310	Nonparametric	0.0017	GOOD
	Appendix IV	Antimony	0/8	0	ND	ND	0.006	0.006	0.0025	0.0025	All NDs	--	--
		Arsenic	6/8	75	0.00206	0.00589	0.01	0.01	0.005	0.0094	Normal	0.00090	LOW
		Barium	8/8	100	0.0242	0.0355	2	2	0.01	0.041	Normal	0.00090	LOW
		Beryllium	0/8	0	ND	ND	0.004	0.004	0.001	0.001	All NDs	--	--
		Cadmium	0/8	0	ND	ND	0.005	0.005	0.001	0.001	All NDs	--	--
		Chromium	0/8	0	ND	ND	0.1	0.1	0.005	0.005	All NDs	--	--
		Cobalt	1/8	13	0.00338	0.00338	0.006	0.006	0.005	0.0034	Nonparametric, <50% Detects	0.00090	GOOD
		Fluoride	6/8	75	0.102	0.391	4	4	0.4	0.63	Normal	0.00090	LOW
		Lead	3/8	38	0.000377	0.000983	0.015	0.015	0.001	0.00098	Nonparametric, <50% Detects	0.00090	GOOD
		Lithium	8/8	100	0.0111	0.0151	0.04	0.04	0.01	0.017	Normal	0.00090	LOW
		Mercury	0/8	0	ND	ND	0.002	0.002	0.0002	0.0002	All NDs	--	--
		Molybdenum	0/8	0	ND	ND	0.1	0.1	0.005	0.005	All NDs	--	--
		Selenium	0/8	0	ND	ND	0.05	0.05	0.005	0.005	All NDs	--	--
		Thallium	0/8	0	ND	ND	0.002	0.002	0.0015	0.0015	All NDs	--	--
		Radium-226 + Radium-228	4/8	50	0.73	2.43	5	5	0	4.2	Normal	0.00090	LOW

Notes:
1. All concentrations in mg/L. pH in standard units. Ra combined in pCi/L.
2. Alternative GWPS provided for Cobalt, Lithium, Lead, and Molybdenum

Figure C−1. Appendix III − Boron

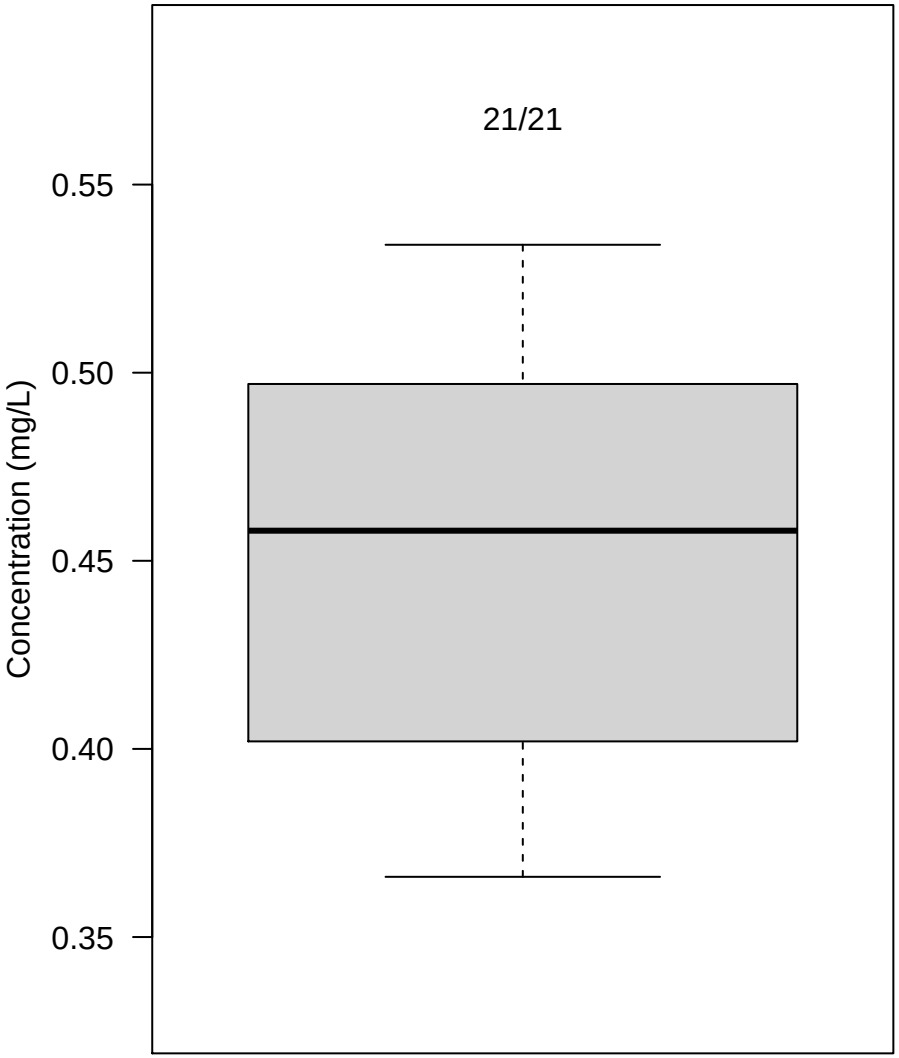


Figure C−2. Appendix III − Calcium

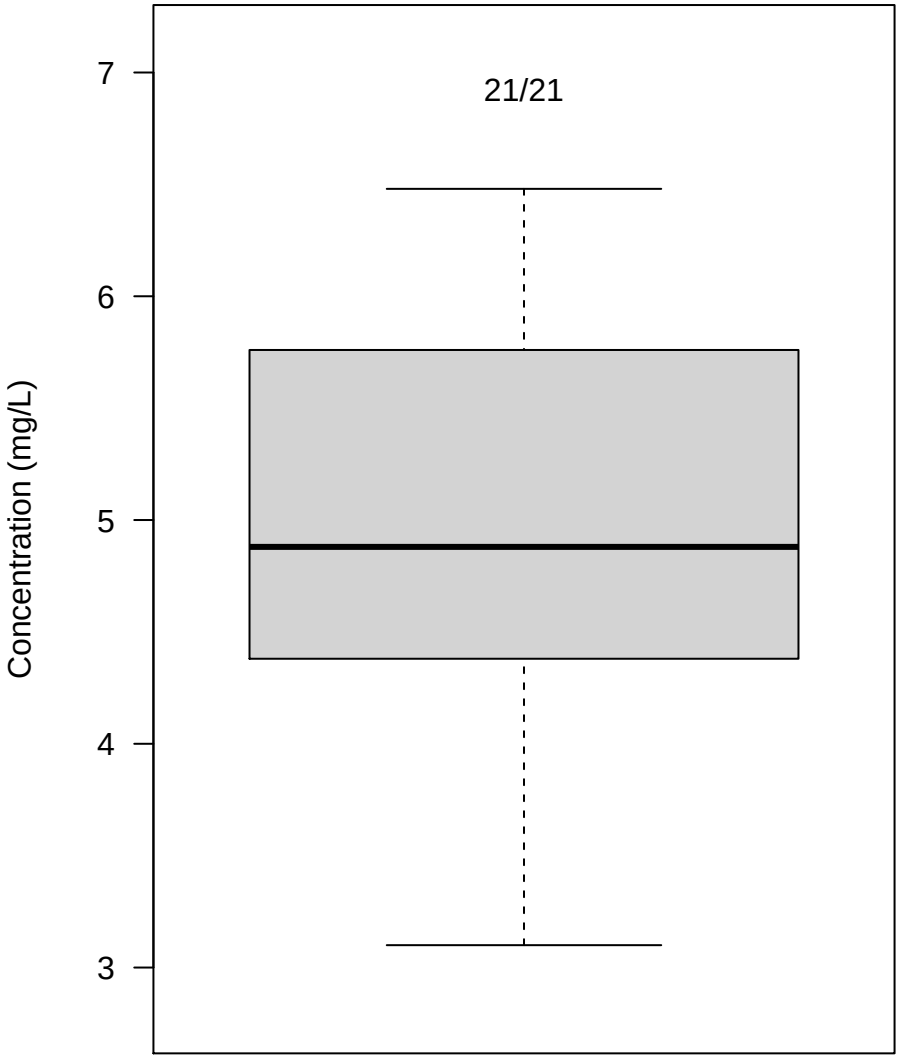


Figure C−3. Appendix III − Chloride

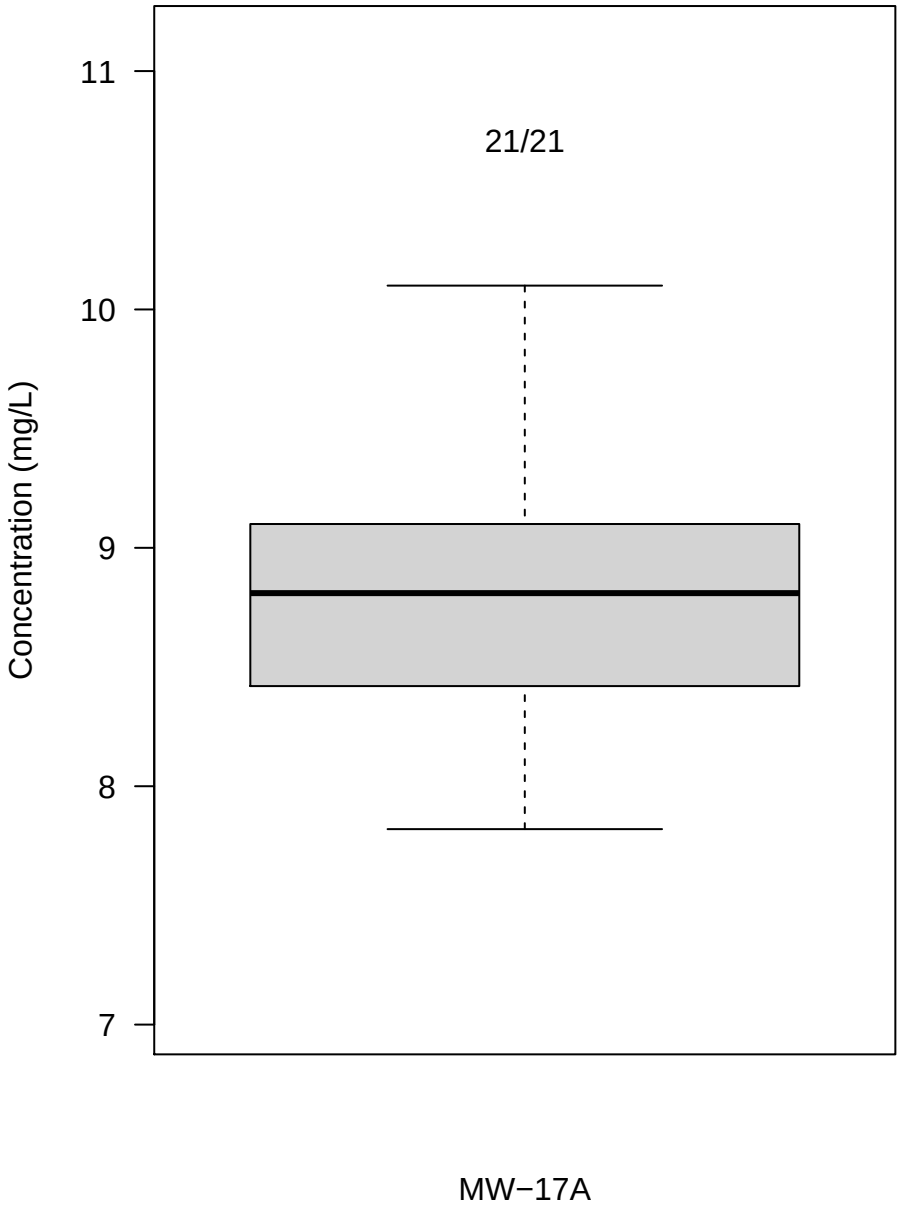


Figure C−4. Appendix III − Fluoride

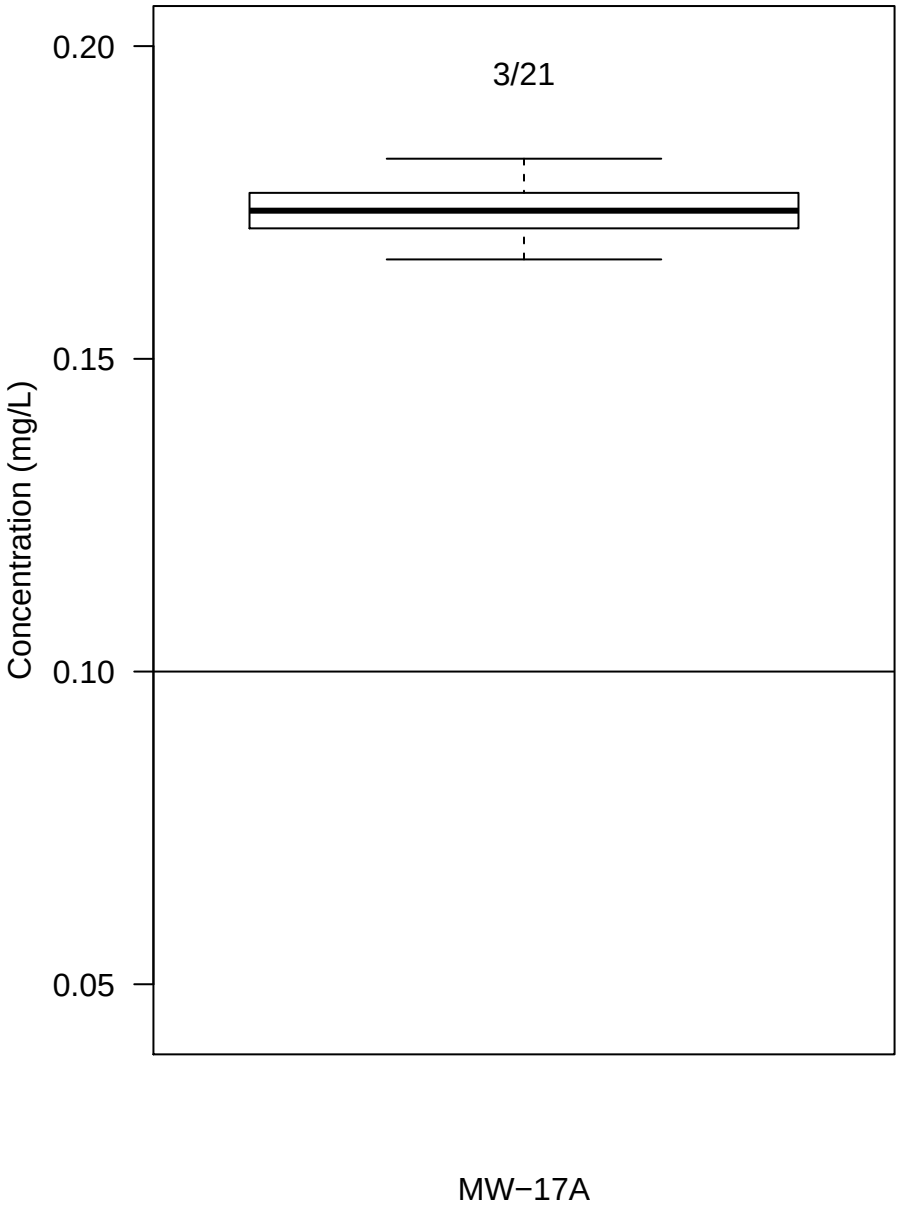


Figure C−5. Appendix III − field.pH

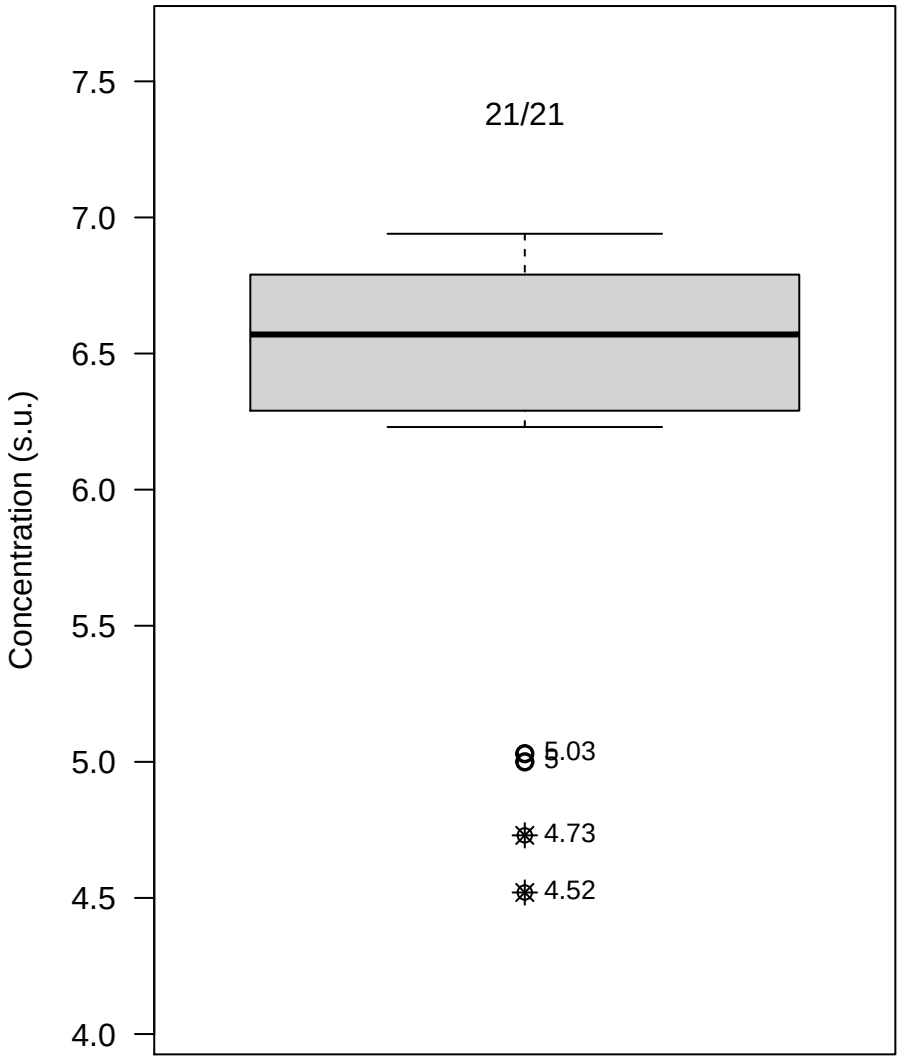


Figure C−6. Appendix III − Sulfate

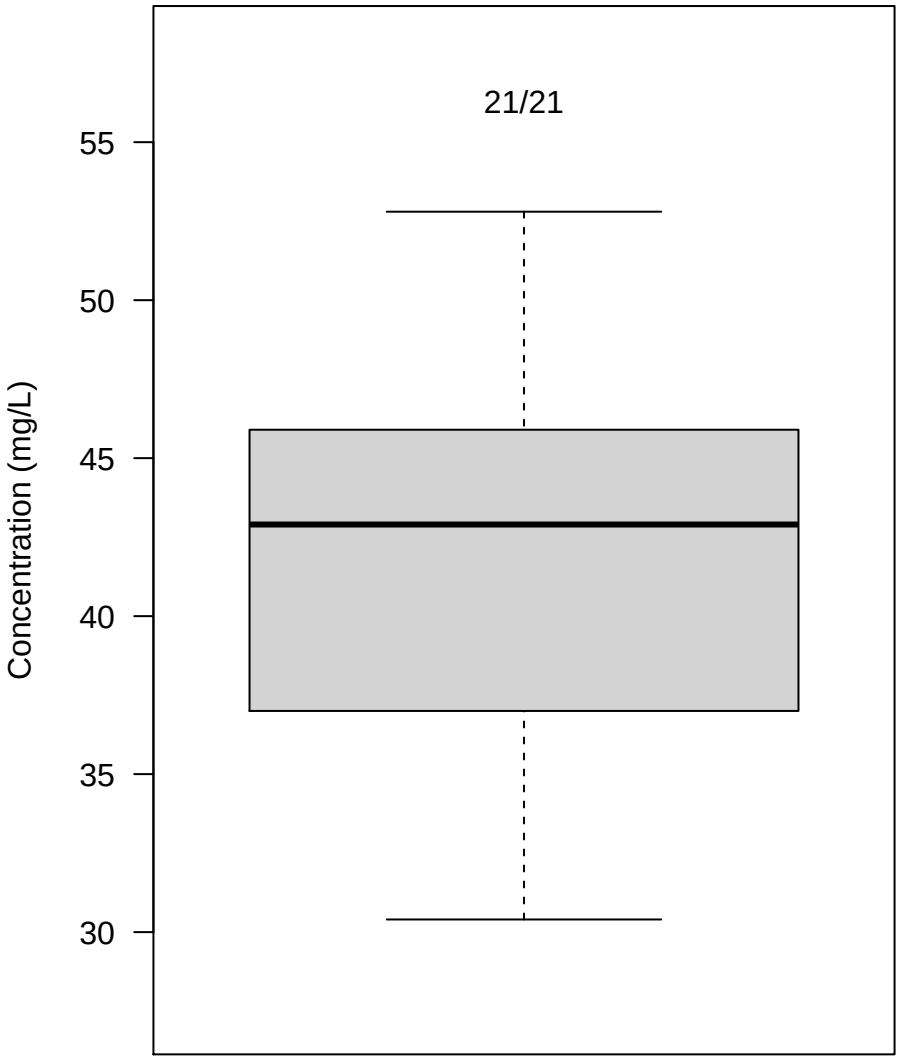


Figure C−7. Appendix III − Total Dissolved Solids

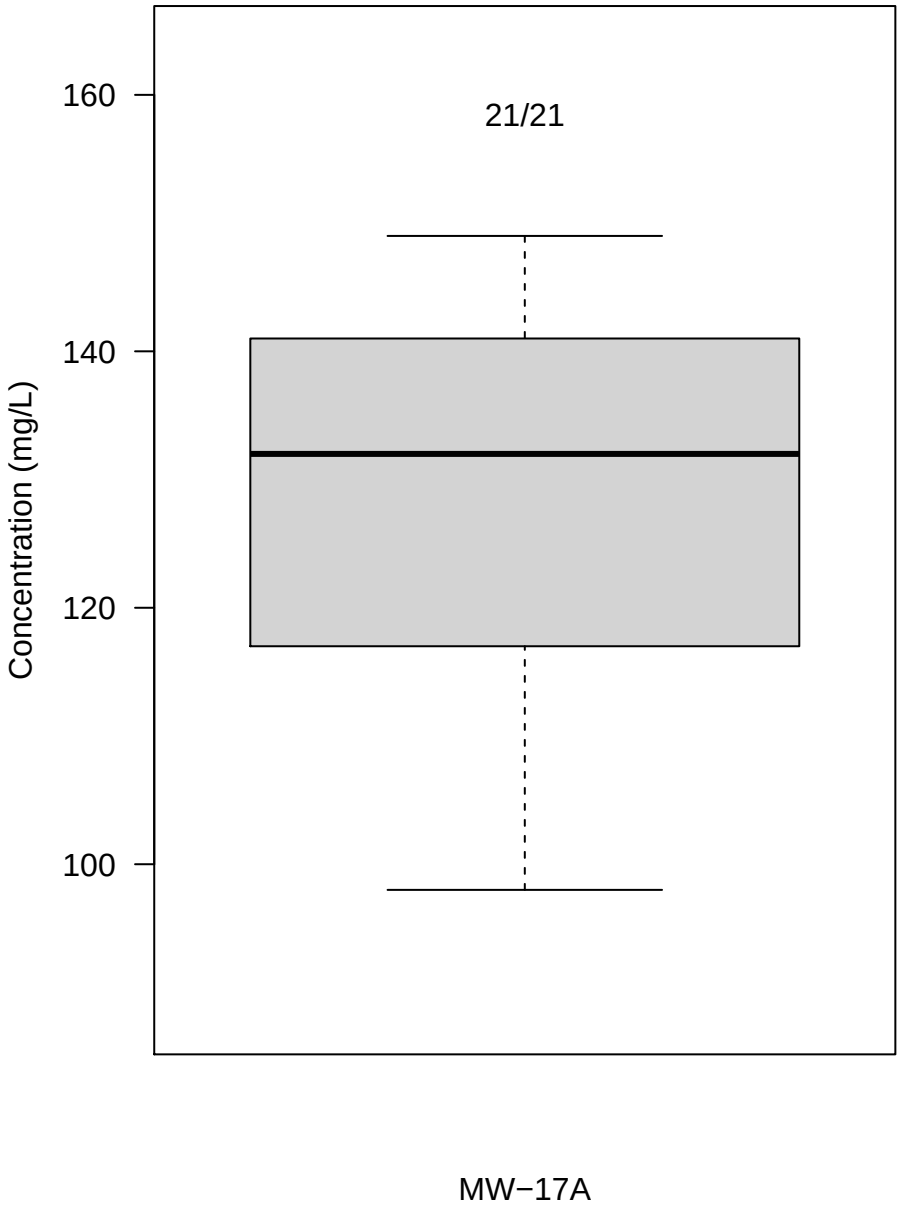


Figure C−8. Appendix IV − Barium

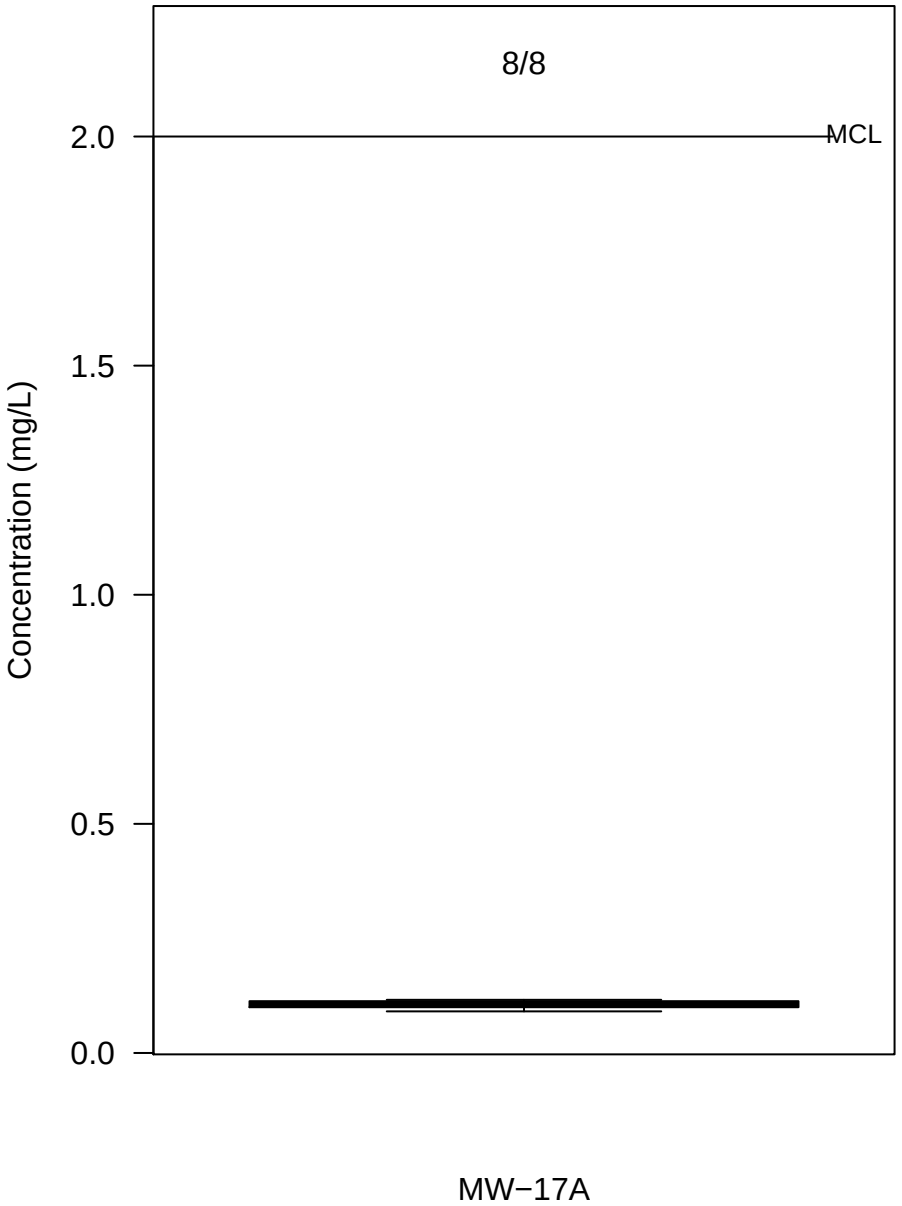


Figure C−9. Appendix IV − Chromium

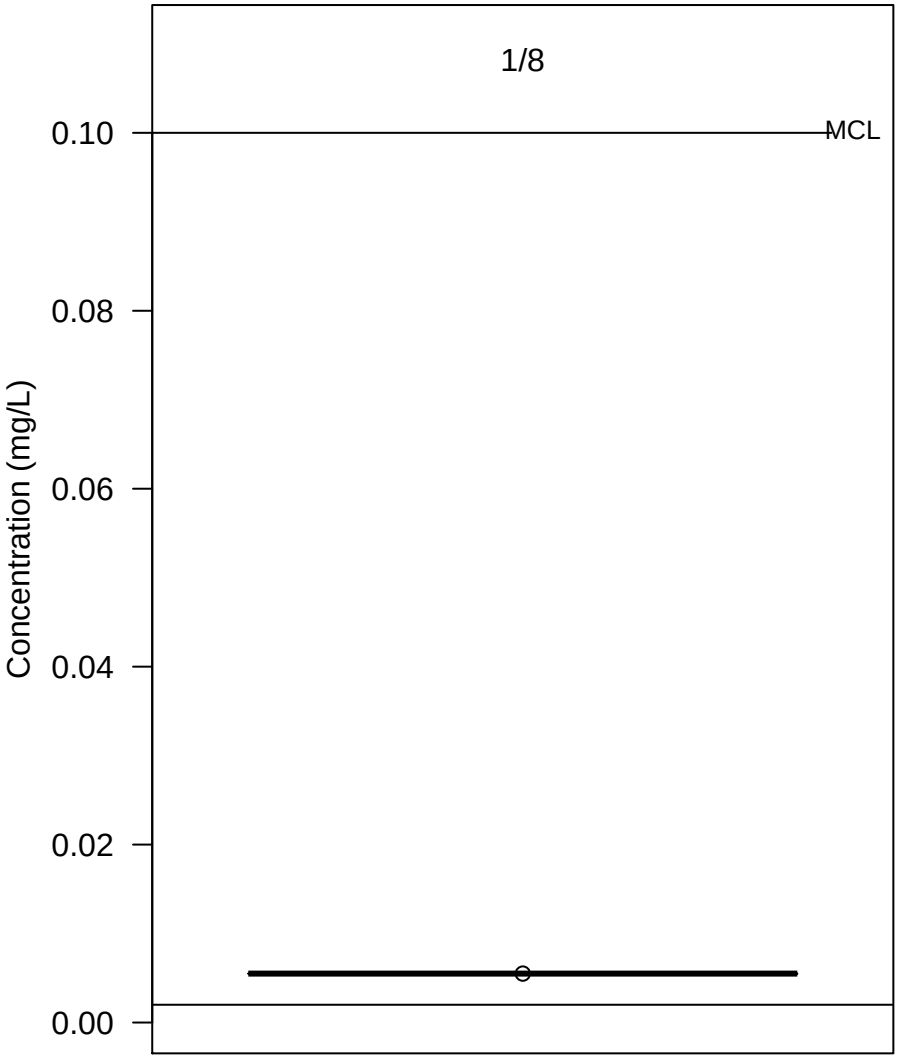


Figure C−10. Appendix IV − Cobalt

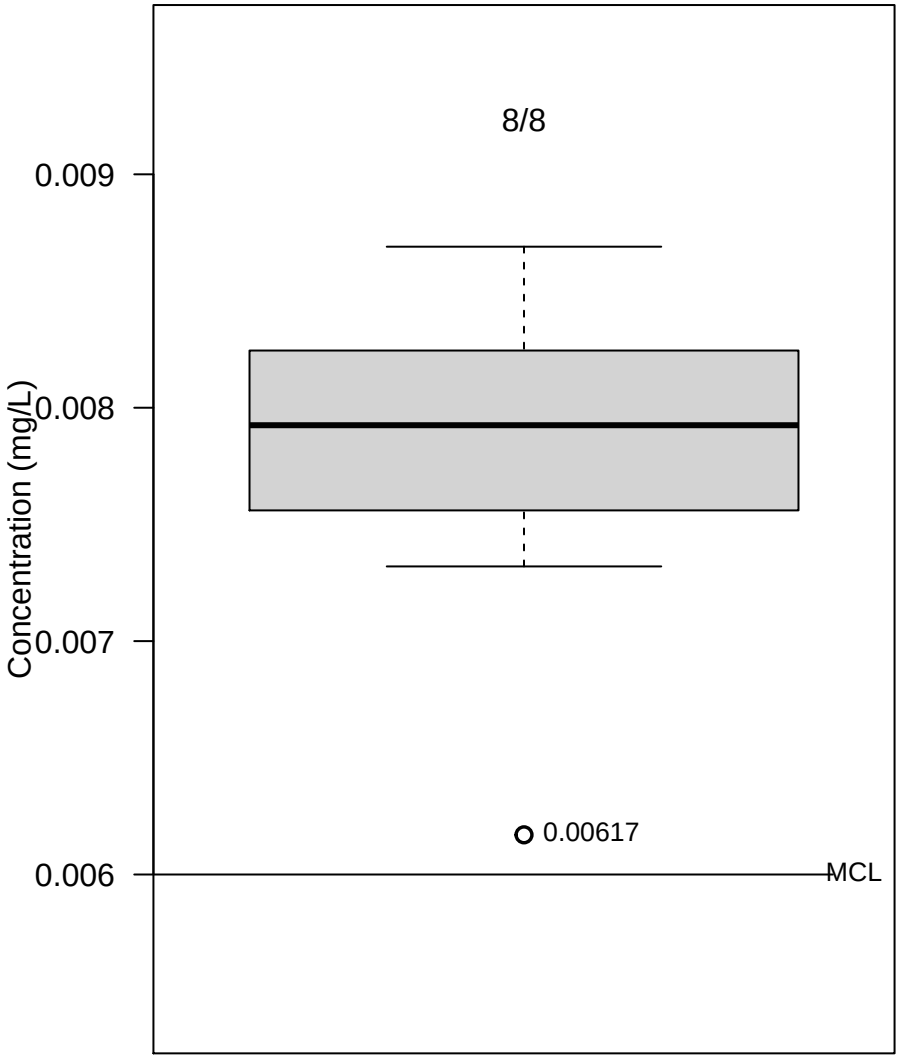


Figure C−11. Appendix IV − Fluoride

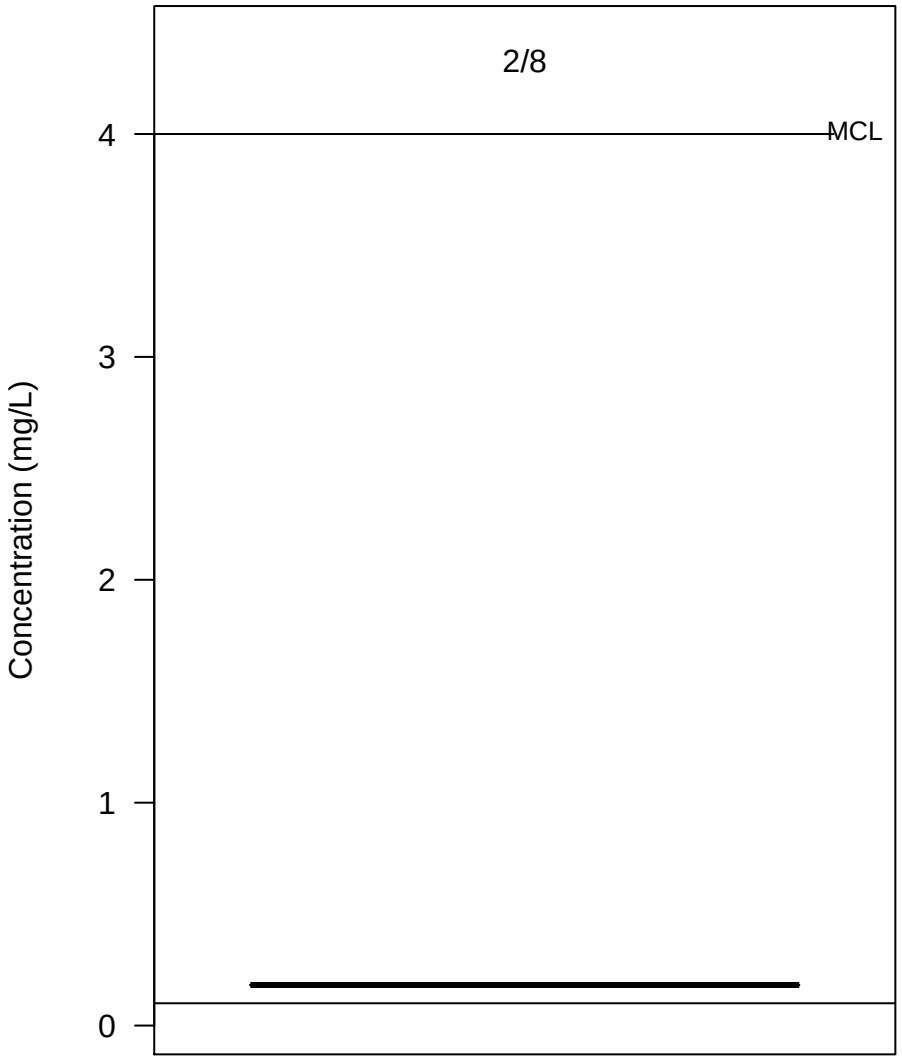


Figure C−12. Appendix IV − Lithium

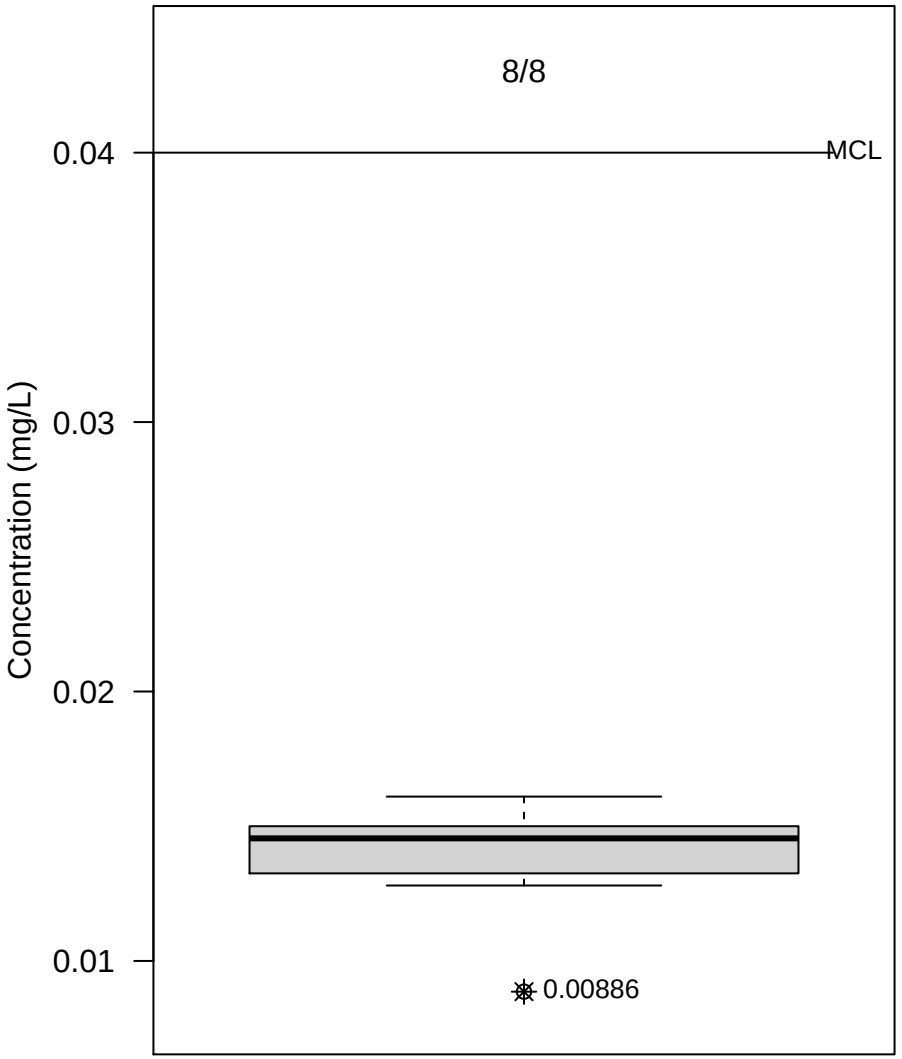


Figure C−13. Appendix IV − Mercury

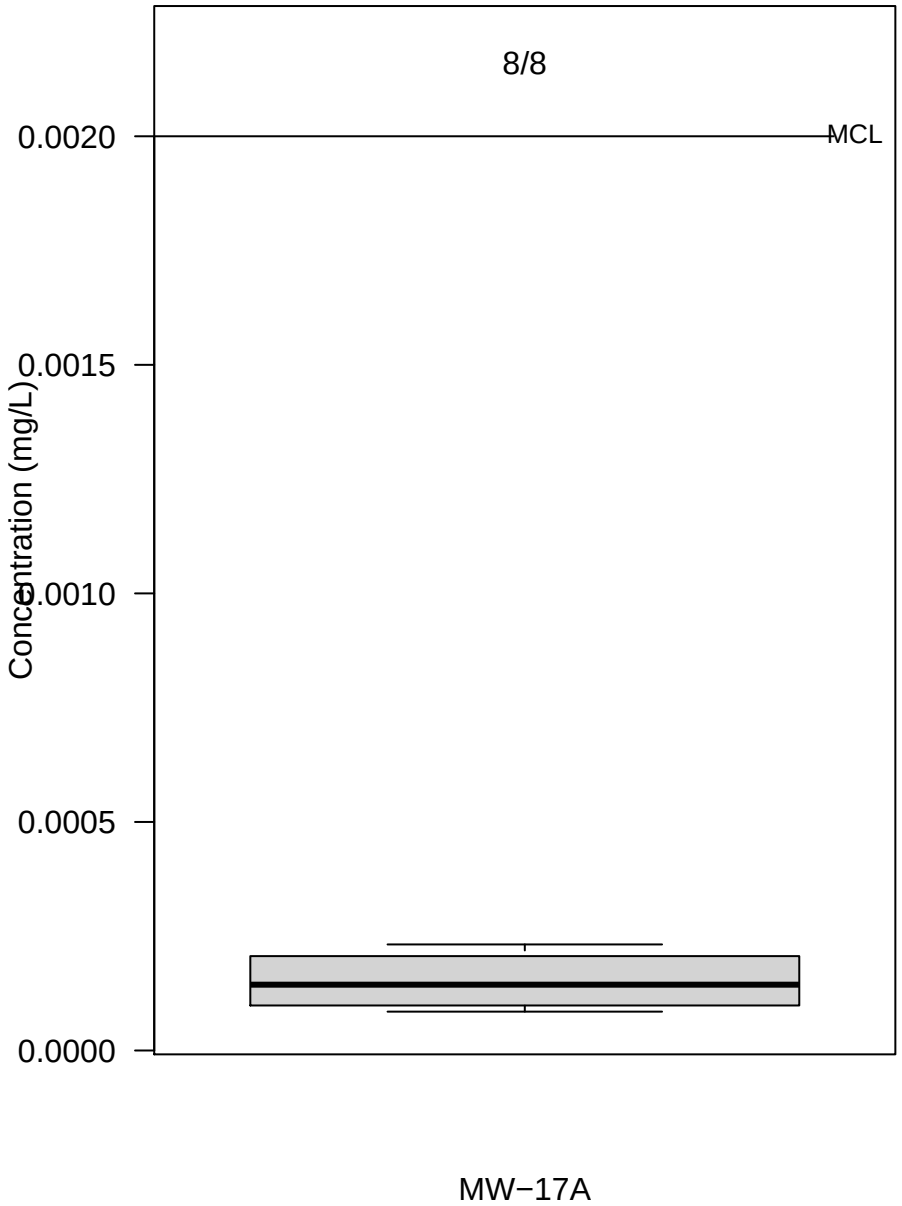


Figure C−14. Appendix IV − Radium−226 + Radium−228

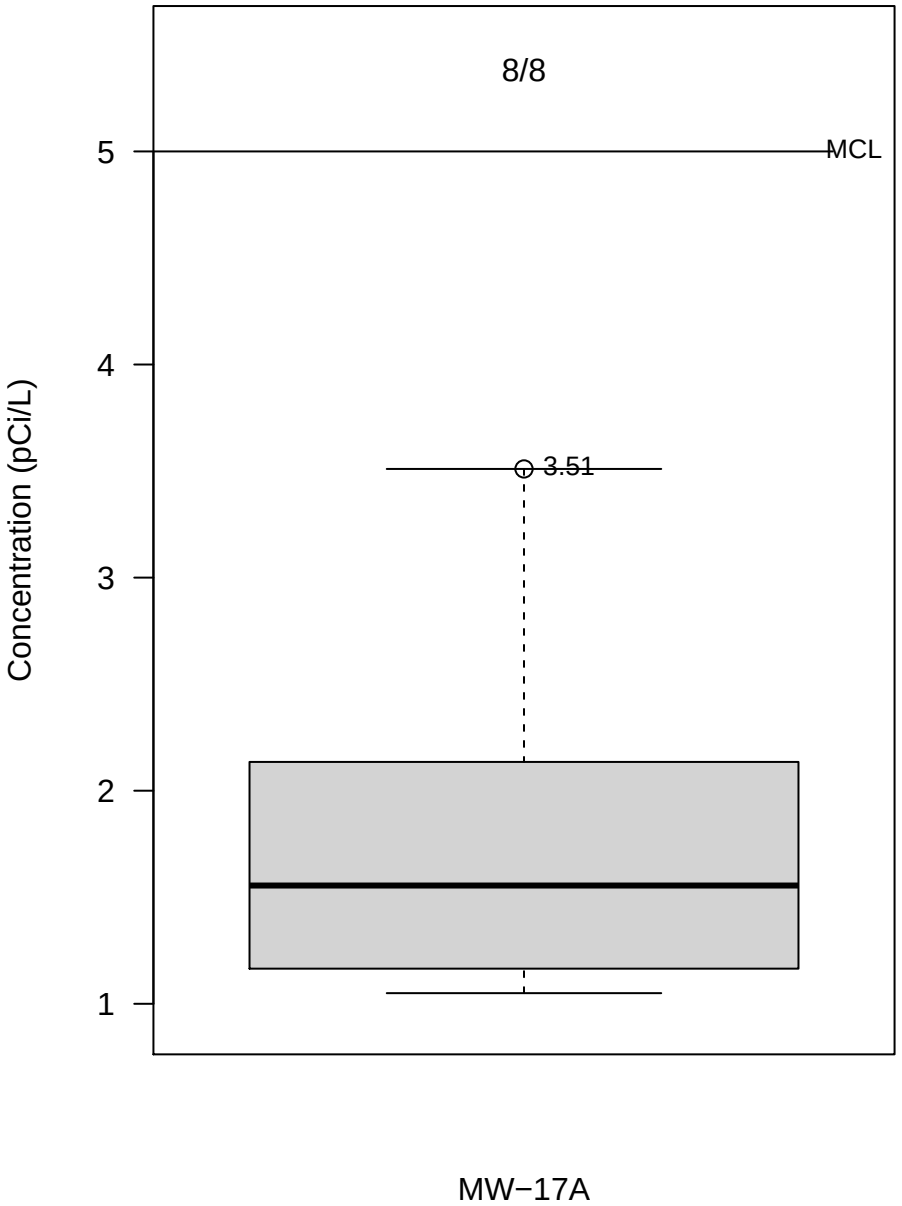


Figure C−15. Appendix III − Boron

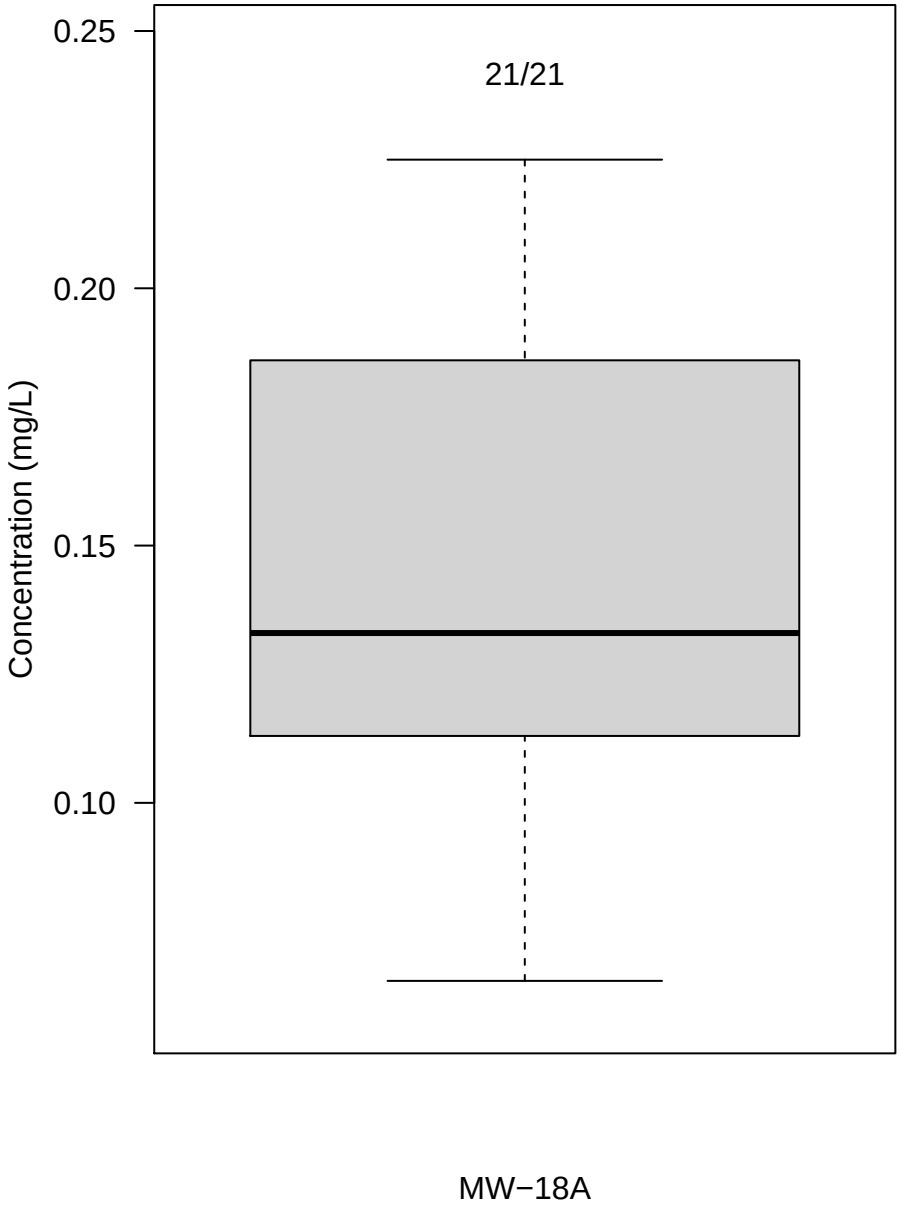


Figure C−16. Appendix III − Calcium

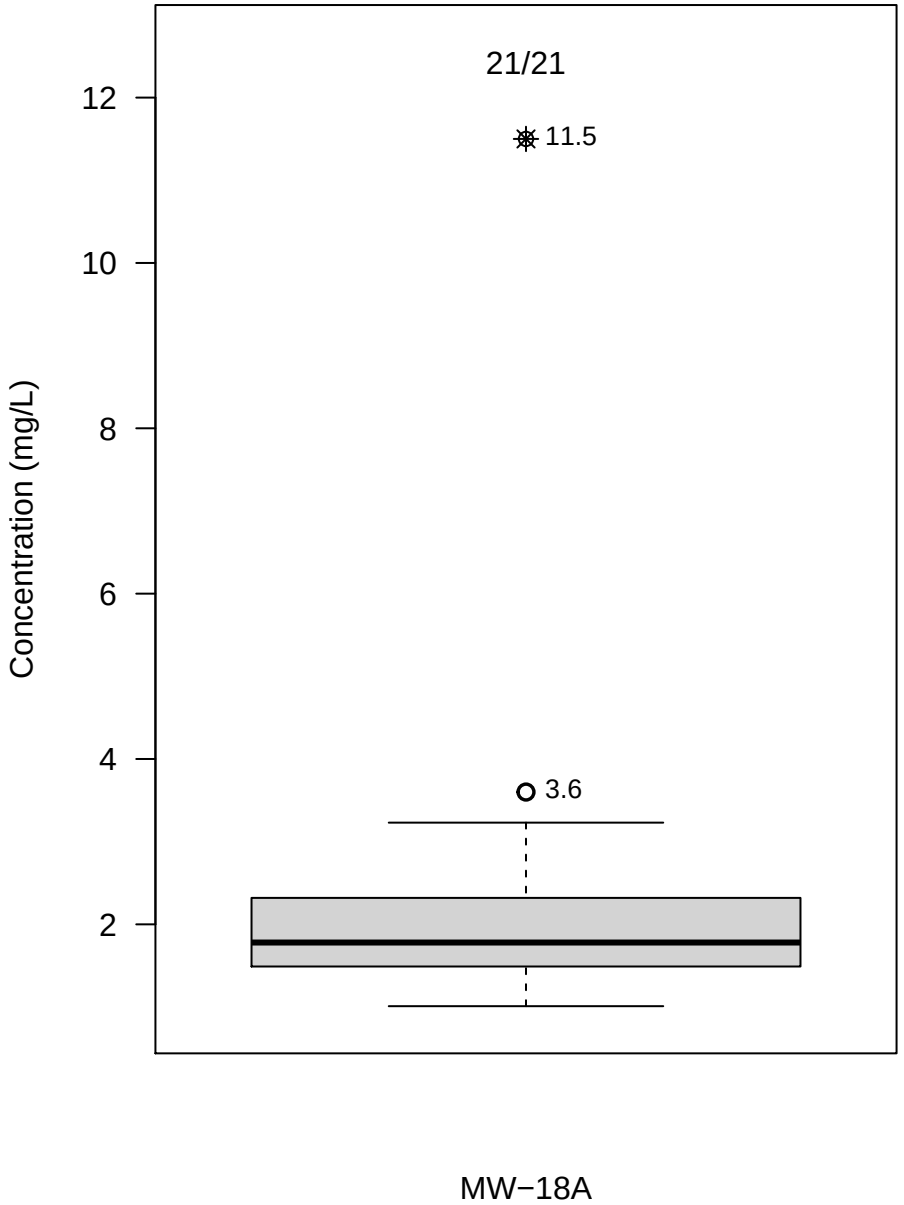


Figure C−17. Appendix III − Chloride

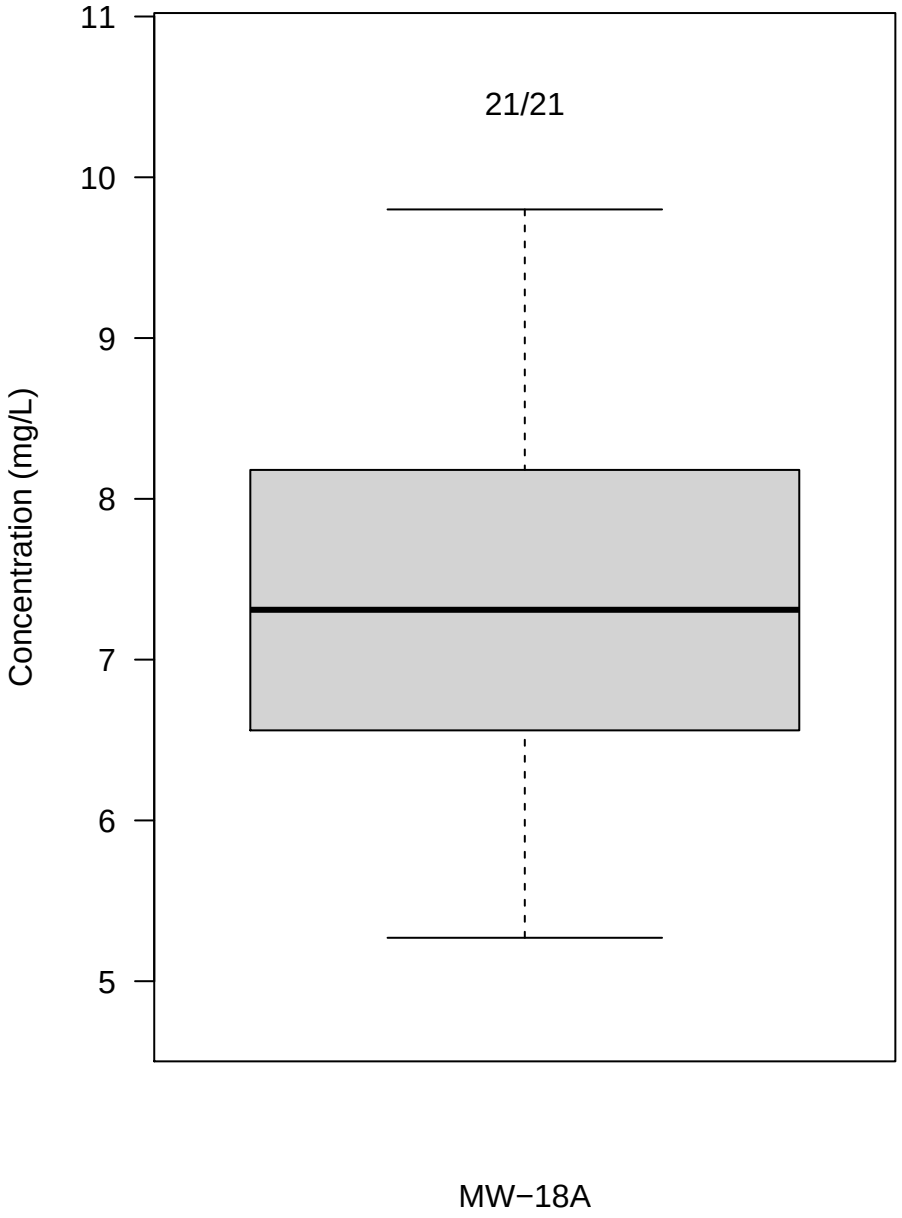


Figure C−18. Appendix III − Fluoride

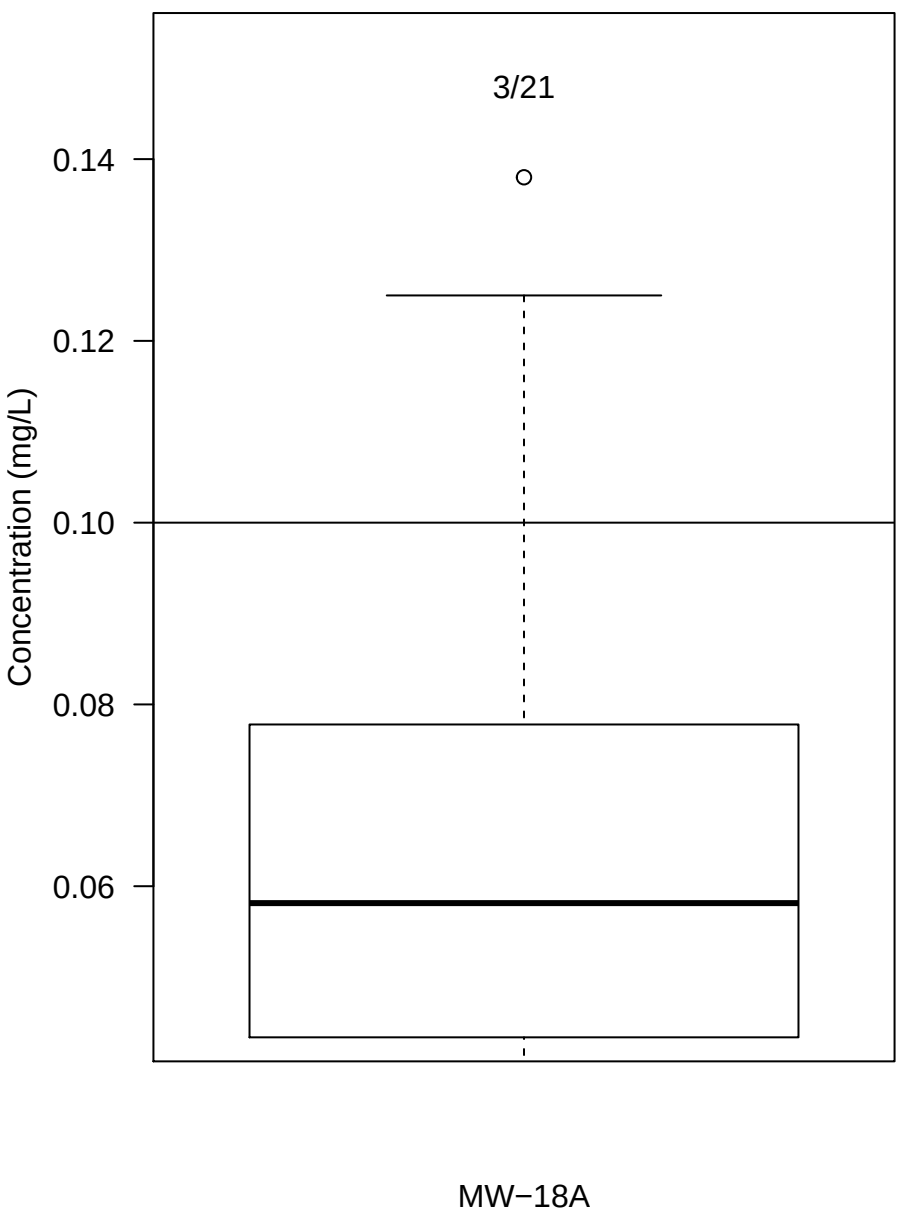


Figure C−19. Appendix III − field.pH

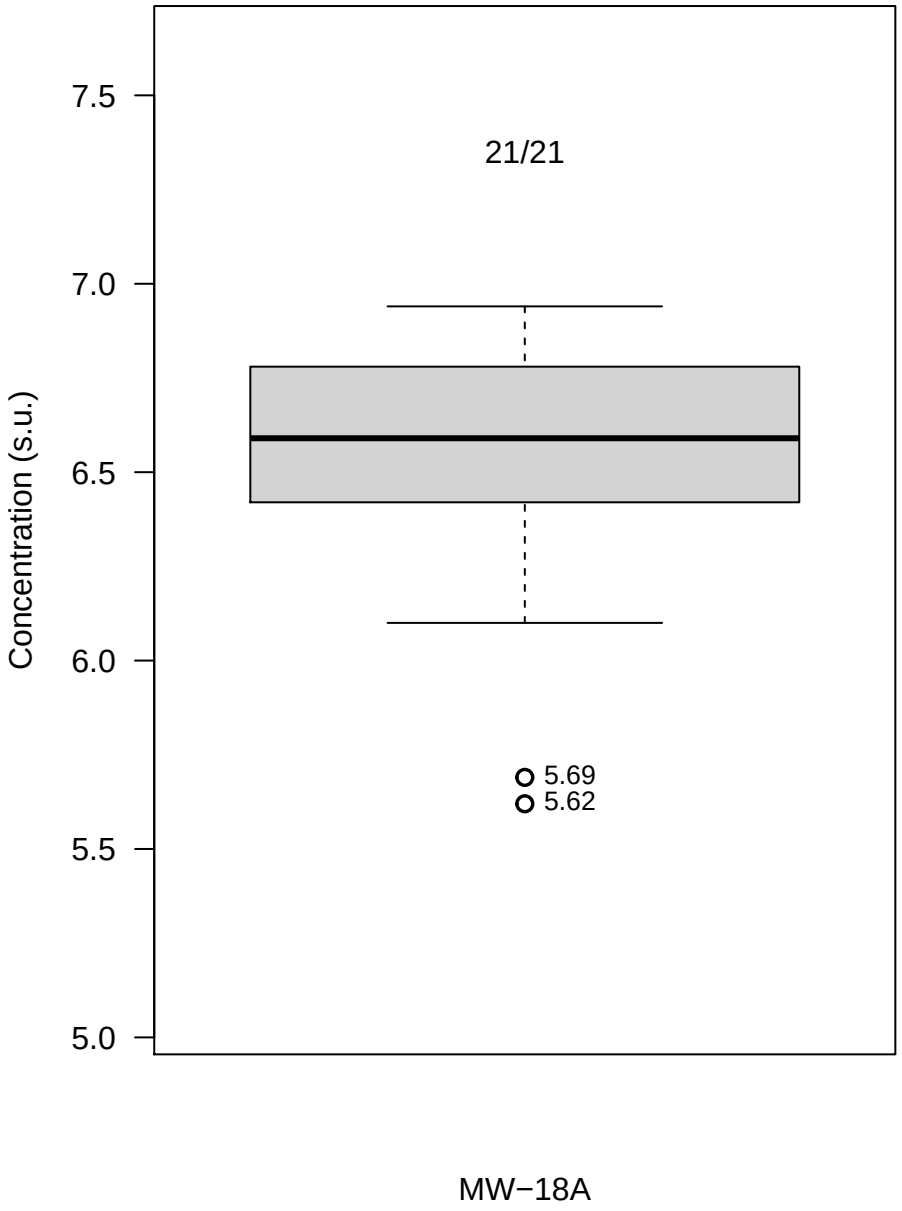


Figure C−20. Appendix III − Sulfate

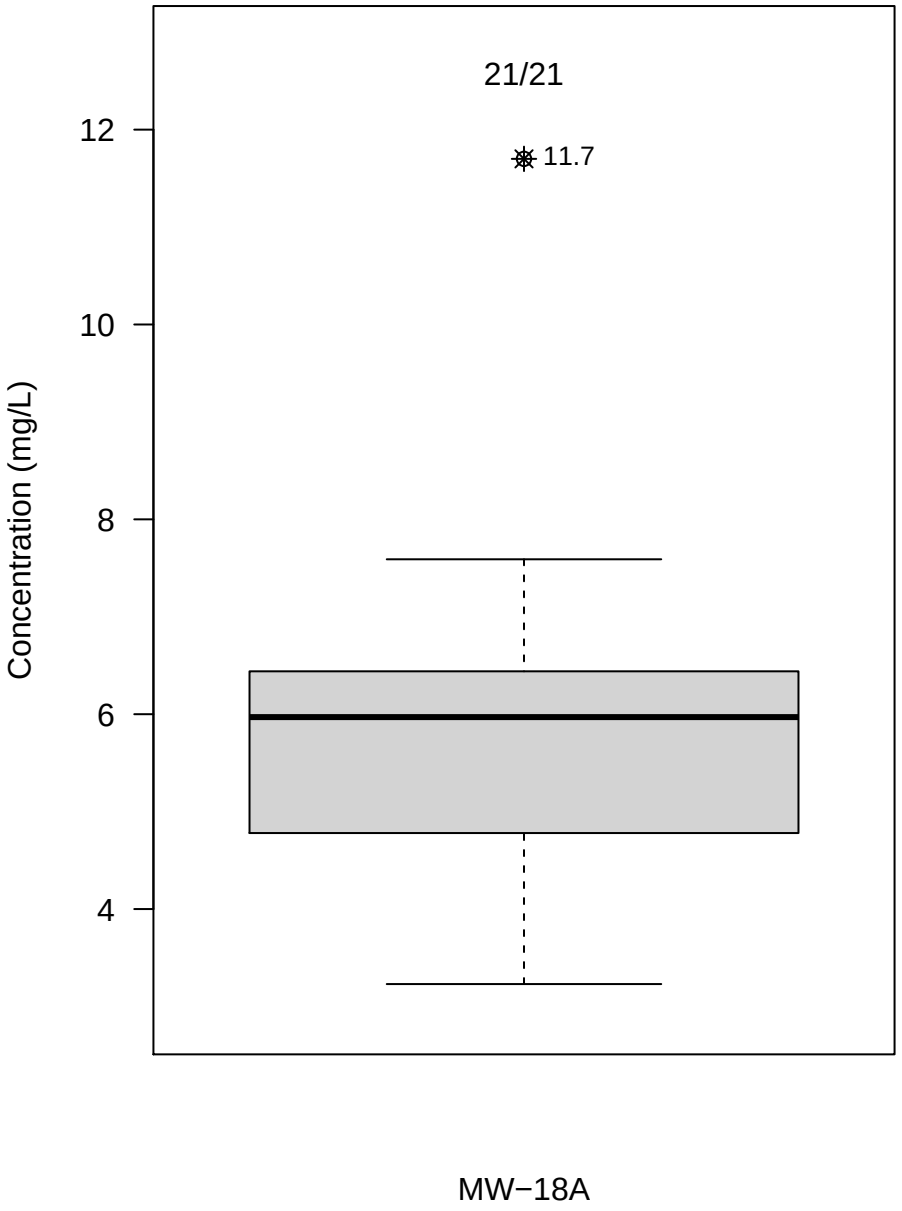


Figure C−21. Appendix III − Total Dissolved Solids

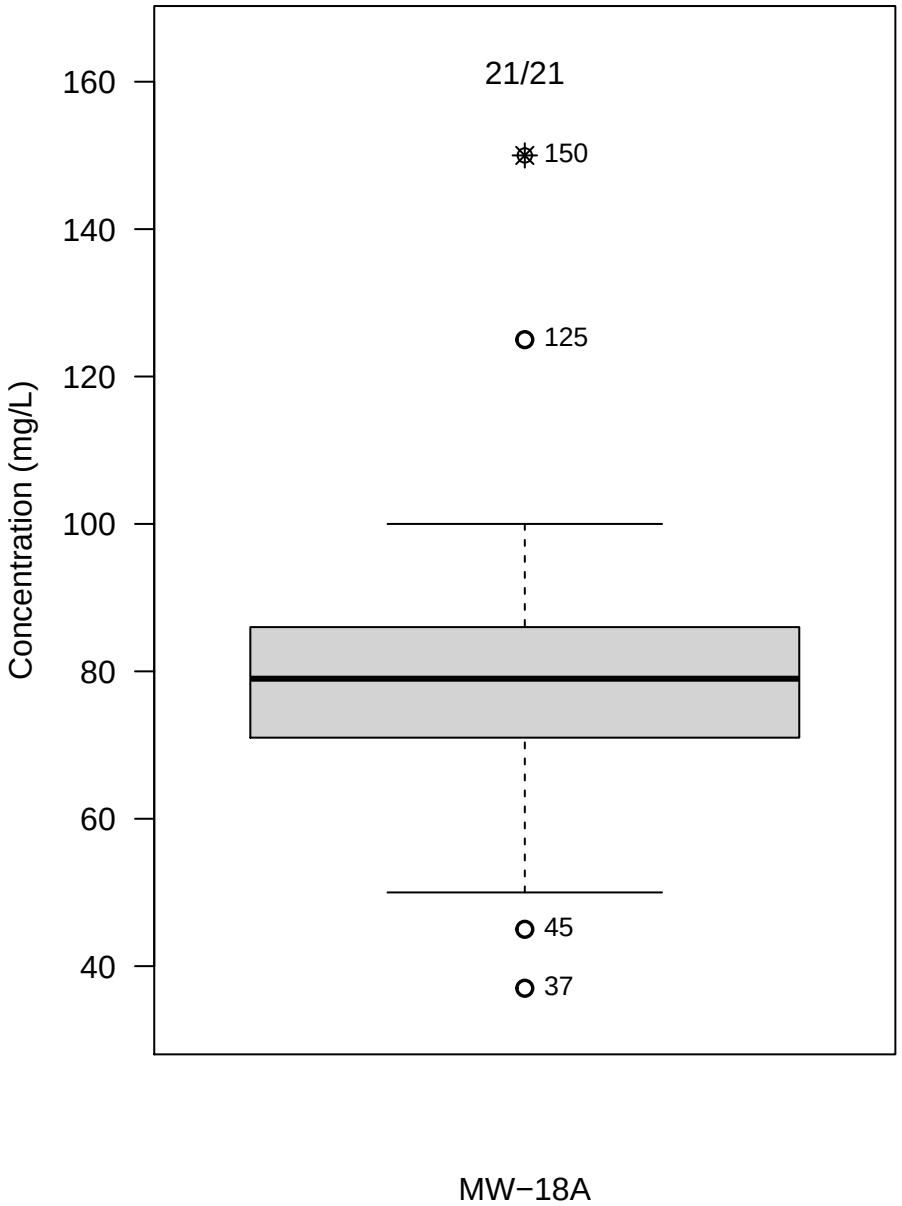


Figure C−22. Appendix IV − Barium

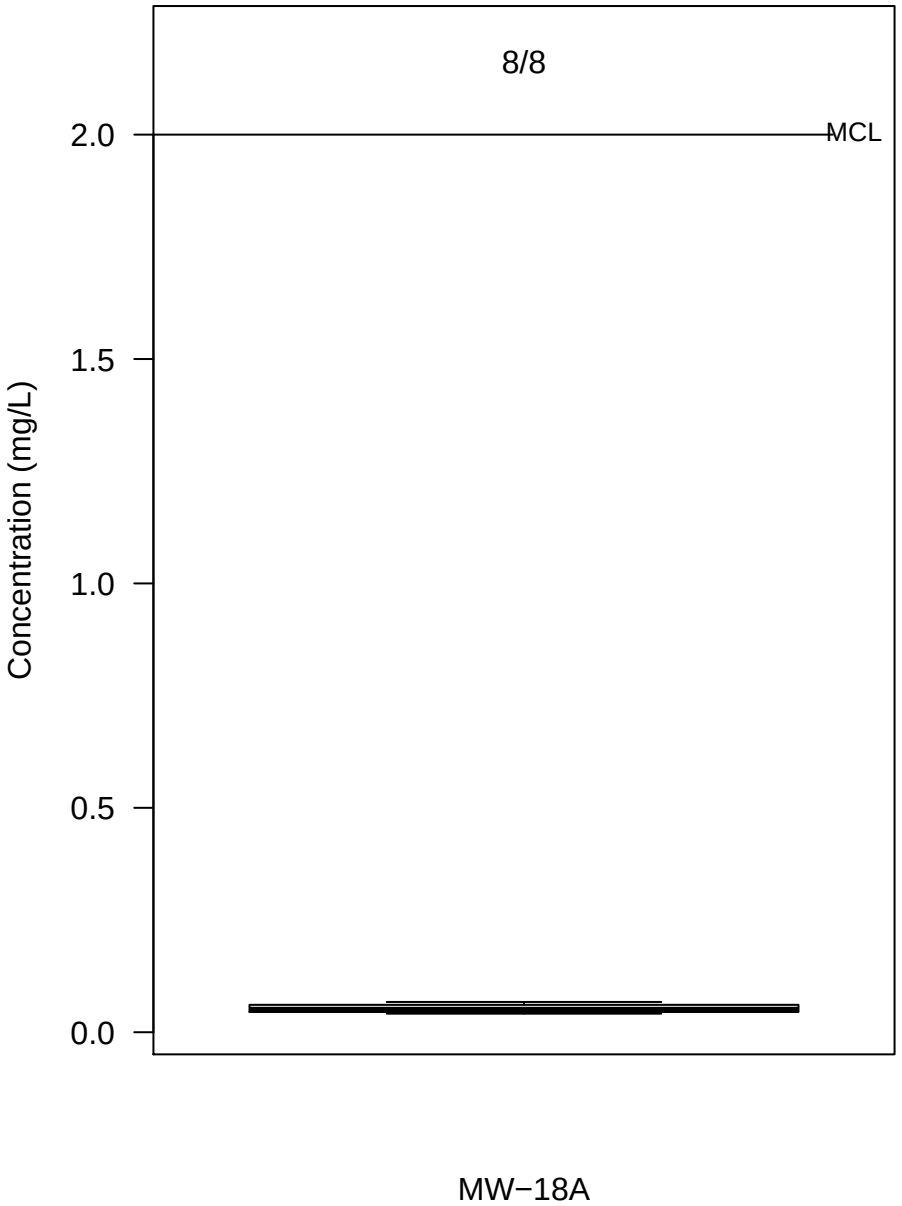


Figure C−23. Appendix IV − Beryllium

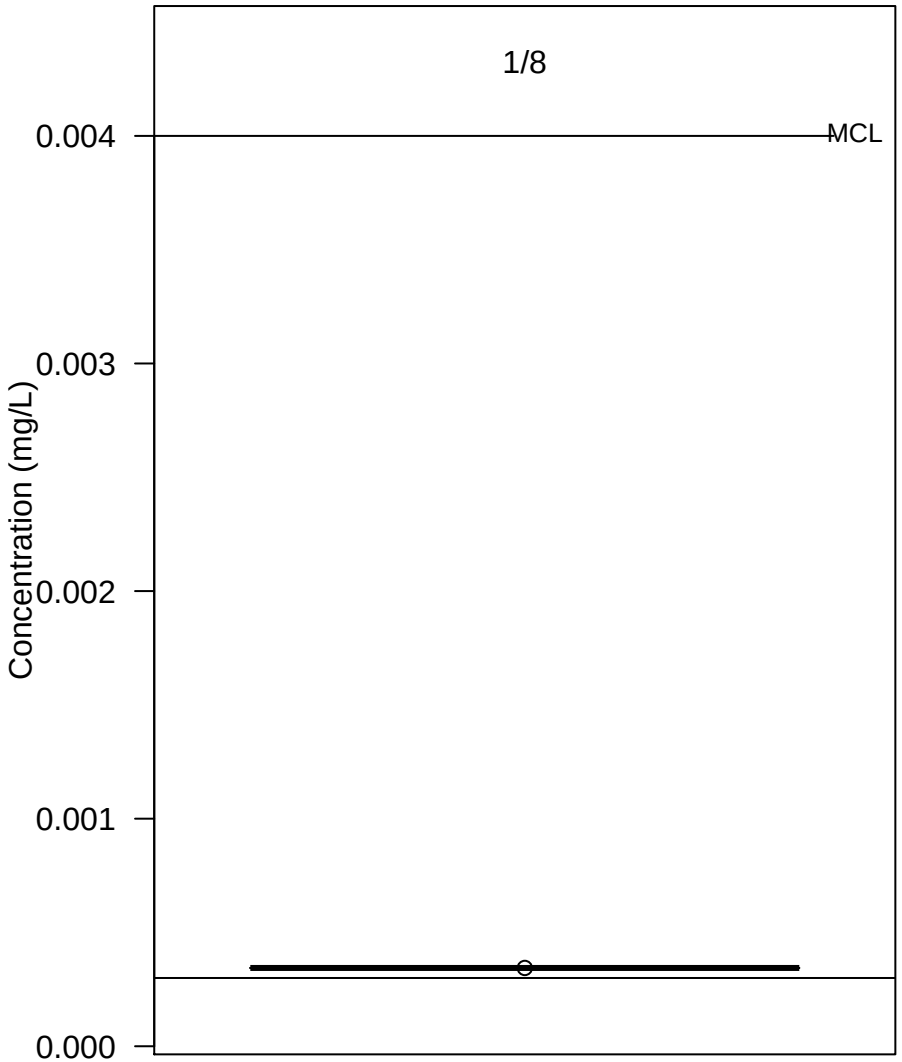


Figure C−24. Appendix IV − Chromium

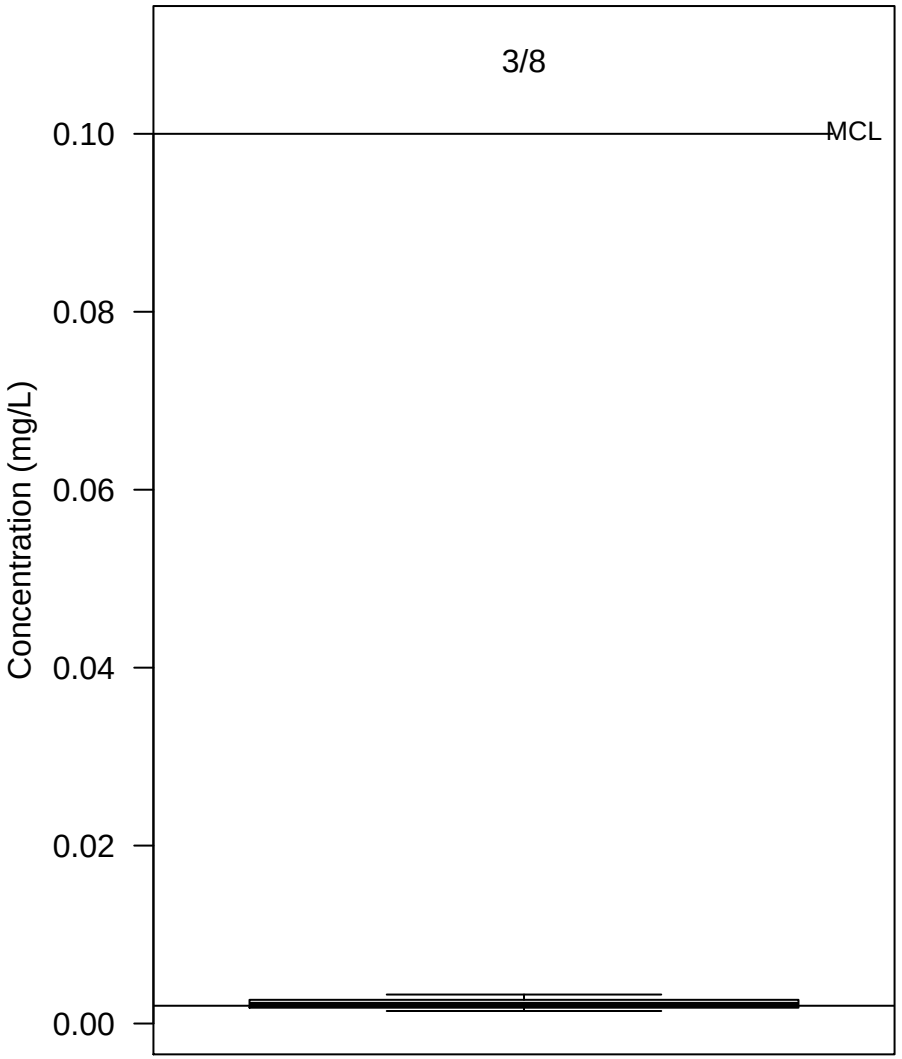


Figure C−25. Appendix IV − Cobalt

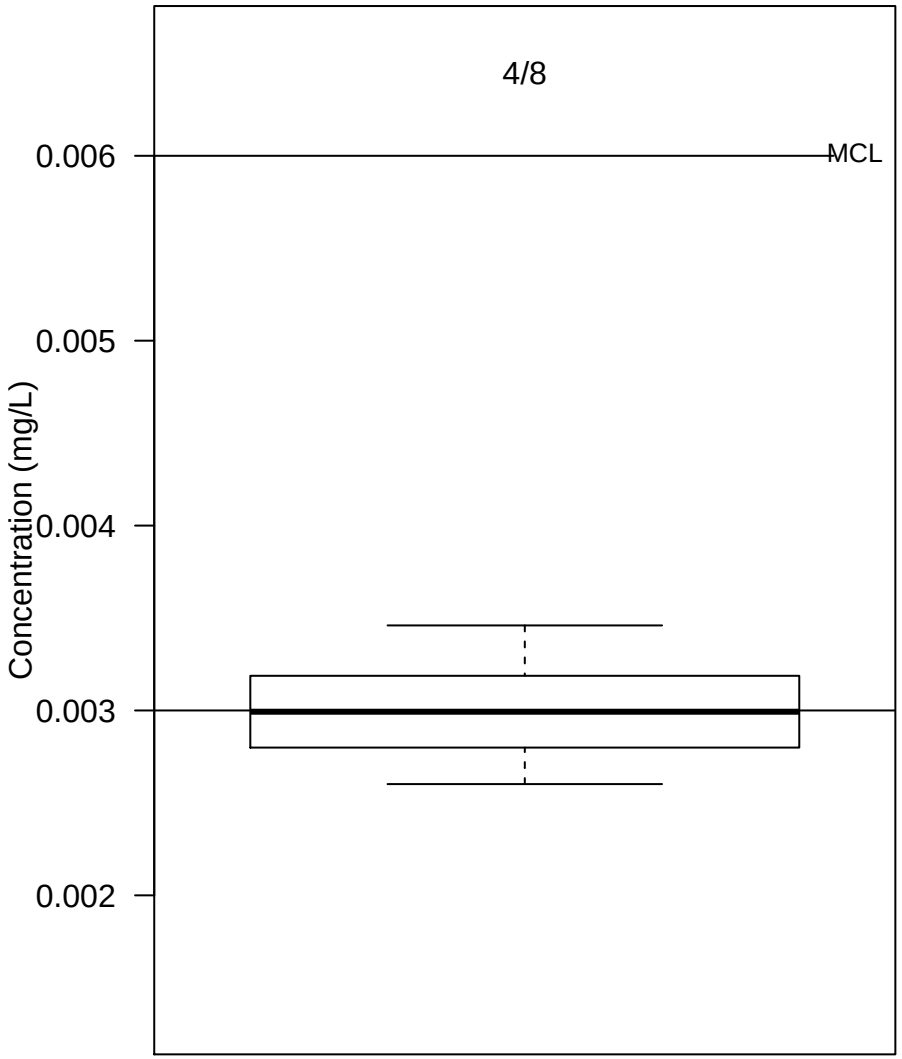


Figure C−26. Appendix IV − Fluoride

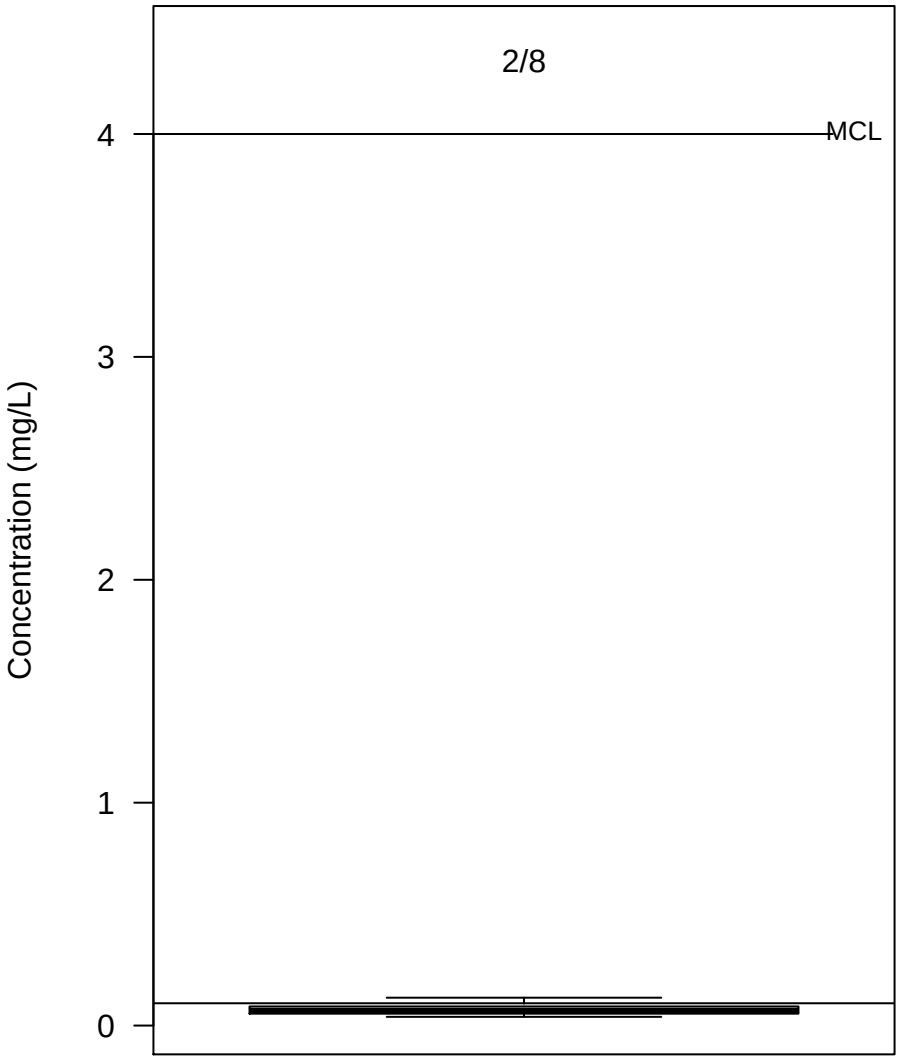


Figure C−27. Appendix IV − Lead

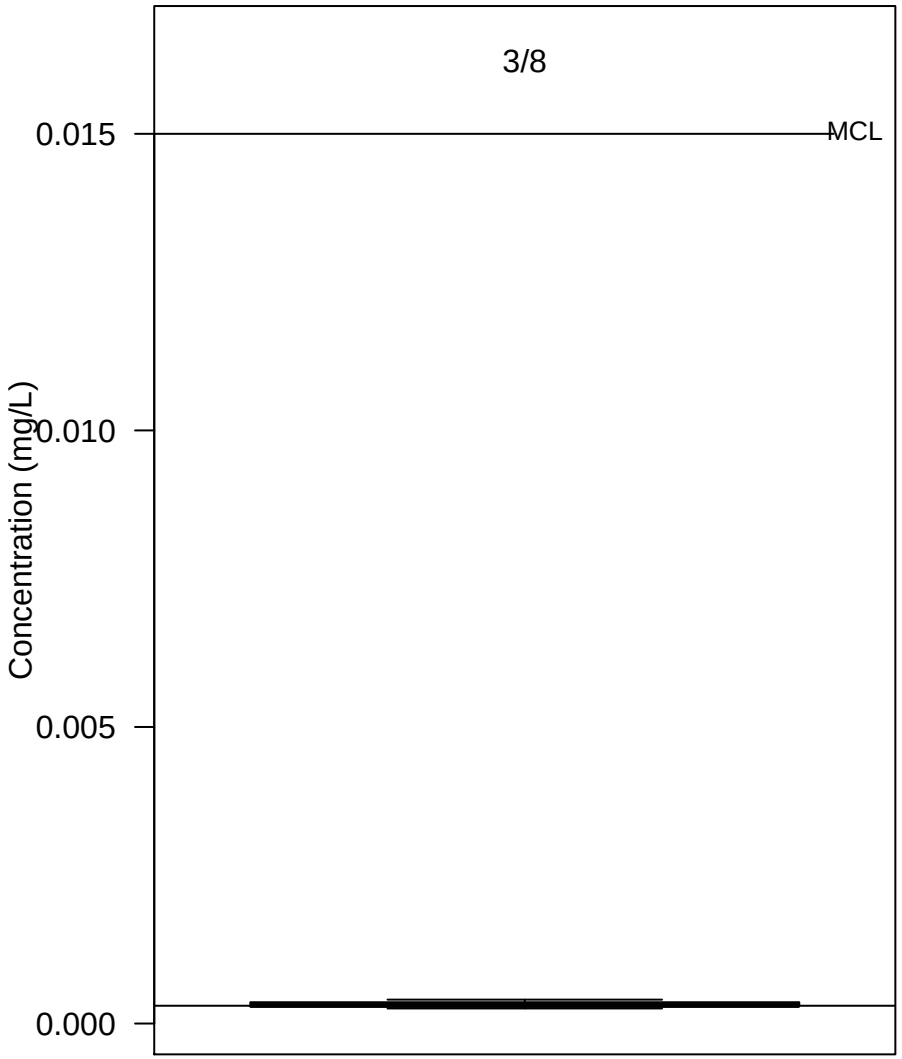


Figure C−28. Appendix IV − Lithium

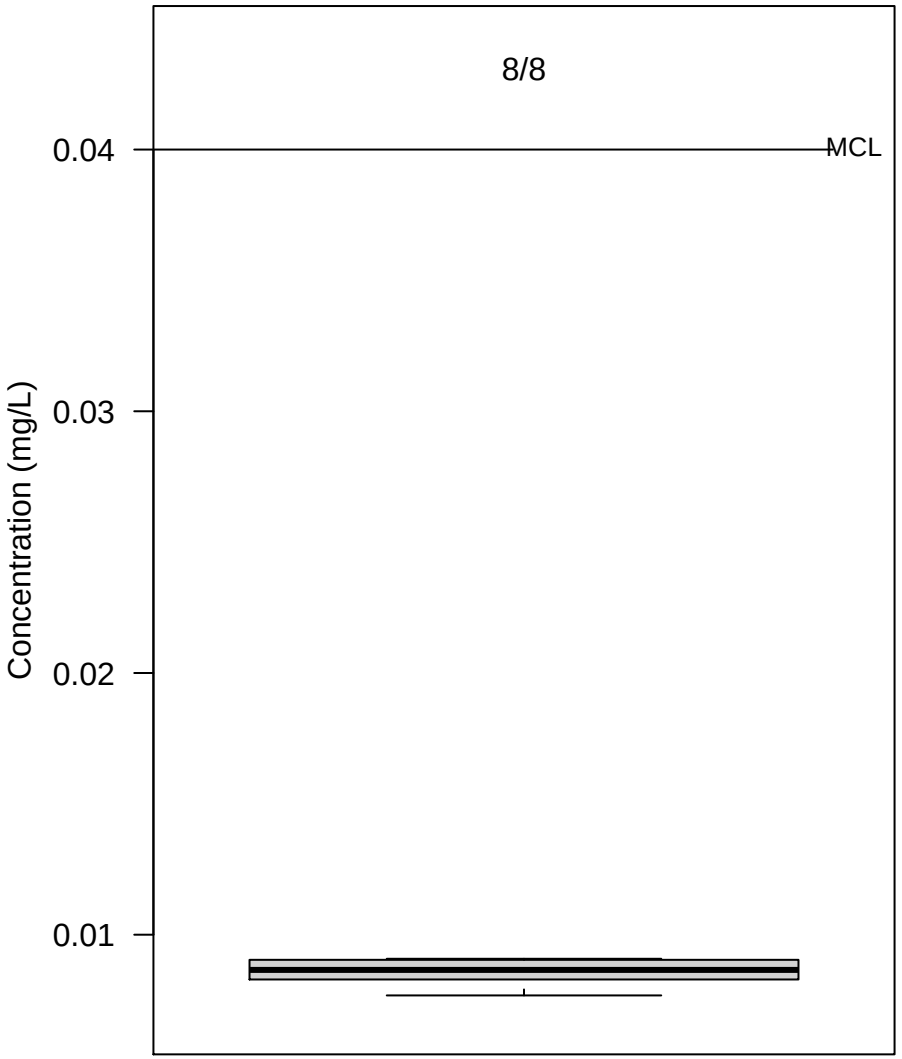


Figure C−29. Appendix IV − Mercury

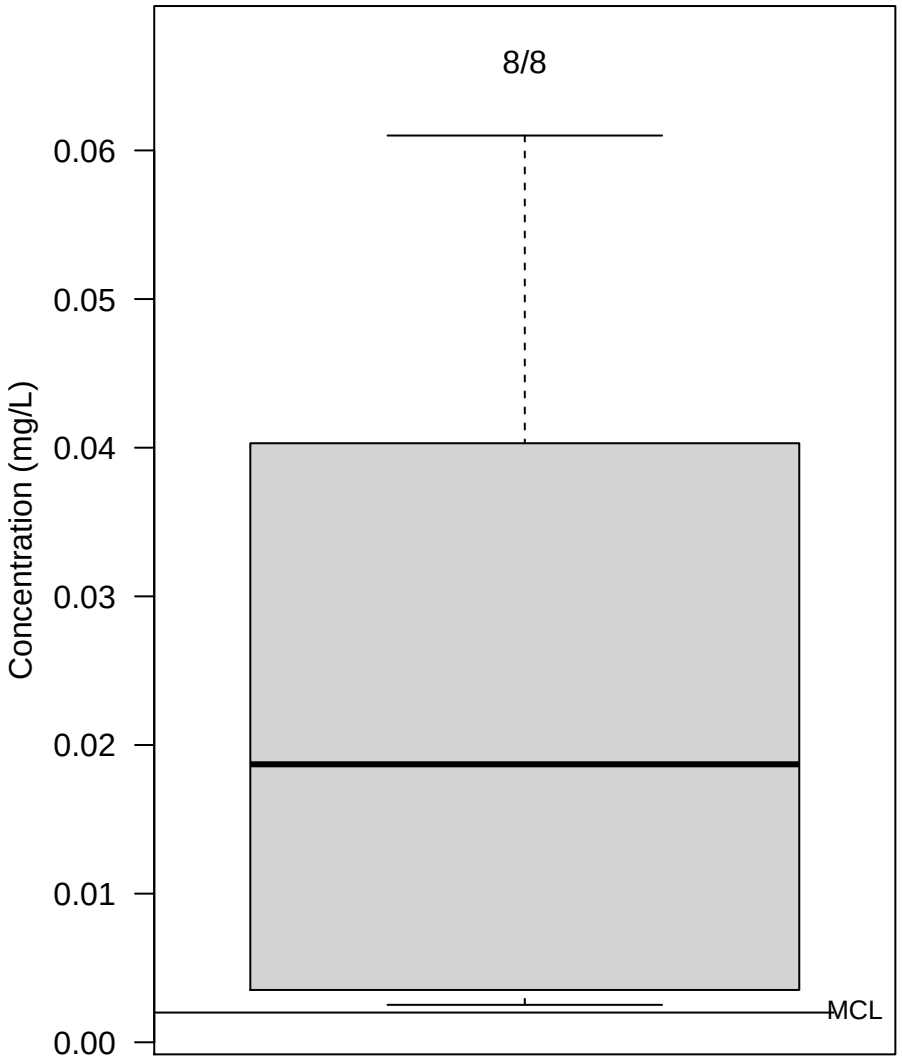


Figure C−30. Appendix IV − Selenium

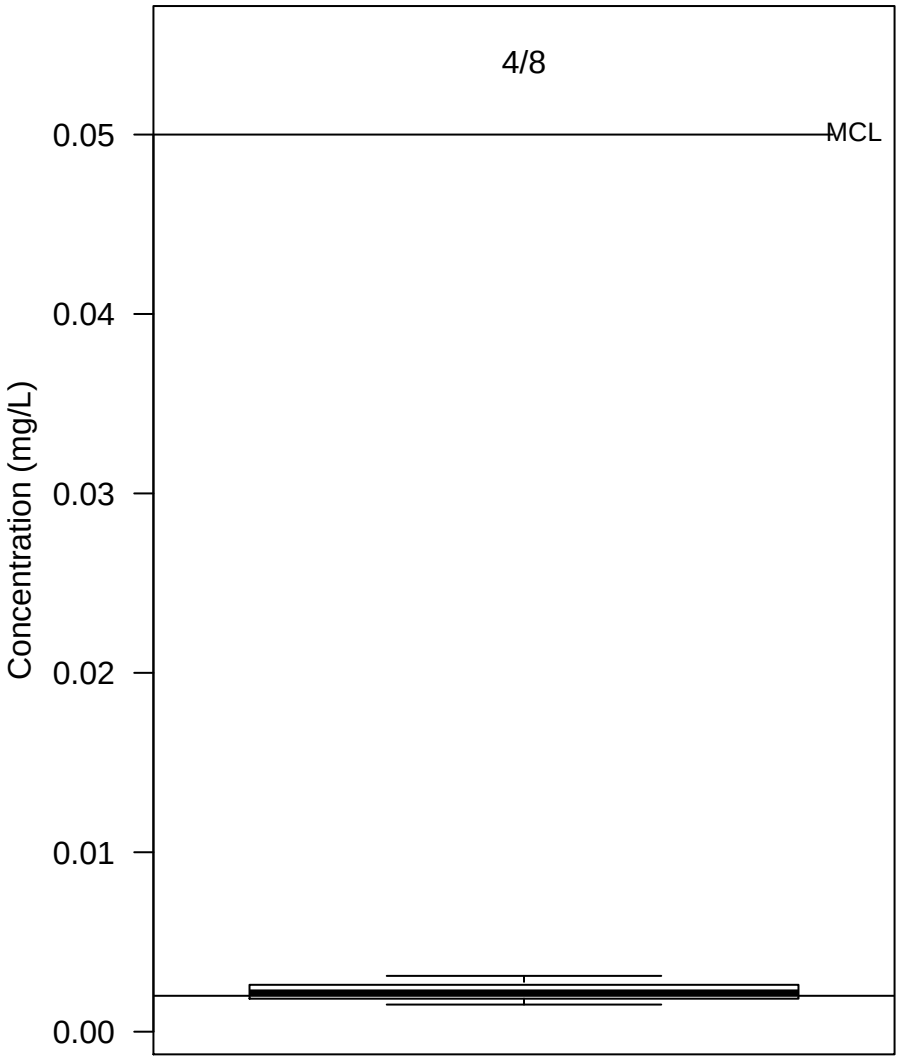


Figure C−31. Appendix IV − Radium−226 + Radium−228

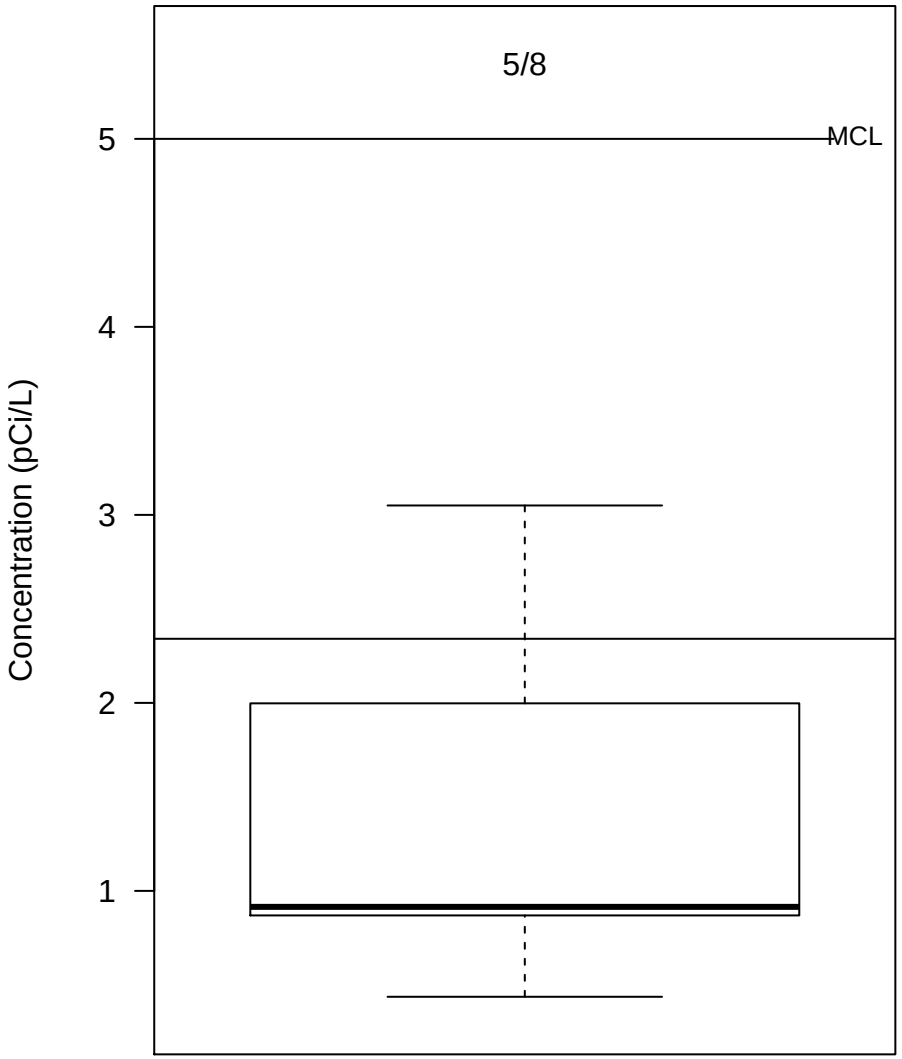


Figure C−32. Appendix III − Boron

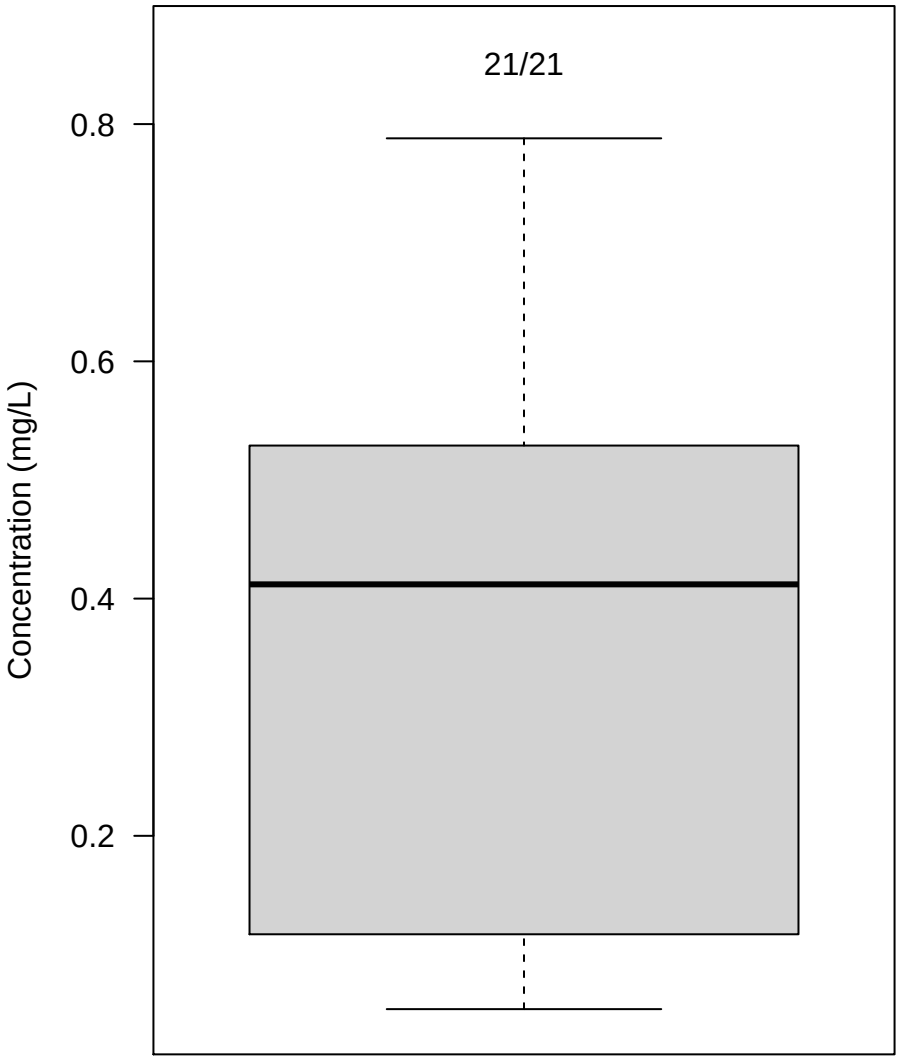


Figure C−33. Appendix III − Calcium

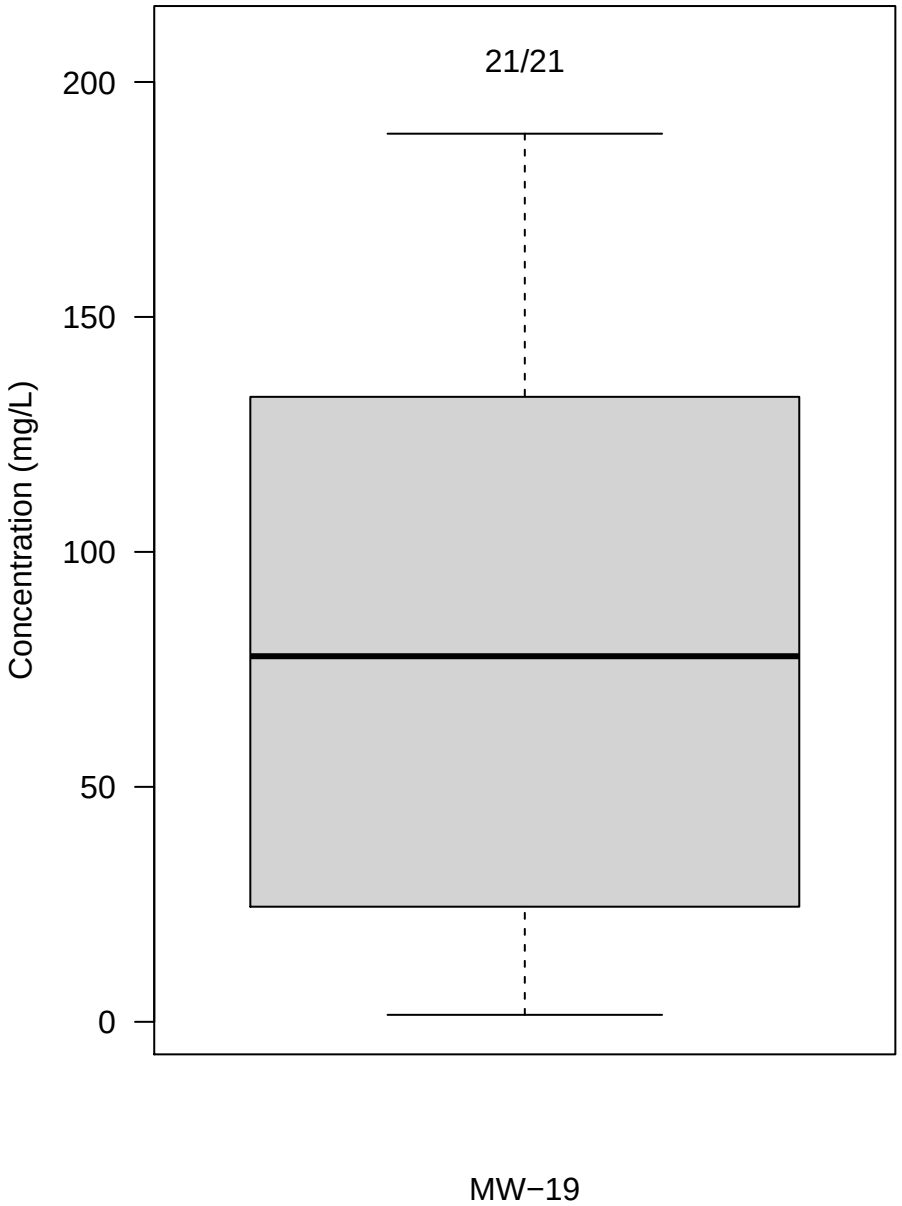


Figure C−34. Appendix III − Chloride

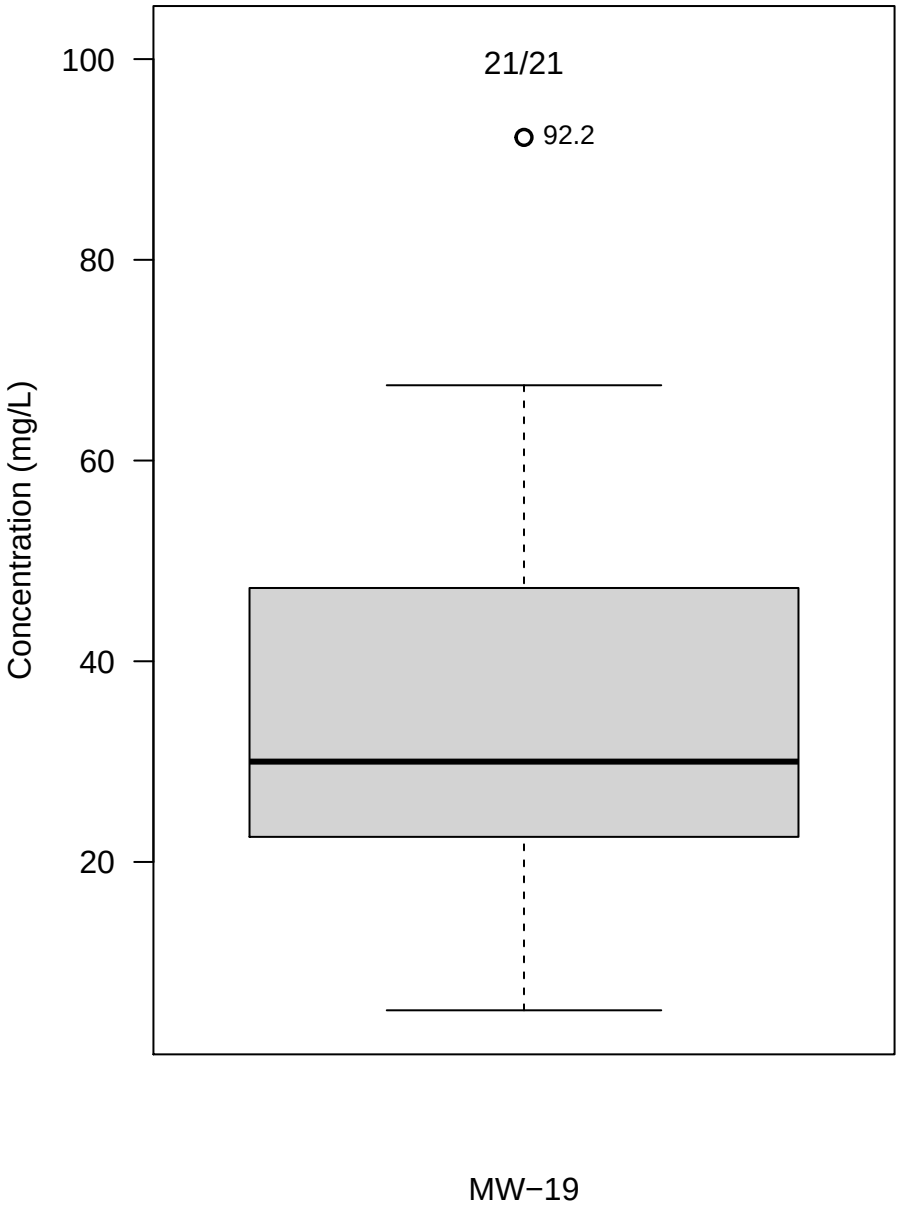


Figure C−35. Appendix III − Fluoride

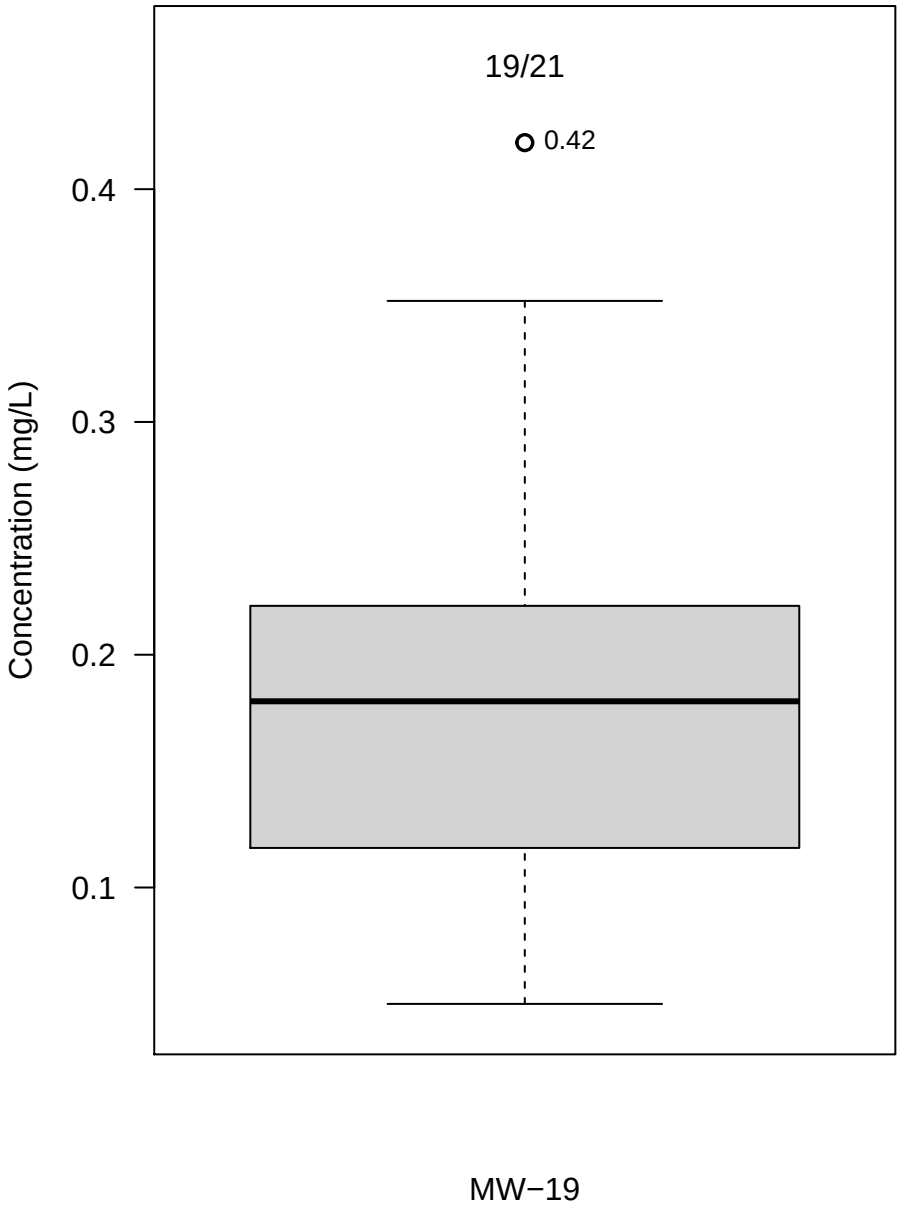


Figure C−36. Appendix III − field.pH

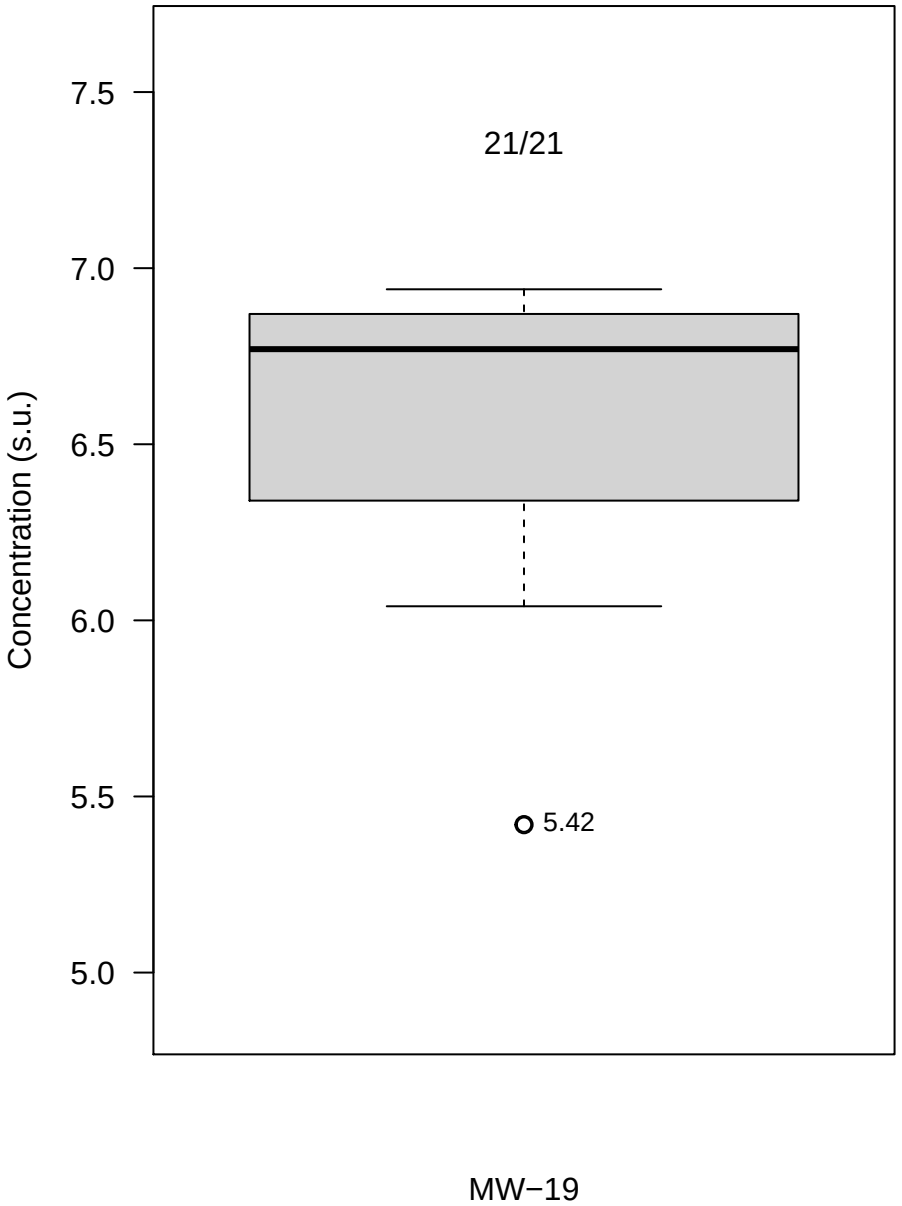


Figure C−37. Appendix III − Sulfate

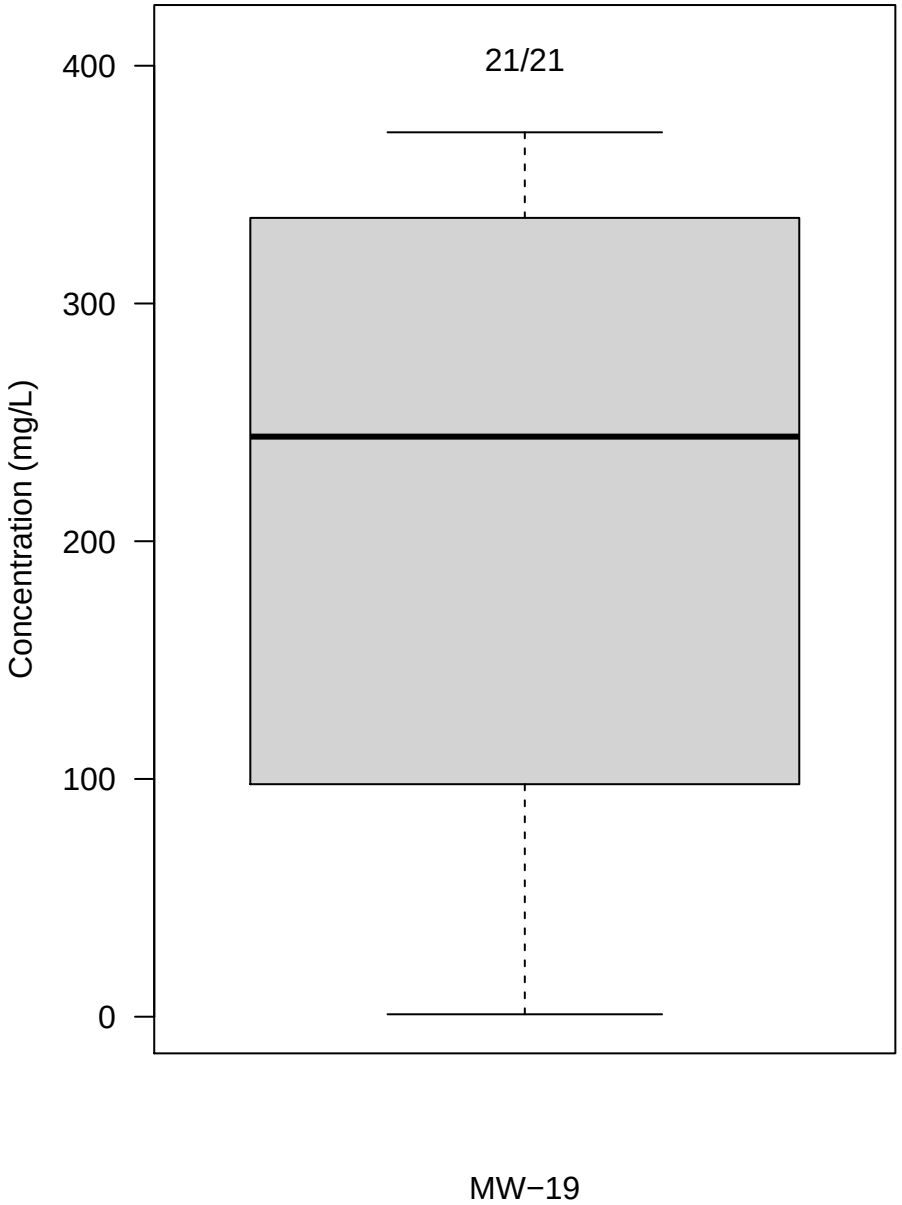


Figure C−38. Appendix III − Total Dissolved Solids

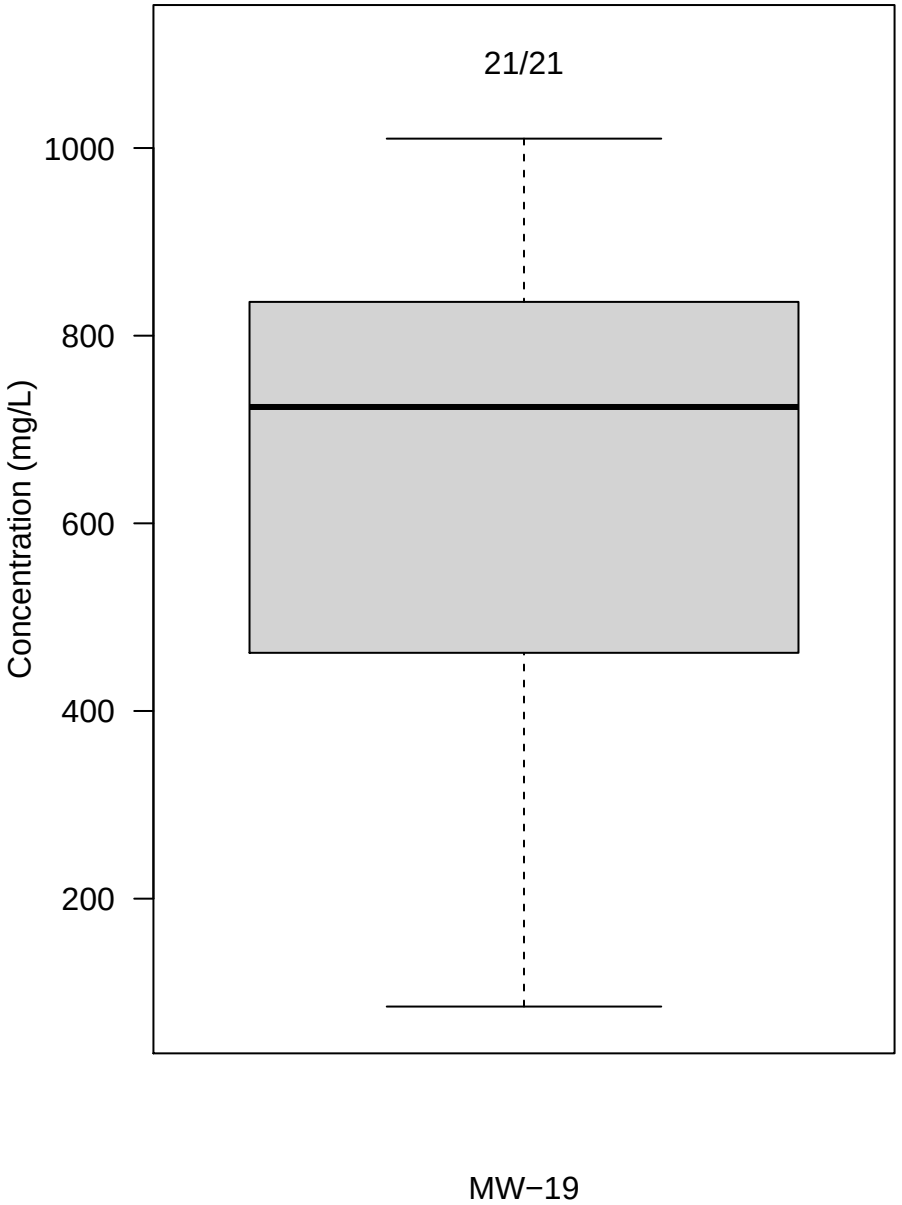


Figure C−39. Appendix IV − Arsenic

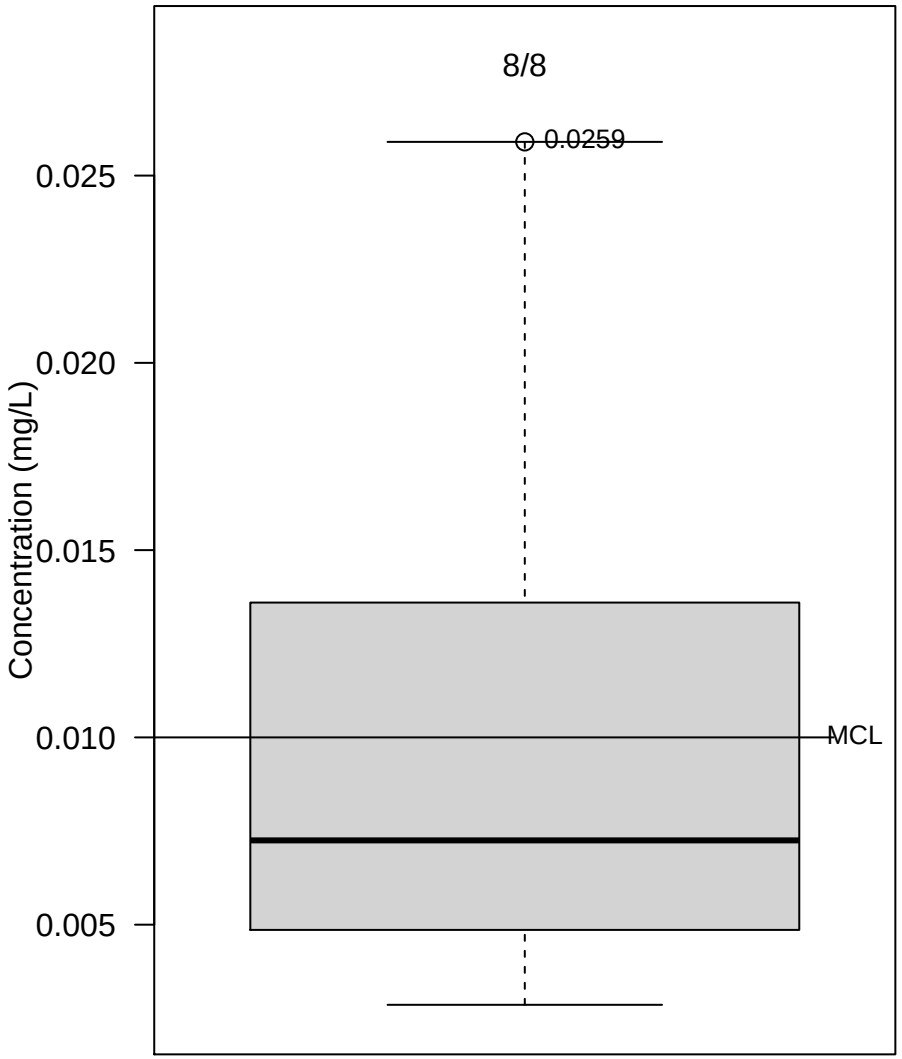


Figure C−40. Appendix IV − Barium

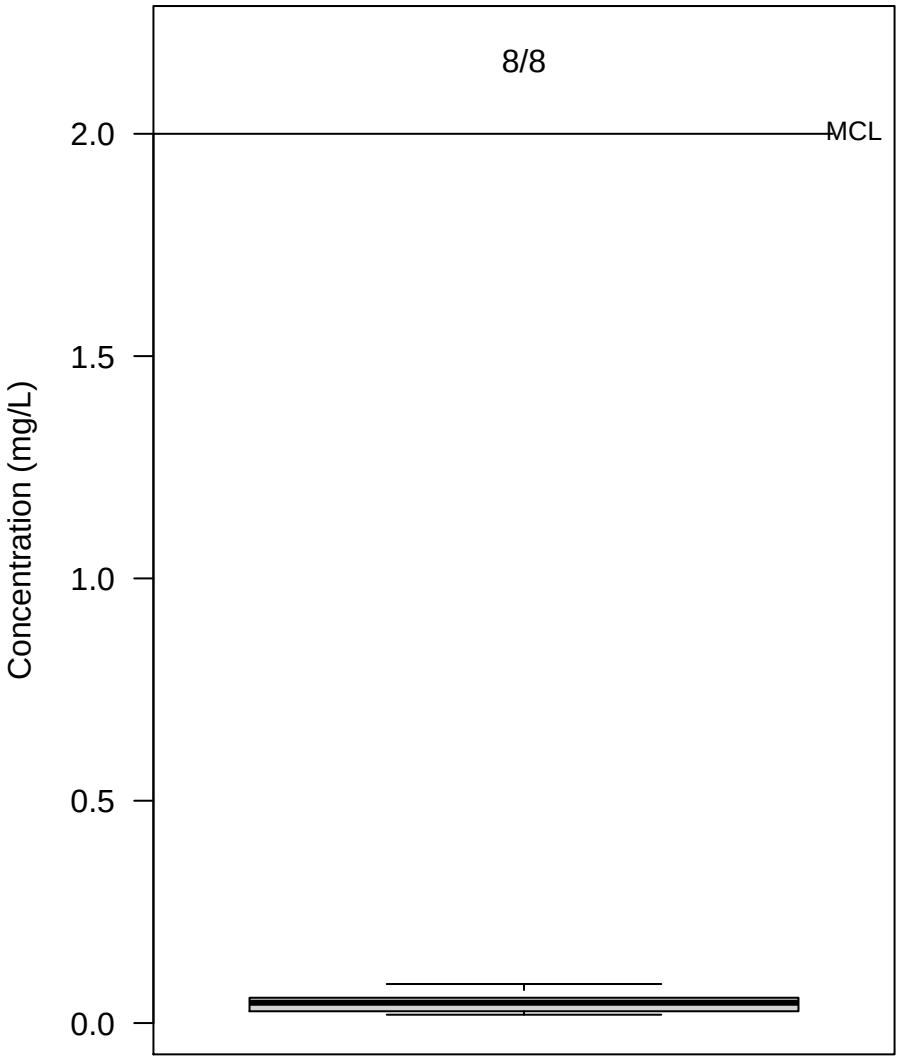


Figure C−41. Appendix IV − Beryllium

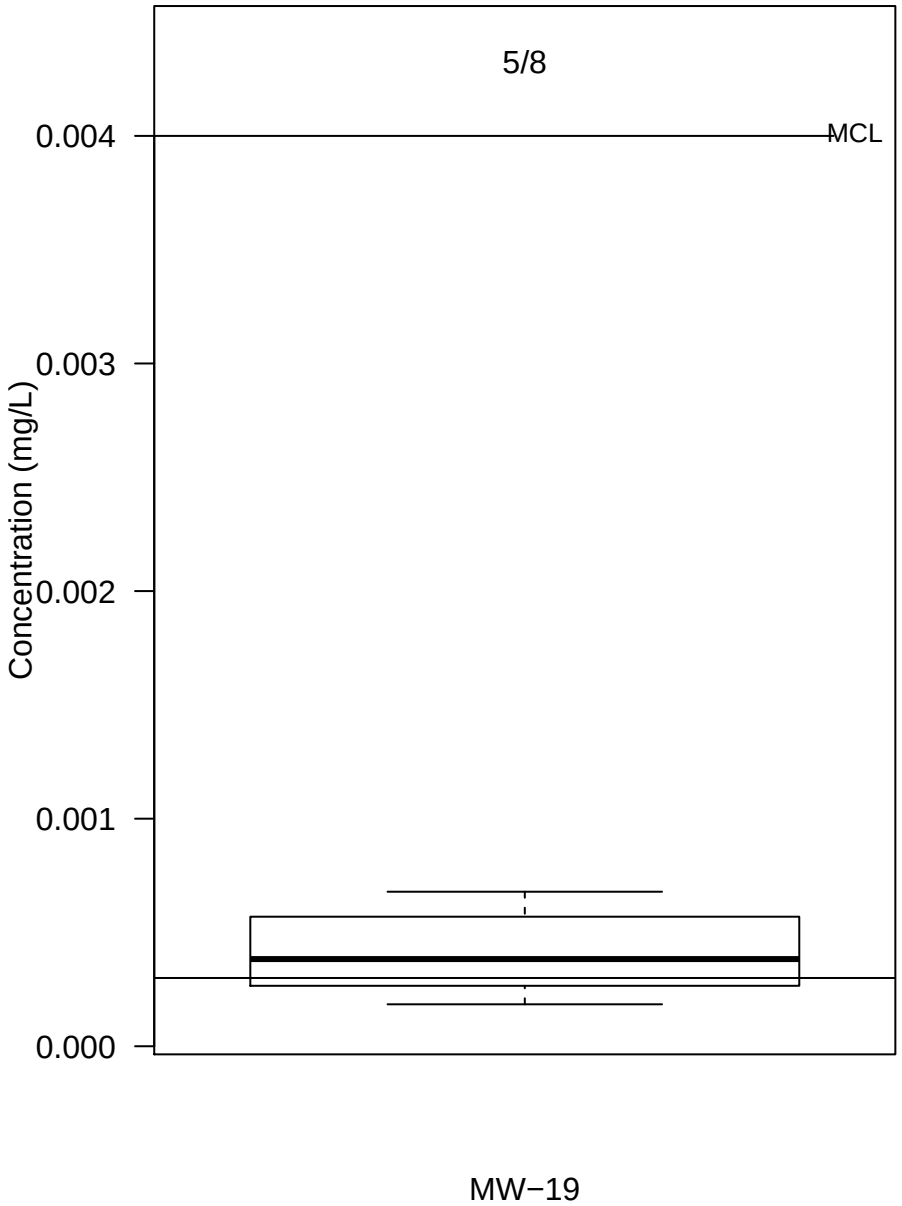


Figure C−42. Appendix IV − Chromium

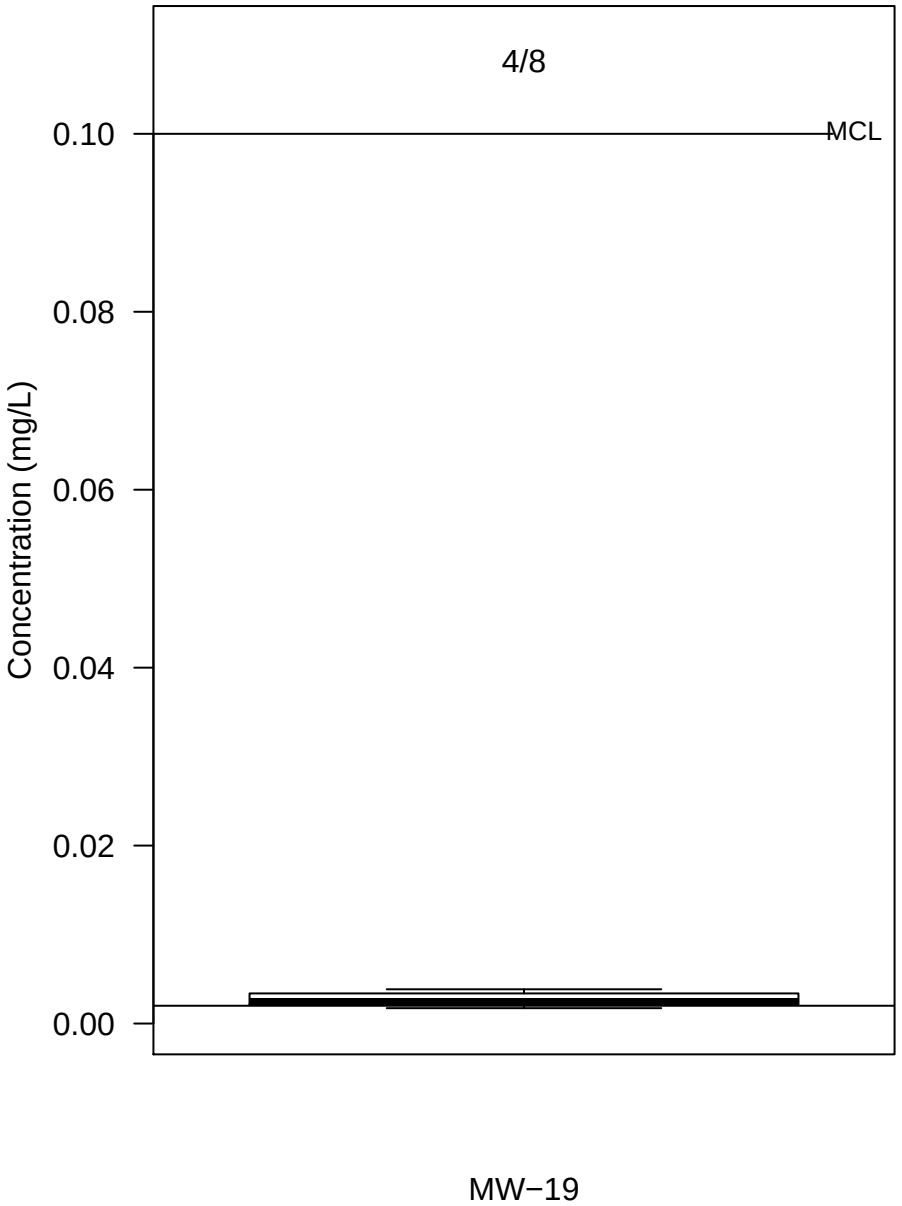


Figure C−43. Appendix IV − Cobalt

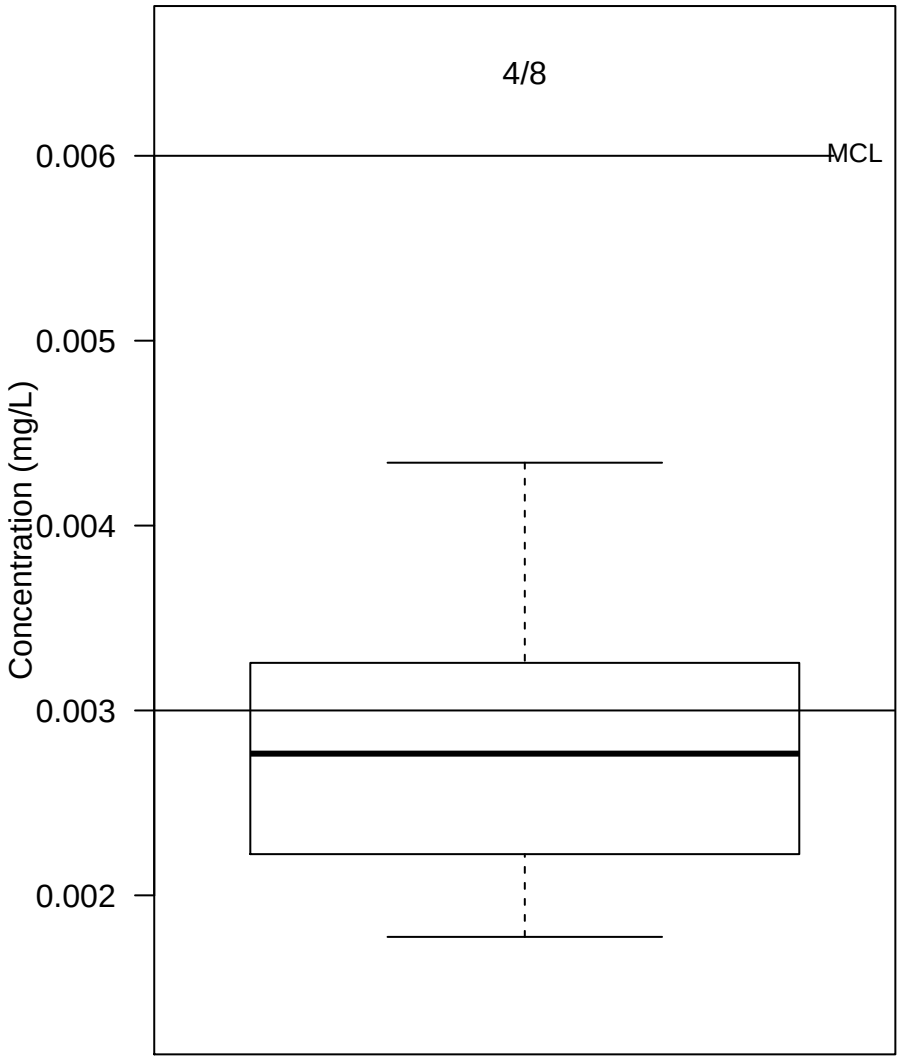


Figure C−44. Appendix IV − Fluoride

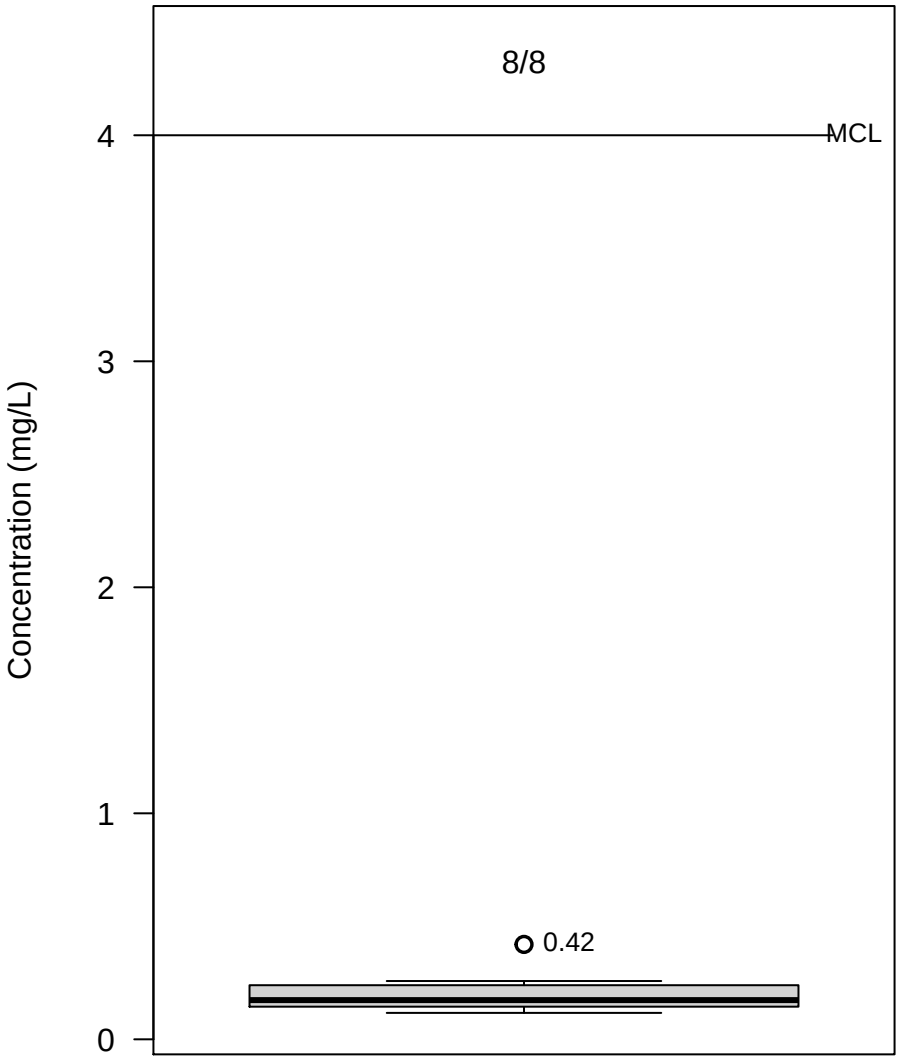


Figure C−45. Appendix IV − Lead

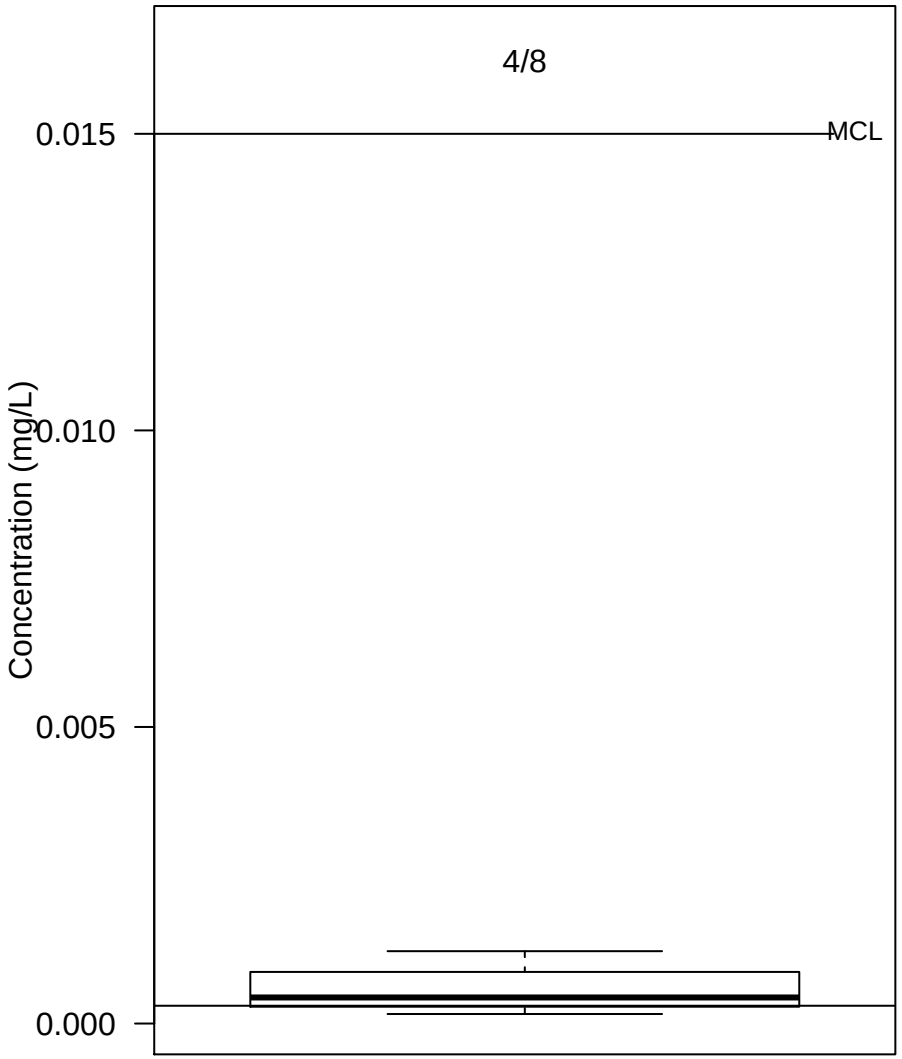


Figure C−46. Appendix IV − Lithium

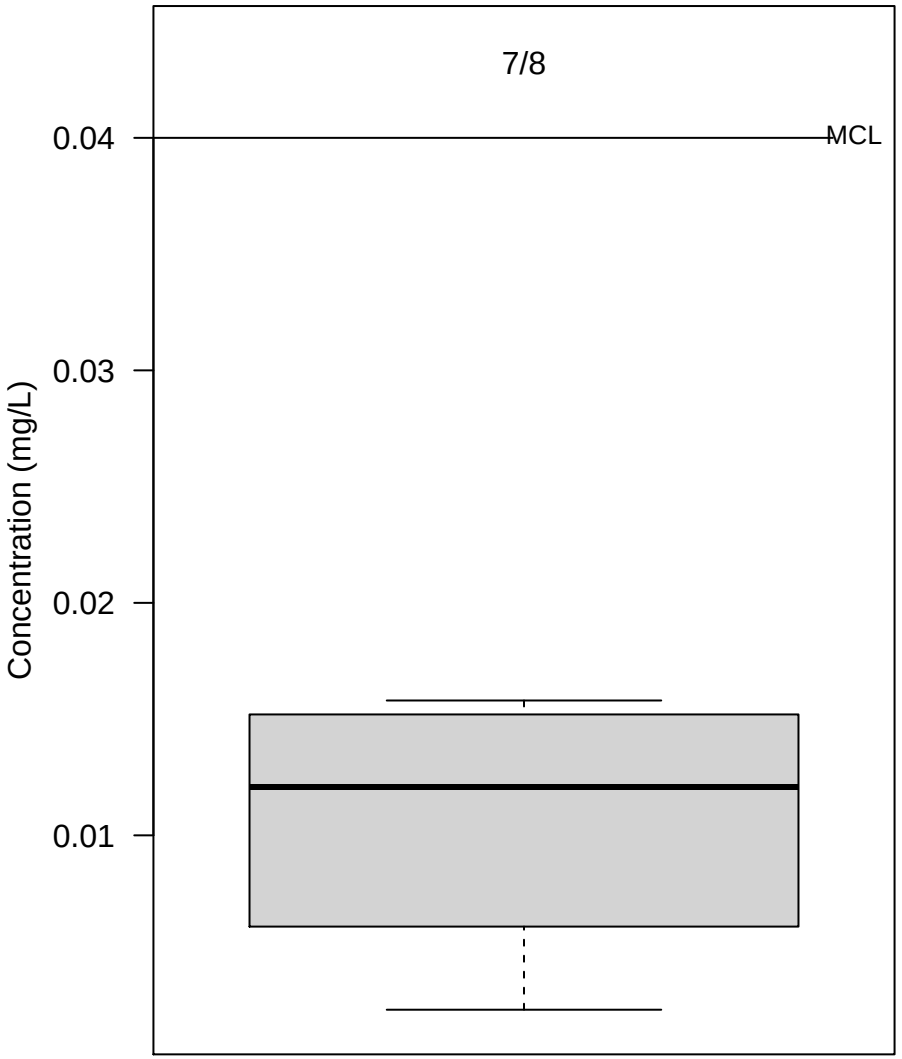


Figure C−47. Appendix IV − Selenium

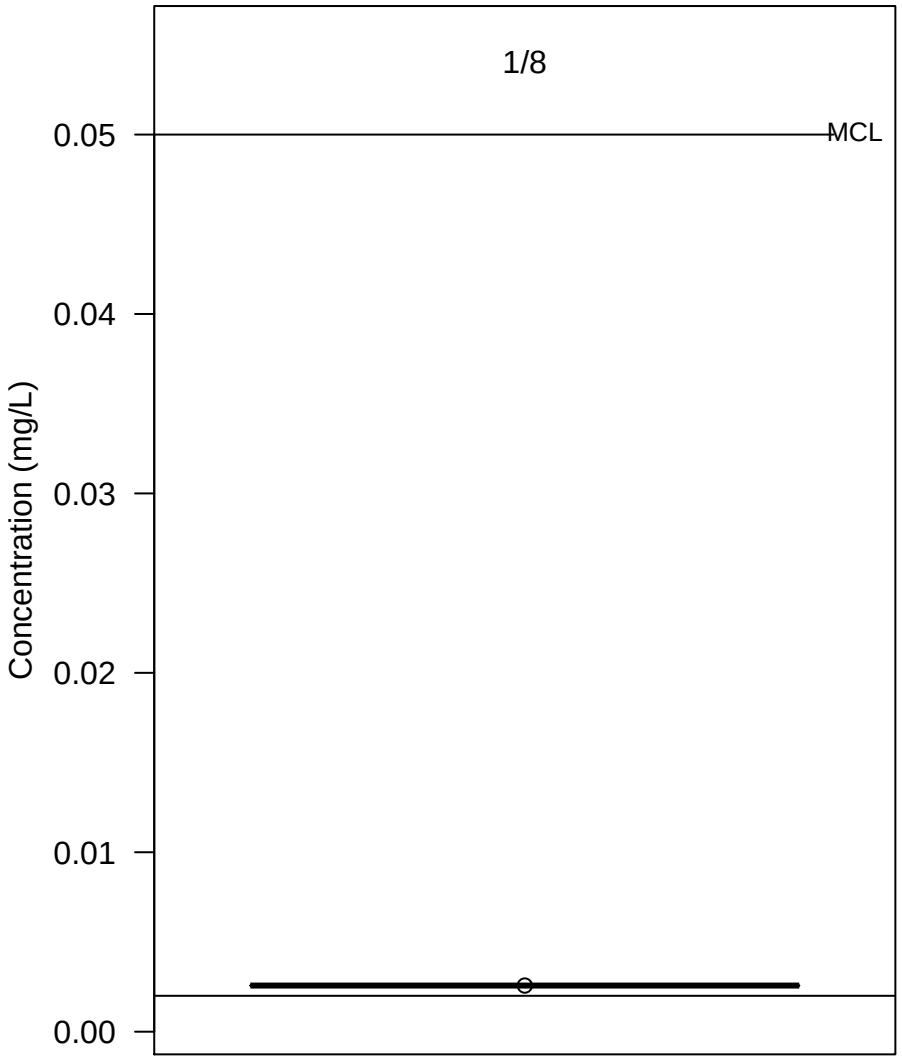


Figure C−48. Appendix IV − Radium−226 + Radium−228

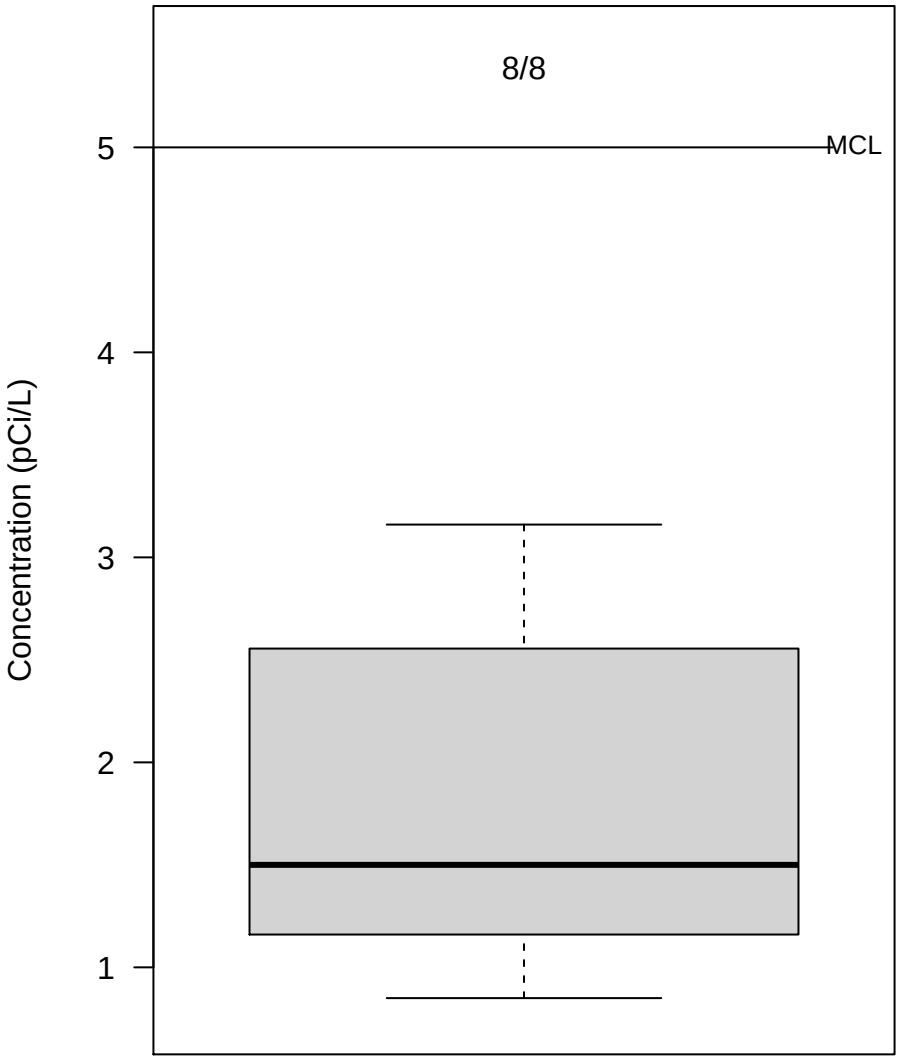


Figure C−49. Appendix III − Boron

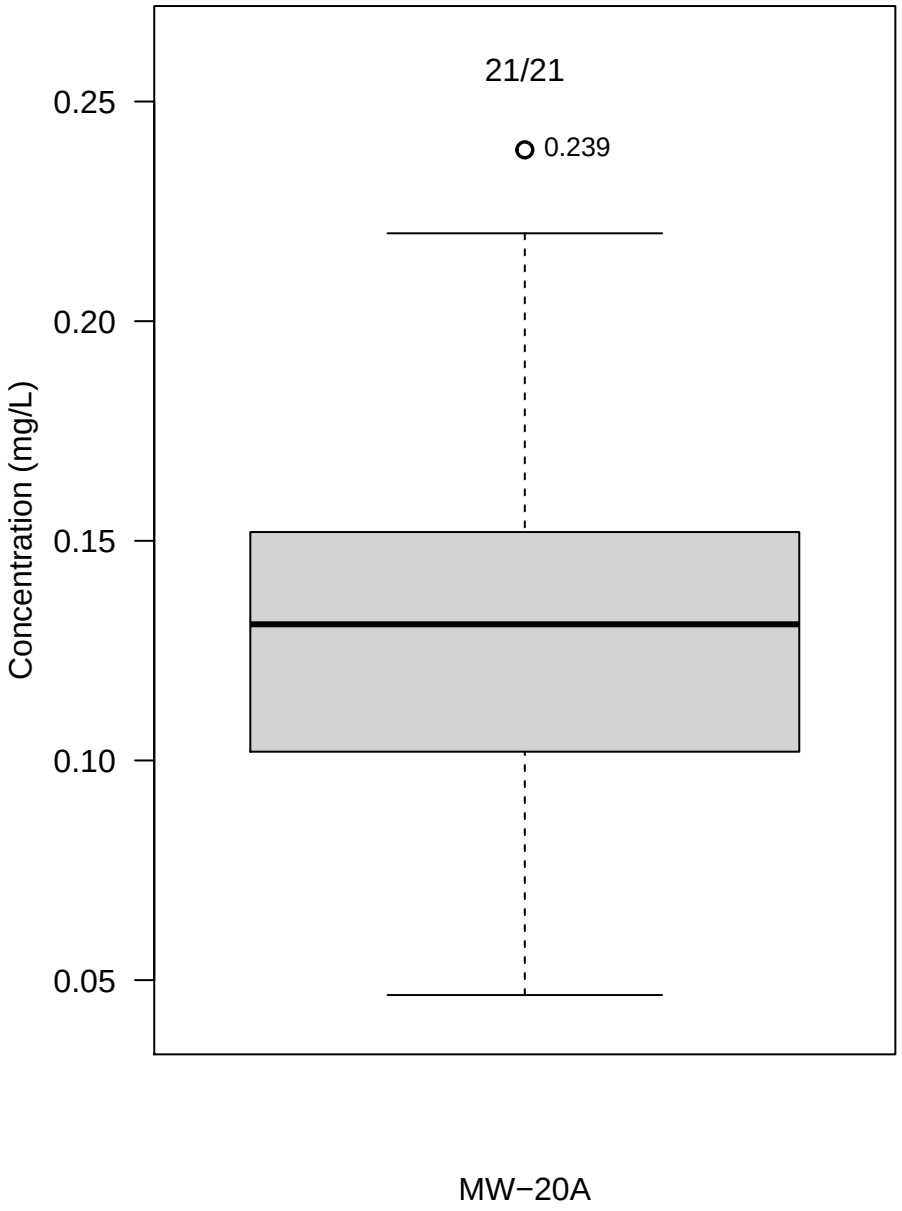


Figure C−50. Appendix III − Calcium

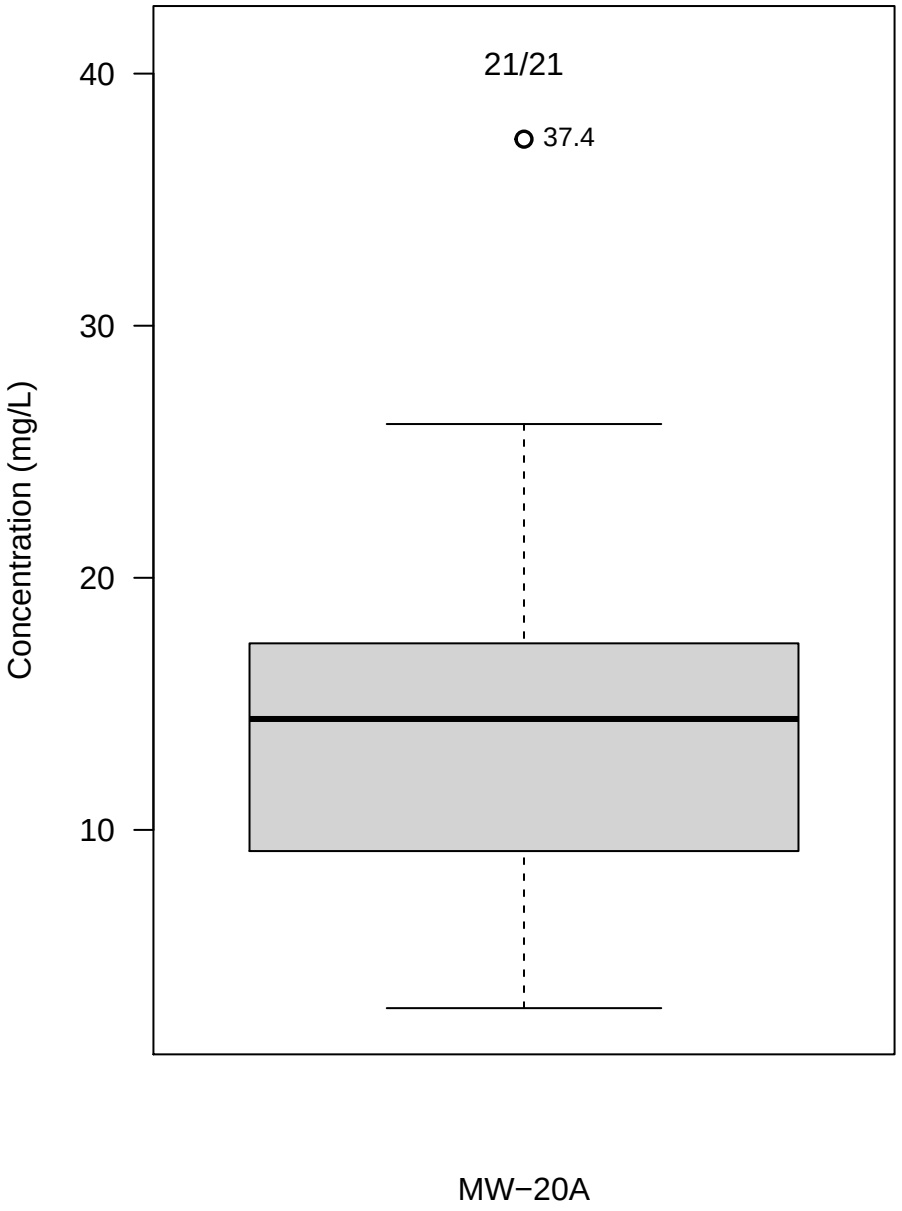


Figure C−51. Appendix III − Chloride

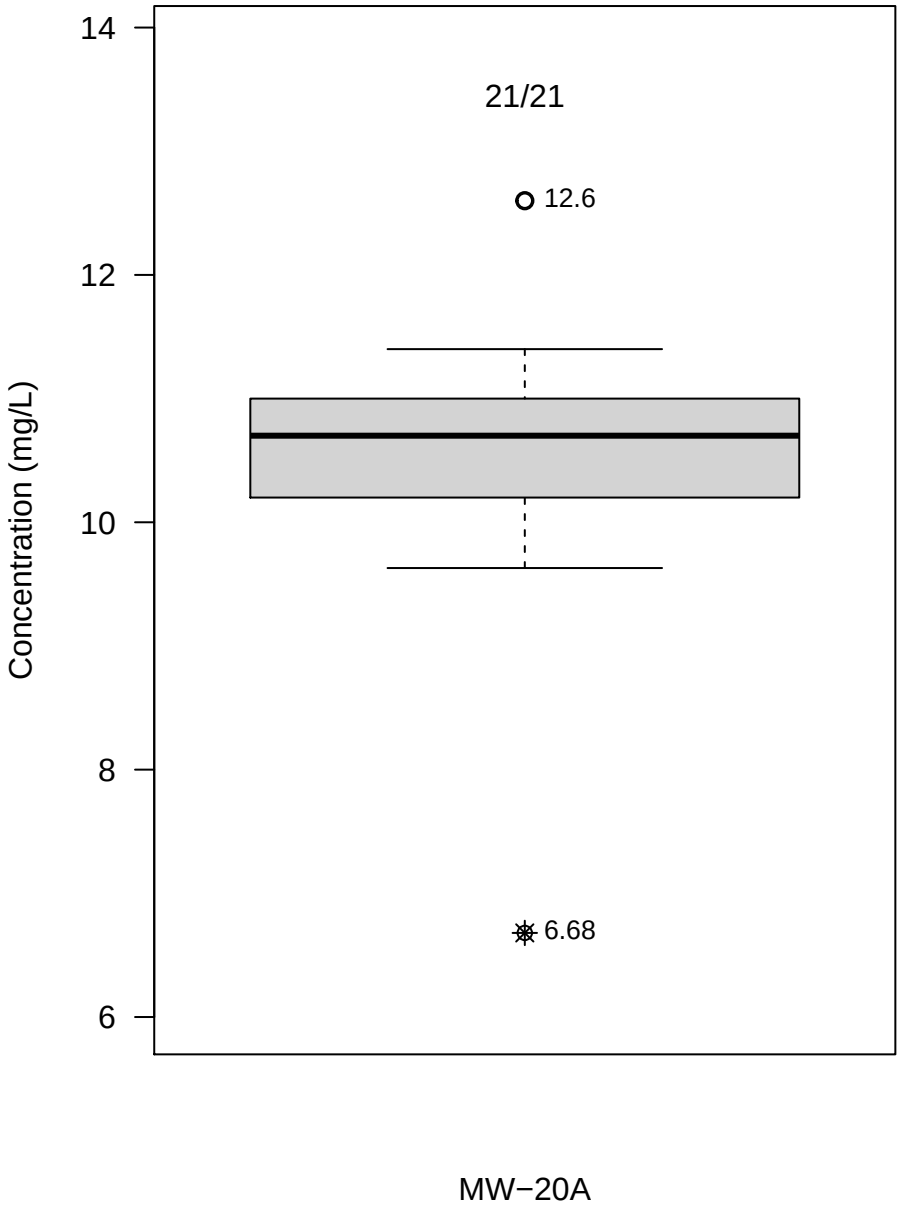


Figure C−52. Appendix III − Fluoride

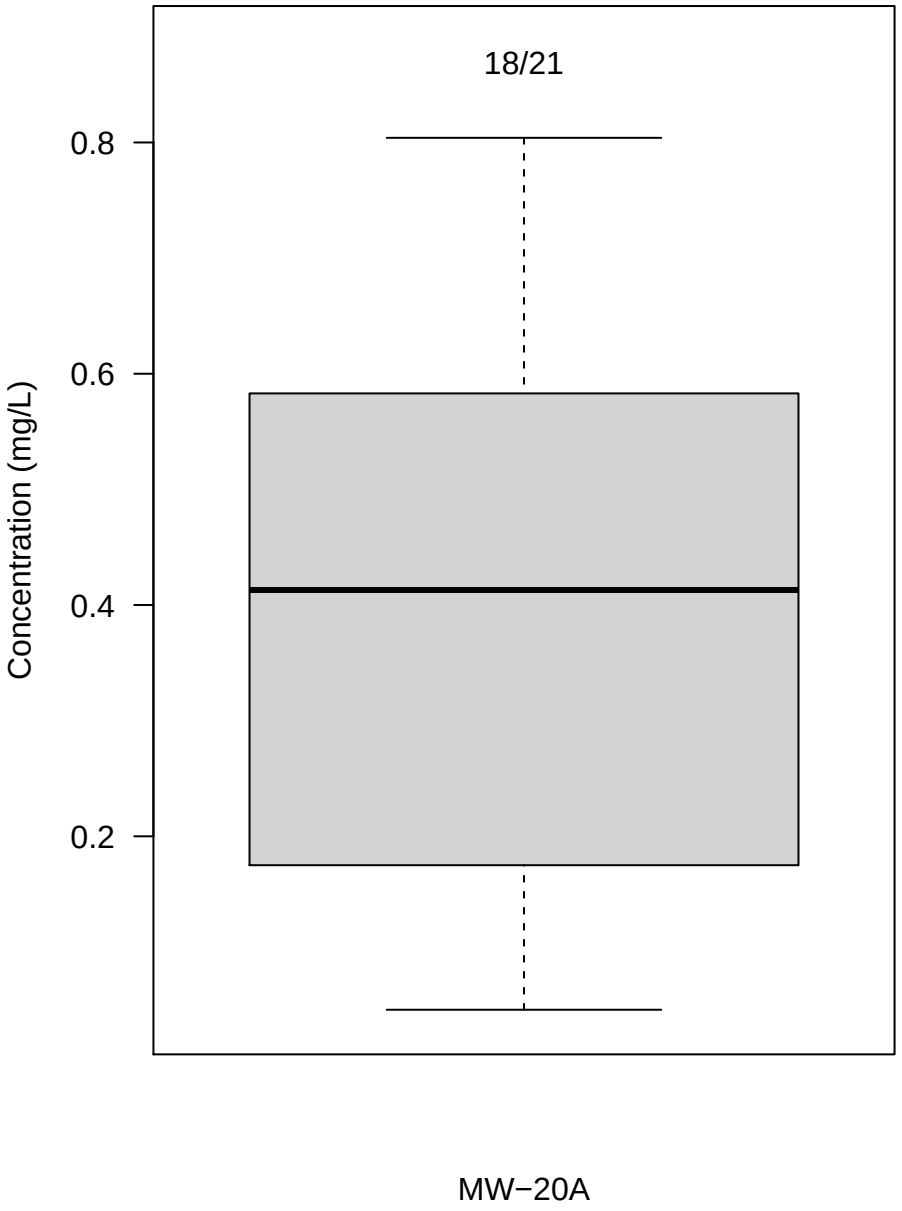


Figure C−53. Appendix III − field.pH

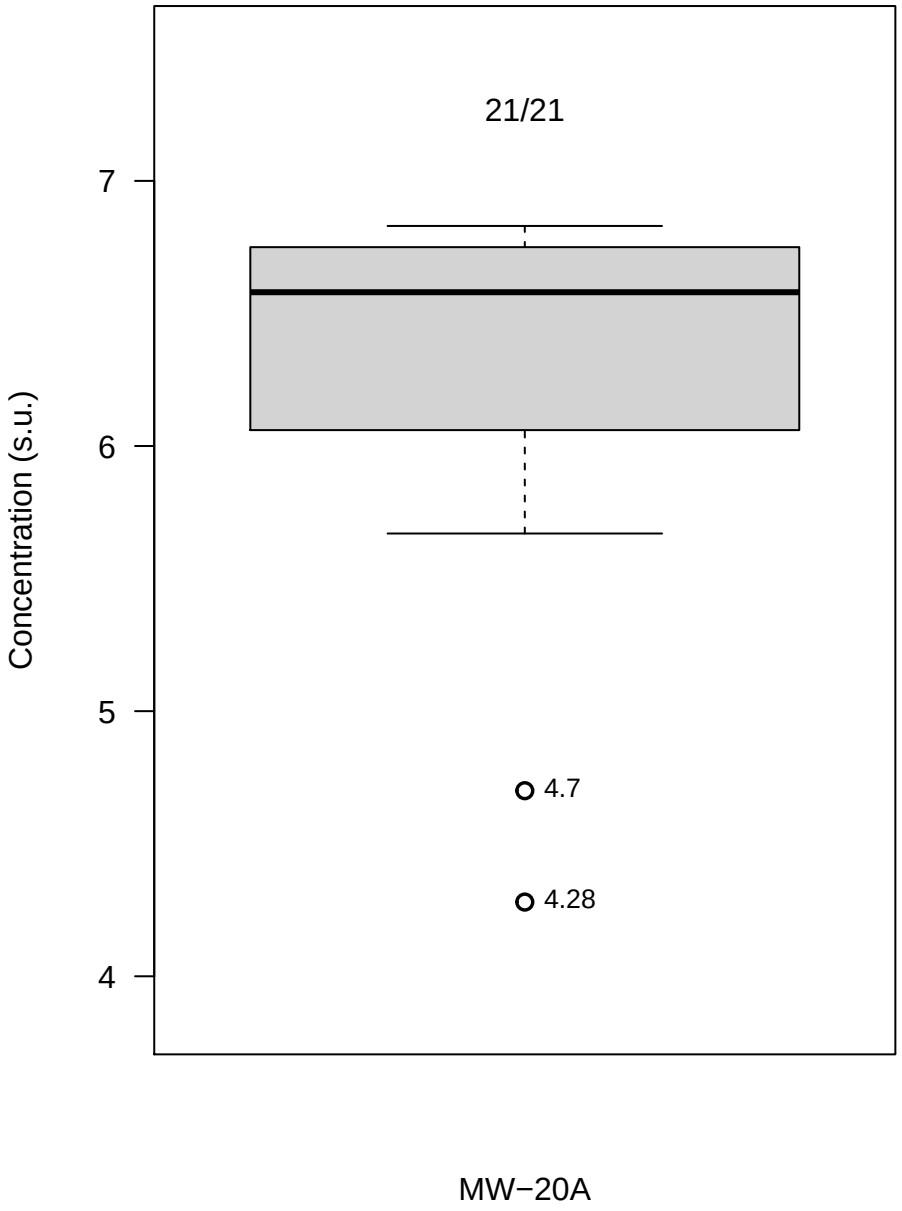


Figure C−54. Appendix III − Sulfate

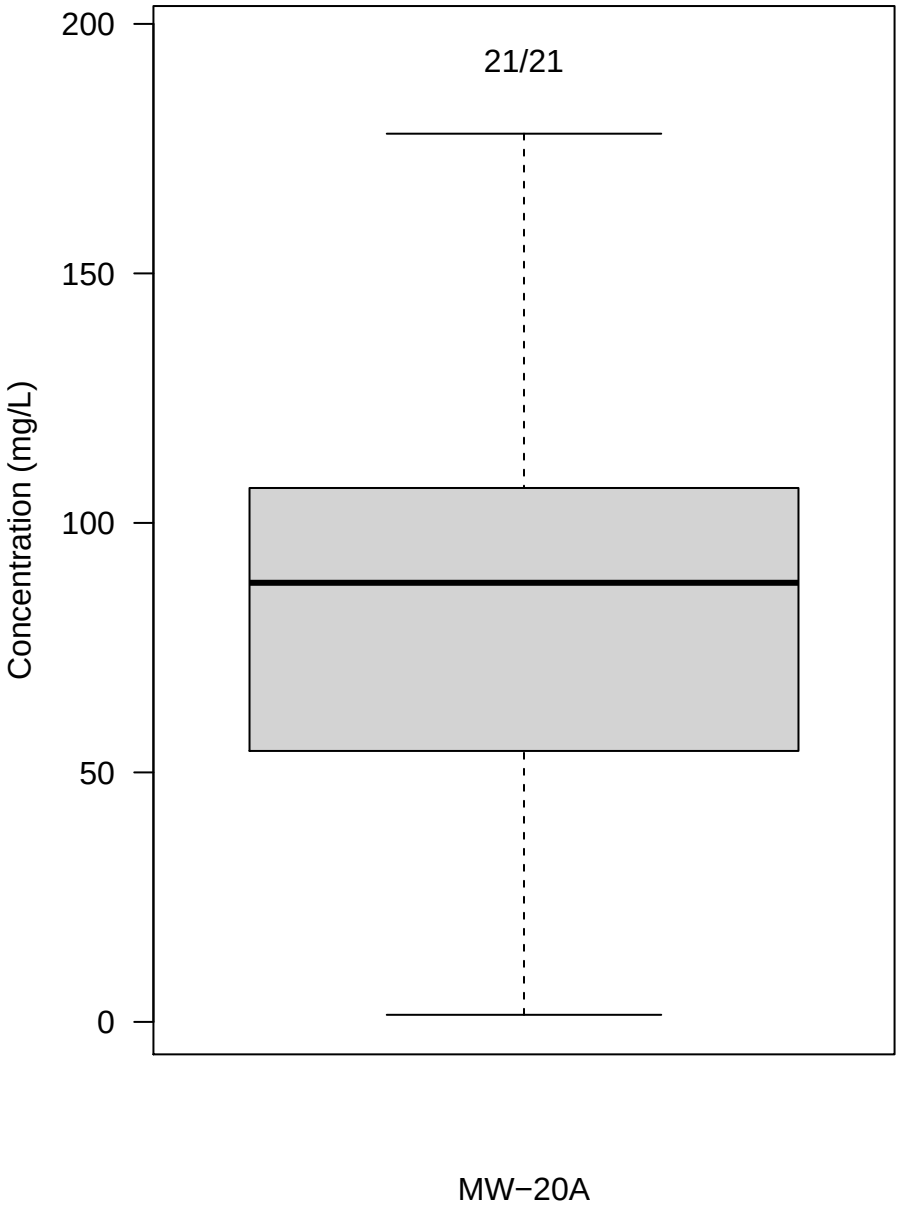


Figure C−55. Appendix III − Total Dissolved Solids

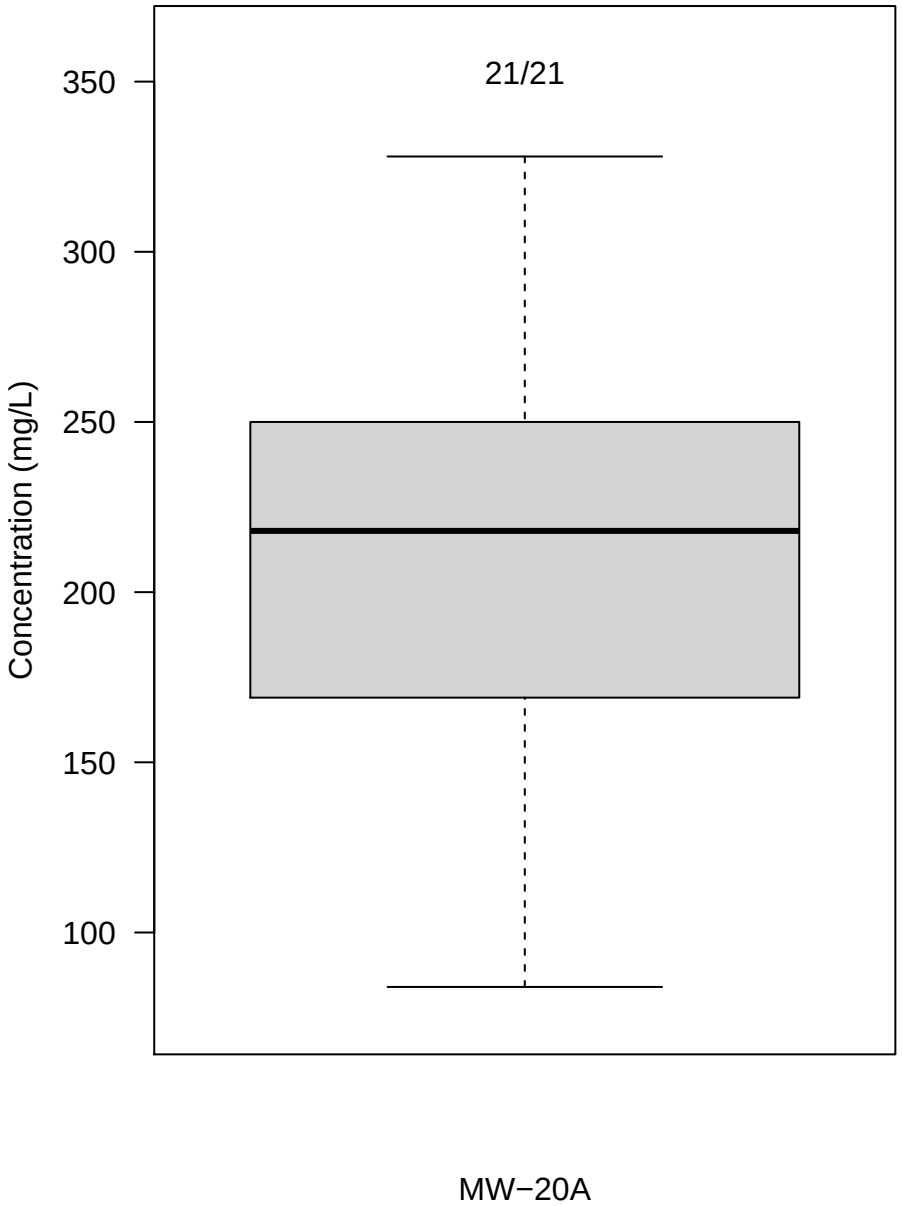


Figure C−56. Appendix IV − Barium

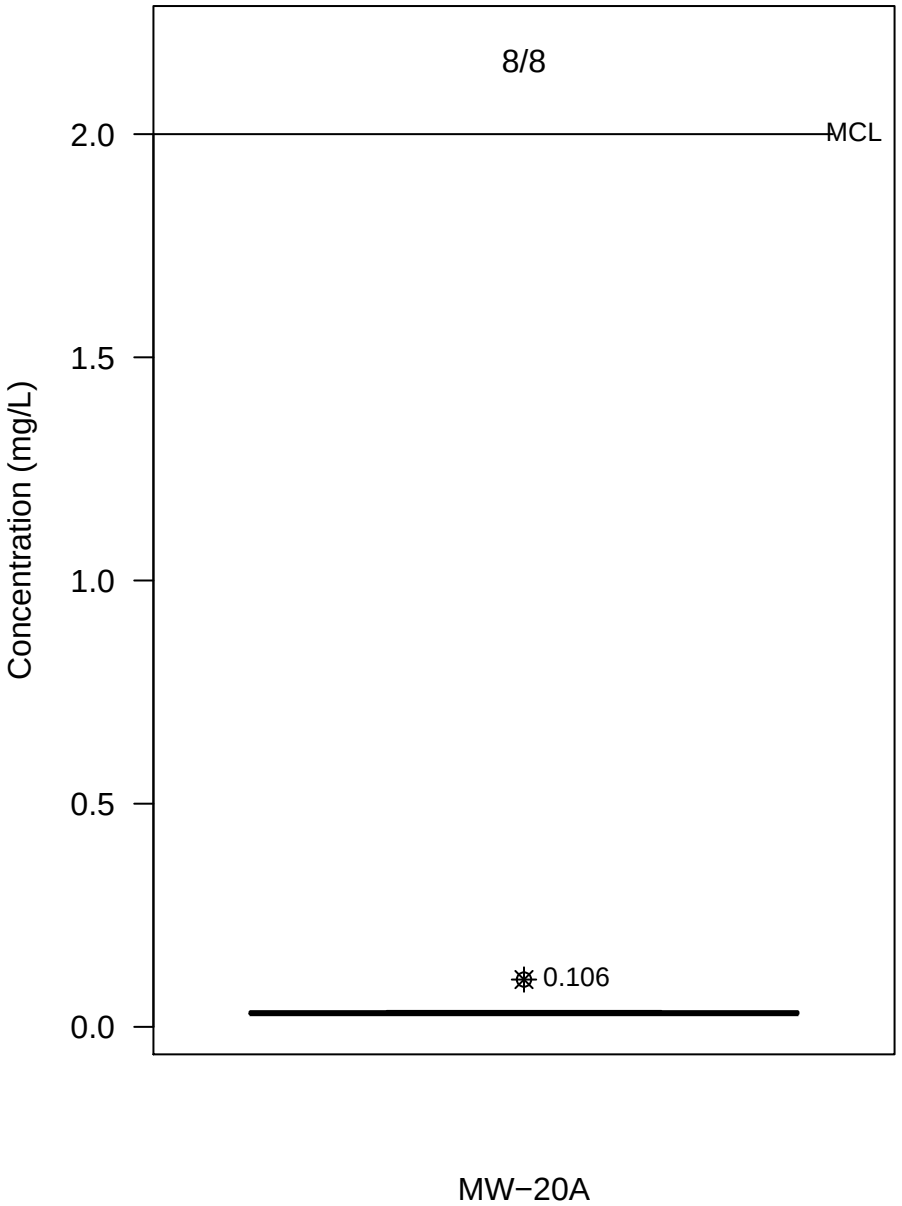


Figure C−57. Appendix IV − Beryllium

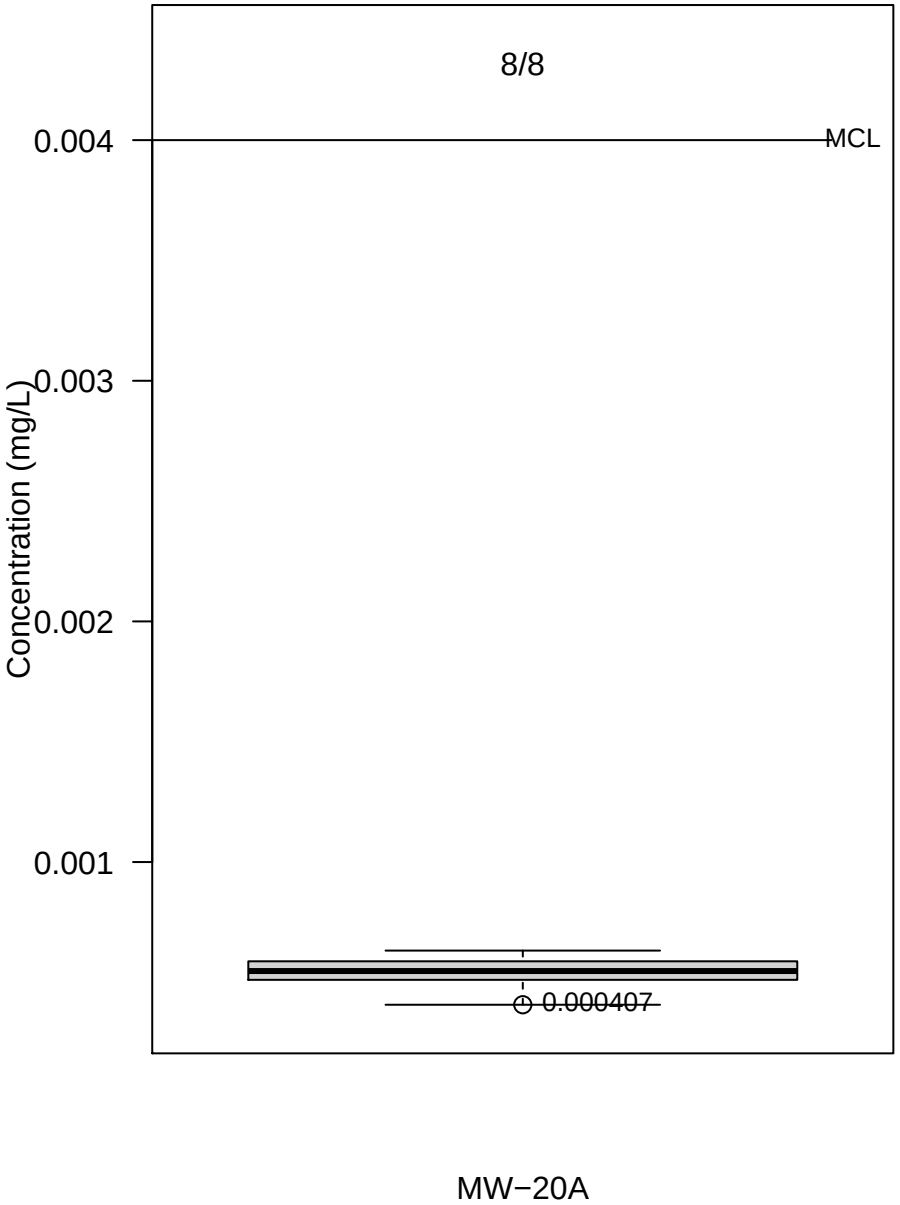


Figure C−58. Appendix IV − Chromium

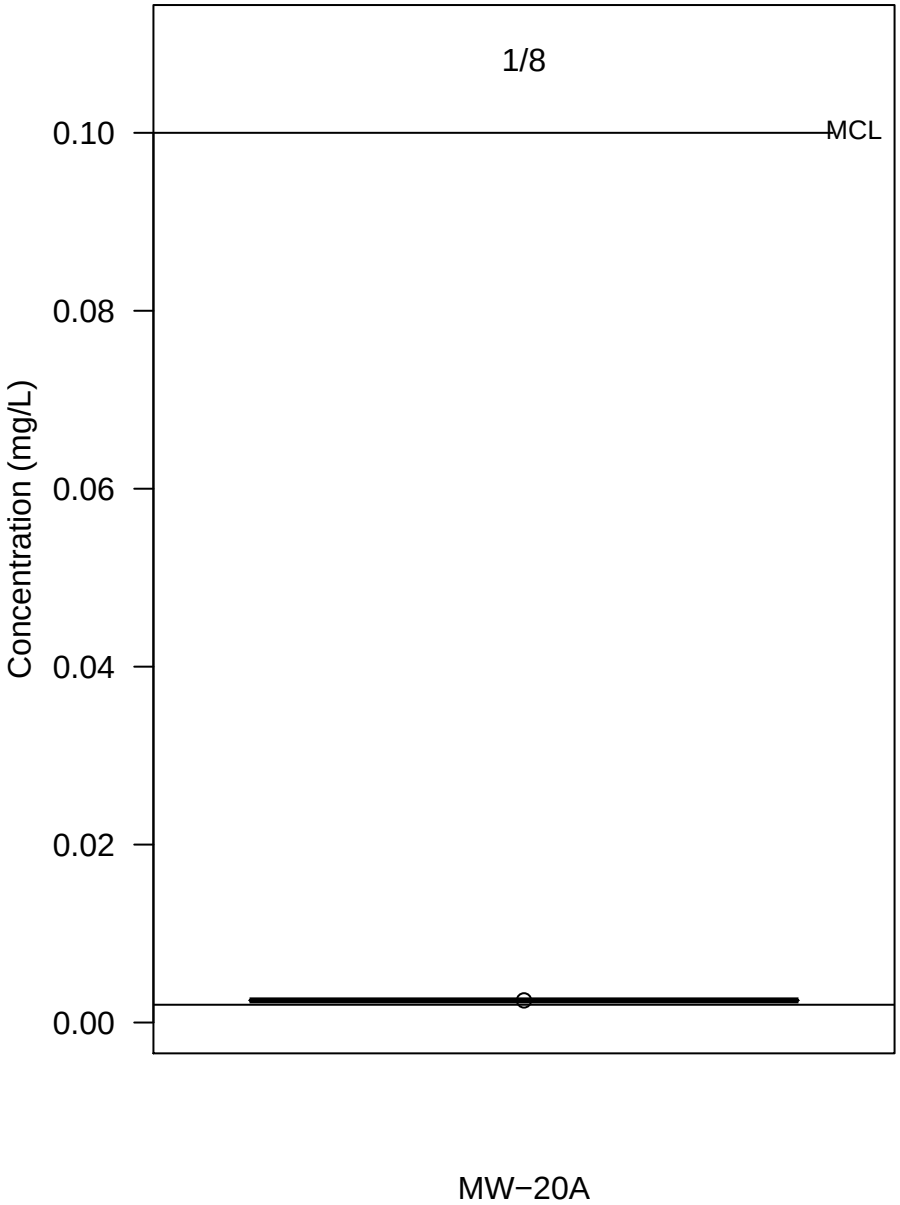


Figure C−59. Appendix IV − Cobalt

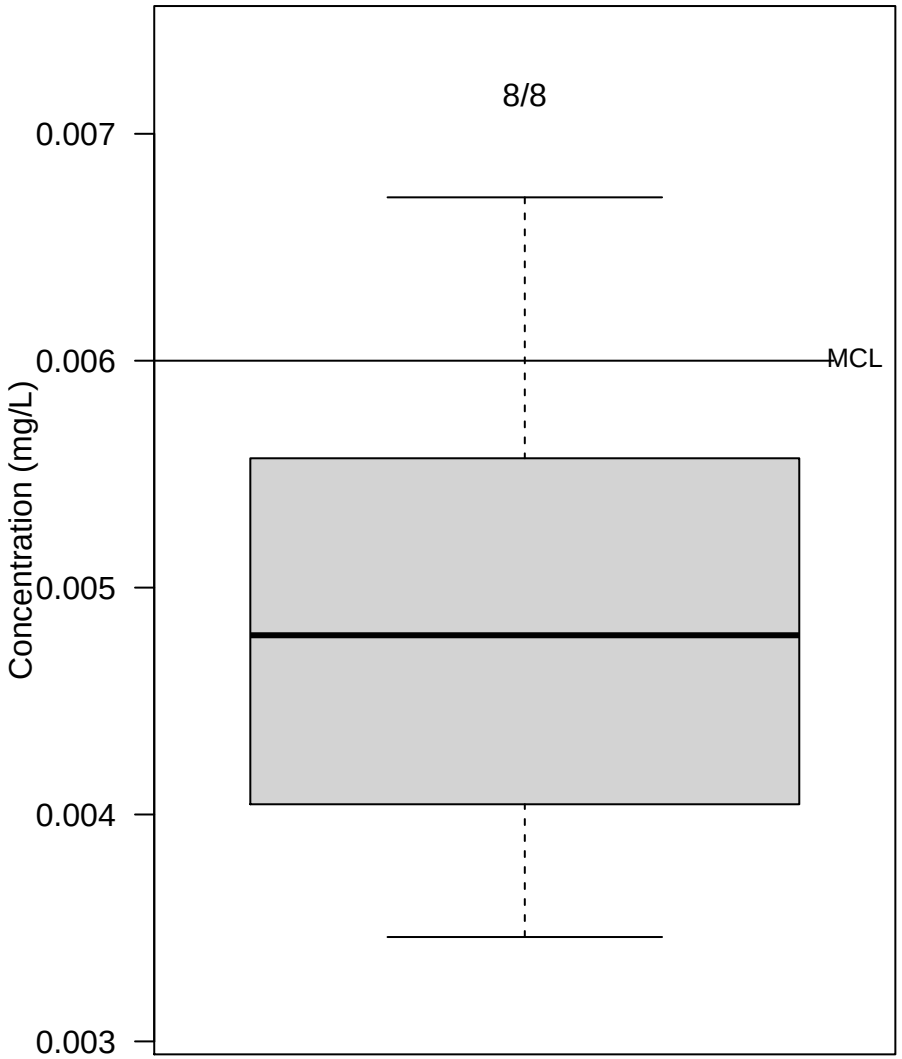


Figure C−60. Appendix IV − Fluoride

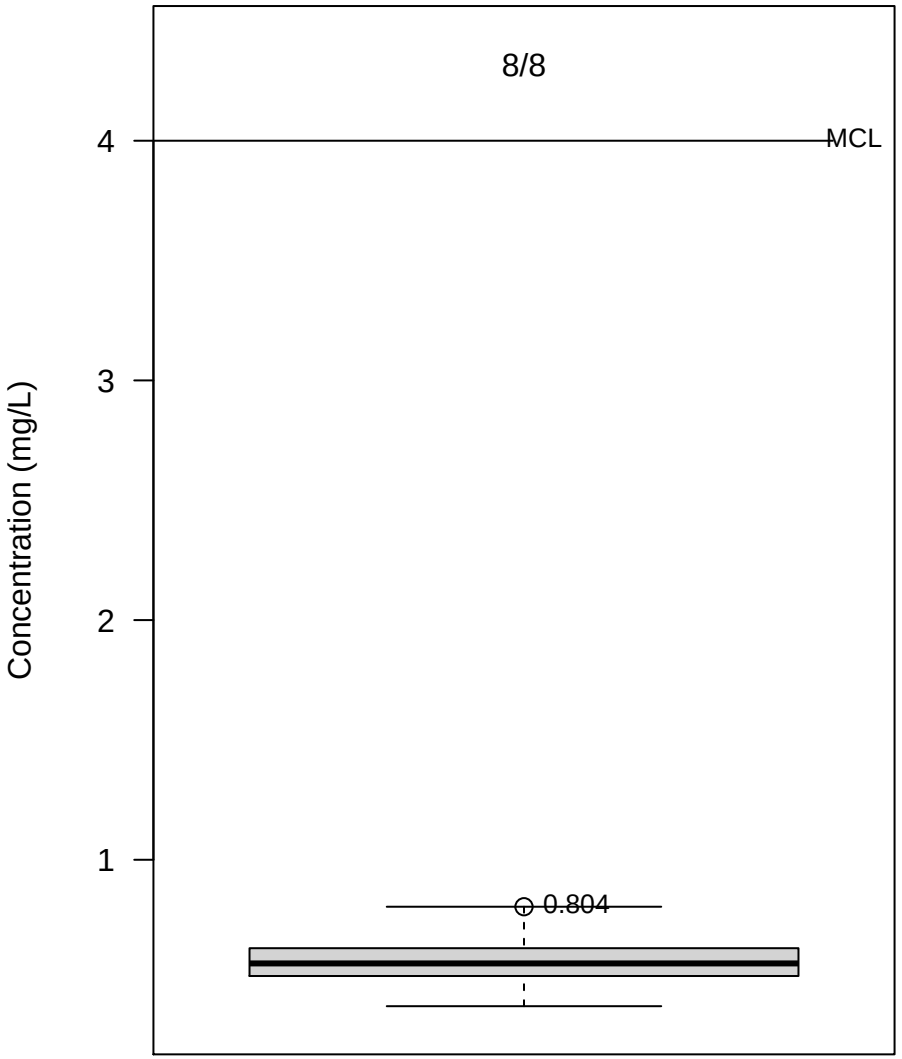


Figure C−61. Appendix IV − Lead

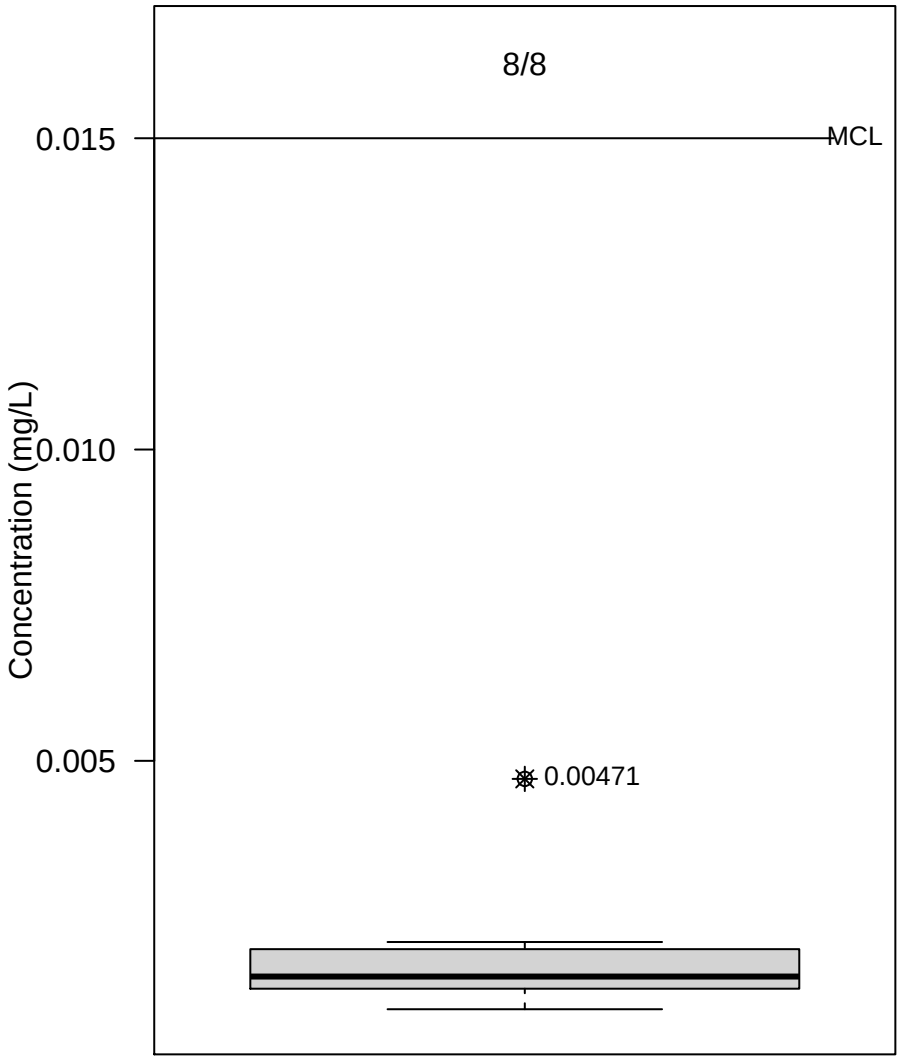


Figure C−62. Appendix IV − Lithium

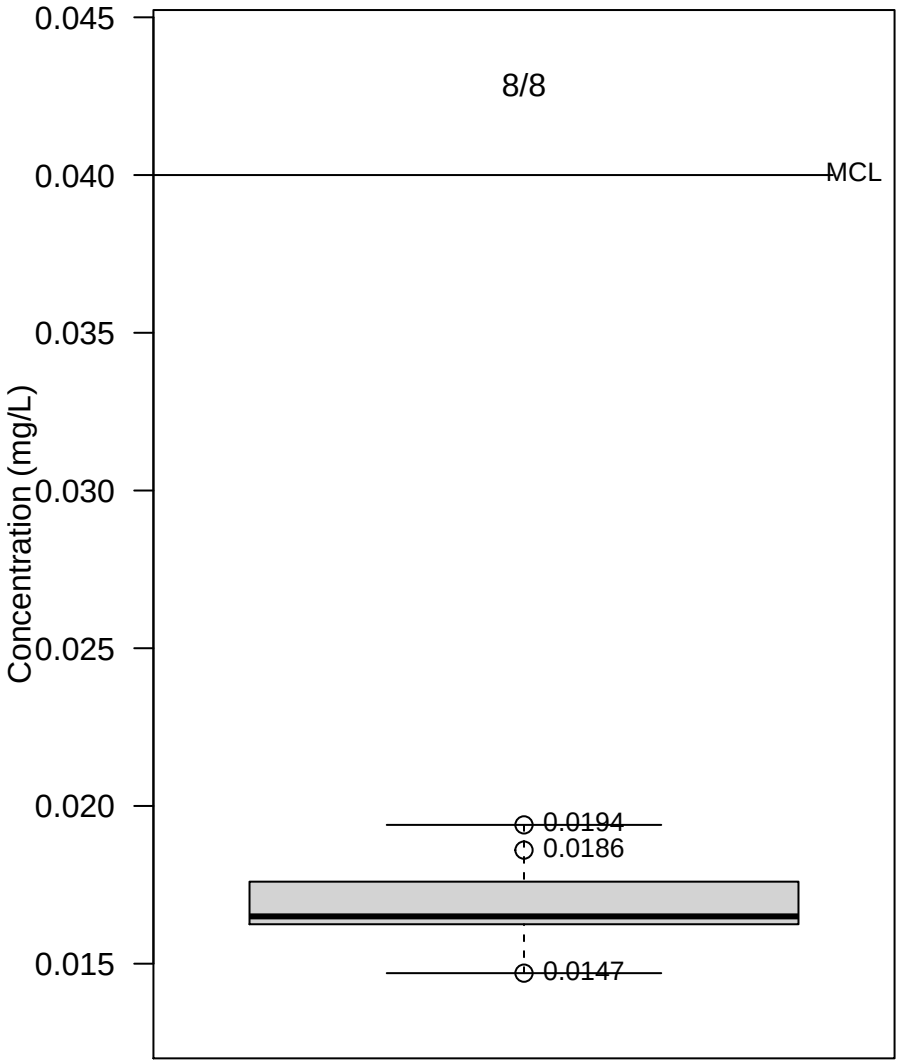


Figure C−63. Appendix IV − Mercury

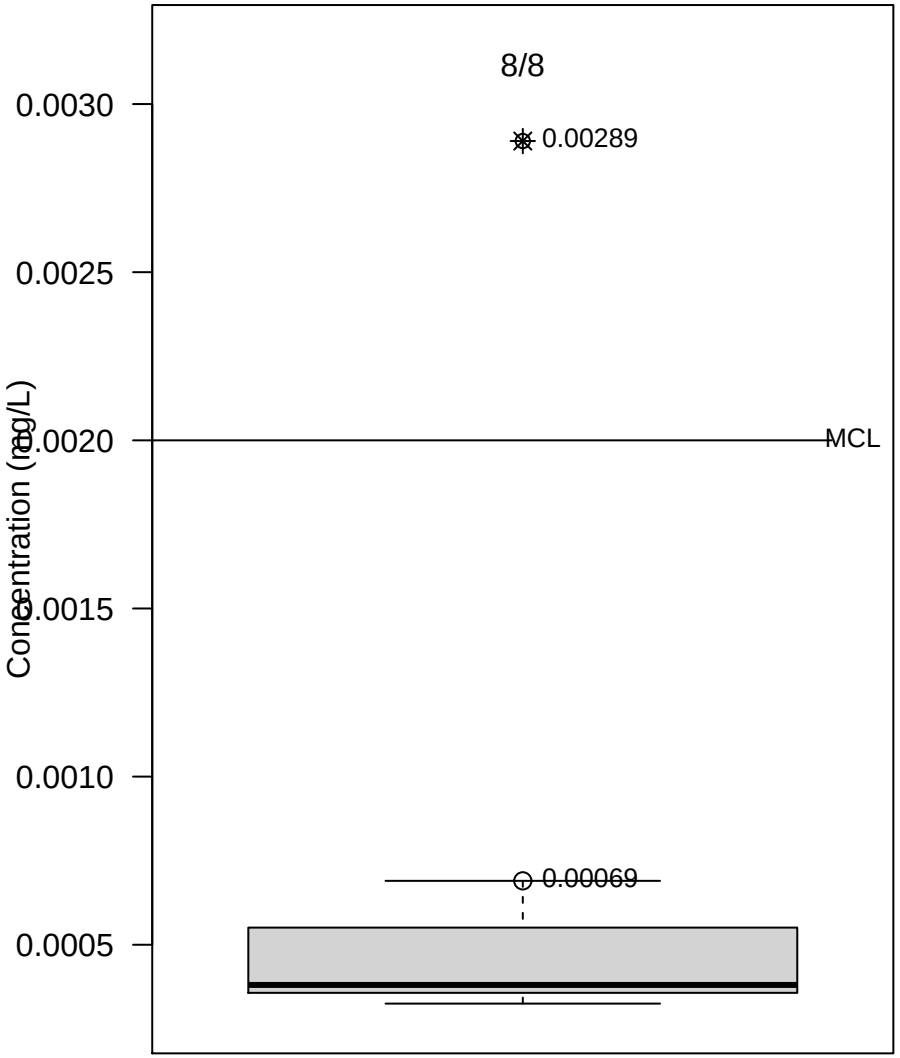


Figure C−64. Appendix IV − Selenium

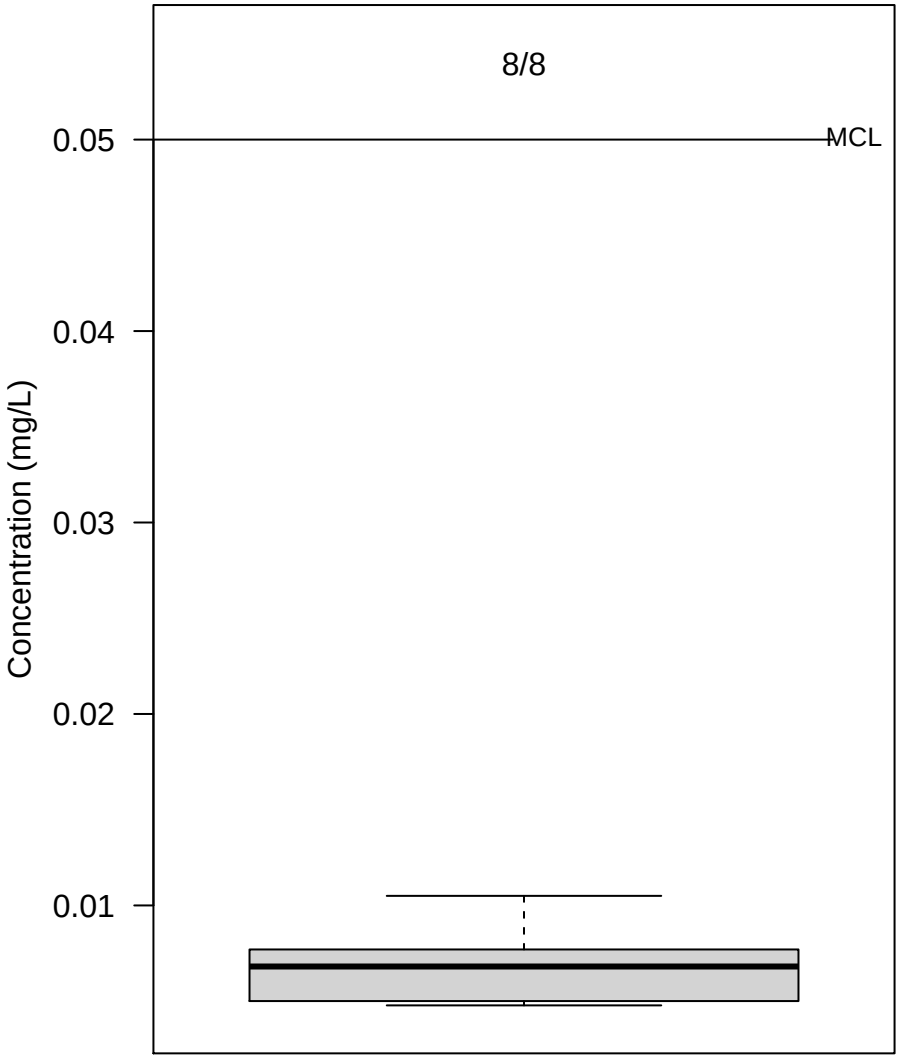


Figure C−65. Appendix IV − Radium−226 + Radium−228

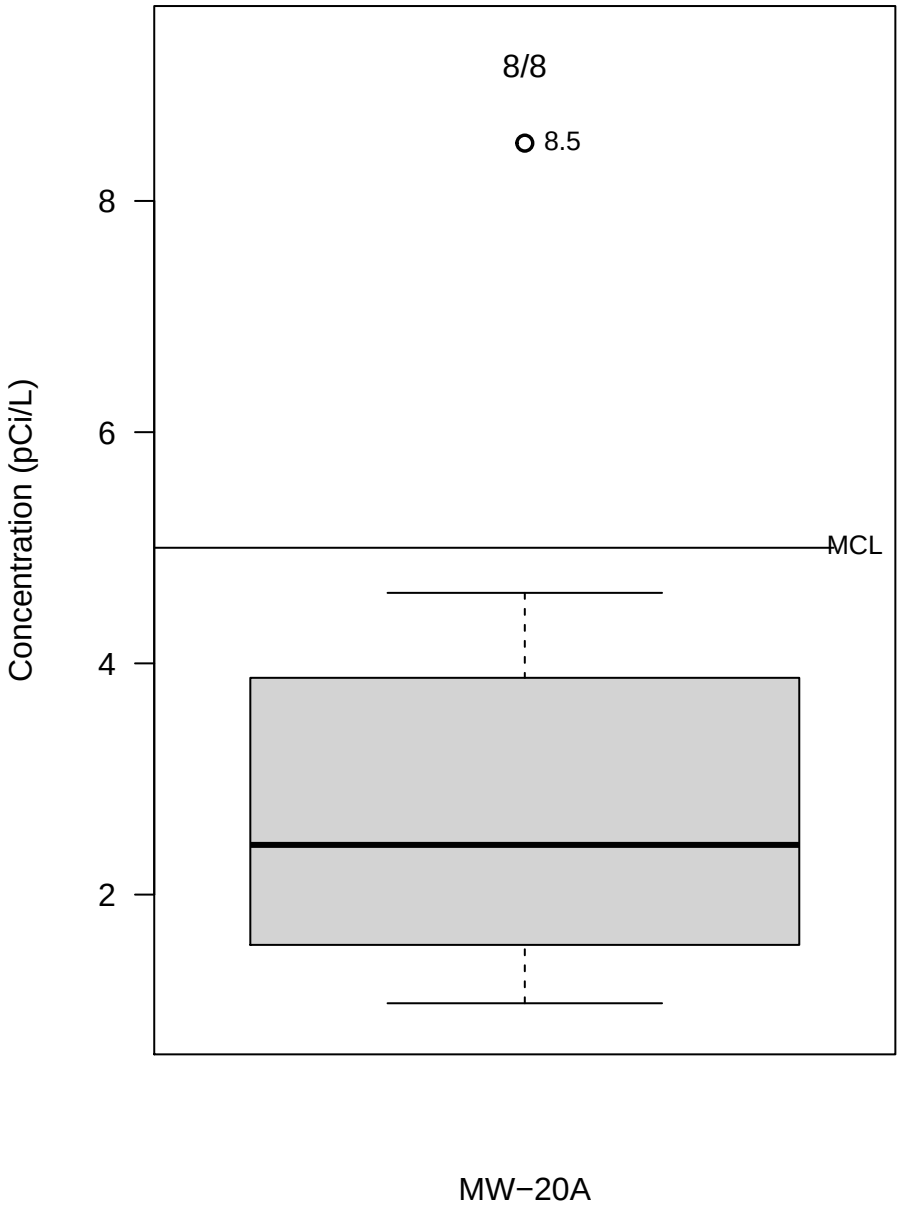


Figure C−66. Appendix III − Boron

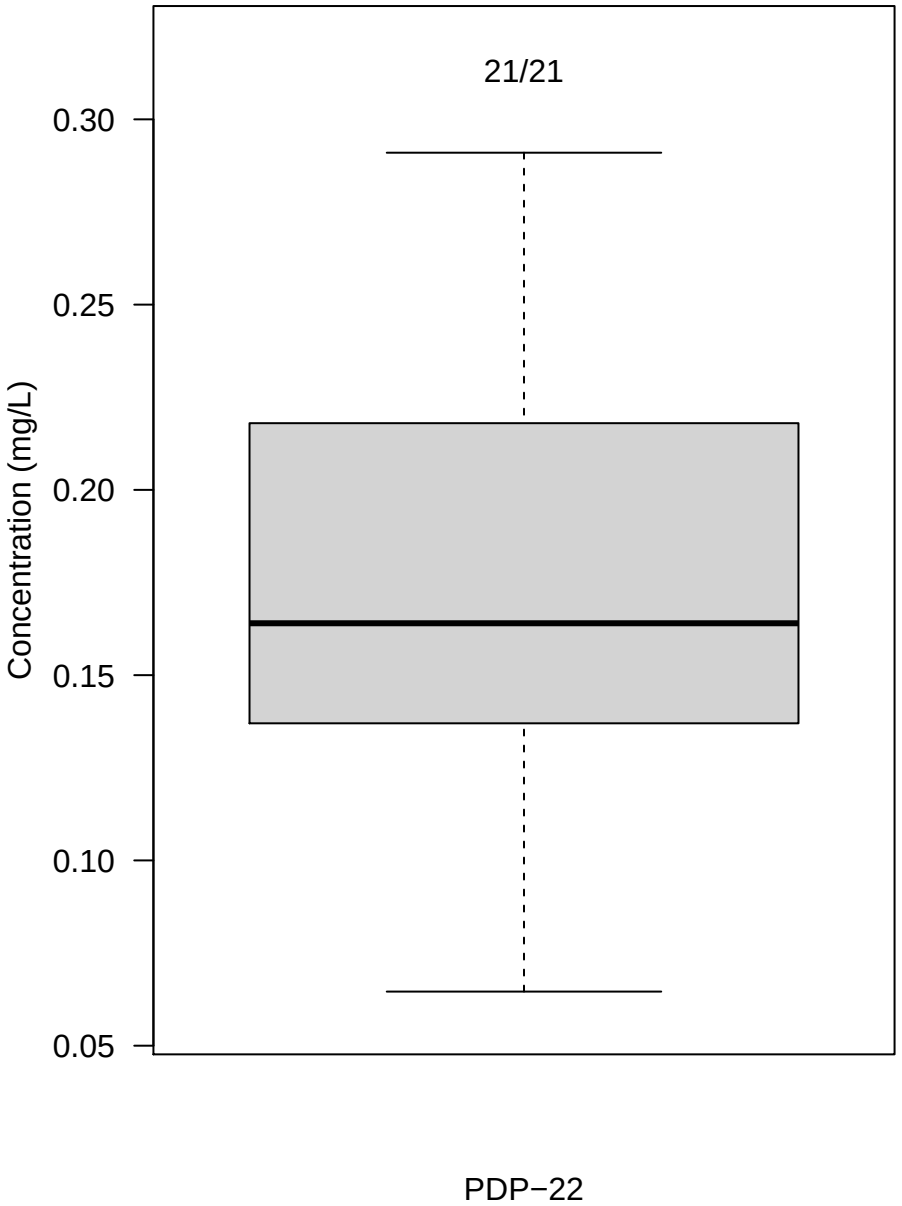


Figure C−67. Appendix III − Calcium

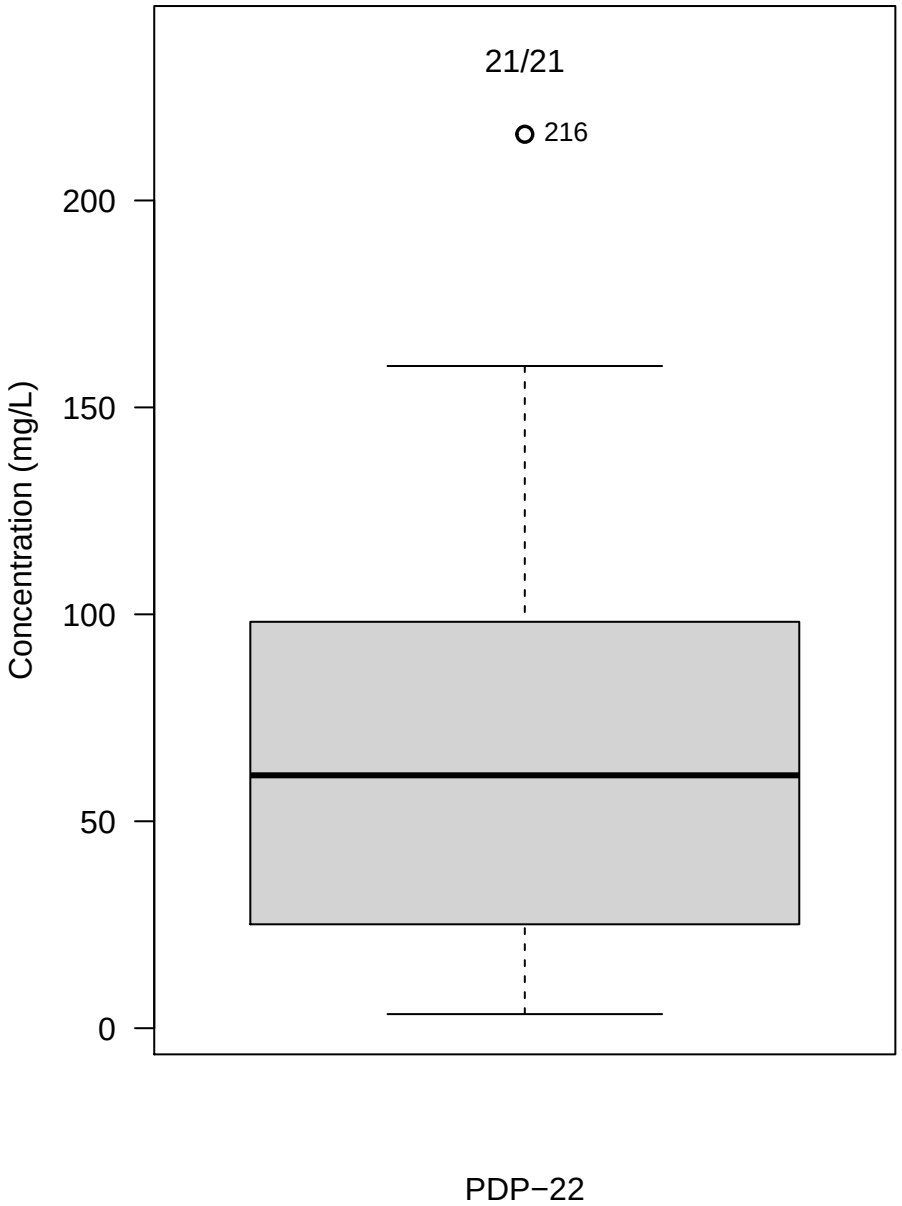


Figure C−68. Appendix III − Chloride

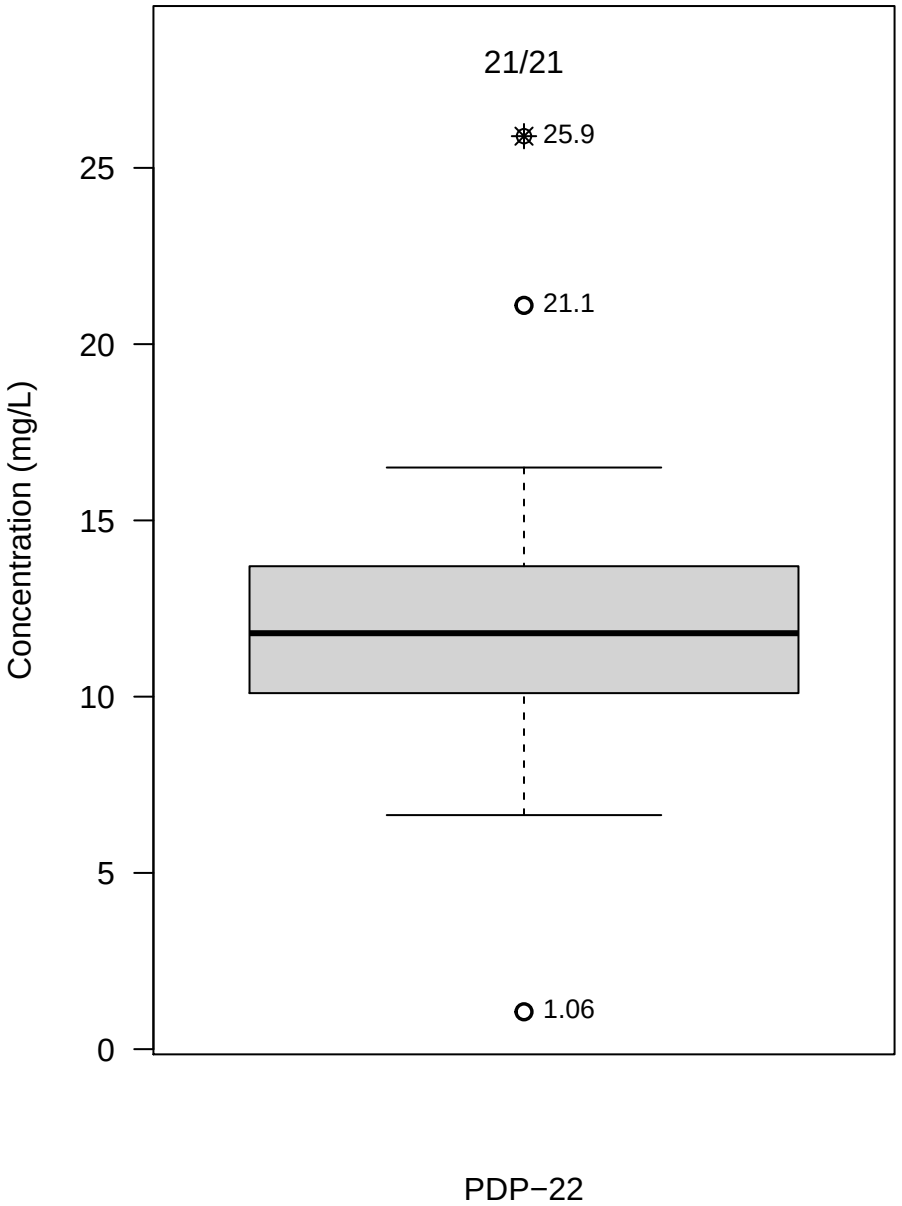


Figure C−69. Appendix III − Fluoride

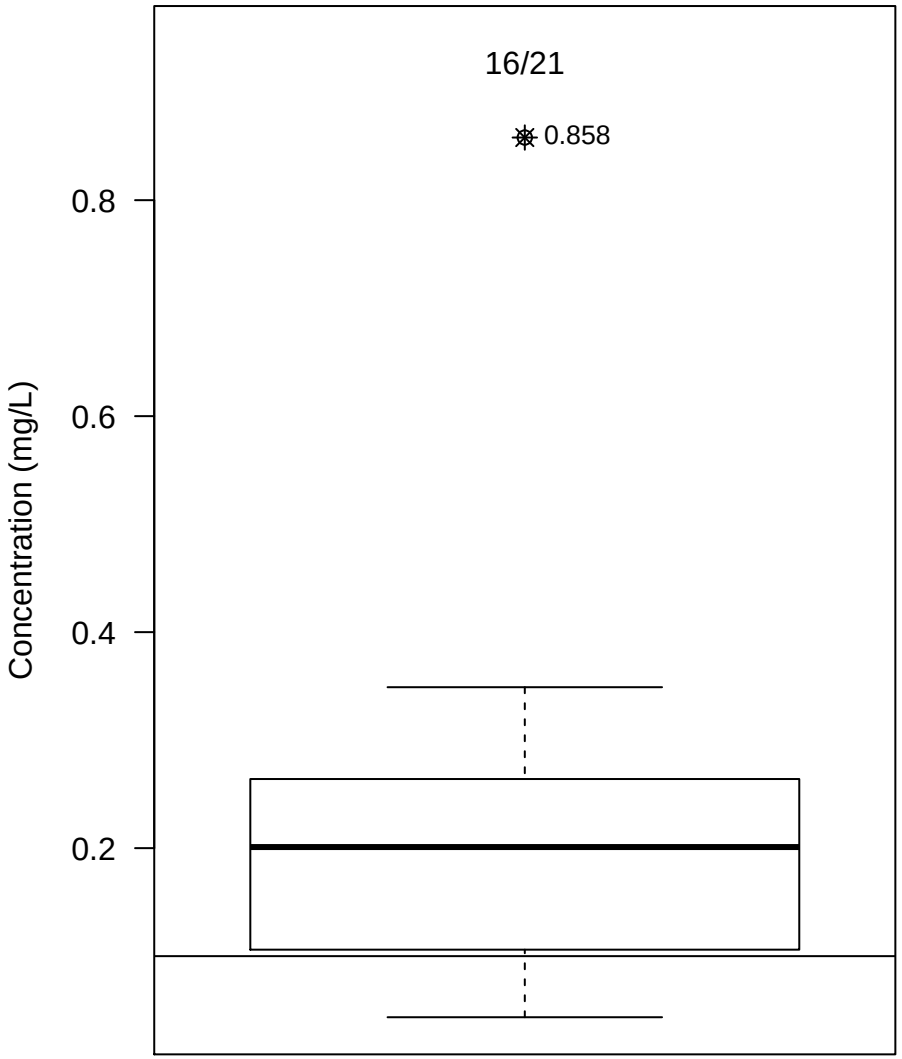


Figure C−70. Appendix III − field.pH

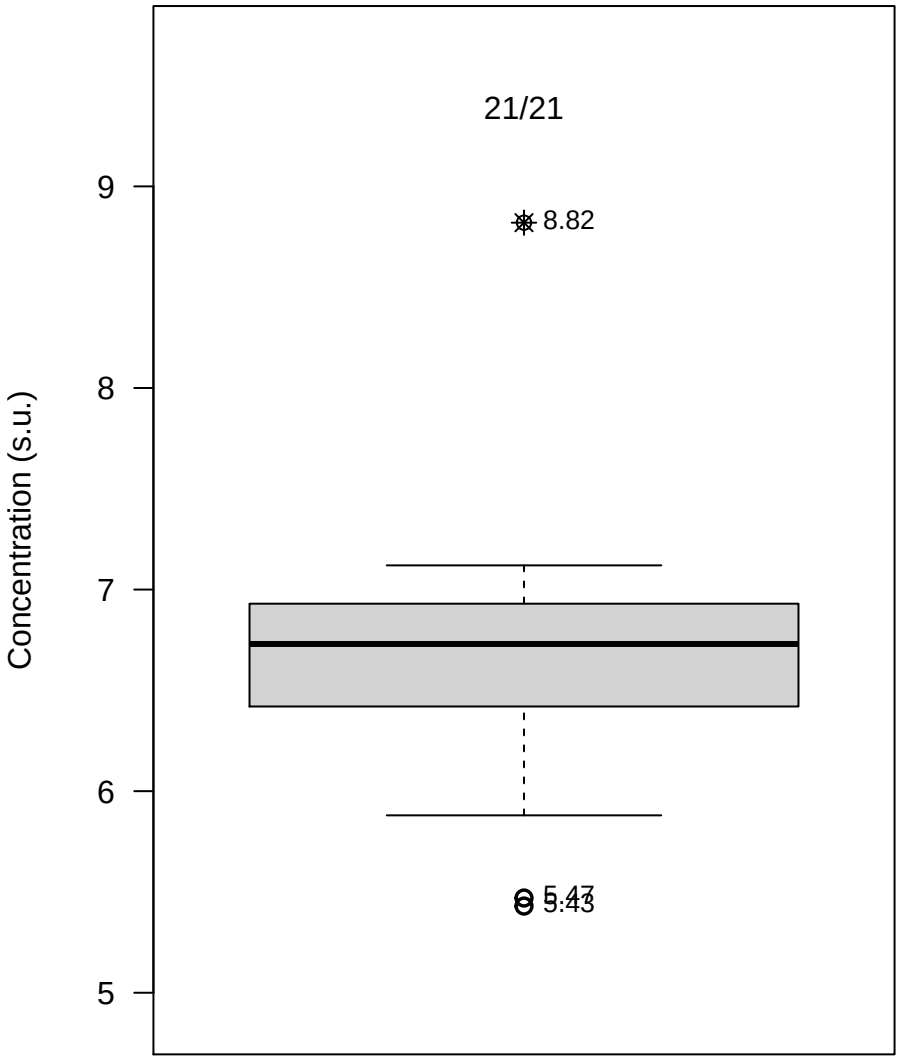


Figure C−71. Appendix III − Sulfate

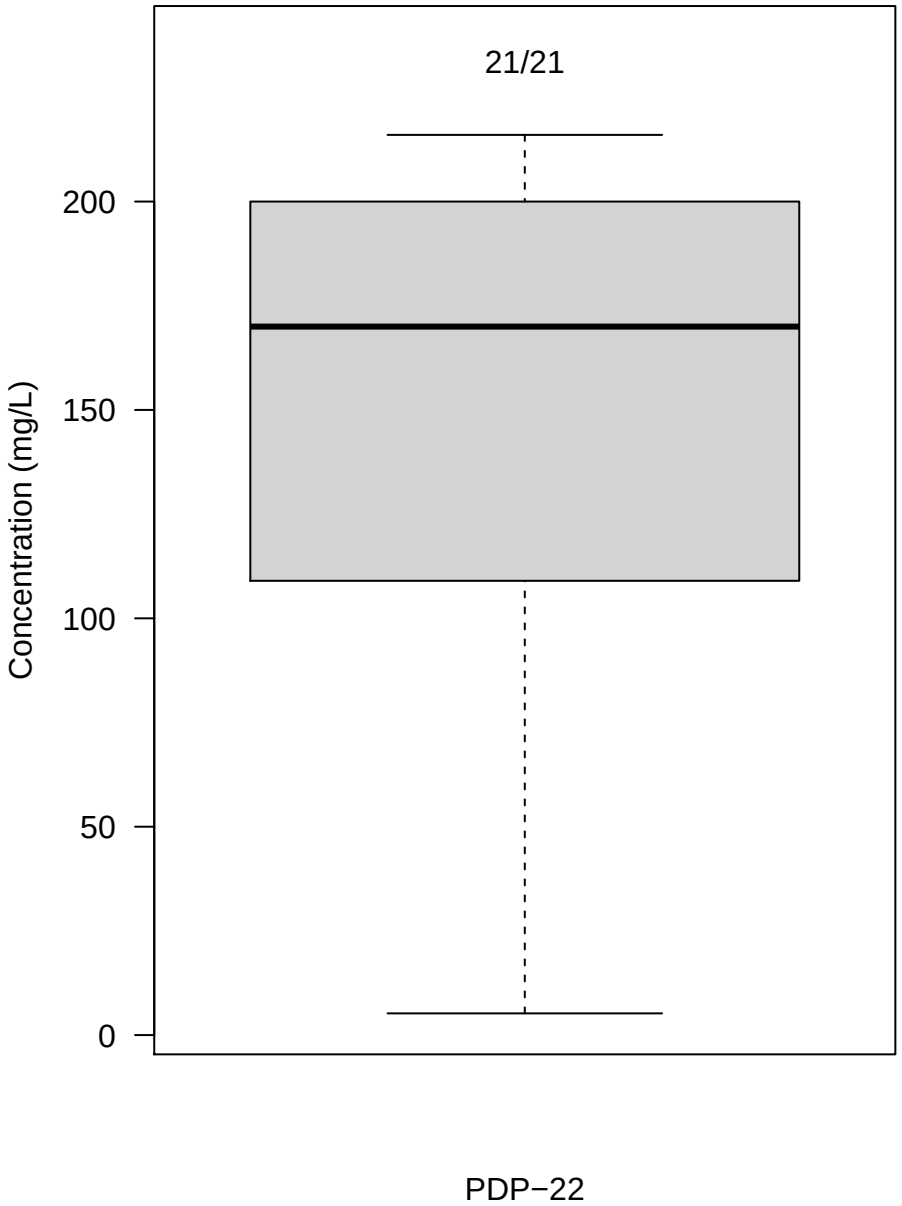


Figure C−72. Appendix III − Total Dissolved Solids

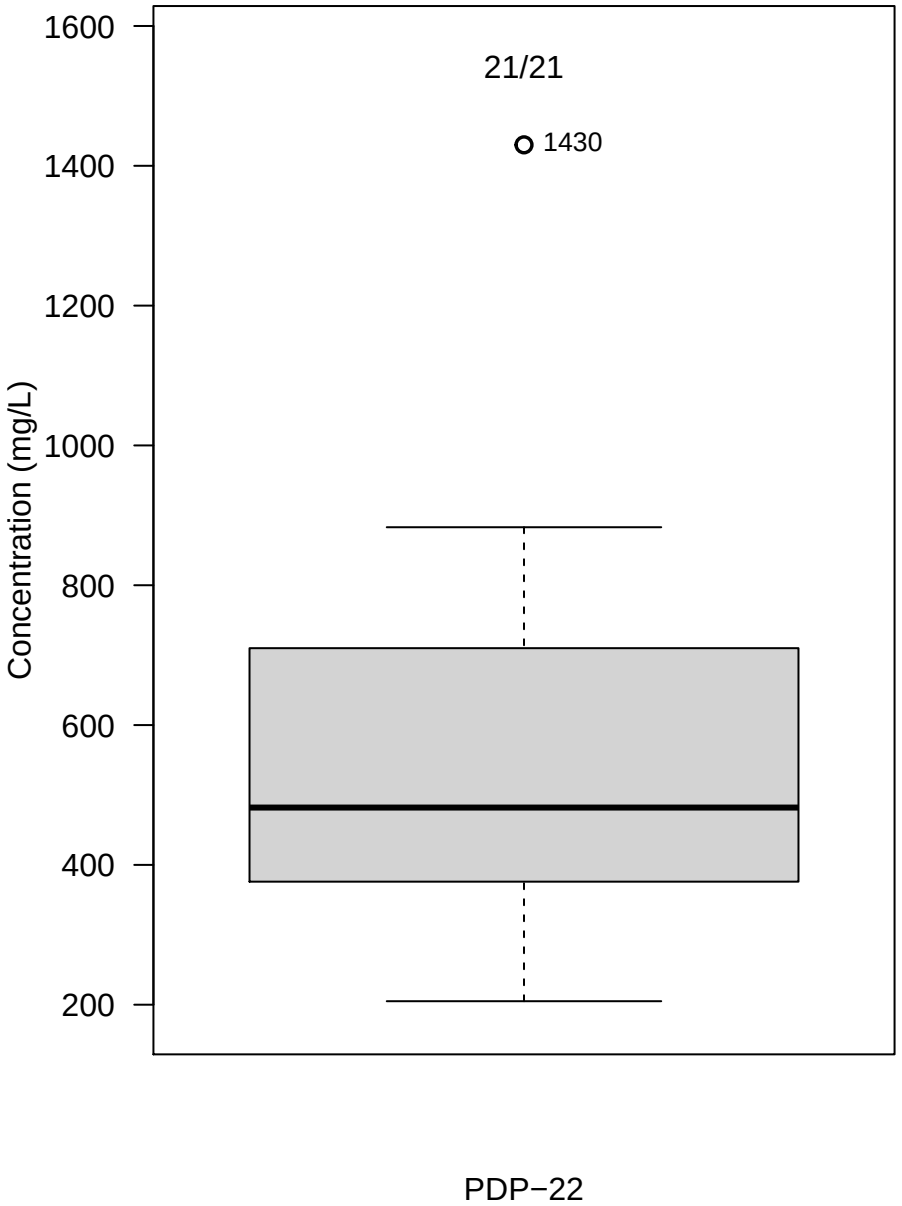


Figure C−73. Appendix IV − Arsenic

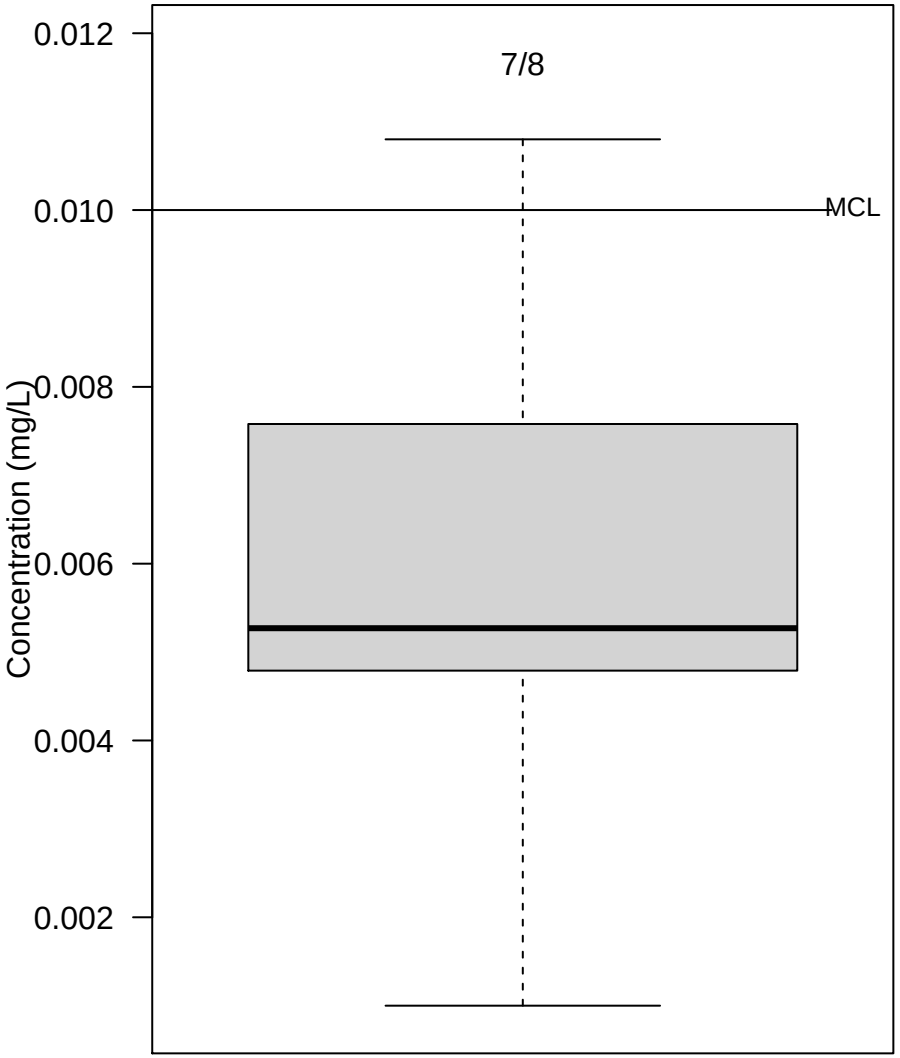


Figure C−74. Appendix IV − Barium

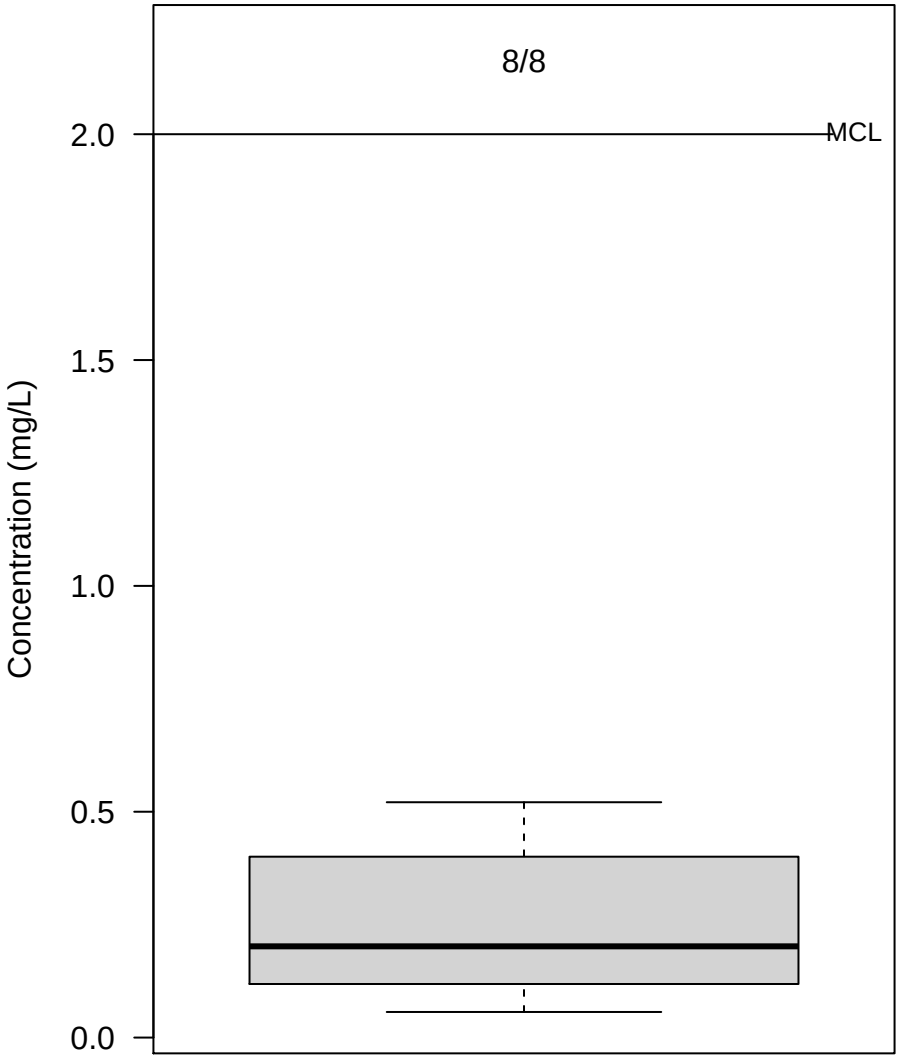
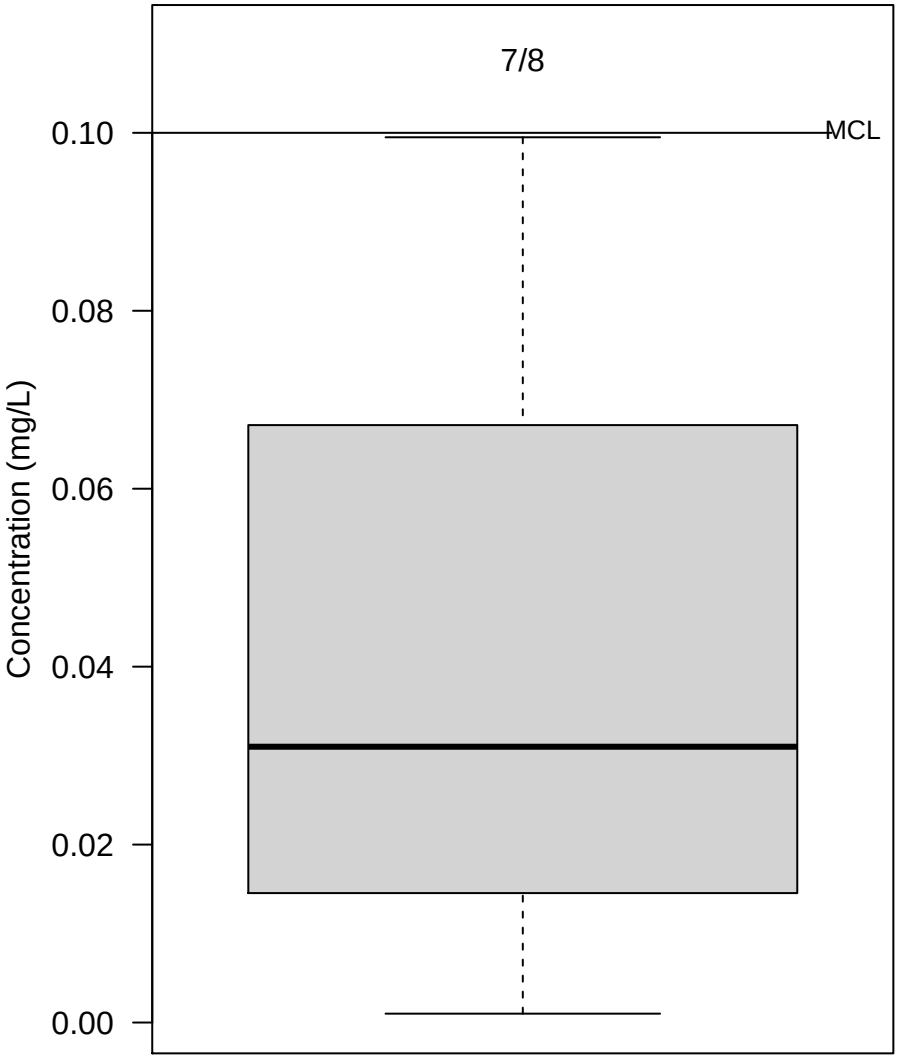
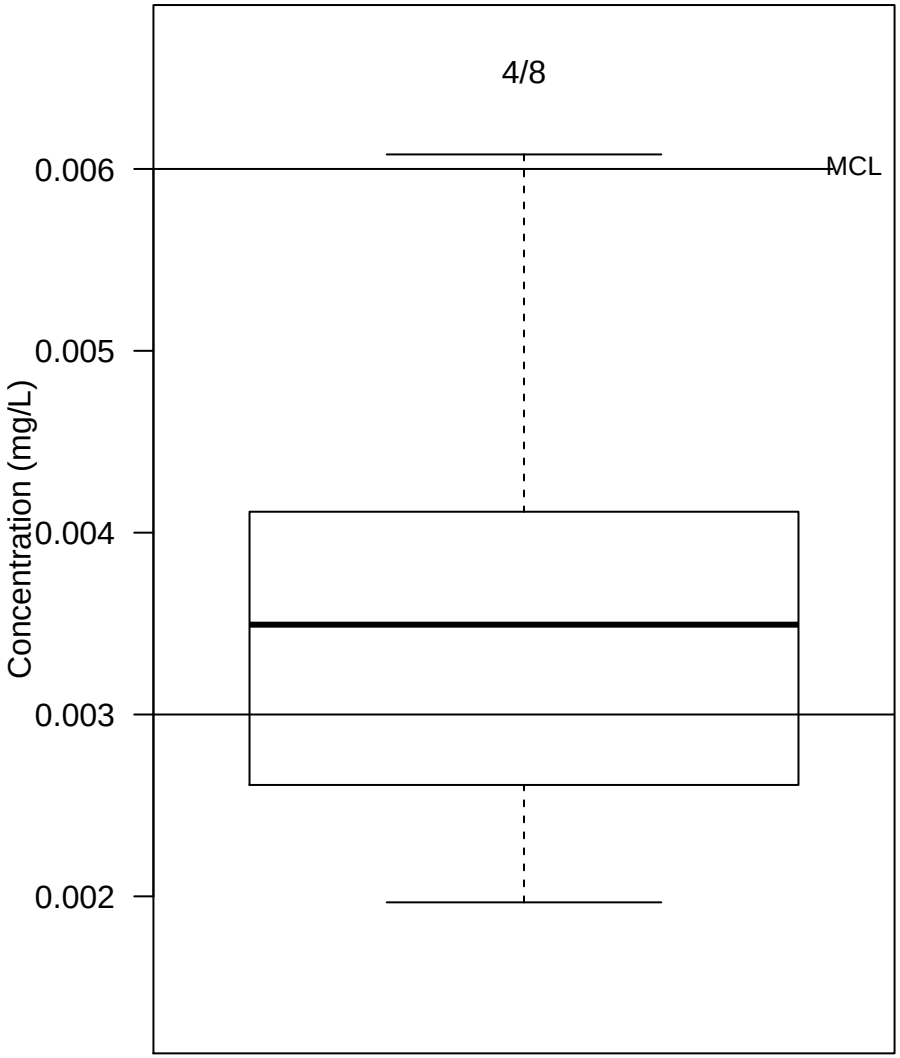


Figure C−75. Appendix IV − Chromium



PDP−22

Figure C−76. Appendix IV − Cobalt



PDP−22

Figure C−77. Appendix IV − Fluoride

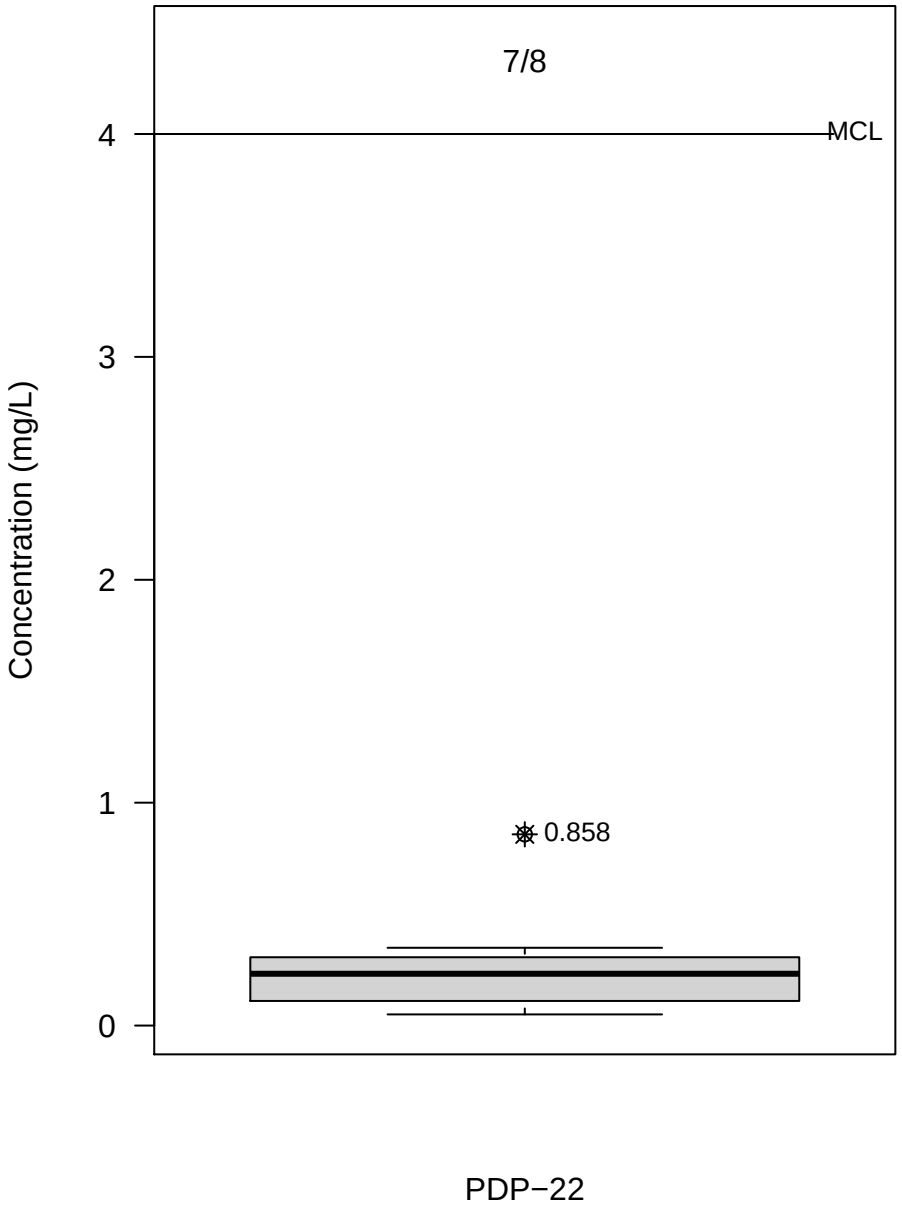


Figure C−78. Appendix IV − Lead

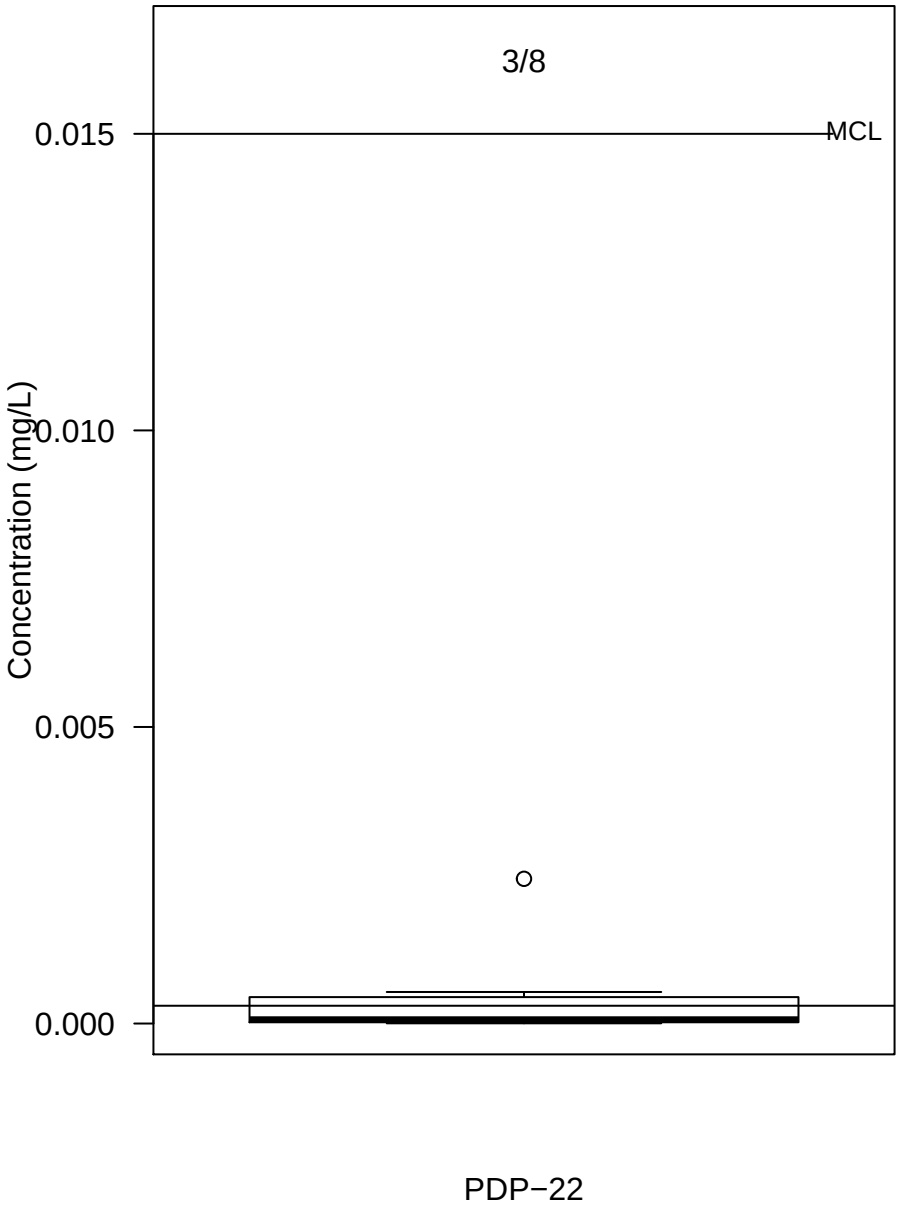


Figure C−79. Appendix IV − Lithium

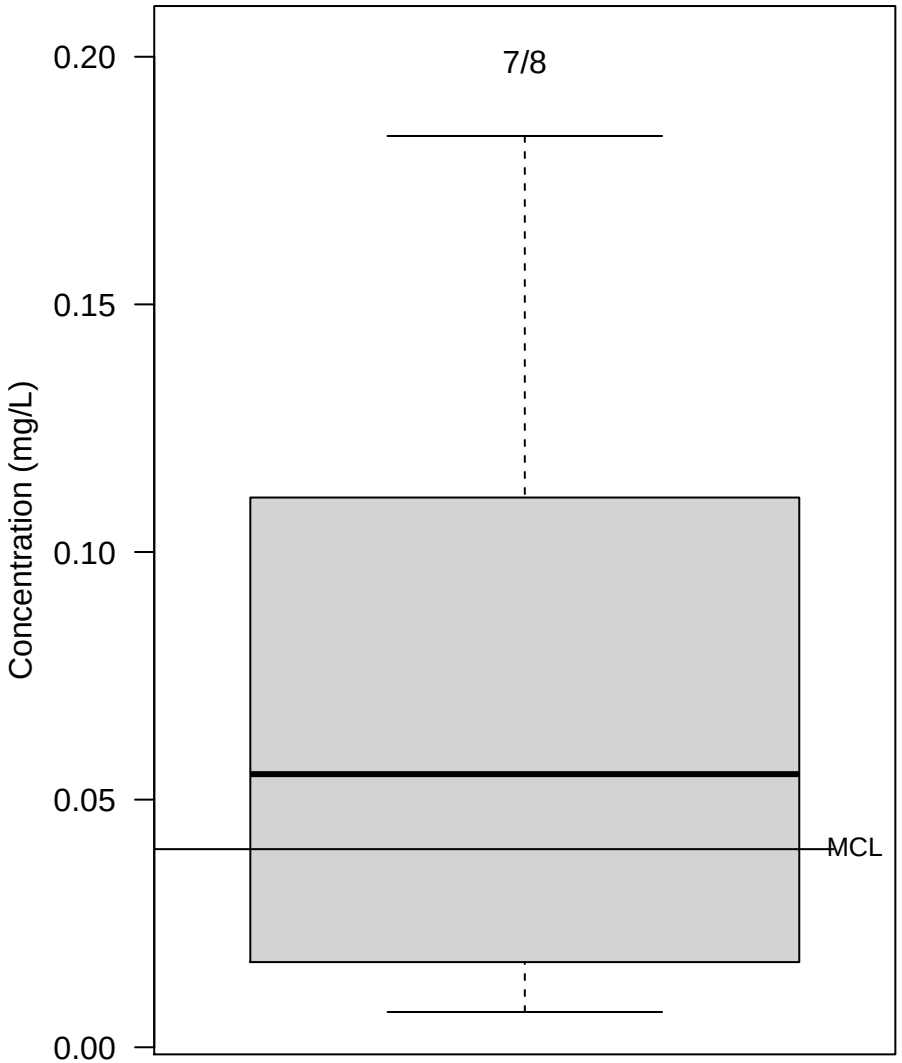


Figure C−80. Appendix IV − Molybdenum

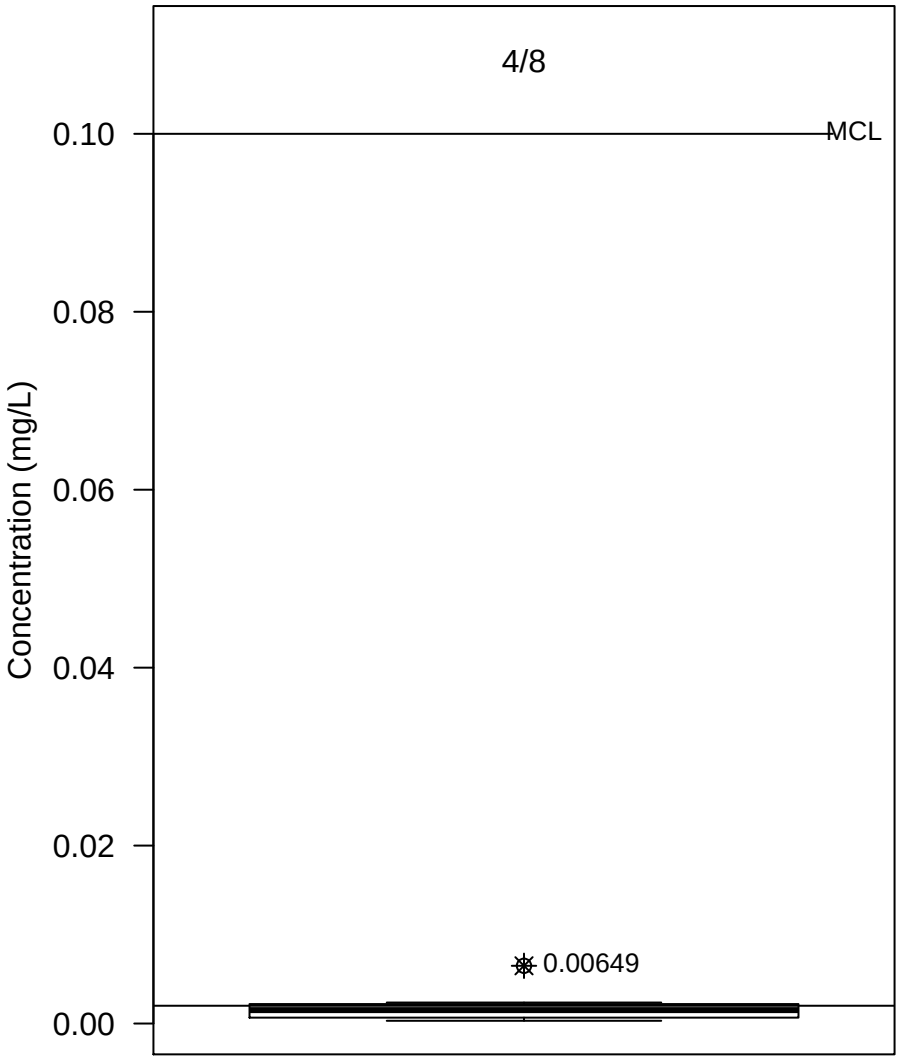
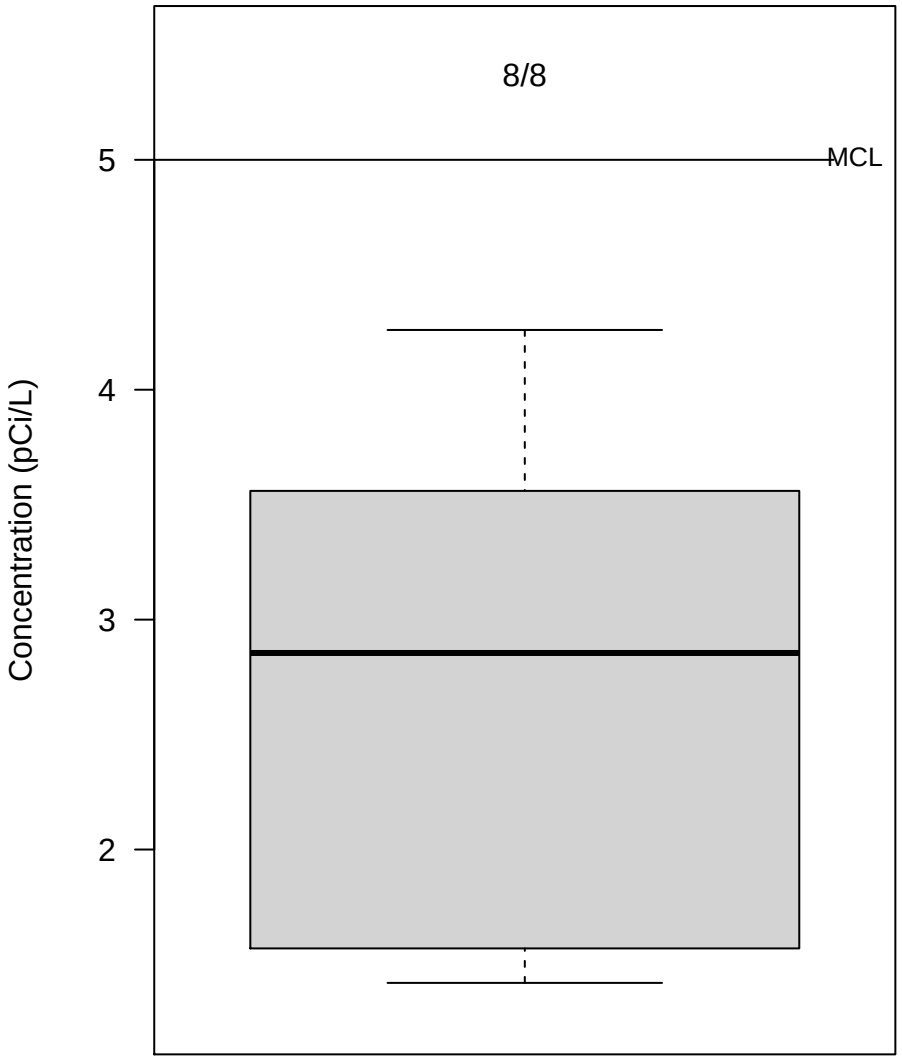
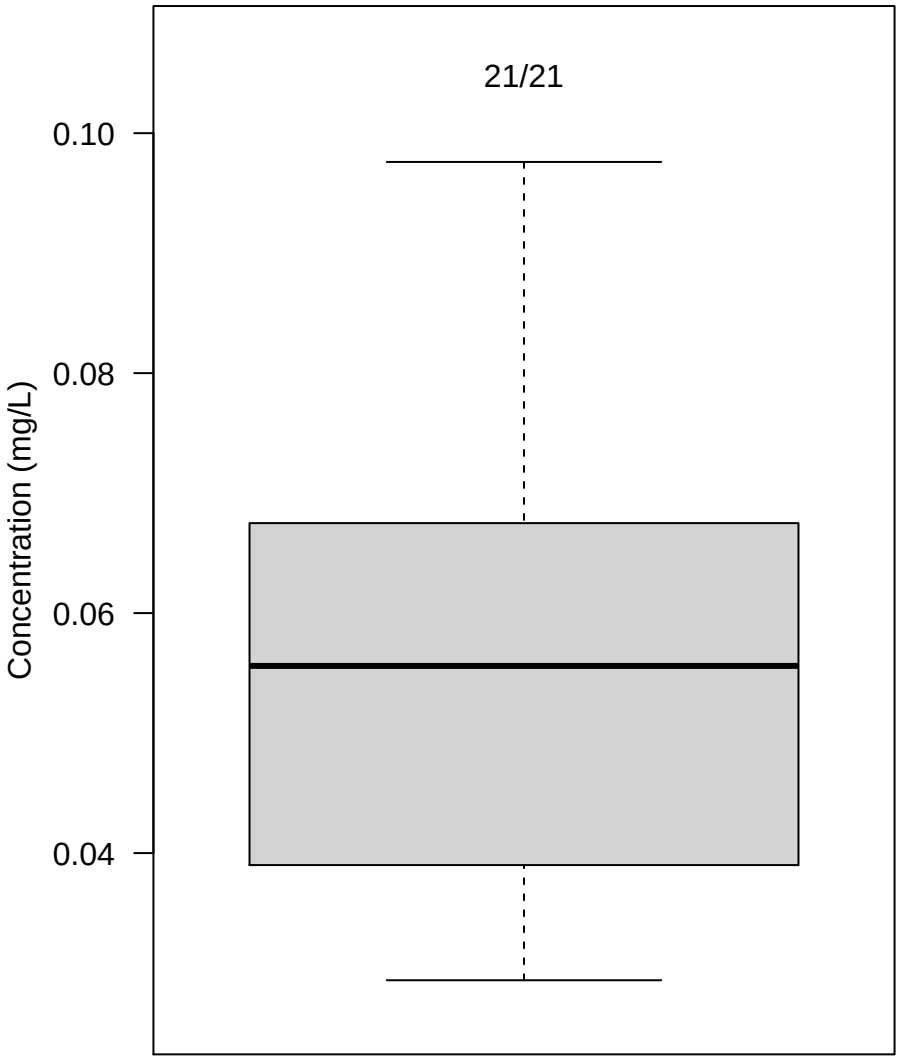


Figure C−81. Appendix IV − Radium−226 + Radium−228



PDP−22

Figure C−82. Appendix III − Boron



PDP−23

Figure C−83. Appendix III − Calcium

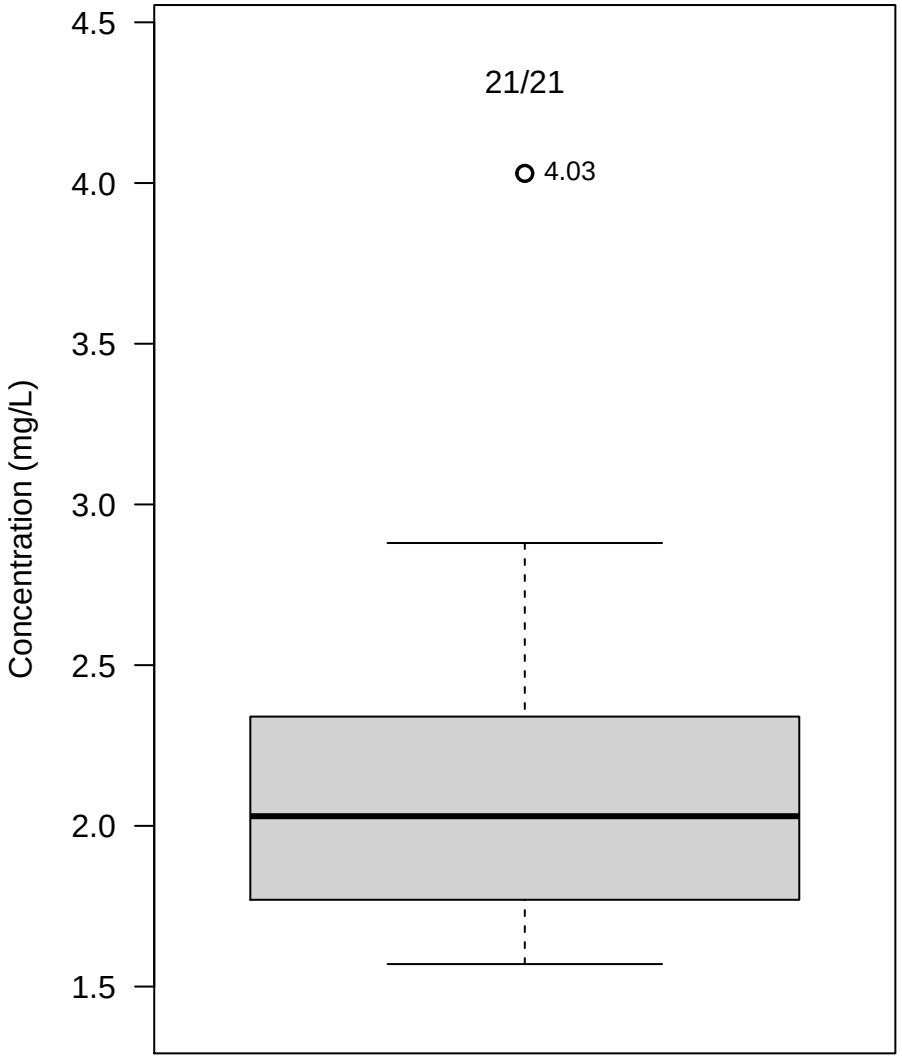


Figure C−84. Appendix III − Chloride

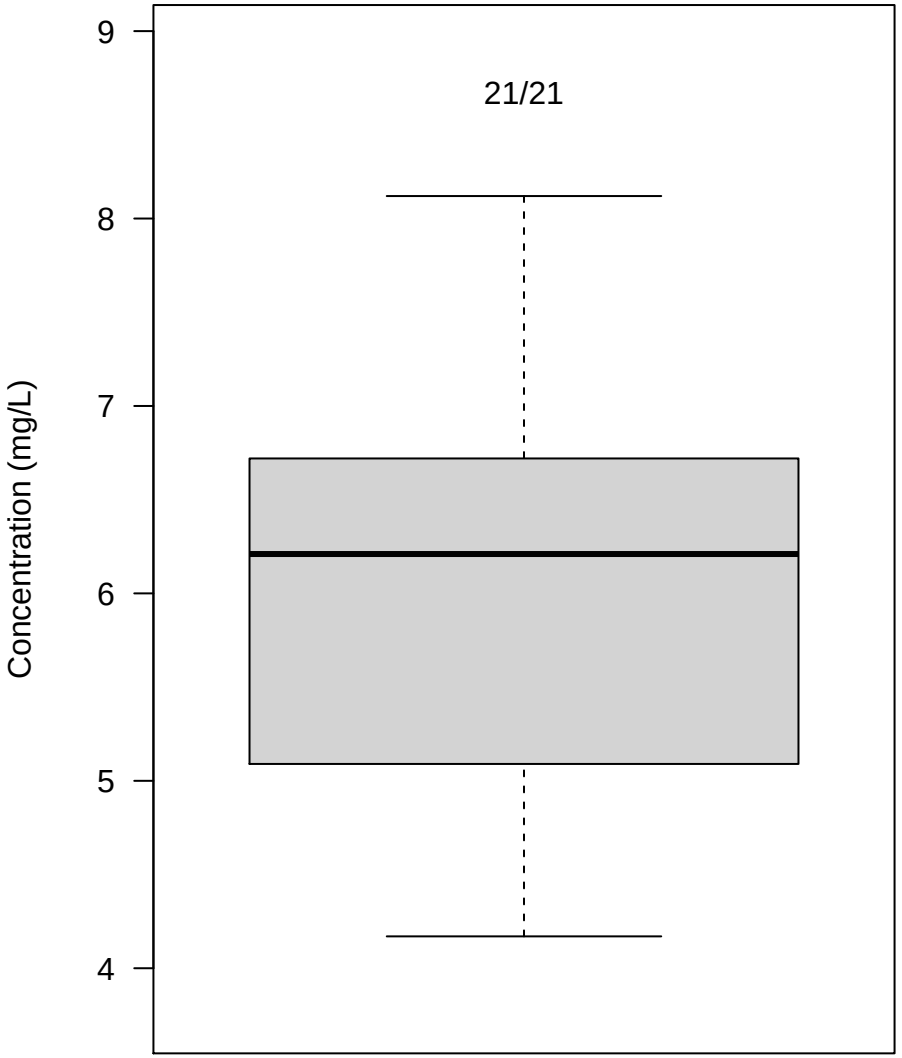


Figure C−85. Appendix III − Fluoride

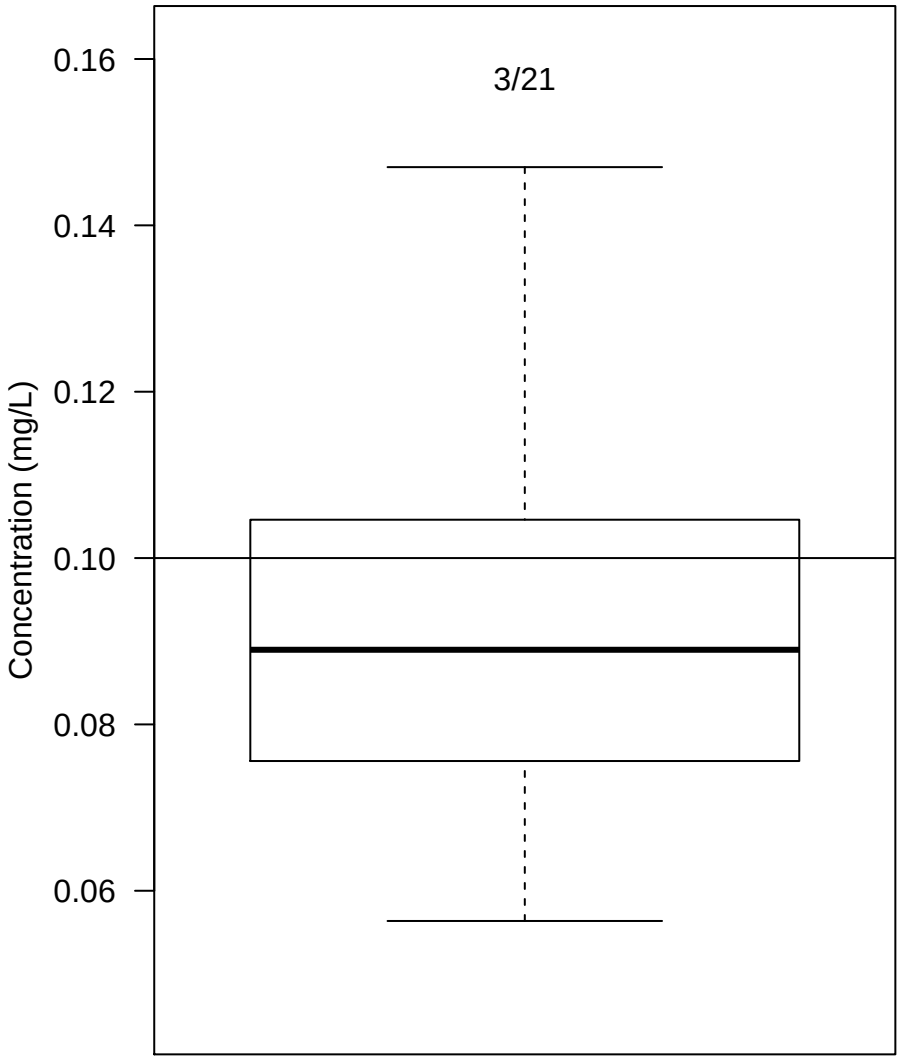


Figure C−86. Appendix III − field.pH

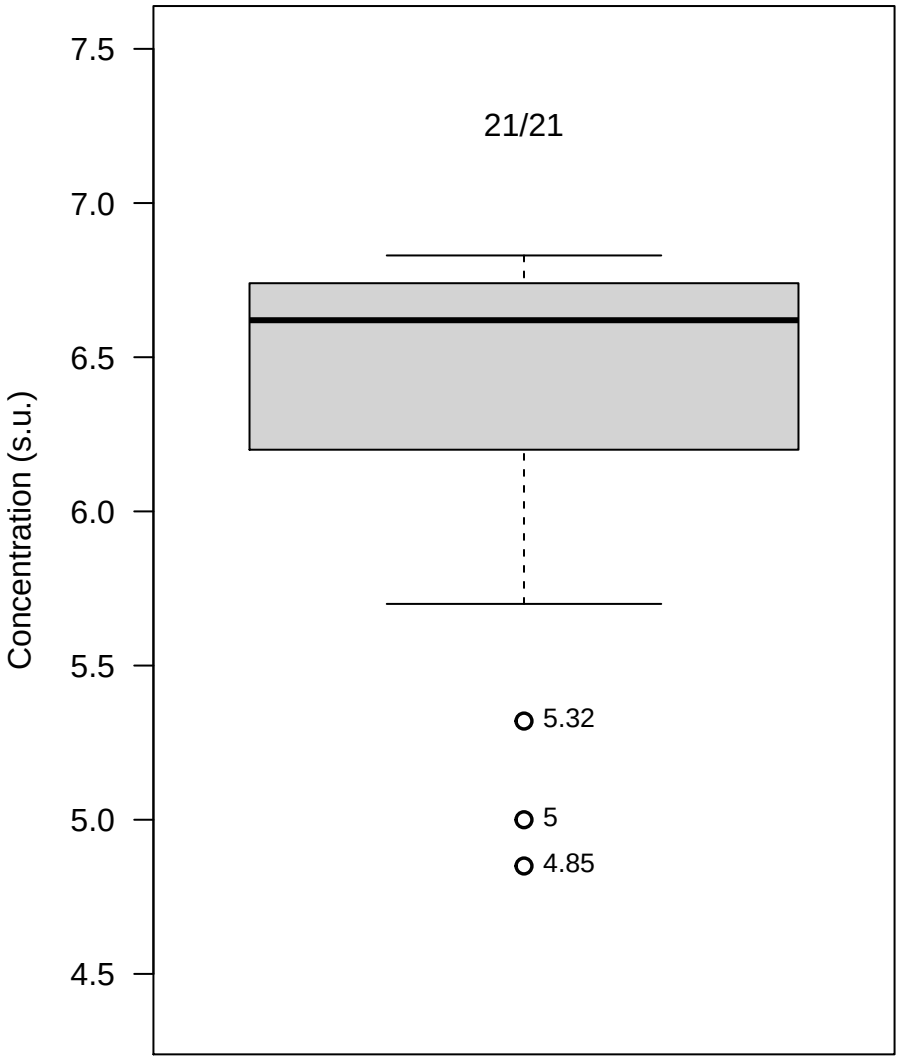
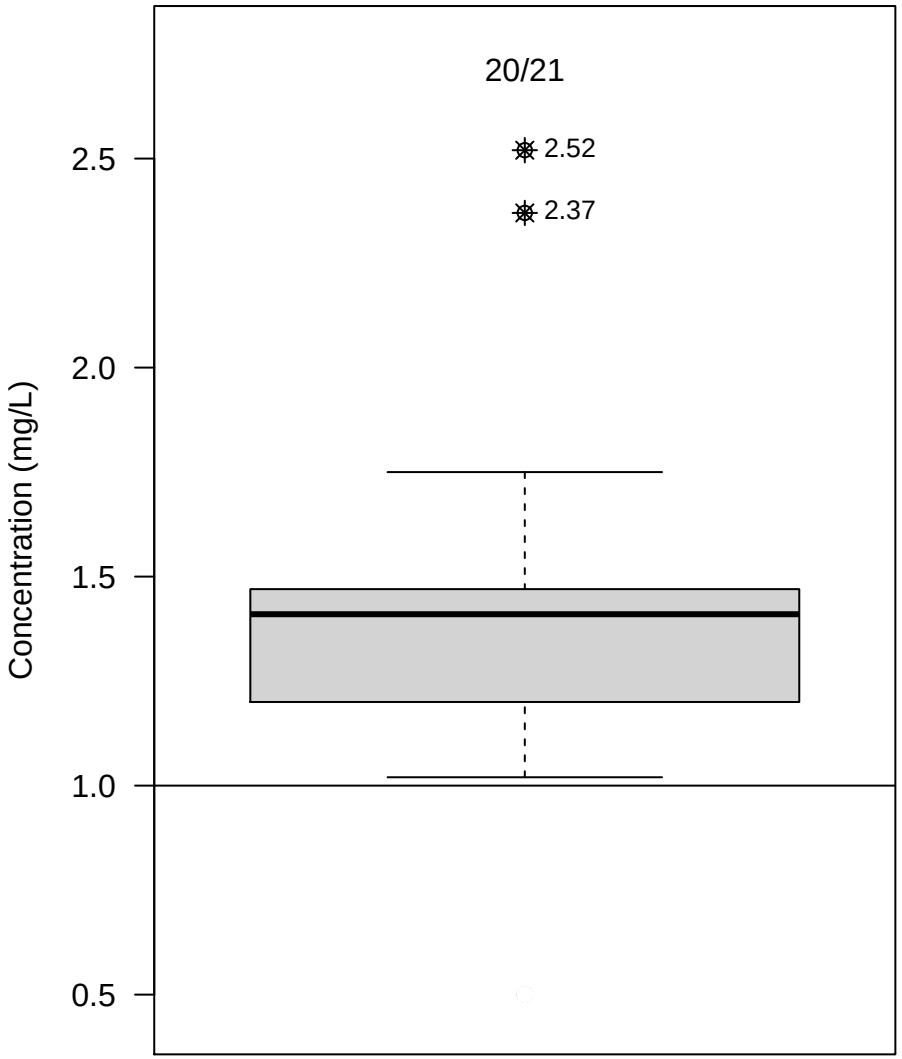
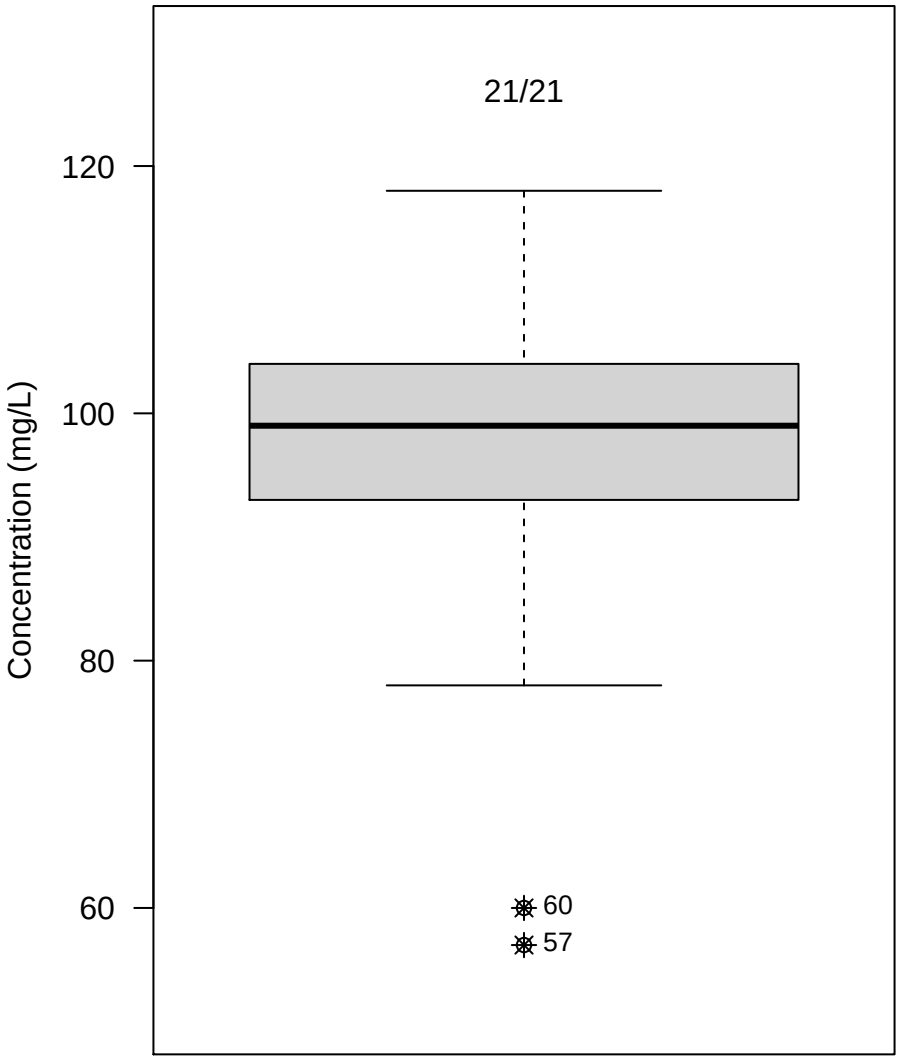


Figure C−87. Appendix III − Sulfate



PDP−23

Figure C−88. Appendix III − Total Dissolved Solids



PDP−23

Figure C−89. Appendix IV − Barium

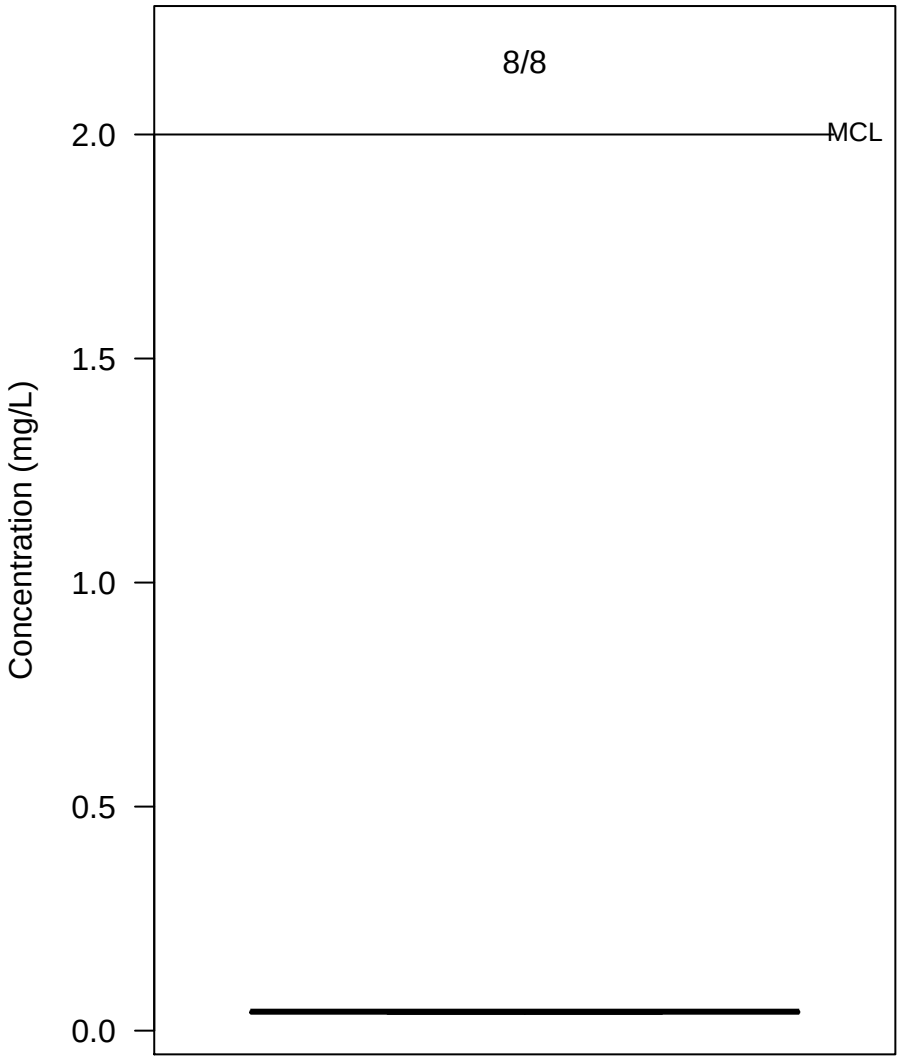


Figure C−90. Appendix IV − Chromium

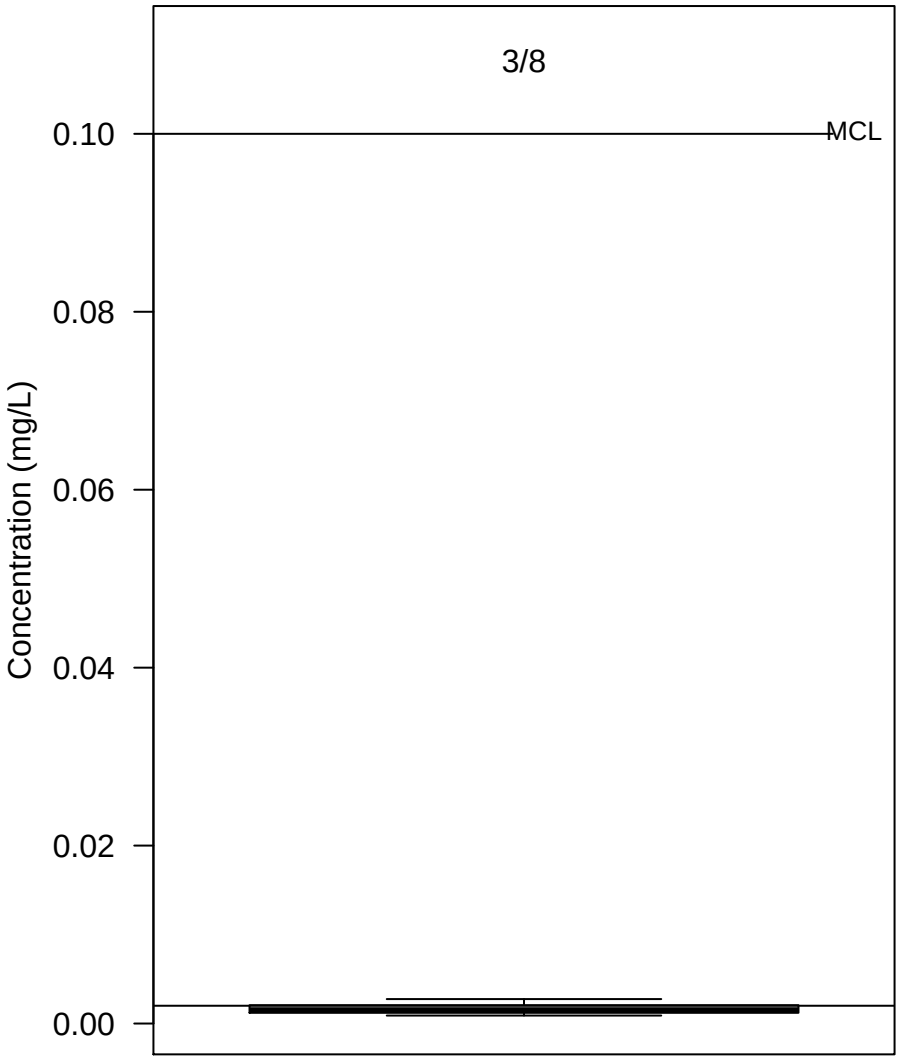


Figure C−91. Appendix IV − Fluoride

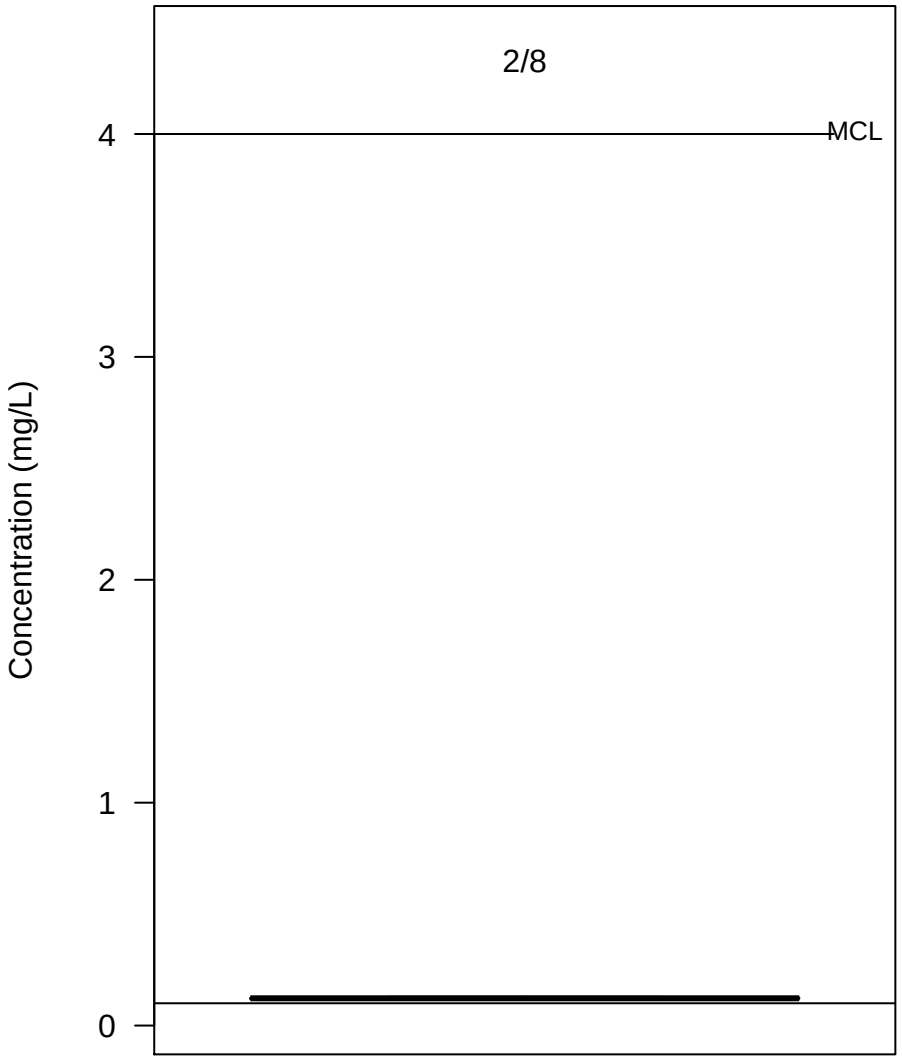


Figure C−92. Appendix IV − Lithium

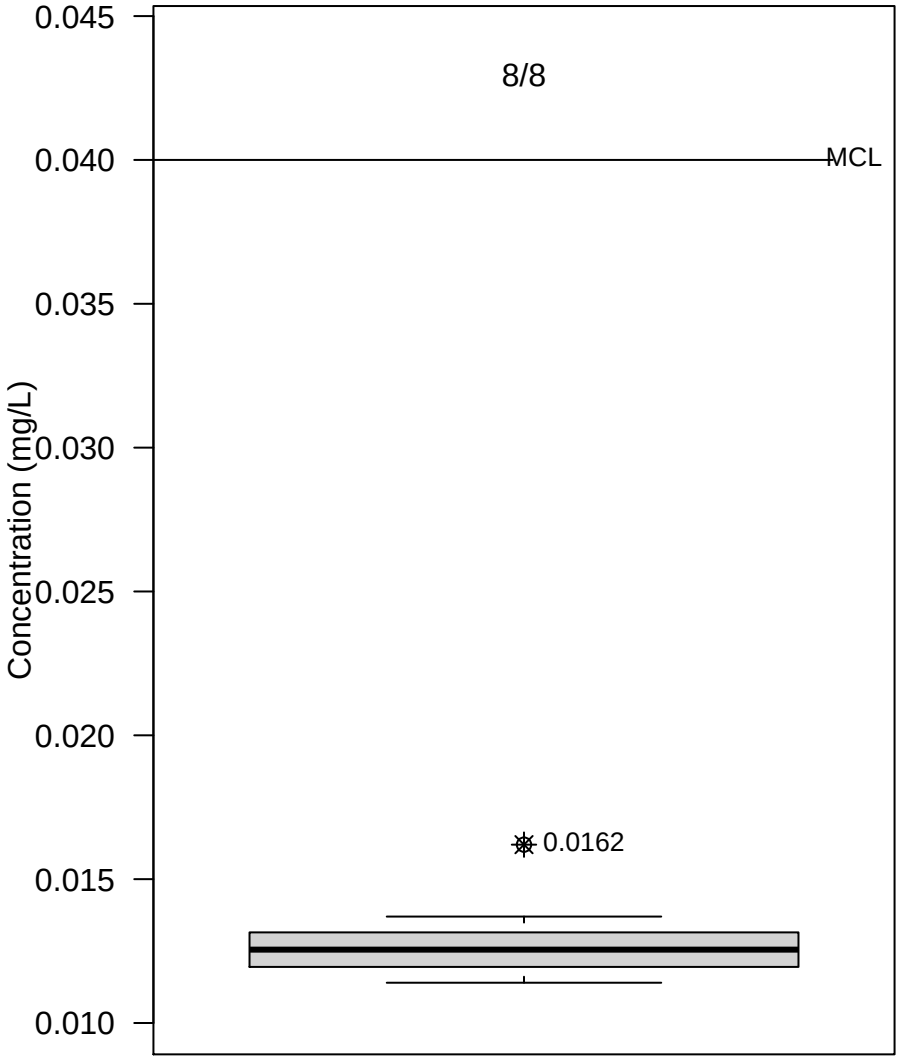
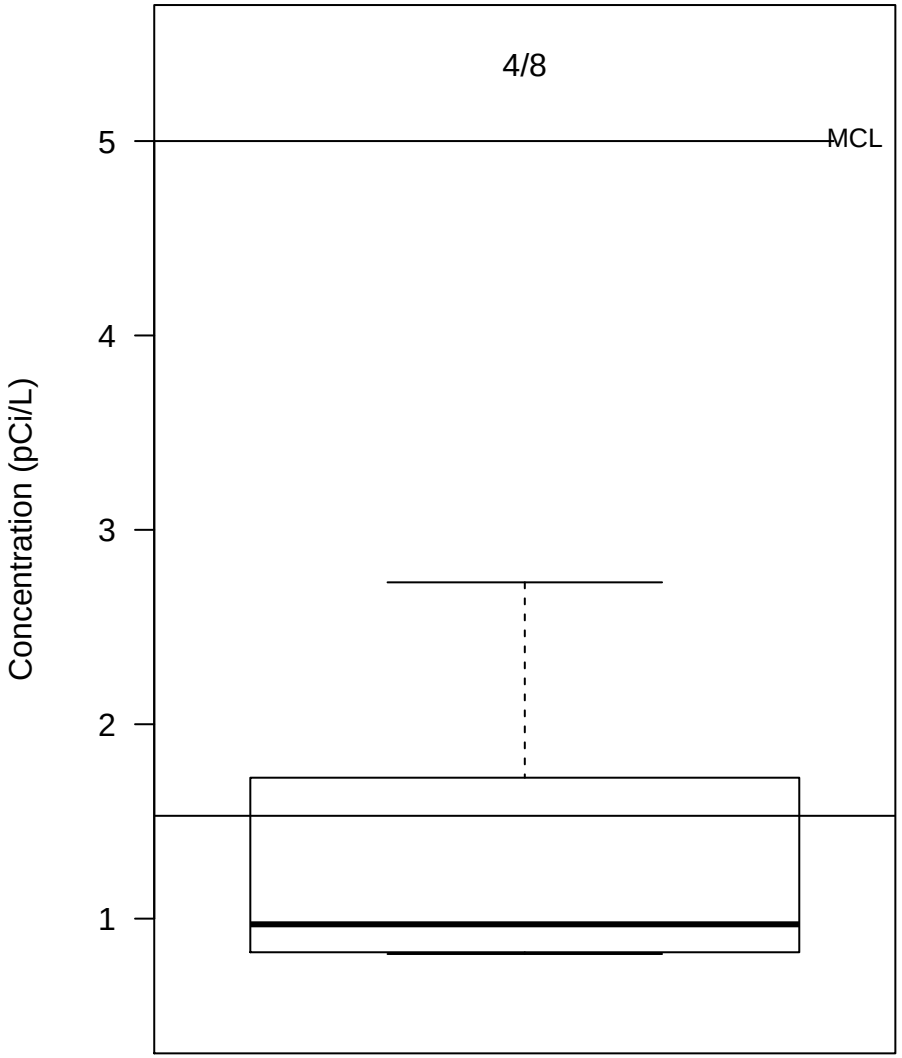
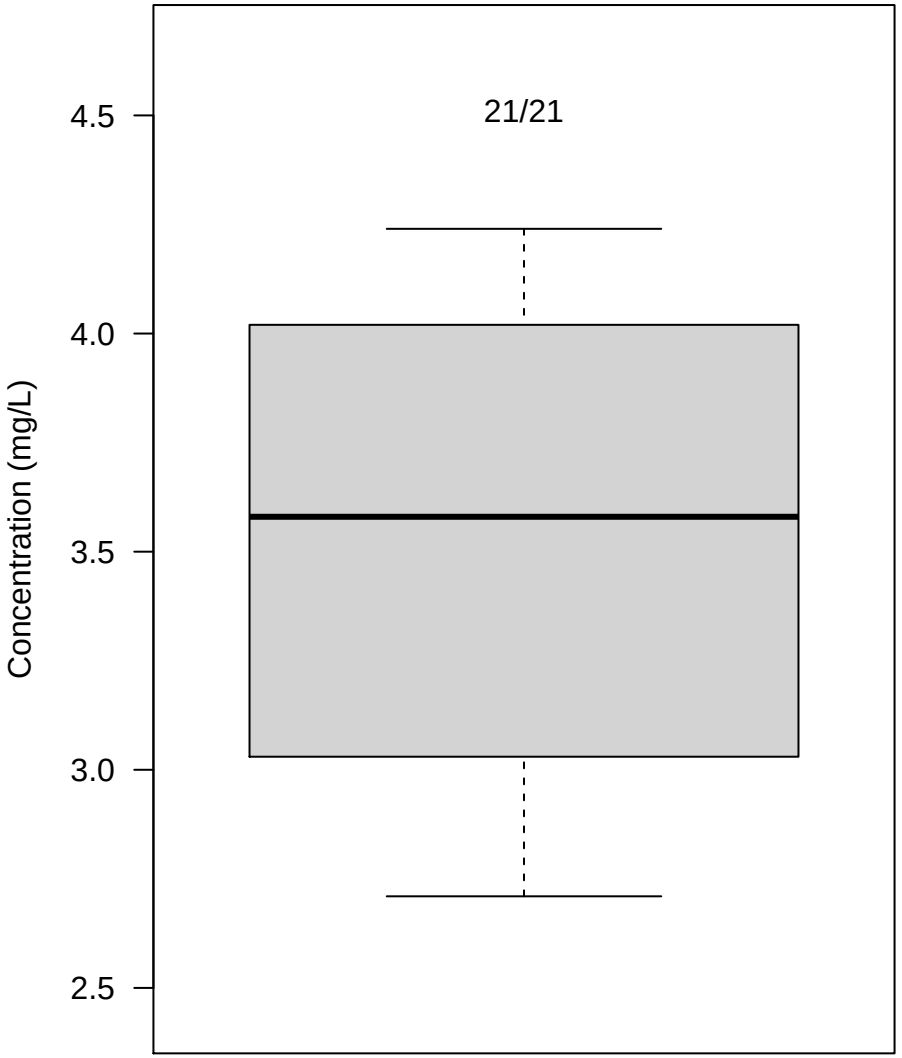


Figure C−93. Appendix IV − Radium−226 + Radium−228



PDP−23

Figure C−94. Appendix III − Boron



PDP−24

Figure C−95. Appendix III − Calcium

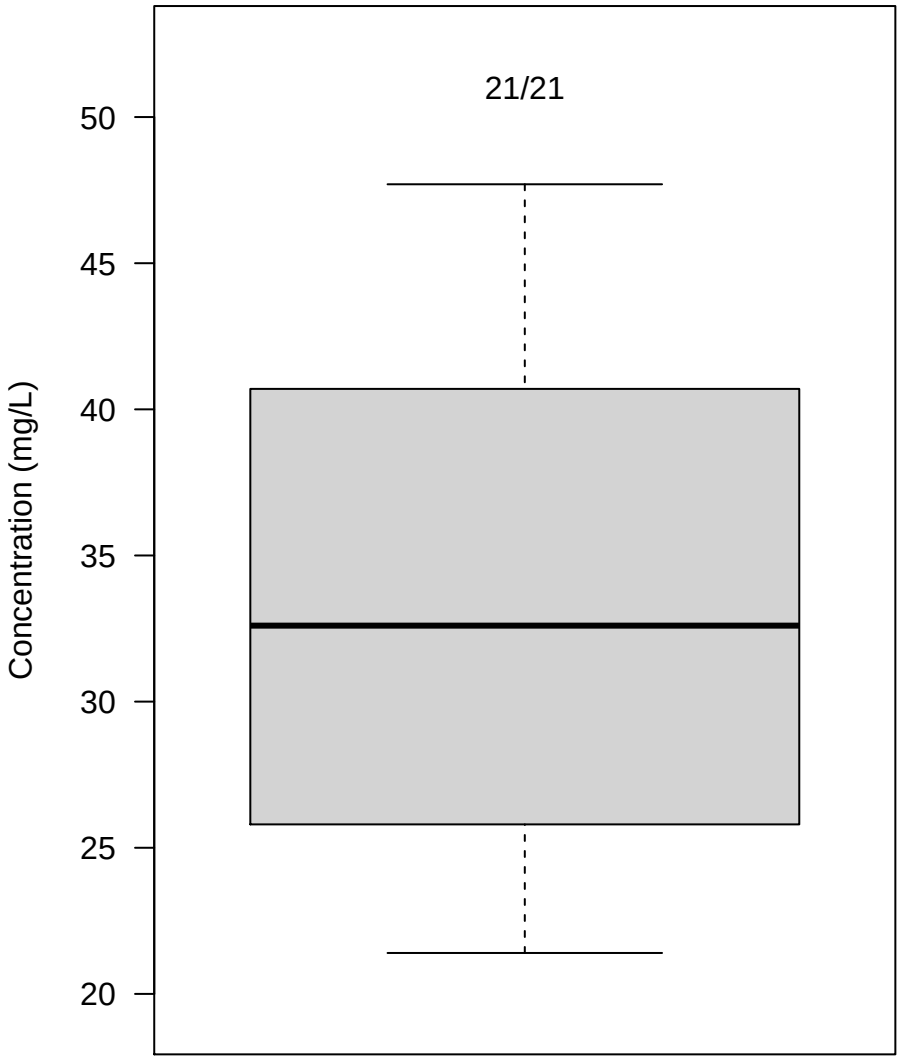


Figure C−96. Appendix III − Chloride

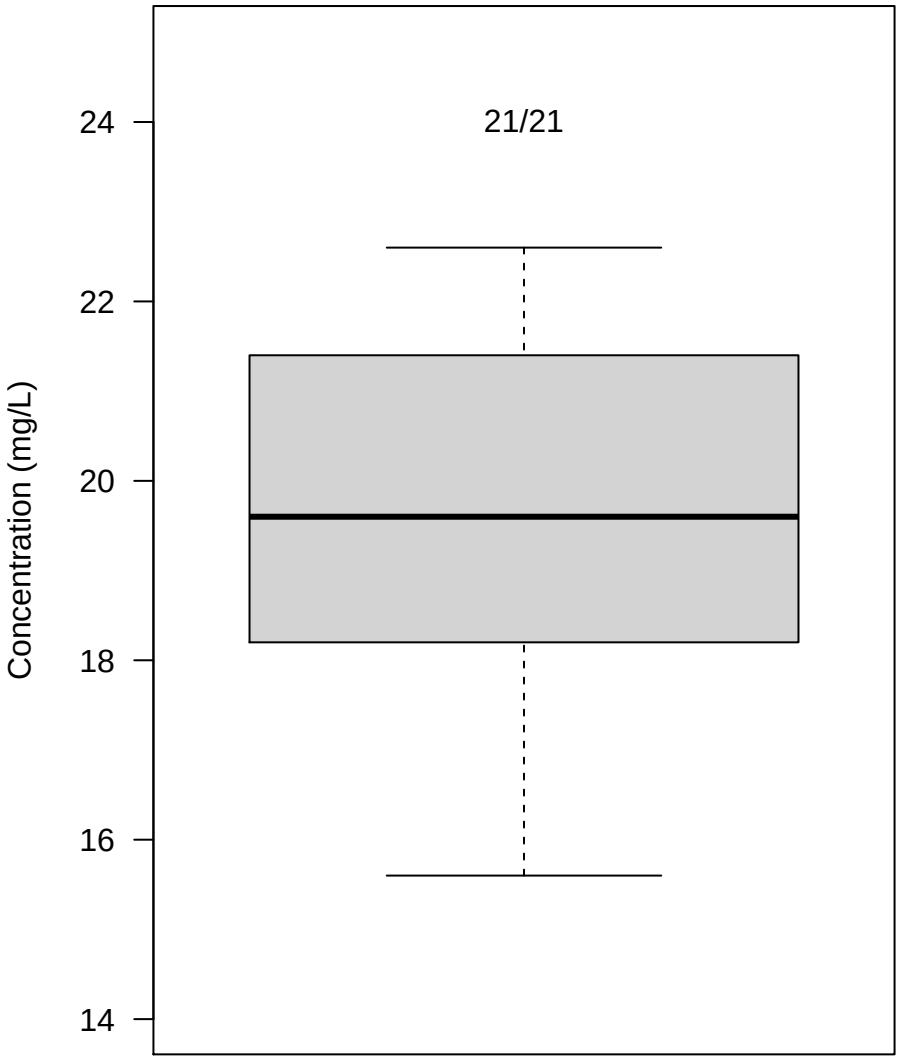


Figure C−97. Appendix III − Fluoride

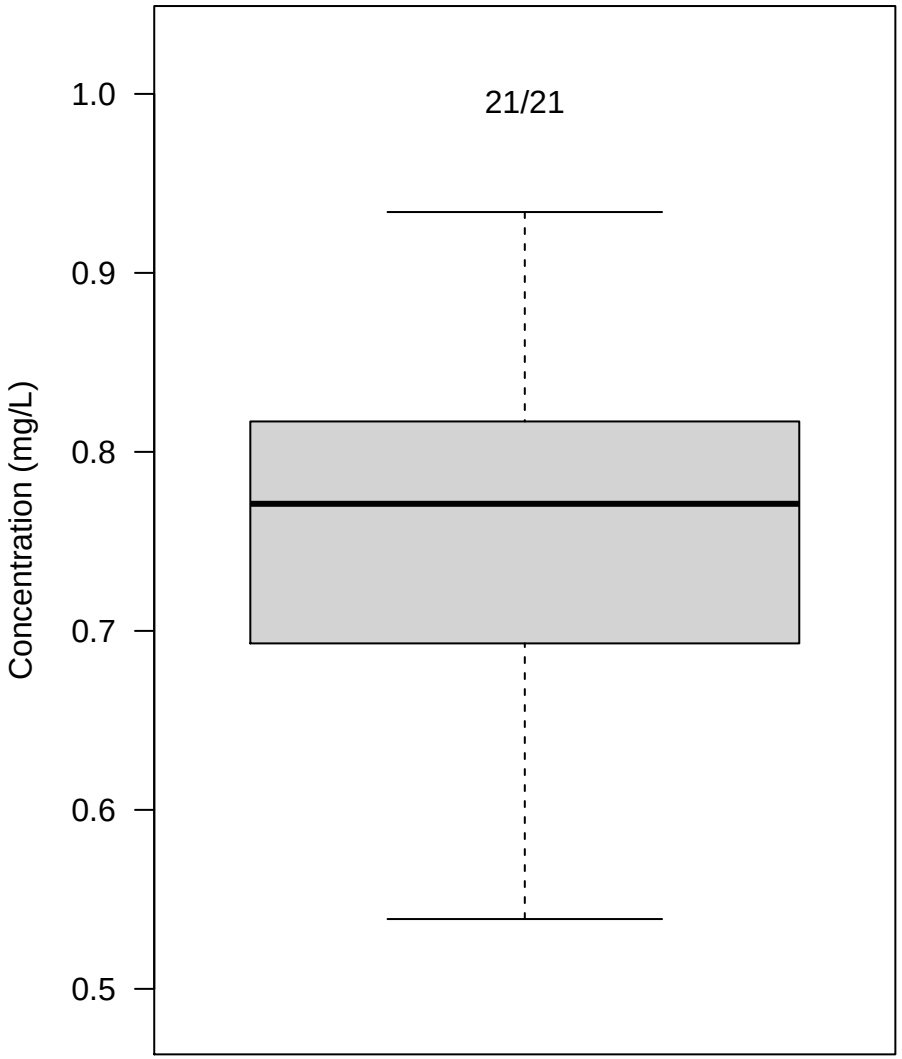


Figure C−98. Appendix III − field.pH

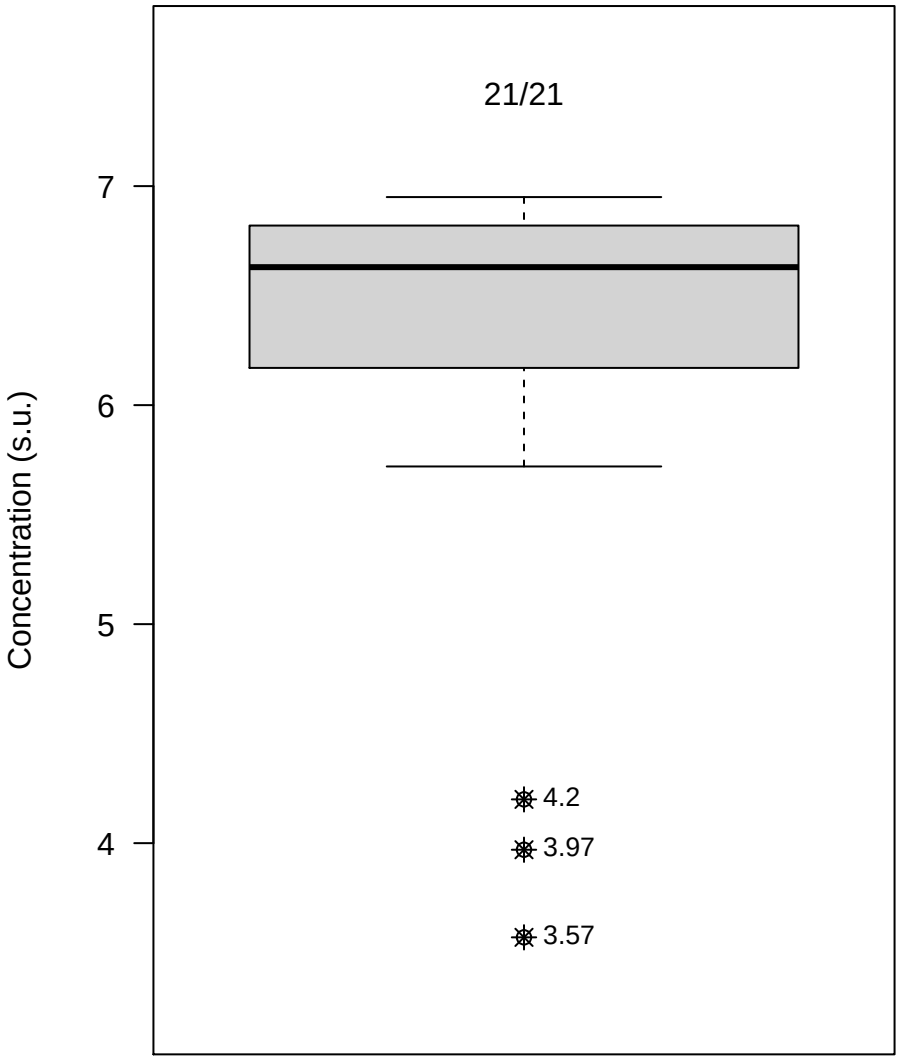


Figure C−99. Appendix III − Sulfate

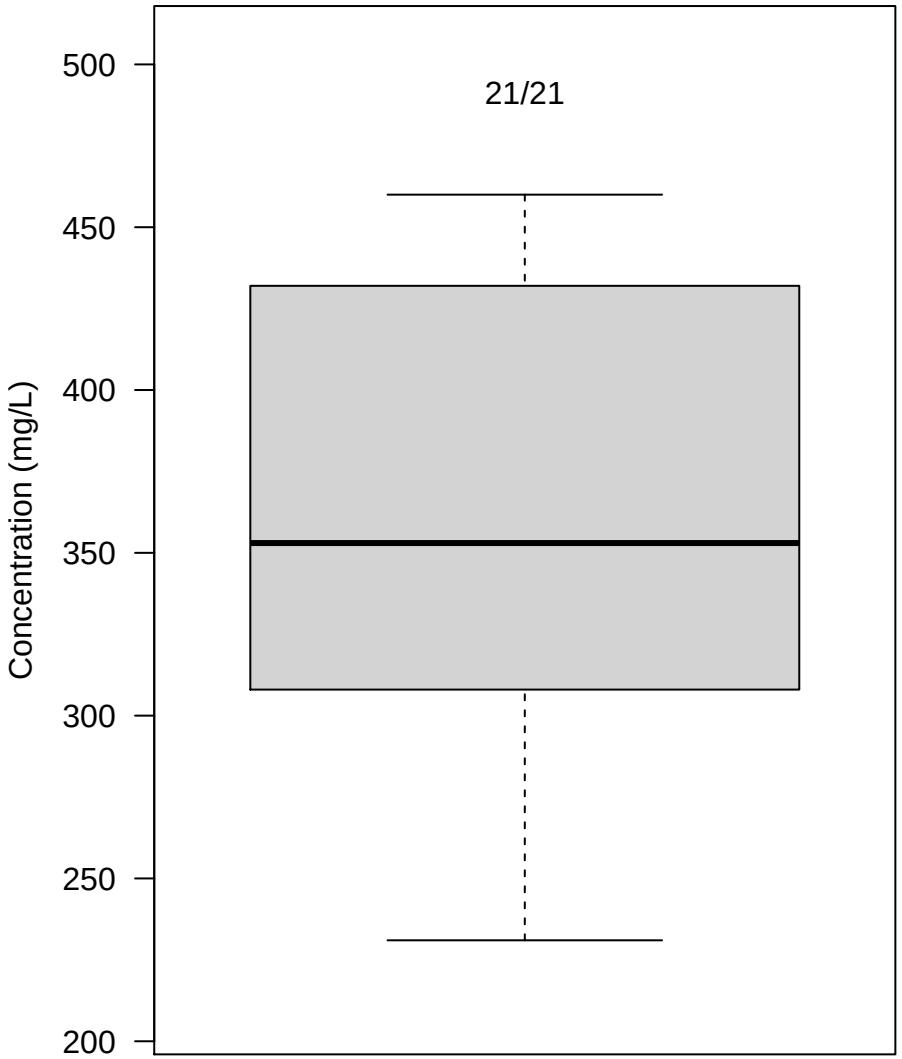


Figure C−100. Appendix III − Total Dissolved Solids

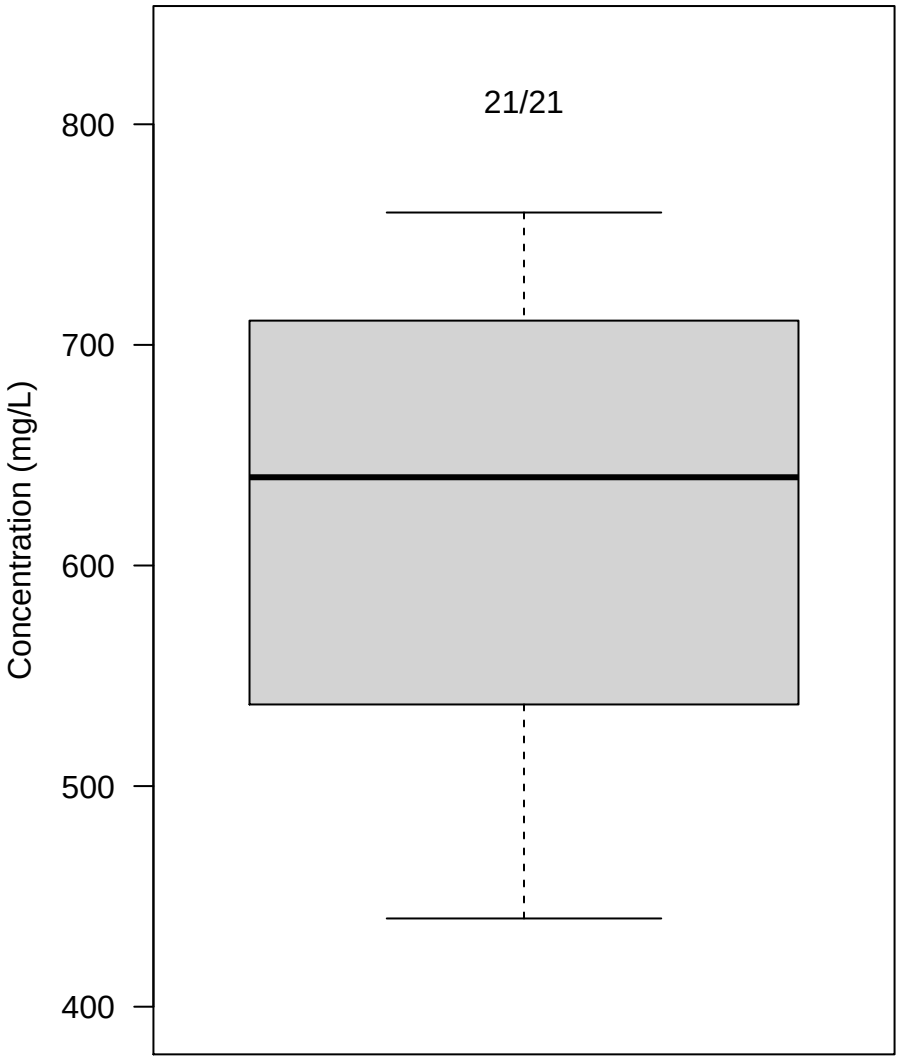


Figure C−101. Appendix IV − Barium

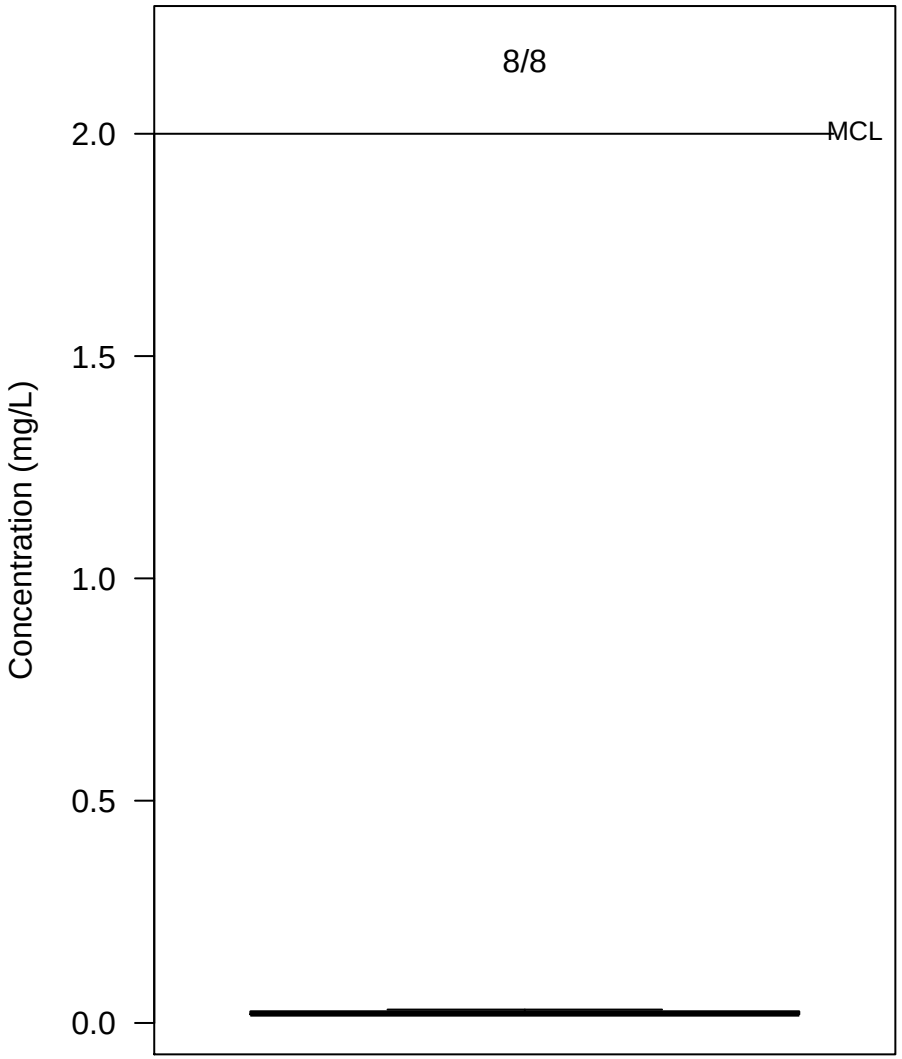


Figure C−102. Appendix IV − Beryllium

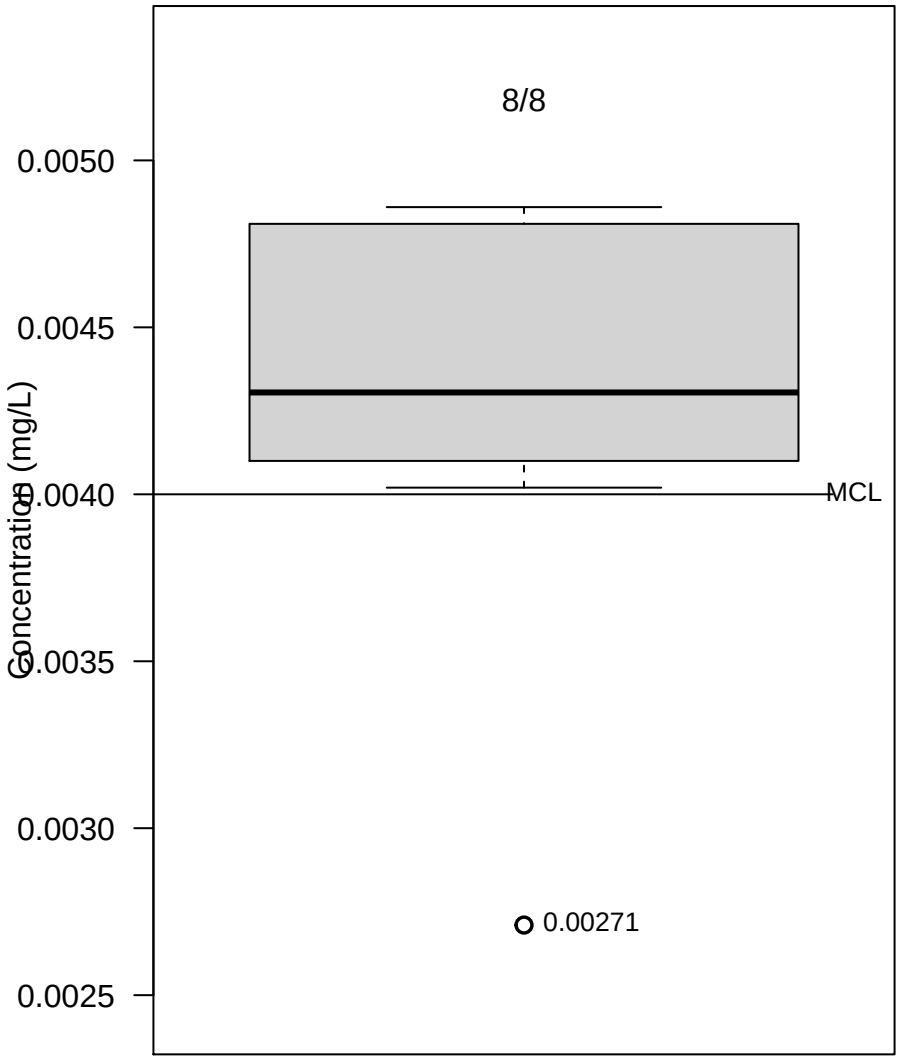


Figure C−103. Appendix IV − Cadmium

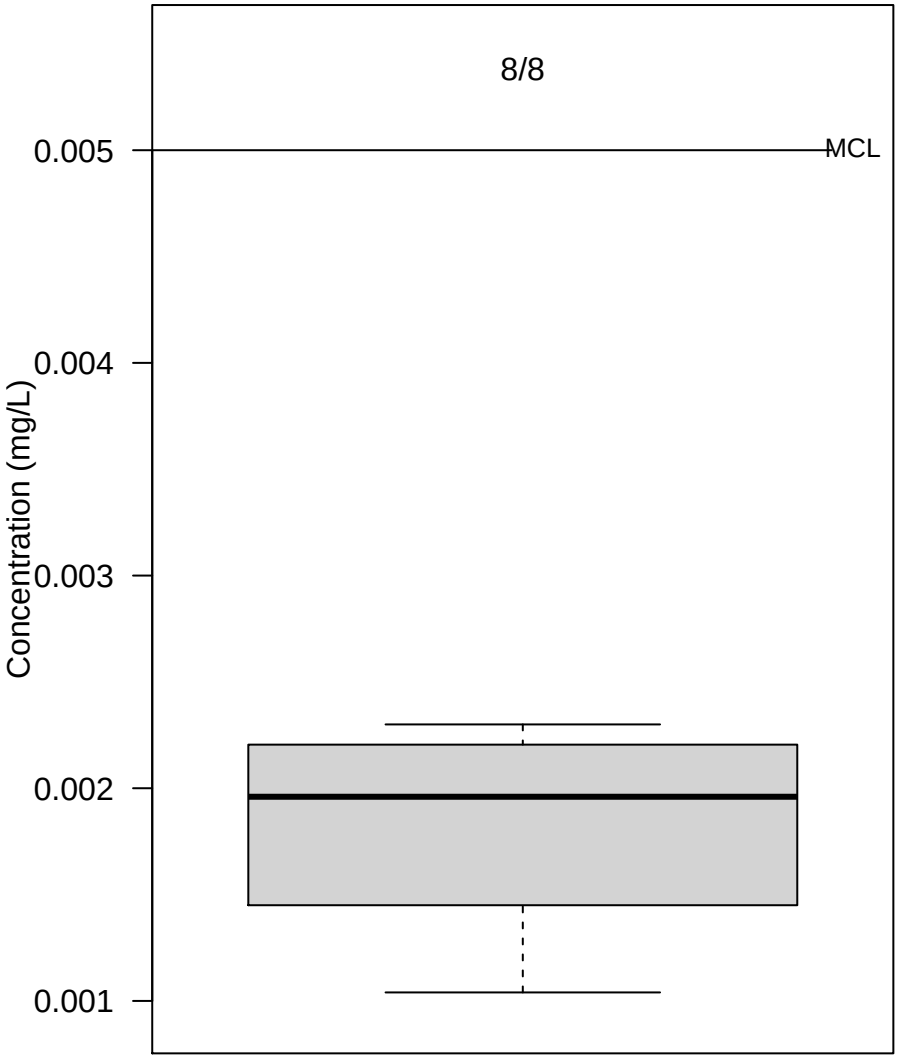


Figure C−104. Appendix IV − Cobalt

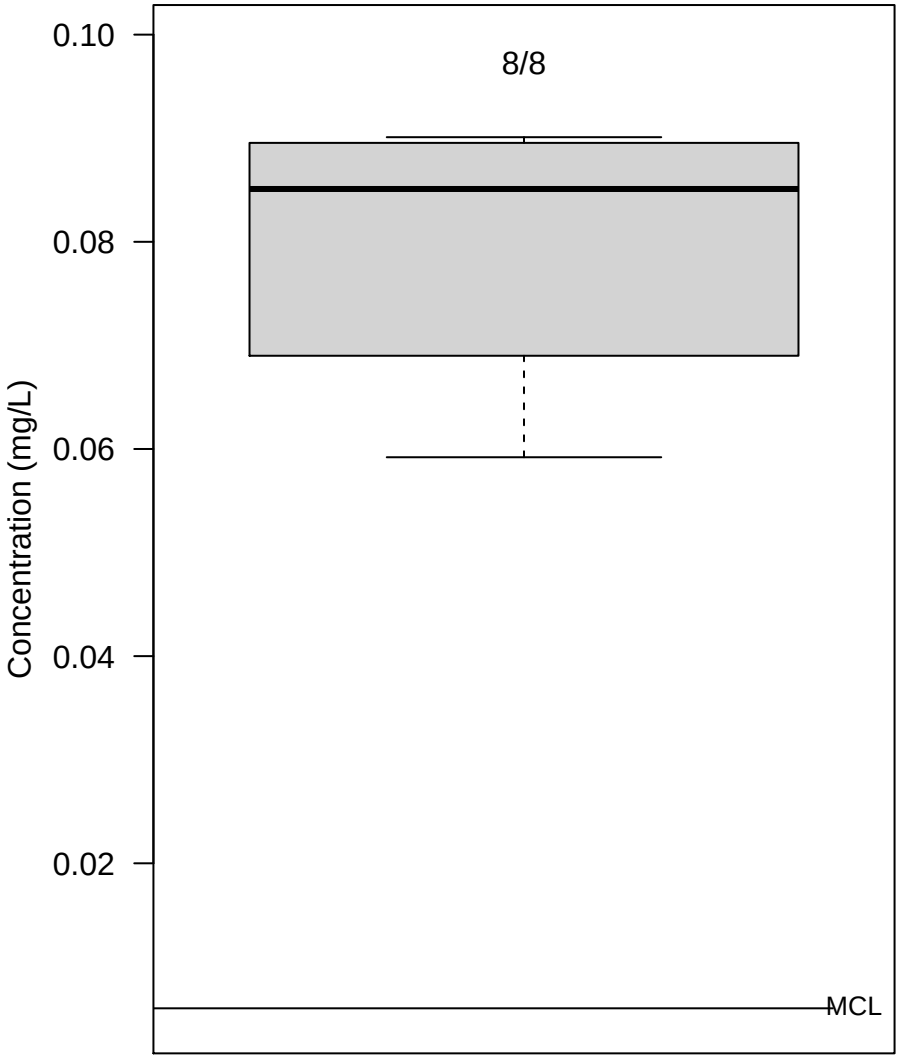


Figure C−105. Appendix IV − Fluoride

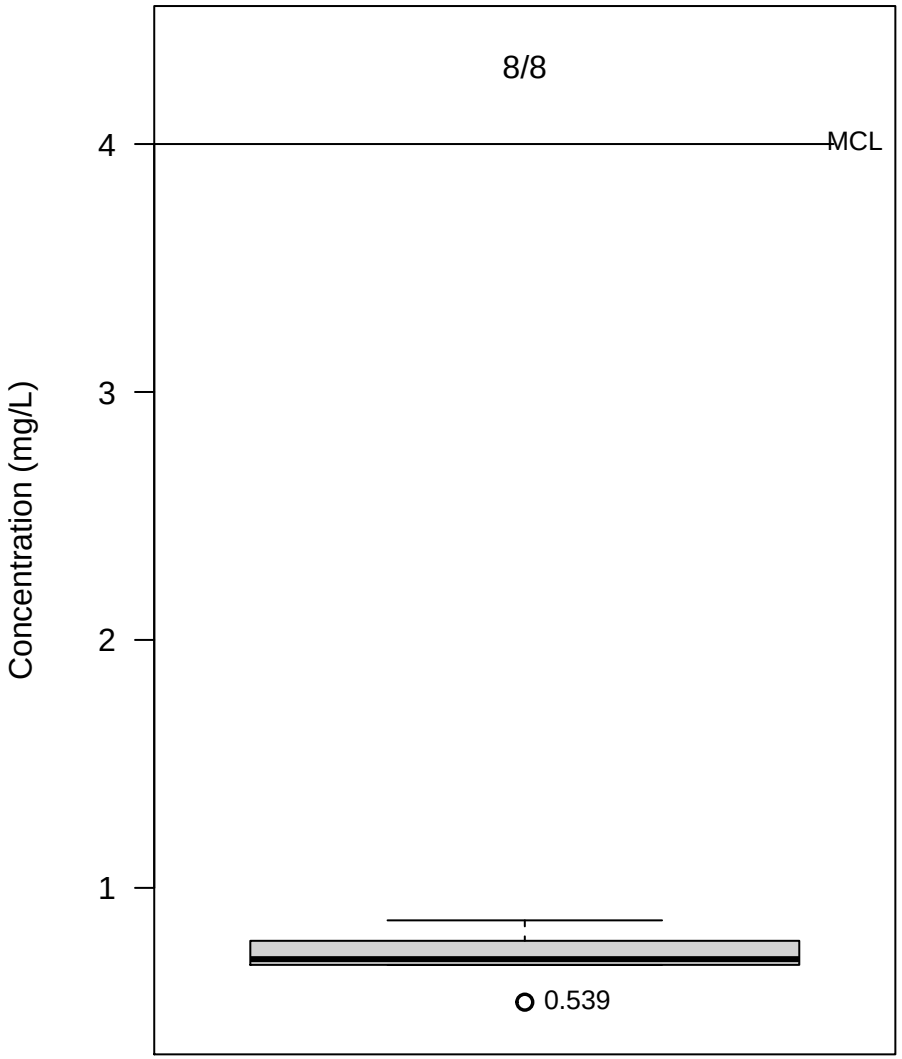


Figure C−106. Appendix IV − Lead

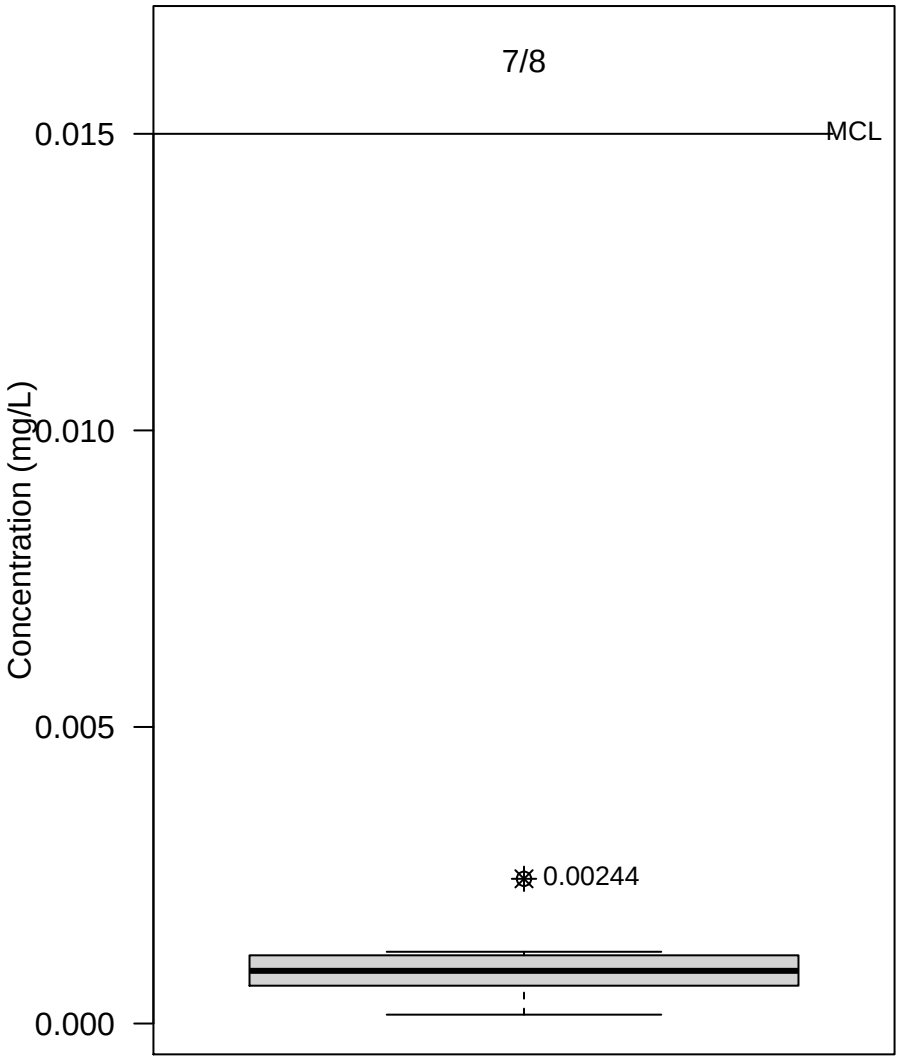
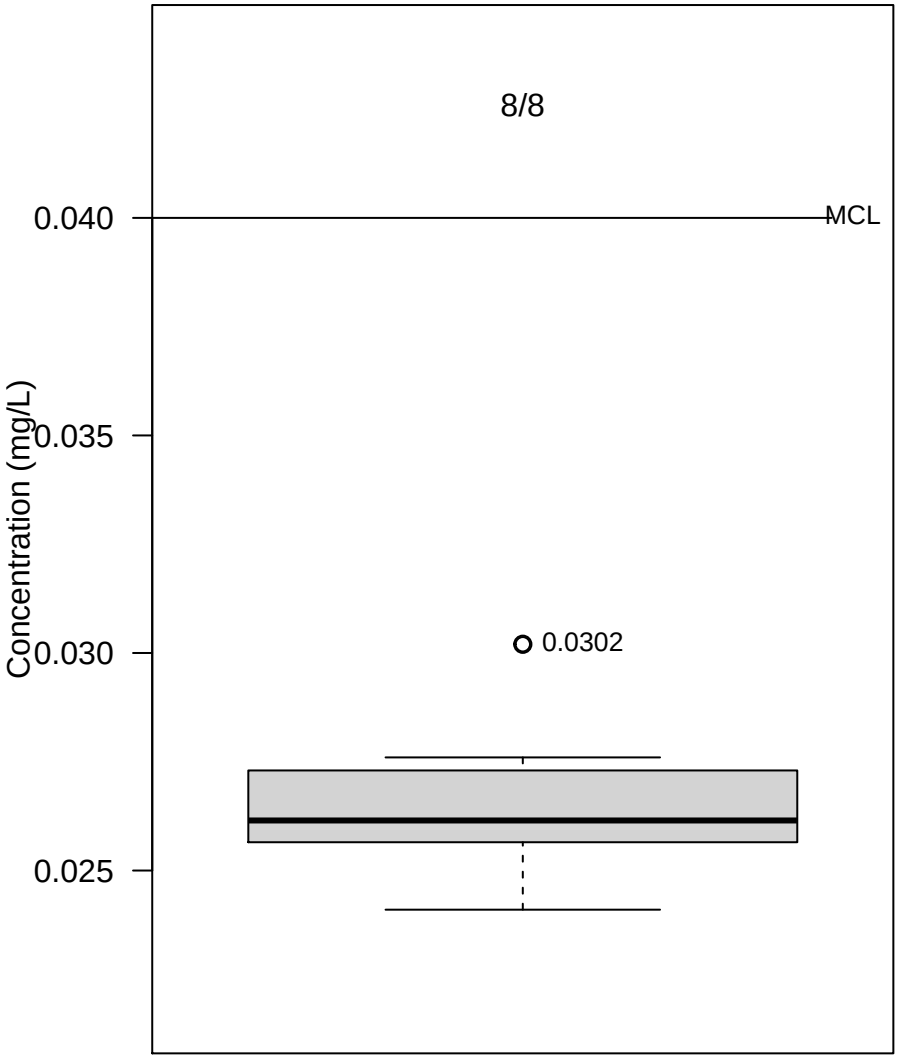
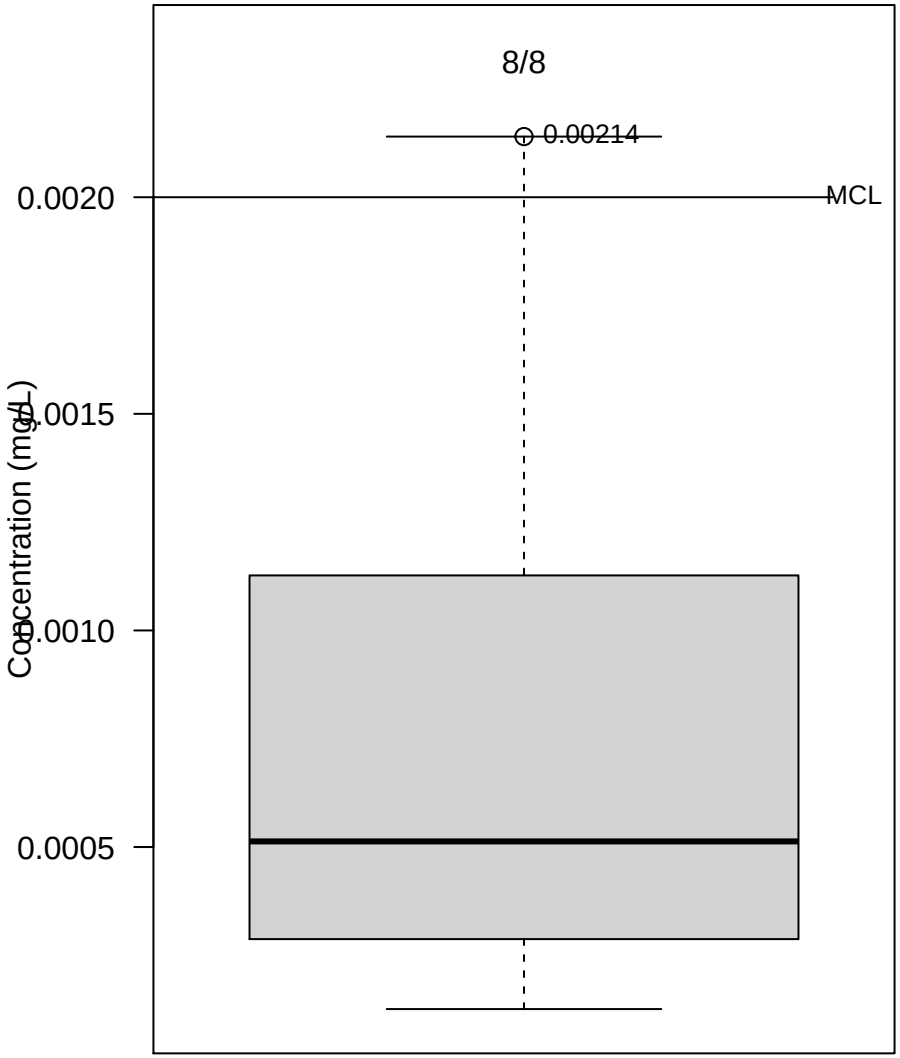


Figure C−107. Appendix IV − Lithium



PDP−24

Figure C−108. Appendix IV − Mercury



PDP−24

Figure C−109. Appendix IV − Selenium

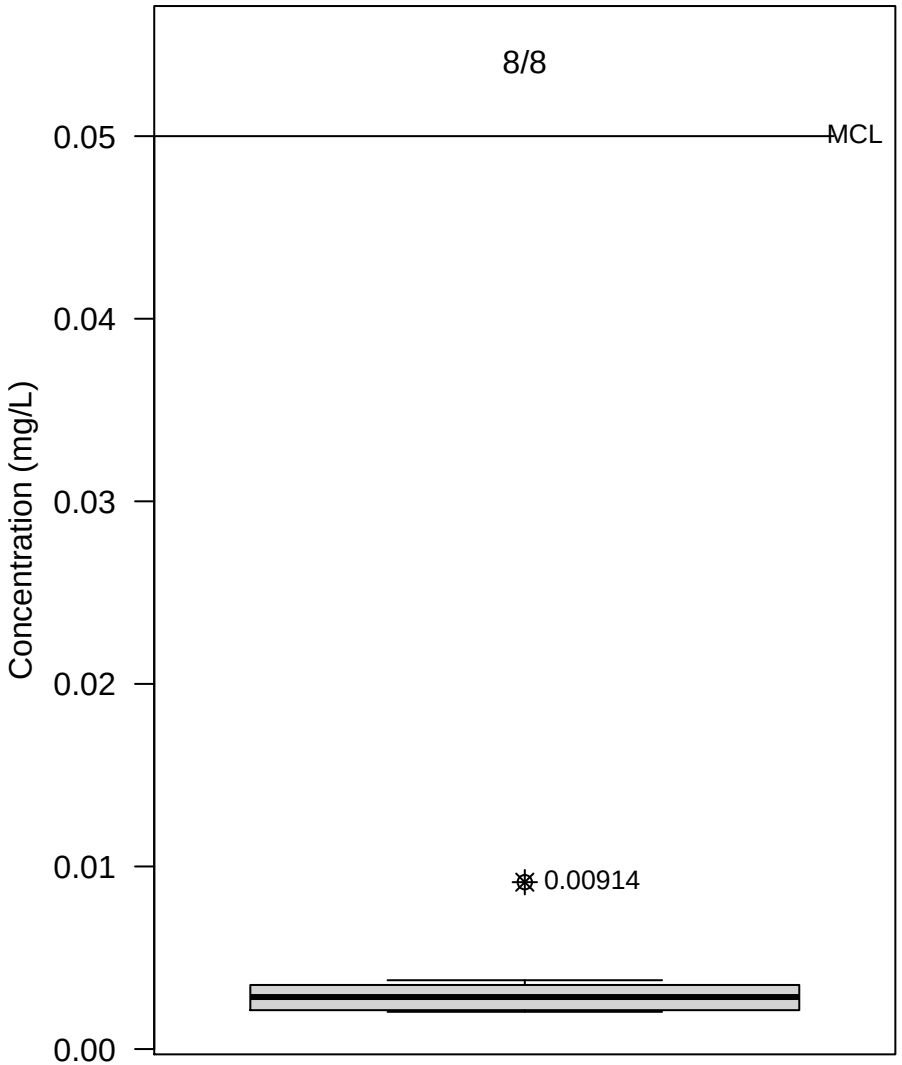


Figure C−110. Appendix IV − Radium−226 + Radium−228

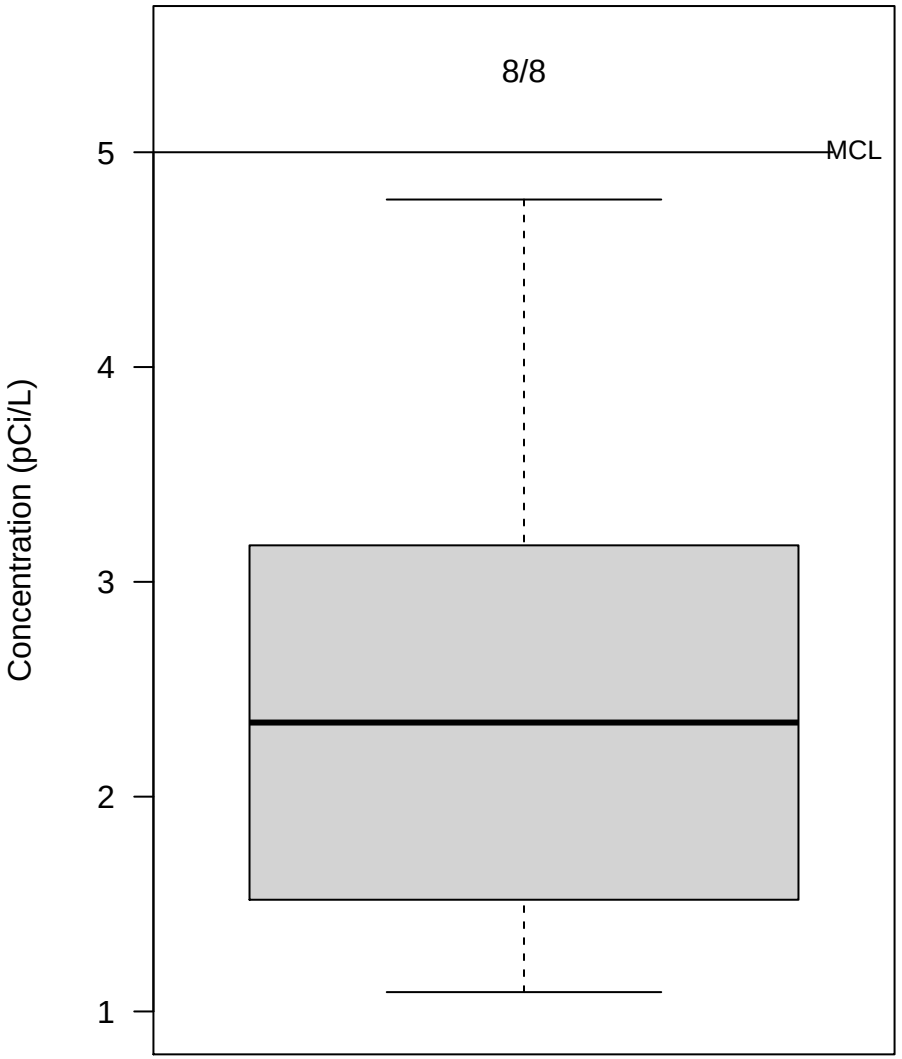


Figure C−111. Appendix III − Boron

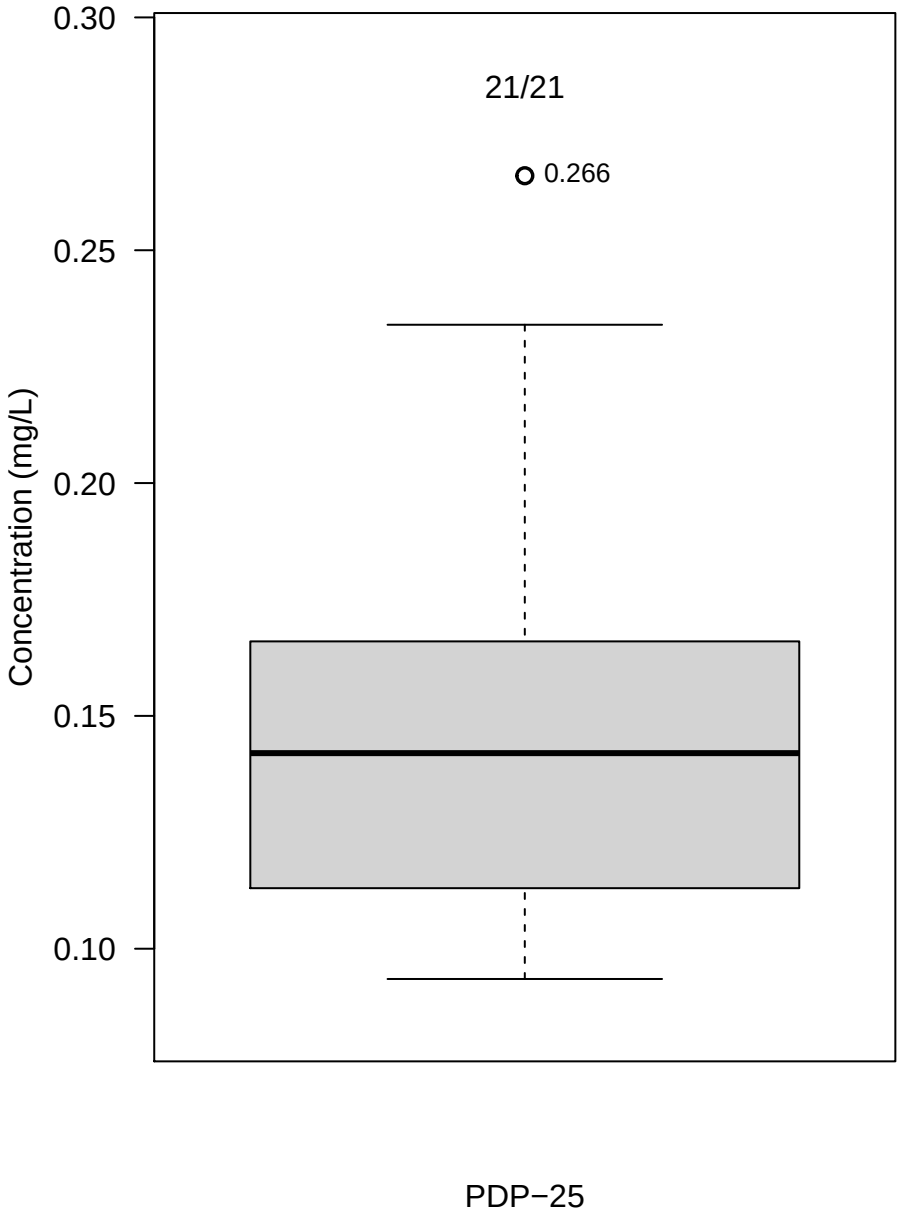


Figure C−112. Appendix III − Calcium

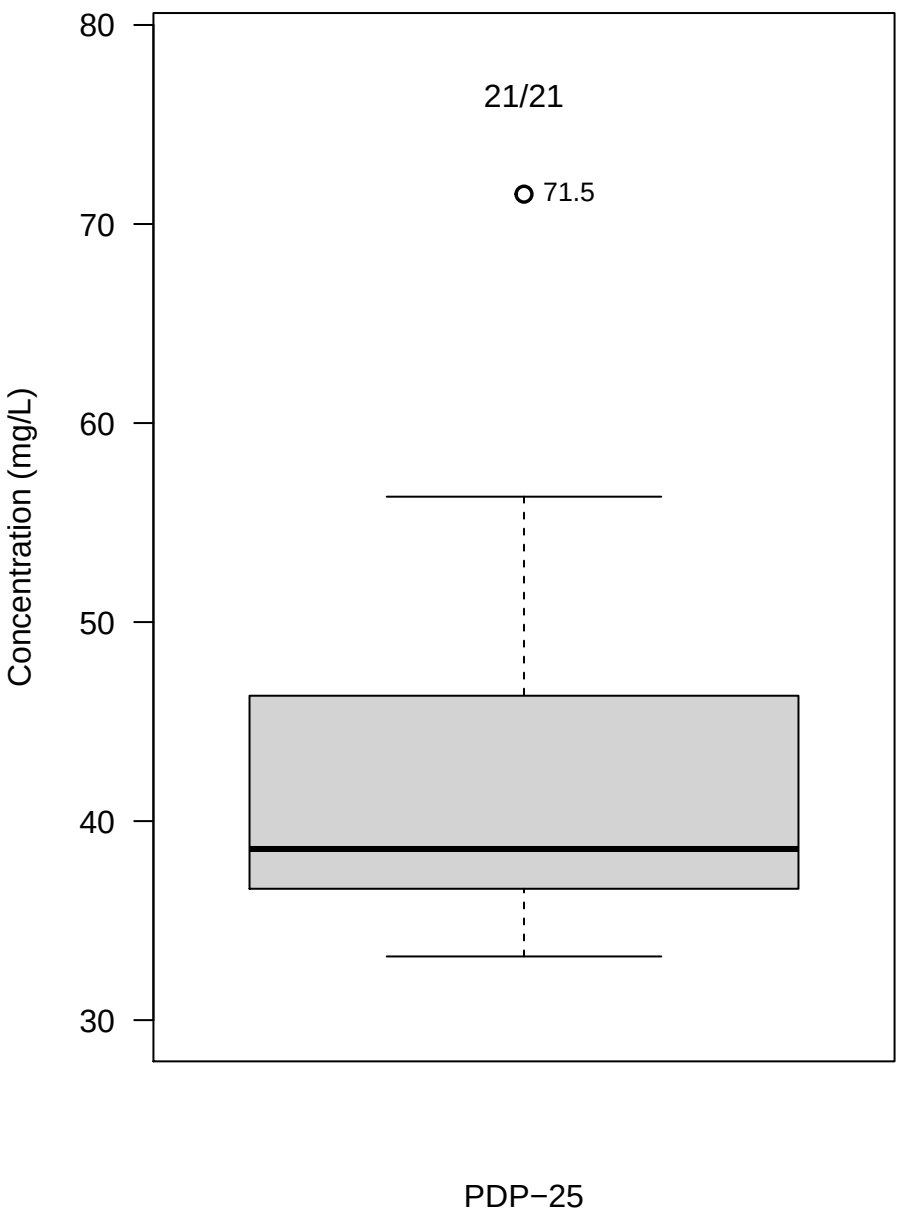


Figure C−113. Appendix III − Chloride

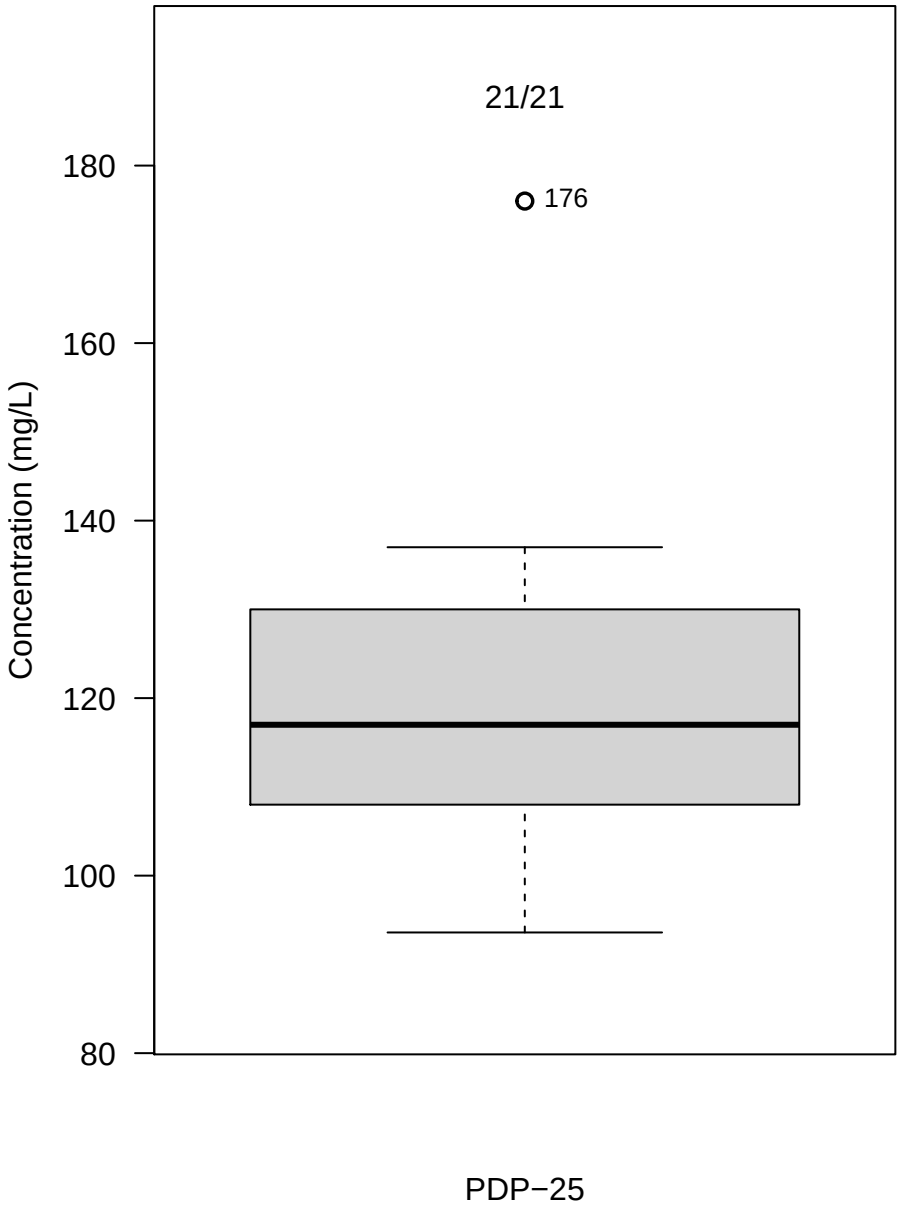


Figure C−114. Appendix III − Fluoride

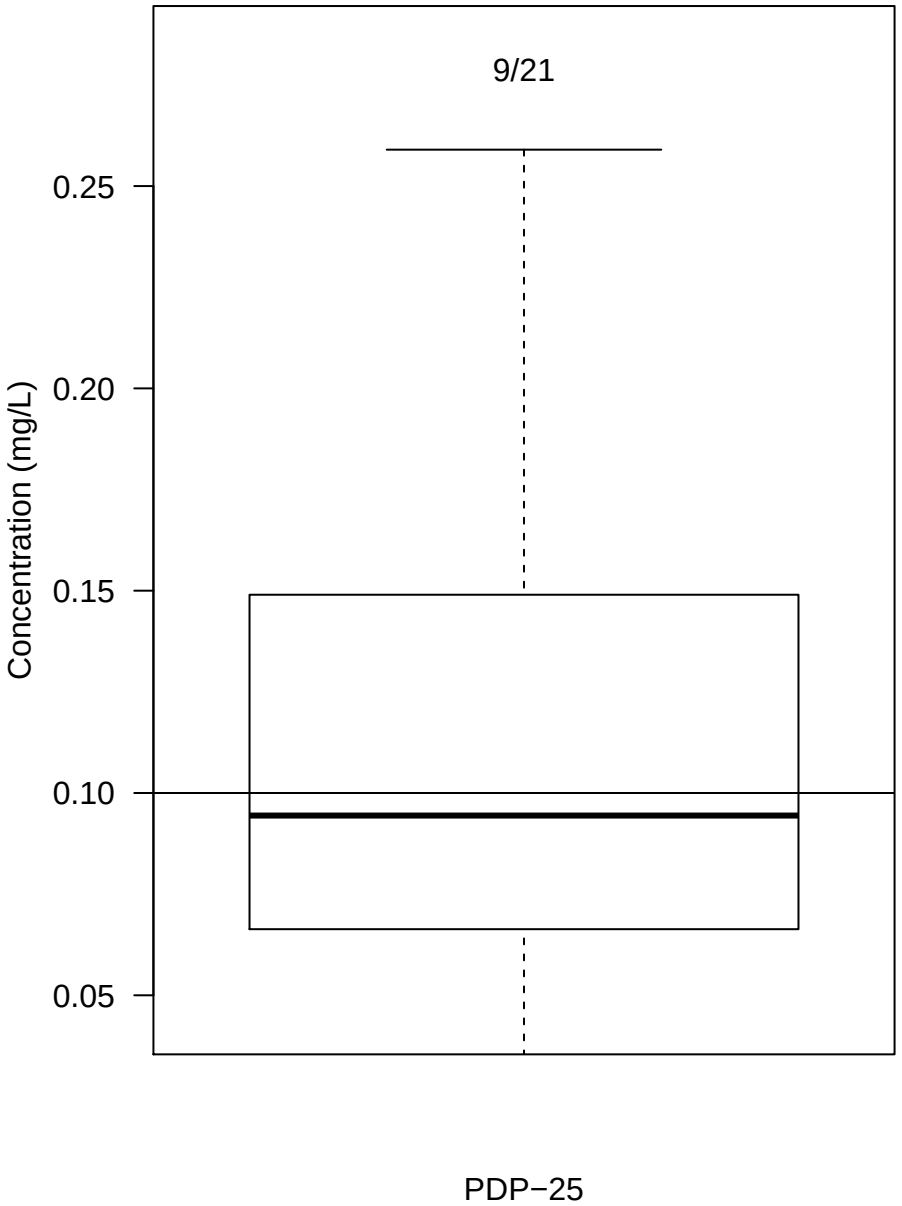


Figure C−115. Appendix III − field.pH

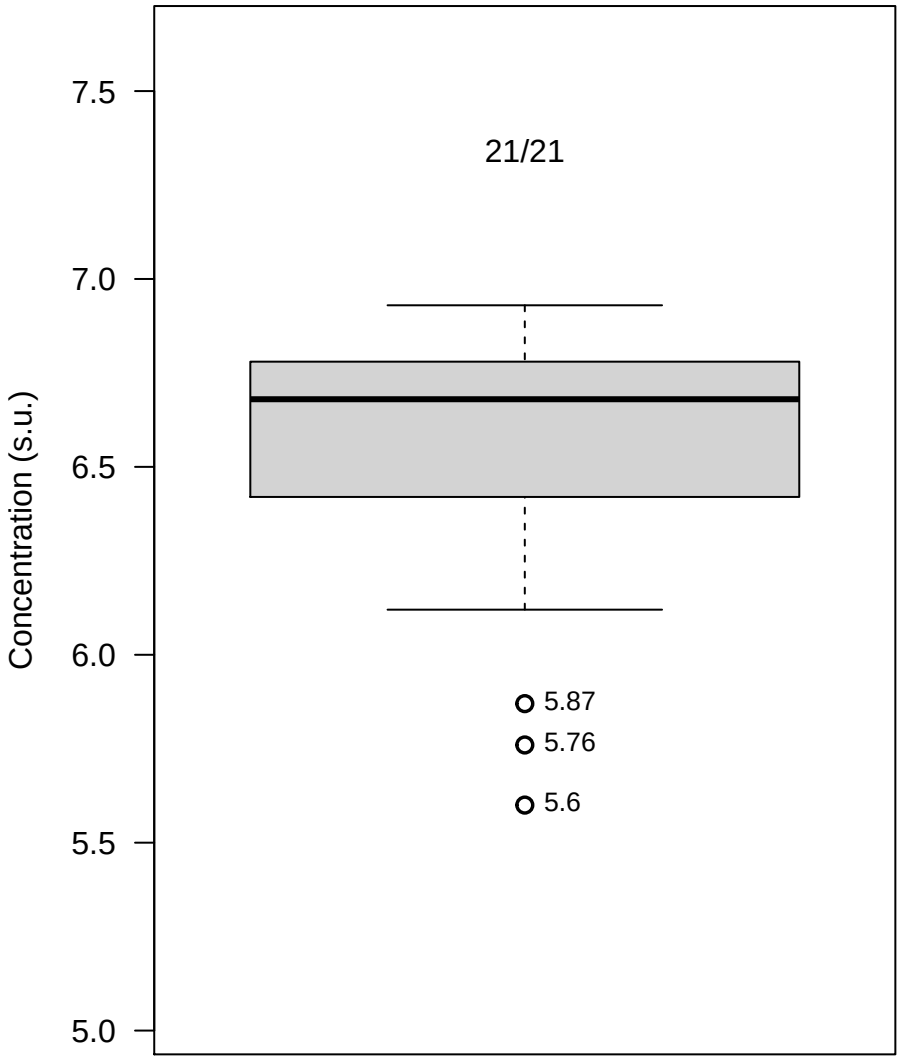


Figure C−116. Appendix III − Sulfate

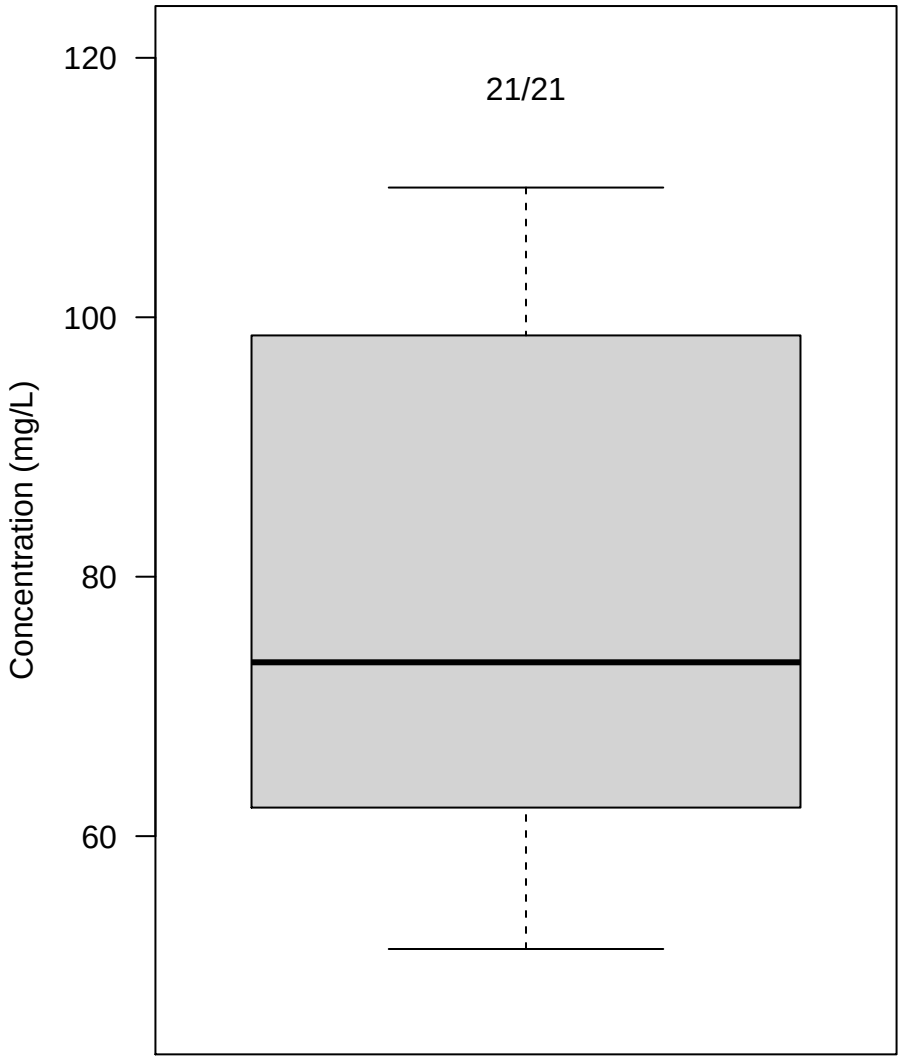
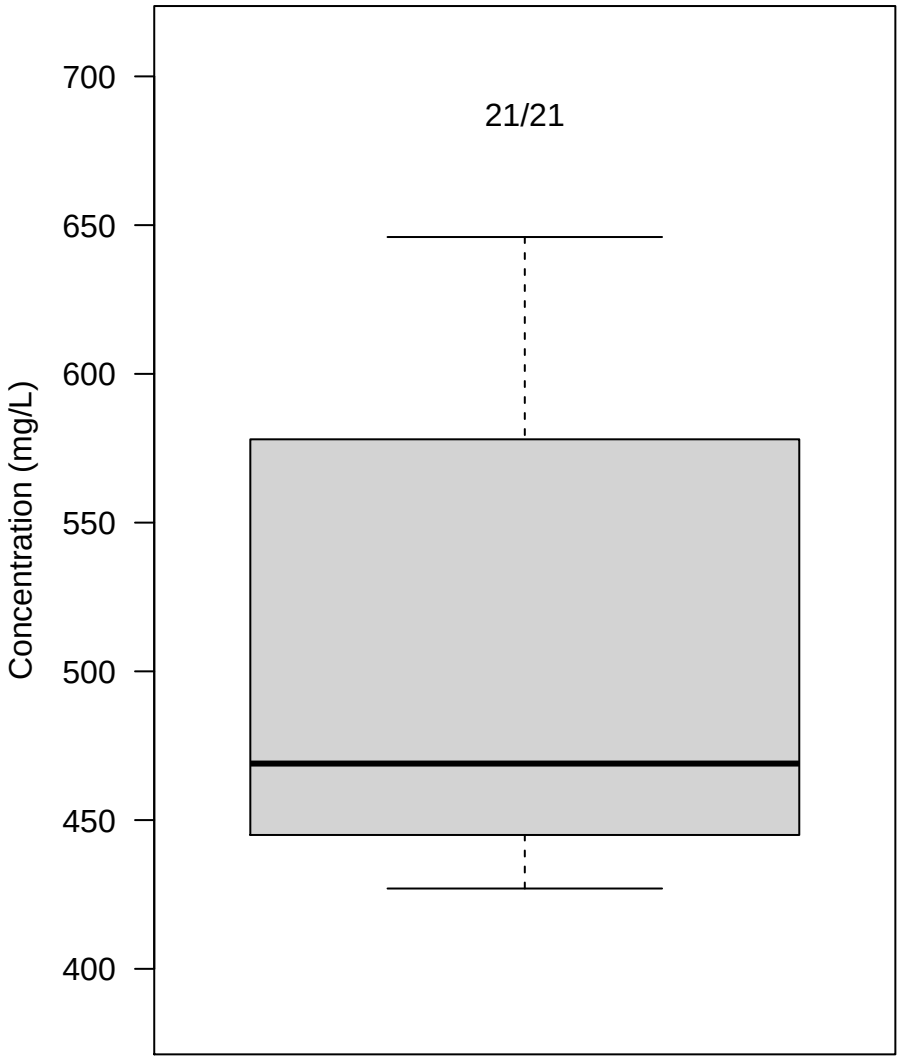
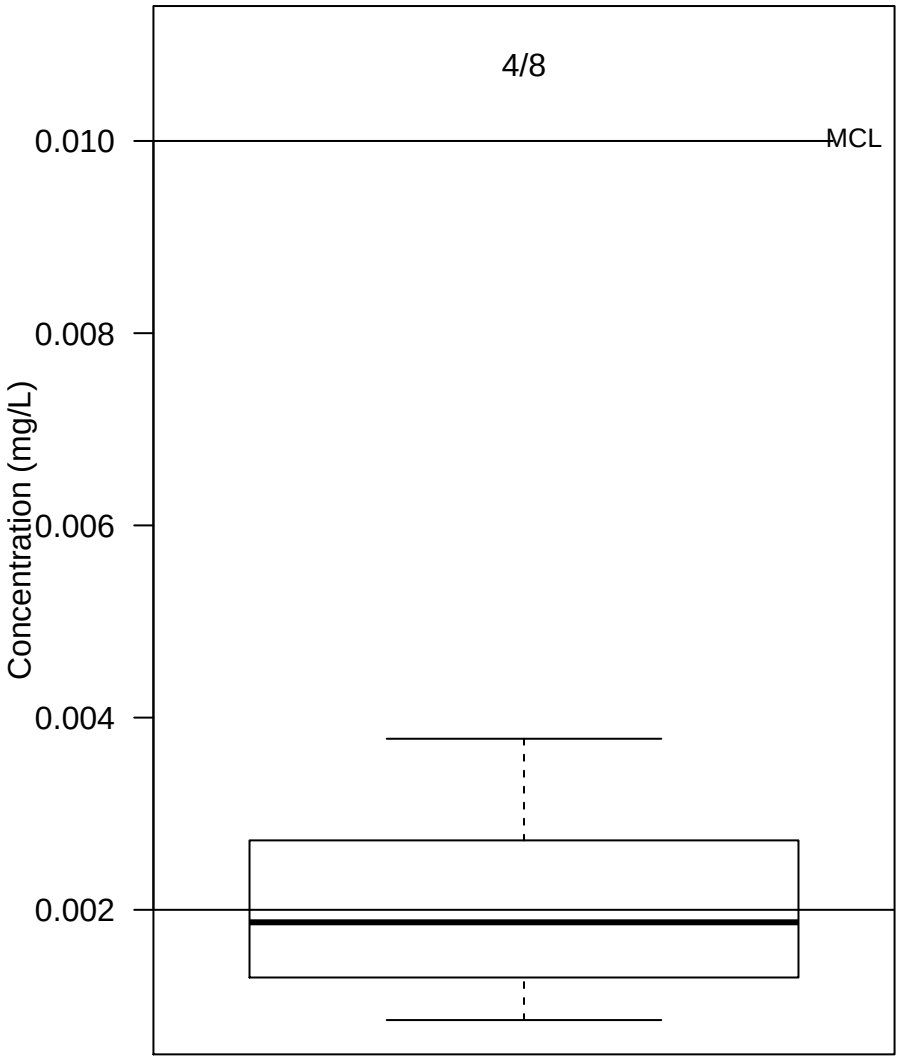


Figure C−117. Appendix III − Total Dissolved Solids



PDP−25

Figure C−118. Appendix IV − Arsenic



PDP−25

Figure C−119. Appendix IV − Barium

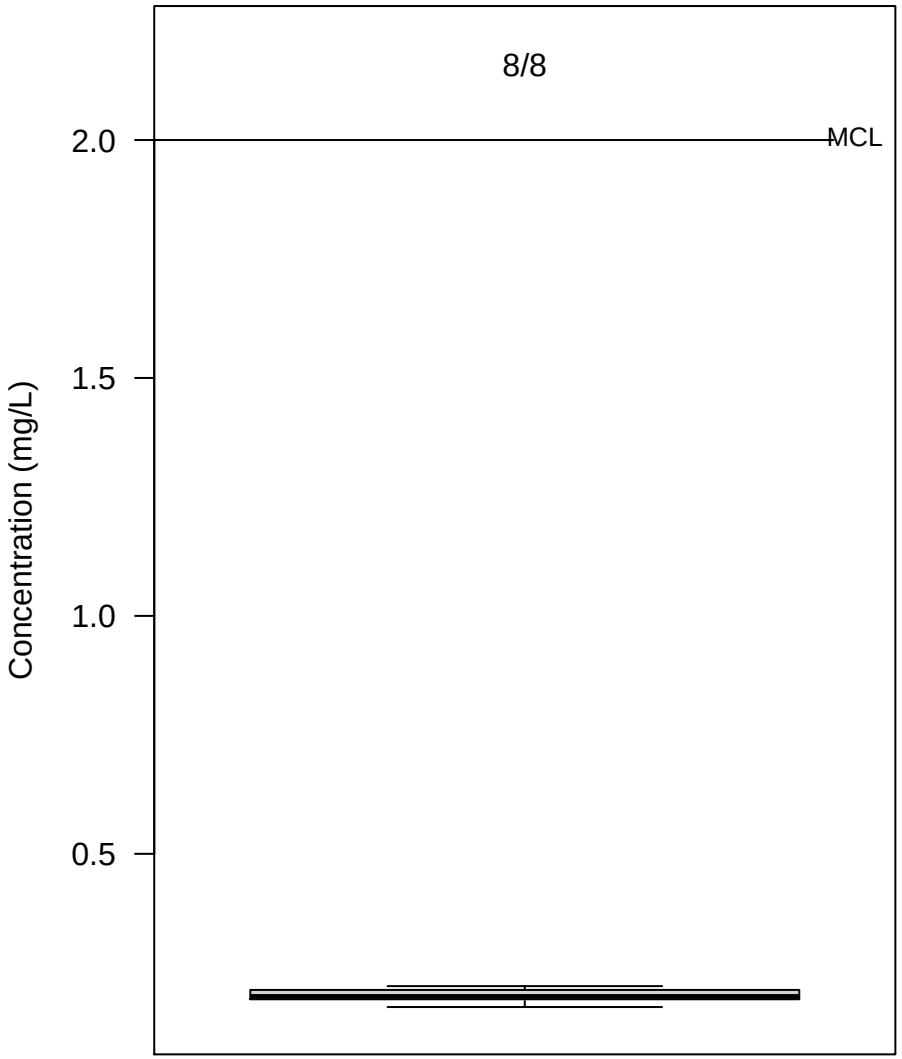


Figure C−120. Appendix IV − Chromium

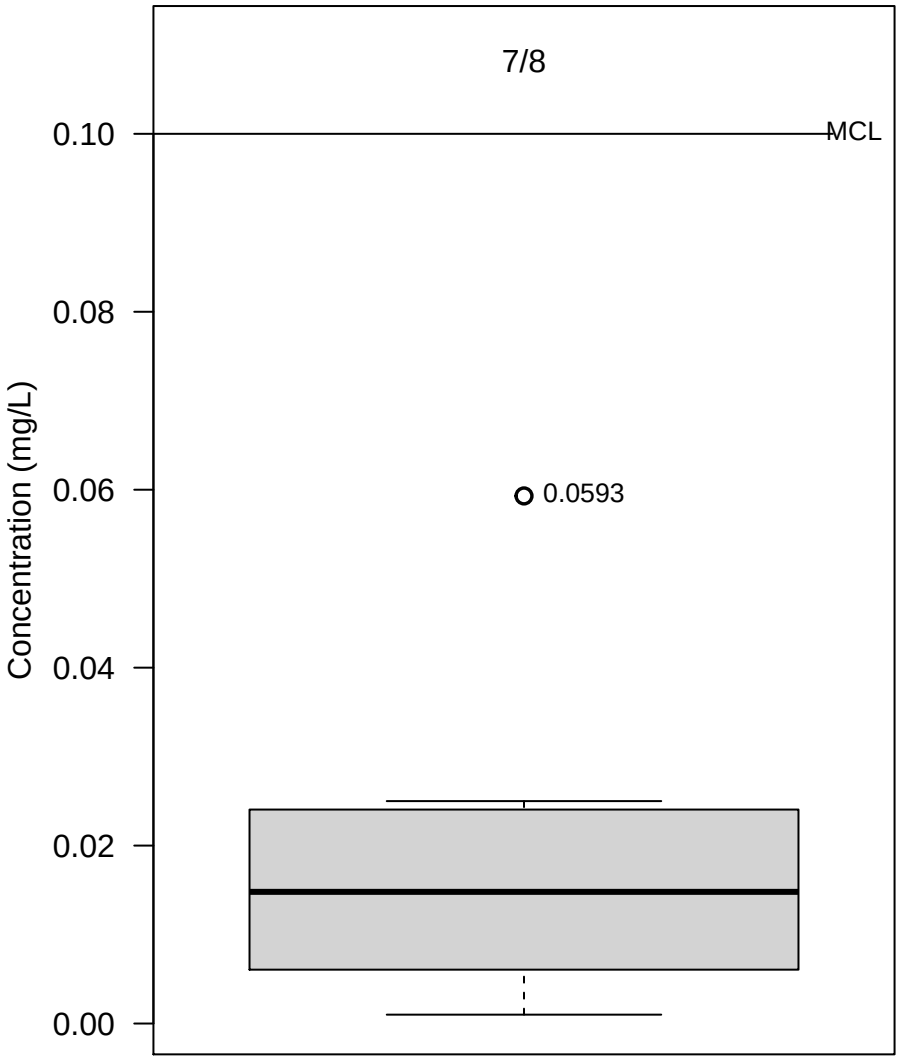
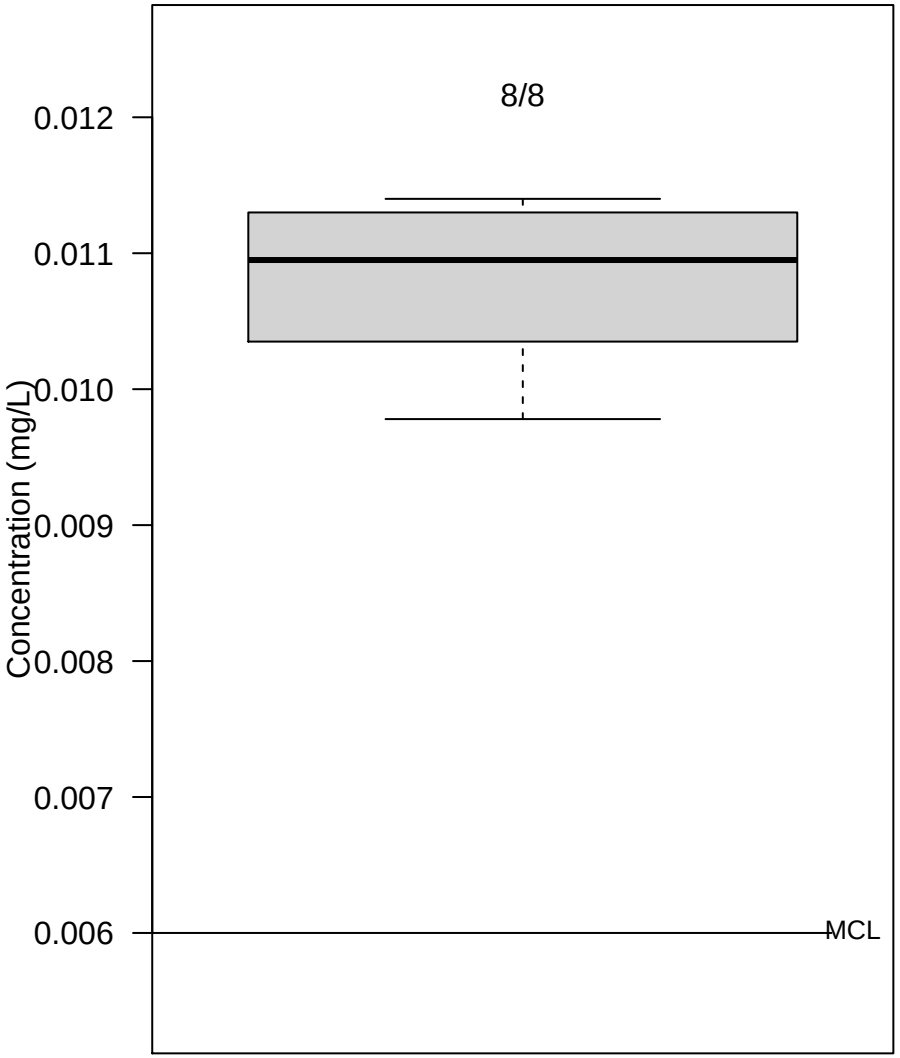
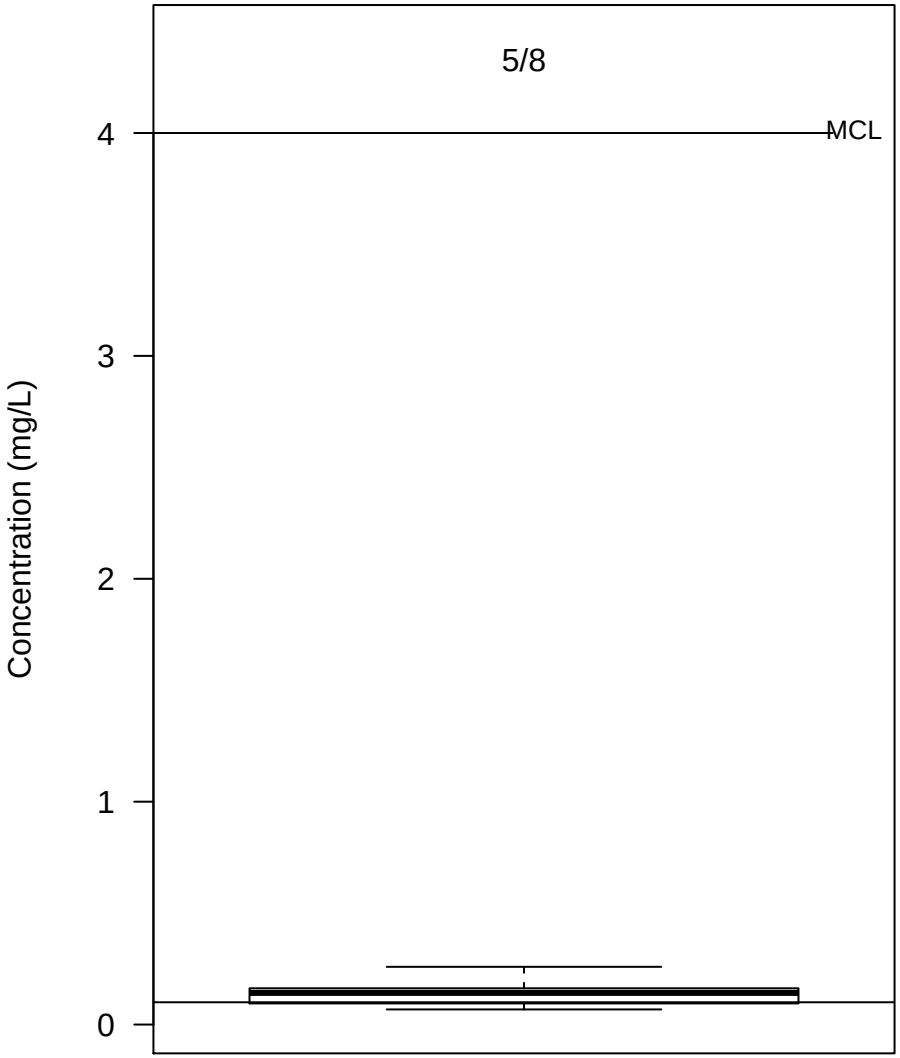


Figure C−121. Appendix IV − Cobalt



PDP−25

Figure C−122. Appendix IV − Fluoride



PDP−25

Figure C−123. Appendix IV − Lithium

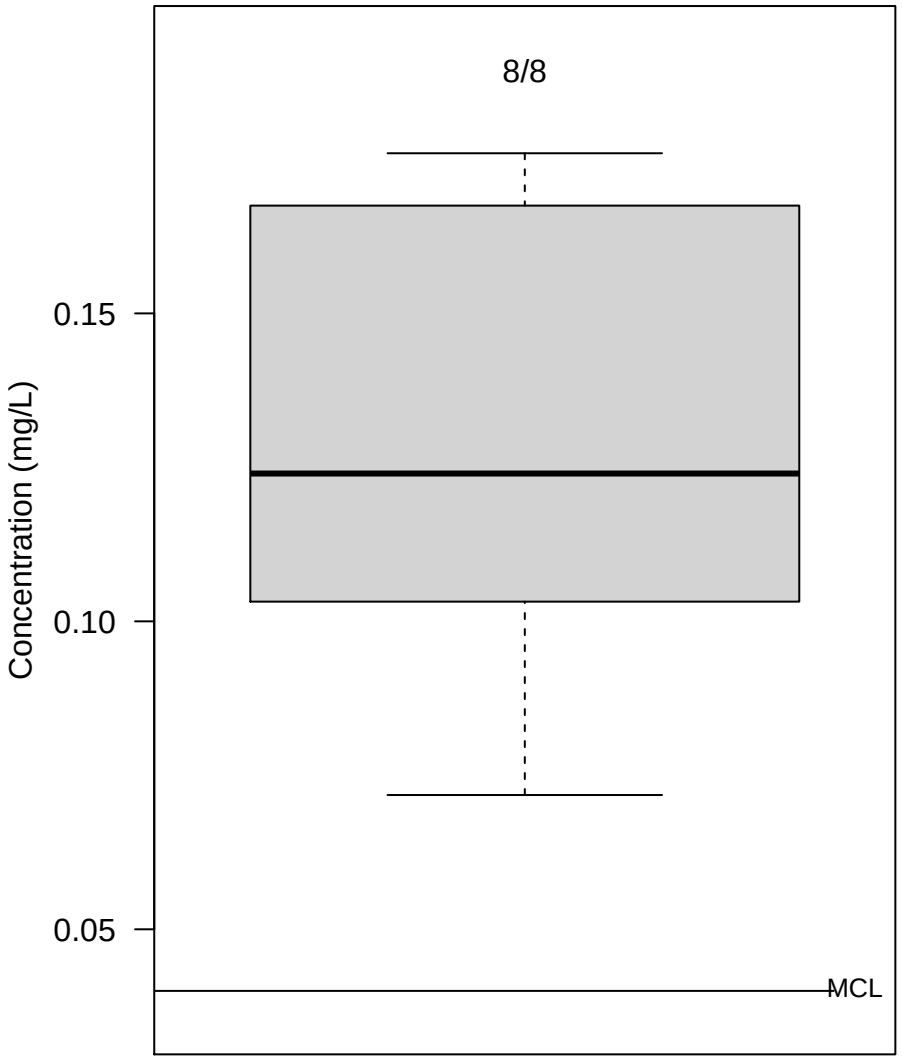


Figure C−124. Appendix IV − Radium−226 + Radium−228

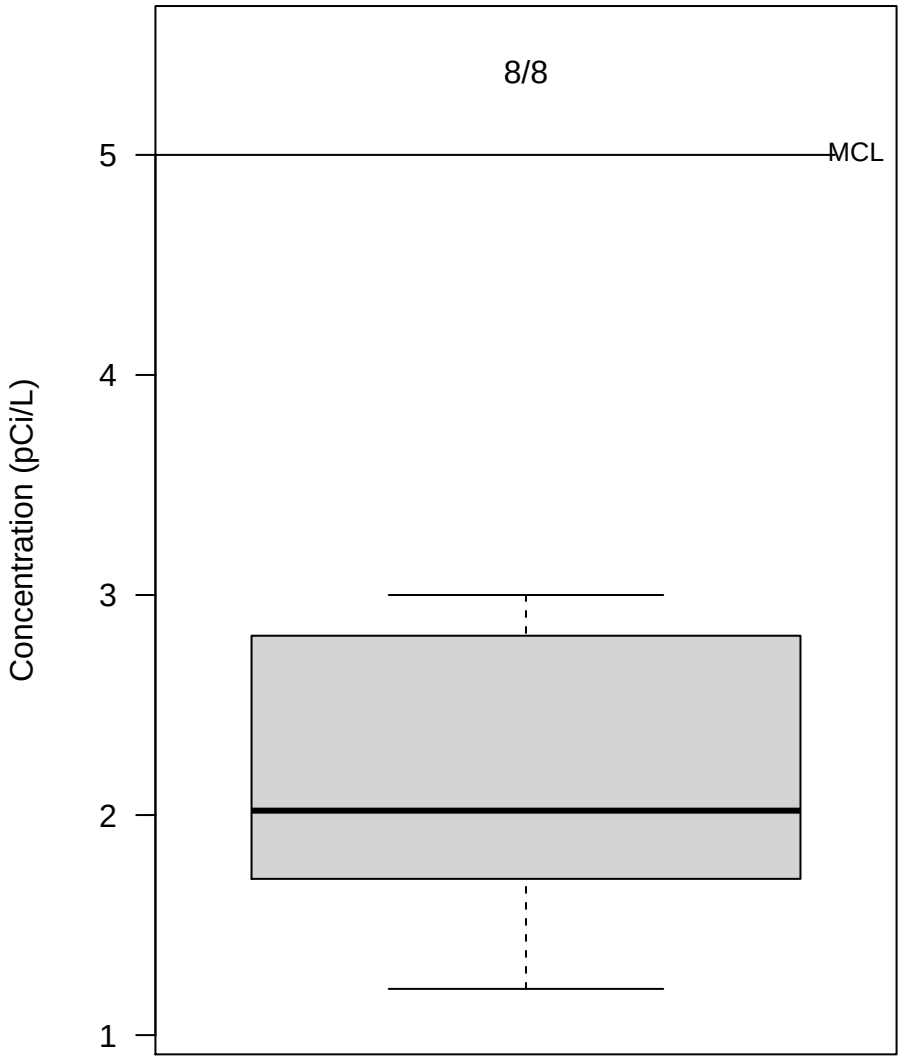
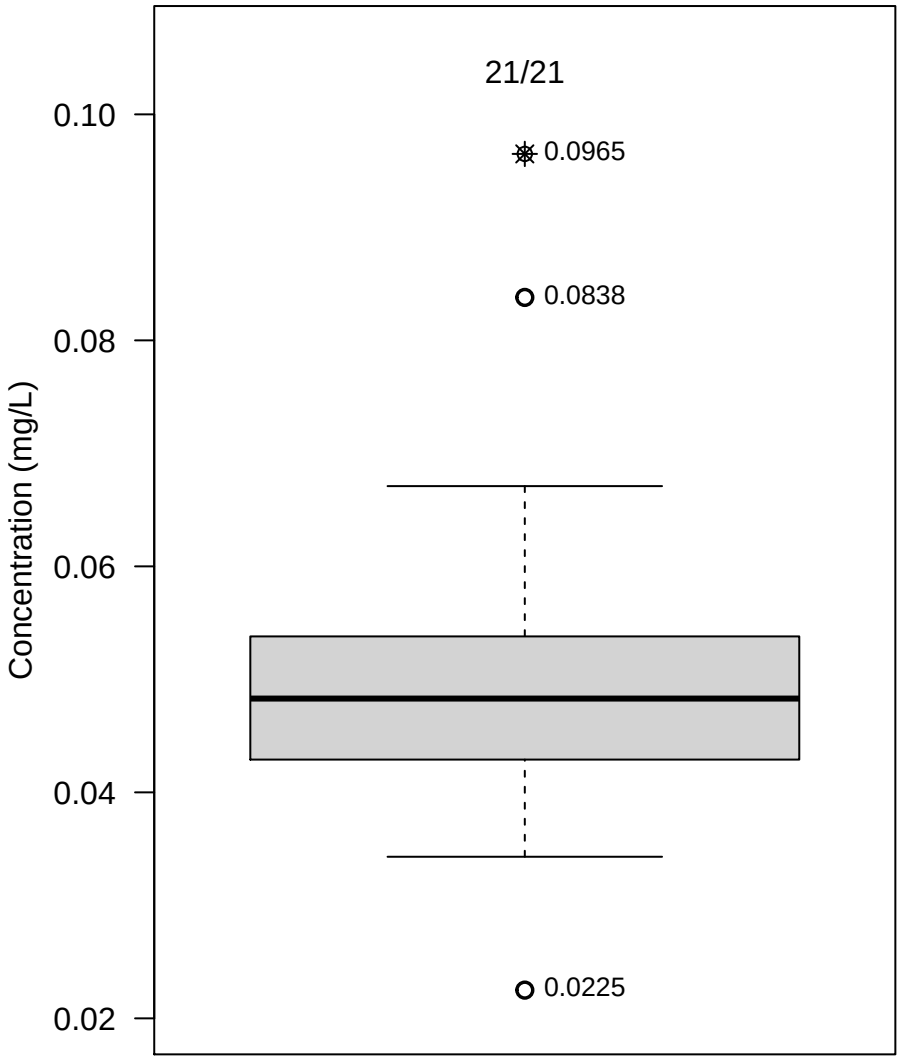
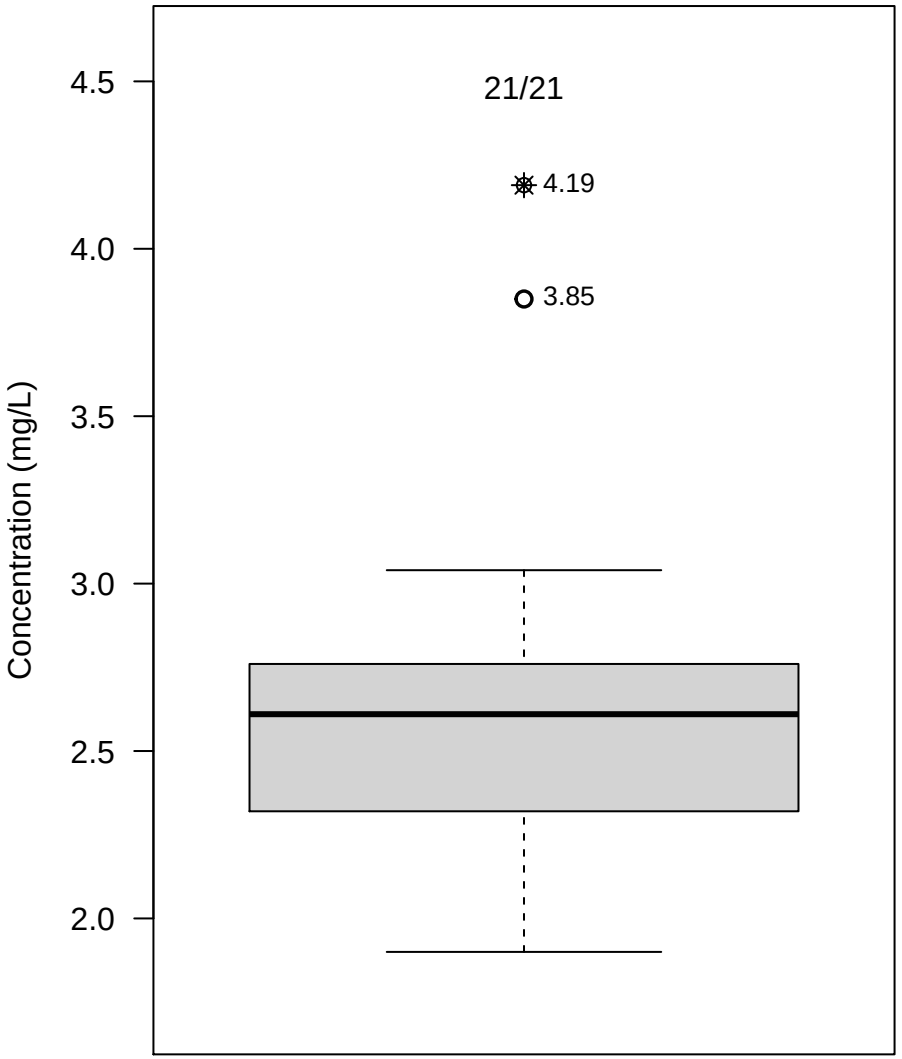


Figure C−125. Appendix III − Boron



PDP−26

Figure C−126. Appendix III − Calcium



PDP−26

Figure C−127. Appendix III − Chloride

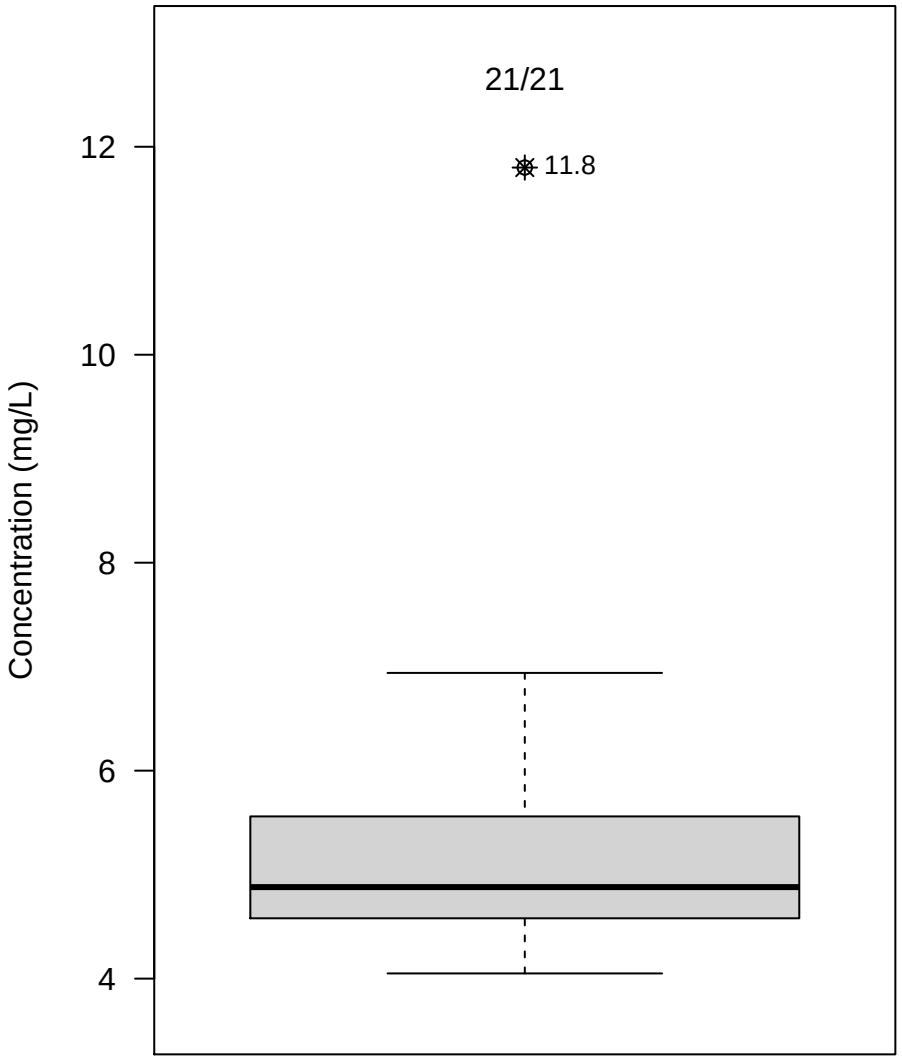


Figure C−128. Appendix III − Fluoride

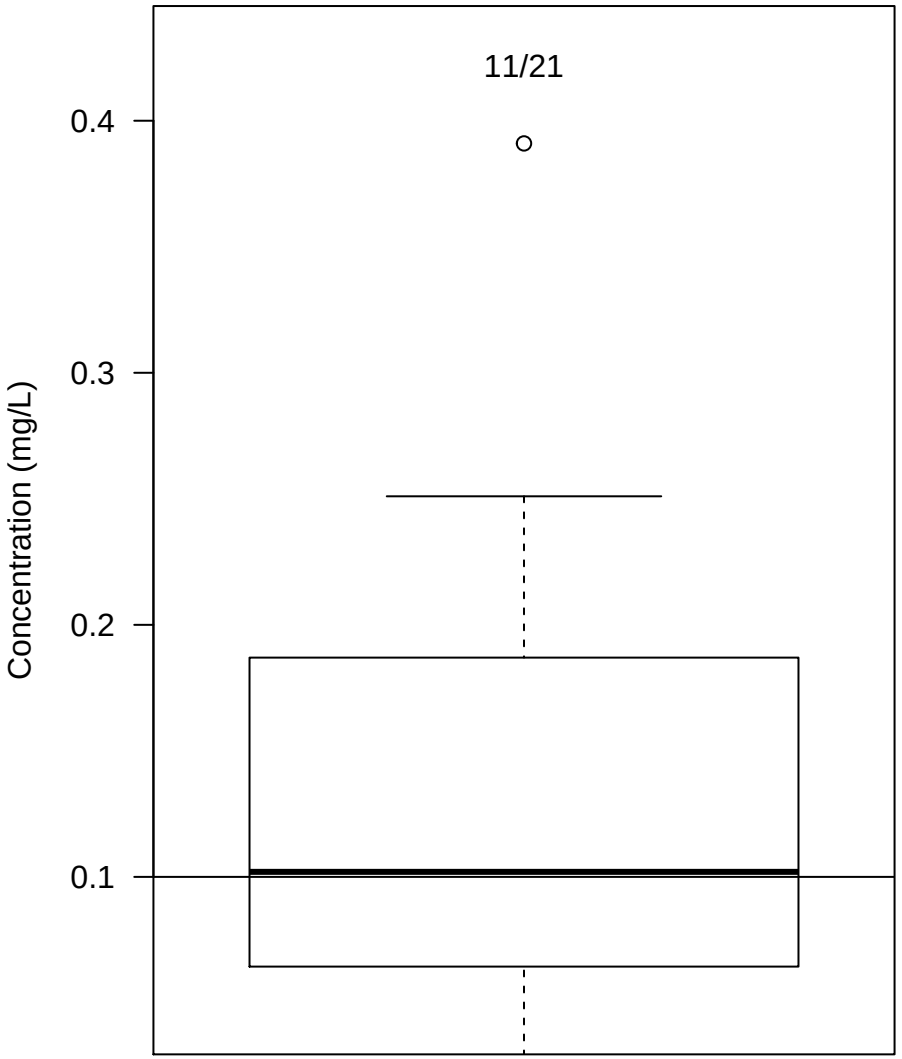


Figure C−129. Appendix III − field.pH

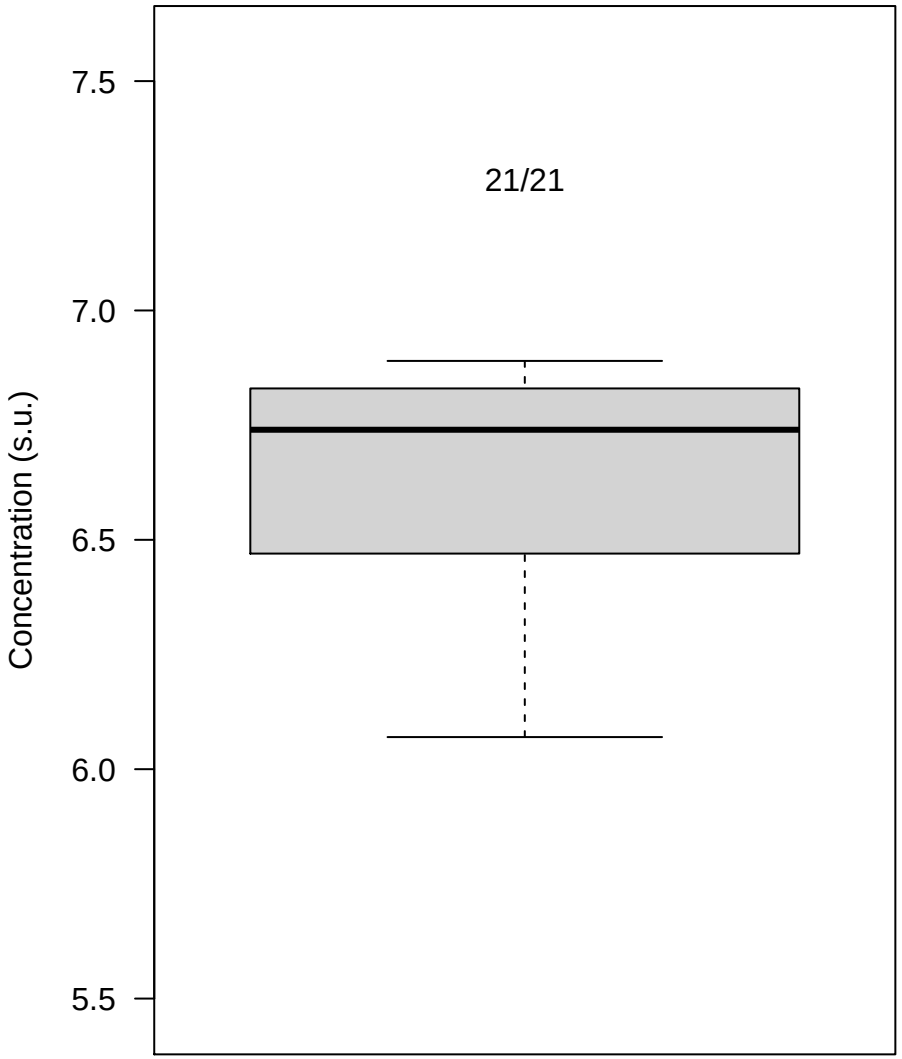


Figure C−130. Appendix III − Sulfate

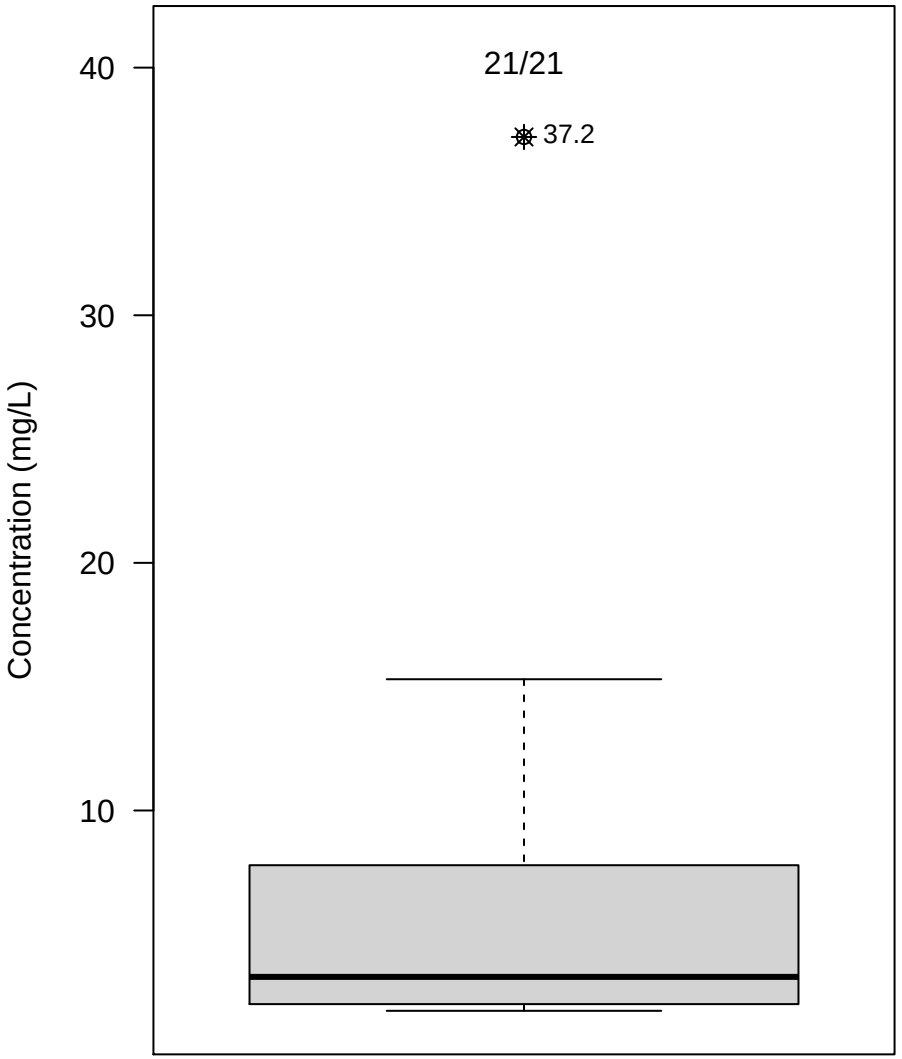
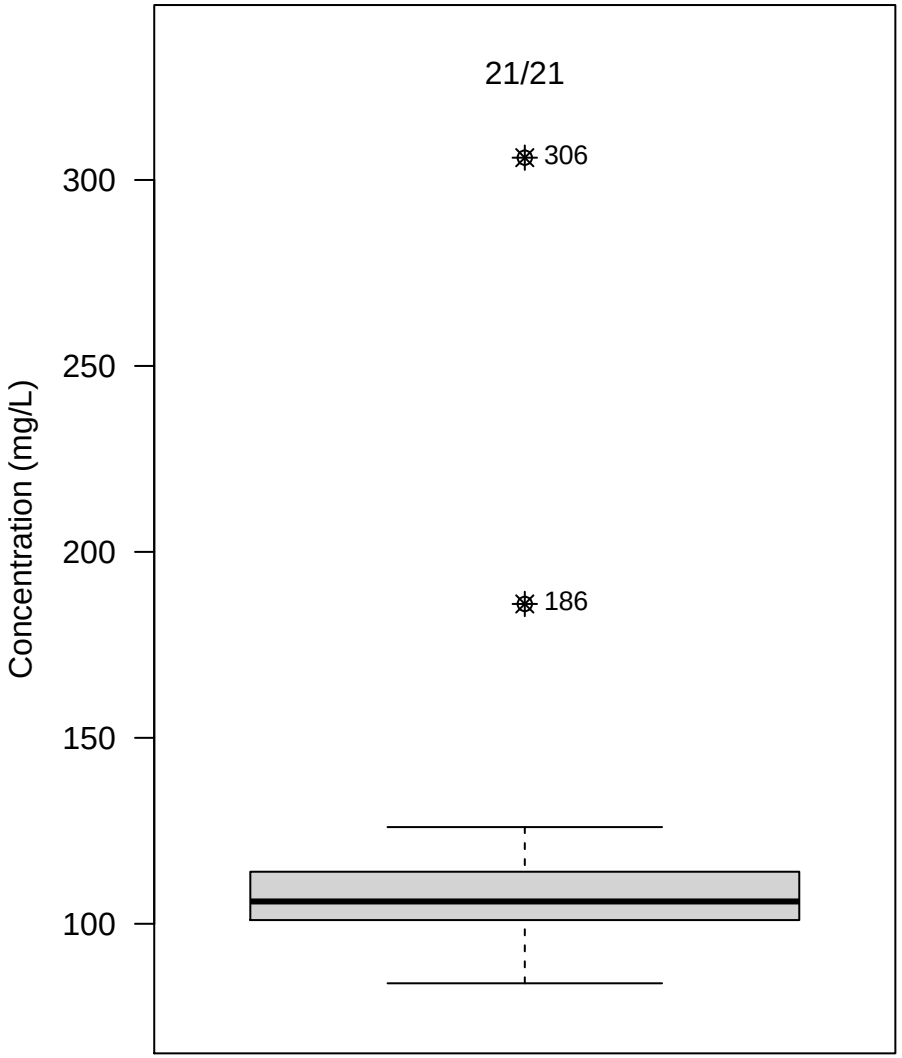
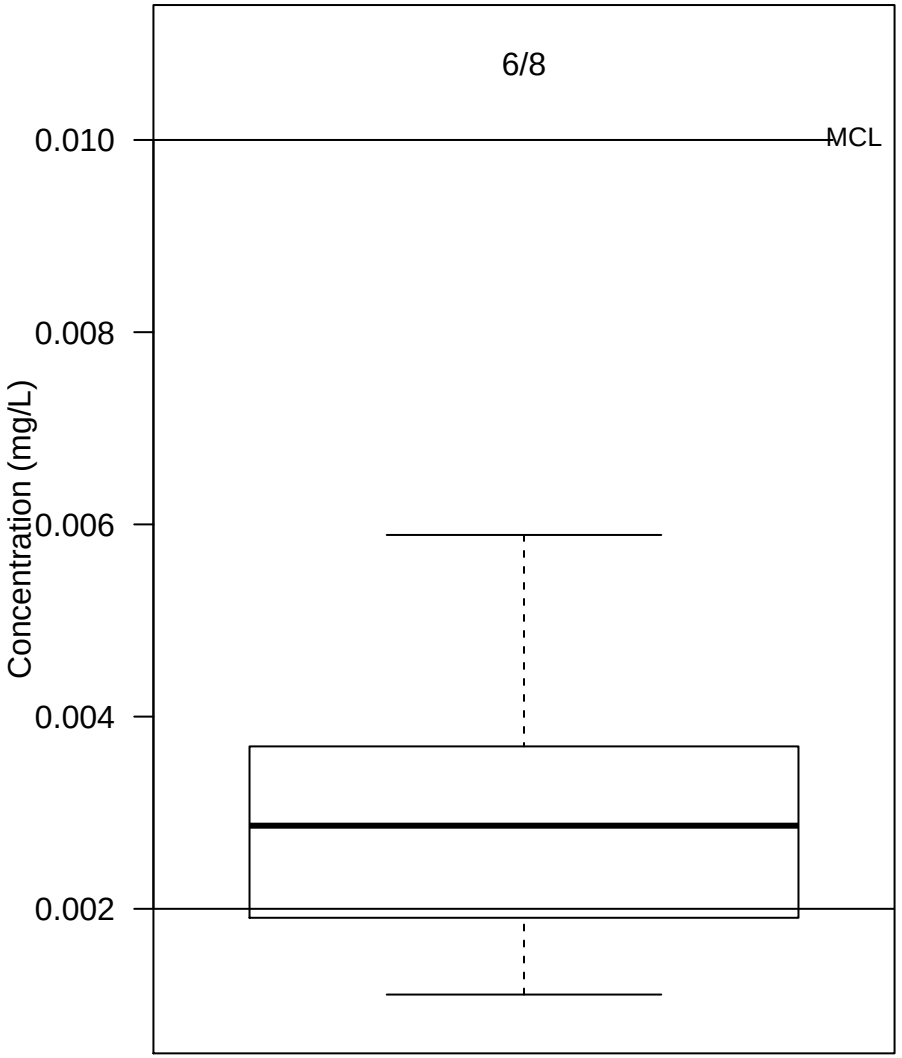


Figure C−131. Appendix III − Total Dissolved Solids



PDP−26

Figure C−132. Appendix IV − Arsenic



PDP−26

Figure C−133. Appendix IV − Barium

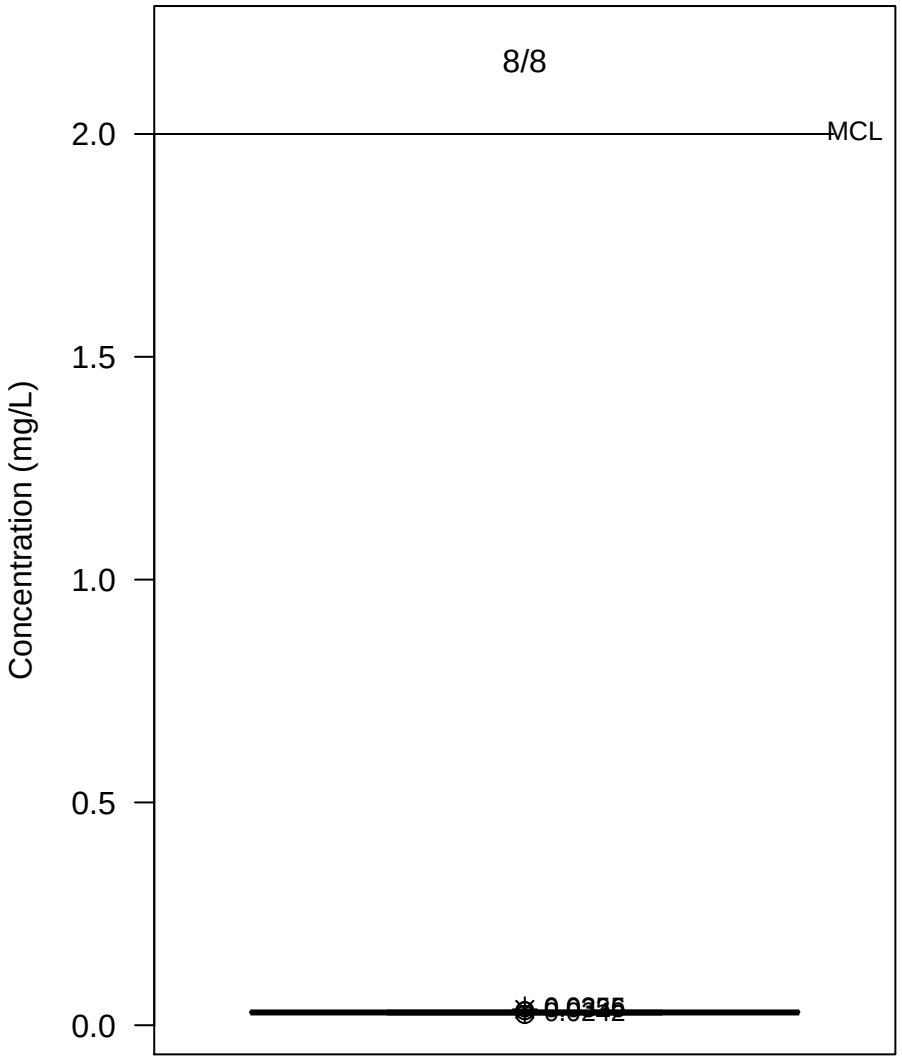


Figure C−134. Appendix IV − Cobalt

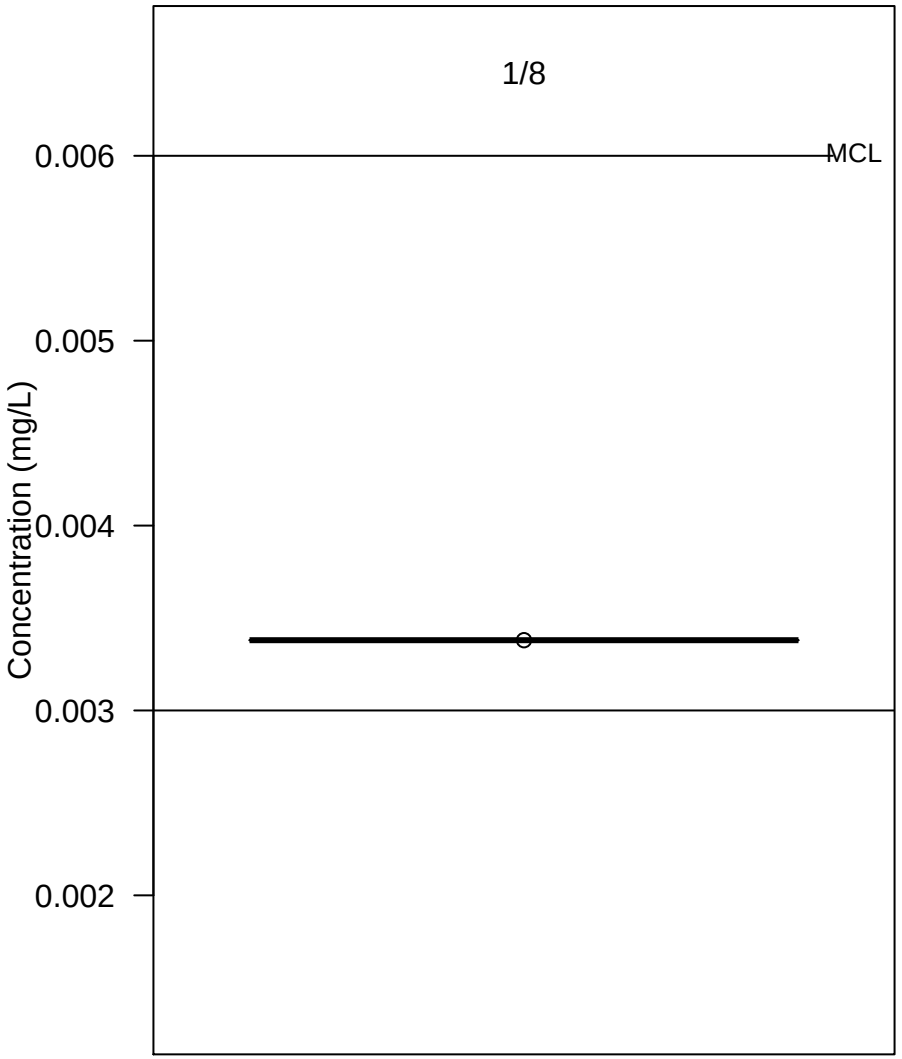


Figure C−135. Appendix IV − Fluoride

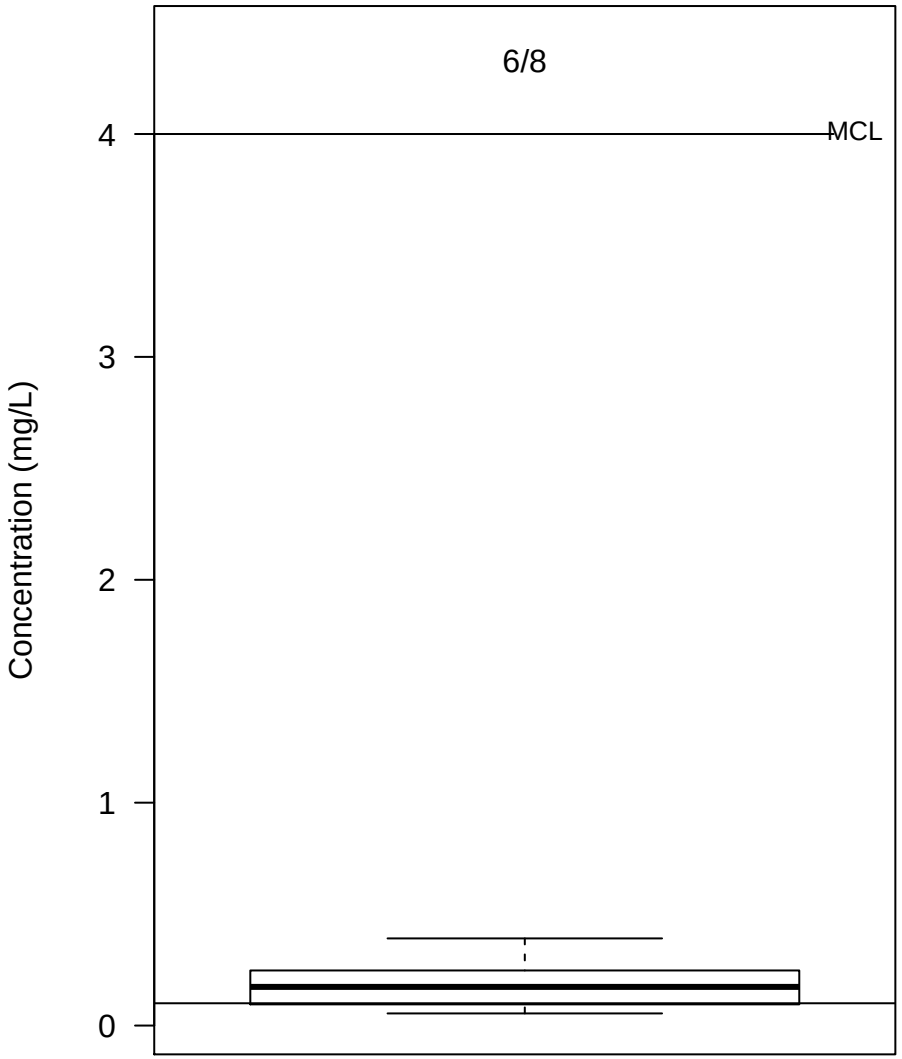


Figure C−136. Appendix IV − Lead

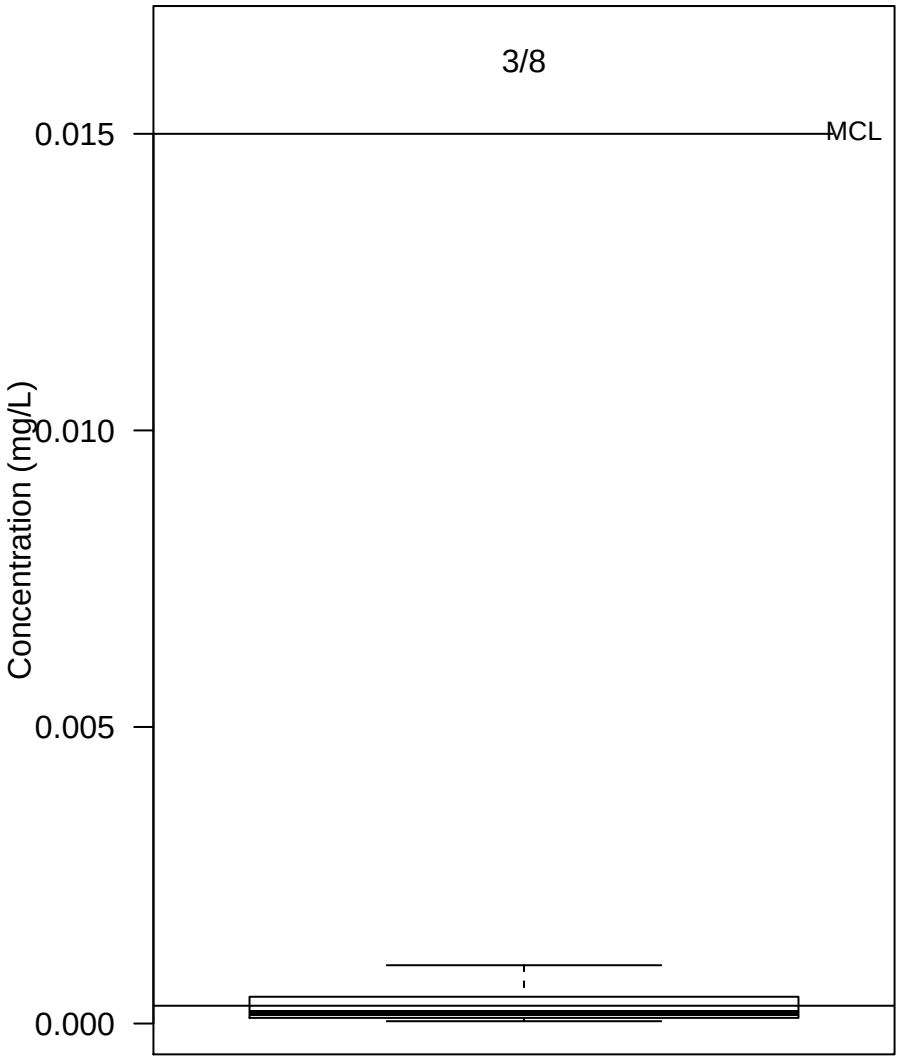
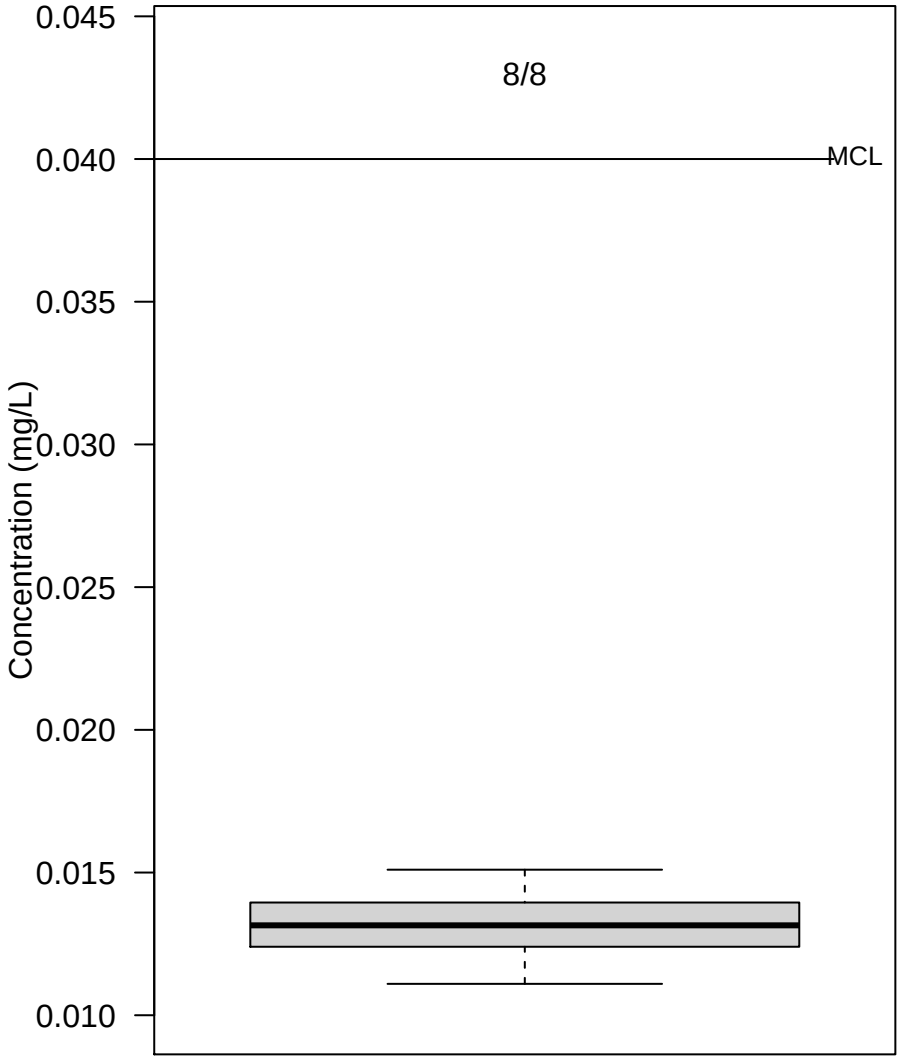
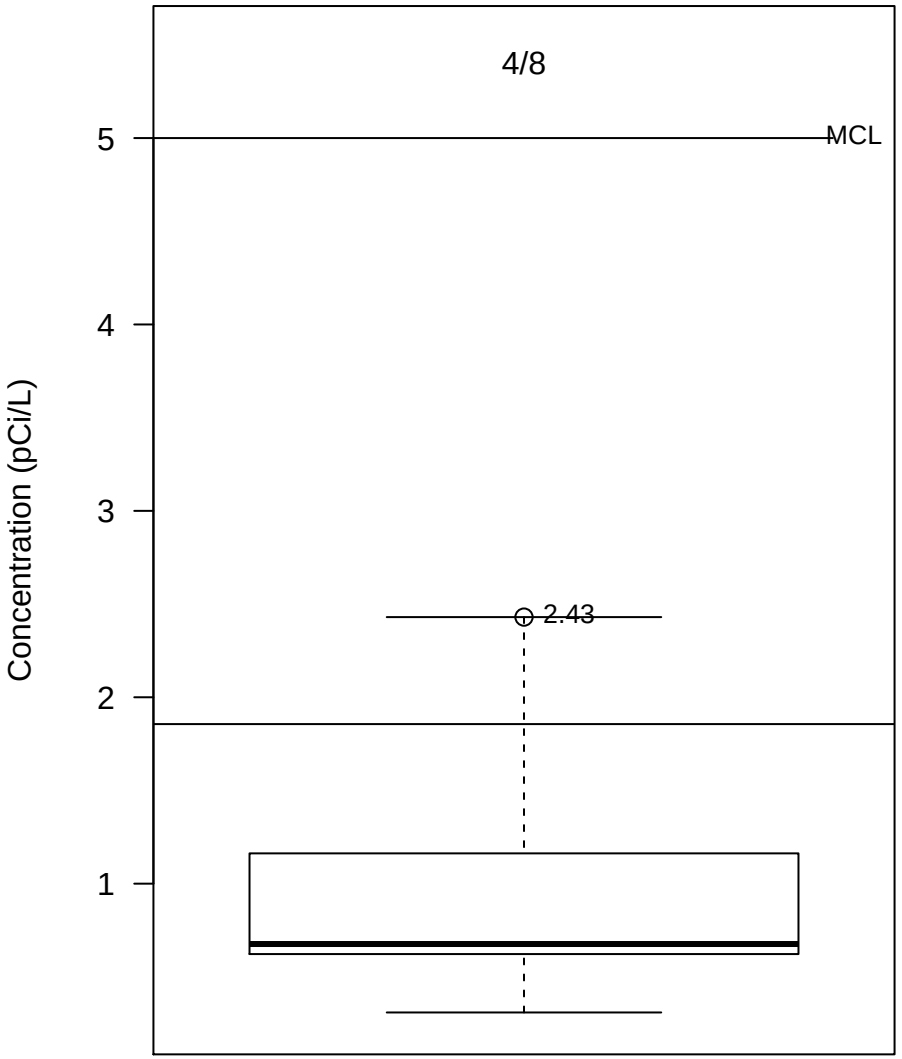


Figure C−137. Appendix IV − Lithium

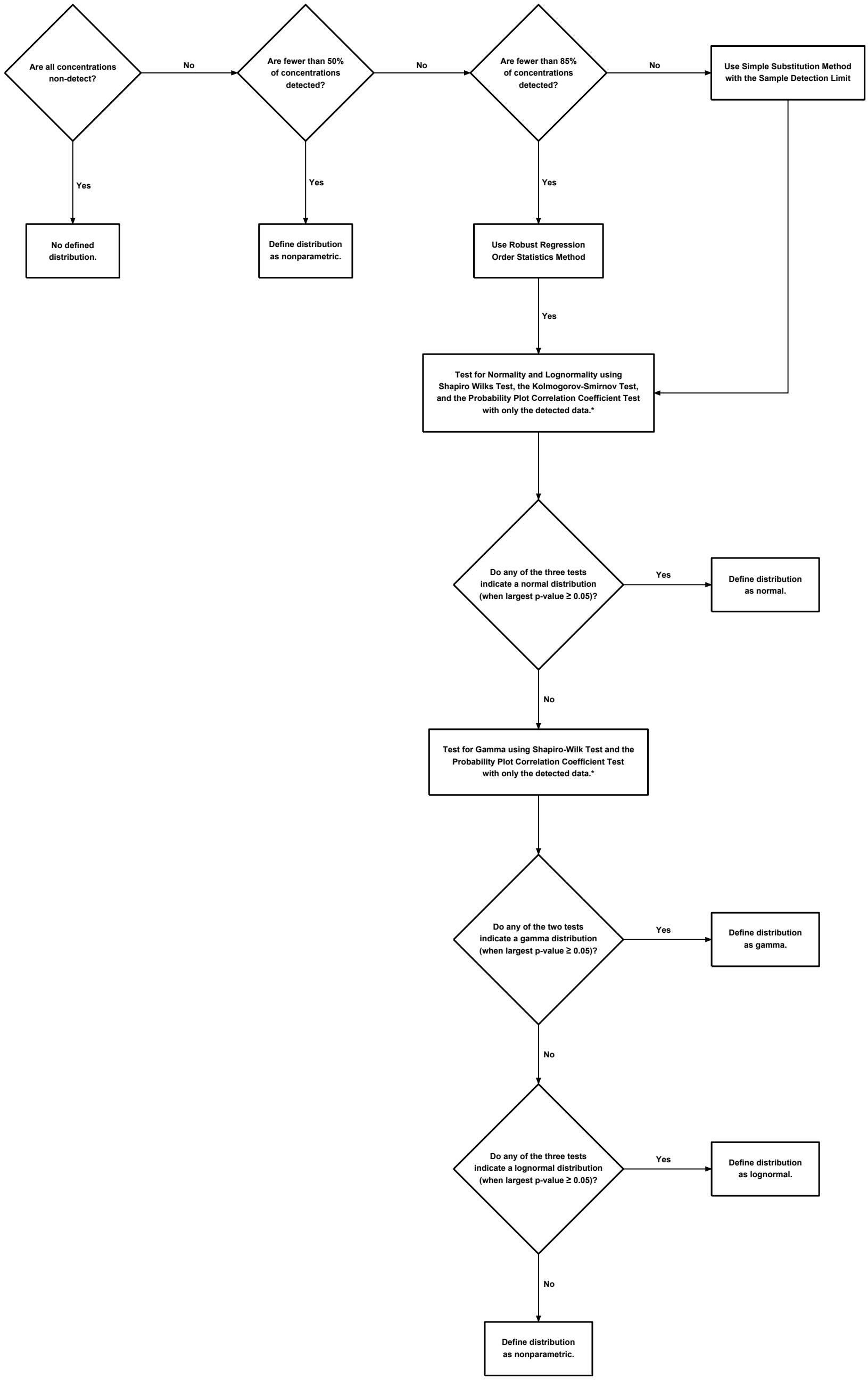


PDP−26

Figure C−138. Appendix IV − Radium−226 + Radium−228



PDP−26



Note:

* - Distributional tests can not be performed for the following cases:

1. For a data group with fewer than five detected samples, the Kolmogorov-Smirnov Test and the Probability Plot Correlation Coefficient Test can not be performed using only the detected concentrations.
2. For a data group with fewer than four detected samples, the Shapiro-Wilks Test can not be performed using only the detected concentrations.

Figure C-139

PROCESS FOR DEFINING A DISTRIBUTION FOR A DATA SET

PROJECT: 5164E	BY: AJD	REVISIONS
DATE: jAN. 2019	CHECKED: PJB	

BULLOCK, BENNETT & ASSOCIATES, LLC

Bullock, Bennett & Associates, LLC

2020 Annual Groundwater Monitoring and Corrective Action Report

Martin Lake Steam Electric Station A1 Area Landfill - Panola County, Texas

Prepared for:

Luminant Generation Company LLC

Prepared by:

Golder Associates Inc.

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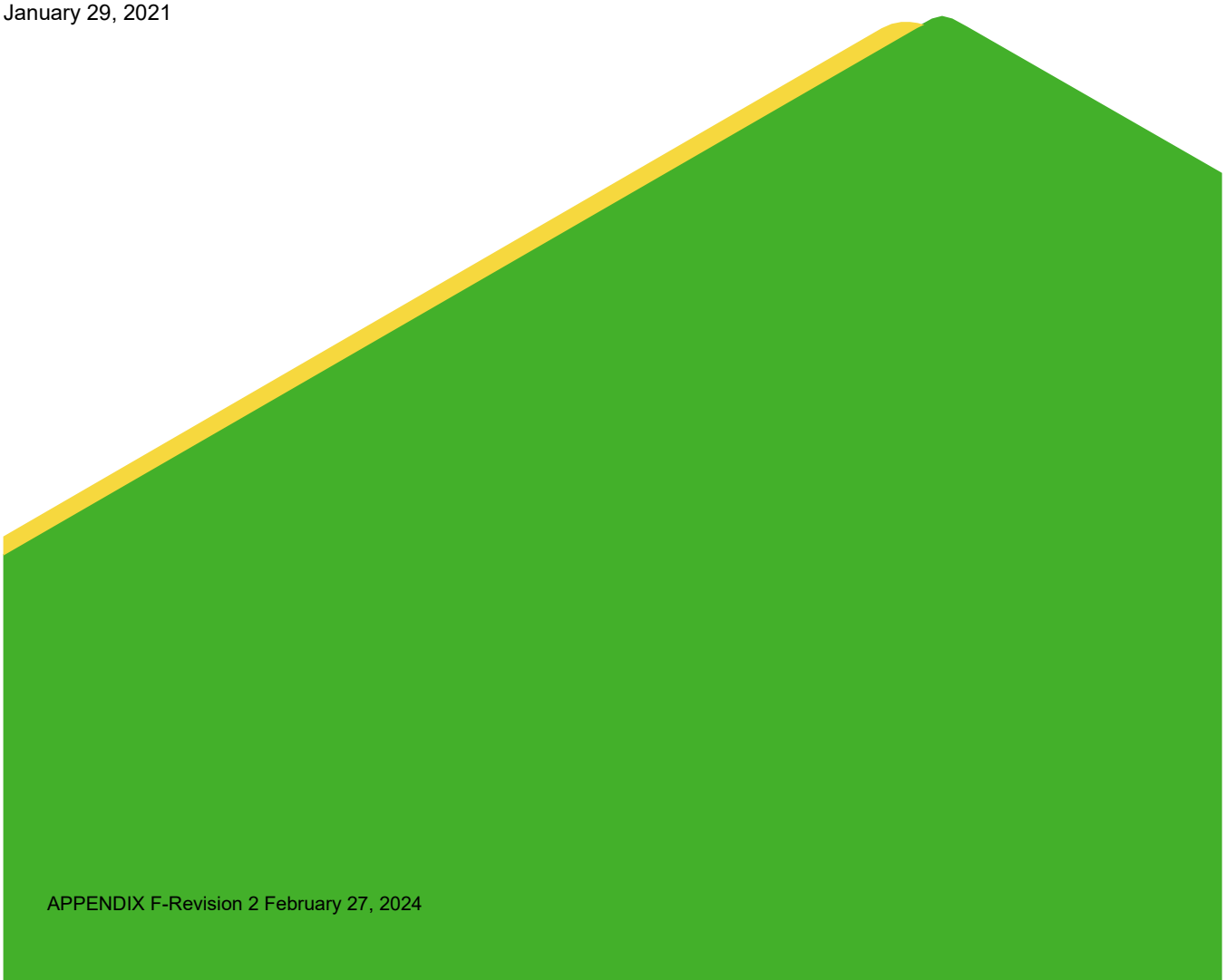
January 29, 2021



APPENDIX F-Revision 2 February 27, 2024

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ACRONYMS AND ABBREVIATIONS

ACM	Assessment of Corrective Measures
CCR	Coal Combustion Residuals
CFR	Code of Federal Regulations
GWPS	Groundwater Protection Standard
MCL	Maximum Concentration Level
mg/L	Milligrams per Liter
MLSES	Martin Lake Steam Electric Station
NA	Not Applicable
SSI	Statistically Significant Increase
SSL	Statistically Significant Level
USEPA	United States Environmental Protection Agency

EXECUTIVE SUMMARY

Golder Associates, Inc. (Golder) has prepared this report on behalf of Luminant Generation Company LLC (Luminant) to satisfy the 2020 annual groundwater monitoring and corrective action reporting requirements of the Coal Combustion Residuals (CCR) Rule (40 CFR 257, Subpart D) for the A1 Area Landfill (the "CCR unit") at the Martin Lake Steam Electric Station (MLSES) in Panola County, Texas. The CCR unit and CCR monitoring well network are shown on Figure 1.

At the beginning and end of the 2020 reporting period, the CCR unit was operating under an Assessment Monitoring Program as described in 40 CFR § 257.95. The Assessment Monitoring Program was established on July 16, 2018. Concentrations of Appendix IV constituents at statistically significant levels (SSLs) above groundwater protection standards (GWPSs) were identified in January 2019 for arsenic, barium, cobalt, and lithium at the A1 Area Landfill. An Assessment of Corrective Measures (ACM) was initiated on April 8, 2019 and was completed on September 5, 2019 in accordance with 40 CFR § 257.96 to address the Appendix IV SSLs. A public meeting was held on November 13, 2019, pursuant to 40 CFR § 257.96(e), to discuss the results of the ACM. Luminant has not yet selected the remedy for parameters detected at SSLs above GWPSs from the potential corrective measure alternatives proposed in the ACM in accordance with 40 CFR §257.97. Further evaluation of potential remedies is on-going.

During 2020, SSLs above GWPSs were observed at A1 Area Landfill for cobalt in wells BMW-20 and BMW-27.

1.0 INTRODUCTION

The CCR Rule (40 CFR 257 Subpart D - *Standards for the Receipt of Coal Combustion Residuals in Landfills and Surface Impoundments*) has been promulgated by the United States Environmental Protection Agency (USEPA) to regulate the management and disposal of CCRs as solid waste under Resource Conservation and Recovery Act (RCRA) Subtitle D. For existing CCR landfills and surface impoundments, the CCR Rule requires that the owner or operator prepare an annual groundwater monitoring and corrective action report to document the status of the groundwater monitoring and corrective action program for the CCR unit for the previous calendar year. Per 40 CFR 257.90(e) of the CCR Rule, the report should contain the following information, to the extent available:

(1) A map, aerial image, or diagram showing the CCR unit and all background (or upgradient) and downgradient monitoring wells, to include the well identification numbers, that are part of the groundwater monitoring program for the CCR unit;

(2) Identification of any monitoring wells that were installed or decommissioned during the preceding year, along with a narrative description of why those actions were taken;

(3) In addition to all the monitoring data obtained under §§ 257.90 through 257.98, a summary including the number of groundwater samples that were collected for analysis for each background and downgradient well, the dates the samples were collected, and whether the sample was required by the detection monitoring or assessment monitoring programs;

(4) A narrative discussion of any transition between monitoring programs (*e.g.,* the date and circumstances for transitioning from detection monitoring to assessment monitoring in addition to identifying the constituent(s) detected at a statistically significant increase over background levels); and

(5) Other information required to be included in the annual report as specified in §§ 257.90 through 257.98.

(6) A section at the beginning of the annual report that provides an overview of the current status of groundwater monitoring and corrective action programs for the CCR unit. At a minimum, the summary must specify all of the following:

(i) At the start of the current annual reporting period, whether the CCR unit was operating under the detection monitoring program in § 257.94 or the assessment monitoring program in § 257.95;

(ii) At the end of the current annual reporting period, whether the CCR unit was operating under the detection monitoring program in § 257.94 or the assessment monitoring program in § 257.95;

(iii) If it was determined that there was a statistically significant increase over background for one or more constituents listed in Appendix III to this part pursuant to § 257.94(e):

(A) Identify those constituents listed in Appendix III to this part and the names of the monitoring wells associated with such an increase; and

(B) Provide the date when the assessment monitoring program was initiated for the CCR unit.

(iv) If it was determined that there was a SSL above the groundwater protection standard for one or more constituents listed in Appendix IV to this part pursuant to § 257.95(g) include all of the following:

(A) Identify those constituents listed in Appendix IV to this part and the names of the monitoring wells associated with such an increase;

(B) Provide the date when the assessment of corrective measures was initiated for the CCR unit;

(C) Provide the date when the public meeting was held for the assessment of corrective measures for the CCR unit; and

(D) Provide the date when the assessment of corrective measures was completed for the CCR unit.

(v) Whether a remedy was selected pursuant to § 257.97 during the current annual reporting period, and if so, the date of remedy selection; and

(vi) Whether remedial activities were initiated or are ongoing pursuant to § 257.98 during the current annual reporting period.

2.0 MONITORING AND CORRECTIVE ACTION PROGRAM STATUS

Golder collected the initial Detection Monitoring Program groundwater samples from the A1 Area Landfill CCR monitoring well network in September 2017. The evaluation of those data was completed in 2018 using procedures described in the Statistical Analysis Plan (PBW, 2017) to identify statistically significant increases (SSIs) of Appendix III parameters over background concentrations. The Detection Monitoring Program sampling dates and parameters are summarized in the following table:

Detection Monitoring Program Summary

Sampling Dates	Parameters	SSIs	Assessment Monitoring Program Established
September 25-26, 2017	Appendix III	Yes	July 16, 2018

Alternate source evaluations were inconclusive for one or more of the SSIs. Consequently, an Assessment Monitoring Program was initiated and established for the A1 Area Landfill in July 2018 in accordance with 40 CFR § 257.94(e)(2). Golder collected the initial Assessment Monitoring Program groundwater samples in June 2018. Subsequent Assessment Monitoring Program sampling events have been conducted on a semi-annual basis, as required by the CCR Rule.

The statistical background prediction limits used to assess Appendix III data and the GWPSs used to assess Appendix IV data are summarized in Tables 1 and 2, respectively. Appendix III and Appendix IV analytical data are summarized in Tables 3 and 4, respectively. Using the Appendix IV data collected during the assessment period through September 2018, SSLs above GWPSs were initially identified for arsenic, barium, cobalt, and lithium in 2019. Notification of these SSLs was placed in the operating record on February 6, 2019 and was subsequently placed on the public website in accordance with 40 CFR § 257.107(d). An ACM was initiated on April 8, 2019 pursuant to §257.95(g). A justification letter for a 60-day extension due to site-specific circumstances that delayed work on the ACM was certified on July 3, 2019 in accordance with 40 CFR §257.96(a). A copy of the extension justification letter was provided in the 2019 Annual Groundwater Monitoring and Corrective Action Report. The ACM was completed in September 2019 (Golder 2019) for the parameters detected at SSLs above GWPSs (arsenic, barium, cobalt, and lithium), pursuant to 40 CFR § 257.96.

Statistical analysis of the 2020 data was performed in accordance with the Statistical Analysis Plan for CCR Groundwater Monitoring (PBW 2017) and the USEPA Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities-Unified Guidance (USEPA 2009). The statistical analysis included an evaluation of confidence intervals for each of the Appendix IV parameter data sets to evaluate whether constituent concentrations were present at concentrations above GWPSs. Cobalt was the only Appendix IV parameter identified at an SSL above

GWPSs during the 2020 Assessment Monitoring period. Notification of the cobalt SSL based on the Appendix IV data collected through May 2020 was placed in the operating record on September 16, 2020 and was subsequently placed on the public website in accordance with 40 CFR § 257.107(d).

The Assessment Monitoring Program sampling dates and parameters are summarized in the following table:

Assessment Monitoring Program Summary

Sampling Dates	Analytical Data Receipt Date	Parameters Collected	SSL(s)	SSL(s) Determination Date	Corrective Measures Assessment Initiated	Corrective Measures Assessment Completed
June 11-12, 2018	July 21, 2018	Appendix III Appendix IV	NA	NA	NA	NA
September 13-14, 2018	October 12, 2018	Appendix III Appendix IV	As, Ba, Co, Li	January 7, 2019	April 8, 2019	September 5, 2019
May 15, 2019	June 18, 2019	Appendix III Appendix IV	Co	September 5, 2019	NA	NA
September 4 and 9, 2019	October 14, 2019	Appendix III Appendix IV	Co	January 8, 2020	NA	NA
May 20-22, 2020	June 24, 2020	Appendix III Appendix IV	Co	August 17, 2020	NA	NA
September 29-30, 2020	October 27, 2020	Appendix III Appendix IV	Co	December 7, 2020	NA	NA

Notes:

NA: Not Applicable

3.0 KEY ACTIONS COMPLETED IN 2020

Assessment Monitoring Program groundwater monitoring events were completed in May and September 2020. The number of groundwater samples that were collected for analysis for each background and downgradient well, the dates the samples were collected, and the analytical results for the groundwater samples are summarized in Table 3 (Appendix III parameters) and Table 4 (Appendix IV parameters). A map showing the CCR unit and monitoring wells is provided as Figure 1. Upgradient/background well BMW-33, which was installed and sampled as part of the 2019 ACM evaluation, was included in the CCR monitoring program in 2020.

As noted in Section 2.0, an ACM for the Appendix IV parameters identified at SSLs above GWPSs in 2018 (arsenic, barium, cobalt, and lithium) was completed in September 2019. A public meeting was held on November 13, 2019, pursuant to 40 CFR § 257.96(e), to discuss the results of the ACM. Further evaluation is ongoing for purposes of selecting a remedy under 40 CFR. § 257.97.

4.0 PROBLEMS ENCOUNTERED AND ACTIONS TO RESOLVE THE PROBLEMS

No problems were encountered with the CCR groundwater monitoring program in 2020.

5.0 KEY ACTIVITIES PLANNED FOR 2021

The following key activities are planned for 2021:

- Continue the Assessment Monitoring Program in accordance with 40 CFR § 257.95.

- Complete statistical evaluation of Appendix IV analytical data from the downgradient wells and compare results to GWPSs to determine whether SSLs have occurred.

- If an SSL is identified, notification will be prepared as required under 40 CFR § 257.95(g), will placed in the operating record per 40 CFR § 257.105(h)(8), and will be subsequently placed on the public website per 40 CFR § 257.107(d). Potential alternate sources (i.e., a source other than the CCR unit caused the SSL or that the SSL resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality) will be evaluated. If an alternate source is identified to be the cause of the SSL, a written demonstration will be completed within 90 days of SSL detection and included in the Annual Groundwater Monitoring and Corrective Action Report.

- If an alternate source is not identified to be the cause of the SSL, the applicable requirements of 40 CFR § 257.94 through 257.98 as may apply will be met, including associated recordkeeping/notifications required by 40 CFR §§ 257.105 through 257.108.

- Luminant has not yet selected the remedy for parameters detected at SSLs above GWPSs from the potential corrective measure alternatives proposed in the ACM (Golder 2019). The remedy will be selected in accordance with 40 CFR §257.97 as soon as feasible after the public meeting required under 40 CFR §257.96(e). Further evaluation is ongoing for purposes of selecting a remedy under 40 CFR §257.97.

6.0 REFERENCES

Golder, 2019. CCR Assessment of Corrective Measures, Martin Lake Steam Electric Station – A1 Area Landfill, Panola County, Texas. September.

Pastor, Behling & Wheeler, LLC (PBW), 2017. Coal Combustion Residual Rule Statistical Analysis Plan, Martin Lake Steam Electric Station, A1 Area Landfill, Rusk County, Texas.

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Signature Page

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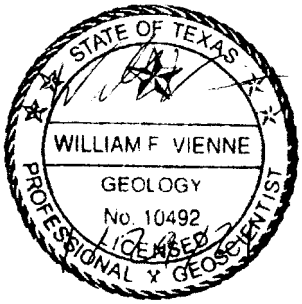

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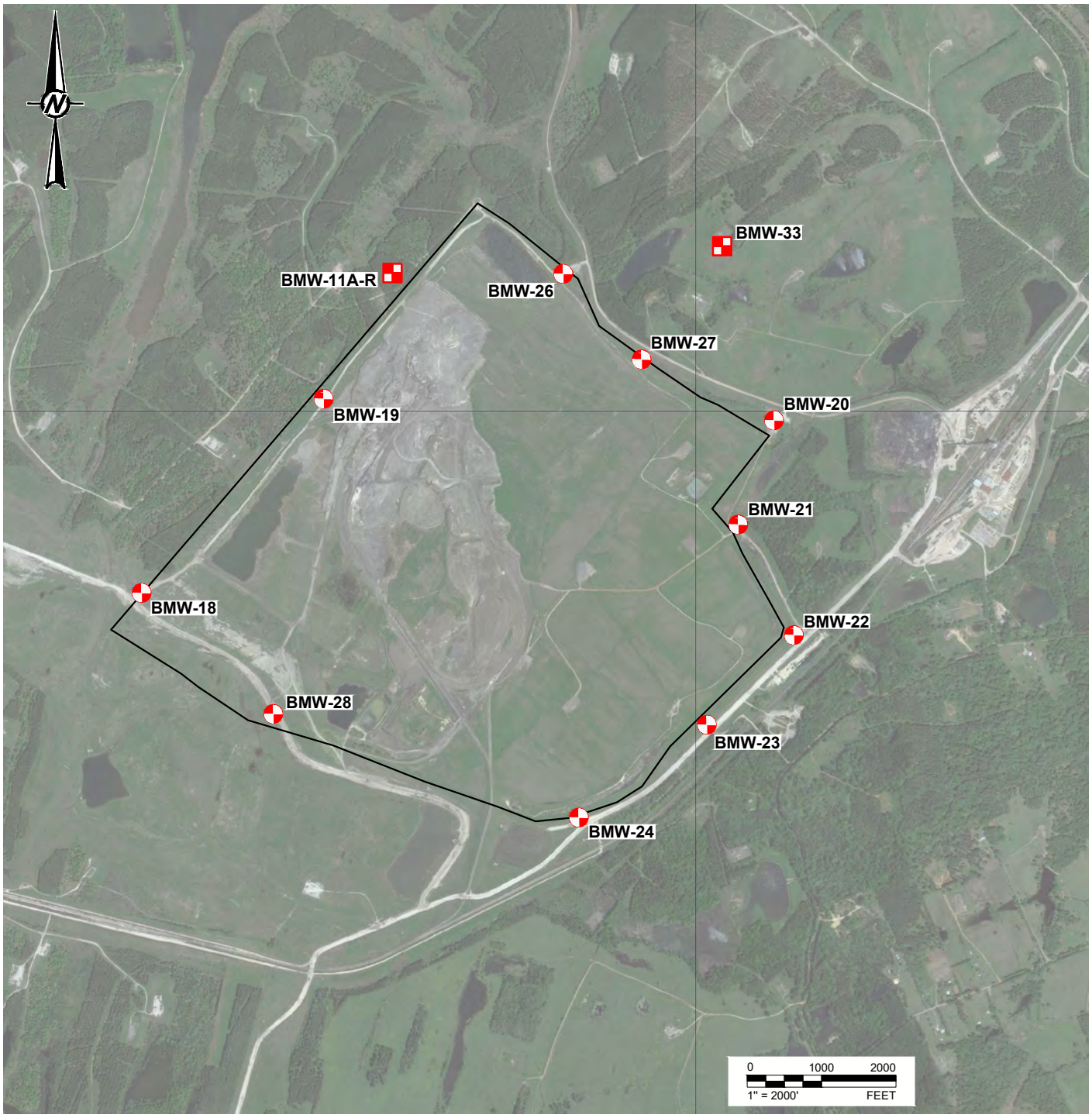
FIGURES



LEGEND

- DOWNGRADIENT CCR MONITORING WELL
- UPGRADIENT CCR MONITORING WELL

REFERENCE(S)

BASE MAP TAKEN FROM GOOGLE EARTH IMAGERY DATED 4/6/17.

APPENDIX F Revision 2 February 27, 2024

CLIENT
LUMINANT

PROJECT
MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

TITLE
DETAILED SITE PLAN - A1 AREA LANDFILL

CONSULTANT
GOLDER

YYYY-MM-DD	2021-01-11
DESIGNED	AJD
PREPARED	AJD
REVIEWED	WFV
APPROVED	WFV

PROJECT NO.	CONTROL	REV.	FIGURE
19122262		0	1

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI A

Last Edited By: adiamond Date: 2021-01-11 Time:10:21:51 AM | Printed By: adiamond Date: 2021-01-11 Time:10:23:01 AM
Path: \\texarkanadata\Projects - Round Rock_2019\19122262 - Luminant\D - MLSES\2020 CCR GWMR\ | File Name: FIG 1 - Detailed Site Plan (A1 Area Landfill).dwg

TABLES

Table 1
Statistical Background Values
MLSES A1 Area Landfill

Parameter	Statistical Background Value
Boron (mg/L)	0.546
Calcium (mg/L)	276
Chloride (mg/L)	35.5
Fluoride (mg/L)	0.4
field pH (s.u.)	5.81 7.58
Sulfate (mg/L)	1,100
Total Dissolved Solids (mg/L)	2,850

Table 2
Groundwater Protection Standards
MLSES A1 Area Landfill

Parameter	Groundwater Protection Standard
Antimony (mg/L)	0.006
Arsenic (mg/L)	0.0164
Barium (mg/L)	2
Beryllium (mg/L)	0.004
Cadmium (mg/L)	0.005
Chromium (mg/L)	0.1
Cobalt (mg/L)	0.0124
Fluoride (mg/L)	4
Lead (mg/L)	0.015
Lithium (mg/L)	0.103
Mercury (mg/L)	0.002
Molybdenum (mg/L)	0.1
Selenium (mg/L)	0.05
Thallium (mg/L)	0.002
Radium 226+228 (pCi/L)	10.7

TABLE 3
APPENDIX III ANALYTICAL DATA
MLSES A1 AREA LANDFILL

Sample Location	Date Sampled	B (mg/L)	Ca (mg/L)	Cl (mg/L)	F (mg/L)	pH (s.u.)	SO_4 (mg/L)	TDS (mg/L)
Upgradient Wells								
BMW-11-AR	10/29/15	0.332	91.5	11.3	<0.100	6.97	243	923
	12/30/15	0.285	92.3	2.39	0.26 J	6.87	114	642
	02/25/16	0.44	136	18.8	0.123 J	6.52	382	1,450
	04/07/16	0.391	151	17.5	<0.100	6.34	334	1,290
	06/09/16	0.417	182	19.8	<0.100	6.63	603	1,700
	08/11/16	0.389	170	20.8	<0.100	6.68	682	1,790
	10/26/16	0.316	99.7	15.8	<0.100	6.85	495	1,590
	12/14/16	0.409	201	19.8	<0.100	6.65	665	1,970
	09/25/17	0.448	199	15.2	<0.100	6.97	561	1,620
	06/12/18	0.634	173	8.37	0.323 J	6.82	320	1,080
	09/14/18	0.455	175	19.7	0.353 J	5.86	538	1,720
	05/15/19	0.374	138	6.11	0.198 J	6.84	324	970
	09/04/19	0.368	149	6.41	0.170 J	6.82	356	1,090
	05/20/20	0.289	114	4.43	<0.100	6.89	266	907
	9/29/2020	0.349	148	6.37	0.408	6.42	275	1,240
BMW-33	5/21/2020	0.241	112	67.7	<0.100	6.76	202	1,020
	9/30/2020	0.228	131	60.9	0.410	6.73	184	1,000
Downgradient Wells								
BMW-18	10/30/15	0.41	7.2	26.6	0.148 J	6.65	97	768
	12/30/15	0.322	346	7.14	0.101 J	6.77	1,570	2,470
	02/26/16	0.406	9.49	17.1	0.164 J	6.91	90	508
	04/07/16	0.423	7.08	16.3	0.117 J	6.52	87	489
	06/09/16	0.429	7.32	18.7	0.128 J	6.64	101	498
	08/11/16	0.415	7.02	18.5	<0.100	6.81	100	493
	10/26/16	0.45	6.55	18.1	0.158 J	6.67	94.3	534
	12/14/16	0.411	9.26	17.6	0.134 J	6.77	94.1	493
	9/25/17	0.437	6.49	16.9	0.128 J	6.87	87.2	476
	6/12/18	0.636	14.4	18.2	0.176 J	6.82	87.2	464
	9/14/18	0.423	6.06	18.6	0.201 J	5.7	81.3	476
	5/15/19	0.443	7.91	20	0.229 J	6.65	89.9	473
	9/4/19	0.435	7.72	19.2	0.203 J	6.51	91.8	478
	05/20/20	0.476	9.13	17.8	0.144	6.87	82.3	477
	9/30/2020	0.447	6.62	19.0	0.387 J	6.78	81.1	469
BMW-19	10/29/18	0.385	417	16.2	<0.100	6.77	2,070	4,060
	12/30/15	0.4	441	11.4	0.127 J	6.49	2,100	3,260
	02/25/16	0.458	504	8.4	<0.100	6.14	2,330	2,960
	04/07/16	0.424	480	8.46	<0.100	6.71	2,270	3,740
	06/09/16	0.444	489	8.04	<0.100	6.32	2,390	4,180
	08/11/16	0.419	458	8.26	<0.100	6.95	2,370	3,780
	10/26/16	0.417	443	8.26	<0.100	6.97	2,210	4,410
	12/14/16	0.427	481	7.2	<0.100	6.75	2220	3,660
	09/25/17	0.481	496	6.11	<0.100	6.95	2,360	3,670
	06/12/18	0.667	539	6.08	<0.100	6.92	2,080	3,660
	09/13/18	0.460	514	6.86	0.404	6.26	2,330	4,010
	05/15/19	0.474	388	4.66	0.189 J	6.88	1,760	3,090
	09/04/19	0.430	434	5.93	<0.1	6.74	2,010	3,320
	05/20/20	0.487	445	5.54	<0.100	6.74	2,020	3,470
	9/29/2020	0.460	484	5.39	<0.100	6.63	1790	3,480

TABLE 3
APPENDIX III ANALYTICAL DATA
MLSES A1 AREA LANDFILL

Sample Location	Date Sampled	B (mg/L)	Ca (mg/L)	Cl (mg/L)	F (mg/L)	pH (s.u.)	SO_4 (mg/L)	TDS (mg/L)
BMW-20	10/23/15	0.139 J	71.2	64.8	<0.100	6.28	223	804
	12/30/15	0.144	96	36.4	0.12 J	6.32	443	987
	02/25/16	0.202	157	30.7	<0.100	5.7	131	888
	04/07/16	0.0787	80	30	<0.100	6.22	219	600
	06/09/16	0.129	128	37.5	<0.100	6.24	557	1,220
	08/11/16	0.106	107	39.4	<0.100	6.86	602	1,310
	10/26/16	0.113	93.5	48.2	<0.100	6.93	801	1,610
	12/13/16	0.0687	62.8	42.8	<0.100	6.64	335	757
	09/26/17	0.0973	116	33.5	<0.100	6.73	472	986
	06/11/18	0.0912	149	35.9	0.144 J	6.67	654	1,160
	09/13/18	0.0773	91.1	48.8	<0.100	5.26	831	1,360
	05/15/19	0.979	146	426	<0.418	6.71	474	2,030
	09/04/19	0.101	136	50.7	<0.100	6.74	1160	1,830
	05/20/20	0.179	162	35.8	<0.100	6.81	797	1,450
	9/29/2020	0.111	143	46.3	<0.100	6.55	966	1,540
BMW-21	10/23/15	0.973	157	496	<0.100	7.28	484	2,510
	12/30/15	0.951	142	365	0.126 J	7.08	444	2,020
	02/25/16	1.01	148	393	<0.100	6.64	462	1,990
	04/07/16	0.99	158	373	<0.100	7.02	454	2,190
	06/09/16	1.17	155	415	<0.100	7.09	477	2,230
	08/11/16	1.04	143	425	<0.100	6.66	484	1,860
	10/26/16	1.14	145	399	<0.100	6.85	434	2,170
	12/13/16	0.993	149	426	<0.100	6.93	483	2,170
	09/26/17	1.02	138	364	<0.100	6.76	417	1,850
	06/11/18	1.01	168	402	0.233 J	6.75	457	1,990
	09/13/18	0.987	151	418	0.136 J	6.64	474	2,100
	05/15/19	0.994	147	428	0.366 J	6.92	474	1,980
	09/04/19	0.0409	152	426	<0.1	6.73	477	2,090
	05/20/20	1.07	166	416	<0.100	6.87	457	1,910
	9/29/2020	1.00	161	415	<0.100	6.84	444	2,030
BMW-22	10/23/15	2.76	209	377	<0.100	6.86	927	2,720
	12/30/15	2.54	150	215	0.186 J	6.92	670	1,870
	02/25/16	3.18	209	295	<0.100	6.27	949	2,430
	04/07/16	3.34	202	256	<0.100	6.84	839	2,230
	06/08/16	3.53	193	279	<0.100	6.84	890	2,340
	08/11/16	3.18	198	311	<0.100	6.25	946	2,520
	10/26/16	3.38	183	241	<0.100	6.89	803	2,600
	12/13/16	3.45	191	281	<0.100	6.73	896	2,370
	09/26/17	3.53	209	270	<0.100	6.82	860	2,250
	06/11/18	3.49	219	280	0.312 J	6.85	883	2,180
	09/13/18	3.28	188	296	0.205 J	6.34	919	2,310
	05/15/19	3.39	198	311	0.351 J	6.68	967	2,260
	09/09/19	3.65	208	307	<0.100	6.58	960	2,420
	05/20/20	3.67	205	290	<0.100	6.69	906	2,230
	9/29/2020	3.49	223	281	<0.100	6.75	855	2,280

TABLE 3
APPENDIX III ANALYTICAL DATA
MLSES A1 AREA LANDFILL

Sample Location	Date Sampled	B (mg/L)	Ca (mg/L)	Cl (mg/L)	F (mg/L)	pH (s.u.)	SO_4 (mg/L)	TDS (mg/L)
BMW-23	10/23/15	1.19	102	287	<0.100	6.84	577	1,980
	12/30/15	1.25	95.2	214	0.122 J	6.76	529	1,500
	02/25/16	1.31	97.7	225	<0.100	6.16	527	1,520
	04/07/16	1.22	95.1	221	<0.100	6.63	503	1,510
	06/08/16	1.31	102	254	<0.100	6.71	558	1,720
	08/11/16	1.28	90.4	242	<0.100	6.15	539	1,430
	10/26/16	1.22	86.8	219	<0.100	6.85	467	1,700
	12/13/16	1.25	91.8	237	<0.100	6.63	510	1,870
	09/26/17	1.46	99.6	223	<0.100	6.65	482	1,550
	06/12/18	1.49	104	236	0.204 J	6.72	490	1,530
	09/13/18	1.34	91.7	236	0.190 J	6.25	482	1,560
	05/15/19	1.31	89.9	240	<0.100	6.84	613	1,640
	09/09/19	1.47	98.9	257	<0.100	6.65	503	1,680
	05/20/20	1.63	105	256	<0.100	6.63	494	1,580
	9/29/2020	1.42	102	238	0.302 J	6.93	443	1,590
BMW-24	10/23/15	0.144 J	61.6	633	0.247 J	7.14	45	1,510
	12/30/15	0.347	58.8	404	0.391 J	7.07	125	1,210
	02/25/16	0.431	61.6	332	0.236 J	5.8	184	1,210
	04/07/16	0.532	63.4	224	0.109 J	7.07	240	1,100
	06/08/16	0.612	60.1	201	0.147 J	7.06	259	984
	08/11/16	0.248	58.5	481	0.225 J	5.84	97.8	1,150
	10/26/16	0.225	59.2	518	0.305 J	6.78	34.2	1,490
	12/13/16	0.225	62.5	518	0.3 J	6.78	33	1,480
	09/26/17	0.656	66.8	229	<0.100	6.82	242	940
	06/11/18	0.469	70.6	336	0.466	6.76	117	970
	09/13/18	0.197	59.5	488	0.769	6.45	40	1,090
	05/15/19	0.601	57.9	169	0.219 J	6.78	280	881
	09/09/19	0.247	56.4	501	0.534 J	6.65	16.4	985
	05/20/20	0.758	67.8	175	0.129 J	6.72	254	907
	9/29/2020	0.205	58.8	482	0.725	6.57	4.48	1,000
BMW-26	9/13/16	0.457	234	97.8	<0.100	6.51	671	2,120
	10/26/16	0.127	44.3	16.2	<0.100	6.87	140	414
	12/14/16	0.251	130	152	0.344 J	6.96	1210	2,050
	01/23/17	0.478	224	126	<0.100	6.33	669	1,950
	02/23/17	0.0683	52	23.9	0.106 J	6.22	20.4	209
	03/24/17	0.44	215	112	<0.100	6.68	610	1,690
	04/24/17	0.495	218	111	<0.100	6.37	576	2,210
	05/25/17	0.613	178	115	<0.100	6.82	613	2,110
	06/29/17	0.507	233	111	<0.100	--[*]	604	1,700
	09/25/17	0.514	71	112	<0.100	6.95	606	1,510
	06/12/18	0.726	96.5	120	<0.100	6.61	633	1,550
	09/13/18	0.474	230	125	<0.100	5.32	671	2,020
	05/15/19	0.449	200	135	<0.100	6.9	706	1,930
	09/04/19	0.473	262	140	<0.100	6.78	753	2,170
	05/20/20	0.547	252	131	<0.100	6.77	701	1,980
	9/29/2020	0.522	265	130	<0.100	6.74	703	2,140

TABLE 3
APPENDIX III ANALYTICAL DATA
MLSES A1 AREA LANDFILL

Sample Location	Date Sampled	B (mg/L)	Ca (mg/L)	Cl (mg/L)	F (mg/L)	pH (s.u.)	SO_4 (mg/L)	TDS (mg/L)
BMW-27	9/13/16	0.486	160	133	0.668	5.87	1,150	2,750
	10/26/16	0.548	196	102	<0.100	6.73	700	2,020
	12/14/16	0.529	211	101	<0.100	6.9	674	1,810
	01/23/17	0.393	152	143	0.573	5.62	1,280	2,260
	02/23/17	0.0832	52.4	24	0.252 J	6.4	20.6	239
	03/24/17	0.304	120	132	0.738	6.35	1,190	2,100
	04/24/17	0.34	132	130	0.663	6.22	1,150	2,290
	05/25/17	0.331	122	124	1.61	6.67	1,150	2,320
	06/29/17	0.39	144	129	0.717	--[*]	1,180	2,080
	09/25/17	0.336	128	126	0.254 J	6.89	1,160	2,110
	06/12/18	0.478	96.1	98.4	<0.100	6.87	522	1,420
	09/13/18	0.398	143	132	0.750	5.6	1,230	2,380
	05/15/19	0.46	190	129	<0.100	6.72	674	1,840
	09/04/19	0.463	257	141	<0.100	6.95	755	2,130
	05/20/20	0.46	213	108	<0.100	6.56	579	1,670
	9/29/2020	0.464	268	134	<0.100	6.79	704	2,130
BMW-28	12/14/16	1.22	234	111	<0.100	6.87	1280	2,360
	01/23/17	1.18	221	122	0.104 J	6.85	1,370	2,810
	02/23/17	0.0776	53.3	24	0.11 J	6.43	20.3	203
	03/24/17	1.14	242	121	<0.100	6.36	1,350	2,580
	04/24/17	1.16	266	121	0.19 J	6.57	1,330	2,980
	05/25/17	1.23	255	130	<0.100	6.70	1,410	3,180
	06/29/17	1.21	269	130	0.137 J	6.98	1,450	2,950
	08/01/17	1.17	260	132	<0.100	--[*]	1,460	2,780
	09/25/17	1.35 J	262	130	<0.100	6.85	1,430	3,060
	06/12/18	1.41	262	139	0.529	6.92	1,470	3,100
	09/13/18	1.35	243	143	0.445	5.71	1,420	3,180
	05/15/19	1.01	249	133	0.496	6.77	1,820	3,610
	09/04/19	1.22	277	137	<0.1	6.77	1,720	3,470
	05/20/20	1.29	284	137	<0.100	6.86	1520	3,270
	9/30/2020	0.612	149	51.1	0.229 J	6.82	1030	2,100

Notes:
1. Abbreviations: mg/L - milligrams per liter; TDS - total dissolved solids; s.u. - standard units.
2. J - concentration is below method quantitation limit; result is an estimate.
3. --[*] - value not available due to pH meter malfuncton during sampling.

TABLE 4
APPENDIX IV ANALYTICAL DATA
MLSES A1 AREA LANDFILL

Sample Location	Date Sampled	Sb (mg/L)	As (mg/L)	Ba (mg/L)	Be (mg/L)	Cd (mg/L)	Cr (mg/L)	Co (mg/L)	F (mg/L)	Pb (mg/L)	Li (mg/L)	Hg (mg/L)	Mo (mg/L)	Se (mg/L)	Tl (mg/L)	Ra 226 (pCi/L)	Ra 228 (pCi/L)	Ra 226/228 Comb.^ (pCi/L)
Upgradient Wells																		
BMW-11-AR	10/29/15	<0.0008	0.0116	0.0659	<0.0003	<0.0003	<0.002	0.0124	<0.1	0.000391 J	0.0594	<0.00008	0.00496 J	<0.002	<0.0005	1.60	4.75	6.35
	12/30/15	<0.0008	0.00362 J	0.0433	<0.0003	<0.0003	<0.002	<0.003	0.26 J	0.000362 J	0.0589	<0.00008	0.00384 J	<0.002	<0.0005	1.66	3.19	4.85
	02/25/16	<0.0008	0.00608	0.0724	<0.0003	<0.0003	<0.002	0.0049 J	0.123 J	<0.0003	0.0276	<0.00008	0.00597	<0.002	<0.0005	2.43	3.80	6.23
	04/07/16	<0.0008	0.00614	0.0929	<0.0003	<0.0003	<0.002	<0.003	<0.1	<0.0003	0.0195	<0.00008	0.00444 J	<0.002	<0.0005	0.885	1.48	2.37
	06/09/16	<0.0008	0.00532	0.0891	<0.0003	<0.0003	<0.002	<0.003	<0.1	<0.0003	0.0187	<0.00008	0.00355 J	<0.002	<0.0005	0.47	<0.674	1.14
	08/11/16	<0.0008	0.00271 J	0.0772	<0.0003	<0.0003	<0.002	<0.003	<0.1	<0.0003	0.0147	<0.00008	0.00346 J	<0.002	<0.0005	0.810	2.42	3.23
	10/26/16	<0.0008	<0.002	0.0429	<0.0003	<0.0003	<0.002	<0.003	<0.1	<0.0003	0.0508	<0.00008	0.00363 J	<0.002	<0.0005	0.631	0.922	1.55
	12/14/16	<0.0008	0.0061	0.074	<0.0003	<0.0003	<0.002	<0.003	<0.1	0.00347	0.0139	<0.00008	0.00303 J	<0.002	<0.0005	<0.821	<1.73	<2.551
	06/12/18	<0.0008	0.00444 J	0.0692	<0.0003	<0.0003	0.00295 J	<0.003	0.323 J	0.0017	0.0686	<0.00008	0.00340 J	<0.002	<0.0005	0.996	1.7	2.696
	09/14/18	--	0.0056	0.0735	--	--	<0.002	<0.003	0.353 J	0.00147	0.0196	--	0.00299 J	--	--	1.52	1.11	2.63
	05/15/19	<0.0008	0.00208 J	0.0399	<0.0003	<0.0003	<0.002	<0.003	0.198 J	<0.0003	0.0404	<0.00008	<0.002	<0.002	<0.0005	0.83	4.89	5.72
	09/04/19	--	<0.2	0.0393	--	--	--	<0.003	0.170 J	--	0.0411	--	<0.002	--	--	0.382	0.317	0.699
	05/20/20	<0.0008	0.00479 J	0.0439	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.0348	<0.00008	<0.00200	<0.002	<0.0005	0.289	1.54	1.83
	09/29/20	--	0.0102	0.0517	<0.000300	<0.000300	<0.00200	<0.00300	0.408	<0.000300	0.0337	--	--	<0.002	--	0.209	1.59	1.8
BMW-33	08/01/19	--	<0.00200	--	--	--	--	0.0176	0.342	--	0.0206	--	--	--	--	--	--	--
	09/09/19	--	<0.00200	0.285	--	--	--	0.0122	0.145 J	--	0.0177	--	0.00325 J	--	--	0.738	-0.0903	0.738
	05/20/20	0.00102 J	<0.002	0.203	<0.0003	<0.0003	<0.002	0.0065	<0.100	<0.0003	0.0145	<0.00008	0.00207 J	<0.002	<0.0005	0.499	0.394	0.893
	09/30/20	--	<0.00200	0.166	<0.000300	<0.000300	<0.00200	0.00826	0.410	<0.000300	0.0135	--	--	<0.002	--	0.237	0.419	0.656
Downgradient Wells																		
BMW-18	10/30/15	<0.0008	<0.002	0.0401	<0.0003	<0.0003	0.00944	<0.003	0.148 J	<0.0003	0.14	<0.00008	<0.002	<0.002	<0.0005	0.526	<1.51	2.04
	12/30/15	<0.0008	<0.002	0.0168	<0.0003	<0.0003	<0.002	0.0129	0.101 J	<0.0003	0.0415	<0.00008	<0.002	<0.002	<0.0005	<0.405	<2.04	<2.445
	02/26/16	<0.0008	<0.002	0.0446	<0.0003	<0.0003	0.0021 J	<0.003	0.164 J	<0.0003	0.0156	<0.00008	<0.002	<0.002	<0.0005	<0.406	<1.9	<2.306
	04/07/16	<0.0008	<0.002	0.0306	<0.0003	<0.0003	<0.002	<0.003	0.117 J	<0.0003	0.0171	<0.00008	<0.002	<0.002	<0.0005	<0.109	<1.00	<1.109
	06/09/16	<0.0008	<0.002	0.0283	<0.0003	<0.0003	<0.002	<0.003	0.128 J	<0.0003	0.0152	<0.00008	<0.002	<0.002	<0.0005	<0.143	0.857	1.00
	08/11/16	<0.0008	<0.002	0.0291	<0.0003	<0.0003	<0.002	<0.003	<0.1	<0.0003	0.0147	<0.00008	<0.002	<0.002	<0.0005	<0.22	<1.07	<1.29
	10/26/16	<0.0008	<0.002	0.029	<0.0003	<0.0003	<0.002	<0.003	0.158 J	<0.0003	0.0156	<0.00008	<0.002	<0.002	<0.0005	<0.132	<0.534	<0.666
	12/14/16	<0.0008	<0.002	0.0384	<0.0003	<0.0003	<0.002	<0.003	0.134 J	<0.0003	0.0158	<0.00008	<0.002	<0.002	<0.0005	0.140	<1.99	2.13
	06/12/18	<0.0008	<0.002	0.0412	<0.0003	<0.0003	<0.002	<0.003	0.176 J	0.0013	0.0185	<0.00008	<0.002	<0.002	<0.0005	0.232	0.706	0.938
	09/14/18	--	<0.002	0.0277	--	--	<0.002	<0.003	0.201 J	<0.0003	0.0165	--	<0.002	--	--	<0.509	<0.589	<1.098
	05/15/19	<0.0008	<0.002	0.0362	<0.0003	<0.0003	<0.002	<0.003	0.229 J	<0.0003	0.016	<0.00008	<0.002	<0.002	<0.0005	<0.264	3.95	4.214
	09/04/19	--	<0.002	0.0337	--	--	--	<0.003	0.203 J	--	0.0128	--	<0.002	--	--	0.304	1.48	1.79
	05/20/20	<0.0008	<0.002	0.0431	<0.0003	<0.0003	<0.002	<0.003	0.144 J	<0.0003	0.0136	<0.00008	<0.002	<0.002	<0.0005	0.555	1.21	1.76
	09/30/20	--	<0.00200	0.0315	<0.000300	<0.000300	<0.00200	<0.00300	0.387 J	<0.000300	0.0193	--	--	<0.002	--	0.0836	-0.338	0.0836
BMW-19	10/29/18	<0.0008	<0.002	0.0231	<0.0003	<0.0003	<0.002	0.0161	<0.1	<0.0003	0.0545	<0.00008	<0.002	<0.002	<0.0005	0.395	<1.56	1.96
	12/30/15	<0.0008	<0.002	0.0222	<0.0003	<0.0003	<0.002	0.0166	0.127 J	<0.0003	0.0506	<0.00008	<0.002	<0.002	<0.0005	0.598	<2.89	3.49
	02/25/16	<0.0008	0.00235 J	0.0169	<0.0003	<0.0003	<0.002	0.0149	<0.1	<0.0003	0.0711	<0.00008	<0.002	<0.002	<0.0005	0.571	1.94	2.51
	04/07/16	<0.0008	<0.002	0.0178	<0.0003	<0.0003	<0.002	0.0137	<0.1	<0.0003	0.0591	<0.00008	<0.002	<0.002	<0.0005	<0.185	<0.715	<0.9
	06/09/16	<0.0008	<0.002	0.0158	<0.0003	<0.0003	<0.002	0.0141	<0.1	<0.0003	0.0644	<0.00008	<0.002	<0.002	<0.0005	<0.142	1.98	2.12
	08/11/16	<0.0008	0.00711	0.0158	<0.0003	<0.0003	<0.002	0.0128	<0.1	<0.0003	0.0568	<0.00008	<0.002	<0.002	<0.0005	0.927	<0.812	1.74
	10/26/16	<0.0008	<0.002	0.0144	<0.0003	<0.0003	<0.002	0.0104	<0.1	<0.0003	0.0495	<0.00008	<0.002	<0.002	<0.0005	<0.152	<0.48	<0.632
	12/14/16	<0.0008	0.00369 J	0.0171	<0.0003	<0.0003	<0.002	0.0125	<0.1	<0.0003	0.0584	<0.00008	<0.002	<0.002	<0.0005	0.309	0.827	1.14
	06/12/18	<0.0008	0.0428	0.0243	<0.0003	<0.0003	0.00267	0.0115	<0.100	0.00183	0.0734	<0.00008	<0.002	<0.002	<0.0005	<0.395	1.17	1.565
	09/13/18	--	0.00491 J	0.0132	--	--	<0.002	0.0125	0.404 J	<0.0003	0.0845	--	<0.002	--	--	<0.376	1.46	1.836
	05/15/19	<0.0008	<0.002	0.0104	<0.0003	<0.0003	<0.002	<0.003	0.189 J	<0.0003	0.0647	<0.00008	<0.002	<0.002	<0.0005	0.487	4.66	5.147
	09/04/19	--	<0.002	0.0117	--	--	--	<0.003	<0.1	--	0.0694	--	<0.002	--	--	-0.00769	0.563	0.563
	05/20/20	<0.0008	<0.00200	0.0109	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.0783	<0.00008	0.00231 J	<0.002	<0.0005	0.0651	0.127	0.192
	09/29/20	--	<0.00200	0.0137	<0.000300	<0.000300	<0.00200	0.0187	<0.100	<0.000300	0.0742	--	--	<0.002	--	-0.0171	1.02	1.020

TABLE 4
APPENDIX IV ANALYTICAL DATA
MLSES A1 AREA LANDFILL

Sample Location	Date Sampled	Sb (mg/L)	As (mg/L)	Ba (mg/L)	Be (mg/L)	Cd (mg/L)	Cr (mg/L)	Co (mg/L)	F (mg/L)	Pb (mg/L)	Li (mg/L)	Hg (mg/L)	Mo (mg/L)	Se (mg/L)	Tl (mg/L)	Ra 226 (pCi/L)	Ra 228 (pCi/L)	Ra 226/228 Comb.^ (pCi/L)
BMW-20	10/23/15	<0.0008	0.00236 J	0.0778	<0.0003	<0.0003	<0.002	0.0256	<0.1	0.0005 J	<0.005	<0.00008	<0.002	<0.002	<0.0005	0.463	<1.89	2.35
	12/30/15	<0.0008	0.00344 J	0.0777	<0.0003	<0.0003	<0.002	0.051	0.12 J	<0.0003	<0.005	<0.00008	<0.002	<0.002	<0.0005	0.816	<2.41	3.23
	02/25/16	<0.0008	0.00474 J	0.0989	<0.0003	<0.0003	<0.002	0.022	<0.1	<0.0003	<0.005	<0.00008	<0.002	<0.002	<0.0005	<0.61	2.85	3.46
	04/07/16	<0.0008	0.00411 J	0.0912	<0.0003	<0.0003	<0.002	0.0276	<0.1	<0.0003	<0.005	<0.00008	<0.002	<0.002	<0.0005	0.221	<1.08	1.30
	06/09/16	<0.0008	0.0103	0.0776	<0.0003	<0.0003	<0.002	0.054	<0.1	0.0007 J	<0.005	<0.00008	<0.002	<0.002	<0.0005	0.51	<0.716	1.23
	08/11/16	<0.0008	<0.002	0.0637	<0.0003	<0.0003	<0.002	0.0513	<0.1	<0.0003	<0.005	<0.00008	<0.002	<0.002	<0.0005	0.322	1.40	1.72
	10/26/16	<0.0008	0.00444 J	0.0421	<0.0003	<0.0003	<0.002	0.0786	<0.1	<0.0003	<0.005	<0.00008	<0.002	<0.002	<0.0005	0.347	0.848	1.20
	12/13/16	<0.0008	0.00483 J	0.0377	<0.0003	<0.0003	<0.002	0.0451	<0.1	<0.0003	<0.005	<0.00008	<0.002	<0.002	<0.0005	0.246	1.15	1.40
	06/11/18	<0.0008	0.00473 J	0.0515	<0.0003	<0.0003	<0.002	0.0681	0.144 J	0.000476	<0.005	<0.00008	<0.002	<0.002	<0.0005	0.74	0.865	1.605
	09/13/18	--	0.00473 J	0.0258	--	--	<0.002	0.0645	<0.100	0.000368 J	<0.005	--	<0.002	--	--	0.519	0.711	1.23
	05/15/18	<0.0008	0.00541	0.0412	<0.0003	<0.0003	<0.002	0.003	0.418	<0.0003	0.0615	<0.00008	<0.002	<0.002	<0.0005	1.18	0.657	1.837
	09/04/19	--	0.00768	0.0261	--	--	--	0.108	<0.1	--	<0.005	--	<0.002	--	--	0.0996	1.62	1.72
	05/20/20	<0.0008	0.0126	0.0494	<0.0003	<0.0003	<0.002	0.0912	<0.1	0.000956 J	<0.005	<0.00008	<0.002	0.0044 J	<0.0005	0.5	2.15	2.65
	09/29/20	--	0.00837	0.0292	<0.000300	<0.000300	0.002	0.101	<0.100	0.00159	0.005	--	--	0.00204 J	--	0.152	0.548	0.7
BMW-21	10/23/15	<0.0008	0.00324 J	0.0703	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.0623	<0.00008	<0.002	<0.002	<0.0005	<0.436	<0.948	<1.384
	12/30/15	<0.0008	0.00247 J	0.0478	<0.0003	<0.0003	<0.002	<0.003	0.126 J	<0.0003	0.0602	<0.00008	<0.002	<0.002	<0.0005	0.584	<2.00	2.58
	02/25/16	<0.0008	0.00327 J	0.0471	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.0602	<0.00008	<0.002	<0.002	<0.0005	0.735	2.13	2.87
	04/07/16	<0.0008	0.00337 J	0.0472	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.0653	<0.00008	<0.002	<0.002	<0.0005	0.470	<2.78	3.25
	06/09/16	<0.0008	0.0034 J	0.0457	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.0675	<0.00008	<0.002	<0.002	<0.0005	0.32	<0.917	1.24
	08/11/16	<0.0008	0.00373 J	0.0445	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.0527	<0.00008	<0.002	<0.002	<0.0005	0.655	<0.728	1.38
	10/26/16	<0.0008	0.0037 J	0.0443	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.0611	<0.00008	<0.002	<0.002	<0.0005	0.383	1.61	1.99
	12/13/16	<0.0008	0.00217 J	0.0438	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.0631	<0.00008	<0.002	<0.002	<0.0005	0.213	1.00	1.21
	06/11/18	<0.0008	0.00373 J	0.0438	<0.0003	<0.0003	<0.002	<0.003	0.233 J	<0.0003	0.07	<0.00008	<0.002	<0.002	<0.0005	<0.239	<0.939	<1.178
	09/13/18	--	0.00353 J	0.0412	--	--	<0.002	<0.003	0.136 J	<0.0003	0.0646	--	<0.002	--	--	0.562	1.49	2.052
	05/15/19	<0.0008	0.00399 J	0.0412	<0.0003	<0.0003	<0.002	<0.003	0.366 J	<0.0003	0.0613	<0.00008	<0.002	<0.002	<0.0005	<0.322	1.07	1.392
	09/04/19	--	0.00378	0.0409	--	--	--	<0.003	<0.1	--	0.0683	--	<0.002	--	--	0.506	1.51	2.06
	05/20/20	<0.0008	0.00434 J	0.0421	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.0632	<0.00008	<0.002	<0.002	<0.0005	0.562	1.76	2.32
	09/29/20	--	0.00814	0.0420	<0.000300	<0.000300	<0.00200	<0.00300	<0.100	<0.000300	0.0663	--	--	<0.002	--	0.699	1.48	2.18
BMW-22	10/23/15	<0.0008	<0.002	0.106	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.0675	<0.00008	<0.002	<0.002	<0.0005	1.59	2.11	3.70
	12/30/15	<0.0008	<0.002	0.084	<0.0003	<0.0003	<0.002	<0.003	0.186 J	<0.0003	0.0594	<0.00008	<0.002	<0.002	<0.0005	0.973	<1.55	2.52
	02/25/16	<0.0008	<0.002	0.0761	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.0801	<0.00008	<0.002	<0.002	<0.0005	0.594	<1.93	2.52
	04/07/16	<0.0008	<0.002	0.072	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.0773	<0.00008	<0.002	<0.002	<0.0005	0.480	1.46	1.94
	06/08/16	<0.0008	0.00206 J	0.0667	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.0847	<0.00008	<0.002	<0.002	<0.0005	0.888	1.88	2.77
	08/11/16	<0.0008	<0.002	0.0679	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.0675	<0.00008	<0.002	<0.002	<0.0005	0.607	1.93	2.54
	10/26/16	<0.0008	0.00216 J	0.0645	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.0753	<0.00008	<0.002	<0.002	<0.0005	0.633	1.02	1.65
	12/13/16	<0.0008	0.00232 J	0.0655	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.0689	<0.00008	<0.002	<0.002	<0.0005	<0.209	1.05	1.26
	06/11/18	<0.0008	<0.002	0.0638	<0.0003	<0.0003	<0.002	<0.003	0.312 J	<0.0003	0.089	<0.00008	<0.002	<0.002	<0.0005	0.522	<1.020	1.54
	09/13/18	--	<0.002	0.063	--	--	<0.002	<0.003	0.205 J	<0.0003	0.0882	--	<0.002	--	--	1.29	2.89	4.18
	05/15/19	<0.0008	<0.002	0.0618	<0.0003	<0.0003	<0.002	<0.003	0.351 J	<0.0003	0.0779	<0.00008	<0.002	<0.002	<0.0005	3.36	1.64	5.00
	09/09/19	--	<0.002	0.0599	--	--	--	<0.003	<0.100	--	0.0829	--	<0.002	--	--	0.954	1.85	2.81
	05/20/20	<0.0008	<0.002	0.0621	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.0855	<0.00008	<0.002	<0.002	<0.0005	0.909	2.67	3.58
	09/29/20	--	<0.00200	0.0598	<0.000300	<0.000300	<0.00200	<0.00300	<0.100	<0.000300	0.0837	--	--	<0.002	--	0.621	3.13	3.75

TABLE 4
APPENDIX IV ANALYTICAL DATA
MLSES A1 AREA LANDFILL

Sample Location	Date Sampled	Sb (mg/L)	As (mg/L)	Ba (mg/L)	Be (mg/L)	Cd (mg/L)	Cr (mg/L)	Co (mg/L)	F (mg/L)	Pb (mg/L)	Li (mg/L)	Hg (mg/L)	Mo (mg/L)	Se (mg/L)	Tl (mg/L)	Ra 226 (pCi/L)	Ra 228 (pCi/L)	Ra 226/228 Comb.^ (pCi/L)
BMW-23	10/23/15	<0.0008	<0.002	0.0519	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.0802	<0.00008	<0.002	<0.002	<0.0005	1.19	<1.91	3.10
	12/30/15	<0.0008	<0.002	0.0462	<0.0003	<0.0003	<0.002	<0.003	0.122 J	<0.0003	0.0897	<0.00008	<0.002	<0.002	<0.0005	0.711	<2.62	3.33
	02/25/16	<0.0008	<0.002	0.0488	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.0959	<0.00008	<0.002	<0.002	<0.0005	0.604	<1.78	2.38
	04/07/16	<0.0008	<0.002	0.0472	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.095	<0.00008	<0.002	<0.002	<0.0005	0.723	1.98	2.70
	06/08/16	<0.0008	<0.002	0.0497	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.103	<0.00008	<0.002	<0.002	<0.0005	0.654	1.29	1.94
	08/11/16	<0.0008	<0.002	0.0458	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.077	<0.00008	<0.002	<0.002	<0.0005	0.936	1.94	2.88
	10/26/16	<0.0008	<0.002	0.0437	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.0856	<0.00008	<0.002	<0.002	<0.0005	0.472	1.76	2.23
	12/13/16	<0.0008	<0.002	0.0407	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.0817	<0.00008	<0.002	<0.002	<0.0005	<0.225	0.704	0.93
	06/11/18	<0.0008	<0.002	0.0381	<0.0003	<0.0003	<0.002	<0.003	0.204 J	<0.0003	0.106	<0.00008	<0.002	<0.002	<0.0005	0.442	1.79	2.23
	09/13/18	--	<0.002	0.0414	--	--	<0.002	<0.003	0.190 J	<0.0003	0.0915	--	<0.002	--	--	0.774	1.23	2.00
	05/15/19	<0.0008	0.0024	0.0381	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.0951	<0.00008	<0.002	<0.002	<0.0005	2.54	1	3.54
	09/09/19	--	<0.002	0.0382	--	--	--	<0.003	<0.100	--	0.0896	--	<0.002	--	--	0.583	2.4	2.98
	05/20/20	<0.0008	<0.002	0.039	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.0927	<0.00008	<0.002	<0.002	<0.0005	0.669	2.27	2.93
	09/29/20	--	<0.00200	0.0383	<0.000300	<0.000300	<0.00200	<0.00300	0.302 J	<0.000300	0.0861	--	--	<0.002	--	0.687	0	0.687
BMW-24	10/23/15	<0.0008	0.00494 J	1.87	<0.0003	<0.0003	<0.002	0.00802	0.247 J	<0.0003	<0.005	<0.00008	<0.002	<0.002	<0.0005	1.83	3.32	5.15
	12/30/15	<0.0008	0.00579	0.801	<0.0003	<0.0003	<0.002	0.0146	0.391 J	<0.0003	0.0161	<0.00008	<0.002	<0.002	<0.0005	0.485	<1.66	2.15
	02/25/16	<0.0008	0.00442 J	0.645	<0.0003	<0.0003	<0.002	0.0137	0.236 J	<0.0003	0.0267	<0.00008	<0.002	<0.002	<0.0005	1.20	<1.93	3.13
	04/07/16	<0.0008	0.00376 J	0.202	<0.0003	<0.0003	<0.002	0.0238	0.109 J	<0.0003	0.0415	<0.00008	<0.002	<0.002	<0.0005	<0.349	<1.58	<1.929
	06/08/16	<0.0008	0.00481 J	0.181	<0.0003	<0.0003	<0.002	0.0227	0.147 J	<0.0003	0.0475	<0.00008	<0.002	<0.002	<0.0005	0.360	1.26	1.62
	08/11/16	<0.0008	0.00414 J	1.26	<0.0003	<0.0003	<0.002	0.00707	0.225 J	<0.0003	0.00938 J	<0.00008	<0.002	<0.002	<0.0005	0.564	<0.942	1.51
	10/26/16	<0.0008	0.00364 J	1.88	<0.0003	<0.0003	<0.002	<0.003	0.305 J	<0.0003	0.00767 J	<0.00008	<0.002	<0.002	<0.0005	1.37	1.31	2.68
	12/13/16	<0.0008	0.00498 J	1.96	<0.0003	<0.0003	<0.002	0.0033 J	0.3 J	<0.0003	0.00914 J	<0.00008	<0.002	<0.002	<0.0005	0.270	1.16	1.43
	06/11/18	<0.0008	0.00266 J	0.487	<0.0003	<0.0003	<0.002	0.00633	0.466	<0.0003	0.0198	<0.00008	<0.002	<0.002	<0.0005	0.668	0.975	1.643
	09/13/18	--	<0.002	2.19	--	--	<0.002	0.00304 J	0.769	<0.0003	0.00764 J	--	<0.002	--	--	1.82	1.45	3.27
	05/15/19	<0.0008	0.00272 J	0.221	<0.0003	<0.0003	<0.002	0.000643	0.219 J	<0.0003	0.0512	<0.00008	<0.002	<0.002	<0.0005	1.45	<1.21	2.66
	09/09/19	--	<0.002	1.48	--	--	--	<0.003	0.534	--	0.00826 J	--	<0.002	--	--	0.584	1.41	2
	05/20/20	<0.0008	0.00207 J	0.244	<0.0003	<0.0003	<0.002	0.0109	0.129 J	<0.0003	0.046	<0.00008	<0.002	<0.002	<0.0005	0.532	<2.45	2.99
	09/29/20	--	<0.00200	1.85	<0.000300	<0.000300	<0.00200	<0.00300	0.725	<0.000300	0.00563 J	--	--	<0.002	--	1.24	0.892	2.14
BMW-26	09/13/16	<0.0008	0.017	0.0425	<0.0003	<0.0003	<0.002	<0.003	<0.1	<0.0003	0.0944	<0.00008	0.00215 J	<0.002	<0.0005	0.154	<1.02	1.17
	10/26/16	<0.0008	0.00318 J	0.0731	<0.0003	<0.0003	<0.002	0.004 J	<0.1	<0.0003	<0.005	<0.00008	<0.002	<0.002	<0.0005	0.175	<0.695	0.87
	12/14/16	<0.0008	<0.002	0.0424	<0.0003	0.00082 J	<0.002	0.236	0.344 J	<0.0003	0.0527	<0.00008	<0.002	<0.002	<0.0005	0.177	<1.29	1.47
	01/23/17	<0.0008	0.0325	0.0446	<0.0003	<0.0003	<0.002	<0.003	<0.1	0.00059 J	0.0977	<0.00008	0.0035 J	<0.002	<0.0005	0.351	0.936	1.29
	02/23/17	<0.0008	<0.002	0.0705	<0.0003	<0.0003	<0.002	<0.003	0.106 J	0.00073 J	0.0052 J	<0.00008	<0.002	<0.002	<0.0005	0.306	0.951	1.26
	03/24/17	<0.0008	0.0107	0.0371	<0.0003	<0.0003	<0.002	<0.003	<0.1	0.00074 J	0.0964	<0.00008	0.00461 J	<0.002	<0.0005	0.335	<0.627	0.96
	05/25/17	<0.0008	0.00347 J	0.0243	<0.0003	<0.0003	<0.002	<0.003	<0.1	<0.0003	0.0951	<0.0008	0.00302 J	<0.002	<0.0005	<0.477	0.818	1.30
	06/29/17	<0.0008	0.0328	0.0352	<0.0003	<0.0003	<0.002	<0.003	<0.1	<0.0003	0.0985	<0.0008	0.00257 J	<0.002	<0.0005	0.198	0.677	0.88
	06/12/18	<0.0008	0.00316 J	0.0222	<0.0003	<0.0003	0.00231 J	<0.003	<0.100	0.00152	0.111	<0.00008	0.0029 J	<0.002	<0.0005	<0.251	<0.508	<0.759
	09/13/18	--	0.0165	0.0360	--	--	<0.002	<0.003	<0.100	<0.0003	0.11	--	<0.002	--	--	<0.426	0.826	1.252
	05/15/19	<0.0008	<0.002	0.0253	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.101	<0.00008	0.00218 J	<0.002	<0.0005	0.457	<1.13	1.587
	09/04/19	--	0.00725	0.0317	--	--	--	<0.003	<0.1	--	0.109	--	<0.002	--	--	0.126	1.53	1.66
	05/20/20	<0.0008	<0.002	0.0293	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.0999	<0.00008	<0.002	<0.002	<0.0005	0.158	0.696	0.853
	09/29/20	--	0.00466 J	0.0314	<0.000300	<0.000300	<0.00200	<0.00300	<0.100	<0.000300	0.107	--	--	<0.002	--	0.234	0.161	0.395

TABLE 4
APPENDIX IV ANALYTICAL DATA
MLSES A1 AREA LANDFILL

Sample Location	Date Sampled	Sb (mg/L)	As (mg/L)	Ba (mg/L)	Be (mg/L)	Cd (mg/L)	Cr (mg/L)	Co (mg/L)	F (mg/L)	Pb (mg/L)	Li (mg/L)	Hg (mg/L)	Mo (mg/L)	Se (mg/L)	Tl (mg/L)	Ra 226 (pCi/L)	Ra 228 (pCi/L)	Ra 226/228 Comb.^ (pCi/L)
BMW-27	09/13/16	<0.0008	0.00536	0.0434	<0.0003	0.00062 J	<0.002	0.15	0.668	0.00043 J	0.0541	<0.00008	<0.002	<0.002	<0.0005	0.308	<1.14	1.45
	10/26/16	<0.0008	0.00625	0.0339	<0.0003	<0.0003	<0.002	<0.003	<0.1	<0.0003	0.0933	<0.00008	<0.002	<0.002	<0.0005	0.156	1.94	2.10
	12/14/16	<0.0008	0.0051	0.0342	<0.0003	<0.0003	<0.002	<0.003	<0.1	<0.0003	0.0932	<0.00008	<0.002	<0.002	<0.0005	<0.12	<1.05	<1.17
	01/23/17	<0.0008	0.00845	0.0333	<0.0003	0.00071 J	0.0028 J	0.195	0.573	0.00032 J	0.0484	<0.00008	<0.002	<0.002	<0.0005	0.369	0.934	1.30
	02/23/17	<0.0008	<0.002	0.0704	<0.0003	<0.0003	<0.002	<0.003	0.252 J	0.00074 J	<0.005	<0.00008	<0.002	<0.002	<0.0005	<0.209	0.660	0.87
	03/24/17	<0.0008	0.00319 J	0.0296	<0.0003	0.00078 J	<0.002	0.222	0.738	<0.0003	0.0474	<0.00008	<0.002	<0.002	<0.0005	0.414	<0.725	1.14
	05/25/17	<0.0008	<0.002	0.0266	<0.0003	0.000521 J	<0.002	0.2	1.61	0.000439 J	0.0471	<0.00008	<0.002	<0.002	<0.0005	<0.443	1.38	1.82
	06/29/17	<0.0008	0.00593	0.0307	<0.0003	0.00851 J	0.00266 J	0.255	0.717	<0.0003	0.048	<0.0008	<0.002	<0.002	<0.0005	0.303	0.628	0.93
	5/2017																	
	06/12/18	<0.0008	0.00223 J	0.0182	<0.0003	<0.0003	<0.002	<0.003	<0.100	0.00097 J	0.0721	<0.00008	<0.002	<0.002	<0.0005	0.305	<0.5860	0.891
	09/13/18	--	0.00467 J	0.0250	--	--	0.002 J	0.190	0.750	<0.0003	0.0531	--	<0.002	--	--	0.691	1.04	1.731
	05/15/19	<0.0008	<0.002	0.0238	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.0943	<0.00008	<0.002	<0.002	<0.0005	<0.195	0.962	1.157
	09/04/19	--	0.00759	0.32	--	--	--	<0.003	<0.1	--	0.107	--	<0.002	--	--	0.0726	1.68	1.75
	05/20/20	<0.0008	<0.002	0.025	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.084	<0.00008	<0.002	<0.002	<0.0005	0.265	0.255	0.52
	09/29/20	--	0.00494 J	0.0313	<0.000300	<0.000300	<0.00200	<0.00300	<0.100	0.0003	0.110	--	--	<0.002	--	0.147	-0.339	0.147
BMW-28	12/14/16	0.0012 J	<0.002	0.0509	<0.0003	<0.0003	<0.002	<0.003	<0.1	<0.0003	0.11	<0.00008	0.0103	0.0045 J	<0.0005	<0.566	<2.22	2.79
	01/23/17	0.001 J	<0.002	0.0518	<0.0003	<0.0003	<0.002	<0.003	0.104 J	<0.0003	0.116	<0.00008	0.00881	<0.002	<0.0005	0.626	1.12	1.75
	02/23/17	<0.0008	<0.002	0.0734	<0.0003	<0.0003	<0.002	<0.003	0.11 J	0.00097 J	0.00514 J	<0.00008	<0.002	<0.002	<0.0005	0.168	0.835	1.00
	03/24/17	0.0012 J	<0.002	0.046	<0.0003	<0.0003	<0.002	<0.003	<0.1	<0.0003	0.1	<0.00008	0.00773	0.0021 J	<0.0005	1.04	1.17	2.21
	04/24/17	0.0011 J	<0.002	0.047	<0.0003	<0.0003	<0.002	<0.003	0.19 J	<0.0003	0.109	<0.00008	0.00766	<0.002	<0.0005	0.356	1.880	2.24
	06/12/18	<0.0008	<0.002	0.0505	<0.0003	<0.0003	<0.002	<0.003	0.529	0.00122	0.116	<0.00008	0.00764	<0.002	<0.0005	0.197	1.12	1.32
	09/14/18	--	<0.002	0.0419	--	--	<0.002	<0.003	0.445	<0.0003	0.114	--	0.00782	--	--	0.35	1.15	1.50
	05/15/19	<0.0008	<0.002	0.0285	<0.0003	<0.0003	<0.002	<0.003	0.496	<0.0003	0.119	<0.00008	0.0124	<0.002	<0.0005	0.289	0.924	1.21
	09/04/19	--	<0.002	0.027	--	--	--	<0.003	<0.1	--	0.131	--	0.00961	--	--	0.0173	3.2	3.21
	05/20/20	<0.0008	<0.002	0.0297	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.133	<0.00008	0.00617	<0.002	<0.0005	0.157	2.38	2.54
	09/30/20	--	<0.00200	0.0150	<0.000300	<0.000300	<0.00200	<0.00300	0.229 J	<0.000300	0.0953	--	--	<0.002	--	0.229	2.53	2.76

Notes:
1. Abbreviations: mg/L - milligrams per liter; pCi/L - picocuries per liter.
2. ^ - Sum of Ra 226 and Ra 228 concentrations. Non-detect isotope results were assigned a value equal to the minimum detectable concentration.
3. J - Concentration is below method quantitation limit; result is an estimate.
4. "--" - not analyzed. Groundwater sample analyses for the second semi-annual sampling events were in some instances limited to Appendix IV parameters detected during the preceding first semi-annual sampling event in accordance with 40 CFR § 257.95(d)(1). Well BMW-33 was not formerly a CCR monitoring well; therefore, not all Appendix IV constituents were analyzed in samples from this well during every sampling event.

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2020 Annual Groundwater Monitoring and Corrective Action Report

Martin Lake Steam Electric Station Ash Pond Area - Rusk County, Texas

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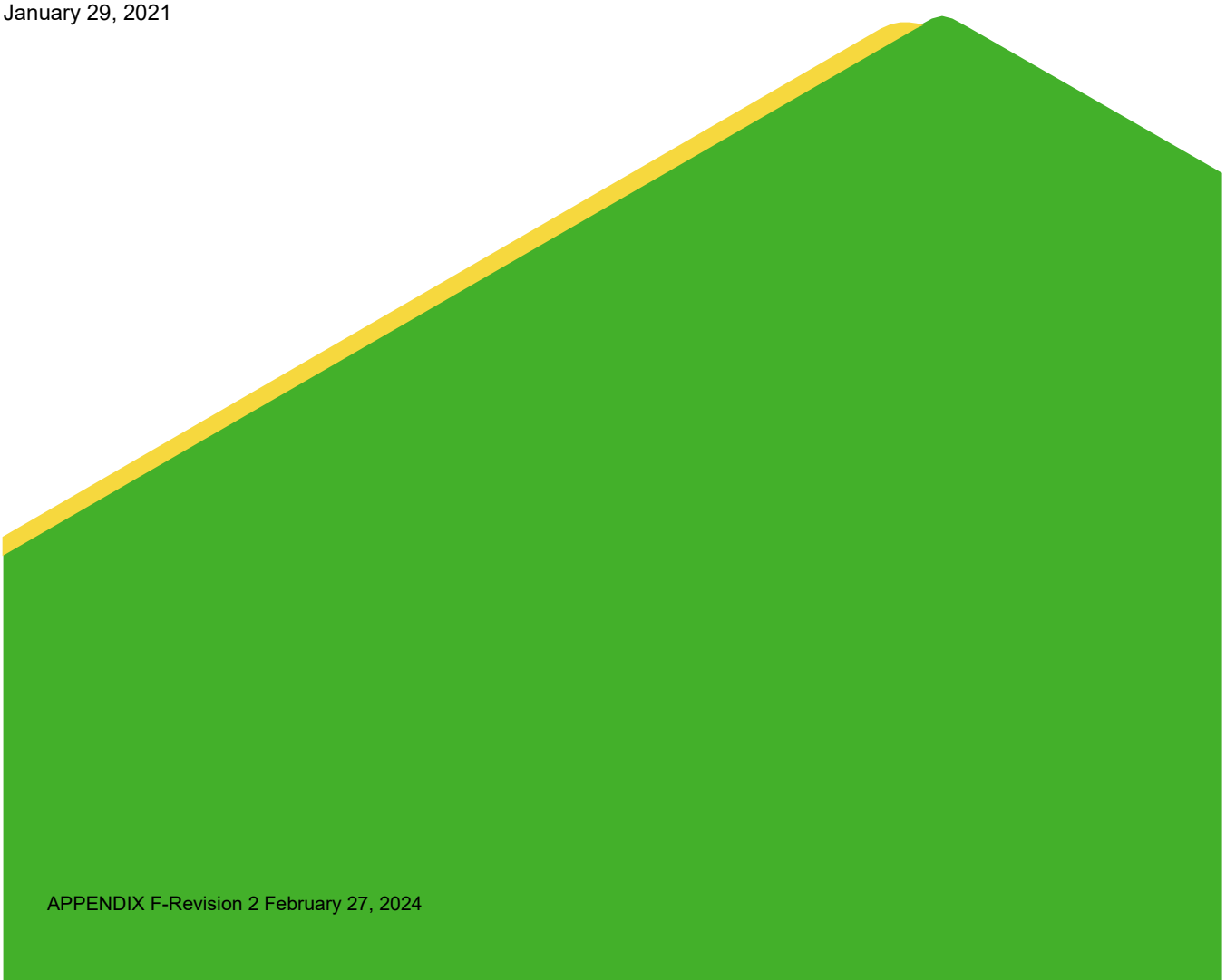

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ACRONYMS AND ABBREVIATIONS

ACM	Assessment of Corrective Measures
CCR	Coal Combustion Residuals
CFR	Code of Federal Regulations
GWPS	Groundwater Protection Standard
MCL	Maximum Concentration Level
mg/L	Milligrams per Liter
MLSES	Martin Lake Steam Electric Station
NA	Not Applicable
SSI	Statistically Significant Increase
SSL	Statistically Significant Level
USEPA	United States Environmental Protection Agency

EXECUTIVE SUMMARY

Golder Associates, Inc. (Golder) has prepared this report on behalf of Luminant Generation Company LLC (Luminant) to satisfy the 2020 annual groundwater monitoring and corrective action reporting requirements of the Coal Combustion Residuals (CCR) Rule (40 CFR 257, Subpart D) for the Ash Pond Area (the "CCR units") at the Martin Lake Steam Electric Station (MLSES) in Rusk County, Texas. The CCR units and CCR monitoring well network are shown on Figure 1.

At the beginning and end of the 2020 reporting period, the CCR units were operating under an Assessment Monitoring Program as described in 40 CFR § 257.95. The Assessment Monitoring Program was established on July 16, 2018. Concentrations of Appendix IV constituents at statistically significant levels (SSLs) above groundwater protection standards (GWPSs) were identified in January 2019 for beryllium, cobalt, and lithium in the Ash Pond Area. An Assessment of Corrective Measures (ACM) was initiated on April 8, 2019 and completed on September 5, 2019 in accordance with 40 CFR § 257.96 to address the Appendix IV SSLs. A public meeting was held on November 13, 2019, pursuant to 40 CFR § 257.96(e), to discuss the results of the ACM. Luminant has not yet selected the remedy for parameters detected at SSLs above GWPSs from the potential corrective measure alternatives proposed in the ACM in accordance with 40 CFR §257.97. Further evaluation of potential remedies is on-going.

During 2020, SSLs above GWPSs were observed in the Ash Pond Area for beryllium in well H-31 and cobalt in wells H-28, H-31, and H-32.

1.0 INTRODUCTION

The CCR Rule (40 CFR 257 Subpart D - *Standards for the Receipt of Coal Combustion Residuals in Landfills and Surface Impoundments*) has been promulgated by the United States Environmental Protection Agency (USEPA) to regulate the management and disposal of CCRs as solid waste under Resource Conservation and Recovery Act (RCRA) Subtitle D. For existing CCR landfills and surface impoundments, the CCR Rule requires that the owner or operator prepare an annual groundwater monitoring and corrective action report to document the status of the groundwater monitoring and corrective action program for the CCR unit for the previous calendar year. Per 40 CFR 257.90(e) of the CCR Rule, the report should contain the following information, to the extent available:

(1) A map, aerial image, or diagram showing the CCR unit and all background (or upgradient) and downgradient monitoring wells, to include the well identification numbers, that are part of the groundwater monitoring program for the CCR unit;

(2) Identification of any monitoring wells that were installed or decommissioned during the preceding year, along with a narrative description of why those actions were taken;

(3) In addition to all the monitoring data obtained under §§ 257.90 through257.98, a summary including the number of groundwater samples that were collected for analysis for each background and downgradient well, the dates the samples were collected, and whether the sample was required by the detection monitoring or assessment monitoring programs;

(4) A narrative discussion of any transition between monitoring programs (*e.g.,* the date and circumstances for transitioning from detection monitoring to assessment monitoring in addition to identifying the constituent(s) detected at a statistically significant increase over background levels); and

(5) Other information required to be included in the annual report as specified in §§ 257.90 through 257.98.

(6) A section at the beginning of the annual report that provides an overview of the current status of groundwater monitoring and corrective action programs for the CCR unit. At a minimum, the summary must specify all of the following:

(i) At the start of the current annual reporting period, whether the CCR unit was operating under the detection monitoring program in § 257.94 or the assessment monitoring program in § 257.95;

(ii) At the end of the current annual reporting period, whether the CCR unit was operating under the detection monitoring program in § 257.94 or the assessment monitoring program in § 257.95;

(iii) If it was determined that there was a statistically significant increase over background for one or more constituents listed in Appendix III to this part pursuant to § 257.94(e):

(A) Identify those constituents listed in Appendix III to this part and the names of the monitoring wells associated with such an increase; and

(B) Provide the date when the assessment monitoring program was initiated for the CCR unit.

(iv) If it was determined that there was a SSL above the groundwater protection standard for one or more constituents listed in Appendix IV to this part pursuant to § 257.95(g) include all of the following:

(A) Identify those constituents listed in Appendix IV to this part and the names of the monitoring wells associated with such an increase;

(B) Provide the date when the assessment of corrective measures was initiated for the CCR unit;

(C) Provide the date when the public meeting was held for the assessment of corrective measures for the CCR unit; and

(D) Provide the date when the assessment of corrective measures was completed for the CCR unit.

(v) Whether a remedy was selected pursuant to § 257.97 during the current annual reporting period, and if so, the date of remedy selection; and

(vi) Whether remedial activities were initiated or are ongoing pursuant to § 257.98 during the current annual reporting period.

2.0 MONITORING AND CORRECTIVE ACTION PROGRAM STATUS

Golder collected the initial Detection Monitoring Program groundwater samples from the Ash Pond Area CCR monitoring well network in September 2017. The evaluation of those data was completed in 2018 using procedures described in the Statistical Analysis Plan (PBW, 2017) to identify statistically significant increases (SSIs) of Appendix III parameters over background concentrations. The Detection Monitoring Program sampling dates and parameters are summarized in the following table:

Detection Monitoring Program Summary

Sampling Dates	Parameters	SSIs	Assessment Monitoring Program Established
September 21, 2017	Appendix III	Yes	July 16, 2018

Alternate source evaluations were inconclusive for one or more of the SSIs. Consequently, an Assessment Monitoring Program was initiated and established for the Ash Pond Area CCR units in 2018 in accordance with 40 CFR § 257.94(e)(2).

Golder collected the initial Assessment Monitoring Program groundwater samples in June 2018. Subsequent Assessment Monitoring Program sampling events have been conducted on a semi-annual basis, as required by the CCR Rule. All CCR groundwater monitoring wells were sampled for Appendix III and Appendix IV constituents during the semi-annual sampling events.

The statistical background prediction limits used to assess Appendix III data and the GWPSs used to assess Appendix IV data are summarized in Tables 1 and 2, respectively. Appendix III and Appendix IV analytical data are summarized in Tables 3 and 4, respectively.

Concentrations of Appendix IV constituents at statistically significant levels (SSLs) above GWPSs were identified in January 2019 for beryllium, cobalt, and lithium. Notification of these SSLs was placed in the operating record on February 6, 2019 and was subsequently placed on the public website in accordance with 40 CFR § 257.107(d). An ACM was initiated on April 8, 2019 pursuant to §257.95(g). A justification letter for a 60-day extension due to site-specific circumstances that delayed work on the ACM was certified on July 3, 2019 in accordance with 40 CFR §257.96(a). A copy of the extension justification letter was provided in the 2019 Annual Groundwater Monitoring and Corrective Action Report. The ACM was completed in September 2019 (Golder 2019) for the parameters detected at SSLs above GWPSs (i.e., beryllium, cobalt, and lithium), pursuant to 40 CFR § 257.96.

Additional semi-annual Assessment Monitoring events were conducted in 2019 and 2020. Statistical analysis of the sample data was performed in accordance with the Statistical Analysis Plan for CCR Groundwater Monitoring (PBW 2017) and the USEPA Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities-Unified Guidance (USEPA 2009). The statistical analysis included an evaluation of statistical confidence intervals based on Appendix IV sample data collected from downgradient monitoring wells. SSLs are indicated if the 95% lower confidence limit of a particular parameter's data population exceeds the GWPS. SSLs above GWPSs were identified for beryllium and cobalt during each of the semi-annual groundwater assessments in 2019 and 2020. Notification of the beryllium and cobalt SSLs have been made after SSLs are identified in accordance with 40 CFR § 257.107(d). SSLs for lithium were not identified during the 2019 or 2020 monitoring events.

The Assessment Monitoring Program sampling dates and parameters are summarized in the following table:

Assessment Monitoring Program Summary

Sampling Dates	Analytical Data Receipt Date	Parameters Collected	Constituents with SSL(s)	SSL Determination Date	Corrective Measures Assessment Initiated	Corrective Measures Assessment Completed
June 12-13, 2018	July 27, 2018	Appendix III Appendix IV	NA	NA	NA	NA
September 7, 2018	October 8, 2018	Appendix III Appendix IV	Be, Co, Li	January 7, 2019	April 8, 2019	September 5, 2019
May 14, 2019	June 14, 2019	Appendix III Appendix IV	Be and Co	September 5, 2019	NA	NA
September 10, 2019	October 11, 2019	Appendix III Appendix IV	Be and Co	January 8, 2020	NA	NA
May 13, 2020	June 12, 2020	Appendix III Appendix IV	Be and Co	July 22, 2020	NA	NA
October 6, 2020	November 6, 2020	Appendix III Appendix IV	Be and Co	December 7, 2020	NA	NA

Notes:

NA: Not Applicable

3.0 KEY ACTIONS COMPLETED IN 2020

Assessment Monitoring Program groundwater monitoring events were completed in May and October 2020. The number of groundwater samples that were collected for analysis for each background and downgradient well, the dates the samples were collected, and the analytical results for the groundwater samples are summarized in Table 3 (Appendix III parameters) and Table 4 (Appendix IV parameters).

As noted in Section 2.0, an ACM for the Appendix IV parameters identified at SSLs above GWPSs in 2018 (beryllium, cobalt, and lithium) was completed in September 2019. The ACM evaluated retrofitting the Ash Ponds liner systems for purposes of source control. A public meeting was held on November 13, 2019, pursuant to 40 CFR § 257.96(e), to discuss the results of the ACM. Further evaluation is ongoing for purposes of selecting a remedy under 40 CFR. § 257.97.

No CCR wells were installed or decommissioned in 2020.

4.0 PROBLEMS ENCOUNTERED AND ACTIONS TO RESOLVE THE PROBLEMS

No problems were encountered with the CCR groundwater monitoring program in 2020.

5.0 KEY ACTIVITIES PLANNED FOR 2021

The following key activities are planned for 2021:

- Continue the Assessment Monitoring Program in accordance with 40 CFR § 257.95.

- Complete statistical evaluation of Appendix IV analytical data from the downgradient wells and compare results to GWPSs to determine whether an SSL has occurred.

- If an SSL is identified, notification will be prepared as required under 40 CFR § 257.95(g) and will placed in the operating record per 40 CFR § 257.105(h)(8) and will be subsequently placed on the public website per 40 CFR § 257.107(d). Potential alternate sources (i.e., a source other than the CCR unit caused the SSL or that the SSL resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality) will be evaluated. If an alternate source is identified to be the cause of the SSL, a written demonstration will be completed within 90 days of SSL detection and included in the Annual Groundwater Monitoring and Corrective Action Report.

- If an alternate source is not identified to be the cause of the SSL, the applicable requirements of 40 CFR § 257.94 through 257.98 (e.g., assessment of corrective measures) as may apply will be met, including associated recordkeeping/notifications required by 40 CFR §§ 257.105 through 257.108.

- Luminant has not yet selected the remedy for parameters detected at SSLs above GWPSs from the potential corrective measure alternatives proposed in the ACM (Golder 2019). The remedy will be selected in accordance with 40 CFR §257.97 as soon as feasible after the public meeting required under 40 CFR §257.96(e). Further evaluation is ongoing for purposes of selecting a remedy under 40 CFR §257.97.

6.0 REFERENCES

Golder, 2019. CCR Assessment of Corrective Measures, Martin Lake Steam Electric Station – Ash Pond Area, Rusk County, Texas. September.

Pastor, Behling & Wheeler, LLC (PBW), 2017. Coal Combustion Residual Rule Statistical Analysis Plan, Martin Lake Steam Electric Station, Ash Ponds, Rusk County, Texas.

USEPA, 2009. Unified Guidance Document: Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, EPA 530-R-09-007, March 2009.

Signature Page

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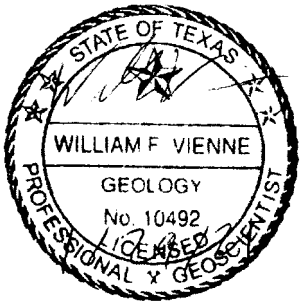

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FIGURES

LEGEND

- DOWNGRADIENT CCR MONITORING WELL
- UPGRADIENT CCR MONITORING WELL

REFERENCE(S)

BASE MAP TAKEN FROM GOOGLE EARTH IMAGERY DATED 2021.

APPENDIX F Revision 2 February 27, 2024

CLIENT
LUMINANT

PROJECT
MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

TITLE
DETAILED SITE PLAN - ASH POND AREA

CONSULTANT
GOLDER

YYYY-MM-DD	2020-01-23
DESIGNED	AJD
PREPARED	AJD
REVIEWED	WFV
APPROVED	WFV

PROJECT NO.	REV.	FIGURE
19122262	0	1

Last Edited By: adiamond Date: 2020-01-23 Time:9:52:24 AM | Printed By: adiamond Date: 2020-01-23 Time:9:52:58 AM
Path: \\texarkanadata\Projects - Round Rock_2019\19122262 - Luminant\C - MLSES-Ash Pond Area\ | File Name: FIG 1 - Detailed Site Plan (Ash Pond Area).dwg
IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI A

TABLES

Table 1
Appendix III Background Statistical Values
MLSES Ash Pond Area

Parameter	Statistical Background Value
Boron (mg/L)	0.602
Calcium (mg/L)	57.2
Chloride (mg/L)	153
Fluoride (mg/L)	0.4
field pH (s.u.)	4.63 7.6
Sulfate (mg/L)	365
Total Dissolved Solids (mg/L)	1,110

Table 2
Appendix IV Analytical Results
MLSES Ash Pond Area

Parameter	Groundwater Protection Standard
Antimony (mg/L)	0.006
Arsenic (mg/L)	0.01
Barium (mg/L)	2
Beryllium (mg/L)	0.004
Cadmium (mg/L)	0.005
Chromium (mg/L)	0.1
Cobalt (mg/L)	0.0564
Fluoride (mg/L)	4
Lead (mg/L)	0.015
Lithium (mg/L)	0.177
Mercury (mg/L)	0.002
Molybdenum (mg/L)	0.1
Selenium (mg/L)	0.05
Thallium (mg/L)	0.002
Radium 226+228 (pCi/L)	5

TABLE 3
APPENDIX III ANALYTICAL RESULTS
MLSES ASH POND AREA

Sample Location	Date Sampled	B (mg/L)	Ca (mg/L)	Cl (mg/L)	Fl (mg/L)	pH (s.u.)	SO_4 (mg/L)	TDS (mg/L)
Upgradient Wells								
H-26	10/21/15	0.602	24.2	69.2	<0.1	5.82	154	466
	12/14/15	0.0679	9.88	40.3	<0.1	5.91	75.8	280
	02/23/16	0.206	11.7	17.1	0.151 J	6.84	54	219
	04/05/16	0.289	11.8	27.8	0.199 J	5.89	56.8	213
	06/07/16	0.441	11.7	48.6	<0.1	5.98	72.2	278
	08/09/16	0.569	14	70	<0.1	4.63	90.9	354
	10/18/16	0.439	13.6	49.1	0.127 J	6.63	69.7	263
	12/11/16	0.537	11.9	57.6	0.161 J	6.73	68.8	236
	09/21/17	0.579	13.1	67.8	<0.100	6.88	69.6	288
	06/13/18	0.512	17	66.1	<0.100	6.74	67	313
	09/07/18	0.606	11.3	65.1	<0.100	6.85	60.7	265
	05/14/19	0.0507	85.2	61.7	0.140 J	6.83	88.2	453
	09/10/19	0.505	12	72.1	<0.1	6.75	69.4	265
	05/13/20	0.644	30.4	71	<0.100	6.89	58.4	280
	10/6/2020	0.473	10.9	68.2	<0.100	6.53	52.0	252
H-27	10/21/15	0.58	55.3	117	<0.1	6.24	328	800
	12/14/15	0.474	57.2	112	0.156 J	6.32	317	857
	02/23/16	0.523	53.8	113	0.101 J	5.82	344	811
	04/05/16	0.48	52.7	115	0.124 J	6.04	360	819
	06/07/16	0.319	10.6	40.5	<0.1	6.32	55	207
	08/09/16	0.462	54.3	124	<0.1	4.35	365	854
	10/18/16	0.477	56.5	114	0.144 J	6.87	336	868
	12/11/16	0.427	52.8	119	0.161 J	6.78	355	805
	09/21/17	0.48	61.1	122	<0.100	6.87	378	852
	06/13/18	0.404	57	110	0.208 J	6.52	372	850
	09/07/18	0.347	6.96	58.3	0.14 J	6.72	188	716
	05/14/19	0.35	61.8	132	0.159 J	6.78	406	897
	09/10/19	0.368	57.7	117	<0.1	6.77	365	841
	05/13/20	0.583	53.1	93	<0.100	6.92	274	786
	10/6/2020	0.465	11.0	68.0	<0.100	6.55	51.9	253
H-33	10/20/15	0.0462	17.9	60.5	<0.1	5.78	120	415
	12/14/15	0.0596	10.7	59.6	0.136 J	5.73	110	403
	02/23/16	0.0656	11.2	56.1	0.125 J	6.92	111	625
	04/05/16	0.0659	14.9	58.3	0.14 J	6.31	113	589
	06/07/16	0.0571	20.1	67.5	<0.1	6.04	121	515
	08/09/16	0.0431	11.2	64.9	<0.1	5.13	120	442
	10/18/16	0.0539	11.1	59.2	<0.1	6.86	114	398
	12/11/16	0.0594	12.1	63.2	0.132 J	6.85	112	395
	09/21/17	0.0452	13.7	67.9	<0.100	7.02	107	412
	06/13/18	0.114	24	65.5	0.105 J	6.72	93.8	447
	09/07/18	0.112	22.4	66.2	0.135 J	6.73	96.8	489
	05/14/19	0.0592	68.6	80.4	0.166 J	6.81	104	559
	09/10/19	0.0631	44.1	86.1	<0.1	6.75	119	495
	05/13/20	0.103	24	84.3	<0.100	6.63	113	439
	10/6/2020	0.0763	19.7	83.0	<0.100	6.88	108	417

TABLE 3
APPENDIX III ANALYTICAL RESULTS
MLSES ASH POND AREA

Sample Location	Date Sampled	B (mg/L)	Ca (mg/L)	Cl (mg/L)	Fl (mg/L)	pH (s.u.)	SO_4 (mg/L)	TDS (mg/L)
Downgradient Wells								
H-28	10/21/15	9.25	113	109	<0.1	5.92	1,010	1,830
	12/14/15	1.02	17.3	15.5	<0.1	6.02	113	299
	02/23/16	10.2	123	97.4	<0.1	4.45	1,070	1,910
	04/05/16	10.3	120	94.4	<0.1	5.97	1,080	1,890
	06/07/16	3.66	45.4	62.2	<0.1	6.16	465	817
	08/09/16	9.29	116	98.4	<0.1	3.83	1,080	2,100
	10/18/16	4.96	67.3	91.4	0.165 J	6.82	643	1,460
	12/11/16	3.94	45.7	56.7	0.114 J	6.64	445	766
	09/21/17	6.06	74.1	88.5	<0.100	6.77	702	1,220
	06/13/18	6.97	92.1	96.5	0.126 J	6.59	826	1,490
	09/07/18	4.54	60.5	93.4	<0.100	6.84	679	1,330
	05/14/19	8.51	99.7	98.9	<0.100	6.32	935	1,680
	09/10/19	5.69	68.9	95.9	<0.100	6.89	716	1,390
	05/13/20	7.03	88.9	86.7	<0.100	6.58	676	1,220
	10/6/2020	5.14	70.8	88.7	<0.100	6.72	638	1220
H-29	10/21/15	0.0788	16	65.2	<0.1	5.78	171	441
	12/14/15	0.29	165	8.68	0.56	5.92	178	990
	02/23/16	0.268	59.4	14.6	0.239 J	11.20	156	334
	04/05/16	0.361	80.8	14.2	0.363 J	6.04	181	489
	06/07/16	0.311	29.8	19.3	0.27 J	6.13	166	308
	08/09/16	0.172	64.6	53.1	<0.1	5.97	124	575
	10/18/16	0.953	150	4.33	1.15	6.63	346	607
	12/11/16	1.02	130	4.65	1.4	6.59	365	651
	09/21/17	1.4	147	42	0.304	6.78	170	782
	06/13/18	5.89	81.1	84.1	0.123 J	6.75	713	1,240
	09/07/18	3.21	46.7	78.6	<0.100	6.77	544	1,030
	05/14/19	8.12	95.9	81.8	0.104 J	6.52	780	1,400
	09/10/19	8.05	97.1	90.5	<0.1	6.62	930	1,600
	05/13/20	6.98	84.9	70.7	<0.100	6.72	769	1,340
	10/6/2020	11.0	156	167	1.76	6.62	1400	2440
H-31	10/20/15	17.2	194	179	0.889	6.57	1,930	3,270
	12/14/15	20.4	236	147	0.692	6.60	1,740	2,250
	02/23/16	22.3	252	199	0.921	5.33	2,510	4,180
	04/05/16	21.1	250	186	1.36	6.46	2,450	3,920
	06/07/16	22.2	244	241	0.783	6.42	2,720	4,570
	08/09/16	24.1	251	217	0.216 J	4.38	2,730	4,440
	10/18/16	20	236	187	0.298 J	6.82	1,960	3,690
	12/11/16	22.3	246	201	0.892	6.82	2,640	4,170
	09/21/17	23.8	260	227	0.308 J	6.87	2,870	4,570
	06/12/18	16.6	246	205	0.646	6.61	2,390	4,100
	09/07/18	0.838	12.2	17.7	<0.275	6.77	136	457
	05/14/19	20	234	225	0.96	6.42	2,470	4,230
	09/10/18	19.7	234	232	2.1	6.78	2,640	4,220
	05/13/20	22.9	235	223	0.231 J	6.81	2,340	4,150
	10/6/2020	9.77	148	110	0.494	6.78	1150	2000

TABLE 3
APPENDIX III ANALYTICAL RESULTS
MLSES ASH POND AREA

Sample Location	Date Sampled	B (mg/L)	Ca (mg/L)	Cl (mg/L)	Fl (mg/L)	pH (s.u.)	SO_4 (mg/L)	TDS (mg/L)
H-32	10/20/15	1.22	42.2	120	0.374 J	6.18	309	797
	12/14/15	1.39	37.4	122	0.619	6.29	325	860
	02/23/16	1.48	45.3	123	0.701	4.82	323	842
	04/05/16	1.65	44.3	125	1.05	6.17	337	831
	06/07/16	1.82	45.6	137	0.858	6.05	350	829
	08/09/16	1.69	45.4	132	0.68	3.64	342	839
	10/18/16	1.72	50.5	121	0.904	6.75	319	888
	12/11/16	2.5 J	44.3	120	1.00	6.83	341	759
	09/21/17	2.07 J	52.8	129	0.519	6.82	337	807
	06/12/18	1.82 J	52.6	126	1.02	6.75	339	793
	09/07/18	0.292 J	10.9	17.8	0.551	6.79	53.8	283
	05/14/19	2.08	45.2	135	1.15	6.02	320	910
	09/10/19	1.87	45.9	127	0.923	6.68	365	810
	05/13/20	2.15	43.3	124	0.641	6.93	343	791
	10/6/2020	1.79	49.0	116	0.814	6.59	336	777

Notes:
1. Abbreviations: mg/L - milligrams per liter; TDS - total dissolved solids; s.u. - standard units.
2. J - concentration is below method quantitation limit; result is an estimate.

TABLE 4
APPENDIX IV GROUNDWATER ANALYTICAL DATA
MLSES ASH POND AREA

Sample Location	Date Sampled	Sb (mg/L)	As (mg/L)	Ba (mg/L)	Be (mg/L)	Cd (mg/L)	Cr (mg/L)	Co (mg/L)	F (mg/L)	Pb (mg/L)	Li (mg/L)	Hg (mg/L)	Mo (mg/L)	Se (mg/L)	Tl (mg/L)	Ra 226 (pCi/L)	Ra 228 (pCi/L)	Ra 226/228 Comb.^ (pCi/L)
Upgradient Wells																		
H-26	10/21/15	<0.0008	0.00364 J	0.0785	0.000349 J	<0.0003	<0.002	0.0385	<0.1	<0.0003	0.0139	<0.00008	<0.002	<0.002	<0.0005	0.919	<1.64	2.56
	12/14/15	<0.0008	<0.002	0.0401	0.000458 J	<0.0003	<0.002	0.0244	<0.1	<0.0003	0.0769	<0.00008	<0.002	<0.002	<0.0005	0.619	<1.95	2.57
	02/23/16	<0.0008	<0.002	0.0423	<0.0003	<0.0003	0.0077	0.00813	0.151 J	0.000315 J	0.0124	<0.00008	0.00248 J	0.0022 J	<0.0005	0.37	<2.06	2.43
	04/05/16	<0.0008	<0.002	0.0408	<0.0003	<0.0003	0.00798	0.0125	0.199 J	<0.0003	0.0121	<0.00008	<0.002	<0.002	<0.0005	<0.243	<1.06	<1.303
	06/07/16	<0.0008	<0.002	0.0467	0.000721 J	<0.0003	<0.002	0.0217	<0.1	<0.0003	0.0132	<0.00008	<0.002	<0.002	<0.0005	0.245	1.67	1.92
	08/09/16	<0.0008	0.0029 J	0.0431	0.00136	<0.0003	<0.002	0.0352	<0.1	<0.0003	0.0155	<0.00008	<0.002	<0.002	<0.0005	<0.2	<0.932	<1.132
	10/18/16	<0.0008	<0.002	0.0497	0.000709 J	<0.0003	<0.002	0.0214	0.127 J	<0.0003	0.0136	<0.00008	<0.002	0.00265 J	<0.0005	0.243	<0.622	0.87
	12/11/16	<0.0008	<0.002	0.0468	0.00146	<0.0003	0.00311 J	0.0275	0.161 J	0.000358 J	0.014	<0.00008	<0.002	<0.002	<0.0005	0.248	1.82	2.07
	06/13/18	<0.0008	<0.002	0.0659	0.0016	<0.0003	0.00213 J	0.0261	<0.100	<0.0003	0.032	<0.00008	<0.002	<0.002	<0.0005	<0.297	3.72	4.017
	09/07/18	NA	<0.002	0.0470	0.00155	<0.0003	0.00319 J	0.0247	<0.100	<0.0003	0.0489	NA	NA	<0.002	NA	<0.473	<0.665	<1.138
	05/14/19	<0.0008	0.0041 J	0.1900	0.00147	<0.0003	0.0406	0.0795	0.140 J	0.000972 J	0.147	<0.00008	<0.002	0.00222 J	<0.0005	1.43	0.598	2.028
	9/10/2019	NA	<0.002	0.046	0.00165	<0.0003	<0.002	0.0237	<0.1	0.000313 J	0.0141	NA	NA	0.0109	NA	0.115	2.74	2.85
	5/13/2020	<0.0008	<0.002	0.129	0.00166	<0.0003	0.00314 J	0.0241	<0.100	0.000798	0.0218 J	<0.00008	<0.002	0.0147	<0.0005	0.295	0.585	0.88
	10/6/2020	<0.000800	<0.00200	0.0528	0.00168	<0.000300	<0.00200	0.0231	<0.100	<0.000300	0.0152	<0.0000800	<0.00200	0.00909	<0.000500	0.898	0.293	1.19
H-27	10/21/15	<0.0008	<0.002	0.0378	<0.0003	<0.0003	<0.002	0.00432 J	<0.1	<0.0003	0.0607	<0.00008	<0.002	<0.002	<0.0005	<0.553	<1.67	<2.223
	12/14/15	<0.0008	0.0021 J	0.039	<0.0003	<0.0003	<0.002	0.00326 J	0.156 J	0.000339 J	0.0624	<0.00008	<0.002	<0.002	<0.0005	0.468	<1.68	2.15
	02/23/16	<0.0008	<0.002	0.0266	<0.0003	<0.0003	<0.002	<0.003	0.101 J	<0.0003	0.0601	<0.00008	<0.002	<0.002	<0.0005	0.921	<1.62	2.54
	04/05/16	<0.0008	<0.002	0.0245	<0.0003	<0.0003	<0.002	<0.003	0.124 J	<0.0003	0.0573	<0.00008	<0.002	<0.002	<0.0005	0.269	<2.05	2.32
	06/07/16	<0.0008	<0.002	0.0342	0.000609 J	<0.0003	<0.002	0.016	<0.1	<0.0003	0.0107	<0.00008	<0.002	<0.002	<0.0005	0.269	<0.658	0.927
	08/09/16	<0.0008	<0.002	0.0241	<0.0003	<0.0003	<0.002	<0.003	<0.1	<0.0003	0.0616	<0.00008	<0.002	<0.002	<0.0005	0.408	<0.632	1.04
	10/18/16	<0.0008	<0.002	0.0248	<0.0003	<0.0003	<0.002	<0.003	0.144J	<0.0003	0.0576	<0.00008	<0.002	<0.002	<0.0005	<0.178	1.07	1.25
	12/11/16	<0.0008	<0.002	0.0236	<0.0003	<0.0003	<0.002	<0.003	0.161 J	<0.0003	0.0606	<0.00008	<0.002	<0.002	<0.0005	0.143	1.54	1.68
	06/13/18	<0.0008	<0.002	0.0237	<0.0003	<0.0003	0.00964	<0.003	0.208 J	<0.0003	0.108	<0.00008	<0.002	<0.002	<0.0005	0.267	<1.4	1.667
	09/07/18	NA	<0.002	0.0196	<0.0003	<0.0003	0.0453	<0.003	0.140 J	<0.0003	0.306	NA	NA	0.00773	NA	<0.285	1.43	1.715
	05/14/19	<0.0008	<0.002	0.0208	<0.0003	<0.0003	<0.002	<0.003	0.159 J	<0.0003	0.0678	<0.00008	<0.002	<0.002	<0.0005	1.10	0.928	2.028
	9/10/2019	NA	<0.002	0.384	<0.0003	<0.0003	0.00668	<0.003	<0.1	<0.0003	0.103	NA	NA	0.0027 J	NA	0.185	3.57	3.76
	5/13/2020	<0.0008	<0.002	0.0668	<0.0003	<0.0003	0.0133	<0.003	<0.100	<0.0003	0.170	<0.00008	<0.002	0.00671	<0.0005	0.166	-0.0371	0.166
	10/6/2020	<0.000800	<0.00200	0.0519	0.00167	<0.000300	<0.00200	0.0233	<0.100	0.000390 J	0.0152	<0.0000800	<0.00200	0.00961	<0.000500	0.409	0.789	1.2
H-33	10/20/15	<0.0008	0.00208 J	0.0586	0.000351 J	<0.0003	<0.002	0.0274	<0.1	<0.0003	0.0814	<0.00008	<0.002	<0.002	<0.0005	1.76	1.64	3.40
	12/14/15	<0.0008	0.00205 J	0.0473	0.000382 J	<0.0003	<0.002	0.0293	0.136 J	<0.0003	0.0903	<0.00008	<0.002	<0.002	<0.0005	1.94	<1.79	3.73
	02/23/16	<0.0008	<0.002	0.0529	0.000311 J	<0.0003	0.0194	0.0163	0.125 J	<0.0003	0.182	<0.00008	<0.002	<0.002	<0.0005	0.906	<2.32	3.23
	04/05/16	<0.0008	<0.002	0.0576	0.000302 J	<0.0003	0.0171	0.016	0.14 J	<0.0003	0.16	<0.00008	<0.002	<0.002	<0.0005	0.328	1.08	1.41
	06/07/16	<0.0008	<0.002	0.0774	0.000604 J	<0.0003	0.0153	0.0196	<0.1	<0.0003	0.163	<0.00008	<0.002	<0.002	<0.0005	0.276	0.897	1.17
	08/09/16	<0.0008	<0.002	0.0424	0.000519 J	<0.0003	0.00291 J	0.0284	<0.1	<0.0003	0.102	<0.00008	<0.002	<0.002	<0.0005	<0.149	0.649	0.80
	10/18/16	<0.0008	0.00347 J	0.0464	0.000617 J	<0.0003	0.0309	0.0644	<0.1	0.000329 J	0.118	<0.00008	<0.002	<0.002	<0.0005	0.096	<0.517	0.61
	12/11/16	<0.0008	0.00218 J	0.0537	0.000865 J	<0.0003	0.0368	0.0408	0.132 J	0.000495 J	0.115	<0.00008	<0.002	<0.002	<0.0005	0.159	1.29	1.45
	06/13/18	<0.0008	0.00283 J	0.0741	0.0004 J	<0.0003	0.0182	0.0266	0.105 J	0.0009 J	0.183	<0.00008	<0.002	<0.002	<0.0005	0.795	<0.712	1.507
	09/07/18	NA	0.00239 J	0.0757	0.0003 J	<0.0003	0.0105	0.0288	0.135 J	<0.0003	0.160	NA	NA	<0.002	NA	0.334	<0.645	0.979
	05/14/19	<0.0008	0.00355 J	0.158	0.00114	<0.0003	0.0342	0.0648	0.166 J	0.000772 J	0.161	<0.00008	<0.002	<0.002	<0.0005	0.850	1.35	2.200
	9/10/2019	NA	<0.002	0.111	0.000518 J	<0.0003	0.00637	0.0347	0.01	<0.0003	0.142	NA	NA	<0.002	NA	0.6	2.97	3.57
	5/13/2020	<0.0008	<0.002	0.0784	0.00053 J	<0.0003	0.00755	0.0312	<0.100	0.00191	0.173	<0.00008	<0.002	0.00243 J	<0.0005	0.395	1.9	2.29
	10/6/2020	<0.000800	<0.00200	0.068	0.000721 J	<0.000300	0.00317 J	0.0331	<0.100	0.000358 J	0.128	<0.0000800	<0.00200	<0.00200	<0.000500	0.33	0.737	1.07

TABLE 4
APPENDIX IV GROUNDWATER ANALYTICAL DATA
MLSES ASH POND AREA

Sample Location	Date Sampled	Sb (mg/L)	As (mg/L)	Ba (mg/L)	Be (mg/L)	Cd (mg/L)	Cr (mg/L)	Co (mg/L)	F (mg/L)	Pb (mg/L)	Li (mg/L)	Hg (mg/L)	Mo (mg/L)	Se (mg/L)	Tl (mg/L)	Ra 226 (pCi/L)	Ra 228 (pCi/L)	Ra 226/228 Comb.^ (pCi/L)
Downgradient Wells																		
H-28	10/21/15	<0.0008	0.00278 J	0.0396	0.00148	0.00121	<0.002	0.188	<0.1	0.000491 J	0.154	<0.00008	<0.002	0.00682	<0.0005	<0.558	<1.65	<2.208
	12/14/15	<0.0008	<0.002	0.0224	<0.0003	0.000572 J	<0.002	0.0225	<0.1	<0.0003	0.021	<0.00008	<0.002	<0.002	<0.0005	0.707	<1.18	1.89
	02/23/16	<0.0008	0.00225 J	0.0202	0.00133	0.00151	<0.002	0.201	<0.1	0.00053 J	0.159	<0.00008	<0.002	0.00222 J	<0.0005	<0.396	2.24	2.64
	04/05/16	<0.0008	<0.002	0.0173	0.0011	0.00252	<0.002	0.199	<0.1	0.00087 J	0.15	<0.00008	<0.002	0.00237 J	<0.0005	<0.231	1.76	1.99
	06/07/16	<0.0008	<0.002	0.0468	0.000934 J	0.000664 J	<0.002	0.0944	<0.1	<0.0003	0.0959	<0.00008	<0.002	<0.002	<0.0005	0.310	1.48	1.79
	08/09/16	<0.0008	<0.002	0.0155	0.00275	0.0016	<0.002	0.195	<0.1	0.000774 J	0.155	<0.00008	<0.002	0.00286 J	<0.0005	<0.451	1.41	1.86
	10/18/16	<0.0008	0.00284J	0.0174	0.00685	0.000744 J	<0.002	0.169	0.165J	0.00108	0.155	<0.00008	<0.002	0.00273 J	<0.0005	<0.228	0.645	0.87
	12/11/16	<0.0008	<0.002	0.0471	0.000698 J	0.000668 J	<0.002	0.0924	0.114 J	<0.0003	0.0869	<0.00008	<0.002	<0.002	<0.0005	<0.149	1.13	1.28
	06/13/18	<0.0008	<0.002	0.0186	0.00393	0.0038	<0.002	0.169	0.126 J	0.000448 J	0.18	<0.00008	<0.002	<0.002	<0.0005	0.327	<1.56	1.887
	09/07/18	NA	<0.002	0.0192	0.00704	0.00115	<0.002	0.162	<0.100	0.00118 J	0.203	NA	NA	0.00281 J	NA	<0.243	0.845	1.088
	05/14/19	<0.0008	<0.002	0.0141	0.00281	0.00212	<0.002	0.187	<0.100	0.000595 J	0.172	<0.00008	<0.002	0.00619	<0.0005	0.444	0.615	1.059
	9/10/2019	NA	<0.002	0.145	0.0058	0.000951	<0.002	0.146	<0.1	0.00132	0.169	NA	NA	0.00461	NA	0.205	4.26	4.47
	5/13/2020	<0.0008	<0.002	0.0149	0.00252	0.00126	<0.002	0.159	<0.100	0.00751 J	0.171	<0.00008	<0.002	0.0032 J	<0.0005	0.151	0.984	1.13
	10/6/2020	<0.000800	<0.00200	0.0166	0.00563	0.000835 J	<0.00200	0.145	<0.100	0.00106	0.173	<0.0000800	<0.00200	0.00468 J	<0.000500	0.898	0.293	1.19
H-29	10/21/15	<0.0008	<0.002	0.159	0.000359 J	<0.0003	<0.002	0.0301	<0.1	<0.0003	0.0156	<0.00008	<0.002	<0.002	<0.0005	0.464	1.82	2.28
	12/14/15	<0.0008	<0.002	0.277	<0.0003	<0.0003	0.062	<0.003	0.56	0.000542 J	0.0202	<0.00008	0.00819	0.0282	<0.0005	<0.53	<1.25	<1.78
	02/23/16	<0.0008	0.00203 J	0.151	<0.0003	<0.0003	0.019	<0.003	0.239 J	<0.0003	0.0135	<0.00008	0.00603	0.0148	<0.0005	<0.374	<2.22	<2.594
	04/05/16	<0.0008	<0.002	0.167	<0.0003	<0.0003	0.042	<0.003	0.363 J	<0.0003	0.0175	<0.00008	0.00697	0.0232	<0.0005	<0.228	<0.897	<1.125
	06/07/16	<0.0008	<0.002	0.136	<0.0003	<0.0003	0.0274	<0.003	0.27 J	<0.0003	0.0188	<0.00008	0.00551	0.0152	<0.0005	0.173	<0.834	1.01
	08/09/16	<0.0008	0.00995	0.315	<0.0003	<0.0003	0.00297 J	0.00473 J	<0.1	<0.0003	0.0143	<0.00008	<0.002	<0.002	<0.0005	0.261	<0.578	0.84
	10/18/16	<0.0008	<0.002	0.118	<0.0003	<0.0003	0.00412 J	<0.003	1.15	0.000427J	0.0056 J	<0.00008	0.00305 J	0.0681	<0.0005	0.155	<0.439	0.59
	12/11/16	<0.0008	<0.002	0.0779	<0.0003	<0.0003	<0.002	<0.003	1.4	<0.0003	<0.005	<0.00008	0.00307 J	0.0642	<0.0005	<0.113	<0.599	<0.712
	06/13/18	<0.0008	<0.002	0.0157	0.00345	0.00318	<0.002	0.153	0.123 J	0.000779 J	0.153	<0.00008	<0.002	<0.002	<0.0005	<0.274	<1.62	<1.894
	09/07/18	NA	<0.002	0.0374	0.00513	0.000938	<0.002	0.119	<0.100	0.00172	0.145	NA	NA	0.00374 J	NA	<0.371	<0.71	<1.081
	5/14/2019	<0.0008	<0.002	0.0138	0.00341	0.00219	<0.002	0.183	0.104 J	0.000543 J	0.173	<0.00008	<0.002	0.00616	<0.0005	<0.339	<0.707	<1.046
	9/10/2019	NA	<0.002	0.0135	0.00233	0.00127	<0.002	0.164	<0.1	0.000916 J	0.157	NA	NA	0.00395 J	NA	0.364	4.99	5.35
	5/13/2020	<0.0008	<0.002	0.0117	0.0013	0.00129	<0.002	0.142	<0.100	0.000684 J	0.134	<0.00008	<0.002	0.00281 J	<0.0005	0.246	0.545	0.791
	10/6/2020	<0.000800	0.00696	0.0165	0.0256	<0.000300	0.00205 J	0.377	1.76	0.000438	0.164	<0.0000800	<0.00200	0.0513	<0.000500	0.0273	0.741	0.769
H-31	10/20/15	<0.0008	0.0168	0.0732	0.0126	0.0032	0.00687	0.434	0.889	<0.0003	0.137	<0.00008	<0.002	0.116	<0.0005	0.943	<1.88	2.82
	12/14/15	<0.0008	0.00513	0.0388	0.00702	<0.0003	0.00456 J	0.0651	0.692	<0.0003	0.149	<0.00008	<0.002	0.0231	<0.0005	1.61	<1.29	2.90
	02/23/16	<0.0008	0.00436 J	0.0243	0.0101	<0.0003	<0.002	0.0594	0.921	<0.0003	0.146	<0.00008	<0.002	0.0209	<0.0005	<0.419	<1.64	<2.059
	04/05/16	<0.0008	0.00514	0.0241	0.00925	<0.0003	0.00435 J	0.0685	1.36	<0.0003	0.146	<0.00008	<0.002	0.0226	<0.0005	<0.334	<0.897	<1.231
	06/07/16	<0.0008	0.0038 J	0.0242	0.00789	<0.0003	<0.002	0.0406	0.783	<0.0003	0.157	<0.00008	<0.002	0.0307	<0.0005	0.257	<0.555	0.81
	08/09/16	<0.0008	0.00886	0.0191	0.00734	<0.0003	<0.002	0.286	0.216 J	<0.0003	0.17	<0.00008	<0.002	0.0202	<0.0005	1.31	0.900	2.21
	10/18/16	<0.0008	0.00351 J	0.0215	0.00167 J	<0.0003	<0.002	0.0304 J	0.298 J	<0.0003	0.165	<0.00008	<0.002	0.00567 J	<0.0005	0.169	1.18	1.35
	12/11/16	<0.0008	0.00875 J	0.0189	0.0197	<0.0003	0.00386 J	0.23 J	0.892	<0.0003	0.198	<0.00008	<0.002	0.0365	<0.0005	0.195	<0.754	0.95
	06/12/18	<0.0008	0.00532	0.0194	0.00545	<0.0003	0.003 J	0.236	0.646	<0.0003	0.214	<0.00008	<0.002	0.00475 J	<0.0005	<0.26	<0.597	<0.857
	09/07/18	NA	<0.002	0.0287	<0.0003	<0.0003	<0.002	0.00353 J	0.275 J	<0.0003	0.0187	NA	NA	0.00424 J	NA	<0.261	<0.567	<0.828
	05/14/19	<0.0008	0.00675	0.0163	0.00928	<0.0003	0.00315 J	0.389	0.96	<0.0003	0.219	<0.0004	<0.002	0.0261	<0.0005	2.62	<0.789	3.409
	9/10/2019	NA	0.00845	0.0158	0.0312	<0.0003	0.00305 J	0.41	2.1	<0.0003	0.225	NA	NA	0.0642	NA	0.247	2.92	3.17
	5/13/2020	<0.0008	0.011	0.0159	0.0331	<0.0003	0.00367 J	0.449	0.231 J	<0.0003	0.249	<0.00008	<0.002	0.0792	<0.0005	0.0808	1.7	1.78
	10/6/2020	<0.000800	0.00440 J	0.0345	0.00923	<0.000300	<0.00200	0.208	0.494	<0.000300	0.120	<0.0000800	<0.00200	0.0313	<0.000500	0	0.992	0.992
H-32	10/20/15	<0.0008	0.0028 J	0.16	0.00266	<0.0003	<0.002	0.163	0.374 J	<0.0003	0.0788	<0.00008	<0.002	0.00303 J	<0.0005	1.05	<1.90	2.95
	12/14/15	<0.0008	0.0123	0.0384	0.00313	<0.0003	<0.002	0.155	0.619	<0.0003	0.0733	<0.00008	<0.002	<0.002	<0.0005	0.712	<2.21	2.92
	02/23/16	<0.0008	0.00712	0.0277	0.00452	<0.0003	<0.002	0.188	0.701	0.000326 J	0.0821	<0.00008	<0.002	<0.002	<0.0005	1.12	1.60	2.72
	04/05/16	<0.0008	0.00648	0.0237	0.00527	0.00128	<0.002	0.208	1.05	0.00182	0.0818	<0.00008	<0.002	<0.002	<0.0005	<0.364	<1.15	<1.514
	06/07/16	<0.0008	0.00446 J	0.0238	0.00583	0.000997 J	<0.002	0.207	0.858	0.00168	0.087	<0.00008	<0.002	0.00298 J	<0.0005	<0.165	0.613	0.778
	08/09/16	<0.0008	0.00344 J	0.0234	0.00548	0.000713 J	<0.002	0.19	0.68	0.00115	0.0774	<0.00008	<0.002	0.00281 J	<0.0005	2.56	<0.446	3.01
	10/18/16	<0.0008	0.00289 J	0.02	0.00567	0.00254	<0.002	0.204	0.904	0.00332	0.0834	<0.00008	<0.002	0.00267 J	<0.0005	<0.139	0.683	0.82
	12/11/16	<0.0008	0.00246 J	0.0205	0.00609	0.00108	<0.002	0.208	1	0.00137	0.0838	<0.00008	<0.002	0.00237 J	<0.0005	<0.163	<0.753	<0.916
	06/12/18	<0.0008	<0.002	0.0175	0.00681	0.000586 J	<0.002	0.215	1.02	0.000701 J	0.0957	<0.00008	<0.002	<0.002	<0.0005	<0.275	0.917	1.192
	09/07/18	NA	<0.002	0.0404	<0.0003	<0.0003	<0.002	0.00347 J	0.551	<0.0003	0.0195	NA	NA	0.0157	NA	0.343	1.25	1.593
	05/14/19	<0.0008	0.002 J	0.0162	0.00713	0.000366 J	<0.002	0.202	1.15	0.000574 J	0.0978	<0.00008	<0.002	0.00675	<0.0005	0.303	<0.546	<0.849
	9/10/2019	NA	<0.002	0.016	0.00678	0.000467 J	<0.002	0.185	0.923	0.00056 J	0.0935	NA	NA	0.00492 J	NA	0.0404	4.74	4.78
	5/13/2020	<0.0008	0.00214 J	0.0166	0.00725	0.000389 J	<0.00200	0.195	0.641	0.000743 J	0.0978	<0.00008	<0.002	0.00401 J	<0.0005	-0.0142	1.15	1.15
	10/6/2020	<0.000800	<0.00200	0.0160	0.00676	0.000380 J	<0.00200	0.179	0.814	0.000633	0.0946	<0.0000800	<0.00200	0.00378 J	<0.000500	0.0686	0.348	0.417

Notes:
1. Abbreviations: mg/L - milligrams per liter; pCi/L - picocuries per liter.
2. ^ - Sum of Ra 226 and Ra 228 concentrations. Non-detect isotope results were assigned a value equal to the minimum detectable concentration.
3. J - concentration is below method quantitation limit; result is an estimate.
4. NA = not analyzed (groundwater sample analyses for the second semi-annual sampling events were limited to Appendix IV parameters detected during the preceding first semi-annual sampling event in accordance with 40 CFR § 257.95(d)(1)).

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2020 Annual Groundwater Monitoring and Corrective Action Report

Martin Lake Steam Electric Station PDP 5 - Rusk County, Texas

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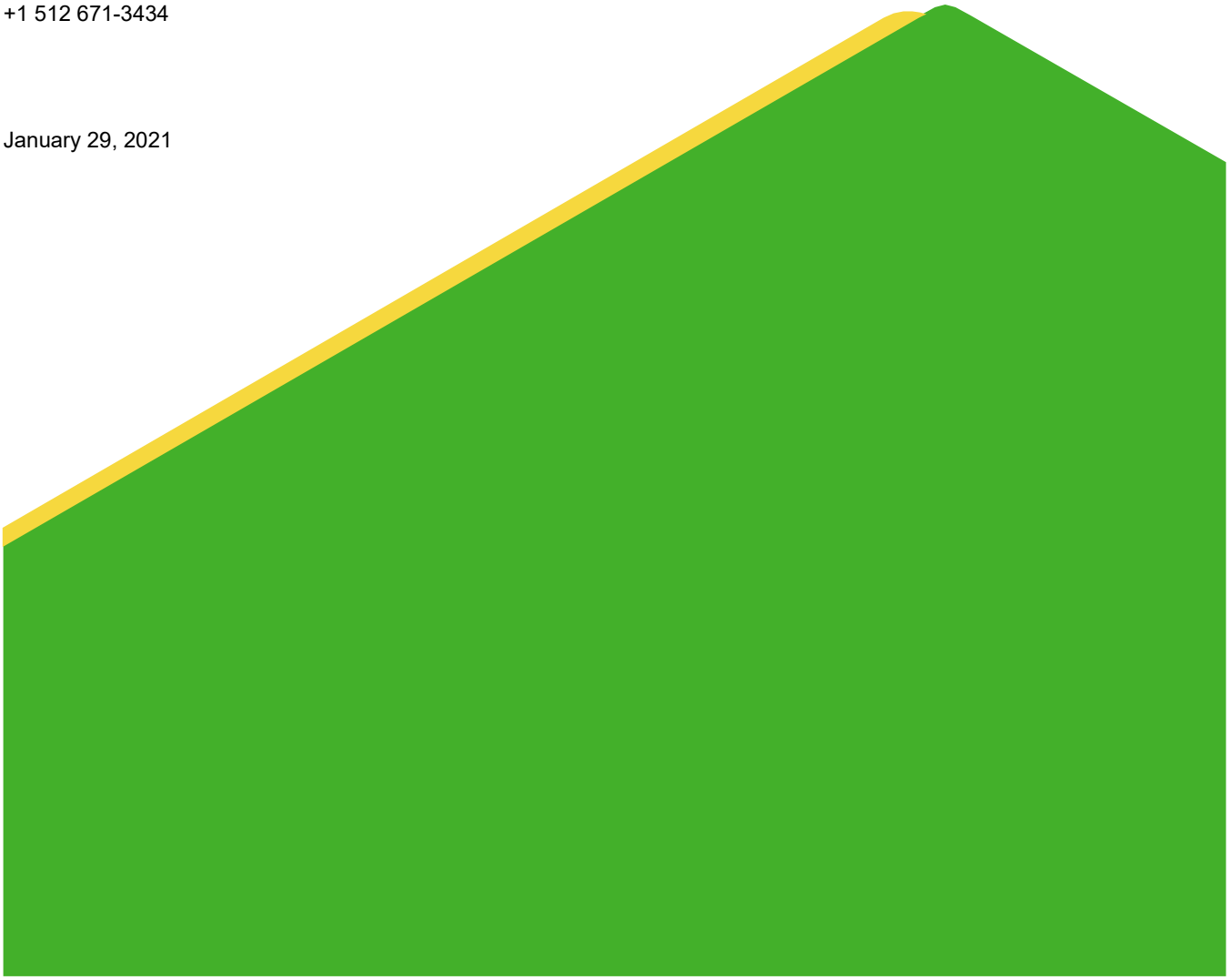

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LIST OF ATTACHMENTS

Attachment 1 Alternate Source Demonstration Report

ACRONYMS AND ABBREVIATIONS

CCR	Coal Combustion Residuals
CFR	Code of Federal Regulations
GWPS	Groundwater Protection Standard
MCL	Maximum Concentration Level
mg/L	Milligrams per Liter
MLSES	Martin Lake Steam Electric Station
NA	Not Applicable
PDP	Permanent Disposal Pond
SSI	Statistically Significant Increase
SSL	Statistically Significant Level
USEPA	United States Environmental Protection Agency

EXECUTIVE SUMMARY

Golder Associates, Inc. (Golder) has prepared this report on behalf of Luminant Generation Company LLC (Luminant) to satisfy the 2020 annual groundwater monitoring and corrective action reporting requirements of the Coal Combustion Residuals (CCR) Rule (40 CFR 257, Subpart D) for the Permanent Disposal Pond 5 (PDP 5) (the "CCR unit") at the Martin Lake Steam Electric Station (MLSES) in Rusk County, Texas. The CCR unit and CCR monitoring well network are shown on Figure 1.

At the beginning and end of the 2020 reporting period, the CCR unit was operating under a Detection Monitoring Program as described in 40 CFR § 257.94. The Detection Monitoring Program for PDP 5 was established in September 2017. Statistically significant increases (SSIs) above background prediction limits were identified for several Appendix III parameters as part of the 2017 through 2019 Detection Monitoring events; however, Alternate Source Demonstrations were completed in 2018, 2019, and 2020 which indicated that a source other than the CCR unit caused the SSIs observed in 2017, 2018, and 2019. During 2020, SSIs were also identified for Appendix III constituents that included boron in well PDP-25, calcium in well PDP-23 and PDP-25, and chloride in well MW-20A. Alternate sources for the SSIs identified in the 2020 sample data are being evaluated in accordance with 40 CFR § 257.94. If an alternate source is not identified to be the cause of the 2020 SSIs, an Assessment Monitoring Program will be established in accordance with 40 CFR § 257.94(e)(2).

1.0 INTRODUCTION

The CCR Rule (40 CFR 257 Subpart D - *Standards for the Receipt of Coal Combustion Residuals in Landfills and Surface Impoundments*) has been promulgated by the United States Environmental Protection Agency (USEPA) to regulate the management and disposal of CCRs as solid waste under Resource Conservation and Recovery Act (RCRA) Subtitle D. For existing CCR landfills and surface impoundments, the CCR Rule requires that the owner or operator prepare an annual groundwater monitoring and corrective action report to document the status of the groundwater monitoring and corrective action program for the CCR unit for the previous calendar year. Per 40 CFR 257.90(e) of the CCR Rule, the report should contain the following information, to the extent available:

(1) A map, aerial image, or diagram showing the CCR unit and all background (or upgradient) and downgradient monitoring wells, to include the well identification numbers, that are part of the groundwater monitoring program for the CCR unit;

(2) Identification of any monitoring wells that were installed or decommissioned during the preceding year, along with a narrative description of why those actions were taken;

(3) In addition to all the monitoring data obtained under §§ 257.90 through 257.98, a summary including the number of groundwater samples that were collected for analysis for each background and downgradient well, the dates the samples were collected, and whether the sample was required by the detection monitoring or assessment monitoring programs;

(4) A narrative discussion of any transition between monitoring programs (*e.g.,* the date and circumstances for transitioning from detection monitoring to assessment monitoring in addition to identifying the constituent(s) detected at a statistically significant increase over background levels); and

(5) Other information required to be included in the annual report as specified in §§ 257.90 through 257.98.

(6) A section at the beginning of the annual report that provides an overview of the current status of groundwater monitoring and corrective action programs for the CCR unit. At a minimum, the summary must specify all of the following:

(i) At the start of the current annual reporting period, whether the CCR unit was operating under the detection monitoring program in § 257.94 or the assessment monitoring program in § 257.95;

(ii) At the end of the current annual reporting period, whether the CCR unit was operating under the detection monitoring program in § 257.94 or the assessment monitoring program in § 257.95;

(iii) If it was determined that there was a statistically significant increase over background for one or more constituents listed in Appendix III to this part pursuant to § 257.94(e):

(A) Identify those constituents listed in Appendix III to this part and the names of the monitoring wells associated with such an increase; and

(B) Provide the date when the assessment monitoring program was initiated for the CCR unit.

(iv) If it was determined that there was a SSL above the groundwater protection standard for one or more constituents listed in Appendix IV to this part pursuant to § 257.95(g) include all of the following:

(A) Identify those constituents listed in Appendix IV to this part and the names of the monitoring wells associated with such an increase;

(B) Provide the date when the assessment of corrective measures was initiated for the CCR unit;

(C) Provide the date when the public meeting was held for the assessment of corrective measures for the CCR unit; and

(D) Provide the date when the assessment of corrective measures was completed for the CCR unit.

(v) Whether a remedy was selected pursuant to § 257.97 during the current annual reporting period, and if so, the date of remedy selection; and

(vi) Whether remedial activities were initiated or are ongoing pursuant to § 257.98 during the current annual reporting period.

2.0 MONITORING AND CORRECTIVE ACTION PROGRAM STATUS

The PDP 5 CCR Unit is currently in a Detection Monitoring Program. Golder collected the initial Detection Monitoring Program groundwater samples from the PDP 5 CCR monitoring well network in September 2017. Subsequent Detection Monitoring Program groundwater samples have been collected on a semi-annual basis since that time. Data evaluation is completed using procedures described in the Statistical Analysis Plan (PBW, 2017) to identify statistically significant increases (SSIs) of Appendix III parameters over background concentrations. The Detection Monitoring Program sampling dates and parameters are summarized in the following table:

Detection Monitoring Program Summary

Sampling Dates	Parameters	SSIs	Assessment Monitoring Program Established
September 2017 February 2018 (re-samples)	Appendix III	Yes	No (Alternate Source Demonstration Completed)
June 2018 September 2018 November 2018 (re-samples)	Appendix III	Yes	No (Alternate Source Demonstration Completed)
May 2019 November 2019	Appendix III	Yes	No (Alternate Source Demonstration Completed)
May 2020 September 2020	Appendix III	Yes	No (Alternate Source Is Being Assessed)

The statistical background values and Appendix III analytical data are presented in Tables 1 and 2, respectively. SSIs of Appendix III parameters were identified for the 2017 through 2019 sampling events. An initial Alternate Source Demonstration was completed in 2018, which indicated that a source other than the CCR unit caused the SSIs observed in the 2017 sample data and 2018 re-sample data. Similarly, Alternate Source Demonstrations were completed in 2019 and 2020 based on the 2018 and 2019 sample data. As such, PDP 5 has remained in the Detection Monitoring Program. A summary of the Alternate Source Demonstration based on the 2019 sample data is presented in Attachment 1 as required by 40 CFR 257.94(e)(2).

Detection Monitoring Program groundwater samples were collected from the CCR groundwater monitoring network on a semi-annual basis in 2020, as required by the CCR Rule. The first 2020 semi-annual Detection

Monitoring Program sampling event was conducted in May 2020. The second 2020 semi-annual Detection Monitoring Program sampling event was conducted in September 2020. The analytical data from the 2020 semi-annual Detection Monitoring Program sampling events were evaluated using procedures described in the Statistical Analysis Plan to identify SSIs of Appendix III parameters over background concentrations. SSIs of Appendix III parameters over background concentrations were identified for several constituents for which SSIs had previously been attributed to alternate sources. Alternate sources for the SSIs identified in the 2020 sample data are being evaluated in accordance with 40 CFR § 257.94. If an alternate source is not identified to be the cause of the SSI, an Assessment Monitoring Program will be established in accordance with 40 CFR § 257.94(e)(2).

3.0 KEY ACTIONS COMPLETED IN 2020

Semi-annual Detection Monitoring Program groundwater monitoring events were completed in May and September 2020. The number of groundwater samples that were collected for analysis for each background and downgradient well, the dates the samples were collected, and the analytical results for the groundwater samples are summarized in Table 2. A map showing the CCR units and monitoring wells is provided as Figure 1. No CCR wells were installed or decommissioned in 2020.

An Alternate Source Demonstration was completed in April 2020 which documented that a source other than PDP 5 caused the SSIs detected over background levels during the 2019 Detection Monitoring Program sampling events, as required by 40 CFR 257.94(e)(2). A copy of the 2020 Alternate Source Demonstration is provided in Attachment 1.

4.0 PROBLEMS ENCOUNTERED AND ACTIONS TO RESOLVE THE PROBLEMS

No problems were encountered with the CCR groundwater monitoring program in 2020.

5.0 KEY ACTIVITIES PLANNED FOR 2021

The following key activities are planned for 2021:

- Continue the Detection Monitoring Program in accordance with 40 CFR § 257.94.

- Complete evaluation of Appendix III analytical data and compare results to statistical background values to determine whether an SSI has occurred.

- If an SSI is identified, potential alternate sources (i.e., a source other than the CCR unit caused the SSI or that the SSI resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality) will be evaluated. If an alternate source is identified to be the cause of the SSI, a written demonstration will be completed within 90 days of SSI determination and included in the Annual Groundwater Monitoring and Corrective Action Report.

- If an alternate source is not identified to be the cause of the SSI, an Assessment Monitoring Program will be established in accordance with 40 CFR § 257.94(e)(2).

6.0 REFERENCES

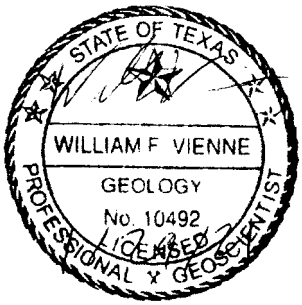
Pastor, Behling & Wheeler, LLC, 2017. Coal Combustion Residual Rule Statistical Analysis Plan, Martin Lake Steam Electric Station, PDP 5, Rusk County, Texas.

Signature Page

Golder Associates Inc.

Patrick J. Behling
Principal Engineer

William F. Vienne
Senior Hydrogeologist



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FIGURES

EXPLANATION

CCR Monitoring Well

N

Scale in Feet

0 275 550

SOURCE:
Imagery from www.tnris.gov, Rusk County, aerial photographs, 2012.

MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

Figure 1

PDP 5 AREA
DETAILED SITE PLAN

PROJECT: 5164B	BY: AJD	REVISIONS
DATE: SEPT., 2017	CHECKED: PJB	

GOLDER

TABLES

Table 1
Statistical Background Values
MLSES - PDP 5

Sample Location	Boron (mg/L)	Calcium (mg/L)	Chloride (mg/L)	Flouride (mg/L)	field pH (s.u.)	Sulfate (mg/L)	Total Dissolved Solids (mg/L)
MW-17A	0.538	6.73	10.4	0.4	2.5 9.19	51.9	170
MW-18A	0.20	3.1	10.4	0.4	4.88 7.92	9.1	157
MW-19	0.782	237	57.7	0.512	4.6 8.08	672	1,380
MW-20A	0.213	25.7	12.3	0.954	3.06 8.76	148	381
PDP-22	0.411	306	32.7	1.07	4.08 8.63	216	1,780
PDP-23	0.0678	2	7.52	0.4	3.38 8.45	3.27	143
PDP-24	4.92	45.9	22.6	1.03	1.33 9.97	533	894
PDP-25	0.136	41.3	197	0.4	4.65 7.93	118	705
PDP-26	0.111	4.74	14.6	0.577	5.35 7.57	64.6	438

TABLE 2
APPENDIX III ANALYTICAL RESULTS
MLSES PDP 5

Sample Location	Date Sampled	Boran (mg/L)	Calcium (mg/L)	Chloride (mg/L)	Flouride (mg/L)	field pH standard units	SO_4 (mg/L)	TDS (mg/L)
MW-17A	09/22/17	0.402	3.1	8.3	<0.1	6.78	31.2	111
	06/14/18	0.485	6.48	9.16	<0.1	6.87	45.9	129
	09/11/18	0.523	5.06	8.82	0.179 J	5.03	43.1	137
	05/13/19	0.497	4.88	9.18	<0.1	6.79	44.7	145
	11/07/19	0.52	5.05	8.81	<0.100	6.44	43.9	127
	05/19/20	0.521	5.09	8.74	<0.100	6.57	46.8	140
	09/25/20	0.477	5.76	10.1	<0.100	6.57	47.7	133
MW-18A	09/21/17	0.0654	1.04	5.27	<0.1	6.94	3.23	45
	06/14/18	0.102	2	6.56	<0.1	6.92	3.48	71
	09/12/18	0.211	3.23	9.06	<0.1	5.69	4.82	150
	11/7/2018 re-sample	0.128	--	--	--	--	--	--
	05/13/19	0.117	1.01	6.17	0.138 J	6.64	3.23	73
	11/07/19	0.127	11.5	6.34	<0.100	6.23	3.67	68
	05/19/20	0.225	1.54	7.09	<0.100	6.89	5.97	86
	09/25/20	0.188	1.66	8.13	<0.100	6.78	6.03	77
MW-19	09/22/17	0.0677	2.74	5.36	<0.1	6.94	1.46 J	98
	06/14/18	0.577	133	24.4	0.216 J	6.78	328	758
	09/11/18	0.243	38	65.1	0.228 J	6.04	166	597
	11/07/18	--	--	5.22	--	--	--	--
	05/13/19	0.429	122	26.8	0.229 J	6.72	349	813
	11/08/19	0.529	77.8	49.3	0.189 J	6.87	310	844
	05/19/20	0.0724	1.49	5.84	<0.100	6.91	1.02 J	85
	09/25/20	0.412	94.6	14.3	0.111 J	6.92	160	462
MW-20A	09/22/17	0.0807	17.4	12.6	0.175 J	6.71	74.2	237
	02/21/18 re-sample	--	--	10.7	--	--	--	--
	06/13/18	0.171	24	10.9	0.672	6.72	132	250
	09/11/18	0.141	7.16	11	0.235 J	4.70	39.1	154
	05/13/19	0.239	37.4	10.2	0.731	6.81	178	328
	11/08/19	0.132	9.9	10.2	0.465	6.51	88	205
	05/19/20	0.22	24	10.4	0.413	6.83	133	270
	09/25/20	0.107	8.94	12.6	0.132 J	6.68	54.3	162
PDP-22	09/22/17	0.221	92.5	12.3	0.321 J	6.98	178	558
	06/14/18	0.115	7.78	11.8	0.239	6.63	186	491
	09/12/18	0.164	61.1	10.9	0.216 J	5.88	143	476
	05/13/19	0.158	98.2	10.1	0.303 J	6.86	184	615
	11/12/19	0.226	34.3	12.6	0.218 J	6.93	215	482
	05/19/20	0.0646	54.9	1.06	<0.100	6.55	5.21	205
	09/25/20	0.206	25.1	12.7	0.128 J	6.73	186	398

TABLE 2
APPENDIX III ANALYTICAL RESULTS
MLSES PDP 5

PDP-23	09/22/17	0.0463	2.34	4.48	0.147 J	6.77	1.47 J	111
	02/21/18 re-sample	--	2.37	--	--	--	--	--
	06/13/18	0.0357	2.29	6.21	<0.1	6.82	1.26 J	98
	09/11/18	0.0760	1.96	6.38	<0.1	5.32	1.52 J	98
	11/7/2018 re-sample	0.0683	--	--	--	--	--	--
	05/13/19	0.0628	1.89	6.98	<0.1	6.68	1.28 J	103
	11/12/19	0.0675	2.14	4.98	<0.100	6.72	1.41 J	93
	05/19/20	0.0709	2.03	6.86	<0.100	6.83	1.19 J	104
	09/25/20	0.0617	2.31	7.29	<0.100	6.74	<1.00	94
PDP-24	09/22/17	3.01	25.8	17.5	0.898	6.95	231	440
	06/14/18	2.71	23.9	21.1	0.629	6.82	284	481
	09/11/18	4.08	41.6	19.4	0.832	4.20	460	760
	05/13/19	3.23	23	21	0.871	6.95	300	537
	11/12/19	3	21.9	20.6	0.751	6.87	295	520
	11/12/19	2.97	22.2	20.5	0.744	6.87	300	504
	05/19/20	3.17	21.4	21	0.61	6.79	286	512
	09/25/20	4.04	40.7	19.6	0.776	6.83	445	699
PDP-25	09/22/17	0.133	36.8	130	0.157 J	6.81	89.1	481
	06/14/18	0.119	40.4	111	<0.1	6.78	73.4	439
	09/11/18	0.167	36.2	135	0.115 J	5.87	90.3	469
	11/7/2018 re-sample	0.142	--	--	--	--	--	--
	05/13/19	0.144	44.4	108	0.121 J	6.84	69	469
	11/12/19	0.184	38.6	117	<0.100	6.82	71.4	454
	05/19/20	0.202	53.7	105	<0.100	6.61	62.2	442
	09/25/20	0.174	46.3	123	<0.100	6.77	67.5	445
PDP-26	09/22/17	0.0343	2.32	5.24	0.157 J	6.84	5.88	107
	06/14/18	0.0225 J	2.93	4.8	<0.1	6.89	4.27	100
	09/12/18	0.0371	2.37	4.88	<0.1	6.07	2.66 J	107
	05/13/19	0.0528	1.9	4.59	0.217 J	6.86	2.7 J	106
	11/12/19	0.0622	2.25	4.64	0.122 J	6.77	2.1 J	102
	05/19/20	0.0538	2.09	4.52	<0.100	6.64	2.1 J	108
	09/25/20	0.0549	2.71	5.07	<0.100	6.83	1.91	92

Notes:
1. J - concentration is below sample quantitation limit; result is an estimate.

ATTACHMENT 1
ALTERNATE SOURCE DEMONSTRATION

ALTERNATE SOURCE DEMONSTRATION SUMMARY

MARTIN LAKE STEAM ELECTRIC STATION – PDP 5

Introduction

This Alternative Source Demonstration Summary was prepared to document that a source other than the Permanent Disposal Pond 5 (PDP 5) (the Site) caused the statistically significant increases (SSIs) over background levels observed during the 2019 Detection Monitoring Program sampling events as required by 40 CFR 257.94(e)(2). A detailed Site plan of the Coal Combustion Residual (CCR) groundwater monitoring network is shown on Figure 1. The Detection Monitoring Program groundwater data are summarized in Table 1.

2019 Semi-Annual Detection Monitoring Results and Discussion

Detection Monitoring Program groundwater samples were collected on a semi-annual basis from the Site CCR monitoring well network in 2019 in accordance with 40 CFR 257.94. Golder collected the initial 2019 Detection Monitoring Program groundwater samples in May 2019 and the second semi-annual Detection Monitoring Program groundwater samples in November 2019. Based on the semi-annual analytical results, SSIs were identified for boron in well PDP-25 and calcium in well PDP-23. Prediction limits for boron, calcium, and sulfate in well MW-20A and calcium in well PDP-25 were exceeded during the first semi-annual 2019 sampling event; however, since the prediction limits were not exceeded during the second semi-annual 2019 event, SSIs were not indicated for these constituents/wells in accordance with the procedures outlined in the Statistical Analysis Plan (PBW, 2017).

The boron concentrations in the 2019 groundwater samples from well PDP-25 (maximum sample concentration of 0.184 mg/L) exceeded the boron prediction limit of 0.136 mg/L for that well; however, the PDP-25 boron results are significantly lower than the boron concentrations observed at other Site wells where SSIs were not indicated. For example, five of the eight other CCR monitoring wells (MW-17A, MW-19, MW-20A, PDP-22, and PDP-24) had boron sample concentrations in 2019 that were higher than those observed in the PDP-25 samples, but SSIs were not indicated in these other wells. As such, the boron sample concentrations observed at PDP-25 are similar or less than those observed in other Site wells and are attributed to variability caused by the heterogeneity of the uppermost aquifer at the Site.

The calcium concentrations in the November 2019 groundwater sample from well PDP-23 (maximum sample concentration of 2.14 mg/L) exceeded the calcium prediction limit of 2.0 mg/L for that well; however, based on the extremely low concentrations of calcium in PDP-23, and the high variability in calcium concentrations observed in the site-wide PDP 5 detection monitoring samples (average calcium concentration for all wells in November 2019 was 22.6 mg/L), the prediction limit exceedance observed in PDP-23 is attributed to variability caused by the heterogeneity of the uppermost aquifer at the Site.

PDP 5 is built on top of three closed and capped landfills (PDP 1, PDP 2, and PDP 3). PDP 4, which is located adjacent to PDP 5 to the south, is also a closed and capped landfill. PDP 1 through PDP 4 are not considered regulated units under the CCR Rule. In addition to the natural variability caused by the heterogeneity of the groundwater system at the Site, sample concentrations identified as SSIs may also be influenced by potential historical effects caused by the closed landfills in the vicinity of PDP 5.

Conclusion

SSIs were identified for boron and calcium during the 2019 Detection Monitoring Program sampling events at PDP 5. All observed SSIs are attributed to natural variation in groundwater quality due to the heterogeneity of the

groundwater system and to potential effects from the closed landfills in the vicinity of PDP 5 (PDP 1 through PDP 4), and are not considered evidence of a release from the CCR unit. In accordance with Section 257.94(e)(2), Luminant should continue the Detection Monitoring Program. Initiation of an Assessment Monitoring Program is not required at this time.

References

Pastor, Behling & Wheeler, LLC (PBW), 2017. Coal Combustion Residual Rule, Statistical Analysis Plan, PDP 5, Rusk County, Texas. October 11, 2017.

PROFESSIONAL CERTIFICATION

This document and all attachments were prepared by Golder Associates Inc. under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I hereby certify that the alternative source demonstration at the referenced facility meets the requirements of Section 257.94(e)(2) of the CCR Rule.

Patrick J. Behling, P.E.

Principal Engineer

GOLDER ASSOCIATES INC.

Table 1
CCR Groundwater Detection Monitoring Data Summary
Martin Lake Steam Electric Station - PDP 5

Sample Location	Date Sampled	B		Ca		Cl		Fl		field pH		SO_4		TDS	
		Prediction Limit	Sample Data	Prediction Limit	Sample Data	Prediction Limit	Sample Data	Prediction Limit	Sample Data	Prediction Limit	Sample Data	Prediction Limit	Sample Data	Prediction Limit	Sample Data
MW-17A	09/22/17	0.538	0.402	6.73	3.1	10.4	8.3	0.4	<0.1	2.5 9.19	6.78	51.9	31.2	170	111
	06/14/18		0.485		6.48		9.16		<0.1		6.87		45.9		129
	09/11/18		0.523		5.06		8.82		0.179 J		5.03		43.1		137
	05/13/19		0.497		4.88		9.18		<0.1		6.79		44.7		145
	11/07/19		0.52		5.05		8.81		<0.100		6.44		43.9		127
MW-18A	09/21/17	0.20	0.0654	3.1	1.04	10.4	5.27	0.4	<0.1	4.88 7.92	6.94	9.1	3.23	157	45
	06/14/18		0.102		2		6.56		<0.1		6.92		3.48		71
	09/12/18		0.211		3.23		9.06		<0.1		5.69		4.82		150
	11/07/18		0.128		--		--		--		--		--		--
	05/13/19		0.117		1.01		6.17		0.138 J		6.64		3.23		73
	11/07/19		0.127		11.5		6.34		<0.100		6.23		3.67		68
MW-19	09/22/17	0.782	0.0677	237	2.74	57.7	5.36	0.512	<0.1	4.6 8.08	6.94	672	1.46 J	1,380	98
	06/14/18		0.577		133		24.4		0.216 J		6.78		328		758
	09/11/18		0.243		38		65.1		0.228 J		6.04		166		597
	11/07/18		--		--		5.22		--		--		--		--
	05/13/19		0.429		122		26.8		0.229 J		6.72		349		813
	11/08/19		0.529		77.8		49.3		0.189 J		6.87		310		844
MW-20A	09/22/17	0.213	0.0807	25.7	17.4	12.3	12.6	0.954	0.175 J	3.06 8.76	6.71	148	74.2	381	237
	02/21/18 re-sample		--		--		10.7		--		--		--		--
	06/13/18		0.171		24		10.9		0.672		6.72		132		250
	09/11/18		0.141		7.16		11		0.235 J		4.70		39.1		154
	05/13/19		0.239		37.4		10.2		0.731		6.81		178		328
	11/08/19		0.132		9.9		10.2		0.465		6.51		88		205

Table 1
CCR Groundwater Detection Monitoring Data Summary
Martin Lake Steam Electric Station - PDP 5

Sample Location	Date Sampled	B		Ca		Cl		Fl		field pH		SO_4		TDS	
		Prediction Limit	Sample Data	Prediction Limit	Sample Data	Prediction Limit	Sample Data	Prediction Limit	Sample Data	Prediction Limit	Sample Data	Prediction Limit	Sample Data	Prediction Limit	Sample Data
PDP-22	09/22/17	0.411	0.221	306	92.5	32.7	12.3	1.07	0.321 J	4.08 8.63	6.98	216	178	1,780	558
	06/14/18		0.115		7.78		11.8		0.239		6.63		186		491
	09/12/18		0.164		61.1		10.9		0.216 J		5.88		143		476
	05/13/19		0.158		98.2		10.1		0.303 J		6.86		184		615
	11/12/19		0.226		34.3		12.6		0.218 J		6.93		215		482
PDP-23	09/22/17	0.0678	0.0463	2	2.34	7.52	4.48	0.4	0.147 J	3.38 8.45	6.77	3.27	1.47 J	143	111
	02/21/18 re-sample		--		2.37		--		--		--		--		--
	06/13/18		0.0357		2.29		6.21		<0.1		6.82		1.26 J		98
	09/11/18		0.0760		1.96		6.38		<0.1		5.32		1.52 J		98
	11/07/18		0.0683		--		--		--		--		--		--
	05/13/19		0.0628		1.89		6.98		<0.1		6.68		1.28 J		103
	11/12/19		0.0675		2.14		4.98		<0.100		6.72		1.41 J		93
PDP-24	09/22/17	4.92	3.01	45.9	25.8	22.6	17.5	1.03	0.898	1.33 9.97	6.95	533	231	894	440
	06/14/18		2.71		23.9		21.1		0.629		6.82		284		481
	09/11/18		4.08		41.6		19.4		0.832		4.20		460		760
	05/13/19		3.23		23		21		0.871		6.95		300		537
	11/12/19		3		21.9		20.6		0.751		6.87		295		520
	11/12/19		2.97		22.2		20.5		0.744		6.87		300		504
PDP-25	09/22/17	0.136	0.133	41.3	36.8	197	130	0.4	0.157 J	4.65 7.93	6.81	118	89.1	705	481
	06/14/18		0.119		40.4		111		<0.1		6.78		73.4		439
	09/11/18		0.167		36.2		135		0.115 J		5.87		90.3		469
	11/07/18		0.142		--		--		--		--		--		--
	05/13/19		0.144		44.4		108		0.121 J		6.84		69		469
	11/12/19		0.184		38.6		117		<0.100		6.82		71.4		454

Table 1
CCR Groundwater Detection Monitoring Data Summary
Martin Lake Steam Electric Station - PDP 5

Sample Location	Date Sampled	B		Ca		Cl		Fl		field pH		SO_4		TDS	
		Prediction Limit	Sample Data	Prediction Limit	Sample Data	Prediction Limit	Sample Data	Prediction Limit	Sample Data	Prediction Limit	Sample Data	Prediction Limit	Sample Data	Prediction Limit	Sample Data
PDP-26	09/22/17	0.111	0.0343	4.74	2.32	14.6	5.24	0.577	0.157 J	5.35 7.57	6.84	64.6	5.88	438	107
	06/14/18		0.0225 J		2.93		4.8		<0.1		6.89		4.27		100
	09/12/18		0.0371		2.37		4.88		<0.1		6.07		2.66 J		107
	05/13/19		0.0528		1.9		4.59		0.217 J		6.86		2.7 J		106
	11/12/19		0.0622		2.25		4.64		0.122 J		6.77		2.1 J		102

Notes:
1. All concentrations in mg/L. pH in standard units.
2. J - concentration is below sample quantitation limit; result is an estimate.

EXPLANATION

CCR Monitoring Well

N

Scale in Feet

0 275 550

SOURCE:
Imagery from www.tnris.gov, Rusk County, aerial photographs, 2012.

MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

Figure 1

PDP 5 AREA
DETAILED SITE PLAN

PROJECT: 5164B	BY: AJD	REVISIONS
DATE: SEPT., 2017	CHECKED: PJB	

golder.com

2021 Annual Groundwater Monitoring and Corrective Action Report - Revision 1

Martin Lake Steam Electric Station A1 Area Landfill - Panola County, Texas

Prepared for:

Luminant Generation Company LLC

Prepared by:

Golder Associates USA Inc., Member of WSP

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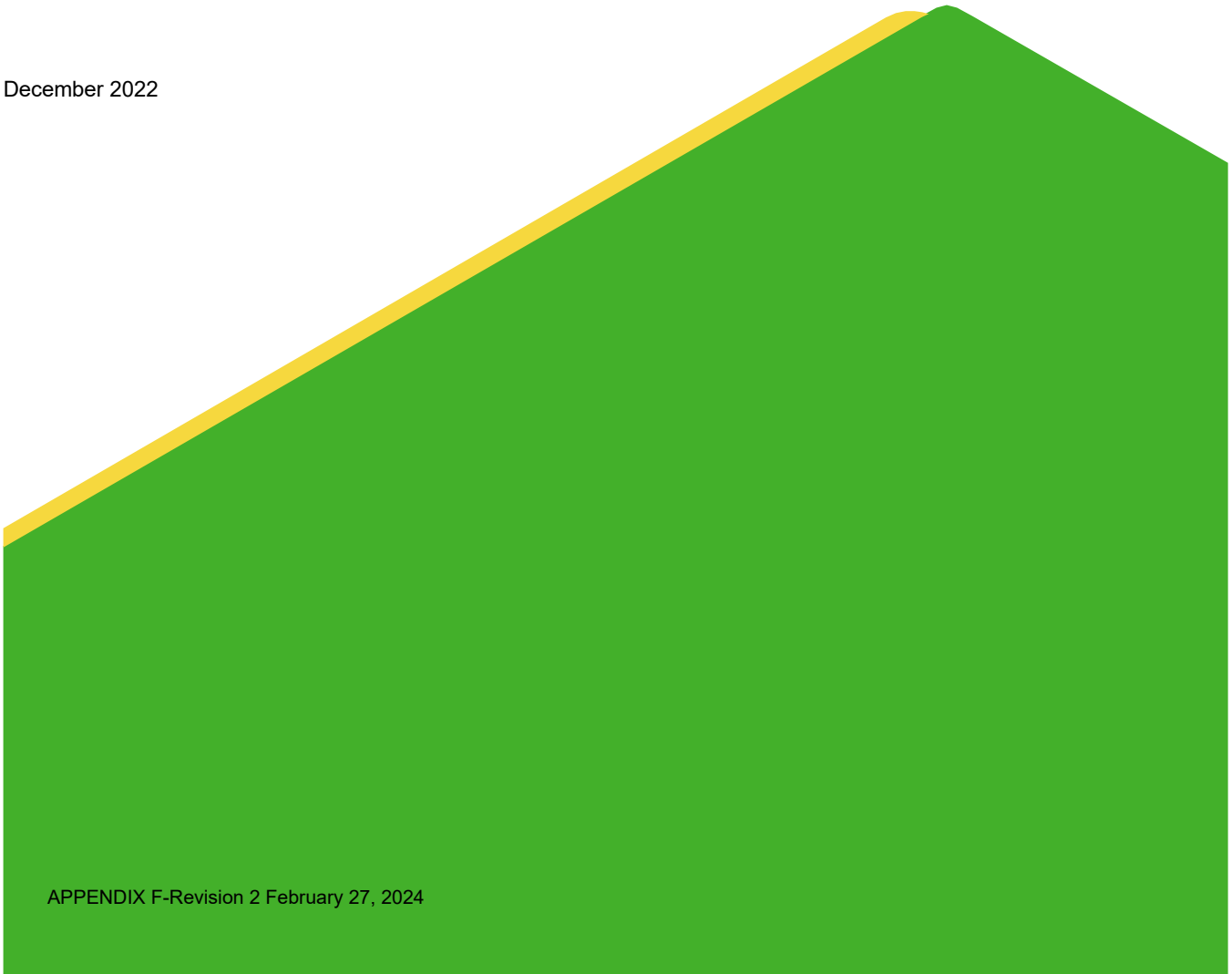
December 2022



APPENDIX F-Revision 2 February 27, 2024

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Attachment 2 2021 Appendix IV Confidence Interval Graphs

Attachment 3 2021 Groundwater Potentiometric Surface Maps

ACRONYMS AND ABBREVIATIONS

ACM	Assessment of Corrective Measures
CCR	Coal Combustion Residuals
C.F.R.	Code of Federal Regulations
GWPS	Groundwater Protection Standard
MCL	Maximum Concentration Level
mg/L	Milligrams per Liter
MLSES	Martin Lake Steam Electric Station
MNA	Monitored Natural Attenuation
NA	Not Applicable
SSI	Statistically Significant Increase
SSL	Statistically Significant Level
T.A.C.	Texas Administrative Code
USEPA	United States Environmental Protection Agency

DOCUMENT REVISION RECORD

Issue No.	Date	Details of Revisions
Revision 0	January 31, 2022	Original Document
Revision 1	December 2022	Added laboratory analytical reports, documentation on statistical evaluation of Appendix IV groundwater data, groundwater potentiometric surface maps, and professional seals to figures where applicable

EXECUTIVE SUMMARY

Golder Associates USA Inc. (Golder), Member of WSP, has prepared this report on behalf of Luminant Generation Company LLC (Luminant) to satisfy the 2021 annual groundwater monitoring and corrective action reporting requirements of 40 C.F.R. Part 257 and 30 T.A.C. Chapter 352 for the A1 Area Landfill (the "CCR unit") at the Martin Lake Steam Electric Station (MLSES) in Panola County, Texas. The CCR unit and CCR monitoring well network are shown on Figure 1.

At the beginning and end of the 2021 reporting period, the CCR unit was operating under an Assessment Monitoring Program as described in §257.95. The Assessment Monitoring Program was established on July 16, 2018. Concentrations of Appendix IV constituents at statistically significant levels (SSLs) above groundwater protection standards (GWPSs) were identified in January 2019 for arsenic, barium, cobalt, and lithium at the A1 Area Landfill. An Assessment of Corrective Measures (ACM) was initiated on April 8, 2019 and was completed on September 5, 2019 in accordance with §257.96 to address the Appendix IV SSLs. A public meeting was held on November 13, 2019, pursuant to §257.96(e), to discuss the results of the ACM. A Remedy Selection Report (Golder 2022) was completed in January 2022 in accordance with the requirements of §257.97. MNA with source control measures was selected as the remedy to address the Appendix IV constituents observed at SSLs. A Site-specific feasibility study to evaluate MNA as a potential groundwater remedy for the Appendix IV constituents observed at SSLs was performed in accordance with guidance and best practices promulgated by the USEPA (USEPA 2007a and 2007b) and Interstate Technology and Regulatory Council (ITRC 2010). Summary reports documenting the MNA feasibility study were included as attachments to the Remedy Selection Report.

During 2021, SSLs above GWPSs were observed at A1 Area Landfill only for cobalt in wells BMW-20 and BMW-27.

1.0 INTRODUCTION

The CCR Rule (40 C.F.R. 257 Subpart D - *Standards for the Receipt of Coal Combustion Residuals in Landfills and Surface Impoundments*) has been promulgated by the United States Environmental Protection Agency (USEPA) to regulate the management and disposal of CCRs as solid waste under Resource Conservation and Recovery Act (RCRA) Subtitle D. TCEQ has adopted portions of the federal CCR rule at 30 T.A.C. Chapter 352 (Texas CCR Rule), and USEPA published its final approval of the Texas CCR rule on June 28, 2021. *See* 86 Fed. Reg. 33,892 (June 28, 2021). The Texas CCR Rule became effective on July 28, 2021, and it adopts and incorporates by reference the requirements for the annual groundwater monitoring report located at 40 C.F.R. §257.90. *See* 30 T.A.C. §352.901. It further adopts and incorporates by reference the Federal CCR Program requirements for detection and assessment monitoring in 30 T.A.C. §352.941 and 30 T.A.C. §352.951, respectively. Pursuant to 30 T.A.C. §352.902, this report will be submitted to TCEQ for review no later than 30 days after the report has been placed in the facility's operating record. For existing CCR landfills and surface impoundments, the CCR Rule requires that the owner or operator prepare an annual groundwater monitoring and corrective action report to document the status of the groundwater monitoring and corrective action program for the CCR unit for the previous calendar year. Per §257.90(e) of the CCR Rule, the report should contain the following information, to the extent available:

(1) A map, aerial image, or diagram showing the CCR unit and all background (or upgradient) and downgradient monitoring wells, to include the well identification numbers, that are part of the groundwater monitoring program for the CCR unit;

(2) Identification of any monitoring wells that were installed or decommissioned during the preceding year, along with a narrative description of why those actions were taken;

(3) In addition to all the monitoring data obtained under §§ 257.90 through 257.98, a summary including the number of groundwater samples that were collected for analysis for each background and downgradient well, the dates the samples were collected, and whether the sample was required by the detection monitoring or assessment monitoring programs;

(4) A narrative discussion of any transition between monitoring programs (*e.g.,* the date and circumstances for transitioning from detection monitoring to assessment monitoring in addition to identifying the constituent(s) detected at a statistically significant increase over background levels); and

(5) Other information required to be included in the annual report as specified in §§ 257.90 through 257.98.

(6) A section at the beginning of the annual report that provides an overview of the current status of groundwater monitoring and corrective action programs for the CCR unit. At a minimum, the summary must specify all of the following:

(i) At the start of the current annual reporting period, whether the CCR unit was operating under the detection monitoring program in § 257.94 or the assessment monitoring program in § 257.95;

(ii) At the end of the current annual reporting period, whether the CCR unit was operating under the detection monitoring program in § 257.94 or the assessment monitoring program in § 257.95;

(iii) If it was determined that there was a statistically significant increase over background for one or more constituents listed in Appendix III to this part pursuant to § 257.94(e):

(A) Identify those constituents listed in Appendix III to this part and the names of the monitoring wells associated with such an increase; and

(B) Provide the date when the assessment monitoring program was initiated for the CCR unit.

(iv) If it was determined that there was a SSL above the groundwater protection standard for one or more constituents listed in Appendix IV to this part pursuant to § 257.95(g) include all of the following:

(A) Identify those constituents listed in Appendix IV to this part and the names of the monitoring wells associated with such an increase;

(B) Provide the date when the assessment of corrective measures was initiated for the CCR unit;

(C) Provide the date when the public meeting was held for the assessment of corrective measures for the CCR unit; and

(D) Provide the date when the assessment of corrective measures was completed for the CCR unit.

(v) Whether a remedy was selected pursuant to § 257.97 during the current annual reporting period, and if so, the date of remedy selection; and

(vi) Whether remedial activities were initiated or are ongoing pursuant to § 257.98 during the current annual reporting period.

2.0 MONITORING AND CORRECTIVE ACTION PROGRAM STATUS

Golder collected the initial Detection Monitoring Program groundwater samples from the A1 Area Landfill CCR monitoring well network in September 2017. The evaluation of those data was completed in 2018 using procedures described in the Statistical Analysis Plan (Golder 2022a) to identify statistically significant increases (SSIs) of Appendix III parameters over background concentrations. The Detection Monitoring Program sampling dates and parameters are summarized in the following table:

Detection Monitoring Program Summary

Sampling Dates	Parameters	SSIs	Assessment Monitoring Program Established
September 25-26, 2017	Appendix III	Yes	July 16, 2018

Alternate source evaluations were inconclusive for one or more of the SSIs. Consequently, an Assessment Monitoring Program was initiated and established for the A1 Area Landfill in July 2018 in accordance with §257.94(e)(2). Golder collected the initial Assessment Monitoring Program groundwater samples in June 2018. Subsequent Assessment Monitoring Program sampling events have been conducted on a semi-annual basis, as required by the CCR Rule.

The statistical background prediction limits used to assess Appendix III data and the GWPSs used to assess Appendix IV data are summarized in Tables 1 and 2, respectively, and the laboratory analytical reports are provided in Attachment 1. Appendix III and Appendix IV analytical data are summarized in Tables 3 and 4, respectively. Using the Appendix IV data collected during the assessment period through September 2018, SSLs above GWPSs were initially identified for arsenic, barium, cobalt, and lithium in 2019. Notification of these SSLs was placed in the operating record on February 6, 2019 and was subsequently placed on the public website in accordance with §257.107(d). An ACM was initiated on April 8, 2019 pursuant to §257.95(g). A justification letter for a 60-day extension due to site-specific circumstances that delayed work on the ACM was certified on July 3, 2019 in accordance with §257.96(a). A copy of the extension justification letter was provided in the 2019 Annual Groundwater Monitoring and Corrective Action Report. The ACM was completed in September 2019 (Golder 2019) for the parameters detected at SSLs above GWPSs (arsenic, barium, cobalt, and lithium), pursuant to §257.96.

Statistical analysis of the 2021 data was performed in accordance with the Statistical Analysis Plan (Golder 2022a) and USEPA Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities-Unified Guidance (USEPA 2009). The statistical analysis included an evaluation of confidence intervals for each of the Appendix IV parameter data sets to evaluate whether constituent concentrations were present at concentrations above

GWPSs. Cobalt was the only Appendix IV parameter identified at an SSL above GWPSs during the 2021 Assessment Monitoring period. Graphical representations of the statistical analysis performed on the 2021 data are provided in Attachment 2.

The Assessment Monitoring Program sampling dates and parameters are summarized in the following table:

Assessment Monitoring Program Summary

Sampling Dates	Analytical Data Receipt Date	Parameters Collected	SSL(s)	SSL(s) Determination Date	Corrective Measures Assessment Initiated	Corrective Measures Assessment Completed
June 11-12, 2018	July 21, 2018	Appendix III Appendix IV	NA	NA	NA	NA
September 13-14, 2018	October 12, 2018	Appendix III Appendix IV	As, Ba, Co, Li	January 7, 2019	April 8, 2019	September 5, 2019
May 15, 2019	June 18, 2019	Appendix III Appendix IV	Co	September 5, 2019	NA	NA
September 4 and 9, 2019	October 14, 2019	Appendix III Appendix IV	Co	January 8, 2020	NA	NA
May 20-22, 2020	June 24, 2020	Appendix III Appendix IV	Co	August 17, 2020	NA	NA
September 29-30, 2020	October 27, 2020	Appendix III Appendix IV	Co	December 7, 2020	NA	NA
June 14-15, 2021	July 19, 2021	Appendix III Appendix IV	Co	July 19, 2021	NA	NA
October 6-7, 2021	November 15, 2021	Appendix III Appendix IV	Co	January 10, 2022	NA	NA

Notes:

NA: Not Applicable

3.0 KEY ACTIONS COMPLETED IN 2021

Assessment Monitoring Program groundwater monitoring events were completed in June and October 2021. The number of groundwater samples that were collected for analysis for each background and downgradient well, the dates the samples were collected, and the analytical results for the groundwater samples are summarized in Table 3 (Appendix III parameters) and Table 4 (Appendix IV parameters). A map showing the CCR unit and monitoring wells is provided as Figure 1. Upgradient/background well BMW-33, which was installed and sampled as part of the 2019 ACM evaluation, was added to the CCR monitoring program in 2020. No CCR wells were installed or decommissioned in 2021.

Water elevations measured in the CCR wells during the 2021 semi-annual groundwater sampling events were used to develop groundwater potentiometric surface maps, which are presented in Attachment 3. The inferred direction of groundwater flow was generally from the northeast to the southwest, south, and southeast during both semi-annual groundwater sampling events in 2021.

As noted in Section 2.0, an ACM for the Appendix IV parameters identified at SSLs above GWPSs in 2018 (arsenic, barium, cobalt, and lithium) was completed in September 2019 to assess potential corrective measures alternatives. A public meeting was held on November 13, 2019, pursuant to §257.96(e), to discuss the results of the ACM. A Remedy Selection Report (Golder 2022b) was completed in January 2022 in accordance with the requirements of §257.97. MNA with source control measures (capping) was selected as the remedy to address the Appendix IV constituents observed at SSLs. A Site-specific feasibility study to evaluate MNA as a potential groundwater remedy for the Appendix IV constituents observed at SSLs was performed in accordance with guidance and best practices promulgated by the USEPA (USEPA 2007a and 2007b) and Interstate Technology and Regulatory Council (ITRC 2010). Summary reports documenting the MNA feasibility study were included as attachments to the Remedy Selection Report. Based on the results of the MNA feasibility study, the following was concluded regarding the Appendix IV constituents identified at SSLs:

- Physical and chemical attenuation of arsenic, barium, cobalt, and lithium is occurring at the Site. Concentrations of these constituents in groundwater are stable or decreasing and the aquifer has adequate capacity to attenuate these constituents in a reasonable timeframe. Geochemical modeling indicates that attenuation will be efficient and stable in the long term. Therefore, MNA with source control measures is considered an effective corrective measure for the Site.

4.0 PROBLEMS ENCOUNTERED AND ACTIONS TO RESOLVE THE PROBLEMS

No problems were encountered with the CCR groundwater monitoring program in 2021.

5.0 KEY ACTIVITIES PLANNED FOR 2022

The following key activities are planned for 2022:

- Luminant submitted a registration application to TCEQ under the Texas CCR Rule for the Martin Lake A1 Area Landfill on January 24, 2022.

- Continue the Assessment Monitoring Program in accordance with applicable provisions of 40 C.F.R. §257.95 and 30 T.A.C. §352.951.

- An assessment of MNA effectiveness in addressing SSLs will be documented in future Annual Groundwater Monitoring and Corrective Action Reports.

6.0 REFERENCES

Golder, 2019. CCR Assessment of Corrective Measures, Martin Lake Steam Electric Station – A1 Area Landfill, Panola County, Texas. September.

Golder, 2022a. Statistical Analysis Plan – Revision No. 1, Martin Lake Steam Electric Station – A1 Area Landfill, Panola County, Texas.

Golder, 2022b. Remedy Selection Report, Martin Lake Steam Electric Station – A1 Area Landfill, Panola County, Texas. January 18.

Interstate Technology and Regulatory Council (ITRC), 2010. A Decision Framework for Applying Monitored Natural Attenuation Processes to Metals and Radionuclides in Groundwater. Technical/Regulatory Guidance, December 2010.

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USEPA, 2007a. Monitored Natural Attenuation of Inorganic Contaminants in Ground Water. Volume 1. Technical Basis for Assessment. EPA/600/R-07/139.

USEPA, 2007b. Monitored Natural Attenuation of Inorganic Contaminants in Ground Water. Volume 2. Assessment for Non-Radionuclides Including Arsenic, Cadmium, Chromium, Copper, Lead, Nickel, Nitrate, Perchlorate, and Selenium. EPA/600/R-07/140.

USEPA, 2009. Unified Guidance Document: Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, EPA 530-R-09-007, March 2009.

Signature Page

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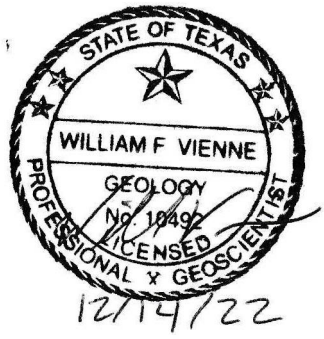

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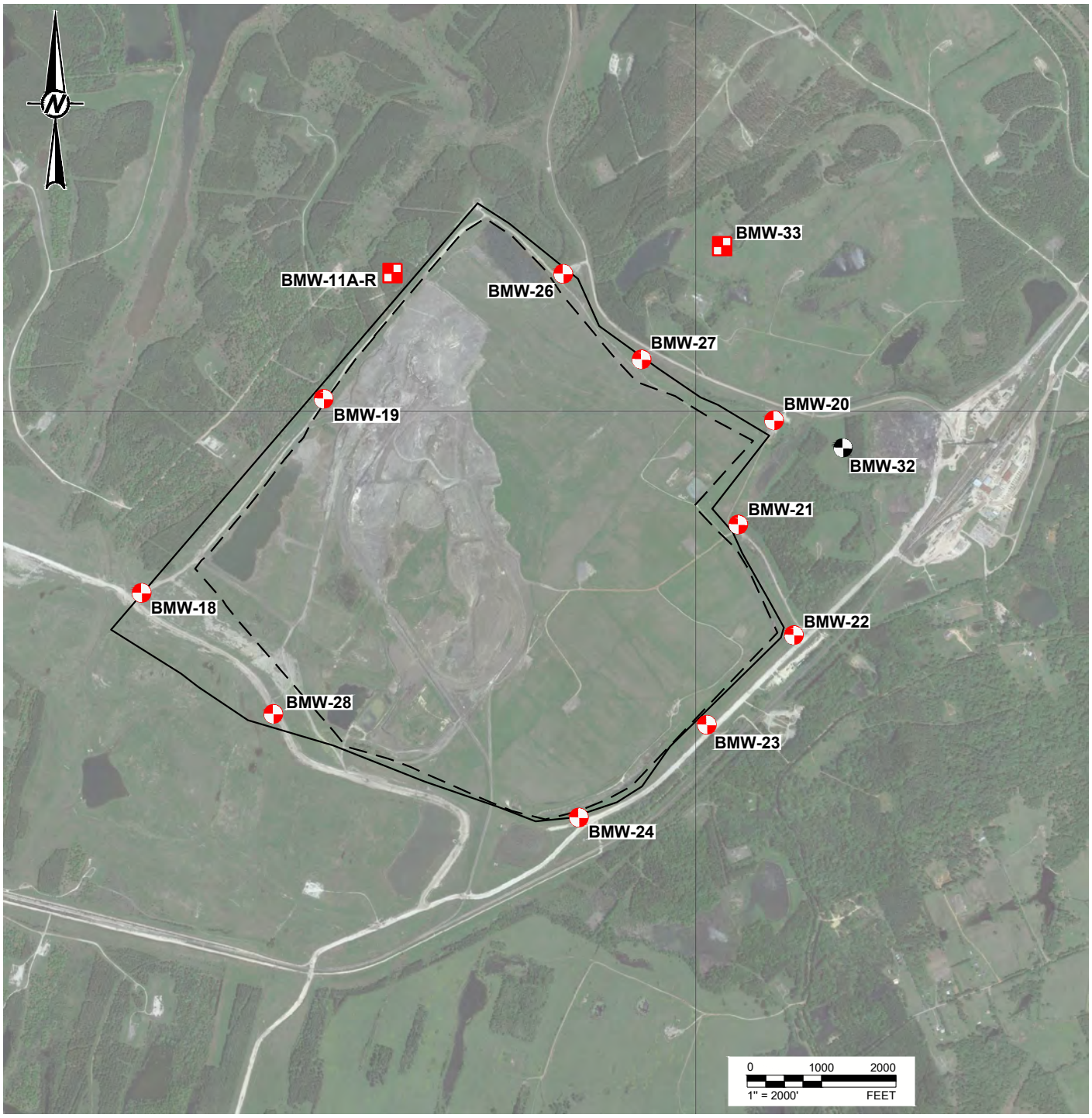
FIGURES



LEGEND

- DEED RESTRICTION BOUNDARY
- WASTE BOUNDARY
- DOWNGRADIENT CCR MONITORING WELL
- UPGRADIENT CCR MONITORING WELL
- CCR DELINEATION MONITORING WELL

REFERENCE(S)

BASE MAP TAKEN FROM GOOGLE EARTH IMAGERY DATED 4/6/17.

CLIENT
LUMINANT

PROJECT
MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

TITLE
DETAILED SITE PLAN - A1 AREA LANDFILL

CONSULTANT
WSP GOLDER

YYYY-MM-DD	2022-12-06
DESIGNED	AJD
PREPARED	AJD
REVIEWED	WFV
APPROVED	WFV

PROJECT NO.	CONTROL	REV.	FIGURE
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Last Edited By: usad701305 Date: 2022-12-09 Time:2:57:47 PM | Printed By: USAD701305 Date: 2022-12-12 Time:11:31:46 AM
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IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI A

TABLES

Table 1
Statistical Background Values
MLSES A1 Area Landfill

Parameter	Statistical Background Value
Boron (mg/L)	0.546
Calcium (mg/L)	276
Chloride (mg/L)	35.5
Fluoride (mg/L)	0.4
field pH (s.u.)	5.81 7.58
Sulfate (mg/L)	1,100
Total Dissolved Solids (mg/L)	2,850

Table 2
Groundwater Protection Standards
MLSES A1 Area Landfill

Parameter	Groundwater Protection Standard
Antimony (mg/L)	0.006
Arsenic (mg/L)	0.0164
Barium (mg/L)	2
Beryllium (mg/L)	0.004
Cadmium (mg/L)	0.005
Chromium (mg/L)	0.1
Cobalt (mg/L)	0.0124
Fluoride (mg/L)	4
Lead (mg/L)	0.015
Lithium (mg/L)	0.103
Mercury (mg/L)	0.002
Molybdenum (mg/L)	0.1
Selenium (mg/L)	0.05
Thallium (mg/L)	0.002
Radium 226+228 (pCi/L)	10.7

TABLE 3
APPENDIX III ANALYTICAL DATA
MLSES A1 AREA LANDFILL

Sample Location	Date Sampled	B (mg/L)	Ca (mg/L)	Cl (mg/L)	F (mg/L)	pH (s.u.)	SO_4 (mg/L)	TDS (mg/L)
Upgradient Wells								
BMW-11-AR	10/29/15	0.332	91.5	11.3	<0.100	6.97	243	923
	12/30/15	0.285	92.3	2.39	0.26 J	6.87	114	642
	02/25/16	0.44	136	18.8	0.123 J	6.52	382	1,450
	04/07/16	0.391	151	17.5	<0.100	6.34	334	1,290
	06/09/16	0.417	182	19.8	<0.100	6.63	603	1,700
	08/11/16	0.389	170	20.8	<0.100	6.68	682	1,790
	10/26/16	0.316	99.7	15.8	<0.100	6.85	495	1,590
	12/14/16	0.409	201	19.8	<0.100	6.65	665	1,970
	09/25/17	0.448	199	15.2	<0.100	6.97	561	1,620
	06/12/18	0.634	173	8.37	0.323 J	6.82	320	1,080
	09/14/18	0.455	175	19.7	0.353 J	5.86	538	1,720
	05/15/19	0.374	138	6.11	0.198 J	6.84	324	970
	09/04/19	0.368	149	6.41	0.170 J	6.82	356	1,090
	05/20/20	0.289	114	4.43	<0.100	6.89	266	907
	09/29/20	0.349	148	6.37	0.408	6.42	275	1,240
	06/14/21	0.32	143	5.36	0.208 J	6.73	330	903
	10/06/21	0.318	158	5.83	<0.100	6.77	334	978
BMW-33	06/13/19	--	97.5	83.8	0.342 J	--	256	1,100
	09/09/19	0.269	95.8	79.5	0.145 J	--	232	1,040
	05/21/20	0.241	112	67.7	<0.100	6.76	202	1,020
	09/30/20	0.228	131	60.9	0.410	6.73	184	1,000
	06/15/21	0.208	118	66.4	0.235 J	6.52	210	980
	10/07/21	0.179	138	67.8	<0.100	6.57	188	1040
Downgradient Wells								
BMW-18	10/30/15	0.41	7.2	26.6	0.148 J	6.65	97	768
	12/30/15	0.322	346	7.14	0.101 J	6.77	1,570	2,470
	02/26/16	0.406	9.49	17.1	0.164 J	6.91	90	508
	04/07/16	0.423	7.08	16.3	0.117 J	6.52	87	489
	06/09/16	0.429	7.32	18.7	0.128 J	6.64	101	498
	08/11/16	0.415	7.02	18.5	<0.100	6.81	100	493
	10/26/16	0.45	6.55	18.1	0.158 J	6.67	94.3	534
	12/14/16	0.411	9.26	17.6	0.134 J	6.77	94.1	493
	09/25/17	0.437	6.49	16.9	0.128 J	6.87	87.2	476
	06/12/18	0.636	14.4	18.2	0.176 J	6.82	87.2	464
	09/14/18	0.423	6.06	18.6	0.201 J	5.70	81.3	476
	05/15/19	0.443	7.91	20	0.229 J	6.65	89.9	473
	09/04/19	0.435	7.72	19.2	0.203 J	6.51	91.8	478
	05/20/20	0.476	9.13	17.8	0.144	6.87	82.3	477
	09/30/20	0.447	6.62	19.0	0.387 J	6.78	81.1	469
	06/15/21	0.463	6.67	19.3	0.231 J	6.58	87.1	467
	10/07/21	0.388	6.26	20	0.477	6.53	86.4	467

TABLE 3
APPENDIX III ANALYTICAL DATA
MLSES A1 AREA LANDFILL

Sample Location	Date Sampled	B (mg/L)	Ca (mg/L)	Cl (mg/L)	F (mg/L)	pH (s.u.)	SO_4 (mg/L)	TDS (mg/L)
BMW-19	10/29/18	0.385	417	16.2	<0.100	6.77	2,070	4,060
	12/30/15	0.4	441	11.4	0.127 J	6.49	2,100	3,260
	02/25/16	0.458	504	8.4	<0.100	6.14	2,330	2,960
	04/07/16	0.424	480	8.46	<0.100	6.71	2,270	3,740
	06/09/16	0.444	489	8.04	<0.100	6.32	2,390	4,180
	08/11/16	0.419	458	8.26	<0.100	6.95	2,370	3,780
	10/26/16	0.417	443	8.26	<0.100	6.97	2,210	4,410
	12/14/16	0.427	481	7.2	<0.100	6.75	2220	3,660
	09/25/17	0.481	496	6.11	<0.100	6.95	2,360	3,670
	06/12/18	0.667	539	6.08	<0.100	6.92	2,080	3,660
	09/13/18	0.460	514	6.86	0.40	6.26	2,330	4,010
	05/15/19	0.474	388	4.66	0.189 J	6.88	1,760	3,090
	09/04/19	0.430	434	5.93	<0.1	6.74	2,010	3,320
	05/20/20	0.487	445	5.54	<0.100	6.74	2,020	3,470
	09/29/20	0.460	484	5.39	<0.100	6.63	1790	3,480
	06/15/21	0.45	391	5.72	<0.100	6.86	1770	2980
	06/15/21 DUP	0.496	399	6.03	<0.100	6.86	1600	2980
	10/07/21	0.424	466	4.72	<0.100	6.70	1720	3090
BMW-20	10/23/15	0.139 J	71.2	64.8	<0.100	6.28	223	804
	12/30/15	0.144	96	36.4	0.12 J	6.32	443	987
	02/25/16	0.202	157	30.7	<0.100	5.70	131	888
	04/07/16	0.0787	80	30	<0.100	6.22	219	600
	06/09/16	0.129	128	37.5	<0.100	6.24	557	1,220
	08/11/16	0.106	107	39.4	<0.100	6.86	602	1,310
	10/26/16	0.113	93.5	48.2	<0.100	6.93	801	1,610
	12/13/16	0.0687	62.8	42.8	<0.100	6.64	335	757
	09/26/17	0.0973	116	33.5	<0.100	6.73	472	986
	06/11/18	0.0912	149	35.9	0.144 J	6.67	654	1,160
	09/13/18	0.0773	91.1	48.8	<0.100	5.26	831	1,360
	05/15/19	0.979	146	426	0.418	6.71	474	2,030
	09/04/19	0.101	136	50.7	<0.100	6.74	1160	1,830
	05/20/20	0.179	162	35.8	<0.100	6.81	797	1,450
	09/29/20	0.111	143	46.3	<0.100	6.55	966	1,540
	06/14/21	0.13	187	42.7	0.109 J	6.84	1210	1810
	10/06/21	0.0998	151	47.2	<0.100	6.69	1060	1660
BMW-21	10/23/15	0.973	157	496	<0.100	7.28	484	2,510
	12/30/15	0.951	142	365	0.126 J	7.08	444	2,020
	02/25/16	1.01	148	393	<0.100	6.64	462	1,990
	04/07/16	0.99	158	373	<0.100	7.02	454	2,190
	06/09/16	1.17	155	415	<0.100	7.09	477	2,230
	08/11/16	1.04	143	425	<0.100	6.66	484	1,860
	10/26/16	1.14	145	399	<0.100	6.85	434	2,170
	12/13/16	0.993	149	426	<0.100	6.93	483	2,170
	09/26/17	1.02	138	364	<0.100	6.76	417	1,850
	06/11/18	1.01	168	402	0.233 J	6.75	457	1,990
	09/13/18	0.987	151	418	0.136 J	6.64	474	2,100
	05/15/19	0.994	147	428	0.366 J	6.92	474	1,980
	09/04/19	0.0409	152	426	<0.1	6.73	477	2,090
	05/20/20	1.07	166	416	<0.100	6.87	457	1,910
	09/29/20	1.00	161	415	<0.100	6.84	444	2,030
	06/14/21	1.02	156	442	<0.100	6.64	507	2130
	10/06/21	0.938	168	459	<0.100	6.77	503	2080

TABLE 3
APPENDIX III ANALYTICAL DATA
MLSES A1 AREA LANDFILL

Sample Location	Date Sampled	B (mg/L)	Ca (mg/L)	Cl (mg/L)	F (mg/L)	pH (s.u.)	SO_4 (mg/L)	TDS (mg/L)
BMW-22	10/23/15	2.76	209	377	<0.100	6.86	927	2,720
	12/30/15	2.54	150	215	0.186 J	6.92	670	1,870
	02/25/16	3.18	209	295	<0.100	6.27	949	2,430
	04/07/16	3.34	202	256	<0.100	6.84	839	2,230
	06/08/16	3.53	193	279	<0.100	6.84	890	2,340
	08/11/16	3.18	198	311	<0.100	6.25	946	2,520
	10/26/16	3.38	183	241	<0.100	6.89	803	2,600
	12/13/16	3.45	191	281	<0.100	6.73	896	2,370
	09/26/17	3.53	209	270	<0.100	6.82	860	2,250
	06/11/18	3.49	219	280	0.312 J	6.85	883	2,180
	09/13/18	3.28	188	296	0.205 J	6.34	919	2,310
	05/15/19	3.39	198	311	0.351 J	6.68	967	2,260
	09/09/19	3.65	208	307	<0.100	6.58	960	2,420
	05/20/20	3.67	205	290	<0.100	6.69	906	2,230
	09/29/20	3.49	223	281	<0.100	6.75	855	2,280
	06/14/21	3.29	214	308	<0.100	6.42	998	2250
	10/06/21	3.19	222	316	<0.100	6.62	966	2310
BMW-23	10/23/15	1.19	102	287	<0.100	6.84	577	1,980
	12/30/15	1.25	95.2	214	0.122 J	6.76	529	1,500
	02/25/16	1.31	97.7	225	<0.100	6.16	527	1,520
	04/07/16	1.22	95.1	221	<0.100	6.63	503	1,510
	06/08/16	1.31	102	254	<0.100	6.71	558	1,720
	08/11/16	1.28	90.4	242	<0.100	6.15	539	1,430
	10/26/16	1.22	86.8	219	<0.100	6.85	467	1,700
	12/13/16	1.25	91.8	237	<0.100	6.63	510	1,870
	09/26/17	1.46	99.6	223	<0.100	6.65	482	1,550
	06/12/18	1.49	104	236	0.204 J	6.72	490	1,530
	09/13/18	1.34	91.7	236	0.190 J	6.25	482	1,560
	05/15/19	1.31	89.9	240	<0.100	6.84	613	1,640
	09/09/19	1.47	98.9	257	<0.100	6.65	503	1,680
	05/20/20	1.63	105	256	<0.100	6.63	494	1,580
	09/29/20	1.42	102	238	0.302 J	6.93	443	1,590
	06/14/21	1.67	110	283	<0.100	6.75	565	1700
	10/06/21	1.44	100	279	<0.100	6.64	517	1670
BMW-24	10/23/15	0.144 J	61.6	633	0.247 J	7.14	45	1,510
	12/30/15	0.347	58.8	404	0.391 J	7.07	125	1,210
	02/25/16	0.431	61.6	332	0.236 J	5.80	184	1,210
	04/07/16	0.532	63.4	224	0.109 J	7.07	240	1,100
	06/08/16	0.612	60.1	201	0.147 J	7.06	259	984
	08/11/16	0.248	58.5	481	0.225 J	5.84	97.8	1,150
	10/26/16	0.225	59.2	518	0.305 J	6.78	34.2	1,490
	12/13/16	0.225	62.5	518	0.3 J	6.78	33	1,480
	09/26/17	0.656	66.8	229	<0.100	6.82	242	940
	06/11/18	0.469	70.6	336	0.466	6.76	117	970
	09/13/18	0.197	59.5	488	0.769	6.45	40	1,090
	05/15/19	0.601	57.9	169	0.219 J	6.78	280	881
	09/09/19	0.247	56.4	501	0.534 J	6.65	16.4	985
	05/20/20	0.758	67.8	175	0.129 J	6.72	254	907
	09/29/20	0.205	58.8	482	0.725	6.57	4.48	1,000
	06/14/21	0.661	65.4	165	0.251 J	6.68	276	848
	10/06/21	0.212	57.9	474	0.312 J	6.58	6.72	1020

TABLE 3
APPENDIX III ANALYTICAL DATA
MLSES A1 AREA LANDFILL

Sample Location	Date Sampled	B (mg/L)	Ca (mg/L)	Cl (mg/L)	F (mg/L)	pH (s.u.)	SO_4 (mg/L)	TDS (mg/L)
BMW-26	09/13/16	0.457	234	97.8	<0.100	6.51	671	2,120
	10/26/16	0.127	44.3	16.2	<0.100	6.87	140	414
	12/14/16	0.251	130	152	0.344 J	6.96	1210	2,050
	01/23/17	0.478	224	126	<0.100	6.33	669	1,950
	02/23/17	0.0683	52	23.9	0.106 J	6.22	20.4	209
	03/24/17	0.44	215	112	<0.100	6.68	610	1,690
	04/24/17	0.495	218	111	<0.100	6.37	576	2,210
	05/25/17	0.613	178	115	<0.100	6.82	613	2,110
	06/29/17	0.507	233	111	<0.100	--[*]	604	1,700
	09/25/17	0.514	71	112	<0.100	6.95	606	1,510
	06/12/18	0.726	96.5	120	<0.100	6.61	633	1,550
	09/13/18	0.474	230	125	<0.100	5.32	671	2,020
	05/15/19	0.449	200	135	<0.100	6.90	706	1,930
	09/04/19	0.473	262	140	<0.100	6.78	753	2,170
	05/20/20	0.547	252	131	<0.100	6.77	701	1,980
	09/29/20	0.522	265	130	<0.100	6.74	703	2,140
	06/14/21	0.488	235	140	<0.100	6.61	780	2040
	10/06/21	0.440	265	142	<0.100	6.78	769	2230
BMW-27	09/13/16	0.486	160	133	0.668	5.87	1,150	2,750
	10/26/16	0.548	196	102	<0.100	6.73	700	2,020
	12/14/16	0.529	211	101	<0.100	6.90	674	1,810
	01/23/17	0.393	152	143	0.573	5.62	1,280	2,260
	02/23/17	0.0832	52.4	24	0.252 J	6.40	20.6	239
	03/24/17	0.304	120	132	0.738	6.35	1,190	2,100
	04/24/17	0.34	132	130	0.663	6.22	1,150	2,290
	05/25/17	0.331	122	124	1.61	6.67	1,150	2,320
	06/29/17	0.39	144	129	0.717	--[*]	1,180	2,080
	09/25/17	0.336	128	126	0.254 J	6.89	1,160	2,110
	06/12/18	0.478	96.1	98.4	<0.100	6.87	522	1,420
	09/13/18	0.398	143	132	0.750	5.60	1,230	2,380
	05/15/19	0.46	190	129	<0.100	6.72	674	1,840
	09/04/19	0.463	257	141	<0.100	6.95	755	2,130
	05/20/20	0.46	213	108	<0.100	6.56	579	1,670
	09/29/20	0.464	268	134	<0.100	6.79	704	2,130
	06/14/21	0.351	177	107	<0.100	6.76	550	1490
	10/06/21	0.410	231	125	<0.100	6.52	666	1920

TABLE 3
APPENDIX III ANALYTICAL DATA
MLSES A1 AREA LANDFILL

Sample Location	Date Sampled	B (mg/L)	Ca (mg/L)	Cl (mg/L)	F (mg/L)	pH (s.u.)	SO_4 (mg/L)	TDS (mg/L)
BMW-28	12/14/16	1.22	234	111	<0.100	6.87	1280	2,360
	01/23/17	1.18	221	122	0.104 J	6.85	1,370	2,810
	02/23/17	0.0776	53.3	24	0.11 J	6.43	20.3	203
	03/24/17	1.14	242	121	<0.100	6.36	1,350	2,580
	04/24/17	1.16	266	121	0.19 J	6.57	1,330	2,980
	05/25/17	1.23	255	130	<0.100	6.70	1,410	3,180
	06/29/17	1.21	269	130	0.137 J	6.98	1,450	2,950
	08/01/17	1.17	260	132	<0.100	--[*]	1,460	2,780
	09/25/17	1.35 J	262	130	<0.100	6.85	1,430	3,060
	06/12/18	1.41	262	139	0.529	6.92	1,470	3,100
	09/13/18	1.35	243	143	0.445	5.71	1,420	3,180
	05/15/19	1.01	249	133	0.496	6.77	1,820	3,610
	09/04/19	1.22	277	137	<0.1	6.77	1,720	3,470
	05/20/20	1.29	284	137	<0.100	6.86	1520	3,270
	09/30/20	0.612	149	51.1	0.229 J	6.82	1030	2,100
	06/14/21	0.0878	15.5	38.4	<0.100	6.77	443	871
	10/07/21	0.104	19.1	19.2	0.290 J	6.78	185	402
	10/7/21 DUP	0.0993	19.4	12.8	<0.100	6.78	71.1	175

Notes:
1. Abbreviations: mg/L - milligrams per liter; TDS - total dissolved solids; s.u. - standard units.
2. J - concentration is below method quantitation limit; result is an estimate.
3. --[*]: value not available due to pH meter malfuncton during sampling.

TABLE 4
APPENDIX IV ANALYTICAL DATA
MLSES A1 AREA LANDFILL

Sample Location	Date Sampled	Sb (mg/L)	As (mg/L)	Ba (mg/L)	Be (mg/L)	Cd (mg/L)	Cr (mg/L)	Co (mg/L)	F (mg/L)	Pb (mg/L)	Li (mg/L)	Hg (mg/L)	Mo (mg/L)	Se (mg/L)	Tl (mg/L)	Ra 226 (pCi/L)	Ra 228 (pCi/L)	Ra 226/228 Comb.^ (pCi/L)
Upgradient Wells																		
BMW-11-AR	10/29/15	<0.0008	0.0116	0.0659	<0.0003	<0.0003	<0.002	0.0124	<0.1	0.000391 J	0.0594	<0.00008	0.00496 J	<0.002	<0.0005	1.60	4.75	6.35
	12/30/15	<0.0008	0.00362 J	0.0433	<0.0003	<0.0003	<0.002	<0.003	0.26 J	0.000362 J	0.0589	<0.00008	0.00384 J	<0.002	<0.0005	1.66	3.19	4.85
	02/25/16	<0.0008	0.00608	0.0724	<0.0003	<0.0003	<0.002	0.00486 J	0.123 J	<0.0003	0.0276	<0.00008	0.00597	<0.002	<0.0005	2.43	3.80	6.23
	04/07/16	<0.0008	0.00614	0.0929	<0.0003	<0.0003	<0.002	<0.003	<0.1	<0.0003	0.0195	<0.00008	0.00444 J	<0.002	<0.0005	0.885	1.48	2.37
	06/09/16	<0.0008	0.00532	0.0891	<0.0003	<0.0003	<0.002	<0.003	<0.1	<0.0003	0.0187	<0.00008	0.00355 J	<0.002	<0.0005	0.47	<0.674	1.14
	08/11/16	<0.0008	0.00271 J	0.0772	<0.0003	<0.0003	<0.002	<0.003	<0.1	<0.0003	0.0147	<0.00008	0.00346 J	<0.002	<0.0005	0.810	2.42	3.23
	10/26/16	<0.0008	<0.002	0.0429	<0.0003	<0.0003	<0.002	<0.003	<0.1	<0.0003	0.0508	<0.00008	0.00363 J	<0.002	<0.0005	0.631	0.922	1.55
	12/14/16	<0.0008	0.0061	0.074	<0.0003	<0.0003	<0.002	<0.003	<0.1	0.00347	0.0139	<0.00008	0.00303 J	<0.002	<0.0005	<0.821	<1.73	<2.551
	06/12/18	<0.0008	0.00444 J	0.0692	<0.0003	<0.0003	0.00295 J	<0.003	0.323 J	0.0017	0.0686	<0.00008	0.00340 J	<0.002	<0.0005	0.996	1.7	2.696
	09/14/18	--	0.0056	0.0735	--	--	<0.002	<0.003	0.353 J	0.00147	0.0196	--	0.00299 J	--	--	1.52	1.11	2.63
	05/15/19	<0.0008	0.00208 J	0.0399	<0.0003	<0.0003	<0.002	<0.003	0.198 J	<0.0003	0.0404	<0.00008	<0.002	<0.002	<0.0005	0.83	4.89	5.72
	09/04/19	--	<0.2	0.0393	--	--	--	<0.003	0.170 J	--	0.0411	--	<0.002	--	--	0.382	0.317	0.699
	05/20/20	<0.0008	0.00479 J	0.0439	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.0348	<0.00008	<0.00200	<0.002	<0.0005	0.289	1.54	1.83
	09/29/20	--	0.0102	0.0517	<0.000300	<0.000300	<0.00200	<0.00300	0.408	<0.000300	0.0337	--	--	<0.002	--	0.209	1.59	1.8
	06/14/21	<0.0008	0.0029 J	0.0565	<0.0003	<0.0003	<0.002	<0.003	0.208 J	0.00132	0.032	<0.00008	<0.002	<0.002	<0.0005	0.434	0.712	1.15
	10/06/21	<0.000800	<0.00200	0.0511	<0.000300	<0.000300	<0.00200	<0.00300	<0.100	<0.000300	0.0331	<0.0000800	0.00212 J	<0.00200	<0.000500	0.334	1.34	1.68
BMW-33	06/13/19	--	<0.002	--	--	--	--	0.0176	0.342 J	--	0.0206	--	--	--	--	--	--	--
	09/09/19	--	<0.002	0.285	--	--	--	0.0122	0.145 J	--	0.0177	--	0.00325 J	NA	NA	0.738	<0.809	0.738
	05/20/20	0.00102 J	<0.002	0.203	<0.0003	<0.0003	<0.002	0.0065	<0.100	<0.0003	0.0145	<0.00008	0.00207 J	<0.002	<0.0005	0.499	0.394	0.893
	09/30/20	--	<0.002	0.166	<0.000300	<0.000300	<0.00200	0.00826	0.410	<0.000300	0.0135	--	--	<0.002	--	0.237	0.419	0.656
	06/15/21	<0.0008	<0.002	0.137	<0.0003	<0.0003	<0.002	0.0113	0.235 J	<0.0003	0.0124	<0.00008	<0.002	<0.002	<0.0005	0.190 J	0.597 J	0.786 J
	10/07/21	<0.000800	0.00247 J	0.130	<0.000300	<0.000300	<0.00200	0.0115	<0.100	<0.000300	0.0126	<0.0000800	<0.00200	<0.00200	<0.000500	0.522	1.30	1.82
Downgradient Wells																		
BMW-18	10/30/15	<0.0008	<0.002	0.0401	<0.0003	<0.0003	0.00944	<0.003	0.148 J	<0.0003	0.14	<0.00008	<0.002	<0.002	<0.0005	0.526	<1.51	2.04
	12/30/15	<0.0008	<0.002	0.0168	<0.0003	<0.0003	<0.002	0.0129	0.101 J	<0.0003	0.0415	<0.00008	<0.002	<0.002	<0.0005	<0.405	<2.04	<2.445
	02/26/16	<0.0008	<0.002	0.0446	<0.0003	<0.0003	0.00214 J	<0.003	0.164 J	<0.0003	0.0156	<0.00008	<0.002	<0.002	<0.0005	<0.406	<1.9	<2.306
	04/07/16	<0.0008	<0.002	0.0306	<0.0003	<0.0003	<0.002	<0.003	0.117 J	<0.0003	0.0171	<0.00008	<0.002	<0.002	<0.0005	<0.109	<1.00	<1.109
	06/09/16	<0.0008	<0.002	0.0283	<0.0003	<0.0003	<0.002	<0.003	0.128 J	<0.0003	0.0152	<0.00008	<0.002	<0.002	<0.0005	<0.143	0.857	1.00
	08/11/16	<0.0008	<0.002	0.0291	<0.0003	<0.0003	<0.002	<0.003	<0.1	<0.0003	0.0147	<0.00008	<0.002	<0.002	<0.0005	<0.22	<1.07	<1.29
	10/26/16	<0.0008	<0.002	0.029	<0.0003	<0.0003	<0.002	<0.003	0.158 J	<0.0003	0.0156	<0.00008	<0.002	<0.002	<0.0005	<0.132	<0.534	<0.666
	12/14/16	<0.0008	<0.002	0.0384	<0.0003	<0.0003	<0.002	<0.003	0.134 J	<0.0003	0.0158	<0.00008	<0.002	<0.002	<0.0005	0.140	<1.99	2.13
	06/12/18	<0.0008	<0.002	0.0412	<0.0003	<0.0003	<0.002	<0.003	0.176 J	0.0013	0.0185	<0.00008	<0.002	<0.002	<0.0005	0.232	0.706	0.938
	09/14/18	--	<0.002	0.0277	--	--	<0.002	<0.003	0.201 J	<0.0003	0.0165	--	<0.002	--	--	<0.509	<0.589	<1.098
	05/15/19	<0.0008	<0.002	0.0362	<0.0003	<0.0003	<0.002	<0.003	0.229 J	<0.0003	0.016	<0.00008	<0.002	<0.002	<0.0005	<0.264	3.95	4.214
	09/04/19	--	<0.002	0.0337	--	--	--	<0.003	0.203 J	--	0.0128	--	<0.002	--	--	0.304	1.48	1.79
	05/20/20	<0.0008	<0.002	0.0431	<0.0003	<0.0003	<0.002	<0.003	0.144 J	<0.0003	0.0136	<0.00008	<0.002	<0.002	<0.0005	0.555	1.21	1.76
	09/30/20	--	<0.002	0.0315	<0.000300	<0.000300	<0.00200	<0.00300	0.387 J	<0.000300	0.0193	--	--	<0.00200	--	0.0836	<0.927	0.0836
	06/15/21	<0.0008	<0.002	0.0306	<0.0003	<0.0003	<0.002	<0.003	0.231 J	<0.0003	0.0127	<0.00008	<0.002	<0.002	<0.0005	<0.282	<0.645	0.000
	10/07/21	<0.000800	<0.00200	0.0295	<0.000300	<0.000300	<0.00200	<0.00300	0.477	<0.000300	0.0159	<0.0000800	<0.00200	<0.00200	<0.000500	0.155 J	0.0602	0.215
BMW-19	10/29/18	<0.0008	<0.002	0.0231	<0.0003	<0.0003	<0.002	0.0161	<0.1	<0.0003	0.0545	<0.00008	<0.002	<0.002	<0.0005	0.395	<1.56	1.96
	12/30/15	<0.0008	<0.002	0.0222	<0.0003	<0.0003	<0.002	0.0166	0.127 J	<0.0003	0.0506	<0.00008	<0.002	<0.002	<0.0005	0.598	<2.89	3.49
	02/25/16	<0.0008	0.00235 J	0.0169	<0.0003	<0.0003	<0.002	0.0149	<0.1	<0.0003	0.0711	<0.00008	<0.002	<0.002	<0.0005	0.571	1.94	2.51
	04/07/16	<0.0008	<0.002	0.0178	<0.0003	<0.0003	<0.002	0.0137	<0.1	<0.0003	0.0591	<0.00008	<0.002	<0.002	<0.0005	<0.185	<0.715	<0.9
	06/09/16	<0.0008	<0.002	0.0158	<0.0003	<0.0003	<0.002	0.0141	<0.1	<0.0003	0.0644	<0.00008	<0.002	<0.002	<0.0005	<0.142	1.98	2.12
	08/11/16	<0.0008	0.00711	0.0158	<0.0003	<0.0003	<0.002	0.0128	<0.1	<0.0003	0.0568	<0.00008	<0.002	<0.002	<0.0005	0.927	<0.812	1.74
	10/26/16	<0.0008	<0.002	0.0144	<0.0003	<0.0003	<0.002	0.0104	<0.1	<0.0003	0.0495	<0.00008	<0.002	<0.002	<0.0005	<0.152	<0.48	<0.632
	12/14/16	<0.0008	0.00369 J	0.0171	<0.0003	<0.0003	<0.002	0.0125	<0.1	<0.0003	0.0584	<0.00008	<0.002	<0.002	<0.0005	0.309	0.827	1.14
	06/12/18	<0.0008	0.0428	0.0243	<0.0003	<0.0003	0.00267	0.0115	<0.100	0.00183	0.0734	<0.00008	<0.002	<0.002	<0.0005	<0.395	1.17	1.565
	09/13/18	--	0.00491 J	0.0132	--	--	<0.002	0.0125	0.404 J	<0.0003	0.0845	--	<0.002	--	--	<0.376	1.46	1.836
	05/15/19	<0.0008	<0.002	0.0104	<0.0003	<0.0003	<0.002	<0.003	0.189 J	<0.0003	0.0647	<0.00008	<0.002	<0.002	<0.0005	0.487	4.66	5.147
	09/04/19	--	<0.002	0.0117	--	--	--	<0.003	<0.1	--	0.0694	--	<0.002	--	--	<0.267	0.563	0.563
	05/20/20	<0.0008	<0.00200	0.0109	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.0783	<0.00008	0.00231 J	<0.002	<0.0005	0.0651	0.127	0.192
	09/29/20	--	<0.00200	0.0137	<0.000300	<0.000300	<0.00200	0.0187	<0.100	<0.000300	0.0742	--	--	<0.00200	--	<0.312	1.02 J	1.02
	06/15/21	<0.0008	<0.002	0.0149	<0.0003	<0.0003	<0.002	0.0083	<0.100	<0.0003	0.0689	<0.00008	<0.002	<0.002	<0.0005	<0.320	0.0156	0.0156
	6/15/21 DUP	<0.0008	0.00288 J	0.015	<0.0003	<0.0003	<0.002	0.00831	<0.1	<0.0003	0.0686	<0.00008	<0.002	<0.002	<0.0005	0.175 J	1.38	1.55
	10/07/21	<0.000800	0.00341 J	0.0151	<0.000300	<0.000300	<0.00200	0.0117	<0.100	<0.000300	0.0727	<0.0000800	<0.00200	<0.00200	<0.000500	0.229 J	1.51	1.74

TABLE 4
APPENDIX IV ANALYTICAL DATA
MLSES A1 AREA LANDFILL

Sample Location	Date Sampled	Sb (mg/L)	As (mg/L)	Ba (mg/L)	Be (mg/L)	Cd (mg/L)	Cr (mg/L)	Co (mg/L)	F (mg/L)	Pb (mg/L)	Li (mg/L)	Hg (mg/L)	Mo (mg/L)	Se (mg/L)	Tl (mg/L)	Ra 226 (pCi/L)	Ra 228 (pCi/L)	Ra 226/228 Comb.^ (pCi/L)
BMW-20	10/23/15	<0.0008	0.00236 J	0.0778	<0.0003	<0.0003	<0.002	0.0256	<0.1	0.000501 J	<0.005	<0.00008	<0.002	<0.002	<0.0005	0.463	<1.89	2.35
	12/30/15	<0.0008	0.00344 J	0.0777	<0.0003	<0.0003	<0.002	0.051	0.12 J	<0.0003	<0.005	<0.00008	<0.002	<0.002	<0.0005	0.816	<2.41	3.23
	02/25/16	<0.0008	0.00474 J	0.0989	<0.0003	<0.0003	<0.002	0.022	<0.1	<0.0003	<0.005	<0.00008	<0.002	<0.002	<0.0005	<0.61	2.85	3.46
	04/07/16	<0.0008	0.00411 J	0.0912	<0.0003	<0.0003	<0.002	0.0276	<0.1	<0.0003	<0.005	<0.00008	<0.002	<0.002	<0.0005	0.221	<1.08	1.30
	06/09/16	<0.0008	0.0103	0.0776	<0.0003	<0.0003	<0.002	0.054	<0.1	0.000696 J	<0.005	<0.00008	<0.002	<0.002	<0.0005	0.51	<0.716	1.23
	08/11/16	<0.0008	<0.002	0.0637	<0.0003	<0.0003	<0.002	0.0513	<0.1	<0.0003	<0.005	<0.00008	<0.002	<0.002	<0.0005	0.322	1.40	1.72
	10/26/16	<0.0008	0.00444 J	0.0421	<0.0003	<0.0003	<0.002	0.0786	<0.1	<0.0003	<0.005	<0.00008	<0.002	<0.002	<0.0005	0.347	0.848	1.20
	12/13/16	<0.0008	0.00483 J	0.0377	<0.0003	<0.0003	<0.002	0.0451	<0.1	<0.0003	<0.005	<0.00008	<0.002	<0.002	<0.0005	0.246	1.15	1.40
	06/11/18	<0.0008	0.00473 J	0.0515	<0.0003	<0.0003	<0.002	0.0681	0.144 J	0.000476	<0.005	<0.00008	<0.002	<0.002	<0.0005	0.74	0.865	1.605
	09/13/18	--	0.00473 J	0.0258	--	--	<0.002	0.0645	<0.100	0.000368 J	<0.005	--	<0.002	--	--	0.519	0.711	1.23
	05/15/19	<0.0008	0.00541	0.0412	<0.0003	<0.0003	<0.002	0.003	0.418	<0.0003	0.0615	<0.00008	<0.002	<0.002	<0.0005	1.18	0.657	1.837
	09/04/19	--	0.00768	0.0261	--	--	--	0.108	<0.1	--	<0.005	--	<0.002	--	--	0.0996	1.62	1.72
	05/20/20	<0.0008	0.0126	0.0494	<0.0003	<0.0003	<0.002	0.0912	<0.1	0.000956 J	<0.005	<0.00008	<0.002	0.0044 J	<0.0005	0.5	2.15	2.65
	09/29/20	--	0.00837	0.0292	<0.000300	<0.000300	0.002	0.101	<0.100	0.00159	0.005	--	--	0.00204 J	--	0.152	0.548	0.7
	06/14/21	<0.0008	0.00234 J	0.0431	<0.0003	<0.0003	<0.002	0.0788	0.109 J	0.000323 J	0.00778 J	<0.00008	<0.002	<0.002	<0.0005	0.500	2.81	3.31
	10/06/21	<0.000800	0.00439 J	0.0273	<0.000300	<0.000300	<0.00200	0.0963	<0.100	0.000947 J	0.00549 J	<0.0000800	<0.00200	<0.00200	<0.000500	0.401	2.18	2.58
BMW-21	10/23/15	<0.0008	0.00324 J	0.0703	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.0623	<0.00008	<0.002	<0.002	<0.0005	<0.436	<0.948	<1.384
	12/30/15	<0.0008	0.00247 J	0.0478	<0.0003	<0.0003	<0.002	<0.003	0.126 J	<0.0003	0.0602	<0.00008	<0.002	<0.002	<0.0005	0.584	<2.00	2.58
	02/25/16	<0.0008	0.00327 J	0.0471	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.0602	<0.00008	<0.002	<0.002	<0.0005	0.735	2.13	2.87
	04/07/16	<0.0008	0.00337 J	0.0472	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.0653	<0.00008	<0.002	<0.002	<0.0005	0.470	<2.78	3.25
	06/09/16	<0.0008	0.0034 J	0.0457	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.0675	<0.00008	<0.002	<0.002	<0.0005	0.32	<0.917	1.24
	08/11/16	<0.0008	0.00373 J	0.0445	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.0527	<0.00008	<0.002	<0.002	<0.0005	0.655	<0.728	1.38
	10/26/16	<0.0008	0.0037 J	0.0443	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.0611	<0.00008	<0.002	<0.002	<0.0005	0.383	1.61	1.99
	12/13/16	<0.0008	0.00217 J	0.0438	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.0631	<0.00008	<0.002	<0.002	<0.0005	0.213	1.00	1.21
	06/11/18	<0.0008	0.00373 J	0.0438	<0.0003	<0.0003	<0.002	<0.003	0.233 J	<0.0003	0.07	<0.00008	<0.002	<0.002	<0.0005	<0.239	<0.939	<1.178
	09/13/18	--	0.00353 J	0.0412	--	--	<0.002	<0.003	0.136 J	<0.0003	0.0646	--	<0.002	--	--	0.562	1.49	2.052
	05/15/19	<0.0008	0.00399 J	0.0412	<0.0003	<0.0003	<0.002	<0.003	0.366 J	<0.0003	0.0613	<0.00008	<0.002	<0.002	<0.0005	<0.322	1.07	1.392
	09/04/19	--	0.00378	0.0409	--	--	--	<0.003	<0.1	--	0.0683	--	<0.002	--	--	0.506	1.51	2.06
	05/20/20	<0.0008	0.00434 J	0.0421	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.0632	<0.00008	<0.002	<0.002	<0.0005	0.562	1.76	2.32
	09/29/20	--	0.00814	0.0420	<0.000300	<0.000300	<0.00200	<0.00300	<0.100	<0.000300	0.0663	--	--	<0.00200	--	0.699	1.48	2.18
	06/14/21	<0.0008	0.004 J	0.0398	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.0617	<0.00008	<0.002	<0.002	<0.0005	0.555	1.62	2.18
	10/06/21	<0.000800	0.00790	0.0394	<0.000300	<0.000300	<0.00200	<0.00300	<0.100	<0.000300	0.0653	<0.0000800	<0.00200	<0.00200	<0.000500	0.609	1.77	2.38
BMW-22	10/23/15	<0.0008	<0.002	0.106	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.0675	<0.00008	<0.002	<0.002	<0.0005	1.59	2.11	3.70
	12/30/15	<0.0008	<0.002	0.084	<0.0003	<0.0003	<0.002	<0.003	0.186 J	<0.0003	0.0594	<0.00008	<0.002	<0.002	<0.0005	0.973	<1.55	2.52
	02/25/16	<0.0008	<0.002	0.0761	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.0801	<0.00008	<0.002	<0.002	<0.0005	0.594	<1.93	2.52
	04/07/16	<0.0008	<0.002	0.072	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.0773	<0.00008	<0.002	<0.002	<0.0005	0.480	1.46	1.94
	06/08/16	<0.0008	0.00206 J	0.0667	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.0847	<0.00008	<0.002	<0.002	<0.0005	0.888	1.88	2.77
	08/11/16	<0.0008	<0.002	0.0679	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.0675	<0.00008	<0.002	<0.002	<0.0005	0.607	1.93	2.54
	10/26/16	<0.0008	0.00216 J	0.0645	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.0753	<0.00008	<0.002	<0.002	<0.0005	0.633	1.02	1.65
	12/13/16	<0.0008	0.00232 J	0.0655	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.0689	<0.00008	<0.002	<0.002	<0.0005	<0.209	1.05	1.26
	06/11/18	<0.0008	<0.002	0.0638	<0.0003	<0.0003	<0.002	<0.003	0.312 J	<0.0003	0.089	<0.00008	<0.002	<0.002	<0.0005	0.522	<1.020	1.54
	09/13/18	--	<0.002	0.063	--	--	<0.002	<0.003	0.205 J	<0.0003	0.0882	--	<0.002	--	--	1.29	2.89	4.18
	05/15/19	<0.0008	<0.002	0.0618	<0.0003	<0.0003	<0.002	<0.003	0.351 J	<0.0003	0.0779	<0.00008	<0.002	<0.002	<0.0005	3.36	1.64	5.00
	09/09/19	--	<0.002	0.0599	--	--	--	<0.003	<0.100	--	0.0829	--	<0.002	--	--	0.954	1.85	2.81
	05/20/20	<0.0008	<0.002	0.0621	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.0855	<0.00008	<0.002	<0.002	<0.0005	0.909	2.67	3.58
	09/29/20	--	<0.00200	0.0598	<0.000300	<0.000300	<0.00200	<0.00300	<0.100	<0.000300	0.0837	--	--	<0.00200	--	0.621	3.13	3.75
	06/14/21	<0.0008	<0.002	0.0609	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.0776	<0.00008	<0.002	<0.002	<0.0005	0.415	1.64	2.05
	10/06/21	<0.000800	<0.00200	0.0576	<0.000300	<0.000300	<0.00200	<0.00300	<0.100	<0.000300	0.0779	<0.0000800	<0.00200	<0.00200	<0.000500	0.695	1.43	2.12

TABLE 4
APPENDIX IV ANALYTICAL DATA
MLSES A1 AREA LANDFILL

Sample Location	Date Sampled	Sb (mg/L)	As (mg/L)	Ba (mg/L)	Be (mg/L)	Cd (mg/L)	Cr (mg/L)	Co (mg/L)	F (mg/L)	Pb (mg/L)	Li (mg/L)	Hg (mg/L)	Mo (mg/L)	Se (mg/L)	Tl (mg/L)	Ra 226 (pCi/L)	Ra 228 (pCi/L)	Ra 226/228 Comb.^ (pCi/L)
BMW-23	10/23/15	<0.0008	<0.002	0.0519	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.0802	<0.00008	<0.002	<0.002	<0.0005	1.19	<1.91	3.10
	12/30/15	<0.0008	<0.002	0.0462	<0.0003	<0.0003	<0.002	<0.003	0.122 J	<0.0003	0.0897	<0.00008	<0.002	<0.002	<0.0005	0.711	<2.62	3.33
	02/25/16	<0.0008	<0.002	0.0488	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.0959	<0.00008	<0.002	<0.002	<0.0005	0.604	<1.78	2.38
	04/07/16	<0.0008	<0.002	0.0472	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.095	<0.00008	<0.002	<0.002	<0.0005	0.723	1.98	2.70
	06/08/16	<0.0008	<0.002	0.0497	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.103	<0.00008	<0.002	<0.002	<0.0005	0.654	1.29	1.94
	08/11/16	<0.0008	<0.002	0.0458	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.077	<0.00008	<0.002	<0.002	<0.0005	0.936	1.94	2.88
	10/26/16	<0.0008	<0.002	0.0437	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.0856	<0.00008	<0.002	<0.002	<0.0005	0.472	1.76	2.23
	12/13/16	<0.0008	<0.002	0.0407	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.0817	<0.00008	<0.002	<0.002	<0.0005	<0.225	0.704	0.93
	06/11/18	<0.0008	<0.002	0.0381	<0.0003	<0.0003	<0.002	<0.003	0.204 J	<0.0003	0.106	<0.00008	<0.002	<0.002	<0.0005	0.442	1.79	2.23
	09/13/18	--	<0.002	0.0414	--	--	<0.002	<0.003	0.190 J	<0.0003	0.0915	--	<0.002	--	--	0.774	1.23	2.00
	05/15/19	<0.0008	0.0024	0.0381	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.0951	<0.00008	<0.002	<0.002	<0.0005	2.54	1	3.54
	09/09/19	--	<0.002	0.0382	--	--	--	<0.003	<0.100	--	0.0896	--	<0.002	--	--	0.583	2.4	2.98
	05/20/20	<0.0008	<0.002	0.039	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.0927	<0.00008	<0.002	<0.002	<0.0005	0.669	2.27	2.93
	09/29/20	--	<0.00200	0.0383	<0.000300	<0.000300	<0.00200	<0.00300	0.302 J	<0.000300	0.0861	--	--	<0.00200	--	0.687	0	0.687
	06/14/21	<0.0008	<0.002	0.0433	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.0837	<0.00008	<0.002	<0.002	<0.0005	0.742	1.75	2.49
	10/06/21	<0.000800	<0.00200	0.0367	<0.000300	<0.000300	<0.00200	<0.00300	<0.100	<0.000300	0.0827	<0.0000800	<0.00200	<0.00200	<0.000500	0.59	1.77	2.36
BMW-24	10/23/15	<0.0008	0.00494 J	1.87	<0.0003	<0.0003	<0.002	0.00802	0.247 J	<0.0003	<0.005	<0.00008	<0.002	<0.002	<0.0005	1.83	3.32	5.15
	12/30/15	<0.0008	0.00579	0.801	<0.0003	<0.0003	<0.002	0.0146	0.391 J	<0.0003	0.0161	<0.00008	<0.002	<0.002	<0.0005	0.485	<1.66	2.15
	02/25/16	<0.0008	0.00442 J	0.645	<0.0003	<0.0003	<0.002	0.0137	0.236 J	<0.0003	0.0267	<0.00008	<0.002	<0.002	<0.0005	1.20	<1.93	3.13
	04/07/16	<0.0008	0.00376 J	0.202	<0.0003	<0.0003	<0.002	0.0238	0.109 J	<0.0003	0.0415	<0.00008	<0.002	<0.002	<0.0005	<0.349	<1.58	<1.929
	06/08/16	<0.0008	0.00481 J	0.181	<0.0003	<0.0003	<0.002	0.0227	0.147 J	<0.0003	0.0475	<0.00008	<0.002	<0.002	<0.0005	0.360	1.26	1.62
	08/11/16	<0.0008	0.00414 J	1.26	<0.0003	<0.0003	<0.002	0.00707	0.225 J	<0.0003	0.00938 J	<0.00008	<0.002	<0.002	<0.0005	0.564	<0.942	1.51
	10/26/16	<0.0008	0.00364 J	1.88	<0.0003	<0.0003	<0.002	<0.003	0.305 J	<0.0003	0.00767 J	<0.00008	<0.002	<0.002	<0.0005	1.37	1.31	2.68
	12/13/16	<0.0008	0.00498 J	1.96	<0.0003	<0.0003	<0.002	0.00326 J	0.3 J	<0.0003	0.00914 J	<0.00008	<0.002	<0.002	<0.0005	0.270	1.16	1.43
	06/11/18	<0.0008	0.00266 J	0.487	<0.0003	<0.0003	<0.002	0.00633	0.466	<0.0003	0.0198	<0.00008	<0.002	<0.002	<0.0005	0.668	0.975	1.643
	09/13/18	--	<0.002	2.19	--	--	<0.002	0.00304 J	0.769	<0.0003	0.00764 J	--	<0.002	--	--	1.82	1.45	3.27
	05/15/19	<0.0008	0.00272 J	0.221	<0.0003	<0.0003	<0.002	0.000643	0.219 J	<0.0003	0.0512	<0.00008	<0.002	<0.002	<0.0005	1.45	<1.21	2.66
	09/09/19	--	<0.002	1.48	--	--	--	<0.003	0.534	--	0.00826 J	--	<0.002	--	--	0.584	1.41	2
	05/20/20	<0.0008	0.00207 J	0.244	<0.0003	<0.0003	<0.002	0.0109	0.129 J	<0.0003	0.046	<0.00008	<0.002	<0.002	<0.0005	0.532	<2.45	2.99
	09/29/20	--	<0.00200	1.85	<0.000300	<0.000300	<0.00200	<0.00300	0.725	<0.000300	0.00563 J	--	--	<0.00200	--	1.24	0.892	2.14
	06/14/21	<0.0008	<0.002	0.212	<0.0003	<0.0003	<0.002	0.00512	0.251 J	<0.0003	0.0497	<0.00008	<0.002	<0.002	<0.0005	0.486	1.77	2.26
	10/06/21	<0.000800	<0.00200	1.60	<0.000300	<0.000300	<0.00200	<0.00300	0.312 J	<0.000300	0.00545 J	<0.000400	<0.00200	<0.00200	<0.000500	1.04	2.85	3.89
BMW-26	09/13/16	<0.0008	0.017	0.0425	<0.0003	<0.0003	<0.002	<0.003	<0.1	<0.0003	0.0944	<0.00008	0.00215 J	<0.002	<0.0005	0.154	<1.02	1.17
	10/26/16	<0.0008	0.00318 J	0.0731	<0.0003	<0.0003	<0.002	0.00402 J	<0.1	<0.0003	<0.005	<0.00008	<0.002	<0.002	<0.0005	0.175	<0.695	0.87
	12/14/16	<0.0008	<0.002	0.0424	<0.0003	0.000823 J	<0.002	0.236	0.344 J	<0.0003	0.0527	<0.00008	<0.002	<0.002	<0.0005	0.177	<1.29	1.47
	01/23/17	<0.0008	0.0325	0.0446	<0.0003	<0.0003	<0.002	<0.003	<0.1	0.000594 J	0.0977	<0.00008	0.0035 J	<0.002	<0.0005	0.351	0.936	1.29
	02/23/17	<0.0008	<0.002	0.0705	<0.0003	<0.0003	<0.002	<0.003	0.106 J	0.000726 J	0.0052 J	<0.00008	<0.002	<0.002	<0.0005	0.306	0.951	1.26
	03/24/17	<0.0008	0.0107	0.0371	<0.0003	<0.0003	<0.002	<0.003	<0.1	0.000742 J	0.0964	<0.00008	0.00461 J	<0.002	<0.0005	0.335	<0.627	0.96
	05/25/17	<0.0008	0.00347 J	0.0243	<0.0003	<0.0003	<0.002	<0.003	<0.1	<0.0003	0.0951	<0.0008	0.00302 J	<0.002	<0.0005	<0.477	0.818	1.30
	06/29/17	<0.0008	0.0328	0.0352	<0.0003	<0.0003	<0.002	<0.003	<0.1	<0.0003	0.0985	<0.0008	0.00257 J	<0.002	<0.0005	0.198	0.677	0.88
	06/12/18	<0.0008	0.00316 J	0.0222	<0.0003	<0.0003	0.00231 J	<0.003	<0.100	0.00152	0.111	<0.00008	0.0029 J	<0.002	<0.0005	<0.251	<0.508	<0.759
	09/13/18	--	0.0165	0.0360	--	--	<0.002	<0.003	<0.100	<0.0003	0.11	--	<0.002	--	--	<0.426	0.826	1.252
	05/15/19	<0.0008	<0.002	0.0253	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.101	<0.00008	0.00218 J	<0.002	<0.0005	0.457	<1.13	1.587
	09/04/19	--	0.00725	0.0317	--	--	--	<0.003	<0.1	--	0.109	--	<0.002	--	--	0.126	1.53	1.66
	05/20/20	<0.0008	<0.002	0.0293	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.0999	<0.00008	<0.002	<0.002	<0.0005	0.158	0.696	0.853
	09/29/20	--	0.00466 J	0.0314	<0.000300	<0.000300	<0.00200	<0.00300	<0.100	<0.000300	0.107	--	--	<0.00200	--	0.234	0.161	0.395
	06/14/21	<0.0008	<0.002	0.0273	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.099	<0.00008	<0.002	<0.002	<0.0005	0.149	1.05	1.20
	10/06/21	<0.000800	0.00436 J	0.0297	<0.000300	<0.000300	<0.00200	<0.00300	<0.100	<0.000300	0.105	<0.0000800	<0.00200	<0.00200	<0.000500	0.145 J	0.97	1.12

TABLE 4
APPENDIX IV ANALYTICAL DATA
MLSES A1 AREA LANDFILL

Sample Location	Date Sampled	Sb (mg/L)	As (mg/L)	Ba (mg/L)	Be (mg/L)	Cd (mg/L)	Cr (mg/L)	Co (mg/L)	F (mg/L)	Pb (mg/L)	Li (mg/L)	Hg (mg/L)	Mo (mg/L)	Se (mg/L)	Tl (mg/L)	Ra 226 (pCi/L)	Ra 228 (pCi/L)	Ra 226/228 Comb.^ (pCi/L)
BMW-27	09/13/16	<0.0008	0.00536	0.0434	<0.0003	0.000615 J	<0.002	0.15	0.668	0.000432 J	0.0541	<0.00008	<0.002	<0.002	<0.0005	0.308	<1.14	1.45
	10/26/16	<0.0008	0.00625	0.0339	<0.0003	<0.0003	<0.002	<0.003	<0.1	<0.0003	0.0933	<0.00008	<0.002	<0.002	<0.0005	0.156	1.94	2.10
	12/14/16	<0.0008	0.0051	0.0342	<0.0003	<0.0003	<0.002	<0.003	<0.1	<0.0003	0.0932	<0.00008	<0.002	<0.002	<0.0005	<0.12	<1.05	<1.17
	01/23/17	<0.0008	0.00845	0.0333	<0.0003	0.000707 J	0.00278 J	0.195	0.573	0.000323 J	0.0484	<0.00008	<0.002	<0.002	<0.0005	0.369	0.934	1.30
	02/23/17	<0.0008	<0.002	0.0704	<0.0003	<0.0003	<0.002	<0.003	0.252 J	0.000736 J	<0.005	<0.00008	<0.002	<0.002	<0.0005	<0.209	0.660	0.87
	03/24/17	<0.0008	0.00319 J	0.0296	<0.0003	0.000776 J	<0.002	0.222	0.738	<0.0003	0.0474	<0.00008	<0.002	<0.002	<0.0005	0.414	<0.725	1.14
	05/25/17	<0.0008	<0.002	0.0266	<0.0003	0.000521 J	<0.002	0.2	1.61	0.000439 J	0.0471	<0.00008	<0.002	<0.002	<0.0005	<0.443	1.38	1.82
	06/29/17	<0.0008	0.00593	0.0307	<0.0003	0.00851 J	0.00266 J	0.255	0.717	<0.0003	0.048	<0.0008	<0.002	<0.002	<0.0005	0.303	0.628	0.93
	06/12/18	<0.0008	0.00223 J	0.0182	<0.0003	<0.0003	<0.002	<0.003	<0.100	0.00097 J	0.0721	<0.00008	<0.002	<0.002	<0.0005	0.305	<0.5860	0.891
	09/13/18	--	0.00467 J	0.0250	--	--	0.002 J	0.190	0.750	<0.0003	0.0531	--	<0.002	--	--	0.691	1.04	1.731
	05/15/19	<0.0008	<0.002	0.0238	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.0943	<0.00008	<0.002	<0.002	<0.0005	<0.195	0.962	1.157
	09/04/19	--	0.00759	0.32	--	--	--	<0.003	<0.1	--	0.107	--	<0.002	--	--	0.0726	1.68	1.75
	05/20/20	<0.0008	<0.002	0.025	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.084	<0.00008	<0.002	<0.002	<0.0005	0.265	0.255	0.52
	09/29/20	--	0.00494 J	0.0313	<0.000300	<0.000300	<0.00200	<0.00300	<0.100	0.0003	0.110	--	--	<0.00200	--	0.147	-0.339	0.147
	06/14/21	<0.0008	<0.002	0.021	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.075	<0.00008	<0.002	<0.002	<0.0005	0.0262	0.558	0.584 J
	10/06/21	<0.000800	0.00384 J	0.0375	<0.000300	<0.000300	<0.00200	<0.00300	<0.100	<0.000300	0.0883	<0.0000800	<0.00200	<0.00200	<0.000500	0.358	0.585 J	0.943 J
BMW-28	12/14/16	0.0012 J	<0.002	0.0509	<0.0003	<0.0003	<0.002	<0.003	<0.1	<0.0003	0.11	<0.00008	0.0103	0.00445 J	<0.0005	<0.566	<2.22	2.79
	01/23/17	0.001 J	<0.002	0.0518	<0.0003	<0.0003	<0.002	<0.003	0.104 J	<0.0003	0.116	<0.00008	0.00881	<0.002	<0.0005	0.626	1.12	1.75
	02/23/17	<0.0008	<0.002	0.0734	<0.0003	<0.0003	<0.002	<0.003	0.11 J	0.000965 J	0.00514 J	<0.00008	<0.002	<0.002	<0.0005	0.168	0.835	1.00
	03/24/17	0.0012 J	<0.002	0.046	<0.0003	<0.0003	<0.002	<0.003	<0.1	<0.0003	0.1	<0.00008	0.00773	0.00208 J	<0.0005	1.04	1.17	2.21
	04/24/17	0.0011 J	<0.002	0.047	<0.0003	<0.0003	<0.002	<0.003	0.19 J	<0.0003	0.109	<0.00008	0.00766	<0.002	<0.0005	0.356	1.880	2.24
	06/12/18	<0.0008	<0.002	0.0505	<0.0003	<0.0003	<0.002	<0.003	0.529	0.00122	0.116	<0.00008	0.00764	<0.002	<0.0005	0.197	1.12	1.32
	09/14/18	--	<0.002	0.0419	--	--	<0.002	<0.003	0.445	<0.0003	0.114	--	0.00782	--	--	0.35	1.15	1.50
	05/15/19	<0.0008	<0.002	0.0285	<0.0003	<0.0003	<0.002	<0.003	0.496	<0.0003	0.119	<0.00008	0.0124	<0.002	<0.0005	0.289	0.924	1.21
	09/04/19	--	<0.002	0.027	--	--	--	<0.003	<0.1	--	0.131	--	0.00961	--	--	0.0173	3.20	3.21
	05/20/20	<0.0008	<0.002	0.0297	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.133	<0.00008	0.00617	<0.002	<0.0005	0.157	2.38	2.54
	09/30/20	--	<0.00200	0.0150	<0.000300	<0.000300	<0.00200	<0.00300	0.229 J	<0.000300	0.0953	--	--	<0.00200	--	0.229	2.53	2.76
	06/15/21	<0.0008	<0.002	0.00547 J	<0.0003	<0.0003	<0.002	<0.003	<0.100	0.000393 J	<0.00500	<0.00008	<0.002	<0.002	<0.0005	0.101	0.972	1.07
	10/07/21	<0.000800	<0.00200	0.00461 J	<0.000300	<0.000300	<0.00200	<0.00300	0.290 J	<0.000300	0.00749 J	<0.0000800	<0.00200	<0.00200	<0.000500	0.795	0.832	1.63
	10/7/21 DUP	<0.0008	<0.002	0.00487 J	<0.0003	<0.0003	<0.002	<0.003	<0.1	<0.0003	0.00637 J	<0.00008	<0.002	<0.002	<0.0005	0.462	0.516 J	0.978

Notes:
1. Abbreviations: mg/L - milligrams per liter; pCi/L - picocuries per liter.
2. ^ - Sum of Ra 226 and Ra 228 concentrations.
3. J - Concentration is below method quantitation limit; result is an estimate
4. "--" - not analyzed. Groundwater sample analyses for the second semi-annual sampling events were in some instances limited to Appendix IV parameters detected during the preceding first semi-annual sampling event i accordance with 40 CFR § 257.95(d)(1). Well BMW-33 was not formerly a CCR monitoring well; therefore, not all Appendix IV constituents were analyzed in samples from this well during every sampling ever

ATTACHMENT 1

LABORATORY ANALYTICAL REPORTS

July 19, 2021

Will Vienne
Golder
2201 Double Creek Dr #4004
Round Rock, Texas 78664
TEL: (512) 671-3434
FAX (512) 671-3446

Order No.: 2106110

RE: MLSES A1 Area Landfill CCR

Dear Will Vienne:

DHL Analytical, Inc. received 14 sample(s) on 6/16/2021 for the analyses presented in the following report.

There were no problems with the analyses and all data met requirements of NELAP except where noted in the Case Narrative. All non-NELAP methods will be identified accordingly in the case narrative and all estimated uncertainties of test results are within method or EPA specifications.

If you have any questions regarding these tests results, please feel free to call. Thank you for using DHL Analytical.

Sincerely,

John DuPont
General Manager

This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211-21-27

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DHL ANALYTICAL
2300 Double Creek Dr. Round Rock, TX 78664
Phone 512.388.8222
Web: **www.dhlanalytical.com**
Email: **login@dhlanalytical.com**

CHAIN-OF-CUSTODY

CLIENT: GOLDER
ADDRESS: 2201 DOUBLE CREEK DR #4004 ROUND ROCK, TX 78664
PHONE: 512-671-3434 EMAIL:
DATA REPORTED TO: WILL VIENNE
ADDITIONAL REPORT COPIES TO:
PO#:
PROJECT LOCATION OR NAME: MLSES A1 AREA LANDFILL CCR
CLIENT PROJECT # 19122262
COLLECTOR: JOHN BRAYTON

LABORATORY USE ONLY
DHL WORKORDER #: 2106110

Authorize 5% surcharge for TRRP report? ☐ Yes ☐ No

Lab Use Only: W=WATER L=LIQUID S=SOLID SO=SOLID SE=SEDIMENT P=PAINT SL=SLUDGE

Field Sample I.D.	DHL Lab #	Collection Date	Collection Time	Matrix	Container Type	# of Containers	PRESERVATION: HCL	HNO_3	H_2SO_4	NaOH ☐ Zn Acetate ☐	ICE ☒ UNPRESERVED ☒	ANALYSES	APPENDIX III	APPENDIX IV	FIELD NOTES
BMW-24	01	6-14-21	0945	W	P	4		X			X		X	X	
BMW-23	02	6-14-21	1035	W	P	4		X			X		X	X	
BMW-22	03	6-14-21	1130	W	P	4		X			X		X	X	
BMW-20	04	6-14-21	1230	W	P	4		X			X		X	X	
BMW-21	05	6-14-21	1320	W	P	4		X			X		X	X	
BMW-27	06	6-14-21	1425	W	P	4		X			X		X	X	
BMW-26	07	6-14-21	1525	W	P	4		X			X		X	X	
BMW-11AR	08	6-14-21	1630	W	P	4		X			X		X	X	
BMW-19	09	6-15-21	0810	W	P	4		X			X		X	X	
DUP-1	10	6-15-21	0810	W	P	4		X			X		X	X	
BMW-18	11	6-15-21	0900	W	P	4		X			X		X	X	
BMW-28	12	6-15-21	1010	W	P	4		X			X		X	X	
BMW-33	13	6-15-21	1125	W	P	4		X			X		X	X	
BMW-32	14	6-15-21	1220	W	P	4		X			X		X	X	Analyze for Cobalt only per Will V.
														(RA) 6/16/21	

	DATE/TIME	Received by:
Relinquished By: (Sign)	6-15-21 1800	FedEx
Relinquished By: (Sign) FedEx	6/16/21 0954	
Relinquished By: (Sign)	DATE/TIME	Received by:

TURN AROUND TIME (CALL FIRST FOR RUSH)
RUSH-1 DAY☐ RUSH-2 DAY☐ RUSH-3 DAY☐
NORMAL☒ OTHER ☐
DUE DATE _____ ☐

LABORATORY USE ONLY
RECEIVING TEMP (°C): 2.5/4.7/4.0/2.1 THERM #: 78
CUSTODY SEALS: ☐ BROKEN ☒ INTACT ☐ NOT USED
CARRIER: ☐ LSO ☒ FEDEX ☐ UPS ☐ COURIER ☐ OTHER ☐ HAND DELIVERED

☐ **DHL DISPOSAL @ 5.00 each** ☐ **Return**

Eric Lau

From: John DuPont
Sent: Tuesday, May 28, 2019 11:35 AM
To: Eric Lau
Subject: FW: CCR Analysis

Appendix III Parameters:
Metals (Ca and B)
Anions (Cl, F, and SO4)
TDS

Appendix IV Parameters:

Metals (As, Ba, Be, Cd, Co, Cr, Hg, Li, Mo, Pb, Sb, Se, and Tl)
Ra-226
Ra-228

From: Vienne, Will [mailto:William_Vienne@golder.com]
Sent: Tuesday, April 09, 2019 12:48 PM
To: John DuPont <dupont@dhlanalytical.com>
Subject: CCR Analysis

Eric Lau

Subject: FW: MLSES Area Landfill CCR COC

That is correct, BMW-32 for cobalt only. The rest for all Appendix III/IV parameters.

Thanks,

William Vienne
Senior Consulting Hydrogeologist

GOLDER
MEMBER OF WSP

Golder Associates Inc.
2201 Double Creek Dr, Suite 4004, Round Rock, Texas, USA 78664
T: 512 671-3434 | **C:** 512 466-9074 | **golder.com**
LinkedIn | Instagram | Facebook | Twitter

Work Safe, Home Safe

From: Eric Lau <login@dhlanalytical.com>
Sent: Wednesday, June 16, 2021 12:03 PM
To: Vienne, Will <William_Vienne@golder.com>
Cc: John DuPont <dupont@dhlanalytical.com>
Subject: RE: MLSES Area Landfill CCR COC

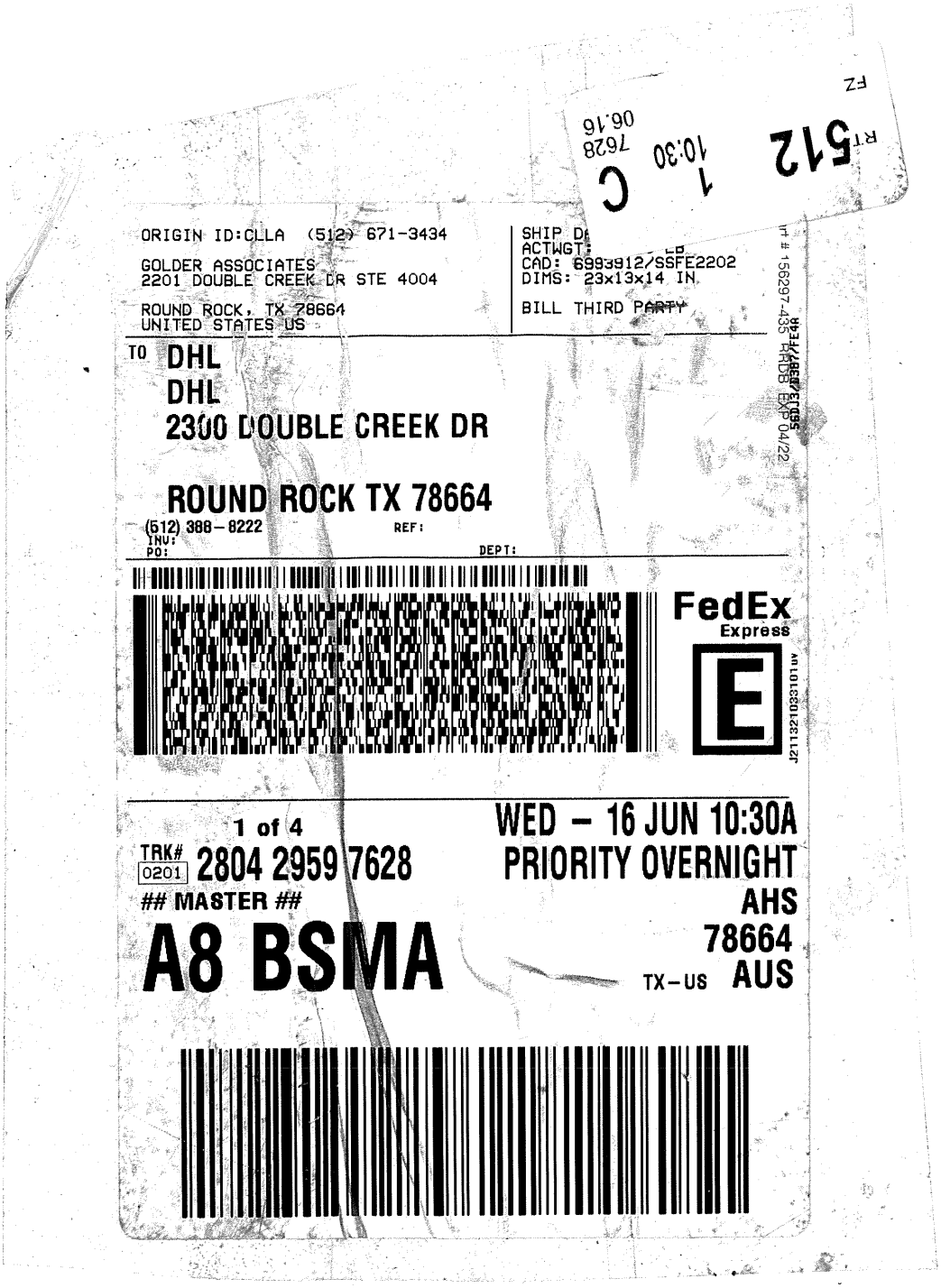
Will,

Before we make the proper changes to the COC, Dr. Luu wanted to confirm that you want sample BMW-32 to be analyzed for cobalt only.

Please confirm that this is correct.

Thank you for using DHL Analytical,
Eric Lau
Login Specialist

DHL ANALYTICAL
Phone: (512) 388-8222 | Fax (512) 388-8229
2300 Double Creek Drive | Round Rock, TX 78664
http://www.dhlanalytical.com

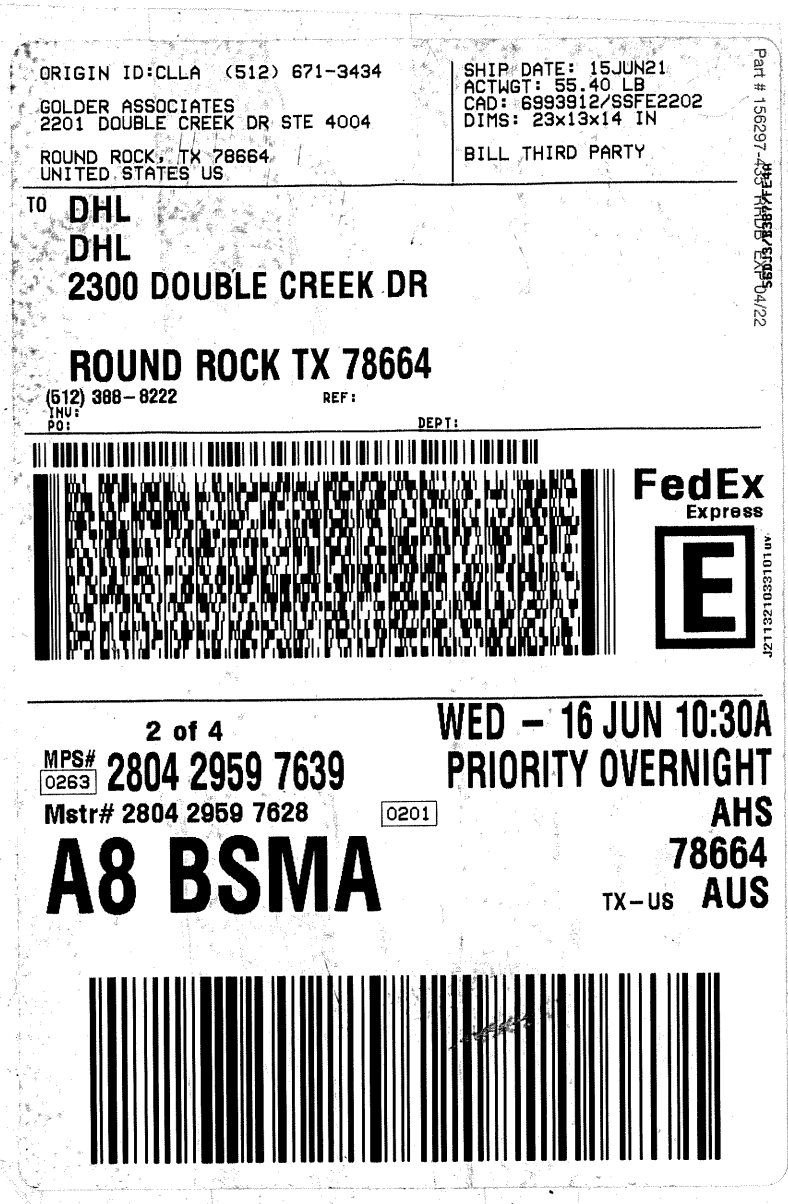


CUSTODY SEAL

DATE 6-15-21

SIGNATURE

DHL ANALYTICAL



CUSTODY SEAL

DATE 6-15-21

SIGNATURE

DHL ANALYTICAL

ORIGIN ID:CLLA (512) 671-3434
GOLDER ASSOCIATES
2201 DOUBLE CREEK DR STE 4004
ROUND ROCK, TX 78664
UNITED STATES US

SHIP DATE: 15JUN21
ACTWGT: 56.00 LB
CAD: 6993912/SSFE2202
DIMS: 22x13x14 IN
BILL THIRD PARTY

Part #156297-435 RRDB EXP 04/22

TO DHL
DHL
2300 DOUBLE CREEK DR

ROUND ROCK TX 78664
(512) 388-8222 REF:
INV:
PO: DEPT:

FedEx Express

3 of 4
MPS# 0263 2804 2959 7640
Mstr# 2804 2959 7628 0201

WED - 16 JUN 10:30A
PRIORITY OVERNIGHT
AHS
78664
TX-US AUS

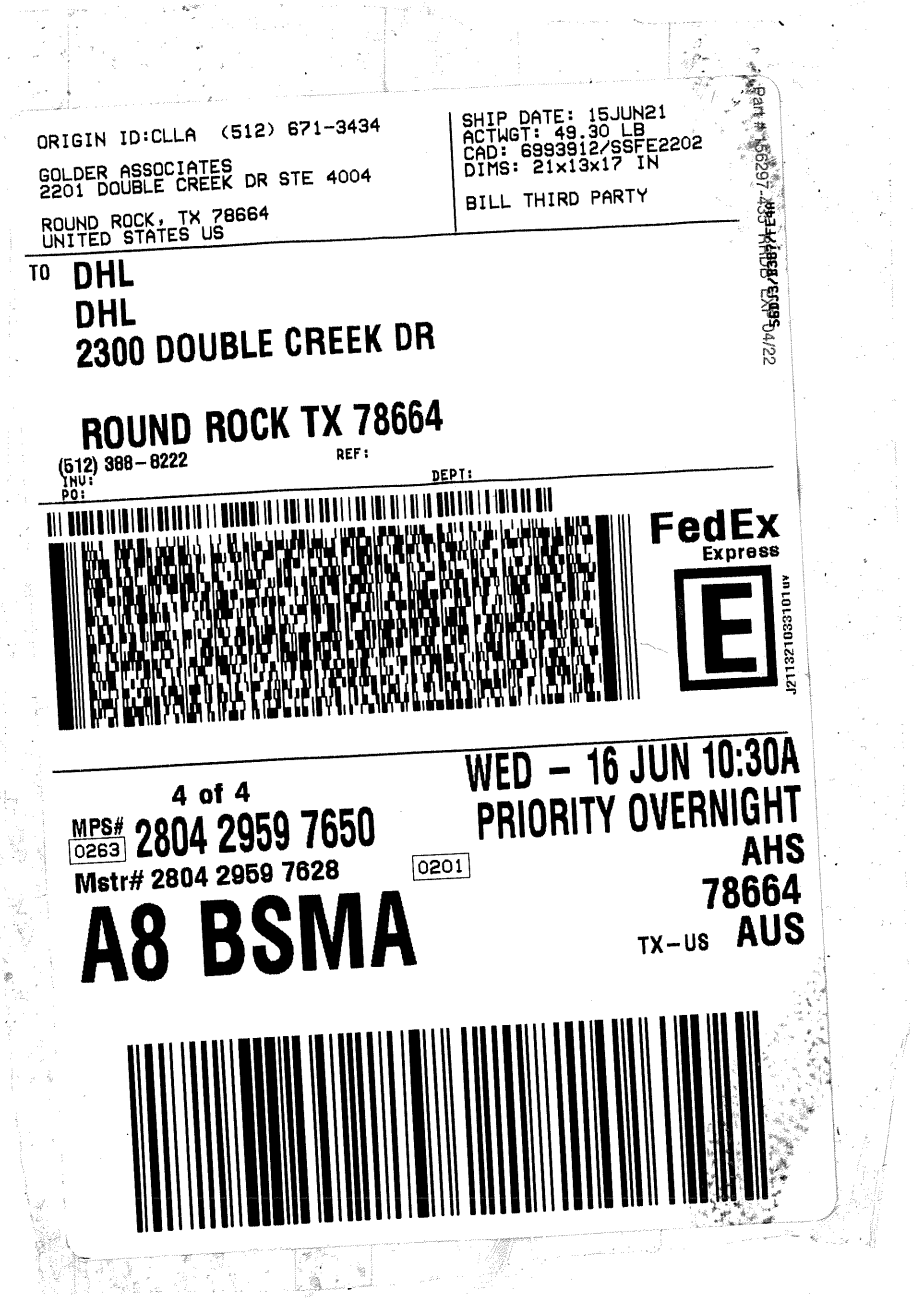
A8 BSMA

CUSTODY SEAL

DATE 6-15-21

SIGNATURE John Bry

DHL ANALYTICAL



CUSTODY SEAL

DATE 6.15.21

SIGNATURE

DHL ANALYTICAL

DHL Analytical, Inc.

Sample Receipt Checklist

Client Name **Golder** Date Received: **6/16/2021**

Work Order Number **2106110** Received by: **EL**

Checklist completed by: Signature 6/16/2021 Date Reviewed by (PL) Initials 6/16/2021 Date

Carrier name: FedEx 1day

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☐	No ☑	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	2.5 °C/4.7°C/4.9°C/2.1°C
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH<2 acceptable upon receipt?	Yes ☑	No ☐	NA ☐ LOT # 13171
	Adjusted? No		Checked by R.A.
Water - ph>9 (S) or ph>10 (CN) acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted?		Checked by

Any No response must be detailed in the comments section below.

Client contacted: Golder Date contacted: 6/16/21 Person contacted Will V.

Contacted by: Ryan A. Regarding: Insufficient Sample Volume

Comments: Sample BMW-32 received in one 250ml preserved plastic bottle which is insufficient for all analysis requested.

Corrective Action: Per Will V., DHL will put sample BMW-32 on hold and will proceed with the analysis of the remaining samples.

Laboratory Name: DHL Analytical, Inc.

Laboratory Review Checklist: Reportable Data

Project Name: MLSES A1 Area Landfill CCR	**LRC Date:** 7/19/21
Reviewer Name: Carlos Castro	**Laboratory Work Order:** 2106110
Prep Batch Number(s): See Prep Dates Report	**Run Batch:** See Analytical Dates Report

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
		Chain-of-Custody (C-O-C)					
R1	OI	**1)** Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	**X**				**R1-01**
		2) Were all departures from standard conditions described in an exception report?			**X**		
R2	OI	**Sample and Quality Control (QC) Identification**					
		1) Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	**X**				
		2) Are all laboratory ID numbers cross-referenced to the corresponding QC data?	**X**				
R3	OI	**Test Reports**					
		1) Were all samples prepared and analyzed within holding times?	**X**				
		2) Other than those results < MQL, were all other raw values bracketed by calibration standards?	**X**				
		3) Were calculations checked by a peer or supervisor?	**X**				
		4) Were all analyte identifications checked by a peer or supervisor?	**X**				
		5) Were sample detection limits reported for all analytes not detected?	**X**				
		6) Were all results for soil and sediment samples reported on a dry weight basis?			**X**		
		7) Were % moisture (or solids) reported for all soil and sediment samples?			**X**		
		8) Were bulk soils/solids samples for volatile analysis extracted with methanol per EPA Method 5035?			**X**		
		9) If required for the project, TICs reported?			**X**		
R4	O	**Surrogate Recovery Data**					
		1) Were surrogates added prior to extraction?			**X**		
		2) Were surrogate percent recoveries in all samples within the laboratory QC limits?			**X**		
R5	OI	**Test Reports/Summary Forms for Blank Samples**					
		1) Were appropriate type(s) of blanks analyzed?	**X**				
		2) Were blanks analyzed at the appropriate frequency?	**X**				
		3) Where method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	**X**				
		4) Were blank concentrations < MDL?	**X**				
		5) For analyte(s) detected in a blank sample, was the concentration, unadjusted for sample specific factors, in all associated field samples, **greater** than 10 times the concentration in the blank sample?			**X**		
R6	OI	**Laboratory Control Samples (LCS):**					
		1) Were all COCs included in the LCS?	**X**				
		2) Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	**X**				
		3) Were LCSs analyzed at the required frequency?	**X**				
		4) Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	**X**				
		5) Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	**X**				
		6) Was the LCSD RPD within QC limits (if applicable)?	**X**				
R7	OI	**Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Data**					
		1) Were the project/method specified analytes included in the MS and MSD?	**X**				
		2) Were MS/MSD analyzed at the appropriate frequency?	**X**				
		3) Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?		**X**			**R7-03**
		4) Were MS/MSD RPDs within laboratory QC limits?	**X**				
R8	OI	**Analytical Duplicate Data**					
		1) Were appropriate analytical duplicates analyzed for each matrix?	**X**				
		2) Were analytical duplicates analyzed at the appropriate frequency?	**X**				
		3) Were RPDs or relative standard deviations within the laboratory QC limits?	**X**				
R9	OI	**Method Quantitation Limits (MQLs):**					
		1) Are the MQLs for each method analyte included in the laboratory data package?	**X**				
		2) Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	**X**				
		3) Are unadjusted MQLs and DCSs included in the laboratory data package?	**X**				
R10	OI	**Other Problems/Anomalies**					
		1) Are all known problems/anomalies/special conditions noted in this LRC and ER?	**X**				
		2) Was applicable and available technology used to lower the SDL to minimize the matrix interference affects on the sample results?	**X**				
		3) Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices and methods associated with this laboratory data package?	**X**				

Laboratory Name: DHL Analytical, Inc.

Laboratory Review Checklist (continued): Supporting Data

Project Name: MLSES A1 Area Landfill CCR	**LRC Date:** 7/19/21
Reviewer Name: Carlos Castro	**Laboratory Work Order:** 2106110
Prep Batch Number(s): See Prep Dates Report	**Run Batch:** See Analytical Dates Report

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
S1	OI	**Initial Calibration (ICAL)**					
		1) Were response factors and/or relative response factors for each analyte within QC limits?	X				
		2) Were percent RSDs or correlation coefficient criteria met?	X				
		3) Was the number of standards recommended in the method used for all analytes?	X				
		4) Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		5) Are ICAL data available for all instruments used?	X				
		6) Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	**Initial and Continuing calibration Verification (ICCV and CCV) and Continuing Calibration blank (CCB):**					
		1) Was the CCV analyzed at the method-required frequency?	X				
		2) Were percent differences for each analyte within the method-required QC limits?...	X				
		3) Was the ICAL curve verified for each analyte?	X				
		4) Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	X				
S3	O	**Mass Spectral Tuning:**					
		1) Was the appropriate compound for the method used for tuning?	X				
		2) Were ion abundance data within the method-required QC limits?	X				
S4	O	**Internal Standards (IS):**					
		1) Were IS area counts and retention times within the method-required QC limits?	X				
S5	OI	**Raw Data (NELAC Section 5.5.10)**					
		1) Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		2) Were data associated with manual integrations flagged on the raw data?	X				
S6	O	**Dual Column Confirmation**					
		1) Did dual column confirmation results meet the method-required QC?			X		
S7	O	**Tentatively Identified Compounds (TICs):**					
		1) If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) Results:**					
		1) Were percent recoveries within method QC limits?	X				
S9	I	**Serial Dilutions, Post Digestion Spikes, and Method of Standard Additions**					
		1) Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	X				
S10	OI	**Method Detection Limit (MDL) Studies**					
		1) Was a MDL study performed for each reported analyte?	X				
		2) Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	**Proficiency Test Reports:**					
		1) Was the lab's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	**Standards Documentation**					
		1) Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound/Analyte Identification Procedures**					
		1) Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of Analyst Competency (DOC)**					
		1) Was DOC conducted consistent with NELAC Chapter 5 – Appendix C?	X				
		2) Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/Validation Documentation for Methods** (NELAC Chapter 5)					
		1) Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	**Laboratory Standard Operating Procedures (SOPs):**					
		1) Are laboratory SOPs current and on file for each method performed?	X				

1 Items identified by the letter "R" should be included in the laboratory data package submitted to the TCEQ in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.

2 O = organic analyses; I = inorganic analyses (and general chemistry, when applicable).

3 NA = Not applicable.

4 NR = Not Reviewed.

5 ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Data Package Signature Page – RG-366/TRRP-13

This data package consists of:

This signature page, the laboratory review checklist, and the following reportable data:

R1 Field chain-of-custody documentation;
R2 Sample identification cross-reference;
R3 Test reports (analytical data sheets) for each environmental sample that includes:
  a) Items consistent with NELAC Chapter 5,
  b) dilution factors,
  c) preparation methods,
  d) cleanup methods, and
  e) if required for the project, tentatively identified compounds (TICs).
R4 Surrogate recovery data including:
  a) Calculated recovery (%R), and
  b) The laboratory's surrogate QC limits.
R5 Test reports/summary forms for blank samples;
R6 Test reports/summary forms for laboratory control samples (LCSs) including:
  a) LCS spiking amounts,
  b) Calculated %R for each analyte, and
  c) The laboratory's LCS QC limits.
R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
  a) Samples associated with the MS/MSD clearly identified,
  b) MS/MSD spiking amounts,
  c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
  d) Calculated %Rs and relative percent differences (RPDs), and
  e) The laboratory's MS/MSD QC limits
R8 Laboratory analytical duplicate (if applicable) recovery and precision:
  a) The amount of analyte measured in the duplicate,
  b) The calculated RPD, and
  c) The laboratory's QC limits for analytical duplicates.
R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix;
R10 Other problems or anomalies.

The Exception Report for each "No" or "Not Reviewed (NR)" item in the Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory is not accredited under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature below, I affirm to the best of my knowledge that all problems/anomalies observed by the laboratory have been identified in the Laboratory Review Checklist, and no information or data affecting the quality of the data has been knowingly withheld.

This laboratory was last inspected by TCEQ on February 23-26, 2021. Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Name: John DuPont
Official Title: General Manager

Signature

0□/1□/21

Date

Name: Dr. Derhsing Luu
Official Title: Technical Director

DHL Analytical, Inc. **Date:** *19-Jul-21*

CLIENT: Golder
Project: MLSES A1 Area Landfill CCR
Lab Order: 2106110

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Method SW6020B - Metals Analysis
Method SW7470A - Mercury Analysis
Method E300 - Anions Analysis
Method M2540C - TDS Analysis
Sub-contract - Radium-228 and Radium-226 analyses by methods E904 and SM 7500 Ra B M. Analyzed at Pace Analytical.

Exception Report R1-01

The samples were received and log-in performed on 6/16/21. A total of 14 samples were received. For further login notes please refer to the Sample Receipt Checklist. The samples arrived in good condition and were properly packaged.

Exception Report R7-03

For Anions analysis performed on 6/21/21 the matrix spikes and matrix spike duplicate recoveries (2106122-04 MS/MSD & 2106122-08 MS/MSD) were slightly below control limits for Sulfate. These are flagged accordingly in the QC summary report. The samples selected for the matrix spikes and matrix spike duplicates (2106122-04 MS/MSD & 2106122-08 MS/MSD) were not from this work order. The LCS was within control limits for this analyte. No further corrective actions were taken.

For Metals analysis performed on 6/17/21 the matrix spike and matrix spike duplicate recoveries were below control limits for Boron and/or Calcium. These are flagged accordingly. The sample selected for the matrix spike and matrix spike duplicate was from this work order. The LCS was within control limits for these analytes. No further corrective actions were taken.

DHL Analytical, Inc.

Date: *19-Jul-21*

CLIENT: Golder
Project: MLSES A1 Area Landfill CCR
Lab Order: 2106110

Work Order Sample Summary

Lab Smp ID	Client Sample ID	Tag Number	Date Collected	Date Recved
2106110-01	BMW-24		06/14/21 09:45 AM	6/16/2021
2106110-02	BMW-23		06/14/21 10:35 AM	6/16/2021
2106110-03	BMW-22		06/14/21 11:30 AM	6/16/2021
2106110-04	BMW-20		06/14/21 12:30 PM	6/16/2021
2106110-05	BMW-21		06/14/21 01:20 PM	6/16/2021
2106110-06	BMW-27		06/14/21 02:25 PM	6/16/2021
2106110-07	BMW-26		06/14/21 03:25 PM	6/16/2021
2106110-08	BMW-11AR		06/14/21 04:30 PM	6/16/2021
2106110-09	BMW-19		06/15/21 08:10 AM	6/16/2021
2106110-10	DUP-1		06/15/21 08:10 AM	6/16/2021
2106110-11	BMW-18		06/15/21 09:00 AM	6/16/2021
2106110-12	BMW-28		06/15/21 10:10 AM	6/16/2021
2106110-13	BMW-33		06/15/21 11:25 AM	6/16/2021
2106110-14	BMW-32		06/15/21 12:20 PM	6/16/2021

Lab Order: 2106110
Client: Golder
Project: MLSES A1 Area Landfill CCR

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
2106110-01A	BMW-24	06/14/21 09:45 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/17/21 08:38 AM	100940
	BMW-24	06/14/21 09:45 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/17/21 08:38 AM	100940
	BMW-24	06/14/21 09:45 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/17/21 08:38 AM	100940
	BMW-24	06/14/21 09:45 AM	Aqueous	SW7470A	Mercury Aq Prep	06/23/21 12:10 PM	101004
2106110-01B	BMW-24	06/14/21 09:45 AM	Aqueous	E300	Anion Preparation	06/18/21 08:44 AM	100945
	BMW-24	06/14/21 09:45 AM	Aqueous	E300	Anion Preparation	06/18/21 08:44 AM	100945
	BMW-24	06/14/21 09:45 AM	Aqueous	M2540C	TDS Preparation	06/18/21 09:30 AM	100948
2106110-02A	BMW-23	06/14/21 10:35 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/17/21 08:38 AM	100940
	BMW-23	06/14/21 10:35 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/17/21 08:38 AM	100940
	BMW-23	06/14/21 10:35 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/17/21 08:38 AM	100940
	BMW-23	06/14/21 10:35 AM	Aqueous	SW7470A	Mercury Aq Prep	06/23/21 12:10 PM	101004
2106110-02B	BMW-23	06/14/21 10:35 AM	Aqueous	E300	Anion Preparation	06/18/21 08:44 AM	100945
	BMW-23	06/14/21 10:35 AM	Aqueous	E300	Anion Preparation	06/18/21 08:44 AM	100945
	BMW-23	06/14/21 10:35 AM	Aqueous	M2540C	TDS Preparation	06/18/21 09:30 AM	100948
2106110-03A	BMW-22	06/14/21 11:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/17/21 08:38 AM	100940
	BMW-22	06/14/21 11:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/17/21 08:38 AM	100940
	BMW-22	06/14/21 11:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/17/21 08:38 AM	100940
	BMW-22	06/14/21 11:30 AM	Aqueous	SW7470A	Mercury Aq Prep	06/23/21 12:10 PM	101004
2106110-03B	BMW-22	06/14/21 11:30 AM	Aqueous	E300	Anion Preparation	06/18/21 08:44 AM	100945
	BMW-22	06/14/21 11:30 AM	Aqueous	E300	Anion Preparation	06/18/21 08:44 AM	100945
	BMW-22	06/14/21 11:30 AM	Aqueous	M2540C	TDS Preparation	06/18/21 09:30 AM	100948
2106110-04A	BMW-20	06/14/21 12:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/17/21 08:38 AM	100940
	BMW-20	06/14/21 12:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/17/21 08:38 AM	100940
	BMW-20	06/14/21 12:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/17/21 08:38 AM	100940
	BMW-20	06/14/21 12:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/17/21 08:38 AM	100940
	BMW-20	06/14/21 12:30 PM	Aqueous	SW7470A	Mercury Aq Prep	06/23/21 12:10 PM	101004
2106110-04B	BMW-20	06/14/21 12:30 PM	Aqueous	E300	Anion Preparation	06/18/21 08:44 AM	100945
	BMW-20	06/14/21 12:30 PM	Aqueous	E300	Anion Preparation	06/18/21 08:44 AM	100945

Lab Order: 2106110
Client: Golder
Project: MLSES A1 Area Landfill CCR

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
2106110-04B	BMW-20	06/14/21 12:30 PM	Aqueous	M2540C	TDS Preparation	06/18/21 09:30 AM	100948
2106110-05A	BMW-21	06/14/21 01:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/17/21 08:38 AM	100940
	BMW-21	06/14/21 01:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/17/21 08:38 AM	100940
	BMW-21	06/14/21 01:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/17/21 08:38 AM	100940
	BMW-21	06/14/21 01:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/17/21 08:38 AM	100940
	BMW-21	06/14/21 01:20 PM	Aqueous	SW7470A	Mercury Aq Prep	06/23/21 12:10 PM	101004
2106110-05B	BMW-21	06/14/21 01:20 PM	Aqueous	E300	Anion Preparation	06/18/21 08:44 AM	100945
	BMW-21	06/14/21 01:20 PM	Aqueous	E300	Anion Preparation	06/18/21 08:44 AM	100945
	BMW-21	06/14/21 01:20 PM	Aqueous	M2540C	TDS Preparation	06/18/21 09:30 AM	100948
2106110-06A	BMW-27	06/14/21 02:25 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/17/21 08:38 AM	100940
	BMW-27	06/14/21 02:25 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/17/21 08:38 AM	100940
	BMW-27	06/14/21 02:25 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/17/21 08:38 AM	100940
	BMW-27	06/14/21 02:25 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/17/21 08:38 AM	100940
	BMW-27	06/14/21 02:25 PM	Aqueous	SW7470A	Mercury Aq Prep	06/23/21 12:10 PM	101004
2106110-06B	BMW-27	06/14/21 02:25 PM	Aqueous	E300	Anion Preparation	06/18/21 08:44 AM	100945
	BMW-27	06/14/21 02:25 PM	Aqueous	E300	Anion Preparation	06/18/21 08:44 AM	100945
	BMW-27	06/14/21 02:25 PM	Aqueous	M2540C	TDS Preparation	06/18/21 09:30 AM	100948
2106110-07A	BMW-26	06/14/21 03:25 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/17/21 08:38 AM	100940
	BMW-26	06/14/21 03:25 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/17/21 08:38 AM	100940
	BMW-26	06/14/21 03:25 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/17/21 08:38 AM	100940
	BMW-26	06/14/21 03:25 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/17/21 08:38 AM	100940
	BMW-26	06/14/21 03:25 PM	Aqueous	SW7470A	Mercury Aq Prep	06/23/21 12:10 PM	101004
2106110-07B	BMW-26	06/14/21 03:25 PM	Aqueous	E300	Anion Preparation	06/18/21 08:44 AM	100945
	BMW-26	06/14/21 03:25 PM	Aqueous	E300	Anion Preparation	06/18/21 08:44 AM	100945
	BMW-26	06/14/21 03:25 PM	Aqueous	M2540C	TDS Preparation	06/18/21 09:30 AM	100948
2106110-08A	BMW-11AR	06/14/21 04:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/17/21 08:38 AM	100940
	BMW-11AR	06/14/21 04:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/17/21 08:38 AM	100940
	BMW-11AR	06/14/21 04:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/17/21 08:38 AM	100940

Lab Order: 2106110
Client: Golder
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PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
2106110-08A	BMW-11AR	06/14/21 04:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/17/21 08:38 AM	100940
	BMW-11AR	06/14/21 04:30 PM	Aqueous	SW7470A	Mercury Aq Prep	06/23/21 12:10 PM	101004
2106110-08B	BMW-11AR	06/14/21 04:30 PM	Aqueous	E300	Anion Preparation	06/18/21 08:44 AM	100945
	BMW-11AR	06/14/21 04:30 PM	Aqueous	E300	Anion Preparation	06/18/21 08:44 AM	100945
	BMW-11AR	06/14/21 04:30 PM	Aqueous	M2540C	TDS Preparation	06/18/21 09:30 AM	100948
2106110-09A	BMW-19	06/15/21 08:10 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/17/21 08:38 AM	100940
	BMW-19	06/15/21 08:10 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/17/21 08:38 AM	100940
	BMW-19	06/15/21 08:10 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/17/21 08:38 AM	100940
	BMW-19	06/15/21 08:10 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/17/21 08:38 AM	100940
	BMW-19	06/15/21 08:10 AM	Aqueous	SW7470A	Mercury Aq Prep	06/23/21 12:10 PM	101004
2106110-09B	BMW-19	06/15/21 08:10 AM	Aqueous	E300	Anion Preparation	06/18/21 08:44 AM	100945
	BMW-19	06/15/21 08:10 AM	Aqueous	E300	Anion Preparation	06/18/21 08:44 AM	100945
	BMW-19	06/15/21 08:10 AM	Aqueous	M2540C	TDS Preparation	06/18/21 09:30 AM	100948
2106110-10A	DUP-1	06/15/21 08:10 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/17/21 08:38 AM	100940
	DUP-1	06/15/21 08:10 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/17/21 08:38 AM	100940
	DUP-1	06/15/21 08:10 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/17/21 08:38 AM	100940
	DUP-1	06/15/21 08:10 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/17/21 08:38 AM	100940
	DUP-1	06/15/21 08:10 AM	Aqueous	SW7470A	Mercury Aq Prep	06/23/21 12:10 PM	101004
2106110-10B	DUP-1	06/15/21 08:10 AM	Aqueous	E300	Anion Preparation	06/18/21 08:44 AM	100945
	DUP-1	06/15/21 08:10 AM	Aqueous	E300	Anion Preparation	06/21/21 09:53 AM	100964
	DUP-1	06/15/21 08:10 AM	Aqueous	E300	Anion Preparation	06/18/21 08:44 AM	100945
	DUP-1	06/15/21 08:10 AM	Aqueous	M2540C	TDS Preparation	06/18/21 09:30 AM	100948
2106110-11A	BMW-18	06/15/21 09:00 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/17/21 08:38 AM	100940
	BMW-18	06/15/21 09:00 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/17/21 08:38 AM	100940
	BMW-18	06/15/21 09:00 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/17/21 08:38 AM	100940
	BMW-18	06/15/21 09:00 AM	Aqueous	SW7470A	Mercury Aq Prep	06/23/21 12:10 PM	101004
2106110-11B	BMW-18	06/15/21 09:00 AM	Aqueous	E300	Anion Preparation	06/18/21 08:44 AM	100945
	BMW-18	06/15/21 09:00 AM	Aqueous	M2540C	TDS Preparation	06/18/21 09:30 AM	100948

Lab Order: 2106110
Client: Golder
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PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
2106110-12A	BMW-28	06/15/21 10:10 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/17/21 08:38 AM	100940
	BMW-28	06/15/21 10:10 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/17/21 08:38 AM	100940
	BMW-28	06/15/21 10:10 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/17/21 08:38 AM	100940
	BMW-28	06/15/21 10:10 AM	Aqueous	SW7470A	Mercury Aq Prep	06/23/21 12:10 PM	101004
2106110-12B	BMW-28	06/15/21 10:10 AM	Aqueous	E300	Anion Preparation	06/18/21 08:44 AM	100945
	BMW-28	06/15/21 10:10 AM	Aqueous	E300	Anion Preparation	06/18/21 08:44 AM	100945
	BMW-28	06/15/21 10:10 AM	Aqueous	M2540C	TDS Preparation	06/18/21 09:30 AM	100948
2106110-13A	BMW-33	06/15/21 11:25 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/17/21 08:38 AM	100940
	BMW-33	06/15/21 11:25 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/17/21 08:38 AM	100940
	BMW-33	06/15/21 11:25 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/17/21 08:38 AM	100940
	BMW-33	06/15/21 11:25 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/17/21 08:38 AM	100940
	BMW-33	06/15/21 11:25 AM	Aqueous	SW7470A	Mercury Aq Prep	06/23/21 12:10 PM	101004
2106110-13B	BMW-33	06/15/21 11:25 AM	Aqueous	E300	Anion Preparation	06/18/21 08:44 AM	100945
	BMW-33	06/15/21 11:25 AM	Aqueous	E300	Anion Preparation	06/18/21 08:44 AM	100945
	BMW-33	06/15/21 11:25 AM	Aqueous	M2540C	TDS Preparation	06/18/21 09:30 AM	100948
2106110-14A	BMW-32	06/15/21 12:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/17/21 08:38 AM	100940

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Client: Golder
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ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
2106110-01A	BMW-24	Aqueous	SW7470A	Mercury Total: Aqueous	101004	1	06/24/21 02:29 PM	CETAC2_HG_210624D
	BMW-24	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100940	5	06/17/21 03:29 PM	ICP-MS4_210617D
	BMW-24	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100940	1	06/18/21 11:05 AM	ICP-MS4_210618A
	BMW-24	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100940	1	06/17/21 02:51 PM	ICP-MS5_210617B
2106110-01B	BMW-24	Aqueous	E300	Anions by IC method - Water	100945	10	06/18/21 08:43 PM	IC4_210618A
	BMW-24	Aqueous	E300	Anions by IC method - Water	100945	1	06/19/21 01:47 AM	IC4_210618A
	BMW-24	Aqueous	M2540C	Total Dissolved Solids	100948	1	06/18/21 03:15 PM	WC_210618B
2106110-02A	BMW-23	Aqueous	SW7470A	Mercury Total: Aqueous	101004	1	06/24/21 02:31 PM	CETAC2_HG_210624D
	BMW-23	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100940	10	06/17/21 03:31 PM	ICP-MS4_210617D
	BMW-23	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100940	1	06/18/21 11:07 AM	ICP-MS4_210618A
	BMW-23	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100940	1	06/17/21 02:54 PM	ICP-MS5_210617B
2106110-02B	BMW-23	Aqueous	E300	Anions by IC method - Water	100945	10	06/18/21 09:02 PM	IC4_210618A
	BMW-23	Aqueous	E300	Anions by IC method - Water	100945	1	06/19/21 03:41 AM	IC4_210618A
	BMW-23	Aqueous	M2540C	Total Dissolved Solids	100948	1	06/18/21 03:15 PM	WC_210618B
2106110-03A	BMW-22	Aqueous	SW7470A	Mercury Total: Aqueous	101004	1	06/24/21 02:33 PM	CETAC2_HG_210624D
	BMW-22	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100940	20	06/17/21 03:33 PM	ICP-MS4_210617D
	BMW-22	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100940	1	06/18/21 11:09 AM	ICP-MS4_210618A
	BMW-22	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100940	1	06/17/21 02:56 PM	ICP-MS5_210617B
2106110-03B	BMW-22	Aqueous	E300	Anions by IC method - Water	100945	10	06/18/21 10:56 PM	IC4_210618A
	BMW-22	Aqueous	E300	Anions by IC method - Water	100945	1	06/19/21 04:00 AM	IC4_210618A
	BMW-22	Aqueous	M2540C	Total Dissolved Solids	100948	1	06/18/21 03:15 PM	WC_210618B
2106110-04A	BMW-20	Aqueous	SW7470A	Mercury Total: Aqueous	101004	1	06/24/21 02:35 PM	CETAC2_HG_210624D
	BMW-20	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100940	20	06/17/21 03:51 PM	ICP-MS5_210617B
	BMW-20	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100940	1	06/17/21 02:59 PM	ICP-MS5_210617B
	BMW-20	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100940	1	06/18/21 11:11 AM	ICP-MS4_210618A
	BMW-20	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100940	1	06/17/21 03:35 PM	ICP-MS4_210617D

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Client: Golder
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ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
2106110-04B	BMW-20	Aqueous	E300	Anions by IC method - Water	100945	1	06/19/21 04:19 AM	IC4_210618A
	BMW-20	Aqueous	E300	Anions by IC method - Water	100945	10	06/18/21 11:15 PM	IC4_210618A
	BMW-20	Aqueous	M2540C	Total Dissolved Solids	100948	1	06/18/21 03:15 PM	WC_210618B
2106110-05A	BMW-21	Aqueous	SW7470A	Mercury Total: Aqueous	101004	1	06/24/21 02:38 PM	CETAC2_HG_210624D
	BMW-21	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100940	5	06/17/21 03:25 PM	ICP-MS4_210617D
	BMW-21	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100940	1	06/18/21 11:01 AM	ICP-MS4_210618A
	BMW-21	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100940	1	06/17/21 02:46 PM	ICP-MS5_210617B
	BMW-21	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100940	20	06/17/21 03:46 PM	ICP-MS5_210617B
2106110-05B	BMW-21	Aqueous	E300	Anions by IC method - Water	100945	10	06/18/21 11:34 PM	IC4_210618A
	BMW-21	Aqueous	E300	Anions by IC method - Water	100945	1	06/19/21 04:38 AM	IC4_210618A
	BMW-21	Aqueous	M2540C	Total Dissolved Solids	100948	1	06/18/21 03:15 PM	WC_210618B
2106110-06A	BMW-27	Aqueous	SW7470A	Mercury Total: Aqueous	101004	1	06/24/21 02:40 PM	CETAC2_HG_210624D
	BMW-27	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100940	1	06/18/21 11:13 AM	ICP-MS4_210618A
	BMW-27	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100940	1	06/17/21 03:02 PM	ICP-MS5_210617B
	BMW-27	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100940	20	06/17/21 03:53 PM	ICP-MS5_210617B
	BMW-27	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100940	2	06/17/21 03:37 PM	ICP-MS4_210617D
2106110-06B	BMW-27	Aqueous	E300	Anions by IC method - Water	100945	10	06/18/21 11:53 PM	IC4_210618A
	BMW-27	Aqueous	E300	Anions by IC method - Water	100945	1	06/19/21 04:57 AM	IC4_210618A
	BMW-27	Aqueous	M2540C	Total Dissolved Solids	100948	1	06/18/21 03:15 PM	WC_210618B
2106110-07A	BMW-26	Aqueous	SW7470A	Mercury Total: Aqueous	101004	1	06/24/21 02:42 PM	CETAC2_HG_210624D
	BMW-26	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100940	20	06/17/21 03:56 PM	ICP-MS5_210617B
	BMW-26	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100940	2	06/17/21 03:39 PM	ICP-MS4_210617D
	BMW-26	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100940	1	06/18/21 11:15 AM	ICP-MS4_210618A
	BMW-26	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100940	1	06/17/21 03:04 PM	ICP-MS5_210617B
2106110-07B	BMW-26	Aqueous	E300	Anions by IC method - Water	100945	1	06/19/21 05:16 AM	IC4_210618A
	BMW-26	Aqueous	E300	Anions by IC method - Water	100945	10	06/19/21 12:12 AM	IC4_210618A

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ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
2106110-07B	BMW-26	Aqueous	M2540C	Total Dissolved Solids	100948	1	06/18/21 03:15 PM	WC_210618B
2106110-08A	BMW-11AR	Aqueous	SW7470A	Mercury Total: Aqueous	101004	1	06/24/21 02:44 PM	CETAC2_HG_210624D
	BMW-11AR	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100940	2	06/17/21 03:41 PM	ICP-MS4_210617D
	BMW-11AR	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100940	1	06/18/21 11:17 AM	ICP-MS4_210618A
	BMW-11AR	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100940	1	06/17/21 03:07 PM	ICP-MS5_210617B
	BMW-11AR	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100940	20	06/17/21 04:05 PM	ICP-MS5_210617B
2106110-08B	BMW-11AR	Aqueous	E300	Anions by IC method - Water	100945	10	06/19/21 12:31 AM	IC4_210618A
	BMW-11AR	Aqueous	E300	Anions by IC method - Water	100945	1	06/19/21 05:35 AM	IC4_210618A
	BMW-11AR	Aqueous	M2540C	Total Dissolved Solids	100948	1	06/18/21 03:15 PM	WC_210618B
2106110-09A	BMW-19	Aqueous	SW7470A	Mercury Total: Aqueous	101004	1	06/24/21 02:47 PM	CETAC2_HG_210624D
	BMW-19	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100940	50	06/17/21 04:07 PM	ICP-MS5_210617B
	BMW-19	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100940	1	06/17/21 03:09 PM	ICP-MS5_210617B
	BMW-19	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100940	2	06/17/21 03:43 PM	ICP-MS4_210617D
	BMW-19	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100940	1	06/18/21 11:19 AM	ICP-MS4_210618A
2106110-09B	BMW-19	Aqueous	E300	Anions by IC method - Water	100945	100	06/18/21 06:49 PM	IC4_210618A
	BMW-19	Aqueous	E300	Anions by IC method - Water	100945	1	06/19/21 05:54 AM	IC4_210618A
	BMW-19	Aqueous	M2540C	Total Dissolved Solids	100948	1	06/18/21 03:15 PM	WC_210618B
2106110-10A	DUP-1	Aqueous	SW7470A	Mercury Total: Aqueous	101004	1	06/24/21 02:54 PM	CETAC2_HG_210624D
	DUP-1	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100940	2	06/17/21 03:44 PM	ICP-MS4_210617D
	DUP-1	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100940	1	06/18/21 11:21 AM	ICP-MS4_210618A
	DUP-1	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100940	1	06/17/21 03:12 PM	ICP-MS5_210617B
	DUP-1	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100940	50	06/17/21 04:10 PM	ICP-MS5_210617B
2106110-10B	DUP-1	Aqueous	E300	Anions by IC method - Water	100964	100	06/21/21 05:30 PM	IC2_210621A
	DUP-1	Aqueous	E300	Anions by IC method - Water	100945	1	06/19/21 06:13 AM	IC4_210618A
	DUP-1	Aqueous	E300	Anions by IC method - Water	100945	10	06/19/21 12:50 AM	IC4_210618A
	DUP-1	Aqueous	M2540C	Total Dissolved Solids	100948	1	06/18/21 03:15 PM	WC_210618B

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ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
2106110-11A	BMW-18	Aqueous	SW7470A	Mercury Total: Aqueous	101004	1	06/24/21 02:56 PM	CETAC2_HG_210624D
	BMW-18	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100940	2	06/17/21 04:00 PM	ICP-MS4_210617D
	BMW-18	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100940	1	06/18/21 11:33 AM	ICP-MS4_210618A
	BMW-18	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100940	1	06/17/21 03:28 PM	ICP-MS5_210617B
2106110-11B	BMW-18	Aqueous	E300	Anions by IC method - Water	100945	1	06/19/21 06:32 AM	IC4_210618A
	BMW-18	Aqueous	M2540C	Total Dissolved Solids	100948	1	06/18/21 03:15 PM	WC_210618B
2106110-12A	BMW-28	Aqueous	SW7470A	Mercury Total: Aqueous	101004	1	06/24/21 02:58 PM	CETAC2_HG_210624D
	BMW-28	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100940	1	06/18/21 11:35 AM	ICP-MS4_210618A
	BMW-28	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100940	1	06/17/21 03:31 PM	ICP-MS5_210617B
	BMW-28	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100940	1	06/17/21 04:02 PM	ICP-MS4_210617D
2106110-12B	BMW-28	Aqueous	E300	Anions by IC method - Water	100945	1	06/19/21 08:26 AM	IC4_210618A
	BMW-28	Aqueous	E300	Anions by IC method - Water	100945	10	06/19/21 01:09 AM	IC4_210618A
	BMW-28	Aqueous	M2540C	Total Dissolved Solids	100948	1	06/18/21 03:15 PM	WC_210618B
2106110-13A	BMW-33	Aqueous	SW7470A	Mercury Total: Aqueous	101004	1	06/24/21 03:00 PM	CETAC2_HG_210624D
	BMW-33	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100940	1	06/17/21 04:04 PM	ICP-MS4_210617D
	BMW-33	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100940	1	06/18/21 11:37 AM	ICP-MS4_210618A
	BMW-33	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100940	1	06/17/21 03:33 PM	ICP-MS5_210617B
	BMW-33	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100940	20	06/17/21 04:13 PM	ICP-MS5_210617B
2106110-13B	BMW-33	Aqueous	E300	Anions by IC method - Water	100945	10	06/19/21 01:28 AM	IC4_210618A
	BMW-33	Aqueous	E300	Anions by IC method - Water	100945	1	06/19/21 08:45 AM	IC4_210618A
	BMW-33	Aqueous	M2540C	Total Dissolved Solids	100948	1	06/18/21 03:15 PM	WC_210618B
2106110-14A	BMW-32	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100940	1	06/17/21 03:36 PM	ICP-MS5_210617B

DHL Analytical, Inc.

Date: *19-Jul-21*

CLIENT:	Golder	**Client Sample ID:**	BMW-24
Project:	MLSES A1 Area Landfill CCR	**Lab ID:**	2106110-01
Project No:	19122262	**Collection Date:**	06/14/21 09:45 AM
Lab Order:	2106110	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	06/17/21 02:51 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	06/17/21 02:51 PM
Barium	0.212	0.00300	0.0100		mg/L	1	06/17/21 02:51 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	06/18/21 11:05 AM
Boron	0.661	0.0500	0.150		mg/L	5	06/17/21 03:29 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	06/17/21 02:51 PM
Calcium	65.4	0.500	1.50		mg/L	5	06/17/21 03:29 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	06/17/21 02:51 PM
Cobalt	0.00512	0.00300	0.00500		mg/L	1	06/17/21 02:51 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	06/17/21 02:51 PM
Lithium	0.0497	0.00500	0.0100		mg/L	1	06/17/21 02:51 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	06/17/21 02:51 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	06/17/21 02:51 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	06/17/21 02:51 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **JVR**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/24/21 02:29 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **BM**
Chloride	165	3.00	10.0		mg/L	10	06/18/21 08:43 PM
Fluoride	0.251	0.100	0.400	J	mg/L	1	06/19/21 01:47 AM
Sulfate	276	10.0	30.0		mg/L	10	06/18/21 08:43 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	848	10.0	10.0		mg/L	1	06/18/21 03:15 PM

Qualifiers:

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DF- Dilution Factor
N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *19-Jul-21*

CLIENT:	Golder	**Client Sample ID:**	BMW-23
Project:	MLSES A1 Area Landfill CCR	**Lab ID:**	2106110-02
Project No:	19122262	**Collection Date:**	06/14/21 10:35 AM
Lab Order:	2106110	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	06/17/21 02:54 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	06/17/21 02:54 PM
Barium	0.0433	0.00300	0.0100		mg/L	1	06/17/21 02:54 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	06/18/21 11:07 AM
Boron	1.67	0.100	0.300		mg/L	10	06/17/21 03:31 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	06/17/21 02:54 PM
Calcium	110	1.00	3.00		mg/L	10	06/17/21 03:31 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	06/17/21 02:54 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	06/17/21 02:54 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	06/17/21 02:54 PM
Lithium	0.0837	0.00500	0.0100		mg/L	1	06/17/21 02:54 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	06/17/21 02:54 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	06/17/21 02:54 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	06/17/21 02:54 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **JVR**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/24/21 02:31 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **BM**
Chloride	283	3.00	10.0		mg/L	10	06/18/21 09:02 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	06/19/21 03:41 AM
Sulfate	565	10.0	30.0		mg/L	10	06/18/21 09:02 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	1700	50.0	50.0		mg/L	1	06/18/21 03:15 PM

Qualifiers:

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N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *19-Jul-21*

CLIENT:	Golder	**Client Sample ID:**	BMW-22
Project:	MLSES A1 Area Landfill CCR	**Lab ID:**	2106110-03
Project No:	19122262	**Collection Date:**	06/14/21 11:30 AM
Lab Order:	2106110	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	06/17/21 02:56 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	06/17/21 02:56 PM
Barium	0.0609	0.00300	0.0100		mg/L	1	06/17/21 02:56 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	06/18/21 11:09 AM
Boron	3.29	0.200	0.600		mg/L	20	06/17/21 03:33 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	06/17/21 02:56 PM
Calcium	214	2.00	6.00		mg/L	20	06/17/21 03:33 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	06/17/21 02:56 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	06/17/21 02:56 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	06/17/21 02:56 PM
Lithium	0.0776	0.00500	0.0100		mg/L	1	06/17/21 02:56 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	06/17/21 02:56 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	06/17/21 02:56 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	06/17/21 02:56 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **JVR**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/24/21 02:33 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **BM**
Chloride	308	3.00	10.0		mg/L	10	06/18/21 10:56 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	06/19/21 04:00 AM
Sulfate	998	10.0	30.0		mg/L	10	06/18/21 10:56 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	2250	50.0	50.0		mg/L	1	06/18/21 03:15 PM

Qualifiers:

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S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *19-Jul-21*

CLIENT:	Golder	**Client Sample ID:**	BMW-20
Project:	MLSES A1 Area Landfill CCR	**Lab ID:**	2106110-04
Project No:	19122262	**Collection Date:**	06/14/21 12:30 PM
Lab Order:	2106110	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	06/17/21 02:59 PM
Arsenic	0.00234	0.00200	0.00500	J	mg/L	1	06/17/21 02:59 PM
Barium	0.0431	0.00300	0.0100		mg/L	1	06/17/21 02:59 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	06/18/21 11:11 AM
Boron	0.130	0.0100	0.0300		mg/L	1	06/17/21 03:35 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	06/17/21 02:59 PM
Calcium	187	2.00	6.00		mg/L	20	06/17/21 03:51 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	06/17/21 02:59 PM
Cobalt	0.0788	0.00300	0.00500		mg/L	1	06/17/21 02:59 PM
Lead	0.000323	0.000300	0.00100	J	mg/L	1	06/17/21 02:59 PM
Lithium	0.00778	0.00500	0.0100	J	mg/L	1	06/17/21 02:59 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	06/17/21 02:59 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	06/17/21 02:59 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	06/17/21 02:59 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **JVR**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/24/21 02:35 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **BM**
Chloride	42.7	0.300	1.00		mg/L	1	06/19/21 04:19 AM
Fluoride	0.109	0.100	0.400	J	mg/L	1	06/19/21 04:19 AM
Sulfate	1210	10.0	30.0		mg/L	10	06/18/21 11:15 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	1810	50.0	50.0		mg/L	1	06/18/21 03:15 PM

Qualifiers:

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- RL - Reporting Limit (MQL adjusted for moisture and sample size)
- SDL - Sample Detection Limit
- E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *19-Jul-21*

CLIENT:	Golder	**Client Sample ID:**	BMW-21
Project:	MLSES A1 Area Landfill CCR	**Lab ID:**	2106110-05
Project No:	19122262	**Collection Date:**	06/14/21 01:20 PM
Lab Order:	2106110	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	06/17/21 02:46 PM
Arsenic	0.00400	0.00200	0.00500	J	mg/L	1	06/17/21 02:46 PM
Barium	0.0398	0.00300	0.0100		mg/L	1	06/17/21 02:46 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	06/18/21 11:01 AM
Boron	1.02	0.0500	0.150		mg/L	5	06/17/21 03:25 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	06/17/21 02:46 PM
Calcium	156	2.00	6.00		mg/L	20	06/17/21 03:46 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	06/17/21 02:46 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	06/17/21 02:46 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	06/17/21 02:46 PM
Lithium	0.0617	0.00500	0.0100		mg/L	1	06/17/21 02:46 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	06/17/21 02:46 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	06/17/21 02:46 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	06/17/21 02:46 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **JVR**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/24/21 02:38 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **BM**
Chloride	442	3.00	10.0		mg/L	10	06/18/21 11:34 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	06/19/21 04:38 AM
Sulfate	507	10.0	30.0		mg/L	10	06/18/21 11:34 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	2130	50.0	50.0		mg/L	1	06/18/21 03:15 PM

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SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *19-Jul-21*

CLIENT:	Golder	**Client Sample ID:**	BMW-27
Project:	MLSES A1 Area Landfill CCR	**Lab ID:**	2106110-06
Project No:	19122262	**Collection Date:**	06/14/21 02:25 PM
Lab Order:	2106110	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	06/17/21 03:02 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	06/17/21 03:02 PM
Barium	0.0210	0.00300	0.0100		mg/L	1	06/17/21 03:02 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	06/18/21 11:13 AM
Boron	0.351	0.0200	0.0600		mg/L	2	06/17/21 03:37 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	06/17/21 03:02 PM
Calcium	177	2.00	6.00		mg/L	20	06/17/21 03:53 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	06/17/21 03:02 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	06/17/21 03:02 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	06/17/21 03:02 PM
Lithium	0.0750	0.00500	0.0100		mg/L	1	06/17/21 03:02 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	06/17/21 03:02 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	06/17/21 03:02 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	06/17/21 03:02 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **JVR**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/24/21 02:40 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **BM**
Chloride	107	3.00	10.0		mg/L	10	06/18/21 11:53 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	06/19/21 04:57 AM
Sulfate	550	10.0	30.0		mg/L	10	06/18/21 11:53 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	1490	50.0	50.0		mg/L	1	06/18/21 03:15 PM

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SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *19-Jul-21*

CLIENT:	Golder	**Client Sample ID:**	BMW-26
Project:	MLSES A1 Area Landfill CCR	**Lab ID:**	2106110-07
Project No:	19122262	**Collection Date:**	06/14/21 03:25 PM
Lab Order:	2106110	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	06/17/21 03:04 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	06/17/21 03:04 PM
Barium	0.0273	0.00300	0.0100		mg/L	1	06/17/21 03:04 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	06/18/21 11:15 AM
Boron	0.488	0.0200	0.0600		mg/L	2	06/17/21 03:39 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	06/17/21 03:04 PM
Calcium	235	2.00	6.00		mg/L	20	06/17/21 03:56 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	06/17/21 03:04 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	06/17/21 03:04 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	06/17/21 03:04 PM
Lithium	0.0990	0.00500	0.0100		mg/L	1	06/17/21 03:04 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	06/17/21 03:04 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	06/17/21 03:04 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	06/17/21 03:04 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **JVR**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/24/21 02:42 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **BM**
Chloride	140	3.00	10.0		mg/L	10	06/19/21 12:12 AM
Fluoride	<0.100	0.100	0.400		mg/L	1	06/19/21 05:16 AM
Sulfate	780	10.0	30.0		mg/L	10	06/19/21 12:12 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	2040	50.0	50.0		mg/L	1	06/18/21 03:15 PM

Qualifiers:

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J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
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C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *19-Jul-21*

CLIENT:	Golder	**Client Sample ID:**	BMW-11AR
Project:	MLSES A1 Area Landfill CCR	**Lab ID:**	2106110-08
Project No:	19122262	**Collection Date:**	06/14/21 04:30 PM
Lab Order:	2106110	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	06/17/21 03:07 PM
Arsenic	0.00290	0.00200	0.00500	J	mg/L	1	06/17/21 03:07 PM
Barium	0.0565	0.00300	0.0100		mg/L	1	06/17/21 03:07 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	06/18/21 11:17 AM
Boron	0.320	0.0200	0.0600		mg/L	2	06/17/21 03:41 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	06/17/21 03:07 PM
Calcium	143	2.00	6.00		mg/L	20	06/17/21 04:05 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	06/17/21 03:07 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	06/17/21 03:07 PM
Lead	0.00132	0.000300	0.00100		mg/L	1	06/17/21 03:07 PM
Lithium	0.0320	0.00500	0.0100		mg/L	1	06/17/21 03:07 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	06/17/21 03:07 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	06/17/21 03:07 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	06/17/21 03:07 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **JVR**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/24/21 02:44 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **BM**
Chloride	5.36	0.300	1.00		mg/L	1	06/19/21 05:35 AM
Fluoride	0.208	0.100	0.400	J	mg/L	1	06/19/21 05:35 AM
Sulfate	330	10.0	30.0		mg/L	10	06/19/21 12:31 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	903	10.0	10.0		mg/L	1	06/18/21 03:15 PM

Qualifiers:

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- DF- Dilution Factor
- N - Parameter not NELAP certified
- See Final Page of Report for MQLs and MDLs
- S - Spike Recovery outside control limits
- C - Sample Result or QC discussed in Case Narrative
- RL - Reporting Limit (MQL adjusted for moisture and sample size)
- SDL - Sample Detection Limit
- E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *19-Jul-21*

CLIENT:	Golder	**Client Sample ID:**	BMW-19
Project:	MLSES A1 Area Landfill CCR	**Lab ID:**	2106110-09
Project No:	19122262	**Collection Date:**	06/15/21 08:10 AM
Lab Order:	2106110	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	06/17/21 03:09 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	06/17/21 03:09 PM
Barium	0.0149	0.00300	0.0100		mg/L	1	06/17/21 03:09 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	06/18/21 11:19 AM
Boron	0.450	0.0200	0.0600		mg/L	2	06/17/21 03:43 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	06/17/21 03:09 PM
Calcium	391	5.00	15.0		mg/L	50	06/17/21 04:07 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	06/17/21 03:09 PM
Cobalt	0.00830	0.00300	0.00500		mg/L	1	06/17/21 03:09 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	06/17/21 03:09 PM
Lithium	0.0689	0.00500	0.0100		mg/L	1	06/17/21 03:09 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	06/17/21 03:09 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	06/17/21 03:09 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	06/17/21 03:09 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **JVR**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/24/21 02:47 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **BM**
Chloride	5.72	0.300	1.00		mg/L	1	06/19/21 05:54 AM
Fluoride	<0.100	0.100	0.400		mg/L	1	06/19/21 05:54 AM
Sulfate	1770	100	300		mg/L	100	06/18/21 06:49 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	2980	50.0	50.0		mg/L	1	06/18/21 03:15 PM

Qualifiers:

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DF- Dilution Factor
N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *19-Jul-21*

CLIENT:	Golder	**Client Sample ID:**	DUP-1
Project:	MLSES A1 Area Landfill CCR	**Lab ID:**	2106110-10
Project No:	19122262	**Collection Date:**	06/15/21 08:10 AM
Lab Order:	2106110	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	06/17/21 03:12 PM
Arsenic	0.00288	0.00200	0.00500	J	mg/L	1	06/17/21 03:12 PM
Barium	0.0150	0.00300	0.0100		mg/L	1	06/17/21 03:12 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	06/18/21 11:21 AM
Boron	0.496	0.0200	0.0600		mg/L	2	06/17/21 03:44 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	06/17/21 03:12 PM
Calcium	399	5.00	15.0		mg/L	50	06/17/21 04:10 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	06/17/21 03:12 PM
Cobalt	0.00831	0.00300	0.00500		mg/L	1	06/17/21 03:12 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	06/17/21 03:12 PM
Lithium	0.0686	0.00500	0.0100		mg/L	1	06/17/21 03:12 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	06/17/21 03:12 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	06/17/21 03:12 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	06/17/21 03:12 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **JVR**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/24/21 02:54 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **BM**
Chloride	6.03	0.300	1.00		mg/L	1	06/19/21 06:13 AM
Fluoride	<0.100	0.100	0.400		mg/L	1	06/19/21 06:13 AM
Sulfate	1600	100	300		mg/L	100	06/21/21 05:30 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	2980	50.0	50.0		mg/L	1	06/18/21 03:15 PM

Qualifiers:

- ND - Not Detected at the SDL
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- See Final Page of Report for MQLs and MDLs
- S - Spike Recovery outside control limits
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- RL - Reporting Limit (MQL adjusted for moisture and sample size)
- SDL - Sample Detection Limit
- E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *19-Jul-21*

CLIENT:	Golder	**Client Sample ID:**	BMW-18
Project:	MLSES A1 Area Landfill CCR	**Lab ID:**	2106110-11
Project No:	19122262	**Collection Date:**	06/15/21 09:00 AM
Lab Order:	2106110	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	06/17/21 03:28 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	06/17/21 03:28 PM
Barium	0.0306	0.00300	0.0100		mg/L	1	06/17/21 03:28 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	06/18/21 11:33 AM
Boron	0.463	0.0200	0.0600		mg/L	2	06/17/21 04:00 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	06/17/21 03:28 PM
Calcium	6.67	0.100	0.300		mg/L	1	06/17/21 03:28 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	06/17/21 03:28 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	06/17/21 03:28 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	06/17/21 03:28 PM
Lithium	0.0127	0.00500	0.0100		mg/L	1	06/17/21 03:28 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	06/17/21 03:28 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	06/17/21 03:28 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	06/17/21 03:28 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **JVR**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/24/21 02:56 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **BM**
Chloride	19.3	0.300	1.00		mg/L	1	06/19/21 06:32 AM
Fluoride	0.231	0.100	0.400	J	mg/L	1	06/19/21 06:32 AM
Sulfate	87.1	1.00	3.00		mg/L	1	06/19/21 06:32 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	467	10.0	10.0		mg/L	1	06/18/21 03:15 PM

Qualifiers:

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- DF- Dilution Factor
- N - Parameter not NELAP certified
- See Final Page of Report for MQLs and MDLs
- S - Spike Recovery outside control limits
- C - Sample Result or QC discussed in Case Narrative
- RL - Reporting Limit (MQL adjusted for moisture and sample size)
- SDL - Sample Detection Limit
- E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *19-Jul-21*

CLIENT:	Golder	**Client Sample ID:**	BMW-28
Project:	MLSES A1 Area Landfill CCR	**Lab ID:**	2106110-12
Project No:	19122262	**Collection Date:**	06/15/21 10:10 AM
Lab Order:	2106110	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	06/17/21 03:31 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	06/17/21 03:31 PM
Barium	0.00547	0.00300	0.0100	J	mg/L	1	06/17/21 03:31 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	06/18/21 11:35 AM
Boron	0.0878	0.0100	0.0300		mg/L	1	06/17/21 04:02 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	06/17/21 03:31 PM
Calcium	15.5	0.100	0.300		mg/L	1	06/17/21 03:31 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	06/17/21 03:31 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	06/17/21 03:31 PM
Lead	0.000393	0.000300	0.00100	J	mg/L	1	06/17/21 03:31 PM
Lithium	<0.00500	0.00500	0.0100		mg/L	1	06/17/21 03:31 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	06/17/21 03:31 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	06/17/21 03:31 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	06/17/21 03:31 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **JVR**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/24/21 02:58 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **BM**
Chloride	38.4	0.300	1.00		mg/L	1	06/19/21 08:26 AM
Fluoride	<0.100	0.100	0.400		mg/L	1	06/19/21 08:26 AM
Sulfate	443	10.0	30.0		mg/L	10	06/19/21 01:09 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	871	10.0	10.0		mg/L	1	06/18/21 03:15 PM

Qualifiers:

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C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *19-Jul-21*

CLIENT:	Golder	**Client Sample ID:**	BMW-33
Project:	MLSES A1 Area Landfill CCR	**Lab ID:**	2106110-13
Project No:	19122262	**Collection Date:**	06/15/21 11:25 AM
Lab Order:	2106110	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	06/17/21 03:33 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	06/17/21 03:33 PM
Barium	0.137	0.00300	0.0100		mg/L	1	06/17/21 03:33 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	06/18/21 11:37 AM
Boron	0.208	0.0100	0.0300		mg/L	1	06/17/21 04:04 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	06/17/21 03:33 PM
Calcium	118	2.00	6.00		mg/L	20	06/17/21 04:13 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	06/17/21 03:33 PM
Cobalt	0.0113	0.00300	0.00500		mg/L	1	06/17/21 03:33 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	06/17/21 03:33 PM
Lithium	0.0124	0.00500	0.0100		mg/L	1	06/17/21 03:33 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	06/17/21 03:33 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	06/17/21 03:33 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	06/17/21 03:33 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **JVR**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/24/21 03:00 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **BM**
Chloride	66.4	3.00	10.0		mg/L	10	06/19/21 01:28 AM
Fluoride	0.235	0.100	0.400	J	mg/L	1	06/19/21 08:45 AM
Sulfate	210	10.0	30.0		mg/L	10	06/19/21 01:28 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	980	10.0	10.0		mg/L	1	06/18/21 03:15 PM

Qualifiers:

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- S - Spike Recovery outside control limits
- C - Sample Result or QC discussed in Case Narrative
- RL - Reporting Limit (MQL adjusted for moisture and sample size)
- SDL - Sample Detection Limit
- E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *19-Jul-21*

CLIENT:	Golder	**Client Sample ID:**	BMW-32
Project:	MLSES A1 Area Landfill CCR	**Lab ID:**	2106110-14
Project No:	19122262	**Collection Date:**	06/15/21 12:20 PM
Lab Order:	2106110	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Cobalt	0.00370	0.00300	0.00500	J	mg/L	1	06/17/21 03:36 PM

Qualifiers:

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- J - Analyte detected between SDL and RL
- B - Analyte detected in the associated Method Blank
- DF- Dilution Factor
- N - Parameter not NELAP certified
- See Final Page of Report for MQLs and MDLs
- S - Spike Recovery outside control limits
- C - Sample Result or QC discussed in Case Narrative
- RL - Reporting Limit (MQL adjusted for moisture and sample size)
- SDL - Sample Detection Limit
- E - TPH pattern not Gas or Diesel Range Pattern

CLIENT: Golder
Work Order: 2106110
Project: MLSES A1 Area Landfill CCR

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_210511A

Sample ID: **DCS-100518**	Batch ID: **100518**	TestNo: **SW7470A**	Units: **mg/L**		
SampType: **DCS**	Run ID: **CETAC2_HG_210511A**	Analysis Date: **5/11/2021 1:32:27 PM**	Prep Date: **5/10/2021**		

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.000165	0.000200	0.000200	0	82.5	82	119	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2106110
Project: MLSES A1 Area Landfill CCR

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_210624D

The QC data in batch 101004 applies to the following samples: 2106110-01A, 2106110-02A, 2106110-03A, 2106110-04A, 2106110-05A, 2106110-06A, 2106110-07A, 2106110-08A, 2106110-09A, 2106110-10A, 2106110-11A, 2106110-12A, 2106110-13A

Sample ID: **MB-101004**	Batch ID: **101004**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **MBLK**	Run ID: **CETAC2_HG_210624D**	Analysis Date: **6/24/2021 2:19:57 PM**	Prep Date: **6/23/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.0000800	0.000200								

Sample ID: **LCS-101004**	Batch ID: **101004**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **LCS**	Run ID: **CETAC2_HG_210624D**	Analysis Date: **6/24/2021 2:24:30 PM**	Prep Date: **6/23/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00199	0.000200	0.00200	0	99.5	85	115			

Sample ID: **LCSD-101004**	Batch ID: **101004**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **LCSD**	Run ID: **CETAC2_HG_210624D**	Analysis Date: **6/24/2021 2:26:45 PM**	Prep Date: **6/23/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00199	0.000200	0.00200	0	99.5	85	115	0	15	

Sample ID: **2106139-02A MS**	Batch ID: **101004**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **MS**	Run ID: **CETAC2_HG_210624D**	Analysis Date: **6/24/2021 3:07:41 PM**	Prep Date: **6/23/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00213	0.000200	0.00200	0	106	80	120			

Sample ID: **2106139-02A MSD**	Batch ID: **101004**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **MSD**	Run ID: **CETAC2_HG_210624D**	Analysis Date: **6/24/2021 3:09:58 PM**	Prep Date: **6/23/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00213	0.000200	0.00200	0	106	80	120	0	15	

Sample ID: **2106139-02A SD**	Batch ID: **101004**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **SD**	Run ID: **CETAC2_HG_210624D**	Analysis Date: **6/24/2021 3:12:14 PM**	Prep Date: **6/23/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.000400	0.00100	0	0				0	10	

Sample ID: **2106139-02A PDS**	Batch ID: **101004**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **PDS**	Run ID: **CETAC2_HG_210624D**	Analysis Date: **6/24/2021 3:14:31 PM**	Prep Date: **6/23/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00260	0.000200	0.00250	0	104	85	115			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2106110
Project: MLSES A1 Area Landfill CCR

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_210624D

Sample ID: **ICV-210624**	Batch ID: **R115939**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **ICV**	Run ID: **CETAC2_HG_210624D**	Analysis Date: **6/24/2021 1:57:16 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00396	0.000200	0.00400	0	99.0	90	110			

Sample ID: **CCV1-210624**	Batch ID: **R115939**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_210624D**	Analysis Date: **6/24/2021 2:49:28 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00203	0.000200	0.00200	0	102	90	110			

Sample ID: **CCV2-210624**	Batch ID: **R115939**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_210624D**	Analysis Date: **6/24/2021 3:23:39 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00203	0.000200	0.00200	0	102	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2106110
Project: MLSES A1 Area Landfill CCR

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_210428A

Sample ID: **DCS1-100323**	Batch ID: **100323**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS**	Run ID: **ICP-MS4_210428A**	Analysis Date: **4/28/2021 10:32:00 AM**	Prep Date: **4/27/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.000512	0.00100	0.000500	0	102	70	130	0	0	

Sample ID: **DCS2-100323**	Batch ID: **100323**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS2**	Run ID: **ICP-MS4_210428A**	Analysis Date: **4/28/2021 10:34:00 AM**	Prep Date: **4/27/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.302	0.300	0.300	0	101	70	130	0	0	

Sample ID: **DCS4-100323**	Batch ID: **100323**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS4**	Run ID: **ICP-MS4_210428A**	Analysis Date: **4/28/2021 10:39:00 AM**	Prep Date: **4/27/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0310	0.0300	0.0300	0	103	70	130	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2106110
Project: MLSES A1 Area Landfill CCR

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_210617D

The QC data in batch 100940 applies to the following samples: 2106110-01A, 2106110-02A, 2106110-03A, 2106110-04A, 2106110-05A, 2106110-06A, 2106110-07A, 2106110-08A, 2106110-09A, 2106110-10A, 2106110-11A, 2106110-12A, 2106110-13A, 2106110-14A

Sample ID: **MB-100940** Batch ID: **100940** TestNo: **SW6020B** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_210617D** Analysis Date: **6/17/2021 3:17:00 PM** Prep Date: **6/17/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	<0.0100	0.0300								

Sample ID: **LCS-100940** Batch ID: **100940** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_210617D** Analysis Date: **6/17/2021 3:19:00 PM** Prep Date: **6/17/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.191	0.0300	0.200	0	95.5	80	120			

Sample ID: **LCSD-100940** Batch ID: **100940** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_210617D** Analysis Date: **6/17/2021 3:21:00 PM** Prep Date: **6/17/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.202	0.0300	0.200	0	101	80	120	5.38	15	

Sample ID: **2106110-05A SD** Batch ID: **100940** TestNo: **SW6020B** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS4_210617D** Analysis Date: **6/17/2021 3:27:00 PM** Prep Date: **6/17/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	1.11	0.750	0	1.02				8.15	20	

Sample ID: **2106110-05A PDS** Batch ID: **100940** TestNo: **SW6020B** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS4_210617D** Analysis Date: **6/17/2021 3:46:00 PM** Prep Date: **6/17/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	2.05	0.150	1.00	1.02	103	75	125			

Sample ID: **2106110-05A MS** Batch ID: **100940** TestNo: **SW6020B** Units: **mg/L**
SampType: **MS** Run ID: **ICP-MS4_210617D** Analysis Date: **6/17/2021 3:49:00 PM** Prep Date: **6/17/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	1.17	0.150	0.200	1.02	73.1	75	125			S

Sample ID: **2106110-05A MSD** Batch ID: **100940** TestNo: **SW6020B** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS4_210617D** Analysis Date: **6/17/2021 3:51:00 PM** Prep Date: **6/17/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	1.18	0.150	0.200	1.02	76.9	75	125	0.650	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2106110
Project: MLSES A1 Area Landfill CCR

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_210617D

Sample ID: **ICV-210617**	Batch ID: **R115846**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_210617D**	Analysis Date: **6/17/2021 10:50:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0960	0.0300	0.100	0	96.0	90	110			
Calcium	2.53	0.300	2.50	0	101	90	110			

Sample ID: **LCVL-210617**	Batch ID: **R115846**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_210617D**	Analysis Date: **6/17/2021 11:01:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0203	0.0300	0.0200	0	102	80	120			
Calcium	0.105	0.300	0.100	0	105	80	120			

Sample ID: **CCV4-210617**	Batch ID: **R115846**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_210617D**	Analysis Date: **6/17/2021 2:37:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.213	0.0300	0.200	0	107	90	110			
Calcium	5.07	0.300	5.00	0	101	90	110			

Sample ID: **CCV5-210617**	Batch ID: **R115846**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_210617D**	Analysis Date: **6/17/2021 3:56:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.195	0.0300	0.200	0	97.5	90	110			
Calcium	5.17	0.300	5.00	0	103	90	110			

Sample ID: **CCV6-210617**	Batch ID: **R115846**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_210617D**	Analysis Date: **6/17/2021 4:14:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.207	0.0300	0.200	0	104	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2106110
Project: MLSES A1 Area Landfill CCR

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_210618A

The QC data in batch 100940 applies to the following samples: 2106110-01A, 2106110-02A, 2106110-03A, 2106110-04A, 2106110-05A, 2106110-06A, 2106110-07A, 2106110-08A, 2106110-09A, 2106110-10A, 2106110-11A, 2106110-12A, 2106110-13A, 2106110-14A

Sample ID: **MB-100940** Batch ID: **100940** TestNo: **SW6020B** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_210618A** Analysis Date: **6/18/2021 10:53:00 AM** Prep Date: **6/17/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	<0.000300	0.00100								

Sample ID: **LCS-100940** Batch ID: **100940** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_210618A** Analysis Date: **6/18/2021 10:55:00 AM** Prep Date: **6/17/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.202	0.00100	0.200	0	101	80	120			

Sample ID: **LCSD-100940** Batch ID: **100940** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_210618A** Analysis Date: **6/18/2021 10:57:00 AM** Prep Date: **6/17/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.208	0.00100	0.200	0	104	80	120	3.17	15	

Sample ID: **2106110-05A SD** Batch ID: **100940** TestNo: **SW6020B** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS4_210618A** Analysis Date: **6/18/2021 11:03:00 AM** Prep Date: **6/17/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	<0.00150	0.00500	0	0				0	20	

Sample ID: **2106110-05A PDS** Batch ID: **100940** TestNo: **SW6020B** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS4_210618A** Analysis Date: **6/18/2021 11:23:00 AM** Prep Date: **6/17/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.189	0.00100	0.200	0	94.6	75	125			

Sample ID: **2106110-05A MS** Batch ID: **100940** TestNo: **SW6020B** Units: **mg/L**
SampType: **MS** Run ID: **ICP-MS4_210618A** Analysis Date: **6/18/2021 11:25:00 AM** Prep Date: **6/17/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.193	0.00100	0.200	0	96.4	75	125			

Sample ID: **2106110-05A MSD** Batch ID: **100940** TestNo: **SW6020B** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS4_210618A** Analysis Date: **6/18/2021 11:27:00 AM** Prep Date: **6/17/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.195	0.00100	0.200	0	97.3	75	125	0.966	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2106110
Project: MLSES A1 Area Landfill CCR

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_210618A

Sample ID: **ICV-210618**	Batch ID: **R115864**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_210618A**	Analysis Date: **6/18/2021 10:40:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.0991	0.00100	0.100	0	99.1	90	110			

Sample ID: **LCVL-210618**	Batch ID: **R115864**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_210618A**	Analysis Date: **6/18/2021 10:47:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.000921	0.00100	0.00100	0	92.1	80	120			

Sample ID: **CCV1-210618**	Batch ID: **R115864**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_210618A**	Analysis Date: **6/18/2021 11:29:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.211	0.00100	0.200	0	105	90	110			

Sample ID: **CCV2-210618**	Batch ID: **R115864**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_210618A**	Analysis Date: **6/18/2021 11:39:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.211	0.00100	0.200	0	106	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2106110
Project: MLSES A1 Area Landfill CCR

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_210428A

Sample ID: **DCS1-100323**	Batch ID: **100323**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS**	Run ID: **ICP-MS5_210428A**	Analysis Date: **4/28/2021 10:49:00 AM**	Prep Date: **4/27/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00105	0.00250	0.00100	0	105	70	130	0	0	
Cadmium	0.000461	0.00100	0.000500	0	92.2	70	130	0	0	
Lead	0.000474	0.00100	0.000500	0	94.8	70	130	0	0	
Thallium	0.000452	0.00150	0.000500	0	90.4	70	130	0	0	

Sample ID: **DCS2-100323**	Batch ID: **100323**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS2**	Run ID: **ICP-MS5_210428A**	Analysis Date: **4/28/2021 10:53:00 AM**	Prep Date: **4/27/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.302	0.300	0.300	0	101	70	130	0	0	

Sample ID: **DCS3-100323**	Batch ID: **100323**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS3**	Run ID: **ICP-MS5_210428A**	Analysis Date: **4/28/2021 10:56:00 AM**	Prep Date: **4/27/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.00467	0.00500	0.00500	0	93.3	70	130	0	0	
Barium	0.00472	0.0100	0.00500	0	94.4	70	130	0	0	
Chromium	0.00490	0.00500	0.00500	0	97.9	70	130	0	0	
Cobalt	0.00473	0.00500	0.00500	0	94.5	70	130	0	0	
Lithium	0.00495	0.0100	0.00500	0	99.0	70	130	0	0	
Molybdenum	0.00482	0.00500	0.00500	0	96.4	70	130	0	0	
Selenium	0.00498	0.00500	0.00500	0	99.5	70	130	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2106110
Project: MLSES A1 Area Landfill CCR

ANALYTICAL QC SUMMARY REPORT

RunID: **ICP-MS5_210617B**

The QC data in batch 100940 applies to the following samples: 2106110-01A, 2106110-02A, 2106110-03A, 2106110-04A, 2106110-05A, 2106110-06A, 2106110-07A, 2106110-08A, 2106110-09A, 2106110-10A, 2106110-11A, 2106110-12A, 2106110-13A, 2106110-14A

Sample ID: **MB-100940** Batch ID: **100940** TestNo: **SW6020B** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS5_210617B** Analysis Date: **6/17/2021 2:36:00 PM** Prep Date: **6/17/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.000800	0.00250								
Arsenic	<0.00200	0.00500								
Barium	<0.00300	0.0100								
Cadmium	<0.000300	0.00100								
Calcium	<0.100	0.300								
Chromium	<0.00200	0.00500								
Cobalt	<0.00300	0.00500								
Lead	<0.000300	0.00100								
Lithium	<0.00500	0.0100								
Molybdenum	<0.00200	0.00500								
Selenium	<0.00200	0.00500								
Thallium	<0.000500	0.00150								

Sample ID: **LCS-100940** Batch ID: **100940** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS5_210617B** Analysis Date: **6/17/2021 2:38:00 PM** Prep Date: **6/17/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.201	0.00250	0.200	0	100	80	120			
Arsenic	0.199	0.00500	0.200	0	99.4	80	120			
Barium	0.199	0.0100	0.200	0	99.5	80	120			
Cadmium	0.203	0.00100	0.200	0	102	80	120			
Calcium	4.96	0.300	5.00	0	99.2	80	120			
Chromium	0.206	0.00500	0.200	0	103	80	120			
Cobalt	0.200	0.00500	0.200	0	99.9	80	120			
Lead	0.187	0.00100	0.200	0	93.7	80	120			
Lithium	0.189	0.0100	0.200	0	94.3	80	120			
Molybdenum	0.203	0.00500	0.200	0	101	80	120			
Selenium	0.199	0.00500	0.200	0	99.4	80	120			
Thallium	0.187	0.00150	0.200	0	93.6	80	120			

Sample ID: **LCSD-100940** Batch ID: **100940** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS5_210617B** Analysis Date: **6/17/2021 2:41:00 PM** Prep Date: **6/17/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.200	0.00250	0.200	0	100	80	120	0.156	15	
Arsenic	0.201	0.00500	0.200	0	101	80	120	1.24	15	
Barium	0.202	0.0100	0.200	0	101	80	120	1.36	15	
Cadmium	0.204	0.00100	0.200	0	102	80	120	0.243	15	
Calcium	4.77	0.300	5.00	0	95.5	80	120	3.77	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2106110
Project: MLSES A1 Area Landfill CCR

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_210617B

Sample ID: **LCSD-100940**	Batch ID: **100940**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCSD**	Run ID: **ICP-MS5_210617B**	Analysis Date: **6/17/2021 2:41:00 PM**	Prep Date: **6/17/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chromium	0.204	0.00500	0.200	0	102	80	120	1.17	15	
Cobalt	0.203	0.00500	0.200	0	102	80	120	1.60	15	
Lead	0.192	0.00100	0.200	0	96.1	80	120	2.49	15	
Lithium	0.189	0.0100	0.200	0	94.4	80	120	0.082	15	
Molybdenum	0.205	0.00500	0.200	0	102	80	120	0.770	15	
Selenium	0.199	0.00500	0.200	0	99.7	80	120	0.345	15	
Thallium	0.192	0.00150	0.200	0	96.1	80	120	2.63	15	

Sample ID: **2106110-05A SD**	Batch ID: **100940**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS5_210617B**	Analysis Date: **6/17/2021 2:49:00 PM**	Prep Date: **6/17/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.00400	0.0125	0	0				0	20	
Arsenic	<0.0100	0.0250	0	0.00400				0	20	
Barium	0.0406	0.0500	0	0.0398				2.04	20	
Cadmium	<0.00150	0.00500	0	0				0	20	
Chromium	<0.0100	0.0250	0	0				0	20	
Cobalt	<0.0150	0.0250	0	0				0	20	
Lead	<0.00150	0.00500	0	0				0	20	
Lithium	0.0649	0.0500	0	0.0617				4.97	20	
Molybdenum	<0.0100	0.0250	0	0				0	20	
Selenium	<0.0100	0.0250	0	0				0	20	
Thallium	<0.00250	0.00750	0	0				0	20	

Sample ID: **2106110-05A PDS**	Batch ID: **100940**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS5_210617B**	Analysis Date: **6/17/2021 3:14:00 PM**	Prep Date: **6/17/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.194	0.00250	0.200	0	97.1	75	125			
Arsenic	0.195	0.00500	0.200	0.00400	95.6	75	125			
Barium	0.242	0.0100	0.200	0.0398	101	75	125			
Cadmium	0.197	0.00100	0.200	0	98.4	75	125			
Chromium	0.203	0.00500	0.200	0	101	75	125			
Cobalt	0.192	0.00500	0.200	0	96.1	75	125			
Lead	0.198	0.00100	0.200	0	98.8	75	125			
Lithium	0.239	0.0100	0.200	0.0617	88.4	75	125			
Molybdenum	0.203	0.00500	0.200	0	102	75	125			
Selenium	0.199	0.00500	0.200	0	99.3	75	125			
Thallium	0.197	0.00150	0.200	0	98.5	75	125			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2106110
Project: MLSES A1 Area Landfill CCR

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_210617B

Sample ID: **2106110-05A MS**	Batch ID: **100940**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS5_210617B**	Analysis Date: **6/17/2021 3:18:00 PM**	Prep Date: **6/17/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.201	0.00250	0.200	0	100	75	125			
Arsenic	0.198	0.00500	0.200	0.00400	97.0	75	125			
Barium	0.241	0.0100	0.200	0.0398	101	75	125			
Cadmium	0.196	0.00100	0.200	0	97.9	75	125			
Calcium	159	0.300	5.00	158	13.7	75	125			S
Chromium	0.200	0.00500	0.200	0	99.8	75	125			
Cobalt	0.192	0.00500	0.200	0	96.0	75	125			
Lead	0.196	0.00100	0.200	0	97.8	75	125			
Lithium	0.253	0.0100	0.200	0.0617	95.5	75	125			
Molybdenum	0.208	0.00500	0.200	0	104	75	125			
Selenium	0.202	0.00500	0.200	0	101	75	125			
Thallium	0.196	0.00150	0.200	0	98.2	75	125			

Sample ID: **2106110-05A MSD**	Batch ID: **100940**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS5_210617B**	Analysis Date: **6/17/2021 3:20:00 PM**	Prep Date: **6/17/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.198	0.00250	0.200	0	99.1	75	125	1.39	15	
Arsenic	0.198	0.00500	0.200	0.00400	97.0	75	125	0.078	15	
Barium	0.239	0.0100	0.200	0.0398	99.8	75	125	0.669	15	
Cadmium	0.193	0.00100	0.200	0	96.4	75	125	1.53	15	
Calcium	158	0.300	5.00	158	0.437	75	125	0.418	15	S
Chromium	0.199	0.00500	0.200	0	99.6	75	125	0.250	15	
Cobalt	0.189	0.00500	0.200	0	94.7	75	125	1.37	15	
Lead	0.196	0.00100	0.200	0	97.9	75	125	0.045	15	
Lithium	0.252	0.0100	0.200	0.0617	95.1	75	125	0.319	15	
Molybdenum	0.208	0.00500	0.200	0	104	75	125	0.138	15	
Selenium	0.200	0.00500	0.200	0	100	75	125	1.12	15	
Thallium	0.197	0.00150	0.200	0	98.3	75	125	0.107	15	

Sample ID: **2106110-05A SD**	Batch ID: **100940**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS5_210617B**	Analysis Date: **6/17/2021 3:48:00 PM**	Prep Date: **6/17/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	160	30.0	0	156				2.43	20	

Sample ID: **2106110-05A PDS**	Batch ID: **100940**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS5_210617B**	Analysis Date: **6/17/2021 4:15:00 PM**	Prep Date: **6/17/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	256	6.00	100	156	99.9	75	125			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2106110
Project: MLSES A1 Area Landfill CCR

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_210617B

Sample ID: **ICV-210617**	Batch ID: **R115845**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS5_210617B**	Analysis Date: **6/17/2021 10:41:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.0989	0.00250	0.100	0	98.9	90	110			
Arsenic	0.0996	0.00500	0.100	0	99.6	90	110			
Barium	0.0983	0.0100	0.100	0	98.3	90	110			
Cadmium	0.0985	0.00100	0.100	0	98.5	90	110			
Calcium	2.43	0.300	2.50	0	97.0	90	110			
Chromium	0.101	0.00500	0.100	0	101	90	110			
Cobalt	0.0987	0.00500	0.100	0	98.7	90	110			
Lead	0.0959	0.00100	0.100	0	95.9	90	110			
Lithium	0.0910	0.0100	0.100	0	91.0	90	110			
Molybdenum	0.0965	0.00500	0.100	0	96.5	90	110			
Selenium	0.0966	0.00500	0.100	0	96.6	90	110			
Thallium	0.0948	0.00150	0.100	0	94.8	90	110			

Sample ID: **LCVL-210617**	Batch ID: **R115845**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_210617B**	Analysis Date: **6/17/2021 10:49:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00192	0.00250	0.00200	0	95.8	80	120			
Arsenic	0.00500	0.00500	0.00500	0	99.9	80	120			
Barium	0.00487	0.0100	0.00500	0	97.4	80	120			
Cadmium	0.00112	0.00100	0.00100	0	112	80	120			
Calcium	0.0853	0.300	0.100	0	85.3	80	120			
Chromium	0.00515	0.00500	0.00500	0	103	80	120			
Cobalt	0.00486	0.00500	0.00500	0	97.3	80	120			
Lead	0.000984	0.00100	0.00100	0	98.4	80	120			
Lithium	0.00957	0.0100	0.0100	0	95.7	80	120			
Molybdenum	0.00494	0.00500	0.00500	0	98.9	80	120			
Selenium	0.00483	0.00500	0.00500	0	96.7	80	120			
Thallium	0.000990	0.00150	0.00100	0	99.0	80	120			

Sample ID: **CCV3-210617**	Batch ID: **R115845**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_210617B**	Analysis Date: **6/17/2021 2:31:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.198	0.00250	0.200	0	99.1	90	110			
Arsenic	0.201	0.00500	0.200	0	100	90	110			
Barium	0.201	0.0100	0.200	0	100	90	110			
Cadmium	0.201	0.00100	0.200	0	101	90	110			
Calcium	4.85	0.300	5.00	0	97.0	90	110			
Chromium	0.201	0.00500	0.200	0	101	90	110			
Cobalt	0.200	0.00500	0.200	0	100	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2106110
Project: MLSES A1 Area Landfill CCR

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_210617B

Sample ID: **CCV3-210617**	Batch ID: **R115845**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_210617B**	Analysis Date: **6/17/2021 2:31:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.192	0.00100	0.200	0	96.1	90	110			
Lithium	0.187	0.0100	0.200	0	93.5	90	110			
Molybdenum	0.203	0.00500	0.200	0	101	90	110			
Selenium	0.196	0.00500	0.200	0	98.1	90	110			
Thallium	0.190	0.00150	0.200	0	94.8	90	110			

Sample ID: **CCV4-210617**	Batch ID: **R115845**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_210617B**	Analysis Date: **6/17/2021 3:23:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.198	0.00250	0.200	0	98.8	90	110			
Arsenic	0.200	0.00500	0.200	0	100	90	110			
Barium	0.198	0.0100	0.200	0	98.8	90	110			
Cadmium	0.200	0.00100	0.200	0	100	90	110			
Calcium	4.98	0.300	5.00	0	99.7	90	110			
Chromium	0.200	0.00500	0.200	0	99.9	90	110			
Cobalt	0.199	0.00500	0.200	0	99.7	90	110			
Lead	0.188	0.00100	0.200	0	94.0	90	110			
Lithium	0.191	0.0100	0.200	0	95.5	90	110			
Molybdenum	0.202	0.00500	0.200	0	101	90	110			
Selenium	0.196	0.00500	0.200	0	98.0	90	110			
Thallium	0.186	0.00150	0.200	0	92.8	90	110			

Sample ID: **CCV5-210617**	Batch ID: **R115845**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_210617B**	Analysis Date: **6/17/2021 3:39:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.197	0.00250	0.200	0	98.3	90	110			
Arsenic	0.196	0.00500	0.200	0	98.2	90	110			
Barium	0.200	0.0100	0.200	0	99.8	90	110			
Cadmium	0.199	0.00100	0.200	0	99.4	90	110			
Calcium	5.06	0.300	5.00	0	101	90	110			
Chromium	0.201	0.00500	0.200	0	100	90	110			
Cobalt	0.198	0.00500	0.200	0	98.8	90	110			
Lead	0.187	0.00100	0.200	0	93.3	90	110			
Lithium	0.189	0.0100	0.200	0	94.7	90	110			
Molybdenum	0.200	0.00500	0.200	0	100	90	110			
Selenium	0.196	0.00500	0.200	0	97.8	90	110			
Thallium	0.185	0.00150	0.200	0	92.3	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2106110
Project: MLSES A1 Area Landfill CCR

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_210617B

Sample ID: **CCV6-210617**	Batch ID: **R115845**	TestNo: **SW6020B**		Units: **mg/L**	
SampType: **CCV**	Run ID: **ICP-MS5_210617B**	Analysis Date: **6/17/2021 4:21:00 PM**		Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.78	0.300	5.00	0	95.7	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2106110
Project: MLSES A1 Area Landfill CCR

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_210527A

Sample ID: **DCS2-100738**	Batch ID: **100738**	TestNo: **E300**		Units: **mg/L**	
SampType: **DCS2**	Run ID: **IC2_210527A**	Analysis Date: **5/27/2021 3:57:05 PM**		Prep Date: **5/27/2021**	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	1.73	3.00	1.500	0	116	70	130	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2106110
Project: MLSES A1 Area Landfill CCR

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_210621A

The QC data in batch 100964 applies to the following samples: 2106110-10B

Sample ID: **MB-100964**	Batch ID: **100964**	TestNo: **E300**	Units: **mg/L**
SampType: **MBLK**	Run ID: **IC2_210621A**	Analysis Date: **6/21/2021 12:06:40 PM**	Prep Date: **6/21/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	<1.00	3.00								

Sample ID: **LCS-100964**	Batch ID: **100964**	TestNo: **E300**	Units: **mg/L**
SampType: **LCS**	Run ID: **IC2_210621A**	Analysis Date: **6/21/2021 12:22:40 PM**	Prep Date: **6/21/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	29.3	3.00	30.00	0	97.5	90	110			

Sample ID: **LCSD-100964**	Batch ID: **100964**	TestNo: **E300**	Units: **mg/L**
SampType: **LCSD**	Run ID: **IC2_210621A**	Analysis Date: **6/21/2021 12:38:40 PM**	Prep Date: **6/21/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	29.3	3.00	30.00	0	97.6	90	110	0.114	20	

Sample ID: **2106122-04BMS**	Batch ID: **100964**	TestNo: **E300**	Units: **mg/L**
SampType: **MS**	Run ID: **IC2_210621A**	Analysis Date: **6/21/2021 6:02:58 PM**	Prep Date: **6/21/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	1810	300	2000	145.8	83.2	90	110			S

Sample ID: **2106122-04BMSD**	Batch ID: **100964**	TestNo: **E300**	Units: **mg/L**
SampType: **MSD**	Run ID: **IC2_210621A**	Analysis Date: **6/21/2021 6:18:58 PM**	Prep Date: **6/21/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	1810	300	2000	145.8	83.4	90	110	0.233	20	S

Sample ID: **2106122-08BMS**	Batch ID: **100964**	TestNo: **E300**	Units: **mg/L**
SampType: **MS**	Run ID: **IC2_210621A**	Analysis Date: **6/21/2021 6:50:58 PM**	Prep Date: **6/21/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	1960	300	2000	310.0	82.3	90	110			S

Sample ID: **2106122-08BMSD**	Batch ID: **100964**	TestNo: **E300**	Units: **mg/L**
SampType: **MSD**	Run ID: **IC2_210621A**	Analysis Date: **6/21/2021 7:06:58 PM**	Prep Date: **6/21/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	1980	300	2000	310.0	83.7	90	110	1.35	20	S

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2106110
Project: MLSES A1 Area Landfill CCR

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_210621A

Sample ID: **ICV-210621**	Batch ID: **R115881**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC2_210621A**	Analysis Date: **6/21/2021 11:34:40 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	76.5	3.00	75.00	0	102	90	110			

Sample ID: **CCV1-210621**	Batch ID: **R115881**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_210621A**	Analysis Date: **6/21/2021 10:02:58 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	28.9	3.00	30.00	0	96.4	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2106110
Project: MLSES A1 Area Landfill CCR

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_210518A

Sample ID: **DCS3-100614** Batch ID: **100614** TestNo: **E300** Units: **mg/L**
SampType: **DCS3** Run ID: **IC4_210518A** Analysis Date: **5/18/2021 1:16:36 PM** Prep Date: **5/18/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	1.27	1.00	1.000	0	127	70	130	0	0	
Fluoride	0.356	0.400	0.4000	0	89.0	70	130	0	0	
Sulfate	3.16	3.00	3.000	0	105	70	130	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2106110
Project: MLSES A1 Area Landfill CCR

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_210618A

The QC data in batch 100945 applies to the following samples: 2106110-01B, 2106110-02B, 2106110-03B, 2106110-04B, 2106110-05B, 2106110-06B, 2106110-07B, 2106110-08B, 2106110-09B, 2106110-10B, 2106110-11B, 2106110-12B, 2106110-13B

Sample ID: **MB-100945** Batch ID: **100945** TestNo: **E300** Units: **mg/L**
SampType: **MBLK** Run ID: **IC4_210618A** Analysis Date: **6/18/2021 11:10:18 AM** Prep Date: **6/18/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00								
Fluoride	<0.100	0.400								
Sulfate	<1.00	3.00								

Sample ID: **LCS-100945** Batch ID: **100945** TestNo: **E300** Units: **mg/L**
SampType: **LCS** Run ID: **IC4_210618A** Analysis Date: **6/18/2021 11:29:18 AM** Prep Date: **6/18/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.1	1.00	10.00	0	101	90	110			
Fluoride	4.26	0.400	4.000	0	106	90	110			
Sulfate	32.0	3.00	30.00	0	107	90	110			

Sample ID: **LCSD-100945** Batch ID: **100945** TestNo: **E300** Units: **mg/L**
SampType: **LCSD** Run ID: **IC4_210618A** Analysis Date: **6/18/2021 11:48:18 AM** Prep Date: **6/18/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.2	1.00	10.00	0	102	90	110	0.302	20	
Fluoride	4.27	0.400	4.000	0	107	90	110	0.249	20	
Sulfate	32.0	3.00	30.00	0	107	90	110	0.237	20	

Sample ID: **2106110-09BMS** Batch ID: **100945** TestNo: **E300** Units: **mg/L**
SampType: **MS** Run ID: **IC4_210618A** Analysis Date: **6/18/2021 7:08:29 PM** Prep Date: **6/18/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	2050	100	2000	100.9	97.5	90	110			
Fluoride	2090	40.0	2000	0	104	90	110			
Sulfate	3690	300	2000	1770	96.2	90	110			

Sample ID: **2106110-09BMSD** Batch ID: **100945** TestNo: **E300** Units: **mg/L**
SampType: **MSD** Run ID: **IC4_210618A** Analysis Date: **6/18/2021 7:27:29 PM** Prep Date: **6/18/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	2050	100	2000	100.9	97.5	90	110	0.014	20	
Fluoride	2090	40.0	2000	0	105	90	110	0.157	20	
Sulfate	3700	300	2000	1770	96.4	90	110	0.134	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2106110
Project: MLSES A1 Area Landfill CCR

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_210618A

Sample ID: **2106107-01BMS**	Batch ID: **100945**	TestNo: **E300**	Units: **mg/L**
SampType: **MS**	Run ID: **IC4_210618A**	Analysis Date: **6/18/2021 8:05:29 PM**	Prep Date: **6/18/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	437	10.0	200.0	249.2	94.1	90	110			
Fluoride	209	4.00	200.0	5.720	102	90	110			
Sulfate	546	30.0	200.0	365.3	90.3	90	110			

Sample ID: **2106107-01BMSD**	Batch ID: **100945**	TestNo: **E300**	Units: **mg/L**
SampType: **MSD**	Run ID: **IC4_210618A**	Analysis Date: **6/18/2021 8:24:29 PM**	Prep Date: **6/18/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	434	10.0	200.0	249.2	92.2	90	110	0.903	20	
Fluoride	208	4.00	200.0	5.720	101	90	110	0.692	20	
Sulfate	546	30.0	200.0	365.3	90.4	90	110	0.015	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2106110
Project: MLSES A1 Area Landfill CCR

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_210618A

Sample ID: **ICV-210618**	Batch ID: **R115860**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC4_210618A**	Analysis Date: **6/18/2021 10:32:18 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	25.8	1.00	25.00	0	103	90	110			
Fluoride	10.6	0.400	10.00	0	106	90	110			
Sulfate	80.6	3.00	75.00	0	108	90	110			

Sample ID: **CCV1-210618**	Batch ID: **R115860**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC4_210618A**	Analysis Date: **6/18/2021 10:18:29 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.3	1.00	10.00	0	103	90	110			
Fluoride	4.32	0.400	4.000	0	108	90	110			
Sulfate	32.4	3.00	30.00	0	108	90	110			

Sample ID: **CCV2-210618**	Batch ID: **R115860**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC4_210618A**	Analysis Date: **6/19/2021 3:03:29 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.4	1.00	10.00	0	104	90	110			
Fluoride	4.34	0.400	4.000	0	108	90	110			
Sulfate	32.5	3.00	30.00	0	108	90	110			

Sample ID: **CCV3-210618**	Batch ID: **R115860**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC4_210618A**	Analysis Date: **6/19/2021 7:48:29 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.4	1.00	10.00	0	104	90	110			
Fluoride	4.36	0.400	4.000	0	109	90	110			
Sulfate	32.4	3.00	30.00	0	108	90	110			

Sample ID: **CCV4-210618**	Batch ID: **R115860**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC4_210618A**	Analysis Date: **6/19/2021 10:01:29 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.4	1.00	10.00	0	104	90	110			
Fluoride	4.35	0.400	4.000	0	109	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2106110
Project: MLSES A1 Area Landfill CCR

ANALYTICAL QC SUMMARY REPORT

RunID: WC_210618B

The QC data in batch 100948 applies to the following samples: 2106110-01B, 2106110-02B, 2106110-03B, 2106110-04B, 2106110-05B, 2106110-06B, 2106110-07B, 2106110-08B, 2106110-09B, 2106110-10B, 2106110-11B, 2106110-12B, 2106110-13B

Sample ID: **MB-100948** Batch ID: **100948** TestNo: **M2540C** Units: **mg/L**
SampType: **MBLK** Run ID: **WC_210618B** Analysis Date: **6/18/2021 3:15:00 PM** Prep Date: **6/18/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	<10.0	10.0								

Sample ID: **LCS-100948** Batch ID: **100948** TestNo: **M2540C** Units: **mg/L**
SampType: **LCS** Run ID: **WC_210618B** Analysis Date: **6/18/2021 3:15:00 PM** Prep Date: **6/18/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	754	10.0	745.6	0	101	90	113			

Sample ID: **2106110-02B-DUP** Batch ID: **100948** TestNo: **M2540C** Units: **mg/L**
SampType: **DUP** Run ID: **WC_210618B** Analysis Date: **6/18/2021 3:15:00 PM** Prep Date: **6/18/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	1680	50.0	0	1695				0.889	5	

Sample ID: **2106110-03B-DUP** Batch ID: **100948** TestNo: **M2540C** Units: **mg/L**
SampType: **DUP** Run ID: **WC_210618B** Analysis Date: **6/18/2021 3:15:00 PM** Prep Date: **6/18/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	2270	50.0	0	2250				0.664	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2106110
Project: MLSES A1 Area Landfill CCR

MQL SUMMARY REPORT

TestNo: E300	**MDL**	**MQL**
Analyte	**mg/L**	**mg/L**
Chloride	0.300	1.00
Fluoride	0.100	0.400
Sulfate	1.00	3.00

TestNo: SW6020B	**MDL**	**MQL**
Analyte	**mg/L**	**mg/L**
Antimony	0.000800	0.00250
Arsenic	0.00200	0.00500
Barium	0.00300	0.0100
Beryllium	0.000300	0.00100
Boron	0.0100	0.0300
Cadmium	0.000300	0.00100
Calcium	0.100	0.300
Chromium	0.00200	0.00500
Cobalt	0.00300	0.00500
Lead	0.000300	0.00100
Lithium	0.00500	0.0100
Molybdenum	0.00200	0.00500
Selenium	0.00200	0.00500
Thallium	0.000500	0.00150

TestNo: SW7470A	**MDL**	**MQL**
Analyte	**mg/L**	**mg/L**
Mercury	0.0000800	0.000200

TestNo: M2540C	**MDL**	**MQL**
Analyte	**mg/L**	**mg/L**
Total Dissolved Solids (Residue, Filt	10.0	10.0

Qualifiers: MQL -Method Quantitation Limit as defined by TRRP
MDL -Method Detection Limit as defined by TRRP

ANALYTICAL REPORT

July 18, 2021

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

DHL Analytical, Inc.

Sample Delivery Group:	L1369166
Samples Received:	06/21/2021
Project Number:	2106110
Description:	

Report To: John DuPont
2300 Double Creek Drive
Round Rock, TX 78664

Entire Report Reviewed By:

Donna Eidson
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.

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BMW-24 L1369166-01 Non-Potable Water

Collected by | Collected date/time 06/14/21 09:45 | Received date/time 06/21/21 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1701878	1	07/09/21 14:30	07/14/21 12:00	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1694787	1	07/12/21 13:46	07/14/21 12:00	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1694787	1	07/12/21 13:46	07/13/21 16:24	RGT	Mt. Juliet, TN

BMW-23 L1369166-02 Non-Potable Water

Collected by | Collected date/time 06/14/21 10:35 | Received date/time 06/21/21 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1701878	1	07/09/21 14:30	07/14/21 12:00	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1694787	1	07/12/21 13:46	07/14/21 12:00	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1694787	1	07/12/21 13:46	07/13/21 16:24	RGT	Mt. Juliet, TN

BMW-22 L1369166-03 Non-Potable Water

Collected by | Collected date/time 06/14/21 11:30 | Received date/time 06/21/21 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1701878	1	07/09/21 14:30	07/14/21 12:00	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1694787	1	07/12/21 13:46	07/14/21 12:00	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1694787	1	07/12/21 13:46	07/13/21 16:24	RGT	Mt. Juliet, TN

BMW-20 L1369166-04 Non-Potable Water

Collected by | Collected date/time 06/14/21 12:30 | Received date/time 06/21/21 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1701878	1	07/09/21 14:30	07/14/21 12:00	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1694787	1	07/12/21 13:46	07/14/21 12:00	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1694787	1	07/12/21 13:46	07/13/21 16:24	RGT	Mt. Juliet, TN

BMW-21 L1369166-05 Non-Potable Water

Collected by | Collected date/time 06/14/21 13:20 | Received date/time 06/21/21 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1701878	1	07/09/21 14:30	07/14/21 12:00	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1694787	1	07/12/21 13:46	07/14/21 12:00	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1694787	1	07/12/21 13:46	07/13/21 16:24	RGT	Mt. Juliet, TN

BMW-27 L1369166-06 Non-Potable Water

Collected by | Collected date/time 06/14/21 14:25 | Received date/time 06/21/21 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1701878	1	07/09/21 14:30	07/14/21 12:00	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1694787	1	07/12/21 13:46	07/14/21 12:00	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1694787	1	07/12/21 13:46	07/13/21 16:24	RGT	Mt. Juliet, TN

BMW-26 L1369166-07 Non-Potable Water

Collected by | Collected date/time 06/14/21 15:25 | Received date/time 06/21/21 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1701878	1	07/09/21 14:30	07/14/21 12:00	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1694787	1	07/12/21 13:46	07/14/21 12:00	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1694787	1	07/12/21 13:46	07/13/21 16:24	RGT	Mt. Juliet, TN

BMW-11AR L1369166-08 Non-Potable Water

Collected by | Collected date/time 06/14/21 16:30 | Received date/time 06/21/21 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1701878	1	07/09/21 14:30	07/14/21 12:00	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1694787	1	07/12/21 13:46	07/14/21 12:00	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1694787	1	07/12/21 13:46	07/13/21 16:24	RGT	Mt. Juliet, TN

BMW-19 L1369166-09 Non-Potable Water

Collected by | Collected date/time 06/15/21 08:10 | Received date/time 06/21/21 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1701878	1	07/09/21 14:30	07/14/21 12:00	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1694787	1	07/12/21 13:46	07/14/21 12:00	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1694787	1	07/12/21 13:46	07/13/21 16:24	RGT	Mt. Juliet, TN

DUP-1 L1369166-10 Non-Potable Water

Collected by | Collected date/time 06/15/21 08:10 | Received date/time 06/21/21 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1701878	1	07/09/21 14:30	07/14/21 12:00	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1694787	1	07/12/21 13:46	07/14/21 12:00	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1694787	1	07/12/21 13:46	07/13/21 16:24	RGT	Mt. Juliet, TN

BMW-18 L1369166-11 Non-Potable Water

Collected by | Collected date/time 06/15/21 09:00 | Received date/time 06/21/21 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1701878	1	07/09/21 14:30	07/14/21 12:00	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1694787	1	07/12/21 13:46	07/14/21 12:00	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1694787	1	07/12/21 13:46	07/13/21 16:24	RGT	Mt. Juliet, TN

BMW-28 L1369166-12 Non-Potable Water

Collected by | Collected date/time 06/15/21 10:10 | Received date/time 06/21/21 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1701878	1	07/09/21 14:30	07/14/21 12:00	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1694787	1	07/12/21 13:46	07/14/21 12:00	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1694787	1	07/12/21 13:46	07/13/21 16:24	RGT	Mt. Juliet, TN

	Collected by	Collected date/time	Received date/time
BMW-33 L1369166-13 Non-Potable Water		06/15/21 11:25	06/21/21 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1701878	1	07/09/21 14:30	07/14/21 12:00	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1694787	1	07/12/21 13:46	07/14/21 12:00	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1694787	1	07/12/21 13:46	07/13/21 16:24	RGT	Mt. Juliet, TN

CASE NARRATIVE

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Donna Eidson
Project Manager

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	1.77		0.493	0.799	07/14/2021 12:00	WG1701878
(T) Barium	*93.2*			*62.0-143*	*07/14/2021 12:00*	WG1701878
(T) Yttrium	*101*			*79.0-136*	*07/14/2021 12:00*	WG1701878

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	2.26		0.789	1.08	07/14/2021 12:00	WG1694787

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.486		0.296	0.28	07/13/2021 16:24	WG1694787
(T) Barium-133	*104*			*30.0-143*	*07/13/2021 16:24*	WG1694787

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	1.75		0.398	0.637	07/14/2021 12:00	WG1701878
(T) Barium	*105*			*62.0-143*	*07/14/2021 12:00*	WG1701878
(T) Yttrium	*105*			*79.0-136*	*07/14/2021 12:00*	WG1701878

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	2.49		0.709	0.81	07/14/2021 12:00	WG1694787

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.742		0.311	0.173	07/13/2021 16:24	WG1694787
(T) Barium-133	*96.7*			*30.0-143*	*07/13/2021 16:24*	WG1694787

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	1.64		0.442	0.715	07/14/2021 12:00	WG1701878
(T) Barium	*99.0*			*62.0-143*	*07/14/2021 12:00*	WG1701878
(T) Yttrium	*88.4*			*79.0-136*	*07/14/2021 12:00*	WG1701878

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	2.05		0.708	0.964	07/14/2021 12:00	WG1694787

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.415		0.266	0.249	07/13/2021 16:24	WG1694787
(T) Barium-133	*84.9*			*30.0-143*	*07/13/2021 16:24*	WG1694787

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	2.81		0.543	0.85	07/14/2021 12:00	WG1701878
(T) Barium	*92.2*			*62.0-143*	*07/14/2021 12:00*	WG1701878
(T) Yttrium	*92.8*			*79.0-136*	*07/14/2021 12:00*	WG1701878

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	3.31		0.812	1.07	07/14/2021 12:00	WG1694787

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.500		0.269	0.22	07/13/2021 16:24	WG1694787
(T) Barium-133	*93.0*			*30.0-143*	*07/13/2021 16:24*	WG1694787

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	1.62		0.362	0.573	07/14/2021 12:00	WG1701878
(T) Barium	*92.4*			*62.0-143*	*07/14/2021 12:00*	WG1701878
(T) Yttrium	*97.4*			*79.0-136*	*07/14/2021 12:00*	WG1701878

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	2.18		0.692	0.894	07/14/2021 12:00	WG1694787

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.555		0.330	0.321	07/13/2021 16:24	WG1694787
(T) Barium-133	*86.6*			*30.0-143*	*07/13/2021 16:24*	WG1694787

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	0.558		0.311	0.518	07/14/2021 12:00	WG1701878
(T) Barium	*99.9*			*62.0-143*	*07/14/2021 12:00*	WG1701878
(T) Yttrium	*103*			*79.0-136*	*07/14/2021 12:00*	WG1701878

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	0.584	J	0.381	0.669	07/14/2021 12:00	WG1694787

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.0262	U	0.0703	0.151	07/13/2021 16:24	WG1694787
(T) Barium-133	*90.2*			*30.0-143*	*07/13/2021 16:24*	WG1694787

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	1.05		0.333	0.541	07/14/2021 12:00	WG1701878
(T) Barium	*102*			*62.0-143*	*07/14/2021 12:00*	WG1701878
(T) Yttrium	*105*			*79.0-136*	*07/14/2021 12:00*	WG1701878

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	1.20		0.472	0.684	07/14/2021 12:00	WG1694787

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.149		0.139	0.143	07/13/2021 16:24	WG1694787
(T) Barium-133	*103*			*30.0-143*	*07/13/2021 16:24*	WG1694787

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	0.712		0.362	0.6	07/14/2021 12:00	WG1701878
(T) Barium	*102*			*62.0-143*	*07/14/2021 12:00*	WG1701878
(T) Yttrium	*103*			*79.0-136*	*07/14/2021 12:00*	WG1701878

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	1.15		0.587	0.763	07/14/2021 12:00	WG1694787

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.434		0.225	0.163	07/13/2021 16:24	WG1694787
(T) Barium-133	*106*			*30.0-143*	*07/13/2021 16:24*	WG1694787

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	0.0156	U	0.320	0.551	07/14/2021 12:00	WG1701878
(T) Barium	*101*			*62.0-143*	*07/14/2021 12:00*	WG1701878
(T) Yttrium	*107*			*79.0-136*	*07/14/2021 12:00*	WG1701878

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	0.0156	U	0.371	0.746	07/14/2021 12:00	WG1694787

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	-0.0202	U	0.0512	0.195	07/13/2021 16:24	WG1694787
(T) Barium-133	*110*			*30.0-143*	*07/13/2021 16:24*	WG1694787

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	1.38		0.361	0.58	07/14/2021 12:00	WG1701878
(T) Barium	*100*			*62.0-143*	*07/14/2021 12:00*	WG1701878
(T) Yttrium	*109*			*79.0-136*	*07/14/2021 12:00*	WG1701878

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	1.55		0.539	0.807	07/14/2021 12:00	WG1694787

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.175	J	0.178	0.227	07/13/2021 16:24	WG1694787
(T) Barium-133	*105*			*30.0-143*	*07/13/2021 16:24*	WG1694787

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	-0.461	U	0.368	0.645	07/14/2021 12:00	WG1701878
(T) Barium	*98.7*			*62.0-143*	*07/14/2021 12:00*	WG1701878
(T) Yttrium	*97.7*			*79.0-136*	*07/14/2021 12:00*	WG1701878

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	0.000	U	0.502	0.927	07/14/2021 12:00	WG1694787

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	-0.0192	U	0.134	0.282	07/13/2021 16:24	WG1694787
(T) Barium-133	*101*			*30.0-143*	*07/13/2021 16:24*	WG1694787

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	0.972		0.366	0.6	07/14/2021 12:00	WG1701878
(T) Barium	*102*			*62.0-143*	*07/14/2021 12:00*	WG1701878
(T) Yttrium	*110*			*79.0-136*	*07/14/2021 12:00*	WG1701878

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	1.07		0.555	0.901	07/14/2021 12:00	WG1694787

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.101	U	0.189	0.301	07/13/2021 16:24	WG1694787
(T) Barium-133	*105*			*30.0-143*	*07/13/2021 16:24*	WG1694787

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	0.597	J	0.377	0.631	07/14/2021 12:00	WG1701878
(T) Barium	*104*			*62.0-143*	*07/14/2021 12:00*	WG1701878
(T) Yttrium	*88.4*			*79.0-136*	*07/14/2021 12:00*	WG1701878

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	0.786	J	0.592	0.923	07/14/2021 12:00	WG1694787

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.190	J	0.215	0.292	07/13/2021 16:24	WG1694787
(T) Barium-133	*110*			*30.0-143*	*07/13/2021 16:24*	WG1694787

Method Blank (MB)

(MB) R3679869-1 07/14/21 12:00

Analyte	MB Result pCi/l	MB Qualifier	MB MDA pCi/l
Radium-228	-0.327	U	0.531
(T) Barium	*106*		
(T) Yttrium	*80.3*		

L1370437-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1370437-01 07/14/21 12:00 • (DUP) R3679869-5 07/14/21 12:00

Analyte	Original Result pCi/l	DUP Result pCi/l	Dilution	DUP RPD %	DUP RER	DUP Qualifier	DUP RPD Limits %	DUP RER Limit
Radium-228	0.575	0.757	1	27.3	0.280	J	20	3
(T) Barium	*96.1*	*100*						
(T) Yttrium	*109*	*99.7*						

Laboratory Control Sample (LCS)

(LCS) R3679869-2 07/14/21 12:00

Analyte	Spike Amount pCi/l	LCS Result pCi/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Radium-228	5.00	4.66	93.2	80.0-120	
(T) Barium			*105*		
(T) Yttrium			*108*		

L1374861-10 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1374861-10 07/14/21 12:00 • (MS) R3679869-3 07/14/21 12:00 • (MSD) R3679869-4 07/14/21 12:00

Analyte	Spike Amount pCi/l	Original Result pCi/l	MS Result pCi/l	MSD Result pCi/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	MS RER	RPD Limits %
Radium-228	10.0	1.01	9.34	10.2	83.4	92.1	1	70.0-130			8.96		20
(T) Barium		*103*			*106*	*103*							
(T) Yttrium		*110*			*105*	*104*							

Method Blank (MB)

(MB) R3680416-1 07/13/21 16:24

Analyte	MB Result pCi/l	MB Qualifier	MB MDA pCi/l
Radium-226	-0.00896	U	0.0725
(T) Barium-133	*90.6*		

L1369166-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1369166-01 07/13/21 16:24 • (DUP) R3680416-5 07/13/21 16:24

Analyte	Original Result pCi/l	DUP Result pCi/l	Dilution	DUP RPD %	DUP RER	DUP Qualifier	DUP RPD Limits %	DUP RER Limit
Radium-226	0.486	0.706	1	37.0	0.512		20	3
(T) Barium-133	*104*	*94.4*						

Laboratory Control Sample (LCS)

(LCS) R3680416-2 07/13/21 16:24

Analyte	Spike Amount pCi/l	LCS Result pCi/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Radium-226	5.02	4.93	98.1	80.0-120	
(T) Barium-133			*93.4*		

L1374861-10 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1374861-10 07/13/21 16:24 • (MS) R3680416-3 07/13/21 16:24 • (MSD) R3680416-4 07/13/21 16:24

Analyte	Spike Amount pCi/l	Original Result pCi/l	MS Result pCi/l	MSD Result pCi/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	MS RER	RPD Limits %
Radium-226	20.1	0.0795	18.1	17.9	89.4	88.8	1	75.0-125			0.667		20
(T) Barium-133		*106*			*105*	*106*							

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDA	Minimum Detectable Activity.
Rec.	Recovery.
RER	Replicate Error Ratio.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(T)	Tracer - A radioisotope of known concentration added to a solution of chemically equivalent radioisotopes at a known concentration to assist in monitoring the yield of the chemical separation.
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
J	The identification of the analyte is acceptable; the reported value is an estimate.
U	Below Detectable Limits: Indicates that the analyte was not detected.

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky [1 6]	KY90010	South Carolina	84004002
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas [5]	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.

DHL Analytical, Inc.
2300 Double Creek Drive
Round Rock, TX 78664
TEL: *(512) 388-8222* FAX: *(512) 388-8229*

CHAIN-OF-CUSTODY RECORD

Work Order: 2106110

A210

L1369166

16-Jun-21

Subcontractor:

Pace Analytical
12065 Lebanon Rd
Mt. Juliet, TN 37122

TEL: (615) 773-5923
FAX:
Acct #: DHLRRTX

Sample ID	Matrix	DHL#	Date Collected	Bottle Type	Requested Tests					
					Ra-228 E904.0	Ra-226 M7500 Ra B M				
BMW-24	Aqueous	01C	06/14/21 09:45 AM	1LHDPEHNO3		1				-01
BMW-24	Aqueous	01D	06/14/21 09:45 AM	1LHDPEHNO3	1					-01
BMW-23	Aqueous	02C	06/14/21 10:35 AM	1LHDPEHNO3		1				-02
BMW-23	Aqueous	02D	06/14/21 10:35 AM	1LHDPEHNO3	1					-02
BMW-22	Aqueous	03C	06/14/21 11:30 AM	1LHDPEHNO3		1				-03
BMW-22	Aqueous	03D	06/14/21 11:30 AM	1LHDPEHNO3	1					-03
BMW-20	Aqueous	04C	06/14/21 12:30 PM	1LHDPEHNO3		1				-04
BMW-20	Aqueous	04D	06/14/21 12:30 PM	1LHDPEHNO3	1					-04
BMW-21	Aqueous	05C	06/14/21 01:20 PM	1LHDPEHNO3		1				-05
BMW-21	Aqueous	05D	06/14/21 01:20 PM	1LHDPEHNO3	1					-05
BMW-27	Aqueous	06C	06/14/21 02:25 PM	1LHDPEHNO3		1				-06
BMW-27	Aqueous	06D	06/14/21 02:25 PM	1LHDPEHNO3	1					-06
BMW-26	Aqueous	07C	06/14/21 03:25 PM	1LHDPEHNO3		1				-07
BMW-26	Aqueous	07D	06/14/21 03:25 PM	1LHDPEHNO3	1					-07
BMW-11AR	Aqueous	08C	06/14/21 04:30 PM	1LHDPEHNO3		1				-08
BMW-11AR	Aqueous	08D	06/14/21 04:30 PM	1LHDPEHNO3	1					-08
BMW-19	Aqueous	09C	06/15/21 08:10 AM	1LHDPEHNO3		1				-09

General Comments:

Please analyze these samples with Normal Turnaround Time.
Report Ra-226, Ra-228 & Combined per Specs.
Quality Control Package Needed: Standard - NELAC Rad Test compliant
Email to cac@dhlanalytical.com & dupont@dhlanalytical.com

Sample Receipt Checklist

COC Seal Present/Intact: __Y __N
COC Signed/Accurate: __Y __N
Bottles arrive intact: __Y __N
Correct bottles used: __Y __N
Sufficient volume sent: __Y __N
RAD Screen <0.5 mR/hr: __Y __N

If Applicable
VOA Zero Headspace: __Y __N
Pres.Correct/Check: __Y __N

		Date/Time			Date/Time
Relinquished by:		6/16/21 1800	Received by:		6/21/21 1000
Relinquished by:			Received by:		

DHL Analytical, Inc.
2300 Double Creek Drive
Round Rock, TX 78664
TEL: *(512) 388-8222* FAX: *(512) 388-8229*

CHAIN-OF-CUSTODY RECORD

Work Order: 2106110

mm
~~L1369166~~
L1369166
16-Jun-21

Subcontractor:

Pace Analytical
12065 Lebanon Rd
Mt. Juliet, TN 37122

TEL: (615) 773-5923
FAX:
Acct #: DHLRRTX

Sample ID	Matrix	DHL#	Date Collected	Bottle Type	Requested Tests					
					Ra-228 E904.0	Ra-226 M7500 Ra B M				
BMW-19	Aqueous	09D	06/15/21 08:10 AM	1LHDPEHNO3	1					-09
DUP-1	Aqueous	10C	06/15/21 08:10 AM	1LHDPEHNO3		1				-10
DUP-1	Aqueous	10D	06/15/21 08:10 AM	1LHDPEHNO3	1					-10
BMW-18	Aqueous	11C	06/15/21 09:00 AM	1LHDPEHNO3		1				-11
BMW-18	Aqueous	11D	06/15/21 09:00 AM	1LHDPEHNO3	1					-11
BMW-28	Aqueous	12C	06/15/21 10:10 AM	1LHDPEHNO3		1				-12
BMW-28	Aqueous	12D	06/15/21 10:10 AM	1LHDPEHNO3	1					-12
BMW-33	Aqueous	13C	06/15/21 11:25 AM	1LHDPEHNO3		1				-13
BMW-33	Aqueous	13D	06/15/21 11:25 AM	1LHDPEHNO3	1					-13

General Comments:

Please analyze these samples with Normal Turnaround Time.
Report Ra-226, Ra-228 & Combined per Specs.
Quality Control Package Needed: Standard - NELAC Rad Test compliant
Email to cac@dhlanalytical.com & dupont@dhlanalytical.com

		Date/Time			Date/Time
Relinquished by:		6/16/21 1800	**Received by:**		6/21/21 1000
Relinquished by:			**Received by:**		

November 15, 2021

Will Vienne
Golder
2201 Double Creek Dr #4004
Round Rock, Texas 78664
TEL: (512) 671-3434
FAX (512) 671-3446

Order No.: 2110054

RE: Luminant - A1 Landfill

Dear Will Vienne:

DHL Analytical, Inc. received 13 sample(s) on 10/8/2021 for the analyses presented in the following report.

There were no problems with the analyses and all data met requirements of NELAP except where noted in the Case Narrative. All non-NELAP methods will be identified accordingly in the case narrative and all estimated uncertainties of test results are within method or EPA specifications.

If you have any questions regarding these tests results, please feel free to call. Thank you for using DHL Analytical.

Sincerely,

John DuPont
General Manager

This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211-21-27

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Subcontract Report 2110054 55

DHL ANALYTICAL

2300 Double Creek Dr. Round Rock, TX 78664
Phone 512.388.8222
Web: **www.dhlanalytical.com**
Email: **login@dhlanalytical.com**

CHAIN-OF-CUSTODY

PAGE 1 OF 1

CLIENT: GOLDER
ADDRESS: 2201 DOUBLE CREEK DR #4004 ROUND ROCK TX
PHONE: 512-671-3434 EMAIL:
DATA REPORTED TO: WILL VIENNE
ADDITIONAL REPORT COPIES TO:

DATE: 10-7-21
PO#:
PROJECT LOCATION OR NAME: LUMINANT - AI LANDFILL
CLIENT PROJECT # 19122262
COLLECTOR: JOHN BRAYTON

LABORATORY USE ONLY
DHL WORKORDER #: 2110054

Authorize 5% surcharge for TRRP report? ☐ Yes ☐ No

Lab Use Only: W=WATER, L=LIQUID, S=SOLID, SO=SOLID, SE=SEDIMENT, P=PAINT, SL=SLUDGE

Field Sample I.D.	DHL Lab #	Collection Date	Collection Time	Matrix	Container Type	# of Containers	PRESERVATION: HCl	HNO_3	H_2SO_4	NaOH ☐ Zn Acetate ☐	ICE ☒ UNPRESERVED ☒	ANALYSES	BTEX ☐ MTBE ☐ [METHOD 8260]	TPH 1005 ☐ TPH 1006 ☐ HOLD 1006 ☐	GRO 8015 ☐ DRO 8015 ☐	VOC 8260 ☐ VOC 624.1 ☐	SVOC 8270 ☐ SVOC 625.1 ☐	PAH 8270 ☐ HOLD PAH ☐	PEST 8270 ☐ 625.1 ☐ O-P PEST 8270 ☐	PCB 8082 ☐ 608.3 ☐ PCB 8270 ☐ 625.1 ☐	HERB 8321 ☐ T PHOS ☐ AMMONIA ☐	METALS 6020 ☐ 200.8 ☐ DISS. METALS ☐	RCRA 8 ☐ TX11 ☐ _____	pH ☐ HEX CHROM ☐ ALKALINITY ☐ COD ☐	ANIONS 300 ☐ 9056 ☐ _____	TCLP-SVOC ☐ VOC ☐ PEST ☐ HERB ☐	TCLP-METALS ☐ RCRA 8 ☐ TX-11 ☐ Pb ☐	RCI ☐ IGN ☐ DGAS ☐ OIL&GREASE ☐	TDS ☐ TSS ☐ % MOIST ☐ CYANIDE ☐	APPENDIX III	APPENDIX IV	FIELD NOTES
BMW-33	01	10-7-21	1200	W	P	4		X			X																				X	X	
BMW-28	02	"	1045	W	P	4		X			X																				X	X	
DUP-1	03	"	1045	W	P	4		X			X																				X	X	
BMW-18	04	"	0925	W	P	4		X			X																				X	X	
BMW-19	05	"	0815	W	P	4		X			X																				X	X	
BMW-11AR	06	10-6-21	1655	W	P	4		X			X																				X	X	
BMW-27	07		1540	W	P	4		X			X																				X	X	
BMW-26	08		1440	W	P	4		X			X																				X	X	
BMW-21	09		1335	W	P	4		X			X																				X	X	
BMW-20	10		1235	W	P	4		X			X																				X	X	
BMW-22	11		1125	W	P	4		X			X																				X	X	
BMW-23	12		1020	W	P	4		X			X																				X	X	
BMW-24	13		0915	W	P	4		X			X																				X	X	

Relinquished By: (Sign) — DATE/TIME: 10-7-21 — Received by: FedEx
Relinquished By: (Sign) FedEx — DATE/TIME: 10/8/21 0941 — Received by:
Relinquished By: (Sign) — DATE/TIME — Received by:

TURN AROUND TIME (CALL FIRST FOR RUSH)
RUSH-1 DAY☐ RUSH-2 DAY☐ RUSH-3 DAY☐
NORMAL ☒ OTHER ☐
DUE DATE _____ ☐

LABORATORY USE ONLY
RECEIVING TEMP (°C): 2.7°C/0.6°C/2.6°C/1.7°C THERM #: 78
CUSTODY SEALS: ☐ BROKEN ☒ INTACT ☐ NOT USED
CARRIER: ☐ LSO ☒ FEDEX ☐ UPS ☐ COURIER ☐ OTHER ☐ HAND DELIVERED

☐ **DHL DISPOSAL @ 5.00 each** ☐ **Return**

DHL COC REV 3 | MAR 2021

Eric Lau

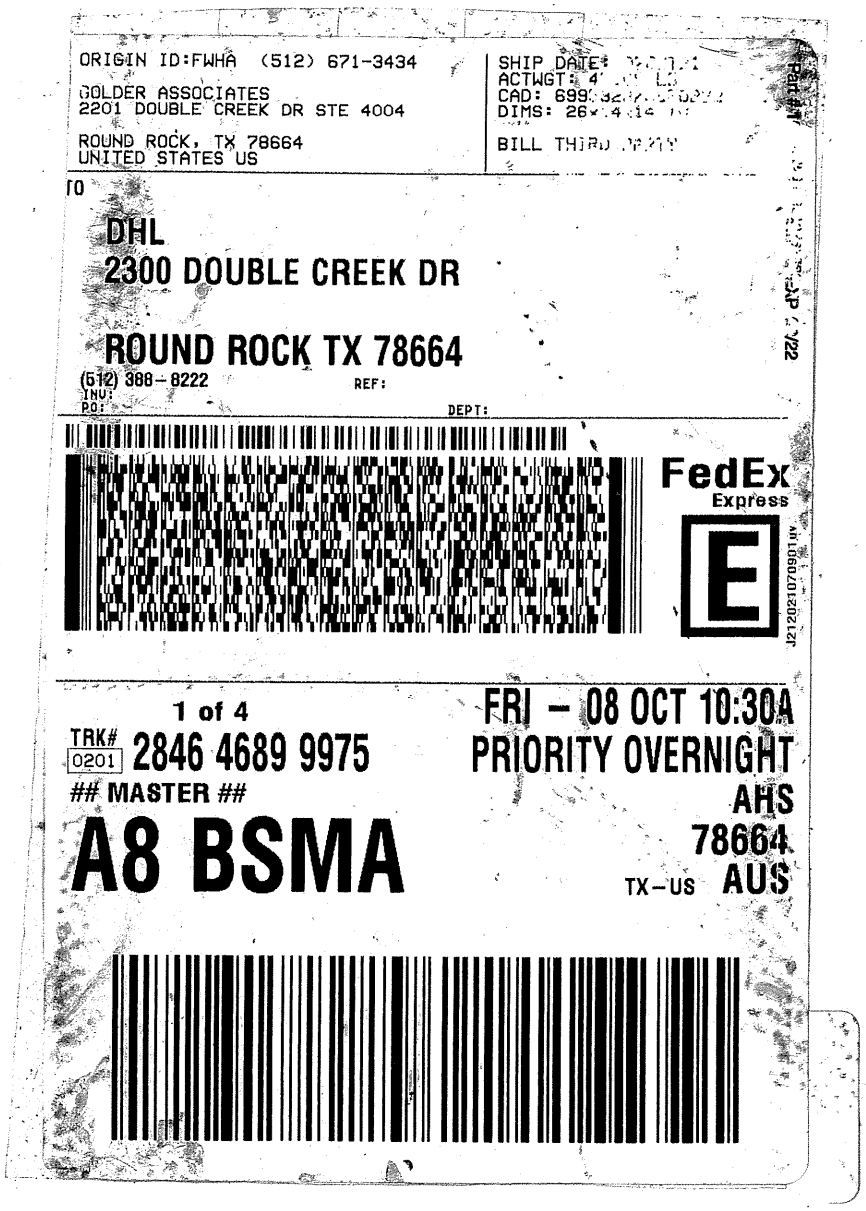
From: John DuPont
Sent: Tuesday, May 28, 2019 11:35 AM
To: Eric Lau
Subject: FW: CCR Analysis

Appendix III Parameters:
Metals (Ca and B)
Anions (Cl, F, and SO4)
TDS

Appendix IV Parameters:

Metals (As, Ba, Be, Cd, Co, Cr, Hg, Li, Mo, Pb, Sb, Se, and Tl)
Ra-226
Ra-228

From: Vienne, Will [mailto:William_Vienne@golder.com]
Sent: Tuesday, April 09, 2019 12:48 PM
To: John DuPont <dupont@dhlanalytical.com>
Subject: CCR Analysis



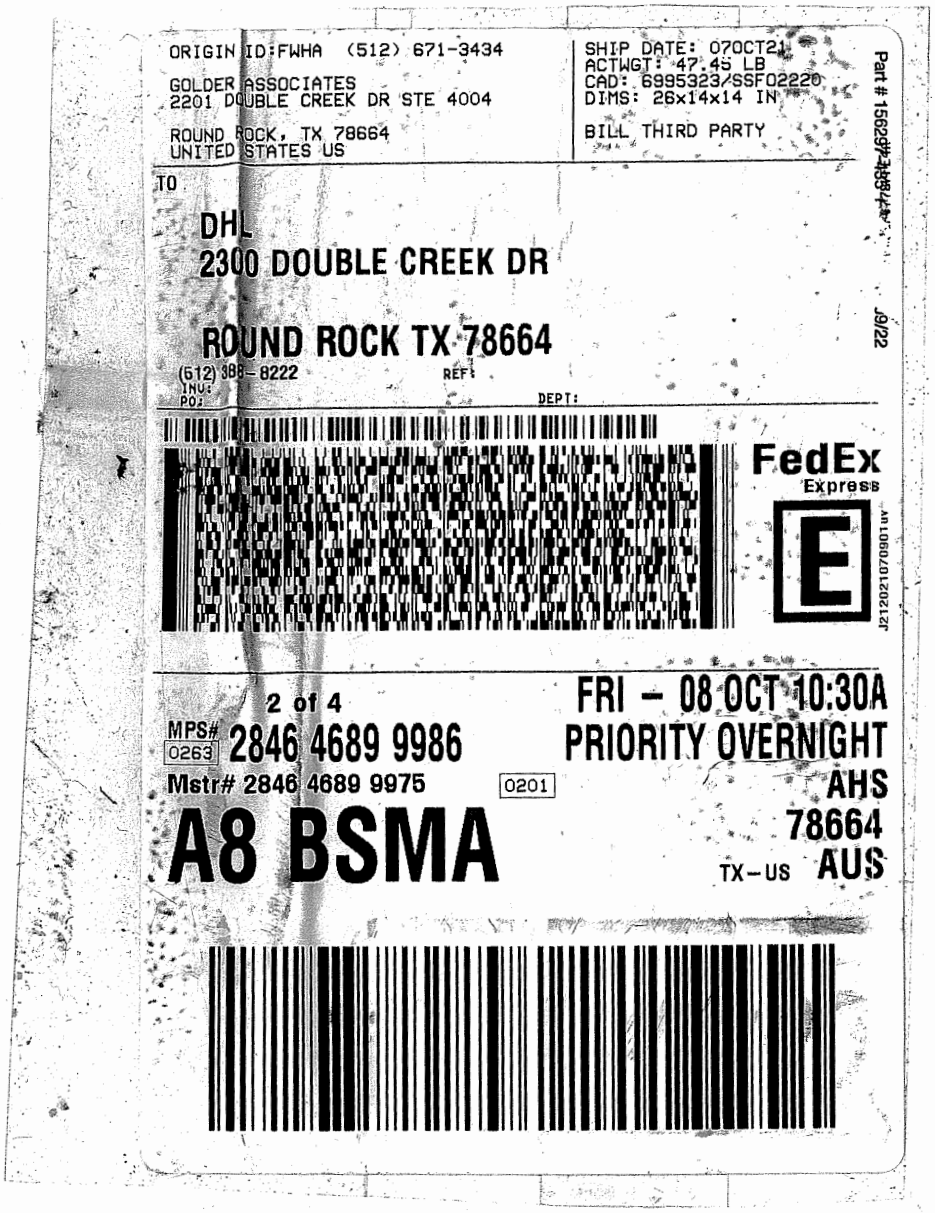
CUSTODY SEAL

DATE 10-7-21

SIGNATURE

DH

ANALY



ORIGIN ID:FWHA (512) 671-3434

GOLDER ASSOCIATES
2201 DOUBLE CREEK DR STE 4004

ROUND ROCK, TX 78664
UNITED STATES US

SHIP DATE: 07OCT21
ACTWGT: 47.45 LB
CAD: 6995323/SSF02220
DIMS: 26x14x14 IN

BILL THIRD PARTY

Part # 156297-188-4

TO

DHL
2300 DOUBLE CREEK DR

ROUND ROCK TX 78664

(512) 388-8222 REF:
INV:
PO: DEPT:

J9/22

FedEx Express

E

J212021070901uv

2 of 4

MPS# 0263 2846 4689 9986

Mstr# 2846 4689 9975 0201

A8 BSMA

FRI - 08 OCT 10:30A
PRIORITY OVERNIGHT
AHS
78664
TX-US AUS

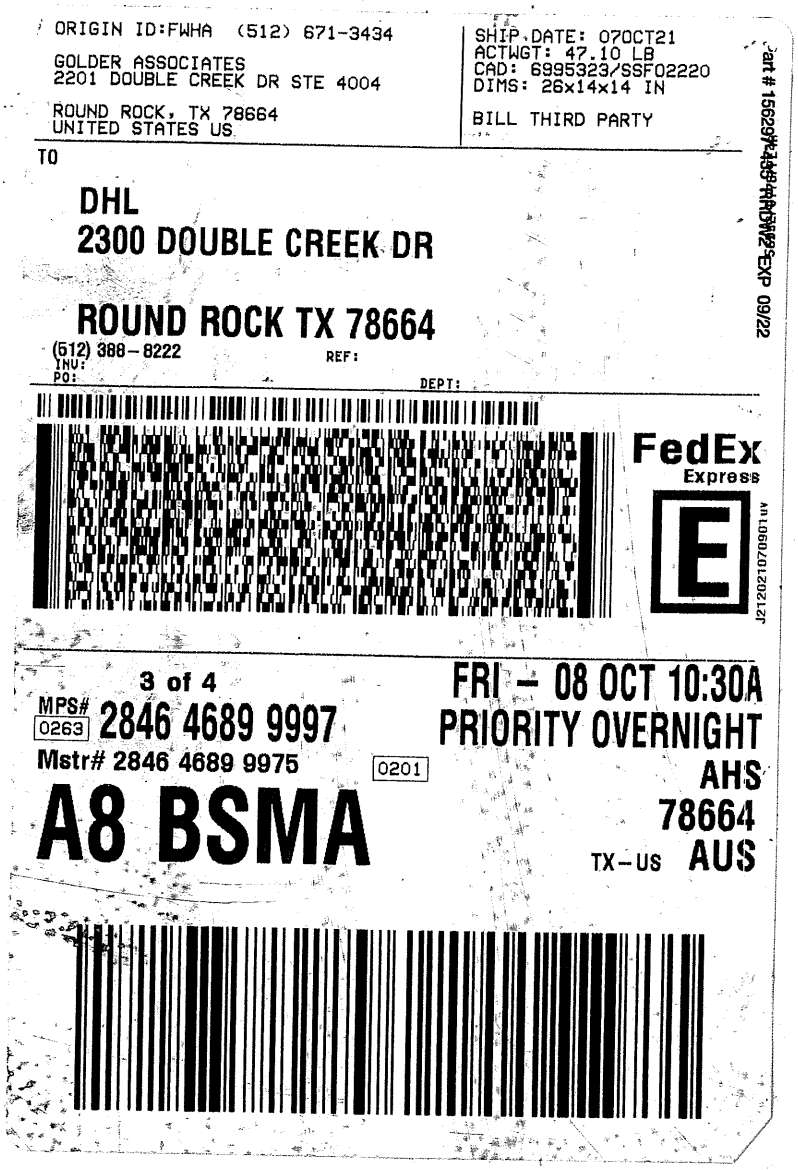
CUSTODY SEA

DATE 10-7-21

SIGNATURE [signature]

L

DHL ANALYTICAL



ORIGIN ID:FWHA (512) 671-3434

GOLDER ASSOCIATES
2201 DOUBLE CREEK DR STE 4004

ROUND ROCK, TX 78664
UNITED STATES US

SHIP DATE: 07OCT21
ACTWGT: 47.10 LB
CAD: 6995323/SSF02220
DIMS: 26x14x14 IN

BILL THIRD PARTY

Part # 156297-435 RRDW2 EXP 09/22

TO

DHL
2300 DOUBLE CREEK DR

ROUND ROCK TX 78664

(512) 388-8222 REF:
INV:
PO: DEPT:

FedEx Express

E

J212021070901uv

3 of 4

MPS# 0263 2846 4689 9997

Mstr# 2846 4689 9975 0201

A8 BSMA

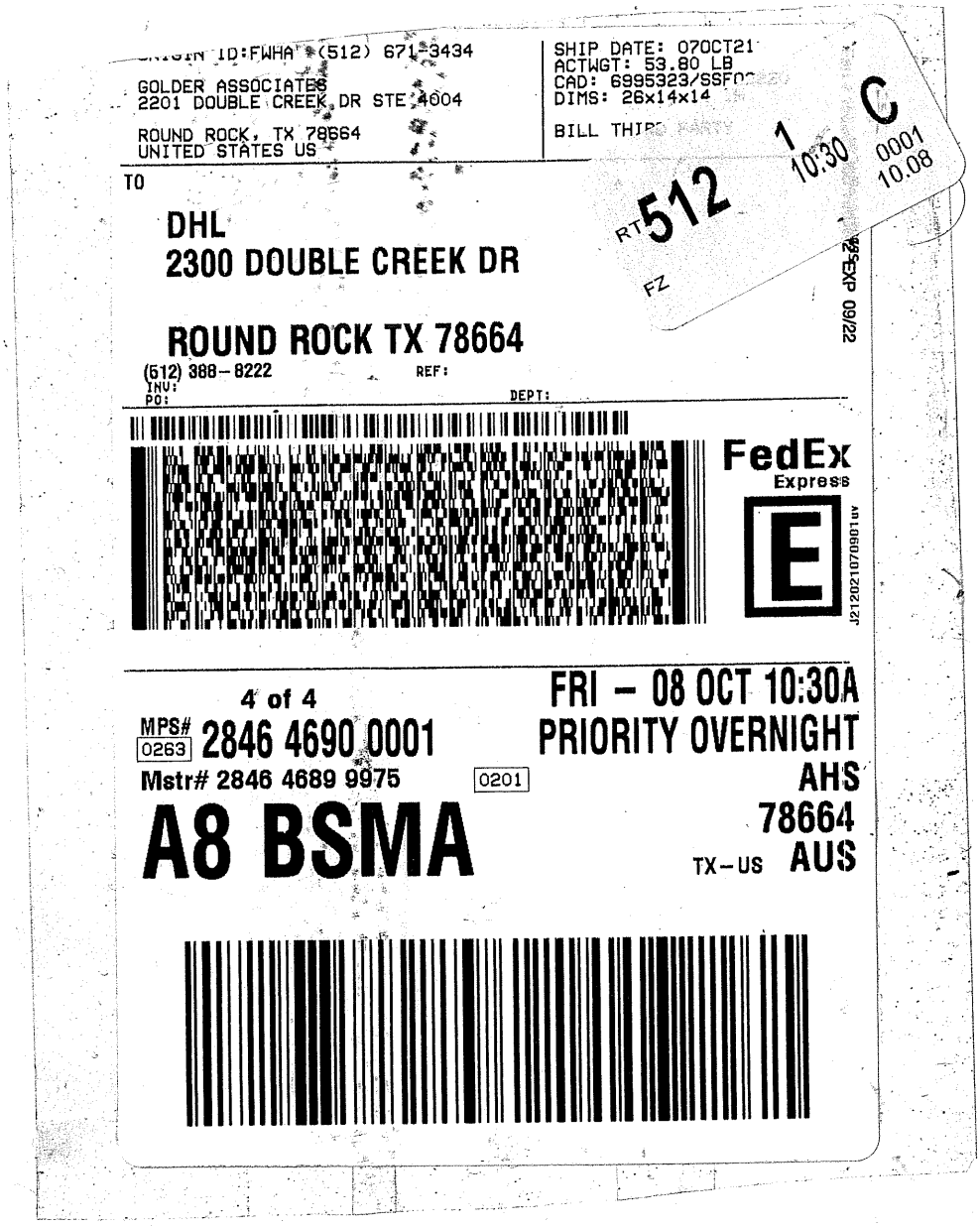
FRI - 08 OCT 10:30A
PRIORITY OVERNIGHT
AHS
78664
TX-US AUS

CUSTODY SEAL

DHL ANALYTICAL

DATE 10 7-21

SIGNATURE


ORIGIN ID:FWHA (512) 671-3434
GOLDER ASSOCIATES
2201 DOUBLE CREEK DR STE 4004
ROUND ROCK, TX 78664
UNITED STATES US
SHIP DATE: 07OCT21
ACTWGT: 53.80 LB
CAD: 6995323/SSFO
DIMS: 26x14x14
BILL THIR
TO
DHL
2300 DOUBLE CREEK DR
ROUND ROCK TX 78664
(512) 388-8222
REF:
INV:
PO:
DEPT:
FedEx
Express
4 of 4
MPS# 2846 4690 0001
Mstr# 2846 4689 9975
0263
0201
A8 BSMA
FRI - 08 OCT 10:30A
PRIORITY OVERNIGHT
AHS
78664
TX-US AUS
RT 512
FZ
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10:30
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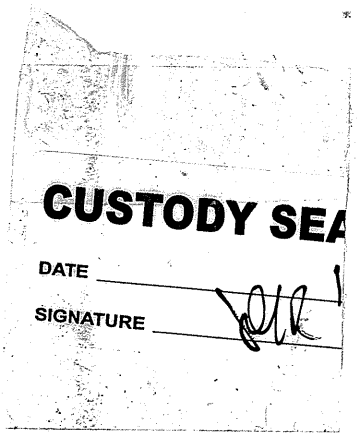
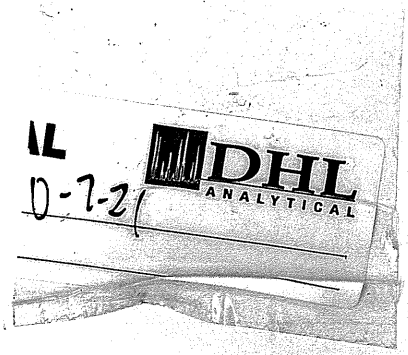
0001
10.08
EXP 09/22


CUSTODY SEA
DATE
SIGNATURE


DHL
ANALYTICAL

DHL Analytical, Inc.

Sample Receipt Checklist

Client Name **Golder** Date Received: **10/8/2021**

Work Order Number **2110054** Received by: **RA**

Checklist completed by: _____ 10/8/2021 Reviewed by SH 10/8/2021
Signature | Date | Initials | Date

Carrier name: FedEx 1day

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	2.7 °C /0.6/2.6/1.7°C
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH<2 acceptable upon receipt?	Yes ☑	No ☐	NA ☐ LOT # 13171
	Adjusted? no		Checked by EL
Water - ph>9 (S) or ph>10 (CN) acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted? _____		Checked by _____

Any No response must be detailed in the comments section below.

Client contacted: _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments: _____

Corrective Action: _____

Laboratory Name: DHL Analytical, Inc.

Laboratory Review Checklist: Reportable Data

Project Name: Luminant - A1 Landfill	**LRC Date:** 11/15/21
Reviewer Name: Carlos Castro	**Laboratory Work Order:** 2110054
Prep Batch Number(s): See Prep Dates Report	**Run Batch:** See Analytical Dates Report

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
		Chain-of-Custody (C-O-C)					
R1	OI	**1)** Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	**X**				**R1-01**
		2) Were all departures from standard conditions described in an exception report?			**X**		
R2	OI	**Sample and Quality Control (QC) Identification**					
		1) Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	**X**				
		2) Are all laboratory ID numbers cross-referenced to the corresponding QC data?	**X**				
R3	OI	**Test Reports**					
		1) Were all samples prepared and analyzed within holding times?	**X**				
		2) Other than those results < MQL, were all other raw values bracketed by calibration standards?	**X**				
		3) Were calculations checked by a peer or supervisor?	**X**				
		4) Were all analyte identifications checked by a peer or supervisor?	**X**				
		5) Were sample detection limits reported for all analytes not detected?	**X**				
		6) Were all results for soil and sediment samples reported on a dry weight basis?			**X**		
		7) Were % moisture (or solids) reported for all soil and sediment samples?			**X**		
		8) Were bulk soils/solids samples for volatile analysis extracted with methanol per EPA Method 5035?			**X**		
		9) If required for the project, TICs reported?			**X**		
R4	O	**Surrogate Recovery Data**					
		1) Were surrogates added prior to extraction?			**X**		
		2) Were surrogate percent recoveries in all samples within the laboratory QC limits?			**X**		
R5	OI	**Test Reports/Summary Forms for Blank Samples**					
		1) Were appropriate type(s) of blanks analyzed?	**X**				
		2) Were blanks analyzed at the appropriate frequency?	**X**				
		3) Where method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	**X**				
		4) Were blank concentrations < MDL?	**X**				
		5) For analyte(s) detected in a blank sample, was the concentration, unadjusted for sample specific factors, in all associated field samples, **greater** than 10 times the concentration in the blank sample?			**X**		
R6	OI	**Laboratory Control Samples (LCS):**					
		1) Were all COCs included in the LCS?	**X**				
		2) Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	**X**				
		3) Were LCSs analyzed at the required frequency?	**X**				
		4) Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	**X**				
		5) Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	**X**				
		6) Was the LCSD RPD within QC limits (if applicable)?	**X**				
R7	OI	**Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Data**					
		1) Were the project/method specified analytes included in the MS and MSD?	**X**				
		2) Were MS/MSD analyzed at the appropriate frequency?	**X**				
		3) Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?		**X**			**R7-03**
		4) Were MS/MSD RPDs within laboratory QC limits?	**X**				
R8	OI	**Analytical Duplicate Data**					
		1) Were appropriate analytical duplicates analyzed for each matrix?	**X**				
		2) Were analytical duplicates analyzed at the appropriate frequency?	**X**				
		3) Were RPDs or relative standard deviations within the laboratory QC limits?	**X**				
R9	OI	**Method Quantitation Limits (MQLs):**					
		1) Are the MQLs for each method analyte included in the laboratory data package?	**X**				
		2) Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	**X**				
		3) Are unadjusted MQLs and DCSs included in the laboratory data package?	**X**				
R10	OI	**Other Problems/Anomalies**					
		1) Are all known problems/anomalies/special conditions noted in this LRC and ER?	**X**				
		2) Was applicable and available technology used to lower the SDL to minimize the matrix interference affects on the sample results?	**X**				
		3) Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices and methods associated with this laboratory data package?	**X**				

Laboratory Name: DHL Analytical, Inc.

Laboratory Review Checklist (continued): Supporting Data

Project Name: Luminant - A1 Landfill	**LRC Date:** 11/15/21
Reviewer Name: Carlos Castro	**Laboratory Work Order:** 2110054
Prep Batch Number(s): See Prep Dates Report	**Run Batch:** See Analytical Dates Report

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
S1	OI	**Initial Calibration (ICAL)**					
		1) Were response factors and/or relative response factors for each analyte within QC limits?	X				
		2) Were percent RSDs or correlation coefficient criteria met?	X				
		3) Was the number of standards recommended in the method used for all analytes?	X				
		4) Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		5) Are ICAL data available for all instruments used?	X				
		6) Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	**Initial and Continuing calibration Verification (ICCV and CCV) and Continuing Calibration blank (CCB):**					
		1) Was the CCV analyzed at the method-required frequency?	X				
		2) Were percent differences for each analyte within the method-required QC limits?	X				
		3) Was the ICAL curve verified for each analyte?	X				
		4) Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	X				
S3	O	**Mass Spectral Tuning:**					
		1) Was the appropriate compound for the method used for tuning?	X				
		2) Were ion abundance data within the method-required QC limits?	X				
S4	O	**Internal Standards (IS):**					
		1) Were IS area counts and retention times within the method-required QC limits?	X				
S5	OI	**Raw Data (NELAC Section 5.5.10)**					
		1) Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		2) Were data associated with manual integrations flagged on the raw data?	X				
S6	O	**Dual Column Confirmation**					
		1) Did dual column confirmation results meet the method-required QC?			X		
S7	O	**Tentatively Identified Compounds (TICs):**					
		1) If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) Results:**					
		1) Were percent recoveries within method QC limits?	X				
S9	I	**Serial Dilutions, Post Digestion Spikes, and Method of Standard Additions**					
		1) Were percent differences, recoveries, and the linearity within the QC limits specified in the method?		X			**S9-01.**
S10	OI	**Method Detection Limit (MDL) Studies**					
		1) Was a MDL study performed for each reported analyte?	X				
		2) Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	**Proficiency Test Reports:**					
		1) Was the lab's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	**Standards Documentation**					
		1) Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound/Analyte Identification Procedures**					
		1) Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of Analyst Competency (DOC)**					
		1) Was DOC conducted consistent with NELAC Chapter 5 – Appendix C?	X				
		2) Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/Validation Documentation for Methods** (NELAC Chapter 5)					
		1) Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	**Laboratory Standard Operating Procedures (SOPs):**					
		1) Are laboratory SOPs current and on file for each method performed?	X				

1 Items identified by the letter "R" should be included in the laboratory data package submitted to the TCEQ in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.

2 O = organic analyses; I = inorganic analyses (and general chemistry, when applicable).

3 NA = Not applicable.

4 NR = Not Reviewed.

5 ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Data Package Signature Page – RG-366/TRRP-13

This data package consists of:

This signature page, the laboratory review checklist, and the following reportable data:

R1 Field chain-of-custody documentation;
R2 Sample identification cross-reference;
R3 Test reports (analytical data sheets) for each environmental sample that includes:
  a) Items consistent with NELAC Chapter 5,
  b) dilution factors,
  c) preparation methods,
  d) cleanup methods, and
  e) if required for the project, tentatively identified compounds (TICs).
R4 Surrogate recovery data including:
  a) Calculated recovery (%R), and
  b) The laboratory's surrogate QC limits.
R5 Test reports/summary forms for blank samples;
R6 Test reports/summary forms for laboratory control samples (LCSs) including:
  a) LCS spiking amounts,
  b) Calculated %R for each analyte, and
  c) The laboratory's LCS QC limits.
R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
  a) Samples associated with the MS/MSD clearly identified,
  b) MS/MSD spiking amounts,
  c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
  d) Calculated %Rs and relative percent differences (RPDs), and
  e) The laboratory's MS/MSD QC limits
R8 Laboratory analytical duplicate (if applicable) recovery and precision:
  a) The amount of analyte measured in the duplicate,
  b) The calculated RPD, and
  c) The laboratory's QC limits for analytical duplicates.
R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix;
R10 Other problems or anomalies.

The Exception Report for each "No" or "Not Reviewed (NR)" item in the Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory is not accredited under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature below, I affirm to the best of my knowledge that all problems/anomalies observed by the laboratory have been identified in the Laboratory Review Checklist, and no information or data affecting the quality of the data has been knowingly withheld.

This laboratory was last inspected by TCEQ on February 23-26 2021. Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Name: John DuPont
Official Title: General Manager

Signature

11/1□/21
Date

Name: Dr. Derhsing Luu
Official Title: Technical Director

DHL Analytical, Inc. **Date:** *15-Nov-21*

CLIENT: Golder
Project: Luminant - A1 Landfill
Lab Order: 2110054

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Method SW6020B - Metals Analysis
Method SW7470A - Mercury Analysis
Method E300 - Anions Analysis
Method M2540C - TDS Analysis
Sub-contract - Radium-228 and Radium-226 analyses by methods E904 and SM 7500 Ra B M. Analyzed at Pace Analytical.

Exception Report R1-01

The samples were received and log-in performed on 10/8/21. A total of 13 samples were received. The samples arrived in good condition and were properly packaged.

Exception Report R7-03

For Anions analysis performed on 10/14/21 (batch 102404) the matrix spikes and matrix spike duplicate recoveries (2110054-05 MSD) was slightly below control limits for Sulfate. This is flagged accordingly in the QC summary report. The sample selected for the matrix spike and matrix spike duplicate (2110054-05 MSD) was from this work order. The LCS was within control limits for this analyte. No further corrective actions were taken.

For Anions analysis performed on 10/15/21 (batch 102421) the matrix spikes and matrix spike duplicate recoveries (2110054-13 MS/MSD & 2110118-01 MS/MSD) were slightly below control limits for Chloride. This is flagged accordingly. The sample selected for the matrix spike and matrix spike duplicate (2110054-13 MSD) was from this work order. The sample selected for the matrix spike and matrix spike duplicate (2110118-01 MS/MSD) was not from this work order. The LCS was within control limits for this analyte. No further corrective actions were taken.

For Metals analysis performed on 10/14/21 the matrix spike duplicate recovery was slightly below control limits for Calcium. This is flagged accordingly. The sample selected for the matrix spike and matrix spike duplicate was from this work order. The LCS was within control limits for this analyte. No further corrective actions were taken.

Exception Report S9-01

For Mercury analysis performed on 10/11/21 the PDS recovery was below control limits. This was due to matrix effect. This is flagged accordingly in the QC summary report. The serial dilution was within control limits. No further corrective actions were taken.

DHL Analytical, Inc.

Date: *15-Nov-21*

CLIENT: Golder
Project: Luminant - A1 Landfill
Lab Order: 2110054

Work Order Sample Summary

Lab Smp ID	Client Sample ID	Tag Number	Date Collected	Date Recved
2110054-01	BMW-33		10/07/21 12:00 PM	10/8/2021
2110054-02	BMW-28		10/07/21 10:45 AM	10/8/2021
2110054-03	DUP-1		10/07/21 10:45 AM	10/8/2021
2110054-04	BMW-18		10/07/21 09:25 AM	10/8/2021
2110054-05	BMW-19		10/07/21 08:15 AM	10/8/2021
2110054-06	BMW-11AR		10/06/21 04:55 PM	10/8/2021
2110054-07	BMW-27		10/06/21 03:40 PM	10/8/2021
2110054-08	BMW-26		10/06/21 02:40 PM	10/8/2021
2110054-09	BMW-21		10/06/21 01:35 PM	10/8/2021
2110054-10	BMW-20		10/06/21 12:35 PM	10/8/2021
2110054-11	BMW-22		10/06/21 11:25 AM	10/8/2021
2110054-12	BMW-23		10/06/21 10:20 AM	10/8/2021
2110054-13	BMW-24		10/06/21 09:15 AM	10/8/2021

Lab Order: 2110054
Client: Golder
Project: Luminant - A1 Landfill

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
2110054-01A	BMW-33	10/07/21 12:00 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/13/21 09:51 AM	102377
	BMW-33	10/07/21 12:00 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/13/21 09:51 AM	102377
	BMW-33	10/07/21 12:00 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/13/21 09:51 AM	102377
	BMW-33	10/07/21 12:00 PM	Aqueous	SW7470A	Mercury Aq Prep	10/08/21 12:16 PM	102333
2110054-01B	BMW-33	10/07/21 12:00 PM	Aqueous	E300	Anion Preparation	10/14/21 09:26 AM	102404
	BMW-33	10/07/21 12:00 PM	Aqueous	E300	Anion Preparation	10/14/21 09:26 AM	102404
	BMW-33	10/07/21 12:00 PM	Aqueous	M2540C	TDS Preparation	10/11/21 02:19 PM	102351
2110054-02A	BMW-28	10/07/21 10:45 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/13/21 09:51 AM	102377
	BMW-28	10/07/21 10:45 AM	Aqueous	SW7470A	Mercury Aq Prep	10/08/21 12:16 PM	102333
2110054-02B	BMW-28	10/07/21 10:45 AM	Aqueous	E300	Anion Preparation	10/14/21 09:26 AM	102404
	BMW-28	10/07/21 10:45 AM	Aqueous	E300	Anion Preparation	10/14/21 09:26 AM	102404
	BMW-28	10/07/21 10:45 AM	Aqueous	E300	Anion Preparation	10/14/21 09:26 AM	102404
	BMW-28	10/07/21 10:45 AM	Aqueous	M2540C	TDS Preparation	10/11/21 02:19 PM	102351
2110054-03A	DUP-1	10/07/21 10:45 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/13/21 09:51 AM	102377
	DUP-1	10/07/21 10:45 AM	Aqueous	SW7470A	Mercury Aq Prep	10/08/21 12:16 PM	102333
2110054-03B	DUP-1	10/07/21 10:45 AM	Aqueous	E300	Anion Preparation	10/14/21 09:26 AM	102404
	DUP-1	10/07/21 10:45 AM	Aqueous	E300	Anion Preparation	10/14/21 09:26 AM	102404
	DUP-1	10/07/21 10:45 AM	Aqueous	M2540C	TDS Preparation	10/11/21 02:19 PM	102351
	DUP-1	10/07/21 10:45 AM	Aqueous	M2540C	TDS Preparation	10/12/21 01:35 PM	102363
2110054-04A	BMW-18	10/07/21 09:25 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/13/21 09:51 AM	102377
	BMW-18	10/07/21 09:25 AM	Aqueous	SW7470A	Mercury Aq Prep	10/08/21 12:16 PM	102333
2110054-04B	BMW-18	10/07/21 09:25 AM	Aqueous	E300	Anion Preparation	10/14/21 09:26 AM	102404
	BMW-18	10/07/21 09:25 AM	Aqueous	M2540C	TDS Preparation	10/11/21 02:19 PM	102351
2110054-05A	BMW-19	10/07/21 08:15 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/13/21 09:51 AM	102377
	BMW-19	10/07/21 08:15 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/13/21 09:51 AM	102377
	BMW-19	10/07/21 08:15 AM	Aqueous	SW7470A	Mercury Aq Prep	10/08/21 12:16 PM	102333
2110054-05B	BMW-19	10/07/21 08:15 AM	Aqueous	E300	Anion Preparation	10/14/21 09:26 AM	102404
	BMW-19	10/07/21 08:15 AM	Aqueous	E300	Anion Preparation	10/14/21 09:26 AM	102404

Lab Order: 2110054
Client: Golder
Project: Luminant - A1 Landfill

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
2110054-05B	BMW-19	10/07/21 08:15 AM	Aqueous	M2540C	TDS Preparation	10/11/21 02:19 PM	102351
2110054-06A	BMW-11AR	10/06/21 04:55 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/13/21 09:51 AM	102377
	BMW-11AR	10/06/21 04:55 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/13/21 09:51 AM	102377
	BMW-11AR	10/06/21 04:55 PM	Aqueous	SW7470A	Mercury Aq Prep	10/08/21 12:16 PM	102333
2110054-06B	BMW-11AR	10/06/21 04:55 PM	Aqueous	E300	Anion Preparation	10/14/21 09:26 AM	102404
	BMW-11AR	10/06/21 04:55 PM	Aqueous	E300	Anion Preparation	10/14/21 09:26 AM	102404
	BMW-11AR	10/06/21 04:55 PM	Aqueous	M2540C	TDS Preparation	10/11/21 02:19 PM	102351
2110054-07A	BMW-27	10/06/21 03:40 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/13/21 09:51 AM	102377
	BMW-27	10/06/21 03:40 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/13/21 09:51 AM	102377
	BMW-27	10/06/21 03:40 PM	Aqueous	SW7470A	Mercury Aq Prep	10/08/21 12:16 PM	102333
2110054-07B	BMW-27	10/06/21 03:40 PM	Aqueous	E300	Anion Preparation	10/14/21 09:26 AM	102404
	BMW-27	10/06/21 03:40 PM	Aqueous	E300	Anion Preparation	10/14/21 09:26 AM	102404
	BMW-27	10/06/21 03:40 PM	Aqueous	M2540C	TDS Preparation	10/11/21 02:19 PM	102351
2110054-08A	BMW-26	10/06/21 02:40 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/13/21 09:51 AM	102377
	BMW-26	10/06/21 02:40 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/13/21 09:51 AM	102377
	BMW-26	10/06/21 02:40 PM	Aqueous	SW7470A	Mercury Aq Prep	10/08/21 12:16 PM	102333
	BMW-26	10/06/21 02:40 PM	Aqueous	SW7470A	Mercury Aq Prep	10/08/21 12:16 PM	102333
2110054-08B	BMW-26	10/06/21 02:40 PM	Aqueous	E300	Anion Preparation	10/14/21 09:26 AM	102404
	BMW-26	10/06/21 02:40 PM	Aqueous	E300	Anion Preparation	10/14/21 09:26 AM	102404
	BMW-26	10/06/21 02:40 PM	Aqueous	M2540C	TDS Preparation	10/11/21 02:19 PM	102351
2110054-09A	BMW-21	10/06/21 01:35 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/13/21 09:51 AM	102377
	BMW-21	10/06/21 01:35 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/13/21 09:51 AM	102377
	BMW-21	10/06/21 01:35 PM	Aqueous	SW7470A	Mercury Aq Prep	10/08/21 12:16 PM	102333
2110054-09B	BMW-21	10/06/21 01:35 PM	Aqueous	E300	Anion Preparation	10/14/21 09:26 AM	102404
	BMW-21	10/06/21 01:35 PM	Aqueous	E300	Anion Preparation	10/14/21 09:26 AM	102404
	BMW-21	10/06/21 01:35 PM	Aqueous	M2540C	TDS Preparation	10/11/21 02:19 PM	102351
2110054-10A	BMW-20	10/06/21 12:35 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/13/21 09:51 AM	102377
	BMW-20	10/06/21 12:35 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/13/21 09:51 AM	102377

Lab Order: 2110054
Client: Golder
Project: Luminant - A1 Landfill

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
2110054-10A	BMW-20	10/06/21 12:35 PM	Aqueous	SW7470A	Mercury Aq Prep	10/08/21 12:16 PM	102333
2110054-10B	BMW-20	10/06/21 12:35 PM	Aqueous	E300	Anion Preparation	10/14/21 09:26 AM	102404
	BMW-20	10/06/21 12:35 PM	Aqueous	E300	Anion Preparation	10/14/21 09:26 AM	102404
	BMW-20	10/06/21 12:35 PM	Aqueous	M2540C	TDS Preparation	10/11/21 02:19 PM	102351
2110054-11A	BMW-22	10/06/21 11:25 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/13/21 09:51 AM	102377
	BMW-22	10/06/21 11:25 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/13/21 09:51 AM	102377
	BMW-22	10/06/21 11:25 AM	Aqueous	SW7470A	Mercury Aq Prep	10/08/21 12:16 PM	102333
2110054-11B	BMW-22	10/06/21 11:25 AM	Aqueous	E300	Anion Preparation	10/14/21 09:26 AM	102404
	BMW-22	10/06/21 11:25 AM	Aqueous	E300	Anion Preparation	10/14/21 09:26 AM	102404
	BMW-22	10/06/21 11:25 AM	Aqueous	M2540C	TDS Preparation	10/11/21 02:19 PM	102351
2110054-12A	BMW-23	10/06/21 10:20 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/13/21 09:51 AM	102377
	BMW-23	10/06/21 10:20 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/13/21 09:51 AM	102377
	BMW-23	10/06/21 10:20 AM	Aqueous	SW7470A	Mercury Aq Prep	10/08/21 12:16 PM	102333
2110054-12B	BMW-23	10/06/21 10:20 AM	Aqueous	E300	Anion Preparation	10/14/21 09:26 AM	102404
	BMW-23	10/06/21 10:20 AM	Aqueous	E300	Anion Preparation	10/14/21 09:26 AM	102404
	BMW-23	10/06/21 10:20 AM	Aqueous	M2540C	TDS Preparation	10/11/21 02:19 PM	102351
2110054-13A	BMW-24	10/06/21 09:15 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/13/21 09:51 AM	102377
	BMW-24	10/06/21 09:15 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/13/21 09:51 AM	102377
	BMW-24	10/06/21 09:15 AM	Aqueous	SW7470A	Mercury Aq Prep	10/08/21 12:16 PM	102333
	BMW-24	10/06/21 09:15 AM	Aqueous	SW7470A	Mercury Aq Prep	10/08/21 12:16 PM	102333
2110054-13B	BMW-24	10/06/21 09:15 AM	Aqueous	E300	Anion Preparation	10/14/21 09:26 AM	102404
	BMW-24	10/06/21 09:15 AM	Aqueous	E300	Anion Preparation	10/14/21 09:26 AM	102404
	BMW-24	10/06/21 09:15 AM	Aqueous	E300	Anion Preparation	10/15/21 10:07 AM	102421
	BMW-24	10/06/21 09:15 AM	Aqueous	M2540C	TDS Preparation	10/11/21 02:19 PM	102351

Lab Order: 2110054
Client: Golder
Project: Luminant - A1 Landfill

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
2110054-01A	BMW-33	Aqueous	SW7470A	Mercury Total: Aqueous	102333	1	10/11/21 11:25 AM	CETAC2_HG_211011C
	BMW-33	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	102377	1	10/14/21 12:37 PM	ICP-MS4_211014C
	BMW-33	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	102377	10	10/14/21 01:37 PM	ICP-MS4_211014C
	BMW-33	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	102377	1	10/15/21 01:47 PM	ICP-MS5_211015B
2110054-01B	BMW-33	Aqueous	E300	Anions by IC method - Water	102404	10	10/14/21 05:45 PM	IC2_211014A
	BMW-33	Aqueous	E300	Anions by IC method - Water	102404	1	10/14/21 10:33 PM	IC2_211014A
	BMW-33	Aqueous	M2540C	Total Dissolved Solids	102351	1	10/11/21 04:45 PM	WC_211011A
2110054-02A	BMW-28	Aqueous	SW7470A	Mercury Total: Aqueous	102333	1	10/11/21 11:27 AM	CETAC2_HG_211011C
	BMW-28	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	102377	1	10/14/21 12:43 PM	ICP-MS4_211014C
2110054-02B	BMW-28	Aqueous	E300	Anions by IC method - Water	102404	100	10/14/21 04:09 PM	IC2_211014A
	BMW-28	Aqueous	E300	Anions by IC method - Water	102404	10	10/14/21 06:01 PM	IC2_211014A
	BMW-28	Aqueous	E300	Anions by IC method - Water	102404	1	10/14/21 10:49 PM	IC2_211014A
	BMW-28	Aqueous	M2540C	Total Dissolved Solids	102351	1	10/11/21 04:45 PM	WC_211011A
2110054-03A	DUP-1	Aqueous	SW7470A	Mercury Total: Aqueous	102333	1	10/11/21 11:30 AM	CETAC2_HG_211011C
	DUP-1	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	102377	1	10/14/21 12:45 PM	ICP-MS4_211014C
2110054-03B	DUP-1	Aqueous	E300	Anions by IC method - Water	102404	10	10/14/21 06:17 PM	IC2_211014A
	DUP-1	Aqueous	E300	Anions by IC method - Water	102404	1	10/14/21 11:05 PM	IC2_211014A
	DUP-1	Aqueous	M2540C	Total Dissolved Solids	102351	1	10/11/21 04:45 PM	WC_211011A
	DUP-1	Aqueous	M2540C	Total Dissolved Solids	102363	1	10/12/21 04:55 PM	WC_211012C
2110054-04A	BMW-18	Aqueous	SW7470A	Mercury Total: Aqueous	102333	1	10/11/21 11:32 AM	CETAC2_HG_211011C
	BMW-18	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	102377	1	10/14/21 12:47 PM	ICP-MS4_211014C
2110054-04B	BMW-18	Aqueous	E300	Anions by IC method - Water	102404	1	10/14/21 11:21 PM	IC2_211014A
	BMW-18	Aqueous	M2540C	Total Dissolved Solids	102351	1	10/11/21 04:45 PM	WC_211011A
2110054-05A	BMW-19	Aqueous	SW7470A	Mercury Total: Aqueous	102333	1	10/11/21 11:34 AM	CETAC2_HG_211011C
	BMW-19	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	102377	1	10/14/21 12:49 PM	ICP-MS4_211014C
	BMW-19	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	102377	50	10/14/21 01:41 PM	ICP-MS4_211014C

Lab Order: 2110054
Client: Golder
Project: Luminant - A1 Landfill

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
2110054-05B	BMW-19	Aqueous	E300	Anions by IC method - Water	102404	100	10/14/21 04:57 PM	IC2_211014A
	BMW-19	Aqueous	E300	Anions by IC method - Water	102404	1	10/15/21 12:41 AM	IC2_211014A
	BMW-19	Aqueous	M2540C	Total Dissolved Solids	102351	1	10/11/21 04:45 PM	WC_211011A
2110054-06A	BMW-11AR	Aqueous	SW7470A	Mercury Total: Aqueous	102333	1	10/11/21 11:36 AM	CETAC2_HG_211011C
	BMW-11AR	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	102377	1	10/14/21 12:51 PM	ICP-MS4_211014C
	BMW-11AR	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	102377	10	10/14/21 01:43 PM	ICP-MS4_211014C
2110054-06B	BMW-11AR	Aqueous	E300	Anions by IC method - Water	102404	10	10/14/21 06:33 PM	IC2_211014A
	BMW-11AR	Aqueous	E300	Anions by IC method - Water	102404	1	10/15/21 12:57 AM	IC2_211014A
	BMW-11AR	Aqueous	M2540C	Total Dissolved Solids	102351	1	10/11/21 04:45 PM	WC_211011A
2110054-07A	BMW-27	Aqueous	SW7470A	Mercury Total: Aqueous	102333	1	10/11/21 11:39 AM	CETAC2_HG_211011C
	BMW-27	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	102377	1	10/14/21 12:52 PM	ICP-MS4_211014C
	BMW-27	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	102377	20	10/14/21 01:45 PM	ICP-MS4_211014C
2110054-07B	BMW-27	Aqueous	E300	Anions by IC method - Water	102404	10	10/14/21 06:49 PM	IC2_211014A
	BMW-27	Aqueous	E300	Anions by IC method - Water	102404	1	10/15/21 01:13 AM	IC2_211014A
	BMW-27	Aqueous	M2540C	Total Dissolved Solids	102351	1	10/11/21 04:45 PM	WC_211011A
2110054-08A	BMW-26	Aqueous	SW7470A	Mercury Total: Aqueous	102333	1	10/11/21 11:57 AM	CETAC2_HG_211011C
	BMW-26	Aqueous	SW7470A	Mercury Total: Aqueous	102333	1	10/11/21 12:12 PM	CETAC2_HG_211011C
	BMW-26	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	102377	1	10/14/21 12:54 PM	ICP-MS4_211014C
	BMW-26	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	102377	20	10/14/21 01:47 PM	ICP-MS4_211014C
2110054-08B	BMW-26	Aqueous	E300	Anions by IC method - Water	102404	10	10/14/21 07:05 PM	IC2_211014A
	BMW-26	Aqueous	E300	Anions by IC method - Water	102404	1	10/15/21 01:29 AM	IC2_211014A
	BMW-26	Aqueous	M2540C	Total Dissolved Solids	102351	1	10/11/21 04:45 PM	WC_211011A
2110054-09A	BMW-21	Aqueous	SW7470A	Mercury Total: Aqueous	102333	1	10/11/21 12:00 PM	CETAC2_HG_211011C
	BMW-21	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	102377	1	10/14/21 12:56 PM	ICP-MS4_211014C
	BMW-21	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	102377	20	10/14/21 01:49 PM	ICP-MS4_211014C
2110054-09B	BMW-21	Aqueous	E300	Anions by IC method - Water	102404	1	10/15/21 01:45 AM	IC2_211014A

Lab Order: 2110054
Client: Golder
Project: Luminant - A1 Landfill

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
2110054-09B	BMW-21	Aqueous	E300	Anions by IC method - Water	102404	10	10/14/21 07:21 PM	IC2_211014A
	BMW-21	Aqueous	M2540C	Total Dissolved Solids	102351	1	10/11/21 04:45 PM	WC_211011A
2110054-10A	BMW-20	Aqueous	SW7470A	Mercury Total: Aqueous	102333	1	10/11/21 12:02 PM	CETAC2_HG_211011C
	BMW-20	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	102377	1	10/14/21 01:15 PM	ICP-MS4_211014C
	BMW-20	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	102377	20	10/14/21 01:51 PM	ICP-MS4_211014C
2110054-10B	BMW-20	Aqueous	E300	Anions by IC method - Water	102404	10	10/14/21 07:37 PM	IC2_211014A
	BMW-20	Aqueous	E300	Anions by IC method - Water	102404	1	10/15/21 02:01 AM	IC2_211014A
	BMW-20	Aqueous	M2540C	Total Dissolved Solids	102351	1	10/11/21 04:45 PM	WC_211011A
2110054-11A	BMW-22	Aqueous	SW7470A	Mercury Total: Aqueous	102333	1	10/11/21 12:04 PM	CETAC2_HG_211011C
	BMW-22	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	102377	1	10/14/21 01:17 PM	ICP-MS4_211014C
	BMW-22	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	102377	20	10/14/21 01:53 PM	ICP-MS4_211014C
2110054-11B	BMW-22	Aqueous	E300	Anions by IC method - Water	102404	10	10/14/21 08:57 PM	IC2_211014A
	BMW-22	Aqueous	E300	Anions by IC method - Water	102404	1	10/15/21 02:17 AM	IC2_211014A
	BMW-22	Aqueous	M2540C	Total Dissolved Solids	102351	1	10/11/21 04:45 PM	WC_211011A
2110054-12A	BMW-23	Aqueous	SW7470A	Mercury Total: Aqueous	102333	1	10/11/21 12:08 PM	CETAC2_HG_211011C
	BMW-23	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	102377	1	10/14/21 01:19 PM	ICP-MS4_211014C
	BMW-23	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	102377	10	10/14/21 01:55 PM	ICP-MS4_211014C
2110054-12B	BMW-23	Aqueous	E300	Anions by IC method - Water	102404	10	10/14/21 09:13 PM	IC2_211014A
	BMW-23	Aqueous	E300	Anions by IC method - Water	102404	1	10/15/21 02:33 AM	IC2_211014A
	BMW-23	Aqueous	M2540C	Total Dissolved Solids	102351	1	10/11/21 04:45 PM	WC_211011A
2110054-13A	BMW-24	Aqueous	SW7470A	Mercury Total: Aqueous	102333	1	10/11/21 12:10 PM	CETAC2_HG_211011C
	BMW-24	Aqueous	SW7470A	Mercury Total: Aqueous	102333	5	10/11/21 12:15 PM	CETAC2_HG_211011C
	BMW-24	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	102377	1	10/14/21 01:22 PM	ICP-MS4_211014C
	BMW-24	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	102377	10	10/14/21 01:57 PM	ICP-MS4_211014C
2110054-13B	BMW-24	Aqueous	E300	Anions by IC method - Water	102404	10	10/14/21 09:29 PM	IC2_211014A
	BMW-24	Aqueous	E300	Anions by IC method - Water	102404	1	10/15/21 02:49 AM	IC2_211014A

Lab Order: 2110054
Client: Golder
Project: Luminant - A1 Landfill

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
2110054-13B	BMW-24	Aqueous	E300	Anions by IC method - Water	102421	100	10/15/21 05:05 PM	IC4_211015A
	BMW-24	Aqueous	M2540C	Total Dissolved Solids	102351	1	10/11/21 04:45 PM	WC_211011A

DHL Analytical, Inc.

Date: *15-Nov-21*

CLIENT:	Golder	**Client Sample ID:**	BMW-33
Project:	Luminant - A1 Landfill	**Lab ID:**	2110054-01
Project No:	19122262	**Collection Date:**	10/07/21 12:00 PM
Lab Order:	2110054	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	10/14/21 12:37 PM
Arsenic	0.00247	0.00200	0.00500	J	mg/L	1	10/14/21 12:37 PM
Barium	0.130	0.00300	0.0100		mg/L	1	10/14/21 12:37 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	10/14/21 12:37 PM
Boron	0.179	0.0100	0.0300		mg/L	1	10/14/21 12:37 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	10/14/21 12:37 PM
Calcium	138	1.00	3.00		mg/L	10	10/14/21 01:37 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	10/14/21 12:37 PM
Cobalt	0.0115	0.00300	0.00500		mg/L	1	10/14/21 12:37 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	10/14/21 12:37 PM
Lithium	0.0126	0.00500	0.0100		mg/L	1	10/14/21 12:37 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	10/14/21 12:37 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	10/14/21 12:37 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	10/14/21 12:37 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **JVR**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	10/11/21 11:25 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **BM**
Chloride	67.8	3.00	10.0		mg/L	10	10/14/21 05:45 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	10/14/21 10:33 PM
Sulfate	188	10.0	30.0		mg/L	10	10/14/21 05:45 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	1040	50.0	50.0		mg/L	1	10/11/21 04:45 PM

Qualifiers:

ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *15-Nov-21*

CLIENT:	Golder	**Client Sample ID:**	BMW-28
Project:	Luminant - A1 Landfill	**Lab ID:**	2110054-02
Project No:	19122262	**Collection Date:**	10/07/21 10:45 AM
Lab Order:	2110054	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	10/14/21 12:43 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	10/14/21 12:43 PM
Barium	0.00461	0.00300	0.0100	J	mg/L	1	10/14/21 12:43 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	10/14/21 12:43 PM
Boron	0.104	0.0100	0.0300		mg/L	1	10/14/21 12:43 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	10/14/21 12:43 PM
Calcium	19.1	0.100	0.300		mg/L	1	10/14/21 12:43 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	10/14/21 12:43 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	10/14/21 12:43 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	10/14/21 12:43 PM
Lithium	0.00749	0.00500	0.0100	J	mg/L	1	10/14/21 12:43 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	10/14/21 12:43 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	10/14/21 12:43 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	10/14/21 12:43 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **JVR**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	10/11/21 11:27 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **BM**
Chloride	19.2	0.300	1.00		mg/L	1	10/14/21 10:49 PM
Fluoride	0.290	0.100	0.400	J	mg/L	1	10/14/21 10:49 PM
Sulfate	185	10.0	30.0		mg/L	10	10/14/21 06:01 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	402	10.0	10.0		mg/L	1	10/11/21 04:45 PM

Qualifiers:

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N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *15-Nov-21*

CLIENT:	Golder	**Client Sample ID:**	DUP-1
Project:	Luminant - A1 Landfill	**Lab ID:**	2110054-03
Project No:	19122262	**Collection Date:**	10/07/21 10:45 AM
Lab Order:	2110054	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	10/14/21 12:45 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	10/14/21 12:45 PM
Barium	0.00487	0.00300	0.0100	J	mg/L	1	10/14/21 12:45 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	10/14/21 12:45 PM
Boron	0.0993	0.0100	0.0300		mg/L	1	10/14/21 12:45 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	10/14/21 12:45 PM
Calcium	19.4	0.100	0.300		mg/L	1	10/14/21 12:45 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	10/14/21 12:45 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	10/14/21 12:45 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	10/14/21 12:45 PM
Lithium	0.00637	0.00500	0.0100	J	mg/L	1	10/14/21 12:45 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	10/14/21 12:45 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	10/14/21 12:45 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	10/14/21 12:45 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **JVR**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	10/11/21 11:30 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **BM**
Chloride	12.8	0.300	1.00		mg/L	1	10/14/21 11:05 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	10/14/21 11:05 PM
Sulfate	71.1	1.00	3.00		mg/L	1	10/14/21 11:05 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	175	10.0	10.0		mg/L	1	10/12/21 04:55 PM

Qualifiers:

ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
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See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *15-Nov-21*

CLIENT:	Golder	**Client Sample ID:**	BMW-18
Project:	Luminant - A1 Landfill	**Lab ID:**	2110054-04
Project No:	19122262	**Collection Date:**	10/07/21 09:25 AM
Lab Order:	2110054	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	10/14/21 12:47 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	10/14/21 12:47 PM
Barium	0.0295	0.00300	0.0100		mg/L	1	10/14/21 12:47 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	10/14/21 12:47 PM
Boron	0.388	0.0100	0.0300		mg/L	1	10/14/21 12:47 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	10/14/21 12:47 PM
Calcium	6.26	0.100	0.300		mg/L	1	10/14/21 12:47 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	10/14/21 12:47 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	10/14/21 12:47 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	10/14/21 12:47 PM
Lithium	0.0159	0.00500	0.0100		mg/L	1	10/14/21 12:47 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	10/14/21 12:47 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	10/14/21 12:47 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	10/14/21 12:47 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **JVR**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	10/11/21 11:32 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **BM**
Chloride	20.0	0.300	1.00		mg/L	1	10/14/21 11:21 PM
Fluoride	0.477	0.100	0.400		mg/L	1	10/14/21 11:21 PM
Sulfate	86.4	1.00	3.00		mg/L	1	10/14/21 11:21 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	467	10.0	10.0		mg/L	1	10/11/21 04:45 PM

Qualifiers:

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- S - Spike Recovery outside control limits
- C - Sample Result or QC discussed in Case Narrative
- RL - Reporting Limit (MQL adjusted for moisture and sample size)
- SDL - Sample Detection Limit
- E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *15-Nov-21*

CLIENT:	Golder	**Client Sample ID:**	BMW-19
Project:	Luminant - A1 Landfill	**Lab ID:**	2110054-05
Project No:	19122262	**Collection Date:**	10/07/21 08:15 AM
Lab Order:	2110054	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	10/14/21 12:49 PM
Arsenic	0.00341	0.00200	0.00500	J	mg/L	1	10/14/21 12:49 PM
Barium	0.0151	0.00300	0.0100		mg/L	1	10/14/21 12:49 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	10/14/21 12:49 PM
Boron	0.424	0.0100	0.0300		mg/L	1	10/14/21 12:49 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	10/14/21 12:49 PM
Calcium	466	5.00	15.0		mg/L	50	10/14/21 01:41 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	10/14/21 12:49 PM
Cobalt	0.0117	0.00300	0.00500		mg/L	1	10/14/21 12:49 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	10/14/21 12:49 PM
Lithium	0.0727	0.00500	0.0100		mg/L	1	10/14/21 12:49 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	10/14/21 12:49 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	10/14/21 12:49 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	10/14/21 12:49 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **JVR**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	10/11/21 11:34 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **BM**
Chloride	4.72	0.300	1.00		mg/L	1	10/15/21 12:41 AM
Fluoride	<0.100	0.100	0.400		mg/L	1	10/15/21 12:41 AM
Sulfate	1720	100	300		mg/L	100	10/14/21 04:57 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	3090	50.0	50.0		mg/L	1	10/11/21 04:45 PM

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S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *15-Nov-21*

CLIENT:	Golder	**Client Sample ID:**	BMW-11AR
Project:	Luminant - A1 Landfill	**Lab ID:**	2110054-06
Project No:	19122262	**Collection Date:**	10/06/21 04:55 PM
Lab Order:	2110054	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	10/14/21 12:51 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	10/14/21 12:51 PM
Barium	0.0511	0.00300	0.0100		mg/L	1	10/14/21 12:51 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	10/14/21 12:51 PM
Boron	0.318	0.0100	0.0300		mg/L	1	10/14/21 12:51 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	10/14/21 12:51 PM
Calcium	158	1.00	3.00		mg/L	10	10/14/21 01:43 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	10/14/21 12:51 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	10/14/21 12:51 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	10/14/21 12:51 PM
Lithium	0.0331	0.00500	0.0100		mg/L	1	10/14/21 12:51 PM
Molybdenum	0.00212	0.00200	0.00500	J	mg/L	1	10/14/21 12:51 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	10/14/21 12:51 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	10/14/21 12:51 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **JVR**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	10/11/21 11:36 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **BM**
Chloride	5.83	0.300	1.00		mg/L	1	10/15/21 12:57 AM
Fluoride	<0.100	0.100	0.400		mg/L	1	10/15/21 12:57 AM
Sulfate	334	10.0	30.0		mg/L	10	10/14/21 06:33 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	978	10.0	10.0		mg/L	1	10/11/21 04:45 PM

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S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *15-Nov-21*

CLIENT:	Golder	**Client Sample ID:**	BMW-27
Project:	Luminant - A1 Landfill	**Lab ID:**	2110054-07
Project No:	19122262	**Collection Date:**	10/06/21 03:40 PM
Lab Order:	2110054	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	10/14/21 12:52 PM
Arsenic	0.00384	0.00200	0.00500	J	mg/L	1	10/14/21 12:52 PM
Barium	0.0375	0.00300	0.0100		mg/L	1	10/14/21 12:52 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	10/14/21 12:52 PM
Boron	0.410	0.0100	0.0300		mg/L	1	10/14/21 12:52 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	10/14/21 12:52 PM
Calcium	231	2.00	6.00		mg/L	20	10/14/21 01:45 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	10/14/21 12:52 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	10/14/21 12:52 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	10/14/21 12:52 PM
Lithium	0.0883	0.00500	0.0100		mg/L	1	10/14/21 12:52 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	10/14/21 12:52 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	10/14/21 12:52 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	10/14/21 12:52 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **JVR**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	10/11/21 11:39 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **BM**
Chloride	125	3.00	10.0		mg/L	10	10/14/21 06:49 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	10/15/21 01:13 AM
Sulfate	666	10.0	30.0		mg/L	10	10/14/21 06:49 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	1920	50.0	50.0		mg/L	1	10/11/21 04:45 PM

Qualifiers:

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N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *15-Nov-21*

CLIENT:	Golder	**Client Sample ID:**	BMW-26
Project:	Luminant - A1 Landfill	**Lab ID:**	2110054-08
Project No:	19122262	**Collection Date:**	10/06/21 02:40 PM
Lab Order:	2110054	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	10/14/21 12:54 PM
Arsenic	0.00436	0.00200	0.00500	J	mg/L	1	10/14/21 12:54 PM
Barium	0.0297	0.00300	0.0100		mg/L	1	10/14/21 12:54 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	10/14/21 12:54 PM
Boron	0.440	0.0100	0.0300		mg/L	1	10/14/21 12:54 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	10/14/21 12:54 PM
Calcium	265	2.00	6.00		mg/L	20	10/14/21 01:47 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	10/14/21 12:54 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	10/14/21 12:54 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	10/14/21 12:54 PM
Lithium	0.105	0.00500	0.0100		mg/L	1	10/14/21 12:54 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	10/14/21 12:54 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	10/14/21 12:54 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	10/14/21 12:54 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **JVR**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	10/11/21 12:12 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **BM**
Chloride	142	3.00	10.0		mg/L	10	10/14/21 07:05 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	10/15/21 01:29 AM
Sulfate	769	10.0	30.0		mg/L	10	10/14/21 07:05 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	2230	50.0	50.0		mg/L	1	10/11/21 04:45 PM

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S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *15-Nov-21*

CLIENT:	Golder	**Client Sample ID:**	BMW-21
Project:	Luminant - A1 Landfill	**Lab ID:**	2110054-09
Project No:	19122262	**Collection Date:**	10/06/21 01:35 PM
Lab Order:	2110054	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	10/14/21 12:56 PM
Arsenic	0.00790	0.00200	0.00500		mg/L	1	10/14/21 12:56 PM
Barium	0.0394	0.00300	0.0100		mg/L	1	10/14/21 12:56 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	10/14/21 12:56 PM
Boron	0.938	0.0100	0.0300		mg/L	1	10/14/21 12:56 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	10/14/21 12:56 PM
Calcium	168	2.00	6.00		mg/L	20	10/14/21 01:49 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	10/14/21 12:56 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	10/14/21 12:56 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	10/14/21 12:56 PM
Lithium	0.0653	0.00500	0.0100		mg/L	1	10/14/21 12:56 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	10/14/21 12:56 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	10/14/21 12:56 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	10/14/21 12:56 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **JVR**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	10/11/21 12:00 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **BM**
Chloride	459	3.00	10.0		mg/L	10	10/14/21 07:21 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	10/15/21 01:45 AM
Sulfate	503	10.0	30.0		mg/L	10	10/14/21 07:21 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	2080	50.0	50.0		mg/L	1	10/11/21 04:45 PM

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SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *15-Nov-21*

CLIENT:	Golder	**Client Sample ID:**	BMW-20
Project:	Luminant - A1 Landfill	**Lab ID:**	2110054-10
Project No:	19122262	**Collection Date:**	10/06/21 12:35 PM
Lab Order:	2110054	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	10/14/21 01:15 PM
Arsenic	0.00439	0.00200	0.00500	J	mg/L	1	10/14/21 01:15 PM
Barium	0.0273	0.00300	0.0100		mg/L	1	10/14/21 01:15 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	10/14/21 01:15 PM
Boron	0.0998	0.0100	0.0300		mg/L	1	10/14/21 01:15 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	10/14/21 01:15 PM
Calcium	151	2.00	6.00		mg/L	20	10/14/21 01:51 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	10/14/21 01:15 PM
Cobalt	0.0963	0.00300	0.00500		mg/L	1	10/14/21 01:15 PM
Lead	0.000947	0.000300	0.00100	J	mg/L	1	10/14/21 01:15 PM
Lithium	0.00549	0.00500	0.0100	J	mg/L	1	10/14/21 01:15 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	10/14/21 01:15 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	10/14/21 01:15 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	10/14/21 01:15 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **JVR**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	10/11/21 12:02 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **BM**
Chloride	47.2	0.300	1.00		mg/L	1	10/15/21 02:01 AM
Fluoride	<0.100	0.100	0.400		mg/L	1	10/15/21 02:01 AM
Sulfate	1060	10.0	30.0		mg/L	10	10/14/21 07:37 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	1660	50.0	50.0		mg/L	1	10/11/21 04:45 PM

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RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
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DHL Analytical, Inc.

Date: *15-Nov-21*

CLIENT:	Golder	**Client Sample ID:**	BMW-22
Project:	Luminant - A1 Landfill	**Lab ID:**	2110054-11
Project No:	19122262	**Collection Date:**	10/06/21 11:25 AM
Lab Order:	2110054	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	10/14/21 01:17 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	10/14/21 01:17 PM
Barium	0.0576	0.00300	0.0100		mg/L	1	10/14/21 01:17 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	10/14/21 01:17 PM
Boron	3.19	0.200	0.600		mg/L	20	10/14/21 01:53 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	10/14/21 01:17 PM
Calcium	222	2.00	6.00		mg/L	20	10/14/21 01:53 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	10/14/21 01:17 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	10/14/21 01:17 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	10/14/21 01:17 PM
Lithium	0.0779	0.00500	0.0100		mg/L	1	10/14/21 01:17 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	10/14/21 01:17 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	10/14/21 01:17 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	10/14/21 01:17 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **JVR**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	10/11/21 12:04 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **BM**
Chloride	316	3.00	10.0		mg/L	10	10/14/21 08:57 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	10/15/21 02:17 AM
Sulfate	966	10.0	30.0		mg/L	10	10/14/21 08:57 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	2310	50.0	50.0		mg/L	1	10/11/21 04:45 PM

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- S - Spike Recovery outside control limits
- C - Sample Result or QC discussed in Case Narrative
- RL - Reporting Limit (MQL adjusted for moisture and sample size)
- SDL - Sample Detection Limit
- E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *15-Nov-21*

CLIENT:	Golder	**Client Sample ID:**	BMW-23
Project:	Luminant - A1 Landfill	**Lab ID:**	2110054-12
Project No:	19122262	**Collection Date:**	10/06/21 10:20 AM
Lab Order:	2110054	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	10/14/21 01:19 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	10/14/21 01:19 PM
Barium	0.0367	0.00300	0.0100		mg/L	1	10/14/21 01:19 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	10/14/21 01:19 PM
Boron	1.44	0.0100	0.0300		mg/L	1	10/14/21 01:19 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	10/14/21 01:19 PM
Calcium	100	1.00	3.00		mg/L	10	10/14/21 01:55 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	10/14/21 01:19 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	10/14/21 01:19 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	10/14/21 01:19 PM
Lithium	0.0827	0.00500	0.0100		mg/L	1	10/14/21 01:19 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	10/14/21 01:19 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	10/14/21 01:19 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	10/14/21 01:19 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **JVR**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	10/11/21 12:08 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **BM**
Chloride	279	3.00	10.0		mg/L	10	10/14/21 09:13 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	10/15/21 02:33 AM
Sulfate	517	10.0	30.0		mg/L	10	10/14/21 09:13 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	1670	50.0	50.0		mg/L	1	10/11/21 04:45 PM

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SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *15-Nov-21*

CLIENT:	Golder	**Client Sample ID:**	BMW-24
Project:	Luminant - A1 Landfill	**Lab ID:**	2110054-13
Project No:	19122262	**Collection Date:**	10/06/21 09:15 AM
Lab Order:	2110054	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	10/14/21 01:22 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	10/14/21 01:22 PM
Barium	1.60	0.00300	0.0100		mg/L	1	10/14/21 01:22 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	10/14/21 01:22 PM
Boron	0.212	0.0100	0.0300		mg/L	1	10/14/21 01:22 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	10/14/21 01:22 PM
Calcium	57.9	1.00	3.00		mg/L	10	10/14/21 01:57 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	10/14/21 01:22 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	10/14/21 01:22 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	10/14/21 01:22 PM
Lithium	0.00545	0.00500	0.0100	J	mg/L	1	10/14/21 01:22 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	10/14/21 01:22 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	10/14/21 01:22 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	10/14/21 01:22 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **JVR**
Mercury	<0.000400	0.000400	0.00100		mg/L	5	10/11/21 12:15 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **BM**
Chloride	474	30.0	100		mg/L	100	10/15/21 05:05 PM
Fluoride	0.312	0.100	0.400	J	mg/L	1	10/15/21 02:49 AM
Sulfate	6.72	1.00	3.00		mg/L	1	10/15/21 02:49 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	1020	50.0	50.0		mg/L	1	10/11/21 04:45 PM

Qualifiers:

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- B - Analyte detected in the associated Method Blank
- DF- Dilution Factor
- N - Parameter not NELAP certified
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- S - Spike Recovery outside control limits
- C - Sample Result or QC discussed in Case Narrative
- RL - Reporting Limit (MQL adjusted for moisture and sample size)
- SDL - Sample Detection Limit
- E - TPH pattern not Gas or Diesel Range Pattern

CLIENT: Golder
Work Order: 2110054
Project: Luminant - A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_210728C

Sample ID: **DCS-101411**	Batch ID: **101411**	TestNo: **SW7470A**	Units: **mg/L**		
SampType: **DCS**	Run ID: **CETAC2_HG_210728C**	Analysis Date: **7/28/2021 1:24:11 PM**	Prep Date: **7/27/2021**		

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.000189	0.000200	0.000200	0	94.5	82	119	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2110054
Project: Luminant - A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_211011C

The QC data in batch 102333 applies to the following samples: 2110054-01A, 2110054-02A, 2110054-03A, 2110054-04A, 2110054-05A, 2110054-06A, 2110054-07A, 2110054-08A, 2110054-09A, 2110054-10A, 2110054-11A, 2110054-12A, 2110054-13A

Sample ID: **MB-102333**	Batch ID: **102333**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **MBLK**	Run ID: **CETAC2_HG_211011C**	Analysis Date: **10/11/2021 11:18:43 A**	Prep Date: **10/8/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.0000800	0.000200								

Sample ID: **LCS-102333**	Batch ID: **102333**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **LCS**	Run ID: **CETAC2_HG_211011C**	Analysis Date: **10/11/2021 11:20:59 A**	Prep Date: **10/8/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00199	0.000200	0.00200	0	99.5	85	115			

Sample ID: **LCSD-102333**	Batch ID: **102333**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **LCSD**	Run ID: **CETAC2_HG_211011C**	Analysis Date: **10/11/2021 11:23:16 A**	Prep Date: **10/8/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00205	0.000200	0.00200	0	103	85	115	2.97	15	

Sample ID: **2110054-07A SD**	Batch ID: **102333**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **SD**	Run ID: **CETAC2_HG_211011C**	Analysis Date: **10/11/2021 11:53:22 A**	Prep Date: **10/8/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.000400	0.00100	0	0				0	10	

Sample ID: **2110054-07A PDS**	Batch ID: **102333**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **PDS**	Run ID: **CETAC2_HG_211011C**	Analysis Date: **10/11/2021 11:55:40 A**	Prep Date: **10/8/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00187	0.000200	0.00250	0	74.8	85	115			S

Sample ID: **2110054-07A MS**	Batch ID: **102333**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **MS**	Run ID: **CETAC2_HG_211011C**	Analysis Date: **10/11/2021 12:18:08 P**	Prep Date: **10/8/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00190	0.00100	0.00200	0	94.8	80	120			

Sample ID: **2110054-07A MSD**	Batch ID: **102333**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **MSD**	Run ID: **CETAC2_HG_211011C**	Analysis Date: **10/11/2021 12:20:26 P**	Prep Date: **10/8/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00187	0.00100	0.00200	0	93.5	80	120	1.33	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2110054
Project: Luminant - A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_211011C

Sample ID: **ICV-211011**	Batch ID: **R117461**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **ICV**	Run ID: **CETAC2_HG_211011C**	Analysis Date: **10/11/2021 10:06:01 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00403	0.000200	0.00400	0	101	90	110			

Sample ID: **CCV1-211011**	Batch ID: **R117461**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_211011C**	Analysis Date: **10/11/2021 11:07:18 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00202	0.000200	0.00200	0	101	90	110			

Sample ID: **CCV2-211011**	Batch ID: **R117461**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_211011C**	Analysis Date: **10/11/2021 11:41:33 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00202	0.000200	0.00200	0	101	90	110			

Sample ID: **CCV3-211011**	Batch ID: **R117461**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_211011C**	Analysis Date: **10/11/2021 12:22:44 P**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00200	0.000200	0.00200	0	100	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2110054
Project: Luminant - A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_210803A

Sample ID: **DCS1-101483**	Batch ID: **101483**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS**	Run ID: **ICP-MS4_210803A**	Analysis Date: **8/3/2021 1:18:00 PM**	Prep Date: **8/2/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00114	0.00250	0.00100	0	114	70	130	0	0	
Beryllium	0.000608	0.00100	0.000500	0	122	70	130	0	0	
Cadmium	0.000587	0.00100	0.000500	0	117	70	130	0	0	
Lead	0.000537	0.00100	0.000500	0	107	70	130	0	0	
Thallium	0.000524	0.00150	0.000500	0	105	70	130	0	0	

Sample ID: **DCS2-101483**	Batch ID: **101483**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS2**	Run ID: **ICP-MS4_210803A**	Analysis Date: **8/3/2021 1:21:00 PM**	Prep Date: **8/2/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.278	0.300	0.300	0	92.6	70	130	0	0	

Sample ID: **DCS3-101483**	Batch ID: **101483**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS3**	Run ID: **ICP-MS4_210803A**	Analysis Date: **8/3/2021 1:24:00 PM**	Prep Date: **8/2/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.00522	0.00500	0.00500	0	104	70	130	0	0	
Barium	0.00522	0.0100	0.00500	0	104	70	130	0	0	
Chromium	0.00527	0.00500	0.00500	0	105	70	130	0	0	
Cobalt	0.00534	0.00500	0.00500	0	107	70	130	0	0	
Lithium	0.00475	0.0100	0.00500	0	95.0	70	130	0	0	
Molybdenum	0.00509	0.00500	0.00500	0	102	70	130	0	0	
Selenium	0.00500	0.00500	0.00500	0	100	70	130	0	0	

Sample ID: **DCS4-101483**	Batch ID: **101483**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS4**	Run ID: **ICP-MS4_210803A**	Analysis Date: **8/3/2021 1:27:00 PM**	Prep Date: **8/2/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0315	0.0300	0.0300	0	105	70	130	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2110054
Project: Luminant - A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: **ICP-MS4_211014C**

The QC data in batch 102377 applies to the following samples: 2110054-01A, 2110054-02A, 2110054-03A, 2110054-04A, 2110054-05A, 2110054-06A, 2110054-07A, 2110054-08A, 2110054-09A, 2110054-10A, 2110054-11A, 2110054-12A, 2110054-13A

Sample ID: **MB-102377** Batch ID: **102377** TestNo: **SW6020B** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_211014C** Analysis Date: **10/14/2021 12:29:00 P** Prep Date: **10/13/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.000800	0.00250								
Arsenic	<0.00200	0.00500								
Barium	<0.00300	0.0100								
Beryllium	<0.000300	0.00100								
Boron	<0.0100	0.0300								
Cadmium	<0.000300	0.00100								
Calcium	<0.100	0.300								
Chromium	<0.00200	0.00500								
Cobalt	<0.00300	0.00500								
Lead	<0.000300	0.00100								
Lithium	<0.00500	0.0100								
Molybdenum	<0.00200	0.00500								
Selenium	<0.00200	0.00500								
Thallium	<0.000500	0.00150								

Sample ID: **LCS-102377** Batch ID: **102377** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_211014C** Analysis Date: **10/14/2021 12:31:00 P** Prep Date: **10/13/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.189	0.00250	0.200	0	94.5	80	120			
Arsenic	0.196	0.00500	0.200	0	97.9	80	120			
Barium	0.194	0.0100	0.200	0	96.8	80	120			
Beryllium	0.190	0.00100	0.200	0	95.1	80	120			
Boron	0.183	0.0300	0.200	0	91.3	80	120			
Cadmium	0.194	0.00100	0.200	0	96.9	80	120			
Calcium	5.20	0.300	5.00	0	104	80	120			
Chromium	0.195	0.00500	0.200	0	97.7	80	120			
Cobalt	0.189	0.00500	0.200	0	94.3	80	120			
Lead	0.190	0.00100	0.200	0	95.1	80	120			
Lithium	0.195	0.0100	0.200	0	97.6	80	120			
Molybdenum	0.190	0.00500	0.200	0	95.2	80	120			
Selenium	0.194	0.00500	0.200	0	97.2	80	120			
Thallium	0.191	0.00150	0.200	0	95.7	80	120			

Sample ID: **LCSD-102377** Batch ID: **102377** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_211014C** Analysis Date: **10/14/2021 12:33:00 P** Prep Date: **10/13/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.190	0.00250	0.200	0	95.2	80	120	0.803	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2110054
Project: Luminant - A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_211014C

Sample ID: **LCSD-102377** Batch ID: **102377** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_211014C** Analysis Date: **10/14/2021 12:33:00 P** Prep Date: **10/13/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.201	0.00500	0.200	0	100	80	120	2.50	15	
Barium	0.196	0.0100	0.200	0	98.2	80	120	1.45	15	
Beryllium	0.196	0.00100	0.200	0	98.0	80	120	3.10	15	
Boron	0.194	0.0300	0.200	0	97.2	80	120	6.27	15	
Cadmium	0.199	0.00100	0.200	0	99.3	80	120	2.43	15	
Calcium	5.28	0.300	5.00	0	106	80	120	1.59	15	
Chromium	0.199	0.00500	0.200	0	99.6	80	120	1.97	15	
Cobalt	0.195	0.00500	0.200	0	97.7	80	120	3.55	15	
Lead	0.196	0.00100	0.200	0	98.0	80	120	2.98	15	
Lithium	0.192	0.0100	0.200	0	95.8	80	120	1.88	15	
Molybdenum	0.194	0.00500	0.200	0	97.2	80	120	2.10	15	
Selenium	0.192	0.00500	0.200	0	96.2	80	120	1.01	15	
Thallium	0.198	0.00150	0.200	0	99.1	80	120	3.49	15	

Sample ID: **2110054-01A SD** Batch ID: **102377** TestNo: **SW6020B** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS4_211014C** Analysis Date: **10/14/2021 12:39:00 P** Prep Date: **10/13/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.00400	0.0125	0	0				0	20	
Arsenic	<0.0100	0.0250	0	0.00247				0	20	
Barium	0.131	0.0500	0	0.130				1.16	20	
Beryllium	<0.00150	0.00500	0	0				0	20	
Boron	0.188	0.150	0	0.179				4.74	20	
Cadmium	<0.00150	0.00500	0	0				0	20	
Chromium	<0.0100	0.0250	0	0				0	20	
Cobalt	<0.0150	0.0250	0	0.0115				0	20	
Lead	<0.00150	0.00500	0	0				0	20	
Lithium	<0.0250	0.0500	0	0.0126				0	20	
Molybdenum	<0.0100	0.0250	0	0				0	20	
Selenium	<0.0100	0.0250	0	0				0	20	
Thallium	<0.00250	0.00750	0	0				0	20	

Sample ID: **2110054-01A PDS** Batch ID: **102377** TestNo: **SW6020B** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS4_211014C** Analysis Date: **10/14/2021 12:58:00 P** Prep Date: **10/13/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.198	0.00250	0.200	0	99.1	75	125			
Arsenic	0.196	0.00500	0.200	0.00247	96.7	75	125			
Barium	0.322	0.0100	0.200	0.130	96.2	75	125			
Beryllium	0.192	0.00100	0.200	0	96.2	75	125			
Boron	0.372	0.0300	0.200	0.179	96.5	75	125			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2110054
Project: Luminant - A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_211014C

Sample ID: **2110054-01A PDS** Batch ID: **102377** TestNo: **SW6020B** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS4_211014C** Analysis Date: **10/14/2021 12:58:00 P** Prep Date: **10/13/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cadmium	0.194	0.00100	0.200	0	97.1	75	125			
Chromium	0.199	0.00500	0.200	0	99.7	75	125			
Cobalt	0.196	0.00500	0.200	0.0115	92.1	75	125			
Lead	0.205	0.00100	0.200	0	103	75	125			
Lithium	0.200	0.0100	0.200	0.0126	93.6	75	125			
Molybdenum	0.198	0.00500	0.200	0	99.0	75	125			
Selenium	0.189	0.00500	0.200	0	94.6	75	125			
Thallium	0.206	0.00150	0.200	0	103	75	125			

Sample ID: **2110054-01A MS** Batch ID: **102377** TestNo: **SW6020B** Units: **mg/L**
SampType: **MS** Run ID: **ICP-MS4_211014C** Analysis Date: **10/14/2021 1:00:00 PM** Prep Date: **10/13/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.198	0.00250	0.200	0	98.9	75	125			
Arsenic	0.204	0.00500	0.200	0.00247	101	75	125			
Barium	0.335	0.0100	0.200	0.130	103	75	125			
Beryllium	0.197	0.00100	0.200	0	98.6	75	125			
Boron	0.381	0.0300	0.200	0.179	101	75	125			
Cadmium	0.195	0.00100	0.200	0	97.3	75	125			
Calcium	140	0.300	5.00	135	95.1	75	125			
Chromium	0.197	0.00500	0.200	0	98.4	75	125			
Cobalt	0.200	0.00500	0.200	0.0115	94.2	75	125			
Lead	0.206	0.00100	0.200	0	103	75	125			
Lithium	0.211	0.0100	0.200	0.0126	99.3	75	125			
Molybdenum	0.204	0.00500	0.200	0	102	75	125			
Selenium	0.197	0.00500	0.200	0	98.4	75	125			
Thallium	0.209	0.00150	0.200	0	105	75	125			

Sample ID: **2110054-01A MSD** Batch ID: **102377** TestNo: **SW6020B** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS4_211014C** Analysis Date: **10/14/2021 1:02:00 PM** Prep Date: **10/13/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.199	0.00250	0.200	0	99.4	75	125	0.442	15	
Arsenic	0.201	0.00500	0.200	0.00247	99.2	75	125	1.65	15	
Barium	0.333	0.0100	0.200	0.130	102	75	125	0.520	15	
Beryllium	0.196	0.00100	0.200	0	98.2	75	125	0.402	15	
Boron	0.377	0.0300	0.200	0.179	99.0	75	125	1.06	15	
Cadmium	0.195	0.00100	0.200	0	97.6	75	125	0.307	15	
Calcium	139	0.300	5.00	135	72.9	75	125	0.796	15	S
Chromium	0.199	0.00500	0.200	0	99.4	75	125	0.999	15	
Cobalt	0.198	0.00500	0.200	0.0115	93.1	75	125	1.13	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2110054
Project: Luminant - A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_211014C

Sample ID: **2110054-01A MSD**	Batch ID: **102377**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS4_211014C**	Analysis Date: **10/14/2021 1:02:00 PM**	Prep Date: **10/13/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.204	0.00100	0.200	0	102	75	125	0.947	15	
Lithium	0.204	0.0100	0.200	0.0126	95.9	75	125	3.19	15	
Molybdenum	0.204	0.00500	0.200	0	102	75	125	0.015	15	
Selenium	0.190	0.00500	0.200	0	94.8	75	125	3.64	15	
Thallium	0.207	0.00150	0.200	0	103	75	125	1.17	15	

Sample ID: **2110054-01A SD**	Batch ID: **102377**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS4_211014C**	Analysis Date: **10/14/2021 1:39:00 PM**	Prep Date: **10/13/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	141	15.0	0	138				1.75	20	

Sample ID: **2110054-01A PDS**	Batch ID: **102377**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_211014C**	Analysis Date: **10/14/2021 1:59:00 PM**	Prep Date: **10/13/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	190	3.00	50.0	138	104	75	125			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2110054
Project: Luminant - A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_211014C

Sample ID: **ICV-211014** Batch ID: **R117521** TestNo: **SW6020B** Units: **mg/L**
SampType: **ICV** Run ID: **ICP-MS4_211014C** Analysis Date: **10/14/2021 12:14:00 P** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.0986	0.00250	0.100	0	98.6	90	110			
Arsenic	0.0987	0.00500	0.100	0	98.7	90	110			
Barium	0.101	0.0100	0.100	0	101	90	110			
Beryllium	0.0971	0.00100	0.100	0	97.1	90	110			
Boron	0.102	0.0300	0.100	0	102	90	110			
Cadmium	0.0993	0.00100	0.100	0	99.3	90	110			
Calcium	2.67	0.300	2.50	0	107	90	110			
Chromium	0.102	0.00500	0.100	0	102	90	110			
Cobalt	0.0969	0.00500	0.100	0	96.9	90	110			
Lead	0.103	0.00100	0.100	0	103	90	110			
Lithium	0.0986	0.0100	0.100	0	98.6	90	110			
Molybdenum	0.0965	0.00500	0.100	0	96.5	90	110			
Selenium	0.0979	0.00500	0.100	0	97.9	90	110			
Thallium	0.102	0.00150	0.100	0	102	90	110			

Sample ID: **LCVL-211014** Batch ID: **R117521** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_211014C** Analysis Date: **10/14/2021 12:22:00 P** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00204	0.00250	0.00200	0	102	80	120			
Arsenic	0.00504	0.00500	0.00500	0	101	80	120			
Barium	0.00505	0.0100	0.00500	0	101	80	120			
Beryllium	0.00104	0.00100	0.00100	0	104	80	120			
Boron	0.0228	0.0300	0.0200	0	114	80	120			
Cadmium	0.00112	0.00100	0.00100	0	112	80	120			
Calcium	0.0850	0.300	0.100	0	85.0	80	120			
Chromium	0.00521	0.00500	0.00500	0	104	80	120			
Cobalt	0.00487	0.00500	0.00500	0	97.4	80	120			
Lead	0.00107	0.00100	0.00100	0	107	80	120			
Lithium	0.0120	0.0100	0.0100	0	120	80	120			
Molybdenum	0.00503	0.00500	0.00500	0	101	80	120			
Selenium	0.00419	0.00500	0.00500	0	83.8	80	120			
Thallium	0.00106	0.00150	0.00100	0	106	80	120			

Sample ID: **CCV1-211014** Batch ID: **R117521** TestNo: **SW6020B** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_211014C** Analysis Date: **10/14/2021 1:04:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.199	0.00250	0.200	0	99.6	90	110			
Arsenic	0.201	0.00500	0.200	0	101	90	110			
Barium	0.200	0.0100	0.200	0	100	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2110054
Project: Luminant - A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_211014C

Sample ID: **CCV1-211014**	Batch ID: **R117521**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_211014C**	Analysis Date: **10/14/2021 1:04:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.203	0.00100	0.200	0	102	90	110			
Boron	0.210	0.0300	0.200	0	105	90	110			
Cadmium	0.199	0.00100	0.200	0	99.5	90	110			
Calcium	5.34	0.300	5.00	0	107	90	110			
Chromium	0.204	0.00500	0.200	0	102	90	110			
Cobalt	0.197	0.00500	0.200	0	98.3	90	110			
Lead	0.205	0.00100	0.200	0	103	90	110			
Lithium	0.209	0.0100	0.200	0	105	90	110			
Molybdenum	0.199	0.00500	0.200	0	99.3	90	110			
Selenium	0.198	0.00500	0.200	0	98.9	90	110			
Thallium	0.206	0.00150	0.200	0	103	90	110			

Sample ID: **CCV2-211014**	Batch ID: **R117521**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_211014C**	Analysis Date: **10/14/2021 1:33:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.198	0.00250	0.200	0	98.9	90	110			
Arsenic	0.199	0.00500	0.200	0	99.5	90	110			
Barium	0.201	0.0100	0.200	0	101	90	110			
Beryllium	0.205	0.00100	0.200	0	103	90	110			
Boron	0.214	0.0300	0.200	0	107	90	110			
Cadmium	0.200	0.00100	0.200	0	99.8	90	110			
Calcium	5.18	0.300	5.00	0	104	90	110			
Chromium	0.203	0.00500	0.200	0	101	90	110			
Cobalt	0.196	0.00500	0.200	0	98.2	90	110			
Lead	0.202	0.00100	0.200	0	101	90	110			
Lithium	0.208	0.0100	0.200	0	104	90	110			
Molybdenum	0.198	0.00500	0.200	0	99.0	90	110			
Selenium	0.199	0.00500	0.200	0	99.6	90	110			
Thallium	0.203	0.00150	0.200	0	102	90	110			

Sample ID: **CCV3-211014**	Batch ID: **R117521**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_211014C**	Analysis Date: **10/14/2021 2:01:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.206	0.0300	0.200	0	103	90	110			
Calcium	5.24	0.300	5.00	0	105	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2110054
Project: Luminant - A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_210928A

Sample ID: **DCS2-102216** Batch ID: **102216** TestNo: **E300** Units: **mg/L**
SampType: **DCS2** Run ID: **IC2_210928A** Analysis Date: **9/28/2021 1:38:01 PM** Prep Date: **9/28/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	0.533	1.00	0.5000	0	107	70	130	0	0	
Fluoride	0.179	0.400	0.2000	0	89.5	70	130	0	0	
Sulfate	1.55	3.00	1.500	0	104	70	130	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2110054
Project: Luminant - A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_211014A

The QC data in batch 102404 applies to the following samples: 2110054-01B, 2110054-02B, 2110054-03B, 2110054-04B, 2110054-05B, 2110054-06B, 2110054-07B, 2110054-08B, 2110054-09B, 2110054-10B, 2110054-11B, 2110054-12B, 2110054-13B

Sample ID: **MB-102404** Batch ID: **102404** TestNo: **E300** Units: **mg/L**
SampType: **MBLK** Run ID: **IC2_211014A** Analysis Date: **10/14/2021 11:28:49 A** Prep Date: **10/14/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00								
Fluoride	<0.100	0.400								
Sulfate	<1.00	3.00								

Sample ID: **LCS-102404** Batch ID: **102404** TestNo: **E300** Units: **mg/L**
SampType: **LCS** Run ID: **IC2_211014A** Analysis Date: **10/14/2021 11:44:49 A** Prep Date: **10/14/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.1	1.00	10.00	0	101	90	110			
Fluoride	4.04	0.400	4.000	0	101	90	110			
Sulfate	31.1	3.00	30.00	0	104	90	110			

Sample ID: **LCSD-102404** Batch ID: **102404** TestNo: **E300** Units: **mg/L**
SampType: **LCSD** Run ID: **IC2_211014A** Analysis Date: **10/14/2021 12:00:49 P** Prep Date: **10/14/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.0	1.00	10.00	0	100	90	110	0.918	20	
Fluoride	4.00	0.400	4.000	0	99.9	90	110	1.09	20	
Sulfate	30.8	3.00	30.00	0	103	90	110	1.13	20	

Sample ID: **2110054-02BMS** Batch ID: **102404** TestNo: **E300** Units: **mg/L**
SampType: **MS** Run ID: **IC2_211014A** Analysis Date: **10/14/2021 4:25:35 PM** Prep Date: **10/14/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	1950	100	2000	0	97.7	90	110			
Fluoride	2040	40.0	2000	0	102	90	110			
Sulfate	2010	300	2000	200.8	90.3	90	110			

Sample ID: **2110054-02BMSD** Batch ID: **102404** TestNo: **E300** Units: **mg/L**
SampType: **MSD** Run ID: **IC2_211014A** Analysis Date: **10/14/2021 4:41:35 PM** Prep Date: **10/14/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	1950	100	2000	0	97.5	90	110	0.198	20	
Fluoride	2040	40.0	2000	0	102	90	110	0.041	20	
Sulfate	2000	300	2000	200.8	90.2	90	110	0.110	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2110054
Project: Luminant - A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_211014A

Sample ID: **2110054-05BMS**	Batch ID: **102404**	TestNo: **E300**	Units: **mg/L**
SampType: **MS**	Run ID: **IC2_211014A**	Analysis Date: **10/14/2021 5:13:35 PM**	Prep Date: **10/14/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	1890	100	2000	0	94.7	90	110			
Fluoride	2030	40.0	2000	0	102	90	110			
Sulfate	3510	300	2000	1718	89.7	90	110			

Sample ID: **2110054-05BMSD**	Batch ID: **102404**	TestNo: **E300**	Units: **mg/L**
SampType: **MSD**	Run ID: **IC2_211014A**	Analysis Date: **10/14/2021 5:29:35 PM**	Prep Date: **10/14/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	1890	100	2000	0	94.3	90	110	0.362	20	
Fluoride	2030	40.0	2000	0	101	90	110	0.169	20	
Sulfate	3510	300	2000	1718	89.3	90	110	0.212	20	S

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2110054
Project: Luminant - A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_211014A

Sample ID: **ICV-211014**	Batch ID: **R117522**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC2_211014A**	Analysis Date: **10/14/2021 10:56:49 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	26.0	1.00	25.00	0	104	90	110			
Fluoride	10.5	0.400	10.00	0	105	90	110			
Sulfate	80.5	3.00	75.00	0	107	90	110			

Sample ID: **CCV1-211014**	Batch ID: **R117522**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_211014A**	Analysis Date: **10/14/2021 8:25:35 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.3	1.00	10.00	0	103	90	110			
Fluoride	4.12	0.400	4.000	0	103	90	110			
Sulfate	31.5	3.00	30.00	0	105	90	110			

Sample ID: **CCV2-211014**	Batch ID: **R117522**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_211014A**	Analysis Date: **10/15/2021 12:09:35 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.2	1.00	10.00	0	102	90	110			
Fluoride	4.09	0.400	4.000	0	102	90	110			
Sulfate	31.1	3.00	30.00	0	104	90	110			

Sample ID: **CCV3-211014**	Batch ID: **R117522**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_211014A**	Analysis Date: **10/15/2021 3:53:35 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.3	1.00	10.00	0	103	90	110			
Fluoride	4.14	0.400	4.000	0	103	90	110			
Sulfate	31.7	3.00	30.00	0	106	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2110054
Project: Luminant - A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_210930A

Sample ID: **DCS2-102243** Batch ID: **102243** TestNo: **E300** Units: **mg/L**
SampType: **DCS2** Run ID: **IC4_210930A** Analysis Date: **9/30/2021 4:11:30 PM** Prep Date: **9/30/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	0.505	1.00	0.5000	0	101	70	130	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2110054
Project: Luminant - A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: **IC4_211015A**

The QC data in batch 102421 applies to the following samples: 2110054-13B

Sample ID: **MB-102421**	Batch ID: **102421**	TestNo: **E300**	Units: **mg/L**
SampType: **MBLK**	Run ID: **IC4_211015A**	Analysis Date: **10/15/2021 12:34:47 P**	Prep Date: **10/15/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00								

Sample ID: **LCS-102421**	Batch ID: **102421**	TestNo: **E300**	Units: **mg/L**
SampType: **LCS**	Run ID: **IC4_211015A**	Analysis Date: **10/15/2021 12:53:47 P**	Prep Date: **10/15/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.43	1.00	10.00	0	94.3	90	110			

Sample ID: **LCSD-102421**	Batch ID: **102421**	TestNo: **E300**	Units: **mg/L**
SampType: **LCSD**	Run ID: **IC4_211015A**	Analysis Date: **10/15/2021 1:12:47 PM**	Prep Date: **10/15/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.41	1.00	10.00	0	94.1	90	110	0.263	20	

Sample ID: **2110054-13BMS**	Batch ID: **102421**	TestNo: **E300**	Units: **mg/L**
SampType: **MS**	Run ID: **IC4_211015A**	Analysis Date: **10/15/2021 5:24:28 PM**	Prep Date: **10/15/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	2200	100	2000	473.7	86.3	90	110			S

Sample ID: **2110054-13BMSD**	Batch ID: **102421**	TestNo: **E300**	Units: **mg/L**
SampType: **MSD**	Run ID: **IC4_211015A**	Analysis Date: **10/15/2021 5:43:28 PM**	Prep Date: **10/15/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	2200	100	2000	473.7	86.5	90	110	0.126	20	S

Sample ID: **2110118-01AMS**	Batch ID: **102421**	TestNo: **E300**	Units: **mg/L**
SampType: **MS**	Run ID: **IC4_211015A**	Analysis Date: **10/15/2021 10:28:27 P**	Prep Date: **10/15/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	196	10.0	200.0	25.21	85.3	90	110			S

Sample ID: **2110118-01AMSD**	Batch ID: **102421**	TestNo: **E300**	Units: **mg/L**
SampType: **MSD**	Run ID: **IC4_211015A**	Analysis Date: **10/15/2021 10:47:27 P**	Prep Date: **10/15/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	198	10.0	200.0	25.21	86.6	90	110	1.37	20	S

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2110054
Project: Luminant - A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_211015A

Sample ID: **ICV-211015**	Batch ID: **R117538**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC4_211015A**	Analysis Date: **10/15/2021 11:56:47 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	24.2	1.00	25.00	0	96.6	90	110			

Sample ID: **CCV1-211015**	Batch ID: **R117538**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC4_211015A**	Analysis Date: **10/15/2021 8:34:28 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.45	1.00	10.00	0	94.5	90	110			

Sample ID: **CCV2-211015**	Batch ID: **R117538**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC4_211015A**	Analysis Date: **10/16/2021 1:38:27 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.50	1.00	10.00	0	95.0	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2110054
Project: Luminant - A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: WC_211011A

The QC data in batch 102351 applies to the following samples: 2110054-01B, 2110054-02B, 2110054-03B, 2110054-04B, 2110054-05B, 2110054-06B, 2110054-07B, 2110054-08B, 2110054-09B, 2110054-10B, 2110054-11B, 2110054-12B, 2110054-13B

Sample ID: **MB-102351** Batch ID: **102351** TestNo: **M2540C** Units: **mg/L**
SampType: **MBLK** Run ID: **WC_211011A** Analysis Date: **10/11/2021 4:45:00 PM** Prep Date: **10/11/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	<10.0	10.0								

Sample ID: **LCS-102351** Batch ID: **102351** TestNo: **M2540C** Units: **mg/L**
SampType: **LCS** Run ID: **WC_211011A** Analysis Date: **10/11/2021 4:45:00 PM** Prep Date: **10/11/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	740	10.0	745.6	0	99.2	90	113			

Sample ID: **2110054-08B-DUP** Batch ID: **102351** TestNo: **M2540C** Units: **mg/L**
SampType: **DUP** Run ID: **WC_211011A** Analysis Date: **10/11/2021 4:45:00 PM** Prep Date: **10/11/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	2230	50.0	0	2225				0	5	

Sample ID: **2110054-09B-DUP** Batch ID: **102351** TestNo: **M2540C** Units: **mg/L**
SampType: **DUP** Run ID: **WC_211011A** Analysis Date: **10/11/2021 4:45:00 PM** Prep Date: **10/11/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	2110	50.0	0	2080				1.19	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2110054
Project: Luminant - A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: **WC_211012C**

The QC data in batch 102363 applies to the following samples: 2110054-03B

Sample ID: **MB-102363**	Batch ID: **102363**	TestNo: **M2540C**	Units: **mg/L**
SampType: **MBLK**	Run ID: **WC_211012C**	Analysis Date: **10/12/2021 4:55:00 PM**	Prep Date: **10/12/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	<10.0	10.0								

Sample ID: **LCS-102363**	Batch ID: **102363**	TestNo: **M2540C**	Units: **mg/L**
SampType: **LCS**	Run ID: **WC_211012C**	Analysis Date: **10/12/2021 4:55:00 PM**	Prep Date: **10/12/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	744	10.0	745.6	0	99.8	90	113			

Sample ID: **LCSD-102363**	Batch ID: **102363**	TestNo: **M2540C**	Units: **mg/L**
SampType: **LCSD**	Run ID: **WC_211012C**	Analysis Date: **10/12/2021 4:55:00 PM**	Prep Date: **10/12/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	743	10.0	745.6	0	99.7	90	113	0.134	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2110054
Project: Luminant - A1 Landfill

MQL SUMMARY REPORT

TestNo: E300	**MDL**	**MQL**
Analyte	**mg/L**	**mg/L**
Chloride	0.300	1.00
Fluoride	0.100	0.400
Sulfate	1.00	3.00

TestNo: SW6020B	**MDL**	**MQL**
Analyte	**mg/L**	**mg/L**
Antimony	0.000800	0.00250
Arsenic	0.00200	0.00500
Barium	0.00300	0.0100
Beryllium	0.000300	0.00100
Boron	0.0100	0.0300
Cadmium	0.000300	0.00100
Calcium	0.100	0.300
Chromium	0.00200	0.00500
Cobalt	0.00300	0.00500
Lead	0.000300	0.00100
Lithium	0.00500	0.0100
Molybdenum	0.00200	0.00500
Selenium	0.00200	0.00500
Thallium	0.000500	0.00150

TestNo: SW7470A	**MDL**	**MQL**
Analyte	**mg/L**	**mg/L**
Mercury	0.0000800	0.000200

TestNo: M2540C	**MDL**	**MQL**
Analyte	**mg/L**	**mg/L**
Total Dissolved Solids (Residue, Filt	10.0	10.0

Qualifiers: MQL -Method Quantitation Limit as defined by TRRP
MDL -Method Detection Limit as defined by TRRP

ANALYTICAL REPORT

November 14, 2021

Revised Report

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

DHL Analytical, Inc.

Sample Delivery Group:	L1417282
Samples Received:	10/13/2021
Project Number:	2110054
Description:	

Report To: John DuPont
2300 Double Creek Drive
Round Rock, TX 78664

Entire Report Reviewed By:

Donna Eidson
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.

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BMW-33 L1417282-01 Non-Potable Water

Collected by | Collected date/time 10/07/21 12:00 | Received date/time 10/13/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method Calculation	WG1758761	1	11/03/21 12:39	11/05/21 12:16	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1758761	1	11/03/21 12:39	11/05/21 12:16	RGT	Mt. Juliet, TN

BMW-28 L1417282-02 Non-Potable Water

Collected by | Collected date/time 10/07/21 10:45 | Received date/time 10/13/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method Calculation	WG1758761	1	11/03/21 12:39	11/05/21 13:10	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1758761	1	11/03/21 12:39	11/05/21 12:16	RGT	Mt. Juliet, TN

DUP-1 L1417282-03 Non-Potable Water

Collected by | Collected date/time 10/07/21 10:45 | Received date/time 10/13/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method Calculation	WG1758761	1	11/03/21 12:39	11/05/21 13:10	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1758761	1	11/03/21 12:39	11/05/21 12:16	RGT	Mt. Juliet, TN

BMW-18 L1417282-04 Non-Potable Water

Collected by | Collected date/time 10/07/21 09:25 | Received date/time 10/13/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method Calculation	WG1758761	1	11/03/21 12:39	11/05/21 13:10	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1758761	1	11/03/21 12:39	11/05/21 12:16	RGT	Mt. Juliet, TN

BMW-19 L1417282-05 Non-Potable Water

Collected by | Collected date/time 10/07/21 08:15 | Received date/time 10/13/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method Calculation	WG1758761	1	11/03/21 12:39	11/05/21 13:10	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1758761	1	11/03/21 12:39	11/05/21 12:16	RGT	Mt. Juliet, TN

BMW-11AR L1417282-06 Non-Potable Water

Collected by | Collected date/time 10/06/21 16:55 | Received date/time 10/13/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method Calculation	WG1758761	1	11/03/21 12:39	11/05/21 13:10	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1758761	1	11/03/21 12:39	11/05/21 12:16	RGT	Mt. Juliet, TN

BMW-27 L1417282-07 Non-Potable Water

Collected by | Collected date/time 10/06/21 15:40 | Received date/time 10/13/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method Calculation	WG1758761	1	11/03/21 12:39	11/05/21 13:10	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1758761	1	11/03/21 12:39	11/05/21 12:16	RGT	Mt. Juliet, TN

BMW-26 L1417282-08 Non-Potable Water

Collected by	Collected date/time	Received date/time
	10/06/21 14:40	10/13/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method Calculation	WG1758761	1	11/03/21 12:39	11/05/21 13:10	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1758761	1	11/03/21 12:39	11/05/21 12:16	RGT	Mt. Juliet, TN

BMW-21 L1417282-09 Non-Potable Water

Collected by	Collected date/time	Received date/time
	10/06/21 13:35	10/13/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method Calculation	WG1758761	1	11/03/21 12:39	11/05/21 13:10	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1758761	1	11/03/21 12:39	11/05/21 12:16	RGT	Mt. Juliet, TN

BMW-20 L1417282-10 Non-Potable Water

Collected by	Collected date/time	Received date/time
	10/06/21 12:35	10/13/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method Calculation	WG1758761	1	11/03/21 12:39	11/05/21 13:10	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1758761	1	11/03/21 12:39	11/05/21 12:16	RGT	Mt. Juliet, TN

BMW-22 L1417282-11 Non-Potable Water

Collected by	Collected date/time	Received date/time
	10/06/21 11:25	10/13/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method Calculation	WG1758761	1	11/03/21 12:39	11/05/21 13:10	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1758761	1	11/03/21 12:39	11/05/21 12:16	RGT	Mt. Juliet, TN

BMW-23 L1417282-12 Non-Potable Water

Collected by	Collected date/time	Received date/time
	10/06/21 10:20	10/13/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method Calculation	WG1758761	1	11/03/21 12:39	11/05/21 13:10	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1758761	1	11/03/21 12:39	11/05/21 12:16	RGT	Mt. Juliet, TN

BMW-24 L1417282-13 Non-Potable Water

Collected by	Collected date/time	Received date/time
	10/06/21 09:15	10/13/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method Calculation	WG1758761	1	11/03/21 12:39	11/05/21 13:10	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1758761	1	11/03/21 12:39	11/05/21 12:16	RGT	Mt. Juliet, TN

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Donna Eidson
Project Manager

Report Revision History

Level II Report - Version 1: 11/09/21 19:45

Project Narrative

Added COMBINED RA per customer request.

Radiochemistry by Method 904/9320

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	1.30		0.410	0.351	11/04/2021 14:00	WG1765168
(T) Barium	*93.7*			*62.0-143*	*11/04/2021 14:00*	WG1765168
(T) Yttrium	*100*			*79.0-136*	*11/04/2021 14:00*	WG1765168

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	1.82		0.741	0.649	11/05/2021 12:16	WG1758761

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.522		0.331	0.298	11/05/2021 12:16	WG1758761
(T) Barium-133	*91.2*			*30.0-143*	*11/05/2021 12:16*	WG1758761

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Radiochemistry by Method 904/9320

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	0.832		0.414	0.748	11/05/2021 13:10	WG1765171
(T) Barium	*106*			*62.0-143*	*11/05/2021 13:10*	WG1765171
(T) Yttrium	*109*			*79.0-136*	*11/05/2021 13:10*	WG1765171

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	1.63		0.766	0.923	11/05/2021 13:10	WG1758761

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.795		0.352	0.175	11/05/2021 12:16	WG1758761
(T) Barium-133	*99.3*			*30.0-143*	*11/05/2021 12:16*	WG1758761

Radiochemistry by Method 904/9320

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	0.516	J	0.390	0.711	11/05/2021 13:10	WG1765171
(T) Barium	*98.8*			*62.0-143*	*11/05/2021 13:10*	WG1765171
(T) Yttrium	*97.9*			*79.0-136*	*11/05/2021 13:10*	WG1765171

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	0.978		0.657	0.881	11/05/2021 13:10	WG1758761

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.462		0.267	0.17	11/05/2021 12:16	WG1758761
(T) Barium-133	*93.7*			*30.0-143*	*11/05/2021 12:16*	WG1758761

Radiochemistry by Method 904/9320

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	0.0602	U	0.384	0.713	11/05/2021 13:10	WG1765171
(T) Barium	*103*			*62.0-143*	*11/05/2021 13:10*	WG1765171
(T) Yttrium	*90.3*			*79.0-136*	*11/05/2021 13:10*	WG1765171

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	0.215	U	0.554	0.919	11/05/2021 13:10	WG1758761

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.155	J	0.170	0.206	11/05/2021 12:16	WG1758761
(T) Barium-133	*96.1*			*30.0-143*	*11/05/2021 12:16*	WG1758761

Radiochemistry by Method 904/9320

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	1.51		0.403	0.707	11/05/2021 13:10	WG1765171
(T) Barium	*91.9*			*62.0-143*	*11/05/2021 13:10*	WG1765171
(T) Yttrium	*90.3*			*79.0-136*	*11/05/2021 13:10*	WG1765171

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	1.74		0.644	1.01	11/05/2021 13:10	WG1758761

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.229	J	0.241	0.306	11/05/2021 12:16	WG1758761
(T) Barium-133	*92.8*			*30.0-143*	*11/05/2021 12:16*	WG1758761

Radiochemistry by Method 904/9320

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	1.34		0.397	0.701	11/05/2021 13:10	WG1765171
(T) Barium	*93.7*			*62.0-143*	*11/05/2021 13:10*	WG1765171
(T) Yttrium	*94.8*			*79.0-136*	*11/05/2021 13:10*	WG1765171

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	1.68		0.680	1.02	11/05/2021 13:10	WG1758761

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.334		0.283	0.318	11/05/2021 12:16	WG1758761
(T) Barium-133	*88.3*			*30.0-143*	*11/05/2021 12:16*	WG1758761

Radiochemistry by Method 904/9320

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	0.585	J	0.405	0.738	11/05/2021 13:10	WG1765171
(T) Barium	*96.8*			*62.0-143*	*11/05/2021 13:10*	WG1765171
(T) Yttrium	*98.6*			*79.0-136*	*11/05/2021 13:10*	WG1765171

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	0.943	J	0.671	1	11/05/2021 13:10	WG1758761

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.358		0.266	0.263	11/05/2021 12:16	WG1758761
(T) Barium-133	*95.8*			*30.0-143*	*11/05/2021 12:16*	WG1758761

Radiochemistry by Method 904/9320

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	0.970		0.320	0.566	11/05/2021 13:10	WG1765171
(T) Barium	*104*			*62.0-143*	*11/05/2021 13:10*	WG1765171
(T) Yttrium	*97.6*			*79.0-136*	*11/05/2021 13:10*	WG1765171

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	1.12		0.537	0.892	11/05/2021 13:10	WG1758761

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.145	J	0.217	0.326	11/05/2021 12:16	WG1758761
(T) Barium-133	*93.9*			*30.0-143*	*11/05/2021 12:16*	WG1758761

Radiochemistry by Method 904/9320

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	1.77		0.315	0.527	11/05/2021 13:10	WG1765171
(T) Barium	*91.8*			*62.0-143*	*11/05/2021 13:10*	WG1765171
(T) Yttrium	*108*			*79.0-136*	*11/05/2021 13:10*	WG1765171

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	2.38		0.628	0.706	11/05/2021 13:10	WG1758761

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.609		0.313	0.179	11/05/2021 12:16	WG1758761
(T) Barium-133	*95.6*			*30.0-143*	*11/05/2021 12:16*	WG1758761

Radiochemistry by Method 904/9320

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	2.18		0.377	0.632	11/05/2021 13:10	WG1765171
(T) Barium	*91.3*			*62.0-143*	*11/05/2021 13:10*	WG1765171
(T) Yttrium	*98.0*			*79.0-136*	*11/05/2021 13:10*	WG1765171

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	2.58		0.652	0.859	11/05/2021 13:10	WG1758761

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.401		0.275	0.227	11/05/2021 12:16	WG1758761
(T) Barium-133	*86.3*			*30.0-143*	*11/05/2021 12:16*	WG1758761

Radiochemistry by Method 904/9320

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	1.43		0.363	0.634	11/05/2021 13:10	WG1765171
(T) Barium	*94.2*			*62.0-143*	*11/05/2021 13:10*	WG1765171
(T) Yttrium	*101*			*79.0-136*	*11/05/2021 13:10*	WG1765171

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	2.12		0.702	0.839	11/05/2021 13:10	WG1758761

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.695		0.339	0.205	11/05/2021 12:16	WG1758761
(T) Barium-133	*90.4*			*30.0-143*	*11/05/2021 12:16*	WG1758761

Radiochemistry by Method 904/9320

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	1.77		0.490	0.856	11/05/2021 13:10	WG1765171
(T) Barium	*97.2*			*62.0-143*	*11/05/2021 13:10*	WG1765171
(T) Yttrium	*96.4*			*79.0-136*	*11/05/2021 13:10*	WG1765171

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	2.36		0.828	1.11	11/05/2021 13:10	WG1758761

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.590		0.338	0.252	11/05/2021 12:16	WG1758761
(T) Barium-133	*92.9*			*30.0-143*	*11/05/2021 12:16*	WG1758761

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Radiochemistry by Method 904/9320

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	2.85		0.497	0.826	11/05/2021 13:10	WG1765171
(T) Barium	*103*			*62.0-143*	*11/05/2021 13:10*	WG1765171
(T) Yttrium	*103*			*79.0-136*	*11/05/2021 13:10*	WG1765171

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	3.89		0.922	1.04	11/05/2021 13:10	WG1758761

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	1.04		0.425	0.217	11/05/2021 12:16	WG1758761
(T) Barium-133	*95.4*			*30.0-143*	*11/05/2021 12:16*	WG1758761

Method Blank (MB)

(MB) R3726145-1 11/04/21 14:00

Analyte	MB Result pCi/l	MB Qualifier	MB Uncertainty + / - pCi/l	MB MDA pCi/l
Radium-228	-0.0171	U	0.332	0.303
(T) Barium	*98.2*		*98.2*	
(T) Yttrium	*92.1*		*92.1*	

L1416575-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1416575-01 11/04/21 14:00 • (DUP) R3726145-5 11/04/21 14:00

Analyte	Original Result pCi/l	Original Uncertainty + / -	Original MDA pCi/l	DUP Result pCi/l	DUP Uncertainty + / -	DUP MDA pCi/l	Dilution	DUP RPD %	DUP RER	DUP Qualifier	DUP RPD Limits %	DUP RER Limit
Radium-228	2.17	0.434	0.36	0.658	1.06	0.36	1	107	1.32	J	20	3
(T) Barium	*95.1*			*99.5*	*99.5*							
(T) Yttrium	*103*			*110*	*110*							

Laboratory Control Sample (LCS)

(LCS) R3726145-2 11/04/21 14:00

Analyte	Spike Amount pCi/l	LCS Result pCi/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Radium-228	5.00	5.29	106	80.0-120	
(T) Barium			*96.7*		
(T) Yttrium			*105*		

L1417282-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1417282-01 11/04/21 14:00 • (MS) R3726145-3 11/04/21 14:00 • (MSD) R3726145-4 11/04/21 14:00

Analyte	Spike Amount pCi/l	Original Result pCi/l	MS Result pCi/l	MSD Result pCi/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	MS RER	RPD Limits %
Radium-228	16.7	1.30	19.9	21.5	111	121	1	70.0-130			7.60		20
(T) Barium		*93.7*			*101*	*101*							
(T) Yttrium		*100*			*105*	*99.0*							

Method Blank (MB)

(MB) R3727250-1 11/05/21 13:10

Analyte	MB Result pCi/l	MB Qualifier	MB Uncertainty + / - pCi/l	MB MDA pCi/l
Radium-228	0.211	J	0.230	0.425
(T) Barium	*100*		*100*	
(T) Yttrium	*103*		*103*	

L1417833-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1417833-01 11/05/21 13:10 • (DUP) R3727250-5 11/05/21 13:10

Analyte	Original Result pCi/l	Original Uncertainty + / -	Original MDA pCi/l	DUP Result pCi/l	DUP Uncertainty + / -	DUP MDA pCi/l	Dilution	DUP RPD %	DUP RER	DUP Qualifier	DUP RPD Limits %	DUP RER Limit
Radium-228	0.263	0.296	0.527	-0.753	0.801	0.527	1	200	1.19	U	20	3
(T) Barium	*99.2*			*101*	*101*							
(T) Yttrium	*105*			*103*	*103*							

Laboratory Control Sample (LCS)

(LCS) R3727250-2 11/05/21 13:10

Analyte	Spike Amount pCi/l	LCS Result pCi/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Radium-228	5.00	4.82	96.5	80.0-120	
(T) Barium			*104*		
(T) Yttrium			*97.7*		

L1417829-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1417829-01 11/05/21 13:10 • (MS) R3727250-3 11/05/21 13:10 • (MSD) R3727250-4 11/05/21 13:10

Analyte	Spike Amount pCi/l	Original Result pCi/l	MS Result pCi/l	MSD Result pCi/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	MS RER	RPD Limits %
Radium-228	16.7	0.973	18.3	17.4	104	98.2	1	70.0-130			5.21		20
(T) Barium		*99.0*			*104*	*97.3*							
(T) Yttrium		*90.4*			*98.3*	*96.5*							

Method Blank (MB)

(MB) R3726790-1 11/05/21 12:16

Analyte	MB Result pCi/l	MB Qualifier	MB Uncertainty + / - pCi/l	MB MDA pCi/l
Radium-226	0.0199	J	0.0308	0.0469
(T) Barium-133	*96.2*		*96.2*	

L1417282-13 Original Sample (OS) • Duplicate (DUP)

(OS) L1417282-13 11/05/21 12:16 • (DUP) R3726790-5 11/05/21 12:16

Analyte	Original Result pCi/l	Original Uncertainty + / -	Original MDA pCi/l	DUP Result pCi/l	DUP Uncertainty + / -	DUP MDA pCi/l	Dilution	DUP RPD %	DUP RER	DUP Qualifier	DUP RPD Limits %	DUP RER Limit
Radium-226	1.04	0.425	0.217	0.940	0.441	0.217	1	10.3	0.166		20	3
(T) Barium-133	*95.4*			*96.2*	*96.2*							

Laboratory Control Sample (LCS)

(LCS) R3726790-2 11/05/21 12:16

Analyte	Spike Amount pCi/l	LCS Result pCi/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Radium-226	5.02	4.74	94.5	80.0-120	
(T) Barium-133			*88.8*		

L1417282-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1417282-05 11/05/21 12:16 • (MS) R3726790-3 11/05/21 12:16 • (MSD) R3726790-4 11/05/21 12:16

Analyte	Spike Amount pCi/l	Original Result pCi/l	MS Result pCi/l	MSD Result pCi/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	MS RER	RPD Limits %
Radium-226	20.1	0.229	20.3	19.7	99.9	96.8	1	75.0-125			3.10		20
(T) Barium-133		*92.8*			*99.3*	*99.5*							

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDA	Minimum Detectable Activity.
Rec.	Recovery.
RER	Replicate Error Ratio.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(T)	Tracer - A radioisotope of known concentration added to a solution of chemically equivalent radioisotopes at a known concentration to assist in monitoring the yield of the chemical separation.
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
J	The identification of the analyte is acceptable; the reported value is an estimate.
U	Below Detectable Limits: Indicates that the analyte was not detected.

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky [1 6]	KY90010	South Carolina	84004002
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas [5]	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.

DHL Analytical, Inc.
2300 Double Creek Drive
Round Rock, TX 78664
TEL: *(512) 388-8222* FAX:

CHAIN-OF-CUSTODY RECORD

Work Order: 2110054

Subcontractor:

Pace Analytical
12065 Lebanon Rd
Mt. Juliet, TN 37122

TEL: (615) 773-5923
FAX:
Acct #: DHLRRTX

A071

L1417282 08-Oct-21

Sample ID	Matrix	DHL#	Date Collected	Bottle Type	Requested Tests					
					Ra-228 E904.0	Ra-226 M7500 Ra B M				
BMW-33	Aqueous	01C	10/07/21 12:00 PM	1LHDPEHNO3		1				-01
BMW-33	Aqueous	01D	10/07/21 12:00 PM	1LHDPEHNO3	1					-01
BMW-28	Aqueous	02C	10/07/21 10:45 AM	1LHDPEHNO3		1				-02
BMW-28	Aqueous	02D	10/07/21 10:45 AM	1LHDPEHNO3	1					-02
DUP-1	Aqueous	03C	10/07/21 10:45 AM	1LHDPEHNO3		1				-03
DUP-1	Aqueous	03D	10/07/21 10:45 AM	1LHDPEHNO3	1					-03
BMW-18	Aqueous	04C	10/07/21 09:25 AM	1LHDPEHNO3		1				-04
BMW-18	Aqueous	04D	10/07/21 09:25 AM	1LHDPEHNO3	1					-04
BMW-19	Aqueous	05C	10/07/21 08:15 AM	1LHDPEHNO3		1				-05
BMW-19	Aqueous	05D	10/07/21 08:15 AM	1LHDPEHNO3	1					-05
BMW-11AR	Aqueous	06C	10/06/21 04:55 PM	1LHDPEHNO3		1				-06
BMW-11AR	Aqueous	06D	10/06/21 04:55 PM	1LHDPEHNO3	1					-06
BMW-27	Aqueous	07C	10/06/21 03:40 PM	1LHDPEHNO3		1				-07
BMW-27	Aqueous	07D	10/06/21 03:40 PM	1LHDPEHNO3	1					-07
BMW-26	Aqueous	08C	10/06/21 02:40 PM	1LHDPEHNO3		1				-08
BMW-26	Aqueous	08D	10/06/21 02:40 PM	1LHDPEHNO3	1					-08
BMW-21	Aqueous	09C	10/06/21 01:35 PM	1LHDPEHNO3		1				-09

General Comments:

Please analyze these samples with a Standard Turnaround Time.
Quality Control Package Needed: TRRP - SEND PDF & Excel EDD Please
EMAIL report to both cac@dhlanalytical.com & dupont@dhlanalytical.com
Call John DuPont if you have questions.

		Date/Time			Date/Time
Relinquished by:	[signature]	10/8/21 18:00	**Received by:**	[signature]	10/13/21 0930
Relinquished by:			**Received by:**		

17.1+0=17.1
A251

DHL Analytical, Inc.
2300 Double Creek Drive
Round Rock, TX 78664
TEL: *(512) 388-8222* FAX:

CHAIN-OF-CUSTODY RECORD

Work Order: 2110054

Subcontractor:

Pace Analytical
12065 Lebanon Rd
Mt. Juliet, TN 37122

TEL: (615) 773-5923
FAX:
Acct #: DHLRRTX

L1419282 08-Oct-21

Sample ID	Matrix	DHL#	Date Collected	Bottle Type	Requested Tests					
					Ra-228 E904.0	Ra-226 M7500 Ra B M				
BMW-21	Aqueous	09D	10/06/21 01:35 PM	1LHDPEHNO3	1					-09
BMW-20	Aqueous	10C	10/06/21 12:35 PM	1LHDPEHNO3		1				-10
BMW-20	Aqueous	10D	10/06/21 12:35 PM	1LHDPEHNO3	1					-10
BMW-22	Aqueous	11C	10/06/21 11:25 AM	1LHDPEHNO3		1				-11
BMW-22	Aqueous	11D	10/06/21 11:25 AM	1LHDPEHNO3	1					-11
BMW-23	Aqueous	12C	10/06/21 10:20 AM	1LHDPEHNO3		1				-12
BMW-23	Aqueous	12D	10/06/21 10:20 AM	1LHDPEHNO3	1					-12
BMW-24	Aqueous	13C	10/06/21 09:15 AM	1LHDPEHNO3		1				-13
BMW-24	Aqueous	13D	10/06/21 09:15 AM	1LHDPEHNO3	1					-13

Sample Receipt Checklist

COC Seal Present/Intact:	Y / N	If Applicable	
COC Signed/Accurate:	Y / N	VOA Zero Headspace:	Y / N
Bottles arrive intact:	Y / N	Pres.Correct/Check:	Y / N
Correct bottles used:	Y / N		
Sufficient volume sent:	Y / N		
RAD Screen <0.5 mR/hr:	Y / N		

General Comments:

Please analyze these samples with a Standard Turnaround Time.
Quality Control Package Needed: TRRP - SEND PDF & Excel EDD Please
EMAIL report to both cac@dhlanalytical.com & dupont@dhlanalytical.com
Call John DuPont if you have questions.

		Date/Time		Date/Time
Relinquished by:	Er	10/8/21 1800	**Received by:**	10/13/21 0930
Relinquished by:			**Received by:**	

17.1 to 17.1 A20T

October 18, 2021

Will Vienne
Golder
2201 Double Creek Dr #4004
Round Rock, Texas 78664
TEL: (512) 671-3434
FAX (512) 671-3446

Order No.: 2110055

RE: Luminant - A1 Landfill

Dear Will Vienne:

DHL Analytical, Inc. received 1 sample(s) on 10/8/2021 for the analyses presented in the following report.

There were no problems with the analyses and all data met requirements of NELAP except where noted in the Case Narrative. All non-NELAP methods will be identified accordingly in the case narrative and all estimated uncertainties of test results are within method or EPA specifications.

If you have any questions regarding these tests results, please feel free to call. Thank you for using DHL Analytical.

Sincerely,

John DuPont
General Manager

This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211-21-27

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MQLSummaryReport 2110055 17

DHL ANALYTICAL
2300 Double Creek Dr. Round Rock, TX 78664
Phone 512.388.8222
Web: **www.dhlanalytical.com**
Email: **login@dhlanalytical.com**

CHAIN-OF-CUSTODY

CLIENT: GOLDER
ADDRESS: 2201 DOUBLE CREEK DR #4004 ROUNDROCK, TX
PHONE: 512-671-3434 EMAIL:
DATA REPORTED TO: WILL VIENNE
ADDITIONAL REPORT COPIES TO:

DATE: 10-6-21
PO#:
PROJECT LOCATION OR NAME: LUMINANT - A1 LANDFILL
CLIENT PROJECT # 1912262 COLLECTOR: JOHN BRAYTON

LABORATORY USE ONLY
DHL WORKORDER #: 2110055

Authorize 5% surcharge for TRRP report? ☐ Yes ☐ No

Lab Use Only

W=WATER L=LIQUID S=SOIL SO=SOLID SE=SEDIMENT P=PAINT SL=SLUDGE

Field Sample I.D.	DHL Lab #	Collection Date	Collection Time	Matrix	Container Type	# of Containers	PRESERVATION: HCL	HNO_3	H_2SO_4	NaOH ☐ Zn Acetate ☐	ICE ☐ UNPRESERVED ☐	ANALYSES	FIELD NOTES
BMW-32	01	10-7-21	1310	W	P	1		X				COBALT: X	

ANALYSES: BTEX ☐ MTBE ☐ [METHOD 8260] | TPH 1005 ☐ TPH 1006 ☐ HOLD 1006 ☐ | GRO 8015 ☐ DRO 8015 ☐ | VOC 8260 ☐ VOC 624.1 ☐ | SVOC 8270 ☐ SVOC 625.1 ☐ | PAH 8270 ☐ HOLD PAH ☐ | PEST 8270 ☐ 625.1 ☐ O-P PEST 8270 ☐ | PCB 8082 ☐ 608.3 ☐ PCB 8270 ☐ 625.1 ☐ | HERB 8321 ☐ T PHOS ☐ AMMONIA ☐ | METALS 6020 ☐ 200.8 ☐ DISS. METALS ☐ | RCRA 8 ☐ TX11 ☐ _____ | pH ☐ HEX CHROM ☐ ALKALINITY ☐ COD ☐ | ANIONS 300 ☐ 9056 ☐ _____ | TCLP-SVOC ☐ VOC ☐ PEST ☐ HERB ☐ | TCLP-METALS ☐ RCRA 8 ☐ TX-11 ☐ Pb ☐ | RCI ☐ IGN ☐ DGAS ☐ OIL&GREASE ☐ | TDS ☐ TSS ☐ % MOIST ☐ CYANIDE ☐

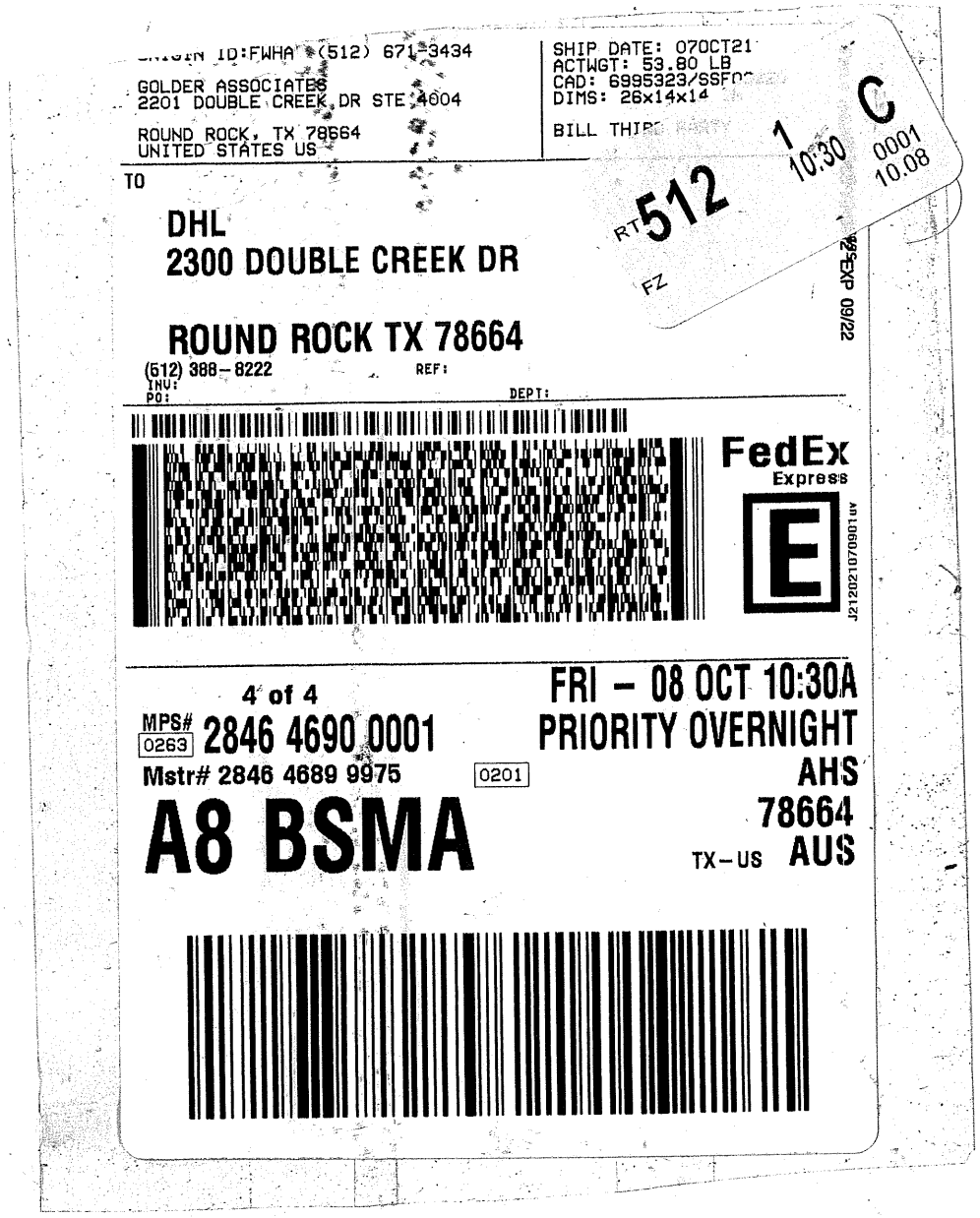
Relinquished By: (Sign)	DATE/TIME 10-7-21 1700	Received by: FedEx
Relinquished By: (Sign) FedEx	DATE/TIME 10/8/21 0941	Received by:
Relinquished By: (Sign)	DATE/TIME	Received by:

TURN AROUND TIME (CALL FIRST FOR RUSH)
RUSH-1 DAY☐ RUSH-2 DAY☐ RUSH-3 DAY☐
NORMAL ☒ OTHER ☐
DUE DATE _____ ☐

LABORATORY USE ONLY
RECEIVING TEMP (°C): 1.7°C THERM #: 78
CUSTODY SEALS: ☐ BROKEN ☒ INTACT ☐ NOT USED
CARRIER: ☐ LSO ☒ FEDEX ☐ UPS ☐ COURIER ☐ OTHER ☐ HAND DELIVERED

☐ **DHL DISPOSAL @ 5.00 each** ☐ **Return**

DHL COC REV 3 | MAR 2021


ORIGIN ID:FWHA (512) 671-3434
GOLDER ASSOCIATES
2201 DOUBLE CREEK DR STE 4004
ROUND ROCK, TX 78664
UNITED STATES US
SHIP DATE: 07OCT21
ACTWGT: 53.80 LB
CAD: 6995323/SSFO
DIMS: 26x14x14
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0001
10.08
RT 512
FZ
TO
DHL
2300 DOUBLE CREEK DR
ROUND ROCK TX 78664
(512) 388-8222
REF:
INV:
PO:
DEPT:
FedEx
Express
EXP 09/22
4 of 4
MPS# 0263 2846 4690 0001
Mstr# 2846 4689 9975
0201
FRI - 08 OCT 10:30A
PRIORITY OVERNIGHT
AHS
78664
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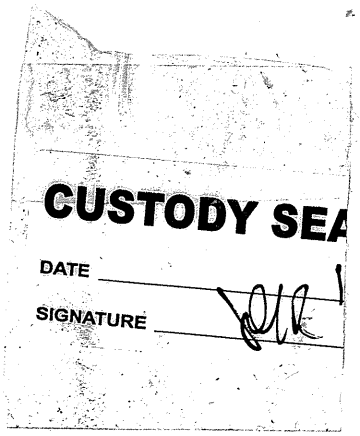
AUS
A8 BSMA


CUSTODY SEA
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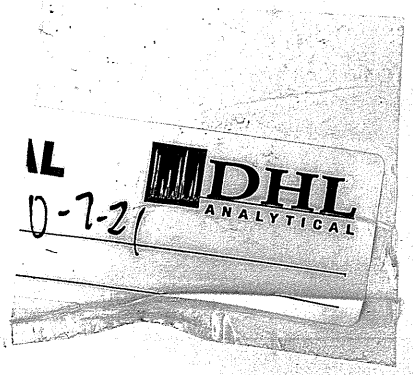
SIGNATURE


DHL
ANALYTICAL

DHL Analytical, Inc.

Sample Receipt Checklist

Client Name **Golder** Date Received: **10/8/2021**

Work Order Number **2110055** Received by: **RA**

Checklist completed by: 10/8/2021 Reviewed by SH 10/8/2021

Signature | Date | Initials | Date

Carrier name: FedEx 1day

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	1.7 °C
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH<2 acceptable upon receipt?	Yes ☑	No ☐	NA ☐ LOT # 13171
	Adjusted? no		Checked by EL
Water - ph>9 (S) or ph>10 (CN) acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted?		Checked by

Any No response must be detailed in the comments section below.

Client contacted: _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments: _____

Corrective Action: _____

Laboratory Name: DHL Analytical, Inc.

Laboratory Review Checklist: Reportable Data

Project Name: Luminant - A1 Landfill	**LRC Date:** 10/18/21
Reviewer Name: Carlos Castro	**Laboratory Work Order:** 2110055
Prep Batch Number(s): See Prep Dates Report	**Run Batch:** See Analytical Dates Report

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
		Chain-of-Custody (C-O-C)					
R1	OI	**1)** Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	**X**				**R1-01**
		2) Were all departures from standard conditions described in an exception report?			**X**		
R2	OI	**Sample and Quality Control (QC) Identification**					
		1) Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	**X**				
		2) Are all laboratory ID numbers cross-referenced to the corresponding QC data?	**X**				
R3	OI	**Test Reports**					
		1) Were all samples prepared and analyzed within holding times?	**X**				
		2) Other than those results < MQL, were all other raw values bracketed by calibration standards?	**X**				
		3) Were calculations checked by a peer or supervisor?	**X**				
		4) Were all analyte identifications checked by a peer or supervisor?	**X**				
		5) Were sample detection limits reported for all analytes not detected?	**X**				
		6) Were all results for soil and sediment samples reported on a dry weight basis?			**X**		
		7) Were % moisture (or solids) reported for all soil and sediment samples?			**X**		
		8) Were bulk soils/solids samples for volatile analysis extracted with methanol per EPA Method 5035?			**X**		
		9) If required for the project, TICs reported?			**X**		
R4	O	**Surrogate Recovery Data**					
		1) Were surrogates added prior to extraction?			**X**		
		2) Were surrogate percent recoveries in all samples within the laboratory QC limits?			**X**		
R5	OI	**Test Reports/Summary Forms for Blank Samples**					
		1) Were appropriate type(s) of blanks analyzed?	**X**				
		2) Were blanks analyzed at the appropriate frequency?	**X**				
		3) Where method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	**X**				
		4) Were blank concentrations < MDL?	**X**				
		5) For analyte(s) detected in a blank sample, was the concentration, unadjusted for sample specific factors, in all associated field samples, **greater** than 10 times the concentration in the blank sample?			**X**		
R6	OI	**Laboratory Control Samples (LCS):**					
		1) Were all COCs included in the LCS?	**X**				
		2) Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	**X**				
		3) Were LCSs analyzed at the required frequency?	**X**				
		4) Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	**X**				
		5) Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	**X**				
		6) Was the LCSD RPD within QC limits (if applicable)?	**X**				
R7	OI	**Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Data**					
		1) Were the project/method specified analytes included in the MS and MSD?	**X**				
		2) Were MS/MSD analyzed at the appropriate frequency?	**X**				
		3) Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	**X**				
		4) Were MS/MSD RPDs within laboratory QC limits?	**X**				
R8	OI	**Analytical Duplicate Data**					
		1) Were appropriate analytical duplicates analyzed for each matrix?			**X**		
		2) Were analytical duplicates analyzed at the appropriate frequency?			**X**		
		3) Were RPDs or relative standard deviations within the laboratory QC limits?			**X**		
R9	OI	**Method Quantitation Limits (MQLs):**					
		1) Are the MQLs for each method analyte included in the laboratory data package?	**X**				
		2) Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	**X**				
		3) Are unadjusted MQLs and DCSs included in the laboratory data package?	**X**				
R10	OI	**Other Problems/Anomalies**					
		1) Are all known problems/anomalies/special conditions noted in this LRC and ER?			**X**		
		2) Was applicable and available technology used to lower the SDL to minimize the matrix interference affects on the sample results?	**X**				
		3) Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices and methods associated with this laboratory data package?	**X**				

Laboratory Name: DHL Analytical, Inc.

Laboratory Review Checklist (continued): Supporting Data

Project Name: Luminant - A1 Landfill	**LRC Date:** 10/18/21
Reviewer Name: Carlos Castro	**Laboratory Work Order:** 2110055
Prep Batch Number(s): See Prep Dates Report	**Run Batch:** See Analytical Dates Report

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
S1	OI	**Initial Calibration (ICAL)**					
		1) Were response factors and/or relative response factors for each analyte within QC limits?	X				
		2) Were percent RSDs or correlation coefficient criteria met?	X				
		3) Was the number of standards recommended in the method used for all analytes?	X				
		4) Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		5) Are ICAL data available for all instruments used?	X				
		6) Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	**Initial and Continuing calibration Verification (ICCV and CCV) and Continuing Calibration blank (CCB):**					
		1) Was the CCV analyzed at the method-required frequency?	X				
		2) Were percent differences for each analyte within the method-required QC limits?	X				
		3) Was the ICAL curve verified for each analyte?	X				
		4) Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	X				
S3	O	**Mass Spectral Tuning:**					
		1) Was the appropriate compound for the method used for tuning?	X				
		2) Were ion abundance data within the method-required QC limits?	X				
S4	O	**Internal Standards (IS):**					
		1) Were IS area counts and retention times within the method-required QC limits?	X				
S5	OI	**Raw Data (NELAC Section 5.5.10)**					
		1) Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		2) Were data associated with manual integrations flagged on the raw data?	X				
S6	O	**Dual Column Confirmation**					
		1) Did dual column confirmation results meet the method-required QC?			X		
S7	O	**Tentatively Identified Compounds (TICs):**					
		1) If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) Results:**					
		1) Were percent recoveries within method QC limits?	X				
S9	I	**Serial Dilutions, Post Digestion Spikes, and Method of Standard Additions**					
		1) Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	X				
S10	OI	**Method Detection Limit (MDL) Studies**					
		1) Was a MDL study performed for each reported analyte?	X				
		2) Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	**Proficiency Test Reports:**					
		1) Was the lab's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	**Standards Documentation**					
		1) Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound/Analyte Identification Procedures**					
		1) Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of Analyst Competency (DOC)**					
		1) Was DOC conducted consistent with NELAC Chapter 5 – Appendix C?	X				
		2) Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/Validation Documentation for Methods** (NELAC Chapter 5)					
		1) Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	**Laboratory Standard Operating Procedures (SOPs):**					
		1) Are laboratory SOPs current and on file for each method performed?	X				

1 Items identified by the letter "R" should be included in the laboratory data package submitted to the TCEQ in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.

2 O = organic analyses; I = inorganic analyses (and general chemistry, when applicable).

3 NA = Not applicable.

4 NR = Not Reviewed.

5 ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Data Package Signature Page – RG-366/TRRP-13

This data package consists of:

This signature page, the laboratory review checklist, and the following reportable data:

R1 Field chain-of-custody documentation;
R2 Sample identification cross-reference;
R3 Test reports (analytical data sheets) for each environmental sample that includes:
  a) Items consistent with NELAC Chapter 5,
  b) dilution factors,
  c) preparation methods,
  d) cleanup methods, and
  e) if required for the project, tentatively identified compounds (TICs).
R4 Surrogate recovery data including:
  a) Calculated recovery (%R), and
  b) The laboratory's surrogate QC limits.
R5 Test reports/summary forms for blank samples;
R6 Test reports/summary forms for laboratory control samples (LCSs) including:
  a) LCS spiking amounts,
  b) Calculated %R for each analyte, and
  c) The laboratory's LCS QC limits.
R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
  a) Samples associated with the MS/MSD clearly identified,
  b) MS/MSD spiking amounts,
  c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
  d) Calculated %Rs and relative percent differences (RPDs), and
  e) The laboratory's MS/MSD QC limits
R8 Laboratory analytical duplicate (if applicable) recovery and precision:
  a) The amount of analyte measured in the duplicate,
  b) The calculated RPD, and
  c) The laboratory's QC limits for analytical duplicates.
R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix;
R10 Other problems or anomalies.

The Exception Report for each "No" or "Not Reviewed (NR)" item in the Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory is not accredited under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature below, I affirm to the best of my knowledge that all problems/anomalies observed by the laboratory have been identified in the Laboratory Review Checklist, and no information or data affecting the quality of the data has been knowingly withheld.

This laboratory was last inspected by TCEQ on February 23-26 2021. Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Name: John DuPont
Official Title: General Manager

Signature

10/1□/21
Date

Name: Dr. Derhsing Luu
Official Title: Technical Director

DHL Analytical, Inc. **Date:** *18-Oct-21*

CLIENT: Golder
Project: Luminant - A1 Landfill
Lab Order: 2110055

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Method SW6020B - Metals Analysis

Exception Report R1-01

The sample was received and log-in performed on 10/8/21. A total of 1 sample was received. The sample arrived in good condition and was properly packaged.

DHL Analytical, Inc.

Date: *18-Oct-21*

CLIENT: Golder
Project: Luminant - A1 Landfill
Lab Order: 2110055

Work Order Sample Summary

Lab Smp ID	Client Sample ID	Tag Number	Date Collected	Date Recved
2110055-01	BMW-32		10/07/21 01:10 PM	10/8/2021

Lab Order: 2110055
Client: Golder
Project: Luminant - A1 Landfill

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
2110055-01A	BMW-32	10/07/21 01:10 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/11/21 10:14 AM	102344

Lab Order: 2110055
Client: Golder
Project: Luminant - A1 Landfill

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
2110055-01A	BMW-32	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	102344	1	10/12/21 02:56 PM	ICP-MS4_211012B

DHL Analytical, Inc.

Date: *18-Oct-21*

CLIENT:	Golder	**Client Sample ID:**	BMW-32
Project:	Luminant - A1 Landfill	**Lab ID:**	2110055-01
Project No:	19122262	**Collection Date:**	10/07/21 01:10 PM
Lab Order:	2110055	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Cobalt	0.00347	0.00300	0.00500	J	mg/L	1	10/12/21 02:56 PM

Qualifiers:

- ND - Not Detected at the SDL
- J - Analyte detected between SDL and RL
- B - Analyte detected in the associated Method Blank
- DF- Dilution Factor
- N - Parameter not NELAP certified
- See Final Page of Report for MQLs and MDLs
- S - Spike Recovery outside control limits
- C - Sample Result or QC discussed in Case Narrative
- RL - Reporting Limit (MQL adjusted for moisture and sample size)
- SDL - Sample Detection Limit
- E - TPH pattern not Gas or Diesel Range Pattern

CLIENT: Golder
Work Order: 2110055
Project: Luminant - A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_210803A

Sample ID: **DCS3-101483** Batch ID: **101483** TestNo: **SW6020B** Units: **mg/L**
SampType: **DCS3** Run ID: **ICP-MS4_210803A** Analysis Date: **8/3/2021 1:24:00 PM** Prep Date: **8/2/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cobalt	0.00534	0.00500	0.00500	0	107	70	130	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2110055
Project: Luminant - A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: **ICP-MS4_211012B**

The QC data in batch 102344 applies to the following samples: 2110055-01A

Sample ID: **MB-102344**	Batch ID: **102344**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MBLK**	Run ID: **ICP-MS4_211012B**	Analysis Date: **10/12/2021 2:44:00 PM**	Prep Date: **10/11/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cobalt	<0.00300	0.00500								

Sample ID: **LCS-102344**	Batch ID: **102344**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCS**	Run ID: **ICP-MS4_211012B**	Analysis Date: **10/12/2021 2:46:00 PM**	Prep Date: **10/11/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cobalt	0.190	0.00500	0.200	0	94.9	80	120			

Sample ID: **LCSD-102344**	Batch ID: **102344**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCSD**	Run ID: **ICP-MS4_211012B**	Analysis Date: **10/12/2021 2:48:00 PM**	Prep Date: **10/11/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cobalt	0.192	0.00500	0.200	0	96.0	80	120	1.21	15	

Sample ID: **2110057-01A SD**	Batch ID: **102344**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS4_211012B**	Analysis Date: **10/12/2021 2:54:00 PM**	Prep Date: **10/11/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cobalt	<0.0150	0.0250	0	0				0	20	

Sample ID: **2110057-01A PDS**	Batch ID: **102344**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_211012B**	Analysis Date: **10/12/2021 3:14:00 PM**	Prep Date: **10/11/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cobalt	0.186	0.00500	0.200	0	93.1	75	125			

Sample ID: **2110057-01A MS**	Batch ID: **102344**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS4_211012B**	Analysis Date: **10/12/2021 3:17:00 PM**	Prep Date: **10/11/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cobalt	0.187	0.00500	0.200	0	93.5	75	125			

Sample ID: **2110057-01A MSD**	Batch ID: **102344**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS4_211012B**	Analysis Date: **10/12/2021 3:19:00 PM**	Prep Date: **10/11/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cobalt	0.185	0.00500	0.200	0	92.5	75	125	1.12	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2110055
Project: Luminant - A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_211012B

Sample ID: **ICV-211012**	Batch ID: **R117484**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_211012B**	Analysis Date: **10/12/2021 10:43:00 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cobalt	0.0985	0.00500	0.100	0	98.5	90	110			

Sample ID: **LCVL-211012**	Batch ID: **R117484**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_211012B**	Analysis Date: **10/12/2021 10:47:00 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cobalt	0.00493	0.00500	0.00500	0	98.6	80	120			

Sample ID: **CCV4-211012**	Batch ID: **R117484**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_211012B**	Analysis Date: **10/12/2021 2:34:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cobalt	0.197	0.00500	0.200	0	98.7	90	110			

Sample ID: **CCV5-211012**	Batch ID: **R117484**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_211012B**	Analysis Date: **10/12/2021 3:21:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cobalt	0.198	0.00500	0.200	0	99.2	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *18-Oct-21*

CLIENT: Golder
Work Order: 2110055
Project: Luminant - A1 Landfill

MQL SUMMARY REPORT

TestNo: SW6020B	MDL	MQL
Analyte	**mg/L**	**mg/L**
Cobalt	0.00300	0.00500

Qualifiers: MQL -Method Quantitation Limit as defined by TRRP
MDL -Method Detection Limit as defined by TRRP

ATTACHMENT 2

2021 APPENDIX IV CONFIDENCE INTERVAL GRAPHS

EXPLANATION

95% Upper confidence limit

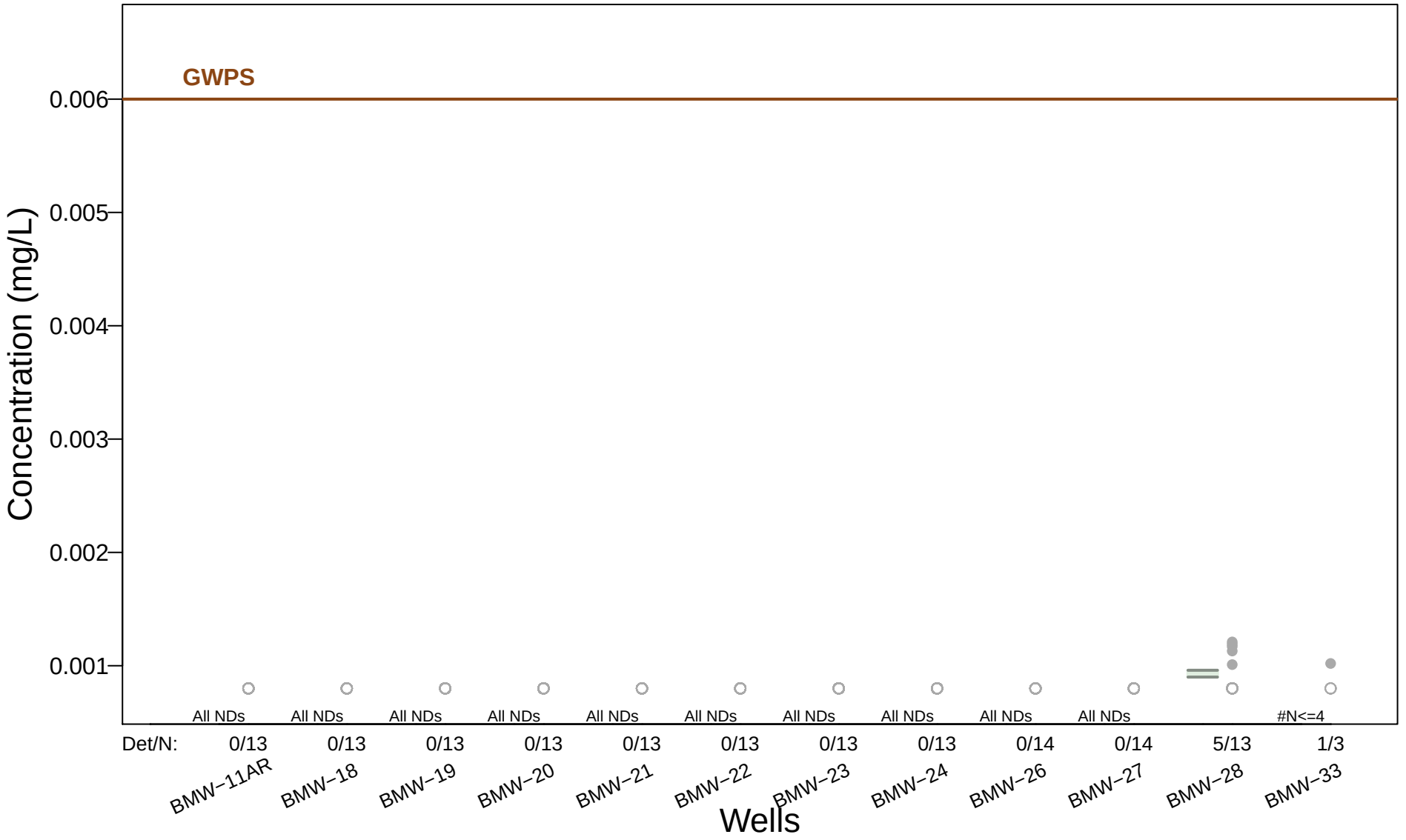
95% Lower confidence limit

Detected sample concentration

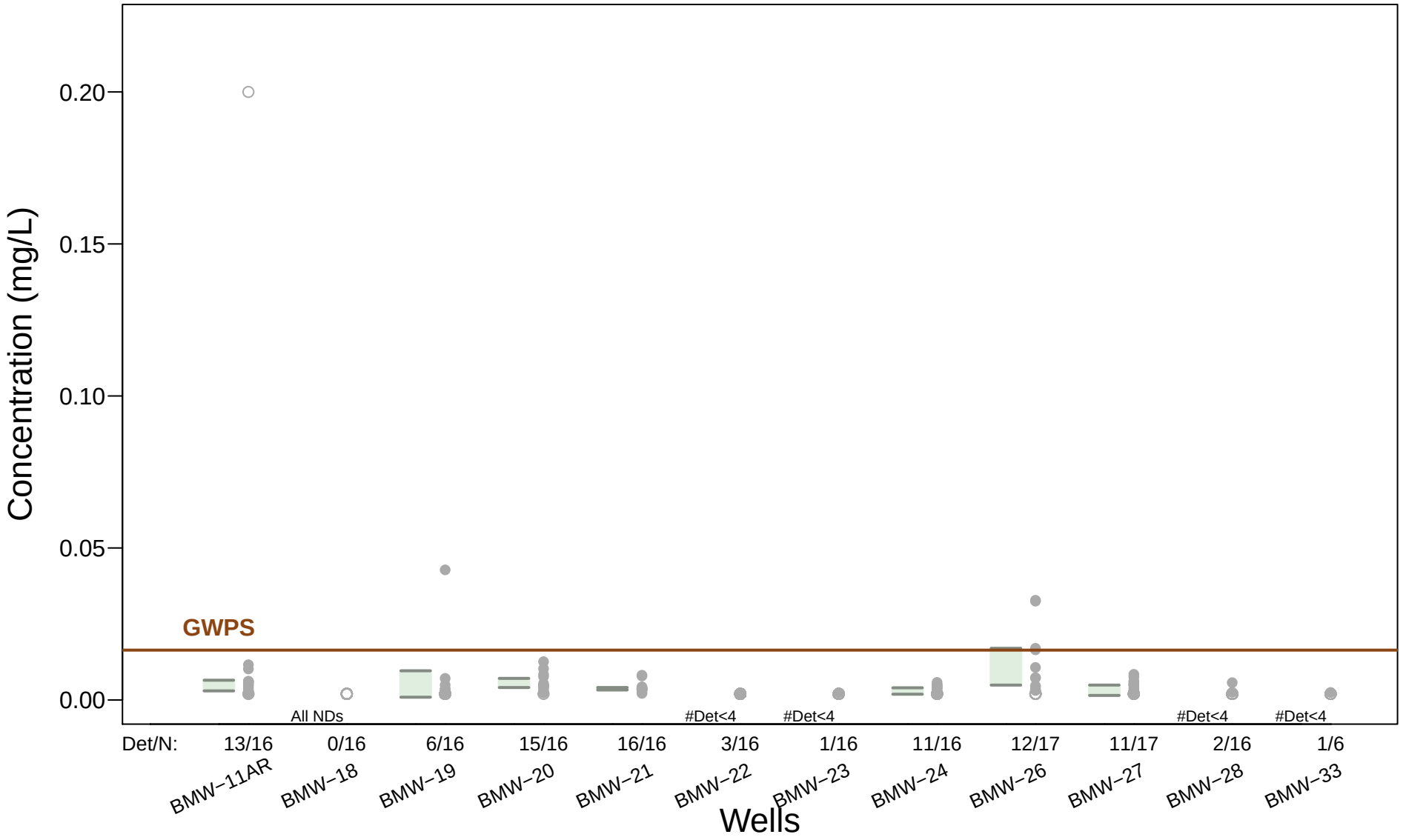
Non-detect sample result (concentration set to laboratory reporting limit)

Note: An SSL is indicated if the lower confidence limit exceeds the GWPS.

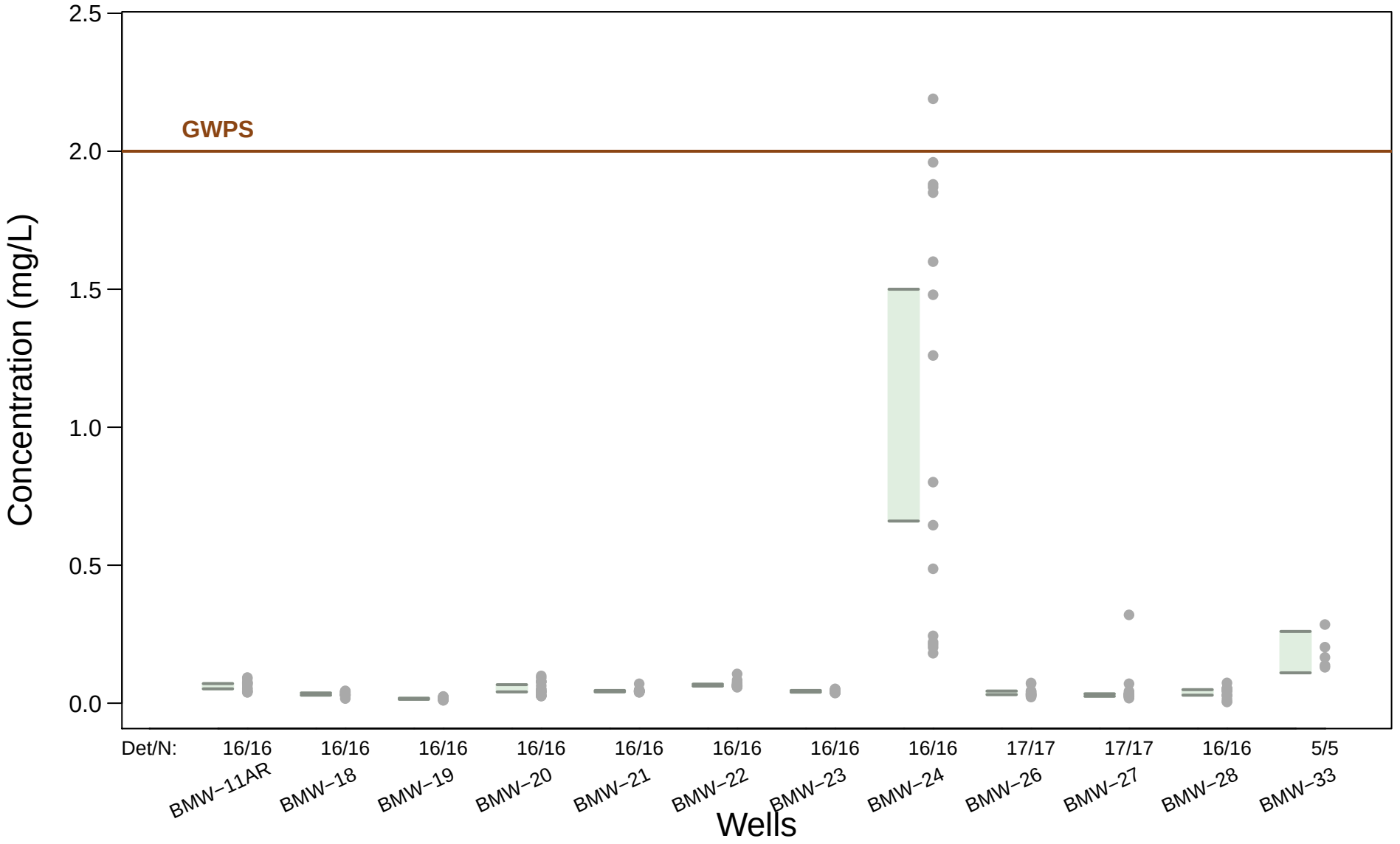
Antimony – 95% Confidence Intervals



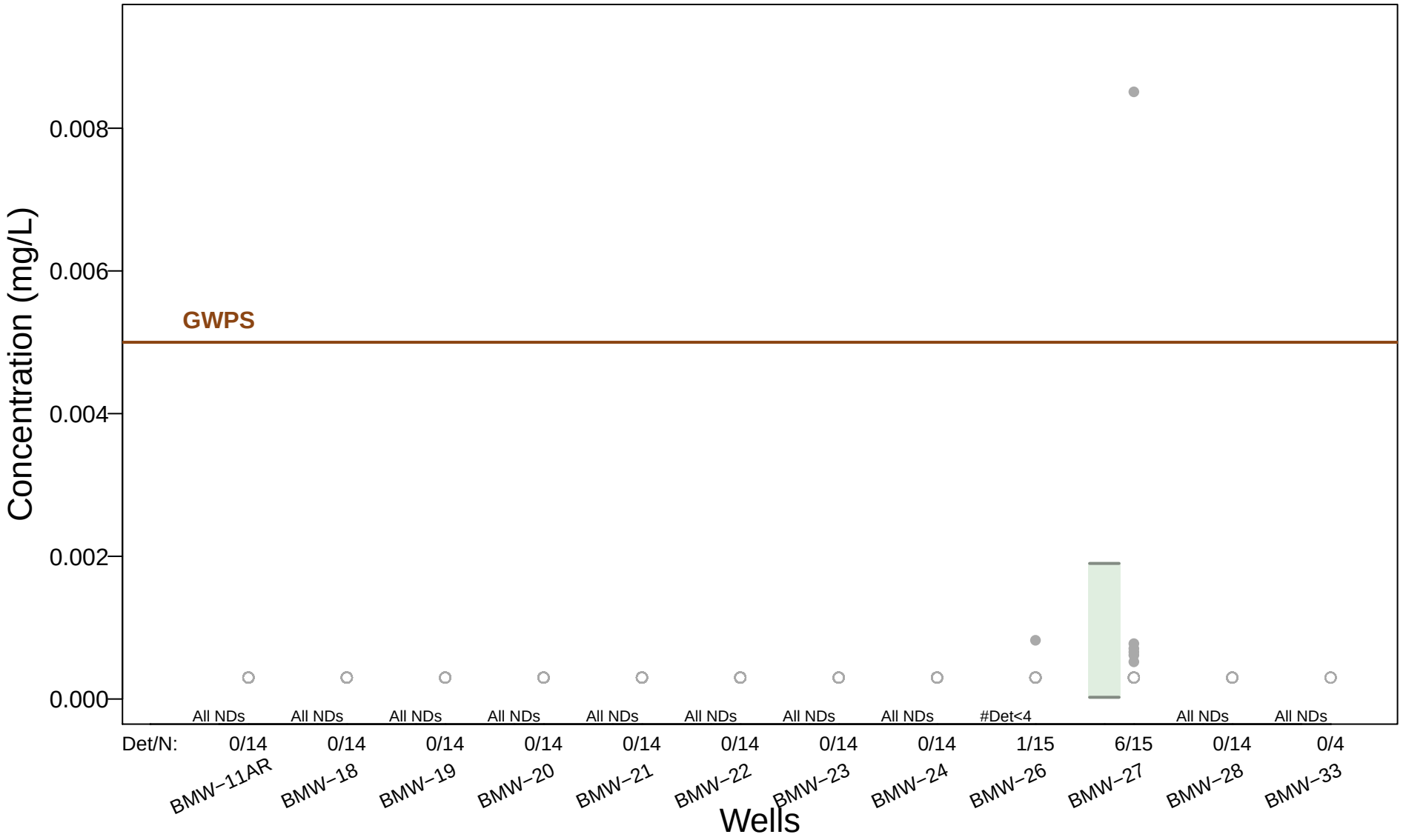
Arsenic – 95% Confidence Intervals



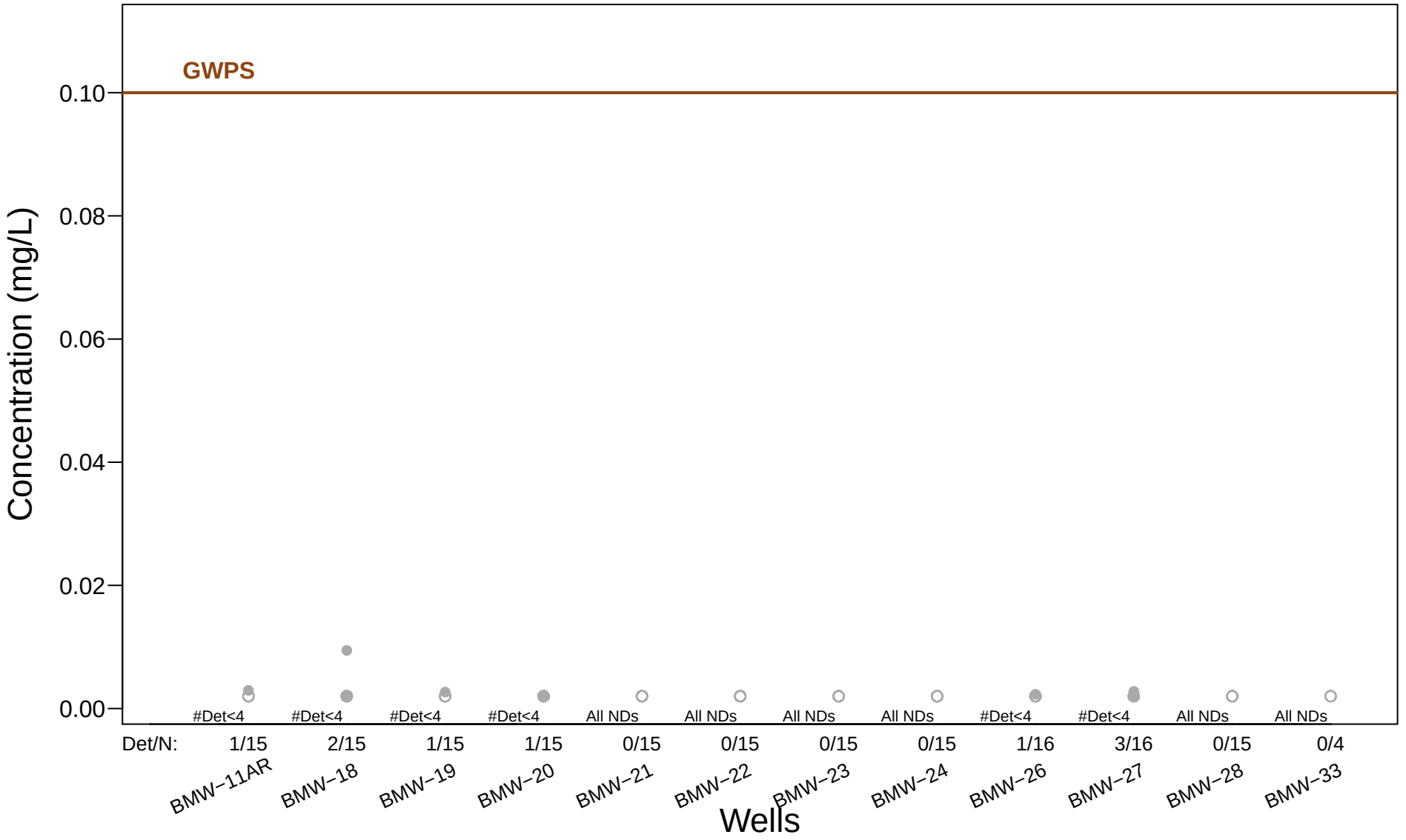
Barium – 95% Confidence Intervals



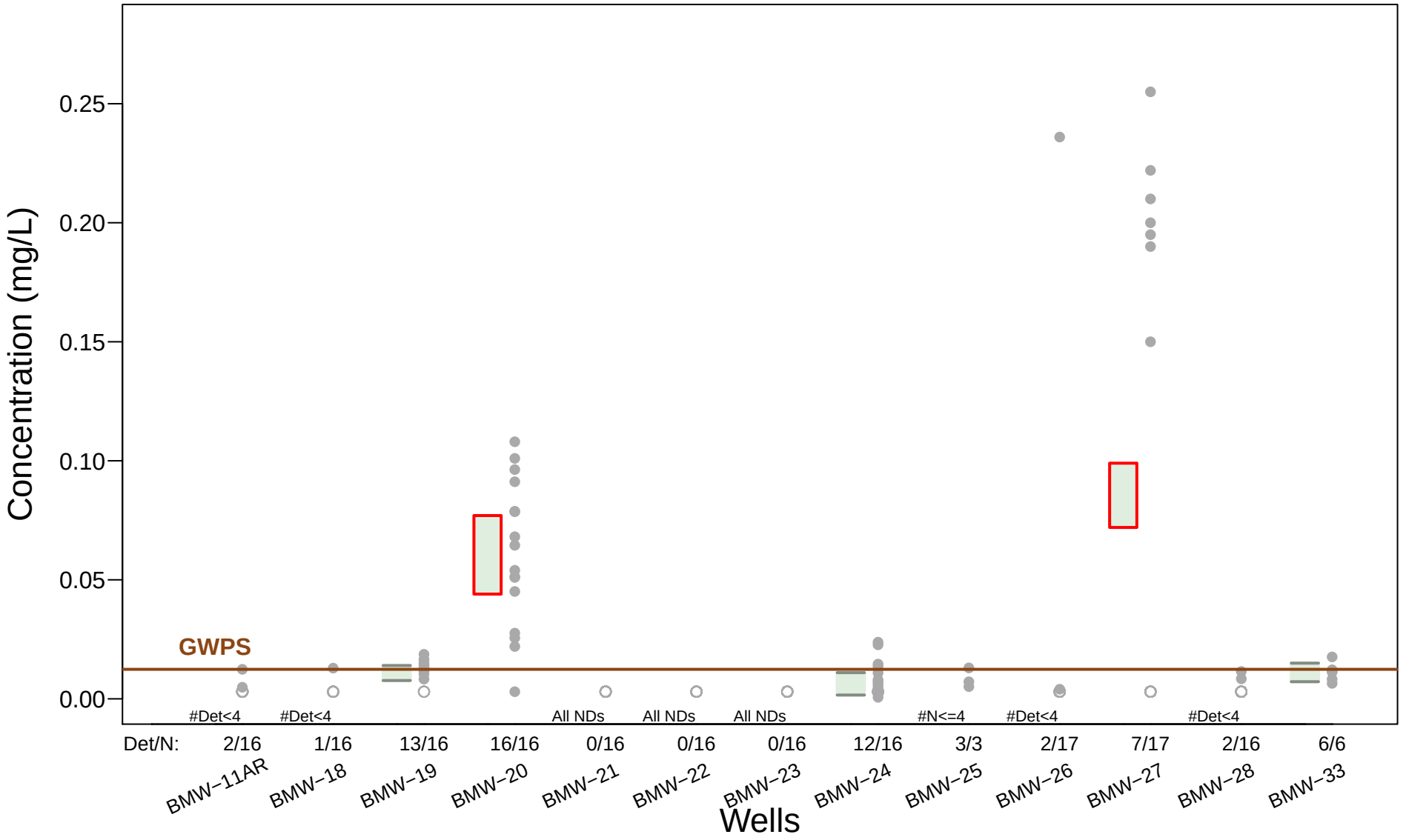
Cadmium – 95% Confidence Intervals



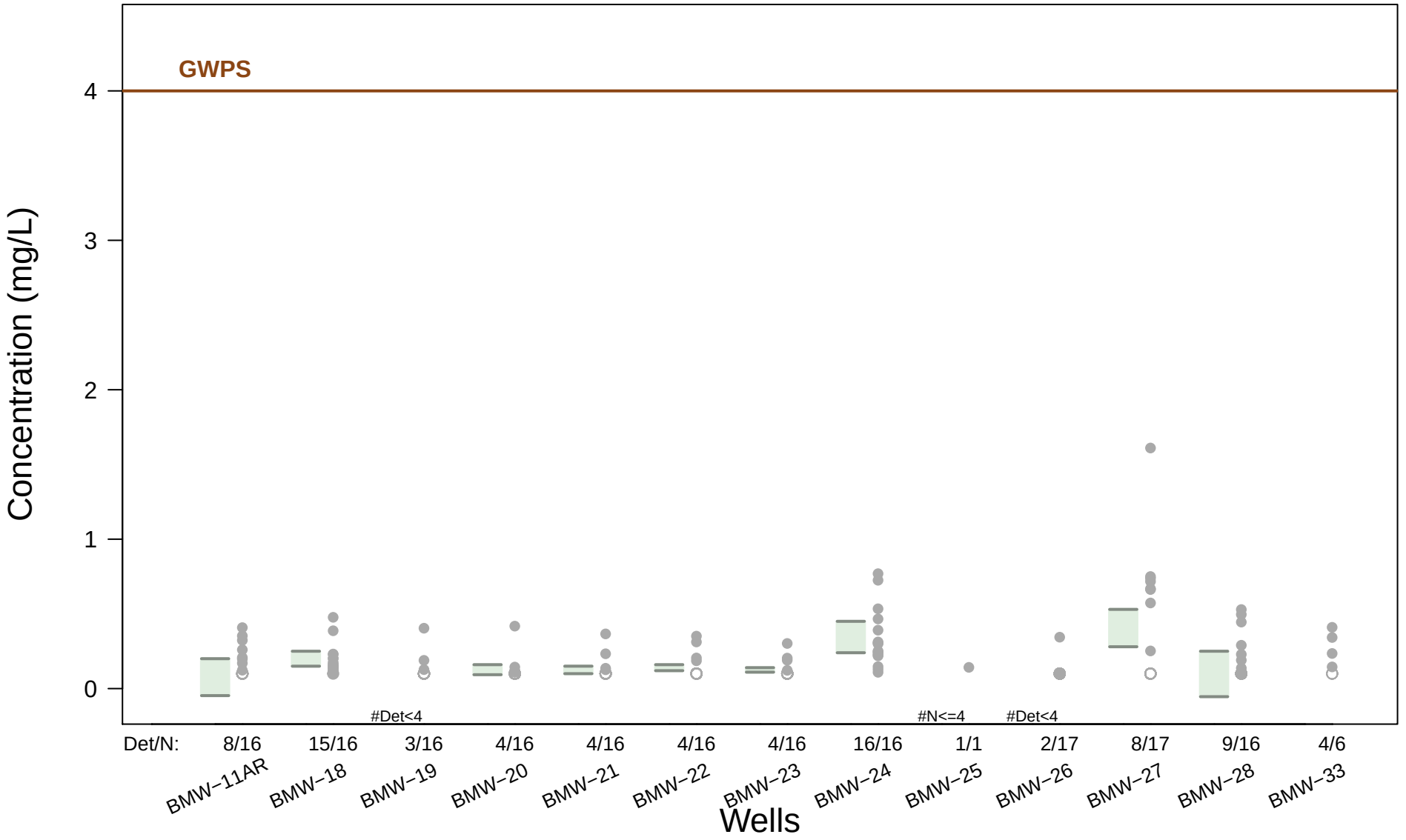
Chromium – 95% Confidence Intervals



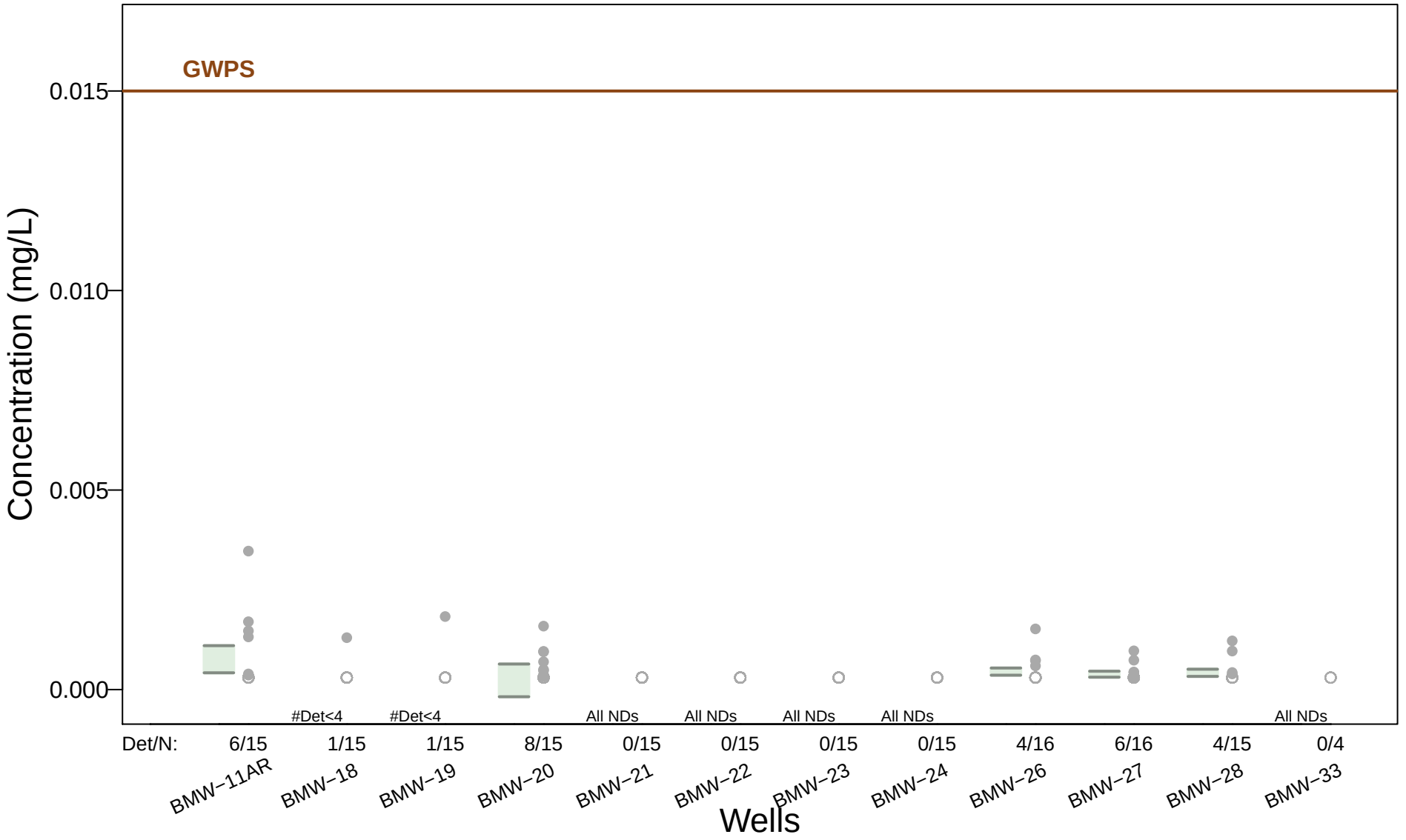
Cobalt – 95% Confidence Intervals



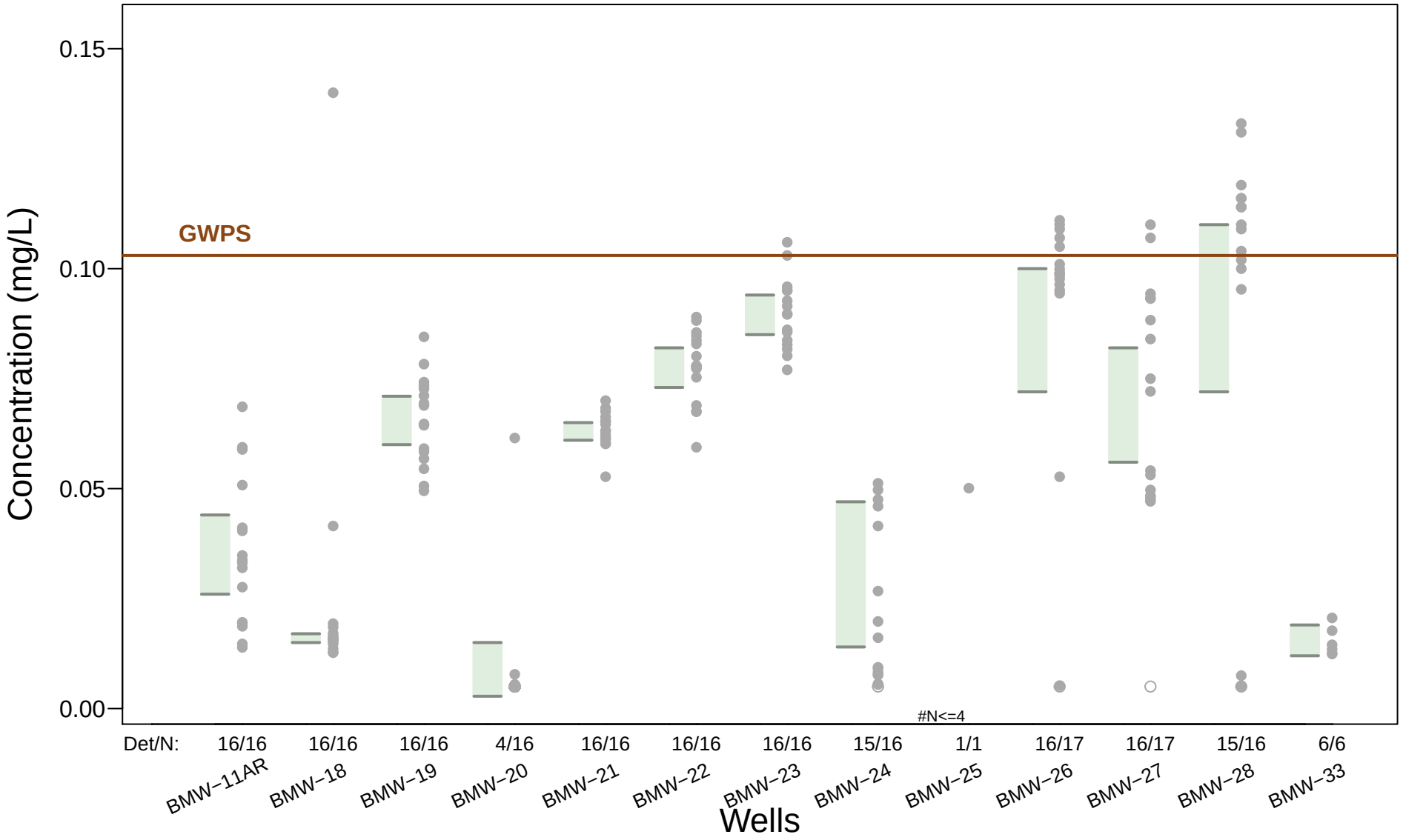
Fluoride (Appendix IV) – 95% Confidence Intervals



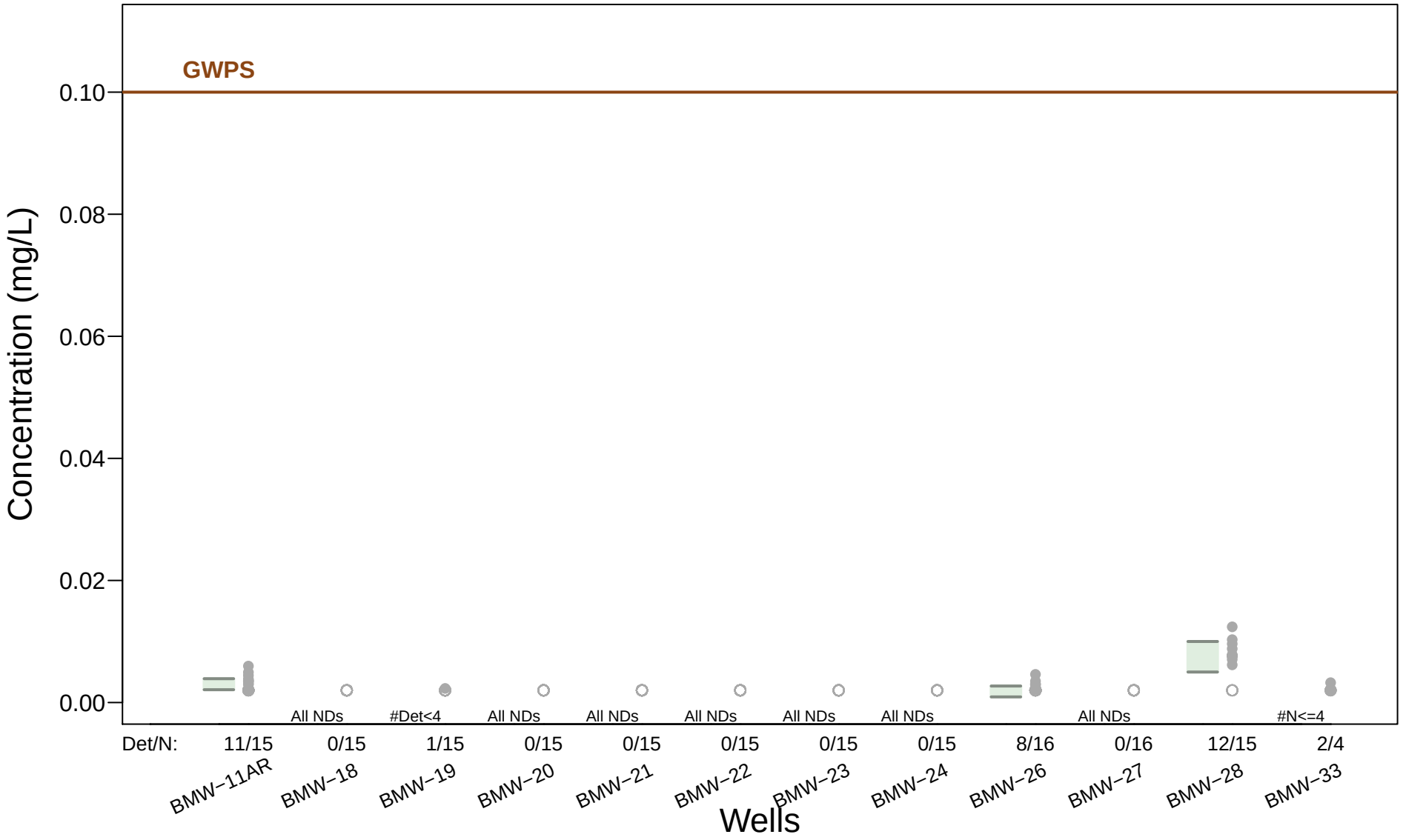
Lead – 95% Confidence Intervals



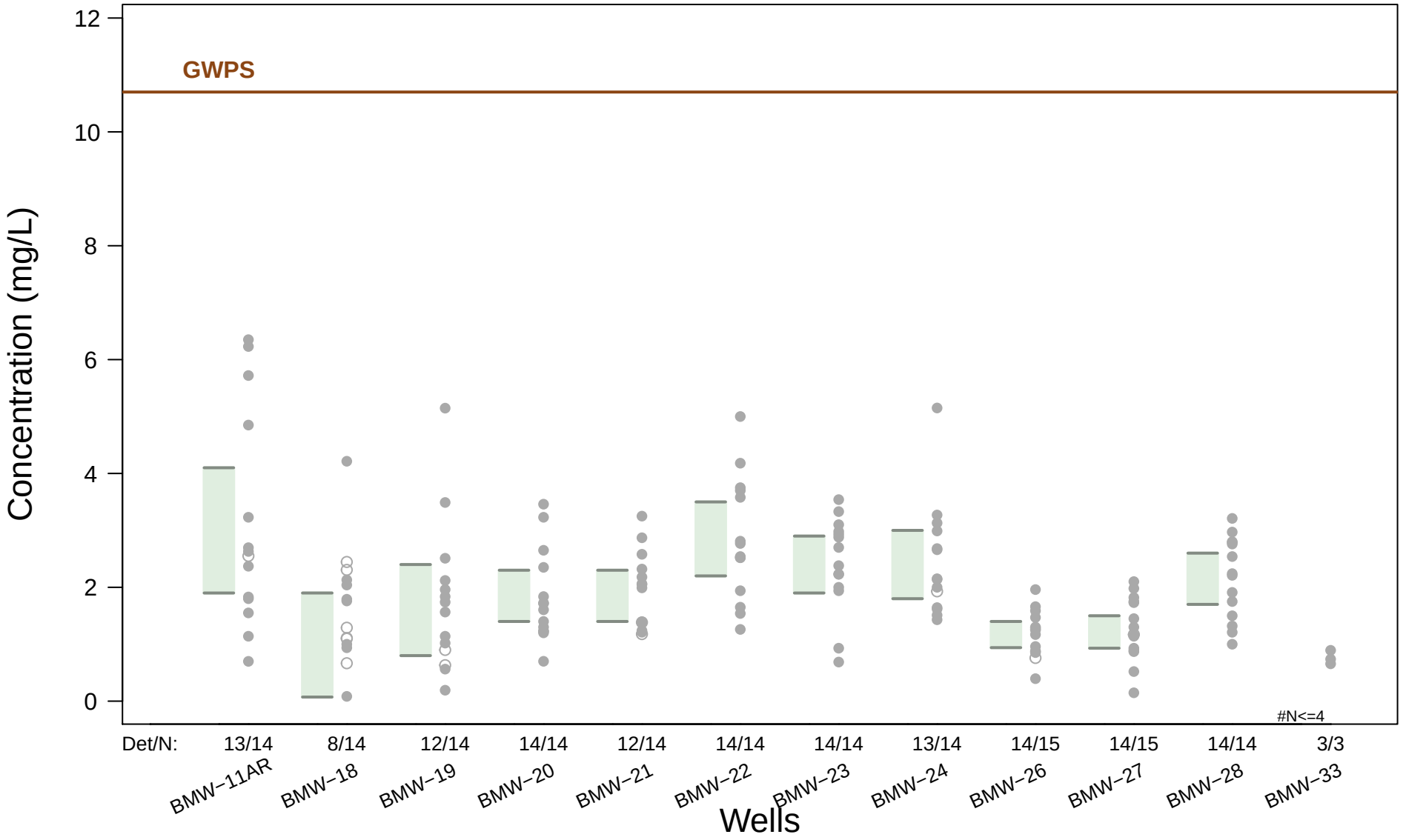
Lithium – 95% Confidence Intervals



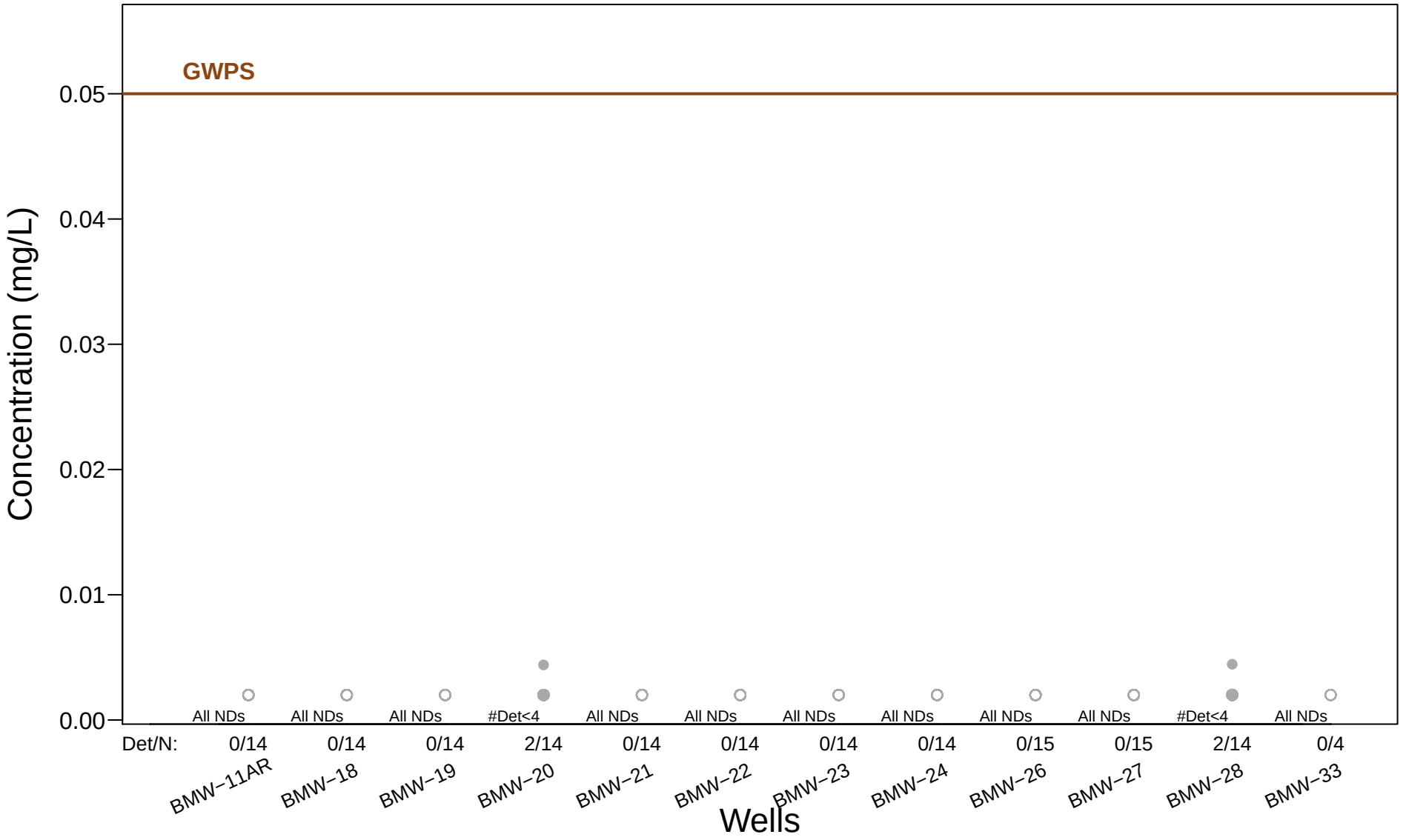
Molybdenum – 95% Confidence Intervals



Radium−226/228 combined − 95% Confidence Intervals

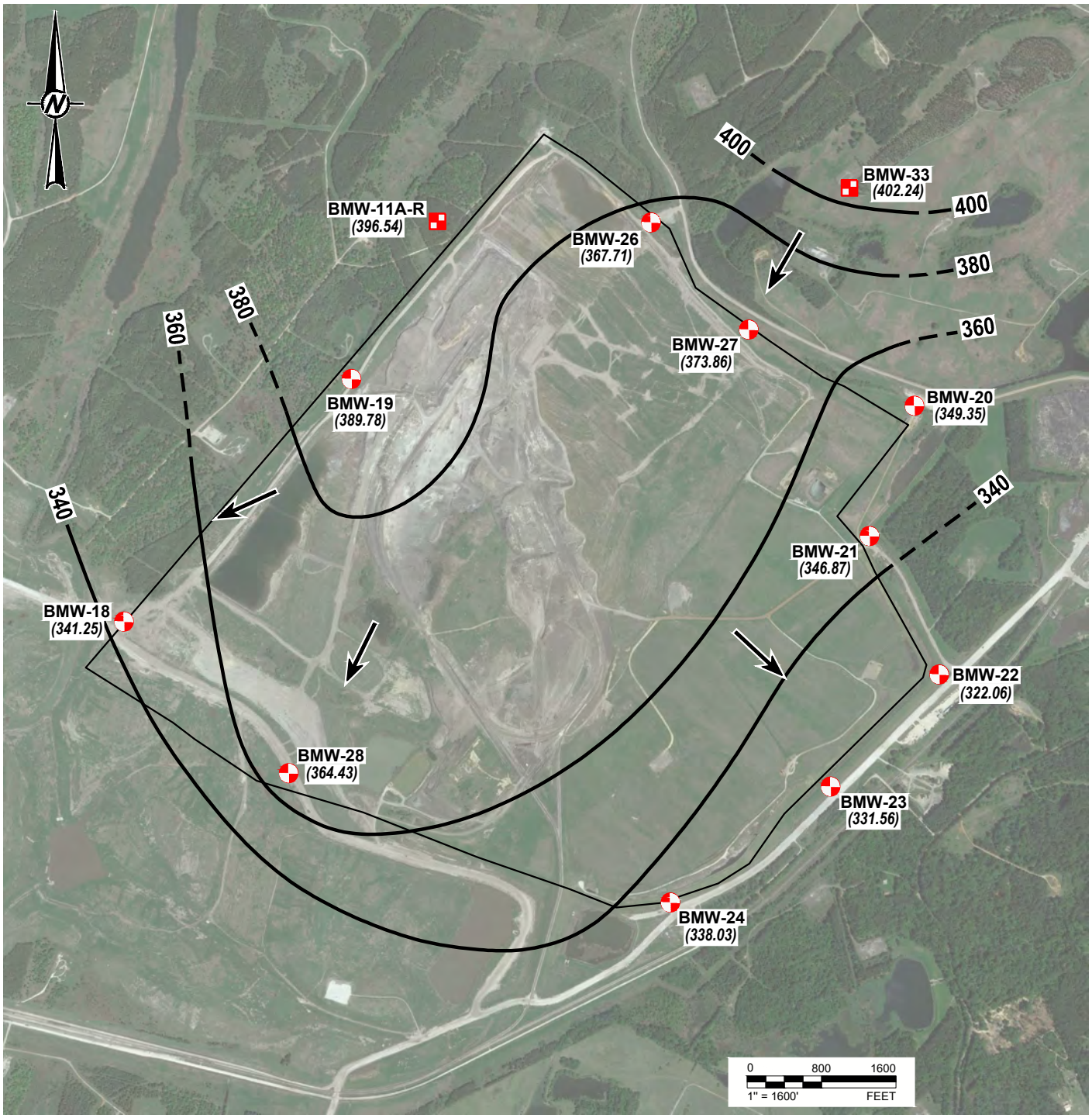


Selenium – 95% Confidence Intervals



ATTACHMENT 3

2021 GROUNDWATER POTENTIOMETRIC SURFACE MAPS



LEGEND

- DOWNGRADIENT CCR MONITORING WELL
- UPGRADIENT CCR MONITORING WELL
- (358.02) GROUNDWATER POTENTIOMETRIC SURFACE (FT MSL)
- 360 GROUNDWATER POTENTIOMETRIC SURFACE CONTOUR (C.I. = 20 FT)
- INFERRED GROUNDWATER FLOW DIRECTION

STATE OF TEXAS
WILLIAM F VIENNE
GEOLOGY
No. 10492
LICENSED
PROFESSIONAL GEOSCIENTIST
11/16/2022

REFERENCE(S)
BASE MAP TAKEN FROM GOOGLE EARTH IMAGERY DATED 4/6/17.

CLIENT
LUMINANT

PROJECT
MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

TITLE
A1 AREA LANDFILL
POTENTIOMETRIC SURFACE MAP
JUNE 14, 2021

CONSULTANT
WSP GOLDER

YYYY-MM-DD	2022-12-02
DESIGNED	AJD
PREPARED	AJD
REVIEWED	WFV
APPROVED	WFV

PROJECT NO.	CONTROL	REV.	FIGURE
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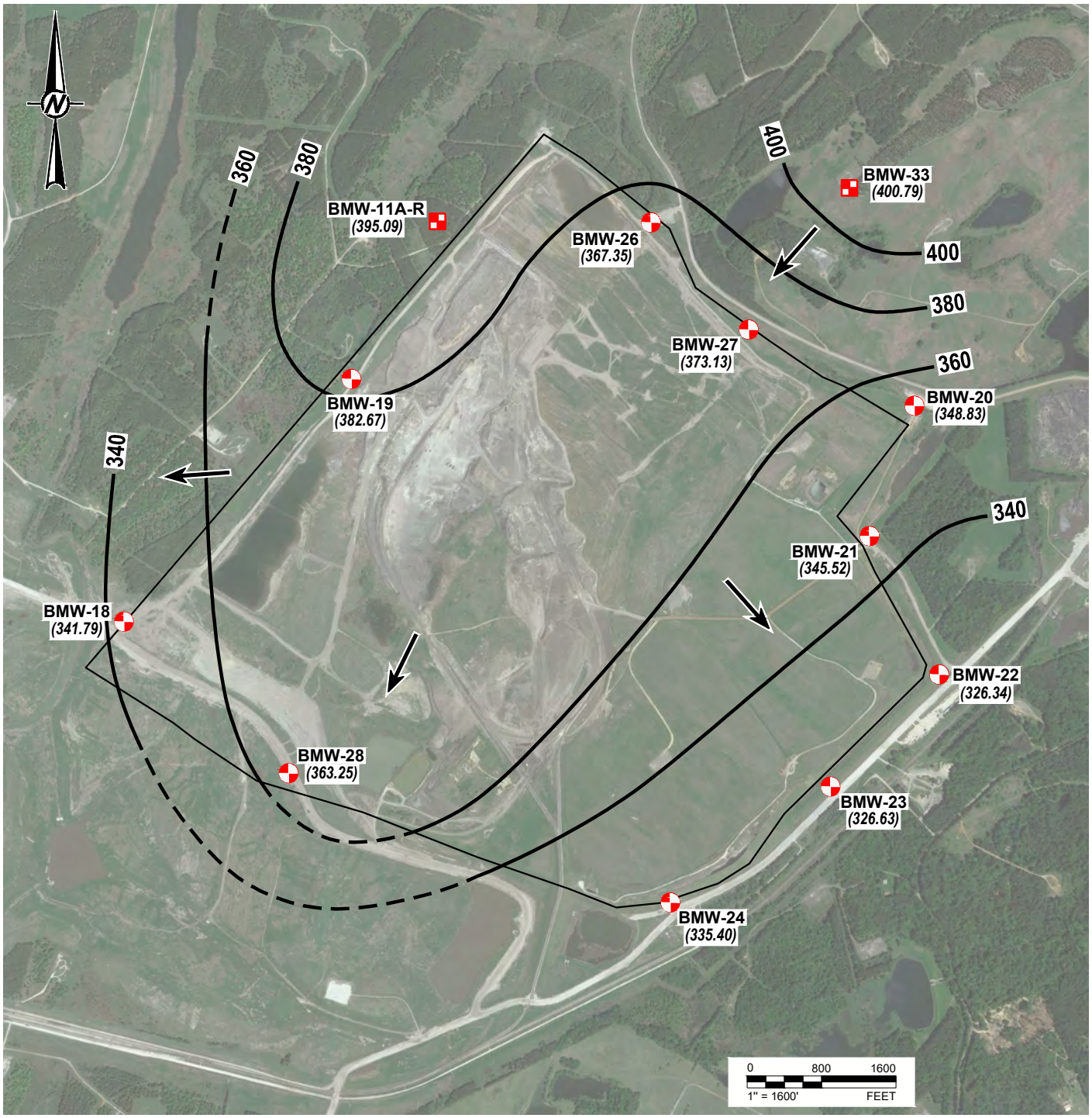

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STATE OF TEXAS
WILLIAM F VIENNE
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No. 10492
LICENSED
PROFESSIONAL GEOSCIENTIST
11/16/2022

REFERENCE(S)
BASE MAP TAKEN FROM GOOGLE EARTH IMAGERY DATED 4/6/17.

CLIENT
LUMINANT

PROJECT
MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

TITLE
A1 AREA LANDFILL
POTENTIOMETRIC SURFACE MAP
OCTOBER 6, 2021

CONSULTANT
WSP GOLDER

YYYY-MM-DD	2022-12-02
DESIGNED	AJD
PREPARED	AJD
REVIEWED	WFV
APPROVED	WFV

PROJECT NO.	CONTROL	REV.	FIGURE
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2021 Annual Groundwater Monitoring and Corrective Action Report - Revision 1

Martin Lake Steam Electric Station Ash Pond Area - Rusk County, Texas

Prepared for:

Luminant Generation Company LLC

Prepared by:

Golder Associates Inc., Member of WSP

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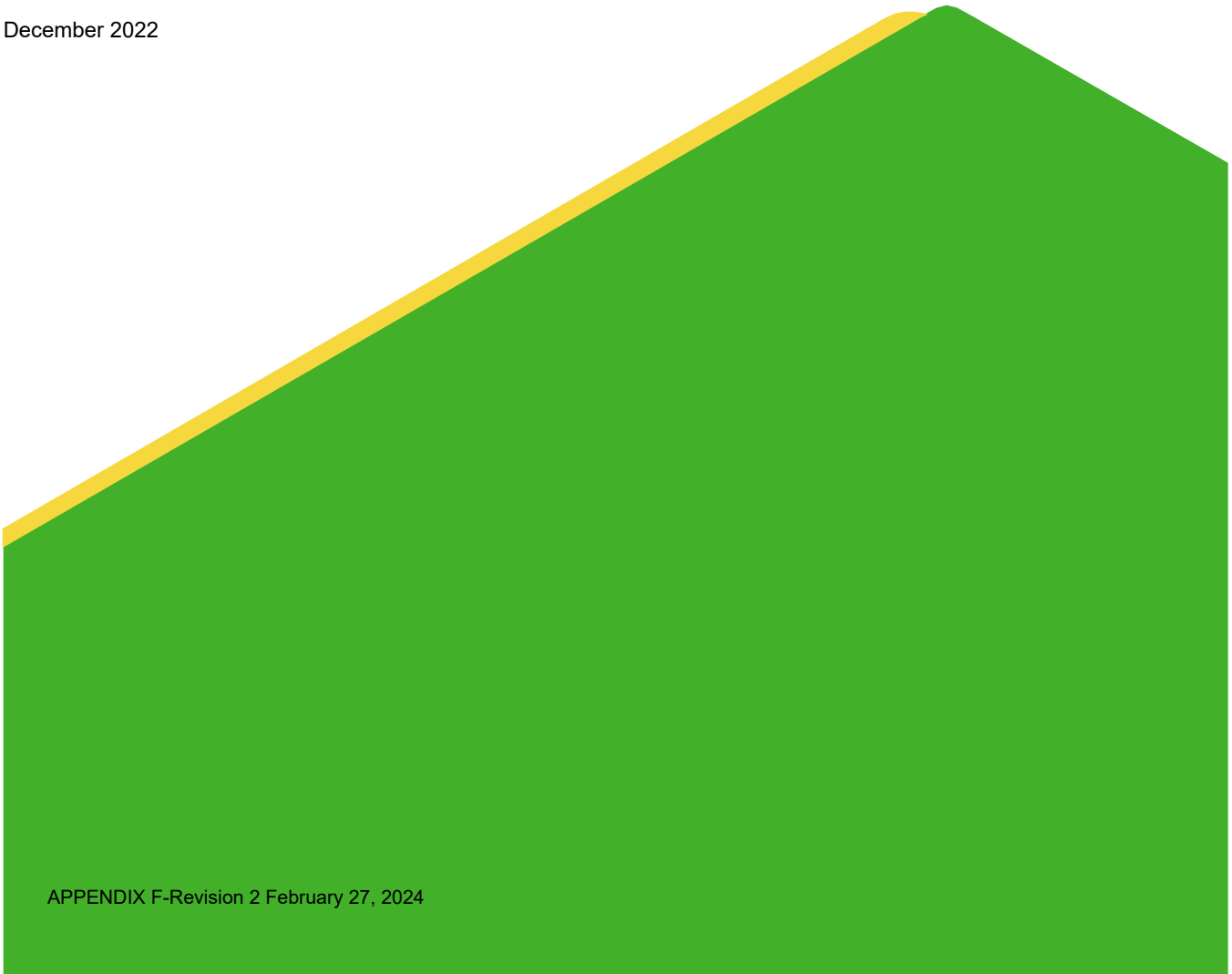
December 2022



APPENDIX F-Revision 2 February 27, 2024

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ACRONYMS AND ABBREVIATIONS

ACM	Assessment of Corrective Measures
CCR	Coal Combustion Residuals
C.F.R.	Code of Federal Regulations
GWPS	Groundwater Protection Standard
MCL	Maximum Concentration Level
mg/L	Milligrams per Liter
MLSES	Martin Lake Steam Electric Station
MNA	Monitored Natural Attenuation
NA	Not Applicable
SSI	Statistically Significant Increase
SSL	Statistically Significant Level
T.A.C.	Texas Administrative Code
USEPA	United States Environmental Protection Agency

DOCUMENT REVISION RECORD

Issue No.	Date	Details of Revisions
Revision 0	January 31, 2022	Original Document
Revision 1	December 2022	Added laboratory analytical reports, documentation on statistical evaluation of Appendix IV groundwater data, groundwater potentiometric surface maps, and professional seals to figures where applicable

EXECUTIVE SUMMARY

Golder Associates USA Inc. (Golder), Member of WSP, has prepared this report on behalf of Luminant Generation Company LLC (Luminant) to satisfy the 2021 annual groundwater monitoring and corrective action reporting requirements of 40 C.F.R. Part 257 and 30 T.A.C. Chapter 352 for the Ash Pond Area (the "CCR units") at the Martin Lake Steam Electric Station (MLSES) in Rusk County, Texas. The CCR units and CCR monitoring well network are shown on Figure 1.

At the beginning and end of the 2021 reporting period, the CCR units were operating under an Assessment Monitoring Program as described in §257.95. The Assessment Monitoring Program was established on July 16, 2018. Concentrations of Appendix IV constituents at statistically significant levels (SSLs) above groundwater protection standards (GWPSs) were identified in January 2019 for beryllium, cobalt, and lithium in the Ash Pond Area. An Assessment of Corrective Measures (ACM) was initiated on April 8, 2019 and completed on September 5, 2019 in accordance with §257.96 to address the Appendix IV SSLs. A public meeting was held on November 13, 2019, pursuant to §257.96(e), to discuss the results of the ACM. A Remedy Selection Report (Golder 2022) was completed in January 2022 in accordance with the requirements of §257.97. Monitored natural attenuation (MNA) with source control measures was selected as the remedy to address the Appendix IV constituents observed at SSLs. A Site-specific feasibility study to evaluate MNA as a potential groundwater remedy for the Appendix IV constituents observed at SSLs was performed in accordance with guidance and best practices promulgated by the USEPA (USEPA 2007a and 2007b) and Interstate Technology and Regulatory Council (ITRC 2010). Summary reports documenting the MNA feasibility study were included as attachments to the Remedy Selection Report.

During 2021, SSLs above GWPSs were observed in the Ash Pond Area for beryllium in well H-31 and cobalt in wells H-28, H-31, and H-32.

1.0 INTRODUCTION

The CCR Rule (40 C.F.R. 257 Subpart D - *Standards for the Receipt of Coal Combustion Residuals in Landfills and Surface Impoundments*) has been promulgated by the United States Environmental Protection Agency (USEPA) to regulate the management and disposal of CCRs as solid waste under Resource Conservation and Recovery Act (RCRA) Subtitle D. TCEQ has adopted portions of the federal CCR rule at 30 T.A.C. Chapter 352 (Texas CCR Rule), and USEPA published its final approval of the Texas CCR rule on June 28, 2021. *See* 86 Fed. Reg. 33,892 (June 28, 2021). The Texas CCR Rule became effective on July 28, 2021, and it adopts and incorporates by reference the requirements for the annual groundwater monitoring report located at 40 C.F.R. §257.90. *See* 30 T.A.C. § 352.901. It further adopts and incorporates by reference the Federal CCR Program requirements for detection and assessment monitoring in 30 T.A.C. §352.941 and 30 T.A.C. §352.951, respectively. Pursuant to 30 T.A.C. §352.902, this report will be submitted to TCEQ for review no later than 30 days after the report has been placed in the facility's operating record. For existing CCR landfills and surface impoundments, the CCR Rule requires that the owner or operator prepare an annual groundwater monitoring and corrective action report to document the status of the groundwater monitoring and corrective action program for the CCR unit for the previous calendar year. Per §257.90(e) of the CCR Rule, the report should contain the following information, to the extent available:

(1) A map, aerial image, or diagram showing the CCR unit and all background (or upgradient) and downgradient monitoring wells, to include the well identification numbers, that are part of the groundwater monitoring program for the CCR unit;

(2) Identification of any monitoring wells that were installed or decommissioned during the preceding year, along with a narrative description of why those actions were taken;

(3) In addition to all the monitoring data obtained under §§ 257.90 through 257.98, a summary including the number of groundwater samples that were collected for analysis for each background and downgradient well, the dates the samples were collected, and whether the sample was required by the detection monitoring or assessment monitoring programs;

(4) A narrative discussion of any transition between monitoring programs (*e.g.,* the date and circumstances for transitioning from detection monitoring to assessment monitoring in addition to identifying the constituent(s) detected at a statistically significant increase over background levels); and

(5) Other information required to be included in the annual report as specified in §§ 257.90 through 257.98.

(6) A section at the beginning of the annual report that provides an overview of the current status of groundwater monitoring and corrective action programs for the CCR unit. At a minimum, the summary must specify all of the following:

(i) At the start of the current annual reporting period, whether the CCR unit was operating under the detection monitoring program in §257.94 or the assessment monitoring program in §257.95;

(ii) At the end of the current annual reporting period, whether the CCR unit was operating under the detection monitoring program in §257.94 or the assessment monitoring program in §257.95;

(iii) If it was determined that there was a statistically significant increase over background for one or more constituents listed in Appendix III to this part pursuant to §257.94(e):

(A) Identify those constituents listed in Appendix III to this part and the names of the monitoring wells associated with such an increase; and

(B) Provide the date when the assessment monitoring program was initiated for the CCR unit.

(iv) If it was determined that there was a SSL above the groundwater protection standard for one or more constituents listed in Appendix IV to this part pursuant to §257.95(g) include all of the following:

(A) Identify those constituents listed in Appendix IV to this part and the names of the monitoring wells associated with such an increase;

(B) Provide the date when the assessment of corrective measures was initiated for the CCR unit;

(C) Provide the date when the public meeting was held for the assessment of corrective measures for the CCR unit; and

(D) Provide the date when the assessment of corrective measures was completed for the CCR unit.

(v) Whether a remedy was selected pursuant to §257.97 during the current annual reporting period, and if so, the date of remedy selection; and

(vi) Whether remedial activities were initiated or are ongoing pursuant to §257.98 during the current annual reporting period.

2.0 MONITORING AND CORRECTIVE ACTION PROGRAM STATUS

Golder collected the initial Detection Monitoring Program groundwater samples from the Ash Pond Area CCR monitoring well network in September 2017. The evaluation of those data was completed in 2018 using procedures described in the Statistical Analysis Plan (Golder 2022a) to identify statistically significant increases (SSIs) of Appendix III parameters over background concentrations. The Detection Monitoring Program sampling dates and parameters are summarized in the following table:

Detection Monitoring Program Summary

Sampling Dates	Parameters	SSIs	Assessment Monitoring Program Established
September 21, 2017	Appendix III	Yes	July 16, 2018

Alternate source evaluations were inconclusive for one or more of the SSIs. Consequently, an Assessment Monitoring Program was initiated and established for the Ash Pond Area CCR units in 2018 in accordance with §257.94(e)(2).

Golder collected the initial Assessment Monitoring Program groundwater samples in June 2018. Subsequent Assessment Monitoring Program sampling events have been conducted on a semi-annual basis, as required by the CCR Rule. All CCR groundwater monitoring wells were sampled for Appendix III and Appendix IV constituents during the semi-annual sampling events.

The statistical background prediction limits used to assess Appendix III data and the GWPSs used to assess Appendix IV data are summarized in Tables 1 and 2, respectively. Appendix III and Appendix IV analytical data are summarized in Tables 3 and 4, respectively, and the laboratory analytical reports are provided in Attachment 1.

Concentrations of Appendix IV constituents at statistically significant levels (SSLs) above GWPSs were identified in January 2019 for beryllium, cobalt, and lithium. Notification of these SSLs was placed in the operating record on February 6, 2019 and was subsequently placed on the public website in accordance with §257.107(d). An ACM was initiated on April 8, 2019 pursuant to §257.95(g). A justification letter for a 60-day extension due to site-specific circumstances that delayed work on the ACM was certified on July 3, 2019 in accordance with §257.96(a). A copy of the extension justification letter was provided in the 2019 Annual Groundwater Monitoring and Corrective Action Report. The ACM was completed in September 2019 (Golder 2019) for the parameters detected at SSLs above GWPSs (i.e., beryllium, cobalt, and lithium), pursuant to §257.96.

Additional semi-annual Assessment Monitoring events were conducted in 2019 through 2021. Statistical analysis of the sample data was performed in accordance with the Statistical Analysis Plan (Golder 2022a) and USEPA Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities-Unified Guidance (USEPA 2009). The statistical analysis included an evaluation of statistical confidence intervals based on Appendix IV sample data collected from downgradient monitoring wells. SSLs are indicated if the 95% lower confidence limit of a particular parameter's data population exceeds the GWPS. SSLs above GWPSs were identified for beryllium and cobalt during each of the semi-annual groundwater assessments in 2019 through 2021. Notification of the beryllium and cobalt SSLs have been made after SSLs are identified in accordance with §257.107(d). SSLs for lithium have not been observed since 2018. Graphical representations of the statistical analysis performed on the 2021 data are provided in Attachment 2.

The Assessment Monitoring Program sampling dates and parameters are summarized in the following table:

Assessment Monitoring Program Summary

Sampling Dates	Analytical Data Receipt Date	Parameters Collected	Constituents with SSL(s)	SSL Determination Date	Corrective Measures Assessment Initiated	Corrective Measures Assessment Completed
June 12-13, 2018	July 27, 2018	Appendix III Appendix IV	NA	NA	NA	NA
September 7, 2018	October 8, 2018	Appendix III Appendix IV	Be, Co, Li	January 7, 2019	April 8, 2019	September 5, 2019
May 14, 2019	June 14, 2019	Appendix III Appendix IV	Be and Co	September 5, 2019	NA	NA
September 10, 2019	October 11, 2019	Appendix III Appendix IV	Be and Co	January 8, 2020	NA	NA
May 13, 2020	June 12, 2020	Appendix III Appendix IV	Be and Co	July 22, 2020	NA	NA
October 6, 2020	November 6, 2020	Appendix III Appendix IV	Be and Co	December 7, 2020	NA	NA
June 4, 2021	July 8, 2021	Appendix III Appendix IV	Be and Co	July 14, 2021	NA	NA
October 4, 2021	November 10, 2021	Appendix III Appendix IV	Be and Co	January 10, 2022	NA	NA

Notes:

NA: Not Applicable

3.0 KEY ACTIONS COMPLETED IN 2021

Assessment Monitoring Program groundwater monitoring events were completed in June and October 2021. The number of groundwater samples that were collected for analysis for each background and downgradient well, the dates the samples were collected, and the analytical results for the groundwater samples are summarized in Table 3 (Appendix III parameters) and Table 4 (Appendix IV parameters). No CCR wells were installed or decommissioned in 2021.

Water elevations measured in the CCR wells during the 2021 semi-annual groundwater sampling events were used to develop groundwater potentiometric surface maps, which are presented in Attachment 3. The inferred direction of groundwater flow was generally to the east during both semi-annual groundwater sampling events in 2021.

As noted in Section 2.0, an ACM for the Appendix IV parameters identified at SSLs above GWPSs in 2018 (beryllium, cobalt, and lithium) was completed in September 2019. The ACM evaluated potential corrective measures alternatives, including retrofitting the Ash Ponds liner systems for purposes of source control. A public meeting was held on November 13, 2019, pursuant to §257.96(e), to discuss the results of the ACM. In accordance with §257.102(k)(5), a notification of intent to retrofit the Ash Pond Area liner systems was posted on June 29, 2020. Design of the Ash Pond Area liner system retrofit has been completed and construction is underway. The EAP and WAP were retrofitted in 2020 and 2021, respectively, with a new composite liner system meeting the requirements of § 257.70(b). The liner system in the NSP will be similarly retrofitted in 2022.

A Remedy Selection Report (Golder 2022b) was completed in January 2022 in accordance with the requirements of §257.97. MNA with source control measures was selected as the remedy to address the Appendix IV constituents observed at SSLs. A Site-specific feasibility study to evaluate MNA as a potential groundwater remedy for the Appendix IV constituents observed at SSLs was performed in accordance with guidance and best practices promulgated by the USEPA (USEPA 2007a and 2007b) and Interstate Technology and Regulatory Council (ITRC 2010). Summary reports documenting the MNA feasibility study were included as attachments to the Remedy Selection Report. Based on the results of the MNA feasibility study, the following was concluded regarding the Appendix IV constituents identified at SSLs:

- Physical and chemical attenuation of beryllium, cobalt, and lithium is occurring at the Site. Concentrations of these constituents in groundwater are stable and the aquifer has adequate capacity to attenuate these constituents in a reasonable timeframe. Geochemical modeling indicates that attenuation will be efficient and stable in the long term. Therefore, MNA with source control measures is considered an effective corrective measure for the Ash Pond Area.

4.0 PROBLEMS ENCOUNTERED AND ACTIONS TO RESOLVE THE PROBLEMS

No problems were encountered with the CCR groundwater monitoring program in 2021.

5.0 KEY ACTIVITIES PLANNED FOR 2022

The following key activities are planned for 2022:

- Luminant submitted a registration application to TCEQ under the Texas CCR Rule for the Martin Lake Ash Pond Area on January 24, 2022.
- Continue the Assessment Monitoring Program in accordance with applicable provisions of 40 C.F.R. §257.95 and 30 TAC §352.951.
- An assessment of MNA effectiveness in addressing SSLs will be documented in future Annual Groundwater Monitoring and Corrective Action Reports.
- The retrofit of the NSP is scheduled for 2022. This will complete the retrofit of the Ash Pond area.

6.0 REFERENCES

Golder, 2019. CCR Assessment of Corrective Measures, Martin Lake Steam Electric Station – Ash Pond Area, Rusk County, Texas. September.

Golder, 2022a. Statistical Analysis Plan – Revision No. 1, Martin Lake Steam Electric Station – Ash Pond Area, Rusk County, Texas.

Golder, 2022b. Remedy Selection Report, Martin Lake Steam Electric Station – Ash Pond Area, Rusk County, Texas. January 18.

Interstate Technology and Regulatory Council (ITRC), 2010. A Decision Framework for Applying Monitored Natural Attenuation Processes to Metals and Radionuclides in Groundwater. Technical/Regulatory Guidance, December 2010.

USEPA, 2007a. Monitored Natural Attenuation of Inorganic Contaminants in Ground Water. Volume 1. Technical Basis for Assessment. EPA/600/R-07/139.

USEPA, 2007b. Monitored Natural Attenuation of Inorganic Contaminants in Ground Water. Volume 2. Assessment for Non-Radionuclides Including Arsenic, Cadmium, Chromium, Copper, Lead, Nickel, Nitrate, Perchlorate, and Selenium. EPA/600/R-07/140.

USEPA, 2009. Unified Guidance Document: Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, EPA 530-R-09-007, March 2009.

Signature Page

Golder Associates Inc., Member of WSP

Patrick J. Behling
Principal Engineer

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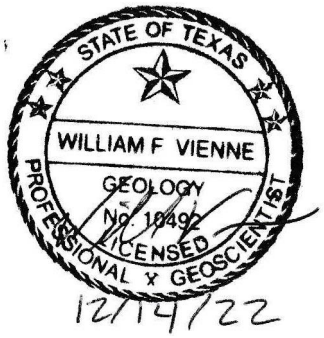
Senior Hydrogeologist



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FIGURES

LEGEND

- DOWNGRADIENT CCR MONITORING WELL
- UPGRADIENT CCR MONITORING WELL

STATE OF TEXAS
WILLIAM F VIENNE
GEOLOGY
No. 10492
LICENSED
PROFESSIONAL GEOSCIENTIST
11/16/2022

REFERENCE(S)
BASE MAP TAKEN FROM GOOGLE EARTH IMAGERY DATED 4/6/17.

CLIENT
LUMINANT

PROJECT
MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

TITLE
DETAILED SITE PLAN - ASH POND AREA

CONSULTANT
GOLDER

YYYY-MM-DD	2020-01-23
DESIGNED	AJD
PREPARED	AJD
REVIEWED	WFV
APPROVED	WFV

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Path: \\texarkanadata\Projects - Round Rock_2019\19122262 - Luminant\C - MLSES-Ash Pond Area\ | File Name: FIG 1 - Detailed Site Plan (Ash Pond Area).dwg
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TABLES

Table 1
Appendix III Background Statistical Values
MLSES Ash Pond Area

Parameter	Statistical Background Value
Boron (mg/L)	0.602
Calcium (mg/L)	57.2
Chloride (mg/L)	153
Fluoride (mg/L)	0.4
field pH (s.u.)	4.63 7.6
Sulfate (mg/L)	365
Total Dissolved Solids (mg/L)	1,110

Table 2
Appendix IV Analytical Results
MLSES Ash Pond Area

Parameter	Groundwater Protection Standard
Antimony (mg/L)	0.006
Arsenic (mg/L)	0.01
Barium (mg/L)	2
Beryllium (mg/L)	0.004
Cadmium (mg/L)	0.005
Chromium (mg/L)	0.1
Cobalt (mg/L)	0.0564
Fluoride (mg/L)	4
Lead (mg/L)	0.015
Lithium (mg/L)	0.177
Mercury (mg/L)	0.002
Molybdenum (mg/L)	0.1
Selenium (mg/L)	0.05
Thallium (mg/L)	0.002
Radium 226+228 (pCi/L)	5

TABLE 3
APPENDIX III ANALYTICAL RESULTS
MLSES ASH POND AREA

Sample Location	Date Sampled	B (mg/L)	Ca (mg/L)	Cl (mg/L)	F (mg/L)	pH (s.u.)	SO_4 (mg/L)	TDS (mg/L)
Upgradient Wells								
H-26	10/21/15	0.602	24.2	69.2	<0.1	5.82	154	466
	12/14/15	0.0679	9.88	40.3	<0.1	5.91	76	280
	02/23/16	0.206	11.7	17.1	0.151 J	6.84	54	219
	04/05/16	0.289	11.8	27.8	0.199 J	5.89	57	213
	06/07/16	0.441	11.7	48.6	<0.1	5.98	72	278
	08/09/16	0.569	14	70	<0.1	4.63	91	354
	10/18/16	0.439	13.6	49.1	0.127 J	6.63	70	263
	12/11/16	0.537	11.9	57.6	0.161 J	6.73	69	236
	09/21/17	0.579	13.1	67.8	<0.100	6.88	70	288
	06/13/18	0.512	17	66.1	<0.100	6.74	67	313
	09/07/18	0.606	11.3	65.1	<0.100	6.85	61	265
	05/14/19	0.0507	85.2	61.7	0.140 J	6.83	88	453
	09/10/19	0.505	12	72.1	<0.100	6.75	69	265
	05/13/20	0.644	30.4	71	<0.100	6.89	58	280
	10/06/20	0.473	10.9	68.2	<0.100	6.53	52	252
	06/10/21	0.502	13.7	66.1	0.245 J	6.79	61	278
	10/04/21	0.409	12.1	72.8	<0.100	6.57	56	247
	10/04/21 DUP	0.412	12.6	75.6	<0.1	6.57	57	253
H-27	10/21/15	0.58	55.3	117	<0.1	6.24	328	800
	12/14/15	0.474	57.2	112	0.156 J	6.32	317	857
	02/23/16	0.523	53.8	113	0.101 J	5.82	344	811
	04/05/16	0.48	52.7	115	0.124 J	6.04	360	819
	06/07/16	0.319	10.6	40.5	<0.1	6.32	55	207
	08/09/16	0.462	54.3	124	<0.1	4.35	365	854
	10/18/16	0.477	56.5	114	0.144 J	6.87	336	868
	12/11/16	0.427	52.8	119	0.161 J	6.78	355	805
	09/21/17	0.48	61.1	122	<0.100	6.87	378	852
	06/13/18	0.404	57	110	0.208 J	6.52	372	850
	09/07/18	0.347	6.96	58.3	0.14 J	6.72	188	716
	05/14/19	0.35	61.8	132	0.159 J	6.78	406	897
	09/10/19	0.368	57.7	117	<0.1	6.77	365	841
	05/13/20	0.583	53.1	93	<0.100	6.92	274	786
	10/06/20	0.465	11.0	68.0	<0.100	6.55	52	253
	06/10/21	0.537	18	49.3	<0.100	6.74	46	219
	10/04/21	0.0511	39.5	84.7	<0.100	6.72	97	415
H-33	10/20/15	0.0462	17.9	60.5	<0.1	5.78	120	415
	12/14/15	0.0596	10.7	59.6	0.136 J	5.73	110	403
	02/23/16	0.0656	11.2	56.1	0.125 J	6.92	111	625
	04/05/16	0.0659	14.9	58.3	0.14 J	6.31	113	589
	06/07/16	0.0571	20.1	67.5	<0.1	6.04	121	515
	08/09/16	0.0431	11.2	64.9	<0.1	5.13	120	442
	10/18/16	0.0539	11.1	59.2	<0.1	6.86	114	398
	12/11/16	0.0594	12.1	63.2	0.132 J	6.85	112	395
	09/21/17	0.0452	13.7	67.9	<0.100	7.02	107	412
	06/13/18	0.114	24	65.5	0.105 J	6.72	94	447
	09/07/18	0.112	22.4	66.2	0.135 J	6.73	97	489
	05/14/19	0.0592	68.6	80.4	0.166 J	6.81	104	559
	09/10/19	0.0631	44.1	86.1	<0.1	6.75	119	495
	05/13/20	0.103	24	84.3	<0.100	6.63	113	439
	10/06/20	0.0763	19.7	83.0	<0.100	6.88	108	417
	06/10/21	0.072	81.6	86.8	0.272 J	6.64	112	569
	06/04/21 DUP	0.0605	81.3	85.0	0.265 J	6.64	113	563
	10/04/21	0.0557	49.1	99.8	<0.100	6.43	117	499

TABLE 3
APPENDIX III ANALYTICAL RESULTS
MLSES ASH POND AREA

Sample Location	Date Sampled	B (mg/L)	Ca (mg/L)	Cl (mg/L)	F (mg/L)	pH (s.u.)	SO_4 (mg/L)	TDS (mg/L)
Downgradient Wells								
H-28	10/21/15	9.25	113	109	<0.1	5.92	1,010	1,830
	12/14/15	1.02	17.3	15.5	<0.1	6.02	113	299
	02/23/16	10.2	123	97.4	<0.1	4.45	1,070	1,910
	04/05/16	10.3	120	94.4	<0.1	5.97	1,080	1,890
	06/07/16	3.66	45.4	62.2	<0.1	6.16	465	817
	08/09/16	9.29	116	98.4	<0.1	3.83	1,080	2,100
	10/18/16	4.96	67.3	91.4	0.165 J	6.82	643	1,460
	12/11/16	3.94	45.7	56.7	0.114 J	6.64	445	766
	09/21/17	6.06	74.1	88.5	<0.100	6.77	702	1,220
	06/13/18	6.97	92.1	96.5	0.126 J	6.59	826	1,490
	09/07/18	4.54	60.5	93.4	<0.100	6.84	679	1,330
	05/14/19	8.51	99.7	98.9	<0.100	6.32	935	1,680
	09/10/19	5.69	68.9	95.9	<0.100	6.89	716	1,390
	05/13/20	7.03	88.9	86.7	<0.100	6.58	676	1,220
	10/06/20	5.14	70.8	88.7	<0.100	6.72	638	1,220
	06/10/21	7.07	88.7	90.9	<0.100	6.57	817	1,480
	10/04/21	5.24	71.3	93.7	<0.100	6.57	681	1,220
H-29	10/21/15	0.0788	16	65.2	<0.1	5.78	171	441
	12/14/15	0.29	165	8.68	0.56	5.92	178	990
	02/23/16	0.268	59.4	14.6	0.239 J	11.20	156	334
	04/05/16	0.361	80.8	14.2	0.363 J	6.04	181	489
	06/07/16	0.311	29.8	19.3	0.27 J	6.13	166	308
	08/09/16	0.172	64.6	53.1	<0.1	5.97	124	575
	10/18/16	0.953	150	4.33	1.15	6.63	346	607
	12/11/16	1.02	130	4.65	1.4	6.59	365	651
	09/21/17	1.4	147	42	0.304	6.78	170	782
	06/13/18	5.89	81.1	84.1	0.123 J	6.75	713	1,240
	09/07/18	3.21	46.7	78.6	<0.100	6.77	544	1,030
	05/14/19	8.12	95.9	81.8	0.104 J	6.52	780	1,400
	09/10/19	8.05	97.1	90.5	<0.1	6.62	930	1,600
	05/13/20	6.98	84.9	70.7	<0.100	6.72	769	1,340
	10/06/20	11.0	156	167	1.76	6.62	1,400	2,440
	06/10/21	7.28	89.7	80.2	<0.100	6.78	482	987
	10/04/21	17.9	241	201	0.223 J	6.40	2,330	3,690
H-31	10/20/15	17.2	194	179	0.889	6.57	1,930	3,270
	12/14/15	20.4	236	147	0.692	6.60	1,740	2,250
	02/23/16	22.3	252	199	0.921	5.33	2,510	4,180
	04/05/16	21.1	250	186	1.36	6.46	2,450	3,920
	06/07/16	22.2	244	241	0.783	6.42	2,720	4,570
	08/09/16	24.1	251	217	0.216 J	4.38	2,730	4,440
	10/18/16	20	236	187	0.298 J	6.82	1,960	3,690
	12/11/16	22.3	246	201	0.892	6.82	2,640	4,170
	09/21/17	23.8	260	227	0.308 J	6.87	2,870	4,570
	06/12/18	16.6	246	205	0.646	6.61	2,390	4,100
	09/07/18	0.838	12.2	17.7	<0.275	6.77	136	457
	05/14/19	20	234	225	0.96	6.42	2,470	4,230
	09/10/19	19.7	234	232	2.1	6.78	2,640	4,220
	05/13/20	22.9	235	223	0.231 J	6.81	2,340	4,150
	10/06/20	9.77	148	110	0.494	6.78	1,150	2,000
	06/10/21	18.3	224	230	0.806	6.72	2,760	4,270
	10/04/21	16.7	244	208	<0.100	6.52	2,110	3,400

TABLE 3
APPENDIX III ANALYTICAL RESULTS
MLSES ASH POND AREA

Sample Location	Date Sampled	B (mg/L)	Ca (mg/L)	Cl (mg/L)	F (mg/L)	pH (s.u.)	SO_4 (mg/L)	TDS (mg/L)
H-32	10/20/15	1.22	42.2	120	0.374 J	6.18	309	797
	12/14/15	1.39	37.4	122	0.619	6.29	325	860
	02/23/16	1.48	45.3	123	0.701	4.82	323	842
	04/05/16	1.65	44.3	125	1.05	6.17	337	831
	06/07/16	1.82	45.6	137	0.858	6.05	350	829
	08/09/16	1.69	45.4	132	0.68	3.64	342	839
	10/18/16	1.72	50.5	121	0.904	6.75	319	888
	12/11/16	2.5 J	44.3	120	1.00	6.83	341	759
	09/21/17	2.07 J	52.8	129	0.519	6.82	337	807
	06/12/18	1.82 J	52.6	126	1.02	6.75	339	793
	09/07/18	0.292 J	10.9	17.8	0.551	6.79	54	283
	05/14/19	2.08	45.2	135	1.15	6.02	320	910
	09/10/19	1.87	45.9	127	0.923	6.68	365	810
	05/13/20	2.15	43.3	124	0.641	6.93	343	791
	10/06/20	1.79	49.0	116	0.814	6.59	336	777
	06/10/21	2.08	41.2	107	0.721 J	6.77	335	764
	10/04/21	1.93	49.3	118	0.656	6.56	359	765

Notes:
1. Abbreviations: mg/L - milligrams per liter; TDS - total dissolved solids; s.u. - standard units.
2. J - concentration is below method quantitation limit; result is an estimate.

TABLE 4
APPENDIX IV GROUNDWATER ANALYTICAL DATA
MARTIN LAKE STEAM ELECTRIC STATION
ASH POND AREA

Sample Location	Date Sampled	Sb (mg/L)	As (mg/L)	Ba (mg/L)	Be (mg/L)	Cd (mg/L)	Cr (mg/L)	Co (mg/L)	F (mg/L)	Pb (mg/L)	Li (mg/L)	Hg (mg/L)	Mo (mg/L)	Se (mg/L)	Tl (mg/L)	Ra 226 (pCi/L)	Ra 228 (pCi/L)	Ra 226/228 Comb.^ (pCi/L)
Upgradient Wells																		
H-26	10/21/15	<0.0008	0.00364 J	0.0785	0.000349 J	<0.0003	<0.002	0.0385	<0.1	<0.0003	0.0139	<0.00008	<0.002	<0.002	<0.0005	0.919	<1.64	2.56
	12/14/15	<0.0008	<0.002	0.0401	0.000458 J	<0.0003	<0.002	0.0244	<0.1	<0.0003	0.0769	<0.00008	<0.002	<0.002	<0.0005	0.619	<1.95	2.57
	02/23/16	<0.0008	<0.002	0.0423	<0.0003	<0.0003	0.0077	0.00813	0.151 J	0.000315 J	0.0124	<0.00008	0.00248 J	0.0022 J	<0.0005	0.37	<2.06	2.43
	04/05/16	<0.0008	<0.002	0.0408	<0.0003	<0.0003	0.00798	0.0125	0.199 J	<0.0003	0.0121	<0.00008	<0.002	<0.002	<0.0005	<0.243	<1.06	<1.303
	06/07/16	<0.0008	<0.002	0.0467	0.000721 J	<0.0003	<0.002	0.0217	<0.1	<0.0003	0.0132	<0.00008	<0.002	<0.002	<0.0005	0.245	1.67	1.92
	08/09/16	<0.0008	0.0029 J	0.0431	0.00136	<0.0003	<0.002	0.0352	<0.1	<0.0003	0.0155	<0.00008	<0.002	<0.002	<0.0005	<0.2	<0.932	<1.132
	10/18/16	<0.0008	<0.002	0.0497	0.000709 J	<0.0003	<0.002	0.0214	0.127 J	<0.0003	0.0136	<0.00008	<0.002	0.00265 J	<0.0005	0.243	<0.622	0.87
	12/11/16	<0.0008	<0.002	0.0468	0.00146	<0.0003	0.00311 J	0.0275	0.161 J	0.000358 J	0.014	<0.00008	<0.002	<0.002	<0.0005	0.248	1.82	2.07
	06/13/18	<0.0008	<0.002	0.0659	0.0016	<0.0003	0.00213 J	0.0261	<0.100	<0.0003	0.032	<0.00008	<0.002	<0.002	<0.0005	<0.297	3.72	4.017
	09/07/18	NA	<0.002	0.0470	0.00155	<0.0003	0.00319 J	0.0247	<0.100	<0.0003	0.0489	NA	NA	<0.002	NA	<0.473	<0.665	<1.138
	05/14/19	<0.0008	0.0041 J	0.1900	0.00147	<0.0003	0.0406	0.0795	0.140 J	0.000972 J	0.147	<0.00008	<0.002	0.00222 J	<0.0005	1.43	0.598	2.028
	09/10/19	NA	<0.002	0.046	0.00165	<0.0003	<0.002	0.0237	<0.1	0.000313 J	0.0141	NA	NA	0.0109	NA	0.115	2.74	2.85
	05/13/20	<0.0008	<0.002	0.129	0.00166	<0.0003	0.00314 J	0.0241	<0.100	0.000798	0.0218 J	<0.00008	<0.002	0.0147	<0.0005	0.295	0.585	0.88
	10/06/20	<0.000800	<0.00200	0.0528	0.00168	<0.000300	<0.00200	0.0231	<0.100	<0.000300	0.0152	<0.0000800	<0.00200	0.00909	<0.000500	0.898	0.293	1.19
	06/04/21	<0.000800	<0.00200	0.0629	0.00153	<0.000300	<0.00200	0.024	0.245 J	0.000621 J	0.0148	<0.000400	<0.00200	0.0201	<0.000500	0.263	1.13	1.39
	10/04/21	<0.000800	<0.00200	0.0491	0.00147	<0.000300	<0.00200	0.0227	<0.100	0.000408 J	0.0119	<0.0000800	<0.00200	0.00669	<0.000500	0.332	2.17	2.5
	10/04/21 DUP	<0.000800	<0.00200	0.0508	0.0017	<0.000300	<0.00200	0.0232	<0.100	0.000398 J	0.0131	<0.0000800	<0.00200	0.00727	<0.000500	0.140 J	1.050	1.19
H-27	10/21/15	<0.0008	<0.002	0.0378	<0.0003	<0.0003	<0.002	0.00432 J	<0.1	<0.0003	0.0607	<0.00008	<0.002	<0.002	<0.0005	<0.553	<1.67	<2.223
	12/14/15	<0.0008	0.0021 J	0.039	<0.0003	<0.0003	<0.002	0.00326 J	0.156 J	0.000339 J	0.0624	<0.00008	<0.002	<0.002	<0.0005	0.468	<1.68	2.15
	02/23/16	<0.0008	<0.002	0.0266	<0.0003	<0.0003	<0.002	<0.003	0.101 J	<0.0003	0.0601	<0.00008	<0.002	<0.002	<0.0005	0.921	<1.62	2.54
	04/05/16	<0.0008	<0.002	0.0245	<0.0003	<0.0003	<0.002	<0.003	0.124 J	<0.0003	0.0573	<0.00008	<0.002	<0.002	<0.0005	0.269	<2.05	2.32
	06/07/16	<0.0008	<0.002	0.0342	0.000609 J	<0.0003	<0.002	0.016	<0.1	<0.0003	0.0107	<0.00008	<0.002	<0.002	<0.0005	0.269	<0.658	0.927
	08/09/16	<0.0008	<0.002	0.0241	<0.0003	<0.0003	<0.002	<0.003	<0.1	<0.0003	0.0616	<0.00008	<0.002	<0.002	<0.0005	0.408	<0.632	1.04
	10/18/16	<0.0008	<0.002	0.0248	<0.0003	<0.0003	<0.002	<0.003	0.144J	<0.0003	0.0576	<0.00008	<0.002	<0.002	<0.0005	<0.178	1.07	1.25
	12/11/16	<0.0008	<0.002	0.0236	<0.0003	<0.0003	<0.002	<0.003	0.161 J	<0.0003	0.0606	<0.00008	<0.002	<0.002	<0.0005	0.143	1.54	1.68
	06/13/18	<0.0008	<0.002	0.0237	<0.0003	<0.0003	0.00964	<0.003	0.208 J	<0.0003	0.108	<0.00008	<0.002	<0.002	<0.0005	0.267	<1.4	1.667
	09/07/18	NA	<0.002	0.0196	<0.0003	<0.0003	0.0453	<0.003	0.140 J	<0.0003	0.306	NA	NA	0.00773	NA	<0.285	1.43	1.715
	05/14/19	<0.0008	<0.002	0.0208	<0.0003	<0.0003	<0.002	<0.003	0.159 J	<0.0003	0.0678	<0.00008	<0.002	<0.002	<0.0005	1.10	0.928	2.028
	09/10/19	NA	<0.002	0.384	<0.0003	<0.0003	0.00668	<0.003	<0.1	<0.0003	0.103	NA	NA	0.0027 J	NA	0.185	3.57	3.76
	05/13/20	<0.0008	<0.002	0.0668	<0.0003	<0.0003	0.0133	<0.003	<0.100	<0.0003	0.170	<0.00008	<0.002	0.00671	<0.0005	0.166	<0.9	0.166
	10/06/20	<0.000800	<0.00200	0.0519	0.00167	<0.000300	<0.00200	0.0233	<0.100	0.000390 J	0.0152	<0.0000800	<0.00200	0.00961	<0.000500	0.409	0.789	1.2
	06/04/21	<0.000800	<0.00200	0.0771	0.00149	<0.000300	0.0363	0.0254	<0.100	<0.000300	0.0165	<0.0000800	<0.00200	0.00414 J	<0.000500	0.226	1.15	1.38
	10/04/21	<0.000800	<0.00200	0.115	0.000461 J	<0.000300	0.00265 J	0.0295	<0.100	<0.000300	0.105	<0.0000800	<0.00200	<0.00200	<0.000500	0.571	1.65	2.22
H-33	10/20/15	<0.0008	0.00208 J	0.0586	0.000351 J	<0.0003	<0.002	0.0274	<0.1	<0.0003	0.0814	<0.00008	<0.002	<0.002	<0.0005	1.76	1.64	3.40
	12/14/15	<0.0008	0.00205 J	0.0473	0.000382 J	<0.0003	<0.002	0.0293	0.136 J	<0.0003	0.0903	<0.00008	<0.002	<0.002	<0.0005	1.94	<1.79	3.73
	02/23/16	<0.0008	<0.002	0.0529	0.000311 J	<0.0003	0.0194	0.0163	0.125 J	<0.0003	0.182	<0.00008	<0.002	<0.002	<0.0005	0.906	<2.32	3.23
	04/05/16	<0.0008	<0.002	0.0576	0.000302 J	<0.0003	0.0171	0.016	0.14 J	<0.0003	0.16	<0.00008	<0.002	<0.002	<0.0005	0.328	1.08	1.41
	06/07/16	<0.0008	<0.002	0.0774	0.000604 J	<0.0003	0.0153	0.0196	<0.1	<0.0003	0.163	<0.00008	<0.002	<0.002	<0.0005	0.276	0.897	1.17
	08/09/16	<0.0008	<0.002	0.0424	0.000519 J	<0.0003	0.00291 J	0.0284	<0.1	<0.0003	0.102	<0.00008	<0.002	<0.002	<0.0005	<0.149	0.649	0.80
	10/18/16	<0.0008	0.00347 J	0.0464	0.000617 J	<0.0003	0.0309	0.0644	<0.1	0.000329 J	0.118	<0.00008	<0.002	<0.002	<0.0005	0.096	<0.517	0.61
	12/11/16	<0.0008	0.00218 J	0.0537	0.000865 J	<0.0003	0.0368	0.0408	0.132 J	0.000495 J	0.115	<0.00008	<0.002	<0.002	<0.0005	0.159	1.29	1.45
	06/13/18	<0.0008	0.00283 J	0.0741	0.0004 J	<0.0003	0.0182	0.0266	0.105 J	0.0009 J	0.183	<0.00008	<0.002	<0.002	<0.0005	0.795	<0.712	1.507
	09/07/18	NA	0.00239 J	0.0757	0.0003 J	<0.0003	0.0105	0.0288	0.135 J	<0.0003	0.160	NA	NA	<0.002	NA	0.334	<0.645	0.979
	05/14/19	<0.0008	0.00355 J	0.158	0.00114	<0.0003	0.0342	0.0648	0.166 J	0.000772 J	0.161	<0.00008	<0.002	<0.002	<0.0005	0.850	1.35	2.200
	09/10/19	NA	<0.002	0.111	0.000518 J	<0.0003	0.00637	0.0347	<0.100	<0.0003	0.142	NA	NA	<0.002	NA	0.6	2.97	3.57
	05/13/20	<0.0008	<0.002	0.0784	0.00053 J	<0.0003	0.00755	0.0312	<0.100	0.00191	0.173	<0.00008	<0.002	0.00243 J	<0.0005	0.395	1.9	2.29
	10/06/20	<0.000800	<0.00200	0.068	0.000721 J	<0.000300	0.00317 J	0.0331	<0.100	0.000358 J	0.128	<0.0000800	<0.00200	<0.00200	<0.000500	0.33	0.737	1.07
	06/04/21	<0.000800	<0.00200	0.213	0.000342 J	<0.000300	0.00464 J	0.0258	0.272 J	<0.000300	0.155	<0.0000800	<0.00200	<0.00200	<0.000500	0.329	0.32	1.41
	06/4/21 DUP	<0.000800	<0.00200	0.208	0.000319 J	<0.000300	0.00458 J	0.0248	0.265	<0.000300	0.153	<0.0000800	<0.00200	<0.00200	<0.000500	0.869	1.14	2.01
	10/04/21	<0.000800	<0.00200	0.129	0.000583 J	<0.000300	0.00337	0.0340	<0.100	0.000347 J	0.131	<0.0000800	<0.00200	<0.00200	<0.000500	0.422	1.21	1.63

TABLE 4
APPENDIX IV GROUNDWATER ANALYTICAL DATA
MARTIN LAKE STEAM ELECTRIC STATION
ASH POND AREA

Sample Location	Date Sampled	Sb (mg/L)	As (mg/L)	Ba (mg/L)	Be (mg/L)	Cd (mg/L)	Cr (mg/L)	Co (mg/L)	F (mg/L)	Pb (mg/L)	Li (mg/L)	Hg (mg/L)	Mo (mg/L)	Se (mg/L)	Tl (mg/L)	Ra 226 (pCi/L)	Ra 228 (pCi/L)	Ra 226/228 Comb.^ (pCi/L)
Downgradient Wells																		
H-28	10/21/15	<0.0008	0.00278 J	0.0396	0.00148	0.00121	<0.002	0.188	<0.1	0.000491 J	0.154	<0.00008	<0.002	0.00682	<0.0005	<0.558	<1.65	<2.208
	12/14/15	<0.0008	<0.002	0.0224	<0.0003	0.000572 J	<0.002	0.0225	<0.1	<0.0003	0.021	<0.00008	<0.002	<0.002	<0.0005	0.707	<1.18	1.89
	02/23/16	<0.0008	0.00225 J	0.0202	0.00133	0.00151	<0.002	0.201	<0.1	0.00053 J	0.159	<0.00008	<0.002	0.00222 J	<0.0005	<0.396	2.24	2.64
	04/05/16	<0.0008	<0.002	0.0173	0.0011	0.00252	<0.002	0.199	<0.1	0.00087 J	0.15	<0.00008	<0.002	0.00237 J	<0.0005	<0.231	1.76	1.99
	06/07/16	<0.0008	<0.002	0.0468	0.000934 J	0.000664 J	<0.002	0.0944	<0.1	<0.0003	0.0959	<0.00008	<0.002	<0.002	<0.0005	0.310	1.48	1.79
	08/09/16	<0.0008	<0.002	0.0155	0.00275	0.0016	<0.002	0.195	<0.1	0.000774 J	0.155	<0.00008	<0.002	0.00286 J	<0.0005	<0.451	1.41	1.86
	10/18/16	<0.0008	0.00284J	0.0174	0.00685	0.000744 J	<0.002	0.169	0.165J	0.00108	0.155	<0.00008	<0.002	0.00273 J	<0.0005	<0.228	0.645	0.87
	12/11/16	<0.0008	<0.002	0.0471	0.000698 J	0.000668 J	<0.002	0.0924	0.114 J	<0.0003	0.0869	<0.00008	<0.002	<0.002	<0.0005	<0.149	1.13	1.28
	06/13/18	<0.0008	<0.002	0.0186	0.00393	0.0038	<0.002	0.169	0.126 J	0.000448 J	0.18	<0.00008	<0.002	<0.002	<0.0005	0.327	<1.56	1.887
	09/07/18	NA	<0.002	0.0192	0.00704	0.00115	<0.002	0.162	<0.100	0.00118 J	0.203	NA	NA	0.00281 J	NA	<0.243	0.845	1.088
	05/14/19	<0.0008	<0.002	0.0141	0.00281	0.00212	<0.002	0.187	<0.100	0.000595 J	0.172	<0.00008	<0.002	0.00619	<0.0005	0.444	0.615	1.059
	09/10/19	NA	<0.002	0.145	0.0058	0.000951	<0.002	0.146	<0.1	0.00132	0.169	NA	NA	0.00461	NA	0.205	4.26	4.47
	05/13/20	<0.0008	<0.002	0.0149	0.00252	0.00126	<0.002	0.159	<0.100	0.00751 J	0.171	<0.00008	<0.002	0.0032 J	<0.0005	0.151	0.984	1.13
	10/06/20	<0.000800	<0.00200	0.0166	0.00563	0.000835 J	<0.00200	0.145	<0.100	0.00106	0.173	<0.0000800	<0.00200	0.00468 J	<0.000500	0.898	0.293	1.19
	06/04/21	<0.000800	<0.00200	0.0167	0.00353	0.00121	<0.00200	0.164	<0.100	0.000812 J	0.159	0.000101 J	<0.00200	<0.00200	<0.000500	0.229	0.796 J	1.03
	10/04/21	<0.000800	<0.00200	0.0135	0.00627	0.000763 J	<0.00200	0.148	<0.100	0.00127	0.163	<0.0000800	<0.00200	0.00477 J	<0.000500	0.119 J	0.798	0.917
H-29	10/21/15	<0.0008	<0.002	0.159	0.000359 J	<0.0003	<0.002	0.0301	<0.1	<0.0003	0.0156	<0.00008	<0.002	<0.002	<0.0005	0.464	1.82	2.28
	12/14/15	<0.0008	<0.002	0.277	<0.0003	<0.0003	0.062	<0.003	0.56	0.000542 J	0.0202	<0.00008	0.00819	0.0282	<0.0005	<0.53	<1.25	<1.78
	02/23/16	<0.0008	0.00203 J	0.151	<0.0003	<0.0003	0.019	<0.003	0.239 J	<0.0003	0.0135	<0.00008	0.00603	0.0148	<0.0005	<0.374	<2.22	<2.594
	04/05/16	<0.0008	<0.002	0.167	<0.0003	<0.0003	0.042	<0.003	0.363 J	<0.0003	0.0175	<0.00008	0.00697	0.0232	<0.0005	<0.228	<0.897	<1.125
	06/07/16	<0.0008	<0.002	0.136	<0.0003	<0.0003	0.0274	<0.003	0.27 J	<0.0003	0.0188	<0.00008	0.00551	0.0152	<0.0005	0.173	<0.834	1.01
	08/09/16	<0.0008	0.00995	0.315	<0.0003	<0.0003	0.00297 J	0.00473 J	<0.1	<0.0003	0.0143	<0.00008	<0.002	<0.002	<0.0005	0.261	<0.578	0.84
	10/18/16	<0.0008	<0.002	0.118	<0.0003	<0.0003	0.00412 J	<0.003	1.15	0.000427J	0.0056 J	<0.00008	0.00305 J	0.0681	<0.0005	0.155	<0.439	0.59
	12/11/16	<0.0008	<0.002	0.0779	<0.0003	<0.0003	<0.002	<0.003	1.4	<0.0003	<0.005	<0.00008	0.00307 J	0.0642	<0.0005	<0.113	<0.599	<0.712
	06/13/18	<0.0008	<0.002	0.0157	0.00345	0.00318	<0.002	0.153	0.123 J	0.000779 J	0.153	<0.00008	<0.002	<0.002	<0.0005	<0.274	<1.62	<1.894
	09/07/18	NA	<0.002	0.0374	0.00513	0.000938	<0.002	0.119	<0.100	0.00172	0.145	NA	NA	0.00374 J	NA	<0.371	<0.71	<1.081
	05/14/19	<0.0008	<0.002	0.0138	0.00341	0.00219	<0.002	0.183	0.104 J	0.000543 J	0.173	<0.00008	<0.002	0.00616	<0.0005	<0.339	<0.707	<1.046
	09/10/19	NA	<0.002	0.0135	0.00233	0.00127	<0.002	0.164	<0.1	0.000916 J	0.157	NA	NA	0.00395 J	NA	0.364	4.99	5.35
	05/13/20	<0.0008	<0.002	0.0117	0.0013	0.00129	<0.002	0.142	<0.100	0.000684 J	0.134	<0.00008	<0.002	0.00281 J	<0.0005	0.246	0.545	0.791
	10/06/20	<0.000800	0.00696	0.0165	0.0256	<0.000300	0.00205 J	0.377	1.76	0.000438	0.164	<0.0000800	<0.00200	0.0513	<0.000500	0.0273	0.741	0.769
	06/04/21	<0.000800	<0.00200	0.0168	0.0032	0.00126	<0.00200	0.168	<0.100	0.000554 J	0.159	0.000118 J	<0.00200	<0.00200	<0.000500	0.136 J	0.853	0.989
	10/04/21	<0.000800	0.0130	0.0222	0.0340	0.000847 J	0.00477 J	0.430	0.223 J	0.00235	0.159	<0.0000800	<0.00200	0.117	<0.000500	0.155 J	1.82	1.97
H-31	10/20/15	<0.0008	0.0168	0.0732	0.0126	0.0032	0.00687	0.434	0.889	<0.0003	0.137	<0.00008	<0.002	0.116	<0.0005	0.943	<1.88	2.82
	12/14/15	<0.0008	0.00513	0.0388	0.00702	<0.0003	0.00456 J	0.0651	0.692	<0.0003	0.149	<0.00008	<0.002	0.0231	<0.0005	1.61	<1.29	2.90
	02/23/16	<0.0008	0.00436 J	0.0243	0.0101	<0.0003	<0.002	0.0594	0.921	<0.0003	0.146	<0.00008	<0.002	0.0209	<0.0005	<0.419	<1.64	<2.059
	04/05/16	<0.0008	0.00514	0.0241	0.00925	<0.0003	0.00435 J	0.0685	1.36	<0.0003	0.146	<0.00008	<0.002	0.0226	<0.0005	<0.334	<0.897	<1.231
	06/07/16	<0.0008	0.0038 J	0.0242	0.00789	<0.0003	<0.002	0.0406	0.783	<0.0003	0.157	<0.00008	<0.002	0.0307	<0.0005	0.257	<0.555	0.81
	08/09/16	<0.0008	0.00886	0.0191	0.00734	<0.0003	<0.002	0.286	0.216 J	<0.0003	0.17	<0.00008	<0.002	0.0202	<0.0005	1.31	0.900	2.21
	10/18/16	<0.0008	0.00351 J	0.0215	0.00167 J	<0.0003	<0.002	0.0304 J	0.298 J	<0.0003	0.165	<0.00008	<0.002	0.00567 J	<0.0005	0.169	1.18	1.35
	12/11/16	<0.0008	0.00875 J	0.0189	0.0197	<0.0003	0.00386 J	0.23 J	0.892	<0.0003	0.198	<0.00008	<0.002	0.0365	<0.0005	0.195	<0.754	0.95
	06/12/18	<0.0008	0.00532	0.0194	0.00545	<0.0003	0.003 J	0.236	0.646	<0.0003	0.214	<0.00008	<0.002	0.00475 J	<0.0005	<0.26	<0.597	<0.857
	09/07/18	NA	<0.002	0.0287	<0.0003	<0.0003	<0.002	0.00353 J	0.275 J	<0.0003	0.0187	NA	NA	0.00424 J	NA	<0.261	<0.567	<0.828
	05/14/19	<0.0008	0.00675	0.0163	0.00928	<0.0003	0.00315 J	0.389	0.96	<0.0003	0.219	<0.0004	<0.002	0.0261	<0.0005	2.62	<0.789	3.409
	09/10/19	NA	0.00845	0.0158	0.0312	<0.0003	0.00305 J	0.41	2.1	<0.0003	0.225	NA	NA	0.0642	NA	0.247	2.92	3.17
	05/13/20	<0.0008	0.011	0.0159	0.0331	<0.0003	0.00367 J	0.449	0.231 J	<0.0003	0.249	<0.00008	<0.002	0.0792	<0.0005	0.0808	1.7	1.78
	10/06/20	<0.000800	0.00440 J	0.0345	0.00923	<0.000300	<0.00200	0.208	0.494	<0.000300	0.120	<0.0000800	<0.00200	0.0313	<0.000500	0.000	0.992	0.992
	06/04/21	<0.000800	0.00756	0.0159	0.014	<0.000300	0.0021 J	0.427	0.806	<0.000300	0.225	<0.0000800	<0.00200	0.00423 J	<0.000500	0.248 J	0.808	1.06 J
	10/04/21	<0.000800	0.00819	0.0160	0.0260	<0.000300	<0.00200	0.483	<0.100	<0.000300	0.202	<0.0000800	<0.00200	0.0767	<0.000500	0.182 J	1.42	1.61

TABLE 4
APPENDIX IV GROUNDWATER ANALYTICAL DATA
MARTIN LAKE STEAM ELECTRIC STATION
ASH POND AREA

Sample Location	Date Sampled	Sb (mg/L)	As (mg/L)	Ba (mg/L)	Be (mg/L)	Cd (mg/L)	Cr (mg/L)	Co (mg/L)	F (mg/L)	Pb (mg/L)	Li (mg/L)	Hg (mg/L)	Mo (mg/L)	Se (mg/L)	Tl (mg/L)	Ra 226 (pCi/L)	Ra 228 (pCi/L)	Ra 226/228 Comb.^ (pCi/L)
H-32	10/20/15	<0.0008	0.0028 J	0.16	0.00266	<0.0003	<0.002	0.163	0.374 J	<0.0003	0.0788	<0.00008	<0.002	0.00303 J	<0.0005	1.05	<1.90	2.95
	12/14/15	<0.0008	0.0123	0.0384	0.00313	<0.0003	<0.002	0.155	0.619	<0.0003	0.0733	<0.00008	<0.002	<0.002	<0.0005	0.712	<2.21	2.92
	02/23/16	<0.0008	0.00712	0.0277	0.00452	<0.0003	<0.002	0.188	0.701	0.000326 J	0.0821	<0.00008	<0.002	<0.002	<0.0005	1.12	1.60	2.72
	04/05/16	<0.0008	0.00648	0.0237	0.00527	0.00128	<0.002	0.208	1.05	0.00182	0.0818	<0.00008	<0.002	<0.002	<0.0005	<0.364	<1.15	<1.514
	06/07/16	<0.0008	0.00446 J	0.0238	0.00583	0.000997 J	<0.002	0.207	0.858	0.00168	0.087	<0.00008	<0.002	0.00298 J	<0.0005	<0.165	0.613	0.778
	08/09/16	<0.0008	0.00344 J	0.0234	0.00548	0.000713 J	<0.002	0.19	0.68	0.00115	0.0774	<0.00008	<0.002	0.00281 J	<0.0005	2.56	<0.446	3.01
	10/18/16	<0.0008	0.00289 J	0.02	0.00567	0.00254	<0.002	0.204	0.904	0.00332	0.0834	<0.00008	<0.002	0.00267 J	<0.0005	<0.139	0.683	0.82
	12/11/16	<0.0008	0.00246 J	0.0205	0.00609	0.00108	<0.002	0.208	1	0.00137	0.0838	<0.00008	<0.002	0.00237 J	<0.0005	<0.163	<0.753	<0.916
	06/12/18	<0.0008	<0.002	0.0175	0.00681	0.000586 J	<0.002	0.215	1.02	0.000701 J	0.0957	<0.00008	<0.002	<0.002	<0.0005	<0.275	0.917	1.192
	09/07/18	NA	<0.002	0.0404	<0.0003	<0.0003	<0.002	0.00347 J	0.551	<0.0003	0.0195	NA	NA	0.0157	NA	0.343	1.25	1.593
	05/14/19	<0.0008	0.002 J	0.0162	0.00713	0.000366 J	<0.002	0.202	1.15	0.000574 J	0.0978	<0.00008	<0.002	0.00675	<0.0005	0.303	<0.546	<0.849
	09/10/19	NA	<0.002	0.016	0.00678	0.000467 J	<0.002	0.185	0.923	0.00056 J	0.0935	NA	NA	0.00492 J	NA	0.0404	4.74	4.78
	05/13/20	<0.0008	0.00214 J	0.0166	0.00725	0.000389 J	<0.00200	0.195	0.641	0.000743 J	0.0978	<0.00008	<0.002	0.00401 J	<0.0005	<0.304	1.15	1.15
	10/06/20	<0.000800	<0.00200	0.0160	0.00676	0.000380 J	<0.00200	0.179	0.814	0.000633	0.0946	<0.0000800	<0.00200	0.00378 J	<0.000500	0.0686	0.348	0.417
	06/04/21	<0.000800	<0.00200	0.0161	0.0067	0.000395 J	<0.00200	0.179	0.721 J	0.000591 J	0.09	<0.0000800	<0.00200	<0.00200	<0.000500	0.000	0.497 J	0.497 J
	10/04/21	<0.000800	<0.00200	0.0166	0.00667	0.000418 J	<0.00200	0.174	0.656	0.000709 J	0.0888	<0.0000800	<0.00200	0.00502	<0.000500	0.0968	1.770	1.860

Notes:
1. Abbreviations: mg/L - milligrams per liter; pCi/L - picocuries per liter.
2. ^ - Sum of Ra 226 and Ra 228 concentrations.
3. J - concentration is below method quantitation limit; result is an estimate.
4. NA = Not analyzed.

ATTACHMENT 1

LABORATORY ANALYTICAL REPORTS

July 09, 2021

Will Vienne
Golder
2201 Double Creek Dr #4004
Round Rock, Texas 78664
TEL: (512) 671-3434
FAX (512) 671-3446

Order No.: 2106039

RE: Luminant - MLSES Ash Ponds CCR

Dear Will Vienne:

DHL Analytical, Inc. received 16 sample(s) on 6/7/2021 for the analyses presented in the following report.

There were no problems with the analyses and all data met requirements of NELAP except where noted in the Case Narrative. All non-NELAP methods will be identified accordingly in the case narrative and all estimated uncertainties of test results are within method or EPA specifications.

If you have any questions regarding these tests results, please feel free to call. Thank you for using DHL Analytical.

Sincerely,

John DuPont
General Manager

This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211-21-27

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DHL ANALYTICAL

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CHAIN-OF-CUSTODY

PAGE 1 OF 1

CLIENT: GOLDER
ADDRESS: 2201 DOUBLE CREEK DR ROUND ROCK, TX
PHONE: 512-671-3434 EMAIL:
DATA REPORTED TO: WILL VIENNE
ADDITIONAL REPORT COPIES TO:

LABORATORY USE ONLY
DHL WORKORDER #: 2106039
PO#:
PROJECT LOCATION OR NAME: LUMINANT - MLSES ASH PONDS CCR
CLIENT PROJECT # 19122262
COLLECTOR: JOHN BRAYTON

Authorize 5% surcharge for TRRP report? ☐ Yes ☐ No

W=WATER L=LIQUID S=SOIL SO=SOLID SE=SEDIMENT P=PAINT SL=SLUDGE

Field Sample I.D.	Lab Use Only DHL Lab #	Collection Date	Collection Time	Matrix	Container Type	# of Containers	PRESERVATION HCL	HNO_3	H_2SO_4	NaOH ☐ Zn Acetate ☐	ICE ☒ UNPRESERVED ☒	ANALYSES	BTEX ☐ MTBE ☐ [METHOD 8260]	TPH 1005 ☐ TPH 1006 ☐ HOLD 1006 ☐	GRO 8015 ☐ DRO 8015 ☐	VOC 8260 ☐ VOC 624.1 ☐	SVOC 8270 ☐ SVOC 625.1 ☐	PAH 8270 ☐ HOLD PAH ☐	PEST 8270 ☐ 625.1 ☐ O-P PEST 8270 ☐	PCB 8082 ☐ 608.3 ☐ PCB 8270 ☐ 625.1 ☐	HERB 8321 ☐ T PHOS ☐ AMMONIA ☐	METALS 6020 ☐ 200.8 ☐ DISS. METALS ☐	RCRA 8 ☐ TX11 ☐	pH ☐ HEX CHROM ☐ ALKALINITY ☐ COD ☐	ANIONS 300 ☐ 9056 ☐	TCLP-SVOC ☐ VOC ☐ PEST ☐ HERB ☐	TCLP-METALS ☐ RCRA 8 ☐ TX-11 ☐ Pb ☐	RCI ☐ IGN ☐ DGAS ☐ OIL&GREASE ☐	TDS ☐ TSS ☐ % MOIST ☐ CYANIDE ☐	APPENDIX III	APPENDIX IV		FIELD NOTES
H-28	01	6-4-21	0900	W	P	4		X			X																			X	X		
H-29	02	6-4-21	0955	W	P	4		X			X																			X	X		
H-31	03	6-4-21	1045	W	P	4		X			X																			X	X		
H-32	04	6-4-21	1130	W	P	4		X			X																			X	X		
H-33	05	6-4-21	1225	W	P	4		X			X																			X	X		
DVP-1	06	6-4-21	1225	W	P	4		X			X																			X	X		
H-26	07	6-4-21	1320	W	P	4		X			X																			X	X		
H-27	08	6-4-21	1410	W	P	4		X			X																			X	X		

Relinquished By: (Sign)	DATE/TIME	Received by:
John Bray	6-4-21 1730	FedEx
FedEx	6/7/21 0932	[signature]

TURN AROUND TIME (CALL FIRST FOR RUSH)
RUSH-1 DAY☐ RUSH-2 DAY☐
RUSH-3 DAY☐
NORMAL ☒ OTHER ☐
DUE DATE _____ ☐

LABORATORY USE ONLY
RECEIVING TEMP (°C): 9.3°C/12.0°C THERM #: 78
CUSTODY SEALS: ☐ BROKEN ☒ INTACT ☐ NOT USED
CARRIER: ☐ LSO ☒ FEDEX ☐ UPS ☐ COURIER ☐ OTHER ☐ HAND DELIVERED

APPENDIX E-Revision 2 February 07, 2020 ☐ **DHL DISPOSAL @ 5.00 each** ☐ **Return**

DHL COC REV 3 | MAR 2021

DHL ANALYTICAL

2300 Double Creek Dr. Round Rock, TX 78664
Phone 512.388.8222
Web: **www.dhlanalytical.com**
Email: **login@dhlanalytical.com**

CHAIN-OF-CUSTODY

PAGE 1 OF 1

CLIENT: GOLDER

ADDRESS: 2201 DOUBLE CREEK DR #4004 ROUND ROCK TX 78664

PHONE: 512-671-3434 EMAIL:

DATA REPORTED TO: WILL VIENNE

ADDITIONAL REPORT COPIES TO:

PO#:

PROJECT LOCATION OR NAME: LUMINANT - MLSES ASH PONDS

CLIENT PROJECT # 19122262

COLLECTOR: JOHN BRAXTON

LABORATORY USE ONLY
DHL WORKORDER #: 2106039

Authorize 5% surcharge for TRRP report? ☐ Yes ☐ No

Lab Use Only

W=WATER L=LIQUID S=SOLID SO=SOLID SE=SEDIMENT P=PAINT SL=SLUDGE

Field Sample I.D.	DHL Lab #	Collection Date	Collection Time	Matrix	Container Type	# of Containers	PRESERVATION: HCl	HNO_3	H_2SO_4	NaOH ☐ Zn Acetate ☐	ICE ☒ UNPRESERVED ☒	ANALYSES	APPENDIX III RESAMPLE	FIELD NOTES
H-28	09	6-10-21	0750	W	P	1					X		X	
H-29	10	6-10-21	0835	W	P	1					X		X	
H-31	11	6-10-21	0915	W	P	1					X		X	
H-32	12	6-10-21	1000	W	P	1					X		X	
H-33	13	6-10-21	1040	W	P	1					X		X	
DUP-1	14	6-10-21	1040	W	P	1					X		X	
H-27	15	6-10-21	1125	W	P	1					X		X	
H-26	16	6-10-21	1210	W	P	1					X		X	

ANALYSES: BTEX ☐ MTBE ☐ [METHOD 8260] | TPH 1005 ☐ TPH 1006 ☐ HOLD 1006 ☐ | GRO 8015 ☐ DRO 8015 ☐ | VOC 8260 ☐ VOC 624.1 ☐ | SVOC 8270 ☐ SVOC 625.1 ☐ | PAH 8270 ☐ HOLD PAH ☐ | PEST 8270 ☐ 625.1 ☐ O-P PEST 8270 ☐ | PCB 8082 ☐ 608.3 ☐ PCB 8270 ☐ 625.1 ☐ | HERB 8321 ☐ T PHOS ☐ AMMONIA ☐ | METALS 6020 ☐ 200.8 ☐ DISS. METALS ☐ | RCRA 8 ☐ TX11 ☐ _____ | pH ☐ HEX CHROM ☐ ALKALINITY ☐ COD ☐ | ANIONS 300 ☐ 9056 ☐ _____ | TCLP-SVOC ☐ VOC ☐ PEST ☐ HERB ☐ | TCLP-METALS ☐ RCRA 8 ☐ TX-11 ☐ Pb ☐ | RCI ☐ IGN ☐ DGAS ☐ OIL&GREASE ☐ | TDS ☐ TSS ☐ % MOIST ☐ CYANIDE ☐

Relinquished By: (Sign) John Braxton	DATE/TIME 6-10-21 1800	Received by: FedEx
Relinquished By: (Sign) FedEx	DATE/TIME 6/11/21 0930	Received by:
Relinquished By: (Sign)	DATE/TIME	Received by:

TURN AROUND TIME (CALL FIRST FOR RUSH)
RUSH-1 DAY☐ RUSH-2 DAY☐
RUSH-3 DAY☐
NORMAL☒ OTHER ☐
DUE DATE _____ ☐

LABORATORY USE ONLY
RECEIVING TEMP (°C): 1.0 °C THERM #: 78
CUSTODY SEALS: ☐ BROKEN ☒ INTACT ~~☒ NOT USED~~ (FR) 6/11/21
CARRIER: ☐ LSO ☒ FEDEX ☐ UPS ☐ COURIER ☐ OTHER ☐ HAND DELIVERED

APPENDIX I - Revised February 7, 2020 ☐ **DHL DISPOSAL @ 5.00 each** ☐ **Return**

DHL COC REV 3 | MAR 2021

Eric Lau

From: John DuPont
Sent: Tuesday, May 28, 2019 11:35 AM
To: Eric Lau
Subject: FW: CCR Analysis

Appendix III Parameters:
Metals (Ca and B)
Anions (Cl, F, and SO4)
TDS

Appendix IV Parameters:

Metals (As, Ba, Be, Cd, Co, Cr, Hg, Li, Mo, Pb, Sb, Se, and Tl)
Ra-226
Ra-228

From: Vienne, Will [mailto:William_Vienne@golder.com]
Sent: Tuesday, April 09, 2019 12:48 PM
To: John DuPont <dupont@dhlanalytical.com>
Subject: CCR Analysis

CUSTODY SEAL
DATE 6.4.21
SIGNATURE
ANALY
ORIGIN ID:FWHA (512) 671-3434
GOLDER ASSOCIATES
2201 DOUBLE CREEK DR STE 4004
ROUND ROCK, TX 78664
UNITED STATES US
SHIP DATE: 04JUN21
ACTWGT: 55.80 LB
CAD: 6991003/SSF02201
DIMS: 25x14x13 IN
BILL THIRD PARTY
TO DHL ANALYTICAL LABS
DHL ANALYTICAL LABS
2300 DOUBLE CREEK DR
ROUND ROCK TX 78664
(512) 388-8222
REF:
DEPT:
INV:
PO:
FedEx
Express
2 of 2
MPS# 2800 3467 6230
0263
Mstr# 2800 3467 6220
0201
XO BSMA
SATURDAY 12:00P
PRIORITY OVERNIGHT
AHS
78664
TX-US AUS
1 of 1
2800 3467 6230

ORIGIN ID:FWHA (512) 671-3434

GOLDER ASSOCIATES
2201 DOUBLE CREEK DR STE 4004

ROUND ROCK, TX 78664
UNITED STATES US

SHIP DATE: 04JUN21
ACTWGT: 54.35 LB
CAD: 6991003/SSF02201
DIMS: 25x14x13 IN

BILL THIRD PARTY

Part # 156299 EXP 05/22

TO DHL ANALYTICAL LABS
DHL ANALYTICAL LABS
2300 DOUBLE CREEK DR

ROUND ROCK TX 78664
(512) 388-8222 REF:
INV:
PO: DEPT:

FedEx Express

E

J211321033101uv

1 of 2

TRK# 0201 2800 3467 6220

MASTER

XO BSMA

SATURDAY 12:00P
PRIORITY OVERNIGHT
AHS
78664
TX-US AUS

RT 197 FZ 1 12:00 D

DHL ANALYTICAL

M 2 /

CU

DATE

SIGNAT

ORIGIN ID:GGGA (512) 671-3434

GOLDER ASSOCIATES
2201 DOUBLE CREEK DR STE 4004

ROUND ROCK, TX 78664
UNITED STATES US

SHIP DATE: 10JUN21
ACTWGT: 21.25 LB
CAD: 6994166/SSFE2202
DIMS: 18x10x15 IN

BILL THIRD PARTY

Part # 156287-495 RRDB EXP 11/21
56DJ3/B3B7/FE44

TO DHL ANALYTICAL LABS
DHL ANALYTICAL LABS
2300 DOUBLE CREEK DR

ROUND ROCK TX 78664
(512) 388-8222

INV:
PO:
REF:
DEPT:

FedEx Express

J211321033101uv

TRK# 0201 2802 5837 8731

FRI - 11 JUN 10:30A
PRIORITY OVERNIGHT

A8 BSMA

AHS
78664
TX-US AUS

CUSTODY SEAL

DATE 6-10-21

SIGNATURE

DHL ANALYTICAL

DHL Analytical, Inc.

Sample Receipt Checklist

Client Name **Golder** Date Received: **6/7/2021**

Work Order Number **2106039** Received by: **RA**

Checklist completed by: _____ 6/7/2021 Reviewed by DL 6/7/2021
Signature | Date | Initials | Date

Carrier name: FedEx 1day

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☐	No ☑	9.3 °C / 12.0°C
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH<2 acceptable upon receipt?	Yes ☑	No ☐	NA ☐ LOT # 13171
	Adjusted? no		Checked by EL
Water - ph>9 (S) or ph>10 (CN) acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted?		Checked by

Any No response must be detailed in the comments section below.

Client contacted: Golder Date contacted: 6/7/21 Person contacted Will V.

Contacted by: John D. Regarding: Sample temps.

Comments: Samples received out of temp for Sulfate and TDS analyses.

Corrective Action: Per Client, hold Sulfate and TDS and proceed with analyses within temp.

DHL Analytical, Inc.

re-Sample

Sample Receipt Checklist

Client Name **Golder**

Date Received: **6/7/2021**

Work Order Number **2106039**

Received by: **RA**

Checklist completed by: _____ 6/11/2021
Signature | Date

Reviewed by _____ 6/11/2021
Initials | Date

Carrier name: FedEx 1day

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	**1.0** °C
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH<2 acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted? _____		Checked by _____
Water - ph>9 (S) or ph>10 (CN) acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted? _____		Checked by _____

Any No response must be detailed in the comments section below.

Client contacted: _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments: _____

Corrective Action: _____

Laboratory Name: DHL Analytical, Inc.

Laboratory Review Checklist: Reportable Data

Project Name: Luminant - MLSES Ash Ponds CCR	**LRC Date:** 7/9/21
Reviewer Name: Carlos Castro	**Laboratory Work Order:** 2106039
Prep Batch Number(s): See Prep Dates Report	**Run Batch:** See Analytical Dates Report

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
		Chain-of-Custody (C-O-C)					
R1	OI	**1)** Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	**X**				**R1-01**
		2) Were all departures from standard conditions described in an exception report?			**X**		
R2	OI	**Sample and Quality Control (QC) Identification**					
		1) Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	**X**				
		2) Are all laboratory ID numbers cross-referenced to the corresponding QC data?	**X**				
R3	OI	**Test Reports**					
		1) Were all samples prepared and analyzed within holding times?	**X**				
		2) Other than those results < MQL, were all other raw values bracketed by calibration standards?	**X**				
		3) Were calculations checked by a peer or supervisor?	**X**				
		4) Were all analyte identifications checked by a peer or supervisor?	**X**				
		5) Were sample detection limits reported for all analytes not detected?	**X**				
		6) Were all results for soil and sediment samples reported on a dry weight basis?			**X**		
		7) Were % moisture (or solids) reported for all soil and sediment samples?			**X**		
		8) Were bulk soils/solids samples for volatile analysis extracted with methanol per EPA Method 5035?			**X**		
		9) If required for the project, TICs reported?			**X**		
R4	O	**Surrogate Recovery Data**					
		1) Were surrogates added prior to extraction?			**X**		
		2) Were surrogate percent recoveries in all samples within the laboratory QC limits?			**X**		
R5	OI	**Test Reports/Summary Forms for Blank Samples**					
		1) Were appropriate type(s) of blanks analyzed?	**X**				
		2) Were blanks analyzed at the appropriate frequency?	**X**				
		3) Where method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	**X**				
		4) Were blank concentrations < MDL?	**X**				
		5) For analyte(s) detected in a blank sample, was the concentration, unadjusted for sample specific factors, in all associated field samples, **greater** than 10 times the concentration in the blank sample?			**X**		
R6	OI	**Laboratory Control Samples (LCS):**					
		1) Were all COCs included in the LCS?	**X**				
		2) Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	**X**				
		3) Were LCSs analyzed at the required frequency?	**X**				
		4) Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	**X**				
		5) Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	**X**				
		6) Was the LCSD RPD within QC limits (if applicable)?	**X**				
R7	OI	**Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Data**					
		1) Were the project/method specified analytes included in the MS and MSD?	**X**				
		2) Were MS/MSD analyzed at the appropriate frequency?	**X**				
		3) Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?		**X**			**R7-03**
		4) Were MS/MSD RPDs within laboratory QC limits?	**X**				
R8	OI	**Analytical Duplicate Data**					
		1) Were appropriate analytical duplicates analyzed for each matrix?	**X**				
		2) Were analytical duplicates analyzed at the appropriate frequency?	**X**				
		3) Were RPDs or relative standard deviations within the laboratory QC limits?	**X**				
R9	OI	**Method Quantitation Limits (MQLs):**					
		1) Are the MQLs for each method analyte included in the laboratory data package?	**X**				
		2) Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	**X**				
		3) Are unadjusted MQLs and DCSs included in the laboratory data package?	**X**				
R10	OI	**Other Problems/Anomalies**					
		1) Are all known problems/anomalies/special conditions noted in this LRC and ER?	**X**				**R10-01**
		2) Was applicable and available technology used to lower the SDL to minimize the matrix interference affects on the sample results?	**X**				
		3) Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices and methods associated with this laboratory data package?	**X**				

Laboratory Name: DHL Analytical, Inc.

Laboratory Review Checklist (continued): Supporting Data

Project Name: Luminant - MLSES Ash Ponds CCR	**LRC Date:** 7/9/21
Reviewer Name: Carlos Castro	**Laboratory Work Order:** 2106039
Prep Batch Number(s): See Prep Dates Report	**Run Batch:** See Analytical Dates Report

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
S1	OI	**Initial Calibration (ICAL)**					
		1) Were response factors and/or relative response factors for each analyte within QC limits?	X				
		2) Were percent RSDs or correlation coefficient criteria met?	X				
		3) Was the number of standards recommended in the method used for all analytes?	X				
		4) Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		5) Are ICAL data available for all instruments used?	X				
		6) Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	**Initial and Continuing calibration Verification (ICCV and CCV) and Continuing Calibration blank (CCB):**					
		1) Was the CCV analyzed at the method-required frequency?	X				
		2) Were percent differences for each analyte within the method-required QC limits?	X				
		3) Was the ICAL curve verified for each analyte?	X				
		4) Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	X				
S3	O	**Mass Spectral Tuning:**					
		1) Was the appropriate compound for the method used for tuning?	X				
		2) Were ion abundance data within the method-required QC limits?	X				
S4	O	**Internal Standards (IS):**					
		1) Were IS area counts and retention times within the method-required QC limits?	X				
S5	OI	**Raw Data (NELAC Section 5.5.10)**					
		1) Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		2) Were data associated with manual integrations flagged on the raw data?	X				
S6	O	**Dual Column Confirmation**					
		1) Did dual column confirmation results meet the method-required QC?			X		
S7	O	**Tentatively Identified Compounds (TICs):**					
		1) If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) Results:**					
		1) Were percent recoveries within method QC limits?	X				
S9	I	**Serial Dilutions, Post Digestion Spikes, and Method of Standard Additions**					
		1) Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	X				
S10	OI	**Method Detection Limit (MDL) Studies**					
		1) Was a MDL study performed for each reported analyte?	X				
		2) Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	**Proficiency Test Reports:**					
		1) Was the lab's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	**Standards Documentation**					
		1) Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound/Analyte Identification Procedures**					
		1) Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of Analyst Competency (DOC)**					
		1) Was DOC conducted consistent with NELAC Chapter 5 – Appendix C?	X				
		2) Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/Validation Documentation for Methods** (NELAC Chapter 5)					
		1) Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	**Laboratory Standard Operating Procedures (SOPs):**					
		1) Are laboratory SOPs current and on file for each method performed?	X				

1 Items identified by the letter "R" should be included in the laboratory data package submitted to the TCEQ in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.

2 O = organic analyses; I = inorganic analyses (and general chemistry, when applicable).

3 NA = Not applicable.

4 NR = Not Reviewed.

5 ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Data Package Signature Page – RG-366/TRRP-13

This data package consists of:

This signature page, the laboratory review checklist, and the following reportable data:

R1 Field chain-of-custody documentation;
R2 Sample identification cross-reference;
R3 Test reports (analytical data sheets) for each environmental sample that includes:
  a) Items consistent with NELAC Chapter 5,
  b) dilution factors,
  c) preparation methods,
  d) cleanup methods, and
  e) if required for the project, tentatively identified compounds (TICs).
R4 Surrogate recovery data including:
  a) Calculated recovery (%R), and
  b) The laboratory's surrogate QC limits.
R5 Test reports/summary forms for blank samples;
R6 Test reports/summary forms for laboratory control samples (LCSs) including:
  a) LCS spiking amounts,
  b) Calculated %R for each analyte, and
  c) The laboratory's LCS QC limits.
R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
  a) Samples associated with the MS/MSD clearly identified,
  b) MS/MSD spiking amounts,
  c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
  d) Calculated %Rs and relative percent differences (RPDs), and
  e) The laboratory's MS/MSD QC limits
R8 Laboratory analytical duplicate (if applicable) recovery and precision:
  a) The amount of analyte measured in the duplicate,
  b) The calculated RPD, and
  c) The laboratory's QC limits for analytical duplicates.
R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix;
R10 Other problems or anomalies.

The Exception Report for each "No" or "Not Reviewed (NR)" item in the Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory is not accredited under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature below, I affirm to the best of my knowledge that all problems/anomalies observed by the laboratory have been identified in the Laboratory Review Checklist, and no information or data affecting the quality of the data has been knowingly withheld.

This laboratory was last inspected by TCEQ on February 23-26, 2021. Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Name: John DuPont
Official Title: General Manager

Signature

0□/0□/21
Date

Name: Dr. Derhsing Luu
Official Title: Technical Director

DHL Analytical, Inc. **Date:** *09-Jul-21*

CLIENT: Golder
Project: Luminant - MLSES Ash Ponds CCR
Lab Order: 2106039

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Method SW6020B - Metals Analysis
Method SW7470A - Mercury Analysis
Method E300 - Anions Analysis
Method M2540C - TDS Analysis
Sub-contract - Radium-228 and Radium-226 analyses by methods E904 and SM 7500 Ra B M. Analyzed at Pace Analytical.

Exception Report R1-01

The samples were received and log-in performed on 6/7/21 and 6/11/21. A total of 16 samples were received. For the samples that arrived on 6/7/21 the samples arrived outside of the temperature control limit (6°) at 9.3°C/12.0°C). Please refer to the Sample Receipt Checklist for further login notes regarding these samples. The samples arrived in good condition and were properly packaged.

Exception Report R7-03

For Anions analysis performed on 6/14/21 the matrix spikes and/or matrix spike duplicate recoveries (2106039-11 MSD & 2106088-01 MS/MSD) were out of control limits for Fluoride or Sulfate. These are flagged accordingly in the QC summary report. The sample selected for the matrix spike and matrix spike duplicate (2106088-01 MS/MSD) was not from this work order. The sample selected for the matrix spike and matrix spike duplicate (2106039-11 MS/MSD) was from this work order. The LCS was within control limits for these analytes. No further corrective actions were taken.

Exception Report R10-01

For Mercury analysis sample H-26 was diluted prior to analysis due to the nature of the sample (matrix).

DHL Analytical, Inc.

Date: *09-Jul-21*

CLIENT: Golder
Project: Luminant - MLSES Ash Ponds CCR
Lab Order: 2106039

Work Order Sample Summary

Lab Smp ID	Client Sample ID	Tag Number	Date Collected	Date Recved
2106039-01	H-28		06/04/21 09:00 AM	6/7/2021
2106039-02	H-29		06/04/21 09:55 AM	6/7/2021
2106039-03	H-31		06/04/21 10:45 AM	6/7/2021
2106039-04	H-32		06/04/21 11:30 AM	6/7/2021
2106039-05	H-33		06/04/21 12:25 PM	6/7/2021
2106039-06	DUP-1		06/04/21 12:25 PM	6/7/2021
2106039-07	H-26		06/04/21 01:20 PM	6/7/2021
2106039-08	H-27		06/04/21 02:10 PM	6/7/2021
2106039-09	H-28		06/10/21 07:50 AM	6/11/2021
2106039-10	H-29		06/10/21 08:35 AM	6/11/2021
2106039-11	H-31		06/10/21 09:15 AM	6/11/2021
2106039-12	H-32		06/10/21 10:00 AM	6/11/2021
2106039-13	H-33		06/10/21 10:40 AM	6/11/2021
2106039-14	DUP-1		06/10/21 10:40 AM	6/11/2021
2106039-15	H-27		06/10/21 11:25 AM	6/11/2021
2106039-16	H-26		06/10/21 12:10 PM	6/11/2021

Lab Order: 2106039
Client: Golder
Project: Luminant - MLSES Ash Ponds CC

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
2106039-01A	H-28	06/04/21 09:00 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/08/21 08:36 AM	100848
	H-28	06/04/21 09:00 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/08/21 08:36 AM	100848
	H-28	06/04/21 09:00 AM	Aqueous	SW7470A	Mercury Aq Prep	06/08/21 02:43 PM	100857
2106039-02A	H-29	06/04/21 09:55 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/08/21 08:36 AM	100848
	H-29	06/04/21 09:55 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/08/21 08:36 AM	100848
	H-29	06/04/21 09:55 AM	Aqueous	SW7470A	Mercury Aq Prep	06/08/21 02:43 PM	100857
2106039-03A	H-31	06/04/21 10:45 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/08/21 08:36 AM	100848
	H-31	06/04/21 10:45 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/08/21 08:36 AM	100848
	H-31	06/04/21 10:45 AM	Aqueous	SW7470A	Mercury Aq Prep	06/08/21 02:43 PM	100857
2106039-04A	H-32	06/04/21 11:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/08/21 08:36 AM	100848
	H-32	06/04/21 11:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/08/21 08:36 AM	100848
	H-32	06/04/21 11:30 AM	Aqueous	SW7470A	Mercury Aq Prep	06/08/21 02:43 PM	100857
2106039-05A	H-33	06/04/21 12:25 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/08/21 08:36 AM	100848
	H-33	06/04/21 12:25 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/08/21 08:36 AM	100848
	H-33	06/04/21 12:25 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/08/21 08:36 AM	100848
	H-33	06/04/21 12:25 PM	Aqueous	SW7470A	Mercury Aq Prep	06/08/21 02:43 PM	100857
2106039-06A	DUP-1	06/04/21 12:25 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/08/21 08:36 AM	100848
	DUP-1	06/04/21 12:25 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/08/21 08:36 AM	100848
	DUP-1	06/04/21 12:25 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/08/21 08:36 AM	100848
	DUP-1	06/04/21 12:25 PM	Aqueous	SW7470A	Mercury Aq Prep	06/08/21 02:43 PM	100857
2106039-07A	H-26	06/04/21 01:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/08/21 08:36 AM	100848
	H-26	06/04/21 01:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/08/21 08:36 AM	100848
	H-26	06/04/21 01:20 PM	Aqueous	SW7470A	Mercury Aq Prep	06/08/21 02:43 PM	100857
	H-26	06/04/21 01:20 PM	Aqueous	SW7470A	Mercury Aq Prep	06/08/21 02:43 PM	100857
2106039-08A	H-27	06/04/21 02:10 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/08/21 08:36 AM	100848
	H-27	06/04/21 02:10 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/08/21 08:36 AM	100848
	H-27	06/04/21 02:10 PM	Aqueous	SW7470A	Mercury Aq Prep	06/08/21 02:43 PM	100857
2106039-09A	H-28	06/10/21 07:50 AM	Aqueous	E300	Anion Preparation	06/14/21 09:37 AM	100908

Lab Order: 2106039
Client: Golder
Project: Luminant - MLSES Ash Ponds CC

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
2106039-09A	H-28	06/10/21 07:50 AM	Aqueous	E300	Anion Preparation	06/14/21 09:37 AM	100908
	H-28	06/10/21 07:50 AM	Aqueous	M2540C	TDS Preparation	06/14/21 08:35 AM	100893
2106039-10A	H-29	06/10/21 08:35 AM	Aqueous	E300	Anion Preparation	06/14/21 09:37 AM	100908
	H-29	06/10/21 08:35 AM	Aqueous	E300	Anion Preparation	06/14/21 09:37 AM	100908
	H-29	06/10/21 08:35 AM	Aqueous	M2540C	TDS Preparation	06/14/21 08:35 AM	100893
2106039-11A	H-31	06/10/21 09:15 AM	Aqueous	E300	Anion Preparation	06/14/21 09:37 AM	100908
	H-31	06/10/21 09:15 AM	Aqueous	E300	Anion Preparation	06/14/21 09:37 AM	100908
	H-31	06/10/21 09:15 AM	Aqueous	E300	Anion Preparation	06/14/21 09:37 AM	100908
	H-31	06/10/21 09:15 AM	Aqueous	M2540C	TDS Preparation	06/14/21 08:35 AM	100893
2106039-12A	H-32	06/10/21 10:00 AM	Aqueous	E300	Anion Preparation	06/14/21 09:37 AM	100908
	H-32	06/10/21 10:00 AM	Aqueous	E300	Anion Preparation	06/14/21 09:37 AM	100908
	H-32	06/10/21 10:00 AM	Aqueous	M2540C	TDS Preparation	06/14/21 08:35 AM	100893
2106039-13A	H-33	06/10/21 10:40 AM	Aqueous	E300	Anion Preparation	06/14/21 09:37 AM	100908
	H-33	06/10/21 10:40 AM	Aqueous	E300	Anion Preparation	06/14/21 09:37 AM	100908
	H-33	06/10/21 10:40 AM	Aqueous	M2540C	TDS Preparation	06/14/21 08:35 AM	100893
2106039-14A	DUP-1	06/10/21 10:40 AM	Aqueous	E300	Anion Preparation	06/14/21 09:37 AM	100908
	DUP-1	06/10/21 10:40 AM	Aqueous	E300	Anion Preparation	06/14/21 09:37 AM	100908
	DUP-1	06/10/21 10:40 AM	Aqueous	M2540C	TDS Preparation	06/14/21 08:35 AM	100893
2106039-15A	H-27	06/10/21 11:25 AM	Aqueous	E300	Anion Preparation	06/14/21 09:37 AM	100908
	H-27	06/10/21 11:25 AM	Aqueous	E300	Anion Preparation	06/14/21 09:37 AM	100908
	H-27	06/10/21 11:25 AM	Aqueous	M2540C	TDS Preparation	06/14/21 08:35 AM	100893
2106039-16A	H-26	06/10/21 12:10 PM	Aqueous	E300	Anion Preparation	06/14/21 09:37 AM	100908
	H-26	06/10/21 12:10 PM	Aqueous	E300	Anion Preparation	06/14/21 09:37 AM	100908
	H-26	06/10/21 12:10 PM	Aqueous	M2540C	TDS Preparation	06/14/21 08:35 AM	100893

Lab Order: 2106039
Client: Golder
Project: Luminant - MLSES Ash Ponds CC

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
2106039-01A	H-28	Aqueous	SW7470A	Mercury Total: Aqueous	100857	1	06/09/21 04:07 PM	CETAC2_HG_210609B
	H-28	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100848	20	06/09/21 11:45 AM	ICP-MS4_210609A
	H-28	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100848	1	06/09/21 10:57 AM	ICP-MS5_210609A
2106039-02A	H-29	Aqueous	SW7470A	Mercury Total: Aqueous	100857	1	06/09/21 04:09 PM	CETAC2_HG_210609B
	H-29	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100848	20	06/09/21 11:47 AM	ICP-MS4_210609A
	H-29	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100848	1	06/09/21 11:00 AM	ICP-MS5_210609A
2106039-03A	H-31	Aqueous	SW7470A	Mercury Total: Aqueous	100857	1	06/09/21 04:12 PM	CETAC2_HG_210609B
	H-31	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100848	50	06/09/21 11:49 AM	ICP-MS4_210609A
	H-31	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100848	1	06/09/21 11:02 AM	ICP-MS5_210609A
2106039-04A	H-32	Aqueous	SW7470A	Mercury Total: Aqueous	100857	1	06/09/21 04:14 PM	CETAC2_HG_210609B
	H-32	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100848	10	06/09/21 11:51 AM	ICP-MS4_210609A
	H-32	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100848	1	06/09/21 11:05 AM	ICP-MS5_210609A
2106039-05A	H-33	Aqueous	SW7470A	Mercury Total: Aqueous	100857	1	06/09/21 04:16 PM	CETAC2_HG_210609B
	H-33	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100848	1	06/09/21 11:07 AM	ICP-MS5_210609A
	H-33	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100848	5	06/09/21 11:53 AM	ICP-MS4_210609A
	H-33	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100848	1	06/09/21 12:38 PM	ICP-MS4_210609A
2106039-06A	DUP-1	Aqueous	SW7470A	Mercury Total: Aqueous	100857	1	06/09/21 04:18 PM	CETAC2_HG_210609B
	DUP-1	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100848	5	06/09/21 11:55 AM	ICP-MS4_210609A
	DUP-1	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100848	1	06/09/21 12:40 PM	ICP-MS4_210609A
	DUP-1	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100848	1	06/09/21 11:10 AM	ICP-MS5_210609A
2106039-07A	H-26	Aqueous	SW7470A	Mercury Total: Aqueous	100857	1	06/09/21 04:21 PM	CETAC2_HG_210609B
	H-26	Aqueous	SW7470A	Mercury Total: Aqueous	100857	5	06/09/21 04:26 PM	CETAC2_HG_210609B
	H-26	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100848	5	06/09/21 11:57 AM	ICP-MS4_210609A
	H-26	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100848	1	06/09/21 11:13 AM	ICP-MS5_210609A

Lab Order: 2106039
Client: Golder
Project: Luminant - MLSES Ash Ponds CC

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
2106039-08A	H-27	Aqueous	SW7470A	Mercury Total: Aqueous	100857	1	06/09/21 04:23 PM	CETAC2_HG_210609B
	H-27	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100848	1	06/09/21 11:15 AM	ICP-MS5_210609A
	H-27	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100848	5	06/09/21 11:59 AM	ICP-MS4_210609A
2106039-09A	H-28	Aqueous	E300	Anions by IC method - Water	100908	10	06/14/21 06:50 PM	IC2_210614A
	H-28	Aqueous	E300	Anions by IC method - Water	100908	1	06/14/21 10:34 PM	IC2_210614A
	H-28	Aqueous	M2540C	Total Dissolved Solids	100893	1	06/14/21 12:10 PM	WC_210614B
2106039-10A	H-29	Aqueous	E300	Anions by IC method - Water	100908	10	06/14/21 07:06 PM	IC2_210614A
	H-29	Aqueous	E300	Anions by IC method - Water	100908	1	06/14/21 10:50 PM	IC2_210614A
	H-29	Aqueous	M2540C	Total Dissolved Solids	100893	1	06/14/21 12:10 PM	WC_210614B
2106039-11A	H-31	Aqueous	E300	Anions by IC method - Water	100908	100	06/14/21 03:38 PM	IC2_210614A
	H-31	Aqueous	E300	Anions by IC method - Water	100908	10	06/14/21 08:42 PM	IC2_210614A
	H-31	Aqueous	E300	Anions by IC method - Water	100908	1	06/14/21 11:06 PM	IC2_210614A
	H-31	Aqueous	M2540C	Total Dissolved Solids	100893	1	06/14/21 12:10 PM	WC_210614B
2106039-12A	H-32	Aqueous	E300	Anions by IC method - Water	100908	1	06/15/21 12:42 AM	IC2_210614A
	H-32	Aqueous	E300	Anions by IC method - Water	100908	10	06/14/21 08:58 PM	IC2_210614A
	H-32	Aqueous	M2540C	Total Dissolved Solids	100893	1	06/14/21 12:10 PM	WC_210614B
2106039-13A	H-33	Aqueous	E300	Anions by IC method - Water	100908	1	06/15/21 12:58 AM	IC2_210614A
	H-33	Aqueous	E300	Anions by IC method - Water	100908	10	06/14/21 09:14 PM	IC2_210614A
	H-33	Aqueous	M2540C	Total Dissolved Solids	100893	1	06/14/21 12:10 PM	WC_210614B
2106039-14A	DUP-1	Aqueous	E300	Anions by IC method - Water	100908	10	06/14/21 09:30 PM	IC2_210614A
	DUP-1	Aqueous	E300	Anions by IC method - Water	100908	1	06/15/21 01:14 AM	IC2_210614A
	DUP-1	Aqueous	M2540C	Total Dissolved Solids	100893	1	06/14/21 12:10 PM	WC_210614B
2106039-15A	H-27	Aqueous	E300	Anions by IC method - Water	100908	10	06/14/21 09:46 PM	IC2_210614A
	H-27	Aqueous	E300	Anions by IC method - Water	100908	1	06/15/21 01:30 AM	IC2_210614A
	H-27	Aqueous	M2540C	Total Dissolved Solids	100893	1	06/14/21 12:10 PM	WC_210614B
2106039-16A	H-26	Aqueous	E300	Anions by IC method - Water	100908	10	06/14/21 10:02 PM	IC2_210614A
	H-26	Aqueous	E300	Anions by IC method - Water	100908	1	06/15/21 01:46 AM	IC2_210614A

Lab Order: 2106039
Client: Golder
Project: Luminant - MLSES Ash Ponds CC

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
2106039-16A	H-26	Aqueous	M2540C	Total Dissolved Solids	100893	1	06/14/21 12:10 PM	WC_210614B

DHL Analytical, Inc.

Date: *09-Jul-21*

CLIENT:	Golder	**Client Sample ID:**	H-28
Project:	Luminant - MLSES Ash Ponds CCR	**Lab ID:**	2106039-01
Project No:	19122262	**Collection Date:**	06/04/21 09:00 AM
Lab Order:	2106039	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	06/09/21 10:57 AM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	06/09/21 10:57 AM
Barium	0.0167	0.00300	0.0100		mg/L	1	06/09/21 10:57 AM
Beryllium	0.00353	0.000300	0.00100		mg/L	1	06/09/21 10:57 AM
Boron	7.07	0.200	0.600		mg/L	20	06/09/21 11:45 AM
Cadmium	0.00121	0.000300	0.00100		mg/L	1	06/09/21 10:57 AM
Calcium	88.7	2.00	6.00		mg/L	20	06/09/21 11:45 AM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	06/09/21 10:57 AM
Cobalt	0.164	0.00300	0.00500		mg/L	1	06/09/21 10:57 AM
Lead	0.000812	0.000300	0.00100	J	mg/L	1	06/09/21 10:57 AM
Lithium	0.159	0.00500	0.0100		mg/L	1	06/09/21 10:57 AM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	06/09/21 10:57 AM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	06/09/21 10:57 AM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	06/09/21 10:57 AM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **JVR**
Mercury	0.000101	0.0000800	0.000200	J	mg/L	1	06/09/21 04:07 PM

Qualifiers:

- ND - Not Detected at the SDL
- J - Analyte detected between SDL and RL
- B - Analyte detected in the associated Method Blank
- DF- Dilution Factor
- N - Parameter not NELAP certified
- See Final Page of Report for MQLs and MDLs
- S - Spike Recovery outside control limits
- C - Sample Result or QC discussed in Case Narrative
- RL - Reporting Limit (MQL adjusted for moisture and sample size)
- SDL - Sample Detection Limit
- E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *09-Jul-21*

CLIENT:	Golder	**Client Sample ID:**	H-29
Project:	Luminant - MLSES Ash Ponds CCR	**Lab ID:**	2106039-02
Project No:	19122262	**Collection Date:**	06/04/21 09:55 AM
Lab Order:	2106039	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	06/09/21 11:00 AM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	06/09/21 11:00 AM
Barium	0.0168	0.00300	0.0100		mg/L	1	06/09/21 11:00 AM
Beryllium	0.00320	0.000300	0.00100		mg/L	1	06/09/21 11:00 AM
Boron	7.28	0.200	0.600		mg/L	20	06/09/21 11:47 AM
Cadmium	0.00126	0.000300	0.00100		mg/L	1	06/09/21 11:00 AM
Calcium	89.7	2.00	6.00		mg/L	20	06/09/21 11:47 AM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	06/09/21 11:00 AM
Cobalt	0.168	0.00300	0.00500		mg/L	1	06/09/21 11:00 AM
Lead	0.000554	0.000300	0.00100	J	mg/L	1	06/09/21 11:00 AM
Lithium	0.159	0.00500	0.0100		mg/L	1	06/09/21 11:00 AM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	06/09/21 11:00 AM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	06/09/21 11:00 AM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	06/09/21 11:00 AM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **JVR**
Mercury	0.000118	0.0000800	0.000200	J	mg/L	1	06/09/21 04:09 PM

Qualifiers:

ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *09-Jul-21*

CLIENT:	Golder	**Client Sample ID:**	H-31
Project:	Luminant - MLSES Ash Ponds CCR	**Lab ID:**	2106039-03
Project No:	19122262	**Collection Date:**	06/04/21 10:45 AM
Lab Order:	2106039	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	06/09/21 11:02 AM
Arsenic	0.00756	0.00200	0.00500		mg/L	1	06/09/21 11:02 AM
Barium	0.0159	0.00300	0.0100		mg/L	1	06/09/21 11:02 AM
Beryllium	0.0140	0.000300	0.00100		mg/L	1	06/09/21 11:02 AM
Boron	18.3	0.500	1.50		mg/L	50	06/09/21 11:49 AM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	06/09/21 11:02 AM
Calcium	224	5.00	15.0		mg/L	50	06/09/21 11:49 AM
Chromium	0.00210	0.00200	0.00500	J	mg/L	1	06/09/21 11:02 AM
Cobalt	0.427	0.00300	0.00500		mg/L	1	06/09/21 11:02 AM
Lead	<0.000300	0.000300	0.00100		mg/L	1	06/09/21 11:02 AM
Lithium	0.225	0.00500	0.0100		mg/L	1	06/09/21 11:02 AM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	06/09/21 11:02 AM
Selenium	0.00423	0.00200	0.00500	J	mg/L	1	06/09/21 11:02 AM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	06/09/21 11:02 AM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **JVR**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/09/21 04:12 PM

Qualifiers:

- ND - Not Detected at the SDL
- J - Analyte detected between SDL and RL
- B - Analyte detected in the associated Method Blank
- DF- Dilution Factor
- N - Parameter not NELAP certified
- See Final Page of Report for MQLs and MDLs
- S - Spike Recovery outside control limits
- C - Sample Result or QC discussed in Case Narrative
- RL - Reporting Limit (MQL adjusted for moisture and sample size)
- SDL - Sample Detection Limit
- E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *09-Jul-21*

CLIENT:	Golder	**Client Sample ID:**	H-32
Project:	Luminant - MLSES Ash Ponds CCR	**Lab ID:**	2106039-04
Project No:	19122262	**Collection Date:**	06/04/21 11:30 AM
Lab Order:	2106039	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	06/09/21 11:05 AM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	06/09/21 11:05 AM
Barium	0.0161	0.00300	0.0100		mg/L	1	06/09/21 11:05 AM
Beryllium	0.00670	0.000300	0.00100		mg/L	1	06/09/21 11:05 AM
Boron	2.08	0.100	0.300		mg/L	10	06/09/21 11:51 AM
Cadmium	0.000395	0.000300	0.00100	J	mg/L	1	06/09/21 11:05 AM
Calcium	41.2	1.00	3.00		mg/L	10	06/09/21 11:51 AM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	06/09/21 11:05 AM
Cobalt	0.179	0.00300	0.00500		mg/L	1	06/09/21 11:05 AM
Lead	0.000591	0.000300	0.00100	J	mg/L	1	06/09/21 11:05 AM
Lithium	0.0900	0.00500	0.0100		mg/L	1	06/09/21 11:05 AM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	06/09/21 11:05 AM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	06/09/21 11:05 AM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	06/09/21 11:05 AM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **JVR**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/09/21 04:14 PM

Qualifiers:

- ND - Not Detected at the SDL
- J - Analyte detected between SDL and RL
- B - Analyte detected in the associated Method Blank
- DF- Dilution Factor
- N - Parameter not NELAP certified
- See Final Page of Report for MQLs and MDLs
- S - Spike Recovery outside control limits
- C - Sample Result or QC discussed in Case Narrative
- RL - Reporting Limit (MQL adjusted for moisture and sample size)
- SDL - Sample Detection Limit
- E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *09-Jul-21*

CLIENT:	Golder	**Client Sample ID:**	H-33
Project:	Luminant - MLSES Ash Ponds CCR	**Lab ID:**	2106039-05
Project No:	19122262	**Collection Date:**	06/04/21 12:25 PM
Lab Order:	2106039	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	06/09/21 11:07 AM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	06/09/21 11:07 AM
Barium	0.213	0.00300	0.0100		mg/L	1	06/09/21 11:07 AM
Beryllium	0.000342	0.000300	0.00100	J	mg/L	1	06/09/21 11:07 AM
Boron	0.0720	0.0100	0.0300		mg/L	1	06/09/21 12:38 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	06/09/21 11:07 AM
Calcium	81.6	0.500	1.50		mg/L	5	06/09/21 11:53 AM
Chromium	0.00464	0.00200	0.00500	J	mg/L	1	06/09/21 11:07 AM
Cobalt	0.0258	0.00300	0.00500		mg/L	1	06/09/21 11:07 AM
Lead	<0.000300	0.000300	0.00100		mg/L	1	06/09/21 11:07 AM
Lithium	0.155	0.00500	0.0100		mg/L	1	06/09/21 11:07 AM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	06/09/21 11:07 AM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	06/09/21 11:07 AM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	06/09/21 11:07 AM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **JVR**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/09/21 04:16 PM

Qualifiers:

ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *09-Jul-21*

CLIENT:	Golder	**Client Sample ID:**	DUP-1
Project:	Luminant - MLSES Ash Ponds CCR	**Lab ID:**	2106039-06
Project No:	19122262	**Collection Date:**	06/04/21 12:25 PM
Lab Order:	2106039	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	06/09/21 11:10 AM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	06/09/21 11:10 AM
Barium	0.208	0.00300	0.0100		mg/L	1	06/09/21 11:10 AM
Beryllium	0.000319	0.000300	0.00100	J	mg/L	1	06/09/21 11:10 AM
Boron	0.0605	0.0100	0.0300		mg/L	1	06/09/21 12:40 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	06/09/21 11:10 AM
Calcium	81.3	0.500	1.50		mg/L	5	06/09/21 11:55 AM
Chromium	0.00458	0.00200	0.00500	J	mg/L	1	06/09/21 11:10 AM
Cobalt	0.0248	0.00300	0.00500		mg/L	1	06/09/21 11:10 AM
Lead	<0.000300	0.000300	0.00100		mg/L	1	06/09/21 11:10 AM
Lithium	0.153	0.00500	0.0100		mg/L	1	06/09/21 11:10 AM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	06/09/21 11:10 AM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	06/09/21 11:10 AM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	06/09/21 11:10 AM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **JVR**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/09/21 04:18 PM

Qualifiers:

ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *09-Jul-21*

CLIENT:	Golder	**Client Sample ID:**	H-26
Project:	Luminant - MLSES Ash Ponds CCR	**Lab ID:**	2106039-07
Project No:	19122262	**Collection Date:**	06/04/21 01:20 PM
Lab Order:	2106039	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	06/09/21 11:13 AM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	06/09/21 11:13 AM
Barium	0.0629	0.00300	0.0100		mg/L	1	06/09/21 11:13 AM
Beryllium	0.00153	0.000300	0.00100		mg/L	1	06/09/21 11:13 AM
Boron	0.502	0.0500	0.150		mg/L	5	06/09/21 11:57 AM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	06/09/21 11:13 AM
Calcium	13.7	0.100	0.300		mg/L	1	06/09/21 11:13 AM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	06/09/21 11:13 AM
Cobalt	0.0240	0.00300	0.00500		mg/L	1	06/09/21 11:13 AM
Lead	0.000621	0.000300	0.00100	J	mg/L	1	06/09/21 11:13 AM
Lithium	0.0148	0.00500	0.0100		mg/L	1	06/09/21 11:13 AM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	06/09/21 11:13 AM
Selenium	0.0201	0.00200	0.00500		mg/L	1	06/09/21 11:13 AM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	06/09/21 11:13 AM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **JVR**
Mercury	<0.000400	0.000400	0.00100		mg/L	5	06/09/21 04:26 PM

Qualifiers:

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- B - Analyte detected in the associated Method Blank
- DF- Dilution Factor
- N - Parameter not NELAP certified
- See Final Page of Report for MQLs and MDLs
- S - Spike Recovery outside control limits
- C - Sample Result or QC discussed in Case Narrative
- RL - Reporting Limit (MQL adjusted for moisture and sample size)
- SDL - Sample Detection Limit
- E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *09-Jul-21*

CLIENT:	Golder	**Client Sample ID:**	H-27
Project:	Luminant - MLSES Ash Ponds CCR	**Lab ID:**	2106039-08
Project No:	19122262	**Collection Date:**	06/04/21 02:10 PM
Lab Order:	2106039	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	06/09/21 11:15 AM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	06/09/21 11:15 AM
Barium	0.0771	0.00300	0.0100		mg/L	1	06/09/21 11:15 AM
Beryllium	0.00149	0.000300	0.00100		mg/L	1	06/09/21 11:15 AM
Boron	0.537	0.0500	0.150		mg/L	5	06/09/21 11:59 AM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	06/09/21 11:15 AM
Calcium	18.0	0.100	0.300		mg/L	1	06/09/21 11:15 AM
Chromium	0.0363	0.00200	0.00500		mg/L	1	06/09/21 11:15 AM
Cobalt	0.0254	0.00300	0.00500		mg/L	1	06/09/21 11:15 AM
Lead	<0.000300	0.000300	0.00100		mg/L	1	06/09/21 11:15 AM
Lithium	0.0165	0.00500	0.0100		mg/L	1	06/09/21 11:15 AM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	06/09/21 11:15 AM
Selenium	0.00414	0.00200	0.00500	J	mg/L	1	06/09/21 11:15 AM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	06/09/21 11:15 AM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **JVR**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	06/09/21 04:23 PM

Qualifiers:

- ND - Not Detected at the SDL
- J - Analyte detected between SDL and RL
- B - Analyte detected in the associated Method Blank
- DF- Dilution Factor
- N - Parameter not NELAP certified
- See Final Page of Report for MQLs and MDLs
- S - Spike Recovery outside control limits
- C - Sample Result or QC discussed in Case Narrative
- RL - Reporting Limit (MQL adjusted for moisture and sample size)
- SDL - Sample Detection Limit
- E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *09-Jul-21*

CLIENT:	Golder	**Client Sample ID:**	H-28
Project:	Luminant - MLSES Ash Ponds CCR	**Lab ID:**	2106039-09
Project No:	19122262	**Collection Date:**	06/10/21 07:50 AM
Lab Order:	2106039	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **BM**
Chloride	90.9	3.00	10.0		mg/L	10	06/14/21 06:50 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	06/14/21 10:34 PM
Sulfate	817	10.0	30.0		mg/L	10	06/14/21 06:50 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	1480	50.0	50.0		mg/L	1	06/14/21 12:10 PM

Qualifiers:

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- J - Analyte detected between SDL and RL
- B - Analyte detected in the associated Method Blank
- DF- Dilution Factor
- N - Parameter not NELAP certified
- See Final Page of Report for MQLs and MDLs
- S - Spike Recovery outside control limits
- C - Sample Result or QC discussed in Case Narrative
- RL - Reporting Limit (MQL adjusted for moisture and sample size)
- SDL - Sample Detection Limit
- E - TPH pattern not Gas or Diesel Range Pattern

CLIENT:	Golder	**Client Sample ID:**	H-29
Project:	Luminant - MLSES Ash Ponds CCR	**Lab ID:**	2106039-10
Project No:	19122262	**Collection Date:**	06/10/21 08:35 AM
Lab Order:	2106039	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **BM**
Chloride	80.2	3.00	10.0		mg/L	10	06/14/21 07:06 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	06/14/21 10:50 PM
Sulfate	482	10.0	30.0		mg/L	10	06/14/21 07:06 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	987	10.0	10.0		mg/L	1	06/14/21 12:10 PM

Qualifiers:

ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *09-Jul-21*

CLIENT:	Golder	**Client Sample ID:**	H-31
Project:	Luminant - MLSES Ash Ponds CCR	**Lab ID:**	2106039-11
Project No:	19122262	**Collection Date:**	06/10/21 09:15 AM
Lab Order:	2106039	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **BM**
Chloride	230	3.00	10.0		mg/L	10	06/14/21 08:42 PM
Fluoride	0.806	0.100	0.400		mg/L	1	06/14/21 11:06 PM
Sulfate	2760	100	300		mg/L	100	06/14/21 03:38 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	4270	50.0	50.0		mg/L	1	06/14/21 12:10 PM

Qualifiers:

- ND - Not Detected at the SDL
- J - Analyte detected between SDL and RL
- B - Analyte detected in the associated Method Blank
- DF- Dilution Factor
- N - Parameter not NELAP certified
- See Final Page of Report for MQLs and MDLs
- S - Spike Recovery outside control limits
- C - Sample Result or QC discussed in Case Narrative
- RL - Reporting Limit (MQL adjusted for moisture and sample size)
- SDL - Sample Detection Limit
- E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *09-Jul-21*

CLIENT:	Golder	**Client Sample ID:**	H-32
Project:	Luminant - MLSES Ash Ponds CCR	**Lab ID:**	2106039-12
Project No:	19122262	**Collection Date:**	06/10/21 10:00 AM
Lab Order:	2106039	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **BM**
Chloride	107	3.00	10.0		mg/L	10	06/14/21 08:58 PM
Fluoride	0.721	0.100	0.400		mg/L	1	06/15/21 12:42 AM
Sulfate	335	10.0	30.0		mg/L	10	06/14/21 08:58 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	764	10.0	10.0		mg/L	1	06/14/21 12:10 PM

Qualifiers:

ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

CLIENT:	Golder	**Client Sample ID:**	H-33
Project:	Luminant - MLSES Ash Ponds CCR	**Lab ID:**	2106039-13
Project No:	19122262	**Collection Date:**	06/10/21 10:40 AM
Lab Order:	2106039	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **BM**
Chloride	86.8	3.00	10.0		mg/L	10	06/14/21 09:14 PM
Fluoride	0.272	0.100	0.400	J	mg/L	1	06/15/21 12:58 AM
Sulfate	112	1.00	3.00		mg/L	1	06/15/21 12:58 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	569	10.0	10.0		mg/L	1	06/14/21 12:10 PM

Qualifiers:

- ND - Not Detected at the SDL
- J - Analyte detected between SDL and RL
- B - Analyte detected in the associated Method Blank
- DF- Dilution Factor
- N - Parameter not NELAP certified
- See Final Page of Report for MQLs and MDLs
- S - Spike Recovery outside control limits
- C - Sample Result or QC discussed in Case Narrative
- RL - Reporting Limit (MQL adjusted for moisture and sample size)
- SDL - Sample Detection Limit
- E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *09-Jul-21*

CLIENT:	Golder	**Client Sample ID:**	DUP-1
Project:	Luminant - MLSES Ash Ponds CCR	**Lab ID:**	2106039-14
Project No:	19122262	**Collection Date:**	06/10/21 10:40 AM
Lab Order:	2106039	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **BM**
Chloride	85.0	3.00	10.0		mg/L	10	06/14/21 09:30 PM
Fluoride	0.265	0.100	0.400	J	mg/L	1	06/15/21 01:14 AM
Sulfate	113	1.00	3.00		mg/L	1	06/15/21 01:14 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	563	10.0	10.0		mg/L	1	06/14/21 12:10 PM

Qualifiers:

ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *09-Jul-21*

CLIENT:	Golder	**Client Sample ID:**	H-27
Project:	Luminant - MLSES Ash Ponds CCR	**Lab ID:**	2106039-15
Project No:	19122262	**Collection Date:**	06/10/21 11:25 AM
Lab Order:	2106039	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **BM**
Chloride	49.3	3.00	10.0		mg/L	10	06/14/21 09:46 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	06/15/21 01:30 AM
Sulfate	46.4	1.00	3.00		mg/L	1	06/15/21 01:30 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	219	10.0	10.0		mg/L	1	06/14/21 12:10 PM

Qualifiers:

- ND - Not Detected at the SDL
- J - Analyte detected between SDL and RL
- B - Analyte detected in the associated Method Blank
- DF- Dilution Factor
- N - Parameter not NELAP certified
- See Final Page of Report for MQLs and MDLs
- S - Spike Recovery outside control limits
- C - Sample Result or QC discussed in Case Narrative
- RL - Reporting Limit (MQL adjusted for moisture and sample size)
- SDL - Sample Detection Limit
- E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *09-Jul-21*

CLIENT:	Golder	**Client Sample ID:**	H-26
Project:	Luminant - MLSES Ash Ponds CCR	**Lab ID:**	2106039-16
Project No:	19122262	**Collection Date:**	06/10/21 12:10 PM
Lab Order:	2106039	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **BM**
Chloride	66.1	3.00	10.0		mg/L	10	06/14/21 10:02 PM
Fluoride	0.245	0.100	0.400	J	mg/L	1	06/15/21 01:46 AM
Sulfate	61.2	1.00	3.00		mg/L	1	06/15/21 01:46 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	278	10.0	10.0		mg/L	1	06/14/21 12:10 PM

Qualifiers:

- ND - Not Detected at the SDL
- J - Analyte detected between SDL and RL
- B - Analyte detected in the associated Method Blank
- DF- Dilution Factor
- N - Parameter not NELAP certified
- See Final Page of Report for MQLs and MDLs
- S - Spike Recovery outside control limits
- C - Sample Result or QC discussed in Case Narrative
- RL - Reporting Limit (MQL adjusted for moisture and sample size)
- SDL - Sample Detection Limit
- E - TPH pattern not Gas or Diesel Range Pattern

CLIENT: Golder
Work Order: 2106039
Project: Luminant - MLSES Ash Ponds CCR

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_210511A

Sample ID: **DCS-100518**	Batch ID: **100518**	TestNo: **SW7470A**	Units: **mg/L**		
SampType: **DCS**	Run ID: **CETAC2_HG_210511A**	Analysis Date: **5/11/2021 1:32:27 PM**	Prep Date: **5/10/2021**		

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.000165	0.000200	0.000200	0	82.5	82	119	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2106039
Project: Luminant - MLSES Ash Ponds CCR

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_210609B

The QC data in batch 100857 applies to the following samples: 2106039-01A, 2106039-02A, 2106039-03A, 2106039-04A, 2106039-05A, 2106039-06A, 2106039-07A, 2106039-08A

Sample ID: **MB-100857** Batch ID: **100857** TestNo: **SW7470A** Units: **mg/L**
SampType: **MBLK** Run ID: **CETAC2_HG_210609B** Analysis Date: **6/9/2021 3:09:04 PM** Prep Date: **6/8/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.0000800	0.000200								

Sample ID: **LCS-100857** Batch ID: **100857** TestNo: **SW7470A** Units: **mg/L**
SampType: **LCS** Run ID: **CETAC2_HG_210609B** Analysis Date: **6/9/2021 3:13:36 PM** Prep Date: **6/8/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00207	0.000200	0.00200	0	104	85	115			

Sample ID: **LCSD-100857** Batch ID: **100857** TestNo: **SW7470A** Units: **mg/L**
SampType: **LCSD** Run ID: **CETAC2_HG_210609B** Analysis Date: **6/9/2021 3:15:52 PM** Prep Date: **6/8/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00205	0.000200	0.00200	0	103	85	115	0.971	15	

Sample ID: **2106029-02C MS** Batch ID: **100857** TestNo: **SW7470A** Units: **mg/L**
SampType: **MS** Run ID: **CETAC2_HG_210609B** Analysis Date: **6/9/2021 3:31:44 PM** Prep Date: **6/8/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0103	0.00100	0.0100	0	103	80	120			

Sample ID: **2106029-02C MSD** Batch ID: **100857** TestNo: **SW7470A** Units: **mg/L**
SampType: **MSD** Run ID: **CETAC2_HG_210609B** Analysis Date: **6/9/2021 3:33:59 PM** Prep Date: **6/8/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0103	0.00100	0.0100	0	103	80	120	0	15	

Sample ID: **2106029-02C SD** Batch ID: **100857** TestNo: **SW7470A** Units: **mg/L**
SampType: **SD** Run ID: **CETAC2_HG_210609B** Analysis Date: **6/9/2021 3:36:15 PM** Prep Date: **6/8/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.00200	0.00500	0	0				0	10	

Sample ID: **2106029-02C PDS** Batch ID: **100857** TestNo: **SW7470A** Units: **mg/L**
SampType: **PDS** Run ID: **CETAC2_HG_210609B** Analysis Date: **6/9/2021 3:38:31 PM** Prep Date: **6/8/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0122	0.00100	0.0125	0	98.0	85	115			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2106039
Project: Luminant - MLSES Ash Ponds CCR

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_210609B

Sample ID: **ICV-210609**	Batch ID: **R115747**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **ICV**	Run ID: **CETAC2_HG_210609B**	Analysis Date: **6/9/2021 3:04:30 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00412	0.000200	0.00400	0	103	90	110			

Sample ID: **CCV1-210609**	Batch ID: **R115747**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_210609B**	Analysis Date: **6/9/2021 4:00:43 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00200	0.000200	0.00200	0	100	90	110			

Sample ID: **CCV2-210609**	Batch ID: **R115747**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_210609B**	Analysis Date: **6/9/2021 4:28:53 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00202	0.000200	0.00200	0	101	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2106039
Project: Luminant - MLSES Ash Ponds CCR

ANALYTICAL QC SUMMARY REPORT

RunID: **ICP-MS4_210428A**

Sample ID: **DCS2-100323**	Batch ID: **100323**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS2**	Run ID: **ICP-MS4_210428A**	Analysis Date: **4/28/2021 10:34:00 AM**	Prep Date: **4/27/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.302	0.300	0.300	0	101	70	130	0	0	

Sample ID: **DCS4-100323**	Batch ID: **100323**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS4**	Run ID: **ICP-MS4_210428A**	Analysis Date: **4/28/2021 10:39:00 AM**	Prep Date: **4/27/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0310	0.0300	0.0300	0	103	70	130	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2106039
Project: Luminant - MLSES Ash Ponds CCR

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_210609A

The QC data in batch 100848 applies to the following samples: 2106039-01A, 2106039-02A, 2106039-03A, 2106039-04A, 2106039-05A, 2106039-06A, 2106039-07A, 2106039-08A

Sample ID: **MB-100848**	Batch ID: **100848**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MBLK**	Run ID: **ICP-MS4_210609A**	Analysis Date: **6/9/2021 11:33:00 AM**	Prep Date: **6/8/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	<0.0100	0.0300								

Sample ID: **LCS-100848**	Batch ID: **100848**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCS**	Run ID: **ICP-MS4_210609A**	Analysis Date: **6/9/2021 11:35:00 AM**	Prep Date: **6/8/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.201	0.0300	0.200	0	100	80	120			

Sample ID: **LCSD-100848**	Batch ID: **100848**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCSD**	Run ID: **ICP-MS4_210609A**	Analysis Date: **6/9/2021 11:37:00 AM**	Prep Date: **6/8/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.200	0.0300	0.200	0	99.9	80	120	0.390	15	

Sample ID: **2106027-04A SD**	Batch ID: **100848**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS4_210609A**	Analysis Date: **6/9/2021 11:43:00 AM**	Prep Date: **6/8/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0606	0.150	0	0.0516				16.0	20	

Sample ID: **2106027-04A PDS**	Batch ID: **100848**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_210609A**	Analysis Date: **6/9/2021 12:03:00 PM**	Prep Date: **6/8/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.259	0.0300	0.200	0.0516	104	75	125			

Sample ID: **2106027-04A MS**	Batch ID: **100848**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS4_210609A**	Analysis Date: **6/9/2021 12:05:00 PM**	Prep Date: **6/8/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.262	0.0300	0.200	0.0516	105	75	125			

Sample ID: **2106027-04A MSD**	Batch ID: **100848**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS4_210609A**	Analysis Date: **6/9/2021 12:07:00 PM**	Prep Date: **6/8/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.262	0.0300	0.200	0.0516	105	75	125	0.115	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2106039
Project: Luminant - MLSES Ash Ponds CCR

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_210609A

Sample ID: **ICV-210609**	Batch ID: **R115738**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_210609A**	Analysis Date: **6/9/2021 10:34:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.102	0.0300	0.100	0	102	90	110			
Calcium	2.34	0.300	2.50	0	93.5	90	110			

Sample ID: **LCVL-210609**	Batch ID: **R115738**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_210609A**	Analysis Date: **6/9/2021 10:48:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0216	0.0300	0.0200	0	108	80	120			
Calcium	0.0810	0.300	0.100	0	81.0	80	120			

Sample ID: **CCV1-210609**	Batch ID: **R115738**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_210609A**	Analysis Date: **6/9/2021 12:09:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.207	0.0300	0.200	0	104	90	110			
Calcium	4.78	0.300	5.00	0	95.6	90	110			

Sample ID: **CCV2-210609**	Batch ID: **R115738**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_210609A**	Analysis Date: **6/9/2021 12:32:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.207	0.0300	0.200	0	103	90	110			

Sample ID: **CCV3-210609**	Batch ID: **R115738**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_210609A**	Analysis Date: **6/9/2021 12:44:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.214	0.0300	0.200	0	107	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2106039
Project: Luminant - MLSES Ash Ponds CCR

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_210428A

Sample ID: **DCS1-100323**	Batch ID: **100323**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS**	Run ID: **ICP-MS5_210428A**	Analysis Date: **4/28/2021 10:49:00 AM**	Prep Date: **4/27/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00105	0.00250	0.00100	0	105	70	130	0	0	
Beryllium	0.000505	0.00100	0.000500	0	101	70	130	0	0	
Cadmium	0.000461	0.00100	0.000500	0	92.2	70	130	0	0	
Lead	0.000474	0.00100	0.000500	0	94.8	70	130	0	0	
Thallium	0.000452	0.00150	0.000500	0	90.4	70	130	0	0	

Sample ID: **DCS2-100323**	Batch ID: **100323**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS2**	Run ID: **ICP-MS5_210428A**	Analysis Date: **4/28/2021 10:53:00 AM**	Prep Date: **4/27/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.302	0.300	0.300	0	101	70	130	0	0	

Sample ID: **DCS3-100323**	Batch ID: **100323**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS3**	Run ID: **ICP-MS5_210428A**	Analysis Date: **4/28/2021 10:56:00 AM**	Prep Date: **4/27/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.00467	0.00500	0.00500	0	93.3	70	130	0	0	
Barium	0.00472	0.0100	0.00500	0	94.4	70	130	0	0	
Chromium	0.00490	0.00500	0.00500	0	97.9	70	130	0	0	
Cobalt	0.00473	0.00500	0.00500	0	94.5	70	130	0	0	
Lithium	0.00495	0.0100	0.00500	0	99.0	70	130	0	0	
Molybdenum	0.00482	0.00500	0.00500	0	96.4	70	130	0	0	
Selenium	0.00498	0.00500	0.00500	0	99.5	70	130	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2106039
Project: Luminant - MLSES Ash Ponds CCR

ANALYTICAL QC SUMMARY REPORT

RunID: **ICP-MS5_210609A**

The QC data in batch 100848 applies to the following samples: 2106039-01A, 2106039-02A, 2106039-03A, 2106039-04A, 2106039-05A, 2106039-06A, 2106039-07A, 2106039-08A

Sample ID: **MB-100848** Batch ID: **100848** TestNo: **SW6020B** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS5_210609A** Analysis Date: **6/9/2021 10:42:00 AM** Prep Date: **6/8/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.000800	0.00250								
Arsenic	<0.00200	0.00500								
Barium	<0.00300	0.0100								
Beryllium	<0.000300	0.00100								
Cadmium	<0.000300	0.00100								
Calcium	<0.100	0.300								
Chromium	<0.00200	0.00500								
Cobalt	<0.00300	0.00500								
Lead	<0.000300	0.00100								
Lithium	<0.00500	0.0100								
Molybdenum	<0.00200	0.00500								
Selenium	<0.00200	0.00500								
Thallium	<0.000500	0.00150								

Sample ID: **LCS-100848** Batch ID: **100848** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS5_210609A** Analysis Date: **6/9/2021 10:44:00 AM** Prep Date: **6/8/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.200	0.00250	0.200	0	99.8	80	120			
Arsenic	0.202	0.00500	0.200	0	101	80	120			
Barium	0.200	0.0100	0.200	0	100	80	120			
Beryllium	0.193	0.00100	0.200	0	96.6	80	120			
Cadmium	0.202	0.00100	0.200	0	101	80	120			
Calcium	4.96	0.300	5.00	0	99.3	80	120			
Chromium	0.202	0.00500	0.200	0	101	80	120			
Cobalt	0.201	0.00500	0.200	0	100	80	120			
Lead	0.193	0.00100	0.200	0	96.5	80	120			
Lithium	0.195	0.0100	0.200	0	97.6	80	120			
Molybdenum	0.202	0.00500	0.200	0	101	80	120			
Selenium	0.200	0.00500	0.200	0	100	80	120			
Thallium	0.192	0.00150	0.200	0	96.2	80	120			

Sample ID: **LCSD-100848** Batch ID: **100848** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS5_210609A** Analysis Date: **6/9/2021 10:47:00 AM** Prep Date: **6/8/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.201	0.00250	0.200	0	101	80	120	0.772	15	
Arsenic	0.204	0.00500	0.200	0	102	80	120	1.01	15	
Barium	0.198	0.0100	0.200	0	98.9	80	120	1.22	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

Sample ID: **LCSD-100848** Batch ID: **100848** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS5_210609A** Analysis Date: **6/9/2021 10:47:00 AM** Prep Date: **6/8/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.193	0.00100	0.200	0	96.3	80	120	0.249	15	
Cadmium	0.203	0.00100	0.200	0	101	80	120	0.421	15	
Calcium	4.88	0.300	5.00	0	97.5	80	120	1.78	15	
Chromium	0.201	0.00500	0.200	0	100	80	120	0.430	15	
Cobalt	0.201	0.00500	0.200	0	101	80	120	0.385	15	
Lead	0.193	0.00100	0.200	0	96.4	80	120	0.154	15	
Lithium	0.195	0.0100	0.200	0	97.5	80	120	0.146	15	
Molybdenum	0.200	0.00500	0.200	0	100	80	120	0.692	15	
Selenium	0.199	0.00500	0.200	0	99.3	80	120	0.933	15	
Thallium	0.193	0.00150	0.200	0	96.5	80	120	0.329	15	

Sample ID: **2106027-04A SD** Batch ID: **100848** TestNo: **SW6020B** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS5_210609A** Analysis Date: **6/9/2021 10:55:00 AM** Prep Date: **6/8/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.00400	0.0125	0	0				0	20	
Arsenic	<0.0100	0.0250	0	0				0	20	
Barium	0.0228	0.0500	0	0.0227				0.434	20	
Beryllium	<0.00150	0.00500	0	0				0	20	
Cadmium	<0.00150	0.00500	0	0				0	20	
Calcium	2.45	1.50	0	2.37				3.47	20	
Chromium	<0.0100	0.0250	0	0				0	20	
Cobalt	<0.0150	0.0250	0	0				0	20	
Lead	<0.00150	0.00500	0	0				0	20	
Lithium	<0.0250	0.0500	0	0.0118				0	20	
Molybdenum	<0.0100	0.0250	0	0				0	20	
Selenium	<0.0100	0.0250	0	0				0	20	
Thallium	<0.00250	0.00750	0	0				0	20	

Sample ID: **2106027-04A PDS** Batch ID: **100848** TestNo: **SW6020B** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS5_210609A** Analysis Date: **6/9/2021 11:20:00 AM** Prep Date: **6/8/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.159	0.00250	0.200	0	79.3	75	125			
Arsenic	0.189	0.00500	0.200	0	94.7	75	125			
Barium	0.226	0.0100	0.200	0.0227	102	75	125			
Beryllium	0.189	0.00100	0.200	0	94.3	75	125			
Cadmium	0.208	0.00100	0.200	0	104	75	125			
Calcium	7.04	0.300	5.00	2.37	93.5	75	125			
Chromium	0.207	0.00500	0.200	0	104	75	125			
Cobalt	0.195	0.00500	0.200	0	97.4	75	125			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2106039
Project: Luminant - MLSES Ash Ponds CCR

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_210609A

Sample ID: **2106027-04A PDS**	Batch ID: **100848**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS5_210609A**	Analysis Date: **6/9/2021 11:20:00 AM**	Prep Date: **6/8/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.197	0.00100	0.200	0	98.3	75	125			
Lithium	0.199	0.0100	0.200	0.0118	93.4	75	125			
Molybdenum	0.199	0.00500	0.200	0	99.7	75	125			
Selenium	0.198	0.00500	0.200	0	99.2	75	125			
Thallium	0.194	0.00150	0.200	0	97.1	75	125			

Sample ID: **2106027-04A MS**	Batch ID: **100848**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS5_210609A**	Analysis Date: **6/9/2021 11:23:00 AM**	Prep Date: **6/8/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.202	0.00250	0.200	0	101	75	125			
Arsenic	0.193	0.00500	0.200	0	96.7	75	125			
Barium	0.225	0.0100	0.200	0.0227	101	75	125			
Beryllium	0.187	0.00100	0.200	0	93.6	75	125			
Cadmium	0.204	0.00100	0.200	0	102	75	125			
Calcium	7.17	0.300	5.00	2.37	96.0	75	125			
Chromium	0.203	0.00500	0.200	0	101	75	125			
Cobalt	0.194	0.00500	0.200	0	96.8	75	125			
Lead	0.193	0.00100	0.200	0	96.7	75	125			
Lithium	0.201	0.0100	0.200	0.0118	94.8	75	125			
Molybdenum	0.201	0.00500	0.200	0	101	75	125			
Selenium	0.197	0.00500	0.200	0	98.4	75	125			
Thallium	0.193	0.00150	0.200	0	96.5	75	125			

Sample ID: **2106027-04A MSD**	Batch ID: **100848**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS5_210609A**	Analysis Date: **6/9/2021 11:26:00 AM**	Prep Date: **6/8/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.202	0.00250	0.200	0	101	75	125	0.345	15	
Arsenic	0.191	0.00500	0.200	0	95.4	75	125	1.39	15	
Barium	0.223	0.0100	0.200	0.0227	100	75	125	0.936	15	
Beryllium	0.186	0.00100	0.200	0	93.2	75	125	0.406	15	
Cadmium	0.204	0.00100	0.200	0	102	75	125	0.160	15	
Calcium	7.39	0.300	5.00	2.37	101	75	125	3.11	15	
Chromium	0.205	0.00500	0.200	0	102	75	125	1.03	15	
Cobalt	0.191	0.00500	0.200	0	95.7	75	125	1.08	15	
Lead	0.194	0.00100	0.200	0	97.1	75	125	0.417	15	
Lithium	0.202	0.0100	0.200	0.0118	95.2	75	125	0.432	15	
Molybdenum	0.203	0.00500	0.200	0	101	75	125	0.634	15	
Selenium	0.200	0.00500	0.200	0	99.9	75	125	1.49	15	
Thallium	0.193	0.00150	0.200	0	96.6	75	125	0.054	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2106039
Project: Luminant - MLSES Ash Ponds CCR

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_210609A

Sample ID: **ICV-210609**	Batch ID: **R115743**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS5_210609A**	Analysis Date: **6/9/2021 10:28:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.0996	0.00250	0.100	0	99.6	90	110			
Arsenic	0.0994	0.00500	0.100	0	99.4	90	110			
Barium	0.0991	0.0100	0.100	0	99.1	90	110			
Beryllium	0.0921	0.00100	0.100	0	92.1	90	110			
Cadmium	0.0985	0.00100	0.100	0	98.5	90	110			
Calcium	2.37	0.300	2.50	0	94.9	90	110			
Chromium	0.100	0.00500	0.100	0	100	90	110			
Cobalt	0.100	0.00500	0.100	0	100	90	110			
Lead	0.0962	0.00100	0.100	0	96.2	90	110			
Lithium	0.0934	0.0100	0.100	0	93.4	90	110			
Molybdenum	0.0963	0.00500	0.100	0	96.3	90	110			
Selenium	0.0969	0.00500	0.100	0	96.9	90	110			
Thallium	0.0946	0.00150	0.100	0	94.6	90	110			

Sample ID: **LCVL-210609**	Batch ID: **R115743**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_210609A**	Analysis Date: **6/9/2021 10:34:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00188	0.00250	0.00200	0	94.2	80	120			
Arsenic	0.00520	0.00500	0.00500	0	104	80	120			
Barium	0.00489	0.0100	0.00500	0	97.8	80	120			
Beryllium	0.00103	0.00100	0.00100	0	103	80	120			
Cadmium	0.00112	0.00100	0.00100	0	112	80	120			
Calcium	0.105	0.300	0.100	0	105	80	120			
Chromium	0.00492	0.00500	0.00500	0	98.4	80	120			
Cobalt	0.00466	0.00500	0.00500	0	93.3	80	120			
Lead	0.00102	0.00100	0.00100	0	102	80	120			
Lithium	0.00965	0.0100	0.0100	0	96.5	80	120			
Molybdenum	0.00514	0.00500	0.00500	0	103	80	120			
Selenium	0.00495	0.00500	0.00500	0	99.1	80	120			
Thallium	0.000954	0.00150	0.00100	0	95.4	80	120			

Sample ID: **CCV1-210609**	Batch ID: **R115743**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_210609A**	Analysis Date: **6/9/2021 11:28:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.201	0.00250	0.200	0	100	90	110			
Arsenic	0.201	0.00500	0.200	0	100	90	110			
Barium	0.201	0.0100	0.200	0	101	90	110			
Beryllium	0.187	0.00100	0.200	0	93.4	90	110			
Cadmium	0.203	0.00100	0.200	0	101	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2106039
Project: Luminant - MLSES Ash Ponds CCR

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_210609A

Sample ID: **CCV1-210609** Batch ID: **R115743** TestNo: **SW6020B** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS5_210609A** Analysis Date: **6/9/2021 11:28:00 AM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.94	0.300	5.00	0	98.7	90	110			
Chromium	0.202	0.00500	0.200	0	101	90	110			
Cobalt	0.201	0.00500	0.200	0	100	90	110			
Lead	0.197	0.00100	0.200	0	98.7	90	110			
Lithium	0.192	0.0100	0.200	0	95.8	90	110			
Molybdenum	0.204	0.00500	0.200	0	102	90	110			
Selenium	0.198	0.00500	0.200	0	99.2	90	110			
Thallium	0.195	0.00150	0.200	0	97.4	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2106039
Project: Luminant - MLSES Ash Ponds CCR

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_210527A

Sample ID: **DCS3-100738** Batch ID: **100738** TestNo: **E300** Units: **mg/L**
SampType: **DCS3** Run ID: **IC2_210527A** Analysis Date: **5/27/2021 4:13:05 PM** Prep Date: **5/27/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	1.25	1.00	1.000	0	125	70	130	0	0	
Fluoride	0.408	0.400	0.4000	0	102	70	130	0	0	
Sulfate	3.03	3.00	3.000	0	101	70	130	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2106039
Project: Luminant - MLSES Ash Ponds CCR

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_210614A

The QC data in batch 100908 applies to the following samples: 2106039-09A, 2106039-10A, 2106039-11A, 2106039-12A, 2106039-13A, 2106039-14A, 2106039-15A, 2106039-16A

Sample ID: **MB-100908** Batch ID: **100908** TestNo: **E300** Units: **mg/L**
SampType: **MBLK** Run ID: **IC2_210614A** Analysis Date: **6/14/2021 11:51:44 AM** Prep Date: **6/14/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00								
Fluoride	<0.100	0.400								
Sulfate	<1.00	3.00								

Sample ID: **LCS-100908** Batch ID: **100908** TestNo: **E300** Units: **mg/L**
SampType: **LCS** Run ID: **IC2_210614A** Analysis Date: **6/14/2021 12:07:44 PM** Prep Date: **6/14/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.25	1.00	10.00	0	92.5	90	110			
Fluoride	3.91	0.400	4.000	0	97.6	90	110			
Sulfate	29.7	3.00	30.00	0	99.0	90	110			

Sample ID: **LCSD-100908** Batch ID: **100908** TestNo: **E300** Units: **mg/L**
SampType: **LCSD** Run ID: **IC2_210614A** Analysis Date: **6/14/2021 12:23:44 PM** Prep Date: **6/14/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.26	1.00	10.00	0	92.6	90	110	0.117	20	
Fluoride	3.89	0.400	4.000	0	97.2	90	110	0.418	20	
Sulfate	29.6	3.00	30.00	0	98.5	90	110	0.489	20	

Sample ID: **2106039-11AMS** Batch ID: **100908** TestNo: **E300** Units: **mg/L**
SampType: **MS** Run ID: **IC2_210614A** Analysis Date: **6/14/2021 3:54:01 PM** Prep Date: **6/14/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	2410	100	2000	226.9	109	90	110			
Fluoride	2200	40.0	2000	0	110	90	110			
Sulfate	4550	300	2000	2758	89.7	90	110			

Sample ID: **2106039-11AMSD** Batch ID: **100908** TestNo: **E300** Units: **mg/L**
SampType: **MSD** Run ID: **IC2_210614A** Analysis Date: **6/14/2021 4:10:01 PM** Prep Date: **6/14/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	2420	100	2000	226.9	109	90	110	0.456	20	
Fluoride	2210	40.0	2000	0	111	90	110	0.356	20	S
Sulfate	4560	300	2000	2758	90.0	90	110	0.115	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2106039
Project: Luminant - MLSES Ash Ponds CCR

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_210614A

Sample ID: **2106088-01BMS**	Batch ID: **100908**	TestNo: **E300**	Units: **mg/L**
SampType: **MS**	Run ID: **IC2_210614A**	Analysis Date: **6/14/2021 4:42:02 PM**	Prep Date: **6/14/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	2320	100	2000	354.9	98.4	90	110			
Fluoride	1990	40.0	2000	0	99.3	90	110			
Sulfate	2210	300	2000	475.1	86.9	90	110			S

Sample ID: **2106088-01BMSD**	Batch ID: **100908**	TestNo: **E300**	Units: **mg/L**
SampType: **MSD**	Run ID: **IC2_210614A**	Analysis Date: **6/14/2021 4:58:02 PM**	Prep Date: **6/14/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	2330	100	2000	354.9	98.7	90	110	0.286	20	
Fluoride	1990	40.0	2000	0	99.4	90	110	0.120	20	
Sulfate	2210	300	2000	475.1	86.5	90	110	0.329	20	S

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2106039
Project: Luminant - MLSES Ash Ponds CCR

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_210614A

Sample ID: **ICV-210614**	Batch ID: **R115795**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC2_210614A**	Analysis Date: **6/14/2021 11:19:44 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	24.7	1.00	25.00	0	98.7	90	110			
Fluoride	10.1	0.400	10.00	0	101	90	110			
Sulfate	77.8	3.00	75.00	0	104	90	110			

Sample ID: **CCV1-210614**	Batch ID: **R115795**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_210614A**	Analysis Date: **6/14/2021 8:10:01 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.33	1.00	10.00	0	93.3	90	110			
Fluoride	4.03	0.400	4.000	0	101	90	110			
Sulfate	30.1	3.00	30.00	0	100	90	110			

Sample ID: **CCV2-210614**	Batch ID: **R115795**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_210614A**	Analysis Date: **6/15/2021 12:10:01 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.29	1.00	10.00	0	92.9	90	110			
Fluoride	3.97	0.400	4.000	0	99.3	90	110			
Sulfate	29.8	3.00	30.00	0	99.2	90	110			

Sample ID: **CCV3-210614**	Batch ID: **R115795**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_210614A**	Analysis Date: **6/15/2021 4:10:01 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	4.00	0.400	4.000	0	100	90	110			
Sulfate	29.8	3.00	30.00	0	99.3	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2106039
Project: Luminant - MLSES Ash Ponds CCR

ANALYTICAL QC SUMMARY REPORT

RunID: WC_210614B

The QC data in batch 100893 applies to the following samples: 2106039-09A, 2106039-10A, 2106039-11A, 2106039-12A, 2106039-13A, 2106039-14A, 2106039-15A, 2106039-16A

Sample ID: **MB-100893**	Batch ID: **100893**	TestNo: **M2540C**	Units: **mg/L**
SampType: **MBLK**	Run ID: **WC_210614B**	Analysis Date: **6/14/2021 12:10:00 PM**	Prep Date: **6/14/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	<10.0	10.0								

Sample ID: **LCS-100893**	Batch ID: **100893**	TestNo: **M2540C**	Units: **mg/L**
SampType: **LCS**	Run ID: **WC_210614B**	Analysis Date: **6/14/2021 12:10:00 PM**	Prep Date: **6/14/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	759	10.0	745.6	0	102	90	113			

Sample ID: **2106088-01B-DUP**	Batch ID: **100893**	TestNo: **M2540C**	Units: **mg/L**
SampType: **DUP**	Run ID: **WC_210614B**	Analysis Date: **6/14/2021 12:10:00 PM**	Prep Date: **6/14/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	2010	50.0	0	2015				0.248	5	

Sample ID: **2106088-02B-DUP**	Batch ID: **100893**	TestNo: **M2540C**	Units: **mg/L**
SampType: **DUP**	Run ID: **WC_210614B**	Analysis Date: **6/14/2021 12:10:00 PM**	Prep Date: **6/14/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	2460	50.0	0	2550				3.59	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2106039
Project: Luminant - MLSES Ash Ponds CCR

MQL SUMMARY REPORT

TestNo: E300	**MDL**	**MQL**
Analyte	**mg/L**	**mg/L**
Chloride	0.300	1.00
Fluoride	0.100	0.400
Sulfate	1.00	3.00

TestNo: SW6020B	**MDL**	**MQL**
Analyte	**mg/L**	**mg/L**
Antimony	0.000800	0.00250
Arsenic	0.00200	0.00500
Barium	0.00300	0.0100
Beryllium	0.000300	0.00100
Boron	0.0100	0.0300
Cadmium	0.000300	0.00100
Calcium	0.100	0.300
Chromium	0.00200	0.00500
Cobalt	0.00300	0.00500
Lead	0.000300	0.00100
Lithium	0.00500	0.0100
Molybdenum	0.00200	0.00500
Selenium	0.00200	0.00500
Thallium	0.000500	0.00150

TestNo: SW7470A	**MDL**	**MQL**
Analyte	**mg/L**	**mg/L**
Mercury	0.0000800	0.000200

TestNo: M2540C	**MDL**	**MQL**
Analyte	**mg/L**	**mg/L**
Total Dissolved Solids (Residue, Filt	10.0	10.0

Qualifiers: MQL -Method Quantitation Limit as defined by TRRP
MDL -Method Detection Limit as defined by TRRP

ANALYTICAL REPORT

July 09, 2021

DHL Analytical, Inc.

Sample Delivery Group:	L1363700
Samples Received:	06/09/2021
Project Number:	2106039
Description:	

Report To: John DuPont
2300 Double Creek Drive
Round Rock, TX 78664

Entire Report Reviewed By:

Donna Eidson
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.

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H-28 L1363700-01 Non-Potable Water

Collected by | Collected date/time 06/04/21 09:00 | Received date/time 06/09/21 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1695760	1	06/28/21 12:32	07/06/21 15:05	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1688248	1	07/02/21 09:34	07/06/21 15:05	JMR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1688248	1	07/02/21 09:34	07/05/21 11:46	RGT	Mt. Juliet, TN

H-29 L1363700-02 Non-Potable Water

Collected by | Collected date/time 06/04/21 09:55 | Received date/time 06/09/21 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1695760	1	06/28/21 12:32	07/06/21 15:05	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1688248	1	07/02/21 09:34	07/06/21 15:05	JMR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1688248	1	07/02/21 09:34	07/05/21 11:46	RGT	Mt. Juliet, TN

H-31 L1363700-03 Non-Potable Water

Collected by | Collected date/time 06/04/21 10:45 | Received date/time 06/09/21 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1695760	1	06/28/21 12:32	07/06/21 15:05	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1688248	1	07/02/21 09:34	07/06/21 15:05	JMR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1688248	1	07/02/21 09:34	07/05/21 11:46	RGT	Mt. Juliet, TN

H-32 L1363700-04 Non-Potable Water

Collected by | Collected date/time 06/04/21 11:30 | Received date/time 06/09/21 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1695760	1	06/28/21 12:32	07/06/21 15:05	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1688248	1	07/02/21 09:34	07/06/21 15:05	JMR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1688248	1	07/02/21 09:34	07/05/21 11:46	RGT	Mt. Juliet, TN

H-33 L1363700-05 Non-Potable Water

Collected by | Collected date/time 06/04/21 12:25 | Received date/time 06/09/21 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1695760	1	06/28/21 12:32	07/06/21 15:05	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1688248	1	07/02/21 09:34	07/06/21 15:05	JMR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1688248	1	07/02/21 09:34	07/05/21 11:46	RGT	Mt. Juliet, TN

DUP-1 L1363700-06 Non-Potable Water

Collected by | Collected date/time 06/04/21 12:25 | Received date/time 06/09/21 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1695760	1	06/28/21 12:32	07/06/21 15:05	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1688248	1	07/02/21 09:34	07/06/21 15:05	JMR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1688248	1	07/02/21 09:34	07/05/21 11:46	RGT	Mt. Juliet, TN

H-26 L1363700-07 Non-Potable Water

Collected by	Collected date/time	Received date/time
	06/04/21 13:20	06/09/21 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1695760	1	06/28/21 12:32	07/06/21 15:05	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1688248	1	07/02/21 09:34	07/06/21 15:05	JMR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1688248	1	07/02/21 09:34	07/05/21 11:46	RGT	Mt. Juliet, TN

H-27 L1363700-08 Non-Potable Water

Collected by	Collected date/time	Received date/time
	06/04/21 14:10	06/09/21 10:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1695760	1	06/28/21 12:32	07/06/21 15:05	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1688248	1	07/02/21 09:34	07/06/21 15:05	JMR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1688248	1	07/02/21 09:34	07/05/21 11:46	RGT	Mt. Juliet, TN

CASE NARRATIVE

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Donna Eidson
Project Manager

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	0.796	J	0.444	0.808	07/06/2021 15:05	WG1695760
(T) Barium	*97.5*			*62.0-143*	*07/06/2021 15:05*	WG1695760
(T) Yttrium	*97.9*			*79.0-136*	*07/06/2021 15:05*	WG1695760

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	1.03		0.629	0.991	07/06/2021 15:05	WG1688248

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.229		0.185	0.183	07/05/2021 11:46	WG1688248
(T) Barium-133	*94.2*			*30.0-143*	*07/05/2021 11:46*	WG1688248

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	0.853		0.380	0.686	07/06/2021 15:05	WG1695760
(T) Barium	*96.6*			*62.0-143*	*07/06/2021 15:05*	WG1695760
(T) Yttrium	*105*			*79.0-136*	*07/06/2021 15:05*	WG1695760

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	0.989		0.533	0.887	07/06/2021 15:05	WG1688248

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.136	J	0.153	0.201	07/05/2021 11:46	WG1688248
(T) Barium-133	*83.2*			*30.0-143*	*07/05/2021 11:46*	WG1688248

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	0.808		0.383	0.692	07/06/2021 15:05	WG1695760
(T) Barium	*100*			*62.0-143*	*07/06/2021 15:05*	WG1695760
(T) Yttrium	*93.7*			*79.0-136*	*07/06/2021 15:05*	WG1695760

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	1.06	J	0.660	1.07	07/06/2021 15:05	WG1688248

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.248	J	0.277	0.376	07/05/2021 11:46	WG1688248
(T) Barium-133	*84.7*			*30.0-143*	*07/05/2021 11:46*	WG1688248

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	0.497	J	0.457	0.843	07/06/2021 15:05	WG1695760
(T) Barium	*97.2*			*62.0-143*	*07/06/2021 15:05*	WG1695760
(T) Yttrium	*99.3*			*79.0-136*	*07/06/2021 15:05*	WG1695760

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	0.497	U	0.587	1.11	07/06/2021 15:05	WG1688248

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.000	U	0.130	0.269	07/05/2021 11:46	WG1688248
(T) Barium-133	*97.7*			*30.0-143*	*07/05/2021 11:46*	WG1688248

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	0.649		0.320	0.58	07/06/2021 15:05	WG1695760
(T) Barium	*112*			*62.0-143*	*07/06/2021 15:05*	WG1695760
(T) Yttrium	*99.1*			*79.0-136*	*07/06/2021 15:05*	WG1695760

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	1.41		0.649	0.89	07/06/2021 15:05	WG1688248

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.760		0.329	0.31	07/05/2021 11:46	WG1688248
(T) Barium-133	*91.4*			*30.0-143*	*07/05/2021 11:46*	WG1688248

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	1.14		0.293	0.513	07/06/2021 15:05	WG1695760
(T) Barium	*115*			*62.0-143*	*07/06/2021 15:05*	WG1695760
(T) Yttrium	*99.7*			*79.0-136*	*07/06/2021 15:05*	WG1695760

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	2.01		0.618	0.657	07/06/2021 15:05	WG1688248

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.869		0.325	0.144	07/05/2021 11:46	WG1688248
(T) Barium-133	*100*			*30.0-143*	*07/05/2021 11:46*	WG1688248

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	1.13		0.351	0.624	07/06/2021 15:05	WG1695760
(T) Barium	*107*			*62.0-143*	*07/06/2021 15:05*	WG1695760
(T) Yttrium	*92.3*			*79.0-136*	*07/06/2021 15:05*	WG1695760

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	1.39		0.553	0.846	07/06/2021 15:05	WG1688248

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.263		0.202	0.222	07/05/2021 11:46	WG1688248
(T) Barium-133	*97.2*			*30.0-143*	*07/05/2021 11:46*	WG1688248

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	1.15		0.340	0.601	07/06/2021 15:05	WG1695760
(T) Barium	*106*			*62.0-143*	*07/06/2021 15:05*	WG1695760
(T) Yttrium	*96.0*			*79.0-136*	*07/06/2021 15:05*	WG1695760

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	1.38		0.523	0.797	07/06/2021 15:05	WG1688248

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.226		0.183	0.196	07/05/2021 11:46	WG1688248
(T) Barium-133	*104*			*30.0-143*	*07/05/2021 11:46*	WG1688248

Method Blank (MB)

(MB) R3677006-1 07/06/21 15:05

Analyte	MB Result pCi/l	MB Qualifier	MB MDA pCi/l
Radium-228	0.000	U	0.498
(T) Barium	*111*		
(T) Yttrium	*88.1*		

L1363700-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1363700-05 07/06/21 15:05 • (DUP) R3677006-5 07/06/21 15:05

Analyte	Original Result pCi/l	DUP Result pCi/l	Dilution	DUP RPD %	DUP RER	DUP Qualifier	DUP RPD Limits %	DUP RER Limit
Radium-228	0.649	0.0636	1	164	0.892	U	20	3
(T) Barium	*112*	*104*						
(T) Yttrium	*99.1*	*95.5*						

Laboratory Control Sample (LCS)

(LCS) R3677006-2 07/06/21 15:05

Analyte	Spike Amount pCi/l	LCS Result pCi/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Radium-228	5.00	5.47	109	80.0-120	
(T) Barium			*109*		
(T) Yttrium			*95.6*		

L1369855-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1369855-03 07/06/21 15:05 • (MS) R3677006-3 07/06/21 15:05 • (MSD) R3677006-4 07/06/21 15:05

Analyte	Spike Amount pCi/l	Original Result pCi/l	MS Result pCi/l	MSD Result pCi/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	MS RER	RPD Limits %
Radium-228	16.7	0.367	19.8	17.6	117	103	1	70.0-130			11.9		20
(T) Barium		*98.1*			*102*	*112*							
(T) Yttrium		*92.1*			*88.4*	*89.1*							

Method Blank (MB)

(MB) R3676622-1 07/05/21 11:46

Analyte	MB Result	MB Qualifier	MB MDA
	pCi/l		pCi/l
Radium-226	-0.0128	U	0.0705
(T) Barium-133	*101*		

L1363700-08 Original Sample (OS) • Duplicate (DUP)

(OS) L1363700-08 07/05/21 11:46 • (DUP) R3676622-5 07/05/21 11:46

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP RER	DUP Qualifier	DUP RPD Limits	DUP RER Limit
	pCi/l	pCi/l		%			%	
Radium-226	0.226	0.466	1	69.3	0.753		20	3
(T) Barium-133	*104*	*97.2*						

Laboratory Control Sample (LCS)

(LCS) R3676622-2 07/05/21 11:46

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	pCi/l	pCi/l	%	%	
Radium-226	5.02	4.97	99.0	80.0-120	
(T) Barium-133			*98.9*		

L1363700-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1363700-01 07/05/21 11:46 • (MS) R3676622-3 07/05/21 11:46 • (MSD) R3676622-4 07/05/21 11:46

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	MS RER	RPD Limits
	pCi/l	pCi/l	pCi/l	pCi/l	%	%		%			%		%
Radium-226	20.1	0.229	18.4	18.4	90.6	90.4	1	75.0-125			0.272		20
(T) Barium-133		*94.2*			*96.3*	*83.1*							

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDA	Minimum Detectable Activity.
Rec.	Recovery.
RER	Replicate Error Ratio.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(T)	Tracer - A radioisotope of known concentration added to a solution of chemically equivalent radioisotopes at a known concentration to assist in monitoring the yield of the chemical separation.
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
J	The identification of the analyte is acceptable; the reported value is an estimate.
U	Below Detectable Limits: Indicates that the analyte was not detected.

ACCREDITATIONS & LOCATIONS

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO000356
Kentucky [1 6]	KY90010	South Carolina	84004002
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas [5]	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.

DHL Analytical, Inc.
2300 Double Creek Drive
Round Rock, TX 78664
TEL: (512) 388-8222 FAX: (512) 388-8229

CHAIN-OF-CUSTODY RECORD

Work Order: 2106039

A110

U363700

Subcontractor:
Pace Analytical
12065 Lebanon Rd
Mt. Juliet, TN 37122

TEL: (615) 773-5923
FAX:
Acct #: DHLRRTX

07-Jun-21

Sample ID	Matrix	DHL#	Date Collected	Bottle Type	Requested Tests					
					Ra-228 E904.0	Ra-226 M7500 Ra B M				
H-28	Aqueous	01C	06/04/21 09:00 AM	1LHDPE		1				-01
H-28	Aqueous	01D	06/04/21 09:00 AM	1LHDPE	1					-01
H-29	Aqueous	02C	06/04/21 09:55 AM	1LHDPE		1				-02
H-29	Aqueous	02D	06/04/21 09:55 AM	1LHDPE	1					-02
H-31	Aqueous	03C	06/04/21 10:45 AM	1LHDPE		1				-03
H-31	Aqueous	03D	06/04/21 10:45 AM	1LHDPE	1					-03
H-32	Aqueous	04C	06/04/21 11:30 AM	1LHDPE		1				-04
H-32	Aqueous	04D	06/04/21 11:30 AM	1LHDPE	1					-04
H-33	Aqueous	05C	06/04/21 12:25 PM	1LHDPE		1				-05
H-33	Aqueous	05D	06/04/21 12:25 PM	1LHDPE	1					-05
DUP-1	Aqueous	06C	06/04/21 12:25 PM	1LHDPE		1				-06
DUP-1	Aqueous	06D	06/04/21 12:25 PM	1LHDPE	1					-06
H-26	Aqueous	07C	06/04/21 01:20 PM	1LHDPE		1				-07
H-26	Aqueous	07D	06/04/21 01:20 PM	1LHDPE	1					-09
H-27	Aqueous	08C	06/04/21 02:10 PM	1LHDPE		1				-08
H-27	Aqueous	08D	06/04/21 02:10 PM	1LHDPE	1					-08

General Comments:
Please analyze these samples with Normal Turnaround Time.
Report Ra-226, Ra-228 & Combined per Specs.
Quality Control Package Needed: Standard - NELAC Rad Test compliant
Email to cac@dhlanalytical.com & dupont@dhlanalytical.com

Sample Receipt Checklist
COC Seal Present/Intact: __Y __N
COC Signed/Accurate: Y __N
Bottles arrive intact: Y __N
Correct bottles used: Y __N
Sufficient volume sent: Y __N
RAD Screen <0.5 mR/hr: Y __N
If Applicable
VOA Zero Headspace: __Y __N
Pres.Correct/Check: Y __N

	Date/Time		Date/Time
Relinquished by:	6/7/21 1700	Received by:	6/8/21 1000
Relinquished by:		Received by:	

November 10, 2021

Will Vienne
Golder
2201 Double Creek Dr #4004
Round Rock, Texas 78664
TEL: (512) 671-3434
FAX (512) 671-3446

Order No.: 2110028

RE: Luminant - MLSES Ash Ponds

Dear Will Vienne:

DHL Analytical, Inc. received 8 sample(s) on 10/6/2021 for the analyses presented in the following report.

There were no problems with the analyses and all data met requirements of NELAP except where noted in the Case Narrative. All non-NELAP methods will be identified accordingly in the case narrative and all estimated uncertainties of test results are within method or EPA specifications.

If you have any questions regarding these tests results, please feel free to call. Thank you for using DHL Analytical.

Sincerely,

John DuPont
General Manager

This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211-21-27

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MQLSummaryReport 2110028 47

Subcontract Report 2110028 48

DHL ANALYTICAL

2300 Double Creek Dr. Round Rock, TX 78664
Phone 512.388.8222
Web: **www.dhlanalytical.com**
Email: **login@dhlanalytical.com**

CHAIN-OF-CUSTODY

CLIENT: GOLDER
ADDRESS: 2201 DOUBLE CREEK DR #4004 ROUND ROCK TX
PHONE: 512-671-3434 EMAIL:
DATA REPORTED TO: WILL VIENNE
ADDITIONAL REPORT COPIES TO:

DATE: 10-4-21
PO#:

LABORATORY USE ONLY
DHL WORKORDER #: 2110028

PROJECT LOCATION OR NAME: LUMINANT - MLSES ASH PONDS
CLIENT PROJECT # 19122262 COLLECTOR: JOHN BRAYTON

Authorize 5% surcharge for TRRP report? ☐ Yes ☐ No

W=WATER L=LIQUID S=SOIL SO=SOLID SE=SEDIMENT P=PAINT SL=SLUDGE

Field Sample I.D.	DHL Lab #	Collection Date	Collection Time	Matrix	Container Type	# of Containers	PRESERVATION: HCl	HNO_3	H_2SO_4	NaOH ☐ Zn Acetate ☐	ICE ☒ UNPRESERVED ☒	ANALYSES	APPENDIX III	APPENDIX IV	FIELD NOTES
H-26	01	10-4-21	1535	W	P	4		X			X		X	X	
H-27	02	"	1420	W	P	4		X			X		X	X	
H-33	03	"	1305	W	P	4		X			X		X	X	
H-29	04	"	1150	W	P	4		X			X		X	X	
H-28	05	"	1040	W	P	4		X			X		X	X	
H-32	06	"	0930	W	P	4		X			X		X	X	
H-31	07	"	0815	W	P	4		X			X		X	X	
DUP-1	08	"	1535	W	P	4		X			X		X	X	

ANALYSES: BTEX ☐ MTBE ☐ [METHOD 8260] · TPH 1005 ☐ TPH 1006 ☐ HOLD 1006 ☐ · GRO 8015 ☐ DRO 8015 ☐ · VOC 8260 ☐ VOC 624.1 ☐ · SVOC 8270 ☐ SVOC 625.1 ☐ · PAH 8270 ☐ HOLD PAH ☐ · PEST 8270 ☐ 625.1 ☐ O-P PEST 8270 ☐ · PCB 8082 ☐ 608.3 ☐ PCB 8270 ☐ 625.1 ☐ · HERB 8321 ☐ T PHOS ☐ AMMONIA ☐ · METALS 6020 ☐ 200.8 ☐ DISS. METALS ☐ · RCRA 8 ☐ TX11 ☐ _____ · pH ☐ HEX CHROM ☐ ALKALINITY ☐ COD ☐ · ANIONS 300 ☐ 9056 ☐ _____ · TCLP-SVOC ☐ VOC ☐ PEST ☐ HERB ☐ · TCLP-METALS ☐ RCRA 8 ☐ TX-11 ☐ Pb ☐ · RCI ☐ IGN ☐ DGAS ☐ OIL&GREASE ☐ · TDS ☐ TSS ☐ % MOIST ☐ CYANIDE ☐

Relinquished By: (Sign)	DATE/TIME	Received by:
[signature]	10-5-21 1800	FedEx
FedEx	10/6/21 1010	[signature]

TURN AROUND TIME (CALL FIRST FOR RUSH)
RUSH-1 DAY☐ RUSH-2 DAY☐ RUSH-3 DAY☐
NORMAL ☒ OTHER ☐
DUE DATE _____ ☐

LABORATORY USE ONLY
RECEIVING TEMP (°C): 2.0°C/0.3°C THERM #: 78
CUSTODY SEALS: ☐ BROKEN ☒ INTACT ☐ NOT USED
CARRIER: ☐ LSO ☒ FEDEX ☐ UPS ☐ COURIER ☐ OTHER ☐ HAND DELIVERED

☐ **DHL DISPOSAL @ 5.00 each** ☐ **Return**

DHL COC REV 3 | MAR 2021

Eric Lau

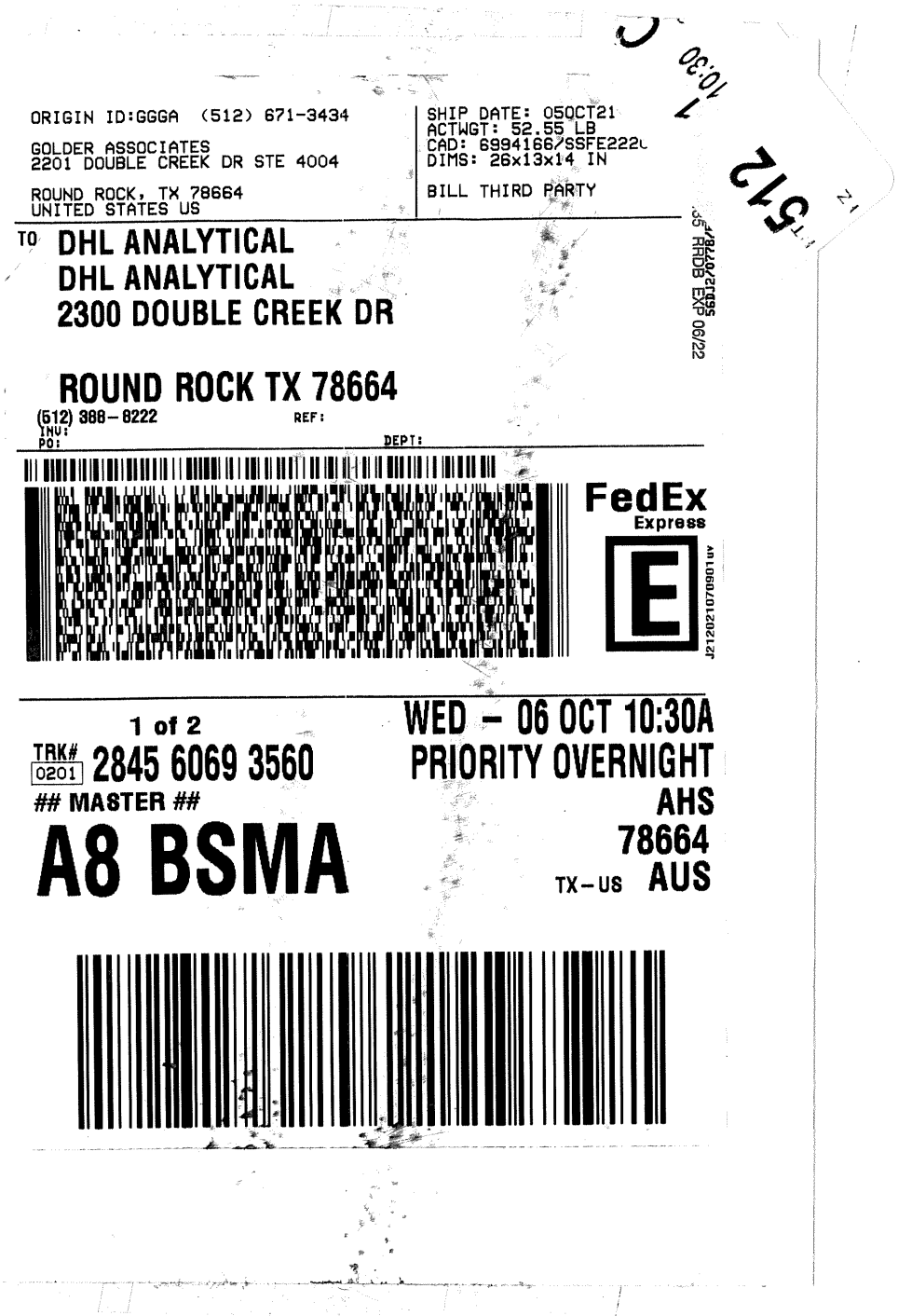
From: John DuPont
Sent: Tuesday, May 28, 2019 11:35 AM
To: Eric Lau
Subject: FW: CCR Analysis

Appendix III Parameters:
Metals (Ca and B)
Anions (Cl, F, and SO4)
TDS

Appendix IV Parameters:

Metals (As, Ba, Be, Cd, Co, Cr, Hg, Li, Mo, Pb, Sb, Se, and Tl)
Ra-226
Ra-228

From: Vienne, Will [mailto:William_Vienne@golder.com]
Sent: Tuesday, April 09, 2019 12:48 PM
To: John DuPont <dupont@dhlanalytical.com>
Subject: CCR Analysis



ORIGIN ID:GGGA (512) 671-3434

GOLDER ASSOCIATES
2201 DOUBLE CREEK DR STE 4004

ROUND ROCK, TX 78664
UNITED STATES US

SHIP DATE: 05OCT21
ACTWGT: 52.55 LB
CAD: 6994166/SSFE2220
DIMS: 26x13x14 IN

BILL THIRD PARTY

TO DHL ANALYTICAL
DHL ANALYTICAL
2300 DOUBLE CREEK DR

ROUND ROCK TX 78664
(512) 388-8222 REF:
INV:
PO: DEPT:

FedEx Express

1 of 2
TRK# 0201 2845 6069 3560
MASTER
A8 BSMA

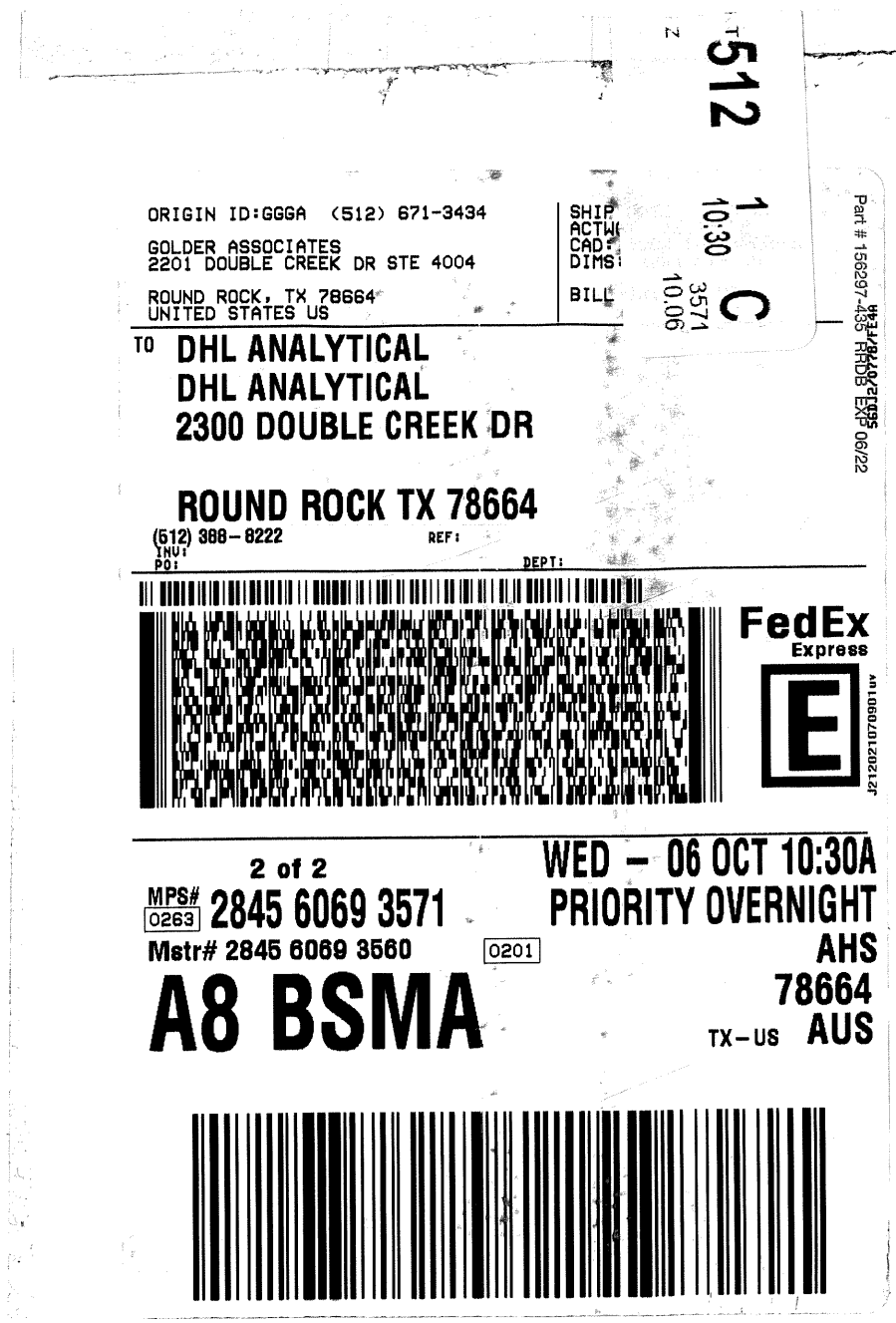
WED - 06 OCT 10:30A
PRIORITY OVERNIGHT
AHS
78664
TX-US AUS

CUSTODY SEAL

DATE 10-5-21

SIGNATURE

DHL ANALYTICAL



ORIGIN ID:GGGA (512) 671-3434
GOLDER ASSOCIATES
2201 DOUBLE CREEK DR STE 4004
ROUND ROCK, TX 78664
UNITED STATES US

SHIP
ACTW
CAD:
DIMS:
BILL

512 1 10:30 C 3571 10.06

Part # 156297-435 RRDB EXP 06/22

TO DHL ANALYTICAL
DHL ANALYTICAL
2300 DOUBLE CREEK DR

ROUND ROCK TX 78664
(512) 388-8222 REF:
INV:
PO: DEPT:

FedEx Express

2 of 2
MPS# 0263 2845 6069 3571
Mstr# 2845 6069 3560 0201

WED - 06 OCT 10:30A
PRIORITY OVERNIGHT
AHS
78664
TX-US AUS

A8 BSMA

CUSTODY SEA

DATE 10.5.21

SIGNATURE

DHL ANALYTICAL

DHL Analytical, Inc.

Sample Receipt Checklist

Client Name **Golder** Date Received: **10/6/2021**

Work Order Number **2110028** Received by: **RA**

Checklist completed by: EL (Signature) 10/6/2021 (Date) Reviewed by (Initials) 10/6/2021 (Date)

Carrier name: FedEx 1day

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	**2.0** °C / 0.3°C
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH<2 acceptable upon receipt?	Yes ☑	No ☐	NA ☐ LOT # 13171
	Adjusted? no		Checked by EL
Water - ph>9 (S) or ph>10 (CN) acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted?		Checked by

Any No response must be detailed in the comments section below.

Client contacted: _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments: _____

Corrective Action: _____

Laboratory Name: DHL Analytical, Inc.

Laboratory Review Checklist: Reportable Data

Project Name: Luminant - MLSES Ash Ponds	**LRC Date:** 11/10/21
Reviewer Name: Carlos Castro	**Laboratory Work Order:** 2110028
Prep Batch Number(s): See Prep Dates Report	**Run Batch:** See Analytical Dates Report

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
		Chain-of-Custody (C-O-C)					
R1	OI	**1)** Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	**X**				**R1-01**
		2) Were all departures from standard conditions described in an exception report?			**X**		
R2	OI	**Sample and Quality Control (QC) Identification**					
		1) Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	**X**				
		2) Are all laboratory ID numbers cross-referenced to the corresponding QC data?	**X**				
R3	OI	**Test Reports**					
		1) Were all samples prepared and analyzed within holding times?	**X**				
		2) Other than those results < MQL, were all other raw values bracketed by calibration standards?	**X**				
		3) Were calculations checked by a peer or supervisor?	**X**				
		4) Were all analyte identifications checked by a peer or supervisor?	**X**				
		5) Were sample detection limits reported for all analytes not detected?	**X**				
		6) Were all results for soil and sediment samples reported on a dry weight basis?			**X**		
		7) Were % moisture (or solids) reported for all soil and sediment samples?			**X**		
		8) Were bulk soils/solids samples for volatile analysis extracted with methanol per EPA Method 5035?			**X**		
		9) If required for the project, TICs reported?			**X**		
R4	O	**Surrogate Recovery Data**					
		1) Were surrogates added prior to extraction?			**X**		
		2) Were surrogate percent recoveries in all samples within the laboratory QC limits?			**X**		
R5	OI	**Test Reports/Summary Forms for Blank Samples**					
		1) Were appropriate type(s) of blanks analyzed?	**X**				
		2) Were blanks analyzed at the appropriate frequency?	**X**				
		3) Where method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	**X**				
		4) Were blank concentrations < MDL?	**X**				
		5) For analyte(s) detected in a blank sample, was the concentration, unadjusted for sample specific factors, in all associated field samples, **greater** than 10 times the concentration in the blank sample?			**X**		
R6	OI	**Laboratory Control Samples (LCS):**					
		1) Were all COCs included in the LCS?	**X**				
		2) Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	**X**				
		3) Were LCSs analyzed at the required frequency?	**X**				
		4) Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	**X**				
		5) Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	**X**				
		6) Was the LCSD RPD within QC limits (if applicable)?	**X**				
R7	OI	**Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Data**					
		1) Were the project/method specified analytes included in the MS and MSD?	**X**				
		2) Were MS/MSD analyzed at the appropriate frequency?	**X**				
		3) Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?		**X**			**R7-03**
		4) Were MS/MSD RPDs within laboratory QC limits?	**X**				
R8	OI	**Analytical Duplicate Data**					
		1) Were appropriate analytical duplicates analyzed for each matrix?	**X**				
		2) Were analytical duplicates analyzed at the appropriate frequency?	**X**				
		3) Were RPDs or relative standard deviations within the laboratory QC limits?	**X**				
R9	OI	**Method Quantitation Limits (MQLs):**					
		1) Are the MQLs for each method analyte included in the laboratory data package?	**X**				
		2) Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	**X**				
		3) Are unadjusted MQLs and DCSs included in the laboratory data package?	**X**				
R10	OI	**Other Problems/Anomalies**					
		1) Are all known problems/anomalies/special conditions noted in this LRC and ER?	**X**				
		2) Was applicable and available technology used to lower the SDL to minimize the matrix interference affects on the sample results?	**X**				
		3) Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices and methods associated with this laboratory data package?	**X**				

Laboratory Name: DHL Analytical, Inc.

Laboratory Review Checklist (continued): Supporting Data

Project Name: Luminant - MLSES Ash Ponds	**LRC Date:** 11/10/21
Reviewer Name: Carlos Castro	**Laboratory Work Order:** 2110028
Prep Batch Number(s): See Prep Dates Report	**Run Batch:** See Analytical Dates Report

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
S1	OI	**Initial Calibration (ICAL)**					
		1) Were response factors and/or relative response factors for each analyte within QC limits?	X				
		2) Were percent RSDs or correlation coefficient criteria met?	X				
		3) Was the number of standards recommended in the method used for all analytes?	X				
		4) Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		5) Are ICAL data available for all instruments used?	X				
		6) Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	**Initial and Continuing calibration Verification (ICCV and CCV) and Continuing Calibration blank (CCB):**					
		1) Was the CCV analyzed at the method-required frequency?	X				
		2) Were percent differences for each analyte within the method-required QC limits?	X				
		3) Was the ICAL curve verified for each analyte?	X				
		4) Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	X				
S3	O	**Mass Spectral Tuning:**					
		1) Was the appropriate compound for the method used for tuning?	X				
		2) Were ion abundance data within the method-required QC limits?	X				
S4	O	**Internal Standards (IS):**					
		1) Were IS area counts and retention times within the method-required QC limits?	X				
S5	OI	**Raw Data (NELAC Section 5.5.10)**					
		1) Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		2) Were data associated with manual integrations flagged on the raw data?	X				
S6	O	**Dual Column Confirmation**					
		1) Did dual column confirmation results meet the method-required QC?			X		
S7	O	**Tentatively Identified Compounds (TICs):**					
		1) If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) Results:**					
		1) Were percent recoveries within method QC limits?	X				
S9	I	**Serial Dilutions, Post Digestion Spikes, and Method of Standard Additions**					
		1) Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	X				
S10	OI	**Method Detection Limit (MDL) Studies**					
		1) Was a MDL study performed for each reported analyte?	X				
		2) Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	**Proficiency Test Reports:**					
		1) Was the lab's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	**Standards Documentation**					
		1) Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound/Analyte Identification Procedures**					
		1) Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of Analyst Competency (DOC)**					
		1) Was DOC conducted consistent with NELAC Chapter 5 – Appendix C?	X				
		2) Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/Validation Documentation for Methods** (NELAC Chapter 5)					
		1) Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	**Laboratory Standard Operating Procedures (SOPs):**					
		1) Are laboratory SOPs current and on file for each method performed?	X				

1 Items identified by the letter "R" should be included in the laboratory data package submitted to the TCEQ in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.

2 O = organic analyses; I = inorganic analyses (and general chemistry, when applicable).

3 NA = Not applicable.

4 NR = Not Reviewed.

5 ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Data Package Signature Page – RG-366/TRRP-13

This data package consists of:

This signature page, the laboratory review checklist, and the following reportable data:

R1 Field chain-of-custody documentation;
R2 Sample identification cross-reference;
R3 Test reports (analytical data sheets) for each environmental sample that includes:
  a) Items consistent with NELAC Chapter 5,
  b) dilution factors,
  c) preparation methods,
  d) cleanup methods, and
  e) if required for the project, tentatively identified compounds (TICs).
R4 Surrogate recovery data including:
  a) Calculated recovery (%R), and
  b) The laboratory's surrogate QC limits.
R5 Test reports/summary forms for blank samples;
R6 Test reports/summary forms for laboratory control samples (LCSs) including:
  a) LCS spiking amounts,
  b) Calculated %R for each analyte, and
  c) The laboratory's LCS QC limits.
R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
  a) Samples associated with the MS/MSD clearly identified,
  b) MS/MSD spiking amounts,
  c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
  d) Calculated %Rs and relative percent differences (RPDs), and
  e) The laboratory's MS/MSD QC limits
R8 Laboratory analytical duplicate (if applicable) recovery and precision:
  a) The amount of analyte measured in the duplicate,
  b) The calculated RPD, and
  c) The laboratory's QC limits for analytical duplicates.
R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix;
R10 Other problems or anomalies.

The Exception Report for each "No" or "Not Reviewed (NR)" item in the Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory is not accredited under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature below, I affirm to the best of my knowledge that all problems/anomalies observed by the laboratory have been identified in the Laboratory Review Checklist, and no information or data affecting the quality of the data has been knowingly withheld.

This laboratory was last inspected by TCEQ on February 23-26 2021. Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Name: John DuPont
Official Title: General Manager

Signature

11/10/21
Date

Name: Dr. Derhsing Luu
Official Title: Technical Director

DHL Analytical, Inc. **Date:** *10-Nov-21*

CLIENT: Golder
Project: Luminant - MLSES Ash Ponds
Lab Order: 2110028

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Method SW6020B - Metals Analysis
Method SW7470A - Mercury Analysis
Method E300 - Anions Analysis
Method M2540C - TDS Analysis
Sub-contract - Radium-228 and Radium-226 analyses by methods E904/9320 and SM 7500 Ra B M. Analyzed at Pace Analytical.

Exception Report R1-01

The samples were received and log-in performed on 10/6/21. A total of 8 samples were received. The samples arrived in good condition and were properly packaged.

Exception Report R7-03

For Anions analysis performed on 10/12/21 (batch 102364) the matrix spike duplicate recovery (2110037-02 MSD) was slightly below control limits for Sulfate. This is flagged accordingly in the QC summary report. The sample selected for the matrix spike and matrix spike duplicate (2110037-02 MSD) was not from this work order. The LCS was within control limits for this analyte. No further corrective actions were taken.

DHL Analytical, Inc.

Date: *10-Nov-21*

CLIENT: Golder
Project: Luminant - MLSES Ash Ponds
Lab Order: 2110028

Work Order Sample Summary

Lab Smp ID	Client Sample ID	Tag Number	Date Collected	Date Recved
2110028-01	H-26		10/04/21 03:35 PM	10/6/2021
2110028-02	H-27		10/04/21 02:20 PM	10/6/2021
2110028-03	H-33		10/04/21 01:05 PM	10/6/2021
2110028-04	H-29		10/04/21 11:50 AM	10/6/2021
2110028-05	H-28		10/04/21 10:40 AM	10/6/2021
2110028-06	H-32		10/04/21 09:30 AM	10/6/2021
2110028-07	H-31		10/04/21 08:15 AM	10/6/2021
2110028-08	DUP-1		10/04/21 03:35 PM	10/6/2021

Lab Order: 2110028
Client: Golder
Project: Luminant - MLSES Ash Ponds

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
2110028-01A	H-26	10/04/21 03:35 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/11/21 10:12 AM	102343
	H-26	10/04/21 03:35 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/11/21 10:12 AM	102343
	H-26	10/04/21 03:35 PM	Aqueous	SW7470A	Mercury Aq Prep	10/08/21 12:15 PM	102332
2110028-01B	H-26	10/04/21 03:35 PM	Aqueous	E300	Anion Preparation	10/11/21 10:26 AM	102348
	H-26	10/04/21 03:35 PM	Aqueous	E300	Anion Preparation	10/11/21 10:26 AM	102348
	H-26	10/04/21 03:35 PM	Aqueous	M2540C	TDS Preparation	10/08/21 10:12 AM	102327
2110028-02A	H-27	10/04/21 02:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/11/21 10:12 AM	102343
	H-27	10/04/21 02:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/11/21 10:12 AM	102343
	H-27	10/04/21 02:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/11/21 10:12 AM	102343
	H-27	10/04/21 02:20 PM	Aqueous	SW7470A	Mercury Aq Prep	10/08/21 12:15 PM	102332
2110028-02B	H-27	10/04/21 02:20 PM	Aqueous	E300	Anion Preparation	10/11/21 10:26 AM	102348
	H-27	10/04/21 02:20 PM	Aqueous	E300	Anion Preparation	10/11/21 10:26 AM	102348
	H-27	10/04/21 02:20 PM	Aqueous	M2540C	TDS Preparation	10/08/21 10:12 AM	102327
2110028-03A	H-33	10/04/21 01:05 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/11/21 10:12 AM	102343
	H-33	10/04/21 01:05 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/11/21 10:12 AM	102343
	H-33	10/04/21 01:05 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/11/21 10:12 AM	102343
	H-33	10/04/21 01:05 PM	Aqueous	SW7470A	Mercury Aq Prep	10/08/21 12:15 PM	102332
2110028-03B	H-33	10/04/21 01:05 PM	Aqueous	E300	Anion Preparation	10/11/21 10:26 AM	102348
	H-33	10/04/21 01:05 PM	Aqueous	E300	Anion Preparation	10/11/21 10:26 AM	102348
	H-33	10/04/21 01:05 PM	Aqueous	M2540C	TDS Preparation	10/08/21 10:12 AM	102327
2110028-04A	H-29	10/04/21 11:50 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/11/21 10:12 AM	102343
	H-29	10/04/21 11:50 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/11/21 10:12 AM	102343
	H-29	10/04/21 11:50 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/11/21 10:12 AM	102343
	H-29	10/04/21 11:50 AM	Aqueous	SW7470A	Mercury Aq Prep	10/08/21 12:15 PM	102332
2110028-04B	H-29	10/04/21 11:50 AM	Aqueous	E300	Anion Preparation	10/11/21 10:26 AM	102348
	H-29	10/04/21 11:50 AM	Aqueous	E300	Anion Preparation	10/11/21 10:26 AM	102348
	H-29	10/04/21 11:50 AM	Aqueous	E300	Anion Preparation	10/12/21 10:00 AM	102364
	H-29	10/04/21 11:50 AM	Aqueous	M2540C	TDS Preparation	10/08/21 10:12 AM	102327

Lab Order: 2110028
Client: Golder
Project: Luminant - MLSES Ash Ponds

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
2110028-05A	H-28	10/04/21 10:40 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/11/21 10:12 AM	102343
	H-28	10/04/21 10:40 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/11/21 10:12 AM	102343
	H-28	10/04/21 10:40 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/11/21 10:12 AM	102343
	H-28	10/04/21 10:40 AM	Aqueous	SW7470A	Mercury Aq Prep	10/08/21 12:15 PM	102332
2110028-05B	H-28	10/04/21 10:40 AM	Aqueous	E300	Anion Preparation	10/11/21 10:26 AM	102348
	H-28	10/04/21 10:40 AM	Aqueous	E300	Anion Preparation	10/11/21 10:26 AM	102348
	H-28	10/04/21 10:40 AM	Aqueous	M2540C	TDS Preparation	10/08/21 10:12 AM	102327
2110028-06A	H-32	10/04/21 09:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/11/21 10:12 AM	102343
	H-32	10/04/21 09:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/11/21 10:12 AM	102343
	H-32	10/04/21 09:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/11/21 10:12 AM	102343
	H-32	10/04/21 09:30 AM	Aqueous	SW7470A	Mercury Aq Prep	10/08/21 12:15 PM	102332
2110028-06B	H-32	10/04/21 09:30 AM	Aqueous	E300	Anion Preparation	10/11/21 10:26 AM	102348
	H-32	10/04/21 09:30 AM	Aqueous	E300	Anion Preparation	10/11/21 10:26 AM	102348
	H-32	10/04/21 09:30 AM	Aqueous	M2540C	TDS Preparation	10/08/21 10:12 AM	102327
2110028-07A	H-31	10/04/21 08:15 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/11/21 10:12 AM	102343
	H-31	10/04/21 08:15 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/11/21 10:12 AM	102343
	H-31	10/04/21 08:15 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/11/21 10:12 AM	102343
	H-31	10/04/21 08:15 AM	Aqueous	SW7470A	Mercury Aq Prep	10/08/21 12:15 PM	102332
2110028-07B	H-31	10/04/21 08:15 AM	Aqueous	E300	Anion Preparation	10/11/21 10:26 AM	102348
	H-31	10/04/21 08:15 AM	Aqueous	E300	Anion Preparation	10/11/21 10:26 AM	102348
	H-31	10/04/21 08:15 AM	Aqueous	E300	Anion Preparation	10/11/21 10:26 AM	102348
	H-31	10/04/21 08:15 AM	Aqueous	M2540C	TDS Preparation	10/08/21 10:12 AM	102327
2110028-08A	DUP-1	10/04/21 03:35 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/11/21 10:12 AM	102343
	DUP-1	10/04/21 03:35 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/11/21 10:12 AM	102343
	DUP-1	10/04/21 03:35 PM	Aqueous	SW7470A	Mercury Aq Prep	10/08/21 12:15 PM	102332
2110028-08B	DUP-1	10/04/21 03:35 PM	Aqueous	E300	Anion Preparation	10/11/21 10:26 AM	102348
	DUP-1	10/04/21 03:35 PM	Aqueous	E300	Anion Preparation	10/11/21 10:26 AM	102348
	DUP-1	10/04/21 03:35 PM	Aqueous	E300	Anion Preparation	10/11/21 10:26 AM	102348

Lab Order: 2110028
Client: Golder
Project: Luminant - MLSES Ash Ponds

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
2110028-08B	DUP-1	10/04/21 03:35 PM	Aqueous	M2540C	TDS Preparation	10/08/21 10:12 AM	102327

Lab Order: 2110028
Client: Golder
Project: Luminant - MLSES Ash Ponds

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
2110028-01A	H-26	Aqueous	SW7470A	Mercury Total: Aqueous	102332	1	10/11/21 10:55 AM	CETAC2_HG_211011C
	H-26	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	102343	1	10/12/21 11:05 AM	ICP-MS4_211012B
	H-26	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	102343	1	10/13/21 11:04 AM	ICP-MS4_211013A
2110028-01B	H-26	Aqueous	E300	Anions by IC method - Water	102348	10	10/11/21 05:05 PM	IC2_211011A
	H-26	Aqueous	E300	Anions by IC method - Water	102348	1	10/11/21 10:57 PM	IC2_211011A
	H-26	Aqueous	M2540C	Total Dissolved Solids	102327	1	10/08/21 04:10 PM	WC_211008B
2110028-02A	H-27	Aqueous	SW7470A	Mercury Total: Aqueous	102332	1	10/11/21 10:58 AM	CETAC2_HG_211011C
	H-27	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	102343	1	10/12/21 11:01 AM	ICP-MS4_211012B
	H-27	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	102343	10	10/12/21 12:11 PM	ICP-MS4_211012B
	H-27	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	102343	1	10/13/21 11:00 AM	ICP-MS4_211013A
2110028-02B	H-27	Aqueous	E300	Anions by IC method - Water	102348	10	10/11/21 05:53 PM	IC2_211011A
	H-27	Aqueous	E300	Anions by IC method - Water	102348	1	10/11/21 11:13 PM	IC2_211011A
	H-27	Aqueous	M2540C	Total Dissolved Solids	102327	1	10/08/21 04:10 PM	WC_211008B
2110028-03A	H-33	Aqueous	SW7470A	Mercury Total: Aqueous	102332	1	10/11/21 11:00 AM	CETAC2_HG_211011C
	H-33	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	102343	1	10/13/21 11:06 AM	ICP-MS4_211013A
	H-33	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	102343	1	10/12/21 11:07 AM	ICP-MS4_211012B
	H-33	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	102343	10	10/12/21 12:15 PM	ICP-MS4_211012B
2110028-03B	H-33	Aqueous	E300	Anions by IC method - Water	102348	10	10/11/21 06:09 PM	IC2_211011A
	H-33	Aqueous	E300	Anions by IC method - Water	102348	1	10/11/21 11:29 PM	IC2_211011A
	H-33	Aqueous	M2540C	Total Dissolved Solids	102327	1	10/08/21 04:10 PM	WC_211008B
2110028-04A	H-29	Aqueous	SW7470A	Mercury Total: Aqueous	102332	1	10/11/21 11:02 AM	CETAC2_HG_211011C
	H-29	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	102343	1	10/12/21 11:09 AM	ICP-MS4_211012B
	H-29	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	102343	50	10/12/21 12:17 PM	ICP-MS4_211012B
	H-29	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	102343	50	10/13/21 11:08 AM	ICP-MS4_211013A
2110028-04B	H-29	Aqueous	E300	Anions by IC method - Water	102348	10	10/11/21 06:25 PM	IC2_211011A
	H-29	Aqueous	E300	Anions by IC method - Water	102348	1	10/11/21 11:45 PM	IC2_211011A

Lab Order: 2110028
Client: Golder
Project: Luminant - MLSES Ash Ponds

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
2110028-04B	H-29	Aqueous	E300	Anions by IC method - Water	102364	100	10/12/21 03:57 PM	IC4_211012A
	H-29	Aqueous	M2540C	Total Dissolved Solids	102327	1	10/08/21 04:10 PM	WC_211008B
2110028-05A	H-28	Aqueous	SW7470A	Mercury Total: Aqueous	102332	1	10/11/21 11:05 AM	CETAC2_HG_211011C
	H-28	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	102343	1	10/12/21 11:11 AM	ICP-MS4_211012B
	H-28	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	102343	10	10/12/21 12:19 PM	ICP-MS4_211012B
	H-28	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	102343	10	10/13/21 11:10 AM	ICP-MS4_211013A
2110028-05B	H-28	Aqueous	E300	Anions by IC method - Water	102348	10	10/11/21 06:41 PM	IC2_211011A
	H-28	Aqueous	E300	Anions by IC method - Water	102348	1	10/12/21 01:05 AM	IC2_211011A
	H-28	Aqueous	M2540C	Total Dissolved Solids	102327	1	10/08/21 04:10 PM	WC_211008B
2110028-06A	H-32	Aqueous	SW7470A	Mercury Total: Aqueous	102332	1	10/11/21 11:11 AM	CETAC2_HG_211011C
	H-32	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	102343	1	10/12/21 11:13 AM	ICP-MS4_211012B
	H-32	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	102343	10	10/12/21 12:21 PM	ICP-MS4_211012B
	H-32	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	102343	10	10/13/21 11:12 AM	ICP-MS4_211013A
2110028-06B	H-32	Aqueous	E300	Anions by IC method - Water	102348	10	10/11/21 06:57 PM	IC2_211011A
	H-32	Aqueous	E300	Anions by IC method - Water	102348	1	10/12/21 01:21 AM	IC2_211011A
	H-32	Aqueous	M2540C	Total Dissolved Solids	102327	1	10/08/21 04:10 PM	WC_211008B
2110028-07A	H-31	Aqueous	SW7470A	Mercury Total: Aqueous	102332	1	10/11/21 11:14 AM	CETAC2_HG_211011C
	H-31	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	102343	50	10/12/21 12:23 PM	ICP-MS4_211012B
	H-31	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	102343	50	10/13/21 11:14 AM	ICP-MS4_211013A
	H-31	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	102343	1	10/12/21 11:15 AM	ICP-MS4_211012B
2110028-07B	H-31	Aqueous	E300	Anions by IC method - Water	102348	100	10/11/21 04:33 PM	IC2_211011A
	H-31	Aqueous	E300	Anions by IC method - Water	102348	10	10/11/21 07:13 PM	IC2_211011A
	H-31	Aqueous	E300	Anions by IC method - Water	102348	1	10/12/21 01:37 AM	IC2_211011A
	H-31	Aqueous	M2540C	Total Dissolved Solids	102327	1	10/08/21 04:10 PM	WC_211008B
2110028-08A	DUP-1	Aqueous	SW7470A	Mercury Total: Aqueous	102332	1	10/11/21 11:16 AM	CETAC2_HG_211011C
	DUP-1	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	102343	1	10/12/21 11:17 AM	ICP-MS4_211012B

Lab Order: 2110028
Client: Golder
Project: Luminant - MLSES Ash Ponds

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
2110028-08A	DUP-1	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	102343	1	10/13/21 11:16 AM	ICP-MS4_211013A
2110028-08B	DUP-1	Aqueous	E300	Anions by IC method - Water	102348	100	10/11/21 04:49 PM	IC2_211011A
	DUP-1	Aqueous	E300	Anions by IC method - Water	102348	10	10/11/21 07:29 PM	IC2_211011A
	DUP-1	Aqueous	E300	Anions by IC method - Water	102348	1	10/12/21 01:53 AM	IC2_211011A
	DUP-1	Aqueous	M2540C	Total Dissolved Solids	102327	1	10/08/21 04:10 PM	WC_211008B

DHL Analytical, Inc.

Date: *10-Nov-21*

CLIENT:	Golder	**Client Sample ID:**	H-26
Project:	Luminant - MLSES Ash Ponds	**Lab ID:**	2110028-01
Project No:	19122262	**Collection Date:**	10/04/21 03:35 PM
Lab Order:	2110028	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	10/12/21 11:05 AM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	10/12/21 11:05 AM
Barium	0.0491	0.00300	0.0100		mg/L	1	10/12/21 11:05 AM
Beryllium	0.00147	0.000300	0.00100		mg/L	1	10/12/21 11:05 AM
Boron	0.409	0.0100	0.0300		mg/L	1	10/13/21 11:04 AM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	10/12/21 11:05 AM
Calcium	12.1	0.100	0.300		mg/L	1	10/12/21 11:05 AM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	10/12/21 11:05 AM
Cobalt	0.0227	0.00300	0.00500		mg/L	1	10/12/21 11:05 AM
Lead	0.000408	0.000300	0.00100	J	mg/L	1	10/12/21 11:05 AM
Lithium	0.0119	0.00500	0.0100		mg/L	1	10/12/21 11:05 AM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	10/12/21 11:05 AM
Selenium	0.00669	0.00200	0.00500		mg/L	1	10/12/21 11:05 AM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	10/12/21 11:05 AM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **JVR**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	10/11/21 10:55 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	72.8	3.00	10.0		mg/L	10	10/11/21 05:05 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	10/11/21 10:57 PM
Sulfate	56.2	1.00	3.00		mg/L	1	10/11/21 10:57 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	247	10.0	10.0		mg/L	1	10/08/21 04:10 PM

Qualifiers:

- ND - Not Detected at the SDL
- J - Analyte detected between SDL and RL
- B - Analyte detected in the associated Method Blank
- DF- Dilution Factor
- N - Parameter not NELAP certified
- See Final Page of Report for MQLs and MDLs
- S - Spike Recovery outside control limits
- C - Sample Result or QC discussed in Case Narrative
- RL - Reporting Limit (MQL adjusted for moisture and sample size)
- SDL - Sample Detection Limit
- E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *10-Nov-21*

CLIENT:	Golder	**Client Sample ID:**	H-27
Project:	Luminant - MLSES Ash Ponds	**Lab ID:**	2110028-02
Project No:	19122262	**Collection Date:**	10/04/21 02:20 PM
Lab Order:	2110028	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	10/12/21 11:01 AM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	10/12/21 11:01 AM
Barium	0.115	0.00300	0.0100		mg/L	1	10/12/21 11:01 AM
Beryllium	0.000461	0.000300	0.00100	J	mg/L	1	10/12/21 11:01 AM
Boron	0.0511	0.0100	0.0300		mg/L	1	10/13/21 11:00 AM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	10/12/21 11:01 AM
Calcium	39.5	1.00	3.00		mg/L	10	10/12/21 12:11 PM
Chromium	0.00265	0.00200	0.00500	J	mg/L	1	10/12/21 11:01 AM
Cobalt	0.0295	0.00300	0.00500		mg/L	1	10/12/21 11:01 AM
Lead	<0.000300	0.000300	0.00100		mg/L	1	10/12/21 11:01 AM
Lithium	0.105	0.00500	0.0100		mg/L	1	10/12/21 11:01 AM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	10/12/21 11:01 AM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	10/12/21 11:01 AM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	10/12/21 11:01 AM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **JVR**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	10/11/21 10:58 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	84.7	3.00	10.0		mg/L	10	10/11/21 05:53 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	10/11/21 11:13 PM
Sulfate	96.9	1.00	3.00		mg/L	1	10/11/21 11:13 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	415	10.0	10.0		mg/L	1	10/08/21 04:10 PM

Qualifiers:

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- DF- Dilution Factor
- N - Parameter not NELAP certified
- See Final Page of Report for MQLs and MDLs
- S - Spike Recovery outside control limits
- C - Sample Result or QC discussed in Case Narrative
- RL - Reporting Limit (MQL adjusted for moisture and sample size)
- SDL - Sample Detection Limit
- E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *10-Nov-21*

CLIENT:	Golder	**Client Sample ID:**	H-33
Project:	Luminant - MLSES Ash Ponds	**Lab ID:**	2110028-03
Project No:	19122262	**Collection Date:**	10/04/21 01:05 PM
Lab Order:	2110028	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	10/12/21 11:07 AM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	10/12/21 11:07 AM
Barium	0.129	0.00300	0.0100		mg/L	1	10/12/21 11:07 AM
Beryllium	0.000583	0.000300	0.00100	J	mg/L	1	10/12/21 11:07 AM
Boron	0.0557	0.0100	0.0300		mg/L	1	10/13/21 11:06 AM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	10/12/21 11:07 AM
Calcium	49.1	1.00	3.00		mg/L	10	10/12/21 12:15 PM
Chromium	0.00337	0.00200	0.00500	J	mg/L	1	10/12/21 11:07 AM
Cobalt	0.0340	0.00300	0.00500		mg/L	1	10/12/21 11:07 AM
Lead	0.000347	0.000300	0.00100	J	mg/L	1	10/12/21 11:07 AM
Lithium	0.131	0.00500	0.0100		mg/L	1	10/12/21 11:07 AM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	10/12/21 11:07 AM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	10/12/21 11:07 AM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	10/12/21 11:07 AM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **JVR**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	10/11/21 11:00 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	99.8	3.00	10.0		mg/L	10	10/11/21 06:09 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	10/11/21 11:29 PM
Sulfate	117	1.00	3.00		mg/L	1	10/11/21 11:29 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	499	10.0	10.0		mg/L	1	10/08/21 04:10 PM

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See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *10-Nov-21*

CLIENT:	Golder	**Client Sample ID:**	H-29
Project:	Luminant - MLSES Ash Ponds	**Lab ID:**	2110028-04
Project No:	19122262	**Collection Date:**	10/04/21 11:50 AM
Lab Order:	2110028	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	10/12/21 11:09 AM
Arsenic	0.0130	0.00200	0.00500		mg/L	1	10/12/21 11:09 AM
Barium	0.0222	0.00300	0.0100		mg/L	1	10/12/21 11:09 AM
Beryllium	0.0340	0.000300	0.00100		mg/L	1	10/12/21 11:09 AM
Boron	17.9	0.500	1.50		mg/L	50	10/13/21 11:08 AM
Cadmium	0.000847	0.000300	0.00100	J	mg/L	1	10/12/21 11:09 AM
Calcium	241	5.00	15.0		mg/L	50	10/12/21 12:17 PM
Chromium	0.00477	0.00200	0.00500	J	mg/L	1	10/12/21 11:09 AM
Cobalt	0.430	0.00300	0.00500		mg/L	1	10/12/21 11:09 AM
Lead	0.00235	0.000300	0.00100		mg/L	1	10/12/21 11:09 AM
Lithium	0.159	0.00500	0.0100		mg/L	1	10/12/21 11:09 AM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	10/12/21 11:09 AM
Selenium	0.117	0.00200	0.00500		mg/L	1	10/12/21 11:09 AM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	10/12/21 11:09 AM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **JVR**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	10/11/21 11:02 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	201	3.00	10.0		mg/L	10	10/11/21 06:25 PM
Fluoride	0.223	0.100	0.400	J	mg/L	1	10/11/21 11:45 PM
Sulfate	2330	100	300		mg/L	100	10/12/21 03:57 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	3690	50.0	50.0		mg/L	1	10/08/21 04:10 PM

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- S - Spike Recovery outside control limits
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- SDL - Sample Detection Limit
- E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *10-Nov-21*

CLIENT:	Golder	**Client Sample ID:**	H-28
Project:	Luminant - MLSES Ash Ponds	**Lab ID:**	2110028-05
Project No:	19122262	**Collection Date:**	10/04/21 10:40 AM
Lab Order:	2110028	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	10/12/21 11:11 AM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	10/12/21 11:11 AM
Barium	0.0135	0.00300	0.0100		mg/L	1	10/12/21 11:11 AM
Beryllium	0.00627	0.000300	0.00100		mg/L	1	10/12/21 11:11 AM
Boron	5.24	0.100	0.300		mg/L	10	10/13/21 11:10 AM
Cadmium	0.000763	0.000300	0.00100	J	mg/L	1	10/12/21 11:11 AM
Calcium	71.3	1.00	3.00		mg/L	10	10/12/21 12:19 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	10/12/21 11:11 AM
Cobalt	0.148	0.00300	0.00500		mg/L	1	10/12/21 11:11 AM
Lead	0.00127	0.000300	0.00100		mg/L	1	10/12/21 11:11 AM
Lithium	0.163	0.00500	0.0100		mg/L	1	10/12/21 11:11 AM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	10/12/21 11:11 AM
Selenium	0.00477	0.00200	0.00500	J	mg/L	1	10/12/21 11:11 AM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	10/12/21 11:11 AM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **JVR**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	10/11/21 11:05 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	93.7	3.00	10.0		mg/L	10	10/11/21 06:41 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	10/12/21 01:05 AM
Sulfate	681	10.0	30.0		mg/L	10	10/11/21 06:41 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	1220	50.0	50.0		mg/L	1	10/08/21 04:10 PM

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- S - Spike Recovery outside control limits
- C - Sample Result or QC discussed in Case Narrative
- RL - Reporting Limit (MQL adjusted for moisture and sample size)
- SDL - Sample Detection Limit
- E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *10-Nov-21*

CLIENT:	Golder	**Client Sample ID:**	H-32
Project:	Luminant - MLSES Ash Ponds	**Lab ID:**	2110028-06
Project No:	19122262	**Collection Date:**	10/04/21 09:30 AM
Lab Order:	2110028	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	10/12/21 11:13 AM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	10/12/21 11:13 AM
Barium	0.0166	0.00300	0.0100		mg/L	1	10/12/21 11:13 AM
Beryllium	0.00667	0.000300	0.00100		mg/L	1	10/12/21 11:13 AM
Boron	1.93	0.100	0.300		mg/L	10	10/13/21 11:12 AM
Cadmium	0.000418	0.000300	0.00100	J	mg/L	1	10/12/21 11:13 AM
Calcium	49.3	1.00	3.00		mg/L	10	10/12/21 12:21 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	10/12/21 11:13 AM
Cobalt	0.174	0.00300	0.00500		mg/L	1	10/12/21 11:13 AM
Lead	0.000709	0.000300	0.00100	J	mg/L	1	10/12/21 11:13 AM
Lithium	0.0888	0.00500	0.0100		mg/L	1	10/12/21 11:13 AM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	10/12/21 11:13 AM
Selenium	0.00502	0.00200	0.00500		mg/L	1	10/12/21 11:13 AM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	10/12/21 11:13 AM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **JVR**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	10/11/21 11:11 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	118	3.00	10.0		mg/L	10	10/11/21 06:57 PM
Fluoride	0.656	0.100	0.400		mg/L	1	10/12/21 01:21 AM
Sulfate	359	10.0	30.0		mg/L	10	10/11/21 06:57 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	765	10.0	10.0		mg/L	1	10/08/21 04:10 PM

Qualifiers:

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S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *10-Nov-21*

CLIENT:	Golder	**Client Sample ID:**	H-31
Project:	Luminant - MLSES Ash Ponds	**Lab ID:**	2110028-07
Project No:	19122262	**Collection Date:**	10/04/21 08:15 AM
Lab Order:	2110028	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	10/12/21 11:15 AM
Arsenic	0.00819	0.00200	0.00500		mg/L	1	10/12/21 11:15 AM
Barium	0.0160	0.00300	0.0100		mg/L	1	10/12/21 11:15 AM
Beryllium	0.0260	0.000300	0.00100		mg/L	1	10/12/21 11:15 AM
Boron	16.7	0.500	1.50		mg/L	50	10/13/21 11:14 AM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	10/12/21 11:15 AM
Calcium	244	5.00	15.0		mg/L	50	10/12/21 12:23 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	10/12/21 11:15 AM
Cobalt	0.483	0.00300	0.00500		mg/L	1	10/12/21 11:15 AM
Lead	<0.000300	0.000300	0.00100		mg/L	1	10/12/21 11:15 AM
Lithium	0.202	0.00500	0.0100		mg/L	1	10/12/21 11:15 AM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	10/12/21 11:15 AM
Selenium	0.0767	0.00200	0.00500		mg/L	1	10/12/21 11:15 AM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	10/12/21 11:15 AM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **JVR**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	10/11/21 11:14 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	208	3.00	10.0		mg/L	10	10/11/21 07:13 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	10/12/21 01:37 AM
Sulfate	2110	100	300		mg/L	100	10/11/21 04:33 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	3400	50.0	50.0		mg/L	1	10/08/21 04:10 PM

Qualifiers:

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DF- Dilution Factor
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C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *10-Nov-21*

CLIENT:	Golder	**Client Sample ID:**	DUP-1
Project:	Luminant - MLSES Ash Ponds	**Lab ID:**	2110028-08
Project No:	19122262	**Collection Date:**	10/04/21 03:35 PM
Lab Order:	2110028	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	10/12/21 11:17 AM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	10/12/21 11:17 AM
Barium	0.0508	0.00300	0.0100		mg/L	1	10/12/21 11:17 AM
Beryllium	0.00170	0.000300	0.00100		mg/L	1	10/12/21 11:17 AM
Boron	0.412	0.0100	0.0300		mg/L	1	10/13/21 11:16 AM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	10/12/21 11:17 AM
Calcium	12.6	0.100	0.300		mg/L	1	10/12/21 11:17 AM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	10/12/21 11:17 AM
Cobalt	0.0232	0.00300	0.00500		mg/L	1	10/12/21 11:17 AM
Lead	0.000398	0.000300	0.00100	J	mg/L	1	10/12/21 11:17 AM
Lithium	0.0131	0.00500	0.0100		mg/L	1	10/12/21 11:17 AM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	10/12/21 11:17 AM
Selenium	0.00727	0.00200	0.00500		mg/L	1	10/12/21 11:17 AM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	10/12/21 11:17 AM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **JVR**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	10/11/21 11:16 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	75.6	3.00	10.0		mg/L	10	10/11/21 07:29 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	10/12/21 01:53 AM
Sulfate	56.8	1.00	3.00		mg/L	1	10/12/21 01:53 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	253	10.0	10.0		mg/L	1	10/08/21 04:10 PM

Qualifiers:

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DF- Dilution Factor
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SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

CLIENT: Golder
Work Order: 2110028
Project: Luminant - MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_210728C

Sample ID: **DCS-101411** Batch ID: **101411** TestNo: **SW7470A** Units: **mg/L**
SampType: **DCS** Run ID: **CETAC2_HG_210728C** Analysis Date: **7/28/2021 1:24:11 PM** Prep Date: **7/27/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.000189	0.000200	0.000200	0	94.5	82	119	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2110028
Project: Luminant - MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_211011C

The QC data in batch 102332 applies to the following samples: 2110028-01A, 2110028-02A, 2110028-03A, 2110028-04A, 2110028-05A, 2110028-06A, 2110028-07A, 2110028-08A

Sample ID: **MB-102332** Batch ID: **102332** TestNo: **SW7470A** Units: **mg/L**
SampType: **MBLK** Run ID: **CETAC2_HG_211011C** Analysis Date: **10/11/2021 10:30:59 A** Prep Date: **10/8/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.0000800	0.000200								

Sample ID: **LCS-102332** Batch ID: **102332** TestNo: **SW7470A** Units: **mg/L**
SampType: **LCS** Run ID: **CETAC2_HG_211011C** Analysis Date: **10/11/2021 10:35:30 A** Prep Date: **10/8/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00207	0.000200	0.00200	0	104	85	115			

Sample ID: **LCSD-102332** Batch ID: **102332** TestNo: **SW7470A** Units: **mg/L**
SampType: **LCSD** Run ID: **CETAC2_HG_211011C** Analysis Date: **10/11/2021 10:37:46 A** Prep Date: **10/8/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00206	0.000200	0.00200	0	103	85	115	0.484	15	

Sample ID: **2110026-01B MS** Batch ID: **102332** TestNo: **SW7470A** Units: **mg/L**
SampType: **MS** Run ID: **CETAC2_HG_211011C** Analysis Date: **10/11/2021 10:46:50 A** Prep Date: **10/8/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0103	0.00100	0.0100	0	103	80	120			

Sample ID: **2110026-01B MSD** Batch ID: **102332** TestNo: **SW7470A** Units: **mg/L**
SampType: **MSD** Run ID: **CETAC2_HG_211011C** Analysis Date: **10/11/2021 10:49:06 A** Prep Date: **10/8/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0104	0.00100	0.0100	0	104	80	120	0.484	15	

Sample ID: **2110026-01B SD** Batch ID: **102332** TestNo: **SW7470A** Units: **mg/L**
SampType: **SD** Run ID: **CETAC2_HG_211011C** Analysis Date: **10/11/2021 10:51:22 A** Prep Date: **10/8/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.00200	0.00500	0	0				0	10	

Sample ID: **2110026-01B PDS** Batch ID: **102332** TestNo: **SW7470A** Units: **mg/L**
SampType: **PDS** Run ID: **CETAC2_HG_211011C** Analysis Date: **10/11/2021 10:53:38 A** Prep Date: **10/8/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0124	0.00100	0.0125	0	99.2	85	115			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2110028
Project: Luminant - MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_211011C

Sample ID: **ICV-211011**	Batch ID: **R117461**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **ICV**	Run ID: **CETAC2_HG_211011C**	Analysis Date: **10/11/2021 10:06:01 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00403	0.000200	0.00400	0	101	90	110			

Sample ID: **CCV1-211011**	Batch ID: **R117461**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_211011C**	Analysis Date: **10/11/2021 11:07:18 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00202	0.000200	0.00200	0	101	90	110			

Sample ID: **CCV2-211011**	Batch ID: **R117461**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_211011C**	Analysis Date: **10/11/2021 11:41:33 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00202	0.000200	0.00200	0	101	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2110028
Project: Luminant - MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_210803A

Sample ID: **DCS1-101483**	Batch ID: **101483**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS**	Run ID: **ICP-MS4_210803A**	Analysis Date: **8/3/2021 1:18:00 PM**	Prep Date: **8/2/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00114	0.00250	0.00100	0	114	70	130	0	0	
Beryllium	0.000608	0.00100	0.000500	0	122	70	130	0	0	
Cadmium	0.000587	0.00100	0.000500	0	117	70	130	0	0	
Lead	0.000537	0.00100	0.000500	0	107	70	130	0	0	
Thallium	0.000524	0.00150	0.000500	0	105	70	130	0	0	

Sample ID: **DCS2-101483**	Batch ID: **101483**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS2**	Run ID: **ICP-MS4_210803A**	Analysis Date: **8/3/2021 1:21:00 PM**	Prep Date: **8/2/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.278	0.300	0.300	0	92.6	70	130	0	0	

Sample ID: **DCS3-101483**	Batch ID: **101483**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS3**	Run ID: **ICP-MS4_210803A**	Analysis Date: **8/3/2021 1:24:00 PM**	Prep Date: **8/2/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.00522	0.00500	0.00500	0	104	70	130	0	0	
Barium	0.00522	0.0100	0.00500	0	104	70	130	0	0	
Chromium	0.00527	0.00500	0.00500	0	105	70	130	0	0	
Cobalt	0.00534	0.00500	0.00500	0	107	70	130	0	0	
Lithium	0.00475	0.0100	0.00500	0	95.0	70	130	0	0	
Molybdenum	0.00509	0.00500	0.00500	0	102	70	130	0	0	
Selenium	0.00500	0.00500	0.00500	0	100	70	130	0	0	

Sample ID: **DCS4-101483**	Batch ID: **101483**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS4**	Run ID: **ICP-MS4_210803A**	Analysis Date: **8/3/2021 1:27:00 PM**	Prep Date: **8/2/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0315	0.0300	0.0300	0	105	70	130	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2110028
Project: Luminant - MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: **ICP-MS4_211012B**

The QC data in batch 102343 applies to the following samples: 2110028-01A, 2110028-02A, 2110028-03A, 2110028-04A, 2110028-05A, 2110028-06A, 2110028-07A, 2110028-08A

Sample ID: **MB-102343** Batch ID: **102343** TestNo: **SW6020B** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_211012B** Analysis Date: **10/12/2021 10:53:00 A** Prep Date: **10/11/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.000800	0.00250								
Arsenic	<0.00200	0.00500								
Barium	<0.00300	0.0100								
Beryllium	<0.000300	0.00100								
Cadmium	<0.000300	0.00100								
Calcium	<0.100	0.300								
Chromium	<0.00200	0.00500								
Cobalt	<0.00300	0.00500								
Lead	<0.000300	0.00100								
Lithium	<0.00500	0.0100								
Molybdenum	<0.00200	0.00500								
Selenium	<0.00200	0.00500								
Thallium	<0.000500	0.00150								

Sample ID: **LCS-102343** Batch ID: **102343** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_211012B** Analysis Date: **10/12/2021 10:55:00 A** Prep Date: **10/11/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.195	0.00250	0.200	0	97.3	80	120			
Arsenic	0.200	0.00500	0.200	0	99.9	80	120			
Barium	0.198	0.0100	0.200	0	98.9	80	120			
Beryllium	0.196	0.00100	0.200	0	97.8	80	120			
Cadmium	0.198	0.00100	0.200	0	99.2	80	120			
Calcium	5.13	0.300	5.00	0	103	80	120			
Chromium	0.202	0.00500	0.200	0	101	80	120			
Cobalt	0.193	0.00500	0.200	0	96.4	80	120			
Lead	0.198	0.00100	0.200	0	99.2	80	120			
Lithium	0.197	0.0100	0.200	0	98.3	80	120			
Molybdenum	0.190	0.00500	0.200	0	94.9	80	120			
Selenium	0.199	0.00500	0.200	0	99.4	80	120			
Thallium	0.202	0.00150	0.200	0	101	80	120			

Sample ID: **LCSD-102343** Batch ID: **102343** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_211012B** Analysis Date: **10/12/2021 10:57:00 A** Prep Date: **10/11/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.195	0.00250	0.200	0	97.5	80	120	0.139	15	
Arsenic	0.201	0.00500	0.200	0	100	80	120	0.452	15	
Barium	0.199	0.0100	0.200	0	99.6	80	120	0.644	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2110028
Project: Luminant - MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_211012B

Sample ID: **LCSD-102343**	Batch ID: **102343**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCSD**	Run ID: **ICP-MS4_211012B**	Analysis Date: **10/12/2021 10:57:00 A**	Prep Date: **10/11/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.197	0.00100	0.200	0	98.6	80	120	0.815	15	
Cadmium	0.198	0.00100	0.200	0	99.1	80	120	0.094	15	
Calcium	5.23	0.300	5.00	0	105	80	120	1.78	15	
Chromium	0.203	0.00500	0.200	0	102	80	120	0.842	15	
Cobalt	0.195	0.00500	0.200	0	97.5	80	120	1.12	15	
Lead	0.203	0.00100	0.200	0	101	80	120	2.30	15	
Lithium	0.198	0.0100	0.200	0	98.8	80	120	0.458	15	
Molybdenum	0.192	0.00500	0.200	0	95.8	80	120	0.927	15	
Selenium	0.203	0.00500	0.200	0	101	80	120	2.03	15	
Thallium	0.206	0.00150	0.200	0	103	80	120	1.89	15	

Sample ID: **2110028-02A SD**	Batch ID: **102343**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS4_211012B**	Analysis Date: **10/12/2021 11:03:00 A**	Prep Date: **10/11/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.00400	0.0125	0	0				0	20	
Arsenic	<0.0100	0.0250	0	0				0	20	
Barium	0.115	0.0500	0	0.115				0.045	20	
Beryllium	<0.00150	0.00500	0	0.000461				0	20	
Cadmium	<0.00150	0.00500	0	0				0	20	
Chromium	<0.0100	0.0250	0	0.00265				0	20	
Cobalt	0.0298	0.0250	0	0.0296				0.698	20	
Lead	<0.00150	0.00500	0	0				0	20	
Lithium	0.114	0.0500	0	0.105				8.37	20	
Molybdenum	<0.0100	0.0250	0	0				0	20	
Selenium	<0.0100	0.0250	0	0				0	20	
Thallium	<0.00250	0.00750	0	0				0	20	

Sample ID: **2110028-02A PDS**	Batch ID: **102343**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_211012B**	Analysis Date: **10/12/2021 11:23:00 A**	Prep Date: **10/11/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.198	0.00250	0.200	0	99.2	75	125			
Arsenic	0.195	0.00500	0.200	0	97.4	75	125			
Barium	0.310	0.0100	0.200	0.115	97.3	75	125			
Beryllium	0.193	0.00100	0.200	0.000461	96.2	75	125			
Cadmium	0.197	0.00100	0.200	0	98.4	75	125			
Chromium	0.204	0.00500	0.200	0.00265	101	75	125			
Cobalt	0.217	0.00500	0.200	0.0295	93.8	75	125			
Lead	0.204	0.00100	0.200	0	102	75	125			
Lithium	0.282	0.0100	0.200	0.105	88.2	75	125			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2110028
Project: Luminant - MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_211012B

Sample ID: **2110028-02A PDS**	Batch ID: **102343**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_211012B**	Analysis Date: **10/12/2021 11:23:00 A**	Prep Date: **10/11/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Molybdenum	0.189	0.00500	0.200	0	94.7	75	125			
Selenium	0.192	0.00500	0.200	0	96.0	75	125			
Thallium	0.204	0.00150	0.200	0	102	75	125			

Sample ID: **2110028-02A MS**	Batch ID: **102343**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS4_211012B**	Analysis Date: **10/12/2021 11:25:00 A**	Prep Date: **10/11/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.199	0.00250	0.200	0	99.3	75	125			
Arsenic	0.201	0.00500	0.200	0	101	75	125			
Barium	0.315	0.0100	0.200	0.115	99.9	75	125			
Beryllium	0.198	0.00100	0.200	0.000461	99.0	75	125			
Cadmium	0.196	0.00100	0.200	0	98.1	75	125			
Calcium	43.0	0.300	5.00	38.6	88.5	75	125			
Chromium	0.202	0.00500	0.200	0.00265	99.5	75	125			
Cobalt	0.219	0.00500	0.200	0.0295	94.7	75	125			
Lead	0.203	0.00100	0.200	0	101	75	125			
Lithium	0.288	0.0100	0.200	0.105	91.2	75	125			
Molybdenum	0.192	0.00500	0.200	0	95.8	75	125			
Selenium	0.197	0.00500	0.200	0	98.6	75	125			
Thallium	0.206	0.00150	0.200	0	103	75	125			

Sample ID: **2110028-02A MSD**	Batch ID: **102343**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS4_211012B**	Analysis Date: **10/12/2021 11:27:00 A**	Prep Date: **10/11/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.198	0.00250	0.200	0	99.1	75	125	0.233	15	
Arsenic	0.203	0.00500	0.200	0	101	75	125	0.751	15	
Barium	0.316	0.0100	0.200	0.115	101	75	125	0.433	15	
Beryllium	0.200	0.00100	0.200	0.000461	99.9	75	125	0.933	15	
Cadmium	0.200	0.00100	0.200	0	99.8	75	125	1.75	15	
Calcium	43.3	0.300	5.00	38.6	93.8	75	125	0.612	15	
Chromium	0.205	0.00500	0.200	0.00265	101	75	125	1.44	15	
Cobalt	0.220	0.00500	0.200	0.0295	95.2	75	125	0.402	15	
Lead	0.207	0.00100	0.200	0	104	75	125	2.22	15	
Lithium	0.289	0.0100	0.200	0.105	92.2	75	125	0.664	15	
Molybdenum	0.195	0.00500	0.200	0	97.7	75	125	1.93	15	
Selenium	0.199	0.00500	0.200	0	99.4	75	125	0.862	15	
Thallium	0.209	0.00150	0.200	0	104	75	125	1.57	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2110028
Project: Luminant - MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: **ICP-MS4_211012B**

Sample ID: **2110028-02A SD**	Batch ID: **102343**	TestNo: **SW6020B**		Units: **mg/L**	
SampType: **SD**	Run ID: **ICP-MS4_211012B**	Analysis Date: **10/12/2021 12:13:00 P**		Prep Date: **10/11/2021**	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	41.2	15.0	0	39.5				4.24	20	

Sample ID: **2110028-02A PDS**	Batch ID: **102343**	TestNo: **SW6020B**		Units: **mg/L**	
SampType: **PDS**	Run ID: **ICP-MS4_211012B**	Analysis Date: **10/12/2021 12:33:00 P**		Prep Date: **10/11/2021**	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	89.0	3.00	50.0	39.5	99.1	75	125			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2110028
Project: Luminant - MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_211012B

Sample ID: **ICV-211012**	Batch ID: **R117484**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_211012B**	Analysis Date: **10/12/2021 10:43:00 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.0996	0.00250	0.100	0	99.6	90	110			
Arsenic	0.0988	0.00500	0.100	0	98.8	90	110			
Barium	0.101	0.0100	0.100	0	101	90	110			
Beryllium	0.0994	0.00100	0.100	0	99.4	90	110			
Cadmium	0.0997	0.00100	0.100	0	99.7	90	110			
Calcium	2.64	0.300	2.50	0	106	90	110			
Chromium	0.104	0.00500	0.100	0	104	90	110			
Cobalt	0.0985	0.00500	0.100	0	98.5	90	110			
Lead	0.104	0.00100	0.100	0	104	90	110			
Lithium	0.0971	0.0100	0.100	0	97.1	90	110			
Molybdenum	0.0948	0.00500	0.100	0	94.8	90	110			
Selenium	0.0971	0.00500	0.100	0	97.1	90	110			
Thallium	0.105	0.00150	0.100	0	105	90	110			

Sample ID: **LCVL-211012**	Batch ID: **R117484**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_211012B**	Analysis Date: **10/12/2021 10:47:00 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00199	0.00250	0.00200	0	99.6	80	120			
Arsenic	0.00490	0.00500	0.00500	0	98.0	80	120			
Barium	0.00498	0.0100	0.00500	0	99.7	80	120			
Beryllium	0.000848	0.00100	0.00100	0	84.8	80	120			
Cadmium	0.00102	0.00100	0.00100	0	102	80	120			
Calcium	0.118	0.300	0.100	0	118	80	120			
Chromium	0.00522	0.00500	0.00500	0	104	80	120			
Cobalt	0.00493	0.00500	0.00500	0	98.6	80	120			
Lead	0.00109	0.00100	0.00100	0	109	80	120			
Lithium	0.00917	0.0100	0.0100	0	91.7	80	120			
Molybdenum	0.00482	0.00500	0.00500	0	96.3	80	120			
Selenium	0.00490	0.00500	0.00500	0	97.9	80	120			
Thallium	0.00107	0.00150	0.00100	0	107	80	120			

Sample ID: **CCV1-211012**	Batch ID: **R117484**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_211012B**	Analysis Date: **10/12/2021 11:29:00 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.205	0.00250	0.200	0	102	90	110			
Arsenic	0.203	0.00500	0.200	0	102	90	110			
Barium	0.206	0.0100	0.200	0	103	90	110			
Beryllium	0.201	0.00100	0.200	0	101	90	110			
Cadmium	0.203	0.00100	0.200	0	102	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2110028
Project: Luminant - MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_211012B

Sample ID: **CCV1-211012**	Batch ID: **R117484**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_211012B**	Analysis Date: **10/12/2021 11:29:00 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	5.30	0.300	5.00	0	106	90	110			
Chromium	0.207	0.00500	0.200	0	104	90	110			
Cobalt	0.198	0.00500	0.200	0	99.2	90	110			
Lead	0.209	0.00100	0.200	0	104	90	110			
Lithium	0.201	0.0100	0.200	0	101	90	110			
Molybdenum	0.197	0.00500	0.200	0	98.4	90	110			
Selenium	0.205	0.00500	0.200	0	102	90	110			
Thallium	0.212	0.00150	0.200	0	106	90	110			

Sample ID: **CCV2-211012**	Batch ID: **R117484**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_211012B**	Analysis Date: **10/12/2021 11:53:00 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	5.24	0.300	5.00	0	105	90	110			

Sample ID: **CCV3-211012**	Batch ID: **R117484**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_211012B**	Analysis Date: **10/12/2021 12:35:00 P**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	5.34	0.300	5.00	0	107	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2110028
Project: Luminant - MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_211013A

The QC data in batch 102343 applies to the following samples: 2110028-01A, 2110028-02A, 2110028-03A, 2110028-04A, 2110028-05A, 2110028-06A, 2110028-07A, 2110028-08A

Sample ID: **MB-102343** Batch ID: **102343** TestNo: **SW6020B** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_211013A** Analysis Date: **10/13/2021 10:52:00 A** Prep Date: **10/11/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	<0.0100	0.0300								

Sample ID: **LCS-102343** Batch ID: **102343** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_211013A** Analysis Date: **10/13/2021 10:54:00 A** Prep Date: **10/11/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.197	0.0300	0.200	0	98.7	80	120			

Sample ID: **LCSD-102343** Batch ID: **102343** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_211013A** Analysis Date: **10/13/2021 10:56:00 A** Prep Date: **10/11/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.200	0.0300	0.200	0	99.8	80	120	1.12	15	

Sample ID: **2110028-02A SD** Batch ID: **102343** TestNo: **SW6020B** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS4_211013A** Analysis Date: **10/13/2021 11:02:00 A** Prep Date: **10/11/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0514	0.150	0	0.0510				0.685	20	

Sample ID: **2110028-02A PDS** Batch ID: **102343** TestNo: **SW6020B** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS4_211013A** Analysis Date: **10/13/2021 11:22:00 A** Prep Date: **10/11/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.240	0.0300	0.200	0.0511	94.3	75	125			

Sample ID: **2110028-02A MS** Batch ID: **102343** TestNo: **SW6020B** Units: **mg/L**
SampType: **MS** Run ID: **ICP-MS4_211013A** Analysis Date: **10/13/2021 11:24:00 A** Prep Date: **10/11/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.249	0.0300	0.200	0.0511	98.9	75	125			

Sample ID: **2110028-02A MSD** Batch ID: **102343** TestNo: **SW6020B** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS4_211013A** Analysis Date: **10/13/2021 11:26:00 A** Prep Date: **10/11/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.245	0.0300	0.200	0.0511	97.2	75	125	1.43	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2110028
Project: Luminant - MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_211013A

Sample ID: **ICV-211013**	Batch ID: **R117501**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_211013A**	Analysis Date: **10/13/2021 10:32:00 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.110	0.0300	0.100	0	110	90	110			

Sample ID: **LCVL-211013**	Batch ID: **R117501**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_211013A**	Analysis Date: **10/13/2021 10:46:00 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0233	0.0300	0.0200	0	116	80	120			

Sample ID: **CCV1-211013**	Batch ID: **R117501**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_211013A**	Analysis Date: **10/13/2021 11:30:00 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.194	0.0300	0.200	0	97.2	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2110028
Project: Luminant - MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_210928A

Sample ID: **DCS2-102216** Batch ID: **102216** TestNo: **E300** Units: **mg/L**
SampType: **DCS2** Run ID: **IC2_210928A** Analysis Date: **9/28/2021 1:38:01 PM** Prep Date: **9/28/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	0.533	1.00	0.5000	0	107	70	130	0	0	
Fluoride	0.179	0.400	0.2000	0	89.5	70	130	0	0	
Sulfate	1.55	3.00	1.500	0	104	70	130	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2110028
Project: Luminant - MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_211011A

The QC data in batch 102348 applies to the following samples: 2110028-01B, 2110028-02B, 2110028-03B, 2110028-04B, 2110028-05B, 2110028-06B, 2110028-07B, 2110028-08B

Sample ID: **MB-102348** Batch ID: **102348** TestNo: **E300** Units: **mg/L**
SampType: **MBLK** Run ID: **IC2_211011A** Analysis Date: **10/11/2021 11:12:24 A** Prep Date: **10/11/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00								
Fluoride	<0.100	0.400								
Sulfate	<1.00	3.00								

Sample ID: **LCS-102348** Batch ID: **102348** TestNo: **E300** Units: **mg/L**
SampType: **LCS** Run ID: **IC2_211011A** Analysis Date: **10/11/2021 11:28:24 A** Prep Date: **10/11/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.0	1.00	10.00	0	100	90	110			
Fluoride	3.92	0.400	4.000	0	98.0	90	110			
Sulfate	31.0	3.00	30.00	0	103	90	110			

Sample ID: **LCSD-102348** Batch ID: **102348** TestNo: **E300** Units: **mg/L**
SampType: **LCSD** Run ID: **IC2_211011A** Analysis Date: **10/11/2021 11:44:24 A** Prep Date: **10/11/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.7	1.00	10.00	0	107	90	110	6.72	20	
Fluoride	4.24	0.400	4.000	0	106	90	110	7.87	20	
Sulfate	33.0	3.00	30.00	0	110	90	110	6.48	20	

Sample ID: **2110028-01BMS** Batch ID: **102348** TestNo: **E300** Units: **mg/L**
SampType: **MS** Run ID: **IC2_211011A** Analysis Date: **10/11/2021 5:21:27 PM** Prep Date: **10/11/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	256	10.0	200.0	72.77	91.5	90	110			
Fluoride	209	4.00	200.0	0	104	90	110			
Sulfate	232	30.0	200.0	52.79	89.7	90	110			

Sample ID: **2110028-01BMSD** Batch ID: **102348** TestNo: **E300** Units: **mg/L**
SampType: **MSD** Run ID: **IC2_211011A** Analysis Date: **10/11/2021 5:37:27 PM** Prep Date: **10/11/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	255	10.0	200.0	72.77	91.3	90	110	0.109	20	
Fluoride	209	4.00	200.0	0	105	90	110	0.264	20	
Sulfate	232	30.0	200.0	52.79	89.7	90	110	0.001	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2110028
Project: Luminant - MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_211011A

Sample ID: **2110030-01CMS**	Batch ID: **102348**	TestNo: **E300**	Units: **mg/L**
SampType: **MS**	Run ID: **IC2_211011A**	Analysis Date: **10/11/2021 9:05:27 PM**	Prep Date: **10/11/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	237	10.0	200.0	45.88	95.3	90	110			
Fluoride	224	4.00	200.0	21.55	101	90	110			
Sulfate	543	30.0	200.0	349.7	96.8	90	110			

Sample ID: **2110030-01CMSD**	Batch ID: **102348**	TestNo: **E300**	Units: **mg/L**
SampType: **MSD**	Run ID: **IC2_211011A**	Analysis Date: **10/11/2021 9:21:27 PM**	Prep Date: **10/11/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	235	10.0	200.0	45.88	94.6	90	110	0.641	20	
Fluoride	223	4.00	200.0	21.55	101	90	110	0.398	20	
Sulfate	539	30.0	200.0	349.7	94.9	90	110	0.710	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2110028
Project: Luminant - MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_211011A

Sample ID: **ICV-211011**	Batch ID: **R117453**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC2_211011A**	Analysis Date: **10/11/2021 10:40:24 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	26.2	1.00	25.00	0	105	90	110			
Fluoride	10.5	0.400	10.00	0	105	90	110			
Sulfate	80.4	3.00	75.00	0	107	90	110			

Sample ID: **CCV1-211011**	Batch ID: **R117453**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_211011A**	Analysis Date: **10/11/2021 3:55:19 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.1	1.00	10.00	0	101	90	110			
Fluoride	3.92	0.400	4.000	0	98.0	90	110			
Sulfate	31.1	3.00	30.00	0	104	90	110			

Sample ID: **CCV2-211011**	Batch ID: **R117453**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_211011A**	Analysis Date: **10/11/2021 8:17:27 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.1	1.00	10.00	0	101	90	110			
Fluoride	3.91	0.400	4.000	0	97.9	90	110			
Sulfate	31.0	3.00	30.00	0	103	90	110			

Sample ID: **CCV3-211011**	Batch ID: **R117453**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_211011A**	Analysis Date: **10/12/2021 12:33:27 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.2	1.00	10.00	0	102	90	110			
Fluoride	3.94	0.400	4.000	0	98.6	90	110			
Sulfate	31.2	3.00	30.00	0	104	90	110			

Sample ID: **CCV4-211011**	Batch ID: **R117453**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_211011A**	Analysis Date: **10/12/2021 2:41:27 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	4.20	0.400	4.000	0	105	90	110			
Sulfate	33.0	3.00	30.00	0	110	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2110028
Project: Luminant - MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_210930A

Sample ID: **DCS3-102243** Batch ID: **102243** TestNo: **E300** Units: **mg/L**
SampType: **DCS3** Run ID: **IC4_210930A** Analysis Date: **9/30/2021 4:30:30 PM** Prep Date: **9/30/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	3.08	3.00	3.000	0	103	70	130	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2110028
Project: Luminant - MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_211012A

The QC data in batch 102364 applies to the following samples: 2110028-04B

Sample ID: **MB-102364**	Batch ID: **102364**	TestNo: **E300**	Units: **mg/L**
SampType: **MBLK**	Run ID: **IC4_211012A**	Analysis Date: **10/12/2021 11:20:41 A**	Prep Date: **10/12/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	<1.00	3.00								

Sample ID: **LCS-102364**	Batch ID: **102364**	TestNo: **E300**	Units: **mg/L**
SampType: **LCS**	Run ID: **IC4_211012A**	Analysis Date: **10/12/2021 11:39:41 A**	Prep Date: **10/12/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	30.9	3.00	30.00	0	103	90	110			

Sample ID: **LCSD-102364**	Batch ID: **102364**	TestNo: **E300**	Units: **mg/L**
SampType: **LCSD**	Run ID: **IC4_211012A**	Analysis Date: **10/12/2021 11:58:41 A**	Prep Date: **10/12/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	31.0	3.00	30.00	0	103	90	110	0.494	20	

Sample ID: **2110037-02BMS**	Batch ID: **102364**	TestNo: **E300**	Units: **mg/L**
SampType: **MS**	Run ID: **IC4_211012A**	Analysis Date: **10/12/2021 4:54:18 PM**	Prep Date: **10/12/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	614	30.0	200.0	432.3	91.0	90	110			

Sample ID: **2110037-02BMSD**	Batch ID: **102364**	TestNo: **E300**	Units: **mg/L**
SampType: **MSD**	Run ID: **IC4_211012A**	Analysis Date: **10/12/2021 5:13:18 PM**	Prep Date: **10/12/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	609	30.0	200.0	432.3	88.3	90	110	0.895	20	S

Sample ID: **2110070-01BMS**	Batch ID: **102364**	TestNo: **E300**	Units: **mg/L**
SampType: **MS**	Run ID: **IC4_211012A**	Analysis Date: **10/12/2021 9:20:17 PM**	Prep Date: **10/12/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	317	30.0	200.0	125.8	95.5	90	110			

Sample ID: **2110070-01BMSD**	Batch ID: **102364**	TestNo: **E300**	Units: **mg/L**
SampType: **MSD**	Run ID: **IC4_211012A**	Analysis Date: **10/12/2021 9:39:17 PM**	Prep Date: **10/12/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	316	30.0	200.0	125.8	94.9	90	110	0.354	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2110028
Project: Luminant - MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_211012A

Sample ID: **ICV-211012**	Batch ID: **R117491**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC4_211012A**	Analysis Date: **10/12/2021 10:42:41 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	77.5	3.00	75.00	0	103	90	110			

Sample ID: **CCV1-211012**	Batch ID: **R117491**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC4_211012A**	Analysis Date: **10/12/2021 8:23:18 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	31.0	3.00	30.00	0	103	90	110			

Sample ID: **CCV2-211012**	Batch ID: **R117491**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC4_211012A**	Analysis Date: **10/13/2021 1:27:17 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	31.1	3.00	30.00	0	104	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2110028
Project: Luminant - MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: WC_211008B

The QC data in batch 102327 applies to the following samples: 2110028-01B, 2110028-02B, 2110028-03B, 2110028-04B, 2110028-05B, 2110028-06B, 2110028-07B, 2110028-08B

Sample ID: **MB-102327**	Batch ID: **102327**	TestNo: **M2540C**	Units: **mg/L**
SampType: **MBLK**	Run ID: **WC_211008B**	Analysis Date: **10/8/2021 4:10:00 PM**	Prep Date: **10/8/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	<10.0	10.0								

Sample ID: **LCS-102327**	Batch ID: **102327**	TestNo: **M2540C**	Units: **mg/L**
SampType: **LCS**	Run ID: **WC_211008B**	Analysis Date: **10/8/2021 4:10:00 PM**	Prep Date: **10/8/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	724	10.0	745.6	0	97.1	90	113			

Sample ID: **2110028-04B-DUP**	Batch ID: **102327**	TestNo: **M2540C**	Units: **mg/L**
SampType: **DUP**	Run ID: **WC_211008B**	Analysis Date: **10/8/2021 4:10:00 PM**	Prep Date: **10/8/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	3700	50.0	0	3690				0.271	5	

Sample ID: **2110028-07B-DUP**	Batch ID: **102327**	TestNo: **M2540C**	Units: **mg/L**
SampType: **DUP**	Run ID: **WC_211008B**	Analysis Date: **10/8/2021 4:10:00 PM**	Prep Date: **10/8/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	3410	50.0	0	3400				0.147	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2110028
Project: Luminant - MLSES Ash Ponds

MQL SUMMARY REPORT

TestNo: E300	MDL	MQL
Analyte	**mg/L**	**mg/L**
Chloride	0.300	1.00
Fluoride	0.100	0.400
Sulfate	1.00	3.00

TestNo: SW6020B	MDL	MQL
Analyte	**mg/L**	**mg/L**
Antimony	0.000800	0.00250
Arsenic	0.00200	0.00500
Barium	0.00300	0.0100
Beryllium	0.000300	0.00100
Boron	0.0100	0.0300
Cadmium	0.000300	0.00100
Calcium	0.100	0.300
Chromium	0.00200	0.00500
Cobalt	0.00300	0.00500
Lead	0.000300	0.00100
Lithium	0.00500	0.0100
Molybdenum	0.00200	0.00500
Selenium	0.00200	0.00500
Thallium	0.000500	0.00150

TestNo: SW7470A	MDL	MQL
Analyte	**mg/L**	**mg/L**
Mercury	0.0000800	0.000200

TestNo: M2540C	MDL	MQL
Analyte	**mg/L**	**mg/L**
Total Dissolved Solids (Residue, Filt	10.0	10.0

Qualifiers: MQL -Method Quantitation Limit as defined by TRRP
MDL -Method Detection Limit as defined by TRRP

ANALYTICAL REPORT

November 07, 2021

DHL Analytical, Inc.

Sample Delivery Group:	L1416575
Samples Received:	10/11/2021
Project Number:	2110028
Description:	

Report To: John DuPont
2300 Double Creek Drive
Round Rock, TX 78664

Entire Report Reviewed By:

Donna Eidson
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.

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H-26 L1416575-01 Non-Potable Water

Collected by	Collected date/time	Received date/time
	10/04/21 15:35	10/11/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method Calculation	WG1758756	1	11/02/21 15:45	11/04/21 14:00	JMR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1758756	1	11/02/21 15:45	11/03/21 19:13	RGT	Mt. Juliet, TN

H-27 L1416575-02 Non-Potable Water

Collected by	Collected date/time	Received date/time
	10/04/21 14:20	10/11/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method Calculation	WG1758756	1	11/02/21 15:45	11/04/21 14:00	JMR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1758756	1	11/02/21 15:45	11/03/21 19:13	RGT	Mt. Juliet, TN

H-33 L1416575-03 Non-Potable Water

Collected by	Collected date/time	Received date/time
	10/04/21 13:05	10/11/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method Calculation	WG1758756	1	11/02/21 15:45	11/04/21 14:00	JMR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1758756	1	11/02/21 15:45	11/03/21 19:13	RGT	Mt. Juliet, TN

H-29 L1416575-04 Non-Potable Water

Collected by	Collected date/time	Received date/time
	10/04/21 11:50	10/11/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method Calculation	WG1758756	1	11/02/21 15:45	11/04/21 14:00	JMR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1758756	1	11/02/21 15:45	11/03/21 19:13	RGT	Mt. Juliet, TN

H-28 L1416575-05 Non-Potable Water

Collected by	Collected date/time	Received date/time
	10/04/21 10:40	10/11/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method Calculation	WG1758756	1	11/02/21 15:45	11/04/21 14:00	JMR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1758756	1	11/02/21 15:45	11/03/21 19:13	RGT	Mt. Juliet, TN

H-32 L1416575-06 Non-Potable Water

Collected by	Collected date/time	Received date/time
	10/04/21 09:30	10/11/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method Calculation	WG1758756	1	11/02/21 15:45	11/04/21 14:00	JMR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1758756	1	11/02/21 15:45	11/03/21 19:13	RGT	Mt. Juliet, TN

H-31 L1416575-07 Non-Potable Water

Collected by	Collected date/time	Received date/time
	10/04/21 08:15	10/11/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method Calculation	WG1758756	1	11/02/21 15:45	11/04/21 14:00	JMR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1758756	1	11/02/21 15:45	11/03/21 19:13	RGT	Mt. Juliet, TN

DUP-1 L1416575-08 Non-Potable Water

Collected by	Collected date/time	Received date/time
	10/04/21 15:35	10/11/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method Calculation	WG1758756	1	11/02/21 15:45	11/04/21 14:00	JMR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1758756	1	11/02/21 15:45	11/03/21 19:13	RGT	Mt. Juliet, TN

CASE NARRATIVE

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Donna Eidson
Project Manager

Radiochemistry by Method 904/9320

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	2.17		0.434	0.36	11/04/2021 14:00	WG1765168
(T) Barium	*95.1*			*62.0-143*	*11/04/2021 14:00*	WG1765168
(T) Yttrium	*103*			*79.0-136*	*11/04/2021 14:00*	WG1765168

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	2.50		0.696	0.604	11/04/2021 14:00	WG1758756

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.332		0.262	0.244	11/03/2021 19:13	WG1758756
(T) Barium-133	*95.6*			*30.0-143*	*11/03/2021 19:13*	WG1758756

Radiochemistry by Method 904/9320

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	1.65		0.460	0.389	11/04/2021 14:00	WG1765168
(T) Barium	*101*			*62.0-143*	*11/04/2021 14:00*	WG1765168
(T) Yttrium	*107*			*79.0-136*	*11/04/2021 14:00*	WG1765168

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	2.22		0.790	0.666	11/04/2021 14:00	WG1758756

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.571		0.330	0.277	11/03/2021 19:13	WG1758756
(T) Barium-133	*98.3*			*30.0-143*	*11/03/2021 19:13*	WG1758756

Radiochemistry by Method 904/9320

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	1.21		0.651	0.572	11/04/2021 14:00	WG1765168
(T) Barium	*86.6*			*62.0-143*	*11/04/2021 14:00*	WG1765168
(T) Yttrium	*106*			*79.0-136*	*11/04/2021 14:00*	WG1765168

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	1.63		0.918	0.759	11/04/2021 14:00	WG1758756

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.422		0.267	0.187	11/03/2021 19:13	WG1758756
(T) Barium-133	*92.9*			*30.0-143*	*11/03/2021 19:13*	WG1758756

Radiochemistry by Method 904/9320

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	1.82		0.493	0.42	11/04/2021 14:00	WG1765168
(T) Barium	*98.0*			*62.0-143*	*11/04/2021 14:00*	WG1765168
(T) Yttrium	*108*			*79.0-136*	*11/04/2021 14:00*	WG1765168

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	1.97		0.654	0.596	11/04/2021 14:00	WG1758756

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.155	J	0.161	0.176	11/03/2021 19:13	WG1758756
(T) Barium-133	*90.5*			*30.0-143*	*11/03/2021 19:13*	WG1758756

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Radiochemistry by Method 904/9320

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	0.798		0.497	0.439	11/04/2021 14:00	WG1765168
(T) Barium	*91.7*			*62.0-143*	*11/04/2021 14:00*	WG1765168
(T) Yttrium	*104*			*79.0-136*	*11/04/2021 14:00*	WG1765168

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	0.917		0.654	0.656	11/04/2021 14:00	WG1758756

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.119	J	0.157	0.217	11/03/2021 19:13	WG1758756
(T) Barium-133	*91.1*			*30.0-143*	*11/03/2021 19:13*	WG1758756

Radiochemistry by Method 904/9320

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	1.77		0.400	0.333	11/04/2021 14:00	WG1765168
(T) Barium	*92.5*			*62.0-143*	*11/04/2021 14:00*	WG1765168
(T) Yttrium	*102*			*79.0-136*	*11/04/2021 14:00*	WG1765168

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	1.86		0.596	0.661	11/04/2021 14:00	WG1758756

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.0968	U	0.196	0.328	11/03/2021 19:13	WG1758756
(T) Barium-133	*86.5*			*30.0-143*	*11/03/2021 19:13*	WG1758756

Radiochemistry by Method 904/9320

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	1.42		0.393	0.333	11/04/2021 14:00	WG1765168
(T) Barium	*97.6*			*62.0-143*	*11/04/2021 14:00*	WG1765168
(T) Yttrium	*103*			*79.0-136*	*11/04/2021 14:00*	WG1765168

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	1.61		0.616	0.638	11/04/2021 14:00	WG1758756

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.182	J	0.223	0.305	11/03/2021 19:13	WG1758756
(T) Barium-133	*91.8*			*30.0-143*	*11/03/2021 19:13*	WG1758756

Radiochemistry by Method 904/9320

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	1.05		0.447	0.389	11/04/2021 14:00	WG1765168
(T) Barium	*89.4*			*62.0-143*	*11/04/2021 14:00*	WG1765168
(T) Yttrium	*105*			*79.0-136*	*11/04/2021 14:00*	WG1765168

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	1.19		0.632	0.651	11/04/2021 14:00	WG1758756

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.140	J	0.185	0.262	11/03/2021 19:13	WG1758756
(T) Barium-133	*96.3*			*30.0-143*	*11/03/2021 19:13*	WG1758756

Method Blank (MB)

(MB) R3726145-1 11/04/21 14:00

Analyte	MB Result pCi/l	MB Qualifier	MB Uncertainty + / - pCi/l	MB MDA pCi/l
Radium-228	-0.0171	U	0.332	0.303
(T) Barium	*98.2*		*98.2*	
(T) Yttrium	*92.1*		*92.1*	

L1416575-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1416575-01 11/04/21 14:00 • (DUP) R3726145-5 11/04/21 14:00

Analyte	Original Result pCi/l	Original Uncertainty + / -	Original MDA pCi/l	DUP Result pCi/l	DUP Uncertainty + / -	DUP MDA pCi/l	Dilution	DUP RPD %	DUP RER	DUP Qualifier	DUP RPD Limits %	DUP RER Limit
Radium-228	2.17	0.434	0.36	0.658	1.06	0.36	1	107	1.32	J	20	3
(T) Barium	*95.1*			*99.5*	*99.5*							
(T) Yttrium	*103*			*110*	*110*							

Laboratory Control Sample (LCS)

(LCS) R3726145-2 11/04/21 14:00

Analyte	Spike Amount pCi/l	LCS Result pCi/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Radium-228	5.00	5.29	106	80.0-120	
(T) Barium			*96.7*		
(T) Yttrium			*105*		

L1417282-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1417282-01 11/04/21 14:00 • (MS) R3726145-3 11/04/21 14:00 • (MSD) R3726145-4 11/04/21 14:00

Analyte	Spike Amount pCi/l	Original Result pCi/l	MS Result pCi/l	MSD Result pCi/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	MS RER	RPD Limits %
Radium-228	16.7	1.30	19.9	21.5	111	121	1	70.0-130			7.60		20
(T) Barium		*93.7*			*101*	*101*							
(T) Yttrium		*100*			*105*	*99.0*							

Method Blank (MB)

(MB) R3725536-1 11/03/21 19:13

Analyte	MB Result pCi/l	MB Qualifier	MB Uncertainty + / - pCi/l	MB MDA pCi/l
Radium-226	0.0136	J	0.0211	0.0340
(T) Barium-133	*94.3*		*94.3*	

L1416575-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1416575-02 11/03/21 19:13 • (DUP) R3725536-5 11/03/21 19:13

Analyte	Original Result pCi/l	Original Uncertainty + / -	Original MDA pCi/l	DUP Result pCi/l	DUP Uncertainty + / -	DUP MDA pCi/l	Dilution	DUP RPD %	DUP RER	DUP Qualifier	DUP RPD Limits %	DUP RER Limit
Radium-226	0.571	0.330	0.277	0.625	0.352	0.277	1	8.97	0.111		20	3
(T) Barium-133	*98.3*			*89.6*	*89.6*							

Laboratory Control Sample (LCS)

(LCS) R3725536-2 11/03/21 19:13

Analyte	Spike Amount pCi/l	LCS Result pCi/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Radium-226	5.02	5.03	100	80.0-120	
(T) Barium-133			*96.3*		

L1416575-07 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1416575-07 11/03/21 19:13 • (MS) R3725536-3 11/03/21 19:13 • (MSD) R3725536-4 11/03/21 19:13

Analyte	Spike Amount pCi/l	Original Result pCi/l	MS Result pCi/l	MSD Result pCi/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	MS RER	RPD Limits %
Radium-226	20.1	0.182	17.1	19.7	84.1	97.2	1	75.0-125			14.3		20
(T) Barium-133		*91.8*			*93.9*	*91.7*							

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDA	Minimum Detectable Activity.
Rec.	Recovery.
RER	Replicate Error Ratio.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(T)	Tracer - A radioisotope of known concentration added to a solution of chemically equivalent radioisotopes at a known concentration to assist in monitoring the yield of the chemical separation.
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
J	The identification of the analyte is acceptable; the reported value is an estimate.
U	Below Detectable Limits: Indicates that the analyte was not detected.

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky [1 6]	KY90010	South Carolina	84004002
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas [5]	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.

DHL Analytical, Inc.
2300 Double Creek Drive
Round Rock, TX 78664
TEL: *(512) 388-8222* FAX:

B119

CHAIN-OF-CUSTODY RECORD

Work Order: 2110028

Subcontractor:
Pace Analytical
12065 Lebanon Rd
Mt. Juliet, TN 37122

TEL: (615) 773-5923
FAX:
Acct #: DHLRRTX

Sample Receipt Checklist

COC Seal Present/Intact:	Y N	If Applicable	
COC Signed/Accurate:	Y N	VOA Zero Headspace:	Y N
Bottles arrive intact:	Y N	Pres.Correct/Check:	Y N
Correct bottles used:	Y N		
Sufficient volume sent:	Y N		
RAD Screen <0.5 mR/hr:	Y N		

L1416575
06-Oct-21

Sample ID	Matrix	DHL#	Date Collected	Bottle Type	Requested Tests					
					Ra-228	Ra-226				
					E904.0	M7500 Ra B M				
H-26	Aqueous	01C	10/04/21 03:35 PM	1LHDPEHNO3		1				-01
H-26	Aqueous	01D	10/04/21 03:35 PM	1LHDPEHNO3	1					-01
H-27	Aqueous	02C	10/04/21 02:20 PM	1LHDPEHNO3		1				-02
H-27	Aqueous	02D	10/04/21 02:20 PM	1LHDPEHNO3	1					-02
H-33	Aqueous	03C	10/04/21 01:05 PM	1LHDPEHNO3		1				-03
H-33	Aqueous	03D	10/04/21 01:05 PM	1LHDPEHNO3	1					-03
H-29	Aqueous	04C	10/04/21 11:50 AM	1LHDPEHNO3		1				-04
H-29	Aqueous	04D	10/04/21 11:50 AM	1LHDPEHNO3	1					-04
H-28	Aqueous	05C	10/04/21 10:40 AM	1LHDPEHNO3		1				-05
H-28	Aqueous	05D	10/04/21 10:40 AM	1LHDPEHNO3	1					-05
H-32	Aqueous	06C	10/04/21 09:30 AM	1LHDPEHNO3		1				-06
H-32	Aqueous	06D	10/04/21 09:30 AM	1LHDPEHNO3	1					-06
H-31	Aqueous	07C	10/04/21 08:15 AM	1LHDPEHNO3		1				-07
H-31	Aqueous	07D	10/04/21 08:15 AM	1LHDPEHNO3	1					-07
DUP-1	Aqueous	08C	10/04/21 03:35 PM	1LHDPEHNO3		1				-08
DUP-1	Aqueous	08D	10/04/21 03:35 PM	1LHDPEHNO3	1					-08

General Comments:

Please analyze these samples with Normal Turnaround Time.
Report Ra-226, Ra-228 & Combined per Specs.
Quality Control Package Needed: Standard - NELAC Rad Test compliant
Email to cac@dhlanalytical.com & dupont@dhlanalytical.com

	Date/Time		Date/Time
Relinquished by:	10/7/21 1800	Received by:	
Relinquished by:		Received by:	10/11/21 9:30

22.1+0=22.1 AWB

ATTACHMENT 2

2021 APPENDIX IV CONFIDENCE INTERVAL GRAPHS

EXPLANATION

95% Upper confidence limit

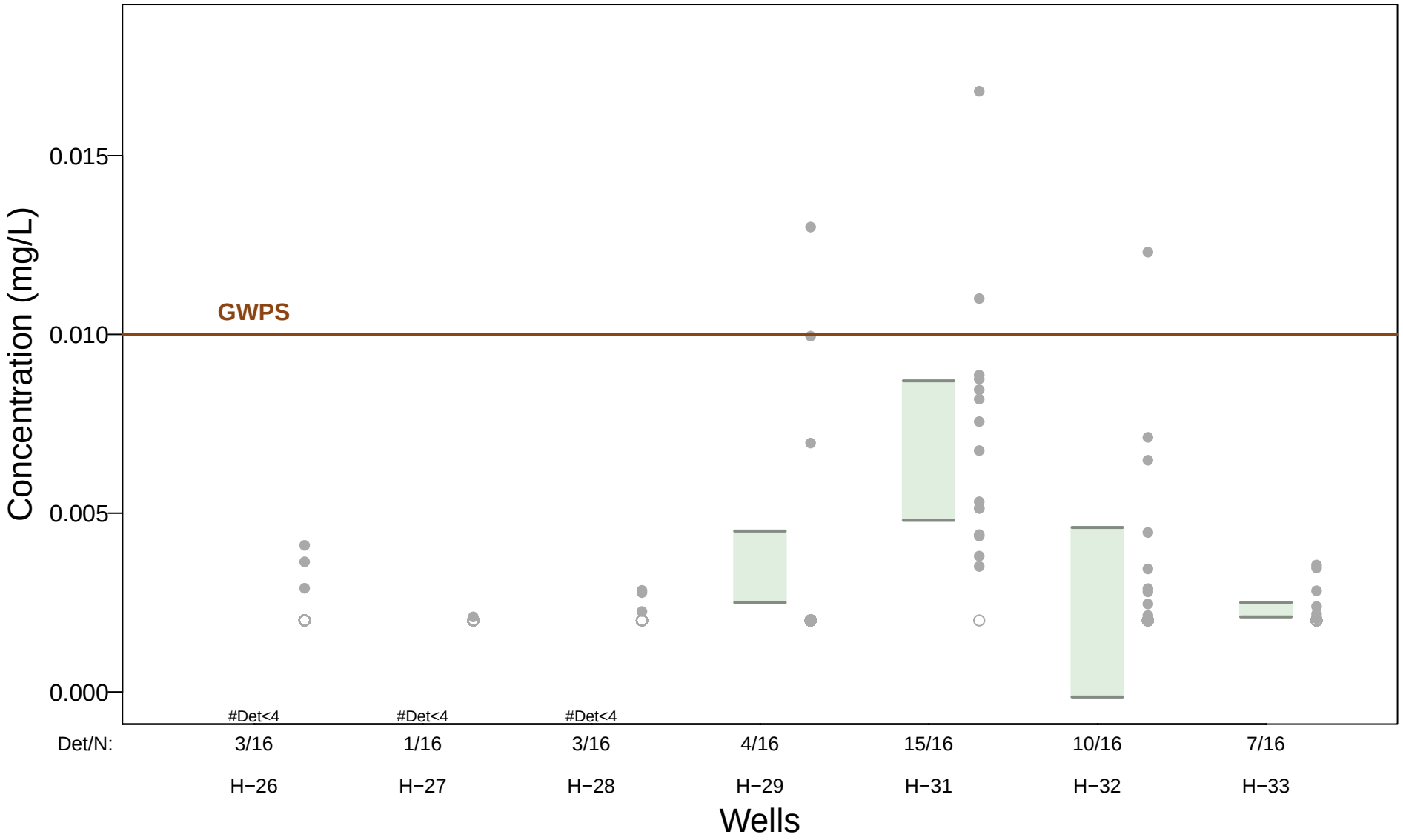
95% Lower confidence limit

Detected sample concentration

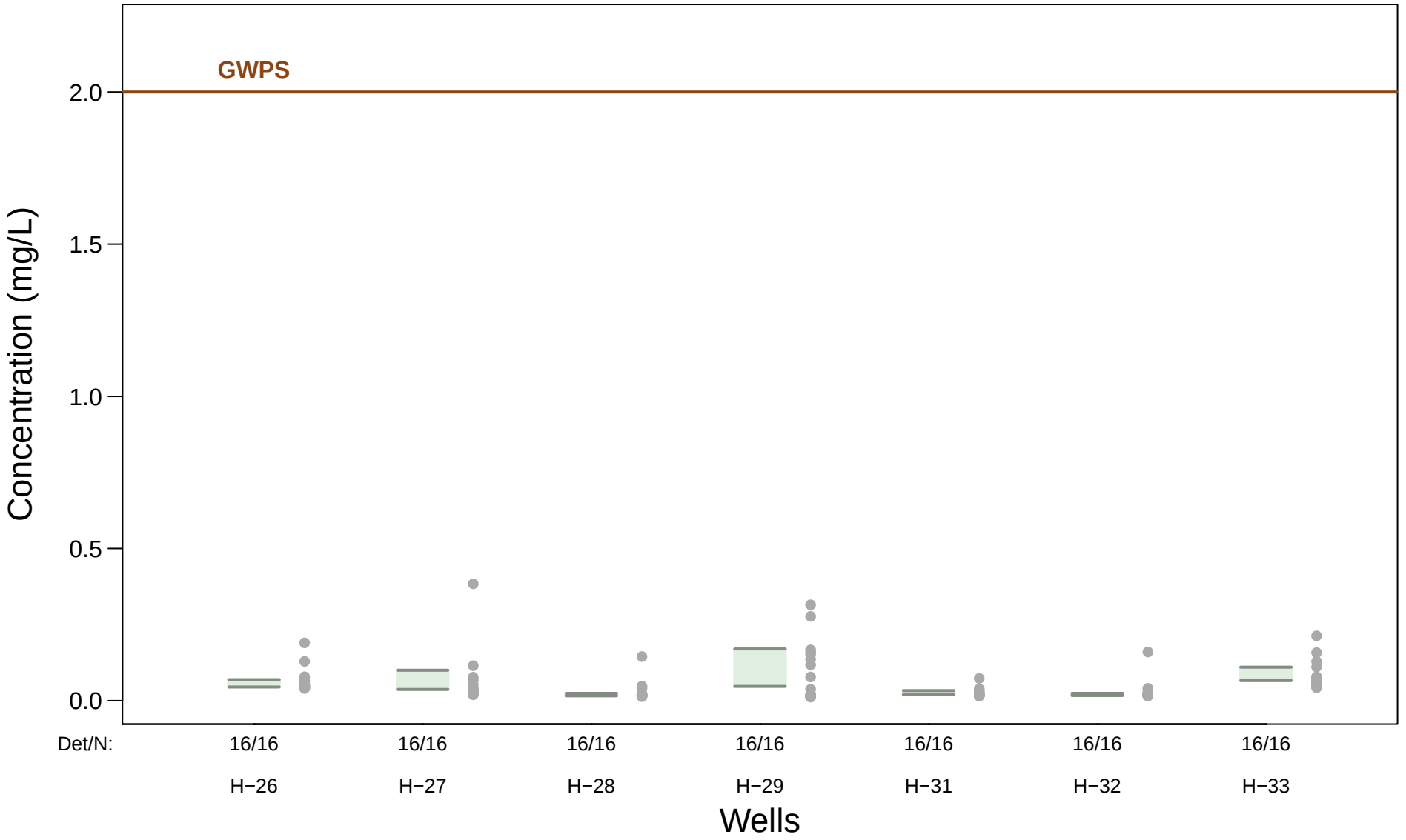
Non-detect sample result (concentration set to laboratory reporting limit)

Note: An SSL is indicated if the lower confidence limit exceeds the GWPS.

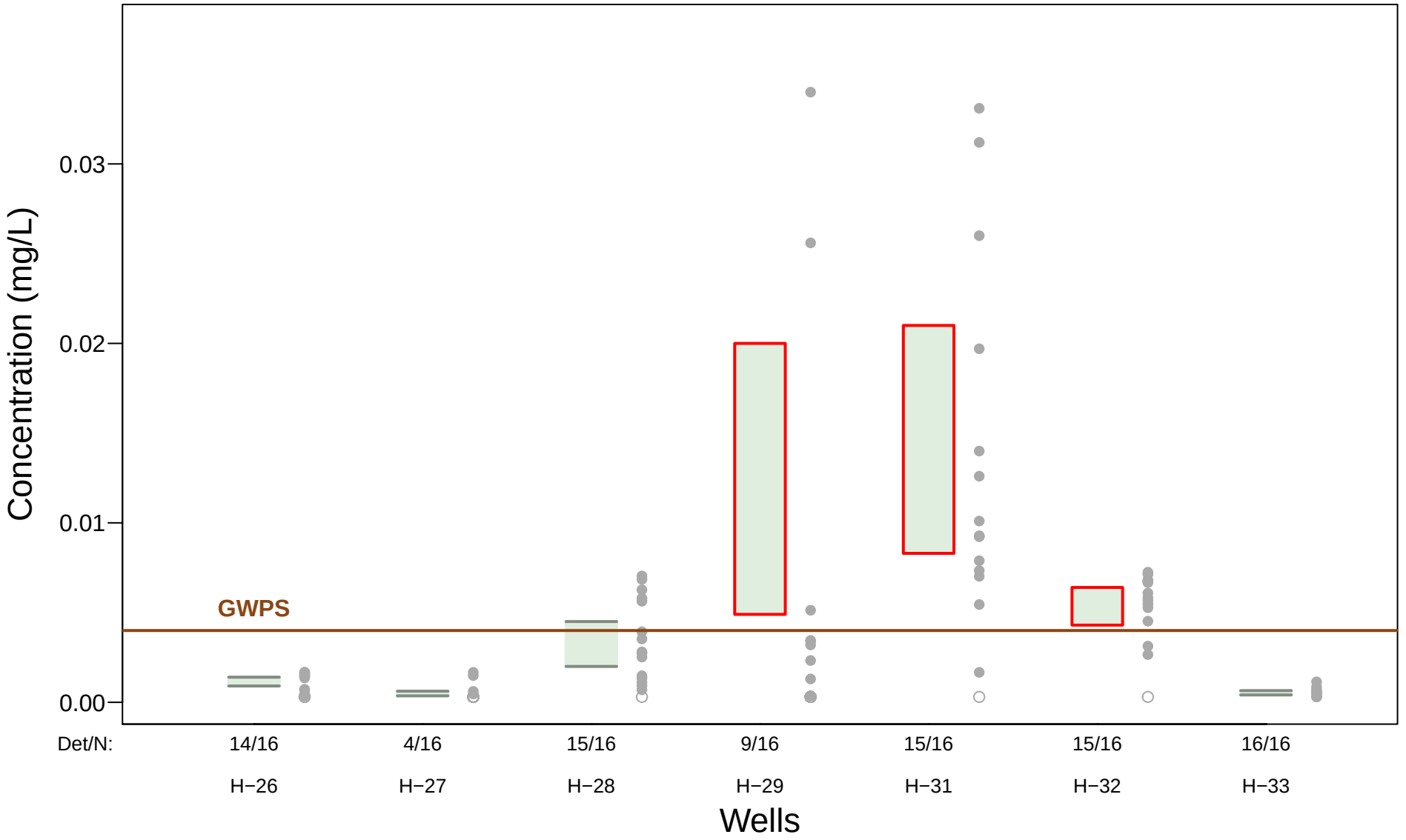
Arsenic – 95% Confidence Intervals



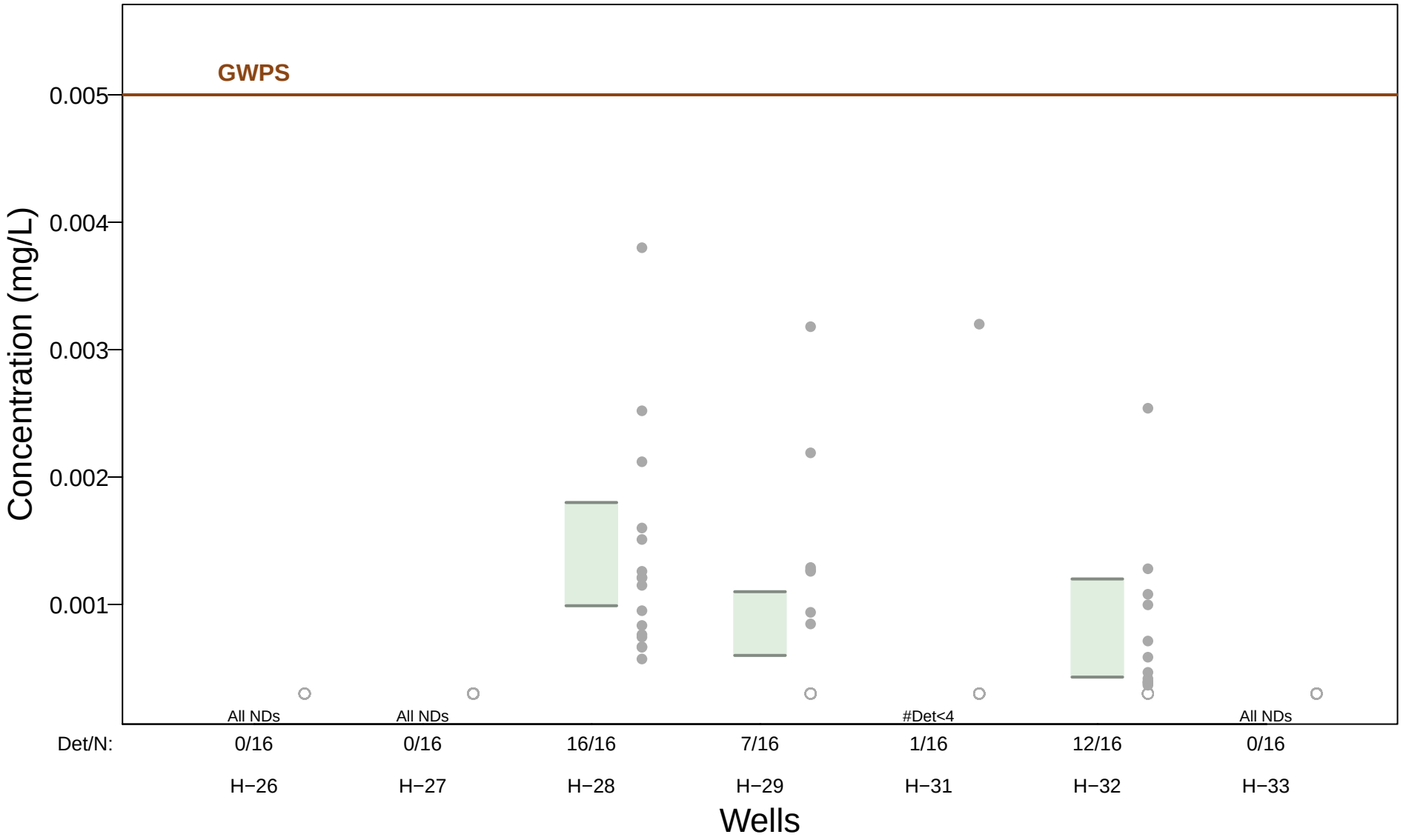
Barium – 95% Confidence Intervals



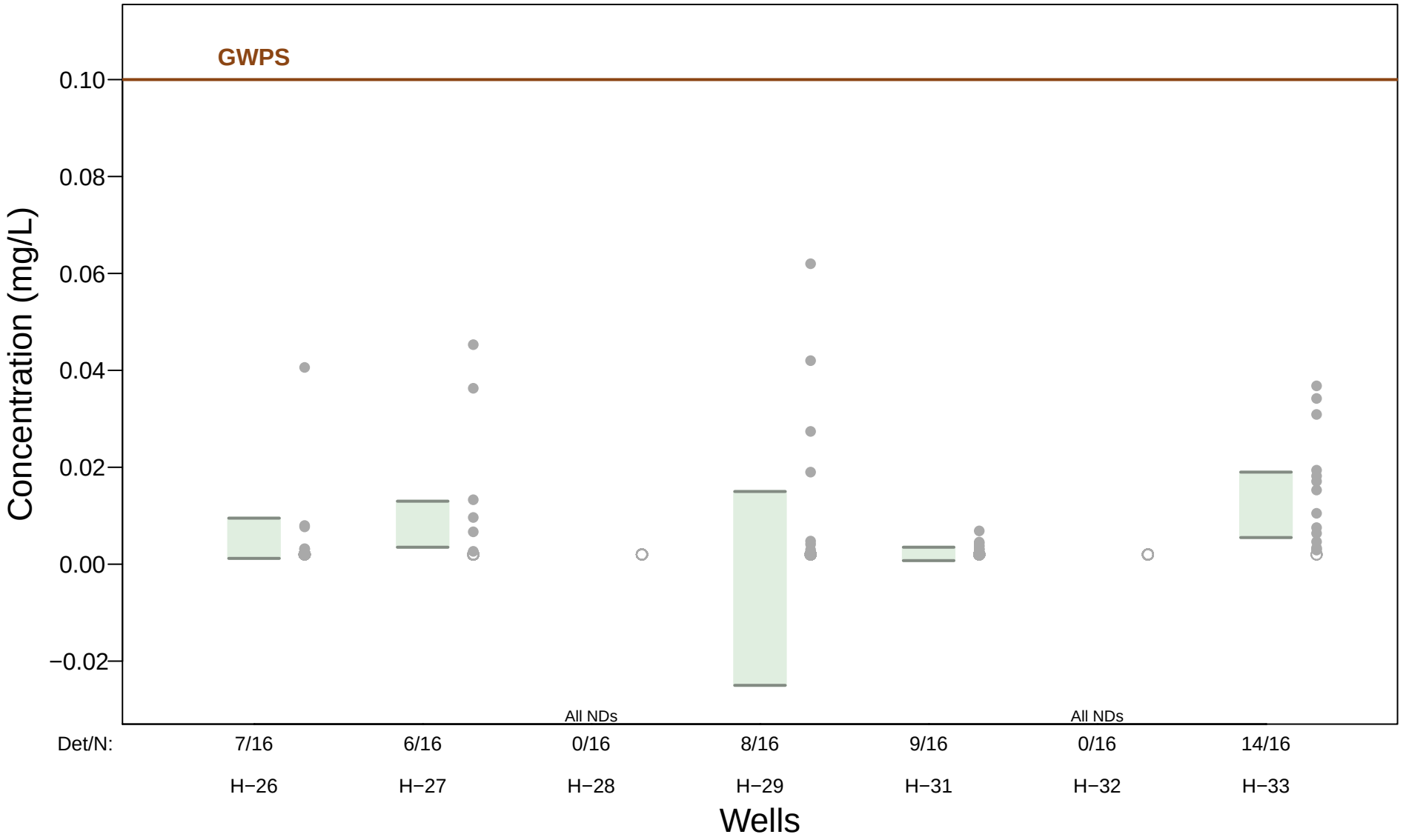
Beryllium – 95% Confidence Intervals



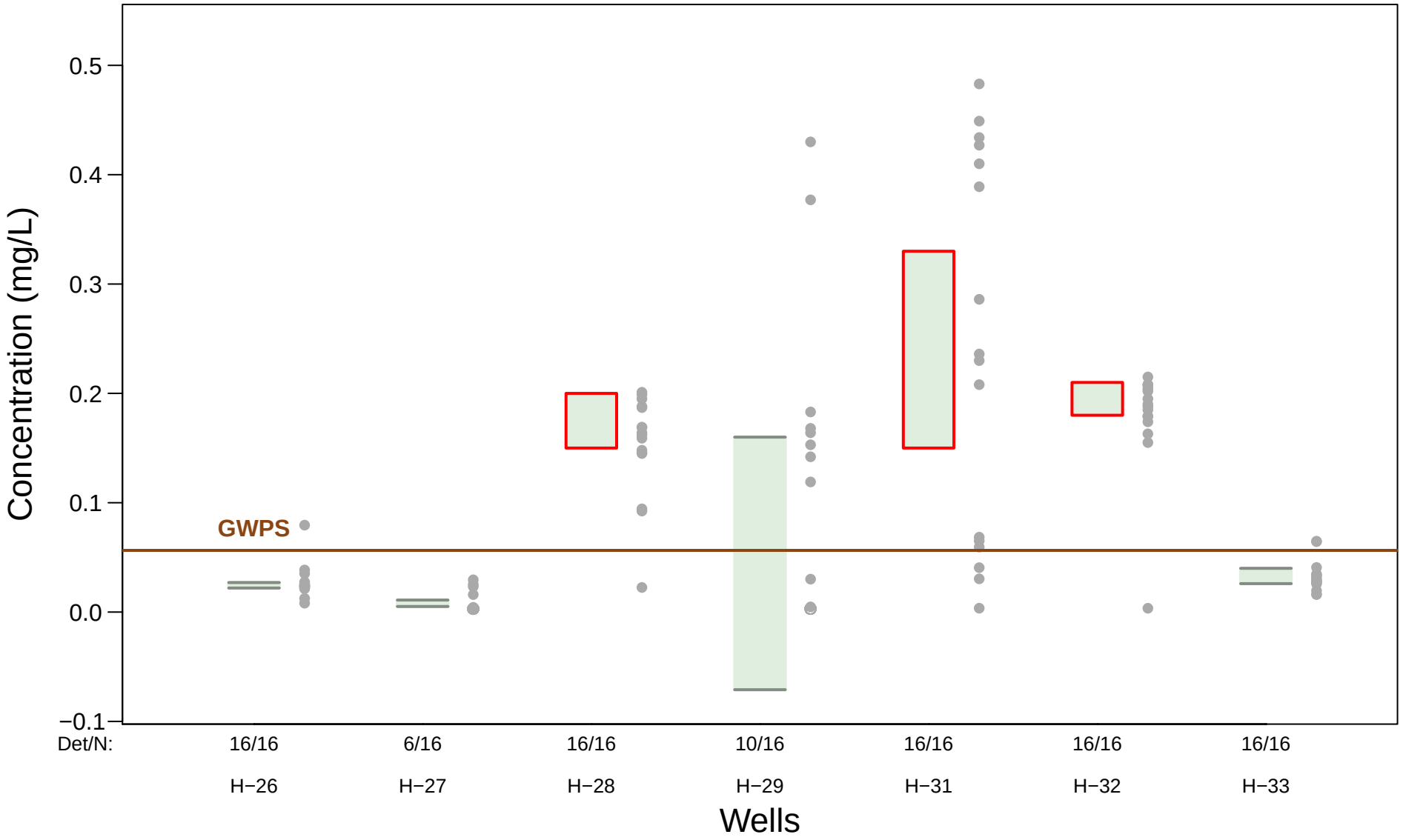
Cadmium – 95% Confidence Intervals



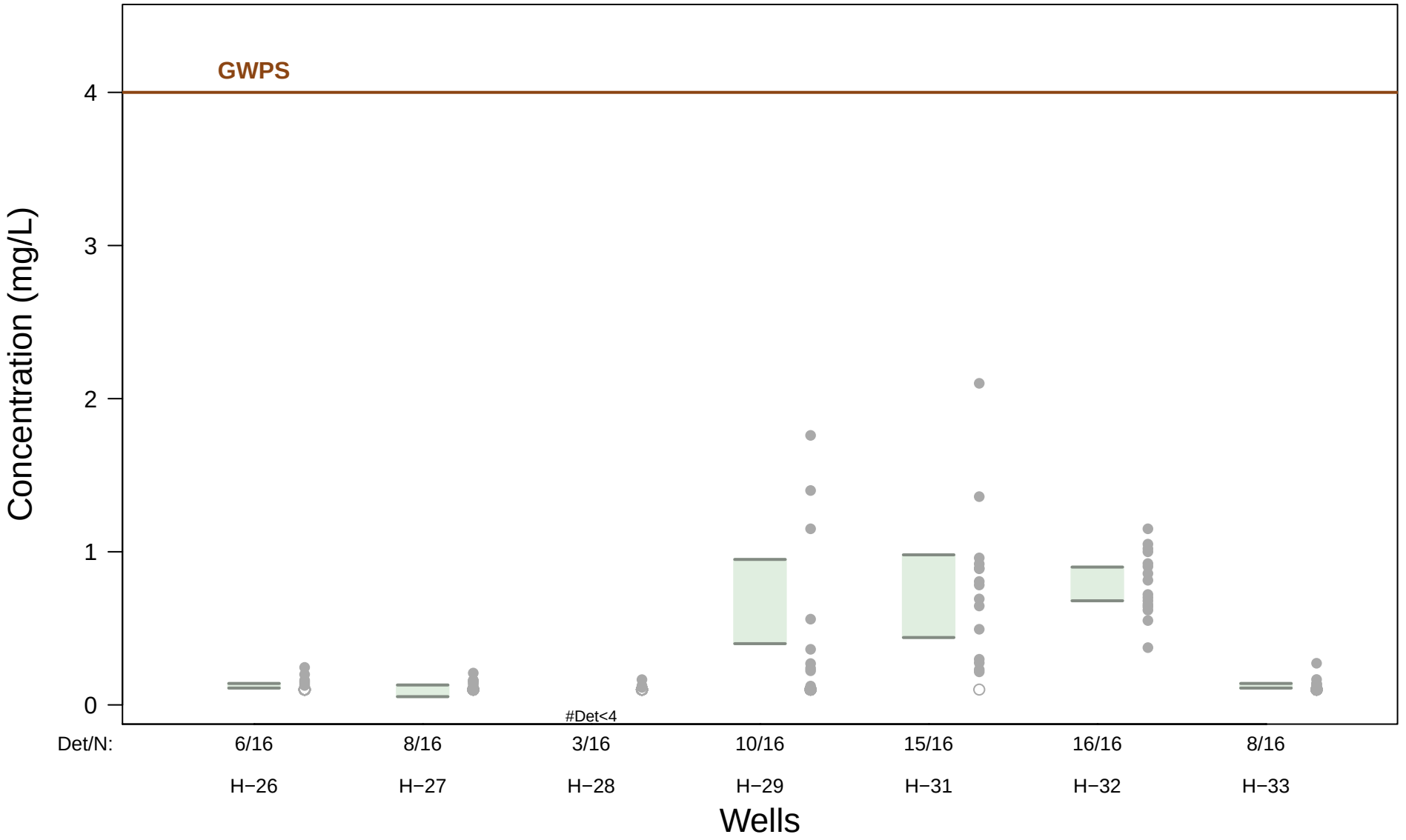
Chromium – 95% Confidence Intervals



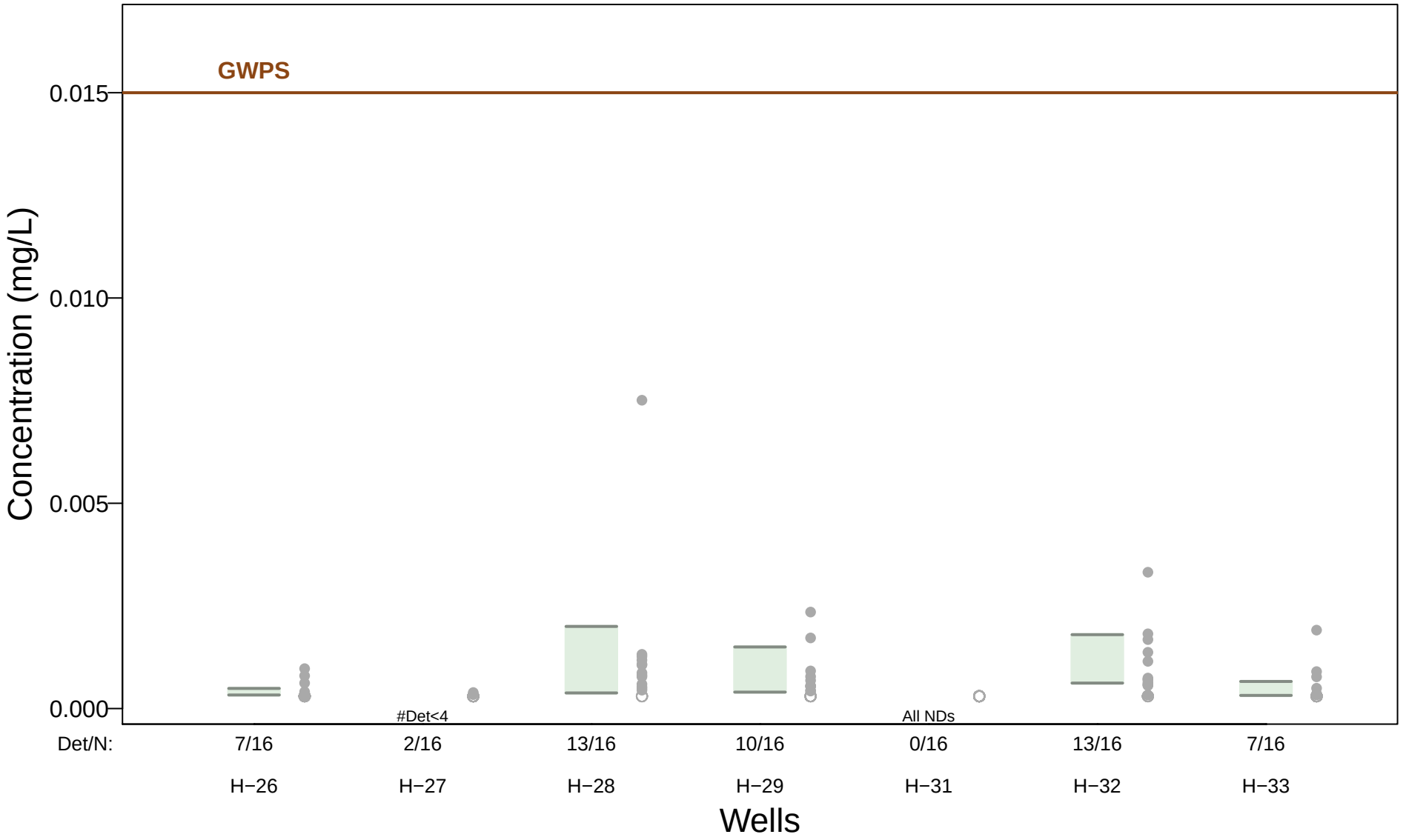
Cobalt – 95% Confidence Intervals



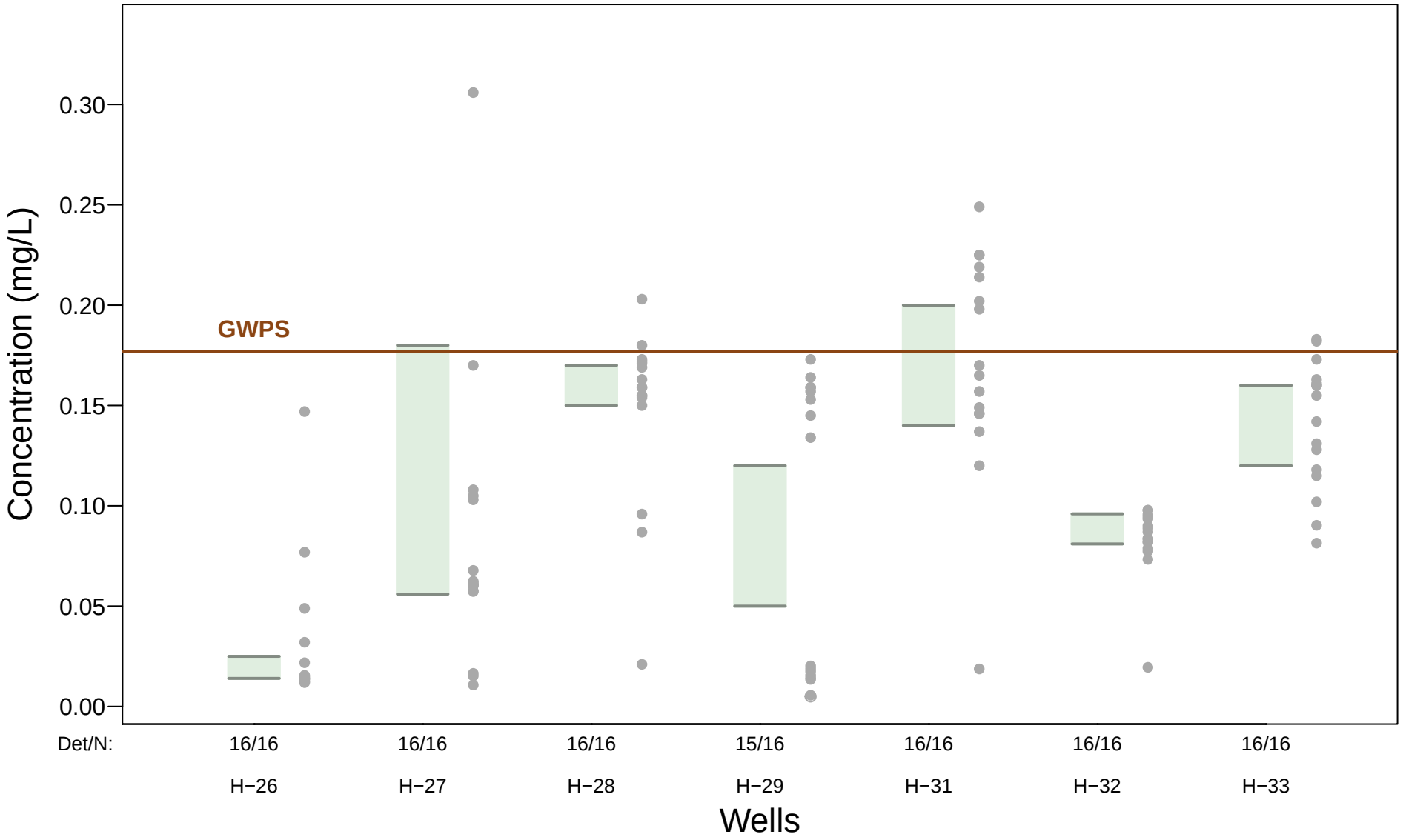
Fluoride (Appendix IV) – 95% Confidence Intervals



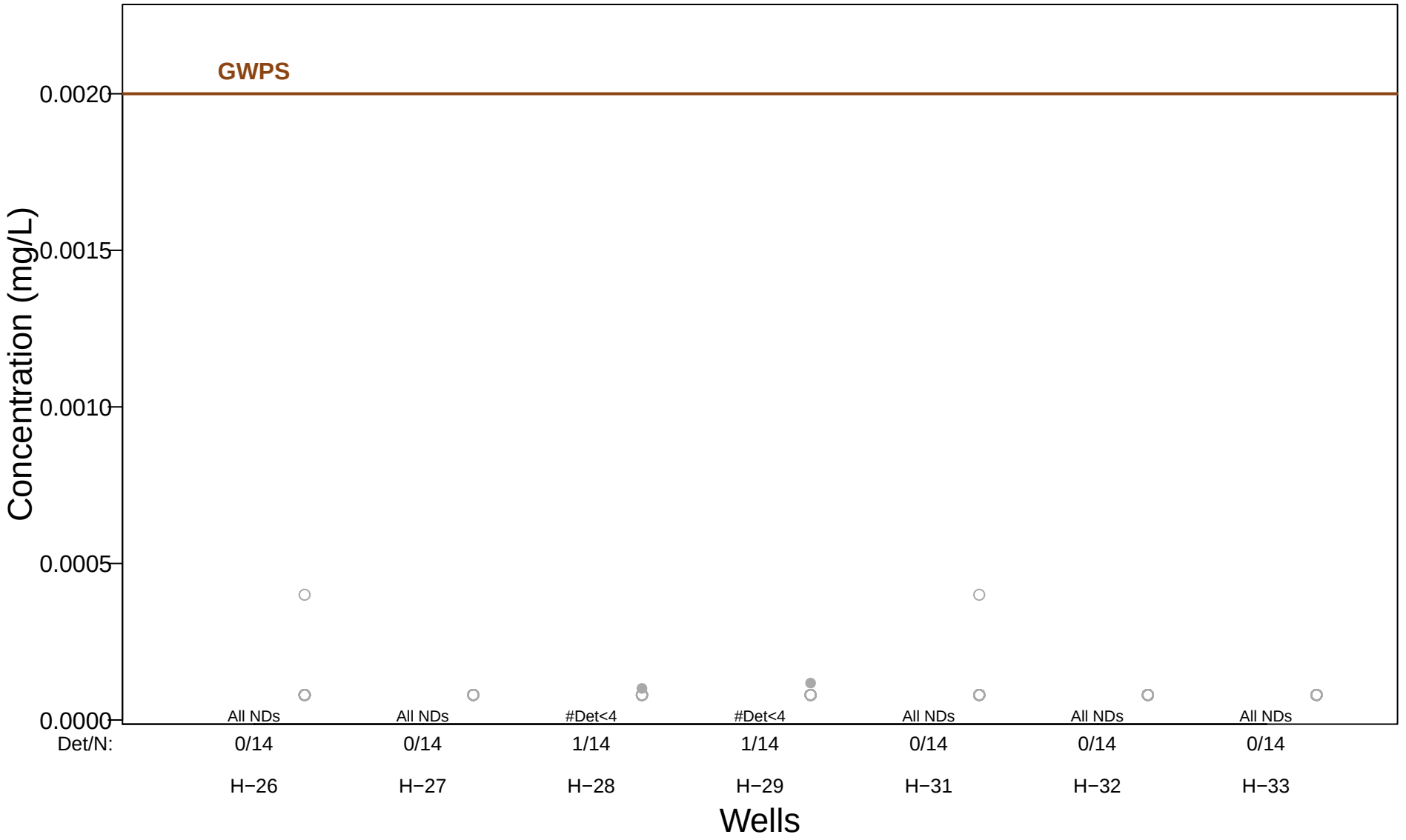
Lead – 95% Confidence Intervals



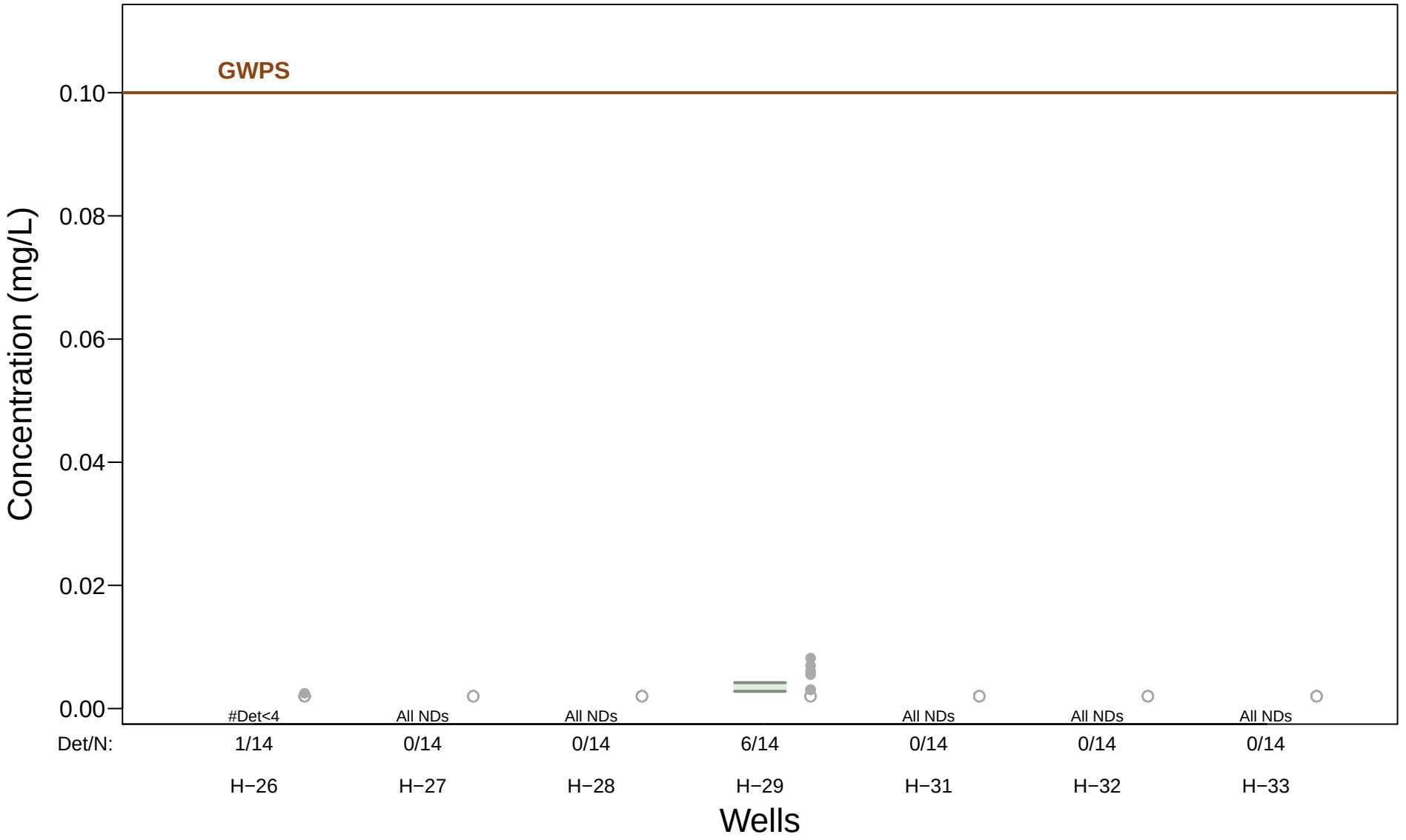
Lithium – 95% Confidence Intervals



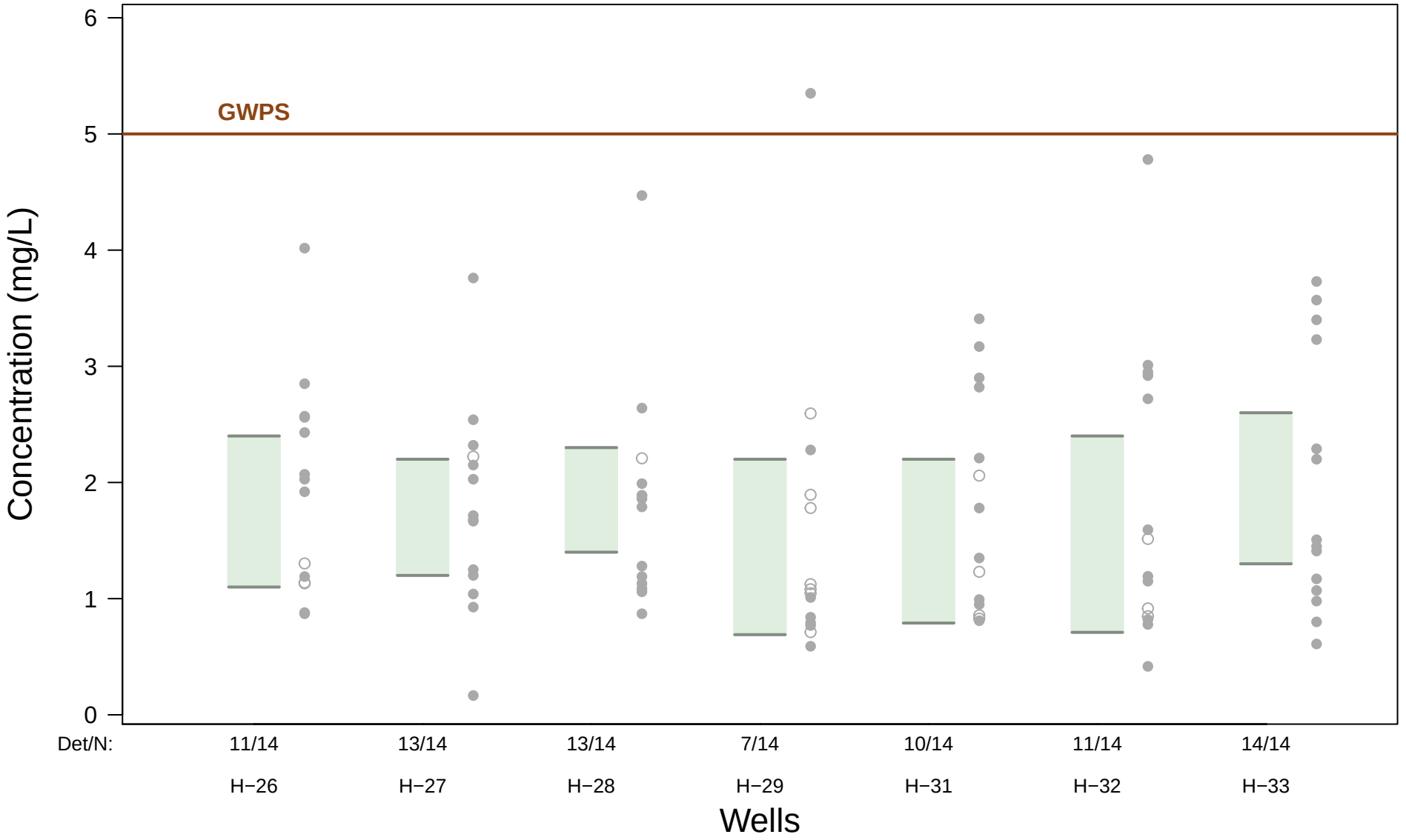
Mercury – 95% Confidence Intervals



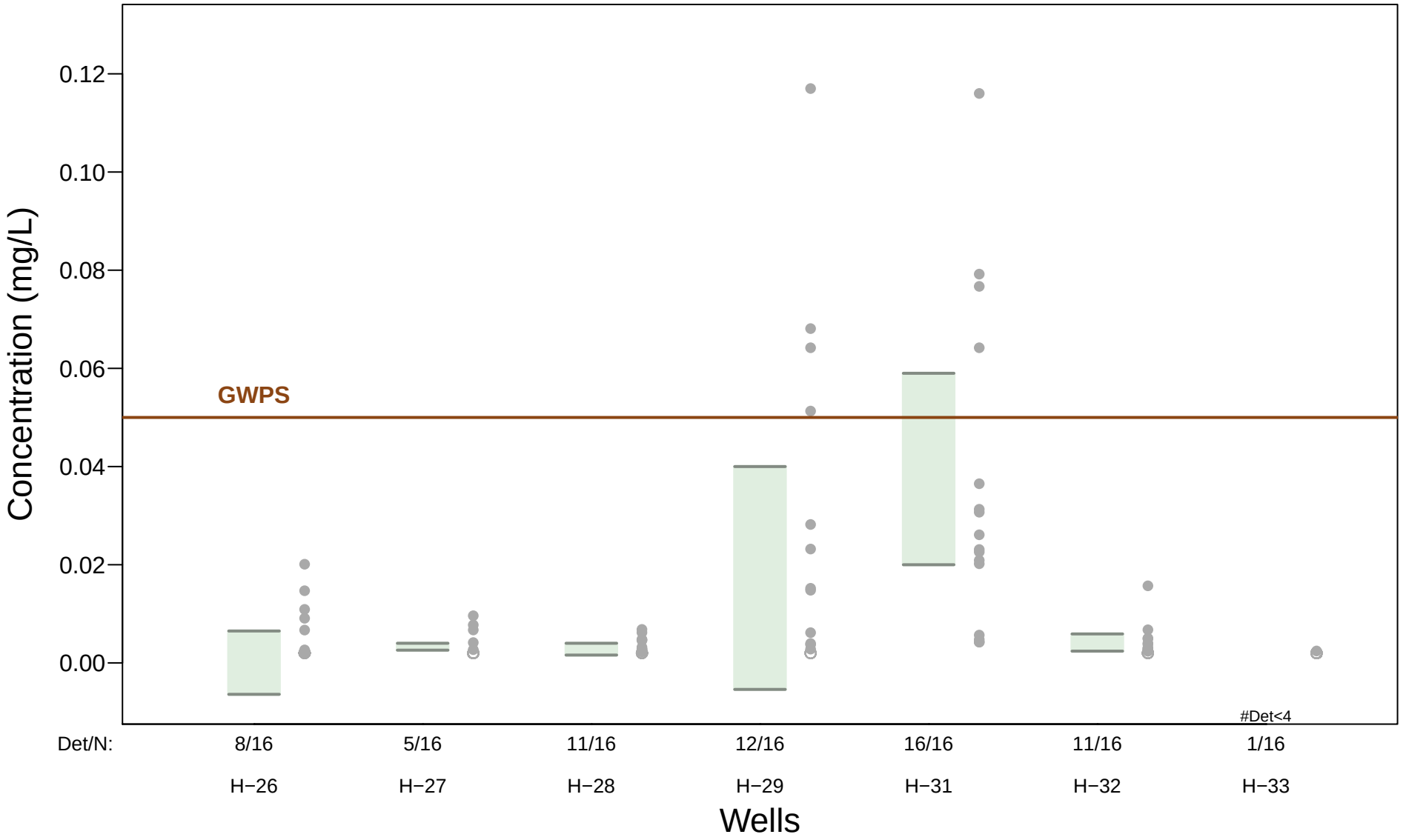
Molybdenum – 95% Confidence Intervals



Radium−226/228 combined − 95% Confidence Intervals

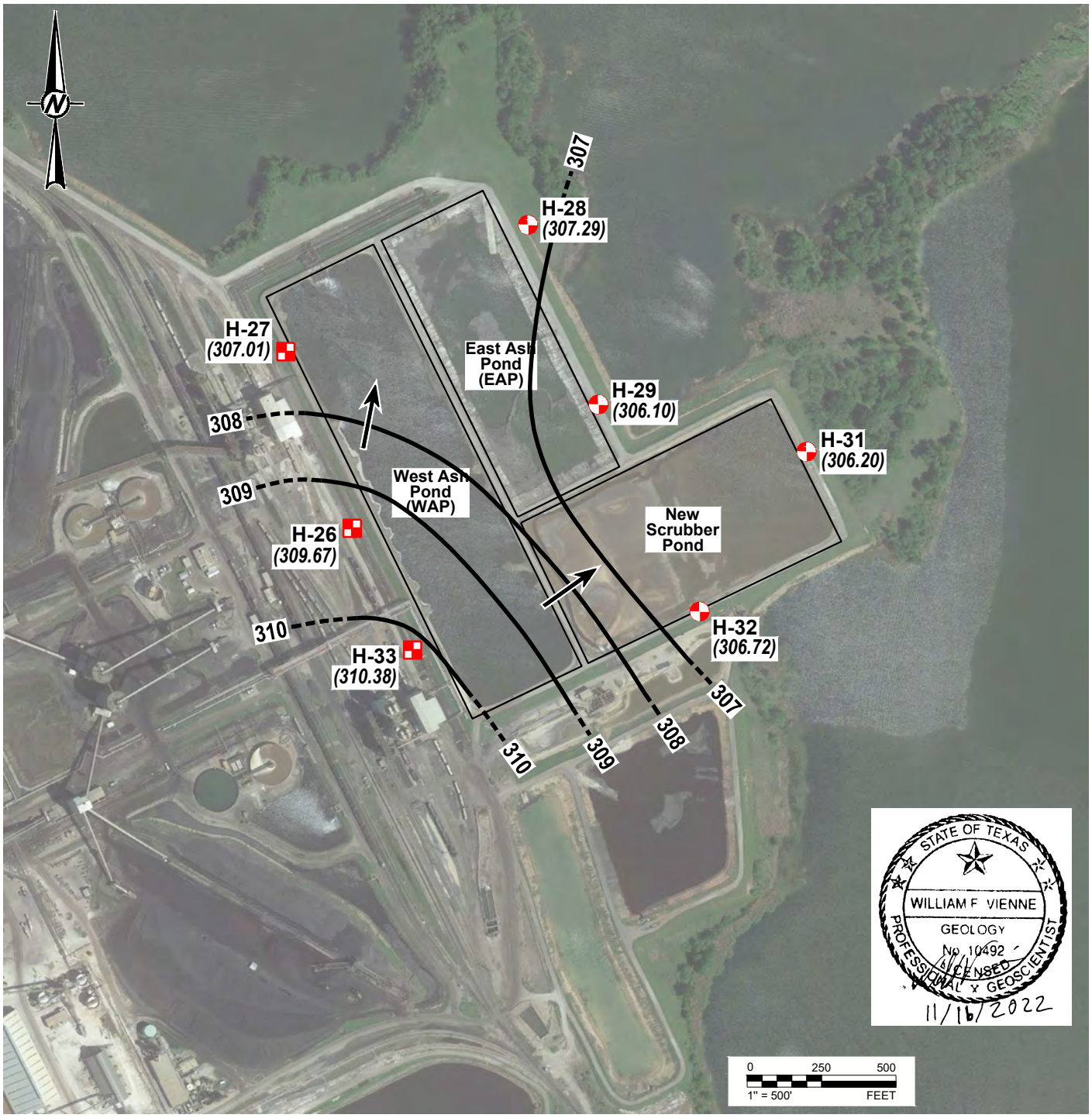


Selenium − 95% Confidence Intervals



ATTACHMENT 3

2021 GROUNDWATER POTENTIOMETRIC SURFACE MAPS



STATE OF TEXAS
WILLIAM F VIENNE
GEOLOGY
No. 10492
LICENSED
PROFESSIONAL GEOSCIENTIST
11/16/2022

LEGEND

- DOWNGRADIENT CCR MONITORING WELL
- UPGRADIENT CCR MONITORING WELL
- (308.70) GROUNDWATER POTENTIOMETRIC SURFACE (FT MSL)
- 308 GROUNDWATER POTENTIOMETRIC SURFACE CONTOUR (C.I. = 1 FT)
- INFERRED GROUNDWATER FLOW DIRECTION

REFERENCE(S)
BASE MAP TAKEN FROM GOOGLE EARTH IMAGERY DATED 4/6/17.

CLIENT
LUMINANT

PROJECT
MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

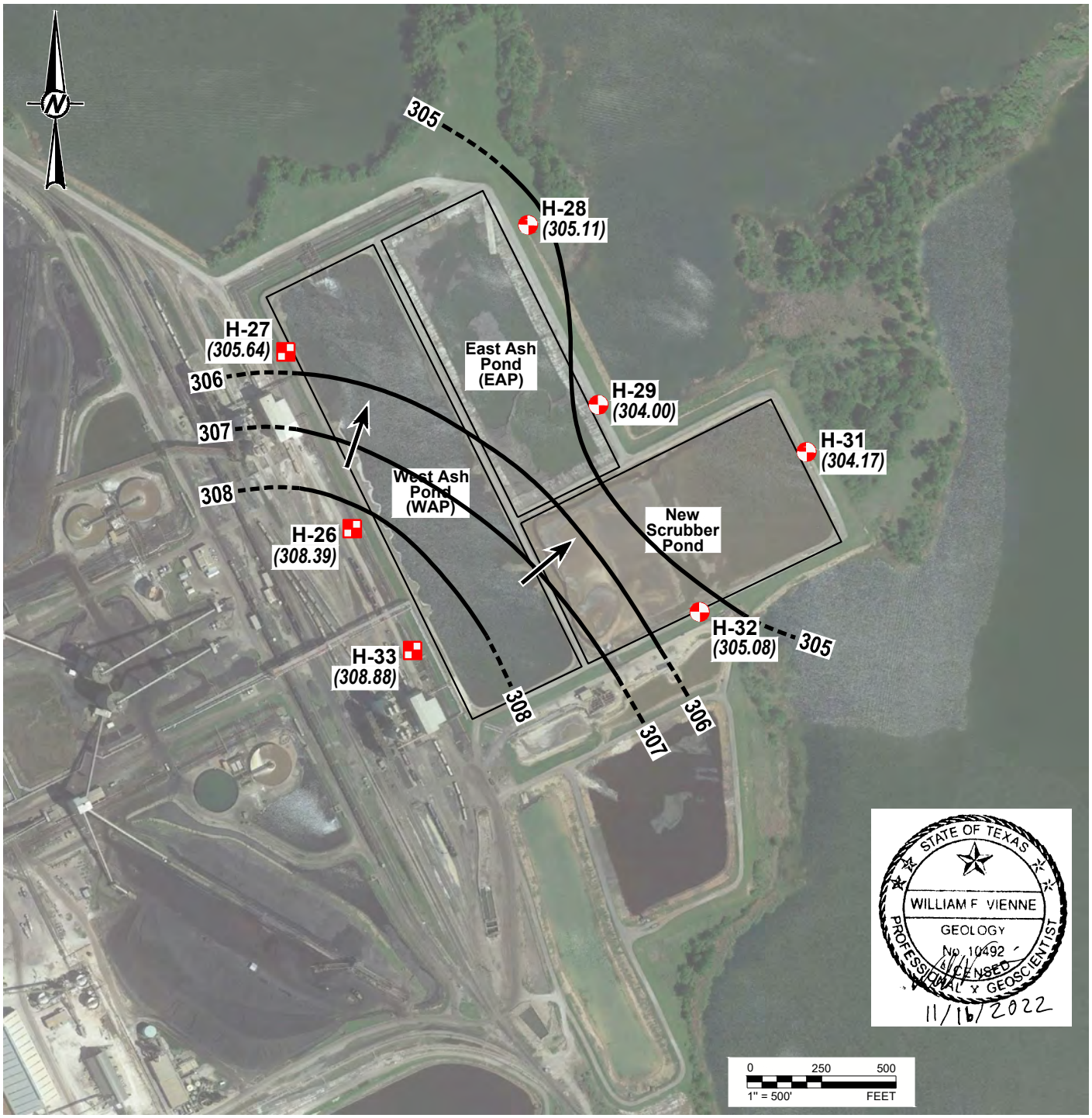
TITLE
ASH POND AREA
POTENTIOMETRIC SURFACE MAP
JUNE 3, 2021

CONSULTANT
WSP GOLDER

YYYY-MM-DD	2022-12-02
DESIGNED	AJD
PREPARED	AJD
REVIEWED	WFV
APPROVED	WFV

PROJECT NO.	CONTROL	REV.	FIGURE
19122262		0	1

Last Edited By: usad701305 Date: 2022-12-02 Time:11:29:06 AM | Printed By: USAD701305 Date: 2022-12-02 Time:11:34:56 AM
Path: \\golder.gds\complexdata\office\Texarkana\Projects - Round Rock_2019\19122262 - Luminant\D - MLSES\2022-12\ | File Name: 1 - POT Surface Map-Ash Pond Area (June 2021).dwg
IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI A



LEGEND

- DOWNGRADIENT CCR MONITORING WELL
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- (308.70) GROUNDWATER POTENTIOMETRIC SURFACE (FT MSL)
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- INFERRED GROUNDWATER FLOW DIRECTION

REFERENCE(S)
BASE MAP TAKEN FROM GOOGLE EARTH IMAGERY DATED 4/6/17.

CLIENT
LUMINANT

PROJECT
MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

TITLE
ASH POND AREA
POTENTIOMETRIC SURFACE MAP
OCTOBER 4, 2021

CONSULTANT
WSP GOLDER

YYYY-MM-DD	2022-12-02
DESIGNED	AJD
PREPARED	AJD
REVIEWED	WFV
APPROVED	WFV

PROJECT NO.	CONTROL	REV.	FIGURE
19122262		0	2

Last Edited By: usad701305 Date: 2022-12-02 Time:11:30:36 AM | Printed By: USAD701305 Date: 2022-12-02 Time:11:37:46 AM
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IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI A
0 1 in

2021 Annual Groundwater Monitoring and Corrective Action Report - Revision 1

Martin Lake Steam Electric Station PDP 5 - Rusk County, Texas

Prepared for:

Luminant Generation Company LLC

Prepared by:

Golder Associates USA Inc., Member of WSP

1601 S. Mopac Expy, Suite 325D, Austin, Texas 78746

+1 737 703-3900

December 2022

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Attachment 2 2021 Groundwater Potentiometric Surface Maps

Attachment 3 Alternate Source Demonstration Report

DOCUMENT REVISION RECORD

Issue No.	Date	Details of Revisions
Revision 0	January 31, 2022	Original Document
Revision 1	December 2022	Added laboratory analytical reports, groundwater potentiometric surface maps, and professional seals to figures where applicable

ACRONYMS AND ABBREVIATIONS

CCR	Coal Combustion Residuals
C.F.R.	Code of Federal Regulations
GWPS	Groundwater Protection Standard
MCL	Maximum Concentration Level
mg/L	Milligrams per Liter
MLSES	Martin Lake Steam Electric Station
NA	Not Applicable
PDP	Permanent Disposal Pond
SSI	Statistically Significant Increase
SSL	Statistically Significant Level
T.A.C.	Texas Administrative Code
USEPA	United States Environmental Protection Agency

EXECUTIVE SUMMARY

Golder Associates USA Inc. (Golder), Member of WSP, has prepared this report on behalf of Luminant Generation Company LLC (Luminant) to satisfy the 2021 annual groundwater monitoring and corrective action reporting requirements of 40 C.F.R. Part 257 and 30 T.A.C. Chapter 352 for the Permanent Disposal Pond 5 (PDP 5) (the "CCR unit") at the Martin Lake Steam Electric Station (MLSES) in Rusk County, Texas. The CCR unit and CCR monitoring well network are shown on Figure 1.

At the beginning and end of the 2021 reporting period, the CCR unit was operating under a Detection Monitoring Program as described in § 257.94. The Detection Monitoring Program for PDP 5 was established in September 2017. Statistically significant increases (SSIs) above background prediction limits were identified for several Appendix III parameters as part of the 2017 through 2020 Detection Monitoring events; however, Alternate Source Demonstrations were completed that indicated that a source other than the CCR unit caused the SSIs. During 2021, SSIs were also identified for Appendix III constituents, which included boron in well PDP-25, calcium in well PDP-23, and chloride in well MW-19. Alternate sources for the SSIs identified in the 2021 sample data are being evaluated in accordance with § 257.94. If an alternate source is not identified to be the cause of the 2021 SSIs, an Assessment Monitoring Program will be established in accordance with § 257.94(e)(2).

1.0 INTRODUCTION

The CCR Rule (40 C.F.R. 257 Subpart D - *Standards for the Receipt of Coal Combustion Residuals in Landfills and Surface Impoundments*) has been promulgated by the United States Environmental Protection Agency (USEPA) to regulate the management and disposal of CCRs as solid waste under Resource Conservation and Recovery Act (RCRA) Subtitle D. TCEQ has adopted portions of the federal CCR rule at 30 T.A.C. Chapter 352 (Texas CCR Rule), and USEPA published its final approval of the Texas CCR rule on June 28, 2021. *See* 86 Fed. Reg. 33,892 (June 28, 2021). The Texas CCR Rule became effective on July 28, 2021, and it adopts and incorporates by reference the requirements for the annual groundwater monitoring report located at 40 C.F.R. § 257.90. *See* 30 T.A.C. § 352.901. It further adopts and incorporates by reference the Federal CCR Program requirements for detection and assessment monitoring in 30 T.A.C. §352.941 and 30 T.A.C. §352.951, respectively. Pursuant to 30 T.A.C. § 352.902, this report will be submitted to TCEQ for review no later than 30 days after the report has been placed in the facility's operating record. For existing CCR landfills and surface impoundments, the CCR Rule requires that the owner or operator prepare an annual groundwater monitoring and corrective action report to document the status of the groundwater monitoring and corrective action program for the CCR unit for the previous calendar year. Per § 257.90(e) of the CCR Rule, the report should contain the following information, to the extent available:

(1) A map, aerial image, or diagram showing the CCR unit and all background (or upgradient) and downgradient monitoring wells, to include the well identification numbers, that are part of the groundwater monitoring program for the CCR unit;

(2) Identification of any monitoring wells that were installed or decommissioned during the preceding year, along with a narrative description of why those actions were taken;

(3) In addition to all the monitoring data obtained under §§ 257.90 through 257.98, a summary including the number of groundwater samples that were collected for analysis for each background and downgradient well, the dates the samples were collected, and whether the sample was required by the detection monitoring or assessment monitoring programs;

(4) A narrative discussion of any transition between monitoring programs (*e.g.,* the date and circumstances for transitioning from detection monitoring to assessment monitoring in addition to identifying the constituent(s) detected at a statistically significant increase over background levels); and

(5) Other information required to be included in the annual report as specified in §§ 257.90 through 257.98.

(6) A section at the beginning of the annual report that provides an overview of the current status of groundwater monitoring and corrective action programs for the CCR unit. At a minimum, the summary must specify all of the following:

(i) At the start of the current annual reporting period, whether the CCR unit was operating under the detection monitoring program in § 257.94 or the assessment monitoring program in § 257.95;

(ii) At the end of the current annual reporting period, whether the CCR unit was operating under the detection monitoring program in § 257.94 or the assessment monitoring program in § 257.95;

(iii) If it was determined that there was a statistically significant increase over background for one or more constituents listed in Appendix III to this part pursuant to § 257.94(e):

(A) Identify those constituents listed in Appendix III to this part and the names of the monitoring wells associated with such an increase; and

(B) Provide the date when the assessment monitoring program was initiated for the CCR unit.

(iv) If it was determined that there was a SSL above the groundwater protection standard for one or more constituents listed in Appendix IV to this part pursuant to § 257.95(g) include all of the following:

(A) Identify those constituents listed in Appendix IV to this part and the names of the monitoring wells associated with such an increase;

(B) Provide the date when the assessment of corrective measures was initiated for the CCR unit;

(C) Provide the date when the public meeting was held for the assessment of corrective measures for the CCR unit; and

(D) Provide the date when the assessment of corrective measures was completed for the CCR unit.

(v) Whether a remedy was selected pursuant to § 257.97 during the current annual reporting period, and if so, the date of remedy selection; and

(vi) Whether remedial activities were initiated or are ongoing pursuant to § 257.98 during the current annual reporting period.

2.0 MONITORING AND CORRECTIVE ACTION PROGRAM STATUS

The PDP 5 CCR Unit is currently in a Detection Monitoring Program. Golder collected the initial Detection Monitoring Program groundwater samples from the PDP 5 CCR monitoring well network in September 2017. Subsequent Detection Monitoring Program groundwater samples have been collected on a semi-annual basis since that time. Statistical analysis of the sample data is performed in accordance with the Statistical Analysis Plan for the Site (Golder 2022) and the USEPA Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities-Unified Guidance (USEPA 2009) to identify SSIs of Appendix III parameters over background concentrations. The Detection Monitoring Program sampling dates and parameters are summarized in the following table:

Detection Monitoring Program Summary

Sampling Dates	Parameters	SSIs	Assessment Monitoring Program Established
September 2017 February 2018 (re-samples)	Appendix III	Yes	No (Alternate Source Demonstration Completed)
June 2018 September 2018 November 2018 (re-samples)	Appendix III	Yes	No (Alternate Source Demonstration Completed)
May 2019 November 2019	Appendix III	Yes	No (Alternate Source Demonstration Completed)
May 2020 September 2020	Appendix III	Yes	No (Alternate Source Demonstration Completed)
June 2021 October 2021	Appendix III	Yes	No (Alternate Source Is Being Assessed)

The statistical background values and Appendix III analytical data are presented in Tables 1 and 2, respectively. SSIs of Appendix III parameters were identified for the 2017 through 2020 sampling events. An initial Alternate Source Demonstration was completed in 2018, which indicated that a source other than the CCR unit caused the SSIs observed in the 2017 sample data and 2018 re-sample data. Similarly, Alternate Source Demonstrations were completed in 2019 through 2021 based on the 2018 through 2020 sample data. As a result, PDP 5 has remained in the Detection Monitoring Program. A summary of the Alternate Source Demonstration based on the

2020 sample data is presented in Attachment 1 as required by § 257.94(e)(2).

Detection Monitoring Program groundwater samples were collected from the CCR groundwater monitoring network on a semi-annual basis in 2021, as required by the CCR Rule. The first 2021 semi-annual Detection Monitoring Program sampling event was conducted in June 2021. The second 2021 semi-annual Detection Monitoring Program sampling event was conducted in October 2021. The 2021 laboratory analytical reports are provided in Attachment 1. The analytical data from the 2021 semi-annual Detection Monitoring Program sampling events were evaluated using procedures described in the Statistical Analysis Plan (Golder 2022) to identify SSIs of Appendix III parameters over background concentrations. SSIs of Appendix III parameters over background concentrations were identified for several constituents for which SSIs had previously been attributed to alternate sources. Alternate sources for the SSIs identified in the 2021 sample data are being evaluated in accordance with § 257.94. If an alternate source is not identified to be the cause of the SSI, an Assessment Monitoring Program will be established in accordance with § 257.94(e)(2).

3.0 KEY ACTIONS COMPLETED IN 2021

Semi-annual Detection Monitoring Program groundwater monitoring events were completed in June and October 2021. The number of groundwater samples that were collected for analysis for each background and downgradient well, the dates the samples were collected, and the analytical results for the groundwater samples are summarized in Table 2. A map showing the CCR unit and monitoring wells is provided as Figure 1. No CCR wells were installed or decommissioned in 2021.

PDP 5 was constructed in 2010 on top of and immediately adjacent to closed and capped former pre-CCR Rule coal ash surface impoundments that began operation in 1979. PDP 5 extends significantly above natural grade and represents a localized topographic high relative to the surrounding area. Based on this configuration, there are no upgradient monitoring wells at PDP 5. Water elevations measured in the CCR wells during the 2021 semi-annual groundwater sampling events were used to develop groundwater potentiometric surface maps, which are presented in (Attachment 2), which confirm that groundwater flows radially outward from the topographic high at PDP 5.

An Alternate Source Demonstration was completed in March 2021, which documented that a source other than PDP 5 caused the SSIs detected over background levels during the 2020 Detection Monitoring Program sampling events, as required by § 257.94(e)(2). A copy of the 2021 Alternate Source Demonstration is provided in Attachment 3.

4.0 PROBLEMS ENCOUNTERED AND ACTIONS TO RESOLVE THE PROBLEMS

No problems were encountered with the CCR groundwater monitoring program in 2021.

5.0 KEY ACTIVITIES PLANNED FOR 2022

The following key activities are planned for 2022:

- Luminant submitted a registration application to TCEQ under the Texas CCR Rule for the Martin Lake PDP 5 on January 24, 2022.

- Continue the Detection Monitoring Program in accordance with applicable provisions of 40 C.F.R. §257.95 and 30 T.A.C. §352.941.

- If an alternate source is identified to be the cause of the SSIs observed in 2021, which are described in this report, a written demonstration will be completed within 90 days of SSI determination and included in the following Annual Groundwater Monitoring and Corrective Action Report.

- If an alternate source is not identified to be the cause of the SSIs, an Assessment Monitoring Program will be established.

6.0 REFERENCES

Golder, 2022. Statistical Analysis Plan – Revision No. 1, Martin Lake Steam Electric Station – Permanent Disposal Pond 5, Rusk County, Texas.

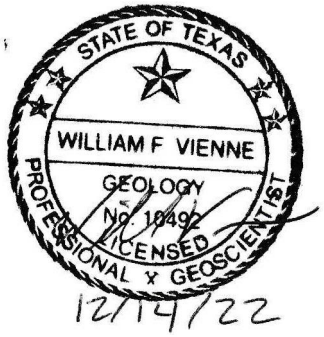
USEPA, 2009. Unified Guidance Document: Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, EPA 530/R-09-007, March.

Signature Page

Golder Associates Inc., Member of WSP

Patrick J. Behling
Principal Engineer

William F. Vienne
Senior Hydrogeologist



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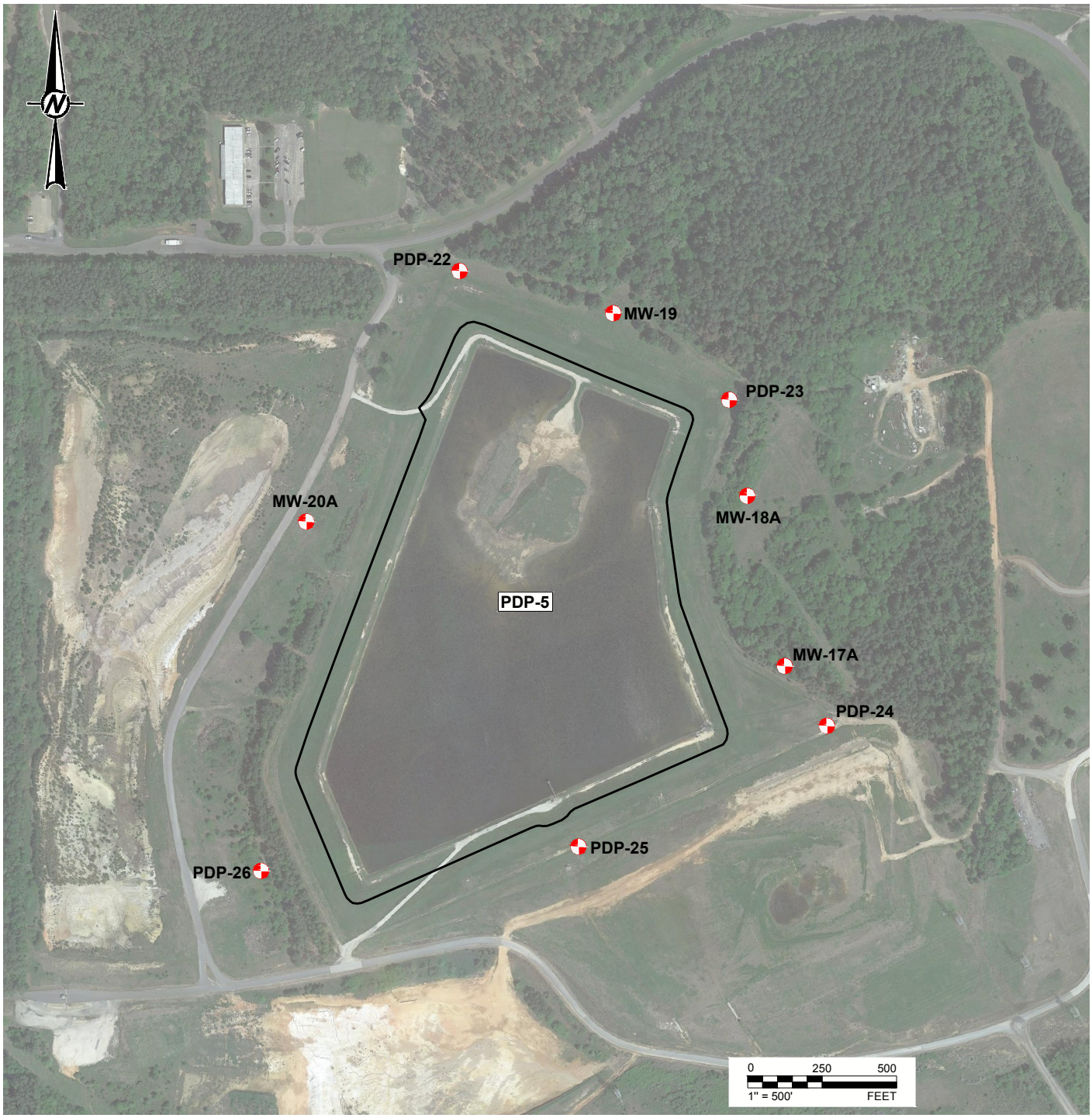
FIGURES



LEGEND

CCR MONITORING WELL

EXTERIOR TOE OF PDP-5 BERMS

STATE OF TEXAS
WILLIAM F VIENNE
GEOLOGY
No. 10492
LICENSED
PROFESSIONAL GEOSCIENTIST
11/16/2022

REFERENCE(S)
BASE MAP TAKEN FROM GOOGLE EARTH IMAGERY DATED 4/3/19.

CLIENT
LUMINANT

PROJECT
MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

TITLE
PDP-5 DETAILED SITE PLAN

CONSULTANT
GOLDER
MEMBER OF WSP

YYYY-MM-DD	2022-01-19
DESIGNED	AJD
PREPARED	AJD
REVIEWED	WFV
APPROVED	WFV

PROJECT NO.	CONTROL	REV.	FIGURE
19122262		0	1

Last Edited By: adiamond Date: 2022-01-19 Time:11:39:32 AM | Printed By: adiamond Date: 2022-01-19 Time:11:45:11 AM
Path: \\golder.gds\complexdata\office\Texarkana\Projects - Round Rock_2019\19122262 - Luminant\D - MLSES\ | File Name:1-Site Plan (PDP5).dwg
IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI A
0
1 in

TABLES

Table 1
Statistical Background Values
MLSES - PDP 5

Sample Location	Boron (mg/L)	Calcium (mg/L)	Chloride (mg/L)	Flouride (mg/L)	field pH (s.u.)	Sulfate (mg/L)	Total Dissolved Solids (mg/L)
MW-17A	0.538	6.73	10.4	0.4	2.5 9.19	51.9	170
MW-18A	0.20	3.1	10.4	0.4	4.88 7.92	9.1	157
MW-19	0.782	237	57.7	0.512	4.6 8.08	672	1,380
MW-20A	0.213	25.7	12.3	0.954	3.06 8.76	148	381
PDP-22	0.411	306	32.7	1.07	4.08 8.63	216	1,780
PDP-23	0.0678	2	7.52	0.4	3.38 8.45	3.27	143
PDP-24	4.92	45.9	22.6	1.03	1.33 9.97	533	894
PDP-25	0.136	41.3	197	0.4	4.65 7.93	118	705
PDP-26	0.111	4.74	14.6	0.577	5.35 7.57	64.6	438

TABLE 2
APPENDIX III ANALYTICAL RESULTS
MLSES PDP 5

Sample Location	Date Sampled	B	Ca	Cl	F	field pH	SO_4	TDS
MW-17A	09/22/17	0.402	3.1	8.3	<0.1	6.78	31.2	111
	06/14/18	0.485	6.48	9.16	<0.1	6.87	45.9	129
	09/11/18	0.523	5.06	8.82	0.179 J	5.03	43.1	137
	05/13/19	0.497	4.88	9.18	<0.1	6.79	44.7	145
	11/07/19	0.52	5.05	8.81	<0.100	6.44	43.9	127
	05/19/20	0.521	5.09	8.74	<0.100	6.57	46.8	140
	09/25/20	0.477	5.76	10.1	<0.100	6.57	47.7	133
	06/03/21	0.534	6.21	7.83	<0.100	6.69	50.4	146
	10/05/21	0.393	3.95	8.42	<0.100	6.57	34.3	115
MW-18A	09/21/17	0.0654	1.04	5.27	<0.1	6.94	3.23	45
	06/14/18	0.102	2	6.56	<0.1	6.92	3.48	71
	09/12/18	0.211	3.23	9.06	<0.1	5.69	4.82	150
	11/7/2018 re-sample	0.128	--	--	--	--	--	--
	05/13/19	0.117	1.01	6.17	0.138 J	6.64	3.23	73
	11/07/19	0.127	11.5	6.34	<0.100	6.23	3.67	68
	05/19/20	0.225	1.54	7.09	<0.100	6.89	5.97	86
	09/25/20	0.188	1.66	8.13	<0.100	6.78	6.03	77
	06/03/21	0.188	1.73	6.2	<0.100	6.69	6.20	76
	10/05/21	0.159	1.49	6.63	<0.100	6.59	5.73	76
MW-19	09/22/17	0.0677	2.74	5.36	<0.1	6.94	1.46 J	98
	06/14/18	0.577	133	24.4	0.216 J	6.78	328	758
	09/11/18	0.243	38	65.1	0.228 J	6.04	166	597
	11/7/2018 re-sample	--	--	5.22	--	--	--	--
	05/13/19	0.429	122	26.8	0.229 J	6.72	349	813
	11/08/19	0.529	77.8	49.3	0.189 J	6.87	310	844
	05/19/20	0.0724	1.49	5.84	<0.100	6.91	1.02 J	85
	09/25/20	0.412	94.6	14.3	0.111 J	6.92	160	462
	06/03/21	0.56	140	19.5	0.352 J	6.75	336	751
	10/05/21	0.495	124	62.9	0.180 J	6.74	323	896
MW-20A	09/22/17	0.0807	17.4	12.6	0.175 J	6.71	74.2	237
	02/21/18 re-sample	--	--	10.7	--	--	--	--
	06/13/18	0.171	24	10.9	0.672	6.72	132	250
	09/11/18	0.141	7.16	11	0.235 J	4.70	39.1	154
	05/13/19	0.239	37.4	10.2	0.731	6.81	178	328
	11/08/19	0.132	9.9	10.2	0.465	6.51	88	205
	05/19/20	0.220	24	10.4	0.413	6.83	133	270
	09/25/20	0.107	8.94	12.6	0.132 J	6.68	54.3	162
	06/03/21	0.152	26.1	9.63	0.324	6.73	93.2	218
	10/05/21	0.0724	6.12	10.8	0.127 J	6.44	32.8	139

TABLE 2
APPENDIX III ANALYTICAL RESULTS
MLSES PDP 5

Sample Location	Date Sampled	B	Ca	Cl	F	field pH	SO_4	TDS
PDP-22	09/22/17	0.221	92.5	12.3	0.321 J	6.98	178	558
	06/14/18	0.115	7.78	11.8	0.239	6.63	186	491
	09/12/18	0.164	61.1	10.9	0.216 J	5.88	143	476
	05/13/19	0.158	98.2	10.1	0.303 J	6.86	184	615
	11/12/19	0.226	34.3	12.6	0.218 J	6.93	215	482
	05/19/20	0.0646	54.9	1.06	<0.100	6.55	5.21	205
	09/25/20	0.206	25.1	12.7	0.128 J	6.73	186	398
	06/03/21	0.121	73.1	6.64	<0.100	6.52	118	415
	10/05/21	0.166	27.1	10.1	0.223 J	6.78	170	376
PDP-23	09/22/17	0.0463	2.34	4.48	0.147 J	6.77	1.47 J	111
	02/21/18 re-sample	--	2.37	--	--	--	--	--
	06/13/18	0.0357	2.29	6.21	<0.1	6.82	1.26 J	98
	09/11/18	0.0760	1.96	6.38	<0.1	5.32	1.52 J	98
	11/7/2018 re-sample	0.0683	--	--	--	--	--	--
	05/13/19	0.0628	1.89	6.98	<0.1	6.68	1.28 J	103
	11/12/19	0.0675	2.14	4.98	<0.100	6.72	1.41 J	93
	05/19/20	0.0709	2.03	6.86	<0.100	6.83	1.19 J	104
	09/25/20	0.0617	2.31	7.29	<0.100	6.74	<1.00	94
	06/03/21	0.0818	2.32	6.88	<0.100	6.57	1.42 J	101
	10/05/21	0.0661	2.38	6.58	<0.100	6.59	1.02 J	97
PDP-24	09/22/17	3.01	25.8	17.5	0.898	6.95	231	440
	06/14/18	2.71	23.9	21.1	0.629	6.82	284	481
	09/11/18	4.08	41.6	19.4	0.832	4.20	460	760
	05/13/19	3.23	23	21	0.871	6.95	300	537
	11/12/19	3	21.9	20.6	0.751	6.87	295	520
	11/12/2019 DUP	2.97	22.2	20.5	0.744	6.87	300	504
	05/19/20	3.17	21.4	21	0.61	6.79	286	512
	09/25/20	4.04	40.7	19.6	0.776	6.83	445	699
	06/03/21	3.56	26.4	19.3	0.934	6.57	350	615
	10/05/21	4.24	46.9	17.8	0.782	6.72	432	681
PDP-25	09/22/17	0.133	36.8	130	0.157 J	6.81	89.1	481
	06/14/18	0.119	40.4	111	<0.1	6.78	73.4	439
	09/11/18	0.167	36.2	135	0.115 J	5.87	90.3	469
	11/7/2018 re-sample	0.142	--	--	--	--	--	--
	05/13/19	0.144	44.4	108	0.121 J	6.84	69	469
	11/12/19	0.184	38.6	117	<0.100	6.82	71.4	454
	05/19/20	0.202	53.7	105	<0.100	6.61	62.2	442
	09/25/20	0.174	46.3	123	<0.100	6.77	67.5	445
	06/03/21	0.234	45.2	101	0.236 J	6.78	61.2	431
	10/05/21	0.159	40.4	115	<0.100	6.73	62.7	427

TABLE 2
APPENDIX III ANALYTICAL RESULTS
MLSES PDP 5

Sample Location	Date Sampled	B	Ca	Cl	F	field pH	SO_4	TDS
PDP-26	09/22/17	0.0343	2.32	5.24	0.157 J	6.84	5.88	107
	06/14/18	0.0225 J	2.93	4.8	<0.1	6.89	4.27	100
	09/12/18	0.0371	2.37	4.88	<0.1	6.07	2.66 J	107
	05/13/19	0.0528	1.9	4.59	0.217 J	6.86	2.7 J	106
	11/12/19	0.0622	2.25	4.64	0.122 J	6.77	2.1 J	102
	05/19/20	0.0538	2.09	4.52	<0.100	6.64	2.1 J	108
	09/25/20	0.0549	2.71	5.07	<0.100	6.83	1.91	92
	06/03/21	0.0516	2.37	4.05	<0.100	6.84	2.18 J	104
	6/3/21 DUP	0.0635	2.23	4.05	<0.1	6.84	2.05 J	107
	10/05/21	0.0486	3.85	4.48	0.194 J	6.74	3.28	104
	10/5/21 DUP	0.0432	3.58	4.24	0.192 J	6.74	2.49 J	103

Notes:
1. All concentrations in mg/L. pH in standard units.
2. J - concentration is below sample quantitation limit; result is an estimate.

ATTACHMENT 1

LABORATORY ANALYTICAL REPORTS

June 11, 2021

Will Vienne
Golder
2201 Double Creek Dr #4004
Round Rock, Texas 78664
TEL: (512) 671-3434
FAX (512) 671-3446

Order No.: 2106027

RE: Luminant - MLSES CCR PDP-5

Dear Will Vienne:

DHL Analytical, Inc. received 10 sample(s) on 6/3/2021 for the analyses presented in the following report.

There were no problems with the analyses and all data met requirements of NELAP except where noted in the Case Narrative. All non-NELAP methods will be identified accordingly in the case narrative and all estimated uncertainties of test results are within method or EPA specifications.

If you have any questions regarding these tests results, please feel free to call. Thank you for using DHL Analytical.

Sincerely,

John DuPont
General Manager

This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211-21-27

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DHL ANALYTICAL
2300 Double Creek Dr. Round Rock, TX 78664
Phone 512.388.8222
Web: www.dhlanalytical.com
Email: login@dhlanalytical.com

CHAIN-OF-CUSTODY

PAGE 1 OF 1

CLIENT: GOLDER
ADDRESS: 2201 DOUBLE CREEK DR, ROUND ROCK, TX
PHONE: 512-671-3434 EMAIL:
DATA REPORTED TO: WILL VIENNE
ADDITIONAL REPORT COPIES TO:

PO#:
PROJECT LOCATION OR NAME: LUMINANT - MLSES CCR PDP-5
CLIENT PROJECT # 19122262

LABORATORY USE ONLY
DHL WORKORDER #: 2106027
COLLECTOR: JOHN BRAYTON

Authorize 5% surcharge for TRRP report? ☐ Yes ☐ No

W=WATER L=LIQUID S=SOIL SO=SOLID SE=SEDIMENT P=PAINT SL=SLUDGE

Field Sample I.D.	Lab Use Only DHL Lab #	Collection Date	Collection Time	Matrix	Container Type	# of Containers	PRESERVATION HCL	HNO_3	H_2SO_4	NaOH ☐ Zn Acetate ☐	ICE ☒ UNPRESERVED ☒	ANALYSES	BTEX ☐ MTBE ☐ [METHOD 8260]	TPH 1005 ☐ TPH 1006 ☐ HOLD 1006 ☐	GRO 8015 ☐ DRO 8015 ☐	VOC 8260 ☐ VOC 624.1 ☐	SVOC 8270 ☐ SVOC 625.1 ☐	PAH 8270 ☐ HOLD PAH ☐	PEST 8270 ☐ 625.1 ☐ O-P PEST 8270 ☐	PCB 8082 ☐ 608.3 ☐ PCB 8270 ☐ 625.1 ☐	HERB 8321 ☐ T PHOS ☐ AMMONIA ☐	METALS 6020 ☐ 200.8 ☐ DISS. METALS ☐	RCRA 8 ☐ TX11 ☐	pH ☐ HEX CHROM ☐ ALKALINITY ☐ COD ☐	ANIONS 300 ☐ 9056 ☐	TCLP-SVOC ☐ VOC ☐ PEST ☐ HERB ☐	TCLP-METALS ☐ RCRA 8 ☐ TX-11 ☐ Pb ☐	RCI ☐ IGN ☐ DGAS ☐ OIL&GREASE ☐	TDS ☐ TSS ☐ % MOIST ☐ CYANIDE ☐	APPENDIX III			FIELD NOTES
MW-17A	01	6-3-21	0905	W	P	2		X			X																			X			
PDP-24	02	6-3-21	0950	W	P	2		X			X																			X			
PDP-25	03	6-3-21	1040	W	P	2		X			X																			X			
PDP-26	04	6-3-21	1125	W	P	2		X			X																			X			
DUP-1	05	6-3-21	1125	W	P	2		X			X																			X			
MW-20A	06	6-3-21	1230	W	P	2		X			X																			X			
PDP-22	07	6-3-21	1315	W	P	2		X			X																			X			
PDP-23	08	6-3-21	1415	W	P	2		X			X																			X			
MW-19	09	6-3-21	1515	W	P	2		X			X																			X			
MW-18A	10	6-3-21	1620	W	P	2		X			X																			X			

Relinquished By: (Sign)	DATE/TIME	Received by:
[signature]	6-3-21 1800	Fed Ex
Fed Ex	6/4/21 0950	[signature]

TURN AROUND TIME (CALL FIRST FOR RUSH)
RUSH-1 DAY☐ RUSH-2 DAY☐ RUSH-3 DAY☐
NORMAL ☒ OTHER ☐
DUE DATE ☐

LABORATORY USE ONLY
RECEIVING TEMP (°C): 3.5 THERM #: 78
CUSTODY SEALS: ☐ BROKEN ☒ INTACT ☐ NOT USED
CARRIER: ☐ LSO ☒ FEDEX ☐ UPS ☐ COURIER ☐ OTHER ☐ HAND DELIVERED

APPENDIX F-Revision 2 February 20, 2020 ☐ DHL DISPOSAL @ 5.00 each ☐ Return

DHL COC REV 3 | MAR 2021

Eric Lau

From: John DuPont
Sent: Tuesday, May 28, 2019 11:35 AM
To: Eric Lau
Subject: FW: CCR Analysis

Appendix III Parameters:
Metals (Ca and B)
Anions (Cl, F, and SO4)
TDS

Appendix IV Parameters:

Metals (As, Ba, Be, Cd, Co, Cr, Hg, Li, Mo, Pb, Sb, Se, and Tl)
Ra-226
Ra-228

From: Vienne, Will [mailto:William_Vienne@golder.com]
Sent: Tuesday, April 09, 2019 12:48 PM
To: John DuPont <dupont@dhlanalytical.com>
Subject: CCR Analysis

ORIGIN ID:GGGA (512) 671-3434

GOLDER ASSOCIATES
2201 DOUBLE CREEK DR STE 4004

ROUND ROCK, TX 78664
UNITED STATES US

SHIP DATE: 03JUN21
ACTWGT: 44.20 LB
CAD: 6994166/SSFE2201
DIMS: 26x14x14 IN

BILL THIRD PARTY

TO **DHL ANALYTICAL LABS**
DHL ANALYTICAL LABS
2300 DOUBLE CREEK DR

ROUND ROCK TX 78664

(512) 388-8222 REF:
INV:
PO: DEPT:

FedEx Express

E

J211321033101uv

FRI - 04 JUN 10:30A
PRIORITY OVERNIGHT
AHS
78664
TX-US **AUS**

TRK# 0201 **7879 2099 7873**

A8 BSMA

CUSTODY SEAL

DATE 6.3.21

SIGNATURE

DHL ANALYTICAL

Golder

PDP5 CCR

DHL Analytical, Inc.

Sample Receipt Checklist

Client Name **Golder** Date Received: **6/3/2021**

Work Order Number **2106027** Received by: **EL**

Checklist completed by: Signature 6/4/2021 Date Reviewed by (ML) Initials 6/4/2021 Date

Carrier name: FedEx 1day

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	**3.5** °C
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH<2 acceptable upon receipt?	Yes ☑	No ☐	NA ☐ LOT # 13171
	Adjusted? No		Checked by R.A.
Water - ph>9 (S) or ph>10 (CN) acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted?		Checked by

Any No response must be detailed in the comments section below.

Client contacted: Date contacted: Person contacted

Contacted by: Regarding:

Comments:

Corrective Action:

Laboratory Name: DHL Analytical, Inc.

Laboratory Review Checklist: Reportable Data

Project Name: Luminant - MLSES CCR PDP-5	**LRC Date:** 6/11/2021
Reviewer Name: Angie O'Donnell	**Laboratory Work Order: 2106027**
Prep Batch Number(s): See Prep Dates Report	**Run Batch:** See Analytical Dates Report

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
		Chain-of-Custody (C-O-C)					
R1	OI	**1)** Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	**X**				**R1-01**
		2) Were all departures from standard conditions described in an exception report?			**X**		
R2	OI	**Sample and Quality Control (QC) Identification**					
		1) Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	**X**				
		2) Are all laboratory ID numbers cross-referenced to the corresponding QC data?	**X**				
R3	OI	**Test Reports**					
		1) Were all samples prepared and analyzed within holding times?	**X**				
		2) Other than those results < MQL, were all other raw values bracketed by calibration standards?	**X**				
		3) Were calculations checked by a peer or supervisor?	**X**				
		4) Were all analyte identifications checked by a peer or supervisor?	**X**				
		5) Were sample detection limits reported for all analytes not detected?	**X**				
		6) Were all results for soil and sediment samples reported on a dry weight basis?			**X**		
		7) Were % moisture (or solids) reported for all soil and sediment samples?			**X**		
		8) Were bulk soils/solids samples for volatile analysis extracted with methanol per EPA Method 5035?			**X**		
		9) If required for the project, TICs reported?			**X**		
R4	O	**Surrogate Recovery Data**					
		1) Were surrogates added prior to extraction?			**X**		
		2) Were surrogate percent recoveries in all samples within the laboratory QC limits?			**X**		
R5	OI	**Test Reports/Summary Forms for Blank Samples**					
		1) Were appropriate type(s) of blanks analyzed?	**X**				
		2) Were blanks analyzed at the appropriate frequency?	**X**				
		3) Where method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	**X**				
		4) Were blank concentrations < MDL?	**X**				
		5) For analyte(s) detected in a blank sample, was the concentration, unadjusted for sample specific factors, in all associated field samples, **greater** than 10 times the concentration in the blank sample?			**X**		
R6	OI	**Laboratory Control Samples (LCS):**					
		1) Were all COCs included in the LCS?	**X**				
		2) Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	**X**				
		3) Were LCSs analyzed at the required frequency?	**X**				
		4) Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	**X**				
		5) Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	**X**				
		6) Was the LCSD RPD within QC limits (if applicable)?	**X**				
R7	OI	**Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Data**					
		1) Were the project/method specified analytes included in the MS and MSD?	**X**				
		2) Were MS/MSD analyzed at the appropriate frequency?	**X**				
		3) Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	**X**				
		4) Were MS/MSD RPDs within laboratory QC limits?	**X**				
R8	OI	**Analytical Duplicate Data**					
		1) Were appropriate analytical duplicates analyzed for each matrix?	**X**				
		2) Were analytical duplicates analyzed at the appropriate frequency?	**X**				
		3) Were RPDs or relative standard deviations within the laboratory QC limits?	**X**				
R9	OI	**Method Quantitation Limits (MQLs):**					
		1) Are the MQLs for each method analyte included in the laboratory data package?	**X**				
		2) Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	**X**				
		3) Are unadjusted MQLs and DCSs included in the laboratory data package?	**X**				
R10	OI	**Other Problems/Anomalies**					
		1) Are all known problems/anomalies/special conditions noted in this LRC and ER?	**X**				
		2) Was applicable and available technology used to lower the SDL to minimize the matrix interference affects on the sample results?	**X**				
		3) Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices and methods associated with this laboratory data package?	**X**				

Laboratory Name: DHL Analytical, Inc.

Laboratory Review Checklist (continued): Supporting Data

Project Name: Luminant - MLSES CCR PDP-5	**LRC Date:** 6/11/2021
Reviewer Name: Angie O'Donnell	**Laboratory Work Order: 2106027**
Prep Batch Number(s): See Prep Dates Report	**Run Batch:** See Analytical Dates Report

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
S1	OI	**Initial Calibration (ICAL)**					
		1) Were response factors and/or relative response factors for each analyte within QC limits?	X				
		2) Were percent RSDs or correlation coefficient criteria met?	X				
		3) Was the number of standards recommended in the method used for all analytes?	X				
		4) Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		5) Are ICAL data available for all instruments used?	X				
		6) Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	**Initial and Continuing calibration Verification (ICCV and CCV) and Continuing Calibration blank (CCB):**					
		1) Was the CCV analyzed at the method-required frequency?	X				
		2) Were percent differences for each analyte within the method-required QC limits?	X				
		3) Was the ICAL curve verified for each analyte?	X				
		4) Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	X				
S3	O	**Mass Spectral Tuning:**					
		1) Was the appropriate compound for the method used for tuning?	X				
		2) Were ion abundance data within the method-required QC limits?	X				
S4	O	**Internal Standards (IS):**					
		1) Were IS area counts and retention times within the method-required QC limits?	X				
S5	OI	**Raw Data (NELAC Section 5.5.10)**					
		1) Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		2) Were data associated with manual integrations flagged on the raw data?	X				
S6	O	**Dual Column Confirmation**					
		1) Did dual column confirmation results meet the method-required QC?			X		
S7	O	**Tentatively Identified Compounds (TICs):**					
		1) If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) Results:**					
		1) Were percent recoveries within method QC limits?	X				
S9	I	**Serial Dilutions, Post Digestion Spikes, and Method of Standard Additions**					
		1) Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	X				
S10	OI	**Method Detection Limit (MDL) Studies**					
		1) Was a MDL study performed for each reported analyte?	X				
		2) Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	**Proficiency Test Reports:**					
		1) Was the lab's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	**Standards Documentation**					
		1) Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound/Analyte Identification Procedures**					
		1) Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of Analyst Competency (DOC)**					
		1) Was DOC conducted consistent with NELAC Chapter 5 – Appendix C?	X				
		2) Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/Validation Documentation for Methods** (NELAC Chapter 5)					
		1) Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	**Laboratory Standard Operating Procedures (SOPs):**					
		1) Are laboratory SOPs current and on file for each method performed?	X				

1 Items identified by the letter "R" should be included in the laboratory data package submitted to the TCEQ in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.

2 O = organic analyses; I = inorganic analyses (and general chemistry, when applicable).

3 NA = Not applicable.

4 NR = Not Reviewed.

5 ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Data Package Signature Page – RG-366/TRRP-13

This data package consists of:

This signature page, the laboratory review checklist, and the following reportable data:

R1 Field chain-of-custody documentation;
R2 Sample identification cross-reference;
R3 Test reports (analytical data sheets) for each environmental sample that includes:
  a) Items consistent with NELAC Chapter 5,
  b) dilution factors,
  c) preparation methods,
  d) cleanup methods, and
  e) if required for the project, tentatively identified compounds (TICs).
R4 Surrogate recovery data including:
  a) Calculated recovery (%R), and
  b) The laboratory's surrogate QC limits.
R5 Test reports/summary forms for blank samples;
R6 Test reports/summary forms for laboratory control samples (LCSs) including:
  a) LCS spiking amounts,
  b) Calculated %R for each analyte, and
  c) The laboratory's LCS QC limits.
R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
  a) Samples associated with the MS/MSD clearly identified,
  b) MS/MSD spiking amounts,
  c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
  d) Calculated %Rs and relative percent differences (RPDs), and
  e) The laboratory's MS/MSD QC limits
R8 Laboratory analytical duplicate (if applicable) recovery and precision:
  a) The amount of analyte measured in the duplicate,
  b) The calculated RPD, and
  c) The laboratory's QC limits for analytical duplicates.
R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix;
R10 Other problems or anomalies.

The Exception Report for each "No" or "Not Reviewed (NR)" item in the Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory is not accredited under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature below, I affirm to the best of my knowledge that all problems/anomalies observed by the laboratory have been identified in the Laboratory Review Checklist, and no information or data affecting the quality of the data has been knowingly withheld.

This laboratory was last inspected by TCEQ on February 23-26, 2021. Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Name: John DuPont
Official Title: General Manager

Name: Dr. Derhsing Luu
Official Title: Technical Director

Signature

6/14/2021
Date

DHL Analytical, Inc. **Date:** *11-Jun-21*

CLIENT: Golder
Project: Luminant - MLSES CCR PDP-5
Lab Order: 2106027

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Method SW6020B - Metals Analysis
Method E300 - Anions Analysis
Method M2540C - Total Dissolved Solids Analysis

Exception Report R1-01

The samples were received and log-in performed on 6/3/2021. A total of 9 samples were received and analyzed. The samples arrived in good condition and were properly packaged.

DHL Analytical, Inc.

Date: *11-Jun-21*

CLIENT: Golder
Project: Luminant - MLSES CCR PDP-5
Lab Order: 2106027

Work Order Sample Summary

Lab Smp ID	Client Sample ID	Tag Number	Date Collected	Date Recved
2106027-01	MW-17A		06/03/21 09:05 AM	6/3/2021
2106027-02	PDP-24		06/03/21 09:50 AM	6/3/2021
2106027-03	PDP-25		06/03/21 10:40 AM	6/3/2021
2106027-04	PDP-26		06/03/21 11:25 AM	6/3/2021
2106027-05	DUP-1		06/03/21 11:25 AM	6/3/2021
2106027-06	MW-20A		06/03/21 12:30 PM	6/3/2021
2106027-07	PDP-22		06/03/21 01:15 PM	6/3/2021
2106027-08	PDP-23		06/03/21 02:15 PM	6/3/2021
2106027-09	MW-19		06/03/21 03:15 PM	6/3/2021
2106027-10	MW-18A		06/03/21 04:20 PM	6/3/2021

Lab Order: 2106027
Client: Golder
Project: Luminant - MLSES CCR PDP-5

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
2106027-01A	MW-17A	06/03/21 09:05 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/08/21 08:36 AM	100848
	MW-17A	06/03/21 09:05 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/08/21 08:36 AM	100848
2106027-01B	MW-17A	06/03/21 09:05 AM	Aqueous	E300	Anion Preparation	06/07/21 09:36 AM	100841
	MW-17A	06/03/21 09:05 AM	Aqueous	M2540C	TDS Preparation	06/04/21 01:46 PM	100830
2106027-02A	PDP-24	06/03/21 09:50 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/08/21 08:36 AM	100848
	PDP-24	06/03/21 09:50 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/08/21 08:36 AM	100848
2106027-02B	PDP-24	06/03/21 09:50 AM	Aqueous	E300	Anion Preparation	06/07/21 09:36 AM	100841
	PDP-24	06/03/21 09:50 AM	Aqueous	E300	Anion Preparation	06/07/21 09:36 AM	100841
	PDP-24	06/03/21 09:50 AM	Aqueous	M2540C	TDS Preparation	06/04/21 01:46 PM	100830
2106027-03A	PDP-25	06/03/21 10:40 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/08/21 08:36 AM	100848
	PDP-25	06/03/21 10:40 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/08/21 08:36 AM	100848
2106027-03B	PDP-25	06/03/21 10:40 AM	Aqueous	E300	Anion Preparation	06/07/21 09:36 AM	100841
	PDP-25	06/03/21 10:40 AM	Aqueous	E300	Anion Preparation	06/07/21 09:36 AM	100841
	PDP-25	06/03/21 10:40 AM	Aqueous	M2540C	TDS Preparation	06/04/21 01:46 PM	100830
2106027-04A	PDP-26	06/03/21 11:25 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/08/21 08:36 AM	100848
	PDP-26	06/03/21 11:25 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/08/21 08:36 AM	100848
2106027-04B	PDP-26	06/03/21 11:25 AM	Aqueous	E300	Anion Preparation	06/07/21 09:36 AM	100841
	PDP-26	06/03/21 11:25 AM	Aqueous	M2540C	TDS Preparation	06/04/21 01:46 PM	100830
2106027-05A	DUP-1	06/03/21 11:25 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/08/21 08:36 AM	100848
	DUP-1	06/03/21 11:25 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/08/21 08:36 AM	100848
2106027-05B	DUP-1	06/03/21 11:25 AM	Aqueous	E300	Anion Preparation	06/07/21 09:36 AM	100841
	DUP-1	06/03/21 11:25 AM	Aqueous	M2540C	TDS Preparation	06/04/21 01:46 PM	100830
2106027-06A	MW-20A	06/03/21 12:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/08/21 08:36 AM	100848
	MW-20A	06/03/21 12:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/08/21 08:36 AM	100848
2106027-06B	MW-20A	06/03/21 12:30 PM	Aqueous	E300	Anion Preparation	06/07/21 09:36 AM	100841
	MW-20A	06/03/21 12:30 PM	Aqueous	M2540C	TDS Preparation	06/04/21 01:46 PM	100830
2106027-07A	PDP-22	06/03/21 01:15 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/08/21 08:36 AM	100848
	PDP-22	06/03/21 01:15 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/08/21 08:36 AM	100848

Lab Order: 2106027
Client: Golder
Project: Luminant - MLSES CCR PDP-5

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
2106027-07A	PDP-22	06/03/21 01:15 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/08/21 08:36 AM	100848
2106027-07B	PDP-22	06/03/21 01:15 PM	Aqueous	E300	Anion Preparation	06/07/21 09:36 AM	100841
	PDP-22	06/03/21 01:15 PM	Aqueous	M2540C	TDS Preparation	06/04/21 01:46 PM	100830
2106027-08A	PDP-23	06/03/21 02:15 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/08/21 08:36 AM	100848
	PDP-23	06/03/21 02:15 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/08/21 08:36 AM	100848
2106027-08B	PDP-23	06/03/21 02:15 PM	Aqueous	E300	Anion Preparation	06/07/21 09:36 AM	100841
	PDP-23	06/03/21 02:15 PM	Aqueous	M2540C	TDS Preparation	06/04/21 01:46 PM	100830
2106027-09A	MW-19	06/03/21 03:15 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/08/21 08:36 AM	100848
	MW-19	06/03/21 03:15 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/08/21 08:36 AM	100848
2106027-09B	MW-19	06/03/21 03:15 PM	Aqueous	E300	Anion Preparation	06/07/21 09:36 AM	100841
	MW-19	06/03/21 03:15 PM	Aqueous	E300	Anion Preparation	06/07/21 09:36 AM	100841
	MW-19	06/03/21 03:15 PM	Aqueous	M2540C	TDS Preparation	06/04/21 01:46 PM	100830
2106027-10A	MW-18A	06/03/21 04:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/08/21 08:36 AM	100848
	MW-18A	06/03/21 04:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/08/21 08:36 AM	100848
2106027-10B	MW-18A	06/03/21 04:20 PM	Aqueous	E300	Anion Preparation	06/07/21 09:36 AM	100841
	MW-18A	06/03/21 04:20 PM	Aqueous	M2540C	TDS Preparation	06/04/21 01:46 PM	100830

Lab Order: 2106027
Client: Golder
Project: Luminant - MLSES CCR PDP-5

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
2106027-01A	MW-17A	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100848	1	06/09/21 11:34 AM	ICP-MS5_210609A
	MW-17A	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100848	2	06/09/21 12:01 PM	ICP-MS4_210609A
2106027-01B	MW-17A	Aqueous	E300	Anions by IC method - Water	100841	1	06/07/21 12:29 PM	IC2_210607A
	MW-17A	Aqueous	M2540C	Total Dissolved Solids	100830	1	06/04/21 05:00 PM	WC_210604A
2106027-02A	PDP-24	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100848	10	06/09/21 12:16 PM	ICP-MS4_210609A
	PDP-24	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100848	1	06/09/21 11:37 AM	ICP-MS5_210609A
2106027-02B	PDP-24	Aqueous	E300	Anions by IC method - Water	100841	1	06/07/21 12:45 PM	IC2_210607A
	PDP-24	Aqueous	E300	Anions by IC method - Water	100841	10	06/07/21 04:37 PM	IC2_210607A
	PDP-24	Aqueous	M2540C	Total Dissolved Solids	100830	1	06/04/21 05:00 PM	WC_210604A
2106027-03A	PDP-25	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100848	1	06/09/21 11:40 AM	ICP-MS5_210609A
	PDP-25	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100848	5	06/09/21 12:18 PM	ICP-MS4_210609A
2106027-03B	PDP-25	Aqueous	E300	Anions by IC method - Water	100841	1	06/07/21 01:01 PM	IC2_210607A
	PDP-25	Aqueous	E300	Anions by IC method - Water	100841	10	06/07/21 05:25 PM	IC2_210607A
	PDP-25	Aqueous	M2540C	Total Dissolved Solids	100830	1	06/04/21 05:00 PM	WC_210604A
2106027-04A	PDP-26	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100848	1	06/09/21 11:41 AM	ICP-MS4_210609A
	PDP-26	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100848	1	06/09/21 10:52 AM	ICP-MS5_210609A
2106027-04B	PDP-26	Aqueous	E300	Anions by IC method - Water	100841	1	06/07/21 01:17 PM	IC2_210607A
	PDP-26	Aqueous	M2540C	Total Dissolved Solids	100830	1	06/04/21 05:00 PM	WC_210604A
2106027-05A	DUP-1	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100848	1	06/09/21 12:20 PM	ICP-MS4_210609A
	DUP-1	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100848	1	06/09/21 11:42 AM	ICP-MS5_210609A
2106027-05B	DUP-1	Aqueous	E300	Anions by IC method - Water	100841	1	06/07/21 01:33 PM	IC2_210607A
	DUP-1	Aqueous	M2540C	Total Dissolved Solids	100830	1	06/04/21 05:00 PM	WC_210604A
2106027-06A	MW-20A	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100848	1	06/09/21 11:45 AM	ICP-MS5_210609A
	MW-20A	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100848	2	06/09/21 12:22 PM	ICP-MS4_210609A
2106027-06B	MW-20A	Aqueous	E300	Anions by IC method - Water	100841	1	06/07/21 01:49 PM	IC2_210607A
	MW-20A	Aqueous	M2540C	Total Dissolved Solids	100830	1	06/04/21 05:00 PM	WC_210604A
2106027-07A	PDP-22	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100848	10	06/09/21 12:24 PM	ICP-MS4_210609A
	PDP-22	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100848	1	06/09/21 12:42 PM	ICP-MS4_210609A

Lab Order: 2106027
Client: Golder
Project: Luminant - MLSES CCR PDP-5

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
2106027-07A	PDP-22	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100848	1	06/09/21 11:47 AM	ICP-MS5_210609A
2106027-07B	PDP-22	Aqueous	E300	Anions by IC method - Water	100841	1	06/07/21 02:05 PM	IC2_210607A
	PDP-22	Aqueous	M2540C	Total Dissolved Solids	100830	1	06/04/21 05:00 PM	WC_210604A
2106027-08A	PDP-23	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100848	1	06/09/21 11:50 AM	ICP-MS5_210609A
	PDP-23	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100848	1	06/09/21 12:26 PM	ICP-MS4_210609A
2106027-08B	PDP-23	Aqueous	E300	Anions by IC method - Water	100841	1	06/07/21 02:21 PM	IC2_210607A
	PDP-23	Aqueous	M2540C	Total Dissolved Solids	100830	1	06/04/21 05:00 PM	WC_210604A
2106027-09A	MW-19	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100848	10	06/09/21 12:28 PM	ICP-MS4_210609A
	MW-19	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100848	1	06/09/21 11:53 AM	ICP-MS5_210609A
2106027-09B	MW-19	Aqueous	E300	Anions by IC method - Water	100841	1	06/07/21 02:37 PM	IC2_210607A
	MW-19	Aqueous	E300	Anions by IC method - Water	100841	10	06/07/21 05:41 PM	IC2_210607A
	MW-19	Aqueous	M2540C	Total Dissolved Solids	100830	1	06/04/21 05:00 PM	WC_210604A
2106027-10A	MW-18A	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100848	1	06/09/21 12:30 PM	ICP-MS4_210609A
	MW-18A	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	100848	1	06/09/21 11:55 AM	ICP-MS5_210609A
2106027-10B	MW-18A	Aqueous	E300	Anions by IC method - Water	100841	1	06/07/21 02:53 PM	IC2_210607A
	MW-18A	Aqueous	M2540C	Total Dissolved Solids	100830	1	06/04/21 05:00 PM	WC_210604A

DHL Analytical, Inc.

Date: *11-Jun-21*

CLIENT:	Golder	**Client Sample ID:**	MW-17A
Project:	Luminant - MLSES CCR PDP-5	**Lab ID:**	2106027-01
Project No:	19122262	**Collection Date:**	06/03/21 09:05 AM
Lab Order:	2106027	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Boron	0.534	0.0200	0.0600		mg/L	2	06/09/21 12:01 PM
Calcium	6.21	0.100	0.300		mg/L	1	06/09/21 11:34 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **BTJ**
Chloride	7.83	0.300	1.00		mg/L	1	06/07/21 12:29 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	06/07/21 12:29 PM
Sulfate	50.4	1.00	3.00		mg/L	1	06/07/21 12:29 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	146	10.0	10.0		mg/L	1	06/04/21 05:00 PM

Qualifiers:

- ND - Not Detected at the SDL
- J - Analyte detected between SDL and RL
- B - Analyte detected in the associated Method Blank
- DF- Dilution Factor
- N - Parameter not NELAP certified
- See Final Page of Report for MQLs and MDLs
- S - Spike Recovery outside control limits
- C - Sample Result or QC discussed in Case Narrative
- RL - Reporting Limit (MQL adjusted for moisture and sample size)
- SDL - Sample Detection Limit
- E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *11-Jun-21*

CLIENT:	Golder	**Client Sample ID:**	PDP-24
Project:	Luminant - MLSES CCR PDP-5	**Lab ID:**	2106027-02
Project No:	19122262	**Collection Date:**	06/03/21 09:50 AM
Lab Order:	2106027	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Boron	3.56	0.100	0.300		mg/L	10	06/09/21 12:16 PM
Calcium	26.4	1.00	3.00		mg/L	10	06/09/21 12:16 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **BTJ**
Chloride	19.3	0.300	1.00		mg/L	1	06/07/21 12:45 PM
Fluoride	0.934	0.100	0.400		mg/L	1	06/07/21 12:45 PM
Sulfate	350	10.0	30.0		mg/L	10	06/07/21 04:37 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	615	10.0	10.0		mg/L	1	06/04/21 05:00 PM

Qualifiers:

ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *11-Jun-21*

CLIENT:	Golder	**Client Sample ID:**	PDP-25
Project:	Luminant - MLSES CCR PDP-5	**Lab ID:**	2106027-03
Project No:	19122262	**Collection Date:**	06/03/21 10:40 AM
Lab Order:	2106027	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Boron	0.234	0.0500	0.150		mg/L	5	06/09/21 12:18 PM
Calcium	45.2	0.500	1.50		mg/L	5	06/09/21 12:18 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **BTJ**
Chloride	101	3.00	10.0		mg/L	10	06/07/21 05:25 PM
Fluoride	0.236	0.100	0.400	J	mg/L	1	06/07/21 01:01 PM
Sulfate	61.2	1.00	3.00		mg/L	1	06/07/21 01:01 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	431	10.0	10.0		mg/L	1	06/04/21 05:00 PM

Qualifiers:

- ND - Not Detected at the SDL
- J - Analyte detected between SDL and RL
- B - Analyte detected in the associated Method Blank
- DF- Dilution Factor
- N - Parameter not NELAP certified
- See Final Page of Report for MQLs and MDLs
- S - Spike Recovery outside control limits
- C - Sample Result or QC discussed in Case Narrative
- RL - Reporting Limit (MQL adjusted for moisture and sample size)
- SDL - Sample Detection Limit
- E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *11-Jun-21*

CLIENT:	Golder	**Client Sample ID:**	PDP-26
Project:	Luminant - MLSES CCR PDP-5	**Lab ID:**	2106027-04
Project No:	19122262	**Collection Date:**	06/03/21 11:25 AM
Lab Order:	2106027	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Boron	0.0516	0.0100	0.0300		mg/L	1	06/09/21 11:41 AM
Calcium	2.37	0.100	0.300		mg/L	1	06/09/21 10:52 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **BTJ**
Chloride	4.05	0.300	1.00		mg/L	1	06/07/21 01:17 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	06/07/21 01:17 PM
Sulfate	2.18	1.00	3.00	J	mg/L	1	06/07/21 01:17 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	104	10.0	10.0		mg/L	1	06/04/21 05:00 PM

Qualifiers:

- ND - Not Detected at the SDL
- J - Analyte detected between SDL and RL
- B - Analyte detected in the associated Method Blank
- DF- Dilution Factor
- N - Parameter not NELAP certified
- See Final Page of Report for MQLs and MDLs
- S - Spike Recovery outside control limits
- C - Sample Result or QC discussed in Case Narrative
- RL - Reporting Limit (MQL adjusted for moisture and sample size)
- SDL - Sample Detection Limit
- E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *11-Jun-21*

CLIENT:	Golder	**Client Sample ID:**	DUP-1
Project:	Luminant - MLSES CCR PDP-5	**Lab ID:**	2106027-05
Project No:	19122262	**Collection Date:**	06/03/21 11:25 AM
Lab Order:	2106027	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Boron	0.0635	0.0100	0.0300		mg/L	1	06/09/21 12:20 PM
Calcium	2.23	0.100	0.300		mg/L	1	06/09/21 11:42 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **BTJ**
Chloride	4.05	0.300	1.00		mg/L	1	06/07/21 01:33 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	06/07/21 01:33 PM
Sulfate	2.05	1.00	3.00	J	mg/L	1	06/07/21 01:33 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	107	10.0	10.0		mg/L	1	06/04/21 05:00 PM

Qualifiers:

- ND - Not Detected at the SDL
- J - Analyte detected between SDL and RL
- B - Analyte detected in the associated Method Blank
- DF- Dilution Factor
- N - Parameter not NELAP certified
- See Final Page of Report for MQLs and MDLs
- S - Spike Recovery outside control limits
- C - Sample Result or QC discussed in Case Narrative
- RL - Reporting Limit (MQL adjusted for moisture and sample size)
- SDL - Sample Detection Limit
- E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *11-Jun-21*

CLIENT:	Golder	**Client Sample ID:**	MW-20A
Project:	Luminant - MLSES CCR PDP-5	**Lab ID:**	2106027-06
Project No:	19122262	**Collection Date:**	06/03/21 12:30 PM
Lab Order:	2106027	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Boron	0.152	0.0200	0.0600		mg/L	2	06/09/21 12:22 PM
Calcium	26.1	0.200	0.600		mg/L	2	06/09/21 12:22 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **BTJ**
Chloride	9.63	0.300	1.00		mg/L	1	06/07/21 01:49 PM
Fluoride	0.324	0.100	0.400	J	mg/L	1	06/07/21 01:49 PM
Sulfate	93.2	1.00	3.00		mg/L	1	06/07/21 01:49 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	218	10.0	10.0		mg/L	1	06/04/21 05:00 PM

Qualifiers:

- ND - Not Detected at the SDL
- J - Analyte detected between SDL and RL
- B - Analyte detected in the associated Method Blank
- DF- Dilution Factor
- N - Parameter not NELAP certified
- See Final Page of Report for MQLs and MDLs
- S - Spike Recovery outside control limits
- C - Sample Result or QC discussed in Case Narrative
- RL - Reporting Limit (MQL adjusted for moisture and sample size)
- SDL - Sample Detection Limit
- E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *11-Jun-21*

CLIENT:	Golder	**Client Sample ID:**	PDP-22
Project:	Luminant - MLSES CCR PDP-5	**Lab ID:**	2106027-07
Project No:	19122262	**Collection Date:**	06/03/21 01:15 PM
Lab Order:	2106027	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Boron	0.121	0.0100	0.0300		mg/L	1	06/09/21 12:42 PM
Calcium	73.1	1.00	3.00		mg/L	10	06/09/21 12:24 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **BTJ**
Chloride	6.64	0.300	1.00		mg/L	1	06/07/21 02:05 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	06/07/21 02:05 PM
Sulfate	118	1.00	3.00		mg/L	1	06/07/21 02:05 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	415	10.0	10.0		mg/L	1	06/04/21 05:00 PM

Qualifiers:

- ND - Not Detected at the SDL
- J - Analyte detected between SDL and RL
- B - Analyte detected in the associated Method Blank
- DF- Dilution Factor
- N - Parameter not NELAP certified
- See Final Page of Report for MQLs and MDLs
- S - Spike Recovery outside control limits
- C - Sample Result or QC discussed in Case Narrative
- RL - Reporting Limit (MQL adjusted for moisture and sample size)
- SDL - Sample Detection Limit
- E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *11-Jun-21*

CLIENT:	Golder	**Client Sample ID:**	PDP-23
Project:	Luminant - MLSES CCR PDP-5	**Lab ID:**	2106027-08
Project No:	19122262	**Collection Date:**	06/03/21 02:15 PM
Lab Order:	2106027	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Boron	0.0818	0.0100	0.0300		mg/L	1	06/09/21 12:26 PM
Calcium	2.32	0.100	0.300		mg/L	1	06/09/21 11:50 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **BTJ**
Chloride	6.88	0.300	1.00		mg/L	1	06/07/21 02:21 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	06/07/21 02:21 PM
Sulfate	1.42	1.00	3.00	J	mg/L	1	06/07/21 02:21 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	101	10.0	10.0		mg/L	1	06/04/21 05:00 PM

Qualifiers:

- ND - Not Detected at the SDL
- J - Analyte detected between SDL and RL
- B - Analyte detected in the associated Method Blank
- DF- Dilution Factor
- N - Parameter not NELAP certified
- See Final Page of Report for MQLs and MDLs
- S - Spike Recovery outside control limits
- C - Sample Result or QC discussed in Case Narrative
- RL - Reporting Limit (MQL adjusted for moisture and sample size)
- SDL - Sample Detection Limit
- E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *11-Jun-21*

CLIENT:	Golder	**Client Sample ID:**	MW-19
Project:	Luminant - MLSES CCR PDP-5	**Lab ID:**	2106027-09
Project No:	19122262	**Collection Date:**	06/03/21 03:15 PM
Lab Order:	2106027	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Boron	0.560	0.100	0.300		mg/L	10	06/09/21 12:28 PM
Calcium	140	1.00	3.00		mg/L	10	06/09/21 12:28 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **BTJ**
Chloride	19.5	0.300	1.00		mg/L	1	06/07/21 02:37 PM
Fluoride	0.352	0.100	0.400	J	mg/L	1	06/07/21 02:37 PM
Sulfate	336	10.0	30.0		mg/L	10	06/07/21 05:41 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	751	10.0	10.0		mg/L	1	06/04/21 05:00 PM

Qualifiers:

- ND - Not Detected at the SDL
- J - Analyte detected between SDL and RL
- B - Analyte detected in the associated Method Blank
- DF- Dilution Factor
- N - Parameter not NELAP certified
- See Final Page of Report for MQLs and MDLs
- S - Spike Recovery outside control limits
- C - Sample Result or QC discussed in Case Narrative
- RL - Reporting Limit (MQL adjusted for moisture and sample size)
- SDL - Sample Detection Limit
- E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *11-Jun-21*

CLIENT:	Golder	**Client Sample ID:**	MW-18A
Project:	Luminant - MLSES CCR PDP-5	**Lab ID:**	2106027-10
Project No:	19122262	**Collection Date:**	06/03/21 04:20 PM
Lab Order:	2106027	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Boron	0.188	0.0100	0.0300		mg/L	1	06/09/21 12:30 PM
Calcium	1.73	0.100	0.300		mg/L	1	06/09/21 11:55 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **BTJ**
Chloride	6.20	0.300	1.00		mg/L	1	06/07/21 02:53 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	06/07/21 02:53 PM
Sulfate	6.20	1.00	3.00		mg/L	1	06/07/21 02:53 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	76.0	10.0	10.0		mg/L	1	06/04/21 05:00 PM

Qualifiers:

- ND - Not Detected at the SDL
- J - Analyte detected between SDL and RL
- B - Analyte detected in the associated Method Blank
- DF- Dilution Factor
- N - Parameter not NELAP certified
- See Final Page of Report for MQLs and MDLs
- S - Spike Recovery outside control limits
- C - Sample Result or QC discussed in Case Narrative
- RL - Reporting Limit (MQL adjusted for moisture and sample size)
- SDL - Sample Detection Limit
- E - TPH pattern not Gas or Diesel Range Pattern

CLIENT: Golder
Work Order: 2106027
Project: Luminant - MLSES CCR PDP-5

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_210428A

Sample ID: **DCS2-100323**	Batch ID: **100323**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS2**	Run ID: **ICP-MS4_210428A**	Analysis Date: **4/28/2021 10:34:00 AM**	Prep Date: **4/27/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.302	0.300	0.300	0	101	70	130	0	0	

Sample ID: **DCS4-100323**	Batch ID: **100323**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS4**	Run ID: **ICP-MS4_210428A**	Analysis Date: **4/28/2021 10:39:00 AM**	Prep Date: **4/27/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0310	0.0300	0.0300	0	103	70	130	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2106027
Project: Luminant - MLSES CCR PDP-5

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_210609A

The QC data in batch 100848 applies to the following samples: 2106027-01A, 2106027-02A, 2106027-03A, 2106027-04A, 2106027-05A, 2106027-06A, 2106027-07A, 2106027-08A, 2106027-09A, 2106027-10A

Sample ID: **MB-100848** Batch ID: **100848** TestNo: **SW6020B** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_210609A** Analysis Date: **6/9/2021 11:33:00 AM** Prep Date: **6/8/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	<0.0100	0.0300								

Sample ID: **LCS-100848** Batch ID: **100848** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_210609A** Analysis Date: **6/9/2021 11:35:00 AM** Prep Date: **6/8/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.201	0.0300	0.200	0	100	80	120			

Sample ID: **LCSD-100848** Batch ID: **100848** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_210609A** Analysis Date: **6/9/2021 11:37:00 AM** Prep Date: **6/8/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.200	0.0300	0.200	0	99.9	80	120	0.390	15	

Sample ID: **2106027-04A SD** Batch ID: **100848** TestNo: **SW6020B** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS4_210609A** Analysis Date: **6/9/2021 11:43:00 AM** Prep Date: **6/8/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0606	0.150	0	0.0516				16.0	20	

Sample ID: **2106027-04A PDS** Batch ID: **100848** TestNo: **SW6020B** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS4_210609A** Analysis Date: **6/9/2021 12:03:00 PM** Prep Date: **6/8/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.259	0.0300	0.200	0.0516	104	75	125			

Sample ID: **2106027-04A MS** Batch ID: **100848** TestNo: **SW6020B** Units: **mg/L**
SampType: **MS** Run ID: **ICP-MS4_210609A** Analysis Date: **6/9/2021 12:05:00 PM** Prep Date: **6/8/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.262	0.0300	0.200	0.0516	105	75	125			

Sample ID: **2106027-04A MSD** Batch ID: **100848** TestNo: **SW6020B** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS4_210609A** Analysis Date: **6/9/2021 12:07:00 PM** Prep Date: **6/8/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.262	0.0300	0.200	0.0516	105	75	125	0.115	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2106027
Project: Luminant - MLSES CCR PDP-5

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_210609A

Sample ID: **ICV-210609**	Batch ID: **R115738**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_210609A**	Analysis Date: **6/9/2021 10:34:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.102	0.0300	0.100	0	102	90	110			
Calcium	2.34	0.300	2.50	0	93.5	90	110			

Sample ID: **LCVL-210609**	Batch ID: **R115738**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_210609A**	Analysis Date: **6/9/2021 10:48:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0216	0.0300	0.0200	0	108	80	120			
Calcium	0.0810	0.300	0.100	0	81.0	80	120			

Sample ID: **CCV1-210609**	Batch ID: **R115738**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_210609A**	Analysis Date: **6/9/2021 12:09:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.207	0.0300	0.200	0	104	90	110			
Calcium	4.78	0.300	5.00	0	95.6	90	110			

Sample ID: **CCV2-210609**	Batch ID: **R115738**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_210609A**	Analysis Date: **6/9/2021 12:32:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.207	0.0300	0.200	0	103	90	110			
Calcium	4.76	0.300	5.00	0	95.2	90	110			

Sample ID: **CCV3-210609**	Batch ID: **R115738**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_210609A**	Analysis Date: **6/9/2021 12:44:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.214	0.0300	0.200	0	107	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2106027
Project: Luminant - MLSES CCR PDP-5

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_210428A

Sample ID: **DCS2-100323** Batch ID: **100323** TestNo: **SW6020B** Units: **mg/L**
SampType: **DCS2** Run ID: **ICP-MS5_210428A** Analysis Date: **4/28/2021 10:53:00 AM** Prep Date: **4/27/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.302	0.300	0.300	0	101	70	130	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2106027
Project: Luminant - MLSES CCR PDP-5

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_210609A

The QC data in batch 100848 applies to the following samples: 2106027-01A, 2106027-02A, 2106027-03A, 2106027-04A, 2106027-05A, 2106027-06A, 2106027-07A, 2106027-08A, 2106027-09A, 2106027-10A

Sample ID: **MB-100848**	Batch ID: **100848**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MBLK**	Run ID: **ICP-MS5_210609A**	Analysis Date: **6/9/2021 10:42:00 AM**	Prep Date: **6/8/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	<0.100	0.300								

Sample ID: **LCS-100848**	Batch ID: **100848**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCS**	Run ID: **ICP-MS5_210609A**	Analysis Date: **6/9/2021 10:44:00 AM**	Prep Date: **6/8/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.96	0.300	5.00	0	99.3	80	120			

Sample ID: **LCSD-100848**	Batch ID: **100848**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCSD**	Run ID: **ICP-MS5_210609A**	Analysis Date: **6/9/2021 10:47:00 AM**	Prep Date: **6/8/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.88	0.300	5.00	0	97.5	80	120	1.78	15	

Sample ID: **2106027-04A SD**	Batch ID: **100848**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS5_210609A**	Analysis Date: **6/9/2021 10:55:00 AM**	Prep Date: **6/8/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	2.45	1.50	0	2.37				3.47	20	

Sample ID: **2106027-04A PDS**	Batch ID: **100848**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS5_210609A**	Analysis Date: **6/9/2021 11:20:00 AM**	Prep Date: **6/8/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	7.04	0.300	5.00	2.37	93.5	75	125			

Sample ID: **2106027-04A MS**	Batch ID: **100848**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS5_210609A**	Analysis Date: **6/9/2021 11:23:00 AM**	Prep Date: **6/8/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	7.17	0.300	5.00	2.37	96.0	75	125			

Sample ID: **2106027-04A MSD**	Batch ID: **100848**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS5_210609A**	Analysis Date: **6/9/2021 11:26:00 AM**	Prep Date: **6/8/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	7.39	0.300	5.00	2.37	101	75	125	3.11	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2106027
Project: Luminant - MLSES CCR PDP-5

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_210609A

Sample ID: **ICV-210609**	Batch ID: **R115743**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS5_210609A**	Analysis Date: **6/9/2021 10:28:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	2.37	0.300	2.50	0	94.9	90	110			

Sample ID: **LCVL-210609**	Batch ID: **R115743**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_210609A**	Analysis Date: **6/9/2021 10:34:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.105	0.300	0.100	0	105	80	120			

Sample ID: **CCV1-210609**	Batch ID: **R115743**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_210609A**	Analysis Date: **6/9/2021 11:28:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.94	0.300	5.00	0	98.7	90	110			

Sample ID: **CCV2-210609**	Batch ID: **R115743**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_210609A**	Analysis Date: **6/9/2021 11:58:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.97	0.300	5.00	0	99.5	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2106027
Project: Luminant - MLSES CCR PDP-5

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_210527A

Sample ID: **DCS3-100738** Batch ID: **100738** TestNo: **E300** Units: **mg/L**
SampType: **DCS3** Run ID: **IC2_210527A** Analysis Date: **5/27/2021 4:13:05 PM** Prep Date: **5/27/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	1.25	1.00	1.000	0	125	70	130	0	0	
Fluoride	0.408	0.400	0.4000	0	102	70	130	0	0	
Sulfate	3.03	3.00	3.000	0	101	70	130	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2106027
Project: Luminant - MLSES CCR PDP-5

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_210607A

The QC data in batch 100841 applies to the following samples: 2106027-01B, 2106027-02B, 2106027-03B, 2106027-04B, 2106027-05B, 2106027-06B, 2106027-07B, 2106027-08B, 2106027-09B, 2106027-10B

Sample ID: **MB-100841** Batch ID: **100841** TestNo: **E300** Units: **mg/L**
SampType: **MBLK** Run ID: **IC2_210607A** Analysis Date: **6/7/2021 11:03:30 AM** Prep Date: **6/7/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00								
Fluoride	<0.100	0.400								
Sulfate	<1.00	3.00								

Sample ID: **LCSD-100841** Batch ID: **100841** TestNo: **E300** Units: **mg/L**
SampType: **LCSD** Run ID: **IC2_210607A** Analysis Date: **6/7/2021 11:35:30 AM** Prep Date: **6/7/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.30	1.00	10.00	0	93.0	90	110	0.036	20	
Fluoride	3.91	0.400	4.000	0	97.8	90	110	0.163	20	
Sulfate	29.5	3.00	30.00	0	98.2	90	110	0.100	20	

Sample ID: **LCS-100841** Batch ID: **100841** TestNo: **E300** Units: **mg/L**
SampType: **LCS** Run ID: **IC2_210607A** Analysis Date: **6/7/2021 12:04:59 PM** Prep Date: **6/7/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.30	1.00	10.00	0	93.0	90	110			
Fluoride	3.92	0.400	4.000	0	97.9	90	110			
Sulfate	29.5	3.00	30.00	0	98.3	90	110			

Sample ID: **2106027-02BMS** Batch ID: **100841** TestNo: **E300** Units: **mg/L**
SampType: **MS** Run ID: **IC2_210607A** Analysis Date: **6/7/2021 4:53:08 PM** Prep Date: **6/7/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	218	10.0	200.0	18.28	99.8	90	110			
Fluoride	201	4.00	200.0	0	101	90	110			
Sulfate	536	30.0	200.0	350.2	92.7	90	110			

Sample ID: **2106027-02BMSD** Batch ID: **100841** TestNo: **E300** Units: **mg/L**
SampType: **MSD** Run ID: **IC2_210607A** Analysis Date: **6/7/2021 5:09:08 PM** Prep Date: **6/7/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	218	10.0	200.0	18.28	99.9	90	110	0.045	20	
Fluoride	202	4.00	200.0	0	101	90	110	0.333	20	
Sulfate	536	30.0	200.0	350.2	93.0	90	110	0.117	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2106027
Project: Luminant - MLSES CCR PDP-5

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_210607A

Sample ID: **ICV-210607**	Batch ID: **R115719**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC2_210607A**	Analysis Date: **6/7/2021 10:31:30 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	24.7	1.00	25.00	0	98.9	90	110			
Fluoride	9.91	0.400	10.00	0	99.1	90	110			
Sulfate	77.7	3.00	75.00	0	104	90	110			

Sample ID: **CCV1-210607**	Batch ID: **R115719**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_210607A**	Analysis Date: **6/7/2021 3:41:45 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.25	1.00	10.00	0	92.5	90	110			
Fluoride	3.87	0.400	4.000	0	96.7	90	110			
Sulfate	29.3	3.00	30.00	0	97.7	90	110			

Sample ID: **CCV2-210607**	Batch ID: **R115719**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_210607A**	Analysis Date: **6/7/2021 6:29:08 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.37	1.00	10.00	0	93.7	90	110			
Fluoride	3.96	0.400	4.000	0	99.0	90	110			
Sulfate	29.9	3.00	30.00	0	99.6	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2106027
Project: Luminant - MLSES CCR PDP-5

ANALYTICAL QC SUMMARY REPORT

RunID: WC_210604A

The QC data in batch 100830 applies to the following samples: 2106027-01B, 2106027-02B, 2106027-03B, 2106027-04B, 2106027-05B, 2106027-06B, 2106027-07B, 2106027-08B, 2106027-09B, 2106027-10B

Sample ID: **MB-100830**	Batch ID: **100830**	TestNo: **M2540C**	Units: **mg/L**
SampType: **MBLK**	Run ID: **WC_210604A**	Analysis Date: **6/4/2021 5:00:00 PM**	Prep Date: **6/4/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	<10.0	10.0								

Sample ID: **LCS-100830**	Batch ID: **100830**	TestNo: **M2540C**	Units: **mg/L**
SampType: **LCS**	Run ID: **WC_210604A**	Analysis Date: **6/4/2021 5:00:00 PM**	Prep Date: **6/4/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	751	10.0	745.6	0	101	90	113			

Sample ID: **2106009-01A-DUP**	Batch ID: **100830**	TestNo: **M2540C**	Units: **mg/L**
SampType: **DUP**	Run ID: **WC_210604A**	Analysis Date: **6/4/2021 5:00:00 PM**	Prep Date: **6/4/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	1110	50.0	0	1115				0.901	5	

Sample ID: **2106009-02A-DUP**	Batch ID: **100830**	TestNo: **M2540C**	Units: **mg/L**
SampType: **DUP**	Run ID: **WC_210604A**	Analysis Date: **6/4/2021 5:00:00 PM**	Prep Date: **6/4/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	1200	50.0	0	1235				2.87	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *11-Jun-21*

CLIENT: Golder
Work Order: 2106027
Project: Luminant - MLSES CCR PDP-5

MQL SUMMARY REPORT

TestNo: E300	**MDL**	**MQL**
Analyte	**mg/L**	**mg/L**
Chloride	0.300	1.00
Fluoride	0.100	0.400
Sulfate	1.00	3.00

TestNo: SW6020B	**MDL**	**MQL**
Analyte	**mg/L**	**mg/L**
Boron	0.0100	0.0300
Calcium	0.100	0.300

TestNo: M2540C	**MDL**	**MQL**
Analyte	**mg/L**	**mg/L**
Total Dissolved Solids (Residue, Filt	10.0	10.0

Qualifiers: MQL -Method Quantitation Limit as defined by TRRP
MDL -Method Detection Limit as defined by TRRP

November 02, 2021

Will Vienne
Golder
2201 Double Creek Dr #4004
Round Rock, Texas 78664
TEL: (512) 671-3434
FAX (512) 671-3446

Order No.: 2110215

RE: Luminant - MLSES PDP 5

Dear Will Vienne:

DHL Analytical, Inc. received 11 sample(s) on 10/26/2021 for the analyses presented in the following report.

There were no problems with the analyses and all data met requirements of NELAP except where noted in the Case Narrative. All non-NELAP methods will be identified accordingly in the case narrative and all estimated uncertainties of test results are within method or EPA specifications.

If you have any questions regarding these tests results, please feel free to call. Thank you for using DHL Analytical.

Sincerely,

John DuPont
General Manager

This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211-21-27

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DHL ANALYTICAL
2300 Double Creek Dr. Round Rock, TX 78664
Phone 512.388.8222
Web: **www.dhlanalytical.com**
Email: **login@dhlanalytical.com**

CHAIN-OF-CUSTODY

CLIENT: GOLDER
ADDRESS: TEXARKANA, TX
PHONE: 512-695-8609 EMAIL:
DATA REPORTED TO: KEITH STARCEK
ADDITIONAL REPORT COPIES TO:

DATE: 10-25-21
PO#:
PROJECT LOCATION OR NAME: LUMINANT-MLSES PDP 5
CLIENT PROJECT # 19116344 COLLECTOR: JOHN BRAYTON

LABORATORY USE ONLY
DHL WORKORDER #: 2110215

Authorize 5% surcharge for TRRP report? ☐ Yes ☐ No

Lab Use Only: W=WATER, L=LIQUID, S=SOIL, SO=SOLID, SE=SEDIMENT, P=PAINT, SL=SLUDGE

Field Sample I.D.	DHL Lab #	Collection Date	Collection Time	Matrix	Container Type	# of Containers	PRESERVATION: HCl	HNO3	H2SO4	NaOH ☐ Zn Acetate ☐	ICE ☒ UNPRESERVED ☐	ANALYSES	FIELD NOTES
MW-17A	01	10-21-21	~~1535~~		P	2		X			X	pH☐ HEX CHROM☐ ALKALINITY☒ COD☐; TDS☒ TSS☐ % MOIST☐ CYANIDE☐; total metals; Cl, SO4	Ca, Cd, Al, Fe,
MW-17B	02	10-21-21	1620	W	P	2		X			X		Mg, Mn, Ni, Se,
MW-6R	03	10-21-21	1705	W	P	2		X			X		Na, B, K
MW-5	04	10-22-21	0755	W	P	2		X			X		
MW-15A	05	10-22-21	0845	W	P	2		X			X		
MW-16A	06	10-22-21	0935	W	P	2		X			X		
MW-16B	07	10-22-21	1025	W	P	2		X			X		
MW-20A	08	10-22-21	1130	W	P	2		X			X		
MW-20B	09	10-22-21	1230	W	P	2		X			X		
MW-1	10	10-22-21	1340	W	P	2		X			X		
DUP-1	11	10-22-21	1340	W	P	2		X			X		

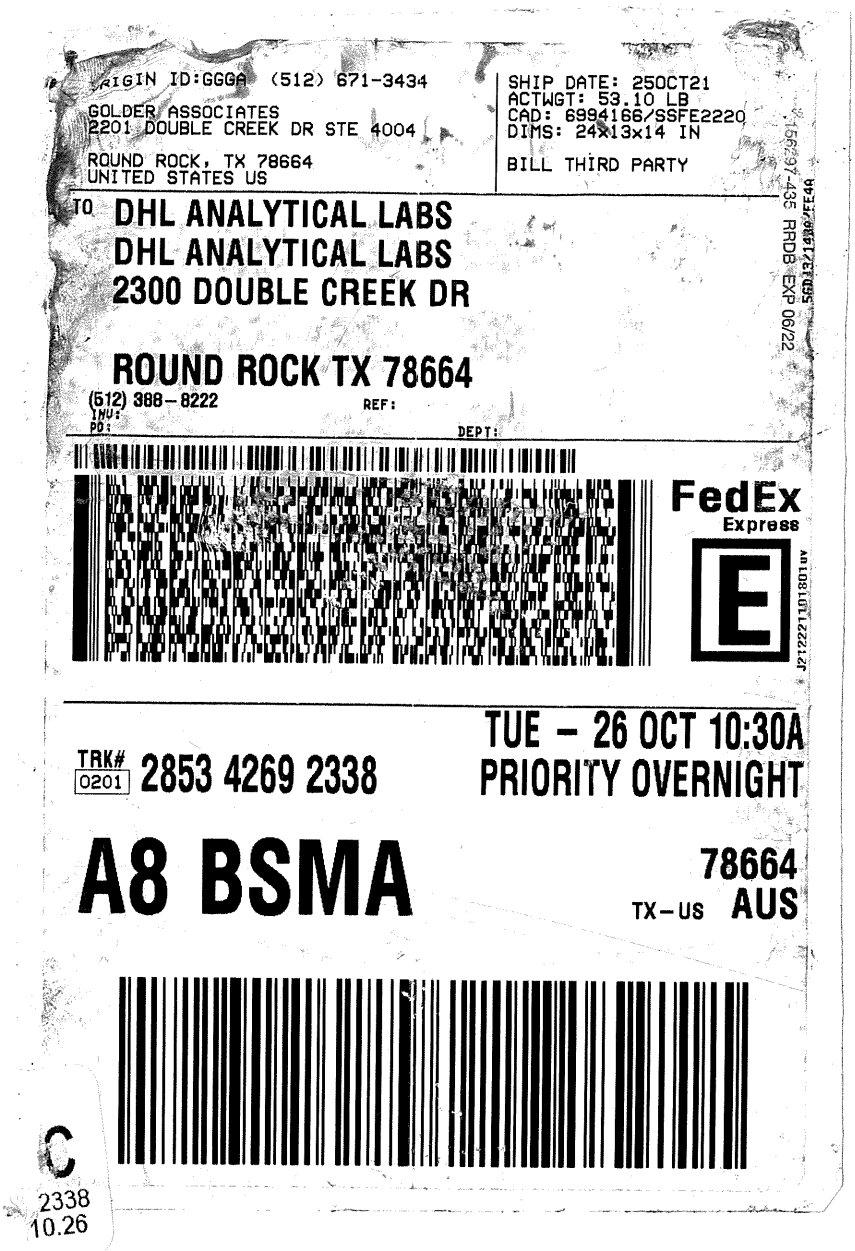
Relinquished By: (Sign)	DATE/TIME	Received by:
[signature]	10-25-21 1830	FedEx
FedEx	10/26/21 0958	[signature]

TURN AROUND TIME (CALL FIRST FOR RUSH)
RUSH-1 DAY☐ RUSH-2 DAY☐ RUSH-3 DAY☐
NORMAL ☒ OTHER ☐
DUE DATE [signature] ☐

LABORATORY USE ONLY
RECEIVING TEMP (°C): 3.0 THERM #: 78
CUSTODY SEALS: ☐ BROKEN ☒ INTACT ☐ NOT USED
CARRIER: ☐ LSO ☒ FEDEX ☐ UPS ☐ COURIER ☐ OTHER ☐ HAND DELIVERED

☐ **DHL DISPOSAL @ 5.00 each** ☐ **Return**

DHL COC REV 3 | MAR 2021



CUSTODY SEAL

DATE 10-25-21

SIGNATURE

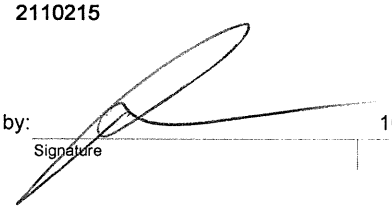
DHL ANALYTICAL

DHL Analytical, Inc.

Sample Receipt Checklist

Client Name **Golder** Date Received: **10/26/2021**

Work Order Number **2110215** Received by: **EL**

Checklist completed by:  10/26/2021 (Signature / Date)

Reviewed by SH 10/26/2021 (Initials / Date)

Carrier name: FedEx 1day

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	**3.0** °C
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH<2 acceptable upon receipt?	Yes ☑	No ☐	NA ☐ LOT # 13171
	Adjusted? No		Checked by R.A.
Water - ph>9 (S) or ph>10 (CN) acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted?		Checked by

Any No response must be detailed in the comments section below.

Client contacted: _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments: _____

Corrective Action: _____

v

Laboratory Name: DHL Analytical, Inc.

Laboratory Review Checklist: Reportable Data

Project Name: Luminant - MLSES PDP 5	**LRC Date:** 11/2/2021
Reviewer Name: Angie O'Donnell	**Laboratory Work Order: 2110215**
Prep Batch Number(s): See Prep Dates Report	**Run Batch:** See Analytical Dates Report

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
		Chain-of-Custody (C-O-C)					
R1	OI	**1)** Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	**X**				**R1-01**
		2) Were all departures from standard conditions described in an exception report?			**X**		
R2	OI	**Sample and Quality Control (QC) Identification**					
		1) Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	**X**				
		2) Are all laboratory ID numbers cross-referenced to the corresponding QC data?	**X**				
R3	OI	**Test Reports**					
		1) Were all samples prepared and analyzed within holding times?	**X**				
		2) Other than those results < MQL, were all other raw values bracketed by calibration standards?	**X**				
		3) Were calculations checked by a peer or supervisor?	**X**				
		4) Were all analyte identifications checked by a peer or supervisor?	**X**				
		5) Were sample detection limits reported for all analytes not detected?	**X**				
		6) Were all results for soil and sediment samples reported on a dry weight basis?			**X**		
		7) Were % moisture (or solids) reported for all soil and sediment samples?			**X**		
		8) Were bulk soils/solids samples for volatile analysis extracted with methanol per EPA Method 5035?			**X**		
		9) If required for the project, TICs reported?			**X**		
R4	O	**Surrogate Recovery Data**					
		1) Were surrogates added prior to extraction?			**X**		
		2) Were surrogate percent recoveries in all samples within the laboratory QC limits?			**X**		
R5	OI	**Test Reports/Summary Forms for Blank Samples**					
		1) Were appropriate type(s) of blanks analyzed?	**X**				
		2) Were blanks analyzed at the appropriate frequency?	**X**				
		3) Where method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	**X**				
		4) Were blank concentrations < MDL?	**X**				
		5) For analyte(s) detected in a blank sample, was the concentration, unadjusted for sample specific factors, in all associated field samples, **greater** than 10 times the concentration in the blank sample?			**X**		
R6	OI	**Laboratory Control Samples (LCS):**					
		1) Were all COCs included in the LCS?	**X**				
		2) Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	**X**				
		3) Were LCSs analyzed at the required frequency?	**X**				
		4) Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	**X**				
		5) Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	**X**				
		6) Was the LCSD RPD within QC limits (if applicable)?	**X**				
R7	OI	**Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Data**					
		1) Were the project/method specified analytes included in the MS and MSD?	**X**				
		2) Were MS/MSD analyzed at the appropriate frequency?	**X**				
		3) Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?		**X**			**R7-03**
		4) Were MS/MSD RPDs within laboratory QC limits?	**X**				
R8	OI	**Analytical Duplicate Data**					
		1) Were appropriate analytical duplicates analyzed for each matrix?	**X**				
		2) Were analytical duplicates analyzed at the appropriate frequency?	**X**				
		3) Were RPDs or relative standard deviations within the laboratory QC limits?	**X**				
R9	OI	**Method Quantitation Limits (MQLs):**					
		1) Are the MQLs for each method analyte included in the laboratory data package?	**X**				
		2) Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	**X**				
		3) Are unadjusted MQLs and DCSs included in the laboratory data package?	**X**				
R10	OI	**Other Problems/Anomalies**					
		1) Are all known problems/anomalies/special conditions noted in this LRC and ER?	**X**				
		2) Was applicable and available technology used to lower the SDL to minimize the matrix interference affects on the sample results?	**X**				
		3) Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices and methods associated with this laboratory data package?	**X**				

Laboratory Name: DHL Analytical, Inc.

Laboratory Review Checklist (continued): Supporting Data

Project Name: Luminant - MLSES PDP 5	**LRC Date:** 11/2/2021
Reviewer Name: Angie O'Donnell	**Laboratory Work Order: 2110215**
Prep Batch Number(s): See Prep Dates Report	**Run Batch:** See Analytical Dates Report

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
S1	OI	**Initial Calibration (ICAL)**					
		1) Were response factors and/or relative response factors for each analyte within QC limits?	X				
		2) Were percent RSDs or correlation coefficient criteria met?	X				
		3) Was the number of standards recommended in the method used for all analytes?	X				
		4) Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		5) Are ICAL data available for all instruments used?	X				
		6) Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	**Initial and Continuing calibration Verification (ICCV and CCV) and Continuing Calibration blank (CCB):**					
		1) Was the CCV analyzed at the method-required frequency?	X				
		2) Were percent differences for each analyte within the method-required QC limits?	X				
		3) Was the ICAL curve verified for each analyte?	X				
		4) Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	X				
S3	O	**Mass Spectral Tuning:**					
		1) Was the appropriate compound for the method used for tuning?	X				
		2) Were ion abundance data within the method-required QC limits?	X				
S4	O	**Internal Standards (IS):**					
		1) Were IS area counts and retention times within the method-required QC limits?	X				
S5	OI	**Raw Data (NELAC Section 5.5.10)**					
		1) Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		2) Were data associated with manual integrations flagged on the raw data?	X				
S6	O	**Dual Column Confirmation**					
		1) Did dual column confirmation results meet the method-required QC?			X		
S7	O	**Tentatively Identified Compounds (TICs):**					
		1) If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) Results:**					
		1) Were percent recoveries within method QC limits?	X				
S9	I	**Serial Dilutions, Post Digestion Spikes, and Method of Standard Additions**					
		1) Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	X				
S10	OI	**Method Detection Limit (MDL) Studies**					
		1) Was a MDL study performed for each reported analyte?	X				
		2) Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	**Proficiency Test Reports:**					
		1) Was the lab's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	**Standards Documentation**					
		1) Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound/Analyte Identification Procedures**					
		1) Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of Analyst Competency (DOC)**					
		1) Was DOC conducted consistent with NELAC Chapter 5 – Appendix C?	X				
		2) Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/Validation Documentation for Methods** (NELAC Chapter 5)					
		1) Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	**Laboratory Standard Operating Procedures (SOPs):**					
		1) Are laboratory SOPs current and on file for each method performed?	X				

1 Items identified by the letter "R" should be included in the laboratory data package submitted to the TCEQ in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.

2 O = organic analyses; I = inorganic analyses (and general chemistry, when applicable).

3 NA = Not applicable.

4 NR = Not Reviewed.

5 ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Data Package Signature Page – RG-366/TRRP-13

This data package consists of:

This signature page, the laboratory review checklist, and the following reportable data:

R1 Field chain-of-custody documentation;
R2 Sample identification cross-reference;
R3 Test reports (analytical data sheets) for each environmental sample that includes:
  a) Items consistent with NELAC Chapter 5,
  b) dilution factors,
  c) preparation methods,
  d) cleanup methods, and
  e) if required for the project, tentatively identified compounds (TICs).
R4 Surrogate recovery data including:
  a) Calculated recovery (%R), and
  b) The laboratory's surrogate QC limits.
R5 Test reports/summary forms for blank samples;
R6 Test reports/summary forms for laboratory control samples (LCSs) including:
  a) LCS spiking amounts,
  b) Calculated %R for each analyte, and
  c) The laboratory's LCS QC limits.
R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
  a) Samples associated with the MS/MSD clearly identified,
  b) MS/MSD spiking amounts,
  c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
  d) Calculated %Rs and relative percent differences (RPDs), and
  e) The laboratory's MS/MSD QC limits
R8 Laboratory analytical duplicate (if applicable) recovery and precision:
  a) The amount of analyte measured in the duplicate,
  b) The calculated RPD, and
  c) The laboratory's QC limits for analytical duplicates.
R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix;
R10 Other problems or anomalies.

The Exception Report for each "No" or "Not Reviewed (NR)" item in the Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory is not accredited under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature below, I affirm to the best of my knowledge that all problems/anomalies observed by the laboratory have been identified in the Laboratory Review Checklist, and no information or data affecting the quality of the data has been knowingly withheld.

This laboratory was last inspected by TCEQ on February 23-26, 2021. Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Name: John DuPont
Official Title: General Manager

Signature

11/02/21

Date

Name: Dr. Derhsing Luu
Official Title: Technical Director

DHL Analytical, Inc. **Date:** *02-Nov-21*

CLIENT: Golder
Project: Luminant - MLSES PDP 5
Lab Order: 2110215

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Method SW6020B - Metals Analysis
Method E300 - Anions Analysis
Method M2540C - TDS Analysis
Method M2320 B - Alkalinity Analysis

Exception Report R1-01

The samples were received and log-in performed on 10/26/2021. A total of 11 samples were received and analyzed. The samples arrived in good condition and were properly packaged.

Exception Report R7-03

For Anions Analysis, the recovery of Chloride for (each) the Matrix Spike and Matrix Spike Duplicate(s) (2110242-02, -03 MS/MSD) was below the method control limits. These are flagged accordingly in the QC Summary Report. This anion was within method control limits in the associated LCS. No further corrective action was taken.

DHL Analytical, Inc.

Date: *02-Nov-21*

CLIENT: Golder
Project: Luminant - MLSES PDP 5
Lab Order: 2110215

Work Order Sample Summary

Lab Smp ID	Client Sample ID	Tag Number	Date Collected	Date Recved
2110215-01	MW-17A		10/21/21 03:35 PM	10/26/2021
2110215-02	MW-17B		10/21/21 04:20 PM	10/26/2021
2110215-03	MW-6R		10/21/21 05:05 PM	10/26/2021
2110215-04	MW-5		10/22/21 07:55 AM	10/26/2021
2110215-05	MW-15A		10/22/21 08:45 AM	10/26/2021
2110215-06	MW-16A		10/22/21 09:35 AM	10/26/2021
2110215-07	MW-16B		10/22/21 10:25 AM	10/26/2021
2110215-08	MW-20A		10/22/21 11:30 AM	10/26/2021
2110215-09	MW-20B		10/22/21 12:30 PM	10/26/2021
2110215-10	MW-1		10/22/21 01:40 PM	10/26/2021
2110215-11	DUP-1		10/22/21 01:40 PM	10/26/2021

Lab Order: 2110215
Client: Golder
Project: Luminant - MLSES PDP 5

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
2110215-01A	MW-17A	10/21/21 03:35 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/27/21 09:40 AM	102576
	MW-17A	10/21/21 03:35 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/27/21 09:40 AM	102576
2110215-01B	MW-17A	10/21/21 03:35 PM	Aqueous	M2320 B	Alkalinity Preparation	10/27/21 09:17 AM	102572
	MW-17A	10/21/21 03:35 PM	Aqueous	E300	Anion Preparation	10/28/21 10:01 AM	102594
	MW-17A	10/21/21 03:35 PM	Aqueous	M2540C	TDS Preparation	10/27/21 08:55 AM	102570
2110215-02A	MW-17B	10/21/21 04:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/27/21 09:40 AM	102576
	MW-17B	10/21/21 04:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/27/21 09:40 AM	102576
2110215-02B	MW-17B	10/21/21 04:20 PM	Aqueous	M2320 B	Alkalinity Preparation	10/27/21 09:17 AM	102572
	MW-17B	10/21/21 04:20 PM	Aqueous	E300	Anion Preparation	10/28/21 10:01 AM	102594
	MW-17B	10/21/21 04:20 PM	Aqueous	E300	Anion Preparation	10/28/21 10:01 AM	102594
	MW-17B	10/21/21 04:20 PM	Aqueous	M2540C	TDS Preparation	10/27/21 08:55 AM	102570
2110215-03A	MW-6R	10/21/21 05:05 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/27/21 09:40 AM	102576
	MW-6R	10/21/21 05:05 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/27/21 09:40 AM	102576
	MW-6R	10/21/21 05:05 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/27/21 09:40 AM	102576
2110215-03B	MW-6R	10/21/21 05:05 PM	Aqueous	M2320 B	Alkalinity Preparation	10/27/21 09:17 AM	102572
	MW-6R	10/21/21 05:05 PM	Aqueous	E300	Anion Preparation	10/28/21 10:01 AM	102594
	MW-6R	10/21/21 05:05 PM	Aqueous	E300	Anion Preparation	10/28/21 10:01 AM	102594
	MW-6R	10/21/21 05:05 PM	Aqueous	M2540C	TDS Preparation	10/27/21 08:55 AM	102570
2110215-04A	MW-5	10/22/21 07:55 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/27/21 09:40 AM	102576
	MW-5	10/22/21 07:55 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/27/21 09:40 AM	102576
	MW-5	10/22/21 07:55 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/27/21 09:40 AM	102576
2110215-04B	MW-5	10/22/21 07:55 AM	Aqueous	M2320 B	Alkalinity Preparation	10/27/21 09:17 AM	102572
	MW-5	10/22/21 07:55 AM	Aqueous	E300	Anion Preparation	10/28/21 10:01 AM	102594
	MW-5	10/22/21 07:55 AM	Aqueous	E300	Anion Preparation	10/28/21 10:01 AM	102594
	MW-5	10/22/21 07:55 AM	Aqueous	M2540C	TDS Preparation	10/27/21 08:55 AM	102570
2110215-05A	MW-15A	10/22/21 08:45 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/27/21 09:40 AM	102576
	MW-15A	10/22/21 08:45 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/27/21 09:40 AM	102576
2110215-05B	MW-15A	10/22/21 08:45 AM	Aqueous	M2320 B	Alkalinity Preparation	10/27/21 09:17 AM	102572

Lab Order: 2110215
Client: Golder
Project: Luminant - MLSES PDP 5

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
2110215-05B	MW-15A	10/22/21 08:45 AM	Aqueous	E300	Anion Preparation	10/28/21 10:01 AM	102594
	MW-15A	10/22/21 08:45 AM	Aqueous	E300	Anion Preparation	10/28/21 10:01 AM	102594
	MW-15A	10/22/21 08:45 AM	Aqueous	M2540C	TDS Preparation	10/27/21 08:55 AM	102570
2110215-06A	MW-16A	10/22/21 09:35 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/27/21 09:40 AM	102576
	MW-16A	10/22/21 09:35 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/27/21 09:40 AM	102576
	MW-16A	10/22/21 09:35 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/27/21 09:40 AM	102576
2110215-06B	MW-16A	10/22/21 09:35 AM	Aqueous	M2320 B	Alkalinity Preparation	10/27/21 09:17 AM	102572
	MW-16A	10/22/21 09:35 AM	Aqueous	E300	Anion Preparation	10/28/21 10:01 AM	102594
	MW-16A	10/22/21 09:35 AM	Aqueous	E300	Anion Preparation	10/28/21 10:01 AM	102594
	MW-16A	10/22/21 09:35 AM	Aqueous	M2540C	TDS Preparation	10/27/21 08:55 AM	102570
2110215-07A	MW-16B	10/22/21 10:25 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/27/21 09:40 AM	102576
	MW-16B	10/22/21 10:25 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/27/21 09:40 AM	102576
2110215-07B	MW-16B	10/22/21 10:25 AM	Aqueous	M2320 B	Alkalinity Preparation	10/27/21 09:17 AM	102572
	MW-16B	10/22/21 10:25 AM	Aqueous	E300	Anion Preparation	10/28/21 10:01 AM	102594
	MW-16B	10/22/21 10:25 AM	Aqueous	E300	Anion Preparation	10/28/21 10:01 AM	102594
	MW-16B	10/22/21 10:25 AM	Aqueous	M2540C	TDS Preparation	10/27/21 08:55 AM	102570
2110215-08A	MW-20A	10/22/21 11:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/27/21 09:40 AM	102576
	MW-20A	10/22/21 11:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/27/21 09:40 AM	102576
2110215-08B	MW-20A	10/22/21 11:30 AM	Aqueous	M2320 B	Alkalinity Preparation	10/27/21 09:17 AM	102572
	MW-20A	10/22/21 11:30 AM	Aqueous	E300	Anion Preparation	10/28/21 10:01 AM	102594
	MW-20A	10/22/21 11:30 AM	Aqueous	M2540C	TDS Preparation	10/27/21 08:55 AM	102570
2110215-09A	MW-20B	10/22/21 12:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/27/21 09:40 AM	102576
	MW-20B	10/22/21 12:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/27/21 09:40 AM	102576
	MW-20B	10/22/21 12:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/27/21 09:40 AM	102576
2110215-09B	MW-20B	10/22/21 12:30 PM	Aqueous	M2320 B	Alkalinity Preparation	10/27/21 09:17 AM	102572
	MW-20B	10/22/21 12:30 PM	Aqueous	E300	Anion Preparation	10/28/21 10:01 AM	102594
	MW-20B	10/22/21 12:30 PM	Aqueous	E300	Anion Preparation	10/28/21 10:01 AM	102594
	MW-20B	10/22/21 12:30 PM	Aqueous	M2540C	TDS Preparation	10/27/21 08:55 AM	102570

Lab Order: 2110215
Client: Golder
Project: Luminant - MLSES PDP 5

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
2110215-10A	MW-1	10/22/21 01:40 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/27/21 09:40 AM	102576
	MW-1	10/22/21 01:40 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/27/21 09:40 AM	102576
	MW-1	10/22/21 01:40 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/27/21 09:40 AM	102576
2110215-10B	MW-1	10/22/21 01:40 PM	Aqueous	M2320 B	Alkalinity Preparation	10/27/21 09:17 AM	102572
	MW-1	10/22/21 01:40 PM	Aqueous	E300	Anion Preparation	10/28/21 10:01 AM	102594
	MW-1	10/22/21 01:40 PM	Aqueous	E300	Anion Preparation	10/28/21 10:01 AM	102594
	MW-1	10/22/21 01:40 PM	Aqueous	M2540C	TDS Preparation	10/27/21 08:55 AM	102570
2110215-11A	DUP-1	10/22/21 01:40 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/27/21 09:40 AM	102576
	DUP-1	10/22/21 01:40 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/27/21 09:40 AM	102576
	DUP-1	10/22/21 01:40 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/27/21 09:40 AM	102576
2110215-11B	DUP-1	10/22/21 01:40 PM	Aqueous	M2320 B	Alkalinity Preparation	10/27/21 09:17 AM	102572
	DUP-1	10/22/21 01:40 PM	Aqueous	E300	Anion Preparation	10/28/21 10:01 AM	102594
	DUP-1	10/22/21 01:40 PM	Aqueous	E300	Anion Preparation	10/28/21 10:01 AM	102594
	DUP-1	10/22/21 01:40 PM	Aqueous	M2540C	TDS Preparation	10/27/21 08:55 AM	102570

Lab Order: 2110215
Client: Golder
Project: Luminant - MLSES PDP 5

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
2110215-01A	MW-17A	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	102576	1	10/28/21 11:03 AM	ICP-MS5_211028A
	MW-17A	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	102576	1	10/28/21 02:08 PM	ICP-MS4_211028A
2110215-01B	MW-17A	Aqueous	M2320 B	Alkalinity	102572	1	10/27/21 12:07 PM	TITRATOR_211027A
	MW-17A	Aqueous	E300	Anions by IC method - Water	102594	1	10/28/21 11:04 PM	IC2_211028A
	MW-17A	Aqueous	M2540C	Total Dissolved Solids	102570	1	10/27/21 03:05 PM	WC_211027C
2110215-02A	MW-17B	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	102576	1	10/28/21 02:12 PM	ICP-MS4_211028A
	MW-17B	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	102576	1	10/28/21 11:15 AM	ICP-MS5_211028A
2110215-02B	MW-17B	Aqueous	M2320 B	Alkalinity	102572	1	10/27/21 12:11 PM	TITRATOR_211027A
	MW-17B	Aqueous	E300	Anions by IC method - Water	102594	10	10/28/21 04:24 PM	IC2_211028A
	MW-17B	Aqueous	E300	Anions by IC method - Water	102594	1	10/28/21 11:20 PM	IC2_211028A
	MW-17B	Aqueous	M2540C	Total Dissolved Solids	102570	1	10/27/21 03:05 PM	WC_211027C
2110215-03A	MW-6R	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	102576	50	10/28/21 02:14 PM	ICP-MS4_211028A
	MW-6R	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	102576	1	10/28/21 11:18 AM	ICP-MS5_211028A
	MW-6R	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	102576	50	10/28/21 12:18 PM	ICP-MS5_211028A
2110215-03B	MW-6R	Aqueous	M2320 B	Alkalinity	102572	1	10/27/21 12:18 PM	TITRATOR_211027A
	MW-6R	Aqueous	E300	Anions by IC method - Water	102594	1	10/29/21 12:40 AM	IC2_211028A
	MW-6R	Aqueous	E300	Anions by IC method - Water	102594	10	10/28/21 04:40 PM	IC2_211028A
	MW-6R	Aqueous	M2540C	Total Dissolved Solids	102570	1	10/27/21 03:05 PM	WC_211027C
2110215-04A	MW-5	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	102576	1	10/28/21 02:52 PM	ICP-MS4_211028A
	MW-5	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	102576	1	10/28/21 11:21 AM	ICP-MS5_211028A
	MW-5	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	102576	5	10/28/21 12:21 PM	ICP-MS5_211028A
2110215-04B	MW-5	Aqueous	M2320 B	Alkalinity	102572	1	10/27/21 12:42 PM	TITRATOR_211027A
	MW-5	Aqueous	E300	Anions by IC method - Water	102594	10	10/28/21 04:56 PM	IC2_211028A
	MW-5	Aqueous	E300	Anions by IC method - Water	102594	1	10/29/21 12:56 AM	IC2_211028A
	MW-5	Aqueous	M2540C	Total Dissolved Solids	102570	1	10/27/21 03:05 PM	WC_211027C
2110215-05A	MW-15A	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	102576	5	10/28/21 02:18 PM	ICP-MS4_211028A
	MW-15A	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	102576	1	10/28/21 11:23 AM	ICP-MS5_211028A
2110215-05B	MW-15A	Aqueous	M2320 B	Alkalinity	102572	1	10/27/21 12:45 PM	TITRATOR_211027A

Lab Order: 2110215
Client: Golder
Project: Luminant - MLSES PDP 5

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
2110215-05B	MW-15A	Aqueous	E300	Anions by IC method - Water	102594	10	10/28/21 05:12 PM	IC2_211028A
	MW-15A	Aqueous	E300	Anions by IC method - Water	102594	1	10/29/21 01:12 AM	IC2_211028A
	MW-15A	Aqueous	M2540C	Total Dissolved Solids	102570	1	10/27/21 03:05 PM	WC_211027C
2110215-06A	MW-16A	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	102576	5	10/28/21 02:20 PM	ICP-MS4_211028A
	MW-16A	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	102576	1	10/28/21 11:26 AM	ICP-MS5_211028A
	MW-16A	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	102576	20	10/28/21 12:26 PM	ICP-MS5_211028A
2110215-06B	MW-16A	Aqueous	M2320 B	Alkalinity	102572	1	10/27/21 01:02 PM	TITRATOR_211027A
	MW-16A	Aqueous	E300	Anions by IC method - Water	102594	1	10/29/21 01:28 AM	IC2_211028A
	MW-16A	Aqueous	E300	Anions by IC method - Water	102594	10	10/28/21 05:28 PM	IC2_211028A
	MW-16A	Aqueous	M2540C	Total Dissolved Solids	102570	1	10/27/21 03:05 PM	WC_211027C
2110215-07A	MW-16B	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	102576	1	10/28/21 02:22 PM	ICP-MS4_211028A
	MW-16B	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	102576	1	10/28/21 11:28 AM	ICP-MS5_211028A
2110215-07B	MW-16B	Aqueous	M2320 B	Alkalinity	102572	1	10/27/21 01:05 PM	TITRATOR_211027A
	MW-16B	Aqueous	E300	Anions by IC method - Water	102594	1	10/29/21 01:44 AM	IC2_211028A
	MW-16B	Aqueous	E300	Anions by IC method - Water	102594	10	10/28/21 05:44 PM	IC2_211028A
	MW-16B	Aqueous	M2540C	Total Dissolved Solids	102570	1	10/27/21 03:05 PM	WC_211027C
2110215-08A	MW-20A	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	102576	1	10/28/21 11:44 AM	ICP-MS5_211028A
	MW-20A	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	102576	1	10/28/21 02:24 PM	ICP-MS4_211028A
2110215-08B	MW-20A	Aqueous	M2320 B	Alkalinity	102572	1	10/27/21 01:08 PM	TITRATOR_211027A
	MW-20A	Aqueous	E300	Anions by IC method - Water	102594	1	10/29/21 02:00 AM	IC2_211028A
	MW-20A	Aqueous	M2540C	Total Dissolved Solids	102570	1	10/27/21 03:05 PM	WC_211027C
2110215-09A	MW-20B	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	102576	5	10/28/21 12:28 PM	ICP-MS5_211028A
	MW-20B	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	102576	1	10/28/21 02:26 PM	ICP-MS4_211028A
	MW-20B	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	102576	1	10/28/21 11:47 AM	ICP-MS5_211028A
2110215-09B	MW-20B	Aqueous	M2320 B	Alkalinity	102572	1	10/27/21 01:13 PM	TITRATOR_211027A
	MW-20B	Aqueous	E300	Anions by IC method - Water	102594	10	10/28/21 06:00 PM	IC2_211028A
	MW-20B	Aqueous	E300	Anions by IC method - Water	102594	1	10/29/21 02:16 AM	IC2_211028A
	MW-20B	Aqueous	M2540C	Total Dissolved Solids	102570	1	10/27/21 03:05 PM	WC_211027C

Lab Order: 2110215
Client: Golder
Project: Luminant - MLSES PDP 5

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
2110215-10A	MW-1	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	102576	1	10/28/21 02:28 PM	ICP-MS4_211028A
	MW-1	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	102576	1	10/28/21 11:49 AM	ICP-MS5_211028A
	MW-1	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	102576	5	10/28/21 12:31 PM	ICP-MS5_211028A
2110215-10B	MW-1	Aqueous	M2320 B	Alkalinity	102572	1	10/27/21 01:18 PM	TITRATOR_211027A
	MW-1	Aqueous	E300	Anions by IC method - Water	102594	10	10/28/21 06:16 PM	IC2_211028A
	MW-1	Aqueous	E300	Anions by IC method - Water	102594	1	10/29/21 02:32 AM	IC2_211028A
	MW-1	Aqueous	M2540C	Total Dissolved Solids	102570	1	10/27/21 03:05 PM	WC_211027C
2110215-11A	DUP-1	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	102576	1	10/28/21 02:48 PM	ICP-MS4_211028A
	DUP-1	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	102576	1	10/28/21 11:52 AM	ICP-MS5_211028A
	DUP-1	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	102576	5	10/28/21 12:33 PM	ICP-MS5_211028A
2110215-11B	DUP-1	Aqueous	M2320 B	Alkalinity	102572	1	10/27/21 01:36 PM	TITRATOR_211027A
	DUP-1	Aqueous	E300	Anions by IC method - Water	102594	10	10/28/21 06:32 PM	IC2_211028A
	DUP-1	Aqueous	E300	Anions by IC method - Water	102594	1	10/29/21 02:48 AM	IC2_211028A
	DUP-1	Aqueous	M2540C	Total Dissolved Solids	102570	1	10/27/21 03:05 PM	WC_211027C

DHL Analytical, Inc.

Date: *02-Nov-21*

CLIENT:	Golder	**Client Sample ID:**	MW-17A
Project:	Luminant - MLSES PDP 5	**Lab ID:**	2110215-01
Project No:	19116344	**Collection Date:**	10/21/21 03:35 PM
Lab Order:	2110215	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.0350	0.0100	0.0300		mg/L	1	10/28/21 11:03 AM
Boron	0.380	0.0100	0.0300		mg/L	1	10/28/21 02:08 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	10/28/21 11:03 AM
Calcium	3.66	0.100	0.300		mg/L	1	10/28/21 11:03 AM
Iron	0.0734	0.0300	0.100	J	mg/L	1	10/28/21 11:03 AM
Magnesium	3.42	0.100	0.300		mg/L	1	10/28/21 11:03 AM
Manganese	0.0638	0.00300	0.0100		mg/L	1	10/28/21 11:03 AM
Nickel	0.00907	0.00300	0.0100	J	mg/L	1	10/28/21 11:03 AM
Potassium	2.13	0.100	0.300		mg/L	1	10/28/21 11:03 AM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	10/28/21 11:03 AM
Sodium	14.6	0.100	0.300		mg/L	1	10/28/21 11:03 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **BM**
Chloride	9.13	0.300	1.00		mg/L	1	10/28/21 11:04 PM
Sulfate	36.0	1.00	3.00		mg/L	1	10/28/21 11:04 PM
ALKALINITY		**M2320 B**					Analyst: **BM**
Alkalinity, Bicarbonate (As CaCO3)	14.1	10.0	20.0	J	mg/L @ pH 4.51	1	10/27/21 12:07 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.51	1	10/27/21 12:07 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.51	1	10/27/21 12:07 PM
Alkalinity, Total (As CaCO3)	14.1	10.0	20.0	J	mg/L @ pH 4.51	1	10/27/21 12:07 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	105	10.0	10.0		mg/L	1	10/27/21 03:05 PM

Qualifiers:

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- B - Analyte detected in the associated Method Blank
- DF- Dilution Factor
- N - Parameter not NELAP certified
- See Final Page of Report for MQLs and MDLs
- S - Spike Recovery outside control limits
- C - Sample Result or QC discussed in Case Narrative
- RL - Reporting Limit (MQL adjusted for moisture and sample size)
- SDL - Sample Detection Limit
- E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *02-Nov-21*

CLIENT:	Golder	**Client Sample ID:**	MW-17B
Project:	Luminant - MLSES PDP 5	**Lab ID:**	2110215-02
Project No:	19116344	**Collection Date:**	10/21/21 04:20 PM
Lab Order:	2110215	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	<0.0100	0.0100	0.0300		mg/L	1	10/28/21 11:15 AM
Boron	0.532	0.0100	0.0300		mg/L	1	10/28/21 02:12 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	10/28/21 11:15 AM
Calcium	22.6	0.100	0.300		mg/L	1	10/28/21 11:15 AM
Iron	1.94	0.0300	0.100		mg/L	1	10/28/21 11:15 AM
Magnesium	16.8	0.100	0.300		mg/L	1	10/28/21 11:15 AM
Manganese	0.0465	0.00300	0.0100		mg/L	1	10/28/21 11:15 AM
Nickel	0.00626	0.00300	0.0100	J	mg/L	1	10/28/21 11:15 AM
Potassium	4.93	0.100	0.300		mg/L	1	10/28/21 11:15 AM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	10/28/21 11:15 AM
Sodium	21.1	0.100	0.300		mg/L	1	10/28/21 11:15 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **BM**
Chloride	41.5	0.300	1.00		mg/L	1	10/28/21 11:20 PM
Sulfate	69.5	1.00	3.00		mg/L	1	10/28/21 11:20 PM
ALKALINITY		**M2320 B**					Analyst: **BM**
Alkalinity, Bicarbonate (As CaCO3)	56.6	10.0	20.0		mg/L @ pH 4.49	1	10/27/21 12:11 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.49	1	10/27/21 12:11 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.49	1	10/27/21 12:11 PM
Alkalinity, Total (As CaCO3)	56.6	20.0	20.0		mg/L @ pH 4.49	1	10/27/21 12:11 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	265	10.0	10.0		mg/L	1	10/27/21 03:05 PM

Qualifiers:

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- B - Analyte detected in the associated Method Blank
- DF- Dilution Factor
- N - Parameter not NELAP certified
- See Final Page of Report for MQLs and MDLs
- S - Spike Recovery outside control limits
- C - Sample Result or QC discussed in Case Narrative
- RL - Reporting Limit (MQL adjusted for moisture and sample size)
- SDL - Sample Detection Limit
- E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *02-Nov-21*

CLIENT:	Golder	**Client Sample ID:**	MW-6R
Project:	Luminant - MLSES PDP 5	**Lab ID:**	2110215-03
Project No:	19116344	**Collection Date:**	10/21/21 05:05 PM
Lab Order:	2110215	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.0418	0.0100	0.0300		mg/L	1	10/28/21 11:18 AM
Boron	15.1	0.500	1.50		mg/L	50	10/28/21 02:14 PM
Cadmium	0.000614	0.000300	0.00100	J	mg/L	1	10/28/21 11:18 AM
Calcium	172	5.00	15.0		mg/L	50	10/28/21 12:18 PM
Iron	0.597	0.0300	0.100		mg/L	1	10/28/21 11:18 AM
Magnesium	47.1	5.00	15.0		mg/L	50	10/28/21 12:18 PM
Manganese	0.0280	0.00300	0.0100		mg/L	1	10/28/21 11:18 AM
Nickel	0.0314	0.00300	0.0100		mg/L	1	10/28/21 11:18 AM
Potassium	13.2	0.100	0.300		mg/L	1	10/28/21 11:18 AM
Selenium	0.00509	0.00200	0.00500		mg/L	1	10/28/21 11:18 AM
Sodium	175	5.00	15.0		mg/L	50	10/28/21 12:18 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **BM**
Chloride	160	3.00	10.0		mg/L	10	10/28/21 04:40 PM
Sulfate	734	10.0	30.0		mg/L	10	10/28/21 04:40 PM
ALKALINITY		**M2320 B**					Analyst: **BM**
Alkalinity, Bicarbonate (As CaCO3)	134	10.0	20.0		mg/L @ pH 4.51	1	10/27/21 12:18 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.51	1	10/27/21 12:18 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.51	1	10/27/21 12:18 PM
Alkalinity, Total (As CaCO3)	134	20.0	20.0		mg/L @ pH 4.51	1	10/27/21 12:18 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	1460	50.0	50.0		mg/L	1	10/27/21 03:05 PM

Qualifiers:

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DF- Dilution Factor
N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *02-Nov-21*

CLIENT:	Golder	**Client Sample ID:**	MW-5
Project:	Luminant - MLSES PDP 5	**Lab ID:**	2110215-04
Project No:	19116344	**Collection Date:**	10/22/21 07:55 AM
Lab Order:	2110215	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.0213	0.0100	0.0300	J	mg/L	1	10/28/21 11:21 AM
Boron	0.133	0.0100	0.0300		mg/L	1	10/28/21 02:52 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	10/28/21 11:21 AM
Calcium	79.1	0.500	1.50		mg/L	5	10/28/21 12:21 PM
Iron	16.7	0.150	0.500		mg/L	5	10/28/21 12:21 PM
Magnesium	20.8	0.100	0.300		mg/L	1	10/28/21 11:21 AM
Manganese	0.0656	0.00300	0.0100		mg/L	1	10/28/21 11:21 AM
Nickel	<0.00300	0.00300	0.0100		mg/L	1	10/28/21 11:21 AM
Potassium	3.08	0.100	0.300		mg/L	1	10/28/21 11:21 AM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	10/28/21 11:21 AM
Sodium	48.5	0.500	1.50		mg/L	5	10/28/21 12:21 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **BM**
Chloride	34.1	0.300	1.00		mg/L	1	10/29/21 12:56 AM
Sulfate	<1.00	1.00	3.00		mg/L	1	10/29/21 12:56 AM
ALKALINITY		**M2320 B**					Analyst: **BM**
Alkalinity, Bicarbonate (As CaCO3)	363	10.0	20.0		mg/L @ pH 4.53	1	10/27/21 12:42 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	10/27/21 12:42 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	10/27/21 12:42 PM
Alkalinity, Total (As CaCO3)	363	20.0	20.0		mg/L @ pH 4.53	1	10/27/21 12:42 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	454	10.0	10.0		mg/L	1	10/27/21 03:05 PM

Qualifiers:

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J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *02-Nov-21*

CLIENT:	Golder	**Client Sample ID:**	MW-15A
Project:	Luminant - MLSES PDP 5	**Lab ID:**	2110215-05
Project No:	19116344	**Collection Date:**	10/22/21 08:45 AM
Lab Order:	2110215	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.240	0.0100	0.0300		mg/L	1	10/28/21 11:23 AM
Boron	0.553	0.0500	0.150		mg/L	5	10/28/21 02:18 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	10/28/21 11:23 AM
Calcium	16.1	0.100	0.300		mg/L	1	10/28/21 11:23 AM
Iron	0.226	0.0300	0.100		mg/L	1	10/28/21 11:23 AM
Magnesium	14.7	0.100	0.300		mg/L	1	10/28/21 11:23 AM
Manganese	0.00557	0.00300	0.0100	J	mg/L	1	10/28/21 11:23 AM
Nickel	0.0110	0.00300	0.0100		mg/L	1	10/28/21 11:23 AM
Potassium	3.65	0.100	0.300		mg/L	1	10/28/21 11:23 AM
Selenium	0.00611	0.00200	0.00500		mg/L	1	10/28/21 11:23 AM
Sodium	19.8	0.100	0.300		mg/L	1	10/28/21 11:23 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **BM**
Chloride	12.8	0.300	1.00		mg/L	1	10/29/21 01:12 AM
Sulfate	118	1.00	3.00		mg/L	1	10/29/21 01:12 AM
ALKALINITY		**M2320 B**					Analyst: **BM**
Alkalinity, Bicarbonate (As CaCO3)	14.6	10.0	20.0	J	mg/L @ pH 4.5	1	10/27/21 12:45 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.5	1	10/27/21 12:45 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.5	1	10/27/21 12:45 PM
Alkalinity, Total (As CaCO3)	14.6	10.0	20.0	J	mg/L @ pH 4.5	1	10/27/21 12:45 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	237	10.0	10.0		mg/L	1	10/27/21 03:05 PM

Qualifiers:

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DF- Dilution Factor
N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *02-Nov-21*

CLIENT:	Golder	**Client Sample ID:**	MW-16A
Project:	Luminant - MLSES PDP 5	**Lab ID:**	2110215-06
Project No:	19116344	**Collection Date:**	10/22/21 09:35 AM
Lab Order:	2110215	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.0297	0.0100	0.0300	J	mg/L	1	10/28/21 11:26 AM
Boron	1.26	0.0500	0.150		mg/L	5	10/28/21 02:20 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	10/28/21 11:26 AM
Calcium	252	2.00	6.00		mg/L	20	10/28/21 12:26 PM
Iron	14.8	0.600	2.00		mg/L	20	10/28/21 12:26 PM
Magnesium	25.9	2.00	6.00		mg/L	20	10/28/21 12:26 PM
Manganese	0.570	0.00300	0.0100		mg/L	1	10/28/21 11:26 AM
Nickel	<0.00300	0.00300	0.0100		mg/L	1	10/28/21 11:26 AM
Potassium	7.48	0.100	0.300		mg/L	1	10/28/21 11:26 AM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	10/28/21 11:26 AM
Sodium	19.3	0.100	0.300		mg/L	1	10/28/21 11:26 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **BM**
Chloride	6.94	0.300	1.00		mg/L	1	10/29/21 01:28 AM
Sulfate	544	10.0	30.0		mg/L	10	10/28/21 05:28 PM
ALKALINITY		**M2320 B**					Analyst: **BM**
Alkalinity, Bicarbonate (As CaCO3)	283	10.0	20.0		mg/L @ pH 4.53	1	10/27/21 01:02 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	10/27/21 01:02 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	10/27/21 01:02 PM
Alkalinity, Total (As CaCO3)	283	20.0	20.0		mg/L @ pH 4.53	1	10/27/21 01:02 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	1140	10.0	10.0		mg/L	1	10/27/21 03:05 PM

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S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *02-Nov-21*

CLIENT:	Golder	**Client Sample ID:**	MW-16B
Project:	Luminant - MLSES PDP 5	**Lab ID:**	2110215-07
Project No:	19116344	**Collection Date:**	10/22/21 10:25 AM
Lab Order:	2110215	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.0255	0.0100	0.0300	J	mg/L	1	10/28/21 11:28 AM
Boron	0.0382	0.0100	0.0300		mg/L	1	10/28/21 02:22 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	10/28/21 11:28 AM
Calcium	3.86	0.100	0.300		mg/L	1	10/28/21 11:28 AM
Iron	0.584	0.0300	0.100		mg/L	1	10/28/21 11:28 AM
Magnesium	2.98	0.100	0.300		mg/L	1	10/28/21 11:28 AM
Manganese	0.0145	0.00300	0.0100		mg/L	1	10/28/21 11:28 AM
Nickel	0.00432	0.00300	0.0100	J	mg/L	1	10/28/21 11:28 AM
Potassium	2.19	0.100	0.300		mg/L	1	10/28/21 11:28 AM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	10/28/21 11:28 AM
Sodium	11.7	0.100	0.300		mg/L	1	10/28/21 11:28 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **BM**
Chloride	6.31	0.300	1.00		mg/L	1	10/29/21 01:44 AM
Sulfate	5.36	1.00	3.00		mg/L	1	10/29/21 01:44 AM
ALKALINITY		**M2320 B**					Analyst: **BM**
Alkalinity, Bicarbonate (As CaCO3)	35.8	10.0	20.0		mg/L @ pH 4.47	1	10/27/21 01:05 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.47	1	10/27/21 01:05 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.47	1	10/27/21 01:05 PM
Alkalinity, Total (As CaCO3)	35.8	20.0	20.0		mg/L @ pH 4.47	1	10/27/21 01:05 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	121	10.0	10.0		mg/L	1	10/27/21 03:05 PM

Qualifiers:

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RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *02-Nov-21*

CLIENT:	Golder	**Client Sample ID:**	MW-20A
Project:	Luminant - MLSES PDP 5	**Lab ID:**	2110215-08
Project No:	19116344	**Collection Date:**	10/22/21 11:30 AM
Lab Order:	2110215	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.222	0.0100	0.0300		mg/L	1	10/28/21 11:44 AM
Boron	0.0541	0.0100	0.0300		mg/L	1	10/28/21 02:24 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	10/28/21 11:44 AM
Calcium	3.92	0.100	0.300		mg/L	1	10/28/21 11:44 AM
Iron	<0.0300	0.0300	0.100		mg/L	1	10/28/21 11:44 AM
Magnesium	2.26	0.100	0.300		mg/L	1	10/28/21 11:44 AM
Manganese	0.00900	0.00300	0.0100	J	mg/L	1	10/28/21 11:44 AM
Nickel	0.00459	0.00300	0.0100	J	mg/L	1	10/28/21 11:44 AM
Potassium	1.11	0.100	0.300		mg/L	1	10/28/21 11:44 AM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	10/28/21 11:44 AM
Sodium	11.0	0.100	0.300		mg/L	1	10/28/21 11:44 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **BM**
Chloride	12.3	0.300	1.00		mg/L	1	10/29/21 02:00 AM
Sulfate	26.9	1.00	3.00		mg/L	1	10/29/21 02:00 AM
ALKALINITY		**M2320 B**					Analyst: **BM**
Alkalinity, Bicarbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.5	1	10/27/21 01:08 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.5	1	10/27/21 01:08 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.5	1	10/27/21 01:08 PM
Alkalinity, Total (As CaCO3)	<20.0	20.0	20.0		mg/L @ pH 4.5	1	10/27/21 01:08 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	132	10.0	10.0		mg/L	1	10/27/21 03:05 PM

Qualifiers:

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- S - Spike Recovery outside control limits
- C - Sample Result or QC discussed in Case Narrative
- RL - Reporting Limit (MQL adjusted for moisture and sample size)
- SDL - Sample Detection Limit
- E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *02-Nov-21*

CLIENT:	Golder	**Client Sample ID:**	MW-20B
Project:	Luminant - MLSES PDP 5	**Lab ID:**	2110215-09
Project No:	19116344	**Collection Date:**	10/22/21 12:30 PM
Lab Order:	2110215	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	<0.0100	0.0100	0.0300		mg/L	1	10/28/21 11:47 AM
Boron	0.0436	0.0100	0.0300		mg/L	1	10/28/21 02:26 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	10/28/21 11:47 AM
Calcium	16.7	0.100	0.300		mg/L	1	10/28/21 11:47 AM
Iron	0.395	0.0300	0.100		mg/L	1	10/28/21 11:47 AM
Magnesium	9.91	0.100	0.300		mg/L	1	10/28/21 11:47 AM
Manganese	0.00848	0.00300	0.0100	J	mg/L	1	10/28/21 11:47 AM
Nickel	0.00408	0.00300	0.0100	J	mg/L	1	10/28/21 11:47 AM
Potassium	2.96	0.100	0.300		mg/L	1	10/28/21 11:47 AM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	10/28/21 11:47 AM
Sodium	25.3	0.500	1.50		mg/L	5	10/28/21 12:28 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **BM**
Chloride	13.6	0.300	1.00		mg/L	1	10/29/21 02:16 AM
Sulfate	76.4	1.00	3.00		mg/L	1	10/29/21 02:16 AM
ALKALINITY		**M2320 B**					Analyst: **BM**
Alkalinity, Bicarbonate (As CaCO3)	53.6	10.0	20.0		mg/L @ pH 4.48	1	10/27/21 01:13 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.48	1	10/27/21 01:13 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.48	1	10/27/21 01:13 PM
Alkalinity, Total (As CaCO3)	53.6	20.0	20.0		mg/L @ pH 4.48	1	10/27/21 01:13 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	252	10.0	10.0		mg/L	1	10/27/21 03:05 PM

Qualifiers:

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S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *02-Nov-21*

CLIENT:	Golder	**Client Sample ID:**	MW-1
Project:	Luminant - MLSES PDP 5	**Lab ID:**	2110215-10
Project No:	19116344	**Collection Date:**	10/22/21 01:40 PM
Lab Order:	2110215	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	<0.0100	0.0100	0.0300		mg/L	1	10/28/21 11:49 AM
Boron	0.0325	0.0100	0.0300		mg/L	1	10/28/21 02:28 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	10/28/21 11:49 AM
Calcium	11.6	0.100	0.300		mg/L	1	10/28/21 11:49 AM
Iron	<0.0300	0.0300	0.100		mg/L	1	10/28/21 11:49 AM
Magnesium	6.01	0.100	0.300		mg/L	1	10/28/21 11:49 AM
Manganese	0.00406	0.00300	0.0100	J	mg/L	1	10/28/21 11:49 AM
Nickel	0.00307	0.00300	0.0100	J	mg/L	1	10/28/21 11:49 AM
Potassium	1.82	0.100	0.300		mg/L	1	10/28/21 11:49 AM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	10/28/21 11:49 AM
Sodium	35.0	0.500	1.50		mg/L	5	10/28/21 12:31 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **BM**
Chloride	14.4	0.300	1.00		mg/L	1	10/29/21 02:32 AM
Sulfate	58.2	1.00	3.00		mg/L	1	10/29/21 02:32 AM
ALKALINITY		**M2320 B**					Analyst: **BM**
Alkalinity, Bicarbonate (As CaCO3)	53.8	10.0	20.0		mg/L @ pH 4.5	1	10/27/21 01:18 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.5	1	10/27/21 01:18 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.5	1	10/27/21 01:18 PM
Alkalinity, Total (As CaCO3)	53.8	20.0	20.0		mg/L @ pH 4.5	1	10/27/21 01:18 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	241	10.0	10.0		mg/L	1	10/27/21 03:05 PM

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SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *02-Nov-21*

CLIENT:	Golder	**Client Sample ID:**	DUP-1
Project:	Luminant - MLSES PDP 5	**Lab ID:**	2110215-11
Project No:	19116344	**Collection Date:**	10/22/21 01:40 PM
Lab Order:	2110215	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Aluminum	0.0144	0.0100	0.0300	J	mg/L	1	10/28/21 11:52 AM
Boron	0.0280	0.0100	0.0300	J	mg/L	1	10/28/21 02:48 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	10/28/21 11:52 AM
Calcium	12.0	0.100	0.300		mg/L	1	10/28/21 11:52 AM
Iron	<0.0300	0.0300	0.100		mg/L	1	10/28/21 11:52 AM
Magnesium	6.07	0.100	0.300		mg/L	1	10/28/21 11:52 AM
Manganese	0.00490	0.00300	0.0100	J	mg/L	1	10/28/21 11:52 AM
Nickel	0.00315	0.00300	0.0100	J	mg/L	1	10/28/21 11:52 AM
Potassium	1.88	0.100	0.300		mg/L	1	10/28/21 11:52 AM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	10/28/21 11:52 AM
Sodium	35.7	0.500	1.50		mg/L	5	10/28/21 12:33 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **BM**
Chloride	14.3	0.300	1.00		mg/L	1	10/29/21 02:48 AM
Sulfate	57.9	1.00	3.00		mg/L	1	10/29/21 02:48 AM
ALKALINITY		**M2320 B**					Analyst: **BM**
Alkalinity, Bicarbonate (As CaCO3)	55.3	10.0	20.0		mg/L @ pH 4.49	1	10/27/21 01:36 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.49	1	10/27/21 01:36 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.49	1	10/27/21 01:36 PM
Alkalinity, Total (As CaCO3)	55.3	20.0	20.0		mg/L @ pH 4.49	1	10/27/21 01:36 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	234	10.0	10.0		mg/L	1	10/27/21 03:05 PM

Qualifiers:

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- DF- Dilution Factor
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- SDL - Sample Detection Limit
- E - TPH pattern not Gas or Diesel Range Pattern

CLIENT: Golder
Work Order: 2110215
Project: Luminant - MLSES PDP 5

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_210803A

Sample ID: **DCS4-101483** Batch ID: **101483** TestNo: **SW6020B** Units: **mg/L**
SampType: **DCS4** Run ID: **ICP-MS4_210803A** Analysis Date: **8/3/2021 1:27:00 PM** Prep Date: **8/2/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0315	0.0300	0.0300	0	105	70	130	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2110215
Project: Luminant - MLSES PDP 5

ANALYTICAL QC SUMMARY REPORT

RunID: **ICP-MS4_211028A**

The QC data in batch 102576 applies to the following samples: 2110215-01A, 2110215-02A, 2110215-03A, 2110215-04A, 2110215-05A, 2110215-06A, 2110215-07A, 2110215-08A, 2110215-09A, 2110215-10A, 2110215-11A

Sample ID: **MB-102576** Batch ID: **102576** TestNo: **SW6020B** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_211028A** Analysis Date: **10/28/2021 2:00:00 PM** Prep Date: **10/27/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	<0.0100	0.0300								

Sample ID: **LCS-102576** Batch ID: **102576** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_211028A** Analysis Date: **10/28/2021 2:02:00 PM** Prep Date: **10/27/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.199	0.0300	0.200	0	99.6	80	120			

Sample ID: **LCSD-102576** Batch ID: **102576** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_211028A** Analysis Date: **10/28/2021 2:04:00 PM** Prep Date: **10/27/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.197	0.0300	0.200	0	98.5	80	120	1.14	15	

Sample ID: **2110215-01A SD** Batch ID: **102576** TestNo: **SW6020B** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS4_211028A** Analysis Date: **10/28/2021 2:10:00 PM** Prep Date: **10/27/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.400	0.150	0	0.380				5.22	20	

Sample ID: **2110215-01A PDS** Batch ID: **102576** TestNo: **SW6020B** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS4_211028A** Analysis Date: **10/28/2021 2:30:00 PM** Prep Date: **10/27/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.533	0.0300	0.200	0.380	76.7	75	125			

Sample ID: **2110215-01A MS** Batch ID: **102576** TestNo: **SW6020B** Units: **mg/L**
SampType: **MS** Run ID: **ICP-MS4_211028A** Analysis Date: **10/28/2021 2:32:00 PM** Prep Date: **10/27/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.556	0.0300	0.200	0.380	88.3	75	125			

Sample ID: **2110215-01A MSD** Batch ID: **102576** TestNo: **SW6020B** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS4_211028A** Analysis Date: **10/28/2021 2:34:00 PM** Prep Date: **10/27/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.557	0.0300	0.200	0.380	88.4	75	125	0.020	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2110215
Project: Luminant - MLSES PDP 5

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_211028A

Sample ID: **ICV-211028**	Batch ID: **R117749**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_211028A**	Analysis Date: **10/28/2021 12:41:00 P**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.109	0.0300	0.100	0	109	90	110			

Sample ID: **LCVL-211028**	Batch ID: **R117749**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_211028A**	Analysis Date: **10/28/2021 12:49:00 P**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0220	0.0300	0.0200	0	110	80	120			

Sample ID: **CCV1-211028**	Batch ID: **R117749**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_211028A**	Analysis Date: **10/28/2021 2:41:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.211	0.0300	0.200	0	106	90	110			

Sample ID: **CCV2-211028**	Batch ID: **R117749**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_211028A**	Analysis Date: **10/28/2021 2:59:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.198	0.0300	0.200	0	99.0	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2110215
Project: Luminant - MLSES PDP 5

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_210803A

Sample ID: **DCS1-101483**	Batch ID: **101483**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS**	Run ID: **ICP-MS5_210803A**	Analysis Date: **8/3/2021 11:08:00 AM**	Prep Date: **8/2/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.0215	0.0300	0.0200	0	108	70	130	0	0	
Cadmium	0.000583	0.00100	0.000500	0	117	70	130	0	0	

Sample ID: **DCS2-101483**	Batch ID: **101483**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS2**	Run ID: **ICP-MS5_210803A**	Analysis Date: **8/3/2021 11:11:00 AM**	Prep Date: **8/2/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.277	0.300	0.300	0	92.2	70	130	0	0	
Iron	0.0552	0.100	0.0500	0	110	70	130	0	0	
Magnesium	0.309	0.300	0.300	0	103	70	130	0	0	
Potassium	0.318	0.300	0.300	0	106	70	130	0	0	
Sodium	0.318	0.300	0.300	0	106	70	130	0	0	

Sample ID: **DCS3-101483**	Batch ID: **101483**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS3**	Run ID: **ICP-MS5_210803A**	Analysis Date: **8/3/2021 11:14:00 AM**	Prep Date: **8/2/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Manganese	0.00528	0.0100	0.00500	0	106	70	130	0	0	
Nickel	0.00555	0.0100	0.00500	0	111	70	130	0	0	
Selenium	0.00540	0.00500	0.00500	0	108	70	130	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2110215
Project: Luminant - MLSES PDP 5

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_211028A

The QC data in batch 102576 applies to the following samples: 2110215-01A, 2110215-02A, 2110215-03A, 2110215-04A, 2110215-05A, 2110215-06A, 2110215-07A, 2110215-08A, 2110215-09A, 2110215-10A, 2110215-11A

Sample ID: **MB-102576** Batch ID: **102576** TestNo: **SW6020B** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS5_211028A** Analysis Date: **10/28/2021 10:52:00 A** Prep Date: **10/27/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	<0.0100	0.0300								
Cadmium	<0.000300	0.00100								
Calcium	<0.100	0.300								
Iron	<0.0300	0.100								
Magnesium	<0.100	0.300								
Manganese	<0.00300	0.0100								
Nickel	<0.00300	0.0100								
Potassium	<0.100	0.300								
Selenium	<0.00200	0.00500								
Sodium	<0.100	0.300								

Sample ID: **LCS-102576** Batch ID: **102576** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS5_211028A** Analysis Date: **10/28/2021 10:55:00 A** Prep Date: **10/27/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.10	0.0300	5.00	0	102	80	120			
Cadmium	0.203	0.00100	0.200	0	102	80	120			
Calcium	5.02	0.300	5.00	0	100	80	120			
Iron	5.19	0.100	5.00	0	104	80	120			
Magnesium	5.14	0.300	5.00	0	103	80	120			
Manganese	0.207	0.0100	0.200	0	103	80	120			
Nickel	0.208	0.0100	0.200	0	104	80	120			
Potassium	5.10	0.300	5.00	0	102	80	120			
Selenium	0.209	0.00500	0.200	0	104	80	120			
Sodium	5.15	0.300	5.00	0	103	80	120			

Sample ID: **LCSD-102576** Batch ID: **102576** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS5_211028A** Analysis Date: **10/28/2021 10:57:00 A** Prep Date: **10/27/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.06	0.0300	5.00	0	101	80	120	0.821	15	
Cadmium	0.204	0.00100	0.200	0	102	80	120	0.532	15	
Calcium	5.01	0.300	5.00	0	100	80	120	0.219	15	
Iron	5.14	0.100	5.00	0	103	80	120	1.04	15	
Magnesium	5.11	0.300	5.00	0	102	80	120	0.545	15	
Manganese	0.203	0.0100	0.200	0	101	80	120	1.97	15	
Nickel	0.207	0.0100	0.200	0	103	80	120	0.573	15	
Potassium	5.07	0.300	5.00	0	101	80	120	0.731	15	
Selenium	0.208	0.00500	0.200	0	104	80	120	0.276	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2110215
Project: Luminant - MLSES PDP 5

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_211028A

Sample ID: **LCSD-102576**	Batch ID: **102576**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCSD**	Run ID: **ICP-MS5_211028A**	Analysis Date: **10/28/2021 10:57:00 A**	Prep Date: **10/27/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	5.10	0.300	5.00	0	102	80	120	1.09	15	

Sample ID: **2110215-01A SD**	Batch ID: **102576**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS5_211028A**	Analysis Date: **10/28/2021 11:05:00 A**	Prep Date: **10/27/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	<0.0500	0.150	0	0.0350				0	20	
Cadmium	<0.00150	0.00500	0	0				0	20	
Calcium	3.59	1.50	0	3.66				1.75	20	
Iron	<0.150	0.500	0	0.0734				0	20	
Magnesium	3.43	1.50	0	3.42				0.322	20	
Manganese	0.0626	0.0500	0	0.0638				1.91	20	
Nickel	<0.0150	0.0500	0	0.00907				0	20	
Potassium	2.12	1.50	0	2.13				0.147	20	
Selenium	<0.0100	0.0250	0	0				0	20	
Sodium	14.5	1.50	0	14.6				0.544	20	

Sample ID: **2110215-01A PDS**	Batch ID: **102576**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS5_211028A**	Analysis Date: **10/28/2021 11:31:00 A**	Prep Date: **10/27/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.96	0.0300	5.00	0.0350	98.5	75	125			
Cadmium	0.198	0.00100	0.200	0	98.8	75	125			
Calcium	8.32	0.300	5.00	3.66	93.2	75	125			
Iron	5.25	0.100	5.00	0.0734	104	75	125			
Magnesium	7.95	0.300	5.00	3.42	90.6	75	125			
Manganese	0.262	0.0100	0.200	0.0638	99.2	75	125			
Nickel	0.206	0.0100	0.200	0.00907	98.4	75	125			
Potassium	6.86	0.300	5.00	2.13	94.7	75	125			
Selenium	0.195	0.00500	0.200	0	97.3	75	125			
Sodium	18.8	0.300	5.00	14.6	84.4	75	125			

Sample ID: **2110215-01A MS**	Batch ID: **102576**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS5_211028A**	Analysis Date: **10/28/2021 11:34:00 A**	Prep Date: **10/27/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.94	0.0300	5.00	0.0350	98.2	75	125			
Cadmium	0.201	0.00100	0.200	0	101	75	125			
Calcium	8.60	0.300	5.00	3.66	98.9	75	125			
Iron	5.20	0.100	5.00	0.0734	103	75	125			
Magnesium	8.49	0.300	5.00	3.42	101	75	125			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2110215
Project: Luminant - MLSES PDP 5

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_211028A

Sample ID: **2110215-01A MS**	Batch ID: **102576**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS5_211028A**	Analysis Date: **10/28/2021 11:34:00 A**	Prep Date: **10/27/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Manganese	0.266	0.0100	0.200	0.0638	101	75	125			
Nickel	0.209	0.0100	0.200	0.00907	100	75	125			
Potassium	7.13	0.300	5.00	2.13	100	75	125			
Selenium	0.202	0.00500	0.200	0	101	75	125			
Sodium	19.7	0.300	5.00	14.6	102	75	125			

Sample ID: **2110215-01A MSD**	Batch ID: **102576**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS5_211028A**	Analysis Date: **10/28/2021 11:36:00 A**	Prep Date: **10/27/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	5.03	0.0300	5.00	0.0350	100	75	125	1.83	15	
Cadmium	0.203	0.00100	0.200	0	101	75	125	0.750	15	
Calcium	8.63	0.300	5.00	3.66	99.5	75	125	0.326	15	
Iron	5.29	0.100	5.00	0.0734	104	75	125	1.70	15	
Magnesium	8.63	0.300	5.00	3.42	104	75	125	1.70	15	
Manganese	0.270	0.0100	0.200	0.0638	103	75	125	1.33	15	
Nickel	0.211	0.0100	0.200	0.00907	101	75	125	0.874	15	
Potassium	7.18	0.300	5.00	2.13	101	75	125	0.712	15	
Selenium	0.205	0.00500	0.200	0	103	75	125	1.70	15	
Sodium	20.0	0.300	5.00	14.6	108	75	125	1.52	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2110215
Project: Luminant - MLSES PDP 5

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_211028A

Sample ID: **ICV-211028**	Batch ID: **R117745**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS5_211028A**	Analysis Date: **10/28/2021 10:37:00 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	2.50	0.0300	2.50	0	100	90	110			
Cadmium	0.101	0.00100	0.100	0	101	90	110			
Calcium	2.55	0.300	2.50	0	102	90	110			
Iron	2.68	0.100	2.50	0	107	90	110			
Magnesium	2.43	0.300	2.50	0	97.3	90	110			
Manganese	0.104	0.0100	0.100	0	104	90	110			
Nickel	0.110	0.0100	0.100	0	110	90	110			
Potassium	2.44	0.300	2.50	0	97.5	90	110			
Selenium	0.108	0.00500	0.100	0	108	90	110			
Sodium	2.52	0.300	2.50	0	101	90	110			

Sample ID: **LCVL-211028**	Batch ID: **R117745**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_211028A**	Analysis Date: **10/28/2021 10:44:00 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.109	0.0300	0.100	0	109	80	120			
Cadmium	0.00103	0.00100	0.00100	0	103	80	120			
Calcium	0.0950	0.300	0.100	0	95.0	80	120			
Iron	0.104	0.100	0.100	0	104	80	120			
Magnesium	0.0982	0.300	0.100	0	98.2	80	120			
Manganese	0.00493	0.0100	0.00500	0	98.6	80	120			
Nickel	0.00516	0.0100	0.00500	0	103	80	120			
Potassium	0.0985	0.300	0.100	0	98.5	80	120			
Selenium	0.00528	0.00500	0.00500	0	106	80	120			
Sodium	0.103	0.300	0.100	0	103	80	120			

Sample ID: **CCV1-211028**	Batch ID: **R117745**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_211028A**	Analysis Date: **10/28/2021 11:39:00 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.98	0.0300	5.00	0	99.7	90	110			
Cadmium	0.204	0.00100	0.200	0	102	90	110			
Calcium	4.94	0.300	5.00	0	98.8	90	110			
Iron	5.23	0.100	5.00	0	105	90	110			
Magnesium	5.08	0.300	5.00	0	102	90	110			
Manganese	0.202	0.0100	0.200	0	101	90	110			
Nickel	0.212	0.0100	0.200	0	106	90	110			
Potassium	4.97	0.300	5.00	0	99.5	90	110			
Selenium	0.215	0.00500	0.200	0	107	90	110			
Sodium	5.11	0.300	5.00	0	102	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2110215
Project: Luminant - MLSES PDP 5

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_211028A

Sample ID: **CCV2-211028**	Batch ID: **R117745**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_211028A**	Analysis Date: **10/28/2021 12:10:00 P**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	4.92	0.0300	5.00	0	98.3	90	110			
Cadmium	0.203	0.00100	0.200	0	101	90	110			
Calcium	5.04	0.300	5.00	0	101	90	110			
Iron	5.34	0.100	5.00	0	107	90	110			
Magnesium	5.07	0.300	5.00	0	101	90	110			
Manganese	0.204	0.0100	0.200	0	102	90	110			
Nickel	0.216	0.0100	0.200	0	108	90	110			
Potassium	4.93	0.300	5.00	0	98.7	90	110			
Selenium	0.213	0.00500	0.200	0	107	90	110			
Sodium	5.16	0.300	5.00	0	103	90	110			

Sample ID: **CCV3-211028**	Batch ID: **R117745**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_211028A**	Analysis Date: **10/28/2021 12:44:00 P**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.92	0.300	5.00	0	98.5	90	110			
Iron	5.26	0.100	5.00	0	105	90	110			
Magnesium	5.04	0.300	5.00	0	101	90	110			
Manganese	0.205	0.0100	0.200	0	103	90	110			
Potassium	4.97	0.300	5.00	0	99.4	90	110			
Sodium	5.11	0.300	5.00	0	102	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2110215
Project: Luminant - MLSES PDP 5

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_210928A

Sample ID: **DCS2-102216**	Batch ID: **102216**	TestNo: **E300**	Units: **mg/L**
SampType: **DCS2**	Run ID: **IC2_210928A**	Analysis Date: **9/28/2021 1:38:01 PM**	Prep Date: **9/28/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	0.533	1.00	0.5000	0	107	70	130	0	0	
Sulfate	1.55	3.00	1.500	0	104	70	130	0	0	

Sample ID: **DCS3-102216**	Batch ID: **102216**	TestNo: **E300**	Units: **mg/L**
SampType: **DCS3**	Run ID: **IC2_210928A**	Analysis Date: **9/28/2021 1:54:01 PM**	Prep Date: **9/28/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	1.05	1.00	1.000	0	105	70	130	0	0	
Sulfate	3.10	3.00	3.000	0	103	70	130	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2110215
Project: Luminant - MLSES PDP 5

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_211028A

The QC data in batch 102594 applies to the following samples: 2110215-01B, 2110215-02B, 2110215-03B, 2110215-04B, 2110215-05B, 2110215-06B, 2110215-07B, 2110215-08B, 2110215-09B, 2110215-10B, 2110215-11B

Sample ID: **MB-102594** Batch ID: **102594** TestNo: **E300** Units: **mg/L**
SampType: **MBLK** Run ID: **IC2_211028A** Analysis Date: **10/28/2021 11:59:09 A** Prep Date: **10/28/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00								
Sulfate	<1.00	3.00								

Sample ID: **LCS-102594** Batch ID: **102594** TestNo: **E300** Units: **mg/L**
SampType: **LCS** Run ID: **IC2_211028A** Analysis Date: **10/28/2021 12:15:09 P** Prep Date: **10/28/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.4	1.00	10.00	0	104	90	110			
Sulfate	31.7	3.00	30.00	0	106	90	110			

Sample ID: **LCSD-102594** Batch ID: **102594** TestNo: **E300** Units: **mg/L**
SampType: **LCSD** Run ID: **IC2_211028A** Analysis Date: **10/28/2021 12:31:09 P** Prep Date: **10/28/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.3	1.00	10.00	0	103	90	110	0.587	20	
Sulfate	31.7	3.00	30.00	0	106	90	110	0.218	20	

Sample ID: **2110242-02EMS** Batch ID: **102594** TestNo: **E300** Units: **mg/L**
SampType: **MS** Run ID: **IC2_211028A** Analysis Date: **10/28/2021 8:24:50 PM** Prep Date: **10/28/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	374	10.0	200.0	200.6	86.6	90	110			S
Sulfate	286	30.0	200.0	94.80	95.8	90	110			

Sample ID: **2110242-02EMSD** Batch ID: **102594** TestNo: **E300** Units: **mg/L**
SampType: **MSD** Run ID: **IC2_211028A** Analysis Date: **10/28/2021 8:40:50 PM** Prep Date: **10/28/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	370	10.0	200.0	200.6	84.8	90	110	0.927	20	S
Sulfate	285	30.0	200.0	94.80	95.0	90	110	0.576	20	

Sample ID: **2110242-03EMS** Batch ID: **102594** TestNo: **E300** Units: **mg/L**
SampType: **MS** Run ID: **IC2_211028A** Analysis Date: **10/28/2021 9:12:50 PM** Prep Date: **10/28/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	368	10.0	200.0	202.3	83.0	90	110			S
Sulfate	287	30.0	200.0	99.33	93.7	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2110215
Project: Luminant - MLSES PDP 5

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_211028A

Sample ID: **2110242-03EMSD** Batch ID: **102594** TestNo: **E300** Units: **mg/L**
SampType: **MSD** Run ID: **IC2_211028A** Analysis Date: **10/28/2021 9:28:50 PM** Prep Date: **10/28/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	369	10.0	200.0	202.3	83.1	90	110	0.035	20	S
Sulfate	287	30.0	200.0	99.33	93.8	90	110	0.064	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2110215
Project: Luminant - MLSES PDP 5

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_211028A

Sample ID: **ICV-211028**	Batch ID: **R117742**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC2_211028A**	Analysis Date: **10/28/2021 11:27:09 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	26.3	1.00	25.00	0	105	90	110			
Sulfate	81.5	3.00	75.00	0	109	90	110			

Sample ID: **CCV1-211028**	Batch ID: **R117742**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_211028A**	Analysis Date: **10/28/2021 7:20:50 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.3	1.00	10.00	0	103	90	110			
Sulfate	31.5	3.00	30.00	0	105	90	110			

Sample ID: **CCV2-211028**	Batch ID: **R117742**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_211028A**	Analysis Date: **10/29/2021 12:08:50 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.2	1.00	10.00	0	102	90	110			
Sulfate	31.5	3.00	30.00	0	105	90	110			

Sample ID: **CCV3-211028**	Batch ID: **R117742**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_211028A**	Analysis Date: **10/29/2021 3:52:50 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.2	1.00	10.00	0	102	90	110			
Sulfate	31.2	3.00	30.00	0	104	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2110215
Project: Luminant - MLSES PDP 5

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_211027A

The QC data in batch 102572 applies to the following samples: 2110215-01B, 2110215-02B, 2110215-03B, 2110215-04B, 2110215-05B, 2110215-06B, 2110215-07B, 2110215-08B, 2110215-09B, 2110215-10B, 2110215-11B

Sample ID: **MB-102572** Batch ID: **102572** TestNo: **M2320 B** Units: **mg/L @ pH 4.35**
SampType: **MBLK** Run ID: **TITRATOR_211027A** Analysis Date: **10/27/2021 10:12:00 A** Prep Date: **10/27/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	<10.0	20.0								
Alkalinity, Carbonate (As CaCO3)	<10.0	20.0								
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0								
Alkalinity, Total (As CaCO3)	<20.0	20.0								

Sample ID: **LCS-102572** Batch ID: **102572** TestNo: **M2320 B** Units: **mg/L @ pH 4.25**
SampType: **LCS** Run ID: **TITRATOR_211027A** Analysis Date: **10/27/2021 10:16:00 A** Prep Date: **10/27/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)	53.8	20.0	50.00	0	108	74	129			

Sample ID: **LCSD-102572** Batch ID: **102572** TestNo: **M2320 B** Units: **mg/L @ pH 4.35**
SampType: **LCSD** Run ID: **TITRATOR_211027A** Analysis Date: **10/27/2021 10:21:00 A** Prep Date: **10/27/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)	53.4	20.0	50.00	0	107	74	129	0.896	20	

Sample ID: **2110153-02D-DUP** Batch ID: **102572** TestNo: **M2320 B** Units: **mg/L @ pH 4.53**
SampType: **DUP** Run ID: **TITRATOR_211027A** Analysis Date: **10/27/2021 11:19:00 A** Prep Date: **10/27/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	276	20.0	0	281.8				2.12	20	
Alkalinity, Carbonate (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Total (As CaCO3)	276	20.0	0	281.8				2.12	20	

Sample ID: **2110165-01D-DUP** Batch ID: **102572** TestNo: **M2320 B** Units: **mg/L @ pH 4.54**
SampType: **DUP** Run ID: **TITRATOR_211027A** Analysis Date: **10/27/2021 11:51:00 A** Prep Date: **10/27/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	310	20.0	0	317.9				2.52	20	
Alkalinity, Carbonate (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Total (As CaCO3)	310	20.0	0	317.9				2.52	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2110215
Project: Luminant - MLSES PDP 5

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_211027A

Sample ID: **ICV-211027**	Batch ID: **R117720**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.33**
SampType: **ICV**	Run ID: **TITRATOR_211027A**	Analysis Date: **10/27/2021 10:07:00 A**	Prep Date: **10/27/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	23.3	20.0	0							
Alkalinity, Carbonate (As CaCO3)	76.5	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	99.8	20.0	100.0	0	99.8	98	102			

Sample ID: **CCV1-211027**	Batch ID: **R117720**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.37**
SampType: **CCV**	Run ID: **TITRATOR_211027A**	Analysis Date: **10/27/2021 12:23:00 P**	Prep Date: **10/27/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	33.8	20.0	0							
Alkalinity, Carbonate (As CaCO3)	65.8	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	99.5	20.0	100.0	0	99.5	90	110			

Sample ID: **CCV2-211027**	Batch ID: **R117720**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.43**
SampType: **CCV**	Run ID: **TITRATOR_211027A**	Analysis Date: **10/27/2021 1:58:00 PM**	Prep Date: **10/27/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	25.9	20.0	0							
Alkalinity, Carbonate (As CaCO3)	74.6	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	100	20.0	100.0	0	100	90	110			

Sample ID: **CCV3-211027**	Batch ID: **R117720**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.38**
SampType: **CCV**	Run ID: **TITRATOR_211027A**	Analysis Date: **10/27/2021 2:16:00 PM**	Prep Date: **10/27/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	27.0	20.0	0							
Alkalinity, Carbonate (As CaCO3)	72.6	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	99.7	20.0	100.0	0	99.7	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2110215
Project: Luminant - MLSES PDP 5

ANALYTICAL QC SUMMARY REPORT

RunID: WC_211027C

The QC data in batch 102570 applies to the following samples: 2110215-01B, 2110215-02B, 2110215-03B, 2110215-04B, 2110215-05B, 2110215-06B, 2110215-07B, 2110215-08B, 2110215-09B, 2110215-10B, 2110215-11B

Sample ID: **MB-102570** Batch ID: **102570** TestNo: **M2540C** Units: **mg/L**
SampType: **MBLK** Run ID: **WC_211027C** Analysis Date: **10/27/2021 3:05:00 PM** Prep Date: **10/27/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	<10.0	10.0								

Sample ID: **LCS-102570** Batch ID: **102570** TestNo: **M2540C** Units: **mg/L**
SampType: **LCS** Run ID: **WC_211027C** Analysis Date: **10/27/2021 3:05:00 PM** Prep Date: **10/27/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	740	10.0	745.6	0	99.2	90	113			

Sample ID: **2110220-02D-DUP** Batch ID: **102570** TestNo: **M2540C** Units: **mg/L**
SampType: **DUP** Run ID: **WC_211027C** Analysis Date: **10/27/2021 3:05:00 PM** Prep Date: **10/27/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	3760	50.0	0	3770				0.399	5	

Sample ID: **2110229-01D-DUP** Batch ID: **102570** TestNo: **M2540C** Units: **mg/L**
SampType: **DUP** Run ID: **WC_211027C** Analysis Date: **10/27/2021 3:05:00 PM** Prep Date: **10/27/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	4240	50.0	0	4240				0.118	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2110215
Project: Luminant - MLSES PDP 5

MQL SUMMARY REPORT

TestNo: E300	**MDL**	**MQL**
Analyte	**mg/L**	**mg/L**
Chloride	0.300	1.00
Sulfate	1.00	3.00

TestNo: SW6020B	**MDL**	**MQL**
Analyte	**mg/L**	**mg/L**
Aluminum	0.0100	0.0300
Boron	0.0100	0.0300
Cadmium	0.000300	0.00100
Calcium	0.100	0.300
Iron	0.0300	0.100
Magnesium	0.100	0.300
Manganese	0.00300	0.0100
Nickel	0.00300	0.0100
Potassium	0.100	0.300
Selenium	0.00200	0.00500
Sodium	0.100	0.300

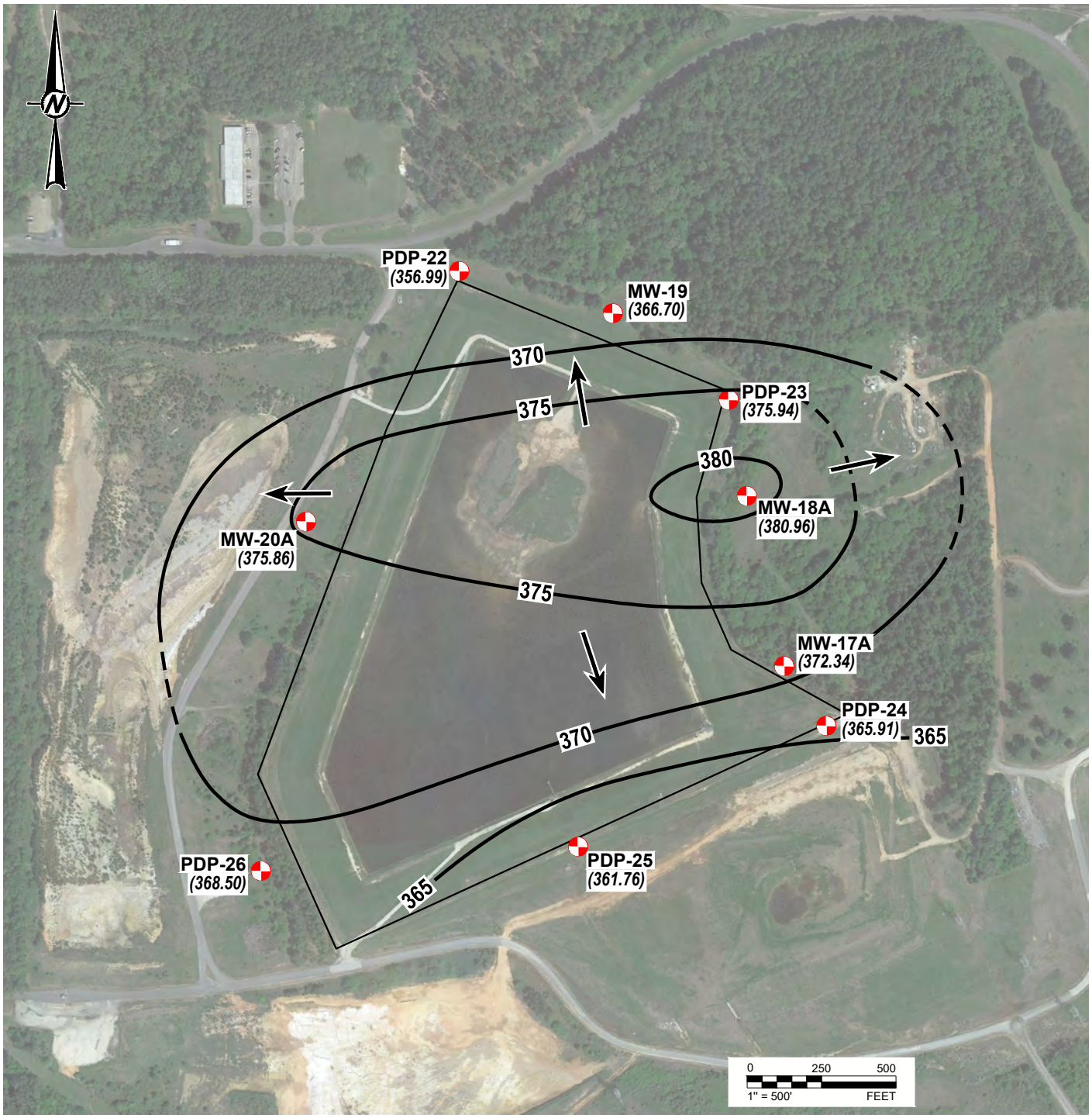
TestNo: M2320 B	**MDL**	**MQL**
Analyte	**ıg/L @ pH 4.3**	**g/L @ pH 4.3**
Alkalinity, Bicarbonate (As CaCO3)	10.0	20.0
Alkalinity, Carbonate (As CaCO3)	10.0	20.0
Alkalinity, Hydroxide (As CaCO3)	10.0	20.0
Alkalinity, Total (As CaCO3)	20.0	20.0

TestNo: M2540C	**MDL**	**MQL**
Analyte	**mg/L**	**mg/L**
Total Dissolved Solids (Residue, Filt	10.0	10.0

Qualifiers: MQL -Method Quantitation Limit as defined by TRRP
MDL -Method Detection Limit as defined by TRRP

ATTACHMENT 2

2021 GROUNDWATER POTENTIOMETRIC SURFACE MAPS



LEGEND

- CCR MONITORING WELL
- (374.34) GROUNDWATER POTENTIOMETRIC SURFACE (FT MSL)
- 360 GROUNDWATER POTENTIOMETRIC SURFACE CONTOUR (C.I. = 5 FT)
- INFERRED GROUNDWATER FLOW DIRECTION

STATE OF TEXAS
WILLIAM F VIENNE
GEOLOGY
No. 10492
LICENSED
PROFESSIONAL GEOSCIENTIST
11/16/2022

REFERENCE(S)
BASE MAP TAKEN FROM GOOGLE EARTH IMAGERY DATED 4/6/17.

CLIENT
LUMINANT

PROJECT
MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

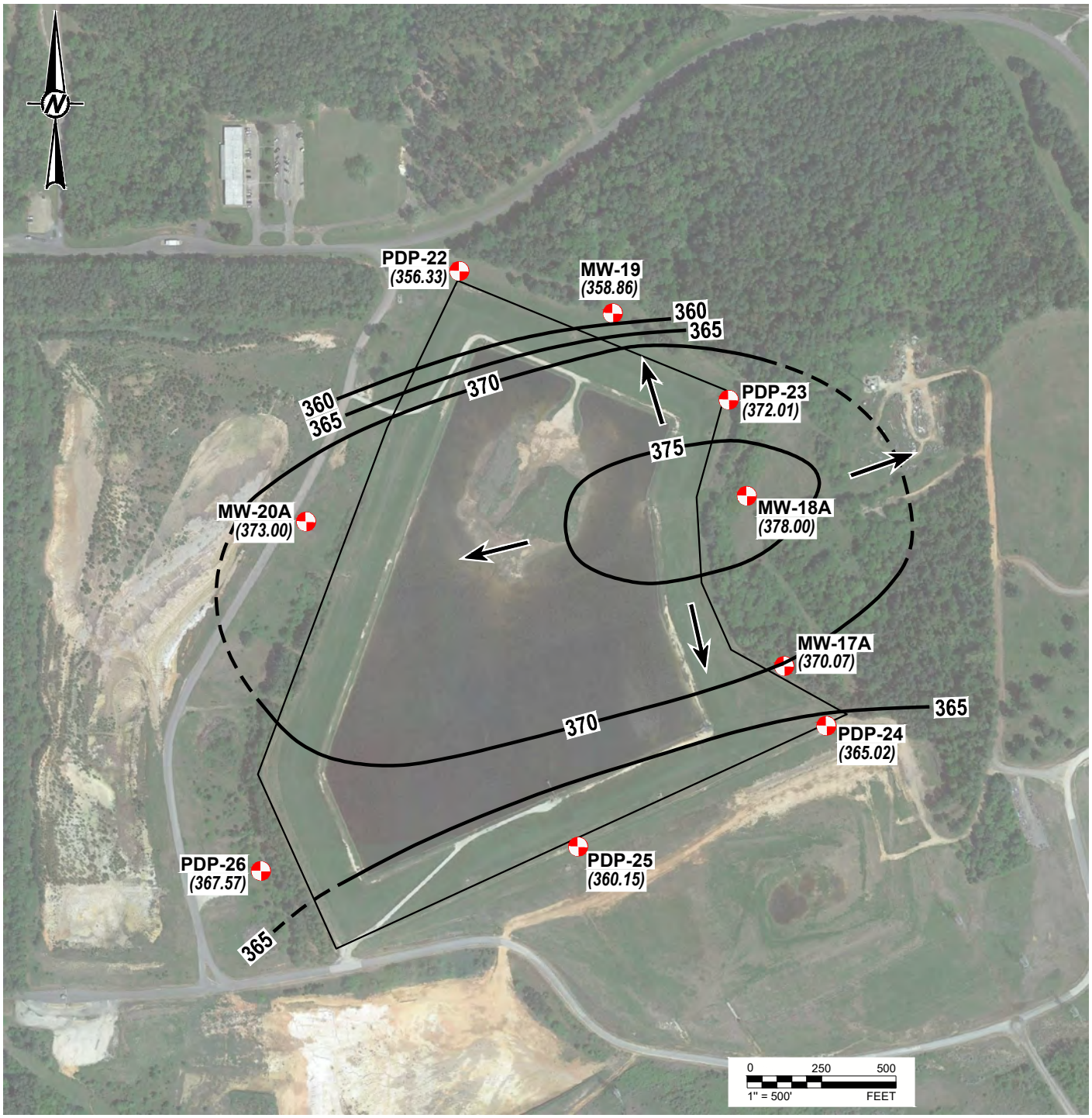
TITLE
PDP 5
POTENTIOMETRIC SURFACE MAP
JUNE 3, 2021

CONSULTANT
WSP GOLDER

YYYY-MM-DD	2022-12-02
DESIGNED	AJD
PREPARED	AJD
REVIEWED	WFV
APPROVED	WFV

PROJECT NO.	CONTROL	REV.	FIGURE
19122262		0	1

Last Edited By: usad701305 Date: 2022-12-02 Time:11:22:38 AM | Printed By: USAD701305 Date: 2022-12-02 Time:11:26:51 AM
Path: \\golder.gds\complexdata\office\Texarkana\Projects - Round Rock_2019\19122262 - Luminant\D - MLSES\2022-12\ | File Name: 1 - POT Surface Map-PDP 5 (June 2021).dwg
IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI A



LEGEND

- CCR MONITORING WELL
- (374.34) GROUNDWATER POTENTIOMETRIC SURFACE (FT MSL)
- 360 GROUNDWATER POTENTIOMETRIC SURFACE CONTOUR (C.I. = 5 FT)
- INFERRED GROUNDWATER FLOW DIRECTION

STATE OF TEXAS
WILLIAM F VIENNE
GEOLOGY
No 10492
LICENSED
PROFESSIONAL GEOSCIENTIST
11/16/2022

REFERENCE(S)
BASE MAP TAKEN FROM GOOGLE EARTH IMAGERY DATED 4/6/17.

CLIENT
LUMINANT

PROJECT
MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

TITLE
PDP 5
POTENTIOMETRIC SURFACE MAP
OCTOBER 4, 2021

CONSULTANT
WSP GOLDER

YYYY-MM-DD	2022-12-02
DESIGNED	AJD
PREPARED	AJD
REVIEWED	WFV
APPROVED	WFV

PROJECT NO.	CONTROL	REV.	FIGURE
19122262		0	2

Last Edited By: usad701305 Date: 2022-12-02 Time:11:14:57 AM | Printed By: USAD701305 Date: 2022-12-02 Time:11:20:37 AM
Path: \\golder.gds\complexdata\office\Texarkana\Projects - Round Rock_2019\19122262 - Luminant\D - MLSES\2022-12\ | File Name: 3 - POT Surface Map-PDP 5 (October 2021).dwg
IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI A
0 1 in

ATTACHMENT 3
ALTERNATE SOURCE DEMONSTRATION

ALTERNATE SOURCE DEMONSTRATION SUMMARY

MARTIN LAKE STEAM ELECTRIC STATION – PDP 5

Introduction

This Alternate Source Demonstration Summary was prepared to document that a source other than the Permanent Disposal Pond 5 (PDP 5) (the Site) caused the statistically significant increases (SSIs) over background levels observed during the 2020 Coal Combustion Residual (CCR) Detection Monitoring Program sampling events as required by 40 CFR 257.94(e)(2) (the "CCR Rule").

PDP-5 History and CCR Monitoring Well Network

A Site Plan showing PDP-5 and vicinity is shown on Figure 1. PDP-5 was constructed in 2010 on top of and immediately adjacent to closed and capped former pre-CCR Rule coal ash surface impoundments that began operation in 1979. PDP-5 extends significantly above natural grade and represents a localized topographic high-point relative to the surrounding area. Based on this configuration, there are no upgradient monitoring wells at PDP-5.

The CCR groundwater monitoring well system at PDP-5 consists of nine monitoring wells (MW-17A, MW-18A, MW-19, MW-20A, PDP-22, PDP-23, PDP-24, PDP-25, PDP-26). As shown on Figure 1, the wells are distributed radially along the perimeter of PDP-5 and are screened in the uppermost aquifer.

2020 Semi-Annual Detection Monitoring Results and Discussion

Detection Monitoring Program groundwater data collected from the PDP-5 CCR monitoring well network from 2017 through 2020 are summarized in Table 1. Detection Monitoring Program groundwater samples were collected on a semi-annual basis in 2020 in accordance with 40 CFR 257.94. Golder collected the first 2020 Detection Monitoring Program groundwater samples in May 2020 and the second semi-annual Detection Monitoring Program groundwater samples in September 2020. Intrawell statistical evaluations were used to identify SSIs from the 2020 Detection Monitoring Program in accordance with the procedures outlined in the Statistical Analysis Plan (SAP) (PBW, 2017).

Based on the 2020 semi-annual analytical results, SSIs were identified for boron and calcium in well PDP-25, calcium in well PDP-23, and chloride in well MW-20A. Prediction limits for boron in wells MW-18A, MW-20A, and PDP-23 were exceeded during the first semi-annual 2020 sampling event; however, since the prediction limits were not exceeded during the second semi-annual 2020 event samples from these wells, SSIs were not indicated for these constituents/wells as specified in the SAP.

The boron SSI concentrations in the 2020 groundwater samples from well PDP-25 (maximum sample concentration of 0.202 mg/L) exceeded the boron prediction limit of 0.136 mg/L for that well; however, the 2020 PDP-25 boron sample results are significantly lower than the boron sample concentrations observed at other Site wells where SSIs were not indicated. For example, six of the eight other CCR monitoring wells (MW-17A, MW-18A, MW-19, MW-20A, PDP-22, and PDP-24) had boron sample concentrations in 2020 that were higher than those observed in the PDP-25 samples, but SSIs were not indicated in these other wells. Therefore, the boron sample concentrations observed at PDP-25 are similar or less than those observed in other Site wells and are attributed to variability caused by the heterogeneity of the uppermost aquifer at the Site.

The calcium SSI concentrations in the 2020 groundwater samples from well PDP-23 (maximum sample concentration of 2.31 mg/L) exceeded the calcium prediction limit of 2.0 mg/L for that well. The calcium SSI concentrations in the 2020 groundwater samples from well PDP-25 (maximum sample concentration of 46.3 mg/L) exceeded the calcium prediction limit of 41.3 mg/L for that well. The historical variability of calcium in groundwater samples collected Site-wide has been high, ranging from about 1 mg/L to 133 mg/L. The calcium SSI sample concentrations observed at PDP-23 and PDP-25 fall in this historical range. Also, two wells (MW-19 and PDP-22) sampled during 2020 that did not have SSIs had calcium sample concentrations that were higher than the maximum calcium SSI observed in 2020. Therefore, the calcium sample concentrations observed at PDP-23 and PDP-25 are similar or less than those observed in other Site wells and are attributed to variability caused by the heterogeneity of the uppermost aquifer at the Site.

The chloride SSI concentration in well MW-20A in September 2020 (12.6 mg/L) slightly exceeded the chloride prediction limit (12.3 mg/L) for that well. The chloride sample concentration from well MW-20A in May 2020 (10.4 mg/L) was below the chloride prediction limit for that well; however, the September 2020 chloride sample result was assumed to be an SSI because a confirmation sample was not collected after the September 2020 sampling event. Four of the eight other CCR monitoring wells (MW-19, PDP-22, PDP-24, and PDP-25) had chloride sample concentrations in 2020 that were higher than those observed in the PDP-20A SSI sample, but SSIs were not indicated in these other wells. Also, the PDP-20A SSI sample chloride concentration was below the Site-wide average concentration of 22 mg/L. Therefore, the chloride sample SSI concentration observed at MW-20A is similar or less than those observed in other Site wells and is attributed to variability caused by the heterogeneity of the uppermost aquifer at the Site.

It should also be noted that groundwater conditions in the vicinity of PDP-5 are influenced by the closed and capped former pre-CCR Rule coal ash surface impoundments beneath and adjacent to PDP-5. As a result, Detection Monitoring groundwater concentrations identified as SSIs may also be attributable to historical operation of the closed former surface impoundments in addition to the natural variability caused by the heterogeneity of the groundwater system at the Site.

Conclusion

SSIs were identified for boron, calcium, and chloride during the 2020 Detection Monitoring Program sampling events at PDP 5. All observed SSIs are attributed to natural variation in groundwater quality due to the heterogeneity of the groundwater system and to potential effects from the closed former non-CCR Rule coal ash surface impoundments in the vicinity of PDP 5. The SSIs identified in the 2020 sample data are not considered evidence of a release from the CCR unit. In accordance with Section 257.94(e)(2), Luminant should continue the Detection Monitoring Program. Initiation of an Assessment Monitoring Program is not required at this time.

References

Pastor, Behling & Wheeler, LLC (PBW), 2017. Coal Combustion Residual Rule, Statistical Analysis Plan, PDP 5, Rusk County, Texas. October 11, 2017.

PROFESSIONAL CERTIFICATION

This document and all attachments were prepared by Golder Associates Inc. under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I hereby certify that the alternative source demonstration at the referenced facility meets the requirements of Section 257.94(e)(2) of the CCR Rule.

Patrick J. Behling, P.E.
Principal Engineer
GOLDER ASSOCIATES INC.

TABLE 1
CCR Groundwater Detection Monitoring Data Summary
Martin Lake Steam Electric Station - PDP 5

Sample	Date	B		Ca		Cl		Fl		field pH		SO_4		TDS	
Location	Sampled	Prediction Limit	Sample Data	Prediction Limit	Sample Data	Prediction Limit	Sample Data	Prediction Limit	Sample Data	Prediction Limit	Sample Data	Prediction Limit	Sample Data	Prediction Limit	Sample Data
MW-17A	09/22/17	0.538	0.402	6.73	3.1	10.4	8.3	0.4	<0.1	2.5 9.19	6.78	51.9	31.2	170	111
	06/14/18		0.485		6.48		9.16		<0.1		6.87		45.9		129
	09/11/18		0.523		5.06		8.82		0.179 J		5.03		43.1		137
	05/13/19		0.497		4.88		9.18		<0.1		6.79		44.7		145
	11/7/2019		0.52		5.05		8.81		<0.100		6.44		43.9		127
	5/19/2020		0.521		5.09		8.74		<0.100		6.57		46.8		140
	9/25/2020		0.477		5.76		10.1		<0.100		6.57		47.7		133
MW-18A	09/21/17	0.20	0.0654	3.1	1.04	10.4	5.27	0.4	<0.1	4.88 7.92	6.94	9.1	3.23	157	45
	06/14/18		0.102		2		6.56		<0.1		6.92		3.48		71
	09/12/18		0.211		3.23		9.06		<0.1		5.69		4.82		150
	11/7/2018 re-sample		0.128		--		--		--		--		--		--
	05/13/19		0.117		1.01		6.17		0.138 J		6.64		3.23		73
	11/7/2019		0.127		11.5		6.34		<0.100		6.23		3.67		68
	5/19/2020		0.225		1.54		7.09		<0.100		6.89		5.97		86
	9/25/2020		0.188		1.66		8.13		<0.100		6.78		6.03		77
MW-19	09/22/17	0.782	0.0677	237	2.74	57.7	5.36	0.512	<0.1	4.6 8.08	6.94	672	1.46 J	1,380	98
	06/14/18		0.577		133		24.4		0.216 J		6.78		328		758
	09/11/18		0.243		38		65.1		0.228 J		6.04		166		597
	11/7/2018 re-sample		--		--		5.22		--		--		--		--
	05/13/19		0.429		122		26.8		0.229 J		6.72		349		813
	11/8/2019		0.529		77.8		49.3		0.189 J		6.87		310		844
	5/19/2020		0.0724		1.49		5.84		<0.100		6.91		1.02 J		85
	9/25/2020		0.412		94.6		14.3		0.111 J		6.92		160		462

TABLE 1
CCR Groundwater Detection Monitoring Data Summary
Martin Lake Steam Electric Station - PDP 5

Sample	Date	B		Ca		Cl		Fl		field pH		SO_4		TDS	
Location	Sampled	Prediction Limit	Sample Data	Prediction Limit	Sample Data	Prediction Limit	Sample Data	Prediction Limit	Sample Data	Prediction Limit	Sample Data	Prediction Limit	Sample Data	Prediction Limit	Sample Data
MW-20A	09/22/17	0.213	0.0807	25.7	17.4	12.3	12.6	0.954	0.175 J	3.06 8.76	6.71	148	74.2	381	237
	02/21/18 re-sample		--		--		10.7		--		--		--		--
	06/13/18		0.171		24		10.9		0.672		6.72		132		250
	09/11/18		0.141		7.16		11		0.235 J		4.70		39.1		154
	05/13/19		0.239		37.4		10.2		0.731		6.81		178		328
	11/8/2019		0.132		9.9		10.2		0.465		6.51		88		205
	5/19/2020		0.22		24		10.4		0.413		6.83		133		270
	9/25/2020		0.107		8.94		12.6		0.132 J		6.68		54.3		162
PDP-22	09/22/17	0.411	0.221	306	92.5	32.7	12.3	1.07	0.321 J	4.08 8.63	6.98	216	178	1,780	558
	06/14/18		0.115		7.78		11.8		0.239		6.63		186		491
	09/12/18		0.164		61.1		10.9		0.216 J		5.88		143		476
	05/13/19		0.158		98.2		10.1		0.303 J		6.86		184		615
	11/12/2019		0.226		34.3		12.6		0.218 J		6.93		215		482
	5/19/2020		0.0646		54.9		1.06		<0.100		6.55		5.21		205
	9/25/2020		0.206		25.1		12.7		0.128 J		6.73		186		398
PDP-23	09/22/17	0.0678	0.0463	2	2.34	7.52	4.48	0.4	0.147 J	3.38 8.45	6.77	3.27	1.47 J	143	111
	02/21/18 re-sample		--		2.37		--		--		--		--		--
	06/13/18		0.0357		2.29		6.21		<0.1		6.82		1.26 J		98
	09/11/18		0.0760		1.96		6.38		<0.1		5.32		1.52 J		98
	11/7/2018 re-sample		0.0683		--		--		--		--		--		--
	05/13/19		0.0628		1.89		6.98		<0.1		6.68		1.28 J		103
	11/12/2019		0.0675		2.14		4.98		<0.100		6.72		1.41 J		93
	5/19/2020		0.0709		2.03		6.86		<0.100		6.83		1.19 J		104
	9/25/2020		0.0617		2.31		7.29		<0.100		6.74		<1.00		94

REPORT

CCR ASSESSMENT OF CORRECTIVE MEASURES

Martin Lake Steam Electric Station - A1 Area Landfill
Panola County, Texas

Submitted to:

Luminant Generation Company LLC

Submitted by:

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September 2019

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1.0 INTRODUCTION

Golder Associates Inc. (Golder) has prepared this assessment of corrective measures (ACM) report on behalf of Luminant Generation Company LLC (Luminant) for the A1 Area Landfill (A1 LF) located at the Martin Lake Steam Electric Station (MLSES) in Panola County, Texas (hereafter, the "Site"). The ACM was prepared in accordance with §257.96 of the Coal Combustion Residual (CCR) Rule and was required due to the presence of concentrations of selected Appendix IV constituents in the uppermost Site aquifer at statistically significant levels (SSLs) above the groundwater protection standards (GWPS) established for the constituents at the Site. This ACM Report will be placed in the MLSES operating record in accordance with §257.105(h)(10).

This report also incorporates the results of a site investigation conducted at the A1 LF in May and June 2019. The objectives of the site investigation were:

- delineate the nature and extent of the selected Appendix IV constituents to their respective GWPS;
- update the statistical evaluations of the Appendix IV constituents to include data collected during 2019 to confirm that SSL exceedances continue to occur at the Site;
- collect data to evaluate potential future alternate source demonstrations (ASDs) for the Appendix IV constituents; and
- assess the potential for monitored natural attenuation (MNA) to be successful at the Site for the Appendix IV constituents.

The MLSES is located approximately 5 miles southeast of Tatum in Rusk County, Texas (Figure 1). The MLSES is expected to remain in operation for the foreseeable future, depending on future power demands.

The A1 LF is located approximately 2.5 miles southeast of the MLSES (Figure 1). The A1 LF is an above grade landfill that considered an existing CCR Landfill under the CCR Rule. CCR is transported to the landfill in rail cars, off loaded and placed within the active areas at the landfill. The A1 LF was registered with the Texas Commission on Environmental Quality (TCEQ) as a Class 2 non-hazardous industrial waste landfill in 1980 under SWR No. 31277 and has been receiving CCR since that time.

The A1 LF is located within reclaimed areas of the former Beckville Lignite Mine (a subsection of the Martin Lake Lignite Mine). The landfill is surrounded by earthen embankments constructed of mine spoil that extend approximately 10 to 20 feet or more above surrounding grade (PBW 2016). The A1 LF is lined with a 1-foot thick compacted clay bottom liner consisting of clay-rich mine spoil scarified and re-compacted to achieve an in-place permeability of $1x10^{-7}$ cm/sec or less. The bottom liner is underlain by low-permeability, clay-rich mine spoil 70 to 100 feet or more in thickness. The earthen embankments are provided with a 3-foot thick compacted clay liner.

Progressive capping/closure of the A-1 LF is performed as placement of CCR in the landfill reaches design elevations. Existing capped areas have been capped/closed using a 3-foot thick compacted clay cap (in-place permeability of $1x10^{-7}$ cm/sec or less) covered with a minimum 2-foot thick vegetative cover layer.

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2.0 REGIONAL AND SITE SETTING

2.1 Regional Geology

The A1 Area Landfill is located in the outcrop area of the Eocene-aged undifferentiated Wilcox Group (Barnes, 1965). The Wilcox Group in the vicinity of the Site consists mostly of unconsolidated to moderately consolidated clay and silt, with various amounts of interbedded sand and lignite. The depositional environment is associated with fluvial-deltaic processes such as inter-channel crevasse splays, overbank deposits, and localized channel fills. The Wilcox Group is overlain by sands of the Carrizo Formation, which is present only at higher elevations in the area. The Carrizo Formation is not present at the Site.

2.2 Regional Hydrogeology

Groundwater within the upper 100 feet below ground surface (bgs) in the region typically flows under unconfined to semi-confined conditions. The direction and rate of groundwater movement in the Calvert Bluff Formation is affected by a number of physical features, including topography, surface drainage, and geology. The natural groundwater potentiometric surface in these shallow flow systems is generally a subdued replica of topography. In general, groundwater flow occurs from high potentiometric areas (recharge zones) toward valleys (discharge zones). Groundwater divides generally coincide with surface drainage divides. Reclaimed mine spoil is not typically used as a water production source. Water wells in the region are typically completed in channel sands of the Wilcox Group or in the Carrizo Formation.

2.3 Site Hydrogeology and CCR Monitoring Well Network

The CCR groundwater monitoring well network at the A1 Area Landfill was established in 2015 using Site monitoring wells BMW-11A-R, BMW-18, BMW-19, BMW-20, BMW-21, BMW-22, BMW-23, and BMW-24. Monitoring wells BMW-26, BMW-27, and BMW-28 were added to the CCR monitoring network in 2016, during the background sampling period. Nature and extent wells BMW-29, BMW-30, BMW-31, BMW-32, and BMW-33 were installed in May 2019 and were sampled, along with one pre-existing non-CCR well (BMW-25), in June 2019. Pre-existing mine monitoring wells A-I-2-OB, AI-17-SPOIL, and AIV-18-OB-95 were also sampled as nature and extent wells in July and August 2019. Boring logs for the CCR monitoring wells and nature and extent wells are provided in Appendix A. The uppermost GWBU occurs under unconfined conditions within the spoil zone. The CCR monitoring wells and nature and extent wells are completed in the spoil zone, except for nature and extent wells A-I-2-OB and AIV-18-OB-95, which are both completed in native Wilcox sands in the overburden interval at the mine. Geologic cross sections of the A1 Area Landfill are presented on Figures 3, 4, 5, and 6.

Prior to the installation of the nature and extent wells, the highest groundwater elevation in the CCR monitoring well network had been consistently observed at well BMW-11-AR, which is located near the northern corner of the A1 Area Landfill. When the initial nature and extent wells were sampled in June 2019, the highest groundwater elevation was observed at BMW-33 (401.69 feet above mean sea level (amsl)), which is located on the northeast side of the landfill. Based on the new water elevation information from the nature and extent wells, BMW-33 is considered an upgradient well relative to the A1 Area Landfill and the inferred direction of groundwater flow is to the east-southeast and west from the A1 Area Landfill, with a lesser flow component to the south. A groundwater potentiometric surface map of the A1 Area Landfill is provided on Figure 7.

Nature and extent wells AI-2-OB, AI-17-SPOIL, and AIV-18-OB-95 were initially selected for evaluation based on the previously inferred groundwater flow direction shown on historic CCR groundwater potentiometric surface maps (PBW 2017a) and the well locations relative to the A1 Area Landfill. Groundwater elevation data collected

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during the nature and extent evaluation indicate that wells AI-17-SPOIL and AIV-18-OB-95 are upgradient of the A1 Area Landfill and that well AI-2-OB is downgradient of the A1 Area Landfill. Based on the inferred groundwater flow direction, the locations of the CCR monitoring wells and nature and extent wells to the A1 Area Landfill are as follows:

Upgradient/Background Wells	Downgradient Wells	
BMW-11A-R	BMW-18	BMW-26
BMW-27	BMW-19	BMW-28
BMW-33	BMW-20	BMW-29
AI-17-SPOIL	BMW-21	BMW-30
AIV-18-OB-95	BMW-22	BMW-31
	BMW-23	BMW-32
	BMW-24	AI-2-OB
	BMW-25	

Rising- and falling-head aquifer tests (i.e., slug tests) were conducted in 2015 at monitoring wells BMW-21, BMW-23, and BMW-24 to evaluate lateral groundwater flow velocities of the uppermost GWBU. The test methods and results were documented in the CCR Groundwater System Certification Report for the Site (PBW 2017a). Based on the test results, the uppermost GWBU has an estimated horizontal hydraulic conductivity value of 3.05E-04 cm/sec and an estimated lateral groundwater flow velocity of 14 feet per year.

Golder performed a survey of water supply wells located in the vicinity of the A1 Area Landfill in May 2019 as part of a Texas Commission on Environmental Quality (TCEQ) Texas Risk Reduction Program (TRRP) assessment of the Site. A Drinking Water Survey Report (Golder, 2019) documenting the water well survey activities and findings was approved by the TCEQ in a letter dated August 2, 2019. No imminent threats to water wells or potentially affected drinking water wells were identified.

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3.0 NATURE AND EXTENT EVALUATION

3.1 Groundwater Monitoring Summary

Background monitoring of groundwater in the vicinity of the A1 Area Landfill began in October 2015 and was completed in December 2016. Samples collected during this period were analyzed for Appendix III and Appendix IV constituents to establish background concentrations pursuant to §257.94(b).

A detection monitoring program in accordance with §257.94 was initiated in September 2017. The evaluation of those data was completed in 2018 using procedures described in the Statistical Analysis Plan (PBW, 2017b) to identify statistically significant increases (SSIs) of Appendix III parameters above background concentrations. Based on the identification of SSIs for one or more Appendix III parameters, an assessment monitoring program was established pursuant to §257.94(e)(1).

The initial assessment monitoring event was performed in June 2018 and a subsequent semi-annual assessment monitoring event was conducted in September 2018 in accordance with §257.95(a) and §257.95(d). Using the Appendix IV data collected during the assessment period through September 2018, SSLs above GWPSs were initially identified for arsenic (BMW-26), barium (BMW-24), cobalt (BMW-19, BMW-20 and BMW-27); and lithium (BMW-26 and BMW-28). An ACM was initiated on April 8, 2019 pursuant to §257.95(g). A justification letter for a 60-day extension due to site-specific circumstances that delayed work on the ACM was certified on July 3, 2019 in accordance with §257.96(a). Based on the extension, the deadline for completing the ACM is September 5, 2019.

3.2 Assessment Monitoring SSL Evaluation

An additional assessment monitoring event was performed in May 2019. Groundwater sampling analytical results for all Appendix IV parameters from 2015 through 2019 are presented in Table 1. An updated statistical analysis of the Appendix IV results from downgradient CCR monitoring wells was conducted, including the May 2019 data, to evaluate if constituent concentrations detected in the samples remained at SSLs relative to the GWPSs. The updated statistical analysis was performed in accordance with the Statistical Analysis Plan for CCR Groundwater Monitoring (PBW, 2017b) and the USEPA Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities-Unified Guidance (USEPA 2009). Confidence intervals were calculated for any Appendix IV parameter that historically has had more than one exceedance of the GWPS in any well within the monitoring network. Plots of the confidence intervals for each of these Appendix IV parameters are presented below (red boxes indicate SSLs):

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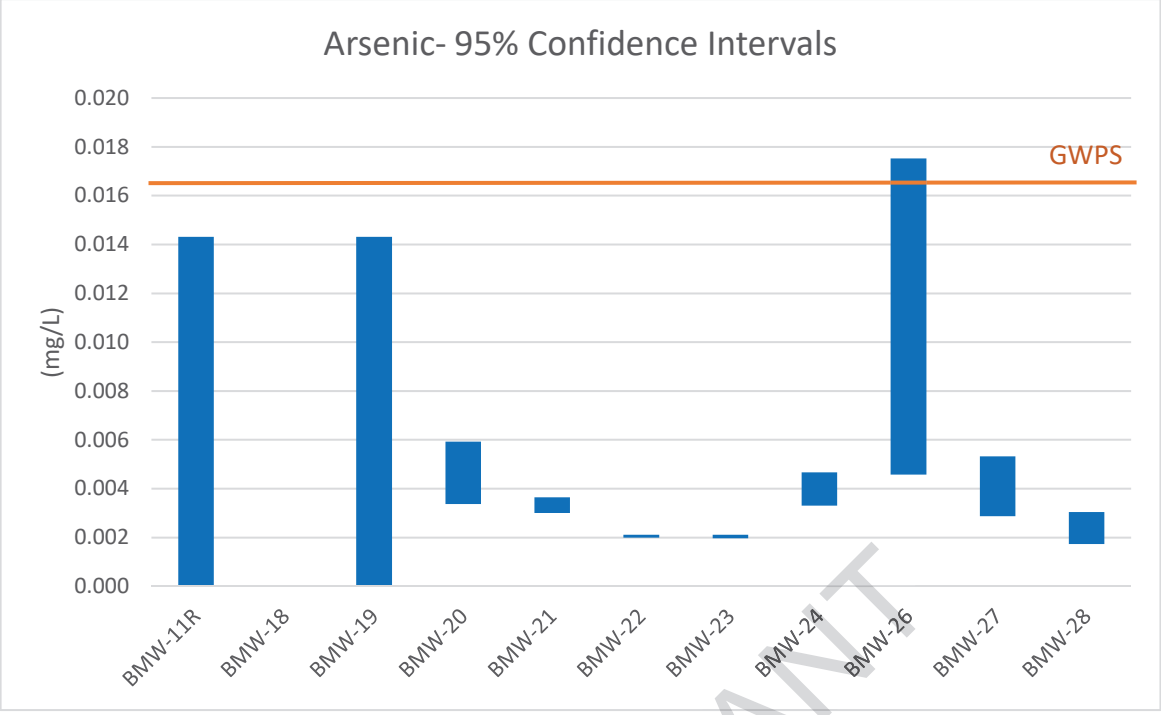
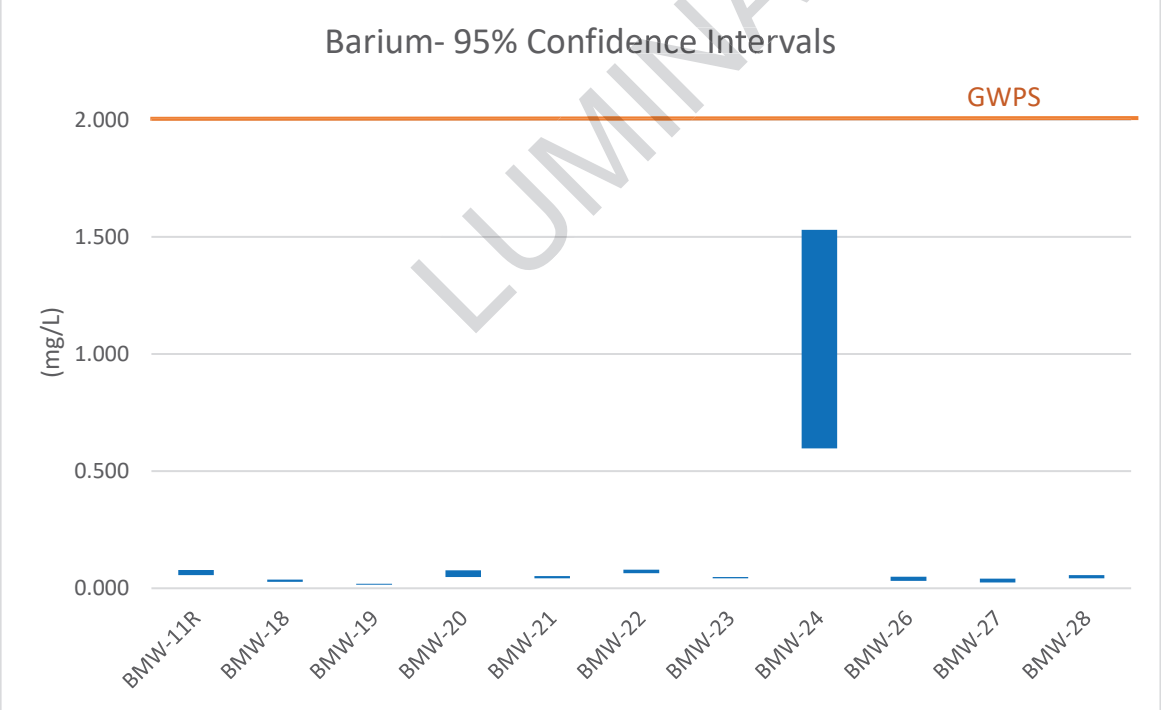

Arsenic- 95% Confidence Intervals
0.020
0.018
0.016
0.014
0.012
0.010
0.008
0.006
0.004
0.002
0.000
(mg/L)
GWPS
BMW-11R
BMW-18
BMW-19
BMW-20
BMW-21
BMW-22
BMW-23
BMW-24
BMW-26
BMW-27
BMW-28


Barium- 95% Confidence Intervals
2.000
1.500
1.000
0.500
0.000
(mg/L)
GWPS
BMW-11R
BMW-18
BMW-19
BMW-20
BMW-21
BMW-22
BMW-23
BMW-24
BMW-26
BMW-27
BMW-28

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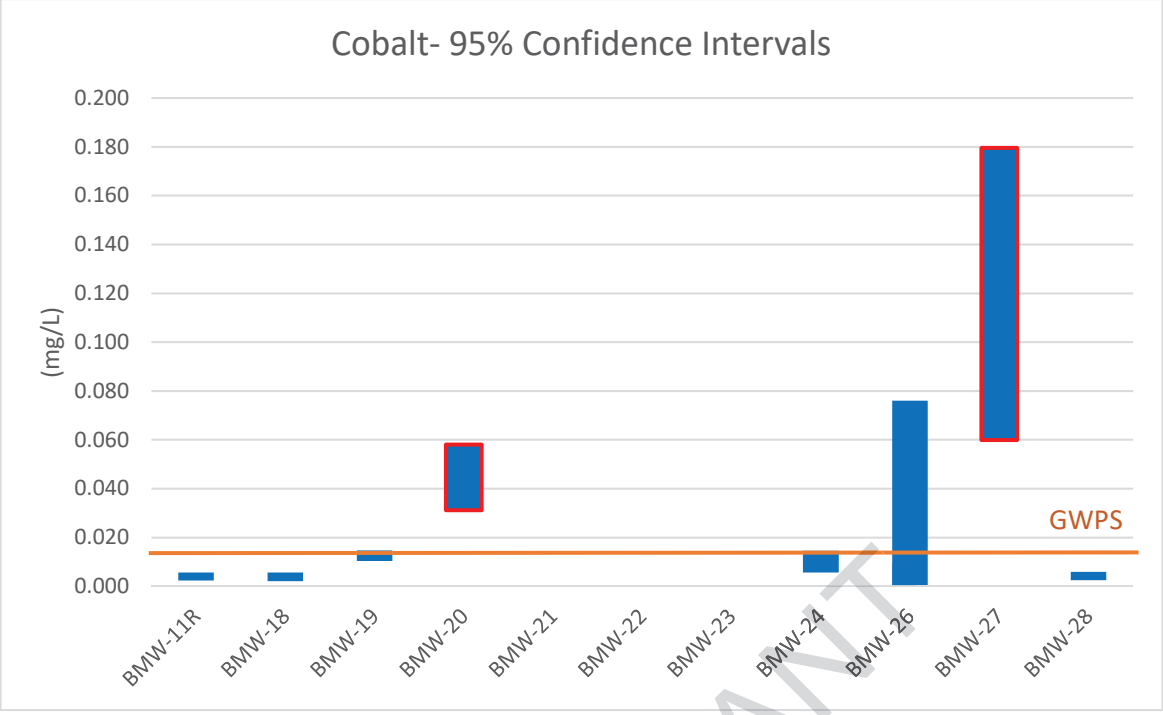

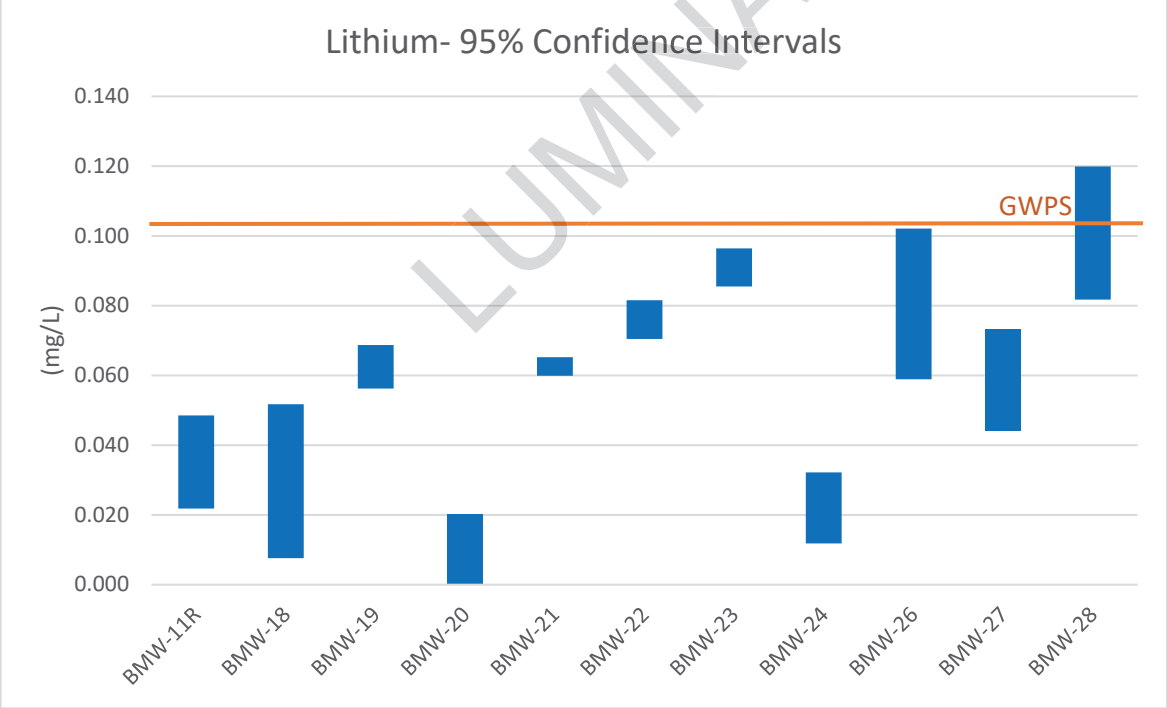

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The previous statistical analysis using data collected during the assessment monitoring period through September 2018 indicated SSLs for arsenic (BMW-26), barium (BMW-24), cobalt (BMW-19, BMW-20, and BMW-27) as identified in the February 2019 SSL notification; and lithium (BMW-26 and BMW-28). The updated statistical analysis identified only cobalt (BMW-20 and BMW-27) as having SSLs above GWPSs Based on the groundwater elevations measured in the nature and extent wells in June 2019, CCR well BMW-27 is now considered to be

upgradient of the A1 Area Landfill; therefore, the SSLs for cobalt identified in well BMW-27 are were characterized as background concentrations in the updated statistical analysis. Cobalt in well BMW-20 was the only occurrence of SSLs above GWPSs in the updated statistical analysis. Although only cobalt was observed at SSLs above the GWPS during the updated statistical analysis, the monitoring wells will continue to be monitored for arsenic, barium, and lithium to confirm that their concentrations remain below SSLs in the future in accordance with the CCR Rule. For the purposes of this ACM evaluation, concentrations are conservatively assumed to be present at SSLs above their respective GWPSs for the following constituents in the wells indicated based on the initial statistical analysis:

- Arsenic (BMW-26);
- Barium (BMW-24);
- Cobalt (BMW-19, BMW-20, and BMW-27); and
- Lithium (BMW-26 and BMW-28).

Figure 8 shows the extent of Appendix IV constituents detected at SSLs above GWPSs based on the initial and updated statistical analysis.

3.3 Field Investigation

3.3.1 General

Field investigation activities conducted as part of the ACM included collection of soil samples for mineralogical assessment and chemical analysis, installation and development of nature and extent monitoring wells, groundwater-level measurements, and groundwater sampling and analysis. Figure 2 presents the locations of soil borings and monitoring wells installed and sampled as part of the field investigation.

3.3.2 Soil Sample Collection

Soil borings were completed in May 2019 at proposed nature and extent monitoring well locations BMW-29, BMW-30, BMW-31, BMW-32, and BMW-33. Soil samples were collected within the target GWBU in each of the soil borings. Soil samples were submitted under chain-of-custody for laboratory analysis of the following parameters:

- Mineralogical composition: The purpose of the mineralogical analysis was to identify and quantify the crystalline mineral phases in each sample. This information is required for geochemical modeling as the release or attenuation of constituents of interest is influenced by the mineral phase(s) present in the aquifer (Hem 1985). The mineralogical testing laboratory (SGS Minerals Services) performed the analysis using quantitative (Rietveld) X-ray diffraction (XRD) (ME-LR-MIN-MET-MN-DO5) and a Bruker AXS D8 Advance Diffractometer.
- Total metals: Analysis of total metals was conducted to quantify the chemical composition of soil materials. The total mass of metals, in combination with the results of sequential extraction testing, can be used to determine the provenance of metals and verify sequential extraction results.
- Sequential extraction (SEP): This test consists of a seven-step metals extraction from solids as per Tessier et al. (1979) to identify the provenance of constituents of interest (i.e. the operationally-defined fraction that

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contains the metal)[1] and determine their potential environmental mobility. For instance, metals bound in the carbonate fraction, or that are exchangeable, are much more likely to become mobile due to changes in groundwater conditions than metals bound within a sulfide or silicate fraction. The total concentration of a metal measured from all seven steps can be compared to the concentration determined from the total metal analysis for compositional accountability.

3.3.3 Monitoring Well Installation

Five new nature and extent monitoring wells were completed (BMW-29, BMW-30, BMW-31, BMW-32, and BMW-33) in May 2019 in the uppermost GWBU. The wells were constructed of 2-inch diameter, schedule 40 PVC casing and 0.010-inch slotted screen. Annular materials consisted of a sand/gravel pack around the screened interval, a bentonite seal above the sand/gravel pack, and grout or bentonite chips to ground surface. Surface completions consisted of a concrete pad, protective steel casing stickup, and guard posts. The monitoring wells were developed by surging the wells several times and purging the wells using an inertial pump to remove fine-sized particles and to establish a hydraulic connection between the well and the formation.

3.3.4 Groundwater Sampling

Groundwater samples were collected from the CCR monitoring network in May 2019 and from the nature and extent wells in June 2019 through August 2019. Laboratory analytical reports are provided in Appendix B and groundwater sampling records, which include field-measured parameters, are presented in Appendix C.

Chemical/geochemical analysis of groundwater samples included field parameters, metals, nutrients, and major cations and anions. The rationale and methods used are as follows:

- Field Parameters: Parameters measured in the field included pH, dissolved oxygen, oxidation reduction potential (ORP), conductivity, and temperature. These parameters were used to evaluate general geochemical conditions in the groundwater and support geochemical modeling.
- Metals and Regulated COIs: Analysis of Appendix III parameters and Appendix IV metals to better understand the geochemical composition of groundwater. Metals analysis allows for the delineation of a potential plume, evaluation of mineral saturation indices, and evaluation of background contributions from natural sources or anthropogenic sources.
- Major Cations, Anions, and Nutrients: Geochemical modeling of mineral solubility, metals attenuation and background contributions requires analysis of major cations and anions because they affect and participate in sorption and mineral dissolution or precipitation reactions.

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[1] Sequential extraction of metals from soil samples consisted of seven discrete steps for this investigation:
Step 1 - Exchangeable Fraction: This extraction includes trace elements that are reversibly adsorbed to soil minerals, amorphous solids, and/or organic material by electrostatic forces.

Step 2 - Carbonate Fraction: This extraction targets trace elements that are adsorbed or otherwise bound to carbonate minerals.

Step 3 - Non-Crystalline Materials Fraction: This extraction targets trace elements that are complexed by amorphous minerals (e.g., iron).

Step 4 - Metal Hydroxide Fraction: Trace elements bound to hydroxides of iron, manganese, and/or aluminum.

Step 5 - Organic Fraction: This extraction targets trace elements strongly bound via chemisorption to organic material.

Step 6 - Acid/Sulfide Fraction: The extraction is used to identify trace elements precipitated as sulfide minerals.

Step 7 - Residual Fraction: Trace elements remaining in soil after the previous extractions will be distributed between silicates, phosphates, and refractory oxides.

3.4 Evaluation of Groundwater Data

3.4.1 Geochemical Modeling Approach

Geochemical modeling was conducted to evaluate general groundwater quality, determine the potential for precipitation of sorbent media, evaluate the potential for mineral precipitation or adsorption in the aquifer, and determine the speciation of metals of interest. The geochemical computer code developed by the United States Geological Survey (USGS), PHREEQC, was used for these simulations (Parkhurst and Appelo 2013). PHREEQC version 3.4 is a general-purpose geochemical modeling code used to simulate reactions in water and between water and solid mineral phases (e.g., rocks and sediments). Reactions include aqueous equilibria, mineral dissolution and precipitation, ion exchange, surface complexation, solid solutions, gas-water equilibrium, and kinetic biogeochemical reactions. The widely-accepted thermodynamic database Minteq.v4, 2017 edition, was used as a basis for the thermodynamic constants required for modeling.

The Geochemist's Workbench Version 12 (Bethke 2015) was used to generate graphical representations of geochemical modeling outputs in the form of predominance, or Pourbaix diagrams (also known as Eh-pH diagrams) for the species of interest (e.g. cobalt) and trilinear plots (also known as Piper plots) displaying the relative abundance of major ions. The Minteq.v4 database was used as the basis for the Pourbaix diagrams.

3.4.2 Summary of Groundwater Results

Groundwater quality data from background well BMW-11-A-R; monitoring wells BMW-18, BMW-19, BMW-20, BMW-21, BMW-22, BMW-23, BMW-24, BMW-26, BMW-27 (now considered upgradient from the A1 Area Landfill), and BMW-28; and nature and extent monitoring wells BMW-25, BMW-29, BMW-30, BMW-31, BMW-32, BMW-33 were used for this evaluation. The water quality monitoring data are presented in Appendices B and C and can be summarized as follows:

General Chemistry Parameters

- pH: The pH of groundwater samples collected from CCR monitoring network and nature and extent wells ranged from 6.6 to 7.2 in May 2019. Historically, the pH in the CCR monitoring well network has ranged from 5.3 to 7.3. However, other than some values that appear to be outliers or are due to seasonality, the pH of groundwater in the CCR network has been consistently between 6.0 and 7.2.
- ORP (Redox): Field-measured redox values, corrected to Eh (+200mV), ranged from +123 to +184 mV in the groundwater samples in the CCR monitoring well network in May 2019. The Eh of groundwater in the nature and extent monitoring wells ranged from +168 mV to +190 mV, indicating that redox conditions were similar to those in the CCR monitoring network wells.
- Total Dissolved Solids (TDS): Groundwater TDS concentrations were variable in May 2019 in the CCR monitoring and nature and extent well network. The lowest TDS concentration (327 mg/L) was observed in nature and extent monitoring well BMW-31 and the highest TDS concentration (3,610 mg/L) was observed in CCR monitoring wells BMW-28. Groundwater in CCR monitoring well BMW-28, while having the highest TDS, does not have a SSL of any Appendix IV constituent as of May 2019.
- Major ion chemistry: A Piper plot was generated for groundwater samples to facilitate the identification of water types and source contributions (Figure 9a). Except for upgradient wells BMW-18, BMW-19 and nature and extent well BMW-31, all background, downgradient, and nature and extent wells demonstrate a similar major ion relative abundance. Based on the molar ratios of calcium, chloride, and sulfate (Figure 9b), all

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wells show major ion compositions ranging between those from BMW-11AR (upgradient) and BMW-31 (nature and extent).

- Iron: Oxidized iron (Fe^{+3}) concentrations were variable, ranging from 0.0633 mg/L (BMW-28) to 35.1 mg/L (BMW-24) in May 2019 (Appendix B). Reduced iron (Fe^{+2}) was non-detect (<0.05 mg/L) in all groundwater samples but two: BMW-23 (0.0937 mg/L) and nature and extent well BMW-29 (0.342 mg/L). Based on the oxidized iron concentrations in groundwater, it is likely ferrihydrite, an iron oxide mineral, is present at the A1 LF, indicating the potential for attenuation of metals and metalloids from groundwater.
- Nutrients: Nitrate (nitrate as N) was present in groundwater at monitoring wells at variable levels, ranging from non-detect (< 0.1 mg/L as N) to 1.35 mg/L as N at BMW-19 in May 2019 (Appendix B). Nitrate was not detected in nature and extent wells. Phosphate concentrations in groundwater ranged from non-detect (0.03 mg/L) to 0.202 mg/L in CCR monitoring and nature and extent wells. No spatial trend was apparent in the nitrate or phosphate distribution in groundwater.

Constituents Identified in February 2019 SSL Notification

- Arsenic: Historically, arsenic concentrations in groundwater surrounding the A1 LF have ranged from non-detect (<0.002 mg/L) to 0.0428 mg/L in CCR monitoring well BMW-19 (June 2018; Figure 10a). Only CCR monitoring wells BMW-19 and BMW-26 have ever exceeded the GWPS. Prior to, and after, the highest groundwater arsenic concentration measured in BMW-19 in June 2018, arsenic concentrations were at or near detection limits in BMW-19 (<0.005 mg/), indicating that the elevated value likely represented an outlier. Arsenic concentrations in groundwater at BMW-26 exceeded the GWPS on four of 12 sampling occasions since October 2016. Based on the evaluation of 95% confidence intervals, no CCR monitoring wells contain arsenic at a concentration above the SSL as of May 2019. Also, , all arsenic concentrations in CCR monitoring wells were below the GWPS as of May 2019.
- Barium: Historically, barium concentrations in groundwater have only exceeded the GWPS of 2.0 mg/L in CCR monitoring well BMW-19 (Figure 10b) on one occasion. Since October 2015, the barium concentration in groundwater at BMW-19 has ranged from 0.181 mg/L to 2.19 mg/L and, as of May 2019, was observed at 0.221 mg/L. No other nature and extent or CCR monitoring wells have ever reported barium concentrations in groundwater exceeding the GWPS. Based on the evaluation of 95% confidence intervals, barium in groundwater is not at an SSL in groundwater at BMW-19, or in any other CCR monitoring well.
- Cobalt: Cobalt concentrations in groundwater samples collected from the nature and extent monitoring wells ranged from non-detect (<0.003 mg/L) to just above non-detect (0.00705 mg/L) in May 2019 (Table 1). The highest observed cobalt concentration in a groundwater occurred at monitoring well BMW-24 (0.00643 mg/L; Figure 10c). All other CCR monitoring wells did not contain cobalt concentrations above the detection limit in May 2019. Historically, cobalt concentrations have ranged from non-detect (<0.003 mg/l) to 0.2550 mg/L in CCR monitoring well BMW-22. The highest cobalt concentration in this well was observed in June 2017, and since then levels have been generally stable or decreasing. CCR monitoring well BMW-24 shows substantial variation between sampling events, of +/- 0.2 mg/L in some cases. Based on an evaluation of 95% confidence intervals, CCR monitoring wells BMW-20 and BMW-27 contain cobalt at a SSL above the GWPS of 0.0124 mg/L (Section 3.2). Cobalt is likely present in groundwater as the divalent cation Co^{+2} while, based on the pH and Eh of groundwater, ferrihydrite, an iron hydroxide mineral phase known to adsorb cobalt, is expected to be present and stable (Figure 11).

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- Lithium: Lithium has exceeded the GWPS (0.103 mg/L) since October 2015 in groundwater from four wells: BMW-18, BMW-23, BMW-26, and BMW-28 (Figure 10d). In May 2019, lithium concentrations in groundwater in the CCR monitoring wells network were only above the GWPS in one well: BMW-28. Based on the evaluation of the 95% confidence intervals, the GWPS exceedances for lithium at BMW-24 are not at an SSL above the GWPS for lithium, nor at any other CCR monitoring well at the A1 LF.

3.5 Evaluation of Soil

3.5.1 Mineralogical Composition

Quantitative X-ray diffraction (XRD) with Rietveld refinement was used to identify and quantify minerals in five overburden samples collected during the drilling activities - one sample from each of the soil borings completed in June 2019 (BMW-29, BMW-30, BMW-31, BMW-32, and BMW-33). These samples were obtained to better understand the mineralogical composition of the aquifer system and identify any minerals that would potentially influence attenuation of constituents of interest. In contrast, the presence of certain minerals could also indicate a potential for naturally-occurring release of metals into groundwater, for instance due to oxidation of sulfide minerals.

The mineralogical analysis identified the materials in boreholes samples at the A1 LF predominantly consist of quartz with varying amounts of the silicate minerals K-feldspar, albite, chlorite, muscovite, biotite, kaolinite, vermiculite, and montmorillonite, plus calcite. Trace amounts of titanomagnetite and ilmenite were encountered in one sample as well. Some of the aluminum phyllosilicates identified in the samples (i.e., kaolinite, vermiculite and montmorillonite) reflect the presence of clays at the A1 LF. Analytical reports for the XRD samples are provided in Appendix B.

3.5.2 Chemical Composition and Sequential Extraction

Chemical analysis and sequential extractions were used to determine the chemical composition of the soil and the distribution of constituents of interest over various operationally-defined fractions comprising the soil. Testing was completed as described in Section 3.3.2 on soil samples obtained from three borehole locations (Figure 2) and the analytical reports for the soil analyses are provided in Appendix B.

Soil sample locations were chosen to gain a better understanding of the underlying geological conditions of the area surrounding the A1 LF, mostly adjacent to or downgradient of a CCR monitoring well. In addition, this information allows for a better understanding of naturally-occurring metal contributions to groundwater or the potential for sequestration of constituents from groundwater.

A description of the individual fractions determined by sequential extraction is presented in Section 3.3.2. Metals extracted in steps 1 through 5 are considered environmentally available, whereas metals extracted in steps 6 and 7 are present in refractory fractions and are not expected to be released under conditions typically encountered in aquifers (Tessier et al. 1979). Total metal quantities from the sequential extraction are expressed as “SEP Total” in Appendix B. The sum of the sequential extraction steps is also presented for comparison but does not represent an analytically-determined value.

The results from the chemical analysis and sequential extraction presented in Appendix B are summarized as follows:

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General Chemistry Parameters

- Aluminum: Aluminum is not a constituent of interest (COI) at the site but it has been well studied as a sorbing medium in soils (e.g., Karamalidis and Dzombak 2011). Total aluminum in soils ranged from 29,526 to 53,368 mg/kg, and the environmentally-available fraction ranged from just 1,208 mg/kg (BMW-30) to 3,286 mg/kg (BMW-29). Aluminum in the soil at the site is, therefore, largely (~84% to 94%) present in the residual, or silicate-bound fraction. This fraction is likely at least partially represented by hydrous aluminum phyllosilicates minerals or clays intermixed in the silica sand matrix. Clays represent an important sorptive reservoir for numerous trace metals and metalloids (Uddin 2017).
- Iron: While not a COI, iron and its minerals commonly represent one of most abundant reservoirs for metal/metalloid attenuation in soils (Dzombak and Morel 1990; Smith 1999). Iron was present in all three core samples analyzed, varying from 5,814 mg/kg (BMW-30) to 24,578 mg/kg (BMW-29). In nearly all samples (except BMW-29 and BMW-31), the sulfide and residual fractions accounted for the largest proportion of total iron (59% to 79%) and, as such, most of the iron is not environmentally available. The remainder of the iron in the samples is present in the amorphous metal and metal hydroxide phase with a small amount <0.6% also occurring in the carbonate fraction. The metal hydroxide fraction, part of the labile fraction in steps 1 through 5, can generally be considered representative of the amount of iron in soil that may be available as a sorbing medium and can, therefore, be used as a proxy for determine the potential for attenuation of cobalt or other COIs.

Constituents Identified in February 2019 SSL Notifiation

- Arsenic: Total arsenic in soil ranged from 3.0 to 4.12 mg/kg while the environmentally-available fraction ranged from 1.38 mg/kg in BMW-31 to 2.27 mg/kg in BMW-29, representing from 46% to 65% of total arsenic. Arsenic in the non-environmentally available fraction (acid/sulfide and residual fractions) ranged from 35% to 54% of total arsenic, indicating the presence of a reservoir of naturally-occurring arsenic in soils. All of the arsenic that was present in the environmentally-available fraction was associated with the amorphous metal and metal hydroxide fractions, indicating potential attenuation of arsenic from groundwater.
- Barium: Total barium in soil ranged from 376 to 597 mg/kg while the environmentally-available fraction ranged from 9.9 mg/kg in BMW-30 to 52 mg/kg in BMW-31, representing from 3% to 14% of total barium. The majority of barium (83% to 96%) was present in the silicate mineral or residual fraction, as such indicating the presence of a considerable reservoir of naturally-occurring barium in soils. Of the barium that occurred in the environmentally-available fraction, the majority was associated with metal hydroxides, indicating potential attenuation of barium from groundwater.
- Cobalt: Total cobalt in soil ranged from 1.7 to 20 mg/kg while the environmentally-available fraction ranged from 0.66 mg/kg in BMW-32 to 18.8 mg/kg in BMW-31, representing from 39% to 94% of total cobalt. Environmentally-available cobalt was present in all the fractions across the A1 LF site. In BMW-31, which contained the highest cobalt concentration measured in the soils samples, the amorphous metal and metal hydroxide fractions accounted for all of the environmentally-available cobalt, indicating its potential attenuation or incorporation into metal hydroxides, such as ferrihydrite.
- Lithium: Total lithium in soil ranged from 11.7 to 24.7 mg/kg, of which between only 12% and 27% of the lithium occurred in the environmentally-available fraction. Lithium that was environmentally available (1.7 to

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6.7 mg/kg), was all present in the metal hydroxide fraction. This distribution of lithium indicates the presence of naturally-occurring lithium contained within the non-environmentally available fractions as well as potential attenuation of lithium by metal hydroxide minerals.

The results from the soil analysis indicate the following:

- Naturally-occurring sources of arsenic, barium, cobalt, and lithium are present in the vicinity of the A1 LF; and
- Attenuation of arsenic, barium, cobalt, and lithium in groundwater is likely occurring in the vicinity of the A1 LF.

3.6 Summary of Site Characterization

Based on the above site characterization and nature and extent investigation, the following conclusions are drawn with respect to the target Appendix IV constituents:

- Arsenic: Recent data indicates that arsenic concentrations in all CCR monitoring wells and nature and extent wells are currently below the GWPS for arsenic. Based on the data collected to date, arsenic concentrations are no longer considered to be present at an SSL above the GWPS; however, arsenic concentrations in groundwater will continue to be monitored to confirm that arsenic levels remain below the GWPS in the future. For the purposes of this ACM evaluation, arsenic concentrations are conservatively assumed to be present at an SSL above the GWPS in well BMW-26 based on the February 2019 SSL notification.
- Barium: Recent data indicates that barium concentrations in all CCR monitoring wells and nature and extent wells are currently below the GWPS for barium. Based on the data collected to date, barium concentrations are no longer considered to be present at an SSL above the GWPS; however, barium concentrations in groundwater will continue to be monitored to confirm that barium levels remain below the GWPS in the future. For the purposes of this ACM evaluation, barium concentrations are conservatively assumed to be present at an SSL above the GWPS in well BMW-24 based on the February 2019 SSL notification..
- Cobalt: CCR monitoring wells in which, historically, cobalt exceeded the GWPS show stable or decreasing cobalt concentrations. Cobalt statistically exceeds the GWPS in two CCR monitoring wells (BMW-20 and BMW-27) while cobalt concentrations in groundwater at all nature and extent monitoring wells (including mine monitoring well A1-2-OB downgradient of BMW-33) are below the GWPS for cobalt. Therefore, cobalt in groundwater is likely limited to the immediate perimeter of the A1 LF and likely attenuates before reaching downgradient wells. The presence of clays and metal hydroxides in soils supports a strong potential for cobalt attenuation (Smith 1999), and attenuation of cobalt on metal hydroxides was confirmed by sequential extraction. Cobalt should, therefore, be considered for further evaluation as part of an ACM as a viable candidate for monitored natural attenuation based on the results of this initial assessment (USEPA 2007a, b).
- Lithium: Recent data indicates that lithium concentrations statistically no longer exceed the GWPS in groundwater at any monitoring or nature and extent well (including mine monitoring well A1-2-OB downgradient of BMW-32). Based on the data collected to date, lithium concentrations are no longer considered to be present at an SSL above the GWPS; however, lithium concentrations in groundwater will continue to be monitored to confirm that lithium levels remain below the GWPS in the future. For the

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purposes of this ACM evaluation, lithium concentrations are conservatively assumed to be present at an SSL above the GWPS in wells BMW-26 and BMW-28 based on the February 2019 SSL notification.

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4.0 ASSESSMENT OF CORRECTIVE MEASURES

In accordance with §257.96 and §257.97, an ACM was conducted for the A1 LF to address concentrations of the following Appendix IV constituents that are conservatively assumed to occur at SSLs above their respective GWPS based on the February 2019 SSL notification:

- arsenic concentrations in monitoring well BMW-26;
- barium concentrations in monitoring well BMW-24;
- cobalt concentrations in monitoring wells BMW-19, BMW-20, and BMW-27; and
- lithium concentrations in monitoring wells BMW-26 and BMW-28.

Potential response technologies were identified for Source Control (to reduce the potential for releases of constituents to groundwater) and Groundwater Response Actions (to reduce constituent concentrations below GWPS). The potential response technologies were then screened to identify options that are appropriate for further consideration in developing potential corrective measures alternatives for the Site. The results of the ACM are presented in this section.

4.1 Corrective Measures Objectives and Evaluation Criteria

As described in §257.96(a), the corrective measures must prevent further releases, remediate any releases and restore the affected area to original conditions. Potential corrective measures must meet the requirements specified in §257.97(b):

1) Be protective of human health and the environment;
2) Attain the groundwater protection standard as specified pursuant to § 257.95(h);
3) Control the source(s) of releases to reduce or eliminate, to the maximum extent feasible, further releases of constituents in appendix IV to this part into the environment;
4) Remove from the environment as much of the contaminated material that was released from the CCR unit as is feasible, considering factors such as avoiding inappropriate disturbance of sensitive ecosystems;
5) Comply with standards for management of wastes as specified in § 257.98(d).

In accordance with §257.96(c), the assessment of potential corrective measures alternatives must include an evaluation of the following:

1) The performance, reliability, ease of implementation, and potential impacts of appropriate potential remedies, including safety impacts, cross-media impacts, and control of exposure to any residual contamination
2) The time required to begin and complete the remedy
3) Institutional requirements, such as state or local permit requirements or other environmental or public health requirements that may substantially affect implementation of the remedy(s).

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4.2 Potential Source Control Response Technologies

One of the listed objectives in §257.97(b) for the corrective measures is to control the source of releases of Appendix IV constituents to the environment from the CCR Unit. In this section, potential source control response technologies are identified and screened for further consideration in developing potential corrective measures alternatives for the A1 LF.

4.2.1 Closure in Place/Capping

Source control can be achieved through construction of a low permeability cap on the surface of the landfill to close the CCR material in-place. Potential final cap options for the A1 LF include either:

- Compacted Clay Cap. This cap option utilizes a low permeability compacted clay liner (infiltration layer) covered by a vegetative soil layer and permanent vegetation.
- Geomembrane Cap. This cap option utilizes a low/high density polyethylene (LLDPE/HDPE) geomembrane liner covered by a vegetative soil layer and permanent vegetation.

The cap would be designed to isolate the CCR material in the landfill and minimize the potential for migration of CCR constituents to groundwater by controlling infiltration of precipitation through the CCR material in the landfill. Long-term cap maintenance (vegetation control, erosion repairs, etc.) would be required.

Capping is a proven method of source control and provides reliable, long-term containment to prevent, or significantly reduce exposure to the source material and migration of precipitation through the source area. Section 257.102(f)(1)(i) of the CCR Rule states that closure of an existing CCR landfill must be completed within six months of commencing closure activities. Section 257.102(f)(2)(ii)(C) of the CCR Rule states that CCR landfills may extend the timeframe to complete closure of the CCR unit multiple times, in one-year increments, with no more than a total of two one-year extensions obtained for any CCR landfill.

4.2.2 Removal and Off-site Disposal

Another option for source control at the A1 LF is excavation/removal of the CCR material in the landfill and transportation to and disposal in an existing or new off-site landfill. This option would involve either:

- Identifying an existing Luminant or commercial landfill that has the available capacity to receive the material from the A1 LF, or
- Siting, regulatory approval, designing, and constructing a new lined repository for the material from the A1 LF.

All material would be excavated from the A1 LF, loaded onto trucks, transported to the designated location, and placed in the selected repository. Once placement is complete, a cap would be constructed over the material. The new repository would require long term maintenance and monitoring.

Removal is an effective method of source control, since the CCR material would be removed from the Site and would no longer potentially impact groundwater once the removal is complete; however, removal of material is only implementable if a suitable repository location is identified. Assuming a suitable repository can be constructed within 10 miles of the A1 LF, it is estimated that it will take 25 to 30 years or more to excavate,

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transport and place the CCR from A1 LF in the new repository. Other significant limitations to removal as a source control option include:

- Much of the CCR in the A1 LF is currently protected by a low permeability soil cap. Excavation of CCR from the landfill would expose the material to precipitation/infiltration and increase the possibility of underlying groundwater contamination from the unit.
- Excavation of the CCR would result in increased risk of exposure to workers and the public to the CCR material itself and fugitive dust emissions during excavation, transportation, and placement at the new repository. It would also result in increased greenhouse gas emissions and carbon footprint.
- A very large number of truck trips (many hundreds of thousands of trips) would be required to transport the material to the new repository. The large volume of truck traffic would result in increased risk to the public due to accidents and potential spills of material during transport.

4.2.3 Screening of Potential Source Control Response Technologies

Following identification of potential source control technologies, Golder screened the potential options for further consideration in developing potential corrective measures alternatives for the A1 LF. The initial screening results for each potential source technology are summarized in Table 2. Based on the initial screening, the following potential source control technology was retained for future evaluation as part of the corrective measures alternatives for the A1 LF:

- Closure in Place/Capping

4.3 Potential Groundwater Response Technologies

For the purposes of this ACM, arsenic, barium, cobalt and lithium are conservatively assumed to be present in groundwater at the Site at SSLs above their respective GWPS based on the February 2019 SSL notification. In this section, potential groundwater response technologies to address these constituents are identified and screened for further consideration in developing potential corrective measures alternatives for the A1 LF.

4.3.1 Monitored Natural Attenuation

Monitored natural attenuation (MNA) refers to the reliance on natural attenuation processes (within the context of a carefully controlled and monitored site cleanup approach) to achieve site-specific groundwater remediation objectives within a time frame that is reasonable compared to that offered by more active remediation methods (USEPA 2007a). MNA relies on a range of natural processes, including dispersion, dilution, sorption, (co)precipitation, radioactive decay, and abiotic degradation/transformation to achieve remediation objectives (ITRC 2010). Routine groundwater monitoring would be required to verify MNA is occurring at the Site.

Where necessary, MNA processes can be enhanced through the use of low-energy, in-situ techniques to stimulate or increase the attenuation of contaminants or reduce contaminate loading (ITRC 2010). Enhancement options include increasing the attenuation capacity of the aquifer, decreasing the mobility of contaminants, and/or increasing the stability of immobilized contaminants by increasing the ability of aquifer solids to remove

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contaminants from groundwater and/or manipulating the geochemistry to reduce remobilization of contaminants by desorption or dissolution of precipitates (ITRC 2010).

MNA has been demonstrated effective in reducing arsenic, barium and cobalt concentrations in groundwater (ITRC 2010; USEPA 2007b). Arsenic is removed through sorption to iron hydroxides or formation of insoluble sulfides and barium is removed through sorption to iron hydroxides and formation of insoluble sulfate and carbonate minerals (ITRC 2010). Cobalt is removed through adsorption to iron hydroxides and/or amorphous metals and the level of effectiveness is dependent on iron hydroxide availability as well as pH, alkalinity, and calcium levels (ITRC 2010). The removal mechanisms for lithium are not identified in the professional literature; however, as described in Section 3.4 - 3.6 of this report, the Site is a good candidate for MNA, since natural attenuation of arsenic, barium, cobalt and lithium is ongoing in the vicinity of the A1 LF.

MNA would be effective in remediating groundwater beneath and downgradient of the landfill. The estimated time to implement MNA is estimated to be approximately 2 to 3 years, including characterization, design, and construction. The estimated time to achieve GWPS for the target Appendix IV constituents is dependent on site-specific conditions and groundwater modeling is needed to better evaluate remedial timeframes.

4.3.2 Groundwater Extraction and Treatment

Groundwater extraction and treatment is one of the most widely implemented groundwater remediation technologies and is used to provide 1) hydraulic containment and 2) treatment (USEPA 1996). A groundwater extraction and treatment system consists of the following major components:

- A series of extraction wells or trenches strategically located to modify/interrupt the natural flow of groundwater;
- Extraction pumps installed in each well/trench to pump groundwater from the subsurface;
- A treatment system to remove constituents of concern from the extracted groundwater; and
- A point of discharge for the treated groundwater (surface water, re-injection to groundwater, etc.).

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For the A1 LF, a system of extraction wells would be installed along the downgradient edge of the landfill to provide hydraulic control of the Appendix IV constituent groundwater plumes. The extracted groundwater would be treated in an on-site treatment system and treated water would be discharged to Martin Lake or re-injected into the aquifer.

Potential groundwater treatment methods for the target Appendix IV constituents include the following:

- Arsenic – activated alumina, ion exchange, reverse osmosis, precipitative softening, coagulation/filtration and oxidation/filtration (USEPA 2019a);
- Barium - ion exchange, lime softening, reverse osmosis, and electrodialysis (USEPA 1992)
- Cobalt - ion exchange, adsorptive media, activated carbon, and chemical treatment with membrane filtration (USEPA 2019a).
- Lithium - reverse osmosis, precipitation/co-precipitation, and ion exchange. (USACE 2010).

Treatment methods for these constituents would need to be bench/pilot tested to evaluate their effectiveness prior to designing a full-scale system. Treatment will generate residual material (sludge, regenerate brine, etc.) containing concentrated levels of the target Appendix IV constituents that must managed.

Groundwater extraction and treatment would be effective in reducing contaminant concentrations in groundwater downgradient of the A1 LF through hydraulic containment, but would have little effect on groundwater conditions beneath the landfill. The estimated time to implement groundwater extraction and treatment is estimated to be approximately 3 to 4 years, including testing, design, and construction. The estimated time to achieve GWPS for the target Appendix IV constituents is dependent on site-specific conditions and groundwater modeling is needed to better evaluate remedial timeframes.

4.3.3 Vertical Hydraulic Barrier

A vertical, low permeability hydraulic barrier can be installed to provide a physical barrier to groundwater flow to contain the migration of contaminated groundwater. Vertical hydraulic barriers that have been demonstrated effective at controlling groundwater flow include the following (USEPA 1998):

- Slurry Wall. Slurry walls consist of a narrow, excavated trench that is filled with a soil-bentonite slurry mixture. The slurry shores and supports the trench walls and forms a low-permeability barrier in the trench. Key design considerations include wall depth, key depth, and material compatibility. Slurry trenches can be excavated to depths of 50 feet using standard excavators and over 80 feet using long-reach excavators or a crane mounted drag line/clamshell bucket. Geosynthetic materials can be placed in the trench in conjunction with the slurry wall to improve the hydraulic performance (decrease permeability) and chemical resistance.
- Soil-Mixed Wall. Soil-mixed walls form a hydraulic barrier through in-situ mixing of soil with amendments, such as bentonite and/or cement. Soil-mixed barrier walls can be installed to depths of over 100 feet. The walls are installed by sections or panels that overlap to achieve a continuous barrier.
- Grout Curtain. Grout curtain barriers are constructed by injecting grout into the subsurface in an overlapping injection pattern to form a continuous barrier. Grouted barriers can be installed using permeation grouting, jet grouting, or vibrating beam technologies. Grouted barriers must be designed and constructed to ensure hydrofracturing does not occur and the completed wall is effective at restricting groundwater flow.
- Sheet-pile Wall. Sheet-pile walls consist of steel, vinyl, or other materials driven into the subsurface using a hydraulic percussion hammer or vibratory hammer. Sheet-pile walls are common in civil engineering applications; however, their use in environmental applications has been more limited. One of the major concerns with sheet-walls in environmental applications is leakage through the vertical joints between piles; however, improvements in pile interlock designs have been made to improve joint sealing.

For a vertical hydraulic barrier to be effective, the bottom of the barrier must be “keyed” into a low-permeability confining layer. A detailed engineering analysis and design, likely including a bench/pilot test to identify most appropriate barrier materials, would be required for the construction of a vertical hydraulic barrier.

For the A1 LF, the vertical hydraulic barrier would be constructed along the downgradient edge of the landfill to provide hydraulic control of the target Appendix IV constituent groundwater plumes. A vertical hydraulic barrier physically interrupts the natural flow of groundwater; consequently, groundwater elevations upgradient of the barrier will rise, potentially to the point that groundwater could begin to flow around the edges of the barrier. To address this concern, a groundwater extraction and treatment system would be required upgradient of the barrier to control the groundwater levels. The groundwater extraction and treatment system used in conjunction with the

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vertical hydraulic barrier would be similar to the system described in Section 4.3.2; however, the required capacity of the system would be less since the rate of groundwater extraction would be limited to that required to control upgradient groundwater levels.

Construction of a vertical hydraulic barrier is expected to require significant effort and time. Prior to implementation of the barrier, pre-design field work, including site investigations and bench/pilot-scale barrier material testing would be required, followed by full-scale design and construction. The estimated time to implement a vertical hydraulic barrier with groundwater extraction and treatment is estimated to be approximately 5 to 8 years, including testing, design, and construction. The estimated time to achieve GWPS for the target Appendix IV constituents is dependent on site-specific conditions and groundwater modeling is needed to better evaluate remedial timeframes.

4.3.4 Permeable Reactive Barrier

A permeable reactive barrier (PRB) is an in-situ, permeable treatment zone that contains reactive media designed to intercept impacted groundwater and either immobilize contaminants or transform the contaminants to a more desirable state (ITRC 2011). A PRB is a passive treatment system that acts as a barrier to groundwater contamination but not groundwater flow. The PRB must intercept the flow of impacted groundwater and must be designed and constructed such that impacted groundwater cannot bypass the reactive media by flowing over, under, or around the PRB. A PRB must include the appropriate reactive media and the residence time within the PRB needs to sufficient to allow for effective treatment. The effectiveness of the reactive media will be reduced over time and the media will likely have to be replaced periodically. Groundwater monitoring is used to evaluate the performance/effectiveness of a PRB system.

There are two primary PRB configurations: continuous and funnel-and-gate. A continuous PRB features permeable reactive media across the entire length of the barrier. A funnel-and -gate PRB uses sections of vertical hydraulic barriers to direct groundwater flow through permeable reactive media sections that allow the groundwater to pass through while treating contaminants. In both configurations, the permeability of the reactive media must be greater than the aquifer to ensure flow is not diverted around the PRB media. For the A1 LF, PRB system would be constructed along the downgradient edge of the landfill to provide control of the cobalt and lithium groundwater plumes.

PRB systems are generally considered a proven technology, however, site conditions and the specific contaminants of interest affect the system performance. The potential applicability of a PRB system for the target Appendix IV constituents can be summarized as follows:

- Arsenic – potentially removed zero-valent iron (ZVI) or combination of ZVI and organic material (ITRC 2011);
- Barium – potentially precipitated as phosphate, sulfate or hydroxide (Arnseth 2018)
- Cobalt - potentially removed using sulfate-reducing media or combination of ZVI and organic material (Ludwig 2002; ITRC 2011);
- Lithium – potentially precipitated as phosphate using appetite media, (Arnseth 2018).

Other than arsenic, removal of the remaining target Appendix IV constituents using a PRB system has not been consistently demonstrated under full-scale conditions and bench/pilot-scale testing would be required to confirm the effectiveness of a PRB system at the Site. A groundwater model would be needed to evaluate the remedial timeframes.

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Similar to a vertical hydraulic barrier, construction of a PRB system is expected to require significant effort and time. Prior to implementation of the PRB, pre-design field work, including site investigations, groundwater modeling, and bench-scale soil mix testing would be required, followed by full-scale design and construction. The estimated time to implement a PRB system is estimated to be approximately 5 to 8 years, including testing, design, and construction. The estimated time to achieve GWPS for the target Appendix IV constituents is dependent on site-specific conditions and groundwater modeling is needed to better evaluate remedial timeframes.

4.3.5 In-situ Chemical Treatment

In-situ Chemical Treatment (ICT) involves the injection of a chemical reagent or other material into the groundwater aquifer to adjust the geochemistry to enhance the direct precipitation, co-precipitation, or related adsorption/precipitation of the target contaminants (USEPA 2019c). Direct precipitation occurs when a constituent exceeds its solubility in water and precipitates out of solution. Co-precipitation refers to the removal of a constituent through adsorption onto the precipitate of another chemical reaction.

Arsenic has the potential to be removed through reduction and precipitation or co-precipitation, barium has the potential to be precipitated as a sulfate and lithium has the potential to be precipitated as a phosphate under appropriate geochemical conditions (Arnseth 2018). Cobalt has the potential to be removed through adsorption and/or coprecipitation under reducing groundwater conditions (Goldemund and Robb 2018).

Injection wells would be installed into the aquifer along the downgradient edge of the A1 LF and the chemical reagents would be injected to provide control of the target Appendix IV constituent groundwater plumes.

ICT is considered an emerging remediation technology for the target Appendix IV constituents and the effectiveness of the technology on most of the constituents is uncertain. Bench/pilot-scale testing would be required to confirm the effectiveness of an ICT system at the Site. The estimated time to implement an ICT system is estimated to be approximately 5 to 8 years, including testing, design, and construction. The estimated time to achieve GWPS for the target Appendix IV constituents is dependent on site-specific conditions and groundwater modeling is needed to better evaluate remedial timeframes.

4.3.6 Phytoremediation

Phytoremediation refers to the use of plants to partially or substantially remediate selected contaminants in contaminated soil, sludge, sediment, ground water, surface water, and wastewater (USEPA 2001). The process utilizes a variety of plant biological processes and plant physical characteristics to aid in remediation; however, the primary plant process potentially applicable to the target Appendix IV constituents at the Site is phytoextraction, which is the uptake and accumulation of contaminants within aboveground portions of a plant. The contaminants are removed from the Site when the plants are harvested and managed off-site. No information concerning the effectiveness of phytoremediation for lithium removal was identified.

Phytoextraction occurs in the root zone of plants, which is typically relatively shallow, with the bulk of roots at shallower rather than deeper depths. This would limit the effectiveness of phytoextraction at the Site due to the depth of groundwater. Phytoremediation for arsenic and cobalt removal from groundwater has not been demonstrated under full-scale conditions and no information concerning the effectiveness of phytoremediation for barium and lithium removal was identified (USEPA 2001).

Implementation of a phytoremediation process at the Site would involve planting appropriate vegetation at intervals along the downgradient edge of the A1 LF and across the affected groundwater plume area. A

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comprehensive bench/pilot testing program would be required to select the most appropriate plants for removal of the target Appendix IV constituents from groundwater at the Site. Since the target Appendix IV constituents would likely accumulate in the plants, management of harvested plants in accordance with RCRA may be required.

The estimated time to implement an ICT system is estimated to be approximately 15 to 20 years, based on the success and rate of vegetation growth. The estimated time to achieve GWPS for the target Appendix IV constituents is dependent on site-specific conditions and groundwater modeling is needed to better evaluate remedial timeframes.

4.3.7 Screening of Potential Groundwater Response Technologies

Following identification of potential groundwater response technologies, Golder screened the potential options for further consideration in developing potential corrective measures alternatives for the A1 LF. The screening results for each potential source technology are summarized in Table 3. Based on the initial screening, the following potential groundwater response technologies were retained for future evaluation as part of the corrective measures alternatives for the A1 LF:

- Monitored Natural Attenuation
- Groundwater Extraction and Treatment
- Vertical Hydraulic Barrier

4.4 Potential Corrective Measures Alternatives

Based on the response technology screening discussed above, Golder assembled the following potential corrective measures alternatives that could be both effective and implementable at the Site:

- Closure-in-Place/Capping with Monitored Natural Attenuation
- Closure-in-Place/Capping with Groundwater Extraction and Treatment
- Closure-in-Place/Capping with Vertical Hydraulic Barrier

A summary of the corrective measure alternatives, including an assessment of each alternative against the evaluation criteria presented in §257.96(c) is provided in Table 4.

4.5 Remedy Selection

The corrective measure alternative proposed as the remedy for the A1 LF will be selected in accordance with §257.97 a minimum of 30 days after the public meeting required under §257.96(e) has been completed.

It should also be noted that, for purposes of this ACM, arsenic, barium, cobalt and lithium concentrations were conservatively assumed to be present at SSLs above their respective GWPSs based on the February 2019 SSL notification. However, as discussed in Sections 3.4-3.6, arsenic, barium and lithium concentrations are no longer considered to be present at SSLs above the GWPSs based on recent data and it is likely that the arsenic, barium and lithium concentrations observed in Site monitoring wells originate from a natural source other than the landfill. Arsenic, barium, cobalt and lithium concentrations in groundwater will continue to be monitored in accordance with the CCR Rule to confirm that the concentrations of these constituents remain below the GWPSs in the future. These monitoring results, along with updated statistical analysis and alternate source demonstrations (if applicable), will be considered as part of the remedy selection process.

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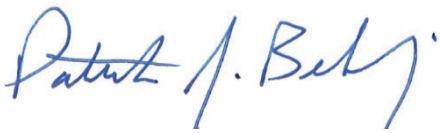

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TABLES

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TABLE 1
APPENDIX IV GROUNDWATER ANALYTICAL DATA SUMMARY
A1 AREA LANDFILL

APPENDIX IV Revision 2 February 27, 2024

Sample Location	Date Sampled	Sb (mg/L)	As (mg/L)	Ba (mg/L)	Be (mg/L)	Cd (mg/L)	Cr (mg/L)	Co (mg/L)	Fl (mg/L)	Pb (mg/L)	Li (mg/L)	Hg (mg/L)	Mo (mg/L)	Se (mg/L)	Tl (mg/L)	Ra 226 (pCi/L)	Ra 228 (pCi/L)	Ra 226/228 Comb.^ (pCi/L)
	GWPS:	0.006	0.0164	2	0.004	0.005	0.1	0.0124	4	0.015	0.103	0.002	0.1	0.05	0.002	--	--	10.7
Upgradient Wells																		
BMW-11-AR	10/29/15	<0.0008	0.0116	0.0659	<0.0003	<0.0003	<0.002	0.0124	<0.1	0.000391 J	0.0594	<0.00008	0.00496 J	<0.002	<0.0005	1.60	4.75	6.35
	12/30/15	<0.0008	0.00362 J	0.0433	<0.0003	<0.0003	<0.002	<0.003	0.26 J	0.000362 J	0.0589	<0.00008	0.00384 J	<0.002	<0.0005	1.66	3.19	4.85
	02/25/16	<0.0008	0.00608	0.0724	<0.0003	<0.0003	<0.002	0.00486 J	0.123 J	<0.0003	0.0276	<0.00008	0.00597	<0.002	<0.0005	2.43	3.80	6.23
	04/07/16	<0.0008	0.00614	0.0929	<0.0003	<0.0003	<0.002	<0.003	<0.1	<0.0003	0.0195	<0.00008	0.00444 J	<0.002	<0.0005	0.885	1.48	2.37
	06/09/16	<0.0008	0.00532	0.0891	<0.0003	<0.0003	<0.002	<0.003	<0.1	<0.0003	0.0187	<0.00008	0.00355 J	<0.002	<0.0005	0.47	<0.674	1.14
	08/11/16	<0.0008	0.00271 J	0.0772	<0.0003	<0.0003	<0.002	<0.003	<0.1	<0.0003	0.0147	<0.00008	0.00346 J	<0.002	<0.0005	0.810	2.42	3.23
	10/26/16	<0.0008	<0.002	0.0429	<0.0003	<0.0003	<0.002	<0.003	<0.1	<0.0003	0.0508	<0.00008	0.00363 J	<0.002	<0.0005	0.631	0.922	1.55
	12/14/16	<0.0008	0.0061	0.074	<0.0003	<0.0003	<0.002	<0.003	<0.1	0.00347	0.0139	<0.00008	0.00303 J	<0.002	<0.0005	<0.821	<1.73	<2.551
	06/12/18	<0.0008	0.00444 J	0.0692	<0.0003	<0.0003	0.00295 J	<0.003	0.323 J	0.0017	0.0686	<0.00008	0.00340 J	<0.002	<0.0005	0.996	1.7	2.696
	09/14/18	NA	0.0056	0.0735	NA	NA	<0.002	<0.003	0.353 J	0.00147	0.0196	NA	0.00299 J	NA	NA	1.52	1.11	2.63
	05/15/19	<0.0008	0.00208 J	0.0399	<0.0003	<0.0003	<0.002	<0.003	0.198 J	<0.0003	0.0404	<0.00008	<0.002	<0.002	<0.0005	0.83	4.89	5.72
BMW-27	9/13/16	<0.0008	0.00536	0.0434	<0.0003	0.00062 J	<0.002	0.15	0.668	0.000432 J	0.0541	<0.00008	<0.002	<0.002	<0.0005	0.308	<1.14	1.45
	10/26/16	<0.0008	0.00625	0.0339	<0.0003	<0.0003	<0.002	<0.003	<0.1	<0.0003	0.0933	<0.00008	<0.002	<0.002	<0.0005	0.156	1.94	2.10
	12/14/16	<0.0008	0.0051	0.0342	<0.0003	<0.0003	<0.002	<0.003	<0.1	<0.0003	0.0932	<0.00008	<0.002	<0.002	<0.0005	<0.12	<1.05	<1.17
	01/23/17	<0.0008	0.00845	0.0333	<0.0003	0.00071 J	0.00278 J	0.195	0.573	0.000323 J	0.0484	<0.00008	<0.002	<0.002	<0.0005	0.369	0.934	1.30
	02/23/27	<0.0008	<0.002	0.0704	<0.0003	<0.0003	<0.002	<0.003	0.252 J	0.000736 J	<0.005	<0.00008	<0.002	<0.002	<0.0005	<0.209	0.660	0.87
	03/24/17	<0.0008	0.00319 J	0.0296	<0.0003	0.00078 J	<0.002	0.222	0.738	<0.0003	0.0474	<0.00008	<0.002	<0.002	<0.0005	0.414	<0.725	1.14
	04/24/17	<0.0008	<0.002	0.0269	<0.0003	0.00066 J	<0.002	0.21	0.663	<0.0003	0.0497	<0.00008	<0.002	<0.002	<0.0005	<0.452	1.53	1.98
	05/25/17	<0.0008	<0.002	0.0266	<0.0003	0.000521 J	<0.002	0.2	1.61	0.000439 J	0.0471	<0.00008	<0.002	<0.002	<0.0005	<0.443	1.38	1.82
	06/29/17	<0.0008	0.00593	0.0307	<0.0003	0.00851 J	0.00266 J	0.255	0.717	<0.0003	0.048	<0.0008	<0.002	<0.002	<0.0005	0.303	0.628	0.93
	06/12/18	<0.0008	0.00223 J	0.0182	<0.0003	<0.0003	<0.002	<0.003	<0.100	0.00097 J	0.0721	<0.00008	<0.002	<0.002	<0.0005	0.305	<0.5860	0.891
	09/13/18	NA	0.00467 J	0.0250	NA	NA	0.002 J	0.190	0.750	<0.0003	0.0531	NA	<0.002	NA	NA	0.691	1.04	1.731
	05/15/19	<0.0008	<0.002	0.0238	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.0943	<0.00008	<0.002	<0.002	<0.0005	<0.195	0.962	1.157
BMW-33	08/01/19	NA	<0.00200	NA	NA	NA	NA	0.0176	0.342	NA	0.0206	NA	NA	NA	NA	NA	NA	NA
AI-17-SPOIL	08/14/19	NA	NA	NA	NA	NA	NA	<0.003	NA	NA	0.0394	NA	NA	NA	NA	NA	NA	NA
AIV-18-OB-95	07/08/19	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0454	NA	NA	NA	NA	NA	NA	NA
Downgradient Wells																		
BMW-18	10/30/15	<0.0008	<0.002	0.0401	<0.0003	<0.0003	0.00944	<0.003	0.148 J	<0.0003	0.14	<0.00008	<0.002	<0.002	<0.0005	0.526	<1.51	2.04
	12/30/15	<0.0008	<0.002	0.0168	<0.0003	<0.0003	<0.002	0.0129	0.101 J	<0.0003	0.0415	<0.00008	<0.002	<0.002	<0.0005	<0.405	<2.04	<2.445
	02/26/16	<0.0008	<0.002	0.0446	<0.0003	<0.0003	0.00214 J	<0.003	0.164 J	<0.0003	0.0156	<0.00008	<0.002	<0.002	<0.0005	<0.406	<1.9	<2.306
	04/07/16	<0.0008	<0.002	0.0306	<0.0003	<0.0003	<0.002	<0.003	0.117 J	<0.0003	0.0171	<0.00008	<0.002	<0.002	<0.0005	<0.109	<1.00	<1.109
	06/09/16	<0.0008	<0.002	0.0283	<0.0003	<0.0003	<0.002	<0.003	0.128 J	<0.0003	0.0152	<0.00008	<0.002	<0.002	<0.0005	<0.143	0.857	1.00
	08/11/16	<0.0008	<0.002	0.0291	<0.0003	<0.0003	<0.002	<0.003	<0.1	<0.0003	0.0147	<0.00008	<0.002	<0.002	<0.0005	<0.22	<1.07	<1.29
	10/26/16	<0.0008	<0.002	0.029	<0.0003	<0.0003	<0.002	<0.003	0.158 J	<0.0003	0.0156	<0.00008	<0.002	<0.002	<0.0005	<0.132	<0.534	<0.666
	12/14/16	<0.0008	<0.002	0.0384	<0.0003	<0.0003	<0.002	<0.003	0.134 J	<0.0003	0.0158	<0.00008	<0.002	<0.002	<0.0005	0.140	<1.99	2.13
	06/12/18	<0.0008	<0.002	0.0412	<0.0003	<0.0003	<0.002	<0.003	0.176 J	0.0013	0.0185	<0.00008	<0.002	<0.002	<0.0005	0.232	0.706	0.938
	09/14/18	NA	<0.002	0.0277	NA	NA	<0.002	<0.003	0.201 J	<0.0003	0.0165	NA	<0.002	NA	NA	<0.509	<0.589	<1.098
	05/15/19	<0.0008	<0.002	0.0362	<0.0003	<0.0003	<0.002	<0.003	0.229 J	<0.0003	0.016	<0.00008	<0.002	<0.002	<0.0005	<0.264	3.95	4.214
BMW-19	10/29/18	<0.0008	<0.002	0.0231	<0.0003	<0.0003	<0.002	0.0161	<0.1	<0.0003	0.0545	<0.00008	<0.002	<0.002	<0.0005	0.395	<1.56	1.96
	12/30/15	<0.0008	<0.002	0.0222	<0.0003	<0.0003	<0.002	0.0166	0.127 J	<0.0003	0.0506	<0.00008	<0.002	<0.002	<0.0005	0.598	<2.89	3.49
	02/25/16	<0.0008	0.00235 J	0.0169	<0.0003	<0.0003	<0.002	0.0149	<0.1	<0.0003	0.0711	<0.00008	<0.002	<0.002	<0.0005	0.571	1.94	2.51
	04/07/16	<0.0008	<0.002	0.0178	<0.0003	<0.0003	<0.002	0.0137	<0.1	<0.0003	0.0591	<0.00008	<0.002	<0.002	<0.0005	<0.185	<0.715	<0.9
	06/09/16	<0.0008	<0.002	0.0158	<0.0003	<0.0003	<0.002	0.0141	<0.1	<0.0003	0.0644	<0.00008	<0.002	<0.002	<0.0005	<0.142	1.98	2.12
	08/11/16	<0.0008	0.00711	0.0158	<0.0003	<0.0003	<0.002	0.0128	<0.1	<0.0003	0.0568	<0.00008	<0.002	<0.002	<0.0005	0.927	<0.812	1.74
	10/26/16	<0.0008	<0.002	0.0144	<0.0003	<0.0003	<0.002	0.0104	<0.1	<0.0003	0.0495	<0.00008	<0.002	<0.002	<0.0005	<0.152	<0.48	<0.632
	12/14/16	<0.0008	0.00369 J	0.0171	<0.0003	<0.0003	<0.002	0.0125	<0.1	<0.0003	0.0584	<0.00008	<0.002	<0.002	<0.0005	0.309	0.827	1.14
	06/12/18	<0.0008	0.0428	0.0243	<0.0003	<0.0003	0.00267	0.0115	<0.100	0.00183	0.0734	<0.00008	<0.002	<0.002	<0.0005	<0.395	1.17	1.565
	09/13/18	NA	0.00491 J	0.0132	NA	NA	<0.002	0.0125	0.404 J	<0.0003	0.0845	NA	<0.002	NA	NA	<0.376	1.46	1.836
	05/15/19	<0.0008	<0.002	0.0104	<0.0003	<0.0003	<0.002	<0.003	0.189 J	<0.0003	0.0647	<0.00008	<0.002	<0.002	<0.0005	0.487	4.66	5.147

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TABLE 1
APPENDIX IV GROUNDWATER ANALYTICAL DATA SUMMARY
A1 AREA LANDFILL

Sample Location	Date Sampled	Sb (mg/L)	As (mg/L)	Ba (mg/L)	Be (mg/L)	Cd (mg/L)	Cr (mg/L)	Co (mg/L)	Fl (mg/L)	Pb (mg/L)	Li (mg/L)	Hg (mg/L)	Mo (mg/L)	Se (mg/L)	Tl (mg/L)	Ra 226 (pCi/L)	Ra 228 (pCi/L)	Ra 226/228 Comb.^ (pCi/L)
	GWPS:	0.006	0.0164	2	0.004	0.005	0.1	0.0124	4	0.015	0.103	0.002	0.1	0.05	0.002	--	--	10.7
BMW-20	10/23/15	<0.0008	0.00236 J	0.0778	<0.0003	<0.0003	<0.002	0.0256	<0.1	0.000501 J	<0.005	<0.00008	<0.002	<0.002	<0.0005	0.463	<1.89	2.35
	12/30/15	<0.0008	0.00344 J	0.0777	<0.0003	<0.0003	<0.002	0.051	0.12 J	<0.0003	<0.005	<0.00008	<0.002	<0.002	<0.0005	0.816	<2.41	3.23
	02/25/16	<0.0008	0.00474 J	0.0989	<0.0003	<0.0003	<0.002	0.022	<0.1	<0.0003	<0.005	<0.00008	<0.002	<0.002	<0.0005	<0.61	2.85	3.46
	04/07/16	<0.0008	0.00411 J	0.0912	<0.0003	<0.0003	<0.002	0.0276	<0.1	<0.0003	<0.005	<0.00008	<0.002	<0.002	<0.0005	0.221	<1.08	1.30
	06/09/16	<0.0008	0.0103	0.0776	<0.0003	<0.0003	<0.002	0.054	<0.1	0.000696 J	<0.005	<0.00008	<0.002	<0.002	<0.0005	0.51	<0.716	1.23
	08/11/16	<0.0008	<0.002	0.0637	<0.0003	<0.0003	<0.002	0.0513	<0.1	<0.0003	<0.005	<0.00008	<0.002	<0.002	<0.0005	0.322	1.40	1.72
	10/26/16	<0.0008	0.00444 J	0.0421	<0.0003	<0.0003	<0.002	0.0786	<0.1	<0.0003	<0.005	<0.00008	<0.002	<0.002	<0.0005	0.347	0.848	1.20
	12/13/16	<0.0008	0.00483 J	0.0377	<0.0003	<0.0003	<0.002	0.0451	<0.1	<0.0003	<0.005	<0.00008	<0.002	<0.002	<0.0005	0.246	1.15	1.40
	06/11/18	<0.0008	0.00473 J	0.0515	<0.0003	<0.0003	<0.002	0.0681	0.144 J	0.000476	<0.005	<0.00008	<0.002	<0.002	<0.0005	0.74	0.865	1.605
	09/13/18	NA	0.00473 J	0.0258	NA	NA	<0.002	0.0645	<0.100	0.000368 J	<0.005	NA	<0.002	NA	NA	0.519	0.711	1.23
	05/15/18	<0.0008	0.00541	0.0412	<0.0003	<0.0003	<0.002	0.003	0.418	<0.0003	0.0615	<0.00008	<0.002	<0.002	<0.0005	1.18	0.657	1.837
BMW-21	10/23/15	<0.0008	0.00324 J	0.0703	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.0623	<0.00008	<0.002	<0.002	<0.0005	<0.436	<0.948	<1.384
	12/30/15	<0.0008	0.00247 J	0.0478	<0.0003	<0.0003	<0.002	<0.003	0.126 J	<0.0003	0.0602	<0.00008	<0.002	<0.002	<0.0005	0.584	<2.00	2.58
	02/25/16	<0.0008	0.00327 J	0.0471	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.0602	<0.00008	<0.002	<0.002	<0.0005	0.735	2.13	2.87
	04/07/16	<0.0008	0.00337 J	0.0472	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.0653	<0.00008	<0.002	<0.002	<0.0005	0.470	<2.78	3.25
	06/09/16	<0.0008	0.0034 J	0.0457	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.0675	<0.00008	<0.002	<0.002	<0.0005	0.32	<0.917	1.24
	08/11/16	<0.0008	0.00373 J	0.0445	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.0527	<0.00008	<0.002	<0.002	<0.0005	0.655	<0.728	1.38
	10/26/16	<0.0008	0.0037 J	0.0443	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.0611	<0.00008	<0.002	<0.002	<0.0005	0.383	1.61	1.99
	12/13/16	<0.0008	0.00217 J	0.0438	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.0631	<0.00008	<0.002	<0.002	<0.0005	0.213	1.00	1.21
	06/11/18	<0.0008	0.00373 J	0.0438	<0.0003	<0.0003	<0.002	<0.003	0.233 J	<0.0003	0.07	<0.00008	<0.002	<0.002	<0.0005	<0.239	<0.939	<1.178
	09/13/18	NA	0.00353 J	0.0412	NA	NA	<0.002	<0.003	0.136 J	<0.0003	0.0646	NA	<0.002	NA	NA	0.562	1.49	2.052
	05/15/19	<0.0008	0.00399 J	0.0412	<0.0003	<0.0003	<0.002	<0.003	0.366 J	<0.0003	0.0613	<0.00008	<0.002	<0.002	<0.0005	<0.322	1.07	1.392
BMW-22	10/23/15	<0.0008	<0.002	0.106	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.0675	<0.00008	<0.002	<0.002	<0.0005	1.59	2.11	3.70
	12/30/15	<0.0008	<0.002	0.084	<0.0003	<0.0003	<0.002	<0.003	0.186 J	<0.0003	0.0594	<0.00008	<0.002	<0.002	<0.0005	0.973	<1.55	2.52
	02/25/16	<0.0008	<0.002	0.0761	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.0801	<0.00008	<0.002	<0.002	<0.0005	0.594	<1.93	2.52
	04/07/16	<0.0008	<0.002	0.072	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.0773	<0.00008	<0.002	<0.002	<0.0005	0.480	1.46	1.94
	06/08/16	<0.0008	0.00206 J	0.0667	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.0847	<0.00008	<0.002	<0.002	<0.0005	0.888	1.88	2.77
	08/11/16	<0.0008	<0.002	0.0679	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.0675	<0.00008	<0.002	<0.002	<0.0005	0.607	1.93	2.54
	10/26/16	<0.0008	0.00216 J	0.0645	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.0753	<0.00008	<0.002	<0.002	<0.0005	0.633	1.02	1.65
	12/13/16	<0.0008	0.00232 J	0.0655	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.0689	<0.00008	<0.002	<0.002	<0.0005	<0.209	1.05	1.26
	06/11/18	<0.0008	<0.002	0.0638	<0.0003	<0.0003	<0.002	<0.003	0.312 J	<0.0003	0.089	<0.00008	<0.002	<0.002	<0.0005	0.522	<1.020	1.54
	09/13/18	NA	<0.002	0.063	NA	NA	<0.002	<0.003	0.205 J	<0.0003	0.0882	NA	<0.002	NA	NA	1.29	2.89	4.18
	05/15/19	<0.0008	<0.002	0.0618	<0.0003	<0.0003	<0.002	<0.003	0.351 J	<0.0003	0.0779	<0.00008	<0.002	<0.002	<0.0005	3.36	1.64	5.00
BMW-23	10/23/15	<0.0008	<0.002	0.0519	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.0802	<0.00008	<0.002	<0.002	<0.0005	1.19	<1.91	3.10
	12/30/15	<0.0008	<0.002	0.0462	<0.0003	<0.0003	<0.002	<0.003	0.122 J	<0.0003	0.0897	<0.00008	<0.002	<0.002	<0.0005	0.711	<2.62	3.33
	02/25/16	<0.0008	<0.002	0.0488	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.0959	<0.00008	<0.002	<0.002	<0.0005	0.604	<1.78	2.38
	04/07/16	<0.0008	<0.002	0.0472	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.095	<0.00008	<0.002	<0.002	<0.0005	0.723	1.98	2.70
	06/08/16	<0.0008	<0.002	0.0497	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.103	<0.00008	<0.002	<0.002	<0.0005	0.654	1.29	1.94
	08/11/16	<0.0008	<0.002	0.0458	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.077	<0.00008	<0.002	<0.002	<0.0005	0.936	1.94	2.88
	10/26/16	<0.0008	<0.002	0.0437	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.0856	<0.00008	<0.002	<0.002	<0.0005	0.472	1.76	2.23
	12/13/16	<0.0008	<0.002	0.0407	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.0817	<0.00008	<0.002	<0.002	<0.0005	<0.225	0.704	0.93
	06/11/18	<0.0008	<0.002	0.0381	<0.0003	<0.0003	<0.002	<0.003	0.204 J	<0.0003	0.106	<0.00008	<0.002	<0.002	<0.0005	0.442	1.79	2.23
	09/13/18	NA	<0.002	0.0414	NA	NA	<0.002	<0.003	0.190 J	<0.0003	0.0915	NA	<0.002	NA	NA	0.774	1.23	2.00
	05/15/19	<0.0008	0.0024	0.0381	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.0951	<0.00008	<0.002	<0.002	<0.0005	2.54	1	3.54

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TABLE 1
APPENDIX IV GROUNDWATER ANALYTICAL DATA SUMMARY
A1 AREA LANDFILL

APPENDIX F-Revision 2 February 27, 2024

Sample Location	Date Sampled	Sb (mg/L)	As (mg/L)	Ba (mg/L)	Be (mg/L)	Cd (mg/L)	Cr (mg/L)	Co (mg/L)	Fl (mg/L)	Pb (mg/L)	Li (mg/L)	Hg (mg/L)	Mo (mg/L)	Se (mg/L)	Tl (mg/L)	Ra 226 (pCi/L)	Ra 228 (pCi/L)	Ra 226/228 Comb.^ (pCi/L)
	GWPS:	0.006	0.0164	2	0.004	0.005	0.1	0.0124	4	0.015	0.103	0.002	0.1	0.05	0.002	--	--	10.7
BMW-24	10/23/15	<0.0008	0.00494 J	1.87	<0.0003	<0.0003	<0.002	0.00802	0.247 J	<0.0003	<0.005	<0.00008	<0.002	<0.002	<0.0005	1.83	3.32	5.15
	12/30/15	<0.0008	0.00579	0.801	<0.0003	<0.0003	<0.002	0.0146	0.391 J	<0.0003	0.0161	<0.00008	<0.002	<0.002	<0.0005	0.485	<1.66	2.15
	02/25/16	<0.0008	0.00442 J	0.645	<0.0003	<0.0003	<0.002	0.0137	0.236 J	<0.0003	0.0267	<0.00008	<0.002	<0.002	<0.0005	1.20	<1.93	3.13
	04/07/16	<0.0008	0.00376 J	0.202	<0.0003	<0.0003	<0.002	0.0238	0.109 J	<0.0003	0.0415	<0.00008	<0.002	<0.002	<0.0005	<0.349	<1.58	<1.929
	06/08/16	<0.0008	0.00481 J	0.181	<0.0003	<0.0003	<0.002	0.0227	0.147 J	<0.0003	0.0475	<0.00008	<0.002	<0.002	<0.0005	0.360	1.26	1.62
	08/11/16	<0.0008	0.00414 J	1.26	<0.0003	<0.0003	<0.002	0.00707	0.225 J	<0.0003	0.00938 J	<0.00008	<0.002	<0.002	<0.0005	0.564	<0.942	1.51
	10/26/16	<0.0008	0.00364 J	1.88	<0.0003	<0.0003	<0.002	<0.003	0.305 J	<0.0003	0.00767 J	<0.00008	<0.002	<0.002	<0.0005	1.37	1.31	2.68
	12/13/16	<0.0008	0.00498 J	1.96	<0.0003	<0.0003	<0.002	0.00326 J	0.3 J	<0.0003	0.00914 J	<0.00008	<0.002	<0.002	<0.0005	0.270	1.16	1.43
	06/11/18	<0.0008	0.00266 J	0.487	<0.0003	<0.0003	<0.002	0.00633	0.466	<0.0003	0.0198	<0.00008	<0.002	<0.002	<0.0005	0.668	0.975	1.643
	09/13/18	NA	<0.002	2.19	NA	NA	<0.002	0.00304 J	0.769	<0.0003	0.00764 J	NA	<0.002	NA	NA	1.82	1.45	3.27
	05/15/19	<0.0008	0.00272 J	0.221	<0.0003	<0.0003	<0.002	0.000643	0.219 J	<0.0003	0.0512	<0.00008	<0.002	<0.002	<0.0005	1.45	<1.21	2.66
BMW-25	06/13/19	NA	NA	NA	NA	NA	NA	0.013	0.142	NA	0.0501	NA	NA	NA	NA	NA	NA	NA
	07/08/19	NA	NA	NA	NA	NA	NA	0.00514	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BMW-26	9/13/16	<0.0008	0.017	0.0425	<0.0003	<0.0003	<0.002	<0.003	<0.1	<0.0003	0.0944	<0.00008	0.00215 J	<0.002	<0.0005	0.154	<1.02	1.17
	10/26/16	<0.0008	0.00318 J	0.0731	<0.0003	<0.0003	<0.002	0.00402 J	<0.1	<0.0003	<0.005	<0.00008	<0.002	<0.002	<0.0005	0.175	<0.695	0.87
	12/14/16	<0.0008	<0.002	0.0424	<0.0003	0.00082 J	<0.002	0.236	0.344 J	<0.0003	0.0527	<0.00008	<0.002	<0.002	<0.0005	0.177	<1.29	1.47
	01/23/17	<0.0008	0.0325	0.0446	<0.0003	<0.0003	<0.002	<0.003	<0.1	0.000594 J	0.0977	<0.00008	0.0035 J	<0.002	<0.0005	0.351	0.936	1.29
	02/23/27	<0.0008	<0.002	0.0705	<0.0003	<0.0003	<0.002	<0.003	0.106 J	0.000726 J	0.0052 J	<0.00008	<0.002	<0.002	<0.0005	0.306	0.951	1.26
	03/24/17	<0.0008	0.0107	0.0371	<0.0003	<0.0003	<0.002	<0.003	<0.1	0.000742 J	0.0964	<0.00008	0.00461 J	<0.002	<0.0005	0.335	<0.627	0.96
	04/24/17	<0.0008	0.00732	0.0322	<0.0003	<0.0003	<0.002	<0.003	<0.1	<0.0003	0.099	<0.00008	0.00303 J	<0.002	<0.0005	<0.363	1.60	1.96
	05/25/17	<0.0008	0.00347 J	0.0243	<0.0003	<0.0003	<0.002	<0.003	<0.1	<0.0003	0.0951	<0.0008	0.00302 J	<0.002	<0.0005	<0.477	0.818	1.30
	06/29/17	<0.0008	0.0328	0.0352	<0.0003	<0.0003	<0.002	<0.003	<0.1	<0.0003	0.0985	<0.0008	0.00257 J	<0.002	<0.0005	0.198	0.677	0.88
	06/12/18	<0.0008	0.00316 J	0.0222	<0.0003	<0.0003	0.00231 J	<0.003	<0.100	0.00152	0.111	<0.00008	0.0029 J	<0.002	<0.0005	<0.251	<0.508	<0.759
	09/13/18	NA	0.0165	0.0360	NA	NA	<0.002	<0.003	<0.100	<0.0003	0.11	NA	<0.002	NA	NA	<0.426	0.826	1.252
	05/15/19	<0.0008	<0.002	0.0253	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.101	<0.00008	0.00218 J	<0.002	<0.0005	0.457	<1.13	1.587
BMW-27	9/13/16	<0.0008	0.00536	0.0434	<0.0003	0.00062 J	<0.002	0.15	0.668	0.000432 J	0.0541	<0.00008	<0.002	<0.002	<0.0005	0.308	<1.14	1.45
	10/26/16	<0.0008	0.00625	0.0339	<0.0003	<0.0003	<0.002	<0.003	<0.1	<0.0003	0.0933	<0.00008	<0.002	<0.002	<0.0005	0.156	1.94	2.10
	12/14/16	<0.0008	0.0051	0.0342	<0.0003	<0.0003	<0.002	<0.003	<0.1	<0.0003	0.0932	<0.00008	<0.002	<0.002	<0.0005	<0.12	<1.05	<1.17
	01/23/17	<0.0008	0.00845	0.0333	<0.0003	0.00071 J	0.00278 J	0.195	0.573	0.000323 J	0.0484	<0.00008	<0.002	<0.002	<0.0005	0.369	0.934	1.30
	02/23/27	<0.0008	<0.002	0.0704	<0.0003	<0.0003	<0.002	<0.003	0.252 J	0.000736 J	<0.005	<0.00008	<0.002	<0.002	<0.0005	<0.209	0.660	0.87
	03/24/17	<0.0008	0.00319 J	0.0296	<0.0003	0.00078 J	<0.002	0.222	0.738	<0.0003	0.0474	<0.00008	<0.002	<0.002	<0.0005	0.414	<0.725	1.14
	04/24/17	<0.0008	<0.002	0.0269	<0.0003	0.00066 J	<0.002	0.21	0.663	<0.0003	0.0497	<0.00008	<0.002	<0.002	<0.0005	<0.452	1.53	1.98
	05/25/17	<0.0008	<0.002	0.0266	<0.0003	0.000521 J	<0.002	0.2	1.61	0.000439 J	0.0471	<0.00008	<0.002	<0.002	<0.0005	<0.443	1.38	1.82
	06/29/17	<0.0008	0.00593	0.0307	<0.0003	0.00851 J	0.00266 J	0.255	0.717	<0.0003	0.048	<0.0008	<0.002	<0.002	<0.0005	0.303	0.628	0.93
	06/12/18	<0.0008	0.00223 J	0.0182	<0.0003	<0.0003	<0.002	<0.003	<0.100	0.00097 J	0.0721	<0.00008	<0.002	<0.002	<0.0005	0.305	<0.5860	0.891
	09/13/18	NA	0.00467 J	0.0250	NA	NA	0.002 J	0.190	0.750	<0.0003	0.0531	NA	<0.002	NA	NA	0.691	1.04	1.731
	05/15/19	<0.0008	<0.002	0.0238	<0.0003	<0.0003	<0.002	<0.003	<0.100	<0.0003	0.0943	<0.00008	<0.002	<0.002	<0.0005	<0.195	0.962	1.157
BMW-28	12/14/16	0.0012 J	<0.002	0.0509	<0.0003	<0.0003	<0.002	<0.003	<0.1	<0.0003	0.11	<0.00008	0.0103	0.0045 J	<0.0005	<0.566	<2.22	2.79
	01/23/17	0.001 J	<0.002	0.0518	<0.0003	<0.0003	<0.002	<0.003	0.104 J	<0.0003	0.116	<0.00008	0.00881	<0.002	<0.0005	0.626	1.12	1.75
	02/23/27	<0.0008	<0.002	0.0734	<0.0003	<0.0003	<0.002	<0.003	0.11 J	0.000965 J	0.00514 J	<0.00008	<0.002	<0.002	<0.0005	0.168	0.835	1.00
	03/24/17	0.0012 J	<0.002	0.046	<0.0003	<0.0003	<0.002	<0.003	<0.1	<0.0003	0.1	<0.00008	0.00773	0.0021 J	<0.0005	1.04	1.17	2.21
	04/24/17	0.0011 J	<0.002	0.047	<0.0003	<0.0003	<0.002	<0.003	0.19 J	<0.0003	0.109	<0.00008	0.00766	<0.002	<0.0005	0.356	1.880	2.24
	05/25/17	0.00119 J	<0.002	0.0468	<0.0003	<0.0003	<0.002	<0.003	<0.1	0.000427 J	0.102	<0.00008	0.00764	<0.002	<0.0005	<0.739	1.170	1.91
	06/29/17	<0.0008	0.00253 J	0.0549	<0.0003	<0.0003	<0.002	0.0084	0.137 J	<0.0003	0.104	<0.00008	0.00754	<0.002	<0.0005	0.489	2.310	2.80
	08/01/17	<0.0008	0.0057	0.0524	<0.0003	<0.0003	<0.002	0.0115	<0.1	<0.0003	0.114	<0.00008	0.00707	<0.002	<0.0005	0.536	2.43	2.97
	06/12/18	<0.0008	<0.002	0.0505	<0.0003	<0.0003	<0.002	<0.003	0.529	0.00122	0.116	<0.00008	0.00764	<0.002	<0.0005	0.197	1.12	1.32
	09/14/18	NA	<0.002	0.0419	NA	NA	<0.002	<0.003	0.445	<0.0003	0.114	NA	0.00782	NA	NA	0.35	1.15	1.50
	05/15/19	<0.0008	<0.002	0.0285	<0.0003	<0.0003	<0.002	<0.003	0.496	<0.0003	0.119	<0.00008	0.0124	<0.002	<0.0005	0.289	0.924	1.21

DRAFT

TABLE 1
APPENDIX IV GROUNDWATER ANALYTICAL DATA SUMMARY
A1 AREA LANDFILL

Sample Location	Date Sampled	Sb (mg/L)	As (mg/L)	Ba (mg/L)	Be (mg/L)	Cd (mg/L)	Cr (mg/L)	Co (mg/L)	Fl (mg/L)	Pb (mg/L)	Li (mg/L)	Hg (mg/L)	Mo (mg/L)	Se (mg/L)	Tl (mg/L)	Ra 226 (pCi/L)	Ra 228 (pCi/L)	Ra 226/228 Comb.^ (pCi/L)
	GWPS:	0.006	0.0164	2	0.004	0.005	0.1	0.0124	4	0.015	0.103	0.002	0.1	0.05	0.002	--	--	10.7
BMW-29	06/13/19	NA	NA	NA	NA	NA	NA	NA	<0.100	NA	0.114	NA	NA	NA	NA	NA	NA	NA
	07/08/19	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.104	NA	NA	NA	NA	NA	NA	NA
BMW-30	06/13/19	NA	NA	0.0982	NA	NA	NA	NA	<0.100	NA	NA	NA	NA	NA	NA	NA	NA	NA
BMW-31	06/13/19	NA	NA	NA	NA	NA	NA	NA	0.255	NA	0.0203	NA	NA	NA	NA	NA	NA	NA
BMW-32	06/13/19	NA	NA	NA	NA	NA	NA	0.115	0.822	NA	0.115	NA	NA	NA	NA	NA	NA	NA
	07/08/19	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.116	NA	NA	NA	NA	NA	NA	NA
AI-2-OB	08/14/19	NA	NA	NA	NA	NA	NA	<0.003	NA	NA	<0.005	NA	NA	NA	NA	NA	NA	NA

Notes:
1. Abbreviations: GWPS - groundwater protection standard; mg/L - milligrams per liter; pCi/L - picocuries per liter.
^ - Sum of Ra 226 and Ra 228 concentrations. Non-detect isotope results were assigned a value equal to the minimum detectable concentration.
J - concentration is below method quantitation limit; result is an estimate.
NA - Not analyzed.

APPENDIX F-Revision 2 February 27, 2024

LUMINANT

Table 2

Screening of Potential Source Control Response Technologies
Martin Lake Steam Electric Station
A1 Area Landfill

Source Control Response Technology	Description	Protective of Human Health and Environment	Attain Groundwater Protection Standard	Control Source of Release	Remove Contaminated Material From Environment	RCRA Compliance	Screening Comments	Retained for Further Evaluation
Closure In Place/Capping	Low-permeability cap constructed over landfill.	Isolates CCR material in landfill.	Mitigates on-going source of CCR constituents to groundwater, enhancing achievement of GWPS by Groundwater Response Technologies.	Minimizes potential for migration of CCR constituents to groundwater by controlling infiltration of precipitation through CCR material.	CCR material remains in landfill. Mitigates on-going source of CCR constituents to groundwater.	Complies with applicable RCRA requirements.	Capping is proven method of source control. Long-term cap maintenance and monitoring required.	Yes
Removal and Off-site Disposal	CCR material excavated from landfill, loaded onto trucks, transported to designated location, and placed in selected repository. Once placement complete, cap constructed over material.	CCR material removed from Site and no longer source of CCR constituents to groundwater. CCR material placed in new repository. Increased chance of exposure to workers and public during excavation, transportation, and placement at new repository.	Mitigates on-going source of CCR constituents to groundwater, enhancing achievement of GWPS by Groundwater Response Technologies.	Removes source of CCR constituents from Site.	Removes source of CCR constituents from Site. CCR material relocated to new repository.	Complies with applicable RCRA requirements.	Removal of material only implementable if suitable repository location is identified. Siting, regulatory approval, design, and construction of new repository likely required. Very large number of round-trip truck trips required to transport material to new location. New repository would require long term maintenance and monitoring. Difficult to implement due to logistics of excavation, transportation, and placement at new repository.	No

LUMINANT

Table 3

Screening of Potential Groundwater Response Technologies
Martin Lake Steam Electric Station
A1 Area Landfill

Groundwater Response Technology	Description	Protective of Human Health and Environment	Attain Groundwater Protection Standard	Control Source of Release	Remove Contaminated Material From Environment	RCRA Compliance	Screening Comments	Retained for Further Evaluation
Monitored Natural Attenuation	Natural processes (dispersion, dilution, sorption, coprecipitation, degradation/transformation, etc.) remove CCR constituents from groundwater in-situ. Groundwater monitoring to verify MNA effectiveness.	Migration of CCR constituents in groundwater controlled and CCR concentrations in groundwater reduced.	CCR constituents removed from groundwater through adsorption, precipitation, and/or coprecipitation. CCR constituents retained in aquifer soil matrix to achieve GWPS below and downgradient of CCR Unit.	CCR constituents removed from groundwater below and downgradient of CCR Unit.	CCR constituents removed from groundwater and retained in aquifer soil matrix.	Purge water from groundwater monitoring requires management in accordance with applicable RCRA requirements.	Site is good MNA candidate based on field MNA evaluation. Long-term groundwater monitoring required. Easy to implement. Groundwater modelling required to assess remediation timeframe.	Yes
Groundwater Extraction and Treatment	System of extraction wells along downgradient edge of landfill to provide hydraulic control of CR constituent groundwater plumes. Extracted groundwater treated in an on-site treatment system and discharged to Martin Lake or re-injected into aquifer. Groundwater monitoring to verify system effectiveness.	Migration of CCR constituents in groundwater controlled.	GWPS attained downgradient of CCR Unit, but limited effect on concentrations beneath unit.	CCR groundwater constituents contained at edge of landfill.	CCR constituents removed from extracted groundwater by treatment system. Treatment residuals (sludge, regenerate brine, etc.) require management.	Treatment residuals (sludge, regenerate brine, etc.) require management in accordance with applicable RCRA requirements.	Regulatory authorization for treated water discharge required. Bench/pilot testing of treatment system required. Groundwater modelling required to assess remediation timeframe.	Yes
Vertical Hydraulic Barrier	Vertical, low permeability hydraulic barrier along downgradient edge of landfill to provide hydraulic control of CCR constituent groundwater plumes. Groundwater extraction and treatment required upgradient of barrier to control groundwater elevations. Groundwater monitoring to verify system effectiveness.	Migration of CCR constituents in groundwater controlled.	GWPS attained downgradient of CCR Unit, but limited effect on concentrations beneath unit.	CCR groundwater constituents contained at edge of landfill.	CCR constituents removed from extracted groundwater by treatment system. Treatment residuals (sludge, regenerate brine, etc.) require management.	Excavated soil generated from barrier installation requires testing and management as necessary. Treatment residuals (sludge, regenerate brine, etc.) require management in accordance with applicable RCRA requirements.	Bench/pilot test of barrier materials likely required. Regulatory authorization for treated water discharge required. Bench/pilot testing of treatment system required. Groundwater modelling required to assess remediation timeframe.	Yes

LUMINANT

Groundwater Response Technology	Description	Protective of Human Health and Environment	Attain Groundwater Protection Standard	Control Source of Release	Remove Contaminated Material From Environment	RCRA Compliance	Screening Comments	Retained for Further Evaluation
Permeable Reactive Barrier	In-situ, passive, permeable treatment zone containing reactive media designed to intercept impacted groundwater and adjust geochemistry to immobilize CCR contaminants. CCR constituents removed through adsorption, precipitation and/or coprecipitation. PRB acts as a barrier to groundwater contamination but not groundwater flow. Groundwater monitoring to verify system effectiveness.	Migration of CCR constituents in groundwater controlled.	GWPS attained downgradient of CCR Unit, but limited effect on concentrations beneath unit.	CCR groundwater constituents removed from groundwater downgradient of CCR Unit.	CCR constituents removed from groundwater and retained on reactive media or aquifer soil matrix.	Excavated soil generated from PRB installation requires testing and management as necessary.	Potential removal of CCR constituents, but full-scale performance uncertain. Reactive media effectiveness reduced over time and media likely replaced periodically. Bench/pilot testing of PRB media/system required. Groundwater modelling required to assess remediation timeframe.	No
In-Situ Chemical Treatment	Injection of chemical/material into aquifer to adjust geochemistry and enhance precipitation, co-precipitation, or indirect adsorption of CCR constituents. Groundwater monitoring to verify system effectiveness.	Migration of CCR constituents in groundwater controlled.	GWPS attained downgradient of CCR Unit, but limited effect on concentrations beneath unit.	CCR groundwater constituents removed from groundwater downgradient of CCR Unit.	CCR constituents removed from groundwater and retained on aquifer soil matrix.	No significant RCRA compliance issues anticipated.	ICR considered emerging remediation technology for CCR constituents - not demonstrated under full-scale conditions. Bench/pilot-scale testing of ICR system required. Groundwater modelling required to assess remediation timeframe.	No
Phytoremediation	Use of plants to remove CCR constituents through uptake and accumulation within above ground portions of the plant. Primary plant process for removal is phytoextraction (uptake/accumulation of contaminants within aboveground portions of a plant). Groundwater monitoring to verify system effectiveness.	Migration of CCR constituents in groundwater controlled.	GWPS attained downgradient of CCR Unit, but limited effect on concentrations beneath unit.	CCR groundwater constituents removed from groundwater downgradient of CCR Unit.	CCR constituents removed from groundwater and accumulates in plants.	Management of harvested plants in accordance with RCRA may be required if accumulated CCR constituent concentrations are high.	Phytoextraction occurs in shallow root zone of plants, which limits the effectiveness for the groundwater depths at the Site. Phytoremediation for CCR constituent removal from groundwater has not been demonstrated under full-scale conditions Bench/pilot-scale testing of phytoremediation system required. Groundwater modelling required to assess remediation timeframe.	No

LUMINANT

Table 4

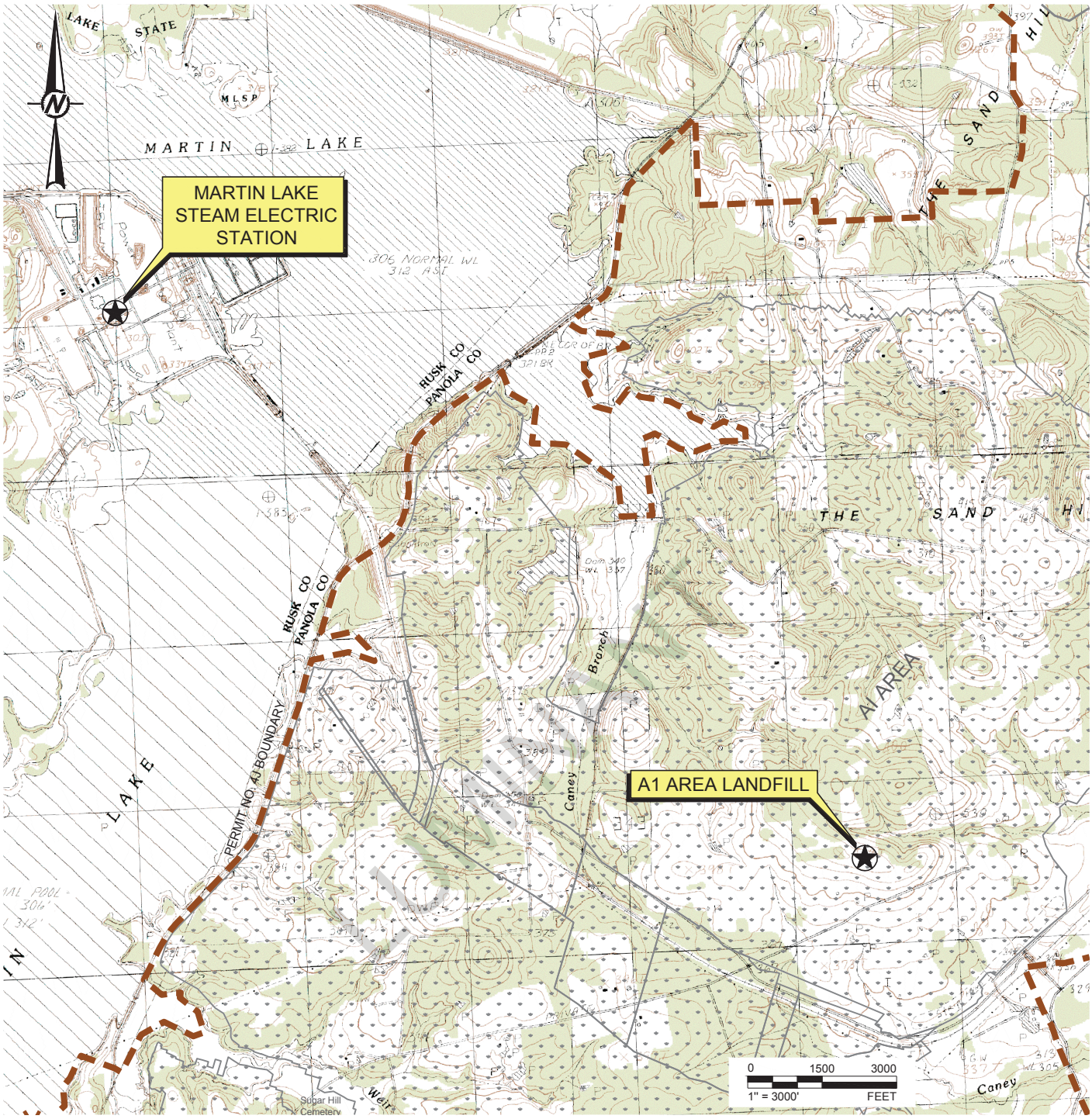
Evaluation of Corrective Measures Alternatives
Martin Lake Steam Electric Station
A1 Area Landfill

Corrective Measures Alternative	Description	Performance	Reliability	Ease of Implementation	Potential Impacts	Time Requirements	Institutional Requirements
Capping with Monitored Natural Attenuation	Low-permeability cap constructed over landfill. MNA to remove CCR constituents from groundwater and control migration. Groundwater monitoring to verify MNA effectiveness.	Cap isolates CCR material in landfill and mitigates on-going source of CCR constituents to groundwater. Site is good MNA candidate for CCR constituents based on MNA field evaluation.	Capping is a common and effective source control technology. On-going attenuation of CCR constituents in groundwater demonstrated during MNA field evaluation. Groundwater monitoring used to verify long-term MNA effectiveness.	Readily implementable with common construction techniques.	Source controlled through capping. CCR constituents removed from groundwater beneath and downgradient of landfill.	Cap Implementation: Up to 2.5 years after commencing closure activities per 257.102(f). MNA Implementation: 2-3 years Groundwater modelling required to assess remediation timeframe.	Minimal regulatory requirements. Deed restrictions required for downgradient plume areas that exceed GWPS.
Capping with Groundwater Extraction and Treatment	Low-permeability cap constructed over landfill. System of extraction wells along downgradient edge of landfill to provide hydraulic control of CCR constituent groundwater plumes. Extracted groundwater treated in an on-site treatment system and discharged to Martin Lake or re-injected into aquifer. Groundwater monitoring to verify system effectiveness.	Cap isolates CCR material in landfill and mitigates on-going source of CCR constituents to groundwater. Migration of CCR constituents in groundwater controlled at landfill boundary by extraction wells.	Capping is a common and effective source control technology. Groundwater extraction and treatment is a common and effective hydraulic control technology. Treatment system operational reliability is key component of overall reliability.	Readily implementable with common construction techniques. Bench/pilot testing of treatment system required. Regulatory authorization for treated water discharge could be difficult to obtain.	Source controlled through capping. Control of CCR constituent migration downgradient of landfill by extraction wells. Extraction system does not address groundwater beneath landfill.	Cap Implementation: Up to 2.5 years after commencing closure activities per 257.102(f). GW Ext/Treatment Implementation: 3-4 years Groundwater modelling required to assess remediation timeframe.	Regulatory authorization for treated water discharge required. Treatment system residuals (sludge, regenerate brine, etc.) require management.
Capping with Vertical Hydraulic Barrier and Groundwater Extraction and Treatment	Low-permeability cap constructed over landfill. Vertical, low permeability hydraulic barrier along downgradient edge of landfill to provide hydraulic control of CCR constituent groundwater plumes. Groundwater extraction and treatment required upgradient of barrier to control groundwater elevations. Groundwater monitoring to verify system effectiveness.	Cap isolates CCR material in landfill and mitigates on-going source of CCR constituents to groundwater. Migration of CCR constituents in groundwater controlled at landfill boundary by vertical barrier. Groundwater elevations upgradient of barrier controlled by groundwater extraction.	Capping is a common and effective source control technology. Vertical hydraulic barrier must be keyed into lower impermeable layer. Groundwater extraction and treatment is a common and effective hydraulic control technology. Treatment system operational reliability is key component of overall reliability.	Readily implementable with common construction techniques. Bench/pilot testing of treatment system required. Regulatory authorization for treated water discharge could be difficult to obtain.	Source controlled through capping. Control of CCR constituent migration downgradient of landfill by vertical barrier. Vertical barrier does not address groundwater beneath landfill.	Cap Implementation: Up to 2.5 years after commencing closure activities per 257.102(f). Barrier and GW Ext/Treat Implementation: 5-8 years Groundwater modelling required to assess remediation timeframe.	Regulatory authorization for treated water discharge required. Treatment system residuals (sludge, regenerate brine, etc.) require management.

DOCUMENT

FIGURES

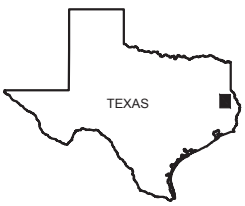
LUMINANT



LEGEND

MARTIN LAKE LIGNITE MINE PERMIT BOUNDARY

MINED OUT AREA



QUADRANGLE LOCATION

REFERENCE(S)

BASE MAP TAKEN FROM TNRIS.GOV, TATUM, TX 7.5 MIN. USGS QUADRANGLE DATED 1983.

APPENDIX F-Revision 2 February 27, 2024

CLIENT
LUMINANT

PROJECT
MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

TITLE
SITE LOCATION MAP

CONSULTANT
GOLDER

YYYY-MM-DD	2019-08-28
DESIGNED	AJD
PREPARED	AJD
REVIEWED	WFV
APPROVED	WFV

PROJECT NO.	REV.	FIGURE
19121403	0	1

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI A

1 in

0

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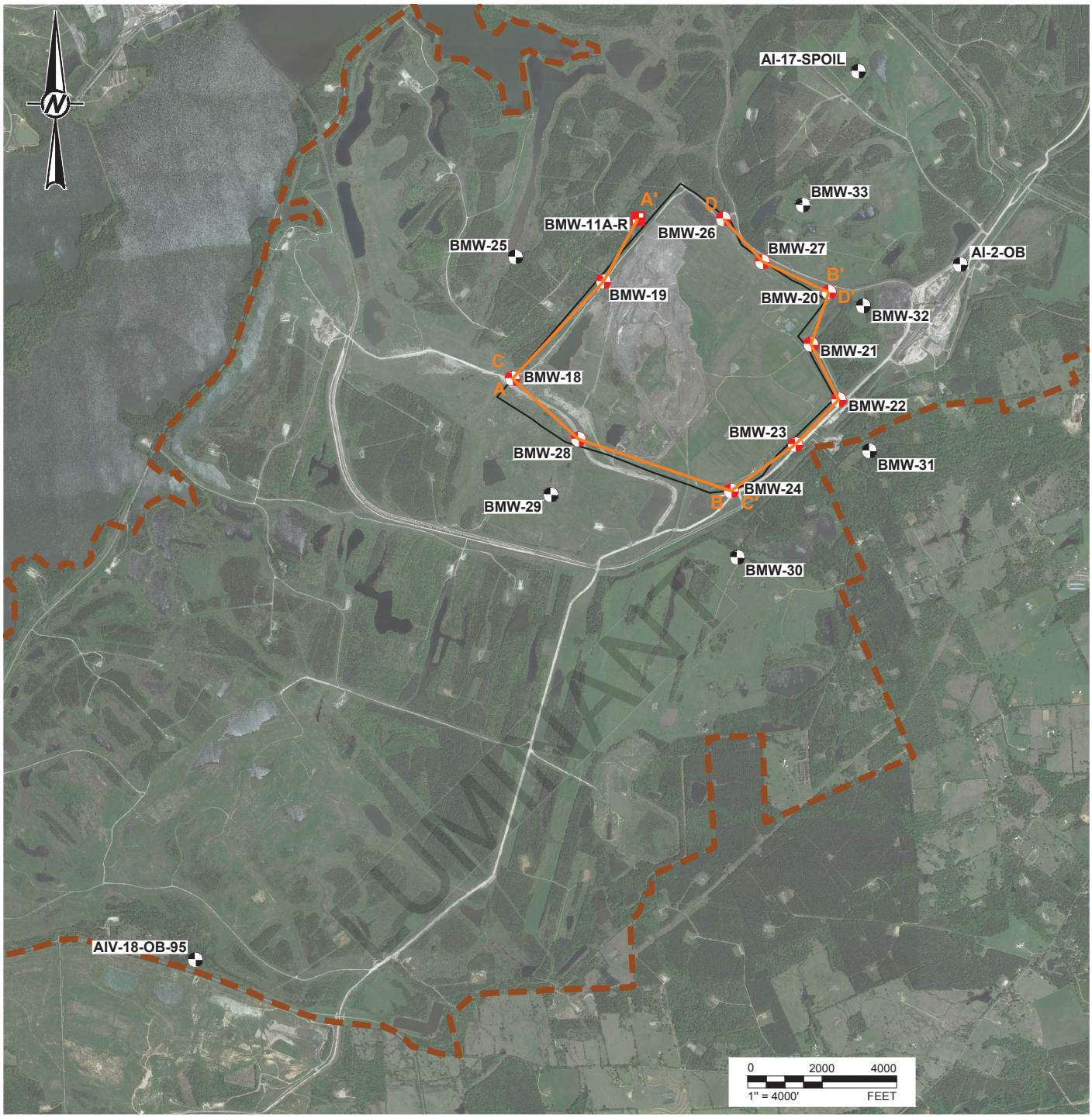
Path: \\texarkanadata\Projects - Round Rock\19121403 - Luminant\Martin Lake A1 Area Landfill\ | File Name: FIG 1 - Site Location Map.dwg



LEGEND

- MARTIN LAKE LIGNITE MINE PERMIT BOUNDARY
- DOWNGRADIENT CCR MONITORING WELL
- UPGRADIENT CCR MONITORING WELL
- CCR DELINEATION WELL
- A — A' CROSS SECTION LOCATION

REFERENCE(S)

BASE MAP TAKEN FROM GOOGLE EARTH IMAGERY DATED 2021.

CLIENT
LUMINANT

PROJECT
MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

TITLE
DETAILED SITE PLAN - A1 AREA LANDFILL

CONSULTANT
GOLDER

YYYY-MM-DD	2019-08-28
DESIGNED	AJD
PREPARED	AJD
REVIEWED	WFV
APPROVED	WFV

PROJECT NO.	REV.	FIGURE
19121403	0	2

LUMINANT

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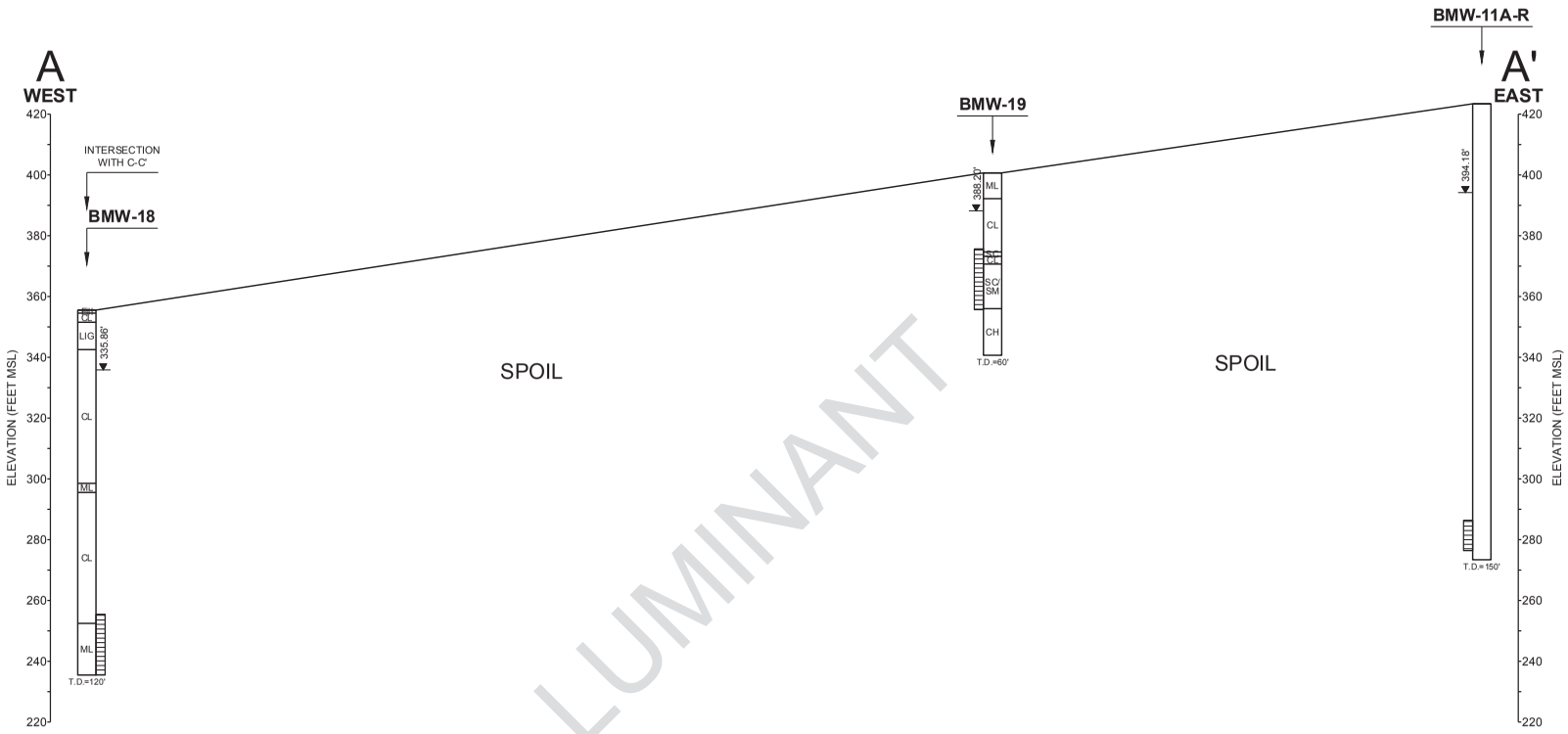
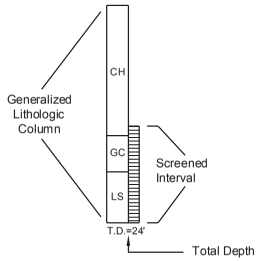


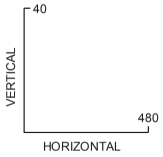
LUMINANT

MONITORING WELL CONSTRUCTION



Water Level (Ft MSL) Measured 5/15/19

SCALE IN FEET



12x Vertical Exaggeration

CLIENT
LUMINANT

PROJECT
MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

TITLE
A1 AREA LANDFILL
GEOLOGIC CROSS SECTION A-A'
NORTH SIDE OF A1 EXPANSION AREA

CONSULTANT
GOLDER

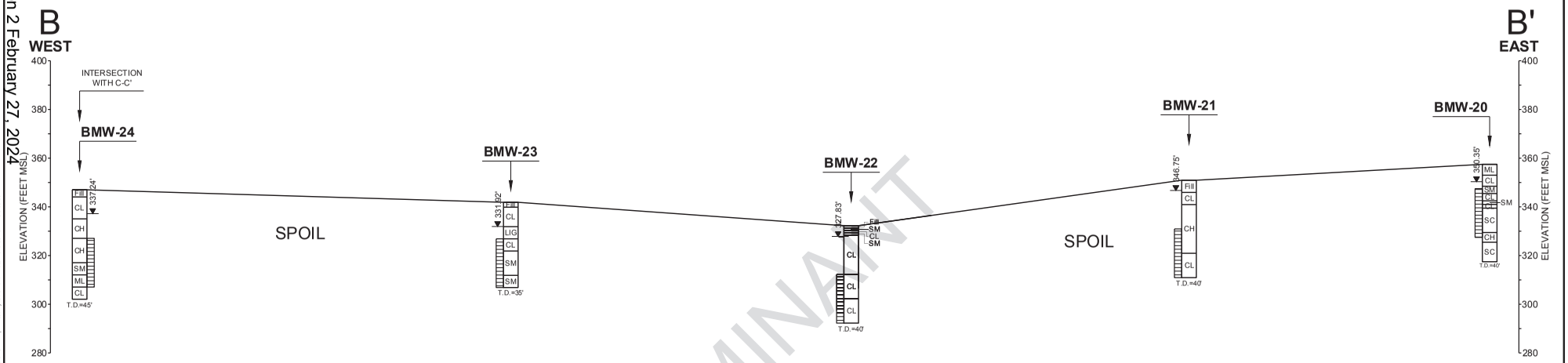
YYYY-MM-DD	2019-08-28
DESIGNED	AJD
PREPARED	AJD
REVIEWED	WFV
APPROVED	WFV

PROJECT NO. 19121403 | REV. 0 | FIGURE 3

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM ANSI B

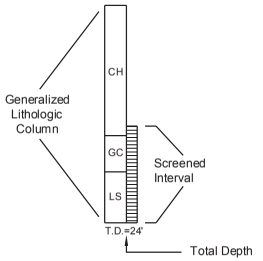
Path: \\data\landdata\Projects_Round Rock\19121403 - Luminant\Martin Lake A1 Area Landfill\ | File Name: FIG 3-6 - Cross Sections.dwg | Last Edited By: ajdiamond Date: 2019-08-28 Time:9:57:54 AM | Printed By: ajdiamond Date: 2019-08-28 Time:9:58:34 AM

APPENDIX F-Revision 2 February 27, 2024



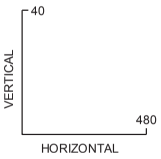
LUMINANT

MONITORING WELL CONSTRUCTION



Water Level (Ft MSL) Measured 5/15/19

SCALE IN FEET



12x Vertical Exaggeration

CLIENT
LUMINANT

PROJECT
MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

TITLE
A1 AREA LANDFILL
GEOLOGIC CROSS SECTION B-B'
SOUTH SIDE OF A1 LANDFILL

CONSULTANT
GOLDER

YYYY-MM-DD	2019-08-28
DESIGNED	AJD
PREPARED	AJD
REVIEWED	WFV
APPROVED	WFV

PROJECT NO. 19121403 | REV. 0 | FIGURE 4

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM ANSI B

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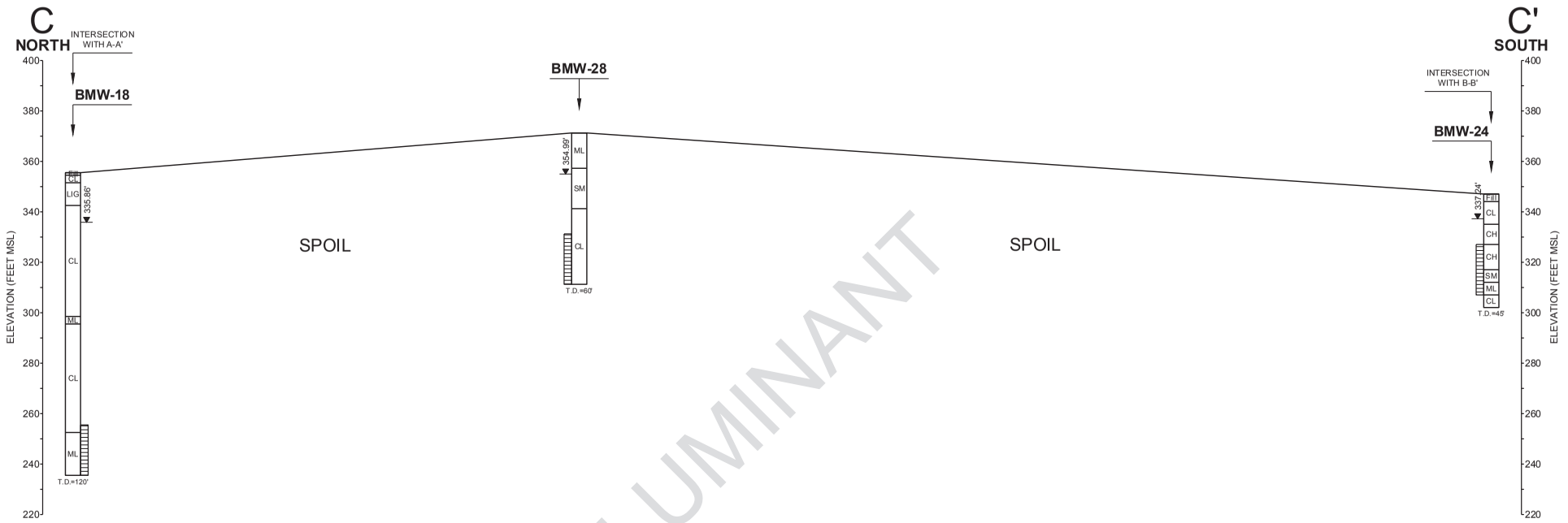
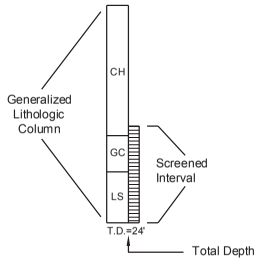


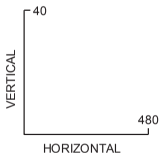
LUMINANT

MONITORING WELL CONSTRUCTION



Water Level (Ft MSL) Measured 5/15/19

SCALE IN FEET



12x Vertical Exaggeration

CLIENT
LUMINANT

PROJECT
MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

TITLE
A1 AREA LANDFILL
GEOLOGIC CROSS SECTION C-C'
WEST SIDE OF A1 LANDFILL

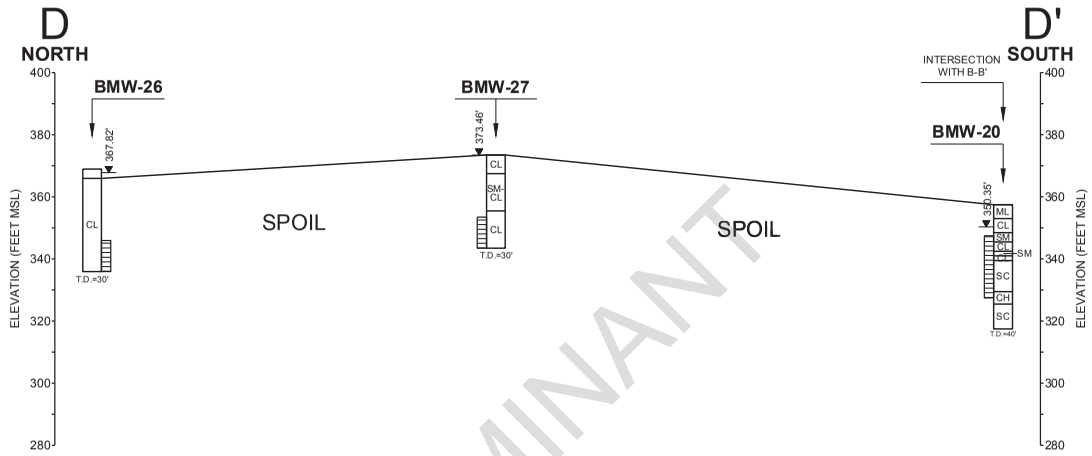
CONSULTANT
GOLDER

YYYY-MM-DD	2019-08-28
DESIGNED	AJD
PREPARED	AJD
REVIEWED	WFV
APPROVED	WFV

PROJECT NO. 19121403 | REV. 0 | FIGURE 5

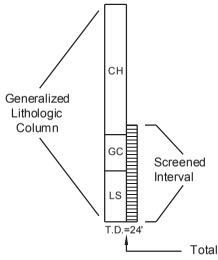
IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM ANSI B

Path: \\data\landdata\Projects - Round Rock\19121403 - Luminant\Martin Lake A1 Area Landfill\ | File Name: FIG 3-6 - Cross Sections.dwg | Last Edited By: ajdiamond Date: 2019-08-28 Time:9:57:54 AM | Printed By: ajdiamond Date: 2019-08-28 Time:9:59:30 AM

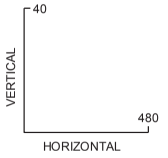


LUMINANT

MONITORING WELL CONSTRUCTION



Water Level (Ft MSL) Measured 5/15/19



12x Vertical Exaggeration

CLIENT
LUMINANT

PROJECT
MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

TITLE
A1 AREA LANDFILL
GEOLOGIC CROSS SECTION D-D'
EAST SIDE OF A1 LANDFILL

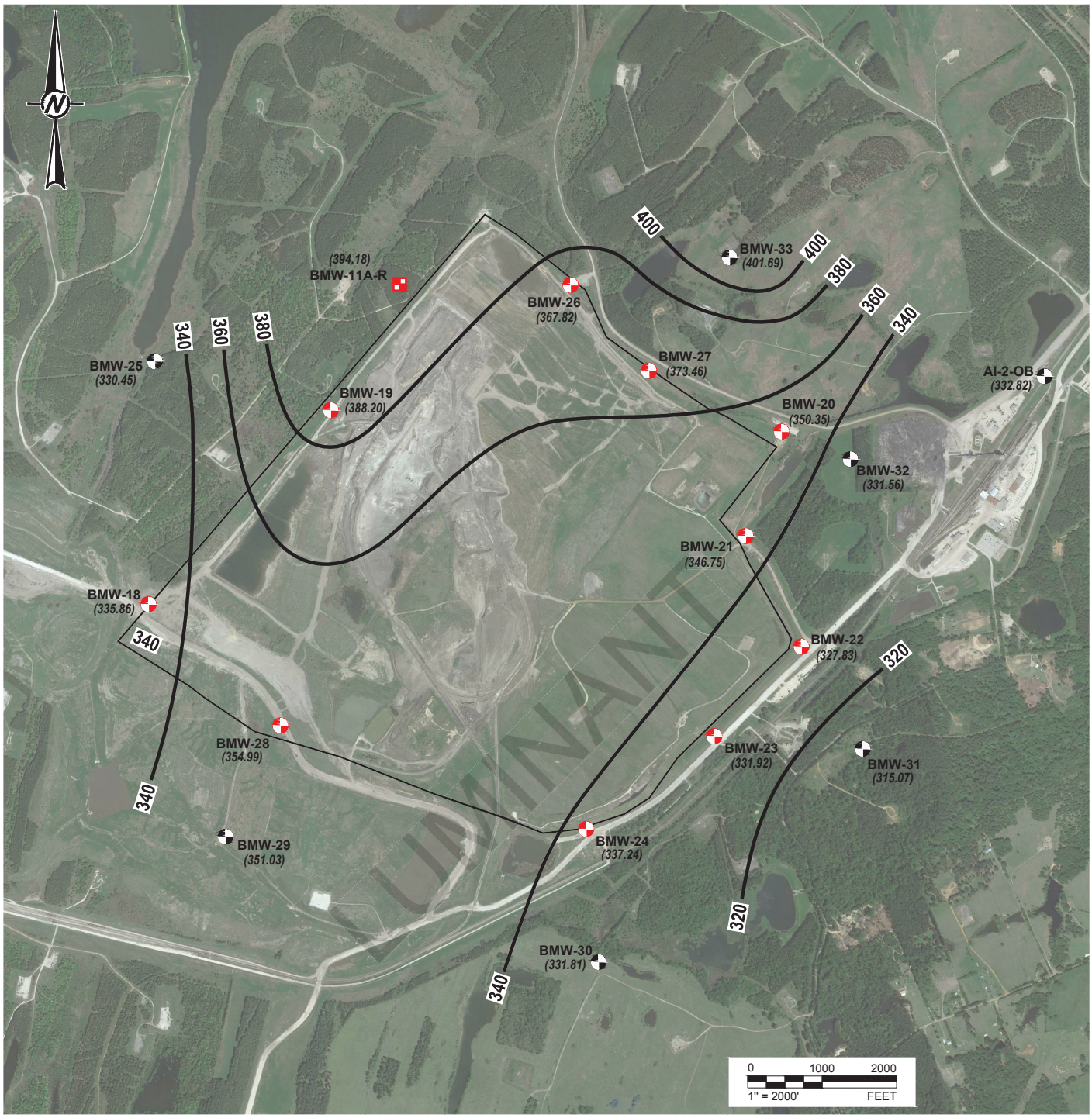
CONSULTANT
GOLDER

YYYY-MM-DD	2019-08-28
DESIGNED	AJD
PREPARED	AJD
REVIEWED	WFV
APPROVED	WFV

PROJECT NO. 19121403 | REV. 0 | FIGURE 6

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM ANSI B

Path: \\data\landdata\Projects, Round Rock\19121403 - Luminant\Martin Lake A1 Area Landfill\ | File Name: FIG 3-6 - Cross Sections.dwg | Last Edited By: ajdamond Date: 2019-08-28 Time:9:57:54 AM | Printed By: ajdamond Date: 2019-08-28 Time:9:59:59 AM



LEGEND

- DOWNGRADIENT CCR MONITORING WELL
- UPGRADIENT CCR MONITORING WELL
- CCR DELINEATION WELL
- (358.02) GROUNDWATER POTENTIOMETRIC SURFACE (FT MSL)
- 360 GROUNDWATER POTENTIOMETRIC SURFACE CONTOUR (C.I. = 20 FT)

NOTE(S)

1. CCR MONITORING WELL WATER LEVELS MEASURED 5/15/19. CCR DELINEATION WELL WATER LEVELS MEASURED 6/13/19. WELL AI-2-OB WATER LEVELS MEASURED 8/14/19.

REFERENCE(S)

BASE MAP TAKEN FROM GOOGLE EARTH IMAGERY DATED 2019.

CLIENT
LUMINANT

PROJECT
MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

TITLE
A1 AREA LANDFILL
POTENTIOMETRIC SURFACE MAP
MAY 15, 2019

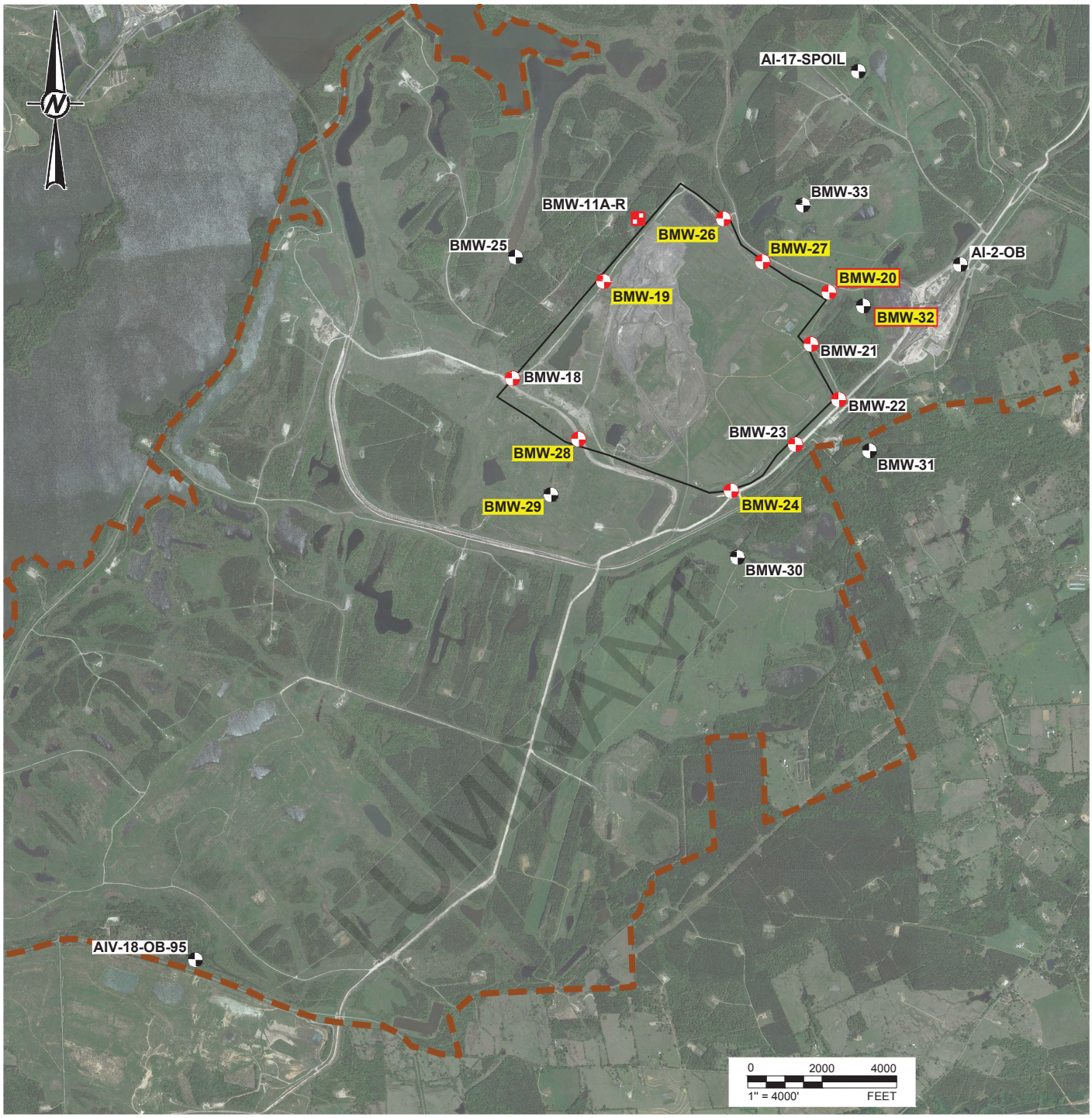
CONSULTANT
GOLDER

YYYY-MM-DD	2019-08-30
DESIGNED	AJD
PREPARED	AJD
REVIEWED	WFV
APPROVED	WFV

PROJECT NO. 19121403 | REV. 0 | FIGURE 7

Last Edited By: adiamond Date: 2019-08-30 Time:4:09:27 PM | Printed By: adiamond Date: 2019-08-30 Time:4:10:10 PM
Path: \\texarkanadata\Projects - Round Rock\19121403 - Luminant\Martin Lake A1 Area Landfill\ | File Name: FIG 7 - POT Surface Map-A1 Area Landfill (May 2019) with AI-2-OB.dwg

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI A
1 in
0



LEGEND

- MARTIN LAKE LIGNITE MINE PERMIT BOUNDARY
- DOWNGRADIENT CCR MONITORING WELL
- UPGRADIENT CCR MONITORING WELL
- CCR DELINEATION WELL
- SSLs FOR ONE OR MORE APPENDIX IV CONSTITUENTS IN DOWNGRADIENT WELLS BASED ON INITIAL STATISTICAL EVALUATION
- SSLs FOR ONE OR MORE APPENDIX IV CONSTITUENTS IN DOWNGRADIENT WELLS BASED ON UPDATED STATISTICAL EVALUATION

NOTE(S)

1. BMW-27 WAS PREVIOUSLY CONSIDERED TO BE A DOWNGRADINET WELL; HOWEVER, BASED ON ADDITIONAL GROUNDWATER ELEVATION DATA FROM THE NATURE AND EXTENT WELLS (SEE FIGURE 7), IT AND BMW-33 ARE CONSIDERED TO BE UPGRADIENT WELLS.

REFERENCE(S)

BASE MAP TAKEN FROM GOOGLE EARTH IMAGERY DATED 2018.

CLIENT
LUMINANT

PROJECT
MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

TITLE
A1 AREA LANDFILL
EXTENT OF APPENDIX IV CONSTITUENTS DETECTED AT SSLs ABOVE GWPSs

CONSULTANT
GOLDER

YYYY-MM-DD	2019-08-29
DESIGNED	AJD
PREPARED	AJD
REVIEWED	WFV
APPROVED	WFV

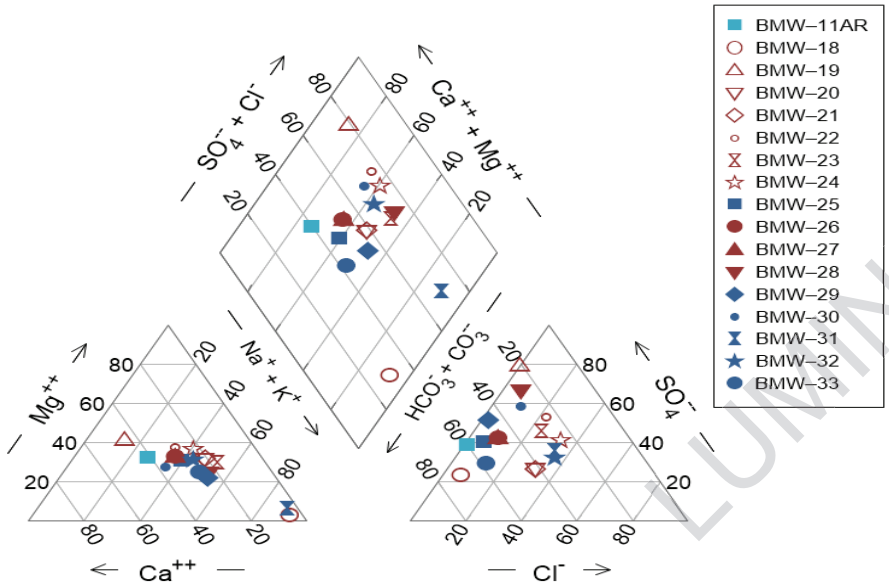
PROJECT NO.	REV.	FIGURE
19121403	0	8

Last Edited By: adiamond Date: 2019-08-29 Time:12:04:45 PM | Printed By: adiamond Date: 2019-08-29 Time:1:52:57 PM
Path: \\texarkanadata\Projects - Round Rock\19121403 - Luminant\Martin Lake A1 Area Landfill\ | File Name: FIG 8 - Extent of App IV Constituents (A1 Area Landfill).dwg

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI A
1 in
0

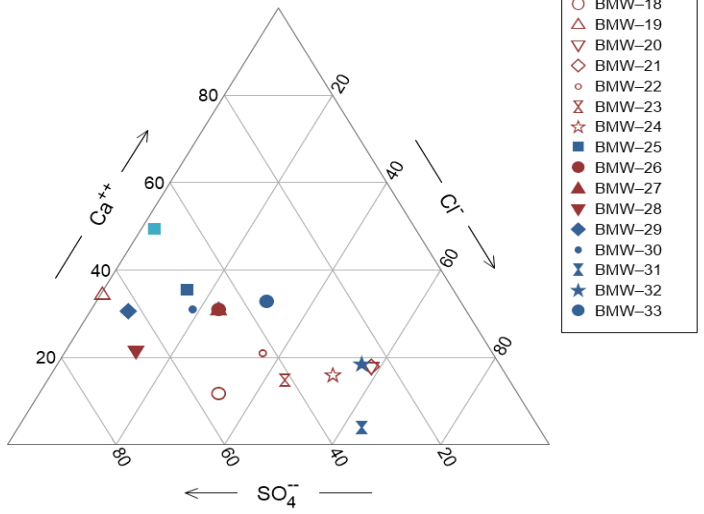
PATH: C:\Users\gjordan\Golder Associates\19121403.Luminant CCR ACM Reports - 5 Technical Work\Phase 2000 - ML A1 Area LF | FILE NAME: Geochem Figures.xlsx

(a)



% meq/kg

(b)



% mol

LUMINANT

CLIENT
LUMINANT
MARTIN LAKE
A1 LANDFILL

CONSULTANT
GOLDER

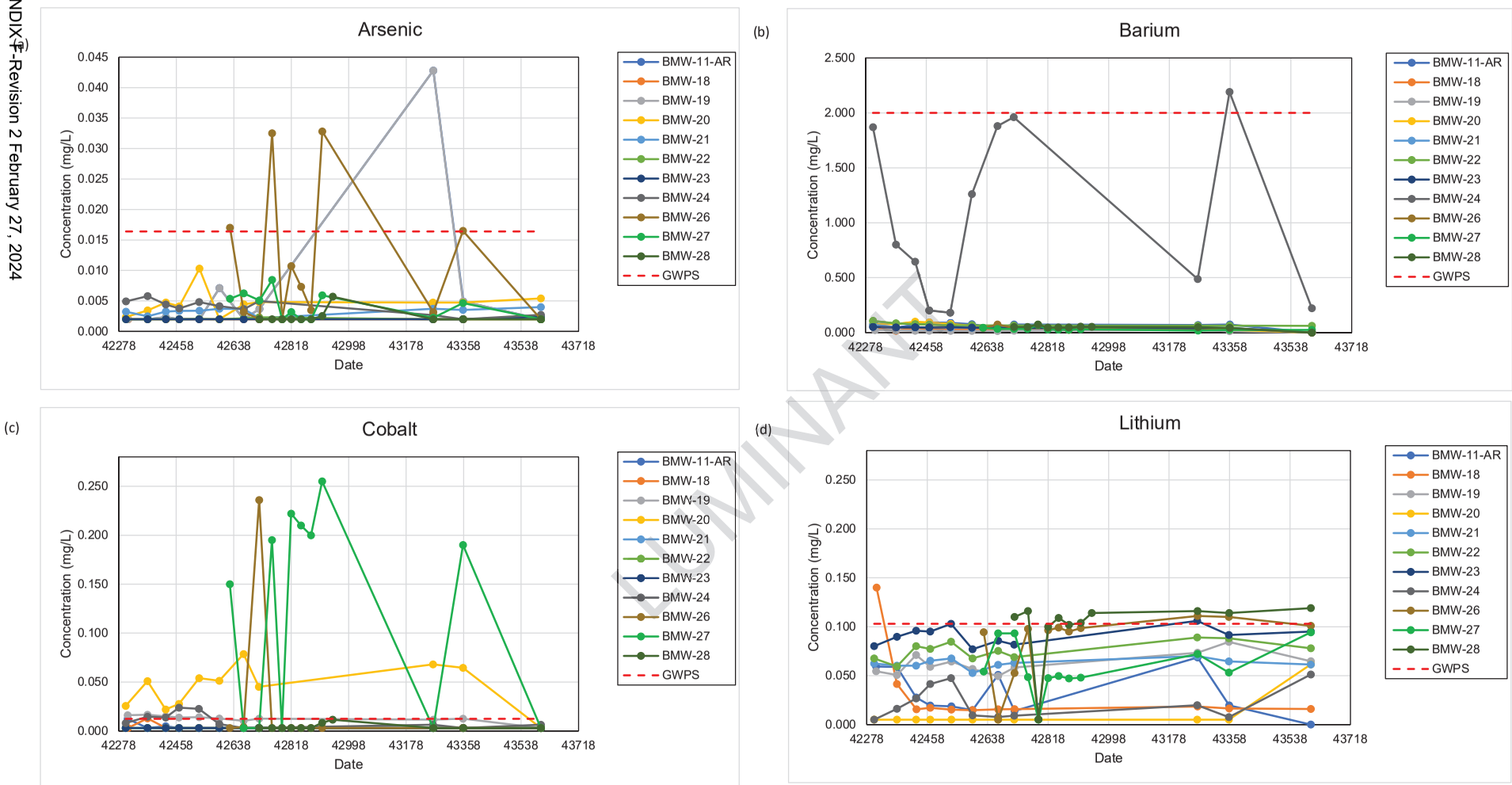
PROJECT
ASSESSMENT OF CORRECTIVE MEASURES
Monitored Natural Attenuation
GEOCHEMICAL ASSESSMENT

TITLE
MAJOR GROUNDWATER CEHMISTRY (A) AND SELECT RELATIVE ION ABUNDANCE (B)

PROJECT NO.	PHASE	REV.	FIGURE
19122434	01	A	9a-b

APPENDIX F-Revision 2 February 27, 2024

PATH: C:\Users\pjnolan\Golder Associates\19121403\Luminant CCR ACM Reports - 5 Technical Work\Phase 2000 - ML A1 Area LF | FILE NAME: Geochem Figures.xlsx



LUMINANT

CLIENT
LUMINANT
MARTIN LAKE
A1 LANDFILL

CONSULTANT
GOLDER

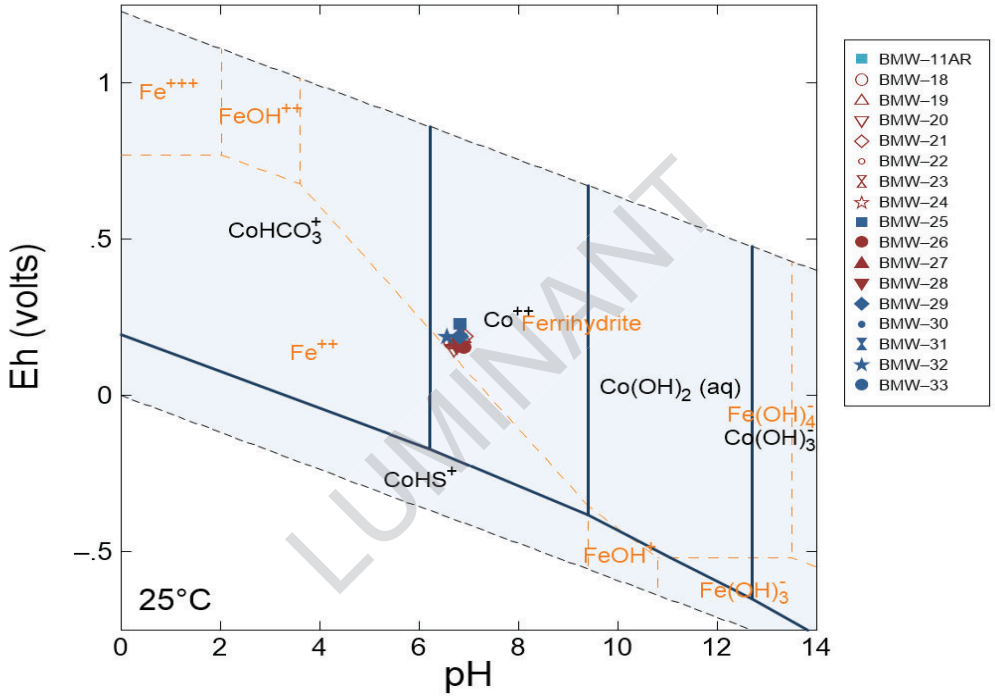
PROJECT
ASSESSMENT OF CORRECTIVE MEASURES
GEOCHEMICAL ASSESSMENT

TITLE
HISTORICAL TRENDS OF ARSENIC (A), BARIUM (B), COBALT (C), AND LITHIUM (D) IN GROUNDWATER

PROJECT NO.	PHASE	REV.	FIGURE
19122434	01	A	10a-d

APPENDIX F-Revision 2 February 27, 2024

PATH: \\Users\pjnclark\Golder Associates\19121403_Luminant CCR ACM Reports - 5 Technical Work\Phase 2000 - MLA1 Area LF | FILE NAME: Geochem Figures.xlsx



CLIENT
LUMINANT
MARTIN LAKE
A1 LANDFILL

CONSULTANT
GOLDER

PROJECT
ASSESSMENT OF CORRECTIVE MEASURES
GEOCHEMICAL ASSESSMENT

TITLE
SPECIATION OF COBALT IN GROUNDWATER

PROJECT NO.	PHASE	REV.	FIGURE
19122434	01	A	11

APPENDIX A

BORING LOGS

LUMINANT

Luminant

Log of Boring: BMW-18

Martin Lake Steam Electric Station
Tatum, TX

PBW Project No. 5164B

Completion Date:	9/29/2015	Drilling Method:	Sonic
Drilling Company:	Walker-Hill Environmental	Borehole Diameter (in.):	6.5
Driller:	Timmy Beach	Total Depth (ft):	120
Driller's License:	5814M	TOC Elevation (ft. AMSL):	357.833
Logged By:	Jeremiah Bihl	Northing:	1051216950.561
Sampling Method:	4"x10' Core barrel	Easting:	2915599.992

Depth (ft)	Well Materials	Recovery (ft/ft)	USCS	Lithologic Description
0			FILL	(0 - 1) Top soil, light brown, rocks (1-3 cm) present
			CL	(1 - 4) CLAY spoil, dark gray to black with pale tan mottling, dry, firm, brittle
		10.0/10.0	LIG	(4 - 13) LIGNITE with clay spoil, dark grey to black, dry to moist, soft, brittle, angular, low plasticity
10				
		5.0/10.0		
20		10.0/10.0		
30		10.0/10.0	CL	(13 - 57) Silty CLAY spoil, dark gray to dark brown with red and yellow mottling, dry, soft to firm, crumbly, medium plasticity, color change to tan at 30', coal seam at 32' (black, dry to moist, soft), pieces of lignite present, color change to gray to dark gray at 35'
40		10.0/10.0		
50		10.0/10.0		
		10.0/10.0		
60			ML	(57 - 60) Clayey SILT spoil, light brown to tan, moist, soft, low plasticity, lignite seam at 59'
		10.0/10.0		(60 - 81) Silty CLAY spoil, black to gray, dry, soft to firm, low plasticity, crumbly, 6" dry white gravel layer at 69', 4" light brown silty sand layer at 81'
70		10.0/10.0		
80			CL	
		10.0/10.0		(81 - 103) Silty CLAY spoil, light gray, dry to moist, soft, low to medium plasticity, crumbly, rubber tire pieces at 89', hard lignite seam at 90' (hard, dry, black, firm), streaks of black (91'- 94'), becomes hard at 94', light to dark gray (94'-103')
90		10.0/10.0		
100				
		10.0/10.0		(103 - 106) Clayey SILT spoil, gray, very moist, soft, medium plasticity
110			ML	(106 - 120) Clayey SILT spoil, gray to dark gray, dry, firm, low plasticity
		10.0/10.0		
120				

LUMINANT

PBW

Pastor, Behling & Wheeler, LLC
2201 Double Creek Dr., Suite 4004
Round Rock, TX 78664
Tel (512) 671-3434 Fax (512) 671-3446

Notes:
1. This log should not be used separately from the report to which it is attached.

Well Materials
(0-100) Casing, 2" Sch 40 FJT PVC
(100-120) Screen, 2" Sch 40 FJT PVC, 0.010" slot

Annular Materials
(0'-96') Grout
(96'-98') Bentonite pellets
(98'-110') 20/40 sand

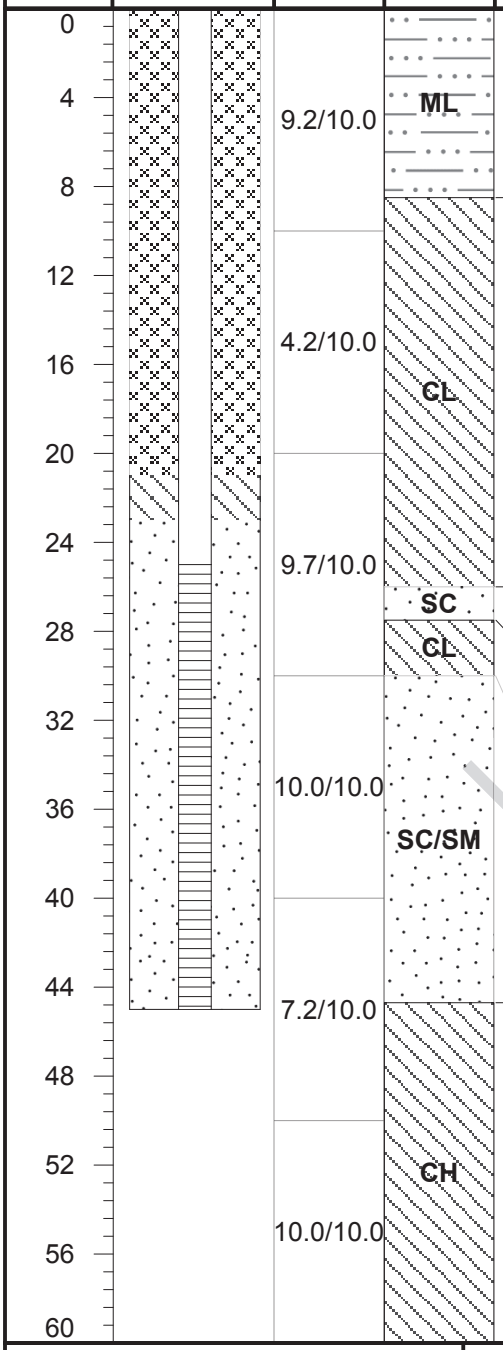
Luminant

Log of Boring: BMW-19

Martin Lake Steam Electric Station
Tatum, TX

PBW Project No. 5164B

Completion Date:	10/7/2015	Drilling Method:	Sonic
Drilling Company:	Walker-Hill Environmental	Borehole Diameter (in.):	6.5
Driller:	Timmy Beach	Total Depth (ft):	60
Driller's License:	5814M	TOC Elevation (ft. AMSL):	400.685
Logged By:	Nolan Townsend	Northing:	1048219535.121
Sampling Method:	4"x10' Core barrel	Easting:	2918071.024



(0 - 8.5) Sandy SILT with clay spoil, light brown to brownish yellow, dry to slightly mosit, soft, low plasticity, more clay content below ~1.0', trace black lignite fragments - dry, firm to hard, brittle, friable, sharp basal contact

(8.5 - 26) Sandy CLAY spoil, yellowish brown, gray after 9.5', trace to moderate orange-yellow mottling, dry to moist, firm, low plasticity, trace black lignite fragments, very fine sand, sharp basal contact

(26 - 27.5) Clayey SAND spoil, gray to yellowish brown, very moist to wet, soft, low plasticity, very fine sand, sharp basal conact

(27.5 - 30) Sandy CLAY spoil, gray to yellowish brown, trace to moderate orange mottling, moist to very moist, soft to firm, moderate plasticity, very fine sand, small lignite seam 29.7'-30.0', brittle and friable, dry, black, hard, sharp basal contact

(30 - 44.7) Clayey silty SAND spoil - sandy CLAY spoil, brownish yellow to gray to greenish gray, trace orange mottling, abundant orange mottling 37.5'-38.5' and 42'-44.7', very moist to wet, soft to firm, moderate to high plasicity, very fine sand

(44.7 - 60) Sandy CLAY spoil, greenish gray to gray, trace orange-red mottling, dry to moist, firm, moderate to high plasticity, trace black lignite fragments, abundant orange and red mottling 56.0'-59.5'

LUMINANT

PBW

Pastor, Behling & Wheeler, LLC
2201 Double Creek Dr., Suite 4004
Round Rock, TX 78664
Tel (512) 671-3434 Fax (512) 671-3446

Notes:
1. This log should not be used separately from the report to which it is attached.
2. Hole collapsed - drilled back down to 45' with 6" casing to set well.

Well Materials
(0-25) Casing, 2" Sch 40 FJT PVC
(25-45) Screen, 2" Sch 40 FJT PVC, 0.010" slot

Annular Materials
(0'-21') Grout
(21'-23') Bentonite pellets
(23'-45') 20/40 sand

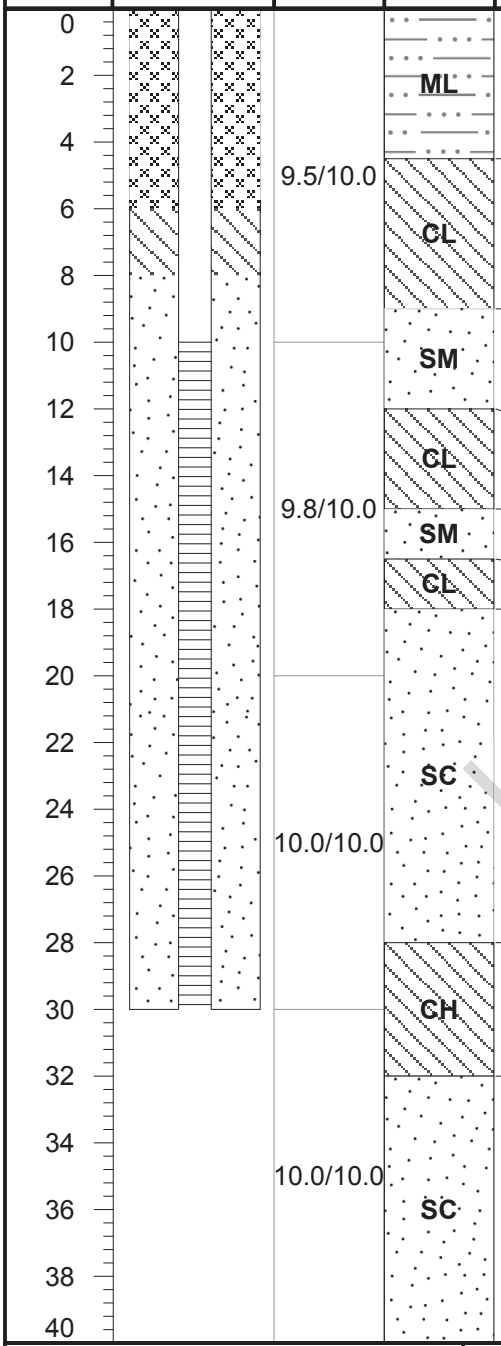
Luminant

Log of Boring: BMW-20

Martin Lake Steam Electric Station
Tatum, TX

PBW Project No. 5164B

Completion Date:	10/8/2015	Drilling Method:	Sonic
Drilling Company:	Walker-Hill Environmental	Borehole Diameter (in.):	6.5
Driller:	Timmy Beach	Total Depth (ft):	40
Driller's License:	5814M	TOC Elevation (ft. AMSL):	357.512
Logged By:	Nolan Townsend	Northing:	1057219166.631
Sampling Method:	4"x10' Core barrel	Easting:	2923995.525



Lithologic Description
(0 - 4.5) Sandy SILT with clay spoil, brownish yellow to gray, trace to moderate orange mottling near 4.0', dry, soft, low plasticity, very fine sand
(4.5 - 9) CLAY spoil with trace sand lenses, gray with trace to moderate orange/yellow mottling, dry to slightly moist, firm to hard, low to moderate plasticity, trace calcareous precipitates, sharp basal contact
(9 - 12) Slightly silty SAND spoil, yellowish orange to tan, moist to very moist, slightly unconsolidated, moderate to high plasticity, very fine sand, moderately to well sorted, mostly quarts with ~5-10% lithic fragments, clay content present 10'-12', dark gray, sharp basal contact
(12 - 15) CLAY spoil, slightly sandy, gray to dark gray, dry to slihgtly moist, firm to hard, low to moderate plasticity, trace black lignite fragments, sandy lenses, trace orange mottling
(15 - 16.5) Silty SAND with clay spoil, tan to yellowish orange, moist to very moist, moderately consolidated, medium to high plasticity, very fine sand
(16.5 - 18) CLAY spoil as above, dry to moist, firm to hard, moderate plasticity
(18 - 28) Clayey SAND spoil, reddish orange and gray, very moist, wet at 20.0', moderately consolidated, moderate to high plasticity, clay composition increases and decreases throughout, very fine sand, becomes gray at 28.0' and more clay content
(28 - 32) Sandy CLAY spoil, gray, trace orange mottling, moist to very moist, firm, moderate to high plasticity, locally sandy lenses/interbeds, trace lignitic fragments (black)
(32 - 40) Clayey SAND spoil, reddish orange with gray clay, very moist to wet, moderately consolidated, moderate to high plasticity, very fine sand, localized small sandy clay seams, trace lignite fragments

LUMINANT

PBW

Pastor, Behling & Wheeler, LLC
2201 Double Creek Dr., Suite 4004
Round Rock, TX 78664
Tel (512) 671-3434 Fax (512) 671-3446

Notes:
1. This log should not be used separately from the report to which it is attached.

Well Materials
(0-10) Casing, 2" Sch 40 FJT PVC
(10-30) Screen, 2" Sch 40 FJT PVC, 0.010" slot

Annular Materials
(0'-6') Grout
(6'-8') Bentonite pellets
(8'-30') 20/40 sand

Luminant

Log of Boring: BMW-21

Martin Lake Steam Electric Station
Tatum, TX

PBW Project No. 5164B

Completion Date:	9/27/2015	Drilling Method:	Sonic
Drilling Company:	Walker-Hill Environmental	Borehole Diameter (in.):	6.5
Driller:	Timmy Beach	Total Depth (ft):	40
Driller's License:	5814M	TOC Elevation (ft. AMSL):	350.976
Logged By:	Jeremiah Bihl	Northing:	1054217792.58
Sampling Method:	4"x10' Core barrel	Easting:	2923478.615

Depth (ft)	Well Materials	Recovery (ft/ft)	USCS	Lithologic Description
0				
2			FILL	(0 - 5) Top soil, sandy with small amounts of clay, tan/brown, moist, soft, low plasticity
4		10.0/10.1		
6			CL	(5 - 10) Sandy CLAY spoil, dark gray to black, moist, soft, low to medium plasticity, trace amounts of lignite, clay content increases with depth
8				
10				
12				
14		10.0/10.0		
16				
18				
20			CH	(10 - 30) CLAY spoil with angular lignite, light gray, moist, soft, high plasticity, 1'-thick lignite layer at 25', hardness increases from 26' to 30'
22				
24		10.0/10.0		
26				
28				
30				
32				
34		10.0/10.0	CL	(30 - 40) CLAY spoil with angular lignite pieces, wet, soft with increasing hardness with depth, medium plasticity, water present at 30', moisture decreases at 35'
36				
38				
40				

LUMINANT

PBW
Pastor, Behling & Wheeler, LLC
2201 Double Creek Dr., Suite 4004
Round Rock, TX 78664
Tel (512) 671-3434 Fax (512) 671-3446

Notes:
1. This log should not be used separately from the report to which it is attached.

Well Materials
(0-20) Casing, 2" Sch 40 FJT PVC
(20-40) Screen, 2" Sch 40 FJT PVC, 0.010" slot

Annular Materials
(0'-37') Grout
(16'-18') Bentonite pellets
(18'-40') 20/40 sand

Luminant

Log of Boring: BMW-22

Martin Lake Steam Electric Station
Tatum, TX

PBW Project No. 5164B

Completion Date:	9/27/2015	Drilling Method:	Sonic
Drilling Company:	Walker-Hill Environmental	Borehole Diameter (in.):	6.5
Driller:	Timmy Beach	Total Depth (ft):	40
Driller's License:	5814M	TOC Elevation (ft. AMSL):	332.304
Logged By:	Jeremiah Bihl	Northing:	1060216298.457
Sampling Method:	4"x10' Core barrel	Easting:	2924359.671

Depth (ft)	Well Materials	Recovery (ft/ft)	USCS	Lithologic Description
0			FILL	(0 - 1) Top soil, light brown
2			SM	(1 - 2) Sandy silty spoil with pieces of rock, light brown, abundant organics
			CL	(2 - 3) CLAY spoil, yellow-reddish
4			SM	(3 - 4) Sandy silty spoil with pieces of rock, light brown/tan, abundant organics
		10.0/10.0		
6				
8				
10				(4 - 20) CLAY spoil, dark gray, lignite present (angular), color change to light gray to yellow clay with some red mottling at 6', firm, moist, medium plasticity, color change to tan at 10', moist and soft lignite layer (12'-13'), hard and lignite layer (angular pieces) at 13'
12				
14		10.0/10.0		
16				
18				
20				
22			CL	(20 - 30) Sandy CLAY spoil, light gray, moist, soft, medium plasticity, moisture content decreases with depth, hardness increases with depth, plasticity decreases with depth
24				
		10.0/10.0		
26				
28				
30				
32				(30 - 40) Sandy CLAY spoil, light gray, wet, soft, hardness increases with depth
34				
		10.0/10.0		
36				
38				
40				

LUMINANT

PBW

Pastor, Behling & Wheeler, LLC
2201 Double Creek Dr., Suite 4004
Round Rock, TX 78664
Tel (512) 671-3434 Fax (512) 671-3446

Notes:
1. This log should not be used separately from the report to which it is attached.

Well Materials
(0-20) Casing, 2" Sch 40 FJT PVC
(20-40) Screen, 2" Sch 40 FJT PVC, 0.010" slot

Annular Materials
(0'-37') Grout
(16'-18') Bentonite pellets
(18'-40') 20/40 sand

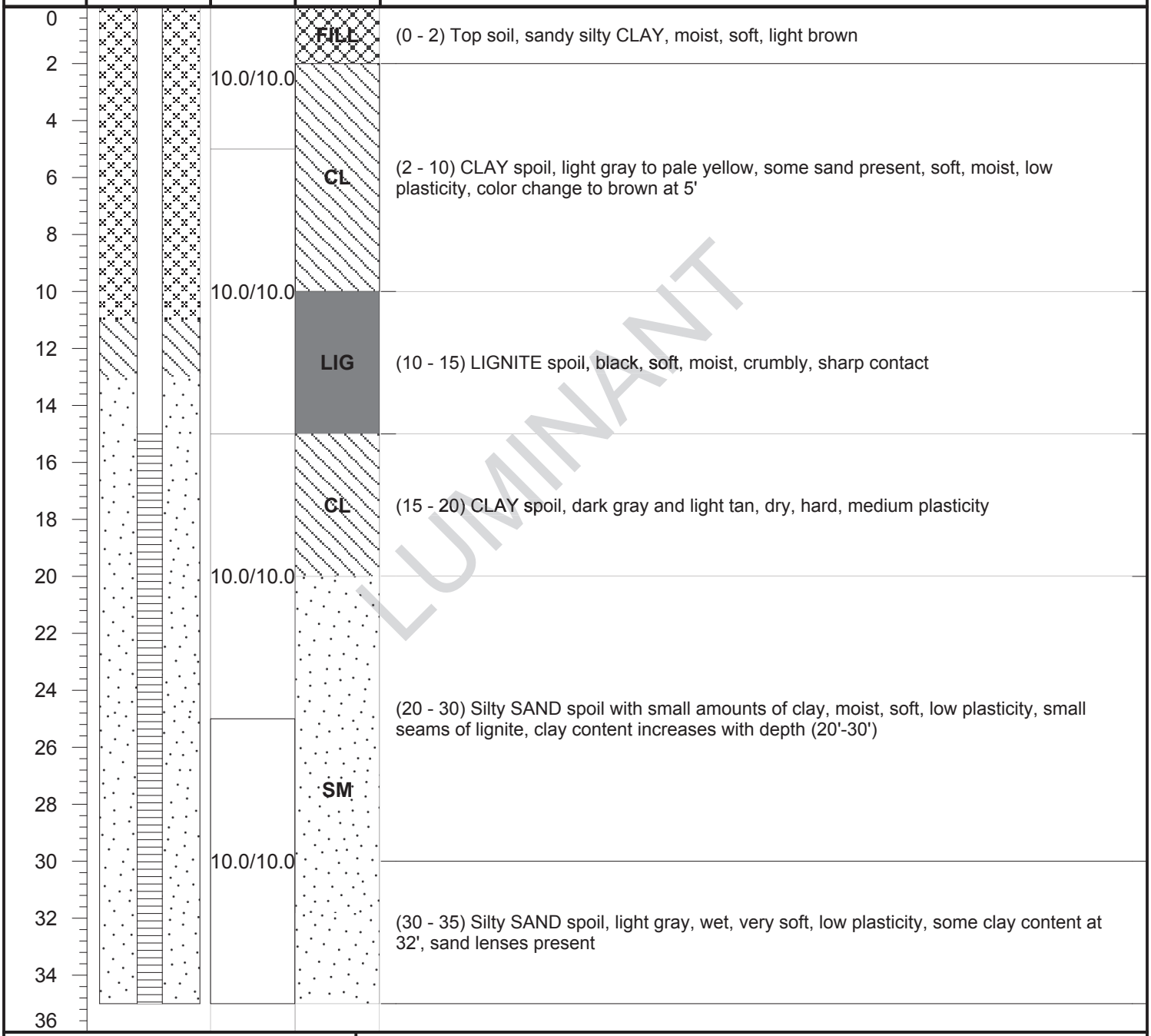
Luminant

Log of Boring: BMW-23

Martin Lake Steam Electric Station
Tatum, TX

PBW Project No. 5164B

Completion Date:	9/28/2015	Drilling Method:	Sonic
Drilling Company:	Walker-Hill Environmental	Borehole Diameter (in.):	6.5
Driller:	Timmy Beach	Total Depth (ft):	35
Driller's License:	5814M	TOC Elevation (ft. AMSL):	341.903
Logged By:	Jeremiah Bihl	Northing:	1061215105.129
Sampling Method:	4"x10' Core barrel	Easting:	2923179.729



LUMINANT

PBW

Pastor, Behling & Wheeler, LLC
2201 Double Creek Dr., Suite 4004
Round Rock, TX 78664
Tel (512) 671-3434 Fax (512) 671-3446

Notes:
1. This log should not be used separately from the report to which it is attached.

Well Materials
(0-15) Casing, 2" Sch 40 FJT PVC
(15-35) Screen, 2" Sch 40 FJT PVC, 0.010" slot

Annular Materials
(0'-11') Grout
(11'-13') Bentonite pellets
(13'-35') 20/40 sand

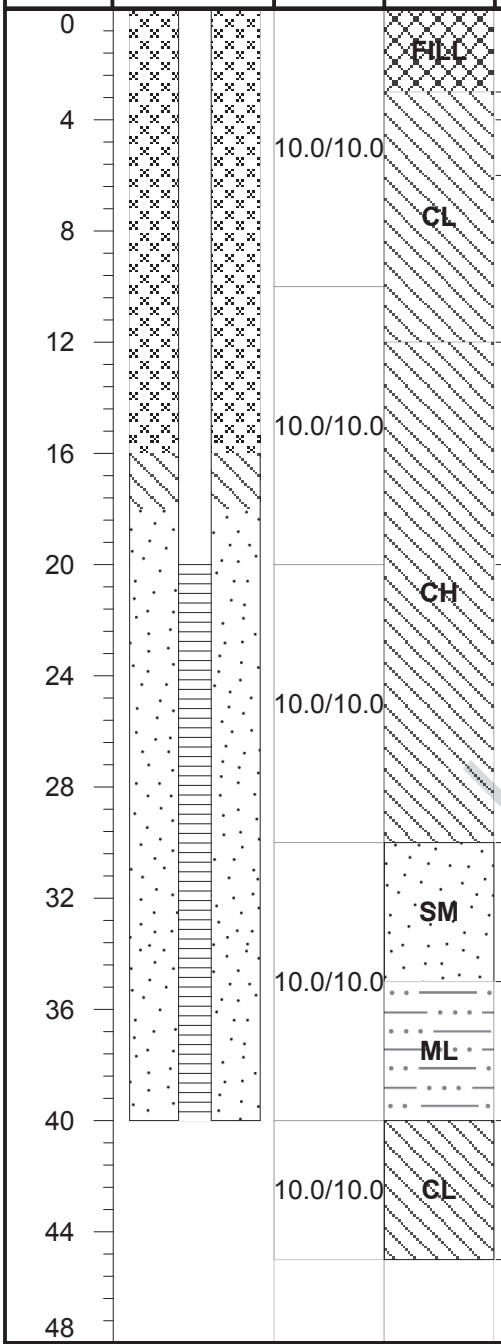
Luminant

Log of Boring: BMW-24

Martin Lake Steam Electric Station
Tatum, TX

PBW Project No. 5164B

Completion Date:	9/28/2015	Drilling Method:	Sonic
Drilling Company:	Walker-Hill Environmental	Borehole Diameter (in.):	6.5
Driller:	Timmy Beach	Total Depth (ft):	45
Driller's License:	5814M	TOC Elevation (ft. AMSL):	347.074
Logged By:	Jeremiah Bihl	Northing:	1066213874.314
Sampling Method:	4"x10' Core barrel	Easting:	2921447.467



Lithologic Description
(0 - 3) Top soil, brown, moist, roots present
(3 - 4) CLAY spoil, light brown with yellow and orange mottling, dry, soft, low plasticity
(4 - 6) CLAY spoil with some silt, tan to yellow/gray, moist, firm, medium plasticity
(6 - 12) CLAY spoil, black with lignite pieces (0.2-1 cm), dry, soft, low plasticity, sharp contact
(12 - 20) CLAY spoil, dark gray with yellow and red mottling, dry, hard, medium to high plasticity
(20 - 30) Silty CLAY spoil, light gray to gray, yellow and red mottling, moist, very soft, high plasticity, pieces of lignite present, decreasing silt content with depth and becomes harder, more brittle, and dry (28'-30'), increase in red, yellow, and black mottling at 28'
(30 - 35) Silty SAND spoil, gray, wet, soft, low plasticity, subangular to rounded
(35 - 40) Clayey SILT spoil, dry, firm, low plasticity, silt content decreases with depth
(40 - 45) Silty CLAY spoil, light gray, dry, firm, low plasticity

LUMINANT

PBW

Pastor, Behling & Wheeler, LLC
2201 Double Creek Dr., Suite 4004
Round Rock, TX 78664
Tel (512) 671-3434 Fax (512) 671-3446

Notes:
1. This log should not be used separately from the report to which it is attached.

Well Materials
(0-20) Casing, 2" Sch 40 FJT PVC
(20-40) Screen, 2" Sch 40 FJT PVC, 0.010" slot

Annular Materials
(0'-16') Grout
(16'-18') Bentonite pellets
(18'-40') 20/40 sand

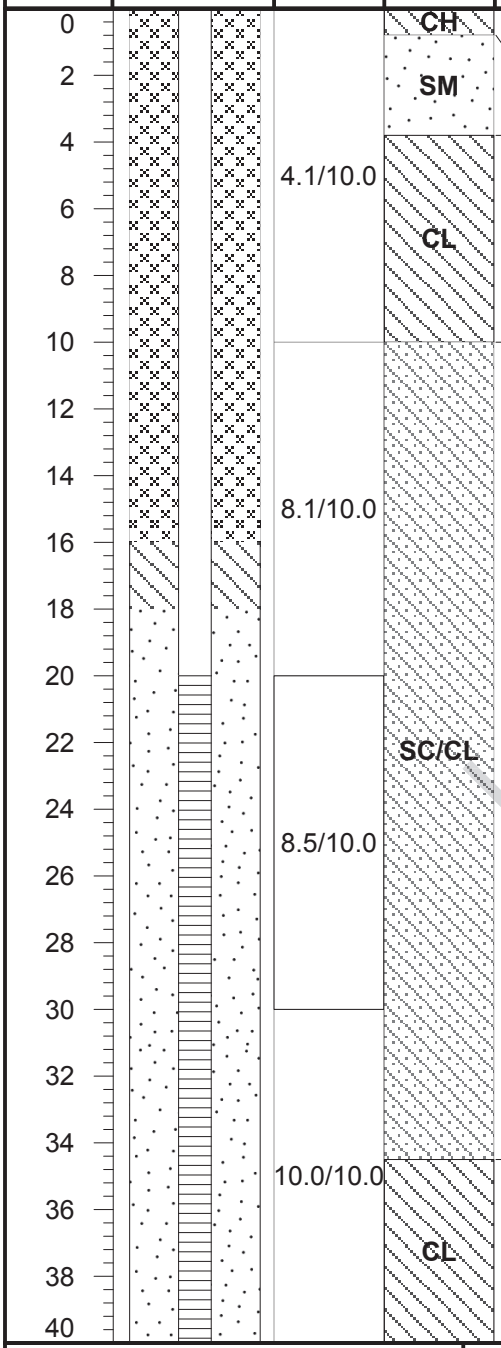
Luminant

Log of Boring: BMW-25

Martin Lake Steam Electric Station
Tatum, TX

PBW Project No. 5164B

Completion Date:	10/7/2015	Drilling Method:	Sonic
Drilling Company:	Walker-Hill Environmental	Borehole Diameter (in.):	6.5
Driller:	Timmy Beach	Total Depth (ft):	40
Driller's License:	5814M	TOC Elevation (ft. AMSL):	339.946
Logged By:	Nolan Townsend	Northing:	1070220215.073
Sampling Method:	4"x10' Core barrel	Easting:	2915715.233



Lithologic Description

(0 - 0.8) Silty CLAY spoil, gray, dry to moist, soft, moderate to high plasticity, trace roots, sharp basal contact

(0.8 - 3.8) Silty, clayey SAND spoil, yellow brown/light brown, dry, soft, low to moderate plasticity, very fine sand, loose/unconsoldated, trace roots, sharp basal contact

(3.8 - 10) Sandy CLAY spoil, gray, dry, frim to hard, low to moderate plasticity, trace sand, trace to moderate red mottling, sharp basal contact

(10 - 34.5) Clayey SAND spoil/sandy CLAY spoil, brownish yellow to light brown to gray, moist to very moist to wet (12'-20', 20'-35'), soft, moderate to high plasticity, trace to moderate orange and rust red mottling, dark gray-gray color 17.5'-20.0', continues as brown-yellow below 20.0', very fine sand, small linterval of clay from 27.4'-28.4' then returns to sandy clay, sharp basal contact

(34.5 - 40) Sandy CLAY spoil, light gray to gray, moist to very moist, firm to hard, low to moderate plasticity, moderate to abundant orange and rust mottling, localized sandy interbeds, very fine sand

LUMINANT

PBW

Pastor, Behling & Wheeler, LLC
2201 Double Creek Dr., Suite 4004
Round Rock, TX 78664
Tel (512) 671-3434 Fax (512) 671-3446

Notes:
1. This log should not be used separately from the report to which it is attached.

Well Materials
(0-20) Casing, 2" Sch 40 FJT PVC
(20-40) Screen, 2" Sch 40 FJT PVC, 0.010" slot

Annular Materials
(0'-16') Grout
(16'-18') Bentonite pellets
(18'-40') 20/40 sand

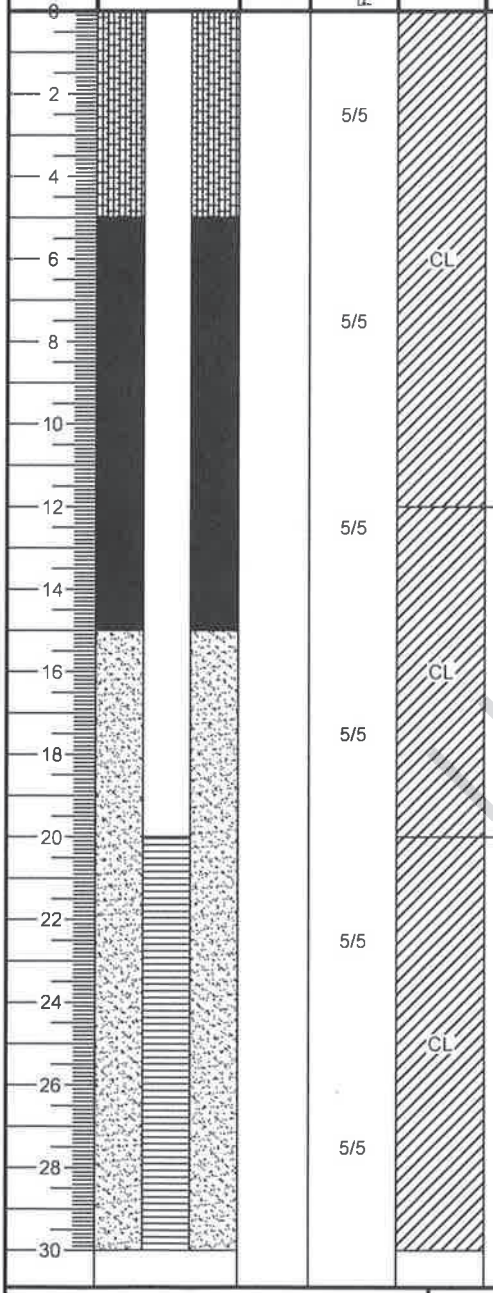
LUMINANT

Log of Boring: BMW-26

A-1 AREA LANDFILL
TATUM, TEXAS

PBW PROJECT No.: 5164-F

Completion Date:	8-31-16	Drilling Method:	HS Auger
Drilling Company:	Walker-Hill Env.	Borehole Diameter (in.):	10.25"
Driller:	Jeremy Thornhill	Total Depth (ft):	30.0'
Driller's License:	NA	Northing:	221187.022
Field Supervisor:	RKS	Easting:	2921306.755
Sampling Method:	5'Macrocore Sampler	Ground Elev. (ft AMSL):	365.958



Lithologic Description

0.0-12.0 - Clay with silt and lignite fragments, dark gray-black, soft, moist, low plasticity

Wet at 4.0'

12.0-20.0 - Silty clay, dark brown, saturated, low plasticity

20.0-30.0 - Silty clay, fine grained, dark brown, saturated, low plasticity

LUMINANT

PBW
Pastor, Behling & Wheeler, LLC
2201 Double Creek Dr., Suite 4004
Round Rock, TX 78664
Tel (512) 671-3434 Fax (512) 671-3446

Notes:

1. All logged material is mine spoil.

Depth (bgs)	Well Materials
0' - 20'	Casing, 4" Sch 40 PVC, FJT
20' - 30'	Screen, 4" Sch 40 PVC, .010 Slot

Depth (bgs)	Annular Materials
0' - 5'	Grout
5' - 15'	Bentonite Pellet Seal
15' - 30'	20/40 Sand

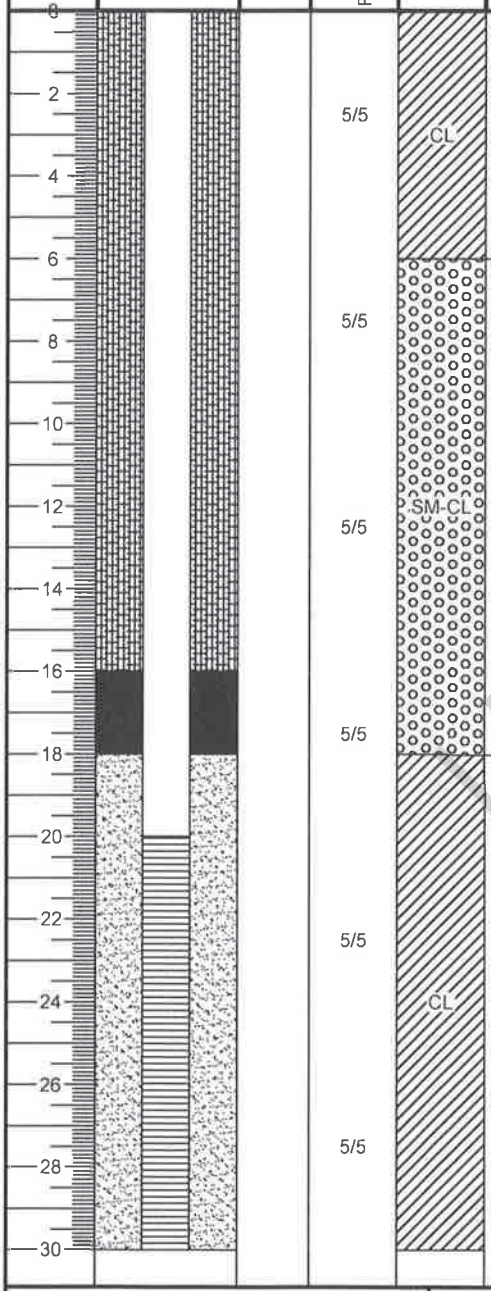
LUMINANT

Log of Boring: BMW-27

A-1 AREA LANDFILL
TATUM, TEXAS

PBW PROJECT No.: 5164-F

Completion Date:	9-1-16	Drilling Method:	HS Auger
Drilling Company:	Walker-Hill Env.	Borehole Diameter (in.):	10.25"
Driller:	Jeremy Thornhill	Total Depth (ft):	30.0'
Driller's License:	NA	Northing:	220024.389
Field Supervisor:	RKS	Easting:	2922347.297
Sampling Method:	5'Macrocore Sampler	Ground Elev. (ft AMSL):	373.463



Lithologic Description

0.0-6.0 - Clay with silt and fine sand, dark gray, soft, moist, low plasticity

Wet at 5.0'

6.0-18.0 - Silty sand with clay, brown, soft, moist

18.0-30.0 - Silty clay with lignite, dark brown-gray, wet, low plasticity

LUMINANT

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Round Rock, TX 78664
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Notes:
1. All logged material is mine spoil.

Depth (bgs)	Well Materials
0' - 20'	Casing, 4" Sch 40 PVC, FJT
20' - 30'	Screen, 4" Sch 40 PVC, .010 Slot

Depth (bgs)	Annular Materials
0' - 16'	Grout
16' - 18'	Bentonite Pellet Seal
18' - 30'	20/40 Sand

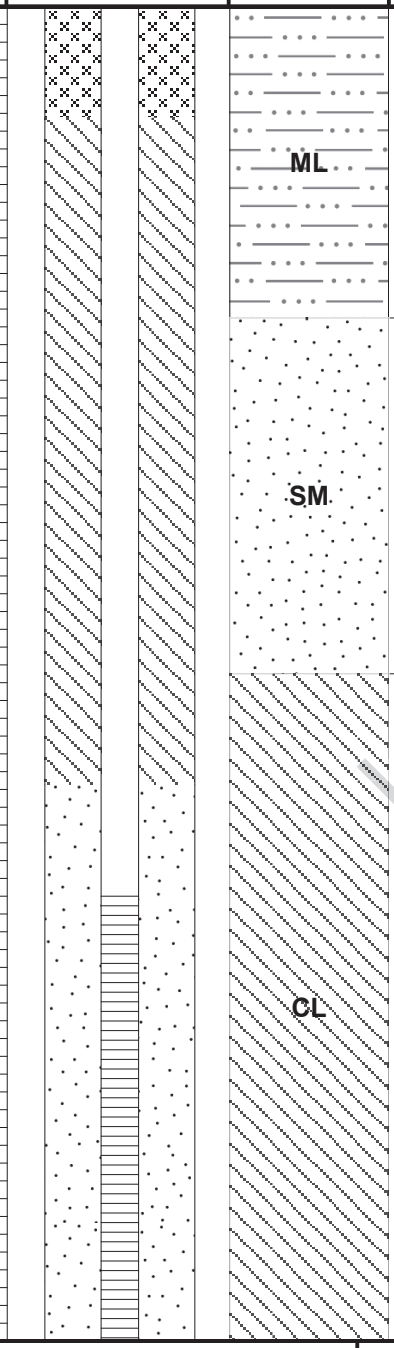
Luminant

Log of Boring: BMW-28

A-1 Area Landfill
Tatum, TX

PBW Project No. 5164F

Completion Date:	10/27/2016	Drilling Method:	HSA
Drilling Company:	ETTL	Borehole Diameter (in.):	10.25
Driller:	Tommy Cook	Total Depth (ft):	60
Driller's License:	2853	TOC Elevation (ft. AMSL):	373.208
Logged By:	Jeremiah Bihl	Northing:	
Sampling Method:	4"x10' Core barrel	Easting:	

Depth (ft)	Well Materials	USCS	Lithologic Description
0 – 14		ML	(0 - 14) Clayey SILT (spoil), black to brown, some pieces of coal, moist, low plasticity.
14 – 30		SM	(14 - 30) SAND with silt and small amounts of clay (spoil), some coal pieces, black, soft, dry, low plasticity.
30 – 60		CL	(30 - 60) CLAY with some silt (spoil), pieces of coal, soft, black to dark gray, dry, low plasticity, possible sandstone/siltstone boulder at 40'.

LUMINANT

PBW

Pastor, Behling & Wheeler, LLC
2201 Double Creek Dr., Suite 4004
Round Rock, TX 78664
Tel (512) 671-3434 Fax (512) 671-3446

Notes:
1. This log should not be used separately from the report to which it is attached.
2. All logged material is mine spoil.

Well Materials
(0-40) Casing, 2" Sch 40 FJT PVC
(40-60) Screen, 2" Sch 40 FJT PVC, 0.010" slot

Annular Materials
(0'-5') Grout
(5'-35') Bentonite pellets
(35'-60') 20/40 sand

Luminant

Log of Boring: BMW-29

Big Brown Steam Electric Station
Franklin, Texas

Golder Project No. 19122434E

Completion Date:	5/31/2019	Drilling Method:	Sonic
Drilling Company:	Walker-Hill Environmental	Borehole Diameter (in.):	6
Driller:	Rodney Labrosse	Total Depth (ft):	40
Driller's License:	60059	TOC Elevation (ft. AMSL):	380.83
Logged By:	Kelsey Worley	Northing:	3565716
Sampling Method:	4"x10' Core barrel	Easting:	355228.3

Depth (ft)	Well Materials	Recovery (ft/ft)	USCS	Lithologic Description
0				
5		1.8/10.0	NR	(0 - 8.2) No return
10			CH	(8.2 - 10) CLAY, some fine sand present, brown to gray, dry, firm, no plasticity
			NR	(10 - 12.7) No terturn
15		7.3/10.0	CH	(12.7 - 24) CLAY, dark gray, some organic staining, pieces of lignite present, slighlty moist, firm, moderate plasticity, fine to large lignite 21'-23.6'
20				
25		9.6/10.0	CL	(24 - 29.8) Silty CLAY, gray, moist, soft, moderate plasticity, minor sand conent at 28.2', Saturated at 29.8'
30				
35		9.4/10.0	SC	(29.8 - 40) Clayey SAND, fine to very fine sand, gray to brown, sand content decreases with depth, saturated, moist at 34.7, dry at 38.1
40				

LUMINANT

GOLDER
2201 Double Creek Dr., Suite 4004
Round Rock, Texas 78664
O·512.671.3434 F·512.671.3446

APPENDIX F-Revision 2 February 27, 2024

Notes:
1. This log should not be used separately from the report to which it is attached.
2. Entire core is composed of mine spoil.

Well Materials
(+3.77 - 30) Casing, 2" Sch 40 FJT PVC
(30 - 40) Screen, 2" Sch 40 FJT PVC, 0.010" slot

Annular Materials
(0'-25') Grout
(25'-28') Bentonite pellets
(28'-40') 20/40 sand

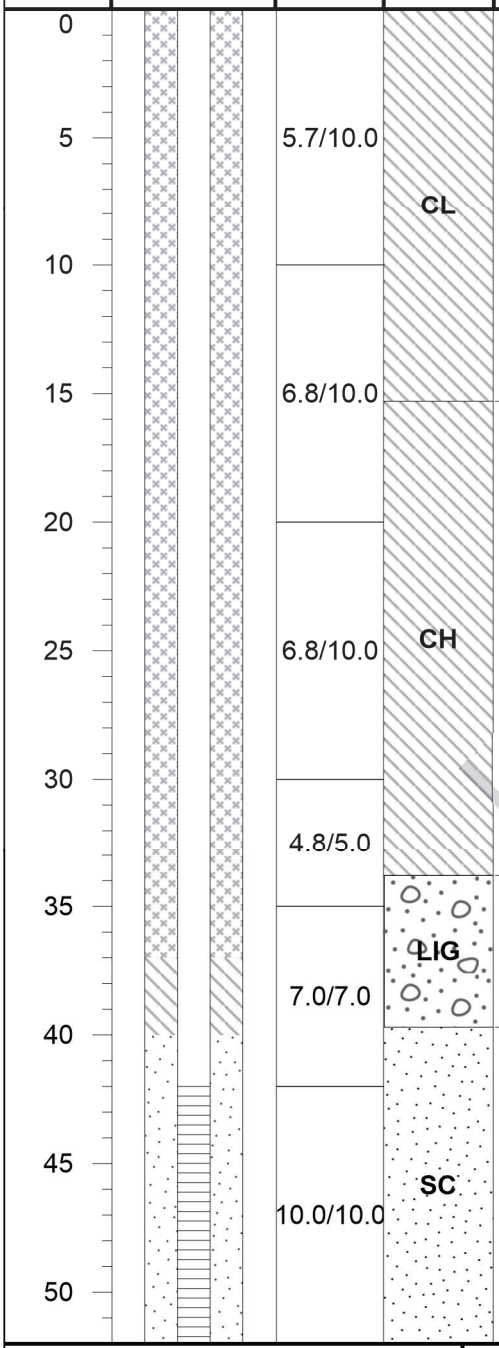
Luminant

Log of Boring: BMW-30

Big Brown Steam Electric Station
Franklin, Texas

Golder Project No. 19122434E

Completion Date:	5/30/2019	Drilling Method:	Sonic
Drilling Company:	Walker-Hill Environmental	Borehole Diameter (in.):	6
Driller:	Rodney Labrosse	Total Depth (ft):	52
Driller's License:	60059	TOC Elevation (ft. AMSL):	363.35
Logged By:	Kelsey Worley	Northing:	3568008
Sampling Method:	4"x10' Core barrel	Easting:	357427.5



Lithologic Description
(0 - 15.3) Sandy CLAY, dark gray, fine sand throughout, pebble to cobble size lignite throughout, trace Fe staining, roots in top 2', 9'-15.3' dark gray with light gray and some trace mottling
(15.3 - 33.8) CLAY, dark gray transition to mix of tan, orange, gray, mottle hard to very hard, moderate to high plastitcity, transition to greenish/ gray at 20', rooting at 25.2'
(33.8 - 39.7) LIGNITE, fine to large cobble size pieces
(39.7 - 52) Clayey SAND, wet at 40' very fine sand in clay, light gray to gray with some black, very tight 42 to 46, wet again below 46'

LUMINANT

GOLDER
2201 Double Creek Dr., Suite 4004
Round Rock, Texas 78664
O·512.671.3434 F·512.671.3446

Notes:
1. This log should not be used separately from the report to which it is attached.
2. Entire core is composed of mine spoil.

Well Materials
(+3 - 42) Casing, 2" Sch 40 FJT PVC
(42 - 52) Screen, 2" Sch 40 FJT PVC, 0.010" slot

Annular Materials
(0'-37') Grout
(37'-40') Bentonite pellets
(40'-52') 20/40 sand

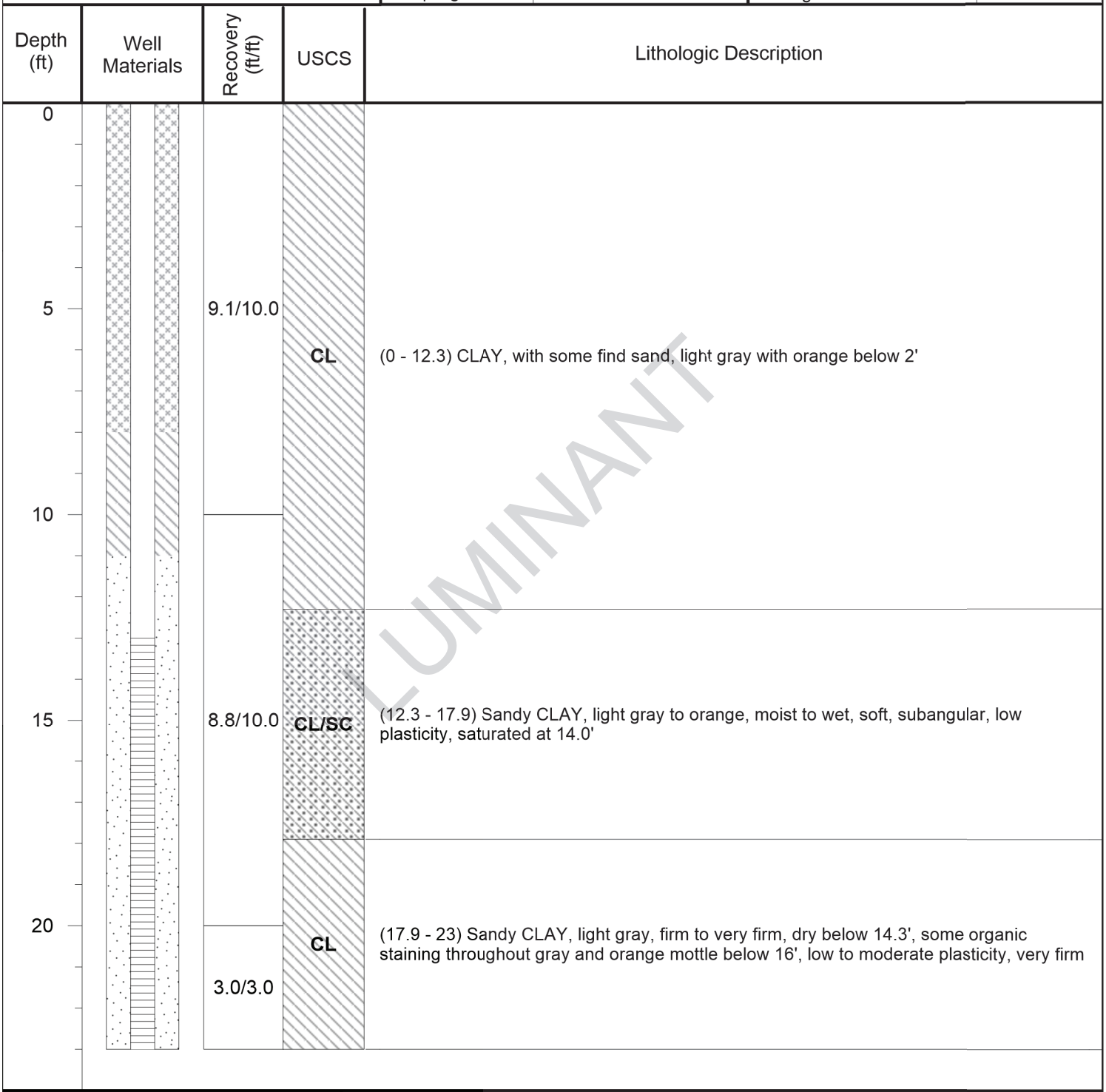
Luminant

Log of Boring: BMW-31

Big Brown Steam Electric Station
Franklin, Texas

Golder Project No. 19122434E

Completion Date:	5/31/2019	Drilling Method:	Sonic
Drilling Company:	Walker-Hill Environmental	Borehole Diameter (in.):	6
Driller:	Rodney Labrosse	Total Depth (ft):	23
Driller's License:	60059	TOC Elevation (ft. AMSL):	324.33
Logged By:	Kelsey Worley	Northing:	3565972
Sampling Method:	4"x10' Core barrel	Easting:	357863.1



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GOLDER
2201 Double Creek Dr., Suite 4004
Round Rock, Texas 78664
O·512.671.3434 F·512.671.3446

Notes:
1. This log should not be used separately from the report to which it is attached.
2. Entire core is composed of mine spoil.

Well Materials
(+3.60 - 13) Casing, 2" Sch 40 FJT PVC
(13'- 23') Screen, 2" Sch 40 FJT PVC, 0.010" slot

Annular Materials
(0'-8') Grout
(8'-11') Bentonite pellets
(11'-23') 20/40 sand

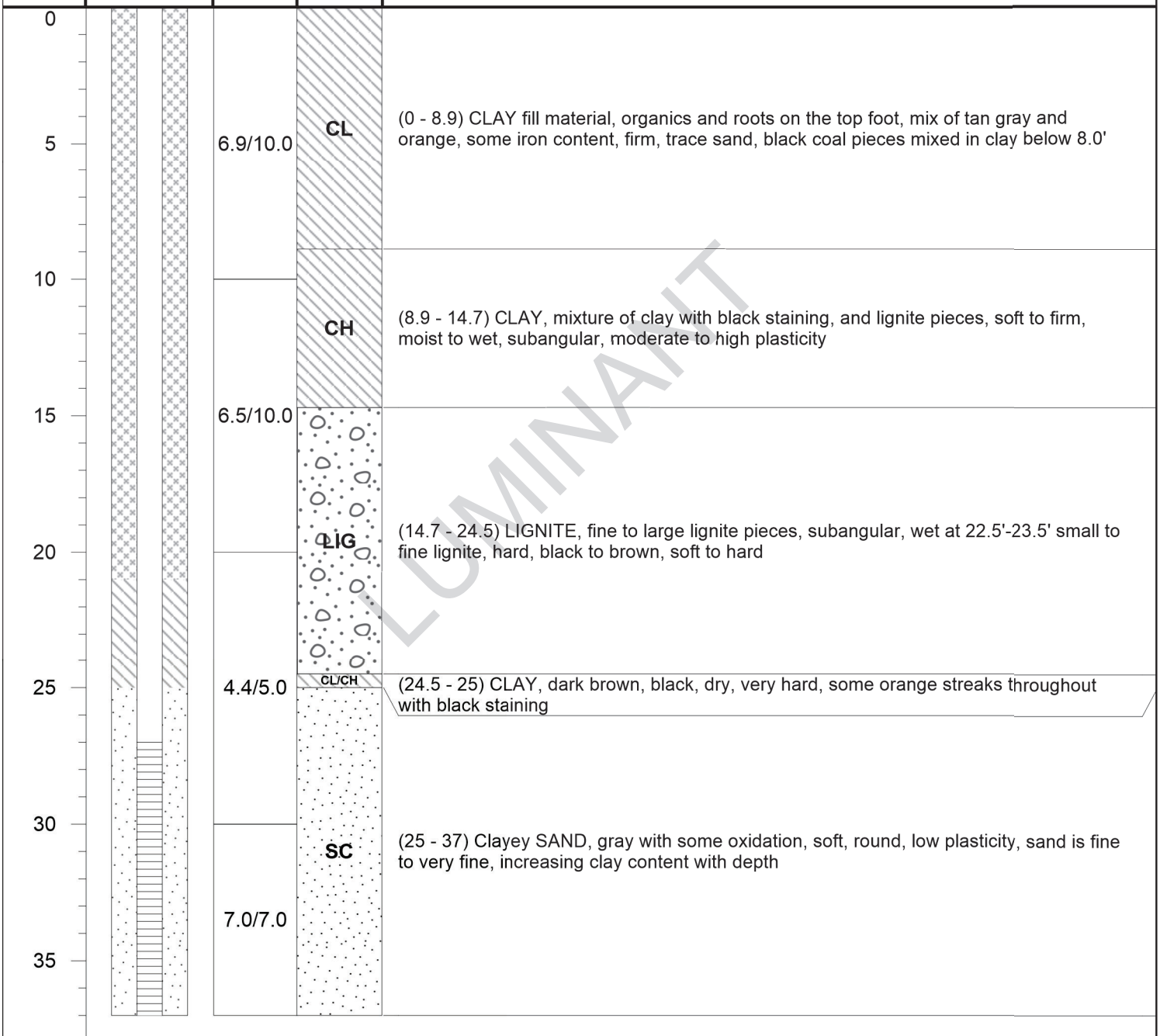
Luminant

Log of Boring: BMW-32

Big Brown Steam Electric Station
Franklin, Texas

Golder Project No. 19122434E

Completion Date:	5/29/2019	Drilling Method:	Sonic
Drilling Company:	Walker-Hill Environmental	Borehole Diameter (in.):	6
Driller:	Rodney Labrosse	Total Depth (ft):	37
Driller's License:	60059	TOC Elevation (ft. AMSL):	344.09
Logged By:	Kelsey Worley	Northing:	3567175
Sampling Method:	4"x10' Core barrel	Easting:	357875



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GOLDER
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Round Rock, Texas 78664
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APPENDIX F-Revision 2 February 27, 2024

Notes:
1. This log should not be used separately from the report to which it is attached.
2. Entire core is composed of mine spoil.

Well Materials
(+3 - 27) Casing, 2" Sch 40 FJT PVC
(27 - 37) Screen, 2" Sch 40 FJT PVC, 0.010" slot

Annular Materials
(0'-21') Grout
(21'-25') Bentonite pellets
(25'-37') 20/40 sand

Luminant

Log of Boring: BMW-33

Big Brown Steam Electric Station
Franklin, Texas

Golder Project No. 19122434E

Completion Date:	5/30/2019	Drilling Method:	Sonic
Drilling Company:	Walker-Hill Environmental	Borehole Diameter (in.):	6
Driller:	Rodney Labrosse	Total Depth (ft):	48
Driller's License:	60059	TOC Elevation (ft. AMSL):	427.7
Logged By:	Sergio Ruiz	Northing:	3568008
Sampling Method:	4"x10' Core barrel	Easting:	357427.5

Depth (ft)	Well Materials	Recovery (ft/ft)	USCS	Lithologic Description
0				
5		6.2/10.0	SP	(0 - 16.7) SAND, fine grained, wet, soft, subround, no plasticity, mix of orange, light orange, few gray clay lenses, thick clay lense 7.3' to 7.8', saturated at 11', trace organics in top 1'
10				
15		6.4/10.0		
			CH	(16.7 - 18.4) CLAY, dark gray, moist, very firm, high plasticity
20				
25		7.3/10.0		
30				
35		6.1/10.0	SC	(18.4 - 48.9) Clayey SAND, wet below 20', mix of gray, light gray, and tan, soft to firm, large pieces of lignite 18.5' to 20' and mixed throughout, dark gray fat clay lense 27.7'-28.2', mixed clay nodules below 29', saturated at 38',
40				
45		6.9/9.0		
				(48.9 - 49) CLAY , gray stiff, with some sand throughout, some black lignite pieces
50				

LUMINANT

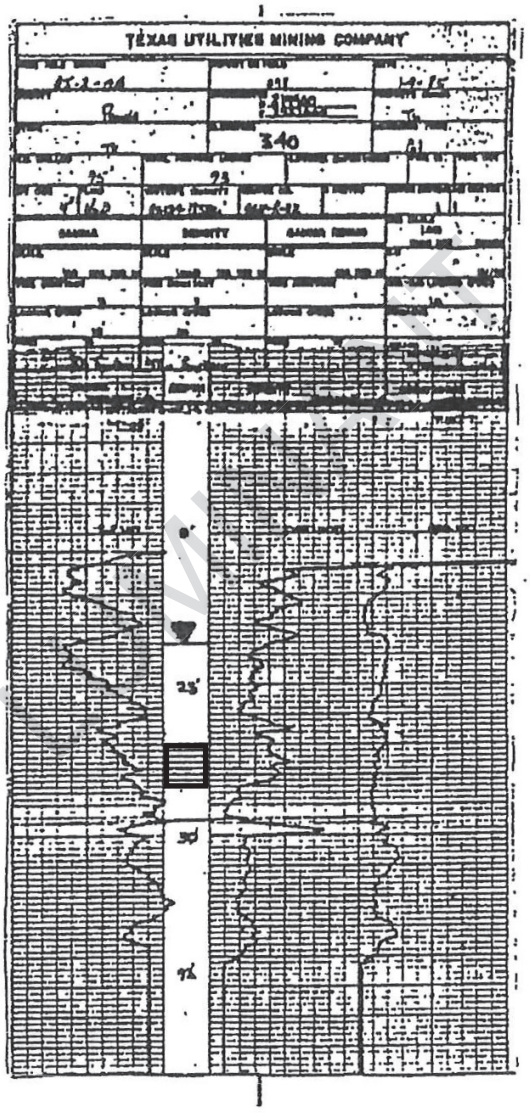
GOLDER
2201 Double Creek Dr., Suite 4004
Round Rock, Texas 78664
O·512.671.3434 F·512.671.3446

Notes:
1. This log should not be used separately from the report to which it is attached.
2. Entire core is composed of mine spoil.

Well Materials
(+3 - 38) Casing, 2" Sch 40 FJT PVC
(38 - 48) Screen, 2" Sch 40 FJT PVC, 0.010" slot

Annular Materials
(0'-32') Grout
(32'-36') Bentonite pellets
(36'-48') 20/40 sand

AI-2-OB



APPENDIX B

LABORATORY ANALYTICAL REPORTS

LUMINANT

June 18, 2019

Will Vienne
Golder
2201 Double Creek Dr #4004
Round Rock, Texas 78664
TEL: (512) 671-3434
FAX (512) 671-3446

Order No.: 1905185

RE: Luminant-A1 Landfill

Dear Will Vienne:

DHL Analytical, Inc. received 11 sample(s) on 5/16/2019 for the analyses presented in the following report.

There were no problems with the analyses and all data met requirements of NELAP except where noted in the Case Narrative. All non-NELAP methods will be identified accordingly in the case narrative and all estimated uncertainties of test results are within method or EPA specifications.

If you have any questions regarding these tests results, please feel free to call. Thank you for using DHL Analytical.

Sincerely,

John DuPont
General Manager

LUMINANT

This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211-19-24

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Subcontract Report 1905185 65

LUMINANT

DHL ANALYTICAL
2300 Double Creek Dr. ■ Round Rock, TX 78664
Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

nelap

№ 82167

CHAIN-OF-CUSTODY

CLIENT: GOLDER
ADDRESS: 2201 DOUBLE CREEK DR, ROUND ROCK, TX 78664
PHONE: 512-671-3434 FAX/E-MAIL: 512-671-3446
DATA REPORTED TO: WILL VIENNE
ADDITIONAL REPORT COPIES TO:

DATE: 5-15-19 PAGE 1 OF 1
PO #:
DHL WORK ORDER #: 1905185
PROJECT LOCATION OR NAME: LUMINANT - A1 LANDFILL
CLENT PROJECT #: 19122262-D COLLECTOR: J. BRAYTON

Authorize 5% surcharge for TRRP Report? ☐ Yes ☐ No

S=SOIL P=PAINT
W=WATER SL=SLUDGE
A=AIR O=OTHER
L=LIQUID SO=SOLID
SE=SEDIMENT

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	HCl	HNO_3	H_2SO_4 ☐ NaOH ☐	ICE	UNPRESERVED	BTEX ☐ MTBE ☐ [METHOD 8021]	TPH 1005 ☐ TPH 1006 ☐ HOLD 1006 ☐	GRO [METHOD 8015] ☐ DRO [METHOD 8105] ☐	VOC 8260 ☐ VOC 624 ☐ VOC 8260/5035 ☐	SVOC 8270 ☐ PAH 8270 ☐ HOLD PAH ☐ SVOC 625 ☐	8270 PEST ☐ 625 PEST/PCB ☐ 608 PCB ☐	8270 O-P PEST ☐ 8082 PCB ☐ 8270 PCB ☐	8321 HERB ☐ T PHOS, AMMONIA ☐	METALS 6020 ☐ METALS 200.8 ☐ DISS. METALS ☐	RCRA ☐ TX11 ☐	PH ☐ HEX CHROM ☐ ALKALINITY ☐ COD ☐	CHLORIDE ☐ ANIONS	TCLP-SVOC ☐ VOC ☐ PEST ☐ HERB ☐	TCLP-METALS ☐ RCRA 8 ☐ TX-11 ☐ Pb ☐	RCI ☐ FLASHPOINT ☐ DGAS ☐	TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐	APPENDIX III & IV	Alk, NO_3, PO_4, Na, Mg, K	FERROUS AND FERRIC IRON	FIELD NOTES
BMW-24	01	5-15-19	0735	W		7																							X	X	X	
BMW-23	02		0825	W		7																							X	X	X	
BMW-22	03		0915	W		7																							X	X	X	
BMW-21	04		0955	W		7																							X	X	X	
BMW-27	05		1055	W		7																							X	X	X	
BMW-26	06		1140	W		7																							X	X	X	
BMW-11AR	07		1235	W		7																							X	X	X	
BMW-19	08		1325	W		7																							X	X	X	
BMW-18	09		1410	W		7																							X	X	X	
BMW-28	10		1500	W		7																							X	X	X	
BMW-20	11		1600	W		7																							X	X	X	

LUMINANT

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
[signature]	5-16-19 9:15	[signature]
[signature]	5-16-19 11:21	[signature]

☐ DHL DISPOSAL @ $5.00 each ☐ Return

TURN AROUND TIME
RUSH ☐ CALL FIRST
1 DAY ☐ CALL FIRST
2 DAY ☐
NORMAL ☒
OTHER ☐

LABORATORY USE ONLY:
RECEIVING TEMP: 1.3/0.4/1.0/2.3 THERM #: 73
CUSTODY SEALS: ☐ BROKEN ☐ INTACT ☒ NOT USED
CARRIER: ☐ LONE STAR ☐ FEDEX ☐ UPS ☐ OTHER
☐ COURIER DELIVERY
☒ HAND DELIVERED

DHL COC Rev 1 | FEB 2010

Eric Lau

From: John DuPont
Sent: Tuesday, May 28, 2019 11:35 AM
To: Eric Lau
Subject: FW: CCR Analysis

Appendix III Parameters:
Metals (Ca and B)
Anions (Cl, F, and SO4)
TDS

Appendix IV Parameters:

Metals (As, Ba, Be, Cd, Co, Cr, Hg, Li, Mo, Pb, Sb, Se, and Tl)
Ra-226
Ra-228

From: Vienne, Will [mailto:William_Vienne@golder.com]
Sent: Tuesday, April 09, 2019 12:48 PM
To: John DuPont <dupont@dhlanalytical.com>
Subject: CCR Analysis

LUMINANT

DHL Analytical, Inc.

Sample Receipt Checklist

Client Name Golder | Date Received: 5/16/2019

Work Order Number 1905185 | Received by EL

Checklist completed by: _____ (Signature) 5/16/2019 (Date) | Reviewed by DL (Initials) 5/16/2019 (Date)

Carrier name Hand Delivered

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑ EL 5/16/19	No ☑	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	1.3 °C
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH<2 acceptable upon receipt?	Yes ☑	No ☐	NA ☐ LOT # 11837
	Adjusted? No		Checked by EL
Water - ph>9 (S) or ph>10 (CN) acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted? _____		Checked by _____

Any No response must be detailed in the comments section below.

Client contacted _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments: One VOA for sample "B/MW-23" broken in Login.

Corrective Action Proceed w/ 2 remaining unbroken VOAs

LUMINANT

DHL Analytical, Inc. **Date:** *18-Jun-19*

CLIENT: Golder
Project: Luminant-A1 Landfill
Lab Order: 1905185

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Method SW6020A - Metals Analysis
Method SW7470A - Mercury Analysis
Method E300 - Anions Analysis
Method M2320 B - Alkalinity Analysis
Method M3500-Fe D - Ferrous Iron Analysis (this parameter is not NELAP certified)
Method M3500-Fe D - Ferric Iron (calculation) (this calculation is not NELAP certified).
Method M4500-P E - Orthophosphate Analysis
Method M2540C - TDS Analysis
Sub-contract - Radium-228 and Radium-226 analyses by methods E904 and SM 7500 Ra B M. Analyzed at Pace Analytical.

LOG IN

The samples were received and log-in performed on 5/16/19. A total of 11 samples were received. For sample BMW-23 one VOA vial was broken in login. Proceeded with analysis of Ferrous Iron with the remaining two VOA vials. The samples arrived in good condition and were properly packaged.

METALS ANALYSIS

For Metals analysis performed on 5/22/19 the matrix spike and matrix spike duplicate recoveries were out of control limits for three analytes. These are flagged accordingly in the QC summary report. The sample selected for the matrix spike and matrix spike duplicate was from this work order. The LCS was within control limits for these analytes. No further corrective actions were taken.

For Metals analysis performed on 5/22/19 the RPD for the serial dilution was slightly above control limits for Boron. This is flagged accordingly. The PDS was within control limits for this analyte. No further corrective actions were taken.

LUMINANT

DHL Analytical, Inc.

Date: *18-Jun-19*

CLIENT: Golder
Project: Luminant-A1 Landfill
Lab Order: 1905185

Work Order Sample Summary

Lab Smp ID	Client Sample ID	Tag Number	Date Collected	Date Recved
1905185-01	BMW-24		05/15/19 07:35 AM	5/16/2019
1905185-02	BMW-23		05/15/19 08:25 AM	5/16/2019
1905185-03	BMW-22		05/15/19 09:15 AM	5/16/2019
1905185-04	BMW-21		05/15/19 09:55 AM	5/16/2019
1905185-05	BMW-27		05/15/19 10:55 AM	5/16/2019
1905185-06	BMW-26		05/15/19 11:40 AM	5/16/2019
1905185-07	BMW-11AR		05/15/19 12:35 PM	5/16/2019
1905185-08	BMW-19		05/15/19 01:25 PM	5/16/2019
1905185-09	BMW-18		05/15/19 02:10 PM	5/16/2019
1905185-10	BMW-28		05/15/19 03:00 PM	5/16/2019
1905185-11	BMW-20		05/15/19 04:00 PM	5/16/2019

LUMINANT

DHL Analytical, Inc. *18-Jun-19*

Lab Order: 1905185
Client: Golder
Project: Luminant-A1 Landfill

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1905185-01A	BMW-24	05/15/19 07:35 AM	Aqueous	M3500-Fe	Ferrous Iron Prep Water	05/20/19 02:56 PM	91002
1905185-01B	BMW-24	05/15/19 07:35 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/20/19 09:30 AM	90989
	BMW-24	05/15/19 07:35 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/20/19 09:30 AM	90989
	BMW-24	05/15/19 07:35 AM	Aqueous	SW7470A	Mercury Aq Prep	05/23/19 09:25 AM	91059
1905185-01C	BMW-24	05/15/19 07:35 AM	Aqueous	M2320 B	Alkalinity Preparation	05/17/19 09:00 AM	90967
	BMW-24	05/15/19 07:35 AM	Aqueous	E300	Anion Preparation	05/16/19 01:49 PM	90934
	BMW-24	05/15/19 07:35 AM	Aqueous	E300	Anion Preparation	05/16/19 01:49 PM	90934
	BMW-24	05/15/19 07:35 AM	Aqueous	M4500-P E	Orthophosphate Prep	05/16/19 02:09 PM	90950
	BMW-24	05/15/19 07:35 AM	Aqueous	M2540C	TDS Preparation	05/20/19 12:59 PM	91001
1905185-02A	BMW-23	05/15/19 08:25 AM	Aqueous	M3500-Fe	Ferrous Iron Prep Water	05/20/19 02:56 PM	91002
1905185-02B	BMW-23	05/15/19 08:25 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/20/19 09:30 AM	90989
	BMW-23	05/15/19 08:25 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/20/19 09:30 AM	90989
	BMW-23	05/15/19 08:25 AM	Aqueous	SW7470A	Mercury Aq Prep	05/23/19 09:25 AM	91059
1905185-02C	BMW-23	05/15/19 08:25 AM	Aqueous	M2320 B	Alkalinity Preparation	05/17/19 09:00 AM	90967
	BMW-23	05/15/19 08:25 AM	Aqueous	E300	Anion Preparation	05/16/19 01:49 PM	90934
	BMW-23	05/15/19 08:25 AM	Aqueous	E300	Anion Preparation	05/16/19 01:49 PM	90934
	BMW-23	05/15/19 08:25 AM	Aqueous	M4500-P E	Orthophosphate Prep	05/16/19 02:09 PM	90950
	BMW-23	05/15/19 08:25 AM	Aqueous	M2540C	TDS Preparation	05/20/19 12:59 PM	91001
1905185-03A	BMW-22	05/15/19 09:15 AM	Aqueous	M3500-Fe	Ferrous Iron Prep Water	05/20/19 02:56 PM	91002
1905185-03B	BMW-22	05/15/19 09:15 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/20/19 09:30 AM	90989
	BMW-22	05/15/19 09:15 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/20/19 09:30 AM	90989
	BMW-22	05/15/19 09:15 AM	Aqueous	SW7470A	Mercury Aq Prep	05/23/19 09:25 AM	91059
1905185-03C	BMW-22	05/15/19 09:15 AM	Aqueous	M2320 B	Alkalinity Preparation	05/17/19 09:00 AM	90967
	BMW-22	05/15/19 09:15 AM	Aqueous	E300	Anion Preparation	05/16/19 01:49 PM	90934
	BMW-22	05/15/19 09:15 AM	Aqueous	E300	Anion Preparation	05/16/19 01:49 PM	90934
	BMW-22	05/15/19 09:15 AM	Aqueous	M4500-P E	Orthophosphate Prep	05/16/19 02:09 PM	90950
	BMW-22	05/15/19 09:15 AM	Aqueous	M2540C	TDS Preparation	05/20/19 12:59 PM	91001
1905185-04A	BMW-21	05/15/19 09:55 AM	Aqueous	M3500-Fe	Ferrous Iron Prep Water	05/20/19 02:56 PM	91002

LUMINANT

DHL Analytical, Inc. *18-Jun-19*

Lab Order: 1905185
Client: Golder
Project: Luminant-A1 Landfill

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1905185-04B	BMW-21	05/15/19 09:55 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/20/19 09:30 AM	90989
	BMW-21	05/15/19 09:55 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/20/19 09:30 AM	90989
	BMW-21	05/15/19 09:55 AM	Aqueous	SW7470A	Mercury Aq Prep	05/23/19 09:25 AM	91059
1905185-04C	BMW-21	05/15/19 09:55 AM	Aqueous	M2320 B	Alkalinity Preparation	05/17/19 09:00 AM	90967
	BMW-21	05/15/19 09:55 AM	Aqueous	E300	Anion Preparation	05/16/19 01:49 PM	90934
	BMW-21	05/15/19 09:55 AM	Aqueous	E300	Anion Preparation	05/16/19 01:49 PM	90934
	BMW-21	05/15/19 09:55 AM	Aqueous	M4500-P E	Orthophosphate Prep	05/16/19 02:09 PM	90950
	BMW-21	05/15/19 09:55 AM	Aqueous	M2540C	TDS Preparation	05/20/19 12:59 PM	91001
1905185-05A	BMW-27	05/15/19 10:55 AM	Aqueous	M3500-Fe	Ferrous Iron Prep Water	05/20/19 02:56 PM	91002
1905185-05B	BMW-27	05/15/19 10:55 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/20/19 09:30 AM	90989
	BMW-27	05/15/19 10:55 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/20/19 09:30 AM	90989
	BMW-27	05/15/19 10:55 AM	Aqueous	SW7470A	Mercury Aq Prep	05/23/19 09:25 AM	91059
1905185-05C	BMW-27	05/15/19 10:55 AM	Aqueous	M2320 B	Alkalinity Preparation	05/17/19 09:00 AM	90967
	BMW-27	05/15/19 10:55 AM	Aqueous	E300	Anion Preparation	05/16/19 01:49 PM	90934
	BMW-27	05/15/19 10:55 AM	Aqueous	E300	Anion Preparation	05/16/19 01:49 PM	90934
	BMW-27	05/15/19 10:55 AM	Aqueous	M4500-P E	Orthophosphate Prep	05/16/19 02:09 PM	90950
	BMW-27	05/15/19 10:55 AM	Aqueous	M2540C	TDS Preparation	05/20/19 12:59 PM	91001
1905185-06A	BMW-26	05/15/19 11:40 AM	Aqueous	M3500-Fe	Ferrous Iron Prep Water	05/20/19 02:56 PM	91002
1905185-06B	BMW-26	05/15/19 11:40 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/20/19 09:30 AM	90989
	BMW-26	05/15/19 11:40 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/20/19 09:30 AM	90989
	BMW-26	05/15/19 11:40 AM	Aqueous	SW7470A	Mercury Aq Prep	05/23/19 09:25 AM	91059
1905185-06C	BMW-26	05/15/19 11:40 AM	Aqueous	M2320 B	Alkalinity Preparation	05/17/19 09:00 AM	90967
	BMW-26	05/15/19 11:40 AM	Aqueous	E300	Anion Preparation	05/16/19 01:49 PM	90934
	BMW-26	05/15/19 11:40 AM	Aqueous	E300	Anion Preparation	05/16/19 01:49 PM	90934
	BMW-26	05/15/19 11:40 AM	Aqueous	M4500-P E	Orthophosphate Prep	05/16/19 02:09 PM	90950
	BMW-26	05/15/19 11:40 AM	Aqueous	M2540C	TDS Preparation	05/20/19 12:59 PM	91001
1905185-07A	BMW-11AR	05/15/19 12:35 PM	Aqueous	M3500-Fe	Ferrous Iron Prep Water	05/20/19 02:56 PM	91002
1905185-07B	BMW-11AR	05/15/19 12:35 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/20/19 09:30 AM	90989

LUMINANT

DHL Analytical, Inc. *18-Jun-19*

Lab Order: 1905185
Client: Golder
Project: Luminant-A1 Landfill

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1905185-07B	BMW-11AR	05/15/19 12:35 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/20/19 09:30 AM	90989
	BMW-11AR	05/15/19 12:35 PM	Aqueous	SW7470A	Mercury Aq Prep	05/23/19 09:25 AM	91059
1905185-07C	BMW-11AR	05/15/19 12:35 PM	Aqueous	M2320 B	Alkalinity Preparation	05/17/19 09:00 AM	90967
	BMW-11AR	05/15/19 12:35 PM	Aqueous	E300	Anion Preparation	05/16/19 01:49 PM	90934
	BMW-11AR	05/15/19 12:35 PM	Aqueous	E300	Anion Preparation	05/16/19 01:49 PM	90934
	BMW-11AR	05/15/19 12:35 PM	Aqueous	M4500-P E	Orthophosphate Prep	05/16/19 02:09 PM	90950
	BMW-11AR	05/15/19 12:35 PM	Aqueous	M2540C	TDS Preparation	05/20/19 12:59 PM	91001
1905185-08A	BMW-19	05/15/19 01:25 PM	Aqueous	M3500-Fe	Ferrous Iron Prep Water	05/20/19 02:56 PM	91002
1905185-08B	BMW-19	05/15/19 01:25 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/20/19 09:30 AM	90989
	BMW-19	05/15/19 01:25 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/20/19 09:30 AM	90989
	BMW-19	05/15/19 01:25 PM	Aqueous	SW7470A	Mercury Aq Prep	05/23/19 09:25 AM	91059
1905185-08C	BMW-19	05/15/19 01:25 PM	Aqueous	M2320 B	Alkalinity Preparation	05/17/19 09:00 AM	90967
	BMW-19	05/15/19 01:25 PM	Aqueous	E300	Anion Preparation	05/16/19 01:49 PM	90934
	BMW-19	05/15/19 01:25 PM	Aqueous	E300	Anion Preparation	05/16/19 01:49 PM	90934
	BMW-19	05/15/19 01:25 PM	Aqueous	E300	Anion Preparation	05/17/19 09:26 AM	90964
	BMW-19	05/15/19 01:25 PM	Aqueous	M4500-P E	Orthophosphate Prep	05/16/19 02:09 PM	90950
	BMW-19	05/15/19 01:25 PM	Aqueous	M2540C	TDS Preparation	05/20/19 12:59 PM	91001
1905185-09A	BMW-18	05/15/19 02:10 PM	Aqueous	M3500-Fe	Ferrous Iron Prep Water	05/20/19 02:56 PM	91002
1905185-09B	BMW-18	05/15/19 02:10 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/20/19 09:30 AM	90989
	BMW-18	05/15/19 02:10 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/20/19 09:30 AM	90989
	BMW-18	05/15/19 02:10 PM	Aqueous	SW7470A	Mercury Aq Prep	05/23/19 09:25 AM	91059
1905185-09C	BMW-18	05/15/19 02:10 PM	Aqueous	M2320 B	Alkalinity Preparation	05/17/19 09:00 AM	90967
	BMW-18	05/15/19 02:10 PM	Aqueous	E300	Anion Preparation	05/16/19 01:49 PM	90934
	BMW-18	05/15/19 02:10 PM	Aqueous	E300	Anion Preparation	05/16/19 01:49 PM	90934
	BMW-18	05/15/19 02:10 PM	Aqueous	M4500-P E	Orthophosphate Prep	05/16/19 02:09 PM	90950
	BMW-18	05/15/19 02:10 PM	Aqueous	M2540C	TDS Preparation	05/20/19 12:59 PM	91001
1905185-10A	BMW-28	05/15/19 03:00 PM	Aqueous	M3500-Fe	Ferrous Iron Prep Water	05/20/19 02:56 PM	91002
1905185-10B	BMW-28	05/15/19 03:00 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/20/19 09:30 AM	90989

LUMINANT

DHL Analytical, Inc. *18-Jun-19*

Lab Order: 1905185
Client: Golder
Project: Luminant-A1 Landfill

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1905185-10B	BMW-28	05/15/19 03:00 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/20/19 09:30 AM	90989
	BMW-28	05/15/19 03:00 PM	Aqueous	SW7470A	Mercury Aq Prep	05/23/19 09:25 AM	91059
1905185-10C	BMW-28	05/15/19 03:00 PM	Aqueous	M2320 B	Alkalinity Preparation	05/17/19 09:00 AM	90967
	BMW-28	05/15/19 03:00 PM	Aqueous	E300	Anion Preparation	05/16/19 01:49 PM	90934
	BMW-28	05/15/19 03:00 PM	Aqueous	E300	Anion Preparation	05/16/19 01:49 PM	90934
	BMW-28	05/15/19 03:00 PM	Aqueous	E300	Anion Preparation	05/17/19 09:26 AM	90964
	BMW-28	05/15/19 03:00 PM	Aqueous	M4500-P E	Orthophosphate Prep	05/16/19 02:09 PM	90950
	BMW-28	05/15/19 03:00 PM	Aqueous	M2540C	TDS Preparation	05/20/19 12:59 PM	91001
1905185-11A	BMW-20	05/15/19 04:00 PM	Aqueous	M3500-Fe	Ferrous Iron Prep Water	05/20/19 02:56 PM	91002
1905185-11B	BMW-20	05/15/19 04:00 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/20/19 09:30 AM	90989
	BMW-20	05/15/19 04:00 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/20/19 09:30 AM	90989
	BMW-20	05/15/19 04:00 PM	Aqueous	SW7470A	Mercury Aq Prep	05/23/19 09:25 AM	91059
1905185-11C	BMW-20	05/15/19 04:00 PM	Aqueous	M2320 B	Alkalinity Preparation	05/17/19 09:00 AM	90967
	BMW-20	05/15/19 04:00 PM	Aqueous	E300	Anion Preparation	05/16/19 01:49 PM	90934
	BMW-20	05/15/19 04:00 PM	Aqueous	E300	Anion Preparation	05/16/19 01:49 PM	90934
	BMW-20	05/15/19 04:00 PM	Aqueous	M4500-P E	Orthophosphate Prep	05/16/19 02:09 PM	90950
	BMW-20	05/15/19 04:00 PM	Aqueous	M2540C	TDS Preparation	05/20/19 12:59 PM	91001

LUMINANT

DHL Analytical, Inc. *18-Jun-19*

Lab Order: 1905185
Client: Golder
Project: Luminant-A1 Landfill

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1905185-01A	BMW-24	Aqueous	M3500-Fe D	Ferric Iron (Calculated)	91002	1	05/24/19	UV/VIS_2_190524A
	BMW-24	Aqueous	M3500-Fe D	Ferrous Iron	91002	1	05/20/19 03:58 PM	UV/VIS_2_190520A
1905185-01B	BMW-24	Aqueous	SW7470A	Mercury Total: Aqueous	91059	1	05/24/19 09:39 AM	CETAC2_HG_190524A
	BMW-24	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	90989	1	05/22/19 02:56 PM	ICP-MS4_190522D
	BMW-24	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	90989	10	05/23/19 11:22 AM	ICP-MS4_190523A
1905185-01C	BMW-24	Aqueous	M2320 B	Alkalinity	90967	1	05/17/19 01:18 PM	TITRATOR_190517A
	BMW-24	Aqueous	E300	Anions by IC method - Water	90934	1	05/16/19 06:01 PM	IC2_190516B
	BMW-24	Aqueous	E300	Anions by IC method - Water	90934	10	05/17/19 01:13 AM	IC2_190516B
	BMW-24	Aqueous	M4500-P E	Orthophosphate	90950	1	05/16/19 02:47 PM	UV/VIS_2_190516B
	BMW-24	Aqueous	M2540C	Total Dissolved Solids	91001	1	05/20/19 04:45 PM	WC_190520A
1905185-02A	BMW-23	Aqueous	M3500-Fe D	Ferric Iron (Calculated)	91002	1	05/24/19	UV/VIS_2_190524A
	BMW-23	Aqueous	M3500-Fe D	Ferrous Iron	91002	1	05/20/19 04:00 PM	UV/VIS_2_190520A
1905185-02B	BMW-23	Aqueous	SW7470A	Mercury Total: Aqueous	91059	1	05/24/19 09:42 AM	CETAC2_HG_190524A
	BMW-23	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	90989	1	05/22/19 02:58 PM	ICP-MS4_190522D
	BMW-23	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	90989	20	05/23/19 11:24 AM	ICP-MS4_190523A
1905185-02C	BMW-23	Aqueous	M2320 B	Alkalinity	90967	1	05/17/19 01:36 PM	TITRATOR_190517A
	BMW-23	Aqueous	E300	Anions by IC method - Water	90934	1	05/16/19 06:17 PM	IC2_190516B
	BMW-23	Aqueous	E300	Anions by IC method - Water	90934	10	05/17/19 01:29 AM	IC2_190516B
	BMW-23	Aqueous	M4500-P E	Orthophosphate	90950	1	05/16/19 02:47 PM	UV/VIS_2_190516B
	BMW-23	Aqueous	M2540C	Total Dissolved Solids	91001	1	05/20/19 04:45 PM	WC_190520A
1905185-03A	BMW-22	Aqueous	M3500-Fe D	Ferric Iron (Calculated)	91002	1	05/24/19	UV/VIS_2_190524A
	BMW-22	Aqueous	M3500-Fe D	Ferrous Iron	91002	1	05/20/19 04:00 PM	UV/VIS_2_190520A
1905185-03B	BMW-22	Aqueous	SW7470A	Mercury Total: Aqueous	91059	1	05/24/19 09:44 AM	CETAC2_HG_190524A
	BMW-22	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	90989	1	05/22/19 03:00 PM	ICP-MS4_190522D
	BMW-22	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	90989	20	05/23/19 11:26 AM	ICP-MS4_190523A
1905185-03C	BMW-22	Aqueous	M2320 B	Alkalinity	90967	1	05/17/19 02:01 PM	TITRATOR_190517A

LUMINANT

DHL Analytical, Inc. *18-Jun-19*

Lab Order: 1905185
Client: Golder
Project: Luminant-A1 Landfill

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1905185-03C	BMW-22	Aqueous	E300	Anions by IC method - Water	90934	10	05/17/19 01:45 AM	IC2_190516B
	BMW-22	Aqueous	E300	Anions by IC method - Water	90934	1	05/16/19 06:33 PM	IC2_190516B
	BMW-22	Aqueous	M4500-P E	Orthophosphate	90950	1	05/16/19 02:48 PM	UV/VIS_2_190516B
	BMW-22	Aqueous	M2540C	Total Dissolved Solids	91001	1	05/20/19 04:45 PM	WC_190520A
1905185-04A	BMW-21	Aqueous	M3500-Fe D	Ferric Iron (Calculated)	91002	1	05/24/19	UV/VIS_2_190524A
	BMW-21	Aqueous	M3500-Fe D	Ferrous Iron	91002	1	05/20/19 04:00 PM	UV/VIS_2_190520A
1905185-04B	BMW-21	Aqueous	SW7470A	Mercury Total: Aqueous	91059	1	05/24/19 09:46 AM	CETAC2_HG_190524A
	BMW-21	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	90989	1	05/22/19 03:02 PM	ICP-MS4_190522D
	BMW-21	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	90989	20	05/23/19 11:28 AM	ICP-MS4_190523A
1905185-04C	BMW-21	Aqueous	M2320 B	Alkalinity	90967	1	05/17/19 02:47 PM	TITRATOR_190517A
	BMW-21	Aqueous	E300	Anions by IC method - Water	90934	1	05/16/19 06:49 PM	IC2_190516B
	BMW-21	Aqueous	E300	Anions by IC method - Water	90934	10	05/17/19 02:01 AM	IC2_190516B
	BMW-21	Aqueous	M4500-P E	Orthophosphate	90950	1	05/16/19 02:48 PM	UV/VIS_2_190516B
	BMW-21	Aqueous	M2540C	Total Dissolved Solids	91001	1	05/20/19 04:45 PM	WC_190520A
1905185-05A	BMW-27	Aqueous	M3500-Fe D	Ferric Iron (Calculated)	91002	1	05/24/19	UV/VIS_2_190524A
	BMW-27	Aqueous	M3500-Fe D	Ferrous Iron	91002	1	05/20/19 04:01 PM	UV/VIS_2_190520A
1905185-05B	BMW-27	Aqueous	SW7470A	Mercury Total: Aqueous	91059	1	05/24/19 09:48 AM	CETAC2_HG_190524A
	BMW-27	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	90989	20	05/23/19 11:30 AM	ICP-MS4_190523A
	BMW-27	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	90989	1	05/22/19 03:04 PM	ICP-MS4_190522D
1905185-05C	BMW-27	Aqueous	M2320 B	Alkalinity	90967	1	05/17/19 03:13 PM	TITRATOR_190517A
	BMW-27	Aqueous	E300	Anions by IC method - Water	90934	1	05/16/19 07:05 PM	IC2_190516B
	BMW-27	Aqueous	E300	Anions by IC method - Water	90934	10	05/17/19 02:17 AM	IC2_190516B
	BMW-27	Aqueous	M4500-P E	Orthophosphate	90950	1	05/16/19 02:48 PM	UV/VIS_2_190516B
	BMW-27	Aqueous	M2540C	Total Dissolved Solids	91001	1	05/20/19 04:45 PM	WC_190520A
1905185-06A	BMW-26	Aqueous	M3500-Fe D	Ferric Iron (Calculated)	91002	1	05/24/19	UV/VIS_2_190524A
	BMW-26	Aqueous	M3500-Fe D	Ferrous Iron	91002	1	05/20/19 04:01 PM	UV/VIS_2_190520A

LUMINANT

DHL Analytical, Inc. *18-Jun-19*

Lab Order: 1905185
Client: Golder
Project: Luminant-A1 Landfill

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1905185-06B	BMW-26	Aqueous	SW7470A	Mercury Total: Aqueous	91059	1	05/24/19 09:51 AM	CETAC2_HG_190524A
	BMW-26	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	90989	1	05/22/19 02:52 PM	ICP-MS4_190522D
	BMW-26	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	90989	20	05/23/19 11:18 AM	ICP-MS4_190523A
1905185-06C	BMW-26	Aqueous	M2320 B	Alkalinity	90967	1	05/17/19 03:40 PM	TITRATOR_190517A
	BMW-26	Aqueous	E300	Anions by IC method - Water	90934	10	05/17/19 02:33 AM	IC2_190516B
	BMW-26	Aqueous	E300	Anions by IC method - Water	90934	1	05/16/19 07:21 PM	IC2_190516B
	BMW-26	Aqueous	M4500-P E	Orthophosphate	90950	1	05/16/19 02:49 PM	UV/VIS_2_190516B
	BMW-26	Aqueous	M2540C	Total Dissolved Solids	91001	1	05/20/19 04:45 PM	WC_190520A
1905185-07A	BMW-11AR	Aqueous	M3500-Fe D	Ferric Iron (Calculated)	91002	1	05/24/19	UV/VIS_2_190524A
	BMW-11AR	Aqueous	M3500-Fe D	Ferrous Iron	91002	1	05/20/19 04:01 PM	UV/VIS_2_190520A
1905185-07B	BMW-11AR	Aqueous	SW7470A	Mercury Total: Aqueous	91059	1	05/24/19 09:53 AM	CETAC2_HG_190524A
	BMW-11AR	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	90989	1	05/22/19 03:06 PM	ICP-MS4_190522D
	BMW-11AR	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	90989	10	05/23/19 11:32 AM	ICP-MS4_190523A
1905185-07C	BMW-11AR	Aqueous	M2320 B	Alkalinity	90967	1	05/17/19 03:59 PM	TITRATOR_190517A
	BMW-11AR	Aqueous	E300	Anions by IC method - Water	90934	1	05/16/19 07:37 PM	IC2_190516B
	BMW-11AR	Aqueous	E300	Anions by IC method - Water	90934	10	05/17/19 02:49 AM	IC2_190516B
	BMW-11AR	Aqueous	M4500-P E	Orthophosphate	90950	1	05/16/19 02:49 PM	UV/VIS_2_190516B
	BMW-11AR	Aqueous	M2540C	Total Dissolved Solids	91001	1	05/20/19 04:45 PM	WC_190520A
1905185-08A	BMW-19	Aqueous	M3500-Fe D	Ferric Iron (Calculated)	91002	1	05/24/19	UV/VIS_2_190524A
	BMW-19	Aqueous	M3500-Fe D	Ferrous Iron	91002	1	05/20/19 04:02 PM	UV/VIS_2_190520A
1905185-08B	BMW-19	Aqueous	SW7470A	Mercury Total: Aqueous	91059	1	05/24/19 09:55 AM	CETAC2_HG_190524A
	BMW-19	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	90989	1	05/22/19 03:07 PM	ICP-MS4_190522D
	BMW-19	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	90989	20	05/23/19 11:34 AM	ICP-MS4_190523A
1905185-08C	BMW-19	Aqueous	M2320 B	Alkalinity	90967	1	05/17/19 04:15 PM	TITRATOR_190517A
	BMW-19	Aqueous	E300	Anions by IC method - Water	90934	1	05/16/19 07:53 PM	IC2_190516B
	BMW-19	Aqueous	E300	Anions by IC method - Water	90934	10	05/17/19 03:05 AM	IC2_190516B

LUMINANT

DHL Analytical, Inc. *18-Jun-19*

Lab Order: 1905185
Client: Golder
Project: Luminant-A1 Landfill

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1905185-08C	BMW-19	Aqueous	E300	Anions by IC method - Water	90964	100	05/17/19 04:09 PM	IC2_190517B
	BMW-19	Aqueous	M4500-P E	Orthophosphate	90950	1	05/16/19 02:49 PM	UV/VIS_2_190516B
	BMW-19	Aqueous	M2540C	Total Dissolved Solids	91001	1	05/20/19 04:45 PM	WC_190520A
1905185-09A	BMW-18	Aqueous	M3500-Fe D	Ferric Iron (Calculated)	91002	1	05/24/19	UV/VIS_2_190524A
	BMW-18	Aqueous	M3500-Fe D	Ferrous Iron	91002	1	05/20/19 04:02 PM	UV/VIS_2_190520A
1905185-09B	BMW-18	Aqueous	SW7470A	Mercury Total: Aqueous	91059	1	05/24/19 09:58 AM	CETAC2_HG_190524A
	BMW-18	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	90989	20	05/23/19 11:36 AM	ICP-MS4_190523A
	BMW-18	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	90989	1	05/22/19 03:09 PM	ICP-MS4_190522D
1905185-09C	BMW-18	Aqueous	M2320 B	Alkalinity	90967	1	05/17/19 04:24 PM	TITRATOR_190517A
	BMW-18	Aqueous	E300	Anions by IC method - Water	90934	1	05/16/19 08:09 PM	IC2_190516B
	BMW-18	Aqueous	E300	Anions by IC method - Water	90934	10	05/17/19 03:21 AM	IC2_190516B
	BMW-18	Aqueous	M4500-P E	Orthophosphate	90950	1	05/16/19 02:50 PM	UV/VIS_2_190516B
	BMW-18	Aqueous	M2540C	Total Dissolved Solids	91001	1	05/20/19 04:45 PM	WC_190520A
1905185-10A	BMW-28	Aqueous	M3500-Fe D	Ferric Iron (Calculated)	91002	1	05/24/19	UV/VIS_2_190524A
	BMW-28	Aqueous	M3500-Fe D	Ferrous Iron	91002	1	05/20/19 04:02 PM	UV/VIS_2_190520A
1905185-10B	BMW-28	Aqueous	SW7470A	Mercury Total: Aqueous	91059	1	05/24/19 10:04 AM	CETAC2_HG_190524A
	BMW-28	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	90989	1	05/22/19 03:11 PM	ICP-MS4_190522D
	BMW-28	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	90989	50	05/23/19 11:38 AM	ICP-MS4_190523A
1905185-10C	BMW-28	Aqueous	M2320 B	Alkalinity	90967	1	05/17/19 04:49 PM	TITRATOR_190517A
	BMW-28	Aqueous	E300	Anions by IC method - Water	90934	1	05/16/19 08:25 PM	IC2_190516B
	BMW-28	Aqueous	E300	Anions by IC method - Water	90934	10	05/17/19 03:37 AM	IC2_190516B
	BMW-28	Aqueous	E300	Anions by IC method - Water	90964	100	05/17/19 04:25 PM	IC2_190517B
	BMW-28	Aqueous	M4500-P E	Orthophosphate	90950	1	05/16/19 02:50 PM	UV/VIS_2_190516B
	BMW-28	Aqueous	M2540C	Total Dissolved Solids	91001	1	05/20/19 04:45 PM	WC_190520A
1905185-11A	BMW-20	Aqueous	M3500-Fe D	Ferric Iron (Calculated)	91002	1	05/24/19	UV/VIS_2_190524A
	BMW-20	Aqueous	M3500-Fe D	Ferrous Iron	91002	1	05/20/19 04:02 PM	UV/VIS_2_190520A

LUMINANT

DHL Analytical, Inc. *18-Jun-19*

Lab Order: 1905185
Client: Golder
Project: Luminant-A1 Landfill

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1905185-11B	BMW-20	Aqueous	SW7470A	Mercury Total: Aqueous	91059	1	05/24/19 10:07 AM	CETAC2_HG_190524A
	BMW-20	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	90989	1	05/22/19 03:50 PM	ICP-MS4_190522D
	BMW-20	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	90989	20	05/23/19 11:53 AM	ICP-MS4_190523A
1905185-11C	BMW-20	Aqueous	M2320 B	Alkalinity	90967	1	05/17/19 05:15 PM	TITRATOR_190517A
	BMW-20	Aqueous	E300	Anions by IC method - Water	90934	1	05/16/19 10:01 PM	IC2_190516B
	BMW-20	Aqueous	E300	Anions by IC method - Water	90934	10	05/17/19 04:57 AM	IC2_190516B
	BMW-20	Aqueous	M4500-P E	Orthophosphate	90950	1	05/16/19 02:52 PM	UV/VIS_2_190516B
	BMW-20	Aqueous	M2540C	Total Dissolved Solids	91001	1	05/20/19 04:45 PM	WC_190520A

LUMINANT

DHL Analytical, Inc.

Date: *18-Jun-19*

CLIENT:	Golder	**Client Sample ID:**	BMW-24
Project:	Luminant-A1 Landfill	**Lab ID:**	1905185-01
Project No:	19122262-D	**Collection Date:**	05/15/19 07:35 AM
Lab Order:	1905185	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	05/22/19 02:56 PM
Arsenic	0.00272	0.00200	0.00500	J	mg/L	1	05/22/19 02:56 PM
Barium	0.221	0.00300	0.0100		mg/L	1	05/22/19 02:56 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	05/22/19 02:56 PM
Boron	0.601	0.0100	0.0300		mg/L	1	05/22/19 02:56 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	05/22/19 02:56 PM
Calcium	57.9	1.00	3.00		mg/L	10	05/23/19 11:22 AM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	05/22/19 02:56 PM
Cobalt	0.00643	0.00300	0.00500		mg/L	1	05/22/19 02:56 PM
Iron	35.1	0.300	1.00		mg/L	10	05/23/19 11:22 AM
Lead	<0.000300	0.000300	0.00100		mg/L	1	05/22/19 02:56 PM
Lithium	0.0512	0.00500	0.0100		mg/L	1	05/22/19 02:56 PM
Magnesium	57.5	1.00	3.00		mg/L	10	05/23/19 11:22 AM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	05/22/19 02:56 PM
Potassium	3.22	0.100	0.300		mg/L	1	05/22/19 02:56 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	05/22/19 02:56 PM
Sodium	119	1.00	3.00		mg/L	10	05/23/19 11:22 AM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	05/22/19 02:56 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	05/24/19 09:39 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **JL**
Chloride	169	3.00	10.0		mg/L	10	05/17/19 01:13 AM
Fluoride	0.219	0.100	0.400	J	mg/L	1	05/16/19 06:01 PM
Nitrate-N	<0.100	0.100	0.500		mg/L	1	05/16/19 06:01 PM
Sulfate	280	10.0	30.0		mg/L	10	05/17/19 01:13 AM
ALKALINITY		**M2320 B**					Analyst: **CC**
Alkalinity, Bicarbonate (As CaCO3)	176	10.0	20.0		mg/L @ pH 4.53	1	05/17/19 01:18 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	05/17/19 01:18 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	05/17/19 01:18 PM
Alkalinity, Total (As CaCO3)	176	20.0	20.0		mg/L @ pH 4.53	1	05/17/19 01:18 PM
FERRIC IRON (CALCULATED)		**M3500-FE D**					Analyst: **CAC**
Iron, Ferric	35.1	0.0500	0.100	N	mg/L	1	05/24/19
FERROUS IRON		**M3500-FE D**					Analyst: **BTJ**
Iron, Ferrous	<0.0500	0.0500	0.100	N	mg/L	1	05/20/19 03:58 PM

LUMINANT

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *18-Jun-19*

CLIENT:	Golder	**Client Sample ID:**	BMW-24
Project:	Luminant-A1 Landfill	**Lab ID:**	1905185-01
Project No:	19122262-D	**Collection Date:**	05/15/19 07:35 AM
Lab Order:	1905185	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
ORTHOPHOSPHATE		**M4500-P E**					Analyst: **CC**
Phosphorus, Total Orthophosphate (As P)	0.0510	0.0300	0.100	J	mg/L	1	05/16/19 02:47 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	881	10.0	10.0		mg/L	1	05/20/19 04:45 PM

LUMINANT

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
	DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit
	ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
	S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *18-Jun-19*

CLIENT:	Golder	**Client Sample ID:**	BMW-23
Project:	Luminant-A1 Landfill	**Lab ID:**	1905185-02
Project No:	19122262-D	**Collection Date:**	05/15/19 08:25 AM
Lab Order:	1905185	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	05/22/19 02:58 PM
Arsenic	0.00240	0.00200	0.00500	J	mg/L	1	05/22/19 02:58 PM
Barium	0.0381	0.00300	0.0100		mg/L	1	05/22/19 02:58 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	05/22/19 02:58 PM
Boron	1.31	0.0100	0.0300		mg/L	1	05/22/19 02:58 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	05/22/19 02:58 PM
Calcium	89.9	2.00	6.00		mg/L	20	05/23/19 11:24 AM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	05/22/19 02:58 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	05/22/19 02:58 PM
Iron	9.64	0.0300	0.100		mg/L	1	05/22/19 02:58 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	05/22/19 02:58 PM
Lithium	0.0951	0.00500	0.0100		mg/L	1	05/22/19 02:58 PM
Magnesium	92.2	2.00	6.00		mg/L	20	05/23/19 11:24 AM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	05/22/19 02:58 PM
Potassium	4.28	0.100	0.300		mg/L	1	05/22/19 02:58 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	05/22/19 02:58 PM
Sodium	311	2.00	6.00		mg/L	20	05/23/19 11:24 AM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	05/22/19 02:58 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	05/24/19 09:42 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **JL**
Chloride	240	3.00	10.0		mg/L	10	05/17/19 01:29 AM
Fluoride	<0.100	0.100	0.400		mg/L	1	05/16/19 06:17 PM
Nitrate-N	<0.100	0.100	0.500		mg/L	1	05/16/19 06:17 PM
Sulfate	613	10.0	30.0		mg/L	10	05/17/19 01:29 AM
ALKALINITY		**M2320 B**					Analyst: **CC**
Alkalinity, Bicarbonate (As CaCO3)	414	10.0	20.0		mg/L @ pH 4.54	1	05/17/19 01:36 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	05/17/19 01:36 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	05/17/19 01:36 PM
Alkalinity, Total (As CaCO3)	414	20.0	20.0		mg/L @ pH 4.54	1	05/17/19 01:36 PM
FERRIC IRON (CALCULATED)		**M3500-FE D**					Analyst: **CAC**
Iron, Ferric	9.55	0.0500	0.100	N	mg/L	1	05/24/19
FERROUS IRON		**M3500-FE D**					Analyst: **BTJ**
Iron, Ferrous	0.0937	0.0500	0.100	JN	mg/L	1	05/20/19 04:00 PM

LUMINANT

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level
C	Sample Result or QC discussed in the Case Narrative
DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern
J	Analyte detected between MDL and RL
MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit
RL	Reporting Limit
S	Spike Recovery outside control limits
N	Parameter not NELAP certified

CLIENT:	Golder	**Client Sample ID:**	BMW-23
Project:	Luminant-A1 Landfill	**Lab ID:**	1905185-02
Project No:	19122262-D	**Collection Date:**	05/15/19 08:25 AM
Lab Order:	1905185	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
ORTHOPHOSPHATE		**M4500-P E**					Analyst: **CC**
Phosphorus, Total Orthophosphate (As P)	0.202	0.0300	0.100		mg/L	1	05/16/19 02:47 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	1640	50.0	50.0		mg/L	1	05/20/19 04:45 PM

LUMINANT

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
	DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit
	ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
	S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *18-Jun-19*

CLIENT:	Golder	**Client Sample ID:**	BMW-22
Project:	Luminant-A1 Landfill	**Lab ID:**	1905185-03
Project No:	19122262-D	**Collection Date:**	05/15/19 09:15 AM
Lab Order:	1905185	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	05/22/19 03:00 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	05/22/19 03:00 PM
Barium	0.0618	0.00300	0.0100		mg/L	1	05/22/19 03:00 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	05/22/19 03:00 PM
Boron	3.39	0.200	0.600		mg/L	20	05/23/19 11:26 AM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	05/22/19 03:00 PM
Calcium	198	2.00	6.00		mg/L	20	05/23/19 11:26 AM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	05/22/19 03:00 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	05/22/19 03:00 PM
Iron	9.99	0.0300	0.100		mg/L	1	05/22/19 03:00 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	05/22/19 03:00 PM
Lithium	0.0779	0.00500	0.0100		mg/L	1	05/22/19 03:00 PM
Magnesium	155	2.00	6.00		mg/L	20	05/23/19 11:26 AM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	05/22/19 03:00 PM
Potassium	6.15	0.100	0.300		mg/L	1	05/22/19 03:00 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	05/22/19 03:00 PM
Sodium	265	2.00	6.00		mg/L	20	05/23/19 11:26 AM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	05/22/19 03:00 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	05/24/19 09:44 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **JL**
Chloride	311	3.00	10.0		mg/L	10	05/17/19 01:45 AM
Fluoride	0.351	0.100	0.400	J	mg/L	1	05/16/19 06:33 PM
Nitrate-N	<0.100	0.100	0.500		mg/L	1	05/16/19 06:33 PM
Sulfate	967	10.0	30.0		mg/L	10	05/17/19 01:45 AM
ALKALINITY		**M2320 B**					Analyst: **CC**
Alkalinity, Bicarbonate (As CaCO3)	474	10.0	20.0		mg/L @ pH 4.54	1	05/17/19 02:01 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	05/17/19 02:01 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	05/17/19 02:01 PM
Alkalinity, Total (As CaCO3)	474	20.0	20.0		mg/L @ pH 4.54	1	05/17/19 02:01 PM
FERRIC IRON (CALCULATED)		**M3500-FE D**					Analyst: **CAC**
Iron, Ferric	9.99	0.0500	0.100	N	mg/L	1	05/24/19
FERROUS IRON		**M3500-FE D**					Analyst: **BTJ**
Iron, Ferrous	<0.0500	0.0500	0.100	N	mg/L	1	05/20/19 04:00 PM

LUMINANT

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
S	Spike Recovery outside control limits	N	Parameter not NELAP certified

CLIENT:	Golder	**Client Sample ID:**	BMW-22
Project:	Luminant-A1 Landfill	**Lab ID:**	1905185-03
Project No:	19122262-D	**Collection Date:**	05/15/19 09:15 AM
Lab Order:	1905185	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
ORTHOPHOSPHATE		**M4500-P E**					Analyst: **CC**
Phosphorus, Total Orthophosphate (As P)	0.0540	0.0300	0.100	J	mg/L	1	05/16/19 02:48 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	2260	50.0	50.0		mg/L	1	05/20/19 04:45 PM

LUMINANT

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
	DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit
	ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
	S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *18-Jun-19*

CLIENT:	Golder	**Client Sample ID:**	BMW-21
Project:	Luminant-A1 Landfill	**Lab ID:**	1905185-04
Project No:	19122262-D	**Collection Date:**	05/15/19 09:55 AM
Lab Order:	1905185	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	05/22/19 03:02 PM
Arsenic	0.00399	0.00200	0.00500	J	mg/L	1	05/22/19 03:02 PM
Barium	0.0412	0.00300	0.0100		mg/L	1	05/22/19 03:02 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	05/22/19 03:02 PM
Boron	0.994	0.0100	0.0300		mg/L	1	05/22/19 03:02 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	05/22/19 03:02 PM
Calcium	147	2.00	6.00		mg/L	20	05/23/19 11:28 AM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	05/22/19 03:02 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	05/22/19 03:02 PM
Iron	1.02	0.0300	0.100		mg/L	1	05/22/19 03:02 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	05/22/19 03:02 PM
Lithium	0.0613	0.00500	0.0100		mg/L	1	05/22/19 03:02 PM
Magnesium	138	2.00	6.00		mg/L	20	05/23/19 11:28 AM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	05/22/19 03:02 PM
Potassium	5.21	0.100	0.300		mg/L	1	05/22/19 03:02 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	05/22/19 03:02 PM
Sodium	386	2.00	6.00		mg/L	20	05/23/19 11:28 AM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	05/22/19 03:02 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	05/24/19 09:46 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **JL**
Chloride	428	3.00	10.0		mg/L	10	05/17/19 02:01 AM
Fluoride	0.366	0.100	0.400	J	mg/L	1	05/16/19 06:49 PM
Nitrate-N	<0.100	0.100	0.500		mg/L	1	05/16/19 06:49 PM
Sulfate	474	10.0	30.0		mg/L	10	05/17/19 02:01 AM
ALKALINITY		**M2320 B**					Analyst: **CC**
Alkalinity, Bicarbonate (As CaCO3)	780	10.0	20.0		mg/L @ pH 4.54	1	05/17/19 02:47 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	05/17/19 02:47 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	05/17/19 02:47 PM
Alkalinity, Total (As CaCO3)	780	20.0	20.0		mg/L @ pH 4.54	1	05/17/19 02:47 PM
FERRIC IRON (CALCULATED)		**M3500-FE D**					Analyst: **CAC**
Iron, Ferric	1.02	0.0500	0.100	N	mg/L	1	05/24/19
FERROUS IRON		**M3500-FE D**					Analyst: **BTJ**
Iron, Ferrous	<0.0500	0.0500	0.100	N	mg/L	1	05/20/19 04:00 PM

LUMINANT

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
S	Spike Recovery outside control limits	N	Parameter not NELAP certified

CLIENT:	Golder	**Client Sample ID:**	BMW-21
Project:	Luminant-A1 Landfill	**Lab ID:**	1905185-04
Project No:	19122262-D	**Collection Date:**	05/15/19 09:55 AM
Lab Order:	1905185	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
ORTHOPHOSPHATE		**M4500-P E**					Analyst: **CC**
Phosphorus, Total Orthophosphate (As P)	<0.0300	0.0300	0.100		mg/L	1	05/16/19 02:48 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	1980	50.0	50.0		mg/L	1	05/20/19 04:45 PM

LUMINANT

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
	DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit
	ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
	S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *18-Jun-19*

CLIENT:	Golder	**Client Sample ID:**	BMW-27
Project:	Luminant-A1 Landfill	**Lab ID:**	1905185-05
Project No:	19122262-D	**Collection Date:**	05/15/19 10:55 AM
Lab Order:	1905185	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	05/22/19 03:04 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	05/22/19 03:04 PM
Barium	0.0238	0.00300	0.0100		mg/L	1	05/22/19 03:04 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	05/22/19 03:04 PM
Boron	0.460	0.0100	0.0300		mg/L	1	05/22/19 03:04 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	05/22/19 03:04 PM
Calcium	190	2.00	6.00		mg/L	20	05/23/19 11:30 AM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	05/22/19 03:04 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	05/22/19 03:04 PM
Iron	0.0447	0.0300	0.100	J	mg/L	1	05/22/19 03:04 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	05/22/19 03:04 PM
Lithium	0.0943	0.00500	0.0100		mg/L	1	05/22/19 03:04 PM
Magnesium	122	2.00	6.00		mg/L	20	05/23/19 11:30 AM
Molybdenum	0.00204	0.00200	0.00500	J	mg/L	1	05/22/19 03:04 PM
Potassium	12.5	0.100	0.300		mg/L	1	05/22/19 03:04 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	05/22/19 03:04 PM
Sodium	251	2.00	6.00		mg/L	20	05/23/19 11:30 AM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	05/22/19 03:04 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	05/24/19 09:48 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **JL**
Chloride	129	3.00	10.0		mg/L	10	05/17/19 02:17 AM
Fluoride	<0.100	0.100	0.400		mg/L	1	05/16/19 07:05 PM
Nitrate-N	0.798	0.100	0.500		mg/L	1	05/16/19 07:05 PM
Sulfate	674	10.0	30.0		mg/L	10	05/17/19 02:17 AM
ALKALINITY		**M2320 B**					Analyst: **CC**
Alkalinity, Bicarbonate (As CaCO3)	783	10.0	20.0		mg/L @ pH 4.54	1	05/17/19 03:13 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	05/17/19 03:13 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	05/17/19 03:13 PM
Alkalinity, Total (As CaCO3)	783	20.0	20.0		mg/L @ pH 4.54	1	05/17/19 03:13 PM
FERRIC IRON (CALCULATED)		**M3500-FE D**					Analyst: **CAC**
Iron, Ferric	<0.0500	0.0500	0.100	N	mg/L	1	05/24/19
FERROUS IRON		**M3500-FE D**					Analyst: **BTJ**
Iron, Ferrous	<0.0500	0.0500	0.100	N	mg/L	1	05/20/19 04:01 PM

LUMINANT

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level
DF	Dilution Factor
J	Analyte detected between MDL and RL
ND	Not Detected at the Method Detection Limit
S	Spike Recovery outside control limits
C	Sample Result or QC discussed in the Case Narrative
E	TPH pattern not Gas or Diesel Range Pattern
MDL	Method Detection Limit
RL	Reporting Limit
N	Parameter not NELAP certified

CLIENT:	Golder	**Client Sample ID:**	BMW-27
Project:	Luminant-A1 Landfill	**Lab ID:**	1905185-05
Project No:	19122262-D	**Collection Date:**	05/15/19 10:55 AM
Lab Order:	1905185	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
ORTHOPHOSPHATE		**M4500-P E**					Analyst: **CC**
Phosphorus, Total Orthophosphate (As P)	<0.0300	0.0300	0.100		mg/L	1	05/16/19 02:48 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	1840	50.0	50.0		mg/L	1	05/20/19 04:45 PM

LUMINANT

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
	DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit
	ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
	S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *18-Jun-19*

CLIENT:	Golder	**Client Sample ID:**	BMW-26
Project:	Luminant-A1 Landfill	**Lab ID:**	1905185-06
Project No:	19122262-D	**Collection Date:**	05/15/19 11:40 AM
Lab Order:	1905185	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	05/22/19 02:52 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	05/22/19 02:52 PM
Barium	0.0253	0.00300	0.0100		mg/L	1	05/22/19 02:52 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	05/22/19 02:52 PM
Boron	0.449	0.0100	0.0300		mg/L	1	05/22/19 02:52 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	05/22/19 02:52 PM
Calcium	200	2.00	6.00		mg/L	20	05/23/19 11:18 AM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	05/22/19 02:52 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	05/22/19 02:52 PM
Iron	<0.0300	0.0300	0.100		mg/L	1	05/22/19 02:52 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	05/22/19 02:52 PM
Lithium	0.101	0.00500	0.0100		mg/L	1	05/22/19 02:52 PM
Magnesium	130	2.00	6.00		mg/L	20	05/23/19 11:18 AM
Molybdenum	0.00218	0.00200	0.00500	J	mg/L	1	05/22/19 02:52 PM
Potassium	13.3	0.100	0.300		mg/L	1	05/22/19 02:52 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	05/22/19 02:52 PM
Sodium	265	2.00	6.00		mg/L	20	05/23/19 11:18 AM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	05/22/19 02:52 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	05/24/19 09:51 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **JL**
Chloride	135	3.00	10.0		mg/L	10	05/17/19 02:33 AM
Fluoride	<0.100	0.100	0.400		mg/L	1	05/16/19 07:21 PM
Nitrate-N	0.851	0.100	0.500		mg/L	1	05/16/19 07:21 PM
Sulfate	706	10.0	30.0		mg/L	10	05/17/19 02:33 AM
ALKALINITY		**M2320 B**					Analyst: **CC**
Alkalinity, Bicarbonate (As CaCO3)	828	10.0	20.0		mg/L @ pH 4.54	1	05/17/19 03:40 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	05/17/19 03:40 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	05/17/19 03:40 PM
Alkalinity, Total (As CaCO3)	828	20.0	20.0		mg/L @ pH 4.54	1	05/17/19 03:40 PM
FERRIC IRON (CALCULATED)		**M3500-FE D**					Analyst: **CAC**
Iron, Ferric	<0.0500	0.0500	0.100	N	mg/L	1	05/24/19
FERROUS IRON		**M3500-FE D**					Analyst: **BTJ**
Iron, Ferrous	<0.0500	0.0500	0.100	N	mg/L	1	05/20/19 04:01 PM

LUMINANT

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level
DF	Dilution Factor
J	Analyte detected between MDL and RL
ND	Not Detected at the Method Detection Limit
S	Spike Recovery outside control limits
C	Sample Result or QC discussed in the Case Narrative
E	TPH pattern not Gas or Diesel Range Pattern
MDL	Method Detection Limit
RL	Reporting Limit
N	Parameter not NELAP certified

CLIENT:	Golder	**Client Sample ID:**	BMW-26
Project:	Luminant-A1 Landfill	**Lab ID:**	1905185-06
Project No:	19122262-D	**Collection Date:**	05/15/19 11:40 AM
Lab Order:	1905185	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
ORTHOPHOSPHATE		**M4500-P E**					Analyst: **CC**
Phosphorus, Total Orthophosphate (As P)	0.0340	0.0300	0.100	J	mg/L	1	05/16/19 02:49 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	1930	50.0	50.0		mg/L	1	05/20/19 04:45 PM

LUMINANT

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
	DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit
	ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
	S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *18-Jun-19*

CLIENT:	Golder	**Client Sample ID:**	BMW-11AR
Project:	Luminant-A1 Landfill	**Lab ID:**	1905185-07
Project No:	19122262-D	**Collection Date:**	05/15/19 12:35 PM
Lab Order:	1905185	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	05/22/19 03:06 PM
Arsenic	0.00208	0.00200	0.00500	J	mg/L	1	05/22/19 03:06 PM
Barium	0.0399	0.00300	0.0100		mg/L	1	05/22/19 03:06 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	05/22/19 03:06 PM
Boron	0.374	0.0100	0.0300		mg/L	1	05/22/19 03:06 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	05/22/19 03:06 PM
Calcium	138	1.00	3.00		mg/L	10	05/23/19 11:32 AM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	05/22/19 03:06 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	05/22/19 03:06 PM
Iron	1.35	0.0300	0.100		mg/L	1	05/22/19 03:06 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	05/22/19 03:06 PM
Lithium	0.0404	0.00500	0.0100		mg/L	1	05/22/19 03:06 PM
Magnesium	64.6	1.00	3.00		mg/L	10	05/23/19 11:32 AM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	05/22/19 03:06 PM
Potassium	20.3	0.100	0.300		mg/L	1	05/22/19 03:06 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	05/22/19 03:06 PM
Sodium	90.4	1.00	3.00		mg/L	10	05/23/19 11:32 AM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	05/22/19 03:06 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	05/24/19 09:53 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **JL**
Chloride	6.11	0.300	1.00		mg/L	1	05/16/19 07:37 PM
Fluoride	0.198	0.100	0.400	J	mg/L	1	05/16/19 07:37 PM
Nitrate-N	<0.100	0.100	0.500		mg/L	1	05/16/19 07:37 PM
Sulfate	324	10.0	30.0		mg/L	10	05/17/19 02:49 AM
ALKALINITY		**M2320 B**					Analyst: **CC**
Alkalinity, Bicarbonate (As CaCO3)	527	10.0	20.0		mg/L @ pH 4.54	1	05/17/19 03:59 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	05/17/19 03:59 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	05/17/19 03:59 PM
Alkalinity, Total (As CaCO3)	527	20.0	20.0		mg/L @ pH 4.54	1	05/17/19 03:59 PM
FERRIC IRON (CALCULATED)		**M3500-FE D**					Analyst: **CAC**
Iron, Ferric	1.35	0.0500	0.100	N	mg/L	1	05/24/19
FERROUS IRON		**M3500-FE D**					Analyst: **BTJ**
Iron, Ferrous	<0.0500	0.0500	0.100	N	mg/L	1	05/20/19 04:01 PM

LUMINANT

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
S	Spike Recovery outside control limits	N	Parameter not NELAP certified

CLIENT:	Golder	**Client Sample ID:**	BMW-11AR
Project:	Luminant-A1 Landfill	**Lab ID:**	1905185-07
Project No:	19122262-D	**Collection Date:**	05/15/19 12:35 PM
Lab Order:	1905185	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
ORTHOPHOSPHATE		**M4500-P E**					Analyst: **CC**
Phosphorus, Total Orthophosphate (As P)	<0.0300	0.0300	0.100		mg/L	1	05/16/19 02:49 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	970	10.0	10.0		mg/L	1	05/20/19 04:45 PM

LUMINANT

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
	DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit
	ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
	S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *18-Jun-19*

CLIENT:	Golder	**Client Sample ID:**	BMW-19
Project:	Luminant-A1 Landfill	**Lab ID:**	1905185-08
Project No:	19122262-D	**Collection Date:**	05/15/19 01:25 PM
Lab Order:	1905185	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	05/22/19 03:07 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	05/22/19 03:07 PM
Barium	0.0104	0.00300	0.0100		mg/L	1	05/22/19 03:07 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	05/22/19 03:07 PM
Boron	0.474	0.0100	0.0300		mg/L	1	05/22/19 03:07 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	05/22/19 03:07 PM
Calcium	388	2.00	6.00		mg/L	20	05/23/19 11:34 AM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	05/22/19 03:07 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	05/22/19 03:07 PM
Iron	0.750	0.0300	0.100		mg/L	1	05/22/19 03:07 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	05/22/19 03:07 PM
Lithium	0.0647	0.00500	0.0100		mg/L	1	05/22/19 03:07 PM
Magnesium	216	2.00	6.00		mg/L	20	05/23/19 11:34 AM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	05/22/19 03:07 PM
Potassium	11.7	0.100	0.300		mg/L	1	05/22/19 03:07 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	05/22/19 03:07 PM
Sodium	135	2.00	6.00		mg/L	20	05/23/19 11:34 AM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	05/22/19 03:07 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	05/24/19 09:55 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **JL**
Chloride	4.66	0.300	1.00		mg/L	1	05/16/19 07:53 PM
Fluoride	0.189	0.100	0.400	J	mg/L	1	05/16/19 07:53 PM
Nitrate-N	1.35	0.100	0.500		mg/L	1	05/16/19 07:53 PM
Sulfate	1760	100	300		mg/L	100	05/17/19 04:09 PM
ALKALINITY		**M2320 B**					Analyst: **CC**
Alkalinity, Bicarbonate (As CaCO3)	482	10.0	20.0		mg/L @ pH 4.53	1	05/17/19 04:15 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	05/17/19 04:15 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	05/17/19 04:15 PM
Alkalinity, Total (As CaCO3)	482	20.0	20.0		mg/L @ pH 4.53	1	05/17/19 04:15 PM
FERRIC IRON (CALCULATED)		**M3500-FE D**					Analyst: **CAC**
Iron, Ferric	0.750	0.0500	0.100	N	mg/L	1	05/24/19
FERROUS IRON		**M3500-FE D**					Analyst: **BTJ**
Iron, Ferrous	<0.0500	0.0500	0.100	N	mg/L	1	05/20/19 04:02 PM

LUMINANT

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *18-Jun-19*

CLIENT:	Golder	**Client Sample ID:**	BMW-19
Project:	Luminant-A1 Landfill	**Lab ID:**	1905185-08
Project No:	19122262-D	**Collection Date:**	05/15/19 01:25 PM
Lab Order:	1905185	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
ORTHOPHOSPHATE		**M4500-P E**					Analyst: **CC**
Phosphorus, Total Orthophosphate (As P)	<0.0300	0.0300	0.100		mg/L	1	05/16/19 02:49 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	3090	50.0	50.0		mg/L	1	05/20/19 04:45 PM

LUMINANT

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
	DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit
	ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
	S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *18-Jun-19*

CLIENT:	Golder	**Client Sample ID:**	BMW-18
Project:	Luminant-A1 Landfill	**Lab ID:**	1905185-09
Project No:	19122262-D	**Collection Date:**	05/15/19 02:10 PM
Lab Order:	1905185	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	05/22/19 03:09 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	05/22/19 03:09 PM
Barium	0.0362	0.00300	0.0100		mg/L	1	05/22/19 03:09 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	05/22/19 03:09 PM
Boron	0.443	0.0100	0.0300		mg/L	1	05/22/19 03:09 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	05/22/19 03:09 PM
Calcium	7.91	0.100	0.300		mg/L	1	05/22/19 03:09 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	05/22/19 03:09 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	05/22/19 03:09 PM
Iron	0.0676	0.0300	0.100	J	mg/L	1	05/22/19 03:09 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	05/22/19 03:09 PM
Lithium	0.0160	0.00500	0.0100		mg/L	1	05/22/19 03:09 PM
Magnesium	2.47	0.100	0.300		mg/L	1	05/22/19 03:09 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	05/22/19 03:09 PM
Potassium	2.91	0.100	0.300		mg/L	1	05/22/19 03:09 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	05/22/19 03:09 PM
Sodium	173	2.00	6.00		mg/L	20	05/23/19 11:36 AM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	05/22/19 03:09 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	05/24/19 09:58 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **JL**
Chloride	20.0	0.300	1.00		mg/L	1	05/16/19 08:09 PM
Fluoride	0.229	0.100	0.400	J	mg/L	1	05/16/19 08:09 PM
Nitrate-N	0.324	0.100	0.500	J	mg/L	1	05/16/19 08:09 PM
Sulfate	89.9	1.00	3.00		mg/L	1	05/16/19 08:09 PM
ALKALINITY		**M2320 B**					Analyst: **CC**
Alkalinity, Bicarbonate (As CaCO3)	285	10.0	20.0		mg/L @ pH 4.52	1	05/17/19 04:24 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.52	1	05/17/19 04:24 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.52	1	05/17/19 04:24 PM
Alkalinity, Total (As CaCO3)	285	20.0	20.0		mg/L @ pH 4.52	1	05/17/19 04:24 PM
FERRIC IRON (CALCULATED)		**M3500-FE D**					Analyst: **CAC**
Iron, Ferric	0.0676	0.0500	0.100	JN	mg/L	1	05/24/19
FERROUS IRON		**M3500-FE D**					Analyst: **BTJ**
Iron, Ferrous	<0.0500	0.0500	0.100	N	mg/L	1	05/20/19 04:02 PM

LUMINANT

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
S	Spike Recovery outside control limits	N	Parameter not NELAP certified

CLIENT:	Golder	**Client Sample ID:**	BMW-18
Project:	Luminant-A1 Landfill	**Lab ID:**	1905185-09
Project No:	19122262-D	**Collection Date:**	05/15/19 02:10 PM
Lab Order:	1905185	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
ORTHOPHOSPHATE		**M4500-P E**					Analyst: **CC**
Phosphorus, Total Orthophosphate (As P)	0.140	0.0300	0.100		mg/L	1	05/16/19 02:50 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	473	10.0	10.0		mg/L	1	05/20/19 04:45 PM

LUMINANT

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
	DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit
	ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
	S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *18-Jun-19*

CLIENT:	Golder	**Client Sample ID:**	BMW-28
Project:	Luminant-A1 Landfill	**Lab ID:**	1905185-10
Project No:	19122262-D	**Collection Date:**	05/15/19 03:00 PM
Lab Order:	1905185	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	05/22/19 03:11 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	05/22/19 03:11 PM
Barium	0.0285	0.00300	0.0100		mg/L	1	05/22/19 03:11 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	05/22/19 03:11 PM
Boron	1.01	0.0100	0.0300		mg/L	1	05/22/19 03:11 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	05/22/19 03:11 PM
Calcium	249	5.00	15.0		mg/L	50	05/23/19 11:38 AM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	05/22/19 03:11 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	05/22/19 03:11 PM
Iron	0.0633	0.0300	0.100	J	mg/L	1	05/22/19 03:11 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	05/22/19 03:11 PM
Lithium	0.119	0.00500	0.0100		mg/L	1	05/22/19 03:11 PM
Magnesium	163	5.00	15.0		mg/L	50	05/23/19 11:38 AM
Molybdenum	0.0124	0.00200	0.00500		mg/L	1	05/22/19 03:11 PM
Potassium	18.6	0.100	0.300		mg/L	1	05/22/19 03:11 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	05/22/19 03:11 PM
Sodium	652	5.00	15.0		mg/L	50	05/23/19 11:38 AM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	05/22/19 03:11 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	05/24/19 10:04 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **JL**
Chloride	133	3.00	10.0		mg/L	10	05/17/19 03:37 AM
Fluoride	0.496	0.100	0.400		mg/L	1	05/16/19 08:25 PM
Nitrate-N	0.493	0.100	0.500	J	mg/L	1	05/16/19 08:25 PM
Sulfate	1820	100	300		mg/L	100	05/17/19 04:25 PM
ALKALINITY		**M2320 B**					Analyst: **CC**
Alkalinity, Bicarbonate (As CaCO3)	751	10.0	20.0		mg/L @ pH 4.54	1	05/17/19 04:49 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	05/17/19 04:49 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	05/17/19 04:49 PM
Alkalinity, Total (As CaCO3)	751	20.0	20.0		mg/L @ pH 4.54	1	05/17/19 04:49 PM
FERRIC IRON (CALCULATED)		**M3500-FE D**					Analyst: **CAC**
Iron, Ferric	0.0633	0.0500	0.100	JN	mg/L	1	05/24/19
FERROUS IRON		**M3500-FE D**					Analyst: **BTJ**
Iron, Ferrous	<0.0500	0.0500	0.100	N	mg/L	1	05/20/19 04:02 PM

LUMINANT

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
S	Spike Recovery outside control limits	N	Parameter not NELAP certified

CLIENT:	Golder	**Client Sample ID:**	BMW-28
Project:	Luminant-A1 Landfill	**Lab ID:**	1905185-10
Project No:	19122262-D	**Collection Date:**	05/15/19 03:00 PM
Lab Order:	1905185	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
ORTHOPHOSPHATE		**M4500-P E**					Analyst: **CC**
Phosphorus, Total Orthophosphate (As P)	0.0370	0.0300	0.100	J	mg/L	1	05/16/19 02:50 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	3610	50.0	50.0		mg/L	1	05/20/19 04:45 PM

LUMINANT

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
	DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit
	ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
	S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *18-Jun-19*

CLIENT:	Golder	**Client Sample ID:**	BMW-20
Project:	Luminant-A1 Landfill	**Lab ID:**	1905185-11
Project No:	19122262-D	**Collection Date:**	05/15/19 04:00 PM
Lab Order:	1905185	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	05/22/19 03:50 PM
Arsenic	0.00541	0.00200	0.00500		mg/L	1	05/22/19 03:50 PM
Barium	0.0412	0.00300	0.0100		mg/L	1	05/22/19 03:50 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	05/22/19 03:50 PM
Boron	0.979	0.0100	0.0300		mg/L	1	05/22/19 03:50 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	05/22/19 03:50 PM
Calcium	146	2.00	6.00		mg/L	20	05/23/19 11:53 AM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	05/22/19 03:50 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	05/22/19 03:50 PM
Iron	1.28	0.0300	0.100		mg/L	1	05/22/19 03:50 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	05/22/19 03:50 PM
Lithium	0.0615	0.00500	0.0100		mg/L	1	05/22/19 03:50 PM
Magnesium	136	2.00	6.00		mg/L	20	05/23/19 11:53 AM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	05/22/19 03:50 PM
Potassium	5.21	0.100	0.300		mg/L	1	05/22/19 03:50 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	05/22/19 03:50 PM
Sodium	382	2.00	6.00		mg/L	20	05/23/19 11:53 AM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	05/22/19 03:50 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	05/24/19 10:07 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **JL**
Chloride	426	3.00	10.0		mg/L	10	05/17/19 04:57 AM
Fluoride	0.418	0.100	0.400		mg/L	1	05/16/19 10:01 PM
Nitrate-N	0.595	0.100	0.500		mg/L	1	05/16/19 10:01 PM
Sulfate	474	10.0	30.0		mg/L	10	05/17/19 04:57 AM
ALKALINITY		**M2320 B**					Analyst: **CC**
Alkalinity, Bicarbonate (As CaCO3)	773	10.0	20.0		mg/L @ pH 4.54	1	05/17/19 05:15 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	05/17/19 05:15 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	05/17/19 05:15 PM
Alkalinity, Total (As CaCO3)	773	20.0	20.0		mg/L @ pH 4.54	1	05/17/19 05:15 PM
FERRIC IRON (CALCULATED)		**M3500-FE D**					Analyst: **CAC**
Iron, Ferric	1.28	0.0500	0.100	N	mg/L	1	05/24/19
FERROUS IRON		**M3500-FE D**					Analyst: **BTJ**
Iron, Ferrous	<0.0500	0.0500	0.100	N	mg/L	1	05/20/19 04:02 PM

LUMINANT

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *18-Jun-19*

CLIENT:	Golder	**Client Sample ID:**	BMW-20
Project:	Luminant-A1 Landfill	**Lab ID:**	1905185-11
Project No:	19122262-D	**Collection Date:**	05/15/19 04:00 PM
Lab Order:	1905185	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
ORTHOPHOSPHATE		**M4500-P E**					Analyst: **CC**
Phosphorus, Total Orthophosphate (As P)	<0.0300	0.0300	0.100		mg/L	1	05/16/19 02:52 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	2030	50.0	50.0		mg/L	1	05/20/19 04:45 PM

LUMINANT

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
S	Spike Recovery outside control limits	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905185
Project: Luminant-A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_190524A

The QC data in batch 91059 applies to the following samples: 1905185-01B, 1905185-02B, 1905185-03B, 1905185-04B, 1905185-05B, 1905185-06B, 1905185-07B, 1905185-08B, 1905185-09B, 1905185-10B, 1905185-11B

Sample ID	**MB-91059**	Batch ID:	**91059**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**CETAC2_HG_190524A**	Analysis Date:	**5/24/2019 9:28:33 AM**	Prep Date:	**5/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.0000800	0.000200								

Sample ID	**LCS-91059**	Batch ID:	**91059**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**CETAC2_HG_190524A**	Analysis Date:	**5/24/2019 9:33:05 AM**	Prep Date:	**5/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00187	0.000200	0.00200	0	93.5	85	115			

Sample ID	**LCSD-91059**	Batch ID:	**91059**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**LCSD**	Run ID:	**CETAC2_HG_190524A**	Analysis Date:	**5/24/2019 9:35:22 AM**	Prep Date:	**5/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00195	0.000200	0.00200	0	97.5	85	115	4.19	15	

Sample ID	**1905231-01A MS**	Batch ID:	**91059**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**MS**	Run ID:	**CETAC2_HG_190524A**	Analysis Date:	**5/24/2019 10:20:46 AM**	Prep Date:	**5/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00960	0.00100	0.0100	0	96.0	80	120			

Sample ID	**1905231-01A MSD**	Batch ID:	**91059**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**MSD**	Run ID:	**CETAC2_HG_190524A**	Analysis Date:	**5/24/2019 10:23:02 AM**	Prep Date:	**5/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00925	0.00100	0.0100	0	92.5	80	120	3.71	15	

Sample ID	**1905231-01A SD**	Batch ID:	**91059**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**SD**	Run ID:	**CETAC2_HG_190524A**	Analysis Date:	**5/24/2019 10:25:18 AM**	Prep Date:	**5/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.00200	0.00500	0	0				0	10	

Sample ID	**1905231-01A PDS**	Batch ID:	**91059**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**PDS**	Run ID:	**CETAC2_HG_190524A**	Analysis Date:	**5/24/2019 10:27:34 AM**	Prep Date:	**5/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0120	0.00100	0.0125	0	95.6	85	115			

LUMINANT

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905185
Project: Luminant-A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_190524A

Sample ID	ICV-190524	Batch ID:	R104261	TestNo:	SW7470A	Units:	mg/L
SampType:	ICV	Run ID:	CETAC2_HG_190524A	Analysis Date:	5/24/2019 9:24:00 AM	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00400	0.000200	0.00400	0	100	90	110			

Sample ID	CCV1-190524	Batch ID:	R104261	TestNo:	SW7470A	Units:	mg/L
SampType:	CCV	Run ID:	CETAC2_HG_190524A	Analysis Date:	5/24/2019 10:00:18 AM	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00214	0.000200	0.00200	0	107	90	110			

Sample ID	CCV2-190524	Batch ID:	R104261	TestNo:	SW7470A	Units:	mg/L
SampType:	CCV	Run ID:	CETAC2_HG_190524A	Analysis Date:	5/24/2019 10:36:42 AM	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00212	0.000200	0.00200	0	106	90	110			

LUMINANT

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905185
Project: Luminant-A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190522D

The QC data in batch 90989 applies to the following samples: 1905185-01B, 1905185-02B, 1905185-03B, 1905185-04B, 1905185-05B, 1905185-06B, 1905185-07B, 1905185-08B, 1905185-09B, 1905185-10B, 1905185-11B

Sample ID **MB-90989** Batch ID: **90989** TestNo: **SW6020A** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_190522D** Analysis Date: **5/22/2019 2:44:00 PM** Prep Date: **5/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.000800	0.00250								
Arsenic	<0.00200	0.00500								
Barium	<0.00300	0.0100								
Beryllium	<0.000300	0.00100								
Boron	<0.0100	0.0300								
Cadmium	<0.000300	0.00100								
Calcium	<0.100	0.300								
Chromium	<0.00200	0.00500								
Cobalt	<0.00300	0.00500								
Iron	<0.0300	0.100								
Lead	<0.000300	0.00100								
Lithium	<0.00500	0.0100								
Magnesium	<0.100	0.300								
Molybdenum	<0.00200	0.00500								
Potassium	<0.100	0.300								
Selenium	<0.00200	0.00500								
Sodium	<0.100	0.300								
Thallium	<0.000500	0.00150								

Sample ID **LCS-90989** Batch ID: **90989** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_190522D** Analysis Date: **5/22/2019 2:46:00 PM** Prep Date: **5/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.202	0.00250	0.200	0	101	80	120			
Arsenic	0.201	0.00500	0.200	0	100	80	120			
Barium	0.198	0.0100	0.200	0	99.2	80	120			
Beryllium	0.198	0.00100	0.200	0	99.2	80	120			
Boron	0.202	0.0300	0.200	0	101	80	120			
Cadmium	0.199	0.00100	0.200	0	99.6	80	120			
Calcium	4.60	0.300	5.00	0	92.1	80	120			
Chromium	0.200	0.00500	0.200	0	99.8	80	120			
Cobalt	0.202	0.00500	0.200	0	101	80	120			
Iron	5.23	0.100	5.00	0	105	80	120			
Lead	0.184	0.00100	0.200	0	91.9	80	120			
Lithium	0.196	0.0100	0.200	0	98.0	80	120			
Magnesium	5.02	0.300	5.00	0	100	80	120			
Molybdenum	0.190	0.00500	0.200	0	95.1	80	120			
Potassium	5.06	0.300	5.00	0	101	80	120			
Selenium	0.209	0.00500	0.200	0	104	80	120			

LUMINANT

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905185
Project: Luminant-A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190522D

Sample ID	LCS-90989	Batch ID:	90989	TestNo:	SW6020A	Units:	mg/L
SampType:	LCS	Run ID:	ICP-MS4_190522D	Analysis Date:	5/22/2019 2:46:00 PM	Prep Date:	5/20/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	5.02	0.300	5.00	0	100	80	120			
Thallium	0.202	0.00150	0.200	0	101	80	120			

Sample ID	LCSD-90989	Batch ID:	90989	TestNo:	SW6020A	Units:	mg/L
SampType:	LCSD	Run ID:	ICP-MS4_190522D	Analysis Date:	5/22/2019 2:48:00 PM	Prep Date:	5/20/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.201	0.00250	0.200	0	100	80	120	0.333	15	
Arsenic	0.203	0.00500	0.200	0	101	80	120	0.942	15	
Barium	0.199	0.0100	0.200	0	99.3	80	120	0.128	15	
Beryllium	0.198	0.00100	0.200	0	99.1	80	120	0.129	15	
Boron	0.201	0.0300	0.200	0	101	80	120	0.298	15	
Cadmium	0.198	0.00100	0.200	0	99.2	80	120	0.362	15	
Calcium	4.62	0.300	5.00	0	92.4	80	120	0.325	15	
Chromium	0.199	0.00500	0.200	0	99.7	80	120	0.085	15	
Cobalt	0.203	0.00500	0.200	0	102	80	120	0.820	15	
Iron	5.15	0.100	5.00	0	103	80	120	1.50	15	
Lead	0.185	0.00100	0.200	0	92.3	80	120	0.421	15	
Lithium	0.200	0.0100	0.200	0	100	80	120	2.22	15	
Magnesium	5.07	0.300	5.00	0	101	80	120	0.937	15	
Molybdenum	0.190	0.00500	0.200	0	95.0	80	120	0.081	15	
Potassium	5.12	0.300	5.00	0	102	80	120	1.16	15	
Selenium	0.204	0.00500	0.200	0	102	80	120	2.39	15	
Sodium	5.05	0.300	5.00	0	101	80	120	0.519	15	
Thallium	0.199	0.00150	0.200	0	99.3	80	120	1.55	15	

Sample ID	1905185-06B SD	Batch ID:	90989	TestNo:	SW6020A	Units:	mg/L
SampType:	SD	Run ID:	ICP-MS4_190522D	Analysis Date:	5/22/2019 2:54:00 PM	Prep Date:	5/20/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.00400	0.0125	0	0				0	10	
Arsenic	<0.0100	0.0250	0	0				0	10	
Barium	0.0256	0.0500	0	0.0253				1.30	10	
Beryllium	<0.00150	0.00500	0	0				0	10	
Boron	0.501	0.150	0	0.449				10.8	10	R
Cadmium	<0.00150	0.00500	0	0				0	10	
Chromium	<0.0100	0.0250	0	0				0	10	
Cobalt	<0.0150	0.0250	0	0				0	10	
Iron	<0.150	0.500	0	0				0	10	
Lead	<0.00150	0.00500	0	0				0	10	
Lithium	0.109	0.0500	0	0.101				7.40	10	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

LUMINANT

CLIENT: Golder
Work Order: 1905185
Project: Luminant-A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190522D

Sample ID **1905185-06B SD**	Batch ID: **90989**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS4_190522D**	Analysis Date: **5/22/2019 2:54:00 PM**	Prep Date: **5/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Molybdenum	<0.0100	0.0250	0	0.00218				0	10	
Potassium	13.4	1.50	0	13.2				1.21	10	
Selenium	<0.0100	0.0250	0	0				0	10	
Thallium	<0.00250	0.00750	0	0				0	10	

Sample ID **1905185-06B PDS**	Batch ID: **90989**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_190522D**	Analysis Date: **5/22/2019 3:13:00 PM**	Prep Date: **5/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.201	0.00250	0.200	0	100	80	120			
Arsenic	0.204	0.00500	0.200	0	102	80	120			
Barium	0.218	0.0100	0.200	0.0253	96.3	80	120			
Beryllium	0.174	0.00100	0.200	0	87.2	80	120			
Boron	0.613	0.0300	0.200	0.449	81.7	80	120			
Cadmium	0.183	0.00100	0.200	0	91.4	80	120			
Chromium	0.188	0.00500	0.200	0	94.2	80	120			
Cobalt	0.193	0.00500	0.200	0	96.4	80	120			
Iron	4.70	0.100	5.00	0	94.1	80	120			
Lead	0.186	0.00100	0.200	0	93.0	80	120			
Lithium	0.265	0.0100	0.200	0.101	81.8	80	120			
Molybdenum	0.186	0.00500	0.200	0.00218	91.9	80	120			
Potassium	17.5	0.300	5.00	13.3	84.0	80	120			
Selenium	0.213	0.00500	0.200	0	106	80	120			
Thallium	0.200	0.00150	0.200	0	100	80	120			

Sample ID **1905185-06B MS**	Batch ID: **90989**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS4_190522D**	Analysis Date: **5/22/2019 3:15:00 PM**	Prep Date: **5/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.202	0.00250	0.200	0	101	80	120			
Arsenic	0.208	0.00500	0.200	0	104	80	120			
Barium	0.226	0.0100	0.200	0.0253	100	80	120			
Beryllium	0.174	0.00100	0.200	0	87.0	80	120			
Boron	0.654	0.0300	0.200	0.449	103	80	120			
Cadmium	0.185	0.00100	0.200	0	92.7	80	120			
Calcium	197	0.300	5.00	194	64.2	80	120			S
Chromium	0.186	0.00500	0.200	0	93.0	80	120			
Cobalt	0.193	0.00500	0.200	0	96.7	80	120			
Iron	4.82	0.100	5.00	0	96.4	80	120			
Lead	0.187	0.00100	0.200	0	93.7	80	120			
Lithium	0.270	0.0100	0.200	0.101	84.2	80	120			

LUMINANT

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905185
Project: Luminant-A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190522D

Sample ID **1905185-06B MS**	Batch ID: **90989**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS4_190522D**	Analysis Date: **5/22/2019 3:15:00 PM**	Prep Date: **5/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Magnesium	128	0.300	5.00	128	-3.79	80	120			S
Molybdenum	0.195	0.00500	0.200	0.00218	96.2	80	120			
Potassium	18.5	0.300	5.00	13.3	105	80	120			
Selenium	0.214	0.00500	0.200	0	107	80	120			
Sodium	252	0.300	5.00	257	-103	80	120			S
Thallium	0.203	0.00150	0.200	0	101	80	120			

Sample ID **1905185-06B MSD**	Batch ID: **90989**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS4_190522D**	Analysis Date: **5/22/2019 3:17:00 PM**	Prep Date: **5/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.200	0.00250	0.200	0	100	80	120	0.836	15	
Arsenic	0.208	0.00500	0.200	0	104	80	120	0.067	15	
Barium	0.227	0.0100	0.200	0.0253	101	80	120	0.141	15	
Beryllium	0.174	0.00100	0.200	0	86.8	80	120	0.265	15	
Boron	0.618	0.0300	0.200	0.449	84.6	80	120	5.65	15	
Cadmium	0.184	0.00100	0.200	0	92.1	80	120	0.555	15	
Calcium	195	0.300	5.00	194	16.8	80	120	1.21	15	S
Chromium	0.187	0.00500	0.200	0	93.6	80	120	0.569	15	
Cobalt	0.192	0.00500	0.200	0	95.8	80	120	1.00	15	
Iron	4.73	0.100	5.00	0	94.7	80	120	1.78	15	
Lead	0.190	0.00100	0.200	0	94.8	80	120	1.15	15	
Lithium	0.265	0.0100	0.200	0.101	81.8	80	120	1.82	15	
Magnesium	127	0.300	5.00	128	-17.7	80	120	0.544	15	S
Molybdenum	0.197	0.00500	0.200	0.00218	97.5	80	120	1.33	15	
Potassium	18.3	0.300	5.00	13.3	100	80	120	1.25	15	
Selenium	0.213	0.00500	0.200	0	107	80	120	0.639	15	
Sodium	256	0.300	5.00	257	-34.0	80	120	1.36	15	S
Thallium	0.206	0.00150	0.200	0	103	80	120	1.46	15	

LUMINANT

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905185
Project: Luminant-A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190522D

Sample ID **ICV-190522** Batch ID: **R104232** TestNo: **SW6020A** Units: **mg/L**
SampType: **ICV** Run ID: **ICP-MS4_190522D** Analysis Date: **5/22/2019 11:38:00 AM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.101	0.00250	0.100	0	101	90	110			
Arsenic	0.102	0.00500	0.100	0	102	90	110			
Barium	0.0975	0.0100	0.100	0	97.5	90	110			
Beryllium	0.0986	0.00100	0.100	0	98.6	90	110			
Boron	0.104	0.0300	0.100	0	104	90	110			
Cadmium	0.0995	0.00100	0.100	0	99.5	90	110			
Calcium	2.35	0.300	2.50	0	94.2	90	110			
Chromium	0.104	0.00500	0.100	0	104	90	110			
Cobalt	0.105	0.00500	0.100	0	105	90	110			
Iron	2.57	0.100	2.50	0	103	90	110			
Lead	0.0926	0.00100	0.100	0	92.6	90	110			
Lithium	0.103	0.0100	0.100	0	103	90	110			
Magnesium	2.45	0.300	2.50	0	98.2	90	110			
Molybdenum	0.0911	0.00500	0.100	0	91.1	90	110			
Potassium	2.52	0.300	2.50	0	101	90	110			
Selenium	0.102	0.00500	0.100	0	102	90	110			
Sodium	2.53	0.300	2.50	0	101	90	110			
Thallium	0.0926	0.00150	0.100	0	92.6	90	110			

Sample ID **LCVL-190522** Batch ID: **R104232** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_190522D** Analysis Date: **5/22/2019 11:43:00 AM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00190	0.00250	0.00200	0	95.0	70	130			
Arsenic	0.00497	0.00500	0.00500	0	99.4	70	130			
Barium	0.00463	0.0100	0.00500	0	92.6	70	130			
Beryllium	0.00117	0.00100	0.00100	0	117	70	130			
Boron	0.0197	0.0300	0.0200	0	98.5	70	130			
Cadmium	0.000953	0.00100	0.00100	0	95.3	70	130			
Calcium	0.0981	0.300	0.100	0	98.1	70	130			
Chromium	0.00486	0.00500	0.00500	0	97.2	70	130			
Cobalt	0.00493	0.00500	0.00500	0	98.7	70	130			
Iron	0.111	0.100	0.100	0	111	70	130			
Lead	0.000870	0.00100	0.00100	0	87.0	70	130			
Lithium	0.00926	0.0100	0.0100	0	92.6	70	130			
Magnesium	0.0967	0.300	0.100	0	96.7	70	130			
Molybdenum	0.00458	0.00500	0.00500	0	91.5	70	130			
Potassium	0.0964	0.300	0.100	0	96.4	70	130			
Selenium	0.00494	0.00500	0.00500	0	98.8	70	130			
Sodium	0.0966	0.300	0.100	0	96.6	70	130			
Thallium	0.000843	0.00150	0.00100	0	84.3	70	130			

LUMINANT

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905185
Project: Luminant-A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190522D

Sample ID **CCV4-190522**	Batch ID: **R104232**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_190522D**	Analysis Date: **5/22/2019 2:34:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.203	0.00250	0.200	0	102	90	110			
Arsenic	0.209	0.00500	0.200	0	104	90	110			
Barium	0.202	0.0100	0.200	0	101	90	110			
Beryllium	0.201	0.00100	0.200	0	100	90	110			
Boron	0.215	0.0300	0.200	0	108	90	110			
Cadmium	0.202	0.00100	0.200	0	101	90	110			
Calcium	4.66	0.300	5.00	0	93.3	90	110			
Chromium	0.203	0.00500	0.200	0	102	90	110			
Cobalt	0.208	0.00500	0.200	0	104	90	110			
Iron	5.05	0.100	5.00	0	101	90	110			
Lead	0.193	0.00100	0.200	0	96.7	90	110			
Lithium	0.195	0.0100	0.200	0	97.5	90	110			
Magnesium	5.05	0.300	5.00	0	101	90	110			
Molybdenum	0.193	0.00500	0.200	0	96.4	90	110			
Potassium	5.13	0.300	5.00	0	103	90	110			
Selenium	0.212	0.00500	0.200	0	106	90	110			
Sodium	5.03	0.300	5.00	0	101	90	110			
Thallium	0.205	0.00150	0.200	0	103	90	110			

Sample ID **LCVL4-190522**	Batch ID: **R104232**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_190522D**	Analysis Date: **5/22/2019 2:40:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00194	0.00250	0.00200	0	96.9	70	130			
Arsenic	0.00504	0.00500	0.00500	0	101	70	130			
Barium	0.00472	0.0100	0.00500	0	94.5	70	130			
Beryllium	0.00124	0.00100	0.00100	0	124	70	130			
Boron	0.0223	0.0300	0.0200	0	111	70	130			
Cadmium	0.000955	0.00100	0.00100	0	95.5	70	130			
Calcium	0.111	0.300	0.100	0	111	70	130			
Chromium	0.00487	0.00500	0.00500	0	97.4	70	130			
Cobalt	0.00501	0.00500	0.00500	0	100	70	130			
Iron	0.114	0.100	0.100	0	114	70	130			
Lead	0.000846	0.00100	0.00100	0	84.6	70	130			
Lithium	0.00964	0.0100	0.0100	0	96.4	70	130			
Magnesium	0.101	0.300	0.100	0	101	70	130			
Molybdenum	0.00453	0.00500	0.00500	0	90.7	70	130			
Potassium	0.0997	0.300	0.100	0	99.7	70	130			
Selenium	0.00427	0.00500	0.00500	0	85.3	70	130			
Sodium	0.111	0.300	0.100	0	111	70	130			
Thallium	0.000835	0.00150	0.00100	0	83.5	70	130			

LUMINANT

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905185
Project: Luminant-A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190522D

Sample ID **CCV5-190522** Batch ID: **R104232** TestNo: **SW6020A** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_190522D** Analysis Date: **5/22/2019 3:26:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.205	0.00250	0.200	0	102	90	110			
Arsenic	0.205	0.00500	0.200	0	103	90	110			
Barium	0.200	0.0100	0.200	0	99.8	90	110			
Beryllium	0.200	0.00100	0.200	0	100	90	110			
Boron	0.220	0.0300	0.200	0	110	90	110			
Cadmium	0.202	0.00100	0.200	0	101	90	110			
Calcium	4.68	0.300	5.00	0	93.5	90	110			
Chromium	0.203	0.00500	0.200	0	101	90	110			
Cobalt	0.205	0.00500	0.200	0	102	90	110			
Iron	5.15	0.100	5.00	0	103	90	110			
Lead	0.188	0.00100	0.200	0	93.8	90	110			
Lithium	0.203	0.0100	0.200	0	102	90	110			
Magnesium	5.17	0.300	5.00	0	103	90	110			
Molybdenum	0.195	0.00500	0.200	0	97.3	90	110			
Potassium	5.20	0.300	5.00	0	104	90	110			
Selenium	0.213	0.00500	0.200	0	107	90	110			
Sodium	5.13	0.300	5.00	0	103	90	110			
Thallium	0.201	0.00150	0.200	0	101	90	110			

Sample ID **LCVL5-190522** Batch ID: **R104232** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_190522D** Analysis Date: **5/22/2019 3:46:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00186	0.00250	0.00200	0	93.2	70	130			
Arsenic	0.00475	0.00500	0.00500	0	95.0	70	130			
Barium	0.00461	0.0100	0.00500	0	92.3	70	130			
Beryllium	0.000947	0.00100	0.00100	0	94.7	70	130			
Boron	0.0229	0.0300	0.0200	0	115	70	130			
Cadmium	0.000924	0.00100	0.00100	0	92.4	70	130			
Calcium	0.102	0.300	0.100	0	102	70	130			
Chromium	0.00452	0.00500	0.00500	0	90.4	70	130			
Cobalt	0.00479	0.00500	0.00500	0	95.8	70	130			
Iron	0.106	0.100	0.100	0	106	70	130			
Lead	0.000756	0.00100	0.00100	0	75.6	70	130			
Lithium	0.00948	0.0100	0.0100	0	94.8	70	130			
Magnesium	0.0981	0.300	0.100	0	98.1	70	130			
Molybdenum	0.00455	0.00500	0.00500	0	91.0	70	130			
Potassium	0.0951	0.300	0.100	0	95.1	70	130			
Selenium	0.00474	0.00500	0.00500	0	94.7	70	130			
Sodium	0.126	0.300	0.100	0	126	70	130			
Thallium	0.000763	0.00150	0.00100	0	76.3	70	130			

LUMINANT

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905185
Project: Luminant-A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190522D

Sample ID **CCV6-190522**	Batch ID: **R104232**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_190522D**	Analysis Date: **5/22/2019 4:12:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.208	0.00250	0.200	0	104	90	110			
Arsenic	0.211	0.00500	0.200	0	106	90	110			
Barium	0.208	0.0100	0.200	0	104	90	110			
Beryllium	0.195	0.00100	0.200	0	97.5	90	110			
Boron	0.207	0.0300	0.200	0	104	90	110			
Cadmium	0.202	0.00100	0.200	0	101	90	110			
Chromium	0.202	0.00500	0.200	0	101	90	110			
Cobalt	0.209	0.00500	0.200	0	104	90	110			
Iron	5.12	0.100	5.00	0	102	90	110			
Lead	0.192	0.00100	0.200	0	96.1	90	110			
Lithium	0.197	0.0100	0.200	0	98.7	90	110			
Molybdenum	0.197	0.00500	0.200	0	98.4	90	110			
Potassium	5.17	0.300	5.00	0	103	90	110			
Selenium	0.213	0.00500	0.200	0	107	90	110			
Thallium	0.206	0.00150	0.200	0	103	90	110			

Sample ID **LCVL6-190522**	Batch ID: **R104232**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_190522D**	Analysis Date: **5/22/2019 4:22:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00200	0.00250	0.00200	0	100	70	130			
Arsenic	0.00486	0.00500	0.00500	0	97.1	70	130			
Barium	0.00495	0.0100	0.00500	0	99.0	70	130			
Beryllium	0.000939	0.00100	0.00100	0	93.9	70	130			
Boron	0.0216	0.0300	0.0200	0	108	70	130			
Cadmium	0.00101	0.00100	0.00100	0	101	70	130			
Chromium	0.00486	0.00500	0.00500	0	97.1	70	130			
Cobalt	0.00489	0.00500	0.00500	0	97.8	70	130			
Iron	0.113	0.100	0.100	0	113	70	130			
Lead	0.000805	0.00100	0.00100	0	80.5	70	130			
Lithium	0.00903	0.0100	0.0100	0	90.3	70	130			
Molybdenum	0.00464	0.00500	0.00500	0	92.8	70	130			
Potassium	0.0982	0.300	0.100	0	98.2	70	130			
Selenium	0.00531	0.00500	0.00500	0	106	70	130			
Thallium	0.000807	0.00150	0.00100	0	80.7	70	130			

LUMINANT

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905185
Project: Luminant-A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190523A

The QC data in batch 90989 applies to the following samples: 1905185-01B, 1905185-02B, 1905185-03B, 1905185-04B, 1905185-05B, 1905185-06B, 1905185-07B, 1905185-08B, 1905185-09B, 1905185-10B, 1905185-11B

Sample ID **1905185-06B SD** Batch ID: **90989** TestNo: **SW6020A** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS4_190523A** Analysis Date: **5/23/2019 11:20:00 AM** Prep Date: **5/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	207	30.0	0	200				3.62	10	
Magnesium	134	30.0	0	130				2.71	10	
Sodium	266	30.0	0	265				0.189	10	

Sample ID **1905185-06B PDS** Batch ID: **90989** TestNo: **SW6020A** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS4_190523A** Analysis Date: **5/23/2019 11:40:00 AM** Prep Date: **5/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	295	6.00	100	200	95.2	80	120			
Magnesium	227	6.00	100	130	96.8	80	120			
Sodium	365	6.00	100	265	99.6	80	120			

LUMINANT

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905185
Project: Luminant-A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190523A

Sample ID	ICV-190523	Batch ID:	R104240	TestNo:	SW6020A	Units:	mg/L
SampType:	ICV	Run ID:	ICP-MS4_190523A	Analysis Date:	5/23/2019 11:01:00 AM	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.104	0.0300	0.100	0	104	90	110			
Calcium	2.39	0.300	2.50	0	95.8	90	110			
Iron	2.56	0.100	2.50	0	102	90	110			
Magnesium	2.53	0.300	2.50	0	101	90	110			
Sodium	2.56	0.300	2.50	0	102	90	110			

Sample ID	LCVL-190523	Batch ID:	R104240	TestNo:	SW6020A	Units:	mg/L
SampType:	LCVL	Run ID:	ICP-MS4_190523A	Analysis Date:	5/23/2019 11:09:00 AM	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0214	0.0300	0.0200	0	107	70	130			
Calcium	0.0901	0.300	0.100	0	90.1	70	130			
Iron	0.105	0.100	0.100	0	105	70	130			
Magnesium	0.0985	0.300	0.100	0	98.5	70	130			
Sodium	0.0949	0.300	0.100	0	94.9	70	130			

Sample ID	CCV1-190523	Batch ID:	R104240	TestNo:	SW6020A	Units:	mg/L
SampType:	CCV	Run ID:	ICP-MS4_190523A	Analysis Date:	5/23/2019 11:42:00 AM	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.210	0.0300	0.200	0	105	90	110			
Calcium	4.76	0.300	5.00	0	95.2	90	110			
Iron	5.10	0.100	5.00	0	102	90	110			
Magnesium	5.21	0.300	5.00	0	104	90	110			
Sodium	5.14	0.300	5.00	0	103	90	110			

Sample ID	LCVL1-190523	Batch ID:	R104240	TestNo:	SW6020A	Units:	mg/L
SampType:	LCVL	Run ID:	ICP-MS4_190523A	Analysis Date:	5/23/2019 11:48:00 AM	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0248	0.0300	0.0200	0	124	70	130			
Calcium	0.0899	0.300	0.100	0	89.9	70	130			
Iron	0.105	0.100	0.100	0	105	70	130			
Magnesium	0.0985	0.300	0.100	0	98.5	70	130			
Sodium	0.0973	0.300	0.100	0	97.3	70	130			

Sample ID	CCV2-190523	Batch ID:	R104240	TestNo:	SW6020A	Units:	mg/L
SampType:	CCV	Run ID:	ICP-MS4_190523A	Analysis Date:	5/23/2019 12:21:00 PM	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.79	0.300	5.00	0	95.7	90	110			

LUMINANT

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905185
Project: Luminant-A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190523A

Sample ID	CCV2-190523	Batch ID:	R104240	TestNo:	SW6020A	Units:	mg/L
SampType:	CCV	Run ID:	ICP-MS4_190523A	Analysis Date:	5/23/2019 12:21:00 PM	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Magnesium	5.29	0.300	5.00	0	106	90	110			
Sodium	5.22	0.300	5.00	0	104	90	110			

Sample ID	LCVL2-190523	Batch ID:	R104240	TestNo:	SW6020A	Units:	mg/L
SampType:	LCVL	Run ID:	ICP-MS4_190523A	Analysis Date:	5/23/2019 12:29:00 PM	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.101	0.300	0.100	0	101	70	130			
Magnesium	0.0985	0.300	0.100	0	98.5	70	130			
Sodium	0.0994	0.300	0.100	0	99.4	70	130			

LUMINANT

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905185
Project: Luminant-A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_190516B

The QC data in batch 90934 applies to the following samples: 1905185-01C, 1905185-02C, 1905185-03C, 1905185-04C, 1905185-05C, 1905185-06C, 1905185-07C, 1905185-08C, 1905185-09C, 1905185-10C, 1905185-11C

Sample ID	**MB-90934**	Batch ID:	**90934**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**IC2_190516B**	Analysis Date:	**5/16/2019 10:26:41 AM**	Prep Date:	**5/16/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00								
Fluoride	<0.100	0.400								
Nitrate-N	<0.100	0.500								
Sulfate	<1.00	3.00								

Sample ID	**LCS-90934**	Batch ID:	**90934**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**IC2_190516B**	Analysis Date:	**5/16/2019 10:42:42 AM**	Prep Date:	**5/16/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.2	1.00	10.00	0	102	90	110			
Fluoride	4.08	0.400	4.000	0	102	90	110			
Nitrate-N	5.10	0.500	5.000	0	102	90	110			
Sulfate	30.6	3.00	30.00	0	102	90	110			

Sample ID	**LCSD-90934**	Batch ID:	**90934**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**LCSD**	Run ID:	**IC2_190516B**	Analysis Date:	**5/16/2019 10:58:41 AM**	Prep Date:	**5/16/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.2	1.00	10.00	0	102	90	110	0.034	20	
Fluoride	4.08	0.400	4.000	0	102	90	110	0.128	20	
Nitrate-N	5.18	0.500	5.000	0	104	90	110	1.47	20	
Sulfate	30.8	3.00	30.00	0	103	90	110	0.343	20	

Sample ID	**1905178-02DMS**	Batch ID:	**90934**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**MS**	Run ID:	**IC2_190516B**	Analysis Date:	**5/16/2019 12:59:35 PM**	Prep Date:	**5/16/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	21400	1000	20000	0	107	90	110			
Fluoride	21400	400	20000	0	107	90	110			
Nitrate-N	4620	500	4516	0	102	90	110			
Sulfate	20700	3000	20000	0	103	90	110			

Sample ID	**1905178-02DMSD**	Batch ID:	**90934**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**MSD**	Run ID:	**IC2_190516B**	Analysis Date:	**5/16/2019 1:15:35 PM**	Prep Date:	**5/16/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	21000	1000	20000	0	105	90	110	2.04	20	
Fluoride	21000	400	20000	0	105	90	110	1.92	20	
Nitrate-N	4530	500	4516	0	100	90	110	2.06	20	

LUMINANT

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905185
Project: Luminant-A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_190516B

Sample ID	1905178-02DMSD	Batch ID:	90934	TestNo:	E300	Units:	mg/L
SampType:	MSD	Run ID:	IC2_190516B	Analysis Date:	5/16/2019 1:15:35 PM	Prep Date:	5/16/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	20200	3000	20000	0	101	90	110	2.16	20	

Sample ID	1905178-03DMS	Batch ID:	90934	TestNo:	E300	Units:	mg/L
SampType:	MS	Run ID:	IC2_190516B	Analysis Date:	5/16/2019 1:47:35 PM	Prep Date:	5/16/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	24300	1000	20000	3227	105	90	110			
Fluoride	21100	400	20000	0	106	90	110			
Nitrate-N	4600	500	4516	0	102	90	110			
Sulfate	20400	3000	20000	0	102	90	110			

Sample ID	1905178-03DMSD	Batch ID:	90934	TestNo:	E300	Units:	mg/L
SampType:	MSD	Run ID:	IC2_190516B	Analysis Date:	5/16/2019 2:03:35 PM	Prep Date:	5/16/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	24200	1000	20000	3227	105	90	110	0.381	20	
Fluoride	21100	400	20000	0	106	90	110	0.221	20	
Nitrate-N	4550	500	4516	0	101	90	110	1.04	20	
Sulfate	20100	3000	20000	0	101	90	110	1.20	20	

LUMINANT

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905185
Project: Luminant-A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_190516B

Sample ID **ICV-190516**	Batch ID: **R104123**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC2_190516B**	Analysis Date: **5/16/2019 9:54:41 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	26.3	1.00	25.00	0	105	90	110			
Fluoride	10.5	0.400	10.00	0	105	90	110			
Nitrate-N	13.3	0.500	12.50	0	106	90	110			
Sulfate	78.9	3.00	75.00	0	105	90	110			

Sample ID **CCV1-190516**	Batch ID: **R104123**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_190516B**	Analysis Date: **5/16/2019 5:29:14 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.5	1.00	10.00	0	105	90	110			
Fluoride	4.18	0.400	4.000	0	104	90	110			
Nitrate-N	5.22	0.500	5.000	0	104	90	110			
Sulfate	31.5	3.00	30.00	0	105	90	110			

Sample ID **CCV2-190516**	Batch ID: **R104123**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_190516B**	Analysis Date: **5/16/2019 9:29:14 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.5	1.00	10.00	0	105	90	110			
Fluoride	4.18	0.400	4.000	0	105	90	110			
Nitrate-N	5.22	0.500	5.000	0	104	90	110			
Sulfate	31.9	3.00	30.00	0	106	90	110			

Sample ID **CCV3-190516**	Batch ID: **R104123**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_190516B**	Analysis Date: **5/17/2019 12:41:14 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.8	1.00	10.00	0	108	90	110			
Fluoride	4.24	0.400	4.000	0	106	90	110			
Nitrate-N	5.27	0.500	5.000	0	105	90	110			
Sulfate	31.9	3.00	30.00	0	106	90	110			

Sample ID **CCV4-190516**	Batch ID: **R104123**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_190516B**	Analysis Date: **5/17/2019 4:25:14 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.6	1.00	10.00	0	106	90	110			
Sulfate	31.6	3.00	30.00	0	105	90	110			

LUMINANT

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905185
Project: Luminant-A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_190516B

Sample ID **CCV5-190516**	Batch ID: **R104123**	TestNo: **E300**		Units: **mg/L**	
SampType: **CCV**	Run ID: **IC2_190516B**	Analysis Date: **5/17/2019 6:49:14 AM**		Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.6	1.00	10.00	0	106	90	110			
Sulfate	31.8	3.00	30.00	0	106	90	110			

LUMINANT

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905185
Project: Luminant-A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_190517B

The QC data in batch 90964 applies to the following samples: 1905185-08C, 1905185-10C

Sample ID	MB-90964	Batch ID:	90964	TestNo:	E300	Units:	mg/L
SampType:	MBLK	Run ID:	IC2_190517B	Analysis Date:	5/17/2019 10:29:03 AM	Prep Date:	5/17/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	<1.00	3.00								

Sample ID	LCS-90964	Batch ID:	90964	TestNo:	E300	Units:	mg/L
SampType:	LCS	Run ID:	IC2_190517B	Analysis Date:	5/17/2019 10:45:03 AM	Prep Date:	5/17/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	31.5	3.00	30.00	0	105	90	110			

Sample ID	LCSD-90964	Batch ID:	90964	TestNo:	E300	Units:	mg/L
SampType:	LCSD	Run ID:	IC2_190517B	Analysis Date:	5/17/2019 11:01:03 AM	Prep Date:	5/17/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	31.6	3.00	30.00	0	105	90	110	0.320	20	

Sample ID	1905169-06BMS	Batch ID:	90964	TestNo:	E300	Units:	mg/L
SampType:	MS	Run ID:	IC2_190517B	Analysis Date:	5/17/2019 3:37:12 PM	Prep Date:	5/17/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	388	30.0	200.0	177.5	105	90	110			

Sample ID	1905169-06BMSD	Batch ID:	90964	TestNo:	E300	Units:	mg/L
SampType:	MSD	Run ID:	IC2_190517B	Analysis Date:	5/17/2019 3:53:11 PM	Prep Date:	5/17/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	394	30.0	200.0	177.5	108	90	110	1.58	20	

LUMINANT

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905185
Project: Luminant-A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_190517B

Sample ID	ICV-190517	Batch ID:	R104148	TestNo:	E300	Units:	mg/L
SampType:	ICV	Run ID:	IC2_190517B	Analysis Date:	5/17/2019 9:57:03 AM	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	80.5	3.00	75.00	0	107	90	110			

Sample ID	CCV1-190517	Batch ID:	R104148	TestNo:	E300	Units:	mg/L
SampType:	CCV	Run ID:	IC2_190517B	Analysis Date:	5/17/2019 7:21:11 PM	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	31.9	3.00	30.00	0	106	90	110			

LUMINANT

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905185
Project: Luminant-A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_190517A

The QC data in batch 90967 applies to the following samples: 1905185-01C, 1905185-02C, 1905185-03C, 1905185-04C, 1905185-05C, 1905185-06C, 1905185-07C, 1905185-08C, 1905185-09C, 1905185-10C, 1905185-11C

Sample ID **MB-90967** Batch ID: **90967** TestNo: **M2320 B** Units: **mg/L @ pH 4.18**
SampType: **MBLK** Run ID: **TITRATOR_190517A** Analysis Date: **5/17/2019 10:37:00 AM** Prep Date: **5/17/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	<10.0	20.0								
Alkalinity, Carbonate (As CaCO3)	<10.0	20.0								
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0								
Alkalinity, Total (As CaCO3)	<20.0	20.0								

Sample ID **LCS-90967** Batch ID: **90967** TestNo: **M2320 B** Units: **mg/L @ pH 4.07**
SampType: **LCS** Run ID: **TITRATOR_190517A** Analysis Date: **5/17/2019 10:42:00 AM** Prep Date: **5/17/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)	52.8	20.0	50.00	0	106	74	129			

Sample ID **LCSD-90967** Batch ID: **90967** TestNo: **M2320 B** Units: **mg/L @ pH 4.09**
SampType: **LCSD** Run ID: **TITRATOR_190517A** Analysis Date: **5/17/2019 11:23:00 AM** Prep Date: **5/17/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)	52.7	20.0	50.00	0	105	74	129	0.152	20	

Sample ID **1905178-02D DUP** Batch ID: **90967** TestNo: **M2320 B** Units: **mg/L @ pH 4.53**
SampType: **DUP** Run ID: **TITRATOR_190517A** Analysis Date: **5/17/2019 12:39:00 PM** Prep Date: **5/17/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	460	20.0	0	469.5				2.04	20	
Alkalinity, Carbonate (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Total (As CaCO3)	460	20.0	0	469.5				2.04	20	

Sample ID **1905185-03C DUP** Batch ID: **90967** TestNo: **M2320 B** Units: **mg/L @ pH 4.54**
SampType: **DUP** Run ID: **TITRATOR_190517A** Analysis Date: **5/17/2019 2:20:00 PM** Prep Date: **5/17/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	469	20.0	0	473.7				1.06	20	
Alkalinity, Carbonate (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Total (As CaCO3)	469	20.0	0	473.7				1.06	20	

LUMINANT

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905185
Project: Luminant-A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_190517A

Sample ID **ICV-190517**	Batch ID: **R104143**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.21**
SampType: **ICV**	Run ID: **TITRATOR_190517A**	Analysis Date: **5/17/2019 10:16:00 AM**	Prep Date: **5/17/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	10.2	20.0	0							
Alkalinity, Carbonate (As CaCO3)	88.2	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	98.3	20.0	100.0	0	98.3	98	102			

Sample ID **CCV1-190517**	Batch ID: **R104143**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.25**
SampType: **CCV**	Run ID: **TITRATOR_190517A**	Analysis Date: **5/17/2019 1:41:00 PM**	Prep Date: **5/17/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	25.5	20.0	0							
Alkalinity, Carbonate (As CaCO3)	73.1	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	98.6	20.0	100.0	0	98.6	90	110			

Sample ID **CCV2-190517**	Batch ID: **R104143**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.22**
SampType: **CCV**	Run ID: **TITRATOR_190517A**	Analysis Date: **5/17/2019 5:20:00 PM**	Prep Date: **5/17/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	14.9	20.0	0							
Alkalinity, Carbonate (As CaCO3)	84.2	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	99.0	20.0	100.0	0	99.0	90	110			

LUMINANT

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905185
Project: Luminant-A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: UV/VIS_2_190516B

The QC data in batch 90950 applies to the following samples: 1905185-01C, 1905185-02C, 1905185-03C, 1905185-04C, 1905185-05C, 1905185-06C, 1905185-07C, 1905185-08C, 1905185-09C, 1905185-10C, 1905185-11C

Sample ID	**MB-90950**	Batch ID:	**90950**	TestNo:	**M4500-P E**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**UV/VIS_2_190516B**	Analysis Date:	**5/16/2019 2:45:00 PM**	Prep Date:	**5/16/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Total Orthophosphate (As	<0.0300	0.100								

Sample ID	**LCS-90950**	Batch ID:	**90950**	TestNo:	**M4500-P E**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**UV/VIS_2_190516B**	Analysis Date:	**5/16/2019 2:45:00 PM**	Prep Date:	**5/16/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Total Orthophosphate (As	0.523	0.100	0.5000	0	105	80	120			

Sample ID	**LCSD-90950**	Batch ID:	**90950**	TestNo:	**M4500-P E**	Units:	**mg/L**
SampType:	**LCSD**	Run ID:	**UV/VIS_2_190516B**	Analysis Date:	**5/16/2019 2:46:00 PM**	Prep Date:	**5/16/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Total Orthophosphate (As	0.496	0.100	0.5000	0	99.2	80	120	5.30	15	

Sample ID	**1905185-01CMS**	Batch ID:	**90950**	TestNo:	**M4500-P E**	Units:	**mg/L**
SampType:	**MS**	Run ID:	**UV/VIS_2_190516B**	Analysis Date:	**5/16/2019 2:46:00 PM**	Prep Date:	**5/16/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Total Orthophosphate (As	0.647	0.100	0.5000	0.05100	119	80	120			

Sample ID	**1905185-01CMSD**	Batch ID:	**90950**	TestNo:	**M4500-P E**	Units:	**mg/L**
SampType:	**MSD**	Run ID:	**UV/VIS_2_190516B**	Analysis Date:	**5/16/2019 2:47:00 PM**	Prep Date:	**5/16/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Total Orthophosphate (As	0.614	0.100	0.5000	0.05100	113	80	120	5.23	15	

LUMINANT

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905185
Project: Luminant-A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: UV/VIS_2_190516B

Sample ID **ICV-190516**	Batch ID: **R104109**	TestNo: **M4500-P E**	Units: **mg/L**
SampType: **ICV**	Run ID: **UV/VIS_2_190516B**	Analysis Date: **5/16/2019 2:44:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Total Orthophosphate (As	0.204	0.100	0.2000	0	102	85	115			

Sample ID **CCV1-190516**	Batch ID: **R104109**	TestNo: **M4500-P E**	Units: **mg/L**
SampType: **CCV**	Run ID: **UV/VIS_2_190516B**	Analysis Date: **5/16/2019 2:51:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Total Orthophosphate (As	0.510	0.100	0.5000	0	102	85	115			

Sample ID **CCV2-190516**	Batch ID: **R104109**	TestNo: **M4500-P E**	Units: **mg/L**
SampType: **CCV**	Run ID: **UV/VIS_2_190516B**	Analysis Date: **5/16/2019 2:53:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Total Orthophosphate (As	0.485	0.100	0.5000	0	97.0	85	115			

LUMINANT

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905185
Project: Luminant-A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: UV/VIS_2_190520A

The QC data in batch 91002 applies to the following samples: 1905185-01A, 1905185-02A, 1905185-03A, 1905185-04A, 1905185-05A, 1905185-06A, 1905185-07A, 1905185-08A, 1905185-09A, 1905185-10A, 1905185-11A

Sample ID	**MB-91002**	Batch ID:	**91002**	TestNo:	**M3500-Fe D**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**UV/VIS_2_190520A**	Analysis Date:	**5/20/2019 3:53:00 PM**	Prep Date:	**5/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	<0.0500	0.100								N

Sample ID	**LCS-91002**	Batch ID:	**91002**	TestNo:	**M3500-Fe D**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**UV/VIS_2_190520A**	Analysis Date:	**5/20/2019 3:53:00 PM**	Prep Date:	**5/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	0.0888	0.100	0.1000	0	88.8	85	115			N

Sample ID	**LCSD-91002**	Batch ID:	**91002**	TestNo:	**M3500-Fe D**	Units:	**mg/L**
SampType:	**LCSD**	Run ID:	**UV/VIS_2_190520A**	Analysis Date:	**5/20/2019 3:53:00 PM**	Prep Date:	**5/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	0.0879	0.100	0.1000	0	87.9	85	115	1.05	15	N

Sample ID	**1905185-11AMS**	Batch ID:	**91002**	TestNo:	**M3500-Fe D**	Units:	**mg/L**
SampType:	**MS**	Run ID:	**UV/VIS_2_190520A**	Analysis Date:	**5/20/2019 4:03:00 PM**	Prep Date:	**5/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	0.0860	0.100	0.1000	0	86.0	85	115			N

Sample ID	**1905185-11AMSD**	Batch ID:	**91002**	TestNo:	**M3500-Fe D**	Units:	**mg/L**
SampType:	**MSD**	Run ID:	**UV/VIS_2_190520A**	Analysis Date:	**5/20/2019 4:03:00 PM**	Prep Date:	**5/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	0.0861	0.100	0.1000	0	86.1	85	115	0.116	15	N

LUMINANT

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905185
Project: Luminant-A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: UV/VIS_2_190520A

Sample ID **ICV-190520**	Batch ID: **R104177**	TestNo: **M3500-Fe D**	Units: **mg/L**
SampType: **ICV**	Run ID: **UV/VIS_2_190520A**	Analysis Date: **5/20/2019 3:52:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	0.0875	0.100	0.1000	0	87.5	85	115			N

Sample ID **CCV1-190520**	Batch ID: **R104177**	TestNo: **M3500-Fe D**	Units: **mg/L**
SampType: **CCV**	Run ID: **UV/VIS_2_190520A**	Analysis Date: **5/20/2019 3:59:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	0.197	0.100	0.2000	0	98.4	85	115			N

Sample ID **CCV2-190520**	Batch ID: **R104177**	TestNo: **M3500-Fe D**	Units: **mg/L**
SampType: **CCV**	Run ID: **UV/VIS_2_190520A**	Analysis Date: **5/20/2019 4:12:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	0.183	0.100	0.2000	0	91.7	85	115			N

LUMINANT

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905185
Project: Luminant-A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: WC_190520A

The QC data in batch 91001 applies to the following samples: 1905185-01C, 1905185-02C, 1905185-03C, 1905185-04C, 1905185-05C, 1905185-06C, 1905185-07C, 1905185-08C, 1905185-09C, 1905185-10C, 1905185-11C

Sample ID	**MB-91001**	Batch ID:	**91001**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**WC_190520A**	Analysis Date:	**5/20/2019 4:45:00 PM**	Prep Date:	**5/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	<10.0	10.0								

Sample ID	**LCS-91001**	Batch ID:	**91001**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**WC_190520A**	Analysis Date:	**5/20/2019 4:45:00 PM**	Prep Date:	**5/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	751	10.0	745.6	0	101	90	113			

Sample ID	**1905182-01D-DUP**	Batch ID:	**91001**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**DUP**	Run ID:	**WC_190520A**	Analysis Date:	**5/20/2019 4:45:00 PM**	Prep Date:	**5/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	6840	200	0	6820				0.293	5	

Sample ID	**1905182-02D-DUP**	Batch ID:	**91001**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**DUP**	Run ID:	**WC_190520A**	Analysis Date:	**5/20/2019 4:45:00 PM**	Prep Date:	**5/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	5030	50.0	0	5065				0.693	5	

LUMINANT

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

Pace Analytical®
National Center for Testing & Innovation

ANALYTICAL REPORT

June 18, 2019

DHL Analytical, Inc.

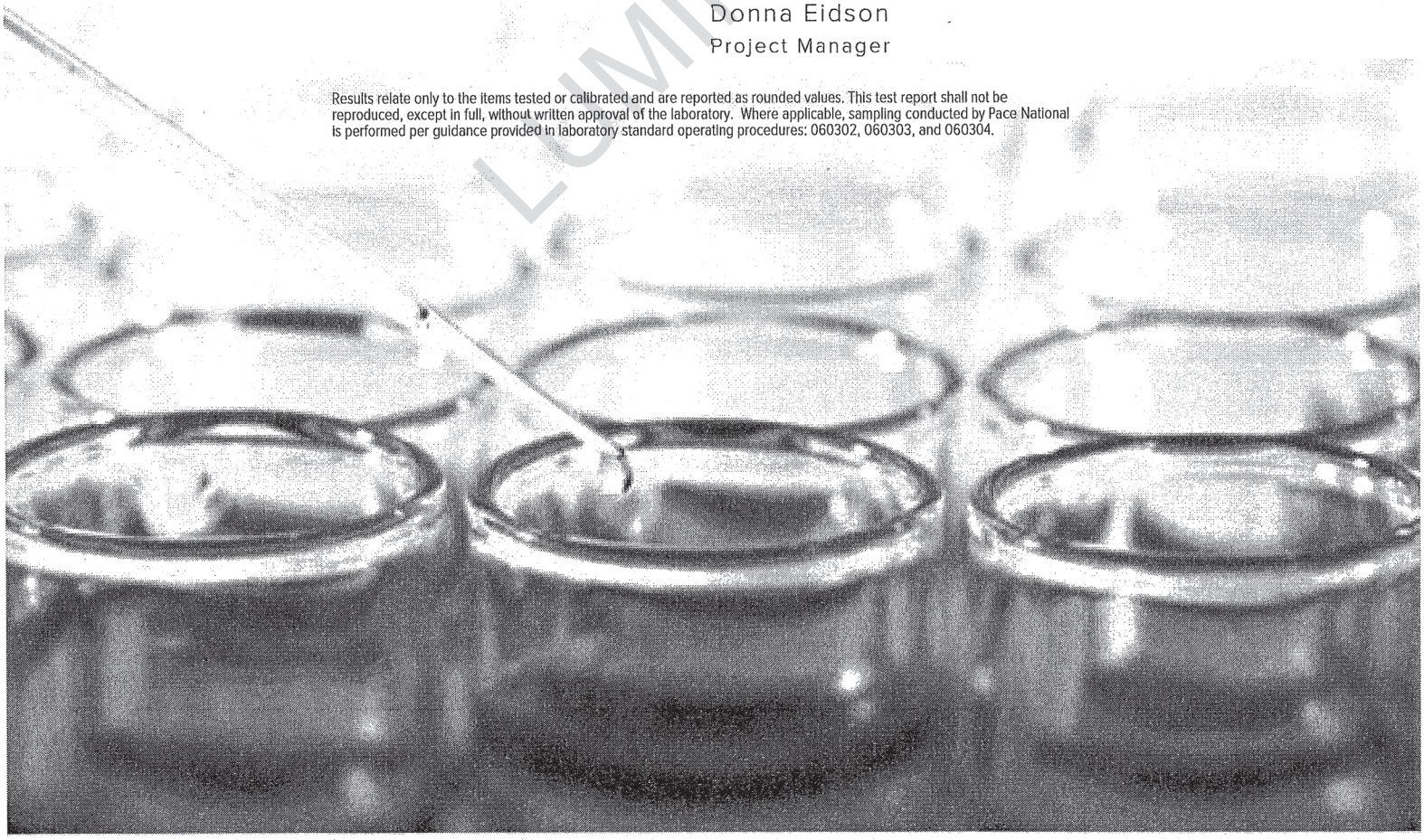
Sample Delivery Group:	L1100977
Samples Received:	05/21/2019
Project Number:	1905185
Description:	
Report To:	John DuPont 2300 Double Creek Drive Round Rock, TX 78664

Entire Report Reviewed By:

Donna Eidson
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace National is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.

LUMINANT



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LUMINANT

BMW-24 L1100977-01 Non-Potable Water

Collected by | Collected date/time 05/15/19 07:35 | Received date/time 05/21/19 10:10

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1285651	1	05/24/19 09:05	05/30/19 12:10	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1285448	1	05/28/19 16:20	05/30/19 13:00	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1285448	1	05/28/19 16:20	05/30/19 13:00	RGT	Mt. Juliet, TN

BMW-23 L1100977-02 Non-Potable Water

Collected by | Collected date/time 05/15/19 08:25 | Received date/time 05/21/19 10:10

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1285651	1	05/24/19 09:05	06/13/19 16:05	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1285448	1	05/28/19 16:20	06/13/19 16:05	JMR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1285448	1	05/28/19 16:20	05/30/19 13:00	RGT	Mt. Juliet, TN

BMW-22 L1100977-03 Non-Potable Water

Collected by | Collected date/time 05/15/19 09:15 | Received date/time 05/21/19 10:10

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1285651	1	05/24/19 09:05	05/30/19 12:10	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1285448	1	05/28/19 16:20	05/30/19 13:00	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1285448	1	05/28/19 16:20	05/30/19 13:00	RGT	Mt. Juliet, TN

BMW-21 L1100977-04 Non-Potable Water

Collected by | Collected date/time 05/15/19 09:55 | Received date/time 05/21/19 10:10

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1285651	1	05/24/19 09:05	05/30/19 12:10	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1285448	1	05/28/19 16:20	05/30/19 13:00	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1285448	1	05/28/19 16:20	05/30/19 13:00	RGT	Mt. Juliet, TN

BMW-27 L1100977-05 Non-Potable Water

Collected by | Collected date/time 05/15/19 10:55 | Received date/time 05/21/19 10:10

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1285651	1	05/24/19 09:05	05/30/19 12:10	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1285448	1	05/28/19 16:20	05/30/19 17:30	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1285448	1	05/28/19 16:20	05/30/19 17:30	RGT	Mt. Juliet, TN

BMW-26 L1100977-06 Non-Potable Water

Collected by | Collected date/time 05/15/19 11:40 | Received date/time 05/21/19 10:10

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1285651	1	05/24/19 09:05	05/30/19 12:10	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1285448	1	05/28/19 16:20	05/30/19 17:30	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1285448	1	05/28/19 16:20	05/30/19 17:30	RGT	Mt. Juliet, TN

LUMINANT

BMW-11AR L1100977-07 Non-Potable Water

Collected by | Collected date/time 05/15/19 12:35 | Received date/time 05/21/19 10:10

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1285651	1	05/24/19 09:05	05/30/19 12:10	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1285448	1	05/28/19 16:20	05/30/19 17:30	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1285448	1	05/28/19 16:20	05/30/19 17:30	RGT	Mt. Juliet, TN

BMW-19 L1100977-08 Non-Potable Water

Collected by | Collected date/time 05/15/19 13:25 | Received date/time 05/21/19 10:10

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1285651	1	05/24/19 09:05	05/30/19 12:10	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1285448	1	05/28/19 16:20	05/30/19 17:30	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1285448	1	05/28/19 16:20	05/30/19 17:30	RGT	Mt. Juliet, TN

BMW-18 L1100977-09 Non-Potable Water

Collected by | Collected date/time 05/15/19 14:10 | Received date/time 05/21/19 10:10

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1285651	1	05/24/19 09:05	05/30/19 12:10	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1285448	1	05/28/19 16:20	05/30/19 17:30	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1285448	1	05/28/19 16:20	05/30/19 17:30	RGT	Mt. Juliet, TN

BMW-28 L1100977-10 Non-Potable Water

Collected by | Collected date/time 05/15/19 15:00 | Received date/time 05/21/19 10:10

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1285651	1	05/24/19 09:05	05/31/19 11:10	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1285448	1	05/28/19 16:20	05/31/19 11:10	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1285448	1	05/28/19 16:20	05/30/19 17:30	RGT	Mt. Juliet, TN

BMW-20 L1100977-11 Non-Potable Water

Collected by | Collected date/time 05/15/19 16:00 | Received date/time 05/21/19 10:10

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1285651	1	05/24/19 09:05	05/31/19 11:10	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1285448	1	05/28/19 16:20	05/31/19 11:10	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1285448	1	05/28/19 16:20	05/30/19 17:30	RGT	Mt. Juliet, TN

LUMINANT

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Donna Eidson
Project Manager

LUMINANT

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	-0.0695		0.728	1.21	05/30/2019 12:10	WG1285651
(T) Barium	*109*			*62.0-143*	*05/30/2019 12:10*	WG1285651
(T) Yttrium	*113*			*79.0-136*	*05/30/2019 12:10*	WG1285651

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	1.45		1.23	1.48	05/30/2019 13:00	WG1285448

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	1.45		0.499	0.265	05/30/2019 13:00	WG1285448
(T) Barium-133	*80.0*			*30.0-143*	*05/30/2019 13:00*	WG1285448

LUMINANT

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
RADIUM-228	1.00		0.384	0.82	06/13/2019 16:05	WG1285651
(T) Barium	*88.9*			*62.0-143*	*06/13/2019 16:05*	WG1285651
(T) Yttrium	*104*			*79.0-136*	*06/13/2019 16:05*	WG1285651

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
Combined Radium	3.54		1.14	1.55	06/13/2019 16:05	WG1285448

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
RADIUM-226	2.54		0.757	0.731	05/30/2019 13:00	WG1285448
(T) Barium-133	*89.6*			*30.0-143*	*05/30/2019 13:00*	WG1285448

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

LUMINANT

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
RADIUM-228	1.64		0.361	0.547	05/30/2019 12:10	WG1285651
(T) Barium	*112*			*62.0-143*	*05/30/2019 12:10*	WG1285651
(T) Yttrium	*113*			*79.0-136*	*05/30/2019 12:10*	WG1285651

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
Combined Radium	5.00		1.19	0.945	05/30/2019 13:00	WG1285448

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
RADIUM-226	3.36		0.831	0.398	05/30/2019 13:00	WG1285448
(T) Barium-133	*79.4*			*30.0-143*	*05/30/2019 13:00*	WG1285448

LUMINANT

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
RADIUM-228	1.07		0.398	0.586	05/30/2019 12:10	WG1285651
(T) Barium	*108*			*62.0-143*	*05/30/2019 12:10*	WG1285651
(T) Yttrium	*120*			*79.0-136*	*05/30/2019 12:10*	WG1285651

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
Combined Radium	1.31		0.656	0.908	05/30/2019 13:00	WG1285448

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
RADIUM-226	0.245		0.258	0.322	05/30/2019 13:00	WG1285448
(T) Barium-133	*73.1*			*30.0-143*	*05/30/2019 13:00*	WG1285448

LUMINANT

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	0.962		0.387	0.609	05/30/2019 12:10	WG1285651
(T) Barium	*112*			*62.0-143*	*05/30/2019 12:10*	WG1285651
(T) Yttrium	*115*			*79.0-136*	*05/30/2019 12:10*	WG1285651

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	1.02		0.499	0.804	05/30/2019 17:30	WG1285448

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.0591		0.112	0.195	05/30/2019 17:30	WG1285448
(T) Barium-133	*90.6*			*30.0-143*	*05/30/2019 17:30*	WG1285448

LUMINANT

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	1.13		0.329	0.524	05/30/2019 12:10	WG1285651
(T) Barium	*114*			*62.0-143*	*05/30/2019 12:10*	WG1285651
(T) Yttrium	*120*			*79.0-136*	*05/30/2019 12:10*	WG1285651

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	1.59		0.595	0.737	05/30/2019 17:30	WG1285448

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.457		0.266	0.213	05/30/2019 17:30	WG1285448
(T) Barium-133	*86.2*			*30.0-143*	*05/30/2019 17:30*	WG1285448

LUMINANT

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
RADIUM-228	4.89		0.423	0.671	05/30/2019 12:10	WG1285651
(T) Barium	*103*			*62.0-143*	*05/30/2019 12:10*	WG1285651
(T) Yttrium	*116*			*79.0-136*	*05/30/2019 12:10*	WG1285651

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
Combined Radium	5.71		0.795	0.964	05/30/2019 17:30	WG1285448

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
RADIUM-226	0.830		0.372	0.293	05/30/2019 17:30	WG1285448
(T) Barium-133	*87.9*			*30.0-143*	*05/30/2019 17:30*	WG1285448

LUMINANT

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	4.66		0.515	0.78	05/30/2019 12:10	WG1285651
(T) Barium	*99.1*			*62.0-143*	*05/30/2019 12:10*	WG1285651
(T) Yttrium	*118*			*79.0-136*	*05/30/2019 12:10*	WG1285651

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	5.47		1.05	1.23	05/30/2019 17:30	WG1285448

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.487		0.321	0.268	05/30/2019 17:30	WG1285448
(T) Barium-133	*71.8*			*30.0-143*	*05/30/2019 17:30*	WG1285448

LUMINANT

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	3.95		0.414	0.603	05/30/2019 12:10	WG1285651
(T) Barium	*96.9*			*62.0-143*	*05/30/2019 12:10*	WG1285651
(T) Yttrium	*118*			*79.0-136*	*05/30/2019 12:10*	WG1285651

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	4.06		0.584	0.867	05/30/2019 17:30	WG1285448

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.107		0.170	0.264	05/30/2019 17:30	WG1285448
(T) Barium-133	*84.7*			*30.0-143*	*05/30/2019 17:30*	WG1285448

LUMINANT

ACCOUNT:	PROJECT:	SDG:	DATE/TIME:	PAGE:
DHL Analytical, Inc.	1905185	L1100977	06/18/19 10:15	14 of 24

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	0.924		0.410	0.59	05/31/2019 11:10	WG1285651
(T) Barium	*122*			*62.0-143*	*05/31/2019 11:10*	WG1285651
(T) Yttrium	*96.5*			*79.0-136*	*05/31/2019 11:10*	WG1285651

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	1.12		0.635	0.879	05/31/2019 11:10	WG1285448

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.197		0.225	0.289	05/30/2019 17:30	WG1285448
(T) Barium-133	*55.5*			*30.0-143*	*05/30/2019 17:30*	WG1285448

LUMINANT

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
RADIUM-228	0.174		0.384	0.657	05/31/2019 11:10	WG1285651
(T) Barium	*85.3*			*62.0-143*	*05/31/2019 11:10*	WG1285651
(T) Yttrium	*108*			*79.0-136*	*05/31/2019 11:10*	WG1285651

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
Combined Radium	1.36		0.877	1.01	05/31/2019 11:10	WG1285448

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
RADIUM-226	1.18		0.493	0.349	05/30/2019 17:30	WG1285448
(T) Barium-133	*73.8*			*30.0-143*	*05/30/2019 17:30*	WG1285448

LUMINANT

APPENDIX F-Revision 2 February 27, 2024

Method Blank (MB)

(MB) R3417363-1 05/30/19 12:10

Analyte	MB Result pCi/l	MB Qualifier	MB MDA pCi/l
Radium-228	-0.0581		0.396
(T) Barium	*105*		
(T) Yttrium	*110*		

L1100977-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1100977-01 05/30/19 12:10 • (DUP) R3417363-5 05/30/19 12:10

Analyte	Original Result pCi/l	DUP Result pCi/l	Dilution	DUP RPD %	DUP RER	DUP Qualifier	DUP RPD Limits %	DUP RER Limit
Radium-228	-0.0695	0.650	1	200	0.741		20	3
(T) Barium	*109*	*111*						
(T) Yttrium	*113*	*107*						

Laboratory Control Sample (LCS)

(LCS) R3417363-2 05/30/19 12:10

Analyte	Spike Amount pCi/l	LCS Result pCi/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Radium-228	5.00	5.29	106	80.0-120	
(T) Barium			*104*		
(T) Yttrium			*114*		

L1100989-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1100989-01 05/31/19 11:10 • (MS) R3417363-3 05/30/19 12:10 • (MSD) R3417363-4 05/30/19 12:10

Analyte	Spike Amount pCi/l	Original Result pCi/l	MS Result pCi/l	MSD Result pCi/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	MS RER	RPD Limits %
Radium-228	20.0	0.531	20.9	19.5	102	94.8	1	70.0-130			7.08		20
(T) Barium		*120*			*102*	*115*							
(T) Yttrium		*93.0*			*117*	*114*							

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APPENDIX F-Revision 2 February 27, 2024

Method Blank (MB)

(MB) R3418748-1 05/30/19 13:00

Analyte	MB Result	MB Qualifier	MB MDA
	pCi/l		pCi/l
Radium-226	0.0330		0.399
(T) Barium-133	*58.0*		

L1102014-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1102014-01 05/30/19 17:30 • (DUP) R3418748-5 05/30/19 13:00

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP RER	DUP Qualifier	DUP RPD Limits	DUP RER Limit
	pCi/l	pCi/l		%			%	
Radium-226	0.955	0.488	1	64.8	0.623		20	3
(T) Barium-133	*41.0*	*37.0*						

Laboratory Control Sample (LCS)

(LCS) R3418748-2 05/30/19 13:00

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	pCi/l	pCi/l	%	%	
Radium-226	20.1	19.8	98.4	80.0-120	
(T) Barium-133			*57.4*		

L1102014-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1102014-02 05/30/19 17:30 • (MS) R3418748-3 05/30/19 13:00 • (MSD) R3418748-4 05/30/19 13:00

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	MS RER	RPD Limits
	pCi/l	pCi/l	pCi/l	pCi/l	%	%		%			%		%
Radium-226	20.1	0.487	22.6	23.9	110	116	1	75.0-125			5.68		20
(T) Barium-133		*59.1*			*47.0*	*45.7*							

LUMINANT

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Abbreviations and Definitions

MDA	Minimum Detectable Activity.
Rec.	Recovery.
RER	Replicate Error Ratio.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(T)	Tracer - A radioisotope of known concentration added to a solution of chemically equivalent radioisotopes at a known concentration to assist in monitoring the yield of the chemical separation.
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
	The remainder of this page intentionally left blank, there are no qualifiers applied to this SDG.

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ACCREDITATIONS & LOCATIONS

ONE LAB. NATIONWIDE.

Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.
* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

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Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.

Pace Analytical National Center for Testing & Innovation
Cooler Receipt Form

Client: DHCRRTX		SDG#:	1100977
Cooler Received/Opened On: 5/21/19		Temperature:	Amb
Received By: Brock Fariss			
Signature: Fariss			

Receipt Check List	NP	Yes	No
COC Seal Present / Intact?	✓		
COC Signed / Accurate?		✓	
Bottles arrive intact?		✓	
Correct bottles used?		✓	
Sufficient volume sent?		✓	
If Applicable			
VOA Zero headspace?			
Preservation Correct / Checked?		✓	

LUMINANT

Kelsey Stephenson

Pace Analytical®
National Center for Testing & Innovation

Login #:L1100977	Client:DHLRRTX	Date:05/21	Evaluated by:Kelsey S

Non-Conformance (check applicable items)

	Sample Integrity		Chain of Custody Clarification		
	Parameter(s) past holding time		Login Clarification Needed		**If Broken Container:**
	Temperature not in range		Chain of custody is incomplete		Insufficient packing material around container
	Improper container type		Please specify Metals requested.		Insufficient packing material inside cooler
	pH not in range.		Please specify TCLP requested.		Improper handling by carrier (FedEx / UPS / Courier
	Insufficient sample volume.		Received additional samples not listed on coc.		Sample was frozen
	Sample is biphasic.		Sample ids on containers do not match ids on coc		Container lid not intact
	Vials received with headspace.		Trip Blank not received.		**If no Chain of Custody:**
	Broken container		Client did not "X" analysis.		Received by:
	Broken container:		Chain of Custody is missing		Date/Time:
	Sufficient sample remains				Temp./Cont. Rec./pH:
					Carrier:
					Tracking#

LUMINANT

Login Comments:
Sample BMW-23,-22,-11AR, and -19 were received ith a pH oh 5
Samples BMW- 21,-27,-26,-28,-20 were received with a pH pf 8

Client informed by:	Call	Email	Voice Mail	Date:	Time:
TSR Initials:	Client Contact:				

Login Instructions:

Noted

DE 5/21/19 1547

1100977

DHL Analytical, Inc.
2300 Double Creek Drive
Round Rock, TX 78664
TEL: *(512) 388-8222* FAX: *(512) 388-8229*

CHAIN-OF-CUSTODY RECORD

H006

Work Order: 1905185

Subcontractor:
Pace Analytical
12065 Lebanon Rd
Mt. Juliet, TN 37122
TEL: (615) 773-5923
FAX:
Acct #: DHLRRTX

c2 c2

16-May-19

Sample Id	Matrix	DHL#	Date Collected	Bottle Type	Ra-228 E904.0	Ra-226 M7500 Ra B M	Requested Tests			
BMW-24	Aqueous	-01D	05/15/19 07:35 AM	1LHDPEHNO3		1				-01
BMW-24	Aqueous	-01E	05/15/19 07:35 AM	1LHDPEHNO3	1					
BMW-23	Aqueous	-02D	05/15/19 08:25 AM	1LHDPEHNO3		1				02
BMW-23	Aqueous	-02E	05/15/19 08:25 AM	1LHDPEHNO3	1					
BMW-22	Aqueous	-03D	05/15/19 09:15 AM	1LHDPEHNO3		1				03
BMW-22	Aqueous	-03E	05/15/19 09:15 AM	1LHDPEHNO3	1					
BMW-21	Aqueous	-04D	05/15/19 09:55 AM	1LHDPEHNO3		1				04
BMW-21	Aqueous	-04E	05/15/19 09:55 AM	1LHDPEHNO3	1					
BMW-27	Aqueous	-05D	05/15/19 10:55 AM	1LHDPEHNO3		1				05
BMW-27	Aqueous	-05E	05/15/19 10:55 AM	1LHDPEHNO3	1					
BMW-26	Aqueous	-06D	05/15/19 11:40 AM	1LHDPEHNO3		1				06
BMW-26	Aqueous	-06E	05/15/19 11:40 AM	1LHDPEHNO3	1					
BMW-11AR	Aqueous	-07D	05/15/19 12:35 PM	1LHDPEHNO3		1				07
BMW-11AR	Aqueous	-07E	05/15/19 12:35 PM	1LHDPEHNO3	1					
BMW-19	Aqueous	-08D	05/15/19 01:25 PM	1LHDPEHNO3		1				08
BMW-19	Aqueous	-08E	05/15/19 01:25 PM	1LHDPEHNO3	1					
BMW-18	Aqueous	-09D	05/15/19 02:10 PM	1LHDPEHNO3		1				09
BMW-18	Aqueous	-09E	05/15/19 02:10 PM	1LHDPEHNO3	1					

General Comments:
Please analyze these samples with Normal Turnaround Time.
Report RA-226, Ra-228 & Combined per Specs.
Quality Control Package Needed: Standard - NELAC Rad Test compliant
Email to cac@dhlanalytical.com & dupont@dhlanalytical.com

UPS
Rec: 22

	Date/Time		Date/Time
Relinquished by:	5/17/19 1700	Received by:	5/21/19 0815 1010
Relinquished by:		Received by:	

pH adj @ 1457

Away RAD SCREEN: <0.5 mR/hr

DRAFT

1160977

DHL Analytical, Inc.
2300 Double Creek Drive
Round Rock. TX 78664
TEL: *(512) 388-8222* FAX: *(512) 388-8229*

CHAIN-OF-CUSTODY RECORD

Work Order: 1905185

Subcontractor:
Pace Analytical
12065 Lebanon Rd
Mt. Juliet, TN 37122

TEL: (615) 773-5923
FAX:
Acct #: DHLRRTX

< 2 < 2

16-May-19

Sample Id	Matrix	DHL#	Date Collected	Bottle Type	Ra-228 E904.0	Ra-226 M7500 Ra B M	Requested Tests			
BMW-28	Aqueous	-10D	05/15/19 03:00 PM	1LHDPEHNO3		1				10
BMW-28	Aqueous	-10E	05/15/19 03:00 PM	1LHDPEHNO3	1					
BMW-20	Aqueous	-11D	05/15/19 04:00 PM	1LHDPEHNO3		1				11
BMW-20	Aqueous	-11E	05/15/19 04:00 PM	1LHDPEHNO3	1					

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General Comments:
Please analyze these samples with Normal Turnaround Time.
Report RA-226, Ra-228 & Combined per Specs.
Quality Control Package Needed: Standard - NELAC Rad Test compliant
Email to cac@dhlanalytical.com & dupont@dhlanalytical.com

UPS
Rec: 22

	Date/Time		Date/Time
Relinquished by:		Received by:	5/21/19 1010
Relinquished by:		Received by:	

Amb

RAD SCREEN: <0.5 mR/hr

June 21, 2019

Will Vienne
Golder
2201 Double Creek Dr #4004
Round Rock, Texas 78664
TEL: (512) 671-3434
FAX (512) 671-3446

Order No.: 1906152

RE: A1 Area Landfill

Dear Will Vienne:

DHL Analytical, Inc. received 6 sample(s) on 6/14/2019 for the analyses presented in the following report.

There were no problems with the analyses and all data met requirements of NELAP except where noted in the Case Narrative. All non-NELAP methods will be identified accordingly in the case narrative and all estimated uncertainties of test results are within method or EPA specifications.

If you have any questions regarding these tests results, please feel free to call. Thank you for using DHL Analytical.

Sincerely,

John DuPont
General Manager

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This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211-19-24

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LUMINANT

DHL ANALYTICAL
2300 Double Creek Dr. ■ Round Rock, TX 78664
Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

nelap

№ 83013

CHAIN-OF-CUSTODY

CLIENT: Golder Associates
ADDRESS: 5416 Plaza Dr Texarkana TX 75501
PHONE: 903-794-0625 FAX/E-MAIL:
DATA REPORTED TO:
ADDITIONAL REPORT COPIES TO:

DATE: PAGE 1 OF 1
PO #: 19122434-D DHL WORK ORDER #: 1906152
PROJECT LOCATION OR NAME: A1 Area Landfill
CLENT PROJECT #: 19122434-D COLLECTOR: Alex Gonzales

Authorize 5% surcharge for TRRP Report? ☐ Yes ☐ No

S=SOIL P=PAINT W=WATER SL=SLUDGE A=AIR O=OTHER L=LIQUID SO=SOLID SE=SEDIMENT

ANALYSES: BTEX ☐ MTBE ☐ [METHOD 8021] TPH 1005 ☐ TPH 1006 ☐ HOLD 1006 ☐ GRO [METHOD 8015] ☐ DRO [METHOD 8105] ☐ VOC 8260 ☐ VOC 624 ☐ VOC 8260/5035 ☐ SVOC 8270 ☐ PAH 8270 ☐ HOLD PAH ☐ SVOC 625 ☐ 8270 PEST ☐ 625 PEST/PCB ☐ 608 PCB ☐ 8270 O-P PEST ☐ 8082 PCB ☐ 8270 PCB ☐ 8321 HERB ☐ T PHOS, AMMONIA ☐ METALS 6020 ☐ METALS 200.8 ☐ DISS. METALS ☐ RCRA ☐ TX11 ☐ PH ☐ HEX CHROM ☐ ALKALINITY ☐ COD ☐ CHLORIDE ☐ ANIONS ☐ TCLP-SVOC ☐ VOC ☐ PEST ☐ HERB ☐ TCLP-METALS ☐ RCRA 8 ☐ TX-11 ☐ Pb ☐ RCI ☐ FLASHPOINT ☐ DGAS ☐ TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐ Cobalt, Sulfate, Lithium, Sulfate, Barium, Arsenic, Alk, NO3, F, SO4, Cl, Ortho P, TDS, Ca, Mg, K, Na, Fe, Ferrous, Ferric

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	HCl	HNO_3	H_2SO_4 ☐ NaOH ☐	ICE	UNPRESERVED	Cobalt, Sulfate, Lithium, Sulfate, Barium, Arsenic	Alk, NO3, F, SO4, Cl, Ortho P, TDS	Ca, Mg, K, Na, Fe, Ferrous, Ferric	FIELD NOTES
BMW-25	01	6/13	0930	W		7		X		X	X	X	X	X	
BMW-29	02	6/13	1030	W		7		X		X	X	X	X	X	
BMW-30	03	6/13	1250	W		7		X		X	X	X	X	X	
BMW-31	04	6/13	1430	W		7		X		X	X	X	X	X	
BMW-32	05	6/13	0730	W		7		X		X	X	X	X	X	
BMW-33	06	6/13	0815	W		7		X		X	X	X	X	X	add per Will Vienne (JO) 06/14/19

RELINQUISHED BY: (Signature) Alex Gonzales DATE/TIME 6/13/19 1730 RECEIVED BY: (Signature) FeL Ex
RELINQUISHED BY: (Signature) FeL Ex DATE/TIME 6/14/19 10:08 RECEIVED BY: (Signature) Sam Lehn
RELINQUISHED BY: (Signature) DATE/TIME RECEIVED BY: (Signature)

☐ DHL DISPOSAL @ $5.00 each ☐ Return

TURN AROUND TIME
RUSH ☐ CALL FIRST
1 DAY ☐ CALL FIRST
2 DAY ☐
NORMAL ☒
OTHER ☐

LABORATORY USE ONLY:
RECEIVING TEMP: 1.6°C/1.6°C THERM #: 78
CUSTODY SEALS: ☐ BROKEN ☒ INTACT ☐ NOT USED
CARRIER: ☐ LONE STAR ☒ FEDEX ☐ UPS ☐ OTHER
☐ COURIER DELIVERY
☐ HAND DELIVERED

DHL COC Rev 1 | FEB 2010

APPENDIX E-Revision 2 February 27, 2024

LUMINANT

Eric Lau

From: John DuPont
Sent: Tuesday, May 28, 2019 11:35 AM
To: Eric Lau
Subject: FW: CCR Analysis

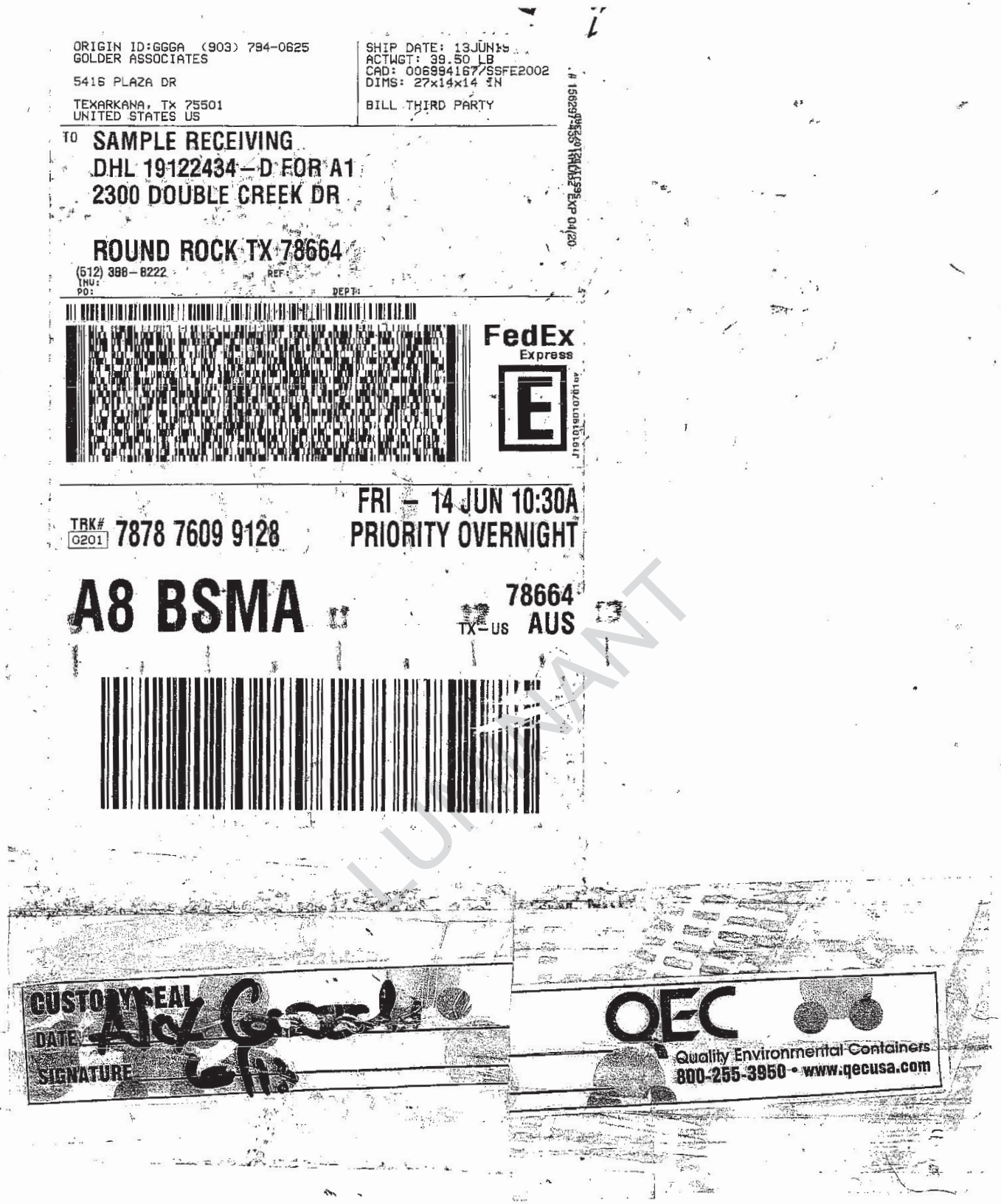
Appendix III Parameters:
Metals (Ca and B)
Anions (Cl, F, and SO4)
TDS

Appendix IV Parameters:

Metals (As, Ba, Be, Cd, Co, Cr, Hg, Li, Mo, Pb, Sb, Se, and Tl)
Ra-226
Ra-228

From: Vienne, Will [mailto:William_Vienne@golder.com]
Sent: Tuesday, April 09, 2019 12:48 PM
To: John DuPont <dupont@dhlanalytical.com>
Subject: CCR Analysis

LUMINANT


ORIGIN ID:GGGA (903) 794-0625
GOLDER ASSOCIATES
5416 PLAZA DR
TEXARKANA, TX 75501
UNITED STATES US
SHIP DATE: 13JUN15
ACTWGT: 39.50 LB
CAD: 006994167/SSFE2002
DIMS: 27x14x14 IN
BILL THIRD PARTY
TO SAMPLE RECEIVING
DHL 19122434-D FOR A1
2300 DOUBLE CREEK DR
ROUND ROCK TX 78664
(512) 388-8222
REF:
INV:
PO:
DEPT:
FedEx
Express
TRK# 0201 7878 7609 9128
FRI - 14 JUN 10:30A
PRIORITY OVERNIGHT
A8 BSMA
78664
TX-US AUS
CUSTODY SEAL
DATE
SIGNATURE
QEC
Quality Environmental Containers
800-255-3950 • www.qecusa.com

LUI PLIANT

ORIGIN ID:GGGA (903) 794-0625
GOLDER ASSOCIATES
5416 PLAZA DR
TEXARKANA, TX 75501
UNITED STATES US
SHIP DATE: 13JUN18
ACTWGT: 59.00 LB
CAD: 006994167/SSFE2002
DIMS: 27x14x14 IN
BILL THIRD PARTY
TO SAMPLE RECEIVING
DHL 19122434 – D FOR A1
2300 DOUBLE CREEK DR
ROUND ROCK TX 78664
(512) 388 – 8222
REF:
INV:
PO:
DEPT:
FedEx
Express
TRK# 0201 7878 7612 6607
FRI – 14 JUN 10:30A
PRIORITY OVERNIGHT
A8 BSMA
78664
TX – US AUS

CUSTODY SEAL
DATE
SIGNATURE
QEC
Quality Environmental Containers
800-255-3950 • www.qecusa.com

ORIGINANT

DHL Analytical, Inc.

Sample Receipt Checklist

Client Name **Golder**

Date Received: **6/14/2019**

Work Order Number **1906152**

Received by **EL**

Checklist completed by: _____ 6/14/2019
Signature | Date

Reviewed by (BZ) 6/14/2019
Initials | Date

Carrier name FedEx 1day

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	**1.6** °C
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH<2 acceptable upon receipt?	Yes ☑	No ☐	NA ☐ LOT # 11837
	Adjusted? no		Checked by CL
Water - ph>9 (S) or ph>10 (CN) acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted? _____		Checked by _____

Any No response must be detailed in the comments section below.

Client contacted _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments: _____

Corrective Action _____

LUMINANT

DHL Analytical, Inc. **Date:** *21-Jun-19*

CLIENT: Golder
Project: A1 Area Landfill
Lab Order: 1906152

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Method SW6020A - Metals Analysis
Method E300 - Anions Analysis
Method M2320 B - Alkalinity Analysis
Method M3500-Fe D - Ferrous Iron Analysis (this parameter is not NELAP certified)
Method M3500-Fe D - Ferric Iron (calculation) (this calculation is not NELAP certified).
Method M4500-P E - Orthophosphate Analysis
Method M2540C - TDS Analysis

LOG IN

The samples were received and log-in performed on 6/14/19. A total of 6 samples were received. On 6/14/19 several test parameters were added to all samples as per the client. These were performed as reque3sted. The samples arrived in good condition and were properly packaged.

METALS ANALYSIS

For Metals analysis performed on 6/19/19 the matrix spike and matrix spike duplicate recoveries were below control limits for Sodium. These are flagged accordingly in the QC summary report. The sample selected for the matrix spike and matrix spike duplicate was not from this work order. The LCS was within control limits for this analyte. No further corrective actions were taken.

For Metals analysis performed on 6/19/19 the PDS recovery was out of control limits for Sodium. This is flagged accordingly. The serial dilution was within control limits for this analyte. No further corrective actions were taken.

FERRIC IRON CALCULATION

The Ferric Iron is calculated as the Total Iron minus the Ferrous Iron.

DOMINANT

DHL Analytical, Inc.

Date: *21-Jun-19*

CLIENT: Golder
Project: A1 Area Landfill
Lab Order: 1906152

Work Order Sample Summary

Lab Smp ID	Client Sample ID	Tag Number	Date Collected	Date Recved
1906152-01	BMW-25		06/13/19 09:30 AM	6/14/2019
1906152-02	BMW-29		06/13/19 10:30 AM	6/14/2019
1906152-03	BMW-30		06/13/19 12:50 PM	6/14/2019
1906152-04	BMW-31		06/13/19 02:30 PM	6/14/2019
1906152-05	BMW-32		06/13/19 07:30 AM	6/14/2019
1906152-06	BMW-33		06/13/19 08:15 AM	6/14/2019

LUMINANT

DHL Analytical, Inc. *21-Jun-19*

Lab Order: 1906152
Client: Golder
Project: A1 Area Landfill

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1906152-01A	BMW-25	06/13/19 09:30 AM	Aqueous	M3500-Fe	Ferrous Iron Prep Water	06/14/19 02:08 PM	91344
1906152-01B	BMW-25	06/13/19 09:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/18/19 08:21 AM	91364
	BMW-25	06/13/19 09:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/18/19 08:21 AM	91364
	BMW-25	06/13/19 09:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/18/19 08:21 AM	91364
1906152-01C	BMW-25	06/13/19 09:30 AM	Aqueous	M2320 B	Alkalinity Preparation	06/17/19 08:32 AM	91346
	BMW-25	06/13/19 09:30 AM	Aqueous	E300	Anion Preparation	06/14/19 11:45 AM	91339
	BMW-25	06/13/19 09:30 AM	Aqueous	E300	Anion Preparation	06/14/19 11:45 AM	91339
	BMW-25	06/13/19 09:30 AM	Aqueous	E300	Anion Preparation	06/14/19 11:45 AM	91339
	BMW-25	06/13/19 09:30 AM	Aqueous	M4500-P E	Orthophosphate Prep	06/14/19 11:55 AM	91343
	BMW-25	06/13/19 09:30 AM	Aqueous	M2540C	TDS Preparation	06/18/19 01:25 PM	91377
1906152-02A	BMW-29	06/13/19 10:30 AM	Aqueous	M3500-Fe	Ferrous Iron Prep Water	06/14/19 02:08 PM	91344
1906152-02B	BMW-29	06/13/19 10:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/18/19 08:21 AM	91364
	BMW-29	06/13/19 10:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/18/19 08:21 AM	91364
1906152-02C	BMW-29	06/13/19 10:30 AM	Aqueous	M2320 B	Alkalinity Preparation	06/17/19 08:32 AM	91346
	BMW-29	06/13/19 10:30 AM	Aqueous	E300	Anion Preparation	06/14/19 11:45 AM	91339
	BMW-29	06/13/19 10:30 AM	Aqueous	E300	Anion Preparation	06/14/19 11:45 AM	91339
	BMW-29	06/13/19 10:30 AM	Aqueous	E300	Anion Preparation	06/14/19 11:45 AM	91339
	BMW-29	06/13/19 10:30 AM	Aqueous	M4500-P E	Orthophosphate Prep	06/14/19 11:55 AM	91343
	BMW-29	06/13/19 10:30 AM	Aqueous	M2540C	TDS Preparation	06/18/19 01:25 PM	91377
1906152-03A	BMW-30	06/13/19 12:50 PM	Aqueous	M3500-Fe	Ferrous Iron Prep Water	06/14/19 02:08 PM	91344
1906152-03B	BMW-30	06/13/19 12:50 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/18/19 08:21 AM	91364
	BMW-30	06/13/19 12:50 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/18/19 08:21 AM	91364
1906152-03C	BMW-30	06/13/19 12:50 PM	Aqueous	M2320 B	Alkalinity Preparation	06/17/19 08:32 AM	91346
	BMW-30	06/13/19 12:50 PM	Aqueous	E300	Anion Preparation	06/14/19 11:45 AM	91339
	BMW-30	06/13/19 12:50 PM	Aqueous	E300	Anion Preparation	06/14/19 11:45 AM	91339
	BMW-30	06/13/19 12:50 PM	Aqueous	E300	Anion Preparation	06/14/19 11:45 AM	91339
	BMW-30	06/13/19 12:50 PM	Aqueous	M4500-P E	Orthophosphate Prep	06/14/19 11:55 AM	91343
	BMW-30	06/13/19 12:50 PM	Aqueous	M2540C	TDS Preparation	06/18/19 01:25 PM	91377

LUMINANT

DHL Analytical, Inc. *21-Jun-19*

Lab Order: 1906152
Client: Golder
Project: A1 Area Landfill

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1906152-04A	BMW-31	06/13/19 02:30 PM	Aqueous	M3500-Fe	Ferrous Iron Prep Water	06/14/19 02:08 PM	91344
1906152-04B	BMW-31	06/13/19 02:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/18/19 08:21 AM	91364
	BMW-31	06/13/19 02:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/18/19 08:21 AM	91364
	BMW-31	06/13/19 02:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/18/19 08:21 AM	91364
1906152-04C	BMW-31	06/13/19 02:30 PM	Aqueous	M2320 B	Alkalinity Preparation	06/17/19 08:32 AM	91346
	BMW-31	06/13/19 02:30 PM	Aqueous	E300	Anion Preparation	06/14/19 11:45 AM	91339
	BMW-31	06/13/19 02:30 PM	Aqueous	E300	Anion Preparation	06/14/19 11:45 AM	91339
	BMW-31	06/13/19 02:30 PM	Aqueous	E300	Anion Preparation	06/14/19 11:45 AM	91339
	BMW-31	06/13/19 02:30 PM	Aqueous	M4500-P E	Orthophosphate Prep	06/14/19 11:55 AM	91343
	BMW-31	06/13/19 02:30 PM	Aqueous	M2540C	TDS Preparation	06/18/19 01:25 PM	91377
1906152-05A	BMW-32	06/13/19 07:30 AM	Aqueous	M3500-Fe	Ferrous Iron Prep Water	06/14/19 02:08 PM	91344
1906152-05B	BMW-32	06/13/19 07:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/18/19 08:21 AM	91364
	BMW-32	06/13/19 07:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/18/19 08:21 AM	91364
	BMW-32	06/13/19 07:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/18/19 08:21 AM	91364
1906152-05C	BMW-32	06/13/19 07:30 AM	Aqueous	M2320 B	Alkalinity Preparation	06/17/19 08:32 AM	91346
	BMW-32	06/13/19 07:30 AM	Aqueous	E300	Anion Preparation	06/14/19 11:45 AM	91339
	BMW-32	06/13/19 07:30 AM	Aqueous	E300	Anion Preparation	06/14/19 11:45 AM	91339
	BMW-32	06/13/19 07:30 AM	Aqueous	E300	Anion Preparation	06/14/19 11:45 AM	91339
	BMW-32	06/13/19 07:30 AM	Aqueous	M4500-P E	Orthophosphate Prep	06/14/19 11:55 AM	91343
	BMW-32	06/13/19 07:30 AM	Aqueous	M2540C	TDS Preparation	06/18/19 01:25 PM	91377
1906152-06A	BMW-33	06/13/19 08:15 AM	Aqueous	M3500-Fe	Ferrous Iron Prep Water	06/14/19 02:08 PM	91344
1906152-06B	BMW-33	06/13/19 08:15 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/18/19 08:21 AM	91364
	BMW-33	06/13/19 08:15 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/18/19 08:21 AM	91364
1906152-06C	BMW-33	06/13/19 08:15 AM	Aqueous	M2320 B	Alkalinity Preparation	06/17/19 08:32 AM	91346
	BMW-33	06/13/19 08:15 AM	Aqueous	E300	Anion Preparation	06/14/19 11:45 AM	91339
	BMW-33	06/13/19 08:15 AM	Aqueous	E300	Anion Preparation	06/14/19 11:45 AM	91339
	BMW-33	06/13/19 08:15 AM	Aqueous	E300	Anion Preparation	06/14/19 11:45 AM	91339
	BMW-33	06/13/19 08:15 AM	Aqueous	M4500-P E	Orthophosphate Prep	06/14/19 11:55 AM	91343

LUMINANT

APPENDIX F-Revision 2 February 27, 2024

Lab Order: 1906152
Client: Golder
Project: A1 Area Landfill

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1906152-06C	BMW-33	06/13/19 08:15 AM	Aqueous	M2540C	TDS Preparation	06/18/19 01:25 PM	91377

LUMINANT

DHL Analytical, Inc. *21-Jun-19*

Lab Order: 1906152
Client: Golder
Project: A1 Area Landfill

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1906152-01A	BMW-25	Aqueous	M3500-Fe D	Ferric Iron (Calculated)	91344	1	06/21/19	UV/VIS_2_190621A
	BMW-25	Aqueous	M3500-Fe D	Ferrous Iron	91344	1	06/14/19 02:57 PM	UV/VIS_2_190614C
1906152-01B	BMW-25	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91364	10	06/19/19 02:34 PM	ICP-MS4_190619B
	BMW-25	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91364	20	06/19/19 02:37 PM	ICP-MS4_190619B
	BMW-25	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91364	1	06/19/19 12:25 PM	ICP-MS5_190619B
1906152-01C	BMW-25	Aqueous	M2320 B	Alkalinity	91346	1	06/17/19 10:31 AM	TITRATOR_190617A
	BMW-25	Aqueous	E300	Anions by IC method - Water	91339	100	06/14/19 12:17 PM	IC2_190614A
	BMW-25	Aqueous	E300	Anions by IC method - Water	91339	10	06/14/19 02:57 PM	IC2_190614A
	BMW-25	Aqueous	E300	Anions by IC method - Water	91339	1	06/14/19 05:37 PM	IC2_190614A
	BMW-25	Aqueous	M4500-P E	Orthophosphate	91343	1	06/14/19 12:26 PM	UV/VIS_2_190614B
	BMW-25	Aqueous	M2540C	Total Dissolved Solids	91377	1	06/18/19 03:40 PM	WC_190618A
1906152-02A	BMW-29	Aqueous	M3500-Fe D	Ferric Iron (Calculated)	91344	1	06/21/19	UV/VIS_2_190621A
	BMW-29	Aqueous	M3500-Fe D	Ferrous Iron	91344	1	06/14/19 02:57 PM	UV/VIS_2_190614C
1906152-02B	BMW-29	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91364	1	06/19/19 12:27 PM	ICP-MS5_190619B
	BMW-29	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91364	20	06/19/19 02:39 PM	ICP-MS4_190619B
1906152-02C	BMW-29	Aqueous	M2320 B	Alkalinity	91346	1	06/17/19 11:00 AM	TITRATOR_190617A
	BMW-29	Aqueous	E300	Anions by IC method - Water	91339	100	06/14/19 12:33 PM	IC2_190614A
	BMW-29	Aqueous	E300	Anions by IC method - Water	91339	10	06/14/19 03:13 PM	IC2_190614A
	BMW-29	Aqueous	E300	Anions by IC method - Water	91339	1	06/14/19 05:53 PM	IC2_190614A
	BMW-29	Aqueous	M4500-P E	Orthophosphate	91343	1	06/14/19 12:27 PM	UV/VIS_2_190614B
	BMW-29	Aqueous	M2540C	Total Dissolved Solids	91377	1	06/18/19 03:40 PM	WC_190618A
1906152-03A	BMW-30	Aqueous	M3500-Fe D	Ferric Iron (Calculated)	91344	1	06/21/19	UV/VIS_2_190621A
	BMW-30	Aqueous	M3500-Fe D	Ferrous Iron	91344	1	06/14/19 02:57 PM	UV/VIS_2_190614C
1906152-03B	BMW-30	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91364	10	06/19/19 02:41 PM	ICP-MS4_190619B
	BMW-30	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91364	1	06/19/19 12:29 PM	ICP-MS5_190619B
1906152-03C	BMW-30	Aqueous	M2320 B	Alkalinity	91346	1	06/17/19 11:15 AM	TITRATOR_190617A
	BMW-30	Aqueous	E300	Anions by IC method - Water	91339	100	06/14/19 12:49 PM	IC2_190614A
	BMW-30	Aqueous	E300	Anions by IC method - Water	91339	10	06/14/19 03:29 PM	IC2_190614A

LUMINANT

DHL Analytical, Inc. *21-Jun-19*

Lab Order: 1906152
Client: Golder
Project: A1 Area Landfill

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1906152-03C	BMW-30	Aqueous	E300	Anions by IC method - Water	91339	1	06/14/19 06:09 PM	IC2_190614A
	BMW-30	Aqueous	M4500-P E	Orthophosphate	91343	1	06/14/19 12:27 PM	UV/VIS_2_190614B
	BMW-30	Aqueous	M2540C	Total Dissolved Solids	91377	1	06/18/19 03:40 PM	WC_190618A
1906152-04A	BMW-31	Aqueous	M3500-Fe D	Ferric Iron (Calculated)	91344	1	06/21/19	UV/VIS_2_190621A
	BMW-31	Aqueous	M3500-Fe D	Ferrous Iron	91344	1	06/14/19 02:58 PM	UV/VIS_2_190614C
1906152-04B	BMW-31	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91364	1	06/19/19 02:43 PM	ICP-MS4_190619B
	BMW-31	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91364	10	06/19/19 02:45 PM	ICP-MS4_190619B
	BMW-31	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91364	1	06/19/19 12:31 PM	ICP-MS5_190619B
1906152-04C	BMW-31	Aqueous	M2320 B	Alkalinity	91346	1	06/17/19 11:19 AM	TITRATOR_190617A
	BMW-31	Aqueous	E300	Anions by IC method - Water	91339	10	06/14/19 03:45 PM	IC2_190614A
	BMW-31	Aqueous	E300	Anions by IC method - Water	91339	1	06/14/19 06:25 PM	IC2_190614A
	BMW-31	Aqueous	E300	Anions by IC method - Water	91339	100	06/14/19 01:05 PM	IC2_190614A
	BMW-31	Aqueous	M4500-P E	Orthophosphate	91343	1	06/14/19 12:28 PM	UV/VIS_2_190614B
	BMW-31	Aqueous	M2540C	Total Dissolved Solids	91377	1	06/18/19 03:40 PM	WC_190618A
1906152-05A	BMW-32	Aqueous	M3500-Fe D	Ferric Iron (Calculated)	91344	1	06/21/19	UV/VIS_2_190621A
	BMW-32	Aqueous	M3500-Fe D	Ferrous Iron	91344	1	06/14/19 02:58 PM	UV/VIS_2_190614C
1906152-05B	BMW-32	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91364	1	06/19/19 12:34 PM	ICP-MS5_190619B
	BMW-32	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91364	10	06/19/19 02:47 PM	ICP-MS4_190619B
	BMW-32	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91364	20	06/19/19 03:12 PM	ICP-MS4_190619B
1906152-05C	BMW-32	Aqueous	M2320 B	Alkalinity	91346	1	06/17/19 11:46 AM	TITRATOR_190617A
	BMW-32	Aqueous	E300	Anions by IC method - Water	91339	100	06/14/19 01:21 PM	IC2_190614A
	BMW-32	Aqueous	E300	Anions by IC method - Water	91339	10	06/14/19 04:01 PM	IC2_190614A
	BMW-32	Aqueous	E300	Anions by IC method - Water	91339	1	06/14/19 06:41 PM	IC2_190614A
	BMW-32	Aqueous	M4500-P E	Orthophosphate	91343	1	06/14/19 12:28 PM	UV/VIS_2_190614B
	BMW-32	Aqueous	M2540C	Total Dissolved Solids	91377	1	06/18/19 03:40 PM	WC_190618A
1906152-06A	BMW-33	Aqueous	M3500-Fe D	Ferric Iron (Calculated)	91344	1	06/21/19	UV/VIS_2_190621A
	BMW-33	Aqueous	M3500-Fe D	Ferrous Iron	91344	1	06/14/19 02:59 PM	UV/VIS_2_190614C
1906152-06B	BMW-33	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91364	10	06/19/19 02:51 PM	ICP-MS4_190619B

LUMINANT

DHL Analytical, Inc. *21-Jun-19*

Lab Order: 1906152
Client: Golder
Project: A1 Area Landfill

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1906152-06B	BMW-33	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91364	1	06/19/19 12:36 PM	ICP-MS5_190619B
1906152-06C	BMW-33	Aqueous	M2320 B	Alkalinity	91346	1	06/17/19 12:05 PM	TITRATOR_190617A
	BMW-33	Aqueous	E300	Anions by IC method - Water	91339	100	06/14/19 01:37 PM	IC2_190614A
	BMW-33	Aqueous	E300	Anions by IC method - Water	91339	10	06/14/19 04:17 PM	IC2_190614A
	BMW-33	Aqueous	E300	Anions by IC method - Water	91339	1	06/14/19 06:57 PM	IC2_190614A
	BMW-33	Aqueous	M4500-P E	Orthophosphate	91343	1	06/14/19 12:28 PM	UV/VIS_2_190614B
	BMW-33	Aqueous	M2540C	Total Dissolved Solids	91377	1	06/18/19 03:40 PM	WC_190618A

LUMINANT

DHL Analytical, Inc.

Date: *21-Jun-19*

CLIENT:	Golder	**Client Sample ID:**	BMW-25
Project:	A1 Area Landfill	**Lab ID:**	1906152-01
Project No:	19122434-D	**Collection Date:**	06/13/19 09:30 AM
Lab Order:	1906152	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **SP**
Calcium	167	1.00	3.00		mg/L	10	06/19/19 02:34 PM
Cobalt	0.0130	0.00300	0.00500		mg/L	1	06/19/19 12:25 PM
Iron	0.354	0.0300	0.100		mg/L	1	06/19/19 12:25 PM
Lithium	0.0501	0.00500	0.0100		mg/L	1	06/19/19 12:25 PM
Magnesium	106	1.00	3.00		mg/L	10	06/19/19 02:34 PM
Potassium	7.77	1.00	3.00		mg/L	10	06/19/19 02:34 PM
Sodium	253	2.00	6.00		mg/L	20	06/19/19 02:37 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **JL**
Chloride	65.0	3.00	10.0		mg/L	10	06/14/19 02:57 PM
Fluoride	0.142	0.100	0.400	J	mg/L	1	06/14/19 05:37 PM
Nitrate-N	<0.100	0.100	0.500		mg/L	1	06/14/19 05:37 PM
Sulfate	556	10.0	30.0		mg/L	10	06/14/19 02:57 PM
ALKALINITY		**M2320 B**					Analyst: **CC**
Alkalinity, Bicarbonate (As CaCO3)	771	10.0	20.0		mg/L @ pH 4.54	1	06/17/19 10:31 AM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	06/17/19 10:31 AM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	06/17/19 10:31 AM
Alkalinity, Total (As CaCO3)	771	20.0	20.0		mg/L @ pH 4.54	1	06/17/19 10:31 AM
FERRIC IRON (CALCULATED)		**M3500-FE D**					Analyst: **CAC**
Iron, Ferric	0.354	0.0500	0.100	N	mg/L	1	06/21/19
FERROUS IRON		**M3500-FE D**					Analyst: **BTJ**
Iron, Ferrous	<0.0500	0.0500	0.100	N	mg/L	1	06/14/19 02:57 PM
ORTHOPHOSPHATE		**M4500-P E**					Analyst: **BTJ**
Phosphorus, Total Orthophosphate (As P)	<0.0300	0.0300	0.100		mg/L	1	06/14/19 12:26 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	1650	50.0	50.0		mg/L	1	06/18/19 03:40 PM

LUMINANT

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
	DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit
	ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
	S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *21-Jun-19*

CLIENT:	Golder	**Client Sample ID:**	BMW-29
Project:	A1 Area Landfill	**Lab ID:**	1906152-02
Project No:	19122434-D	**Collection Date:**	06/13/19 10:30 AM
Lab Order:	1906152	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **SP**
Calcium	176	2.00	6.00		mg/L	20	06/19/19 02:39 PM
Iron	1.01	0.0300	0.100		mg/L	1	06/19/19 12:27 PM
Lithium	0.114	0.00500	0.0100		mg/L	1	06/19/19 12:27 PM
Magnesium	94.5	2.00	6.00		mg/L	20	06/19/19 02:39 PM
Potassium	15.3	2.00	6.00		mg/L	20	06/19/19 02:39 PM
Sodium	429	2.00	6.00		mg/L	20	06/19/19 02:39 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **JL**
Chloride	36.6	3.00	10.0		mg/L	10	06/14/19 03:13 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	06/14/19 05:53 PM
Nitrate-N	<0.100	0.100	0.500		mg/L	1	06/14/19 05:53 PM
Sulfate	867	10.0	30.0		mg/L	10	06/14/19 03:13 PM
ALKALINITY		**M2320 B**					Analyst: **CC**
Alkalinity, Bicarbonate (As CaCO3)	819	10.0	20.0		mg/L @ pH 4.54	1	06/17/19 11:00 AM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	06/17/19 11:00 AM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	06/17/19 11:00 AM
Alkalinity, Total (As CaCO3)	819	20.0	20.0		mg/L @ pH 4.54	1	06/17/19 11:00 AM
FERRIC IRON (CALCULATED)		**M3500-FE D**					Analyst: **CAC**
Iron, Ferric	0.668	0.0500	0.100	N	mg/L	1	06/21/19
FERROUS IRON		**M3500-FE D**					Analyst: **BTJ**
Iron, Ferrous	0.342	0.0500	0.100	N	mg/L	1	06/14/19 02:57 PM
ORTHOPHOSPHATE		**M4500-P E**					Analyst: **BTJ**
Phosphorus, Total Orthophosphate (As P)	<0.0300	0.0300	0.100		mg/L	1	06/14/19 12:27 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	2100	50.0	50.0		mg/L	1	06/18/19 03:40 PM

LUMINANT

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *21-Jun-19*

CLIENT:	Golder	**Client Sample ID:**	BMW-30
Project:	A1 Area Landfill	**Lab ID:**	1906152-03
Project No:	19122434-D	**Collection Date:**	06/13/19 12:50 PM
Lab Order:	1906152	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **SP**
Barium	0.0982	0.00300	0.0100		mg/L	1	06/19/19 12:29 PM
Calcium	147	1.00	3.00		mg/L	10	06/19/19 02:41 PM
Iron	3.01	0.0300	0.100		mg/L	1	06/19/19 12:29 PM
Magnesium	65.9	1.00	3.00		mg/L	10	06/19/19 02:41 PM
Potassium	7.05	1.00	3.00		mg/L	10	06/19/19 02:41 PM
Sodium	158	1.00	3.00		mg/L	10	06/19/19 02:41 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **JL**
Chloride	79.5	3.00	10.0		mg/L	10	06/14/19 03:29 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	06/14/19 06:09 PM
Nitrate-N	<0.100	0.100	0.500		mg/L	1	06/14/19 06:09 PM
Sulfate	574	10.0	30.0		mg/L	10	06/14/19 03:29 PM
ALKALINITY		**M2320 B**					Analyst: **CC**
Alkalinity, Bicarbonate (As CaCO3)	315	10.0	20.0		mg/L @ pH 4.53	1	06/17/19 11:15 AM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	06/17/19 11:15 AM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	06/17/19 11:15 AM
Alkalinity, Total (As CaCO3)	315	20.0	20.0		mg/L @ pH 4.53	1	06/17/19 11:15 AM
FERRIC IRON (CALCULATED)		**M3500-FE D**					Analyst: **CAC**
Iron, Ferric	3.01	0.0500	0.100	N	mg/L	1	06/21/19
FERROUS IRON		**M3500-FE D**					Analyst: **BTJ**
Iron, Ferrous	<0.0500	0.0500	0.100	N	mg/L	1	06/14/19 02:57 PM
ORTHOPHOSPHATE		**M4500-P E**					Analyst: **BTJ**
Phosphorus, Total Orthophosphate (As P)	<0.0300	0.0300	0.100		mg/L	1	06/14/19 12:27 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	1320	50.0	50.0		mg/L	1	06/18/19 03:40 PM

LUMINANT

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *21-Jun-19*

CLIENT:	Golder	**Client Sample ID:**	BMW-31
Project:	A1 Area Landfill	**Lab ID:**	1906152-04
Project No:	19122434-D	**Collection Date:**	06/13/19 02:30 PM
Lab Order:	1906152	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **SP**
Calcium	1.70	0.100	0.300		mg/L	1	06/19/19 02:43 PM
Iron	0.102	0.0300	0.100		mg/L	1	06/19/19 12:31 PM
Lithium	0.0203	0.00500	0.0100		mg/L	1	06/19/19 12:31 PM
Magnesium	1.52	0.100	0.300		mg/L	1	06/19/19 12:31 PM
Potassium	0.238	0.100	0.300	J	mg/L	1	06/19/19 02:43 PM
Sodium	43.3	1.00	3.00		mg/L	10	06/19/19 02:45 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **JL**
Chloride	24.7	0.300	1.00		mg/L	1	06/14/19 06:25 PM
Fluoride	0.255	0.100	0.400	J	mg/L	1	06/14/19 06:25 PM
Nitrate-N	<0.100	0.100	0.500		mg/L	1	06/14/19 06:25 PM
Sulfate	34.4	1.00	3.00		mg/L	1	06/14/19 06:25 PM
ALKALINITY		**M2320 B**					Analyst: **CC**
Alkalinity, Bicarbonate (As CaCO3)	30.4	10.0	20.0		mg/L @ pH 4.49	1	06/17/19 11:19 AM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.49	1	06/17/19 11:19 AM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.49	1	06/17/19 11:19 AM
Alkalinity, Total (As CaCO3)	30.4	20.0	20.0		mg/L @ pH 4.49	1	06/17/19 11:19 AM
FERRIC IRON (CALCULATED)		**M3500-FE D**					Analyst: **CAC**
Iron, Ferric	0.102	0.0500	0.100	N	mg/L	1	06/21/19
FERROUS IRON		**M3500-FE D**					Analyst: **BTJ**
Iron, Ferrous	<0.0500	0.0500	0.100	N	mg/L	1	06/14/19 02:58 PM
ORTHOPHOSPHATE		**M4500-P E**					Analyst: **BTJ**
Phosphorus, Total Orthophosphate (As P)	<0.0300	0.0300	0.100		mg/L	1	06/14/19 12:28 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	327	10.0	10.0		mg/L	1	06/18/19 03:40 PM

LUMINANT

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *21-Jun-19*

CLIENT:	Golder	**Client Sample ID:**	BMW-32
Project:	A1 Area Landfill	**Lab ID:**	1906152-05
Project No:	19122434-D	**Collection Date:**	06/13/19 07:30 AM
Lab Order:	1906152	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **SP**
Calcium	134	1.00	3.00		mg/L	10	06/19/19 02:47 PM
Cobalt	0.00705	0.00300	0.00500		mg/L	1	06/19/19 12:34 PM
Iron	4.61	0.0300	0.100		mg/L	1	06/19/19 12:34 PM
Lithium	0.115	0.00500	0.0100		mg/L	1	06/19/19 12:34 PM
Magnesium	102	1.00	3.00		mg/L	10	06/19/19 02:47 PM
Potassium	4.56	1.00	3.00		mg/L	10	06/19/19 02:47 PM
Sodium	266	2.00	6.00		mg/L	20	06/19/19 03:12 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **JL**
Chloride	364	3.00	10.0		mg/L	10	06/14/19 04:01 PM
Fluoride	0.822	0.100	0.400		mg/L	1	06/14/19 06:41 PM
Nitrate-N	<0.100	0.100	0.500		mg/L	1	06/14/19 06:41 PM
Sulfate	446	10.0	30.0		mg/L	10	06/14/19 04:01 PM
ALKALINITY		**M2320 B**					Analyst: **CC**
Alkalinity, Bicarbonate (As CaCO3)	456	10.0	20.0		mg/L @ pH 4.54	1	06/17/19 11:46 AM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	06/17/19 11:46 AM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	06/17/19 11:46 AM
Alkalinity, Total (As CaCO3)	456	20.0	20.0		mg/L @ pH 4.54	1	06/17/19 11:46 AM
FERRIC IRON (CALCULATED)		**M3500-FE D**					Analyst: **CAC**
Iron, Ferric	4.61	0.0500	0.100	N	mg/L	1	06/21/19
FERROUS IRON		**M3500-FE D**					Analyst: **BTJ**
Iron, Ferrous	<0.0500	0.0500	0.100	N	mg/L	1	06/14/19 02:58 PM
ORTHOPHOSPHATE		**M4500-P E**					Analyst: **BTJ**
Phosphorus, Total Orthophosphate (As P)	0.0340	0.0300	0.100	J	mg/L	1	06/14/19 12:28 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	1720	50.0	50.0		mg/L	1	06/18/19 03:40 PM

LUMINANT

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *21-Jun-19*

CLIENT:	Golder	**Client Sample ID:**	BMW-33
Project:	A1 Area Landfill	**Lab ID:**	1906152-06
Project No:	19122434-D	**Collection Date:**	06/13/19 08:15 AM
Lab Order:	1906152	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **SP**
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	06/19/19 12:36 PM
Calcium	97.5	1.00	3.00		mg/L	10	06/19/19 02:51 PM
Cobalt	0.0176	0.00300	0.00500		mg/L	1	06/19/19 12:36 PM
Iron	2.83	0.0300	0.100		mg/L	1	06/19/19 12:36 PM
Lithium	0.0206	0.00500	0.0100		mg/L	1	06/19/19 12:36 PM
Magnesium	56.5	1.00	3.00		mg/L	10	06/19/19 02:51 PM
Potassium	6.29	1.00	3.00		mg/L	10	06/19/19 02:51 PM
Sodium	207	1.00	3.00		mg/L	10	06/19/19 02:51 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **JL**
Chloride	83.8	3.00	10.0		mg/L	10	06/14/19 04:17 PM
Fluoride	0.342	0.100	0.400	J	mg/L	1	06/14/19 06:57 PM
Nitrate-N	<0.100	0.100	0.500		mg/L	1	06/14/19 06:57 PM
Sulfate	256	10.0	30.0		mg/L	10	06/14/19 04:17 PM
ALKALINITY		**M2320 B**					Analyst: **CC**
Alkalinity, Bicarbonate (As CaCO3)	528	10.0	20.0		mg/L @ pH 4.53	1	06/17/19 12:05 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	06/17/19 12:05 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	06/17/19 12:05 PM
Alkalinity, Total (As CaCO3)	528	20.0	20.0		mg/L @ pH 4.53	1	06/17/19 12:05 PM
FERRIC IRON (CALCULATED)		**M3500-FE D**					Analyst: **CAC**
Iron, Ferric	2.83	0.0500	0.100	N	mg/L	1	06/21/19
FERROUS IRON		**M3500-FE D**					Analyst: **BTJ**
Iron, Ferrous	<0.0500	0.0500	0.100	N	mg/L	1	06/14/19 02:59 PM
ORTHOPHOSPHATE		**M4500-P E**					Analyst: **BTJ**
Phosphorus, Total Orthophosphate (As P)	<0.0300	0.0300	0.100		mg/L	1	06/14/19 12:28 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	1100	50.0	50.0		mg/L	1	06/18/19 03:40 PM

LUMINANT

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
	DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit
	ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
	S	Spike Recovery outside control limits	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906152
Project: A1 Area Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190619B

The QC data in batch 91364 applies to the following samples: 1906152-01B, 1906152-02B, 1906152-03B, 1906152-04B, 1906152-05B, 1906152-06B

Sample ID **MB-91364** Batch ID: **91364** TestNo: **SW6020A** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_190619B** Analysis Date: **6/19/2019 2:20:00 PM** Prep Date: **6/18/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	<0.100	0.300								
Potassium	<0.100	0.300								
Sodium	<0.100	0.300								

Sample ID **LCS-91364** Batch ID: **91364** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_190619B** Analysis Date: **6/19/2019 2:22:00 PM** Prep Date: **6/18/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.85	0.300	5.00	0	97.0	80	120			
Potassium	4.93	0.300	5.00	0	98.6	80	120			
Sodium	5.25	0.300	5.00	0	105	80	120			

Sample ID **LCSD-91364** Batch ID: **91364** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_190619B** Analysis Date: **6/19/2019 2:24:00 PM** Prep Date: **6/18/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.83	0.300	5.00	0	96.6	80	120	0.496	15	
Potassium	5.07	0.300	5.00	0	101	80	120	2.80	15	
Sodium	5.32	0.300	5.00	0	106	80	120	1.32	15	

Sample ID **1906156-01A SD** Batch ID: **91364** TestNo: **SW6020A** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS4_190619B** Analysis Date: **6/19/2019 2:32:00 PM** Prep Date: **6/18/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	8.18	1.50	0	8.11				0.846	10	
Potassium	2.17	1.50	0	2.15				0.715	10	
Sodium	76.4	1.50	0	73.6				3.77	10	

Sample ID **1906156-01A PDS** Batch ID: **91364** TestNo: **SW6020A** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS4_190619B** Analysis Date: **6/19/2019 2:53:00 PM** Prep Date: **6/18/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	12.4	0.300	5.00	8.11	86.2	80	120			
Potassium	6.91	0.300	5.00	2.15	95.1	80	120			
Sodium	73.3	0.300	5.00	73.6	-5.52	80	120			S

LUMINANT

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906152
Project: A1 Area Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190619B

Sample ID	**1906156-01A MS**	Batch ID:	**91364**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**MS**	Run ID:	**ICP-MS4_190619B**	Analysis Date:	**6/19/2019 2:55:00 PM**	Prep Date:	**6/18/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	12.8	0.300	5.00	8.11	92.9	80	120			
Potassium	7.18	0.300	5.00	2.15	100	80	120			
Sodium	76.9	0.300	5.00	73.6	67.1	80	120			S

Sample ID	**1906156-01A MSD**	Batch ID:	**91364**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**MSD**	Run ID:	**ICP-MS4_190619B**	Analysis Date:	**6/19/2019 2:57:00 PM**	Prep Date:	**6/18/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	12.7	0.300	5.00	8.11	92.7	80	120	0.075	15	
Potassium	7.12	0.300	5.00	2.15	99.2	80	120	0.869	15	
Sodium	75.0	0.300	5.00	73.6	29.2	80	120	2.49	15	S

LUMINANT

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906152
Project: A1 Area Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190619B

Sample ID	ICV-190619	Batch ID:	R104661	TestNo:	SW6020A	Units:	mg/L
SampType:	ICV	Run ID:	ICP-MS4_190619B	Analysis Date:	6/19/2019 11:08:00 AM	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	2.53	0.300	2.50	0	101	90	110			
Magnesium	2.44	0.300	2.50	0	97.7	90	110			
Potassium	2.53	0.300	2.50	0	101	90	110			
Sodium	2.61	0.300	2.50	0	104	90	110			

Sample ID	LCVL-190619	Batch ID:	R104661	TestNo:	SW6020A	Units:	mg/L
SampType:	LCVL	Run ID:	ICP-MS4_190619B	Analysis Date:	6/19/2019 11:12:00 AM	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.101	0.300	0.100	0	101	70	130			
Magnesium	0.0980	0.300	0.100	0	98.0	70	130			
Potassium	0.0981	0.300	0.100	0	98.1	70	130			
Sodium	0.104	0.300	0.100	0	104	70	130			

Sample ID	CCV1-190619	Batch ID:	R104661	TestNo:	SW6020A	Units:	mg/L
SampType:	CCV	Run ID:	ICP-MS4_190619B	Analysis Date:	6/19/2019 11:46:00 AM	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.77	0.300	5.00	0	95.3	90	110			
Magnesium	4.91	0.300	5.00	0	98.2	90	110			
Potassium	4.90	0.300	5.00	0	98.0	90	110			
Sodium	5.18	0.300	5.00	0	104	90	110			

Sample ID	LCVL1-190619	Batch ID:	R104661	TestNo:	SW6020A	Units:	mg/L
SampType:	LCVL	Run ID:	ICP-MS4_190619B	Analysis Date:	6/19/2019 11:53:00 AM	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.101	0.300	0.100	0	101	70	130			
Magnesium	0.0993	0.300	0.100	0	99.3	70	130			
Potassium	0.0994	0.300	0.100	0	99.4	70	130			
Sodium	0.124	0.300	0.100	0	124	70	130			

Sample ID	CCV2-190619	Batch ID:	R104661	TestNo:	SW6020A	Units:	mg/L
SampType:	CCV	Run ID:	ICP-MS4_190619B	Analysis Date:	6/19/2019 2:59:00 PM	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.77	0.300	5.00	0	95.4	90	110			
Magnesium	4.95	0.300	5.00	0	99.1	90	110			
Potassium	4.94	0.300	5.00	0	98.9	90	110			
Sodium	5.19	0.300	5.00	0	104	90	110			

LUMINANT

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906152
Project: A1 Area Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190619B

Sample ID **LCVL2-190619**	Batch ID: **R104661**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_190619B**	Analysis Date: **6/19/2019 3:06:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.0955	0.300	0.100	0	95.5	70	130			
Magnesium	0.0994	0.300	0.100	0	99.4	70	130			
Potassium	0.0956	0.300	0.100	0	95.6	70	130			
Sodium	0.112	0.300	0.100	0	112	70	130			

Sample ID **CCV3-190619**	Batch ID: **R104661**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_190619B**	Analysis Date: **6/19/2019 3:14:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	5.12	0.300	5.00	0	102	90	110			

Sample ID **LCVL3-190619**	Batch ID: **R104661**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_190619B**	Analysis Date: **6/19/2019 3:21:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	0.109	0.300	0.100	0	109	70	130			

LUMINANT

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906152
Project: A1 Area Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190619B

The QC data in batch 91364 applies to the following samples: 1906152-01B, 1906152-02B, 1906152-03B, 1906152-04B, 1906152-05B, 1906152-06B

Sample ID	MB-91364	Batch ID:	91364	TestNo:	SW6020A	Units:	mg/L
SampType:	MBLK	Run ID:	ICP-MS5_190619B	Analysis Date:	6/19/2019 12:04:00 PM	Prep Date:	6/18/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	<0.00200	0.00500								
Barium	<0.00300	0.0100								
Cobalt	<0.00300	0.00500								
Iron	<0.0300	0.100								
Lithium	<0.00500	0.0100								
Magnesium	<0.100	0.300								

Sample ID	LCS-91364	Batch ID:	91364	TestNo:	SW6020A	Units:	mg/L
SampType:	LCS	Run ID:	ICP-MS5_190619B	Analysis Date:	6/19/2019 12:07:00 PM	Prep Date:	6/18/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.206	0.00500	0.200	0	103	80	120			
Barium	0.202	0.0100	0.200	0	101	80	120			
Cobalt	0.211	0.00500	0.200	0	105	80	120			
Iron	5.08	0.100	5.00	0	102	80	120			
Lithium	0.203	0.0100	0.200	0	102	80	120			
Magnesium	4.99	0.300	5.00	0	99.9	80	120			

Sample ID	LCSD-91364	Batch ID:	91364	TestNo:	SW6020A	Units:	mg/L
SampType:	LCSD	Run ID:	ICP-MS5_190619B	Analysis Date:	6/19/2019 12:09:00 PM	Prep Date:	6/18/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.208	0.00500	0.200	0	104	80	120	0.963	15	
Barium	0.201	0.0100	0.200	0	101	80	120	0.125	15	
Cobalt	0.210	0.00500	0.200	0	105	80	120	0.544	15	
Iron	5.10	0.100	5.00	0	102	80	120	0.434	15	
Lithium	0.201	0.0100	0.200	0	101	80	120	0.963	15	
Magnesium	5.10	0.300	5.00	0	102	80	120	2.20	15	

Sample ID	1906156-01A SD	Batch ID:	91364	TestNo:	SW6020A	Units:	mg/L
SampType:	SD	Run ID:	ICP-MS5_190619B	Analysis Date:	6/19/2019 12:16:00 PM	Prep Date:	6/18/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	<0.0100	0.0250	0	0				0	10	
Barium	0.190	0.0500	0	0.188				1.33	10	
Cobalt	0.0257	0.0250	0	0.0256				0.487	10	
Iron	0.159	0.500	0	0.161				1.10	10	
Lithium	<0.0250	0.0500	0	0.0130				0	10	
Magnesium	4.47	1.50	0	4.44				0.596	10	

LUMINANT

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906152
Project: A1 Area Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190619B

Sample ID **1906156-01A PDS**	Batch ID: **91364**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS5_190619B**	Analysis Date: **6/19/2019 12:38:00 PM**	Prep Date: **6/18/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.187	0.00500	0.200	0	93.5	80	120			
Barium	0.374	0.0100	0.200	0.188	93.3	80	120			
Cobalt	0.221	0.00500	0.200	0.0256	97.5	80	120			
Iron	5.30	0.100	5.00	0.161	103	80	120			
Lithium	0.218	0.0100	0.200	0.0130	102	80	120			
Magnesium	9.48	0.300	5.00	4.44	101	80	120			

Sample ID **1906156-01A MS**	Batch ID: **91364**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS5_190619B**	Analysis Date: **6/19/2019 12:40:00 PM**	Prep Date: **6/18/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.193	0.00500	0.200	0	96.6	80	120			
Barium	0.384	0.0100	0.200	0.188	97.9	80	120			
Cobalt	0.225	0.00500	0.200	0.0256	99.6	80	120			
Iron	5.29	0.100	5.00	0.161	103	80	120			
Lithium	0.216	0.0100	0.200	0.0130	102	80	120			
Magnesium	9.65	0.300	5.00	4.44	104	80	120			

Sample ID **1906156-01A MSD**	Batch ID: **91364**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS5_190619B**	Analysis Date: **6/19/2019 12:42:00 PM**	Prep Date: **6/18/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.194	0.00500	0.200	0	96.9	80	120	0.339	15	
Barium	0.387	0.0100	0.200	0.188	99.8	80	120	0.972	15	
Cobalt	0.226	0.00500	0.200	0.0256	100	80	120	0.650	15	
Iron	5.29	0.100	5.00	0.161	103	80	120	0.019	15	
Lithium	0.216	0.0100	0.200	0.0130	101	80	120	0.236	15	
Magnesium	9.55	0.300	5.00	4.44	102	80	120	0.948	15	

LUMINANT

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906152
Project: A1 Area Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190619B

Sample ID	ICV-190619	Batch ID:	R104660	TestNo:	SW6020A	Units:	mg/L
SampType:	ICV	Run ID:	ICP-MS5_190619B	Analysis Date:	6/19/2019 10:49:00 AM	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.102	0.00500	0.100	0	102	90	110			
Barium	0.0979	0.0100	0.100	0	97.9	90	110			
Cobalt	0.102	0.00500	0.100	0	102	90	110			
Iron	2.48	0.100	2.50	0	99.4	90	110			
Lithium	0.101	0.0100	0.100	0	101	90	110			
Magnesium	2.45	0.300	2.50	0	98.2	90	110			

Sample ID	LCVL-190619	Batch ID:	R104660	TestNo:	SW6020A	Units:	mg/L
SampType:	LCVL	Run ID:	ICP-MS5_190619B	Analysis Date:	6/19/2019 11:01:00 AM	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.00481	0.00500	0.00500	0	96.2	70	130			
Barium	0.00509	0.0100	0.00500	0	102	70	130			
Cobalt	0.00504	0.00500	0.00500	0	101	70	130			
Iron	0.0961	0.100	0.100	0	96.1	70	130			
Lithium	0.0101	0.0100	0.0100	0	101	70	130			
Magnesium	0.0951	0.300	0.100	0	95.1	70	130			

Sample ID	CCV1-190619	Batch ID:	R104660	TestNo:	SW6020A	Units:	mg/L
SampType:	CCV	Run ID:	ICP-MS5_190619B	Analysis Date:	6/19/2019 11:50:00 AM	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.203	0.00500	0.200	0	102	90	110			
Barium	0.202	0.0100	0.200	0	101	90	110			
Cobalt	0.207	0.00500	0.200	0	103	90	110			
Iron	5.05	0.100	5.00	0	101	90	110			
Lithium	0.201	0.0100	0.200	0	100	90	110			
Magnesium	5.02	0.300	5.00	0	100	90	110			

Sample ID	LCVL1-190619	Batch ID:	R104660	TestNo:	SW6020A	Units:	mg/L
SampType:	LCVL	Run ID:	ICP-MS5_190619B	Analysis Date:	6/19/2019 11:56:00 AM	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.00500	0.00500	0.00500	0	100	70	130			
Barium	0.00470	0.0100	0.00500	0	94.1	70	130			
Cobalt	0.00498	0.00500	0.00500	0	99.5	70	130			
Iron	0.0962	0.100	0.100	0	96.2	70	130			
Lithium	0.0101	0.0100	0.0100	0	101	70	130			
Magnesium	0.100	0.300	0.100	0	100	70	130			

LUMINANT

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906152
Project: A1 Area Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190619B

Sample ID **CCV2-190619**	Batch ID: **R104660**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_190619B**	Analysis Date: **6/19/2019 12:45:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.202	0.00500	0.200	0	101	90	110			
Barium	0.201	0.0100	0.200	0	101	90	110			
Cobalt	0.209	0.00500	0.200	0	105	90	110			
Iron	5.12	0.100	5.00	0	102	90	110			
Lithium	0.203	0.0100	0.200	0	101	90	110			
Magnesium	5.09	0.300	5.00	0	102	90	110			

Sample ID **LCVL2-190619**	Batch ID: **R104660**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_190619B**	Analysis Date: **6/19/2019 12:50:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.00496	0.00500	0.00500	0	99.3	70	130			
Barium	0.00514	0.0100	0.00500	0	103	70	130			
Cobalt	0.00512	0.00500	0.00500	0	102	70	130			
Iron	0.0963	0.100	0.100	0	96.3	70	130			
Lithium	0.0104	0.0100	0.0100	0	104	70	130			
Magnesium	0.0964	0.300	0.100	0	96.4	70	130			

LUMINANT

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906152
Project: A1 Area Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_190614A

The QC data in batch 91339 applies to the following samples: 1906152-01C, 1906152-02C, 1906152-03C, 1906152-04C, 1906152-05C, 1906152-06C

Sample ID	**MB-91339**	Batch ID:	**91339**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**IC2_190614A**	Analysis Date:	**6/14/2019 10:18:32 AM**	Prep Date:	**6/14/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00								
Fluoride	<0.100	0.400								
Nitrate-N	<0.100	0.500								
Sulfate	<1.00	3.00								

Sample ID	**LCS-91339**	Batch ID:	**91339**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**IC2_190614A**	Analysis Date:	**6/14/2019 10:34:32 AM**	Prep Date:	**6/14/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.0	1.00	10.00	0	100	90	110			
Fluoride	3.99	0.400	4.000	0	99.8	90	110			
Nitrate-N	5.09	0.500	5.000	0	102	90	110			
Sulfate	30.3	3.00	30.00	0	101	90	110			

Sample ID	**LCSD-91339**	Batch ID:	**91339**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**LCSD**	Run ID:	**IC2_190614A**	Analysis Date:	**6/14/2019 10:50:32 AM**	Prep Date:	**6/14/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.1	1.00	10.00	0	101	90	110	0.555	20	
Fluoride	4.01	0.400	4.000	0	100	90	110	0.489	20	
Nitrate-N	5.10	0.500	5.000	0	102	90	110	0.295	20	
Sulfate	30.5	3.00	30.00	0	102	90	110	0.758	20	

Sample ID	**1906110-04BMS**	Batch ID:	**91339**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**MS**	Run ID:	**IC2_190614A**	Analysis Date:	**6/14/2019 11:26:46 AM**	Prep Date:	**6/14/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	2380	100	2000	317.4	103	90	110			
Fluoride	2080	40.0	2000	0	104	90	110			
Nitrate-N	451	50.0	451.6	0	99.8	90	110			
Sulfate	4020	300	2000	2016	100	90	110			

Sample ID	**1906110-04BMSD**	Batch ID:	**91339**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**MSD**	Run ID:	**IC2_190614A**	Analysis Date:	**6/14/2019 11:42:46 AM**	Prep Date:	**6/14/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	2390	100	2000	317.4	103	90	110	0.283	20	
Fluoride	2090	40.0	2000	0	104	90	110	0.334	20	
Nitrate-N	452	50.0	451.6	0	100	90	110	0.221	20	
Sulfate	4040	300	2000	2016	101	90	110	0.513	20	

LUMINANT

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906152
Project: A1 Area Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_190614A

Sample ID **ICV-190614**	Batch ID: **R104590**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC2_190614A**	Analysis Date: **6/14/2019 9:46:32 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	25.7	1.00	25.00	0	103	90	110			
Fluoride	10.2	0.400	10.00	0	102	90	110			
Nitrate-N	13.1	0.500	12.50	0	105	90	110			
Sulfate	77.5	3.00	75.00	0	103	90	110			

Sample ID **CCV1-190614**	Batch ID: **R104590**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_190614A**	Analysis Date: **6/14/2019 2:25:37 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.2	1.00	10.00	0	102	90	110			
Fluoride	4.09	0.400	4.000	0	102	90	110			
Nitrate-N	5.17	0.500	5.000	0	103	90	110			
Sulfate	30.9	3.00	30.00	0	103	90	110			

Sample ID **CCV2-190614**	Batch ID: **R104590**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_190614A**	Analysis Date: **6/14/2019 5:05:37 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.3	1.00	10.00	0	103	90	110			
Fluoride	4.13	0.400	4.000	0	103	90	110			
Nitrate-N	5.22	0.500	5.000	0	104	90	110			
Sulfate	31.2	3.00	30.00	0	104	90	110			

Sample ID **CCV3-190614**	Batch ID: **R104590**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_190614A**	Analysis Date: **6/14/2019 7:45:37 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.4	1.00	10.00	0	104	90	110			
Fluoride	4.17	0.400	4.000	0	104	90	110			
Nitrate-N	5.25	0.500	5.000	0	105	90	110			
Sulfate	31.6	3.00	30.00	0	105	90	110			

LUMINANT

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906152
Project: A1 Area Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_190617A

The QC data in batch 91346 applies to the following samples: 1906152-01C, 1906152-02C, 1906152-03C, 1906152-04C, 1906152-05C, 1906152-06C

Sample ID **MB-91346** Batch ID: **91346** TestNo: **M2320 B** Units: **mg/L @ pH 4.53**
SampType: **MBLK** Run ID: **TITRATOR_190617A** Analysis Date: **6/17/2019 9:13:00 AM** Prep Date: **6/17/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	<10.0	20.0								
Alkalinity, Carbonate (As CaCO3)	<10.0	20.0								
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0								
Alkalinity, Total (As CaCO3)	<20.0	20.0								

Sample ID **LCS-91346** Batch ID: **91346** TestNo: **M2320 B** Units: **mg/L @ pH 4.23**
SampType: **LCS** Run ID: **TITRATOR_190617A** Analysis Date: **6/17/2019 9:17:00 AM** Prep Date: **6/17/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)	51.5	20.0	50.00	0	103	74	129			

Sample ID **1906152-04C DUP** Batch ID: **91346** TestNo: **M2320 B** Units: **mg/L @ pH 4.5**
SampType: **DUP** Run ID: **TITRATOR_190617A** Analysis Date: **6/17/2019 11:22:00 AM** Prep Date: **6/17/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	30.3	20.0	0	30.40				0.329	20	
Alkalinity, Carbonate (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Total (As CaCO3)	30.3	20.0	0	30.40				0.329	20	

Sample ID **1906152-06C DUP** Batch ID: **91346** TestNo: **M2320 B** Units: **mg/L @ pH 4.53**
SampType: **DUP** Run ID: **TITRATOR_190617A** Analysis Date: **6/17/2019 12:24:00 PM** Prep Date: **6/17/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	525	20.0	0	527.6				0.418	20	
Alkalinity, Carbonate (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Total (As CaCO3)	525	20.0	0	527.6				0.418	20	

LUMINANT

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906152
Project: A1 Area Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_190617A

Sample ID **ICV-190617**	Batch ID: **R104621**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.34**
SampType: **ICV**	Run ID: **TITRATOR_190617A**	Analysis Date: **6/17/2019 9:10:00 AM**	Prep Date: **6/17/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	7.60	20.0	0							
Alkalinity, Carbonate (As CaCO3)	92.5	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	100	20.0	100.0	0	100	98	102			

Sample ID **CCV1-190617**	Batch ID: **R104621**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.33**
SampType: **CCV**	Run ID: **TITRATOR_190617A**	Analysis Date: **6/17/2019 11:27:00 AM**	Prep Date: **6/17/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	24.5	20.0	0							
Alkalinity, Carbonate (As CaCO3)	74.1	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	98.6	20.0	100.0	0	98.6	90	110			

Sample ID **CCV2-190617**	Batch ID: **R104621**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.37**
SampType: **CCV**	Run ID: **TITRATOR_190617A**	Analysis Date: **6/17/2019 12:53:00 PM**	Prep Date: **6/17/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	33.0	20.0	0							
Alkalinity, Carbonate (As CaCO3)	65.8	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	98.8	20.0	100.0	0	98.8	90	110			

LUMINANT

Qualifiers:

B	Analyte detected in the associated Method Blank
J	Analyte detected between MDL and RL
ND	Not Detected at the Method Detection Limit
RL	Reporting Limit
J	Analyte detected between SDL and RL
DF	Dilution Factor
MDL	Method Detection Limit
R	RPD outside accepted control limits
S	Spike Recovery outside control limits
N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906152
Project: A1 Area Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: UV/VIS_2_190614B

The QC data in batch 91343 applies to the following samples: 1906152-01C, 1906152-02C, 1906152-03C, 1906152-04C, 1906152-05C, 1906152-06C

Sample ID **MB-91343**	Batch ID: **91343**	TestNo: **M4500-P E**	Units: **mg/L**
SampType: **MBLK**	Run ID: **UV/VIS_2_190614B**	Analysis Date: **6/14/2019 12:25:00 PM**	Prep Date: **6/14/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Total Orthophosphate (As	<0.0300	0.100								

Sample ID **LCS-91343**	Batch ID: **91343**	TestNo: **M4500-P E**	Units: **mg/L**
SampType: **LCS**	Run ID: **UV/VIS_2_190614B**	Analysis Date: **6/14/2019 12:25:00 PM**	Prep Date: **6/14/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Total Orthophosphate (As	0.479	0.100	0.5000	0	95.8	80	120			

Sample ID **LCSD-91343**	Batch ID: **91343**	TestNo: **M4500-P E**	Units: **mg/L**
SampType: **LCSD**	Run ID: **UV/VIS_2_190614B**	Analysis Date: **6/14/2019 12:25:00 PM**	Prep Date: **6/14/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Total Orthophosphate (As	0.477	0.100	0.5000	0	95.4	80	120	0.418	15	

Sample ID **1906152-01CMS**	Batch ID: **91343**	TestNo: **M4500-P E**	Units: **mg/L**
SampType: **MS**	Run ID: **UV/VIS_2_190614B**	Analysis Date: **6/14/2019 12:26:00 PM**	Prep Date: **6/14/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Total Orthophosphate (As	0.514	0.100	0.5000	0	103	80	120			

Sample ID **1906152-01CMSD**	Batch ID: **91343**	TestNo: **M4500-P E**	Units: **mg/L**
SampType: **MSD**	Run ID: **UV/VIS_2_190614B**	Analysis Date: **6/14/2019 12:26:00 PM**	Prep Date: **6/14/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Total Orthophosphate (As	0.516	0.100	0.5000	0	103	80	120	0.388	15	

LUMINANT

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

ANALYTICAL QC SUMMARY REPORT

RunID: UV/VIS_2_190614B

Sample ID **ICV-190614**	Batch ID: **R104598**	TestNo: **M4500-P E**	Units: **mg/L**
SampType: **ICV**	Run ID: **UV/VIS_2_190614B**	Analysis Date: **6/14/2019 12:24:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Total Orthophosphate (As	0.197	0.100	0.2000	0	98.5	85	115			

Sample ID **CCV1-190614**	Batch ID: **R104598**	TestNo: **M4500-P E**	Units: **mg/L**
SampType: **CCV**	Run ID: **UV/VIS_2_190614B**	Analysis Date: **6/14/2019 12:29:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Total Orthophosphate (As	0.547	0.100	0.5000	0	109	85	115			

LUMINANT

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906152
Project: A1 Area Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: UV/VIS_2_190614C

The QC data in batch 91344 applies to the following samples: 1906152-01A, 1906152-02A, 1906152-03A, 1906152-04A, 1906152-05A, 1906152-06A

Sample ID	MB-91344	Batch ID:	91344	TestNo:	M3500-Fe D	Units:	mg/L
SampType:	MBLK	Run ID:	UV/VIS_2_190614C	Analysis Date:	6/14/2019 2:51:00 PM	Prep Date:	6/14/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	<0.0500	0.100								N

Sample ID	LCS-91344	Batch ID:	91344	TestNo:	M3500-Fe D	Units:	mg/L
SampType:	LCS	Run ID:	UV/VIS_2_190614C	Analysis Date:	6/14/2019 2:52:00 PM	Prep Date:	6/14/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	0.0968	0.100	0.1000	0	96.8	85	115			N

Sample ID	LCSD-91344	Batch ID:	91344	TestNo:	M3500-Fe D	Units:	mg/L
SampType:	LCSD	Run ID:	UV/VIS_2_190614C	Analysis Date:	6/14/2019 2:52:00 PM	Prep Date:	6/14/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	0.0877	0.100	0.1000	0	87.7	85	115	9.92	15	N

Sample ID	1906089-01AMS	Batch ID:	91344	TestNo:	M3500-Fe D	Units:	mg/L
SampType:	MS	Run ID:	UV/VIS_2_190614C	Analysis Date:	6/14/2019 2:54:00 PM	Prep Date:	6/14/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	0.0880	0.100	0.1000	0	88.0	85	115			N

Sample ID	1906089-01AMSD	Batch ID:	91344	TestNo:	M3500-Fe D	Units:	mg/L
SampType:	MSD	Run ID:	UV/VIS_2_190614C	Analysis Date:	6/14/2019 2:54:00 PM	Prep Date:	6/14/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	0.0896	0.100	0.1000	0	89.6	85	115	1.77	15	N

LUMINANT

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906152
Project: A1 Area Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: UV/VIS_2_190614C

Sample ID **ICV-190614**	Batch ID: **R104612**	TestNo: **M3500-Fe D**	Units: **mg/L**
SampType: **ICV**	Run ID: **UV/VIS_2_190614C**	Analysis Date: **6/14/2019 2:50:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	0.0902	0.100	0.1000	0	90.2	85	115			N

Sample ID **CCV1-190614**	Batch ID: **R104612**	TestNo: **M3500-Fe D**	Units: **mg/L**
SampType: **CCV**	Run ID: **UV/VIS_2_190614C**	Analysis Date: **6/14/2019 3:01:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	0.192	0.100	0.2000	0	96.1	85	115			N

LUMINANT

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906152
Project: A1 Area Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: WC_190618A

The QC data in batch 91377 applies to the following samples: 1906152-01C, 1906152-02C, 1906152-03C, 1906152-04C, 1906152-05C, 1906152-06C

Sample ID	MB-91377	Batch ID:	91377	TestNo:	M2540C	Units:	mg/L
SampType:	MBLK	Run ID:	WC_190618A	Analysis Date:	6/18/2019 3:40:00 PM	Prep Date:	6/18/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	<10.0	10.0								

Sample ID	LCS-91377	Batch ID:	91377	TestNo:	M2540C	Units:	mg/L
SampType:	LCS	Run ID:	WC_190618A	Analysis Date:	6/18/2019 3:40:00 PM	Prep Date:	6/18/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	756	10.0	745.6	0	101	90	113			

Sample ID	1906152-01C-DUP	Batch ID:	91377	TestNo:	M2540C	Units:	mg/L
SampType:	DUP	Run ID:	WC_190618A	Analysis Date:	6/18/2019 3:40:00 PM	Prep Date:	6/18/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	1620	50.0	0	1645				1.84	5	

LUMINANT

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

July 19, 2019

Will Vienne
Golder
2201 Double Creek Dr #4004
Round Rock, Texas 78664
TEL: (512) 671-3434
FAX (512) 671-3446

Order No.: 1907114

RE: Luminant-MLSES-A1 Area Landfill

Dear Will Vienne:

DHL Analytical, Inc. received 4 sample(s) on 7/10/2019 for the analyses presented in the following report.

There were no problems with the analyses and all data met requirements of NELAP except where noted in the Case Narrative. All non-NELAP methods will be identified accordingly in the case narrative and all estimated uncertainties of test results are within method or EPA specifications.

If you have any questions regarding these tests results, please feel free to call. Thank you for using DHL Analytical.

Sincerely,

John DuPont
General Manager

LUMINANT

This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211-19-24

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LUMINANT

DHL ANALYTICAL
2300 Double Creek Dr. ■ Round Rock, TX 78664
Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

nelap

№ 83671

CHAIN-OF-CUSTODY

CLIENT: GOLDER
ADDRESS: 2201 DOUBLE CREEK DR ROUND ROCK, TX 78664
PHONE: 512-671-3434 FAX/E-MAIL: 512-671-3446
DATA REPORTED TO: WILL VIENNE
ADDITIONAL REPORT COPIES TO:

DATE: 7-9-19 PAGE 1 OF 1
PO #: 19122262-D DHL WORK ORDER #: 1907114
PROJECT LOCATION OR NAME: LUMINANT-MLSES-A1 AREA LANDFILL
CLENT PROJECT #: 19122262-D COLLECTOR: J. BRAYTON

Authorize 5% surcharge for TRRP Report? ☐ Yes ☐ No

S=SOIL P=PAINT
W=WATER SL=SLUDGE
A=AIR O=OTHER
L=LIQUID SO=SOLID
SE=SEDIMENT

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	HCl	HNO_3	H_2SO_4 ☐ NaOH ☐	ICE	UNPRESERVED	ANALYSES: BTEX ☐ MTBE ☐ [METHOD 8021]	TPH 1005 ☐ TPH 1006 ☐ HOLD 1006 ☐	GRO [METHOD 8015] ☐ DRO [METHOD 8105] ☐	VOC 8260 ☐ VOC 624 ☐ VOC 8260/5035 ☐	SVOC 8270 ☐ PAH 8270 ☐ HOLD PAH ☐ SVOC 625 ☐	8270 PEST ☐ 625 PEST/PCB ☐ 608 PCB ☐	8270 O-P PEST ☐ 8082 PCB ☐ 8270 PCB ☐	8321 HERB ☐ T PHOS, AMMONIA ☐	METALS 6020 ☐ METALS 200.8 ☐ DISS. METALS ☐	RCRA ☐ TX11 ☐	PH ☐ HEX CHROM ☐ ALKALINITY ☐ COD ☐	CHLORIDE ☐ ANIONS ☐	TCLP-SVOC ☐ VOC ☐ PEST ☐ HERB ☐	TCLP-METALS ☐ RCRA 8 ☐ TX-11 ☐ Pb ☐	RCI ☐ FLASHPOINT ☐ DGAS ☐	TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐	LITHIUM	COBALT	FIELD NOTES
BMW-29	01	7-8-19	0945	W	P	1		X		X																		X			
BMW-32	02	↓	1420	W	P	1		X		X																		X			
BMW-25	03	↓	1255	W	P	1		X		X																			X		
AIV-18-OB-95	04	↓	1135	W	P	1		X		X																		X			

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
[signature]	7-9-19 1800	FeL Ex
FeL Ex	7/10/19 1011	[signature]

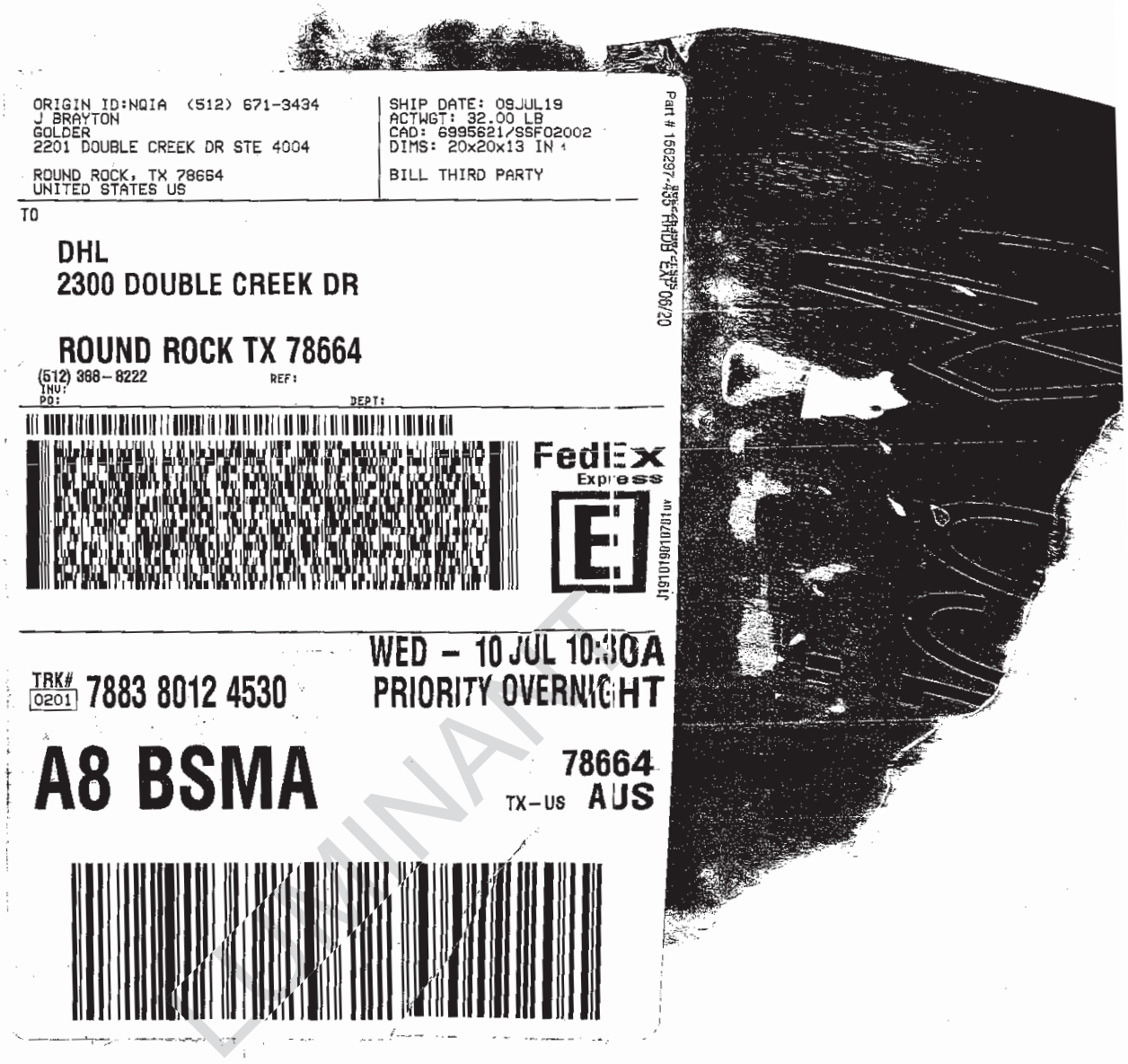
☐ DHL DISPOSAL @ $5.00 each ☐ Return

TURN AROUND TIME
RUSH ☐ CALL FIRST
1 DAY ☐ CALL FIRST
2 DAY ☐
NORMAL ☒
OTHER ☐

LABORATORY USE ONLY:
RECEIVING TEMP: 1.4°C THERM #: 78
CUSTODY SEALS: ☐ BROKEN ☐ INTACT ☑ NOT USED
CARRIER: ☐ LONE STAR ☑ FEDEX ☐ UPS ☐ OTHER
☐ COURIER DELIVERY
☐ HAND DELIVERED

DHL COC Rev 1 | FEB 2010

LUMINANT


ORIGIN ID:NQIA (512) 671-3434
J BRAYTON
GOLDER
2201 DOUBLE CREEK DR STE 4004
ROUND ROCK, TX 78664
UNITED STATES US
SHIP DATE: 09JUL19
ACTWGT: 32.00 LB
CAD: 6995621/SSF02002
DIMS: 20x20x13 IN
BILL THIRD PARTY
TO
DHL
2300 DOUBLE CREEK DR
ROUND ROCK TX 78664
(512) 368-8222
REF:
INV:
PO:
DEPT:
FedEx
Express
E
TRK# 0201 7883 8012 4530
WED - 10 JUL 10:30A
PRIORITY OVERNIGHT
A8 BSMA
78664
TX-US AUS

DOMINANT

DHL Analytical, Inc.

Sample Receipt Checklist

Client Name Golder | Date Received: 7/10/2019

Work Order Number 1907114 | Received by JW

Checklist completed by: Signature 7/10/2019 Date | Reviewed by Initials 7/10/2019 Date

Carrier name FedEx 1day

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	1.4 °C
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH<2 acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted?		Checked by
Water - ph>9 (S) or ph>10 (CN) acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted?		Checked by

Any No response must be detailed in the comments section below.

Client contacted _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments: _____

Corrective Action _____

LUMINANT

DHL Analytical, Inc. **Date:** *19-Jul-19*

CLIENT: Golder
Project: Luminant-MLSES-A1 Area Landfill
Lab Order: 1907114

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Method SW6020A - Metals Analysis

LOG IN

The samples were received and log-in performed on 7/10/2019. A total of 4 samples were received and analyzed. The samples arrived in good condition and were properly packaged. All method blanks, laboratory spikes, and/or matrix spikes met quality assurance objectives.

LUMINANT

DHL Analytical, Inc.

Date: *19-Jul-19*

CLIENT: Golder
Project: Luminant-MLSES-A1 Area Landfill
Lab Order: 1907114

Work Order Sample Summary

Lab Smp ID	Client Sample ID	Tag Number	Date Collected	Date Recved
1907114-01	BMW-29		07/08/19 09:45 AM	7/10/2019
1907114-02	BMW-32		07/08/19 02:20 PM	7/10/2019
1907114-03	BMW-25		07/08/19 12:55 PM	7/10/2019
1907114-04	A1V-18-OB-95		07/08/19 11:35 AM	7/10/2019

LUMINANT

DHL Analytical, Inc.

19-Jul-19

Lab Order: 1907114
Client: Golder
Project: Luminant-MLSES-A1 Area Landfi

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1907114-01A	BMW-29	07/08/19 09:45 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	07/12/19 10:48 AM	91752
1907114-02A	BMW-32	07/08/19 02:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	07/12/19 10:48 AM	91752
1907114-03A	BMW-25	07/08/19 12:55 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	07/12/19 10:48 AM	91752
1907114-04A	A1V-18-OB-95	07/08/19 11:35 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	07/12/19 10:48 AM	91752
	A1V-18-OB-95	07/08/19 11:35 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	07/12/19 10:48 AM	91752

LUMINANT

DHL Analytical, Inc.

19-Jul-19

Lab Order: 1907114
Client: Golder
Project: Luminant-MLSES-A1 Area Landfi

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1907114-01A	BMW-29	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91752	1	07/15/19 11:41 AM	ICP-MS5_190715A
1907114-02A	BMW-32	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91752	1	07/15/19 11:43 AM	ICP-MS5_190715A
1907114-03A	BMW-25	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91752	1	07/15/19 11:45 AM	ICP-MS5_190715A
1907114-04A	A1V-18-OB-95	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91752	1	07/15/19 11:32 AM	ICP-MS5_190715A
	A1V-18-OB-95	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91752	1	07/16/19 11:00 AM	ICP-MS4_190716A

LUMINANT

DHL Analytical, Inc.

Date: *19-Jul-19*

CLIENT:	Golder	**Client Sample ID:**	BMW-29
Project:	Luminant-MLSES-A1 Area Landfill	**Lab ID:**	1907114-01
Project No:	19122262-D	**Collection Date:**	07/08/19 09:45 AM
Lab Order:	1907114	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **SP**
Lithium	0.104	0.00500	0.0100		mg/L	1	07/15/19 11:41 AM

LUMINANT

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
	DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit
	ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
	S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *19-Jul-19*

CLIENT:	Golder	**Client Sample ID:**	BMW-32
Project:	Luminant-MLSES-A1 Area Landfill	**Lab ID:**	1907114-02
Project No:	19122262-D	**Collection Date:**	07/08/19 02:20 PM
Lab Order:	1907114	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **SP**
Lithium	0.116	0.00500	0.0100		mg/L	1	07/15/19 11:43 AM

LUMINANT

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
	DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit
	ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
	S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *19-Jul-19*

CLIENT:	Golder	**Client Sample ID:**	BMW-25
Project:	Luminant-MLSES-A1 Area Landfill	**Lab ID:**	1907114-03
Project No:	19122262-D	**Collection Date:**	07/08/19 12:55 PM
Lab Order:	1907114	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **SP**
Cobalt	0.00514	0.00300	0.00500		mg/L	1	07/15/19 11:45 AM

LUMINANT

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
	DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit
	ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
	S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *19-Jul-19*

CLIENT:	Golder	**Client Sample ID:**	A1V-18-OB-95
Project:	Luminant-MLSES-A1 Area Landfill	**Lab ID:**	1907114-04
Project No:	19122262-D	**Collection Date:**	07/08/19 11:35 AM
Lab Order:	1907114	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **SP**
Lithium	0.0454	0.00500	0.0100		mg/L	1	07/15/19 11:32 AM

LUMINANT

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
S	Spike Recovery outside control limits	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1907114
Project: Luminant-MLSES-A1 Area Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190715A

The QC data in batch 91752 applies to the following samples: 1907114-01A, 1907114-02A, 1907114-03A, 1907114-04A

Sample ID **MB-91752** Batch ID: **91752** TestNo: **SW6020A** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS5_190715A** Analysis Date: **7/15/2019 11:23:00 AM** Prep Date: **7/12/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cobalt	<0.00300	0.00500								
Lithium	<0.00500	0.0100								

Sample ID **LCS-91752** Batch ID: **91752** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS5_190715A** Analysis Date: **7/15/2019 11:26:00 AM** Prep Date: **7/12/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cobalt	0.205	0.00500	0.200	0	102	80	120			
Lithium	0.201	0.0100	0.200	0	100	80	120			

Sample ID **LCSD-91752** Batch ID: **91752** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS5_190715A** Analysis Date: **7/15/2019 11:28:00 AM** Prep Date: **7/12/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cobalt	0.205	0.00500	0.200	0	102	80	120	0.097	15	
Lithium	0.200	0.0100	0.200	0	100	80	120	0.171	15	

Sample ID **1907114-04A SD** Batch ID: **91752** TestNo: **SW6020A** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS5_190715A** Analysis Date: **7/15/2019 11:34:00 AM** Prep Date: **7/12/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cobalt	<0.0150	0.0250	0	0				0	10	
Lithium	0.0460	0.0500	0	0.0454				1.23	10	

Sample ID **1907114-04A PDS** Batch ID: **91752** TestNo: **SW6020A** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS5_190715A** Analysis Date: **7/15/2019 11:56:00 AM** Prep Date: **7/12/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cobalt	0.189	0.00500	0.200	0	94.7	80	120			
Lithium	0.247	0.0100	0.200	0.0454	101	80	120			

Sample ID **1907114-04A MS** Batch ID: **91752** TestNo: **SW6020A** Units: **mg/L**
SampType: **MS** Run ID: **ICP-MS5_190715A** Analysis Date: **7/15/2019 11:58:00 AM** Prep Date: **7/12/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cobalt	0.191	0.00500	0.200	0	95.3	80	120			
Lithium	0.244	0.0100	0.200	0.0454	99.4	80	120			

LUMINANT

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1907114
Project: Luminant-MLSES-A1 Area Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190715A

Sample ID	1907114-04A MSD	Batch ID:	91752	TestNo:	SW6020A	Units:	mg/L
SampType:	MSD	Run ID:	ICP-MS5_190715A	Analysis Date:	7/15/2019 12:01:00 PM	Prep Date:	7/12/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cobalt	0.190	0.00500	0.200	0	94.9	80	120	0.463	15	
Lithium	0.242	0.0100	0.200	0.0454	98.1	80	120	1.07	15	

LUMINANT

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1907114
Project: Luminant-MLSES-A1 Area Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190715A

Sample ID	ICV-190715	Batch ID:	R105116	TestNo:	SW6020A	Units:	mg/L
SampType:	ICV	Run ID:	ICP-MS5_190715A	Analysis Date:	7/15/2019 11:07:00 AM	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cobalt	0.101	0.00500	0.100	0	101	90	110			
Lithium	0.103	0.0100	0.100	0	103	90	110			

Sample ID	LCVL-190715	Batch ID:	R105116	TestNo:	SW6020A	Units:	mg/L
SampType:	LCVL	Run ID:	ICP-MS5_190715A	Analysis Date:	7/15/2019 11:15:00 AM	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cobalt	0.00489	0.00500	0.00500	0	97.7	70	130			
Lithium	0.0103	0.0100	0.0100	0	103	70	130			

Sample ID	CCV1-190715	Batch ID:	R105116	TestNo:	SW6020A	Units:	mg/L
SampType:	CCV	Run ID:	ICP-MS5_190715A	Analysis Date:	7/15/2019 12:03:00 PM	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cobalt	0.192	0.00500	0.200	0	96.1	90	110			
Lithium	0.197	0.0100	0.200	0	98.7	90	110			

Sample ID	LCVL1-190715	Batch ID:	R105116	TestNo:	SW6020A	Units:	mg/L
SampType:	LCVL	Run ID:	ICP-MS5_190715A	Analysis Date:	7/15/2019 12:08:00 PM	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cobalt	0.00495	0.00500	0.00500	0	98.9	70	130			
Lithium	0.00992	0.0100	0.0100	0	99.2	70	130			

LUMINANT

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

August 20, 2019

Will Vienne
Golder
2201 Double Creek Dr #4004
Round Rock, Texas 78664
TEL: (512) 671-3434
FAX (512) 671-3446

Order No.: 1908174

RE: Luminant-A1 Area

Dear Will Vienne:

DHL Analytical, Inc. received 2 sample(s) on 8/16/2019 for the analyses presented in the following report.

There were no problems with the analyses and all data met requirements of NELAP except where noted in the Case Narrative. All non-NELAP methods will be identified accordingly in the case narrative and all estimated uncertainties of test results are within method or EPA specifications.

If you have any questions regarding these tests results, please feel free to call. Thank you for using DHL Analytical.

Sincerely,

John DuPont
General Manager

LUMINANT

This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211-19-24

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LUMINANT

DHL ANALYTICAL
2300 Double Creek Dr. ■ Round Rock, TX 78664
Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

nelap

№ 85327

CHAIN-OF-CUSTODY

CLIENT: GOLDER
ADDRESS: 2201 DOUBLE CREEK DR ROUND ROCK, TX 78664
PHONE: 512-671-3434 FAX/E-MAIL: 512-671-3446
DATA REPORTED TO: WILL VIENNE
ADDITIONAL REPORT COPIES TO:

DATE: 8-14-19 PAGE 1 OF 1
PO #: 19122262-C DHL WORK ORDER #: 1908174
PROJECT LOCATION OR NAME: LUMINANT- A1 AREA
CLENT PROJECT #: 19122262-C COLLECTOR: J. BRAYTON

Authorize 5% Surcharge for TRRP Report? ☐ Yes ☐ No

S=SOIL P=PAINT W=WATER SL=SLUDGE A=AIR O=OTHER L=LIQUID SO=SOLID SE=SEDIMENT

ANALYSES: BTEX ☐ MTBE ☐ [METHOD 8021] TPH 1005 ☐ TPH 1006 ☐ HOLD 1006 ☐ GRO [METHOD 8015] ☐ DRO [METHOD 8105] ☐ VOC 8260 ☐ VOC 624 ☐ VOC 8260/5035 ☐ SVOC 8270 ☐ PAH 8270 ☐ HOLD PAH ☐ SVOC 625 ☐ 8270 PEST ☐ 625 PEST/PCB ☐ 608 PCB ☐ 8270 PCB ☐ 8270 O-P PEST ☐ 8082 PCB ☐ 8270 PCB ☐ 8321 HERB ☐ T PHOS, AMMONIA ☐ METALS 6020 ☐ METALS 200.8 ☐ DISS. METALS ☐ RCRA ☐ TX11 ☐ PH ☐ HEX CHROM ☐ ALKALINITY ☐ COD ☐ CHLORIDE ☐ ANIONS ☐ TCLP-SVOC ☐ VOC ☐ PEST ☐ HERB ☐ TCLP-METALS ☐ RCRA 8 ☐ TX-11 ☐ Pb ☐ RCI ☐ FLASHPOINT ☐ DGAS ☐ TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐ COBALT LITHIUM

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	HCl	HNO_3	H_2SO_4 ☐ NaOH ☐	ICE	UNPRESERVED	COBALT	LITHIUM	FIELD NOTES
A1-2-OB	01	8-14-19	1100		P	1		X				X	X	
A1-17-SPOIL	02	8-14-19	1205		P	1		X				X	X	

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
[signature]	8-15-19 1730	Fed Ex
Fed Ex	8/16/19 0943	[signature]

☐ DHL DISPOSAL @ $5.00 each ☐ Return

TURN AROUND TIME
RUSH ☒ CALL FIRST
1 DAY ☐ CALL FIRST
2 DAY ☐ Per Will
~~NORMAL~~ ☒ CC 8/16/19
OTHER ☐

LABORATORY USE ONLY:
RECEIVING TEMP: 1.4°C THERM #: 78
CUSTODY SEALS: ☐ BROKEN ☐ INTACT ☒ NOT USED
CARRIER: ☐ LONE STAR ☒ FEDEX ☐ UPS ☐ OTHER
☐ COURIER DELIVERY
☐ HAND DELIVERED

DHL COC Rev 1 | FEB 2010

LUMINANT

APPENDIX A Revision 2 February 27, 2024

ORIGIN ID:FWHA (512) 671-3434
JIBRAYTON
GOLDER
2201 DOUBLE CREECK DR
ROUND ROCK, TX 78664
UNITED STATES US
SHIP DATE: 15AUG19
ACTWGT: 18.30 LB
CAD: 6995323/SSF02002
DIMS: 13x15x10 IN
BILL THIRD PARTY
TO DHL ANALYTICAL
DHL ANALYTICAL
2300 DOUBLE CREEK DR
ROUND ROCK TX 78664
(512) 388-8222
REF:
INV:
PO:
DEPT:
FedEx
Express
TRK# 0201 7891 6544 7941
FRI - 16 AUG 10:30A
PRIORITY OVERNIGHT
A8 BSMA
78664
TX-US AUS

LUSHANT

DHL Analytical, Inc.

Sample Receipt Checklist

Client Name Golder

Date Received: 8/16/2019

Work Order Number 1908174

Received by

Checklist completed by: _____ 8/16/2019
Signature Date

Reviewed by JD 8/16/2019
Initials Date

Carrier name FedEx 1day

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	1.4 °C
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH<2 acceptable upon receipt?	Yes ☑	No ☐	NA ☐ LOT # 13171
	Adjusted? NO		Checked by EL
Water - ph>9 (S) or ph>10 (CN) acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted?		Checked by

Any No response must be detailed in the comments section below.

Client contacted Date contacted: Person contacted

Contacted by: Regarding:

Comments:

Corrective Action

LUMINANT

Laboratory Name: DHL Analytical, Inc.

Laboratory Review Checklist: Reportable Data

Project Name: Luminant-A1 Area	**LRC Date:** 8/20/2019
Reviewer Name: Angie O'Donnell	**Laboratory Work Order: 1908174**
Prep Batch Number(s): See Prep Dates Report	**Run Batch:** See Analytical Dates Report

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
		Chain-of-Custody (C-O-C)					
R1	OI	**1)** Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	**X**				**R1-01**
		2) Were all departures from standard conditions described in an exception report?			**X**		
R2	OI	**Sample and Quality Control (QC) Identification**					
		1) Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	**X**				
		2) Are all laboratory ID numbers cross-referenced to the corresponding QC data?	**X**				
R3	OI	**Test Reports**					
		1) Were all samples prepared and analyzed within holding times?	**X**				
		2) Other than those results < MQL, were all other raw values bracketed by calibration standards?	**X**				
		3) Were calculations checked by a peer or supervisor?	**X**				
		4) Were all analyte identifications checked by a peer or supervisor?	**X**				
		5) Were sample detection limits reported for all analytes not detected?	**X**				
		6) Were all results for soil and sediment samples reported on a dry weight basis?			**X**		
		7) Were % moisture (or solids) reported for all soil and sediment samples?			**X**		
		8) Were bulk soils/solids samples for volatile analysis extracted with methanol per EPA Method 5035?			**X**		
		9) If required for the project, TICs reported?			**X**		
R4	O	**Surrogate Recovery Data**					
		1) Were surrogates added prior to extraction?			**X**		
		2) Were surrogate percent recoveries in all samples within the laboratory QC limits?			**X**		
R5	OI	**Test Reports/Summary Forms for Blank Samples**					
		1) Were appropriate type(s) of blanks analyzed?	**X**				
		2) Were blanks analyzed at the appropriate frequency?	**X**				
		3) Where method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	**X**				
		4) Were blank concentrations < MDL?	**X**				
		5) For analyte(s) detected in a blank sample, was the concentration, unadjusted for sample specific factors, in all associated field samples, **greater than** 10 times the concentration in the blank sample?			**X**		
R6	OI	**Laboratory Control Samples (LCS):**					
		1) Were all COCs included in the LCS?	**X**				
		2) Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	**X**				
		3) Were LCSs analyzed at the required frequency?	**X**				
		4) Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	**X**				
		5) Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	**X**				
		6) Was the LCSD RPD within QC limits (if applicable)?	**X**				
R7	OI	**Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Data**					
		1) Were the project/method specified analytes included in the MS and MSD?	**X**				
		2) Were MS/MSD analyzed at the appropriate frequency?	**X**				
		3) Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?		**X**			**R7-03**
		4) Were MS/MSD RPDs within laboratory QC limits?	**X**				
R8	OI	**Analytical Duplicate Data**					
		1) Were appropriate analytical duplicates analyzed for each matrix?			**X**		
		2) Were analytical duplicates analyzed at the appropriate frequency?			**X**		
		3) Were RPDs or relative standard deviations within the laboratory QC limits?			**X**		
R9	OI	**Method Quantitation Limits (MQLs):**					
		1) Are the MQLs for each method analyte included in the laboratory data package?	**X**				
		2) Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	**X**				
		3) Are unadjusted MQLs and DCSs included in the laboratory data package?	**X**				
R10	OI	**Other Problems/Anomalies**					
		1) Are all known problems/anomalies/special conditions noted in this LRC and ER?	**X**				
		2) Was applicable and available technology used to lower the SDL to minimize the matrix interference affects on the sample results?	**X**				
		3) Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices and methods associated with this laboratory data package?	**X**				

LUMINANT

Laboratory Name: DHL Analytical, Inc.

Laboratory Review Checklist (continued): Supporting Data

Project Name: Luminant-A1 Area	**LRC Date:** 8/20/2019
Reviewer Name: Angie O'Donnell	**Laboratory Work Order: 1908174**
Prep Batch Number(s): See Prep Dates Report	**Run Batch:** See Analytical Dates Report

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
S1	OI	**Initial Calibration (ICAL)**					
		1) Were response factors and/or relative response factors for each analyte within QC limits?	X				
		2) Were percent RSDs or correlation coefficient criteria met?	X				
		3) Was the number of standards recommended in the method used for all analytes?	X				
		4) Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		5) Are ICAL data available for all instruments used?	X				
		6) Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	**Initial and Continuing calibration Verification (ICCV and CCV) and Continuing Calibration blank (CCB):**					
		1) Was the CCV analyzed at the method-required frequency?	X				
		2) Were percent differences for each analyte within the method-required QC limits?	X				
		3) Was the ICAL curve verified for each analyte?	X				
		4) Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	X				
S3	O	**Mass Spectral Tuning:**					
		1) Was the appropriate compound for the method used for tuning?	X				
		2) Were ion abundance data within the method-required QC limits?	X				
S4	O	**Internal Standards (IS):**					
		1) Were IS area counts and retention times within the method-required QC limits?	X				
S5	OI	**Raw Data (NELAC Section 5.5.10)**					
		1) Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		2) Were data associated with manual integrations flagged on the raw data?	X				
S6	O	**Dual Column Confirmation**					
		1) Did dual column confirmation results meet the method-required QC?			X		
S7	O	**Tentatively Identified Compounds (TICs):**					
		1) If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) Results:**					
		1) Were percent recoveries within method QC limits?	X				
S9	I	**Serial Dilutions, Post Digestion Spikes, and Method of Standard Additions**					
		1) Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	X				
S10	OI	**Method Detection Limit (MDL) Studies**					
		1) Was a MDL study performed for each reported analyte?	X				
		2) Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	**Proficiency Test Reports:**					
		1) Was the lab's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	**Standards Documentation**					
		1) Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound/Analyte Identification Procedures**					
		1) Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of Analyst Competency (DOC)**					
		1) Was DOC conducted consistent with NELAC Chapter 5 – Appendix C?	X				
		2) Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/Validation Documentation for Methods** (NELAC Chapter 5)					
		1) Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	**Laboratory Standard Operating Procedures (SOPs):**					
		1) Are laboratory SOPs current and on file for each method performed?	X				

LUMINANT

1 Items identified by the letter "R" should be included in the laboratory data package submitted to the TCEQ in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.

2 O = organic analyses; I = inorganic analyses (and general chemistry, when applicable).

3 NA = Not applicable.

4 NR = Not Reviewed.

5 ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Data Package Signature Page – RG-366/TRRP-13

This data package consists of:

This signature page, the laboratory review checklist, and the following reportable data:

R1 Field chain-of-custody documentation;
R2 Sample identification cross-reference;
R3 Test reports (analytical data sheets) for each environmental sample that includes:
  a) Items consistent with NELAC Chapter 5,
  b) dilution factors,
  c) preparation methods,
  d) cleanup methods, and
  e) if required for the project, tentatively identified compounds (TICs).
R4 Surrogate recovery data including:
  a) Calculated recovery (%R), and
  b) The laboratory's surrogate QC limits.
R5 Test reports/summary forms for blank samples;
R6 Test reports/summary forms for laboratory control samples (LCSs) including:
  a) LCS spiking amounts,
  b) Calculated %R for each analyte, and
  c) The laboratory's LCS QC limits.
R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
  a) Samples associated with the MS/MSD clearly identified,
  b) MS/MSD spiking amounts,
  c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
  d) Calculated %Rs and relative percent differences (RPDs), and
  e) The laboratory's MS/MSD QC limits
R8 Laboratory analytical duplicate (if applicable) recovery and precision:
  a) The amount of analyte measured in the duplicate,
  b) The calculated RPD, and
  c) The laboratory's QC limits for analytical duplicates.
R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix;
R10 Other problems or anomalies.

The Exception Report for each "No" or "Not Reviewed (NR)" item in the Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory is not accredited under the Texas Laboratory Accreditation Program.

LUMINANT

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature below, I affirm to the best of my knowledge that all problems/anomalies observed by the laboratory have been identified in the Laboratory Review Checklist, and no information or data affecting the quality of the data has been knowingly withheld.

This laboratory was last inspected by TCEQ on February 25-28, 2019. Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Name: John DuPont
Official Title: General Manager

Signature

08/20/19
Date

Name: Dr. Derhsing Luu
Official Title: Technical Director

DHL Analytical, Inc. **Date:** *20-Aug-19*

CLIENT: Golder
Project: Luminant-A1 Area
Lab Order: 1908174

CASE NARRATIVE

Samples were analyzed using the following references:

Method SW6020A - Metals Analysis

Exception Report R1-01

The samples were received and log-in performed on 8/16/2019. A total of 2 samples were received and analyzed. The samples arrived in good condition and were properly packaged.

Exception Report R7-03

For Metals Analysis, the recovery of Lithium for the Matrix Spike and Matrix Spike Duplicate (1908175-03 MS/MSD) was outside of the method control limits. This is flagged accordingly in the QC Summary Report. This analyte was within method control limits in the associated LCS. No further corrective action was taken.

LUMINANT

DHL Analytical, Inc.

Date: *20-Aug-19*

CLIENT: Golder
Project: Luminant-A1 Area
Lab Order: 1908174

Work Order Sample Summary

Lab Smp ID	Client Sample ID	Tag Number	Date Collected	Date Recved
1908174-01	A1-2-OB		08/14/19 11:00 AM	8/16/2019
1908174-02	A1-17-Spoil		08/14/19 12:05 PM	8/16/2019

LUMINANT

DHL Analytical, Inc. *20-Aug-19*

Lab Order: 1908174
Client: Golder
Project: Luminant-A1 Area

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1908174-01A	A1-2-OB	08/14/19 11:00 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/19/19 08:43 AM	92407
1908174-02A	A1-17-Spoil	08/14/19 12:05 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/19/19 08:43 AM	92407

LUMINANT

APPENDIX F-Revision 2 February 27, 2024

Lab Order: 1908174
Client: Golder
Project: Luminant-A1 Area

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1908174-01A	A1-2-OB	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92407	1	08/20/19 11:17 AM	ICP-MS5_190820A
1908174-02A	A1-17-Spoil	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92407	1	08/20/19 11:19 AM	ICP-MS5_190820A

LUMINANT

DHL Analytical, Inc.

Date: *20-Aug-19*

CLIENT:	Golder	**Client Sample ID:**	A1-2-OB
Project:	Luminant-A1 Area	**Lab ID:**	1908174-01
Project No:	19122262-C	**Collection Date:**	08/14/19 11:00 AM
Lab Order:	1908174	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **SP**
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	08/20/19 11:17 AM
Lithium	<0.00500	0.00500	0.0100		mg/L	1	08/20/19 11:17 AM

LUMINANT

Qualifiers:

- ND - Not Detected at the SDL
- J - Analyte detected between SDL and RL
- B - Analyte detected in the associated Method Blank
- DF- Dilution Factor
- N - Parameter not NELAP certified
- See Final Page of Report for MQLs and MDLs
- S - Spike Recovery outside control limits
- C - Sample Result or QC discussed in Case Narrative
- RL - Reporting Limit (MQL adjusted for moisture and sample size)
- SDL - Sample Detection Limit
- E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *20-Aug-19*

CLIENT:	Golder	**Client Sample ID:**	A1-17-Spoil
Project:	Luminant-A1 Area	**Lab ID:**	1908174-02
Project No:	19122262-C	**Collection Date:**	08/14/19 12:05 PM
Lab Order:	1908174	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **SP**
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	08/20/19 11:19 AM
Lithium	0.0394	0.00500	0.0100		mg/L	1	08/20/19 11:19 AM

LUMINANT

Qualifiers:

- ND - Not Detected at the SDL
- J - Analyte detected between SDL and RL
- B - Analyte detected in the associated Method Blank
- DF- Dilution Factor
- N - Parameter not NELAP certified
- See Final Page of Report for MQLs and MDLs
- S - Spike Recovery outside control limits
- C - Sample Result or QC discussed in Case Narrative
- RL - Reporting Limit (MQL adjusted for moisture and sample size)
- SDL - Sample Detection Limit
- E - TPH pattern not Gas or Diesel Range Pattern

CLIENT: Golder
Work Order: 1908174
Project: Luminant-A1 Area

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190621A

Sample ID **DCS3-91398**	Batch ID: **91398**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **DCS3**	Run ID: **ICP-MS5_190621A**	Analysis Date: **6/21/2019 11:16:00 AM**	Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cobalt	0.00516	0.00500	0.00500	0	103	70	130	0	0	
Lithium	0.00535	0.0100	0.00500	0	107	70	130	0	0	

LUMINANT

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1908174
Project: Luminant-A1 Area

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190820A

The QC data in batch 92407 applies to the following samples: 1908174-01A, 1908174-02A

Sample ID	MB-92407	Batch ID:	92407	TestNo:	SW6020A	Units:	mg/L
SampType:	MBLK	Run ID:	ICP-MS5_190820A	Analysis Date:	8/20/2019 11:00:00 AM	Prep Date:	8/19/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cobalt	<0.00300	0.00500								
Lithium	<0.00500	0.0100								

Sample ID	LCS-92407	Batch ID:	92407	TestNo:	SW6020A	Units:	mg/L
SampType:	LCS	Run ID:	ICP-MS5_190820A	Analysis Date:	8/20/2019 11:03:00 AM	Prep Date:	8/19/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cobalt	0.194	0.00500	0.200	0	97.1	80	120			
Lithium	0.201	0.0100	0.200	0	100	80	120			

Sample ID	LCSD-92407	Batch ID:	92407	TestNo:	SW6020A	Units:	mg/L
SampType:	LCSD	Run ID:	ICP-MS5_190820A	Analysis Date:	8/20/2019 11:05:00 AM	Prep Date:	8/19/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cobalt	0.191	0.00500	0.200	0	95.5	80	120	1.60	15	
Lithium	0.201	0.0100	0.200	0	101	80	120	0.137	15	

Sample ID	1908175-03A SD	Batch ID:	92407	TestNo:	SW6020A	Units:	mg/L
SampType:	SD	Run ID:	ICP-MS5_190820A	Analysis Date:	8/20/2019 11:12:00 AM	Prep Date:	8/19/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cobalt	0.101	0.0250	0	0.0985				2.91	10	
Lithium	1.17	0.0500	0	1.10				6.21	10	

Sample ID	1908175-03A PDS	Batch ID:	92407	TestNo:	SW6020A	Units:	mg/L
SampType:	PDS	Run ID:	ICP-MS5_190820A	Analysis Date:	8/20/2019 11:26:00 AM	Prep Date:	8/19/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cobalt	0.270	0.00500	0.200	0.0985	85.9	80	120			
Lithium	1.29	0.0100	0.200	1.10	94.0	80	120			

Sample ID	1908175-03A MS	Batch ID:	92407	TestNo:	SW6020A	Units:	mg/L
SampType:	MS	Run ID:	ICP-MS5_190820A	Analysis Date:	8/20/2019 11:28:00 AM	Prep Date:	8/19/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cobalt	0.274	0.00500	0.200	0.0985	87.5	80	120			
Lithium	1.36	0.0100	0.200	1.10	131	80	120			S

LUMINANT

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1908174
Project: Luminant-A1 Area

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190820A

Sample ID	1908175-03A MSD	Batch ID:	92407	TestNo:	SW6020A	Units:	mg/L
SampType:	MSD	Run ID:	ICP-MS5_190820A	Analysis Date:	8/20/2019 11:30:00 AM	Prep Date:	8/19/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cobalt	0.263	0.00500	0.200	0.0985	82.5	80	120	3.78	15	
Lithium	1.24	0.0100	0.200	1.10	71.2	80	120	9.15	15	S

LUMINANT

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1908174
Project: Luminant-A1 Area

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190820A

Sample ID **ICV-190820**	Batch ID: **R105890**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS5_190820A**	Analysis Date: **8/20/2019 10:46:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cobalt	0.0990	0.00500	0.100	0	99.0	90	110			
Lithium	0.106	0.0100	0.100	0	106	90	110			

Sample ID **LCVL-190820**	Batch ID: **R105890**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_190820A**	Analysis Date: **8/20/2019 10:54:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cobalt	0.00494	0.00500	0.00500	0	98.7	70	130			
Lithium	0.0107	0.0100	0.0100	0	107	70	130			

Sample ID **CCV1-190820**	Batch ID: **R105890**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_190820A**	Analysis Date: **8/20/2019 11:41:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cobalt	0.198	0.00500	0.200	0	98.9	90	110			
Lithium	0.215	0.0100	0.200	0	108	90	110			

Sample ID **LCVL1-190820**	Batch ID: **R105890**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_190820A**	Analysis Date: **8/20/2019 11:50:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cobalt	0.00510	0.00500	0.00500	0	102	70	130			
Lithium	0.0122	0.0100	0.0100	0	122	70	130			

LUMINANT

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *20-Aug-19*

CLIENT: Golder
Work Order: 1908174
Project: Luminant-A1 Area

MQL SUMMARY REPORT

TestNo: SW6020A	MDL	MQL
Analyte	**mg/L**	**mg/L**
Cobalt	0.00300	0.00500
Lithium	0.00500	0.0100

LUMINANT

Qualifiers: MQL -Method Quantitation Limit as defined by TRRP
MDL -Method Detection Limit as defined by TRRP

Quantitative X-Ray Diffraction by Rietveld Refinement

Report Prepared for:	*Golder Associates - Will Vienne*
Project Number/ LIMS No.	*17431-01 / MI7013-JUN19*
Batch:	*Martin Lake A1 Area Landfill*
Sample Receipt:	*June 13, 2019*
Sample Analysis:	*June 28, 2019*
Reporting Date:	*July 19, 2019*
Instrument:	Panalytical X'pert Pro Diffractometer
Test Conditions:	Co radiation, 40 kV, 45 mA Regular Scanning: Step: 0.033°, Step time:0.15s, 2θ range: 6-70°
Interpretations :	HighScore Plus software using Crystallography Open Database (COD) and Joint Committee on Powder Diffraction Standards -International Center for Diffraction Data (JCPDS-ICDD).
Detection Limit :	0.5-2%. Strongly dependent on crystallinity.

LUMINANT

Contents:

1) Method Summary
2) Summary of Mineral Assemblages
3) Quantitative XRD Results
4) XRD Pattern(s)

Ben Eaton
Junior Mineralogist

Lain Glossop H.B.Sc
Senior Mineralogist

Method Summary

Mineral Identification and Interpretation:

Mineral identification and interpretation involve matching the diffraction pattern of a test sample material to patterns of single-phase reference materials. The reference patterns from the Crystallography Open Database (COD) and the Joint Committee on Powder Diffraction Standards - International Center for Diffraction Data (JCPDS-ICDD).

Interpretations do not reflect the presence of non-crystalline and/or amorphous compounds, except when internal standards have been added by request. Mineral proportions may be strongly influenced by crystallinity, crystal structure and preferred orientations. Mineral or compound identification and quantitative analysis results should be accompanied by supporting chemical assay data or other additional tests.

Quantitative Rietveld Analysis:

Panalytical HighScore Plus software was used to perform the quantitative Rietveld Analysis. This software uses a graphics based profile analysis program built around a non-linear least squares fitting system, to quantitatively determine the amount of different phases present in a multicomponent sample. Whole pattern analyses are predicated by the fact that the X-ray diffraction pattern is a total sum of both instrumental and specimen factors. Unlike other peak intensity-based methods, the Rietveld method uses a least squares approach to refine a theoretical line profile (shown as a blue pattern in the analyses plots) until it matches the obtained experimental patterns (shown as the coloured pattern in the analyses plots).

Rietveld refinement is completed with a set of minerals specifically identified for the sample. Zero values indicate that the mineral was included in the refinement calculations, but the calculated concentration was less than 0.5 wt%. Minerals not identified by the analyst are not included in refinement calculations for specific samples and are indicated with a dash.

LUMINANT

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SGS Minerals
a division of SGS Canada Inc.
3260 Production Way, Burnaby, British Columbia, Canada V5A 4W4
Tel: (604) 638-2349 Fax: (604) 444-5486 www.sgs.com www.sgs.com/met
Member of the SGS Group (SGS SA)

Summary of Rietveld Quantitative Analysis X-ray Diffraction Results

Quantitative X-ray Diffraction Results

Mineral/Compound	1 BMW-29 (30-31)	2 BMW-30 (40-41)	3 BMW-31 (14-15)	4 BMW-32 (25-26)	5 BMW-33 (38-39)
	(wt %)	(wt %)	(wt %)	(wt %)	(wt %)
Quartz	61.8	82.3	90.3	81.7	68.0
Albite	14.3	0.0	2.1	6.6	17.1
K-Feldspar	2.9	7.3	5.6	7.6	3.0
Chlorite	3.1	1.6	0.1	0.0	1.7
*Kaolinite	3.9	3.9	0.0	2.5	3.4
*Montmorillonite	0.3	0.0	0.1	0.0	0.6
Muscovite	5.7	1.5	0.7	0.8	4.0
Biotite	0.0	0.0	0.0	0.0	0.0
Illite	7.7	2.1	1.0	0.6	2.1
*Vermiculite	0.2	0.0	0.1	0.1	0.2
Titanomagnetite	--	0.2	--	--	--
Ilmenite	--	1.0	--	--	--
TOTAL	100	100	100	100	100

Zero values indicate that the mineral was included in the refinement, but the calculated concentration is below a measurable value.

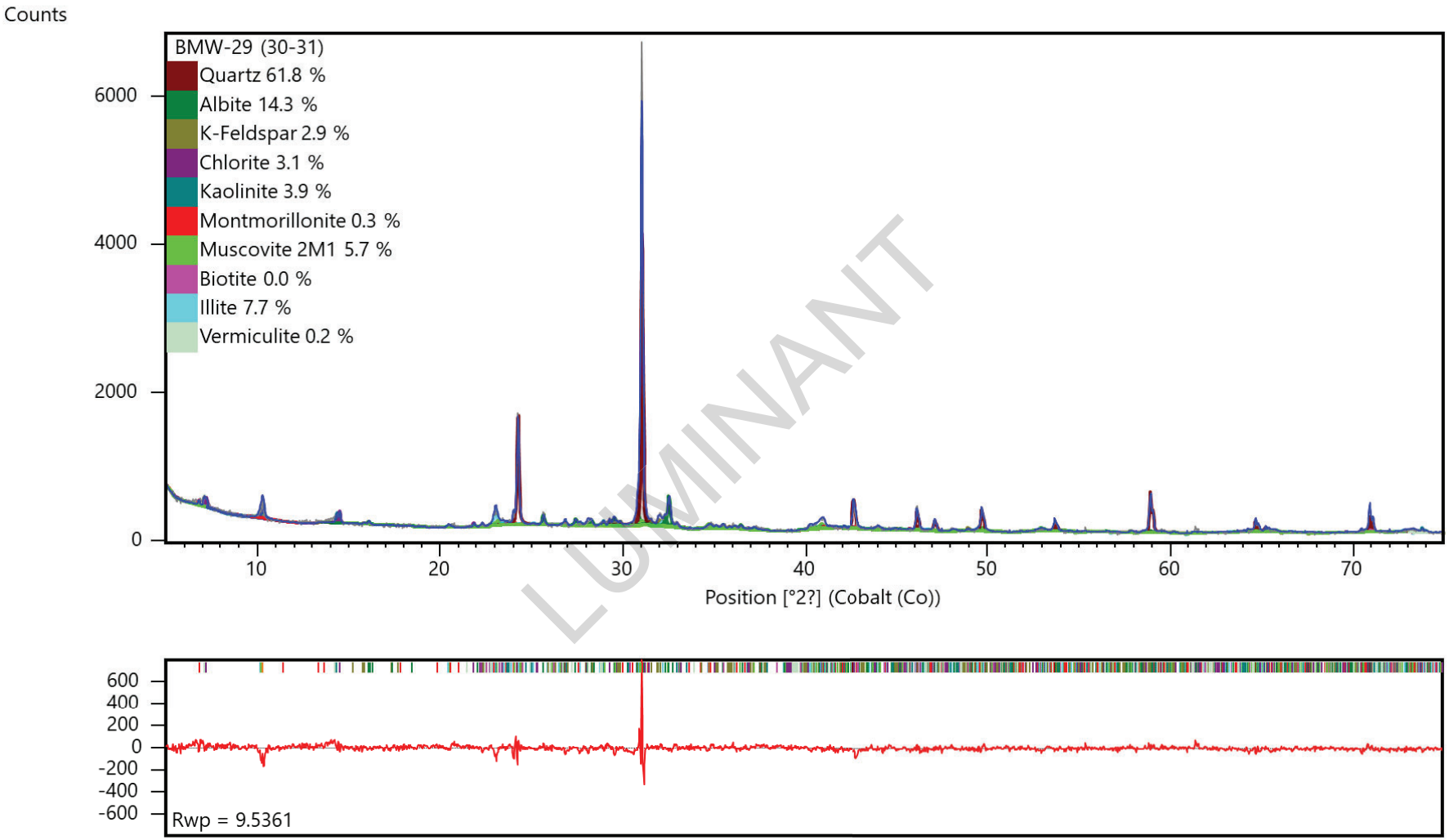
Dashes indicate that the mineral was not identified by the analyst and not included in the refinement calculation for the sample.

** Tentative identification of clays only, further clay XRD analysis will be required for positive identification.*

Mineral/Compound	Formula
Quartz	SiO_2
Albite	$NaAlSi_3O_8$
K-Feldspar	$KAlSi_3O_8$
Chlorite	$(Mg_3,Fe_2)Al(AlSi_3)O_{10}(OH)_8$
Kaolinite	$Al_2Si_2O_5(OH)_4$
Montmorillonite	$Na_{0.2}Ca_{0.1}Al_{1.5}Mg_{0.5}Si_4O_{10}(OH)_2 \cdot 4(H_2O)$
Muscovite	$KAl_2(AlSi_3O_{10})(OH)_2$
Biotite	$KMg_{2.5}Fe_{0.5}AlSi_3O_{10}(OH)_{1.75}F_{0.25}$
Illite	$(K,H_3O)(Al,Mg,Fe)_2(Si,Al)_4O_{10}[(OH)_2,(H_2O)]$
Vermiculite	$(Mg,Fe,Al)_2(Al,Si)_4O_{10}(OH)_2 \cdot 4(H_2O)$
Titanomagnetite	Fe_2TiO_4
Magnetite	Fe_2O_4

DOMINANT

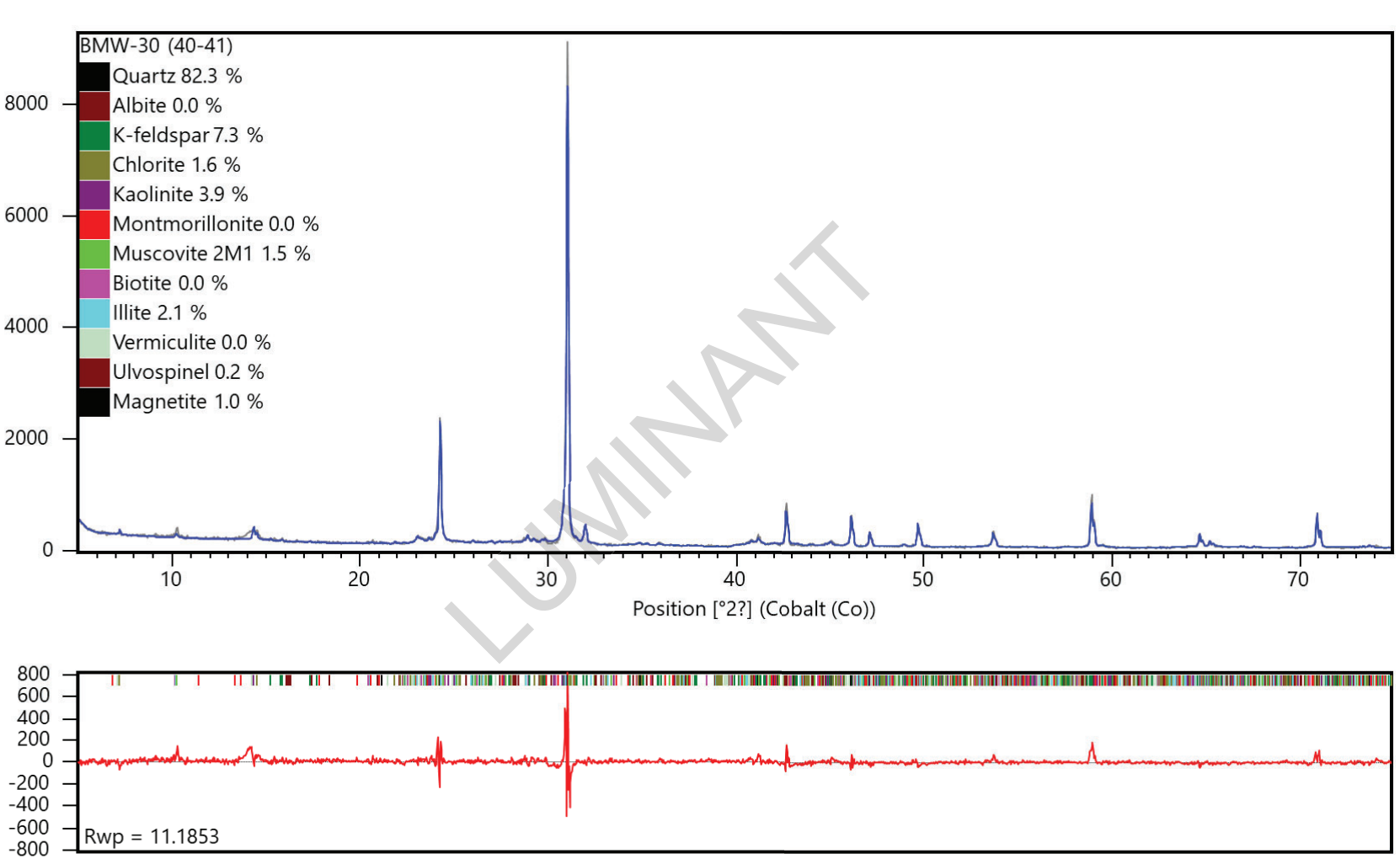
APPENDIX F-Revision 2 February 27, 2024



LUMINANT

X-ray diffractogram. The upper pattern is the measured diffractogram, the blue curve is the calculated pattern from the Rietveld Refinement and the lower red curve is the difference plot.

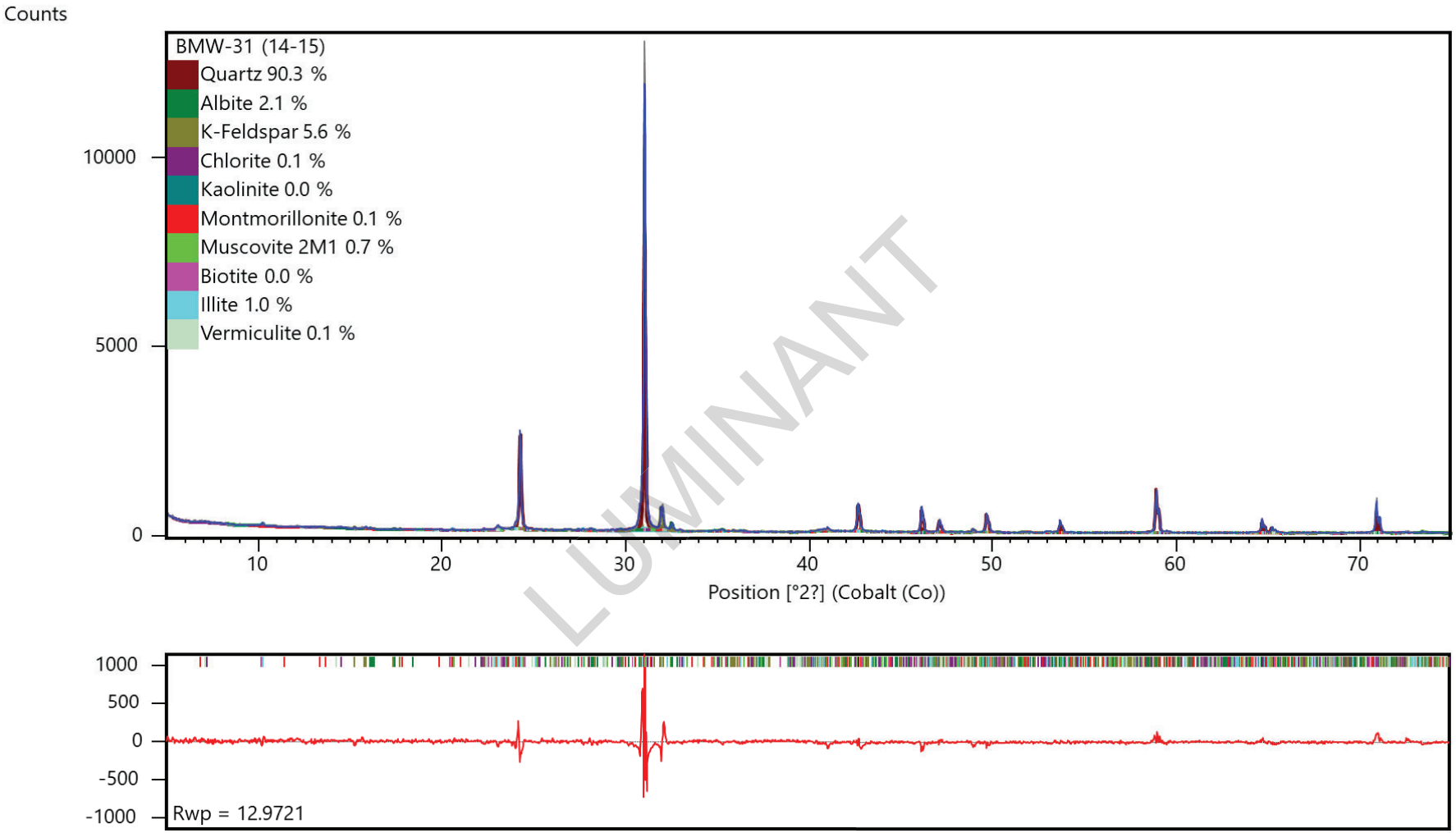
APPENDIX F-Revision 2 February 27, 2024



LUMINANT

X-ray diffractogram. The upper pattern is the measured diffractogram, the blue curve is the calculated pattern from the Rietveld Refinement and the lower red curve is the difference plot.

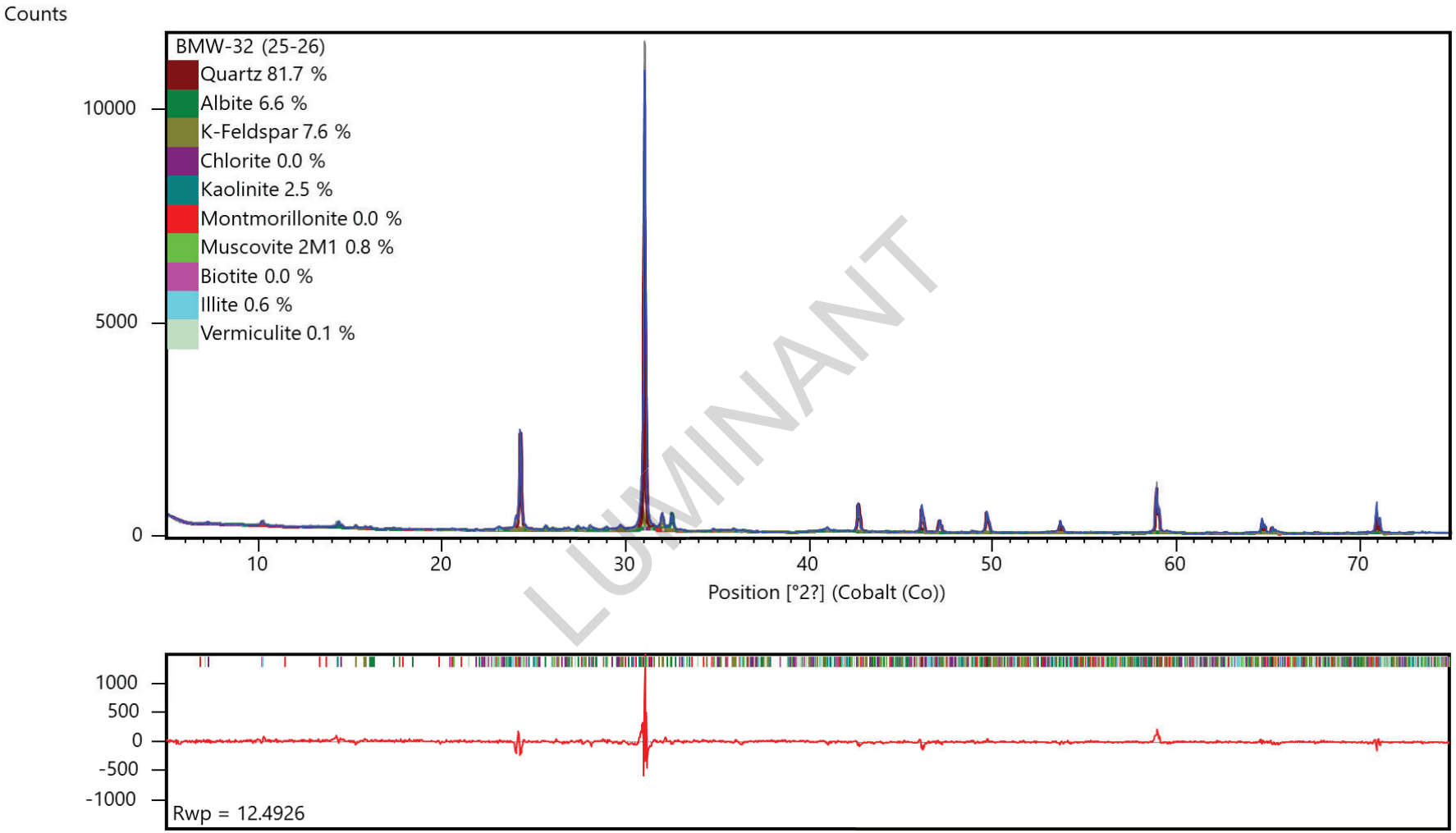
APPENDIX F-Revision 2 February 27, 2024



LUMINANT

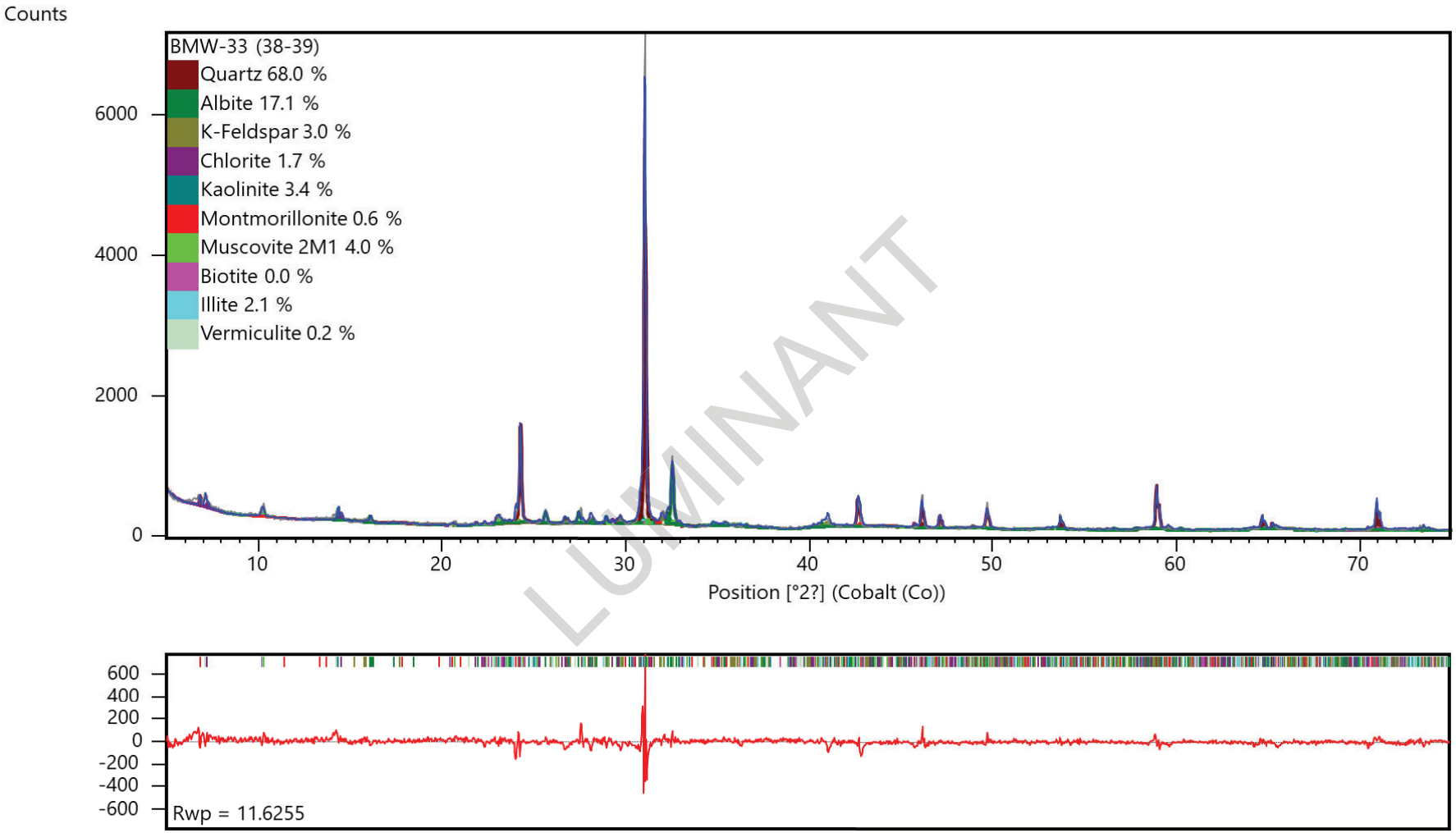
X-ray diffractogram. The upper pattern is the measured diffractogram, the blue curve is the calculated pattern from the Rietveld Refinement and the lower red curve is the difference plot.

APPENDIX F-Revision 2 February 27, 2024



LUMINANT

X-ray diffractogram. The upper pattern is the measured diffractogram, the blue curve is the calculated pattern from the Rietveld Refinement and the lower red curve is the difference plot.



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X-ray diffractogram. The upper pattern is the measured diffractogram, the blue curve is the calculated pattern from the Rietveld Refinement and the lower red curve is the difference plot.

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ANALYTICAL REPORT

Eurofins TestAmerica, Knoxville
5815 Middlebrook Pike
Knoxville, TN 37921
Tel: (865)291-3000

Laboratory Job ID: 140-15492-1
Client Project/Site: Martin Lake A1 Area LF SEP + Totals

For:
Golder Associates Inc.
2201 Double Creek Dr
Suite 4004
Round Rock, Texas 78664

Attn: Will Vienne

Terry Walker Wasmund

Authorized for release by:
7/18/2019 6:22:20 PM

Terry Walker Wasmund, Project Manager II
(865)291-3000
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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: Golder Associates Inc.
Job ID: 140-15492-1
Project/Site: Martin Lake A1 Area LF SEP + Totals

Qualifiers

Metals

Qualifier	Qualifier Description
*	LCS or LCSD is outside acceptance limits.
*	RPD of the LCS and LCSD exceeds the control limits
B	Compound was found in the blank and sample.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

LUMINANT

Job ID: 140-15492-1

Laboratory: Eurofins TestAmerica, Knoxville

Narrative

Job Narrative
140-15492-1

Receipt
The samples were received on 6/5/2019 at 9:20 AM. The samples arrived in good condition, properly preserved, and on ice. The temperature of the cooler at receipt was 1.4º C.

Metals
7 Step Sequential Extraction Procedure

These soil samples were prepared and analyzed using Eurofins TestAmerica Knoxville standard operating procedure KNOX-MT-0008, "7 Step Sequential Extraction Procedure". SW-846 Method 6010B as incorporated in Eurofins TestAmerica Knoxville standard operating procedure KNOX-MT-0007 was used to perform the final instrument analyses.

An aliquot of each sample was sequentially extracted using the steps listed below:

- ***Step 1 - Exchangeable Fraction***: A 5 gram aliquot of sample was extracted with 25 mL of 1M magnesium sulfate (MgSO4), centrifuged and filtered. 5 mL of the resulting leachate was digested using method 3010A and analyzed by method 6010B. Results are reported in mg/kg on a dry weight basis.
- ***Step 2 - Carbonate Fraction:*** The sample residue from step 1 was extracted with 25 mL of 1M sodium acetate/acetic acid (NaOAc/HOAc) at pH 5, centrifuged and filtered. 5 mL of the resulting leachate was digested using method 3010A and analyzed by method 6010B. Results are reported in mg/kg on a dry weight basis.
- ***Step 3 - Non-crystalline Materials Fraction:*** The sample residue from step 2 was extracted with 25 mL of 0.2M ammonium oxalate (pH 3), centrifuged and filtered. 5 mL of the resulting leachate was digested using method 3010A and analyzed by method 6010B. Results are reported in mg/kg on a dry weight basis.
- ***Step 4 - Metal Hydroxide Fraction:*** The sample residue from step 3 was extracted with 25 mL of 1M hydroxylamine hydrochloride solution in 25% v/v acetic acid, centrifuged and filtered. 5 mL of the resulting leachate was digested using method 3010A and analyzed by method 6010B. Results are reported in mg/kg on a dry weight basis.
- ***Step 5 - Organic-bound Fraction:*** The sample residue from step 4 was extracted three times with 25 mL of 5% sodium hypochlorite (NaClO) at pH 9.5, centrifuged and filtered. The resulting leachates were combined and 5 mL were digested using method 3010A and analyzed by method 6010B. Results are reported in mg/kg on a dry weight basis.
- ***Step 6 - Acid/Sulfide Fraction***: The sample residue from step 5 was extracted with 25 mL of a 3:1:2 v/v solution of HCl-HNO3-H2O, centrifuged and filtered. 5 mL of the resulting leachate was diluted to 50 mL with reagent water and analyzed by method 6010B. Results are reported in mg/kg on a dry weight basis.
- ***Step 7 - Residual Fraction:*** A 1.0 g aliquot of the sample residue from step 6 was digested using HF, HNO3, HCl and H3BO3. The digestate was analyzed by ICP using method 6010B. Results are reported in mg/kg on a dry weight basis.

In addition, a 1.0 g aliquot of the original sample was digested using HF, HNO3, HCl and H3BO3. The digestate was analyzed by ICP using method 6010B. Total metal results are reported in mg/kg on a dry weight basis.

Results were calculated using the following equation:

Result, µg/g or mg/Kg, dry weight = (C × V × V1 × D) / (W × S × V2)

Where:
C = Concentration from instrument readout, µg/mL
V = Final volume of digestate, mL
D = Instrument dilution factor
V1 = Total volume of leachate, mL
V2 = Volume of leachate digested, mL
W = Wet weight of sample, g
S = Percent solids/100

A method blank, laboratory control sample and laboratory control sample duplicate were prepared and analyzed with each SEP step in order to provide information about both the presence of elements of interest in the extraction solutions, and the recovery of elements of

LUMINANT

Job ID: 140-15492-1 (Continued)

Laboratory: Eurofins TestAmerica, Knoxville (Continued)

interest from the extraction solutions. Results outside of laboratory QC limits do not reflect out of control performance, but rather the effect of the extraction solution upon the analyte.

A laboratory sample duplicate was prepared and analyzed with each batch of samples in order to provide information regarding the reproducibility of the procedure.

SEP Report Notes
The final report lists the results for each step, the result for the total digestion of the sample, and a sum of the results of steps 1 through 7 by element.

Magnesium was not reported for step 1 because the extraction solution for this step (magnesium sulfate) contains high levels of magnesium. Sodium was not reported for steps 2 and 5 since the extraction solutions for these steps contain high levels of sodium. The sum of steps 1 through 7 is much higher than the total result for sodium and magnesium due to the magnesium and sodium introduced by the extraction solutions.

The step 1 digestates were reanalyzed for vanadium at a 1/10 dilution due to positive interelement interferences resulting from the high magnesium results. The reporting limits were adjusted accordingly.

The digestates for steps 1, 2 and 5 were analyzed at a dilution due to instrument problems caused by the high solids content of the digestates. The reporting limits were adjusted accordingly.

Samples BMW-29 (30-31) (140-15492-1), BMW-30 (40-41) (140-15492-2), BMW-31 (14-15) (140-15492-3), BMW-32 (25-26) (140-15492-4) and BMW-33 (38-39) (140-15492-5) were diluted due to the presence of Silicon or Titanium which interferes with Arsenic, Cobalt, Selenium and Thallium: Elevated reporting limits (RLs) are provided.

Samples BMW-29 (30-31) (140-15492-1), BMW-30 (40-41) (140-15492-2), BMW-31 (14-15) (140-15492-3), BMW-32 (25-26) (140-15492-4) and BMW-33 (38-39) (140-15492-5) were diluted for Aluminum and Barium due to the nature of the sample matrix. Elevated reporting limits (RLs) are provided.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

General Chemistry - % Moisture
The samples were analyzed for percent moisture using SOP number KNOX-WC-0012 (based on Modified MCAWW 160.3 and SM2540B and on the percent moisture determinations described in methods 3540C and 3550B).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Comments
No additional comments.

LUMINANT

Detection Summary

Client: Golder Associates Inc.
Job ID: 140-15492-1
Project/Site: Martin Lake A1 Area LF SEP + Totals

Client Sample ID: BMW-29 (30-31)
Lab Sample ID: 140-15492-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Manganese	3.8	J	4.1	0.17	mg/Kg	4	☼	6010B SEP	Step 1
Aluminum	16	J *	41	6.5	mg/Kg	3	☼	6010B SEP	Step 2
Barium	1.1	J *	10	0.49	mg/Kg	3	☼	6010B SEP	Step 2
Cobalt	1.4	J	10	0.26	mg/Kg	3	☼	6010B SEP	Step 2
Iron	48	*	20	12	mg/Kg	3	☼	6010B SEP	Step 2
Manganese	35		3.1	1.1	mg/Kg	3	☼	6010B SEP	Step 2
Selenium	1.2	J B	2.0	0.69	mg/Kg	3	☼	6010B SEP	Step 2
Aluminum	170		14	2.9	mg/Kg	1	☼	6010B SEP	Step 3
Arsenic	1.4		0.68	0.18	mg/Kg	1	☼	6010B SEP	Step 3
Barium	4.3	B	3.4	0.16	mg/Kg	1	☼	6010B SEP	Step 3
Beryllium	0.11	J	0.34	0.020	mg/Kg	1	☼	6010B SEP	Step 3
Cobalt	1.5	J	3.4	0.061	mg/Kg	1	☼	6010B SEP	Step 3
Iron	4200		6.8	3.9	mg/Kg	1	☼	6010B SEP	Step 3
Manganese	95	B	1.0	0.037	mg/Kg	1	☼	6010B SEP	Step 3
Mo	0.14	J	2.7	0.11	mg/Kg	1	☼	6010B SEP	Step 3
Selenium	0.28	J B	0.68	0.23	mg/Kg	1	☼	6010B SEP	Step 3
Aluminum	2600		14	2.2	mg/Kg	1	☼	6010B SEP	Step 4
Arsenic	0.87	B	0.68	0.30	mg/Kg	1	☼	6010B SEP	Step 4
Barium	19		3.4	0.16	mg/Kg	1	☼	6010B SEP	Step 4
Beryllium	0.23	J	0.34	0.022	mg/Kg	1	☼	6010B SEP	Step 4
Cobalt	3.2	J	3.4	0.072	mg/Kg	1	☼	6010B SEP	Step 4
Iron	8300		6.8	3.9	mg/Kg	1	☼	6010B SEP	Step 4
Li	6.7		3.4	0.20	mg/Kg	1	☼	6010B SEP	Step 4
Manganese	180		1.0	0.18	mg/Kg	1	☼	6010B SEP	Step 4
Aluminum	500	*	200	32	mg/Kg	5	☼	6010B SEP	Step 5
Barium	17	J *	51	2.4	mg/Kg	5	☼	6010B SEP	Step 5
Cobalt	1.0	J *	51	0.82	mg/Kg	5	☼	6010B SEP	Step 5
Iron	530	*	100	60	mg/Kg	5	☼	6010B SEP	Step 5
Manganese	33	*	15	2.5	mg/Kg	5	☼	6010B SEP	Step 5
Aluminum	3500		14	2.2	mg/Kg	1	☼	6010B SEP	Step 6
Arsenic	1.1		0.68	0.20	mg/Kg	1	☼	6010B SEP	Step 6
Barium	30		3.4	0.16	mg/Kg	1	☼	6010B SEP	Step 6
Beryllium	0.11	J	0.34	0.016	mg/Kg	1	☼	6010B SEP	Step 6
Cobalt	1.2	J	3.4	0.063	mg/Kg	1	☼	6010B SEP	Step 6
Iron	4800		6.8	3.9	mg/Kg	1	☼	6010B SEP	Step 6
Li	4.0		3.4	0.20	mg/Kg	1	☼	6010B SEP	Step 6
Manganese	38		1.0	0.34	mg/Kg	1	☼	6010B SEP	Step 6
Aluminum	34000		140	22	mg/Kg	10	☼	6010B SEP	Step 7
Arsenic	0.59	J	0.68	0.18	mg/Kg	1	☼	6010B SEP	Step 7
Barium	340		34	1.6	mg/Kg	10	☼	6010B SEP	Step 7
Beryllium	0.69		0.34	0.010	mg/Kg	1	☼	6010B SEP	Step 7
Cobalt	0.90	J	6.8	0.41	mg/Kg	2	☼	6010B SEP	Step 7
Iron	6700		6.8	5.6	mg/Kg	1	☼	6010B SEP	Step 7
Li	14		3.4	0.20	mg/Kg	1	☼	6010B SEP	Step 7
Manganese	36		1.0	0.071	mg/Kg	1	☼	6010B SEP	Step 7
Mo	0.20	J	2.7	0.11	mg/Kg	1	☼	6010B SEP	Step 7
Thallium	0.74	J	4.8	0.49	mg/Kg	2	☼	6010B SEP	Step 7
Aluminum	41000		10	1.6	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Arsenic	4.0		0.50	0.13	mg/Kg	1		6010B SEP	Sum of Steps 1-7

LUMINANT

This Detection Summary does not include radiochemical test results.

Client Sample ID: BMW-29 (30-31) (Continued)

Lab Sample ID: 140-15492-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	410		2.5	0.12	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Beryllium	1.1		0.25	0.0075	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Cobalt	9.2		2.5	0.023	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Iron	25000		5.0	4.1	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Li	25		2.5	0.15	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Manganese	420		0.75	0.052	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Mo	0.33	J	2.0	0.082	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Selenium	1.5		0.50	0.17	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Thallium	0.74	J	1.8	0.18	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Boron	15	J	25	13	mg/Kg	1	☼	6010B	Total/NA
Chromium	19		1.9	0.28	mg/Kg	1	☼	6010B	Total/NA
Lead	9.7		1.9	0.35	mg/Kg	1	☼	6010B	Total/NA
Aluminum	72000		140	22	mg/Kg	10	☼	6010B	Total/NA
Arsenic	3.8		0.68	0.18	mg/Kg	1	☼	6010B	Total/NA
Barium	630		34	1.6	mg/Kg	10	☼	6010B	Total/NA
Beryllium	1.2		0.34	0.010	mg/Kg	1	☼	6010B	Total/NA
Cobalt	10	J	17	1.0	mg/Kg	5	☼	6010B	Total/NA
Iron	26000		6.8	5.6	mg/Kg	1	☼	6010B	Total/NA
Lithium	31		3.4	0.20	mg/Kg	1	☼	6010B	Total/NA
Manganese	490		1.0	0.071	mg/Kg	1	☼	6010B	Total/NA
Molybdenum	0.70	J	2.7	0.11	mg/Kg	1	☼	6010B	Total/NA
Thallium	1.4	J	12	1.2	mg/Kg	5	☼	6010B	Total/NA
Hg	0.078	J	0.14	0.054	mg/Kg	1	☼	7470A	Total/NA

Client Sample ID: BMW-30 (40-41)

Lab Sample ID: 140-15492-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Cobalt	0.82	J	12	0.21	mg/Kg	4	☼	6010B SEP	Step 1
Manganese	1.5	J	3.6	0.15	mg/Kg	4	☼	6010B SEP	Step 1
Aluminum	7.3	J *	36	5.7	mg/Kg	3	☼	6010B SEP	Step 2
Barium	0.52	J *	8.9	0.43	mg/Kg	3	☼	6010B SEP	Step 2
Cobalt	0.28	J	8.9	0.22	mg/Kg	3	☼	6010B SEP	Step 2
Iron	24	*	18	10	mg/Kg	3	☼	6010B SEP	Step 2
Selenium	0.67	J B	1.8	0.61	mg/Kg	3	☼	6010B SEP	Step 2
Aluminum	35		12	2.5	mg/Kg	1	☼	6010B SEP	Step 3
Arsenic	1.3		0.59	0.15	mg/Kg	1	☼	6010B SEP	Step 3
Barium	2.0	J B	3.0	0.14	mg/Kg	1	☼	6010B SEP	Step 3
Cobalt	0.28	J	3.0	0.053	mg/Kg	1	☼	6010B SEP	Step 3
Iron	190		5.9	3.4	mg/Kg	1	☼	6010B SEP	Step 3
Manganese	0.29	J B	0.89	0.032	mg/Kg	1	☼	6010B SEP	Step 3
Selenium	0.38	J B	0.59	0.20	mg/Kg	1	☼	6010B SEP	Step 3
Aluminum	1100		12	1.9	mg/Kg	1	☼	6010B SEP	Step 4
Arsenic	0.78	B	0.59	0.26	mg/Kg	1	☼	6010B SEP	Step 4
Barium	7.4		3.0	0.14	mg/Kg	1	☼	6010B SEP	Step 4
Beryllium	0.062	J	0.30	0.019	mg/Kg	1	☼	6010B SEP	Step 4

This Detection Summary does not include radiochemical test results.

LUMINANT

Client Sample ID: BMW-30 (40-41) (Continued)
Lab Sample ID: 140-15492-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Cobalt	0.50	J	3.0	0.063	mg/Kg	1	☼	6010B SEP	Step 4
Iron	1000		5.9	3.4	mg/Kg	1	☼	6010B SEP	Step 4
Li	1.7	J	3.0	0.18	mg/Kg	1	☼	6010B SEP	Step 4
Manganese	8.7		0.89	0.15	mg/Kg	1	☼	6010B SEP	Step 4
Selenium	0.76	B *	0.59	0.56	mg/Kg	1	☼	6010B SEP	Step 4
Aluminum	66	J *	180	28	mg/Kg	5	☼	6010B SEP	Step 5
Aluminum	1300		12	1.9	mg/Kg	1	☼	6010B SEP	Step 6
Arsenic	0.75		0.59	0.18	mg/Kg	1	☼	6010B SEP	Step 6
Barium	4.0		3.0	0.14	mg/Kg	1	☼	6010B SEP	Step 6
Beryllium	0.043	J	0.30	0.014	mg/Kg	1	☼	6010B SEP	Step 6
Cobalt	0.46	J	3.0	0.055	mg/Kg	1	☼	6010B SEP	Step 6
Iron	1800		5.9	3.4	mg/Kg	1	☼	6010B SEP	Step 6
Li	0.91	J	3.0	0.18	mg/Kg	1	☼	6010B SEP	Step 6
Manganese	8.0		0.89	0.30	mg/Kg	1	☼	6010B SEP	Step 6
Aluminum	37000		120	19	mg/Kg	10	☼	6010B SEP	Step 7
Arsenic	1.3		1.2	0.31	mg/Kg	2	☼	6010B SEP	Step 7
Barium	380		30	1.4	mg/Kg	10	☼	6010B SEP	Step 7
Beryllium	0.36		0.30	0.0089	mg/Kg	1	☼	6010B SEP	Step 7
Cobalt	0.76	J	5.9	0.36	mg/Kg	2	☼	6010B SEP	Step 7
Iron	2800		5.9	4.9	mg/Kg	1	☼	6010B SEP	Step 7
Li	14		3.0	0.18	mg/Kg	1	☼	6010B SEP	Step 7
Manganese	38		0.89	0.062	mg/Kg	1	☼	6010B SEP	Step 7
Thallium	0.87	J	4.2	0.43	mg/Kg	2	☼	6010B SEP	Step 7
Aluminum	39000		10	1.6	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Arsenic	4.1		0.50	0.13	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Barium	390		2.5	0.12	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Beryllium	0.46		0.25	0.0075	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Cobalt	3.1		2.5	0.023	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Iron	5800		5.0	4.1	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Li	17		2.5	0.15	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Manganese	57		0.75	0.052	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Selenium	1.8		0.50	0.17	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Thallium	0.87	J	1.8	0.18	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Chromium	7.9		1.7	0.25	mg/Kg	1	☼	6010B	Total/NA
Lead	5.9		1.7	0.32	mg/Kg	1	☼	6010B	Total/NA
Aluminum	48000		120	19	mg/Kg	10	☼	6010B	Total/NA
Arsenic	4.8		0.59	0.15	mg/Kg	1	☼	6010B	Total/NA
Barium	490		30	1.4	mg/Kg	10	☼	6010B	Total/NA
Beryllium	0.46		0.30	0.0089	mg/Kg	1	☼	6010B	Total/NA
Cobalt	3.4	J	15	0.89	mg/Kg	5	☼	6010B	Total/NA
Iron	5800		5.9	4.9	mg/Kg	1	☼	6010B	Total/NA
Lithium	18		3.0	0.18	mg/Kg	1	☼	6010B	Total/NA
Manganese	60		0.89	0.062	mg/Kg	1	☼	6010B	Total/NA

LUMINANT

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: Golder Associates Inc.
Job ID: 140-15492-1
Project/Site: Martin Lake A1 Area LF SEP + Totals

Client Sample ID: BMW-30 (40-41) (Continued)
Lab Sample ID: 140-15492-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Molybdenum	0.17	J	2.4	0.097	mg/Kg	1	☼	6010B	Total/NA
Selenium	1.1		0.59	0.20	mg/Kg	1	☼	6010B	Total/NA
Hg	0.054	J	0.12	0.048	mg/Kg	1	☼	7470A	Total/NA

Client Sample ID: BMW-31 (14-15)
Lab Sample ID: 140-15492-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.58	J	12	0.57	mg/Kg	4	☼	6010B SEP	Step 1
Manganese	11		3.6	0.15	mg/Kg	4	☼	6010B SEP	Step 1
Barium	0.46	J *	8.9	0.43	mg/Kg	3	☼	6010B SEP	Step 2
Manganese	2.4	J	2.7	1.0	mg/Kg	3	☼	6010B SEP	Step 2
Selenium	0.77	J B	1.8	0.61	mg/Kg	3	☼	6010B SEP	Step 2
Aluminum	59		12	2.5	mg/Kg	1	☼	6010B SEP	Step 3
Arsenic	0.29	J	0.59	0.15	mg/Kg	1	☼	6010B SEP	Step 3
Barium	14	B	3.0	0.14	mg/Kg	1	☼	6010B SEP	Step 3
Beryllium	0.069	J	0.30	0.018	mg/Kg	1	☼	6010B SEP	Step 3
Cobalt	16		3.0	0.053	mg/Kg	1	☼	6010B SEP	Step 3
Iron	120		5.9	3.4	mg/Kg	1	☼	6010B SEP	Step 3
Manganese	260	B	0.89	0.032	mg/Kg	1	☼	6010B SEP	Step 3
Selenium	0.23	J B	0.59	0.20	mg/Kg	1	☼	6010B SEP	Step 3
Aluminum	1600		12	1.9	mg/Kg	1	☼	6010B SEP	Step 4
Arsenic	1.8	B	0.59	0.26	mg/Kg	1	☼	6010B SEP	Step 4
Barium	33		3.0	0.14	mg/Kg	1	☼	6010B SEP	Step 4
Beryllium	0.24	J	0.30	0.019	mg/Kg	1	☼	6010B SEP	Step 4
Cobalt	2.8	J	3.0	0.063	mg/Kg	1	☼	6010B SEP	Step 4
Iron	5600		5.9	3.4	mg/Kg	1	☼	6010B SEP	Step 4
Li	2.2	J	3.0	0.18	mg/Kg	1	☼	6010B SEP	Step 4
Manganese	63		0.89	0.15	mg/Kg	1	☼	6010B SEP	Step 4
Selenium	1.1	B *	0.59	0.56	mg/Kg	1	☼	6010B SEP	Step 4
Aluminum	67	J *	180	28	mg/Kg	5	☼	6010B SEP	Step 5
Barium	3.9	J *	45	2.1	mg/Kg	5	☼	6010B SEP	Step 5
Aluminum	1800		12	1.9	mg/Kg	1	☼	6010B SEP	Step 6
Arsenic	0.54	J	0.59	0.18	mg/Kg	1	☼	6010B SEP	Step 6
Barium	4.4		3.0	0.14	mg/Kg	1	☼	6010B SEP	Step 6
Beryllium	0.059	J	0.30	0.014	mg/Kg	1	☼	6010B SEP	Step 6
Cobalt	0.46	J	3.0	0.055	mg/Kg	1	☼	6010B SEP	Step 6
Iron	1700		5.9	3.4	mg/Kg	1	☼	6010B SEP	Step 6
Li	1.3	J	3.0	0.18	mg/Kg	1	☼	6010B SEP	Step 6
Manganese	10		0.89	0.30	mg/Kg	1	☼	6010B SEP	Step 6
Aluminum	26000		120	19	mg/Kg	10	☼	6010B SEP	Step 7
Arsenic	0.58	J	1.2	0.31	mg/Kg	2	☼	6010B SEP	Step 7
Barium	320		30	1.4	mg/Kg	10	☼	6010B SEP	Step 7
Beryllium	0.30		0.30	0.0089	mg/Kg	1	☼	6010B SEP	Step 7
Cobalt	0.82	J	5.9	0.36	mg/Kg	2	☼	6010B SEP	Step 7
Iron	3600		5.9	4.9	mg/Kg	1	☼	6010B SEP	Step 7
Li	15		3.0	0.18	mg/Kg	1	☼	6010B SEP	Step 7
Manganese	24		0.89	0.062	mg/Kg	1	☼	6010B SEP	Step 7
Mo	0.16	J	2.4	0.097	mg/Kg	1	☼	6010B SEP	Step 7
Thallium	0.52	J	4.2	0.43	mg/Kg	2	☼	6010B SEP	Step 7
Aluminum	30000		10	1.6	mg/Kg	1		6010B SEP	Sum of Steps 1-7

This Detection Summary does not include radiochemical test results.

LUMINANT

Client Sample ID: BMW-31 (14-15) (Continued)
Lab Sample ID: 140-15492-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	3.2		0.50	0.13	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Barium	370		2.5	0.12	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Beryllium	0.67		0.25	0.0075	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Cobalt	20		2.5	0.023	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Iron	11000		5.0	4.1	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Li	19		2.5	0.15	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Manganese	370		0.75	0.052	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Mo	0.16	J	2.0	0.082	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Selenium	2.1		0.50	0.17	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Thallium	0.52	J	1.8	0.18	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Chromium	7.3		1.8	0.26	mg/Kg	1	☼	6010B	Total/NA
Lead	6.8		1.8	0.33	mg/Kg	1	☼	6010B	Total/NA
Aluminum	30000		120	19	mg/Kg	10	☼	6010B	Total/NA
Arsenic	3.0		0.59	0.15	mg/Kg	1	☼	6010B	Total/NA
Barium	430		30	1.4	mg/Kg	10	☼	6010B	Total/NA
Beryllium	0.66		0.30	0.0089	mg/Kg	1	☼	6010B	Total/NA
Cobalt	18		5.9	0.36	mg/Kg	2	☼	6010B	Total/NA
Iron	10000		5.9	4.9	mg/Kg	1	☼	6010B	Total/NA
Lithium	18		3.0	0.18	mg/Kg	1	☼	6010B	Total/NA
Manganese	280		0.89	0.062	mg/Kg	1	☼	6010B	Total/NA
Molybdenum	0.29	J	2.4	0.097	mg/Kg	1	☼	6010B	Total/NA
Thallium	0.67	J	4.2	0.43	mg/Kg	2	☼	6010B	Total/NA

Client Sample ID: BMW-32 (25-26)
Lab Sample ID: 140-15492-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Manganese	1.0	J	3.6	0.15	mg/Kg	4	☼	6010B SEP	Step 1
Aluminum	17	J *	36	5.7	mg/Kg	3	☼	6010B SEP	Step 2
Iron	36	*	18	10	mg/Kg	3	☼	6010B SEP	Step 2
Selenium	0.78	J B	1.8	0.61	mg/Kg	3	☼	6010B SEP	Step 2
Aluminum	81		12	2.5	mg/Kg	1	☼	6010B SEP	Step 3
Arsenic	0.60		0.59	0.15	mg/Kg	1	☼	6010B SEP	Step 3
Barium	1.3	J B	3.0	0.14	mg/Kg	1	☼	6010B SEP	Step 3
Cobalt	0.060	J	3.0	0.053	mg/Kg	1	☼	6010B SEP	Step 3
Iron	500		5.9	3.4	mg/Kg	1	☼	6010B SEP	Step 3
Manganese	0.60	J B	0.89	0.032	mg/Kg	1	☼	6010B SEP	Step 3
Selenium	0.21	J B	0.59	0.20	mg/Kg	1	☼	6010B SEP	Step 3
Aluminum	1200		12	1.9	mg/Kg	1	☼	6010B SEP	Step 4
Arsenic	0.78	B	0.59	0.26	mg/Kg	1	☼	6010B SEP	Step 4
Barium	17		3.0	0.14	mg/Kg	1	☼	6010B SEP	Step 4
Beryllium	0.025	J	0.30	0.019	mg/Kg	1	☼	6010B SEP	Step 4
Cobalt	0.60	J	3.0	0.063	mg/Kg	1	☼	6010B SEP	Step 4
Iron	2000		5.9	3.4	mg/Kg	1	☼	6010B SEP	Step 4
Li	2.5	J	3.0	0.18	mg/Kg	1	☼	6010B SEP	Step 4

This Detection Summary does not include radiochemical test results.

LUMINANT

Client Sample ID: BMW-32 (25-26) (Continued)
Lab Sample ID: 140-15492-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Manganese	13		0.89	0.15	mg/Kg	1	☼	6010B SEP	Step 4
Selenium	0.62	B *	0.59	0.56	mg/Kg	1	☼	6010B SEP	Step 4
Aluminum	58	J *	180	28	mg/Kg	5	☼	6010B SEP	Step 5
Barium	3.3	J *	45	2.1	mg/Kg	5	☼	6010B SEP	Step 5
Aluminum	1100		12	1.9	mg/Kg	1	☼	6010B SEP	Step 6
Arsenic	0.42	J	0.59	0.18	mg/Kg	1	☼	6010B SEP	Step 6
Barium	6.4		3.0	0.14	mg/Kg	1	☼	6010B SEP	Step 6
Beryllium	0.033	J	0.30	0.014	mg/Kg	1	☼	6010B SEP	Step 6
Cobalt	0.28	J	3.0	0.055	mg/Kg	1	☼	6010B SEP	Step 6
Iron	890		5.9	3.4	mg/Kg	1	☼	6010B SEP	Step 6
Li	1.0	J	3.0	0.18	mg/Kg	1	☼	6010B SEP	Step 6
Manganese	10		0.89	0.30	mg/Kg	1	☼	6010B SEP	Step 6
Aluminum	32000		120	19	mg/Kg	10	☼	6010B SEP	Step 7
Arsenic	1.2		0.59	0.15	mg/Kg	1	☼	6010B SEP	Step 7
Barium	430		30	1.4	mg/Kg	10	☼	6010B SEP	Step 7
Beryllium	0.50		0.30	0.0089	mg/Kg	1	☼	6010B SEP	Step 7
Cobalt	0.76	J	5.9	0.36	mg/Kg	2	☼	6010B SEP	Step 7
Iron	2800		5.9	4.9	mg/Kg	1	☼	6010B SEP	Step 7
Li	8.2		3.0	0.18	mg/Kg	1	☼	6010B SEP	Step 7
Manganese	42		0.89	0.062	mg/Kg	1	☼	6010B SEP	Step 7
Aluminum	35000		10	1.6	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Arsenic	3.0		0.50	0.13	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Barium	460		2.5	0.12	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Beryllium	0.56		0.25	0.0075	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Cobalt	1.7	J	2.5	0.023	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Iron	6200		5.0	4.1	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Li	12		2.5	0.15	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Manganese	67		0.75	0.052	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Selenium	1.6		0.50	0.17	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Chromium	7.6		1.7	0.25	mg/Kg	1	☼	6010B	Total/NA
Lead	3.9		1.7	0.31	mg/Kg	1	☼	6010B	Total/NA
Aluminum	45000		120	19	mg/Kg	10	☼	6010B	Total/NA
Arsenic	3.2		0.59	0.15	mg/Kg	1	☼	6010B	Total/NA
Barium	570		30	1.4	mg/Kg	10	☼	6010B	Total/NA
Beryllium	0.53		0.30	0.0089	mg/Kg	1	☼	6010B	Total/NA
Cobalt	1.6	J	5.9	0.36	mg/Kg	2	☼	6010B	Total/NA
Iron	5600		5.9	4.9	mg/Kg	1	☼	6010B	Total/NA
Lithium	11		3.0	0.18	mg/Kg	1	☼	6010B	Total/NA
Manganese	70		0.89	0.062	mg/Kg	1	☼	6010B	Total/NA
Molybdenum	0.33	J	2.4	0.097	mg/Kg	1	☼	6010B	Total/NA
Selenium	0.54	J	0.59	0.20	mg/Kg	1	☼	6010B	Total/NA
Thallium	0.44	J	4.2	0.43	mg/Kg	2	☼	6010B	Total/NA
Hg	0.053	J	0.12	0.047	mg/Kg	1	☼	7470A	Total/NA

LUMINANT

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: Golder Associates Inc.
Project/Site: Martin Lake A1 Area LF SEP + Totals

Job ID: 140-15492-1

Client Sample ID: BMW-33 (38-39)

Lab Sample ID: 140-15492-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	1.5	J	13	0.62	mg/Kg	4	☼	6010B SEP	Step 1
Cobalt	0.29	J	13	0.23	mg/Kg	4	☼	6010B SEP	Step 1
Manganese	17		3.9	0.16	mg/Kg	4	☼	6010B SEP	Step 1
Aluminum	10	J *	39	6.2	mg/Kg	3	☼	6010B SEP	Step 2
Barium	0.90	J *	9.7	0.46	mg/Kg	3	☼	6010B SEP	Step 2
Cobalt	0.74	J	9.7	0.24	mg/Kg	3	☼	6010B SEP	Step 2
Iron	14	J *	19	11	mg/Kg	3	☼	6010B SEP	Step 2
Manganese	25		2.9	1.1	mg/Kg	3	☼	6010B SEP	Step 2
Aluminum	94		13	2.7	mg/Kg	1	☼	6010B SEP	Step 3
Arsenic	0.47	J	0.65	0.17	mg/Kg	1	☼	6010B SEP	Step 3
Barium	7.5	B	3.2	0.15	mg/Kg	1	☼	6010B SEP	Step 3
Beryllium	0.028	J	0.32	0.019	mg/Kg	1	☼	6010B SEP	Step 3
Cobalt	1.9	J	3.2	0.058	mg/Kg	1	☼	6010B SEP	Step 3
Iron	510		6.5	3.7	mg/Kg	1	☼	6010B SEP	Step 3
Manganese	85	B	0.97	0.035	mg/Kg	1	☼	6010B SEP	Step 3
Selenium	0.25	J B	0.65	0.22	mg/Kg	1	☼	6010B SEP	Step 3
Aluminum	1800		13	2.1	mg/Kg	1	☼	6010B SEP	Step 4
Arsenic	1.2	B	0.65	0.28	mg/Kg	1	☼	6010B SEP	Step 4
Barium	20		3.2	0.15	mg/Kg	1	☼	6010B SEP	Step 4
Beryllium	0.20	J	0.32	0.021	mg/Kg	1	☼	6010B SEP	Step 4
Cobalt	1.5	J	3.2	0.068	mg/Kg	1	☼	6010B SEP	Step 4
Iron	4900		6.5	3.7	mg/Kg	1	☼	6010B SEP	Step 4
Li	2.1	J	3.2	0.19	mg/Kg	1	☼	6010B SEP	Step 4
Manganese	55		0.97	0.17	mg/Kg	1	☼	6010B SEP	Step 4
Selenium	0.71	B *	0.65	0.61	mg/Kg	1	☼	6010B SEP	Step 4
Aluminum	64	J *	190	30	mg/Kg	5	☼	6010B SEP	Step 5
Barium	4.1	J *	48	2.3	mg/Kg	5	☼	6010B SEP	Step 5
Aluminum	3400		13	2.1	mg/Kg	1	☼	6010B SEP	Step 6
Arsenic	0.85		0.65	0.19	mg/Kg	1	☼	6010B SEP	Step 6
Barium	13		3.2	0.15	mg/Kg	1	☼	6010B SEP	Step 6
Beryllium	0.11	J	0.32	0.015	mg/Kg	1	☼	6010B SEP	Step 6
Cobalt	1.1	J	3.2	0.059	mg/Kg	1	☼	6010B SEP	Step 6
Iron	3900		6.5	3.7	mg/Kg	1	☼	6010B SEP	Step 6
Li	2.1	J	3.2	0.19	mg/Kg	1	☼	6010B SEP	Step 6
Manganese	22		0.97	0.32	mg/Kg	1	☼	6010B SEP	Step 6
Aluminum	48000		130	21	mg/Kg	10	☼	6010B SEP	Step 7
Arsenic	0.64	J	0.65	0.17	mg/Kg	1	☼	6010B SEP	Step 7
Barium	550		32	1.5	mg/Kg	10	☼	6010B SEP	Step 7
Beryllium	0.69		0.32	0.0097	mg/Kg	1	☼	6010B SEP	Step 7
Cobalt	0.57	J	6.5	0.39	mg/Kg	2	☼	6010B SEP	Step 7
Iron	6100		6.5	5.3	mg/Kg	1	☼	6010B SEP	Step 7
Li	9.1		3.2	0.19	mg/Kg	1	☼	6010B SEP	Step 7
Manganese	30		0.97	0.067	mg/Kg	1	☼	6010B SEP	Step 7
Aluminum	54000		10	1.6	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Arsenic	3.2		0.50	0.13	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Barium	590		2.5	0.12	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Beryllium	1.0		0.25	0.0075	mg/Kg	1		6010B SEP	Sum of Steps 1-7

LUMINANT

This Detection Summary does not include radiochemical test results.

Client Sample ID: BMW-33 (38-39) (Continued)
Lab Sample ID: 140-15492-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Cobalt	6.1		2.5	0.023	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Iron	15000		5.0	4.1	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Li	13		2.5	0.15	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Manganese	230		0.75	0.052	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Selenium	0.95		0.50	0.17	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Chromium	14		1.8	0.27	mg/Kg	1	☼	6010B	Total/NA
Lead	5.9		1.8	0.34	mg/Kg	1	☼	6010B	Total/NA
Aluminum	73000		130	21	mg/Kg	10	☼	6010B	Total/NA
Arsenic	3.2		0.65	0.17	mg/Kg	1	☼	6010B	Total/NA
Barium	830		32	1.5	mg/Kg	10	☼	6010B	Total/NA
Beryllium	1.0		0.32	0.0097	mg/Kg	1	☼	6010B	Total/NA
Cobalt	4.6	J	16	0.97	mg/Kg	5	☼	6010B	Total/NA
Iron	13000		6.5	5.3	mg/Kg	1	☼	6010B	Total/NA
Lithium	14		3.2	0.19	mg/Kg	1	☼	6010B	Total/NA
Manganese	130		0.97	0.067	mg/Kg	1	☼	6010B	Total/NA
Molybdenum	0.22	J	2.6	0.11	mg/Kg	1	☼	6010B	Total/NA

LUMINANT

This Detection Summary does not include radiochemical test results.

Client Sample ID: BMW-29 (30-31)

Date Collected: 05/31/19 16:45
Date Received: 06/05/19 09:20

Lab Sample ID: 140-15492-1

Matrix: Solid
Percent Solids: 73.5

Method: 6010B SEP - SEP Metals (ICP) - Step 1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		54	8.7	mg/Kg	☼	06/29/19 08:00	07/11/19 13:09	4
Antimony	ND		16	1.5	mg/Kg	☼	06/29/19 08:00	07/11/19 13:09	4
Arsenic	ND		2.7	0.71	mg/Kg	☼	06/29/19 08:00	07/11/19 13:09	4
Barium	ND		14	0.65	mg/Kg	☼	06/29/19 08:00	07/11/19 13:09	4
Beryllium	ND		1.4	0.42	mg/Kg	☼	06/29/19 08:00	07/11/19 13:09	4
Cobalt	ND		14	0.24	mg/Kg	☼	06/29/19 08:00	07/11/19 13:09	4
Iron	ND		27	16	mg/Kg	☼	06/29/19 08:00	07/11/19 13:09	4
Li	ND		14	0.82	mg/Kg	☼	06/29/19 08:00	07/11/19 13:09	4
Manganese	**3.8**	**J**	4.1	0.17	mg/Kg	☼	06/29/19 08:00	07/11/19 13:09	4
Mo	ND		11	0.45	mg/Kg	☼	06/29/19 08:00	07/11/19 13:09	4
Selenium	ND		2.7	0.93	mg/Kg	☼	06/29/19 08:00	07/11/19 13:09	4
Thallium	ND		9.5	1.1	mg/Kg	☼	06/29/19 08:00	07/11/19 13:09	4

Method: 6010B SEP - SEP Metals (ICP) - Step 2

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**16**	**J ***	41	6.5	mg/Kg	☼	06/30/19 08:00	07/11/19 14:53	3
Antimony	ND		12	1.1	mg/Kg	☼	06/30/19 08:00	07/11/19 14:53	3
Arsenic	ND		2.0	0.53	mg/Kg	☼	06/30/19 08:00	07/11/19 14:53	3
Barium	**1.1**	**J ***	10	0.49	mg/Kg	☼	06/30/19 08:00	07/11/19 14:53	3
Beryllium	ND	*	1.0	0.065	mg/Kg	☼	06/30/19 08:00	07/11/19 14:53	3
Cobalt	**1.4**	**J**	10	0.26	mg/Kg	☼	06/30/19 08:00	07/11/19 14:53	3
Iron	**48**	*****	20	12	mg/Kg	☼	06/30/19 08:00	07/11/19 14:53	3
Li	ND		10	0.61	mg/Kg	☼	06/30/19 08:00	07/11/19 14:53	3
Manganese	**35**		3.1	1.1	mg/Kg	☼	06/30/19 08:00	07/11/19 14:53	3
Mo	ND		8.2	0.33	mg/Kg	☼	06/30/19 08:00	07/11/19 14:53	3
Selenium	**1.2**	**J B**	2.0	0.69	mg/Kg	☼	06/30/19 08:00	07/11/19 14:53	3
Thallium	ND		7.1	0.86	mg/Kg	☼	06/30/19 08:00	07/11/19 14:53	3

Method: 6010B SEP - SEP Metals (ICP) - Step 3

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**170**		14	2.9	mg/Kg	☼	07/02/19 08:00	07/11/19 16:42	1
Antimony	ND		4.1	0.38	mg/Kg	☼	07/02/19 08:00	07/11/19 16:42	1
Arsenic	**1.4**		0.68	0.18	mg/Kg	☼	07/02/19 08:00	07/11/19 16:42	1
Barium	**4.3**	**B**	3.4	0.16	mg/Kg	☼	07/02/19 08:00	07/11/19 16:42	1
Beryllium	**0.11**	**J**	0.34	0.020	mg/Kg	☼	07/02/19 08:00	07/11/19 16:42	1
Cobalt	**1.5**	**J**	3.4	0.061	mg/Kg	☼	07/02/19 08:00	07/11/19 16:42	1
Iron	**4200**		6.8	3.9	mg/Kg	☼	07/02/19 08:00	07/11/19 16:42	1
Li	ND		3.4	0.20	mg/Kg	☼	07/02/19 08:00	07/11/19 16:42	1
Manganese	**95**	**B**	1.0	0.037	mg/Kg	☼	07/02/19 08:00	07/11/19 16:42	1
Mo	**0.14**	**J**	2.7	0.11	mg/Kg	☼	07/02/19 08:00	07/11/19 16:42	1
Selenium	**0.28**	**J B**	0.68	0.23	mg/Kg	☼	07/02/19 08:00	07/11/19 16:42	1
Thallium	ND		2.4	0.29	mg/Kg	☼	07/02/19 08:00	07/11/19 16:42	1

Method: 6010B SEP - SEP Metals (ICP) - Step 4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**2600**		14	2.2	mg/Kg	☼	07/03/19 08:00	07/11/19 18:09	1
Antimony	ND		4.1	0.61	mg/Kg	☼	07/03/19 08:00	07/11/19 18:09	1
Arsenic	**0.87**	**B**	0.68	0.30	mg/Kg	☼	07/03/19 08:00	07/11/19 18:09	1
Barium	**19**		3.4	0.16	mg/Kg	☼	07/03/19 08:00	07/11/19 18:09	1
Beryllium	**0.23**	**J**	0.34	0.022	mg/Kg	☼	07/03/19 08:00	07/11/19 18:09	1

LUMINANT

Client Sample ID: BMW-29 (30-31)
Date Collected: 05/31/19 16:45
Date Received: 06/05/19 09:20

Lab Sample ID: 140-15492-1
Matrix: Solid
Percent Solids: 73.5

Method: 6010B SEP - SEP Metals (ICP) - Step 4 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cobalt	3.2	J	3.4	0.072	mg/Kg	☼	07/03/19 08:00	07/11/19 18:09	1
Iron	8300		6.8	3.9	mg/Kg	☼	07/03/19 08:00	07/11/19 18:09	1
Li	6.7		3.4	0.20	mg/Kg	☼	07/03/19 08:00	07/11/19 18:09	1
Manganese	180		1.0	0.18	mg/Kg	☼	07/03/19 08:00	07/11/19 18:09	1
Mo	ND		2.7	0.11	mg/Kg	☼	07/03/19 08:00	07/11/19 18:09	1
Selenium	ND	*	0.68	0.64	mg/Kg	☼	07/03/19 08:00	07/11/19 18:09	1
Thallium	ND		2.4	0.39	mg/Kg	☼	07/03/19 08:00	07/11/19 18:09	1

Method: 6010B SEP - SEP Metals (ICP) - Step 5

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	500	*	200	32	mg/Kg	☼	07/10/19 08:00	07/12/19 12:16	5
Antimony	ND		61	5.7	mg/Kg	☼	07/10/19 08:00	07/12/19 12:16	5
Arsenic	ND		10	2.6	mg/Kg	☼	07/10/19 08:00	07/12/19 12:16	5
Barium	17	J *	51	2.4	mg/Kg	☼	07/10/19 08:00	07/12/19 12:16	5
Beryllium	ND	*	5.1	0.43	mg/Kg	☼	07/10/19 08:00	07/12/19 12:16	5
Cobalt	1.0	J *	51	0.82	mg/Kg	☼	07/10/19 08:00	07/12/19 12:16	5
Iron	530	*	100	60	mg/Kg	☼	07/10/19 08:00	07/12/19 12:16	5
Li	ND		51	3.0	mg/Kg	☼	07/10/19 08:00	07/12/19 12:16	5
Manganese	33	*	15	2.5	mg/Kg	☼	07/10/19 08:00	07/12/19 12:16	5
Mo	ND		41	1.7	mg/Kg	☼	07/10/19 08:00	07/12/19 12:16	5
Selenium	ND		10	3.5	mg/Kg	☼	07/10/19 08:00	07/12/19 12:16	5
Thallium	ND	*	36	4.8	mg/Kg	☼	07/10/19 08:00	07/12/19 12:16	5

Method: 6010B SEP - SEP Metals (ICP) - Step 6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	3500		14	2.2	mg/Kg	☼	07/10/19 08:00	07/12/19 14:00	1
Antimony	ND		4.1	0.38	mg/Kg	☼	07/10/19 08:00	07/12/19 14:00	1
Arsenic	1.1		0.68	0.20	mg/Kg	☼	07/10/19 08:00	07/12/19 14:00	1
Barium	30		3.4	0.16	mg/Kg	☼	07/10/19 08:00	07/12/19 14:00	1
Beryllium	0.11	J	0.34	0.016	mg/Kg	☼	07/10/19 08:00	07/12/19 14:00	1
Cobalt	1.2	J	3.4	0.063	mg/Kg	☼	07/10/19 08:00	07/12/19 14:00	1
Iron	4800		6.8	3.9	mg/Kg	☼	07/10/19 08:00	07/12/19 14:00	1
Li	4.0		3.4	0.20	mg/Kg	☼	07/10/19 08:00	07/12/19 14:00	1
Manganese	38		1.0	0.34	mg/Kg	☼	07/10/19 08:00	07/12/19 14:00	1
Mo	ND		2.7	0.13	mg/Kg	☼	07/10/19 08:00	07/12/19 14:00	1
Selenium	ND		0.68	0.23	mg/Kg	☼	07/10/19 08:00	07/12/19 14:00	1
Thallium	ND		2.4	0.29	mg/Kg	☼	07/10/19 08:00	07/12/19 14:00	1

Method: 6010B SEP - SEP Metals (ICP) - Step 7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	34000		140	22	mg/Kg	☼	07/12/19 09:08	07/15/19 13:29	10
Antimony	ND		4.1	0.19	mg/Kg	☼	07/12/19 09:08	07/15/19 12:16	1
Arsenic	0.59	J	0.68	0.18	mg/Kg	☼	07/12/19 09:08	07/15/19 12:16	1
Barium	340		34	1.6	mg/Kg	☼	07/12/19 09:08	07/15/19 13:29	10
Beryllium	0.69		0.34	0.010	mg/Kg	☼	07/12/19 09:08	07/15/19 12:16	1
Cobalt	0.90	J	6.8	0.41	mg/Kg	☼	07/12/19 09:08	07/15/19 17:32	2
Iron	6700		6.8	5.6	mg/Kg	☼	07/12/19 09:08	07/15/19 12:16	1
Li	14		3.4	0.20	mg/Kg	☼	07/12/19 09:08	07/15/19 12:16	1
Manganese	36		1.0	0.071	mg/Kg	☼	07/12/19 09:08	07/15/19 12:16	1
Mo	0.20	J	2.7	0.11	mg/Kg	☼	07/12/19 09:08	07/15/19 12:16	1

LUMINANT

Client Sample ID: BMW-29 (30-31)
Date Collected: 05/31/19 16:45
Date Received: 06/05/19 09:20

Lab Sample ID: 140-15492-1
Matrix: Solid
Percent Solids: 73.5

Method: 6010B SEP - SEP Metals (ICP) - Step 7 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Selenium	ND		0.68	0.23	mg/Kg	☼	07/12/19 09:08	07/15/19 12:16	1
Thallium	**0.74**	**J**	4.8	0.49	mg/Kg	☼	07/12/19 09:08	07/15/19 17:32	2

Method: 6010B SEP - SEP Metals (ICP) - Sum of Steps 1-7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**41000**		10	1.6	mg/Kg			07/16/19 17:31	1
Antimony	ND		3.0	0.14	mg/Kg			07/16/19 17:31	1
Arsenic	**4.0**		0.50	0.13	mg/Kg			07/16/19 17:31	1
Barium	**410**		2.5	0.12	mg/Kg			07/16/19 17:31	1
Beryllium	**1.1**		0.25	0.0075	mg/Kg			07/16/19 17:31	1
Cobalt	**9.2**		2.5	0.023	mg/Kg			07/16/19 17:31	1
Iron	**25000**		5.0	4.1	mg/Kg			07/16/19 17:31	1
Li	**25**		2.5	0.15	mg/Kg			07/16/19 17:31	1
Manganese	**420**		0.75	0.052	mg/Kg			07/16/19 17:31	1
Mo	**0.33**	**J**	2.0	0.082	mg/Kg			07/16/19 17:31	1
Selenium	**1.5**		0.50	0.17	mg/Kg			07/16/19 17:31	1
Thallium	**0.74**	**J**	1.8	0.18	mg/Kg			07/16/19 17:31	1

Method: 6010B - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**15**	**J**	25	13	mg/Kg	☼	06/26/19 08:00	07/10/19 12:23	1
Chromium	**19**		1.9	0.28	mg/Kg	☼	06/26/19 08:00	07/10/19 12:23	1
Lead	**9.7**		1.9	0.35	mg/Kg	☼	06/26/19 08:00	07/10/19 12:23	1

Method: 6010B - SEP Metals (ICP) - Total

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**72000**		140	22	mg/Kg	☼	06/11/19 08:00	07/15/19 16:20	10
Antimony	ND		4.1	0.19	mg/Kg	☼	06/11/19 08:00	07/15/19 14:46	1
Arsenic	**3.8**		0.68	0.18	mg/Kg	☼	06/11/19 08:00	07/15/19 14:46	1
Barium	**630**		34	1.6	mg/Kg	☼	06/11/19 08:00	07/15/19 16:20	10
Beryllium	**1.2**		0.34	0.010	mg/Kg	☼	06/11/19 08:00	07/15/19 14:46	1
Cobalt	**10**	**J**	17	1.0	mg/Kg	☼	06/11/19 08:00	07/15/19 18:48	5
Iron	**26000**		6.8	5.6	mg/Kg	☼	06/11/19 08:00	07/15/19 14:46	1
Lithium	**31**		3.4	0.20	mg/Kg	☼	06/11/19 08:00	07/15/19 14:46	1
Manganese	**490**		1.0	0.071	mg/Kg	☼	06/11/19 08:00	07/15/19 14:46	1
Molybdenum	**0.70**	**J**	2.7	0.11	mg/Kg	☼	06/11/19 08:00	07/15/19 14:46	1
Selenium	ND		0.68	0.23	mg/Kg	☼	06/11/19 08:00	07/15/19 14:46	1
Thallium	**1.4**	**J**	12	1.2	mg/Kg	☼	06/11/19 08:00	07/15/19 18:48	5

Method: 7470A - SEP Mercury (CVAA) - Total

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	**0.078**	**J**	0.14	0.054	mg/Kg	☼	06/11/19 08:00	06/16/19 14:19	1

LUMINANT

Client Sample ID: BMW-30 (40-41)
Date Collected: 05/30/19 15:55
Date Received: 06/05/19 09:20

Lab Sample ID: 140-15492-2
Matrix: Solid
Percent Solids: 84.1

Method: 6010B SEP - SEP Metals (ICP) - Step 1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		48	7.6	mg/Kg	☼	06/29/19 08:00	07/11/19 13:14	4
Antimony	ND		14	1.3	mg/Kg	☼	06/29/19 08:00	07/11/19 13:14	4
Arsenic	ND		2.4	0.62	mg/Kg	☼	06/29/19 08:00	07/11/19 13:14	4
Barium	ND		12	0.57	mg/Kg	☼	06/29/19 08:00	07/11/19 13:14	4
Beryllium	ND		1.2	0.37	mg/Kg	☼	06/29/19 08:00	07/11/19 13:14	4
Cobalt	**0.82**	**J**	12	0.21	mg/Kg	☼	06/29/19 08:00	07/11/19 13:14	4
Iron	ND		24	14	mg/Kg	☼	06/29/19 08:00	07/11/19 13:14	4
Li	ND		12	0.71	mg/Kg	☼	06/29/19 08:00	07/11/19 13:14	4
Manganese	**1.5**	**J**	3.6	0.15	mg/Kg	☼	06/29/19 08:00	07/11/19 13:14	4
Mo	ND		9.5	0.39	mg/Kg	☼	06/29/19 08:00	07/11/19 13:14	4
Selenium	ND		2.4	0.81	mg/Kg	☼	06/29/19 08:00	07/11/19 13:14	4
Thallium	ND		8.3	1.0	mg/Kg	☼	06/29/19 08:00	07/11/19 13:14	4

Method: 6010B SEP - SEP Metals (ICP) - Step 2

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**7.3**	**J ***	36	5.7	mg/Kg	☼	06/30/19 08:00	07/11/19 14:58	3
Antimony	ND		11	1.0	mg/Kg	☼	06/30/19 08:00	07/11/19 14:58	3
Arsenic	ND		1.8	0.46	mg/Kg	☼	06/30/19 08:00	07/11/19 14:58	3
Barium	**0.52**	**J ***	8.9	0.43	mg/Kg	☼	06/30/19 08:00	07/11/19 14:58	3
Beryllium	ND	*	0.89	0.057	mg/Kg	☼	06/30/19 08:00	07/11/19 14:58	3
Cobalt	**0.28**	**J**	8.9	0.22	mg/Kg	☼	06/30/19 08:00	07/11/19 14:58	3
Iron	**24**	****	18	10	mg/Kg	☼	06/30/19 08:00	07/11/19 14:58	3
Li	ND		8.9	0.53	mg/Kg	☼	06/30/19 08:00	07/11/19 14:58	3
Manganese	ND		2.7	1.0	mg/Kg	☼	06/30/19 08:00	07/11/19 14:58	3
Mo	ND		7.1	0.29	mg/Kg	☼	06/30/19 08:00	07/11/19 14:58	3
Selenium	**0.67**	**J B**	1.8	0.61	mg/Kg	☼	06/30/19 08:00	07/11/19 14:58	3
Thallium	ND		6.2	0.75	mg/Kg	☼	06/30/19 08:00	07/11/19 14:58	3

Method: 6010B SEP - SEP Metals (ICP) - Step 3

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**35**		12	2.5	mg/Kg	☼	07/02/19 08:00	07/11/19 16:47	1
Antimony	ND		3.6	0.33	mg/Kg	☼	07/02/19 08:00	07/11/19 16:47	1
Arsenic	**1.3**		0.59	0.15	mg/Kg	☼	07/02/19 08:00	07/11/19 16:47	1
Barium	**2.0**	**J B**	3.0	0.14	mg/Kg	☼	07/02/19 08:00	07/11/19 16:47	1
Beryllium	ND		0.30	0.018	mg/Kg	☼	07/02/19 08:00	07/11/19 16:47	1
Cobalt	**0.28**	**J**	3.0	0.053	mg/Kg	☼	07/02/19 08:00	07/11/19 16:47	1
Iron	**190**		5.9	3.4	mg/Kg	☼	07/02/19 08:00	07/11/19 16:47	1
Li	ND		3.0	0.18	mg/Kg	☼	07/02/19 08:00	07/11/19 16:47	1
Manganese	**0.29**	**J B**	0.89	0.032	mg/Kg	☼	07/02/19 08:00	07/11/19 16:47	1
Mo	ND		2.4	0.097	mg/Kg	☼	07/02/19 08:00	07/11/19 16:47	1
Selenium	**0.38**	**J B**	0.59	0.20	mg/Kg	☼	07/02/19 08:00	07/11/19 16:47	1
Thallium	ND		2.1	0.25	mg/Kg	☼	07/02/19 08:00	07/11/19 16:47	1

Method: 6010B SEP - SEP Metals (ICP) - Step 4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**1100**		12	1.9	mg/Kg	☼	07/03/19 08:00	07/11/19 18:15	1
Antimony	ND		3.6	0.53	mg/Kg	☼	07/03/19 08:00	07/11/19 18:15	1
Arsenic	**0.78**	**B**	0.59	0.26	mg/Kg	☼	07/03/19 08:00	07/11/19 18:15	1
Barium	**7.4**		3.0	0.14	mg/Kg	☼	07/03/19 08:00	07/11/19 18:15	1
Beryllium	**0.062**	**J**	0.30	0.019	mg/Kg	☼	07/03/19 08:00	07/11/19 18:15	1

LUMINANT

Client Sample ID: BMW-30 (40-41)
Date Collected: 05/30/19 15:55
Date Received: 06/05/19 09:20

Lab Sample ID: 140-15492-2
Matrix: Solid
Percent Solids: 84.1

Method: 6010B SEP - SEP Metals (ICP) - Step 4 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cobalt	0.50	J	3.0	0.063	mg/Kg	☼	07/03/19 08:00	07/11/19 18:15	1
Iron	1000		5.9	3.4	mg/Kg	☼	07/03/19 08:00	07/11/19 18:15	1
Li	1.7	J	3.0	0.18	mg/Kg	☼	07/03/19 08:00	07/11/19 18:15	1
Manganese	8.7		0.89	0.15	mg/Kg	☼	07/03/19 08:00	07/11/19 18:15	1
Mo	ND		2.4	0.097	mg/Kg	☼	07/03/19 08:00	07/11/19 18:15	1
Selenium	0.76	B *	0.59	0.56	mg/Kg	☼	07/03/19 08:00	07/11/19 18:15	1
Thallium	ND		2.1	0.34	mg/Kg	☼	07/03/19 08:00	07/11/19 18:15	1

Method: 6010B SEP - SEP Metals (ICP) - Step 5

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	66	J *	180	28	mg/Kg	☼	07/10/19 08:00	07/12/19 12:21	5
Antimony	ND		53	5.0	mg/Kg	☼	07/10/19 08:00	07/12/19 12:21	5
Arsenic	ND		8.9	2.3	mg/Kg	☼	07/10/19 08:00	07/12/19 12:21	5
Barium	ND	*	45	2.1	mg/Kg	☼	07/10/19 08:00	07/12/19 12:21	5
Beryllium	ND	*	4.5	0.37	mg/Kg	☼	07/10/19 08:00	07/12/19 12:21	5
Cobalt	ND	*	45	0.71	mg/Kg	☼	07/10/19 08:00	07/12/19 12:21	5
Iron	ND	*	89	52	mg/Kg	☼	07/10/19 08:00	07/12/19 12:21	5
Li	ND		45	2.6	mg/Kg	☼	07/10/19 08:00	07/12/19 12:21	5
Manganese	ND	*	13	2.2	mg/Kg	☼	07/10/19 08:00	07/12/19 12:21	5
Mo	ND		36	1.5	mg/Kg	☼	07/10/19 08:00	07/12/19 12:21	5
Selenium	ND		8.9	3.1	mg/Kg	☼	07/10/19 08:00	07/12/19 12:21	5
Thallium	ND	*	31	4.2	mg/Kg	☼	07/10/19 08:00	07/12/19 12:21	5

Method: 6010B SEP - SEP Metals (ICP) - Step 6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	1300		12	1.9	mg/Kg	☼	07/10/19 08:00	07/12/19 14:05	1
Antimony	ND		3.6	0.33	mg/Kg	☼	07/10/19 08:00	07/12/19 14:05	1
Arsenic	0.75		0.59	0.18	mg/Kg	☼	07/10/19 08:00	07/12/19 14:05	1
Barium	4.0		3.0	0.14	mg/Kg	☼	07/10/19 08:00	07/12/19 14:05	1
Beryllium	0.043	J	0.30	0.014	mg/Kg	☼	07/10/19 08:00	07/12/19 14:05	1
Cobalt	0.46	J	3.0	0.055	mg/Kg	☼	07/10/19 08:00	07/12/19 14:05	1
Iron	1800		5.9	3.4	mg/Kg	☼	07/10/19 08:00	07/12/19 14:05	1
Li	0.91	J	3.0	0.18	mg/Kg	☼	07/10/19 08:00	07/12/19 14:05	1
Manganese	8.0		0.89	0.30	mg/Kg	☼	07/10/19 08:00	07/12/19 14:05	1
Mo	ND		2.4	0.12	mg/Kg	☼	07/10/19 08:00	07/12/19 14:05	1
Selenium	ND		0.59	0.20	mg/Kg	☼	07/10/19 08:00	07/12/19 14:05	1
Thallium	ND		2.1	0.25	mg/Kg	☼	07/10/19 08:00	07/12/19 14:05	1

Method: 6010B SEP - SEP Metals (ICP) - Step 7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	37000		120	19	mg/Kg	☼	07/12/19 09:08	07/15/19 13:34	10
Antimony	ND		3.6	0.17	mg/Kg	☼	07/12/19 09:08	07/15/19 12:21	1
Arsenic	1.3		1.2	0.31	mg/Kg	☼	07/12/19 09:08	07/15/19 17:37	2
Barium	380		30	1.4	mg/Kg	☼	07/12/19 09:08	07/15/19 13:34	10
Beryllium	0.36		0.30	0.0089	mg/Kg	☼	07/12/19 09:08	07/15/19 12:21	1
Cobalt	0.76	J	5.9	0.36	mg/Kg	☼	07/12/19 09:08	07/15/19 17:37	2
Iron	2800		5.9	4.9	mg/Kg	☼	07/12/19 09:08	07/15/19 12:21	1
Li	14		3.0	0.18	mg/Kg	☼	07/12/19 09:08	07/15/19 12:21	1
Manganese	38		0.89	0.062	mg/Kg	☼	07/12/19 09:08	07/15/19 12:21	1
Mo	ND		2.4	0.097	mg/Kg	☼	07/12/19 09:08	07/15/19 12:21	1

LUMINANT

Client Sample ID: BMW-30 (40-41)
Date Collected: 05/30/19 15:55
Date Received: 06/05/19 09:20

Lab Sample ID: 140-15492-2
Matrix: Solid
Percent Solids: 84.1

Method: 6010B SEP - SEP Metals (ICP) - Step 7 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Selenium	ND		1.2	0.40	mg/Kg	☼	07/12/19 09:08	07/15/19 17:37	2
Thallium	**0.87**	**J**	4.2	0.43	mg/Kg	☼	07/12/19 09:08	07/15/19 17:37	2

Method: 6010B SEP - SEP Metals (ICP) - Sum of Steps 1-7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**39000**		10	1.6	mg/Kg			07/16/19 17:31	1
Antimony	ND		3.0	0.14	mg/Kg			07/16/19 17:31	1
Arsenic	**4.1**		0.50	0.13	mg/Kg			07/16/19 17:31	1
Barium	**390**		2.5	0.12	mg/Kg			07/16/19 17:31	1
Beryllium	**0.46**		0.25	0.0075	mg/Kg			07/16/19 17:31	1
Cobalt	**3.1**		2.5	0.023	mg/Kg			07/16/19 17:31	1
Iron	**5800**		5.0	4.1	mg/Kg			07/16/19 17:31	1
Li	**17**		2.5	0.15	mg/Kg			07/16/19 17:31	1
Manganese	**57**		0.75	0.052	mg/Kg			07/16/19 17:31	1
Mo	ND		2.0	0.082	mg/Kg			07/16/19 17:31	1
Selenium	**1.8**		0.50	0.17	mg/Kg			07/16/19 17:31	1
Thallium	**0.87**	**J**	1.8	0.18	mg/Kg			07/16/19 17:31	1

Method: 6010B - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		23	11	mg/Kg	☼	06/26/19 08:00	07/10/19 12:28	1
Chromium	**7.9**		1.7	0.25	mg/Kg	☼	06/26/19 08:00	07/10/19 12:28	1
Lead	**5.9**		1.7	0.32	mg/Kg	☼	06/26/19 08:00	07/10/19 12:28	1

Method: 6010B - SEP Metals (ICP) - Total

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**48000**		120	19	mg/Kg	☼	06/11/19 08:00	07/15/19 16:25	10
Antimony	ND		3.6	0.17	mg/Kg	☼	06/11/19 08:00	07/15/19 15:07	1
Arsenic	**4.8**		0.59	0.15	mg/Kg	☼	06/11/19 08:00	07/15/19 15:07	1
Barium	**490**		30	1.4	mg/Kg	☼	06/11/19 08:00	07/15/19 16:25	10
Beryllium	**0.46**		0.30	0.0089	mg/Kg	☼	06/11/19 08:00	07/15/19 15:07	1
Cobalt	**3.4**	**J**	15	0.89	mg/Kg	☼	06/11/19 08:00	07/15/19 18:53	5
Iron	**5800**		5.9	4.9	mg/Kg	☼	06/11/19 08:00	07/15/19 15:07	1
Lithium	**18**		3.0	0.18	mg/Kg	☼	06/11/19 08:00	07/15/19 15:07	1
Manganese	**60**		0.89	0.062	mg/Kg	☼	06/11/19 08:00	07/15/19 15:07	1
Molybdenum	**0.17**	**J**	2.4	0.097	mg/Kg	☼	06/11/19 08:00	07/15/19 15:07	1
Selenium	**1.1**		0.59	0.20	mg/Kg	☼	06/11/19 08:00	07/15/19 15:07	1
Thallium	ND		10	1.1	mg/Kg	☼	06/11/19 08:00	07/15/19 18:53	5

Method: 7470A - SEP Mercury (CVAA) - Total

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	**0.054**	**J**	0.12	0.048	mg/Kg	☼	06/11/19 08:00	06/16/19 14:21	1

LUMINANT

Client Sample ID: BMW-31 (14-15)
Date Collected: 05/31/19 11:15
Date Received: 06/05/19 09:20

Lab Sample ID: 140-15492-3
Matrix: Solid
Percent Solids: 84.2

Method: 6010B SEP - SEP Metals (ICP) - Step 1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		47	7.6	mg/Kg	☼	06/29/19 08:00	07/11/19 13:35	4
Antimony	ND		14	1.3	mg/Kg	☼	06/29/19 08:00	07/11/19 13:35	4
Arsenic	ND		2.4	0.62	mg/Kg	☼	06/29/19 08:00	07/11/19 13:35	4
Barium	**0.58**	**J**	12	0.57	mg/Kg	☼	06/29/19 08:00	07/11/19 13:35	4
Beryllium	ND		1.2	0.37	mg/Kg	☼	06/29/19 08:00	07/11/19 13:35	4
Cobalt	ND		12	0.21	mg/Kg	☼	06/29/19 08:00	07/11/19 13:35	4
Iron	ND		24	14	mg/Kg	☼	06/29/19 08:00	07/11/19 13:35	4
Li	ND		12	0.71	mg/Kg	☼	06/29/19 08:00	07/11/19 13:35	4
Manganese	**11**		3.6	0.15	mg/Kg	☼	06/29/19 08:00	07/11/19 13:35	4
Mo	ND		9.5	0.39	mg/Kg	☼	06/29/19 08:00	07/11/19 13:35	4
Selenium	ND		2.4	0.81	mg/Kg	☼	06/29/19 08:00	07/11/19 13:35	4
Thallium	ND		8.3	1.0	mg/Kg	☼	06/29/19 08:00	07/11/19 13:35	4

Method: 6010B SEP - SEP Metals (ICP) - Step 2

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND	*	36	5.7	mg/Kg	☼	06/30/19 08:00	07/11/19 15:03	3
Antimony	ND		11	1.0	mg/Kg	☼	06/30/19 08:00	07/11/19 15:03	3
Arsenic	ND		1.8	0.46	mg/Kg	☼	06/30/19 08:00	07/11/19 15:03	3
Barium	**0.46**	**J ***	8.9	0.43	mg/Kg	☼	06/30/19 08:00	07/11/19 15:03	3
Beryllium	ND	*	0.89	0.057	mg/Kg	☼	06/30/19 08:00	07/11/19 15:03	3
Cobalt	ND		8.9	0.22	mg/Kg	☼	06/30/19 08:00	07/11/19 15:03	3
Iron	ND	*	18	10	mg/Kg	☼	06/30/19 08:00	07/11/19 15:03	3
Li	ND		8.9	0.53	mg/Kg	☼	06/30/19 08:00	07/11/19 15:03	3
Manganese	**2.4**	**J**	2.7	1.0	mg/Kg	☼	06/30/19 08:00	07/11/19 15:03	3
Mo	ND		7.1	0.29	mg/Kg	☼	06/30/19 08:00	07/11/19 15:03	3
Selenium	**0.77**	**J B**	1.8	0.61	mg/Kg	☼	06/30/19 08:00	07/11/19 15:03	3
Thallium	ND		6.2	0.75	mg/Kg	☼	06/30/19 08:00	07/11/19 15:03	3

Method: 6010B SEP - SEP Metals (ICP) - Step 3

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**59**		12	2.5	mg/Kg	☼	07/02/19 08:00	07/11/19 16:52	1
Antimony	ND		3.6	0.33	mg/Kg	☼	07/02/19 08:00	07/11/19 16:52	1
Arsenic	**0.29**	**J**	0.59	0.15	mg/Kg	☼	07/02/19 08:00	07/11/19 16:52	1
Barium	**14**	**B**	3.0	0.14	mg/Kg	☼	07/02/19 08:00	07/11/19 16:52	1
Beryllium	**0.069**	**J**	0.30	0.018	mg/Kg	☼	07/02/19 08:00	07/11/19 16:52	1
Cobalt	**16**		3.0	0.053	mg/Kg	☼	07/02/19 08:00	07/11/19 16:52	1
Iron	**120**		5.9	3.4	mg/Kg	☼	07/02/19 08:00	07/11/19 16:52	1
Li	ND		3.0	0.18	mg/Kg	☼	07/02/19 08:00	07/11/19 16:52	1
Manganese	**260**	**B**	0.89	0.032	mg/Kg	☼	07/02/19 08:00	07/11/19 16:52	1
Mo	ND		2.4	0.097	mg/Kg	☼	07/02/19 08:00	07/11/19 16:52	1
Selenium	**0.23**	**J B**	0.59	0.20	mg/Kg	☼	07/02/19 08:00	07/11/19 16:52	1
Thallium	ND		2.1	0.25	mg/Kg	☼	07/02/19 08:00	07/11/19 16:52	1

Method: 6010B SEP - SEP Metals (ICP) - Step 4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**1600**		12	1.9	mg/Kg	☼	07/03/19 08:00	07/11/19 18:20	1
Antimony	ND		3.6	0.53	mg/Kg	☼	07/03/19 08:00	07/11/19 18:20	1
Arsenic	**1.8**	**B**	0.59	0.26	mg/Kg	☼	07/03/19 08:00	07/11/19 18:20	1
Barium	**33**		3.0	0.14	mg/Kg	☼	07/03/19 08:00	07/11/19 18:20	1
Beryllium	**0.24**	**J**	0.30	0.019	mg/Kg	☼	07/03/19 08:00	07/11/19 18:20	1

LUMINANT

Client Sample ID: BMW-31 (14-15)
Lab Sample ID: 140-15492-3
Date Collected: 05/31/19 11:15
Matrix: Solid
Date Received: 06/05/19 09:20
Percent Solids: 84.2

Method: 6010B SEP - SEP Metals (ICP) - Step 4 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cobalt	2.8	J	3.0	0.063	mg/Kg	☼	07/03/19 08:00	07/11/19 18:20	1
Iron	5600		5.9	3.4	mg/Kg	☼	07/03/19 08:00	07/11/19 18:20	1
Li	2.2	J	3.0	0.18	mg/Kg	☼	07/03/19 08:00	07/11/19 18:20	1
Manganese	63		0.89	0.15	mg/Kg	☼	07/03/19 08:00	07/11/19 18:20	1
Mo	ND		2.4	0.097	mg/Kg	☼	07/03/19 08:00	07/11/19 18:20	1
Selenium	1.1	B *	0.59	0.56	mg/Kg	☼	07/03/19 08:00	07/11/19 18:20	1
Thallium	ND		2.1	0.34	mg/Kg	☼	07/03/19 08:00	07/11/19 18:20	1

Method: 6010B SEP - SEP Metals (ICP) - Step 5

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	67	J *	180	28	mg/Kg	☼	07/10/19 08:00	07/12/19 12:42	5
Antimony	ND		53	5.0	mg/Kg	☼	07/10/19 08:00	07/12/19 12:42	5
Arsenic	ND		8.9	2.3	mg/Kg	☼	07/10/19 08:00	07/12/19 12:42	5
Barium	3.9	J *	45	2.1	mg/Kg	☼	07/10/19 08:00	07/12/19 12:42	5
Beryllium	ND	*	4.5	0.37	mg/Kg	☼	07/10/19 08:00	07/12/19 12:42	5
Cobalt	ND	*	45	0.71	mg/Kg	☼	07/10/19 08:00	07/12/19 12:42	5
Iron	ND	*	89	52	mg/Kg	☼	07/10/19 08:00	07/12/19 12:42	5
Li	ND		45	2.6	mg/Kg	☼	07/10/19 08:00	07/12/19 12:42	5
Manganese	ND	*	13	2.2	mg/Kg	☼	07/10/19 08:00	07/12/19 12:42	5
Mo	ND		36	1.5	mg/Kg	☼	07/10/19 08:00	07/12/19 12:42	5
Selenium	ND		8.9	3.1	mg/Kg	☼	07/10/19 08:00	07/12/19 12:42	5
Thallium	ND	*	31	4.2	mg/Kg	☼	07/10/19 08:00	07/12/19 12:42	5

Method: 6010B SEP - SEP Metals (ICP) - Step 6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	1800		12	1.9	mg/Kg	☼	07/10/19 08:00	07/12/19 14:10	1
Antimony	ND		3.6	0.33	mg/Kg	☼	07/10/19 08:00	07/12/19 14:10	1
Arsenic	0.54	J	0.59	0.18	mg/Kg	☼	07/10/19 08:00	07/12/19 14:10	1
Barium	4.4		3.0	0.14	mg/Kg	☼	07/10/19 08:00	07/12/19 14:10	1
Beryllium	0.059	J	0.30	0.014	mg/Kg	☼	07/10/19 08:00	07/12/19 14:10	1
Cobalt	0.46	J	3.0	0.055	mg/Kg	☼	07/10/19 08:00	07/12/19 14:10	1
Iron	1700		5.9	3.4	mg/Kg	☼	07/10/19 08:00	07/12/19 14:10	1
Li	1.3	J	3.0	0.18	mg/Kg	☼	07/10/19 08:00	07/12/19 14:10	1
Manganese	10		0.89	0.30	mg/Kg	☼	07/10/19 08:00	07/12/19 14:10	1
Mo	ND		2.4	0.12	mg/Kg	☼	07/10/19 08:00	07/12/19 14:10	1
Selenium	ND		0.59	0.20	mg/Kg	☼	07/10/19 08:00	07/12/19 14:10	1
Thallium	ND		2.1	0.25	mg/Kg	☼	07/10/19 08:00	07/12/19 14:10	1

Method: 6010B SEP - SEP Metals (ICP) - Step 7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	26000		120	19	mg/Kg	☼	07/12/19 09:08	07/15/19 13:39	10
Antimony	ND		3.6	0.17	mg/Kg	☼	07/12/19 09:08	07/15/19 12:26	1
Arsenic	0.58	J	1.2	0.31	mg/Kg	☼	07/12/19 09:08	07/15/19 17:42	2
Barium	320		30	1.4	mg/Kg	☼	07/12/19 09:08	07/15/19 13:39	10
Beryllium	0.30		0.30	0.0089	mg/Kg	☼	07/12/19 09:08	07/15/19 12:26	1
Cobalt	0.82	J	5.9	0.36	mg/Kg	☼	07/12/19 09:08	07/15/19 17:42	2
Iron	3600		5.9	4.9	mg/Kg	☼	07/12/19 09:08	07/15/19 12:26	1
Li	15		3.0	0.18	mg/Kg	☼	07/12/19 09:08	07/15/19 12:26	1
Manganese	24		0.89	0.062	mg/Kg	☼	07/12/19 09:08	07/15/19 12:26	1
Mo	0.16	J	2.4	0.097	mg/Kg	☼	07/12/19 09:08	07/15/19 12:26	1

LUMINANT

Client Sample ID: BMW-31 (14-15)
Date Collected: 05/31/19 11:15
Date Received: 06/05/19 09:20

Lab Sample ID: 140-15492-3
Matrix: Solid
Percent Solids: 84.2

Method: 6010B SEP - SEP Metals (ICP) - Step 7 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Selenium	ND		1.2	0.40	mg/Kg	☼	07/12/19 09:08	07/15/19 17:42	2
Thallium	**0.52**	**J**	4.2	0.43	mg/Kg	☼	07/12/19 09:08	07/15/19 17:42	2

Method: 6010B SEP - SEP Metals (ICP) - Sum of Steps 1-7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**30000**		10	1.6	mg/Kg			07/16/19 17:31	1
Antimony	ND		3.0	0.14	mg/Kg			07/16/19 17:31	1
Arsenic	**3.2**		0.50	0.13	mg/Kg			07/16/19 17:31	1
Barium	**370**		2.5	0.12	mg/Kg			07/16/19 17:31	1
Beryllium	**0.67**		0.25	0.0075	mg/Kg			07/16/19 17:31	1
Cobalt	**20**		2.5	0.023	mg/Kg			07/16/19 17:31	1
Iron	**11000**		5.0	4.1	mg/Kg			07/16/19 17:31	1
Li	**19**		2.5	0.15	mg/Kg			07/16/19 17:31	1
Manganese	**370**		0.75	0.052	mg/Kg			07/16/19 17:31	1
Mo	**0.16**	**J**	2.0	0.082	mg/Kg			07/16/19 17:31	1
Selenium	**2.1**		0.50	0.17	mg/Kg			07/16/19 17:31	1
Thallium	**0.52**	**J**	1.8	0.18	mg/Kg			07/16/19 17:31	1

Method: 6010B - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		24	12	mg/Kg	☼	06/26/19 08:00	07/10/19 12:43	1
Chromium	**7.3**		1.8	0.26	mg/Kg	☼	06/26/19 08:00	07/10/19 12:43	1
Lead	**6.8**		1.8	0.33	mg/Kg	☼	06/26/19 08:00	07/10/19 12:43	1

Method: 6010B - SEP Metals (ICP) - Total

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**30000**		120	19	mg/Kg	☼	06/11/19 08:00	07/15/19 16:30	10
Antimony	ND		3.6	0.17	mg/Kg	☼	06/11/19 08:00	07/15/19 15:12	1
Arsenic	**3.0**		0.59	0.15	mg/Kg	☼	06/11/19 08:00	07/15/19 15:12	1
Barium	**430**		30	1.4	mg/Kg	☼	06/11/19 08:00	07/15/19 16:30	10
Beryllium	**0.66**		0.30	0.0089	mg/Kg	☼	06/11/19 08:00	07/15/19 15:12	1
Cobalt	**18**		5.9	0.36	mg/Kg	☼	06/11/19 08:00	07/15/19 19:14	2
Iron	**10000**		5.9	4.9	mg/Kg	☼	06/11/19 08:00	07/15/19 15:12	1
Lithium	**18**		3.0	0.18	mg/Kg	☼	06/11/19 08:00	07/15/19 15:12	1
Manganese	**280**		0.89	0.062	mg/Kg	☼	06/11/19 08:00	07/15/19 15:12	1
Molybdenum	**0.29**	**J**	2.4	0.097	mg/Kg	☼	06/11/19 08:00	07/15/19 15:12	1
Selenium	ND		0.59	0.20	mg/Kg	☼	06/11/19 08:00	07/15/19 15:12	1
Thallium	**0.67**	**J**	4.2	0.43	mg/Kg	☼	06/11/19 08:00	07/15/19 19:14	2

Method: 7470A - SEP Mercury (CVAA) - Total

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	ND		0.12	0.047	mg/Kg	☼	06/11/19 08:00	06/16/19 14:24	1

LUMINANT

Client Sample ID: BMW-32 (25-26)
Lab Sample ID: 140-15492-4
Date Collected: 05/29/19 15:45
Matrix: Solid
Date Received: 06/05/19 09:20
Percent Solids: 84.2

Method: 6010B SEP - SEP Metals (ICP) - Step 1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		47	7.6	mg/Kg	☼	06/29/19 08:00	07/11/19 13:40	4
Antimony	ND		14	1.3	mg/Kg	☼	06/29/19 08:00	07/11/19 13:40	4
Arsenic	ND		2.4	0.62	mg/Kg	☼	06/29/19 08:00	07/11/19 13:40	4
Barium	ND		12	0.57	mg/Kg	☼	06/29/19 08:00	07/11/19 13:40	4
Beryllium	ND		1.2	0.37	mg/Kg	☼	06/29/19 08:00	07/11/19 13:40	4
Cobalt	ND		12	0.21	mg/Kg	☼	06/29/19 08:00	07/11/19 13:40	4
Iron	ND		24	14	mg/Kg	☼	06/29/19 08:00	07/11/19 13:40	4
Li	ND		12	0.71	mg/Kg	☼	06/29/19 08:00	07/11/19 13:40	4
Manganese	**1.0**	**J**	3.6	0.15	mg/Kg	☼	06/29/19 08:00	07/11/19 13:40	4
Mo	ND		9.5	0.39	mg/Kg	☼	06/29/19 08:00	07/11/19 13:40	4
Selenium	ND		2.4	0.81	mg/Kg	☼	06/29/19 08:00	07/11/19 13:40	4
Thallium	ND		8.3	1.0	mg/Kg	☼	06/29/19 08:00	07/11/19 13:40	4

Method: 6010B SEP - SEP Metals (ICP) - Step 2

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**17**	**J ***	36	5.7	mg/Kg	☼	06/30/19 08:00	07/11/19 15:09	3
Antimony	ND		11	1.0	mg/Kg	☼	06/30/19 08:00	07/11/19 15:09	3
Arsenic	ND		1.8	0.46	mg/Kg	☼	06/30/19 08:00	07/11/19 15:09	3
Barium	ND	*	8.9	0.43	mg/Kg	☼	06/30/19 08:00	07/11/19 15:09	3
Beryllium	ND	*	0.89	0.057	mg/Kg	☼	06/30/19 08:00	07/11/19 15:09	3
Cobalt	ND		8.9	0.22	mg/Kg	☼	06/30/19 08:00	07/11/19 15:09	3
Iron	**36**	*****	18	10	mg/Kg	☼	06/30/19 08:00	07/11/19 15:09	3
Li	ND		8.9	0.53	mg/Kg	☼	06/30/19 08:00	07/11/19 15:09	3
Manganese	ND		2.7	1.0	mg/Kg	☼	06/30/19 08:00	07/11/19 15:09	3
Mo	ND		7.1	0.29	mg/Kg	☼	06/30/19 08:00	07/11/19 15:09	3
Selenium	**0.78**	**J B**	1.8	0.61	mg/Kg	☼	06/30/19 08:00	07/11/19 15:09	3
Thallium	ND		6.2	0.75	mg/Kg	☼	06/30/19 08:00	07/11/19 15:09	3

Method: 6010B SEP - SEP Metals (ICP) - Step 3

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**81**		12	2.5	mg/Kg	☼	07/02/19 08:00	07/11/19 16:58	1
Antimony	ND		3.6	0.33	mg/Kg	☼	07/02/19 08:00	07/11/19 16:58	1
Arsenic	**0.60**		0.59	0.15	mg/Kg	☼	07/02/19 08:00	07/11/19 16:58	1
Barium	**1.3**	**J B**	3.0	0.14	mg/Kg	☼	07/02/19 08:00	07/11/19 16:58	1
Beryllium	ND		0.30	0.018	mg/Kg	☼	07/02/19 08:00	07/11/19 16:58	1
Cobalt	**0.060**	**J**	3.0	0.053	mg/Kg	☼	07/02/19 08:00	07/11/19 16:58	1
Iron	**500**		5.9	3.4	mg/Kg	☼	07/02/19 08:00	07/11/19 16:58	1
Li	ND		3.0	0.18	mg/Kg	☼	07/02/19 08:00	07/11/19 16:58	1
Manganese	**0.60**	**J B**	0.89	0.032	mg/Kg	☼	07/02/19 08:00	07/11/19 16:58	1
Mo	ND		2.4	0.097	mg/Kg	☼	07/02/19 08:00	07/11/19 16:58	1
Selenium	**0.21**	**J B**	0.59	0.20	mg/Kg	☼	07/02/19 08:00	07/11/19 16:58	1
Thallium	ND		2.1	0.25	mg/Kg	☼	07/02/19 08:00	07/11/19 16:58	1

Method: 6010B SEP - SEP Metals (ICP) - Step 4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**1200**		12	1.9	mg/Kg	☼	07/03/19 08:00	07/11/19 18:25	1
Antimony	ND		3.6	0.53	mg/Kg	☼	07/03/19 08:00	07/11/19 18:25	1
Arsenic	**0.78**	**B**	0.59	0.26	mg/Kg	☼	07/03/19 08:00	07/11/19 18:25	1
Barium	**17**		3.0	0.14	mg/Kg	☼	07/03/19 08:00	07/11/19 18:25	1
Beryllium	**0.025**	**J**	0.30	0.019	mg/Kg	☼	07/03/19 08:00	07/11/19 18:25	1

LUMINANT

Client Sample ID: BMW-32 (25-26)
Date Collected: 05/29/19 15:45
Date Received: 06/05/19 09:20

Lab Sample ID: 140-15492-4
Matrix: Solid
Percent Solids: 84.2

Method: 6010B SEP - SEP Metals (ICP) - Step 4 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cobalt	0.60	J	3.0	0.063	mg/Kg	☼	07/03/19 08:00	07/11/19 18:25	1
Iron	2000		5.9	3.4	mg/Kg	☼	07/03/19 08:00	07/11/19 18:25	1
Li	2.5	J	3.0	0.18	mg/Kg	☼	07/03/19 08:00	07/11/19 18:25	1
Manganese	13		0.89	0.15	mg/Kg	☼	07/03/19 08:00	07/11/19 18:25	1
Mo	ND		2.4	0.097	mg/Kg	☼	07/03/19 08:00	07/11/19 18:25	1
Selenium	0.62	B *	0.59	0.56	mg/Kg	☼	07/03/19 08:00	07/11/19 18:25	1
Thallium	ND		2.1	0.34	mg/Kg	☼	07/03/19 08:00	07/11/19 18:25	1

Method: 6010B SEP - SEP Metals (ICP) - Step 5

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	58	J *	180	28	mg/Kg	☼	07/10/19 08:00	07/12/19 12:47	5
Antimony	ND		53	5.0	mg/Kg	☼	07/10/19 08:00	07/12/19 12:47	5
Arsenic	ND		8.9	2.3	mg/Kg	☼	07/10/19 08:00	07/12/19 12:47	5
Barium	3.3	J *	45	2.1	mg/Kg	☼	07/10/19 08:00	07/12/19 12:47	5
Beryllium	ND	*	4.5	0.37	mg/Kg	☼	07/10/19 08:00	07/12/19 12:47	5
Cobalt	ND	*	45	0.71	mg/Kg	☼	07/10/19 08:00	07/12/19 12:47	5
Iron	ND	*	89	52	mg/Kg	☼	07/10/19 08:00	07/12/19 12:47	5
Li	ND		45	2.6	mg/Kg	☼	07/10/19 08:00	07/12/19 12:47	5
Manganese	ND	*	13	2.2	mg/Kg	☼	07/10/19 08:00	07/12/19 12:47	5
Mo	ND		36	1.5	mg/Kg	☼	07/10/19 08:00	07/12/19 12:47	5
Selenium	ND		8.9	3.1	mg/Kg	☼	07/10/19 08:00	07/12/19 12:47	5
Thallium	ND	*	31	4.2	mg/Kg	☼	07/10/19 08:00	07/12/19 12:47	5

Method: 6010B SEP - SEP Metals (ICP) - Step 6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	1100		12	1.9	mg/Kg	☼	07/10/19 08:00	07/12/19 14:15	1
Antimony	ND		3.6	0.33	mg/Kg	☼	07/10/19 08:00	07/12/19 14:15	1
Arsenic	0.42	J	0.59	0.18	mg/Kg	☼	07/10/19 08:00	07/12/19 14:15	1
Barium	6.4		3.0	0.14	mg/Kg	☼	07/10/19 08:00	07/12/19 14:15	1
Beryllium	0.033	J	0.30	0.014	mg/Kg	☼	07/10/19 08:00	07/12/19 14:15	1
Cobalt	0.28	J	3.0	0.055	mg/Kg	☼	07/10/19 08:00	07/12/19 14:15	1
Iron	890		5.9	3.4	mg/Kg	☼	07/10/19 08:00	07/12/19 14:15	1
Li	1.0	J	3.0	0.18	mg/Kg	☼	07/10/19 08:00	07/12/19 14:15	1
Manganese	10		0.89	0.30	mg/Kg	☼	07/10/19 08:00	07/12/19 14:15	1
Mo	ND		2.4	0.12	mg/Kg	☼	07/10/19 08:00	07/12/19 14:15	1
Selenium	ND		0.59	0.20	mg/Kg	☼	07/10/19 08:00	07/12/19 14:15	1
Thallium	ND		2.1	0.25	mg/Kg	☼	07/10/19 08:00	07/12/19 14:15	1

Method: 6010B SEP - SEP Metals (ICP) - Step 7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	32000		120	19	mg/Kg	☼	07/12/19 09:08	07/15/19 13:44	10
Antimony	ND		3.6	0.17	mg/Kg	☼	07/12/19 09:08	07/15/19 12:32	1
Arsenic	1.2		0.59	0.15	mg/Kg	☼	07/12/19 09:08	07/15/19 12:32	1
Barium	430		30	1.4	mg/Kg	☼	07/12/19 09:08	07/15/19 13:44	10
Beryllium	0.50		0.30	0.0089	mg/Kg	☼	07/12/19 09:08	07/15/19 12:32	1
Cobalt	0.76	J	5.9	0.36	mg/Kg	☼	07/12/19 09:08	07/15/19 17:47	2
Iron	2800		5.9	4.9	mg/Kg	☼	07/12/19 09:08	07/15/19 12:32	1
Li	8.2		3.0	0.18	mg/Kg	☼	07/12/19 09:08	07/15/19 12:32	1
Manganese	42		0.89	0.062	mg/Kg	☼	07/12/19 09:08	07/15/19 12:32	1
Mo	ND		2.4	0.097	mg/Kg	☼	07/12/19 09:08	07/15/19 12:32	1

LUMINANT

Client Sample ID: BMW-32 (25-26)
Date Collected: 05/29/19 15:45
Date Received: 06/05/19 09:20

Lab Sample ID: 140-15492-4
Matrix: Solid
Percent Solids: 84.2

Method: 6010B SEP - SEP Metals (ICP) - Step 7 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Selenium	ND		0.59	0.20	mg/Kg	☼	07/12/19 09:08	07/15/19 12:32	1
Thallium	ND		4.2	0.43	mg/Kg	☼	07/12/19 09:08	07/15/19 17:47	2

Method: 6010B SEP - SEP Metals (ICP) - Sum of Steps 1-7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**35000**		10	1.6	mg/Kg			07/16/19 17:31	1
Antimony	ND		3.0	0.14	mg/Kg			07/16/19 17:31	1
Arsenic	**3.0**		0.50	0.13	mg/Kg			07/16/19 17:31	1
Barium	**460**		2.5	0.12	mg/Kg			07/16/19 17:31	1
Beryllium	**0.56**		0.25	0.0075	mg/Kg			07/16/19 17:31	1
Cobalt	**1.7**	**J**	2.5	0.023	mg/Kg			07/16/19 17:31	1
Iron	**6200**		5.0	4.1	mg/Kg			07/16/19 17:31	1
Li	**12**		2.5	0.15	mg/Kg			07/16/19 17:31	1
Manganese	**67**		0.75	0.052	mg/Kg			07/16/19 17:31	1
Mo	ND		2.0	0.082	mg/Kg			07/16/19 17:31	1
Selenium	**1.6**		0.50	0.17	mg/Kg			07/16/19 17:31	1
Thallium	ND		1.8	0.18	mg/Kg			07/16/19 17:31	1

Method: 6010B - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		22	11	mg/Kg	☼	06/26/19 08:00	07/10/19 12:49	1
Chromium	**7.6**		1.7	0.25	mg/Kg	☼	06/26/19 08:00	07/10/19 12:49	1
Lead	**3.9**		1.7	0.31	mg/Kg	☼	06/26/19 08:00	07/10/19 12:49	1

Method: 6010B - SEP Metals (ICP) - Total

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**45000**		120	19	mg/Kg	☼	06/11/19 08:00	07/15/19 16:35	10
Antimony	ND		3.6	0.17	mg/Kg	☼	06/11/19 08:00	07/15/19 15:18	1
Arsenic	**3.2**		0.59	0.15	mg/Kg	☼	06/11/19 08:00	07/15/19 15:18	1
Barium	**570**		30	1.4	mg/Kg	☼	06/11/19 08:00	07/15/19 16:35	10
Beryllium	**0.53**		0.30	0.0089	mg/Kg	☼	06/11/19 08:00	07/15/19 15:18	1
Cobalt	**1.6**	**J**	5.9	0.36	mg/Kg	☼	06/11/19 08:00	07/15/19 19:19	2
Iron	**5600**		5.9	4.9	mg/Kg	☼	06/11/19 08:00	07/15/19 15:18	1
Lithium	**11**		3.0	0.18	mg/Kg	☼	06/11/19 08:00	07/15/19 15:18	1
Manganese	**70**		0.89	0.062	mg/Kg	☼	06/11/19 08:00	07/15/19 15:18	1
Molybdenum	**0.33**	**J**	2.4	0.097	mg/Kg	☼	06/11/19 08:00	07/15/19 15:18	1
Selenium	**0.54**	**J**	0.59	0.20	mg/Kg	☼	06/11/19 08:00	07/15/19 15:18	1
Thallium	**0.44**	**J**	4.2	0.43	mg/Kg	☼	06/11/19 08:00	07/15/19 19:19	2

Method: 7470A - SEP Mercury (CVAA) - Total

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	**0.053**	**J**	0.12	0.047	mg/Kg	☼	06/11/19 08:00	06/16/19 14:27	1

LUMINANT

Client Sample ID: BMW-33 (38-39)
Date Collected: 05/30/19 11:35
Date Received: 06/05/19 09:20

Lab Sample ID: 140-15492-5
Matrix: Solid
Percent Solids: 77.5

Method: 6010B SEP - SEP Metals (ICP) - Step 1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		52	8.3	mg/Kg	☼	06/29/19 08:00	07/11/19 13:45	4
Antimony	ND		15	1.4	mg/Kg	☼	06/29/19 08:00	07/11/19 13:45	4
Arsenic	ND		2.6	0.67	mg/Kg	☼	06/29/19 08:00	07/11/19 13:45	4
Barium	**1.5**	**J**	13	0.62	mg/Kg	☼	06/29/19 08:00	07/11/19 13:45	4
Beryllium	ND		1.3	0.40	mg/Kg	☼	06/29/19 08:00	07/11/19 13:45	4
Cobalt	**0.29**	**J**	13	0.23	mg/Kg	☼	06/29/19 08:00	07/11/19 13:45	4
Iron	ND		26	15	mg/Kg	☼	06/29/19 08:00	07/11/19 13:45	4
Li	ND		13	0.77	mg/Kg	☼	06/29/19 08:00	07/11/19 13:45	4
Manganese	**17**		3.9	0.16	mg/Kg	☼	06/29/19 08:00	07/11/19 13:45	4
Mo	ND		10	0.42	mg/Kg	☼	06/29/19 08:00	07/11/19 13:45	4
Selenium	ND		2.6	0.88	mg/Kg	☼	06/29/19 08:00	07/11/19 13:45	4
Thallium	ND		9.0	1.1	mg/Kg	☼	06/29/19 08:00	07/11/19 13:45	4

Method: 6010B SEP - SEP Metals (ICP) - Step 2

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**10**	**J ***	39	6.2	mg/Kg	☼	06/30/19 08:00	07/11/19 15:14	3
Antimony	ND		12	1.1	mg/Kg	☼	06/30/19 08:00	07/11/19 15:14	3
Arsenic	ND		1.9	0.50	mg/Kg	☼	06/30/19 08:00	07/11/19 15:14	3
Barium	**0.90**	**J ***	9.7	0.46	mg/Kg	☼	06/30/19 08:00	07/11/19 15:14	3
Beryllium	ND	*	0.97	0.062	mg/Kg	☼	06/30/19 08:00	07/11/19 15:14	3
Cobalt	**0.74**	**J**	9.7	0.24	mg/Kg	☼	06/30/19 08:00	07/11/19 15:14	3
Iron	**14**	**J ***	19	11	mg/Kg	☼	06/30/19 08:00	07/11/19 15:14	3
Li	ND		9.7	0.58	mg/Kg	☼	06/30/19 08:00	07/11/19 15:14	3
Manganese	**25**		2.9	1.1	mg/Kg	☼	06/30/19 08:00	07/11/19 15:14	3
Mo	ND		7.7	0.32	mg/Kg	☼	06/30/19 08:00	07/11/19 15:14	3
Selenium	ND		1.9	0.66	mg/Kg	☼	06/30/19 08:00	07/11/19 15:14	3
Thallium	ND		6.8	0.81	mg/Kg	☼	06/30/19 08:00	07/11/19 15:14	3

Method: 6010B SEP - SEP Metals (ICP) - Step 3

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**94**		13	2.7	mg/Kg	☼	07/02/19 08:00	07/11/19 17:03	1
Antimony	ND		3.9	0.36	mg/Kg	☼	07/02/19 08:00	07/11/19 17:03	1
Arsenic	**0.47**	**J**	0.65	0.17	mg/Kg	☼	07/02/19 08:00	07/11/19 17:03	1
Barium	**7.5**	**B**	3.2	0.15	mg/Kg	☼	07/02/19 08:00	07/11/19 17:03	1
Beryllium	**0.028**	**J**	0.32	0.019	mg/Kg	☼	07/02/19 08:00	07/11/19 17:03	1
Cobalt	**1.9**	**J**	3.2	0.058	mg/Kg	☼	07/02/19 08:00	07/11/19 17:03	1
Iron	**510**		6.5	3.7	mg/Kg	☼	07/02/19 08:00	07/11/19 17:03	1
Li	ND		3.2	0.19	mg/Kg	☼	07/02/19 08:00	07/11/19 17:03	1
Manganese	**85**	**B**	0.97	0.035	mg/Kg	☼	07/02/19 08:00	07/11/19 17:03	1
Mo	ND		2.6	0.11	mg/Kg	☼	07/02/19 08:00	07/11/19 17:03	1
Selenium	**0.25**	**J B**	0.65	0.22	mg/Kg	☼	07/02/19 08:00	07/11/19 17:03	1
Thallium	ND		2.3	0.27	mg/Kg	☼	07/02/19 08:00	07/11/19 17:03	1

Method: 6010B SEP - SEP Metals (ICP) - Step 4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**1800**		13	2.1	mg/Kg	☼	07/03/19 08:00	07/11/19 18:45	1
Antimony	ND		3.9	0.58	mg/Kg	☼	07/03/19 08:00	07/11/19 18:45	1
Arsenic	**1.2**	**B**	0.65	0.28	mg/Kg	☼	07/03/19 08:00	07/11/19 18:45	1
Barium	**20**		3.2	0.15	mg/Kg	☼	07/03/19 08:00	07/11/19 18:45	1
Beryllium	**0.20**	**J**	0.32	0.021	mg/Kg	☼	07/03/19 08:00	07/11/19 18:45	1

LUMINANT

Client Sample ID: BMW-33 (38-39)
Date Collected: 05/30/19 11:35
Date Received: 06/05/19 09:20

Lab Sample ID: 140-15492-5
Matrix: Solid
Percent Solids: 77.5

Method: 6010B SEP - SEP Metals (ICP) - Step 4 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cobalt	1.5	J	3.2	0.068	mg/Kg	☼	07/03/19 08:00	07/11/19 18:45	1
Iron	4900		6.5	3.7	mg/Kg	☼	07/03/19 08:00	07/11/19 18:45	1
Li	2.1	J	3.2	0.19	mg/Kg	☼	07/03/19 08:00	07/11/19 18:45	1
Manganese	55		0.97	0.17	mg/Kg	☼	07/03/19 08:00	07/11/19 18:45	1
Mo	ND		2.6	0.11	mg/Kg	☼	07/03/19 08:00	07/11/19 18:45	1
Selenium	0.71	B *	0.65	0.61	mg/Kg	☼	07/03/19 08:00	07/11/19 18:45	1
Thallium	ND		2.3	0.37	mg/Kg	☼	07/03/19 08:00	07/11/19 18:45	1

Method: 6010B SEP - SEP Metals (ICP) - Step 5

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	64	J *	190	30	mg/Kg	☼	07/10/19 08:00	07/12/19 12:53	5
Antimony	ND		58	5.4	mg/Kg	☼	07/10/19 08:00	07/12/19 12:53	5
Arsenic	ND		9.7	2.5	mg/Kg	☼	07/10/19 08:00	07/12/19 12:53	5
Barium	4.1	J *	48	2.3	mg/Kg	☼	07/10/19 08:00	07/12/19 12:53	5
Beryllium	ND	*	4.8	0.41	mg/Kg	☼	07/10/19 08:00	07/12/19 12:53	5
Cobalt	ND	*	48	0.77	mg/Kg	☼	07/10/19 08:00	07/12/19 12:53	5
Iron	ND	*	97	57	mg/Kg	☼	07/10/19 08:00	07/12/19 12:53	5
Li	ND		48	2.8	mg/Kg	☼	07/10/19 08:00	07/12/19 12:53	5
Manganese	ND	*	15	2.4	mg/Kg	☼	07/10/19 08:00	07/12/19 12:53	5
Mo	ND		39	1.6	mg/Kg	☼	07/10/19 08:00	07/12/19 12:53	5
Selenium	ND		9.7	3.4	mg/Kg	☼	07/10/19 08:00	07/12/19 12:53	5
Thallium	ND	*	34	4.5	mg/Kg	☼	07/10/19 08:00	07/12/19 12:53	5

Method: 6010B SEP - SEP Metals (ICP) - Step 6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	3400		13	2.1	mg/Kg	☼	07/10/19 08:00	07/12/19 14:21	1
Antimony	ND		3.9	0.36	mg/Kg	☼	07/10/19 08:00	07/12/19 14:21	1
Arsenic	0.85		0.65	0.19	mg/Kg	☼	07/10/19 08:00	07/12/19 14:21	1
Barium	13		3.2	0.15	mg/Kg	☼	07/10/19 08:00	07/12/19 14:21	1
Beryllium	0.11	J	0.32	0.015	mg/Kg	☼	07/10/19 08:00	07/12/19 14:21	1
Cobalt	1.1	J	3.2	0.059	mg/Kg	☼	07/10/19 08:00	07/12/19 14:21	1
Iron	3900		6.5	3.7	mg/Kg	☼	07/10/19 08:00	07/12/19 14:21	1
Li	2.1	J	3.2	0.19	mg/Kg	☼	07/10/19 08:00	07/12/19 14:21	1
Manganese	22		0.97	0.32	mg/Kg	☼	07/10/19 08:00	07/12/19 14:21	1
Mo	ND		2.6	0.13	mg/Kg	☼	07/10/19 08:00	07/12/19 14:21	1
Selenium	ND		0.65	0.22	mg/Kg	☼	07/10/19 08:00	07/12/19 14:21	1
Thallium	ND		2.3	0.27	mg/Kg	☼	07/10/19 08:00	07/12/19 14:21	1

Method: 6010B SEP - SEP Metals (ICP) - Step 7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	48000		130	21	mg/Kg	☼	07/12/19 09:08	07/15/19 14:04	10
Antimony	ND		3.9	0.18	mg/Kg	☼	07/12/19 09:08	07/15/19 12:37	1
Arsenic	0.64	J	0.65	0.17	mg/Kg	☼	07/12/19 09:08	07/15/19 12:37	1
Barium	550		32	1.5	mg/Kg	☼	07/12/19 09:08	07/15/19 14:04	10
Beryllium	0.69		0.32	0.0097	mg/Kg	☼	07/12/19 09:08	07/15/19 12:37	1
Cobalt	0.57	J	6.5	0.39	mg/Kg	☼	07/12/19 09:08	07/15/19 17:52	2
Iron	6100		6.5	5.3	mg/Kg	☼	07/12/19 09:08	07/15/19 12:37	1
Li	9.1		3.2	0.19	mg/Kg	☼	07/12/19 09:08	07/15/19 12:37	1
Manganese	30		0.97	0.067	mg/Kg	☼	07/12/19 09:08	07/15/19 12:37	1
Mo	ND		2.6	0.11	mg/Kg	☼	07/12/19 09:08	07/15/19 12:37	1

LUMINANT

Client Sample ID: BMW-33 (38-39)
Lab Sample ID: 140-15492-5
Date Collected: 05/30/19 11:35
Matrix: Solid
Date Received: 06/05/19 09:20
Percent Solids: 77.5

Method: 6010B SEP - SEP Metals (ICP) - Step 7 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Selenium	ND		0.65	0.22	mg/Kg	☼	07/12/19 09:08	07/15/19 12:37	1
Thallium	ND		4.5	0.46	mg/Kg	☼	07/12/19 09:08	07/15/19 17:52	2

Method: 6010B SEP - SEP Metals (ICP) - Sum of Steps 1-7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**54000**		10	1.6	mg/Kg			07/16/19 17:31	1
Antimony	ND		3.0	0.14	mg/Kg			07/16/19 17:31	1
Arsenic	**3.2**		0.50	0.13	mg/Kg			07/16/19 17:31	1
Barium	**590**		2.5	0.12	mg/Kg			07/16/19 17:31	1
Beryllium	**1.0**		0.25	0.0075	mg/Kg			07/16/19 17:31	1
Cobalt	**6.1**		2.5	0.023	mg/Kg			07/16/19 17:31	1
Iron	**15000**		5.0	4.1	mg/Kg			07/16/19 17:31	1
Li	**13**		2.5	0.15	mg/Kg			07/16/19 17:31	1
Manganese	**230**		0.75	0.052	mg/Kg			07/16/19 17:31	1
Mo	ND		2.0	0.082	mg/Kg			07/16/19 17:31	1
Selenium	**0.95**		0.50	0.17	mg/Kg			07/16/19 17:31	1
Thallium	ND		1.8	0.18	mg/Kg			07/16/19 17:31	1

Method: 6010B - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		24	12	mg/Kg	☼	06/26/19 08:00	07/10/19 12:54	1
Chromium	**14**		1.8	0.27	mg/Kg	☼	06/26/19 08:00	07/10/19 12:54	1
Lead	**5.9**		1.8	0.34	mg/Kg	☼	06/26/19 08:00	07/10/19 12:54	1

Method: 6010B - SEP Metals (ICP) - Total

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**73000**		130	21	mg/Kg	☼	06/11/19 08:00	07/15/19 16:40	10
Antimony	ND		3.9	0.18	mg/Kg	☼	06/11/19 08:00	07/15/19 15:23	1
Arsenic	**3.2**		0.65	0.17	mg/Kg	☼	06/11/19 08:00	07/15/19 15:23	1
Barium	**830**		32	1.5	mg/Kg	☼	06/11/19 08:00	07/15/19 16:40	10
Beryllium	**1.0**		0.32	0.0097	mg/Kg	☼	06/11/19 08:00	07/15/19 15:23	1
Cobalt	**4.6**	**J**	16	0.97	mg/Kg	☼	06/11/19 08:00	07/15/19 19:24	5
Iron	**13000**		6.5	5.3	mg/Kg	☼	06/11/19 08:00	07/15/19 15:23	1
Lithium	**14**		3.2	0.19	mg/Kg	☼	06/11/19 08:00	07/15/19 15:23	1
Manganese	**130**		0.97	0.067	mg/Kg	☼	06/11/19 08:00	07/15/19 15:23	1
Molybdenum	**0.22**	**J**	2.6	0.11	mg/Kg	☼	06/11/19 08:00	07/15/19 15:23	1
Selenium	ND		0.65	0.22	mg/Kg	☼	06/11/19 08:00	07/15/19 15:23	1
Thallium	ND		11	1.2	mg/Kg	☼	06/11/19 08:00	07/15/19 19:24	5

Method: 7470A - SEP Mercury (CVAA) - Total

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	ND		0.13	0.052	mg/Kg	☼	06/11/19 08:00	06/16/19 14:29	1

LUMINANT

Default Detection Limits

Client: Golder Associates Inc.
Job ID: 140-15492-1
Project/Site: Martin Lake A1 Area LF SEP + Totals

Method: 6010B SEP - SEP Metals (ICP) - Step 1

Prep: 3010A

SEP: Exchangeable

Analyte	RL	MDL	Units
Aluminum	10	1.6	mg/Kg
Antimony	3.0	0.28	mg/Kg
Arsenic	0.50	0.13	mg/Kg
Barium	2.5	0.12	mg/Kg
Beryllium	0.25	0.077	mg/Kg
Cobalt	2.5	0.045	mg/Kg
Iron	5.0	2.9	mg/Kg
Li	2.5	0.15	mg/Kg
Manganese	0.75	0.031	mg/Kg
Mo	2.0	0.082	mg/Kg
Selenium	0.50	0.17	mg/Kg
Thallium	1.8	0.21	mg/Kg

Method: 6010B SEP - SEP Metals (ICP) - Step 2

Prep: 3010A

SEP: Carbonate

Analyte	RL	MDL	Units
Aluminum	10	1.6	mg/Kg
Antimony	3.0	0.28	mg/Kg
Arsenic	0.50	0.13	mg/Kg
Barium	2.5	0.12	mg/Kg
Beryllium	0.25	0.016	mg/Kg
Cobalt	2.5	0.063	mg/Kg
Iron	5.0	2.9	mg/Kg
Li	2.5	0.15	mg/Kg
Manganese	0.75	0.28	mg/Kg
Mo	2.0	0.082	mg/Kg
Selenium	0.50	0.17	mg/Kg
Thallium	1.8	0.21	mg/Kg

Method: 6010B SEP - SEP Metals (ICP) - Step 3

Prep: 3010A

SEP: Non-Crystalline

Analyte	RL	MDL	Units
Aluminum	10	2.1	mg/Kg
Antimony	3.0	0.28	mg/Kg
Arsenic	0.50	0.13	mg/Kg
Barium	2.5	0.12	mg/Kg
Beryllium	0.25	0.015	mg/Kg
Cobalt	2.5	0.045	mg/Kg
Iron	5.0	2.9	mg/Kg
Li	2.5	0.15	mg/Kg
Manganese	0.75	0.027	mg/Kg
Mo	2.0	0.082	mg/Kg
Selenium	0.50	0.17	mg/Kg
Thallium	1.8	0.21	mg/Kg

Method: 6010B SEP - SEP Metals (ICP) - Step 4

Prep: 3010A

SEP: Metal Hydroxide

LUMINANT

Client: Golder Associates Inc.
Job ID: 140-15492-1
Project/Site: Martin Lake A1 Area LF SEP + Totals

Method: 6010B SEP - SEP Metals (ICP) - Step 4

Prep: 3010A

SEP: Metal Hydroxide

Analyte	RL	MDL	Units
Aluminum	10	1.6	mg/Kg
Antimony	3.0	0.45	mg/Kg
Arsenic	0.50	0.22	mg/Kg
Barium	2.5	0.12	mg/Kg
Beryllium	0.25	0.016	mg/Kg
Cobalt	2.5	0.053	mg/Kg
Iron	5.0	2.9	mg/Kg
Li	2.5	0.15	mg/Kg
Manganese	0.75	0.13	mg/Kg
Mo	2.0	0.082	mg/Kg
Selenium	0.50	0.47	mg/Kg
Thallium	1.8	0.29	mg/Kg

Method: 6010B SEP - SEP Metals (ICP) - Step 5

Prep: 3010A

SEP: Organic-Bound

Analyte	RL	MDL	Units
Aluminum	30	4.7	mg/Kg
Antimony	9.0	0.84	mg/Kg
Arsenic	1.5	0.38	mg/Kg
Barium	7.5	0.36	mg/Kg
Beryllium	0.75	0.063	mg/Kg
Cobalt	7.5	0.12	mg/Kg
Iron	15	8.8	mg/Kg
Li	7.5	0.44	mg/Kg
Manganese	2.3	0.37	mg/Kg
Mo	6.0	0.25	mg/Kg
Selenium	1.5	0.52	mg/Kg
Thallium	5.3	0.70	mg/Kg

LUMINANT

Method: 6010B SEP - SEP Metals (ICP) - Step 6

SEP: Acid/Sulfide

Analyte	RL	MDL	Units
Aluminum	10	1.6	mg/Kg
Antimony	3.0	0.28	mg/Kg
Arsenic	0.50	0.15	mg/Kg
Barium	2.5	0.12	mg/Kg
Beryllium	0.25	0.012	mg/Kg
Cobalt	2.5	0.046	mg/Kg
Iron	5.0	2.9	mg/Kg
Li	2.5	0.15	mg/Kg
Manganese	0.75	0.25	mg/Kg
Mo	2.0	0.099	mg/Kg
Selenium	0.50	0.17	mg/Kg
Thallium	1.8	0.21	mg/Kg

Method: 6010B SEP - SEP Metals (ICP) - Step 7

Prep: Residual

Analyte	RL	MDL	Units
Aluminum	10	1.6	mg/Kg

Method: 6010B SEP - SEP Metals (ICP) - Step 7 (Continued)

Prep: Residual

Analyte	RL	MDL	Units
Antimony	3.0	0.14	mg/Kg
Arsenic	0.50	0.13	mg/Kg
Barium	2.5	0.12	mg/Kg
Beryllium	0.25	0.0075	mg/Kg
Cobalt	2.5	0.15	mg/Kg
Iron	5.0	4.1	mg/Kg
Li	2.5	0.15	mg/Kg
Manganese	0.75	0.052	mg/Kg
Mo	2.0	0.082	mg/Kg
Selenium	0.50	0.17	mg/Kg
Thallium	1.8	0.18	mg/Kg

Method: 6010B SEP - SEP Metals (ICP) - Sum of Steps 1-7

Analyte	RL	MDL	Units
Aluminum	10	1.6	mg/Kg
Antimony	3.0	0.14	mg/Kg
Arsenic	0.50	0.13	mg/Kg
Barium	2.5	0.12	mg/Kg
Beryllium	0.25	0.0075	mg/Kg
Cobalt	2.5	0.023	mg/Kg
Iron	5.0	4.1	mg/Kg
Li	2.5	0.15	mg/Kg
Manganese	0.75	0.052	mg/Kg
Mo	2.0	0.082	mg/Kg
Selenium	0.50	0.17	mg/Kg
Thallium	1.8	0.18	mg/Kg

Method: 6010B - Metals (ICP)

Prep: 3050B

Analyte	RL	MDL	Units
Boron	20	10	mg/Kg
Chromium	1.5	0.22	mg/Kg
Lead	1.5	0.28	mg/Kg

Method: 6010B - SEP Metals (ICP) - Total

Prep: Total

Analyte	RL	MDL	Units
Aluminum	10	1.6	mg/Kg
Antimony	3.0	0.14	mg/Kg
Arsenic	0.50	0.13	mg/Kg
Barium	2.5	0.12	mg/Kg
Beryllium	0.25	0.0075	mg/Kg
Cobalt	2.5	0.15	mg/Kg
Iron	5.0	4.1	mg/Kg
Lithium	2.5	0.15	mg/Kg
Manganese	0.75	0.052	mg/Kg
Molybdenum	2.0	0.082	mg/Kg
Selenium	0.50	0.17	mg/Kg
Thallium	1.8	0.18	mg/Kg

Method: 7470A - SEP Mercury (CVAA) - Total

LUMINANT

Default Detection Limits

Client: Golder Associates Inc.
Job ID: 140-15492-1
Project/Site: Martin Lake A1 Area LF SEP + Totals

Method: 7470A - SEP Mercury (CVAA) - Total

Prep: Total

Analyte	RL	MDL	Units
Hg	0.10	0.040	mg/Kg

LUMINANT

Client: Golder Associates Inc.
Project/Site: Martin Lake A1 Area LF SEP + Totals

Job ID: 140-15492-1

Method: 6010B - Metals (ICP)

Lab Sample ID: MB 140-31128/14-A
Matrix: Solid
Analysis Batch: 31553

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 31128

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
uoron	mD		20	10	N8/78		0g/2g/19 0K:00	06/10/19 11:42	1
C3roNiyN	mD		1.5	0.22	N8/78		0g/2g/19 0K:00	06/10/19 11:42	1
Lead	mD		1.5	0.2K	N8/78		0g/2g/19 0K:00	06/10/19 11:42	1

Lab Sample ID: LCS 140-31128/15-A
Matrix: Solid
Analysis Batch: 31553

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 31128

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
uoron	100	101		N8/78		101	K0 - 120
C3roNiyN	20.0	20.B		N8/78		101	90 - 110
Lead	10.0	10.1		N8/78		101	90 - 110

Method: 6010B - SEP Metals (ICP) - Total

Lab Sample ID: MB 140-30683/13-A
Matrix: Solid
Analysis Batch: 31713

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 30683

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
AlyNinyN	mD		10	1.g	N8/78		0g/11/19 0K:00	06/15/19 11:1B	1
AntiNonh	mD		B.0	0.14	N8/78		0g/11/19 0K:00	06/15/19 11:1B	1
Arsenic	mD		0.50	0.1B	N8/78		0g/11/19 0K:00	06/15/19 11:1B	1
uariyN	mD		2.5	0.12	N8/78		0g/11/19 0K:00	06/15/19 11:1B	1
uerhlliyN	mD		0.25	0.0065	N8/78		0g/11/19 0K:00	06/15/19 11:1B	1
Cobalt	mD		2.5	0.15	N8/78		0g/11/19 0K:00	06/15/19 11:1B	1
Iron	mD		5.0	4.1	N8/78		0g/11/19 0K:00	06/15/19 11:1B	1
Lit3iyN	mD		2.5	0.15	N8/78		0g/11/19 0K:00	06/15/19 11:1B	1
Man8anese	mD		0.65	0.052	N8/78		0g/11/19 0K:00	06/15/19 11:1B	1
MolhbdenyN	mD		2.0	0.0K2	N8/78		0g/11/19 0K:00	06/15/19 11:1B	1
SeleniyN	mD		0.50	0.16	N8/78		0g/11/19 0K:00	06/15/19 11:1B	1
T3alliyN	mD		1.K	0.1K	N8/78		0g/11/19 0K:00	06/15/19 11:1B	1

Lab Sample ID: LCS 140-30683/14-A
Matrix: Solid
Analysis Batch: 31713

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 30683

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
AlyNinyN	100	96.g		N8/78		9K	65 - 125
AntiNonh	25.0	25.9		N8/78		10B	65 - 125
Arsenic	5.00	5.29		N8/78		10g	65 - 125
uariyN	5.00	4.99		N8/78		100	65 - 125
uerhlliyN	2.50	2.51		N8/78		100	65 - 125
Cobalt	5.00	5.20		N8/78		104	65 - 125
Iron	50.0	51.1		N8/78		102	65 - 125
Lit3iyN	5.00	5.12		N8/78		102	65 - 125
Man8anese	5.00	5.21		N8/78		104	65 - 125
MolhbdenyN	25.0	2g.g		N8/78		10g	65 - 125
SeleniyN	6.50	6.55		N8/78		101	65 - 125

LUMINANT

Method: 6010B - SEP Metals (ICP) - Total (Continued)

Lab Sample ID: LCS 140-30683/14-A
Matrix: Solid
Analysis Batch: 31713

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 30683

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
T3alliyN	20.0	21.2		N8/78		10g	65 - 125

Lab Sample ID: LCSD 140-30683/15-A
Matrix: Solid
Analysis Batch: 31713

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 30683

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
AlyNinyN	100	96.0		N8/78		96	65 - 125	1	B0
AntiNonh	25.0	25.9		N8/78		104	65 - 125	0	B0
Arsenic	5.00	5.24		N8/78		105	65 - 125	1	B0
uariyN	5.00	4.95		N8/78		99	65 - 125	1	B0
uerhlliyN	2.50	2.4K		N8/78		99	65 - 125	1	B0
Cobalt	5.00	5.1g		N8/78		10B	65 - 125	1	B0
Iron	50.0	50.4		N8/78		101	65 - 125	1	B0
Lit3iyN	5.00	5.04		N8/78		101	65 - 125	2	B0
Man8anese	5.00	5.1g		N8/78		10B	65 - 125	1	B0
MolhbdenyN	25.0	2g.5		N8/78		10g	65 - 125	0	B0
SeleniyN	6.50	6.46		N8/78		100	65 - 125	1	B0
T3alliyN	20.0	21.2		N8/78		10g	65 - 125	0	B0

Method: 6010B SEP - SEP Metals (ICP)

Lab Sample ID: MB 140-31148/13-B ^4
Matrix: Solid
Analysis Batch: 31604

Client Sample ID: Method Blank
Prep Type: Step 1
Prep Batch: 31252

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
AlyNinyN	mD		40	g.4	N8/78		0g/29/19 0K:00	06/11/19 12:BB	4
AntiNonh	mD		12	1.1	N8/78		0g/29/19 0K:00	06/11/19 12:BB	4
Arsenic	mD		2.0	0.52	N8/78		0g/29/19 0K:00	06/11/19 12:BB	4
uariyN	mD		10	0.4K	N8/78		0g/29/19 0K:00	06/11/19 12:BB	4
uerhlliyN	mD		1.0	0.B1	N8/78		0g/29/19 0K:00	06/11/19 12:BB	4
Cobalt	mD		10	0.1K	N8/78		0g/29/19 0K:00	06/11/19 12:BB	4
Iron	mD		20	12	N8/78		0g/29/19 0K:00	06/11/19 12:BB	4
Li	mD		10	0.g0	N8/78		0g/29/19 0K:00	06/11/19 12:BB	4
Man8anese	mD		B.0	0.12	N8/78		0g/29/19 0K:00	06/11/19 12:BB	4
Mo	mD		K.0	0.BB	N8/78		0g/29/19 0K:00	06/11/19 12:BB	4
SeleniyN	mD		2.0	0.gK	N8/78		0g/29/19 0K:00	06/11/19 12:BB	4
T3alliyN	mD		6.0	0.K4	N8/78		0g/29/19 0K:00	06/11/19 12:BB	4

Lab Sample ID: LCS 140-31148/14-B ^5
Matrix: Solid
Analysis Batch: 31604

Client Sample ID: Lab Control Sample
Prep Type: Step 1
Prep Batch: 31252

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
AlyNinyN	100	96.0		N8/78		96	65 - 125
AntiNonh	25.0	24.5		N8/78		9K	65 - 125
Arsenic	5.00	4.K9		N8/78		9K	65 - 125
uariyN	5.00	4.B5	J	N8/78		K6	65 - 125
uerhlliyN	2.50	2.5K		N8/78		10B	65 - 125

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LUMINANT

Method: 6010B SEP - SEP Metals (ICP) (Continued)

Lab Sample ID: LCS 140-31148/14-B ^5
Matrix: Solid
Analysis Batch: 31604

Client Sample ID: Lab Control Sample
Prep Type: Step 1
Prep Batch: 31252

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cobalt	5.00	4.9B	J	N8/78		99	65 - 125
Iron	50.0	49.g		N8/78		99	65 - 125
Li	5.00	4.62	J	N8/78		94	65 - 125
Man8anese	5.00	5.09		N8/78		102	65 - 125
Mo	25.0	25.0		N8/78		100	65 - 125
SeleniyN	6.50	6.K2		N8/78		104	65 - 125
T3alliyN	20.0	19.6		N8/78		9K	65 - 125

Lab Sample ID: LCSD 140-31148/15-B ^5
Matrix: Solid
Analysis Batch: 31604

Client Sample ID: Lab Control Sample Dup
Prep Type: Step 1
Prep Batch: 31252

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
AlyNinyN	100	99.5		N8/78		100	65 - 125	B	B0
AntiNonh	25.0	24.6		N8/78		99	65 - 125	1	B0
Arsenic	5.00	4.6K		N8/78		9g	65 - 125	2	B0
uariyN	5.00	4.B0	J	N8/78		Kg	65 - 125	1	B0
uerhlliyN	2.50	2.59		N8/78		104	65 - 125	0	B0
Cobalt	5.00	4.K9	J	N8/78		9K	65 - 125	1	B0
Iron	50.0	49.5		N8/78		99	65 - 125	0	B0
Li	5.00	4.K4	J	N8/78		96	65 - 125	B	B0
Man8anese	5.00	5.0g		N8/78		101	65 - 125	1	B0
Mo	25.0	25.1		N8/78		100	65 - 125	0	B0
SeleniyN	6.50	K.0g		N8/78		10K	65 - 125	B	B0
T3alliyN	20.0	20.1		N8/78		101	65 - 125	2	B0

Lab Sample ID: MB 140-31253/13-B ^3
Matrix: Solid
Analysis Batch: 31604

Client Sample ID: Method Blank
Prep Type: Step 2
Prep Batch: 31256

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
AlyNinyN	mD		B0	4.K	N8/78		0g/B0/19 0K:00	06/11/19 14:0g	B
AntiNonh	mD		9.0	0.K4	N8/78		0g/B0/19 0K:00	06/11/19 14:0g	B
Arsenic	mD		1.5	0.B9	N8/78		0g/B0/19 0K:00	06/11/19 14:0g	B
uariyN	mD		6.5	0.Bg	N8/78		0g/B0/19 0K:00	06/11/19 14:0g	B
uerhlliyN	mD		0.65	0.04K	N8/78		0g/B0/19 0K:00	06/11/19 14:0g	B
Cobalt	mD		6.5	0.19	N8/78		0g/B0/19 0K:00	06/11/19 14:0g	B
Iron	mD		15	K.6	N8/78		0g/B0/19 0K:00	06/11/19 14:0g	B
Li	mD		6.5	0.45	N8/78		0g/B0/19 0K:00	06/11/19 14:0g	B
Man8anese	mD		2.B	0.K4	N8/78		0g/B0/19 0K:00	06/11/19 14:0g	B
Mo	mD		g.0	0.25	N8/78		0g/B0/19 0K:00	06/11/19 14:0g	B
SeleniyN	0.5K6	J	1.5	0.51	N8/78		0g/B0/19 0K:00	06/11/19 14:0g	B
T3alliyN	mD		5.B	0.gB	N8/78		0g/B0/19 0K:00	06/11/19 14:0g	B

LUMINANT

Method: 6010B SEP - SEP Metals (ICP) (Continued)

Lab Sample ID: LCS 140-31253/14-B ^5
Matrix: Solid
Analysis Batch: 31604

Client Sample ID: Lab Control Sample
Prep Type: Step 2
Prep Batch: 31256

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
AlyNinyN	100	mD	v	N8/78		1	65 - 125
AntiNonh	25.0	21.1		N8/78		K4	65 - 125
Arsenic	5.00	B.95		N8/78		69	65 - 125
uariyN	5.00	2.2K	J v	N8/78		4g	65 - 125
uerhlliyN	2.50	1.B5	v	N8/78		54	65 - 125
Cobalt	5.00	4.g2	J	N8/78		92	65 - 125
Iron	50.0	mD	v	N8/78		2	65 - 125
Li	5.00	4.14	J	N8/78		KB	65 - 125
Man8anese	5.00	4.69		N8/78		9g	65 - 125
Mo	25.0	20.6		N8/78		KB	65 - 125
SeleniyN	6.50	6.B4		N8/78		9K	65 - 125
T3alliyN	20.0	1K.4		N8/78		92	65 - 125

Lab Sample ID: LCSD 140-31253/15-B ^5
Matrix: Solid
Analysis Batch: 31604

Client Sample ID: Lab Control Sample Dup
Prep Type: Step 2
Prep Batch: 31256

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
AlyNinyN	100	mD	v	N8/78		-0.B	65 - 125	2K9	B0
AntiNonh	25.0	21.4		N8/78		Kg	65 - 125	1	B0
Arsenic	5.00	4.00		N8/78		K0	65 - 125	1	B0
uariyN	5.00	2.2K	J v	N8/78		4g	65 - 125	0	B0
uerhlliyN	2.50	1.B2	v	N8/78		5B	65 - 125	2	B0
Cobalt	5.00	4.g2	J	N8/78		92	65 - 125	0	B0
Iron	50.0	mD	v	N8/78		B	65 - 125	2K	B0
Li	5.00	4.15	J	N8/78		KB	65 - 125	0	B0
Man8anese	5.00	4.6g		N8/78		95	65 - 125	1	B0
Mo	25.0	20.9		N8/78		K4	65 - 125	1	B0
SeleniyN	6.50	g.gK		N8/78		K9	65 - 125	10	B0
T3alliyN	20.0	1K.g		N8/78		9B	65 - 125	1	B0

Lab Sample ID: MB 140-31257/13-B
Matrix: Solid
Analysis Batch: 31604

Client Sample ID: Method Blank
Prep Type: Step 3
Prep Batch: 31338

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
AlyNinyN	mD		10	2.1	N8/78		06/02/19 0K:00	06/11/19 15:50	1
AntiNonh	mD		B.0	0.2K	N8/78		06/02/19 0K:00	06/11/19 15:50	1
Arsenic	mD		0.50	0.1B	N8/78		06/02/19 0K:00	06/11/19 15:50	1
uariyN	0.151	J	2.5	0.12	N8/78		06/02/19 0K:00	06/11/19 15:50	1
uerhlliyN	mD		0.25	0.015	N8/78		06/02/19 0K:00	06/11/19 15:50	1
Cobalt	mD		2.5	0.045	N8/78		06/02/19 0K:00	06/11/19 15:50	1
Iron	mD		5.0	2.9	N8/78		06/02/19 0K:00	06/11/19 15:50	1
Li	mD		2.5	0.15	N8/78		06/02/19 0K:00	06/11/19 15:50	1
Man8anese	0.0515	J	0.65	0.026	N8/78		06/02/19 0K:00	06/11/19 15:50	1
Mo	mD		2.0	0.0K2	N8/78		06/02/19 0K:00	06/11/19 15:50	1
SeleniyN	0.196	J	0.50	0.16	N8/78		06/02/19 0K:00	06/11/19 15:50	1
T3alliyN	mD		1.K	0.21	N8/78		06/02/19 0K:00	06/11/19 15:50	1

LUMINANT

Method: 6010B SEP - SEP Metals (ICP) (Continued)

Lab Sample ID: LCS 140-31257/14-B
Matrix: Solid
Analysis Batch: 31604

Client Sample ID: Lab Control Sample
Prep Type: Step 3
Prep Batch: 31338

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
AlyNinyN	100	95.K		N8/78		9g	65 - 125
AntiNonh	25.0	24.B		N8/78		96	65 - 125
Arsenic	5.00	4.90		N8/78		9K	65 - 125
uariyN	5.00	4.B4		N8/78		K6	65 - 125
uerhlliyN	2.50	2.5g		N8/78		102	65 - 125
Cobalt	5.00	4.90		N8/78		9K	65 - 125
Iron	50.0	54.0		N8/78		10K	65 - 125
Li	5.00	4.K6		N8/78		96	65 - 125
Man8anese	5.00	5.0B		N8/78		101	65 - 125
Mo	25.0	24.K		N8/78		99	65 - 125
SeleniyN	6.50	6.B6		N8/78		9K	65 - 125
T3alliyN	20.0	20.2		N8/78		101	65 - 125

Lab Sample ID: LCSD 140-31257/15-B
Matrix: Solid
Analysis Batch: 31604

Client Sample ID: Lab Control Sample Dup
Prep Type: Step 3
Prep Batch: 31338

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
AlyNinyN	100	9K.1		N8/78		9K	65 - 125	2	B0
AntiNonh	25.0	24.g		N8/78		9K	65 - 125	1	B0
Arsenic	5.00	5.0g		N8/78		101	65 - 125	B	B0
uariyN	5.00	4.49		N8/78		90	65 - 125	B	B0
uerhlliyN	2.50	2.g1		N8/78		104	65 - 125	2	B0
Cobalt	5.00	4.96		N8/78		99	65 - 125	1	B0
Iron	50.0	51.0		N8/78		102	65 - 125	g	B0
Li	5.00	4.95		N8/78		99	65 - 125	2	B0
Man8anese	5.00	5.0g		N8/78		101	65 - 125	1	B0
Mo	25.0	24.9		N8/78		100	65 - 125	0	B0
SeleniyN	6.50	6.gB		N8/78		102	65 - 125	B	B0
T3alliyN	20.0	20.5		N8/78		10B	65 - 125	2	B0

Lab Sample ID: MB 140-31341/13-B
Matrix: Solid
Analysis Batch: 31604

Client Sample ID: Method Blank
Prep Type: Step 4
Prep Batch: 31360

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
AlyNinyN	mD		10	1.g	N8/78		06/0B/19 0K:00	06/11/19 16:24	1
AntiNonh	mD		B.0	0.45	N8/78		06/0B/19 0K:00	06/11/19 16:24	1
Arsenic	0.2g0	J	0.50	0.22	N8/78		06/0B/19 0K:00	06/11/19 16:24	1
uariyN	mD		2.5	0.12	N8/78		06/0B/19 0K:00	06/11/19 16:24	1
uerhlliyN	mD		0.25	0.01g	N8/78		06/0B/19 0K:00	06/11/19 16:24	1
Cobalt	mD		2.5	0.05B	N8/78		06/0B/19 0K:00	06/11/19 16:24	1
Iron	mD		5.0	2.9	N8/78		06/0B/19 0K:00	06/11/19 16:24	1
Li	mD		2.5	0.15	N8/78		06/0B/19 0K:00	06/11/19 16:24	1
Man8anese	mD		0.65	0.1B	N8/78		06/0B/19 0K:00	06/11/19 16:24	1
Mo	mD		2.0	0.0K2	N8/78		06/0B/19 0K:00	06/11/19 16:24	1
SeleniyN	0.5g1		0.50	0.46	N8/78		06/0B/19 0K:00	06/11/19 16:24	1
T3alliyN	mD		1.K	0.29	N8/78		06/0B/19 0K:00	06/11/19 16:24	1

LUMINANT

Method: 6010B SEP - SEP Metals (ICP) (Continued)

Lab Sample ID: LCS 140-31341/14-B
Matrix: Solid
Analysis Batch: 31604

Client Sample ID: Lab Control Sample
Prep Type: Step 4
Prep Batch: 31360

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
AlyNinyN	100	9K.4		N8/78		9K	65 - 125
AntiNonh	25.0	25.g		N8/78		102	65 - 125
Arsenic	5.00	5.4K		N8/78		110	65 - 125
uariyN	5.00	4.90		N8/78		9K	65 - 125
uerhlliyN	2.50	2.gg		N8/78		10g	65 - 125
Cobalt	5.00	4.92		N8/78		9K	65 - 125
Iron	50.0	50.0		N8/78		100	65 - 125
Li	5.00	4.92		N8/78		9K	65 - 125
Man8anese	5.00	4.9K		N8/78		100	65 - 125
Mo	25.0	25.6		N8/78		10B	65 - 125
SeleniyN	6.50	0.6g2	v	N8/78		10	65 - 125
T3alliyN	20.0	16.2		N8/78		Kg	65 - 125

Lab Sample ID: LCSD 140-31341/15-B
Matrix: Solid
Analysis Batch: 31604

Client Sample ID: Lab Control Sample Dup
Prep Type: Step 4
Prep Batch: 31360

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
AlyNinyN	100	101		N8/78		101	65 - 125	B	B0
AntiNonh	25.0	25.9		N8/78		10B	65 - 125	1	B0
Arsenic	5.00	5.55		N8/78		111	65 - 125	1	B0
uariyN	5.00	5.04		N8/78		101	65 - 125	B	B0
uerhlliyN	2.50	2.64		N8/78		109	65 - 125	B	B0
Cobalt	5.00	5.06		N8/78		101	65 - 125	B	B0
Iron	50.0	51.5		N8/78		10B	65 - 125	B	B0
Li	5.00	5.09		N8/78		102	65 - 125	B	B0
Man8anese	5.00	5.1B		N8/78		10B	65 - 125	B	B0
Mo	25.0	25.9		N8/78		104	65 - 125	1	B0
SeleniyN	6.50	0.gB1	v	N8/78		K	65 - 125	19	B0
T3alliyN	20.0	16.9		N8/78		K9	65 - 125	4	B0

Lab Sample ID: MB 140-31436/13-B ^5
Matrix: Solid
Analysis Batch: 31651

Client Sample ID: Method Blank
Prep Type: Step 5
Prep Batch: 31500

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
AlyNinyN	mD		150	24	N8/78		06/10/19 0K:00	06/12/19 11:B9	5
AntiNonh	mD		45	4.2	N8/78		06/10/19 0K:00	06/12/19 11:B9	5
Arsenic	mD		6.5	1.9	N8/78		06/10/19 0K:00	06/12/19 11:B9	5
uariyN	mD		BK	1.K	N8/78		06/10/19 0K:00	06/12/19 11:B9	5
uerhlliyN	mD		B.K	0.B2	N8/78		06/10/19 0K:00	06/12/19 11:B9	5
Cobalt	mD		BK	0.g0	N8/78		06/10/19 0K:00	06/12/19 11:B9	5
Iron	mD		65	44	N8/78		06/10/19 0K:00	06/12/19 11:B9	5
Li	mD		BK	2.2	N8/78		06/10/19 0K:00	06/12/19 11:B9	5
Man8anese	mD		11	1.9	N8/78		06/10/19 0K:00	06/12/19 11:B9	5
Mo	mD		B0	1.B	N8/78		06/10/19 0K:00	06/12/19 11:B9	5
SeleniyN	mD		6.5	2.g	N8/78		06/10/19 0K:00	06/12/19 11:B9	5
T3alliyN	mD		2g	B.5	N8/78		06/10/19 0K:00	06/12/19 11:B9	5

LUMINANT

Method: 6010B SEP - SEP Metals (ICP) (Continued)

Lab Sample ID: LCS 140-31436/14-B ^5
Matrix: Solid
Analysis Batch: 31651

Client Sample ID: Lab Control Sample
Prep Type: Step 5
Prep Batch: 31500

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
AlyNinyN	B00	mD	v	N8/78		g	65 - 125
AntiNonh	65.0	K1.2		N8/78		10K	65 - 125
Arsenic	15.0	12.B		N8/78		K2	65 - 125
uariyN	15.0	6.K0	J v	N8/78		52	65 - 125
uerhlliyN	6.50	4.2B	v	N8/78		5g	65 - 125
Cobalt	15.0	4.Kg	J v	N8/78		B2	65 - 125
Iron	150	mD	v	N8/78		2	65 - 125
Li	15.0	1g.4	J	N8/78		109	65 - 125
Man8anese	15.0	4.K2	J v	N8/78		B2	65 - 125
Mo	65.0	g4.6		N8/78		Kg	65 - 125
SeleniyN	22.5	24.K		N8/78		110	65 - 125
T3alliyN	g0.0	mD	v	N8/78		2	65 - 125

Lab Sample ID: LCSD 140-31436/15-B ^5
Matrix: Solid
Analysis Batch: 31651

Client Sample ID: Lab Control Sample Dup
Prep Type: Step 5
Prep Batch: 31500

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
AlyNinyN	B00	mD	v	N8/78		6	65 - 125	14	B0
AntiNonh	65.0	K2.5		N8/78		110	65 - 125	2	B0
Arsenic	15.0	12.5		N8/78		KB	65 - 125	2	B0
uariyN	15.0	6.6B	J v	N8/78		52	65 - 125	1	B0
uerhlliyN	6.50	4.B4	v	N8/78		5K	65 - 125	2	B0
Cobalt	15.0	5.05	J v	N8/78		B4	65 - 125	4	B0
Iron	150	mD	v	N8/78		B	65 - 125	55	B0
Li	15.0	1g.1	J	N8/78		106	65 - 125	2	B0
Man8anese	15.0	4.96	J v	N8/78		BB	65 - 125	B	B0
Mo	65.0	g4.0		N8/78		K5	65 - 125	1	B0
SeleniyN	22.5	2g.2		N8/78		11g	65 - 125	g	B0
T3alliyN	g0.0	mD	v	N8/78		0.9	65 - 125	g0	B0

Lab Sample ID: MB 140-31502/13-A
Matrix: Solid
Analysis Batch: 31651

Client Sample ID: Method Blank
Prep Type: Step 6
Prep Batch: 31502

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
AlyNinyN	mD		10	1.g	N8/78		06/10/19 0K:00	06/12/19 1B:14	1
AntiNonh	mD		B.0	0.2K	N8/78		06/10/19 0K:00	06/12/19 1B:14	1
Arsenic	mD		0.50	0.15	N8/78		06/10/19 0K:00	06/12/19 1B:14	1
uariyN	mD		2.5	0.12	N8/78		06/10/19 0K:00	06/12/19 1B:14	1
uerhlliyN	mD		0.25	0.012	N8/78		06/10/19 0K:00	06/12/19 1B:14	1
Cobalt	mD		2.5	0.04g	N8/78		06/10/19 0K:00	06/12/19 1B:14	1
Iron	mD		5.0	2.9	N8/78		06/10/19 0K:00	06/12/19 1B:14	1
Li	mD		2.5	0.15	N8/78		06/10/19 0K:00	06/12/19 1B:14	1
Man8anese	mD		0.65	0.25	N8/78		06/10/19 0K:00	06/12/19 1B:14	1
Mo	mD		2.0	0.099	N8/78		06/10/19 0K:00	06/12/19 1B:14	1
SeleniyN	mD		0.50	0.16	N8/78		06/10/19 0K:00	06/12/19 1B:14	1
T3alliyN	mD		1.K	0.21	N8/78		06/10/19 0K:00	06/12/19 1B:14	1

LUMINANT

Method: 6010B SEP - SEP Metals (ICP) (Continued)

Lab Sample ID: LCS 140-31502/14-A
Matrix: Solid
Analysis Batch: 31651

Client Sample ID: Lab Control Sample
Prep Type: Step 6
Prep Batch: 31502

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
AlyNinyN	100	95.4		N8/78		95	65 - 125
AntiNonh	25.0	24.K		N8/78		99	65 - 125
Arsenic	5.00	4.94		N8/78		99	65 - 125
uariyN	5.00	4.5K		N8/78		92	65 - 125
uerhlliyN	2.50	2.56		N8/78		10B	65 - 125
Cobalt	5.00	4.6K		N8/78		9g	65 - 125
Iron	50.0	46.4		N8/78		95	65 - 125
Li	5.00	4.61		N8/78		94	65 - 125
Man8anese	5.00	4.KB		N8/78		96	65 - 125
Mo	25.0	24.6		N8/78		99	65 - 125
SeleniyN	6.50	6.B2		N8/78		9K	65 - 125
T3alliyN	20.0	19.K		N8/78		99	65 - 125

Lab Sample ID: LCSD 140-31502/15-A
Matrix: Solid
Analysis Batch: 31651

Client Sample ID: Lab Control Sample Dup
Prep Type: Step 6
Prep Batch: 31502

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
AlyNinyN	100	9K.K		N8/78		99	65 - 125	4	B0
AntiNonh	25.0	25.5		N8/78		102	65 - 125	B	B0
Arsenic	5.00	5.1g		N8/78		10B	65 - 125	4	B0
uariyN	5.00	4.66		N8/78		95	65 - 125	4	B0
uerhlliyN	2.50	2.g6		N8/78		106	65 - 125	4	B0
Cobalt	5.00	4.96		N8/78		99	65 - 125	4	B0
Iron	50.0	49.5		N8/78		99	65 - 125	4	B0
Li	5.00	4.90		N8/78		9K	65 - 125	4	B0
Man8anese	5.00	5.02		N8/78		100	65 - 125	4	B0
Mo	25.0	25.2		N8/78		101	65 - 125	2	B0
SeleniyN	6.50	6.50		N8/78		100	65 - 125	2	B0
T3alliyN	20.0	20.g		N8/78		10B	65 - 125	4	B0

Lab Sample ID: MB 140-31615/13-A
Matrix: Solid
Analysis Batch: 31713

Client Sample ID: Method Blank
Prep Type: Step 7
Prep Batch: 31615

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
AlyNinyN	mD		10	1.g	N8/78		06/12/19 09:0K	06/15/19 10:5K	1
AntiNonh	mD		B.0	0.14	N8/78		06/12/19 09:0K	06/15/19 10:5K	1
Arsenic	mD		0.50	0.1B	N8/78		06/12/19 09:0K	06/15/19 10:5K	1
uariyN	mD		2.5	0.12	N8/78		06/12/19 09:0K	06/15/19 10:5K	1
uerhlliyN	mD		0.25	0.0065	N8/78		06/12/19 09:0K	06/15/19 10:5K	1
Cobalt	mD		2.5	0.15	N8/78		06/12/19 09:0K	06/15/19 10:5K	1
Iron	mD		5.0	4.1	N8/78		06/12/19 09:0K	06/15/19 10:5K	1
Li	mD		2.5	0.15	N8/78		06/12/19 09:0K	06/15/19 10:5K	1
Man8anese	mD		0.65	0.052	N8/78		06/12/19 09:0K	06/15/19 10:5K	1
Mo	mD		2.0	0.0K2	N8/78		06/12/19 09:0K	06/15/19 10:5K	1
SeleniyN	mD		0.50	0.16	N8/78		06/12/19 09:0K	06/15/19 10:5K	1
T3alliyN	mD		1.K	0.1K	N8/78		06/12/19 09:0K	06/15/19 10:5K	1

LUMINANT

Method: 6010B SEP - SEP Metals (ICP) (Continued)

Lab Sample ID: LCS 140-31615/14-A
Matrix: Solid
Analysis Batch: 31713

Client Sample ID: Lab Control Sample
Prep Type: Step 7
Prep Batch: 31615

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
AlyNinyN	100	9g.K		N8/78		96	65 - 125
AntiNonh	25.0	25.6		N8/78		10B	65 - 125
Arsenic	5.00	5.2B		N8/78		105	65 - 125
uariyN	5.00	4.99		N8/78		100	65 - 125
uerhlliyN	2.50	2.52		N8/78		101	65 - 125
Cobalt	5.00	5.20		N8/78		104	65 - 125
Iron	50.0	51.6		N8/78		10B	65 - 125
Li	5.00	5.15		N8/78		10B	65 - 125
Man8anese	5.00	5.21		N8/78		104	65 - 125
Mo	25.0	2g.5		N8/78		10g	65 - 125
SeleniyN	6.50	6.52		N8/78		100	65 - 125
T3alliyN	20.0	21.2		N8/78		10g	65 - 125

Lab Sample ID: LCSD 140-31615/15-A
Matrix: Solid
Analysis Batch: 31713

Client Sample ID: Lab Control Sample Dup
Prep Type: Step 7
Prep Batch: 31615

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
AlyNinyN	100	9K.0		N8/78		9K	65 - 125	1	B0
AntiNonh	25.0	25.K		N8/78		10B	65 - 125	0	B0
Arsenic	5.00	5.B0		N8/78		10g	65 - 125	1	B0
uariyN	5.00	4.99		N8/78		100	65 - 125	0	B0
uerhlliyN	2.50	2.50		N8/78		100	65 - 125	1	B0
Cobalt	5.00	5.21		N8/78		104	65 - 125	0	B0
Iron	50.0	51.5		N8/78		10B	65 - 125	0	B0
Li	5.00	5.1K		N8/78		104	65 - 125	1	B0
Man8anese	5.00	5.21		N8/78		104	65 - 125	0	B0
Mo	25.0	2g.6		N8/78		106	65 - 125	1	B0
SeleniyN	6.50	6.55		N8/78		101	65 - 125	0	B0
T3alliyN	20.0	21.B		N8/78		106	65 - 125	1	B0

Method: 7470A - SEP Mercury (CVAA) - Total

Lab Sample ID: MB 140-30683/13-B
Matrix: Solid
Analysis Batch: 30868

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 30683

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
H8	mD		0.10	0.040	N8/78		0g/11/19 0K:00	0g/1g/19 1B:5g	1

Lab Sample ID: LCS 140-30683/14-B
Matrix: Solid
Analysis Batch: 30868

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 30683

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
H8	2.50	2.60		N8/78		10K	65 - 125

LUMINANT

Client: Golder Associates Inc.
Project/Site: Martin Lake A1 Area LF SEP + Totals

Job ID: 140-15492-1

Method: 7470A - SEP Mercury (CVAA) - Total (Continued)

Lab Sample ID: LCSD 140-30683/15-B
Matrix: Solid
Analysis Batch: 30868

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 30683

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
H8			2.50	2.61		N8/78		10K	65 - 125	0	B0

LUMINANT

Metals

Prep Batch: 30683

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15492-1	BMW-29 (30-31)	Total/NA	Solid	Total	
140-15492-2	BMW-30 (40-41)	Total/NA	Solid	Total	
140-15492-3	BMW-31 (14-15)	Total/NA	Solid	Total	
140-15492-4	BMW-32 (25-26)	Total/NA	Solid	Total	
140-15492-5	BMW-33 (38-39)	Total/NA	Solid	Total	
MB 140-30683/13-A	Method Blank	Total/NA	Solid	Total	
MB 140-30683/13-B	Method Blank	Total/NA	Solid	Total	
LCS 140-30683/14-A	Lab Control Sample	Total/NA	Solid	Total	
LCS 140-30683/14-B	Lab Control Sample	Total/NA	Solid	Total	
LCSD 140-30683/15-A	Lab Control Sample Dup	Total/NA	Solid	Total	
LCSD 140-30683/15-B	Lab Control Sample Dup	Total/NA	Solid	Total	

Prep Batch: 30859

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15492-1	BMW-29 (30-31)	Total/NA	Solid	7470A	30683
140-15492-2	BMW-30 (40-41)	Total/NA	Solid	7470A	30683
140-15492-3	BMW-31 (14-15)	Total/NA	Solid	7470A	30683
140-15492-4	BMW-32 (25-26)	Total/NA	Solid	7470A	30683
140-15492-5	BMW-33 (38-39)	Total/NA	Solid	7470A	30683
MB 140-30683/13-B	Method Blank	Total/NA	Solid	7470A	30683
LCS 140-30683/14-B	Lab Control Sample	Total/NA	Solid	7470A	30683
LCSD 140-30683/15-B	Lab Control Sample Dup	Total/NA	Solid	7470A	30683

Analysis Batch: 30868

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15492-1	BMW-29 (30-31)	Total/NA	Solid	7470A	30859
140-15492-2	BMW-30 (40-41)	Total/NA	Solid	7470A	30859
140-15492-3	BMW-31 (14-15)	Total/NA	Solid	7470A	30859
140-15492-4	BMW-32 (25-26)	Total/NA	Solid	7470A	30859
140-15492-5	BMW-33 (38-39)	Total/NA	Solid	7470A	30859
MB 140-30683/13-B	Method Blank	Total/NA	Solid	7470A	30859
LCS 140-30683/14-B	Lab Control Sample	Total/NA	Solid	7470A	30859
LCSD 140-30683/15-B	Lab Control Sample Dup	Total/NA	Solid	7470A	30859

Prep Batch: 31128

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15492-1	BMW-29 (30-31)	Total/NA	Solid	3050B	
140-15492-2	BMW-30 (40-41)	Total/NA	Solid	3050B	
140-15492-3	BMW-31 (14-15)	Total/NA	Solid	3050B	
140-15492-4	BMW-32 (25-26)	Total/NA	Solid	3050B	
140-15492-5	BMW-33 (38-39)	Total/NA	Solid	3050B	
MB 140-31128/14-A	Method Blank	Total/NA	Solid	3050B	
LCS 140-31128/15-A	Lab Control Sample	Total/NA	Solid	3050B	

SEP Batch: 31148

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15492-1	BMW-29 (30-31)	Step 1	Solid	Exchangeable	
140-15492-2	BMW-30 (40-41)	Step 1	Solid	Exchangeable	
140-15492-3	BMW-31 (14-15)	Step 1	Solid	Exchangeable	
140-15492-4	BMW-32 (25-26)	Step 1	Solid	Exchangeable	
140-15492-5	BMW-33 (38-39)	Step 1	Solid	Exchangeable	

LUMINANT

Metals (Continued)

SEP Batch: 31148 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 140-31148/13-B ^4	Method Blank	Step 1	Solid	Exchangeable	
LCS 140-31148/14-B ^5	Lab Control Sample	Step 1	Solid	Exchangeable	
LCSD 140-31148/15-B ^5	Lab Control Sample Dup	Step 1	Solid	Exchangeable	

Prep Batch: 31252

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15492-1	BMW-29 (30-31)	Step 1	Solid	3010A	31148
140-15492-2	BMW-30 (40-41)	Step 1	Solid	3010A	31148
140-15492-3	BMW-31 (14-15)	Step 1	Solid	3010A	31148
140-15492-4	BMW-32 (25-26)	Step 1	Solid	3010A	31148
140-15492-5	BMW-33 (38-39)	Step 1	Solid	3010A	31148
MB 140-31148/13-B ^4	Method Blank	Step 1	Solid	3010A	31148
LCS 140-31148/14-B ^5	Lab Control Sample	Step 1	Solid	3010A	31148
LCSD 140-31148/15-B ^5	Lab Control Sample Dup	Step 1	Solid	3010A	31148

SEP Batch: 31253

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15492-1	BMW-29 (30-31)	Step 2	Solid	Carbonate	
140-15492-2	BMW-30 (40-41)	Step 2	Solid	Carbonate	
140-15492-3	BMW-31 (14-15)	Step 2	Solid	Carbonate	
140-15492-4	BMW-32 (25-26)	Step 2	Solid	Carbonate	
140-15492-5	BMW-33 (38-39)	Step 2	Solid	Carbonate	
MB 140-31253/13-B ^3	Method Blank	Step 2	Solid	Carbonate	
LCS 140-31253/14-B ^5	Lab Control Sample	Step 2	Solid	Carbonate	
LCSD 140-31253/15-B ^5	Lab Control Sample Dup	Step 2	Solid	Carbonate	

Prep Batch: 31256

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15492-1	BMW-29 (30-31)	Step 2	Solid	3010A	31253
140-15492-2	BMW-30 (40-41)	Step 2	Solid	3010A	31253
140-15492-3	BMW-31 (14-15)	Step 2	Solid	3010A	31253
140-15492-4	BMW-32 (25-26)	Step 2	Solid	3010A	31253
140-15492-5	BMW-33 (38-39)	Step 2	Solid	3010A	31253
MB 140-31253/13-B ^3	Method Blank	Step 2	Solid	3010A	31253
LCS 140-31253/14-B ^5	Lab Control Sample	Step 2	Solid	3010A	31253
LCSD 140-31253/15-B ^5	Lab Control Sample Dup	Step 2	Solid	3010A	31253

SEP Batch: 31257

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15492-1	BMW-29 (30-31)	Step 3	Solid	Non-Crystalline	
140-15492-2	BMW-30 (40-41)	Step 3	Solid	Non-Crystalline	
140-15492-3	BMW-31 (14-15)	Step 3	Solid	Non-Crystalline	
140-15492-4	BMW-32 (25-26)	Step 3	Solid	Non-Crystalline	
140-15492-5	BMW-33 (38-39)	Step 3	Solid	Non-Crystalline	
MB 140-31257/13-B	Method Blank	Step 3	Solid	Non-Crystalline	
LCS 140-31257/14-B	Lab Control Sample	Step 3	Solid	Non-Crystalline	
LCSD 140-31257/15-B	Lab Control Sample Dup	Step 3	Solid	Non-Crystalline	

Prep Batch: 31338

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15492-1	BMW-29 (30-31)	Step 3	Solid	3010A	31257

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Metals (Continued)

Prep Batch: 31338 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15492-2	BMW-30 (40-41)	Step 3	Solid	3010A	31257
140-15492-3	BMW-31 (14-15)	Step 3	Solid	3010A	31257
140-15492-4	BMW-32 (25-26)	Step 3	Solid	3010A	31257
140-15492-5	BMW-33 (38-39)	Step 3	Solid	3010A	31257
MB 140-31257/13-B	Method Blank	Step 3	Solid	3010A	31257
LCS 140-31257/14-B	Lab Control Sample	Step 3	Solid	3010A	31257
LCSD 140-31257/15-B	Lab Control Sample Dup	Step 3	Solid	3010A	31257

SEP Batch: 31341

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15492-1	BMW-29 (30-31)	Step 4	Solid	Metal Hydroxide	
140-15492-2	BMW-30 (40-41)	Step 4	Solid	Metal Hydroxide	
140-15492-3	BMW-31 (14-15)	Step 4	Solid	Metal Hydroxide	
140-15492-4	BMW-32 (25-26)	Step 4	Solid	Metal Hydroxide	
140-15492-5	BMW-33 (38-39)	Step 4	Solid	Metal Hydroxide	
MB 140-31341/13-B	Method Blank	Step 4	Solid	Metal Hydroxide	
LCS 140-31341/14-B	Lab Control Sample	Step 4	Solid	Metal Hydroxide	
LCSD 140-31341/15-B	Lab Control Sample Dup	Step 4	Solid	Metal Hydroxide	

Prep Batch: 31360

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15492-1	BMW-29 (30-31)	Step 4	Solid	3010A	31341
140-15492-2	BMW-30 (40-41)	Step 4	Solid	3010A	31341
140-15492-3	BMW-31 (14-15)	Step 4	Solid	3010A	31341
140-15492-4	BMW-32 (25-26)	Step 4	Solid	3010A	31341
140-15492-5	BMW-33 (38-39)	Step 4	Solid	3010A	31341
MB 140-31341/13-B	Method Blank	Step 4	Solid	3010A	31341
LCS 140-31341/14-B	Lab Control Sample	Step 4	Solid	3010A	31341
LCSD 140-31341/15-B	Lab Control Sample Dup	Step 4	Solid	3010A	31341

SEP Batch: 31436

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15492-1	BMW-29 (30-31)	Step 5	Solid	Organic-Bound	
140-15492-2	BMW-30 (40-41)	Step 5	Solid	Organic-Bound	
140-15492-3	BMW-31 (14-15)	Step 5	Solid	Organic-Bound	
140-15492-4	BMW-32 (25-26)	Step 5	Solid	Organic-Bound	
140-15492-5	BMW-33 (38-39)	Step 5	Solid	Organic-Bound	
MB 140-31436/13-B ^5	Method Blank	Step 5	Solid	Organic-Bound	
LCS 140-31436/14-B ^5	Lab Control Sample	Step 5	Solid	Organic-Bound	
LCSD 140-31436/15-B ^5	Lab Control Sample Dup	Step 5	Solid	Organic-Bound	

Prep Batch: 31500

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15492-1	BMW-29 (30-31)	Step 5	Solid	3010A	31436
140-15492-2	BMW-30 (40-41)	Step 5	Solid	3010A	31436
140-15492-3	BMW-31 (14-15)	Step 5	Solid	3010A	31436
140-15492-4	BMW-32 (25-26)	Step 5	Solid	3010A	31436
140-15492-5	BMW-33 (38-39)	Step 5	Solid	3010A	31436
MB 140-31436/13-B ^5	Method Blank	Step 5	Solid	3010A	31436
LCS 140-31436/14-B ^5	Lab Control Sample	Step 5	Solid	3010A	31436
LCSD 140-31436/15-B ^5	Lab Control Sample Dup	Step 5	Solid	3010A	31436

LUMINANT

Metals

SEP Batch: 31502

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15492-1	BMW-29 (30-31)	Step 6	Solid	Acid/Sulfide	
140-15492-2	BMW-30 (40-41)	Step 6	Solid	Acid/Sulfide	
140-15492-3	BMW-31 (14-15)	Step 6	Solid	Acid/Sulfide	
140-15492-4	BMW-32 (25-26)	Step 6	Solid	Acid/Sulfide	
140-15492-5	BMW-33 (38-39)	Step 6	Solid	Acid/Sulfide	
MB 140-31502/13-A	Method Blank	Step 6	Solid	Acid/Sulfide	
LCS 140-31502/14-A	Lab Control Sample	Step 6	Solid	Acid/Sulfide	
LCSD 140-31502/15-A	Lab Control Sample Dup	Step 6	Solid	Acid/Sulfide	

Analysis Batch: 31553

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15492-1	BMW-29 (30-31)	Total/NA	Solid	6010B	31128
140-15492-2	BMW-30 (40-41)	Total/NA	Solid	6010B	31128
140-15492-3	BMW-31 (14-15)	Total/NA	Solid	6010B	31128
140-15492-4	BMW-32 (25-26)	Total/NA	Solid	6010B	31128
140-15492-5	BMW-33 (38-39)	Total/NA	Solid	6010B	31128
MB 140-31128/14-A	Method Blank	Total/NA	Solid	6010B	31128
LCS 140-31128/15-A	Lab Control Sample	Total/NA	Solid	6010B	31128

Analysis Batch: 31604

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15492-1	BMW-29 (30-31)	Step 1	Solid	6010B SEP	31252
140-15492-1	BMW-29 (30-31)	Step 2	Solid	6010B SEP	31256
140-15492-1	BMW-29 (30-31)	Step 3	Solid	6010B SEP	31338
140-15492-1	BMW-29 (30-31)	Step 4	Solid	6010B SEP	31360
140-15492-2	BMW-30 (40-41)	Step 1	Solid	6010B SEP	31252
140-15492-2	BMW-30 (40-41)	Step 2	Solid	6010B SEP	31256
140-15492-2	BMW-30 (40-41)	Step 3	Solid	6010B SEP	31338
140-15492-2	BMW-30 (40-41)	Step 4	Solid	6010B SEP	31360
140-15492-3	BMW-31 (14-15)	Step 1	Solid	6010B SEP	31252
140-15492-3	BMW-31 (14-15)	Step 2	Solid	6010B SEP	31256
140-15492-3	BMW-31 (14-15)	Step 3	Solid	6010B SEP	31338
140-15492-3	BMW-31 (14-15)	Step 4	Solid	6010B SEP	31360
140-15492-4	BMW-32 (25-26)	Step 1	Solid	6010B SEP	31252
140-15492-4	BMW-32 (25-26)	Step 2	Solid	6010B SEP	31256
140-15492-4	BMW-32 (25-26)	Step 3	Solid	6010B SEP	31338
140-15492-4	BMW-32 (25-26)	Step 4	Solid	6010B SEP	31360
140-15492-5	BMW-33 (38-39)	Step 1	Solid	6010B SEP	31252
140-15492-5	BMW-33 (38-39)	Step 2	Solid	6010B SEP	31256
140-15492-5	BMW-33 (38-39)	Step 3	Solid	6010B SEP	31338
140-15492-5	BMW-33 (38-39)	Step 4	Solid	6010B SEP	31360
MB 140-31148/13-B ^4	Method Blank	Step 1	Solid	6010B SEP	31252
MB 140-31253/13-B ^3	Method Blank	Step 2	Solid	6010B SEP	31256
MB 140-31257/13-B	Method Blank	Step 3	Solid	6010B SEP	31338
MB 140-31341/13-B	Method Blank	Step 4	Solid	6010B SEP	31360
LCS 140-31148/14-B ^5	Lab Control Sample	Step 1	Solid	6010B SEP	31252
LCS 140-31253/14-B ^5	Lab Control Sample	Step 2	Solid	6010B SEP	31256
LCS 140-31257/14-B	Lab Control Sample	Step 3	Solid	6010B SEP	31338
LCS 140-31341/14-B	Lab Control Sample	Step 4	Solid	6010B SEP	31360
LCSD 140-31148/15-B ^5	Lab Control Sample Dup	Step 1	Solid	6010B SEP	31252
LCSD 140-31253/15-B ^5	Lab Control Sample Dup	Step 2	Solid	6010B SEP	31256

LUMINANT

Metals (Continued)

Analysis Batch: 31604 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCSD 140-31257/15-B	Lab Control Sample Dup	Step 3	Solid	6010B SEP	31338
LCSD 140-31341/15-B	Lab Control Sample Dup	Step 4	Solid	6010B SEP	31360

Prep Batch: 31615

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15492-1	BMW-29 (30-31)	Step 7	Solid	Residual	
140-15492-2	BMW-30 (40-41)	Step 7	Solid	Residual	
140-15492-3	BMW-31 (14-15)	Step 7	Solid	Residual	
140-15492-4	BMW-32 (25-26)	Step 7	Solid	Residual	
140-15492-5	BMW-33 (38-39)	Step 7	Solid	Residual	
MB 140-31615/13-A	Method Blank	Step 7	Solid	Residual	
LCS 140-31615/14-A	Lab Control Sample	Step 7	Solid	Residual	
LCSD 140-31615/15-A	Lab Control Sample Dup	Step 7	Solid	Residual	

Analysis Batch: 31651

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15492-1	BMW-29 (30-31)	Step 5	Solid	6010B SEP	31500
140-15492-1	BMW-29 (30-31)	Step 6	Solid	6010B SEP	31502
140-15492-2	BMW-30 (40-41)	Step 5	Solid	6010B SEP	31500
140-15492-2	BMW-30 (40-41)	Step 6	Solid	6010B SEP	31502
140-15492-3	BMW-31 (14-15)	Step 5	Solid	6010B SEP	31500
140-15492-3	BMW-31 (14-15)	Step 6	Solid	6010B SEP	31502
140-15492-4	BMW-32 (25-26)	Step 5	Solid	6010B SEP	31500
140-15492-4	BMW-32 (25-26)	Step 6	Solid	6010B SEP	31502
140-15492-5	BMW-33 (38-39)	Step 5	Solid	6010B SEP	31500
140-15492-5	BMW-33 (38-39)	Step 6	Solid	6010B SEP	31502
MB 140-31436/13-B ^5	Method Blank	Step 5	Solid	6010B SEP	31500
MB 140-31502/13-A	Method Blank	Step 6	Solid	6010B SEP	31502
LCS 140-31436/14-B ^5	Lab Control Sample	Step 5	Solid	6010B SEP	31500
LCS 140-31502/14-A	Lab Control Sample	Step 6	Solid	6010B SEP	31502
LCSD 140-31436/15-B ^5	Lab Control Sample Dup	Step 5	Solid	6010B SEP	31500
LCSD 140-31502/15-A	Lab Control Sample Dup	Step 6	Solid	6010B SEP	31502

Analysis Batch: 31713

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15492-1	BMW-29 (30-31)	Step 7	Solid	6010B SEP	31615
140-15492-1	BMW-29 (30-31)	Step 7	Solid	6010B SEP	31615
140-15492-1	BMW-29 (30-31)	Step 7	Solid	6010B SEP	31615
140-15492-1	BMW-29 (30-31)	Total/NA	Solid	6010B	30683
140-15492-1	BMW-29 (30-31)	Total/NA	Solid	6010B	30683
140-15492-1	BMW-29 (30-31)	Total/NA	Solid	6010B	30683
140-15492-2	BMW-30 (40-41)	Step 7	Solid	6010B SEP	31615
140-15492-2	BMW-30 (40-41)	Step 7	Solid	6010B SEP	31615
140-15492-2	BMW-30 (40-41)	Step 7	Solid	6010B SEP	31615
140-15492-2	BMW-30 (40-41)	Total/NA	Solid	6010B	30683
140-15492-2	BMW-30 (40-41)	Total/NA	Solid	6010B	30683
140-15492-2	BMW-30 (40-41)	Total/NA	Solid	6010B	30683
140-15492-3	BMW-31 (14-15)	Step 7	Solid	6010B SEP	31615
140-15492-3	BMW-31 (14-15)	Step 7	Solid	6010B SEP	31615
140-15492-3	BMW-31 (14-15)	Step 7	Solid	6010B SEP	31615
140-15492-3	BMW-31 (14-15)	Total/NA	Solid	6010B	30683

LUMINANT

Metals (Continued)

Analysis Batch: 31713 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15492-3	BMW-31 (14-15)	Total/NA	Solid	6010B	30683
140-15492-3	BMW-31 (14-15)	Total/NA	Solid	6010B	30683
140-15492-4	BMW-32 (25-26)	Step 7	Solid	6010B SEP	31615
140-15492-4	BMW-32 (25-26)	Step 7	Solid	6010B SEP	31615
140-15492-4	BMW-32 (25-26)	Step 7	Solid	6010B SEP	31615
140-15492-4	BMW-32 (25-26)	Total/NA	Solid	6010B	30683
140-15492-4	BMW-32 (25-26)	Total/NA	Solid	6010B	30683
140-15492-4	BMW-32 (25-26)	Total/NA	Solid	6010B	30683
140-15492-5	BMW-33 (38-39)	Step 7	Solid	6010B SEP	31615
140-15492-5	BMW-33 (38-39)	Step 7	Solid	6010B SEP	31615
140-15492-5	BMW-33 (38-39)	Step 7	Solid	6010B SEP	31615
140-15492-5	BMW-33 (38-39)	Total/NA	Solid	6010B	30683
140-15492-5	BMW-33 (38-39)	Total/NA	Solid	6010B	30683
140-15492-5	BMW-33 (38-39)	Total/NA	Solid	6010B	30683
MB 140-30683/13-A	Method Blank	Total/NA	Solid	6010B	30683
MB 140-31615/13-A	Method Blank	Step 7	Solid	6010B SEP	31615
LCS 140-30683/14-A	Lab Control Sample	Total/NA	Solid	6010B	30683
LCS 140-31615/14-A	Lab Control Sample	Step 7	Solid	6010B SEP	31615
LCSD 140-30683/15-A	Lab Control Sample Dup	Total/NA	Solid	6010B	30683
LCSD 140-31615/15-A	Lab Control Sample Dup	Step 7	Solid	6010B SEP	31615

Analysis Batch: 31744

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15492-1	BMW-29 (30-31)	Sum of Steps 1-7	Solid	6010B SEP	
140-15492-2	BMW-30 (40-41)	Sum of Steps 1-7	Solid	6010B SEP	
140-15492-3	BMW-31 (14-15)	Sum of Steps 1-7	Solid	6010B SEP	
140-15492-4	BMW-32 (25-26)	Sum of Steps 1-7	Solid	6010B SEP	
140-15492-5	BMW-33 (38-39)	Sum of Steps 1-7	Solid	6010B SEP	

General Chemistry

Analysis Batch: 30602

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15492-1	BMW-29 (30-31)	Total/NA	Solid	Moisture	
140-15492-2	BMW-30 (40-41)	Total/NA	Solid	Moisture	
140-15492-3	BMW-31 (14-15)	Total/NA	Solid	Moisture	
140-15492-4	BMW-32 (25-26)	Total/NA	Solid	Moisture	
140-15492-5	BMW-33 (38-39)	Total/NA	Solid	Moisture	

LUMINANT

Client Sample ID: BMW-29 (30-31)
Lab Sample ID: 140-15492-1
Date Collected: 05/31/19 16:45
Matrix: Solid
Date Received: 06/05/19 09:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Sum of Steps 1-7	Analysis	6010B SEP		1			31744	07/16/19 17:31	CLJ	TAL KNX
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Moisture		1			30602	06/06/19 14:52	BKD	TAL KNX
	Instrument ID: W3									

Client Sample ID: BMW-29 (30-31)
Lab Sample ID: 140-15492-1
Date Collected: 05/31/19 16:45
Matrix: Solid
Date Received: 06/05/19 09:20
Percent Solids: 73.5

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			0.539 g	50 mL	31128	06/26/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			31553	07/10/19 12:23	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	30683	06/11/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			31713	07/15/19 14:46	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	30683	06/11/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		10			31713	07/15/19 16:20	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	30683	06/11/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		5			31713	07/15/19 18:48	KNC	TAL KNX
	Instrument ID: DUO									
Step 1	SEP	Exchangeable			5.000 g	25 mL	31148	06/26/19 09:47	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	31252	06/29/19 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		4			31604	07/11/19 13:09	KNC	TAL KNX
	Instrument ID: DUO									
Step 2	SEP	Carbonate			5.000 g	25 mL	31253	06/29/19 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	31256	06/30/19 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		3			31604	07/11/19 14:53	KNC	TAL KNX
	Instrument ID: DUO									
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	31257	06/30/19 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	31338	07/02/19 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			31604	07/11/19 16:42	KNC	TAL KNX
	Instrument ID: DUO									
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	31341	07/02/19 09:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	31360	07/03/19 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			31604	07/11/19 18:09	KNC	TAL KNX
	Instrument ID: DUO									
Step 5	SEP	Organic-Bound			5.000 g	75 mL	31436	07/08/19 07:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	31500	07/10/19 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			31651	07/12/19 12:16	KNC	TAL KNX
	Instrument ID: DUO									
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	31502	07/10/19 08:00	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			31651	07/12/19 14:00	KNC	TAL KNX
	Instrument ID: DUO									

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Lab Chronicle

Client: Golder Associates Inc.
Job ID: 140-15492-1
Project/Site: Martin Lake A1 Area LF SEP + Totals

Client Sample ID: BMW-29 (30-31)
Lab Sample ID: 140-15492-1
Date Collected: 05/31/19 16:45
Matrix: Solid
Date Received: 06/05/19 09:20
Percent Solids: 73.5

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 7	Prep	Residual			1.000 g	50 mL	31615	07/12/19 09:08	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			31713	07/15/19 12:16	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	31615	07/12/19 09:08	KNC	TAL KNX
Step 7	Analysis	6010B SEP		10			31713	07/15/19 13:29	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	31615	07/12/19 09:08	KNC	TAL KNX
Step 7	Analysis	6010B SEP		2			31713	07/15/19 17:32	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	30683	06/11/19 08:00	KNC	TAL KNX
Total/NA	Prep	7470A			5.0 mL	50.0 mL	30859	06/16/19 08:00	DKW	TAL KNX
Total/NA	Analysis	7470A		1			30868	06/16/19 14:19	DKW	TAL KNX
	Instrument ID: HG									

Client Sample ID: BMW-30 (40-41)
Lab Sample ID: 140-15492-2
Date Collected: 05/30/19 15:55
Matrix: Solid
Date Received: 06/05/19 09:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Sum of Steps 1-7	Analysis	6010B SEP		1			31744	07/16/19 17:31	CLJ	TAL KNX
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Moisture		1			30602	06/06/19 14:52	BKD	TAL KNX
	Instrument ID: W3									

Client Sample ID: BMW-30 (40-41)
Lab Sample ID: 140-15492-2
Date Collected: 05/30/19 15:55
Matrix: Solid
Date Received: 06/05/19 09:20
Percent Solids: 84.1

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			0.528 g	50 mL	31128	06/26/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			31553	07/10/19 12:28	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	30683	06/11/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			31713	07/15/19 15:07	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	30683	06/11/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		10			31713	07/15/19 16:25	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	30683	06/11/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		5			31713	07/15/19 18:53	KNC	TAL KNX
	Instrument ID: DUO									
Step 1	SEP	Exchangeable			5.000 g	25 mL	31148	06/26/19 09:47	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	31252	06/29/19 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		4			31604	07/11/19 13:14	KNC	TAL KNX
	Instrument ID: DUO									

LUMINANT

Lab Chronicle

Client: Golder Associates Inc.
Job ID: 140-15492-1
Project/Site: Martin Lake A1 Area LF SEP + Totals

Client Sample ID: BMW-30 (40-41)
Lab Sample ID: 140-15492-2

Date Collected: 05/30/19 15:55
Matrix: Solid
Date Received: 06/05/19 09:20
Percent Solids: 84.1

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 2	SEP	Carbonate			5.000 g	25 mL	31253	06/29/19 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	31256	06/30/19 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		3			31604	07/11/19 14:58	KNC	TAL KNX
	Instrument ID:	DUO								
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	31257	06/30/19 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	31338	07/02/19 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			31604	07/11/19 16:47	KNC	TAL KNX
	Instrument ID:	DUO								
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	31341	07/02/19 09:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	31360	07/03/19 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			31604	07/11/19 18:15	KNC	TAL KNX
	Instrument ID:	DUO								
Step 5	SEP	Organic-Bound			5.000 g	75 mL	31436	07/08/19 07:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	31500	07/10/19 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			31651	07/12/19 12:21	KNC	TAL KNX
	Instrument ID:	DUO								
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	31502	07/10/19 08:00	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			31651	07/12/19 14:05	KNC	TAL KNX
	Instrument ID:	DUO								
Step 7	Prep	Residual			1.000 g	50 mL	31615	07/12/19 09:08	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			31713	07/15/19 12:21	KNC	TAL KNX
	Instrument ID:	DUO								
Step 7	Prep	Residual			1.000 g	50 mL	31615	07/12/19 09:08	KNC	TAL KNX
Step 7	Analysis	6010B SEP		10			31713	07/15/19 13:34	KNC	TAL KNX
	Instrument ID:	DUO								
Step 7	Prep	Residual			1.000 g	50 mL	31615	07/12/19 09:08	KNC	TAL KNX
Step 7	Analysis	6010B SEP		2			31713	07/15/19 17:37	KNC	TAL KNX
	Instrument ID:	DUO								
Total/NA	Prep	Total			1.000 g	50 mL	30683	06/11/19 08:00	KNC	TAL KNX
Total/NA	Prep	7470A			5.0 mL	50.0 mL	30859	06/16/19 08:00	DKW	TAL KNX
Total/NA	Analysis	7470A		1			30868	06/16/19 14:21	DKW	TAL KNX
	Instrument ID:	HG								

Client Sample ID: BMW-31 (14-15)
Lab Sample ID: 140-15492-3

Date Collected: 05/31/19 11:15
Matrix: Solid
Date Received: 06/05/19 09:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Sum of Steps 1-7	Analysis	6010B SEP		1			31744	07/16/19 17:31	CLJ	TAL KNX
	Instrument ID:	NOEQUIP								
Total/NA	Analysis	Moisture		1			30602	06/06/19 14:52	BKD	TAL KNX
	Instrument ID:	W3								

LUMINANT

Client: Golder Associates Inc.
Job ID: 140-15492-1
Project/Site: Martin Lake A1 Area LF SEP + Totals

Client Sample ID: BMW-31 (14-15)
Lab Sample ID: 140-15492-3
Date Collected: 05/31/19 11:15
Matrix: Solid
Date Received: 06/05/19 09:20
Percent Solids: 84.2

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			0.502 g	50 mL	31128	06/26/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			31553	07/10/19 12:43	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	30683	06/11/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			31713	07/15/19 15:12	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	30683	06/11/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		10			31713	07/15/19 16:30	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	30683	06/11/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		2			31713	07/15/19 19:14	KNC	TAL KNX
	Instrument ID: DUO									
Step 1	SEP	Exchangeable			5.000 g	25 mL	31148	06/26/19 09:47	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	31252	06/29/19 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		4			31604	07/11/19 13:35	KNC	TAL KNX
	Instrument ID: DUO									
Step 2	SEP	Carbonate			5.000 g	25 mL	31253	06/29/19 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	31256	06/30/19 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		3			31604	07/11/19 15:03	KNC	TAL KNX
	Instrument ID: DUO									
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	31257	06/30/19 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	31338	07/02/19 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			31604	07/11/19 16:52	KNC	TAL KNX
	Instrument ID: DUO									
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	31341	07/02/19 09:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	31360	07/03/19 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			31604	07/11/19 18:20	KNC	TAL KNX
	Instrument ID: DUO									
Step 5	SEP	Organic-Bound			5.000 g	75 mL	31436	07/08/19 07:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	31500	07/10/19 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			31651	07/12/19 12:42	KNC	TAL KNX
	Instrument ID: DUO									
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	31502	07/10/19 08:00	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			31651	07/12/19 14:10	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	31615	07/12/19 09:08	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			31713	07/15/19 12:26	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	31615	07/12/19 09:08	KNC	TAL KNX
Step 7	Analysis	6010B SEP		10			31713	07/15/19 13:39	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	31615	07/12/19 09:08	KNC	TAL KNX
Step 7	Analysis	6010B SEP		2			31713	07/15/19 17:42	KNC	TAL KNX
	Instrument ID: DUO									

LUMINANT

Lab Chronicle

Client: Golder Associates Inc.
Job ID: 140-15492-1
Project/Site: Martin Lake A1 Area LF SEP + Totals

Client Sample ID: BMW-31 (14-15)
Lab Sample ID: 140-15492-3
Date Collected: 05/31/19 11:15
Matrix: Solid
Date Received: 06/05/19 09:20
Percent Solids: 84.2

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	30683	06/11/19 08:00	KNC	TAL KNX
Total/NA	Prep	7470A			5.0 mL	50.0 mL	30859	06/16/19 08:00	DKW	TAL KNX
Total/NA	Analysis	7470A		1			30868	06/16/19 14:24	DKW	TAL KNX
	Instrument ID: HG									

Client Sample ID: BMW-32 (25-26)
Lab Sample ID: 140-15492-4
Date Collected: 05/29/19 15:45
Matrix: Solid
Date Received: 06/05/19 09:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Sum of Steps 1-7	Analysis	6010B SEP		1			31744	07/16/19 17:31	CLJ	TAL KNX
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Moisture		1			30602	06/06/19 14:52	BKD	TAL KNX
	Instrument ID: W3									

Client Sample ID: BMW-32 (25-26)
Lab Sample ID: 140-15492-4
Date Collected: 05/29/19 15:45
Matrix: Solid
Date Received: 06/05/19 09:20
Percent Solids: 84.2

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			0.529 g	50 mL	31128	06/26/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			31553	07/10/19 12:49	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	30683	06/11/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			31713	07/15/19 15:18	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	30683	06/11/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		10			31713	07/15/19 16:35	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	30683	06/11/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		2			31713	07/15/19 19:19	KNC	TAL KNX
	Instrument ID: DUO									
Step 1	SEP	Exchangeable			5.000 g	25 mL	31148	06/26/19 09:47	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	31252	06/29/19 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		4			31604	07/11/19 13:40	KNC	TAL KNX
	Instrument ID: DUO									
Step 2	SEP	Carbonate			5.000 g	25 mL	31253	06/29/19 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	31256	06/30/19 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		3			31604	07/11/19 15:09	KNC	TAL KNX
	Instrument ID: DUO									
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	31257	06/30/19 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	31338	07/02/19 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			31604	07/11/19 16:58	KNC	TAL KNX
	Instrument ID: DUO									

LUMINANT

Client Sample ID: BMW-32 (25-26)
Lab Sample ID: 140-15492-4

Date Collected: 05/29/19 15:45
Matrix: Solid
Date Received: 06/05/19 09:20
Percent Solids: 84.2

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	31341	07/02/19 09:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	31360	07/03/19 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			31604	07/11/19 18:25	KNC	TAL KNX
	Instrument ID: DUO									
Step 5	SEP	Organic-Bound			5.000 g	75 mL	31436	07/08/19 07:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	31500	07/10/19 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			31651	07/12/19 12:47	KNC	TAL KNX
	Instrument ID: DUO									
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	31502	07/10/19 08:00	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			31651	07/12/19 14:15	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	31615	07/12/19 09:08	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			31713	07/15/19 12:32	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	31615	07/12/19 09:08	KNC	TAL KNX
Step 7	Analysis	6010B SEP		10			31713	07/15/19 13:44	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	31615	07/12/19 09:08	KNC	TAL KNX
Step 7	Analysis	6010B SEP		2			31713	07/15/19 17:47	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	30683	06/11/19 08:00	KNC	TAL KNX
Total/NA	Prep	7470A			5.0 mL	50.0 mL	30859	06/16/19 08:00	DKW	TAL KNX
Total/NA	Analysis	7470A		1			30868	06/16/19 14:27	DKW	TAL KNX
	Instrument ID: HG									

Client Sample ID: BMW-33 (38-39)
Lab Sample ID: 140-15492-5

Date Collected: 05/30/19 11:35
Matrix: Solid
Date Received: 06/05/19 09:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Sum of Steps 1-7	Analysis	6010B SEP		1			31744	07/16/19 17:31	CLJ	TAL KNX
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Moisture		1			30602	06/06/19 14:52	BKD	TAL KNX
	Instrument ID: W3									

Client Sample ID: BMW-33 (38-39)
Lab Sample ID: 140-15492-5

Date Collected: 05/30/19 11:35
Matrix: Solid
Date Received: 06/05/19 09:20
Percent Solids: 77.5

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			0.527 g	50 mL	31128	06/26/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			31553	07/10/19 12:54	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	30683	06/11/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			31713	07/15/19 15:23	KNC	TAL KNX
	Instrument ID: DUO									

LUMINANT

Lab Chronicle

Client: Golder Associates Inc.
Project/Site: Martin Lake A1 Area LF SEP + Totals

Job ID: 140-15492-1

Client Sample ID: BMW-33 (38-39)

Date Collected: 05/30/19 11:35
Date Received: 06/05/19 09:20

Lab Sample ID: 140-15492-5

Matrix: Solid
Percent Solids: 77.5

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	30683	06/11/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		10			31713	07/15/19 16:40	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	30683	06/11/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		5			31713	07/15/19 19:24	KNC	TAL KNX
	Instrument ID: DUO									
Step 1	SEP	Exchangeable			5.000 g	25 mL	31148	06/26/19 09:47	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	31252	06/29/19 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		4			31604	07/11/19 13:45	KNC	TAL KNX
	Instrument ID: DUO									
Step 2	SEP	Carbonate			5.000 g	25 mL	31253	06/29/19 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	31256	06/30/19 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		3			31604	07/11/19 15:14	KNC	TAL KNX
	Instrument ID: DUO									
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	31257	06/30/19 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	31338	07/02/19 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			31604	07/11/19 17:03	KNC	TAL KNX
	Instrument ID: DUO									
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	31341	07/02/19 09:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	31360	07/03/19 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			31604	07/11/19 18:45	KNC	TAL KNX
	Instrument ID: DUO									
Step 5	SEP	Organic-Bound			5.000 g	75 mL	31436	07/08/19 07:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	31500	07/10/19 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			31651	07/12/19 12:53	KNC	TAL KNX
	Instrument ID: DUO									
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	31502	07/10/19 08:00	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			31651	07/12/19 14:21	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	31615	07/12/19 09:08	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			31713	07/15/19 12:37	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	31615	07/12/19 09:08	KNC	TAL KNX
Step 7	Analysis	6010B SEP		10			31713	07/15/19 14:04	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	31615	07/12/19 09:08	KNC	TAL KNX
Step 7	Analysis	6010B SEP		2			31713	07/15/19 17:52	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	30683	06/11/19 08:00	KNC	TAL KNX
Total/NA	Prep	7470A			5.0 mL	50.0 mL	30859	06/16/19 08:00	DKW	TAL KNX
Total/NA	Analysis	7470A		1			30868	06/16/19 14:29	DKW	TAL KNX
	Instrument ID: HG									

LUMINANT

Client Sample ID: Method Blank
Lab Sample ID: MB 140-30683/13-A
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	30683	06/11/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			31713	07/15/19 11:13	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Method Blank
Lab Sample ID: MB 140-30683/13-B
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	30683	06/11/19 08:00	KNC	TAL KNX
Total/NA	Prep	7470A			5.0 mL	50.0 mL	30859	06/16/19 08:00	DKW	TAL KNX
Total/NA	Analysis	7470A		1			30868	06/16/19 13:56	DKW	TAL KNX
	Instrument ID: HG									

Client Sample ID: Method Blank
Lab Sample ID: MB 140-31128/14-A
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			0.500 g	50 mL	31128	06/26/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			31553	07/10/19 11:42	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Method Blank
Lab Sample ID: MB 140-31148/13-B ^4
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 1	SEP	Exchangeable			5.000 g	25 mL	31148	06/26/19 09:47	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	31252	06/29/19 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		4			31604	07/11/19 12:33	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Method Blank
Lab Sample ID: MB 140-31253/13-B ^3
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 2	SEP	Carbonate			5.000 g	25 mL	31253	06/29/19 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	31256	06/30/19 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		3			31604	07/11/19 14:06	KNC	TAL KNX
	Instrument ID: DUO									

LUMINANT

Client Sample ID: Method Blank
Lab Sample ID: MB 140-31257/13-B
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	31257	06/30/19 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	31338	07/02/19 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			31604	07/11/19 15:50	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Method Blank
Lab Sample ID: MB 140-31341/13-B
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	31341	07/02/19 09:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	31360	07/03/19 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			31604	07/11/19 17:24	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Method Blank
Lab Sample ID: MB 140-31436/13-B ^5
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 5	SEP	Organic-Bound			5.000 g	75 mL	31436	07/08/19 07:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	31500	07/10/19 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			31651	07/12/19 11:39	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Method Blank
Lab Sample ID: MB 140-31502/13-A
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	31502	07/10/19 08:00	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			31651	07/12/19 13:14	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Method Blank
Lab Sample ID: MB 140-31615/13-A
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 7	Prep	Residual			1.000 g	50 mL	31615	07/12/19 09:08	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			31713	07/15/19 10:58	KNC	TAL KNX
	Instrument ID: DUO									

LUMINANT

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-30683/14-A
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	30683	06/11/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			31713	07/15/19 11:19	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-30683/14-B
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	30683	06/11/19 08:00	KNC	TAL KNX
Total/NA	Prep	7470A			5.0 mL	50.0 mL	30859	06/16/19 08:00	DKW	TAL KNX
Total/NA	Analysis	7470A		1			30868	06/16/19 13:59	DKW	TAL KNX
	Instrument ID: HG									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-31128/15-A
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			0.500 g	50 mL	31128	06/26/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			31553	07/10/19 11:47	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-31148/14-B ^5
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 1	SEP	Exchangeable			5.000 g	25 mL	31148	06/26/19 09:47	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	31252	06/29/19 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		5			31604	07/11/19 12:38	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-31253/14-B ^5
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 2	SEP	Carbonate			5.000 g	25 mL	31253	06/29/19 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	31256	06/30/19 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		5			31604	07/11/19 14:11	KNC	TAL KNX
	Instrument ID: DUO									

LUMINANT

Lab Chronicle

Client: Golder Associates Inc.
Job ID: 140-15492-1
Project/Site: Martin Lake A1 Area LF SEP + Totals

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-31257/14-B
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	31257	06/30/19 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	31338	07/02/19 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			31604	07/11/19 15:56	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-31341/14-B
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	31341	07/02/19 09:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	31360	07/03/19 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			31604	07/11/19 17:29	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-31436/14-B ^5
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 5	SEP	Organic-Bound			5.000 g	75 mL	31436	07/08/19 07:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	31500	07/10/19 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			31651	07/12/19 11:44	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-31502/14-A
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	31502	07/10/19 08:00	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			31651	07/12/19 13:19	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-31615/14-A
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 7	Prep	Residual			1.000 g	50 mL	31615	07/12/19 09:08	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			31713	07/15/19 11:03	KNC	TAL KNX
	Instrument ID: DUO									

LUMINANT

Lab Chronicle

Client: Golder Associates Inc.
Job ID: 140-15492-1
Project/Site: Martin Lake A1 Area LF SEP + Totals

Client Sample ID: Lab Control Sample Dup
Lab Sample ID: LCSD 140-30683/15-A
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	30683	06/11/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			31713	07/15/19 11:24	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample Dup
Lab Sample ID: LCSD 140-30683/15-B
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	30683	06/11/19 08:00	KNC	TAL KNX
Total/NA	Prep	7470A			5.0 mL	50.0 mL	30859	06/16/19 08:00	DKW	TAL KNX
Total/NA	Analysis	7470A		1			30868	06/16/19 14:02	DKW	TAL KNX
	Instrument ID: HG									

Client Sample ID: Lab Control Sample Dup
Lab Sample ID: LCSD 140-31148/15-B ^5
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 1	SEP	Exchangeable			5.000 g	25 mL	31148	06/26/19 09:47	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	31252	06/29/19 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		5			31604	07/11/19 12:43	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample Dup
Lab Sample ID: LCSD 140-31253/15-B ^5
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 2	SEP	Carbonate			5.000 g	25 mL	31253	06/29/19 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	31256	06/30/19 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		5			31604	07/11/19 14:16	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample Dup
Lab Sample ID: LCSD 140-31257/15-B
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	31257	06/30/19 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	31338	07/02/19 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			31604	07/11/19 16:01	KNC	TAL KNX
	Instrument ID: DUO									

LUMINANT

Lab Chronicle

Client: Golder Associates Inc.
Job ID: 140-15492-1
Project/Site: Martin Lake A1 Area LF SEP + Totals

Client Sample ID: Lab Control Sample Dup
Lab Sample ID: LCSD 140-31341/15-B
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	31341	07/02/19 09:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	31360	07/03/19 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			31604	07/11/19 17:44	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample Dup
Lab Sample ID: LCSD 140-31436/15-B ^5
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 5	SEP	Organic-Bound			5.000 g	75 mL	31436	07/08/19 07:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	31500	07/10/19 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			31651	07/12/19 11:49	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample Dup
Lab Sample ID: LCSD 140-31502/15-A
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	31502	07/10/19 08:00	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			31651	07/12/19 13:24	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample Dup
Lab Sample ID: LCSD 140-31615/15-A
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 7	Prep	Residual			1.000 g	50 mL	31615	07/12/19 09:08	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			31713	07/15/19 11:08	KNC	TAL KNX
	Instrument ID: DUO									

Laboratory References:
TAL KNX = Eurofins TestAmerica, Knoxville, 5815 Middlebrook Pike, Knoxville, TN 37921, TEL (865)291-3000

LUMINANT

Method Summary

Client: Golder Associates Inc.
Job ID: 140-15492-1
Project/Site: Martin Lake A1 Area LF SEP + Totals

Method	Method Description	Protocol	Laboratory
6010B	Metals (ICP)	SW846	TAL KNX
6010B	SEP Metals (ICP) - Total	SW846	TAL KNX
6010B SEP	SEP Metals (ICP)	SW846	TAL KNX
7470A	SEP Mercury (CVAA) - Total	SW846	TAL KNX
Moisture	Percent Moisture	EPA	TAL KNX
3010A	Preparation, Total Metals	SW846	TAL KNX
3050B	Preparation, Metals	SW846	TAL KNX
7470A	Preparation, Mercury	SW846	TAL KNX
Acid/Sulfide	Sequential Extraction Procedure, Acid/Sulfide Fraction	TAL-KNOX	TAL KNX
Carbonate	Sequential Extraction Procedure, Carbonate Fraction	TAL-KNOX	TAL KNX
Exchangeable	Sequential Extraction Procedure, Exchangeable Fraction	TAL-KNOX	TAL KNX
Metal Hydroxide	Sequential Extraction Procedure, Metal Hydroxide Fraction	TAL-KNOX	TAL KNX
Non-Crystalline	Sequential Extraction Procedure, Non-crystalline Materials	TAL-KNOX	TAL KNX
Organic-Bound	Sequential Extraction Procedure, Organic Bound Fraction	TAL-KNOX	TAL KNX
Residual	Sequential Extraction Procedure, Residual Fraction	TAL-KNOX	TAL KNX
Total	Preparation, Total Material	TAL-KNOX	TAL KNX

Protocol References:

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

TAL-KNOX = TestAmerica Laboratories, Knoxville, Facility Standard Operating Procedure.

Laboratory References:

TAL KNX = Eurofins TestAmerica, Knoxville, 5815 Middlebrook Pike, Knoxville, TN 37921, TEL (865)291-3000

LUMINANT

Sample Summary

Client: Golder Associates Inc.
Job ID: 140-15492-1
Project/Site: Martin Lake A1 Area LF SEP + Totals

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
140-15492-1	BMW-29 (30-31)	Solid	05/31/19 16:45	06/05/19 09:20	
140-15492-2	BMW-30 (40-41)	Solid	05/30/19 15:55	06/05/19 09:20	
140-15492-3	BMW-31 (14-15)	Solid	05/31/19 11:15	06/05/19 09:20	
140-15492-4	BMW-32 (25-26)	Solid	05/29/19 15:45	06/05/19 09:20	
140-15492-5	BMW-33 (38-39)	Solid	05/30/19 11:35	06/05/19 09:20	

LUMINANT

Eurofins TestAmerica, Knoxville
5815 Middlebrook Pike
Knoxville, TN 37921
Phone (865) 291-3000 Fax (865) 584-4315

Chain of Custody Record

eurofins | Environment Testing TestAmerica

Client Information	Sampler: S. Ruiz / K. Worley	Lab PM: Walker Wasmund, Terry	Carrier Tracking No(s):	COC No: 140-6682-2228.1
Client Contact: Will Vienne	Phone: 281-750-2734	E-Mail: terry.wasmund@testamericainc.com		Page: Page 1 of 1
Company: Golder Associates Inc.				Job #:
Address: 2201 Double Creek Dr Suite 4004	Due Date Requested:			
City: Round Rock	TAT Requested (days): Standard			
State, Zip: TX, 78664				
Phone: 512-671-3434(Tel)	PO #: 19122434-D			
Email: William_Vienne@golder.com	WO #: 19122434-D			
Project Name: Martin Lake A1 Area LF SEP + Totals	Project #: 14005267			
Site:	SSOW#:			

Analysis Requested

140-15492 Chain of Custody

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	6010B_SEP - SEP Metals (12 Metals)	6010B - Total B, Cr, Pb	Total Number of containers	Special Instructions/Note:
			Preservation Code:				N	I		
Bmw-29 (30-31)	5/31/19	1645	C	S	N		X	X		On Ice
Bmw-30 (40-41)	5/30/19	1555	C	S	N		X	X		" "
Bmw-31 (14-15)	5/31/19	1115	C	S	N		X	X		" "
Bmw-32 (25-26)	5/29/19	1545	C	S	N		X	X		" "
Bmw-33 (38-39)	5/30/19	1135	C	S	N		X	X		" "

RT: 1.4°C CT: 1.4°C, 1 cooler
Fedex SO, trk# 7876 7321 5641
Custody seal intact
KL 6/5/A

Possible Hazard Identification
☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
[signature]	06/04/19 1245	Golder	[signature]	6/5/19 0920	TA Knox

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.: | Cooler Temperature(s) °C and Other Remarks:

Ver: 01/16/2019

LUMINANT

TESTAMERICA KNOXVILLE SAMPLE RECEIPT/CONDITION UPON RECEIPT ANOMALY CHECKLIST

Log In Number: Loc: 140 **15492**

Review Items	Yes	No	NA	If No, what was the problem?	Comments/Actions Taken
1. Are the shipping containers intact?	/			☐ **Containers, Broken**	
2. Were ambient air containers received intact?			/	☐ Checked in lab	
3. The coolers/containers custody seal if present, is it intact?	/			☐ Yes ☐ NA	
4. Is the cooler temperature within limits? (> freezing temp. of water to 6 °C, VOST: 10°C) Thermometer ID : SC68 Correction factor: +0.0	/			☐ **Cooler Out of Temp, Client Contacted, Proceed/Cancel** ☐ **Cooler Out of Temp, Same Day Receipt**	
5. Were all of the sample containers received intact?	/			☐ **Containers, Broken**	
6. Were samples received in appropriate containers?	/			☐ **Containers, Improper; Client Contacted; Proceed/Cancel**	
7. Do sample container labels match COC? (IDs, Dates, Times)	/			☐ **COC & Samples Do Not Match** ☐ **COC Incorrect/Incomplete** ☐ **COC Not Received**	
8. Were all of the samples listed on the COC received?	/			☐ **Sample Received, Not on COC** ☐ **Sample on COC, Not Received**	
9. Is the date/time of sample collection noted?	/			☐ **COC; No Date/Time; Client Contacted**	
10. Was the sampler identified on the COC?	/			☐ **Sampler Not Listed on COC**	
11. Is the client and project name/# identified?	/			☐ **COC Incorrect/Incomplete**	
12. Are tests/parameters listed for each sample?	/			☐ **COC No tests on COC**	
13. Is the matrix of the samples noted?	/			☐ **COC Incorrect/Incomplete**	
14. Was COC relinquished? (Signed/Dated/Timed)	/			☐ **COC Incorrect/Incomplete**	
15. Were samples received within holding time?	/			☐ **Holding Time - Receipt**	
16. Were samples received with correct chemical preservative (excluding Encore)?			/	☐ **pH Adjusted, pH Included (See box 16A)** ☐ **Incorrect Preservative**	
17. Were VOA samples received without headspace?			/	☐ **Headspace (VOA only)**	
18. Did you check for residual chlorine, if necessary? (e.g. 1613B, 1668) Chlorine test strip lot number:			/	☐ **Residual Chlorine**	
19. For 1613B water samples is pH<9?			/	☐ If no, notify lab to adjust	
20. For rad samples was sample activity info. Provided?			/	☐ Project missing info	

Labeling Verified by: **Date:**

pH test strip lot number:

	Box 16A: pH Preservation	Box 18A: Residual Chlorine
Preservative:		
Lot Number:		
Exp Date:		
Analyst:		
Date:		
Time:		

Project #: 1400526 7 PM Instructions:

Sample Receiving Associate: Ken Zl Date: 6/5/19

QA026R31.doc, 112618

LUMA DRAFT

APPENDIX C

GROUNDWATER SAMPLING RECORDS

LUMINANT

RECORD OF WATER LEVEL READINGS

GOLDER

Project Name: LUMINANT- MLSES-A1 Location: TAYLOR TX Project No.: 191222262-D

Borehole No.	Date	Time	Measuring Device / Serial No.	Measurement Point (M.P)	Water Level Below M.P.	Correction To Survey Mark	Survey Mark Elevation	Water Level Elevation	By	Comments
BMW-24	5-15-19	0701	SOLINST	TOC	9.83				JTB	
BMW-23	5-15-19	0751		TOC	9.98					
BMW-22	5-15-19	0838		TOC	4.47					
BMW-21	5-15-19	0923		TOC	4.23					
BMW-27	5-15-19	1019		TOC	2.79					
BMW-26	5-15-19	1106		TOC	1.62					
BMW-11AR	5-15-19	1159		TOC	31.87					
BMW-19	5-15-19	1250		TOC	12.49					
BMW-18	5-15-19	1336		TOC	21.97					
BMW-28	5-15-19	1424		TOC	18.22					
BMW-20	5-15-19	1523		TOC	7.16					

LUMINANT

GROUNDWATER SAMPLING RECORD

PAGE 1 of 1

Project Number: 19122262-D Project Name: LUMINANT - MCSES - A1 Date: 5-15-19

Sample Number:	BMW-20	Starting Water Level (ft. BMP):	7.16
Sampling Location (well ID, etc.):	BMW-20	Casing Stickup (ft.):	—
Sampled by:	JTB	Starting Water Level (ft. BGL):	7.16
Measuring Point (MP) of Well:	TOC/PVC	Total Depth (ft. BGL):	—
Screened Interval (ft. BGL):	—	Casing Diameter (in ID):	2.0
Filter Pack Interval (ft. BGL):	—	Casing Volume (gal.):	—

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: alconox & DI rinse

Purging: peristaltic / bladder Sampling: same

Disposal of Discharged Water: on site

INSTRUMENTS (Indicate make, model, I.d.)

Water Level:	KECK	Thermometer:	HORIBA
pH Meter:	HORIBA	Field Calibration:	7-4
Conductivity Meter:	HORIBA	Field Calibration:	1413
Filter / Filter Size:	—	Other:	

SAMPLING MEASUREMENTS

Time	Cum. Vol. (gal. or L)	Purge Rate (gal. or L/m)	Temp. (oC)	pH	Spec. Cond. (mmhos/cm)	D.O.	Redox (mV)	Turbidity & Color	Water Depth (ft BMP)
1526	—	.2	22.7	6.71	1660	0.47	-52	4.8	7.39
1541		↓	22.9	6.72	1640	0.39	-51	5.6	7.41
1546		↓	22.9	6.71	1640	0.38	-51	5.8	7.42

Water Level (ft. BMP) at End of Purge: 7.42 Sample Intake Depth (ft. BMP):

SAMPLE INVENTORY

Bottles Collected				Filtration		Remarks
Time	Volume	Composition (G, P)	No.	(Y / N)	Preservation	(quality control sample, other)
1600	250mL	P	1	N	—	GEN CHEM
↓	500mL	P	1	N	HNO_3	METALS
	1L	P	2	N	HNO_3	—
	40mL	G	3	N	—	—

Comments:

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LUMINANT

GROUNDWATER SAMPLING RECORD

PAGE 1 of 1

Project Number: 191222G2-D Project Name: LUMINANT - MCSES - AI Date: 5-15-19

Sample Number: BMW-28

Sampling Location (well ID, etc.): BMW-28

Sampled by: JTB

Measuring Point (MP) of Well: TOC/PVC

Screened Interval (ft. BGL): —

Filter Pack Interval (ft. BGL): —

Starting Water Level (ft. BMP): 18.22

Casing Stickup (ft.): —

Starting Water Level (ft. BGL): 18.22

Total Depth (ft. BGL): —

Casing Diameter (In ID): 2.0

Casing Volume (gal.): —

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: alconox & DI rinse

Purging: peristaltic / bladder Sampling: Same

Disposal of Discharged Water: on site

INSTRUMENTS (Indicate make, model, I.d.)

Water Level: KECK Thermometer: HORIBA

pH Meter: HORIBA Field Calibration: 7-4

Conductivity Meter: HORIBA Field Calibration: 1413

Filter / Filter Size: — Other:

SAMPLING MEASUREMENTS

Time (1427)	Cum. Vol. (gal. or L)	Purge Rate (gal. or L/m)	Temp. (oC)	pH	Spec. Cond. (mmhos/cm)	D.O.	Redox (mV)	Turbidity & Color	Water Depth (ft BMP)
1437	—	.2	23.2	6.79	1720	0.41	-41	6.9	18.41
1442		↓	23.1	6.77	1740	0.26	-44	5.7	18.42
1447		↓	23.2	6.77	1740	0.25	-43	5.9	18.41

Water Level (ft. BMP) at End of Purge: 18.41 Sample Intake Depth (ft. BMP):

SAMPLE INVENTORY

Bottles Collected				Filtration		Remarks
Time	Volume	Composition (G, P)	No.	(Y / N)	Preservation	(quality control sample, other)
1500	250mL	P	1	N	—	GEN CHEM
↓	500mL	P	1	N	HNO_3	METALS
	1L	P	2	N	HNO_3	—
	40mL	G	3	N	—	—

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LUMINANT

GROUNDWATER SAMPLING RECORD

PAGE 1 of 1

Project Number: 191222b2-D Project Name: LUMINANT - MCSES - A1 Date: 5-15-19

Sample Number: BMW-18	Starting Water Level (ft. BMP): 21.97
Sampling Location (well ID, etc.): BMW-18	Casing Stickup (ft.): -
Sampled by: JTB	Starting Water Level (ft. BGL): 21.97
Measuring Point (MP) of Well: TOC/PVC	Total Depth (ft. BGL): -
Screened Interval (ft. BGL): -	Casing Diameter (in ID): 2.0
Filter Pack Interval (ft. BGL): -	Casing Volume (gal.): -

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: alconox & DI rinse

Purging: peristaltic / bladder Sampling: same

Disposal of Discharged Water: on site

INSTRUMENTS (Indicate make, model, I.d.)

Water Level:	KECK	Thermometer:	HORIBA
pH Meter:	HORIBA	Field Calibration:	7-4
Conductivity Meter:	HORIBA	Field Calibration:	1413
Filter / Filter Size:	-	Other:	

SAMPLING MEASUREMENTS

Time (1338)	Cum. Vol. (gal. or L)	Purge Rate (gal. or L/m)	Temp. (oC)	pH	Spec. Cond. (mmhos/cm)	D.O.	Redox (mV)	Turbidity & Color	Water Depth (ft BMP)
1348	-	.2	23.4	6.68	1870	0.61	-29	6.7	22.17
1352		↓	23.5	6.64	1910	0.49	-31	7.1	22.16
1358			23.4	6.65	1920	0.49	-32	7.2	22.16

Water Level (ft. BMP) at End of Purge: 22.16 Sample Intake Depth (ft. BMP):

SAMPLE INVENTORY

Bottles Collected				Filtration		Remarks
Time	Volume	Composition (G, P)	No.	(Y / N)	Preservation	(quality control sample, other)
1410	250mL	P	1	N	-	GEN CHEM
↓	500mL	P	1	N	HNO_3	METALS
	1L	P	2	N	HNO_3	-
	40mL	G	3	N	-	-

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LUMINANT

GROUNDWATER SAMPLING RECORD

PAGE 1 of 1

Project Number: 19122262-D Project Name: LUMINANT - MCSES - A1 Date: 5-15-19

Sample Number:	BMW-19	Starting Water Level (ft. BMP):	12.49
Sampling Location (well ID, etc.):	BMW-19	Casing Stickup (ft.):	-
Sampled by:	JTB	Starting Water Level (ft. BGL):	12.49
Measuring Point (MP) of Well:	TOC/PVC	Total Depth (ft. BGL):	-
Screened Interval (ft. BGL):	-	Casing Diameter (in ID):	2.0
Filter Pack Interval (ft. BGL):	-	Casing Volume (gal.):	-

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: alconox & DI rinse

Purging: peristaltic / bladder Sampling: same

Disposal of Discharged Water: on site

INSTRUMENTS (Indicate make, model, I.d.)

Water Level:	KECK	Thermometer:	HORIBA
pH Meter:	HORIBA	Field Calibration:	7-4
Conductivity Meter:	HORIBA	Field Calibration:	1413
Filter / Filter Size:	-	Other:	

SAMPLING MEASUREMENTS

1252 Time	Cum. Vol. (gal. or L)	Purge Rate (gal. or L/m)	Temp. (oC)	pH	Spec. Cond. (mmhos/cm)	D.O.	Redox (mV)	Turbidity & Color	Water Depth (ft BMP)
1302	-	.2	22.9	6.86	1830	1.16	-13	9.6	12.71
1308		↓	27.0	6.89	1860	1.09	-14	4.6	12.70
1315		↓	23.0	6.88	1870	1.16	-14	5.2	12.70

Water Level (ft. BMP) at End of Purge: 12.70 Sample Intake Depth (ft. BMP):

SAMPLE INVENTORY

Bottles Collected				Filtration		Remarks
Time	Volume	Composition (G, P)	No.	(Y / N)	Preservation	(quality control sample, other)
1325	250mL	P	1	N	-	GEN CHEM
↓	500mL	P	1	N	HNO_3	METALS
	1L	P	2	N	HNO_3	-
↓	40mL	G	3	N	-	-

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LUMINANT

GROUNDWATER SAMPLING RECORD

PAGE 1 of 1

Project Number: 191222b2-D Project Name: LUMINANT - MCSES - A1 Date: 5-15-19

Sample Number: BMW-11AR	Starting Water Level (ft. BMP): 31.87
Sampling Location (well ID, etc.): BMW-11AR	Casing Stickup (ft.): -
Sampled by: JTB	Starting Water Level (ft. BGL): 31.87
Measuring Point (MP) of Well: TOC/PVC	Total Depth (ft. BGL): -
Screened Interval (ft. BGL): -	Casing Diameter (in ID): 2.0
Filter Pack Interval (ft. BGL): -	Casing Volume (gal.): -

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: alconox & DI rinse

Purging: peristaltic / bladder Sampling: same

Disposal of Discharged Water: on site

INSTRUMENTS (Indicate make, model, I.d.)

Water Level:	KECK	Thermometer:	HORIBA
pH Meter:	HORIBA	Field Calibration:	7-4
Conductivity Meter:	HORIBA	Field Calibration:	1413
Filter / Filter Size:	-	Other:	

SAMPLING MEASUREMENTS

1308 Time	Cum. Vol. (gal. or L)	Purge Rate (gal. or L/m)	Temp. (oC)	pH	Spec. Cond. (mmhos/cm)	D.O.	Redox (mV)	Turbidity & Color	Water Depth (ft BMP)
1211	-	.2	22.7	6.83	1570	0.39	-17	4.8	32.09
1216		↓	22.9	6.84	1590	0.33	-21	3.8	32.11
1223		↓	22.9	6.84	1590	0.34	-22	4.4	32.12

Water Level (ft. BMP) at End of Purge: 32.12 Sample Intake Depth (ft. BMP):

SAMPLE INVENTORY

Bottles Collected				Filtration		Remarks
Time	Volume	Composition (G, P)	No.	(Y / N)	Preservation	(quality control sample, other)
1235	250mL	P	1	N	-	GEN CHEM
↓	500mL	P	1	N	HNO_3	METALS
	1L	P	2	N	HNO_3	-
	40mL	G	3	N	-	-

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LUMINANT

GROUNDWATER SAMPLING RECORD

PAGE 1 of 1

Project Number: 191222b2-D Project Name: LUMINANT - MCSES - A1 Date: 5-15-19

Sample Number:	BMW-26	Starting Water Level (ft. BMP):	1.62
Sampling Location (well ID, etc.):	BMW-26	Casing Stickup (ft.):	-
Sampled by:	JTB	Starting Water Level (ft. BGL):	1.62
Measuring Point (MP) of Well:	TOC/PVC	Total Depth (ft. BGL):	-
Screened Interval (ft. BGL):	-	Casing Diameter (in ID):	2.0
Filter Pack Interval (ft. BGL):	-	Casing Volume (gal.):	-

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: alconox & DI rinse

Purging: peristaltic / bladder Sampling: same

Disposal of Discharged Water: on site

INSTRUMENTS (Indicate make, model, I.d.)

Water Level:	KECK	Thermometer:	HORIBA
pH Meter:	HORIBA	Field Calibration:	7-4
Conductivity Meter:	HORIBA	Field Calibration:	1413
Filter / Filter Size:	-	Other:	

SAMPLING MEASUREMENTS

1409 Time	Cum. Vol. (gal. or (L))	Purge Rate (gal. or (L/m))	Temp. (oC)	pH	Spec. Cond. (mmhos/cm)	D.O.	Redox (mV)	Turbidity & Color	Water Depth (ft BMP)
1119	-	.2	23.9	6.91	1320	0.71	-47	8.6	1.81
1123		↓	24.1	6.90	1360	0.49	-44	6.7	1.82
1129		↓	24.2	6.90	1370	0.51	-46	6.8	1.81

Water Level (ft. BMP) at End of Purge: 1.81 Sample Intake Depth (ft. BMP):

SAMPLE INVENTORY

Bottles Collected				Filtration		
Time	Volume	Composition (G, P)	No.	(Y / N)	Preservation	Remarks (quality control sample, other)
1140	250mL	P	1	N	-	GEN CHEM
↓	500mL	P	1	N	HNO_3	METALS
	1L	P	2	N	HNO_3	-
↓	40mL	G	3	N	-	-

Comments:

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LUMINANT

GROUNDWATER SAMPLING RECORD

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Project Number: 191222b2-D Project Name: LUMINANT - MCSES - A1 Date: 5-15-19

Sample Number: BMW-27
Sampling Location (well ID, etc.): BMW-27
Sampled by: JTB
Measuring Point (MP) of Well: TOC/PVC
Screened Interval (ft. BGL): —
Filter Pack Interval (ft. BGL): —

Starting Water Level (ft. BMP): 2.79
Casing Stickup (ft.): —
Starting Water Level (ft. BGL): 2.79
Total Depth (ft. BGL): —
Casing Diameter (In ID): 2.0
Casing Volume (gal.): —

QUALITY ASSURANCE

METHODS (describe):
Cleaning Equipment: alconox & DI rinse
Purging: peristaltic / bladder Sampling: same
Disposal of Discharged Water: on site

INSTRUMENTS (Indicate make, model, I.d.)

Water Level: KECK Thermometer: HORIBA
pH Meter: HORIBA Field Calibration: 7-4
Conductivity Meter: HORIBA Field Calibration: 1413
Filter / Filter Size: — Other:

SAMPLING MEASUREMENTS

Time	Cum. Vol. (gal. or L)	Purge Rate (gal. or L/m)	Temp. (oC)	pH	Spec. Cond. (mmhos/cm)	D.O.	Redox (mV)	Turbidity & Color	Water Depth (ft BMP)
1032	—	.2	23.4	6.71	1970	0.60	-27	13	3.11
1037		↓	23.3	6.72	1940	0.46	-28	9.1	3.12
1043		↓	23.3	6.72	1950	0.44	-28	7.8	3.12

Water Level (ft. BMP) at End of Purge: 3.12
Sample Intake Depth (ft. BMP):

SAMPLE INVENTORY

Bottles Collected				Filtration		
Time	Volume	Composition (G, P)	No.	(Y / N)	Preservation	Remarks (quality control sample, other)
1055	250mL	P	1	N	—	GEN CHEM
↓	500mL	P	1	N	HNO_3	METALS
	1L	P	2	N	HNO_3	—
↓	40mL	G	3	N	—	—

Comments:

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LUMINANT

GROUNDWATER SAMPLING RECORD

PAGE 1 of 1

Project Number: 191222G2-D Project Name: LUMINANT - MCSES - A1 Date: 5-15-19

Sample Number: BMW-21
Sampling Location (well ID, etc.): BMW-21
Sampled by: JTB
Measuring Point (MP) of Well: TOC/PVC
Screened Interval (ft. BGL): —
Filter Pack Interval (ft. BGL): —

Starting Water Level (ft. BMP): 4.23
Casing Stickup (ft.): —
Starting Water Level (ft. BGL): 4.23
Total Depth (ft. BGL): —
Casing Diameter (in ID): 2.0
Casing Volume (gal.): —

QUALITY ASSURANCE

METHODS (describe):
Cleaning Equipment: alconox & DI rinse
Purging: peristaltic / bladder Sampling: same
Disposal of Discharged Water: on site

INSTRUMENTS (Indicate make, model, I.d.)
Water Level: KECK Thermometer: HORIBA
pH Meter: HORIBA Field Calibration: 7-4
Conductivity Meter: HORIBA Field Calibration: 1413
Filter / Filter Size: — Other:

SAMPLING MEASUREMENTS

0926 Time	Cum. Vol (gal. or L)	Purge Rate (gal. or L/m)	Temp. (oC)	pH	Spec. Cond. (mmhos/cm)	D.O.	Redox (mV)	Turbidity & Color	Water Depth (ft BMP)
0936	—	.2	22.9	6.89	1810	0.91	-6	5.7	4.91
0942		↓	22.7	6.91	1840	0.77	-11	5.1	4.43
0947		↓	22.7	6.92	1850	0.78	-12	6.8	4.43

Water Level (ft. BMP) at End of Purge: 4.43 Sample Intake Depth (ft. BMP):

SAMPLE INVENTORY

Bottles Collected				Filtration		Remarks
Time	Volume	Composition (G, P)	No.	(Y / N)	Preservation	(quality control sample, other)
0955	250mL	P	1	N	—	GEN CHEM
↓	500mL	P	1	N	HNO_3	METALS
	1L	P	2	N	HNO_3	—
↓	40mL	G	3	N	—	—

Comments:

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LUMINANT

GROUNDWATER SAMPLING RECORD

PAGE 1 of 1

Project Number: 191222G2-D Project Name: LUMINANT - MCSES - AI Date: 5-15-19

Sample Number:	BMW-22	Starting Water Level (ft. BMP):	4.47
Sampling Location (well ID, etc.):	BMW-22	Casing Stickup (ft.):	-
Sampled by:	JTB	Starting Water Level (ft. BGL):	4.47
Measuring Point (MP) of Well:	TOC/PVC	Total Depth (ft. BGL):	-
Screened Interval (ft. BGL):	-	Casing Diameter (in ID):	2.0
Filter Pack Interval (ft. BGL):	-	Casing Volume (gal.):	-

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: alconox & DI rinse

Purging: peristaltic / bladder Sampling: same

Disposal of Discharged Water: on site

INSTRUMENTS (Indicate make, model, I.d.)

Water Level:	KECK	Thermometer:	HORIBA
pH Meter	HORIBA	Field Calibration:	7-4
Conductivity Meter:	HORIBA	Field Calibration:	1413
Filter / Filter Size:	-	Other:	

SAMPLING MEASUREMENTS

Time	Cum. Vol. (gal. or L)	Purge Rate (gal. or L/m)	Temp. (oC)	pH	Spec. Cond. (mmhos/cm)	D.O.	Redox (mV)	Turbidity & Color	Water Depth (ft BMP)
0852	-	.2	23.1	6.64	1790	1.26	-39	13	4.61
0858		↓	23.2	6.69	1810	0.92	-41	10	4.64
0902		↓	23.1	6.68	1810	0.91	-42	10	4.63

Water Level (ft. BMP) at End of Purge: 4.63 Sample Intake Depth (ft. BMP):

SAMPLE INVENTORY

Bottles Collected				Filtration		Remarks
Time	Volume	Composition (G, P)	No.	(Y / N)	Preservation	(quality control sample, other)
0915	250mL	P	1	N	-	GEN CHEM
↓	500mL	P	1	N	HNO_3	METALS
	1L	P	2	N	HNO_3	-
↓	40mL	G	3	N	-	-

Comments:

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LUMINANT

GROUNDWATER SAMPLING RECORD

PAGE 1 of 1

Project Number: 191222b2-D Project Name: LUMINANT - MCSES - A1 Date: 5-15-19

Sample Number:	BMW-23	Starting Water Level (ft. BMP):	9.98
Sampling Location (well ID, etc.):	BMW-23	Casing Stickup (ft.):	—
Sampled by:	JTB	Starting Water Level (ft. BGL):	9.98
Measuring Point (MP) of Well:	TOC/PVC	Total Depth (ft. BGL):	—
Screened Interval (ft. BGL):	—	Casing Diameter (In ID):	2.0
Filter Pack Interval (ft. BGL):	—	Casing Volume (gal.):	—

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: alconox & DI rinse

Purging: peristaltic / bladder Sampling: same

Disposal of Discharged Water: on site

INSTRUMENTS (Indicate make, model, I.d.)

Water Level:	KECK	Thermometer:	HORIBA
pH Meter	HORIBA	Field Calibration:	7-4
Conductivity Meter:	HORIBA	Field Calibration:	1413
Filter / Filter Size:	—	Other:	

SAMPLING MEASUREMENTS

Time (0753)	Cum. Vol. (gal. or (L))	Purge Rate (gal. or (L)/m)	Temp. (oC)	pH	Spec. Cond. (mmhos/cm)	D.O.	Redox (mV)	Turbidity & Color	Water Depth (ft BMP)
0802	—	.2	22.7	6.82	1960	0.79	-27	11	10.27
0808		↓	23.1	6.84	1940	0.52	-26	7.6	10.28
0814		↓	23.2	6.84	1940	0.53	-26	8.2	10.28

Water Level (ft. BMP) at End of Purge: Sample Intake Depth (ft. BMP):

SAMPLE INVENTORY

Bottles Collected				Filtration		Remarks
Time	Volume	Composition (G, P)	No.	(Y / N)	Preservation	(quality control sample, other)
0825	250mL	P	1	N	—	GEN CHEM
↓	500mL	P	1	N	HNO_3	METALS
↓	1L	P	2	N	HNO_3	—
↓	40mL	G	3	N	—	—

Comments:

Pastor, Behling & Wheeler, LLC
2201 Double Creek Dr., Suite 4004
Round Rock, TX 78664
(512) 671-3434 Fax (512) 671-3446

LUMINANT

GROUNDWATER SAMPLING RECORD

PAGE 1 of 1

Project Number: 19122262-D Project Name: LUMINANT-MCSES-A1 Date: 5-15-19

Sample Number:	BMW-24	Starting Water Level (ft. BMP):	9.83
Sampling Location (well ID, etc.):	BMW-24	Casing Stickup (ft.):	–
Sampled by:	JTB	Starting Water Level (ft. BGL):	9.83
Measuring Point (MP) of Well:	TOC/PVC	Total Depth (ft. BGL):	–
Screened Interval (ft. BGL):	–	Casing Diameter (in ID):	2.0
Filter Pack Interval (ft. BGL):	–	Casing Volume (gal.):	–

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: alconox & DI rinse

Purging: peristaltic / bladder Sampling: Same

Disposal of Discharged Water: on site

INSTRUMENTS (Indicate make, model, I.d.)

Water Level:	KECK	Thermometer:	HORIBA
pH Meter:	HORIBA	Field Calibration:	7-4
Conductivity Meter:	HORIBA	Field Calibration:	1413
Filter / Filter Size:	–	Other:	

SAMPLING MEASUREMENTS

0703 Time	Cum. Vol. (gal. or L)	Purge Rate (gal. or L/m)	Temp. (oC)	pH	Spec. Cond. (mmhos/cm)	D.O.	Redox (mV)	Turbidity & Color	Water Depth (ft BMP)
0713	–	.2	21.7	6.74	2320	0.61	-17	6.6	10.16
0718		↓	22.1	6.77	2210	0.60	-16	7.8	10.17
0723		↓	22.2	6.78	2210	0.60	-16	7.7	10.17

Water Level (ft. BMP) at End of Purge: 10.17 Sample Intake Depth (ft. BMP):

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
0735	250mL	P	1	N	–	GEN CHEM
↓	500mL	P	1	N	HNO_3	METALS
↓	1L	P	2	N	HNO_3	–
↓	40mL	G	3	N	–	–

Comments:

Pastor, Behling & Wheeler, LLC
2201 Double Creek Dr., Suite 4004
Round Rock, TX 78664
(512) 671-3434 Fax (512) 671-3446

LUMINANT

Groundwater Sample Collection

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GOLDER

Project/Phase	19122434-D	Equipment Decon	☒ Dedicated equipment ☐ Decon between locations	Depth to Water	9.50 ft. BMP
Site Location	A-1			Casing Stickup	ft.
Date	6-13-19	Reference Point	☒ Top of casing	Depth to Water	ft. BGL
MW ID	BMW-25	Location	☐ Other	Total MW Depth	ft. BGL
Sample ID	BMW-25	Water Quality Meter Model	Horiba U-50	MW Diameter	2 inches
Pump	☒ Waterra ☐ Submersible ☒ Peristaltic ☐ Bladder	Unit Number		MW Volume	gallons
				Pump Intake Depth	ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate (L/min)	Cumulative Purge Volume (L)	Depth to Water (ft)	Temp (°C) ☐ NM	pH ☐ NM	Conductivity (µS/m or mS/cm) ☐ not measured	Dissolved Oxygen (mg/L) ☐ not measured	Redox Potential (mV) ☐ not measured	Turbidity (NTU) ☐ NM
0900	0.1	1.0		21.96	6.74	3.56	10.93	330	10.6
0910		2.0		21.42	6.96	3.62	9.38	316	10.9
0915		2.5		20.21	7.00	2.48	9.27	317	14.2
0920		3.0		21.36	7.01	2.21	9.19	312	16.8
0925		3.5		21.42	7.02	2.13	9.19	309	8.4
0930		4.0		21.93	7.01	2.16	9.21	308	7.0
Purging was completed based on:	☐ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)								

Bottles Collected				Filtration (10µm / 45µm)	Preserved (type)	Notes and Observations (quality control sample, other)
Time	Volume	Composition (G / P)	No.			
0930				☐ filtered ☒ unfiltered		
0				☐ filtered ☒ unfiltered		

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☐ 10 Low Flow Groundwater Sample Collection.

Field Team Leader Alex Bozzolo (name) Alex Bozzolo (signature)

LUMINANT

Groundwater Sample Collection

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GOLDER

Project/Phase	19122484-D	**Equipment Decon**	☐ Dedicated equipment	**Depth to Water**	29.80 ft. BMP
Site Location	A-1		☐ Decon between locations	**Casing Stickup**	___ ft.
Date	6-13-19	**Reference Point**	~~☐ Top~~ of casing	**Depth to Water**	___ ft. BGL
MW ID	BMW-29	**Location**	☐ Other ___	**Total MW Depth**	___ ft. BGL
Sample ID	BMW-29	**Water Quality**		**MW Diameter**	2 inches
Pump	~~☐ Waterra~~ ☐ Submersible	**Meter Model**	Hydrolab U-50	**MW Volume**	___ gallons
	☐ Peristaltic ☐ Bladder	**Unit Number**	Hydrolab U-50	**Pump Intake Depth**	___ ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate (L/min)	Cumulative Purge Volume (L)	Depth to Water (ft)	Temp (°C) ☐ NM	pH ☐ NM	Conductivity (µS/m or mS/cm) ☐ not measured	Dissolved Oxygen (mg/L) ☐ not measured	Redox Potential (mV) ☐ not measured	Turbidity (NTU) ☐ NM
1000	0.1	1.0		22.94	6.36	1.98	10.36	246	131.2
1010		2.0		23.36	6.41	2.02	10.41	256	84.0
1015		2.5		24.04	7.30	2.01	10.74	274	62.8
1020		3.0		24.13	7.10	2.00	9.96	281	71.9
1025		3.5		24.24	7.11	2.00	9.34	295	62.1
1030		4.0		24.19	7.19	2.00	9.24	299	92.4
Purging was completed based on:	☐ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)								

Bottles Collected				Filtration (10µm / 45µm)	Preserved (type)	Notes and Observations (quality control sample, other)
Time	Volume	Composition (G / P)	No.			
1030				☐ filtered ☐ unfiltered		
				☐ filtered ☐ unfiltered		

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☐ 10 Low Flow Groundwater Sample Collection.

Field Team Leader Alex Bozzelo (name) Alex Bozzelo (signature)

LUMINANT

Groundwater Sample Collection

Page ___ of ___

GOLDER

Project/Phase	19122434-D	Equipment Decon	☐ Dedicated equipment ☐ Decon between locations	Depth to Water	31.54 ft. BMP
Site Location	A-1			Casing Stickup	ft.
Date	6-13-19	Reference Point	☒ Top of casing	Depth to Water	ft. BGL
MW ID	BMW-30	Location	☐ Other	Total MW Depth	ft. BGL
Sample ID	BMW-30	Water Quality Meter Model	Bladder Pump	MW Diameter	2 inches
Pump	☒ Waterra ☐ Submersible ☐ Peristaltic ☒ Bladder	Unit Number	Horiba U50	MW Volume	gallons
				Pump Intake Depth	ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate (L/min)	Cumulative Purge Volume (L)	Depth to Water (ft)	Temp (°C) ☐ NM	pH ☐ NM	Conductivity (µS/m or mS/cm) ☐ not measured	Dissolved Oxygen (mg/L) ☐ not measured	Redox Potential (mV) ☐ not measured	Turbidity (NTU) ☐ NM
1220	0.1	1.0		24.26	6.94	1.01	9.36	146	101
1230		2.0		24.52	6.92	0.92	8.41	202	97
1235		2.5		24.76	7.08	1.30	6.24	219	88
1240		3.0		24.69	7.09	1.21	7.69	258	100
1245		3.5		24.52	7.09	1.13	7.38	292	90
1250		4.0		24.61	7.09	1.15	7.94	303	82
Purging was completed based on:	☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)								

Bottles Collected				Filtration (10µm / 45µm)	Preserved (type)	Notes and Observations (quality control sample, other)
Time	Volume	Composition (G / P)	No.			
1250				☐ filtered ☒ unfiltered		
				☐ filtered ☒ unfiltered		

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☐ 10 Low Flow Groundwater Sample Collection.

Field Team Leader Alex Bonzalo (name) Alex Bonzalo (signature)

LUMINANT

Groundwater Sample Collection

GOLDER

Page ___ of ___

Project/Phase	19122434-D	**Equipment Decon**	☑ Dedicated equipment	**Depth to Water**	9.26 ft. BMP
Site Location	A-1		☐ Decon between locations	**Casing Stickup**	___ ft.
Date	6-13-19	**Reference Point**	☑ Top of casing	**Depth to Water**	___ ft. BGL
MW ID	BMW-31	**Location**	☐ Other ___	**Total MW Depth**	___ ft. BGL
Sample ID	BMW-31	**Water Quality**		**MW Diameter**	___ inches
Pump	☑ Waterra ☐ Submersible	**Meter Model**	H9828	**MW Volume**	___ gallons
	☑ Peristaltic ☐ Bladder	**Unit Number**		**Pump Intake Depth**	___ ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate (L/min)	Cumulative Purge Volume (L)	Depth to Water (ft)	Temp (°C) ☐ NM	pH ☐ NM	Conductivity (µS/m or mS/cm) ☐ not measured	Dissolved Oxygen (mg/L) ☐ not measured	Redox Potential (mV) ☐ not measured	Turbidity (NTU) ☐ NM
1400	0.1	1.0		24.90	7.90	2.16	8.36	209	126
1410		2.0		23.26	7.01	2.01	6.31	213	131
1415		2.5		24.01	7.04	2.06	9.24	224	145
1420		3.0		24.21	7.06	1.97	9.30	239	111
1425		3.5		24.16	7.01	1.92	9.21	250	130
1430		4.0		24.52	7.01	1.90	9.14	254	124
Purging was completed based on:	☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)								

Bottles Collected				Filtration (10µm / 45µm)	Preserved (type)	Notes and Observations (quality control sample, other)
Time	Volume	Composition (G / P)	No.			
1430				☐ filtered ☒ unfiltered		
1C				☐ filtered ☒ unfiltered		

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☐ 10 Low Flow Groundwater Sample Collection.

Field Team Leader Alex Bartlo (name) Alex Bartlo (signature)

LUMINANT

Groundwater Sample Collection

Page ___ of ___

GOLDER

Project/Phase	19122434-D	**Equipment Decon**	☒ Dedicated equipment ☐ Decon between locations	**Depth to Water**	12.53 ft. BMP
Site Location	A-1			**Casing Stickup**	3.00 ft.
Date	6-13-19	**Reference Point**	☒ Top of casing	**Depth to Water**	9.53 ft. BGL
MW ID	BMW-32	**Location**	☐ Other ___	**Total MW Depth**	40.00 ft. BGL
Sample ID	BMW-32	**Water Quality**		**MW Diameter**	2 inches
Pump	☒ Waterra ☐ Submersible	**Meter Model**	Horiba U 50	**MW Volume**	14 gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**		**Pump Intake Depth**	30.00 ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate (L/min)	Cumulative Purge Volume (L)	Depth to Water (ft)	Temp (°C) ☐ NM	pH ☐ NM	Conductivity (µS/m or mS/cm) ☐ not measured	Dissolved Oxygen (mg/L) ☐ not measured	Redox Potential (mV) ☐ not measured	Turbidity (NTU) ☐ NM
0700	0.1	1.0		20.58	6.59	2.32	9.98	167	15.8
0710		2.0		21.45	6.48	2.27	9.35	142	13.5
0715		2.5		20.09	6.52	2.26	9.03	134	13.4
0720		3.0		20.12	6.54	2.26	9.03	124	13.0
0725		3.5		20.01	6.56	2.26	9.01	116	14.2
0730		4.0		20.46	6.56	2.29	9.00	114	12.1
Purging was completed based on:	☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)								

Bottles Collected				Filtration	Preserved	Notes and Observations
Time	Volume	Composition (G / P)	No.	(10µm / 45µm)	(type)	(quality control sample, other)
0730				☐ filtered ☐ unfiltered		
0730				☐ filtered ☐ unfiltered		

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☐ 10 Low Flow Groundwater Sample Collection.

Field Team Leader Alex Barzdo (name) Alex Barzdo (signature)

LUMINANT

Groundwater Sample Collection

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GOLDER

Project/Phase	19122484-D	**Equipment Decon**	☐ Dedicated equipment	**Depth to Water**	26.01 ft. BMP
Site Location	A-1		☐ Decon between locations	**Casing Stickup**	2.85 ft.
Date	6-13-19	**Reference Point**	☒ Top of casing	**Depth to Water**	ft. BGL
MW ID	BMW-33	**Location**	☐ Other	**Total MW Depth**	48.00 ft. BGL
Sample ID	BMW-33	**Water Quality**		**MW Diameter**	2 inches
Pump	☐ ~~Waterra~~ ☐ Submersible	**Meter Model**	H6216A U50	**MW Volume**	gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**		**Pump Intake Depth**	ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate (L/min)	Cumulative Purge Volume (L)	Depth to Water (ft)	Temp (°C) ☐ NM	pH ☐ NM	Conductivity (µS/m or mS/cm) ☐ not measured	Dissolved Oxygen (mg/L) ☐ not measured	Redox Potential (mV) ☐ not measured	Turbidity (NTU) ☐ NM
0745	0.1	1.0		23.79	7.02	1.48	0.42	240	7.1
0755		2.0		23.32	6.91	1.49	0.52	228	1.6
0800		2.5		23.63	6.82	1.47	0.51	227	2.7
0805		3.0		23.41	6.80	1.36	0.36	226	2.1
0810		3.5		23.64	6.80	1.40	0.21	226	1.9
0815		4.0		23.31	6.75	1.42	0.17	226	1.7
Purging was completed based on:	☐ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)								

Bottles Collected				Filtration	Preserved	Notes and Observations
Time	Volume	Composition (G / P)	No.	(10µm / 45µm)	(type)	(quality control sample, other)
0815				☐ filtered ☒ ~~Un~~filtered		
0815				☐ filtered ☒ ~~Un~~filtered		

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☐ 10 Low Flow Groundwater Sample Collection.

Field Team Leader Alex Barzdo (name) Alex Barzdo (signature)

LUMINANT

Groundwater Sample Collection

Page ___ of ___

GOLDER

Project/Phase	19122434-D	Equipment Decon	☒ Dedicated equipment ☐ Decon between locations	Depth to Water	9.49 ft. BMP
Site Location	A-1			Casing Stickup	ft.
Date	6-13-19	Reference Point	☒ Top of casing	Depth to Water	ft. BGL
MW ID	MW PDP 2019-1	Location	☐ Other	Total MW Depth	ft. BGL
Sample ID	MW-PDP-2019-1	Water Quality		MW Diameter	inches
Pump	☒ Waterra ☐ Submersible ☒ Peristaltic ☐ Bladder	Meter Model	Horiba U-50	MW Volume	gallons
		Unit Number		Pump Intake Depth	ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate (L/min)	Cumulative Purge Volume (L)	Depth to Water (ft)	Temp (°C) ☐ NM	pH ☐ NM	Conductivity (µS/m or mS/cm) ☐ not measured	Dissolved Oxygen (mg/L) ☐ not measured	Redox Potential (mV) ☐ not measured	Turbidity (NTU) ☐ NM
1530	0.1	1.0		22.14	6.84	2.01	12.42	92	214
1540		2.0		22.04	7.36	1.36	12.36	109	105
1545		2.5		22.12	7.41	1.42	11.92	142	90
1550		3.0		22.16	7.02	1.01	10.34	109	69
1600		3.5		22.36	7.09	102	10.19	174	13
1605		4.0		22.41	7.10	1.00	10.61	202	15
Purging was completed based on:	☐ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)								

Bottles Collected				Filtration (10µm / 45µm)	Preserved (type)	Notes and Observations (quality control sample, other)
Time	Volume	Composition (G / P)	No.			
1605				☐ filtered ☒ unfiltered		
				☐ filtered ☒ unfiltered		

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☐ 10 Low Flow Groundwater Sample Collection.

Field Team Leader Alex Bonzalo (name) Alex Bonzalo (signature)

LUMINANT

GROUNDWATER SAMPLING RECORD

PAGE 1 of 1

Project Number: 19122262-D Project Name: LUMINANT-AIAREA LANDFILL Date: 7-9-19

Sampling Location (well ID, etc.): AIV-18-OB-95

Sample Number: AIV-18-OB-95

Sampled by: JTB

Measuring Point (MP) of Well: TOC - Steel or PVC

Screened Interval (ft. BGL): —

Filter Pack Interval (ft. BGL): —

Starting Water Level (ft. BMP): 23.12

Casing Stickup (ft.):

WL (ft. BMP): (ft. BGL):

TD (ft. BMP): (ft. BGL):

Ft. water: Casing Dia. (In ID):

1X Casing Vol (gal.): 3X (gal):

QUALITY ASSURANCE

Gallons/Foot: 2": 0.16 4": 0.65 5.25": 1.12 6": 1.47 6.25": 1.59

METHODS (describe): Low Flow - Dedicated Tubing/Equipment

Cleaning Equipment: DI/Alconox Rinse

Purge: Peristaltic Pump / SS Pump / Bailer Sampling: Peristaltic Pump / SS Pump / Bailer

Disposal of Discharged Water:

INSTRUMENTS (Indicate make, model, I.d.)

Water Level: SOLINST Other:

Multi Meter: HORIBA

Field Calibration: AUTO CAL

Filter / Filter Size:

SAMPLING MEASUREMENTS

Begin Purge:

1109 Time	DTW (ft BTOC)	Cum. Vol. (gal. or L)	Purge Rate (gal. or L/m)	Temp. (oC)	DO (mg/L)	Spec. Cond. (µs/cm)	pH	ORP (mV)	Turbidity (NTU)	Color & Sediment
1118	23.31	—	↓	20.6	0.62	1920	6.71	-23	5.7	neutral
1124	23.34		↓	20.7	0.51	1930	6.68	-26	6.7	↓
1129	23.35		↓	20.7	0.52	1930	6.67	-26	6.2	↓

WL (ft. BMP) at End of Purge: Sample Intake Depth (ft. BMP):

SAMPLE INVENTORY

Bottles Collected					Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time		Volume	Composition (G, P)	No.			
1135		500mL	P	1	N		
1135		250mL	P	1	N		

Comments:

GOLDER
2201 Double Creek Dr., Suite 4004
Round Rock, Texas 78664
Phone: (512) 671-3434 Fax: (512) 671-3446

LUMINANT

GROUNDWATER SAMPLING RECORD

PAGE 1 of 1

Project Number: 19122262-D Project Name: LUMINANT - ALCOA LANDFILL Date: 7-9-19

Sampling Location (well ID, etc.): BMW-25 Starting Water Level (ft. BMP): 9.34

Sample Number: BMW-25 Casing Stickup (ft.): _____

Sampled by: JTB WL (ft. BMP): _____ (ft. BGL): _____

Measuring Point (MP) of Well: (TOC) - Steel or (PVC) TD (ft. BMP): _____ (ft. BGL): _____

Screened Interval (ft. BGL): — Ft. water: _____ Casing Dia. (In ID): _____

Filter Pack Interval (ft. BGL): — 1X Casing Vol (gal.): _____ 3X (gal): _____

QUALITY ASSURANCE

Gallons/Foot: 2": 0.16 4": 0.65 5.25": 1.12 6": 1.47 6.25": 1.59

METHODS (describe): Low Flow - Dedicated Tubing/Equipment

Cleaning Equipment: DI/Alconox Rinse

Purge: (Peristaltic Pump) / SS Pump / Bailer Sampling: (Peristaltic Pump) / SS Pump / Bailer

Disposal of Discharged Water:

INSTRUMENTS (Indicate make, model, I.d.)

Water Level: SOLINST Other:

Multi Meter: HORIBA

Field Calibration: AUTO CAL

Filter / Filter Size:

SAMPLING MEASUREMENTS

Begin Purge:

1229 Time	DTW (ft BTOC)	Cum. Vol. (gal. or (L))	Purge Rate (gal. or (L /m))	Temp. (oC)	DO (mg/L)	Spec. Cond. (µs/cm)	pH	ORP (mV)	Turbidity (NTU)	Color & Sediment
1238	9.62	—	1	21.7	1.42	2030	6.82	27	7.4	mental
1244	9.64			21.5	1.17	2020	6.83	32	6.4	
1251	9.64			21.5	1.18	2030	6.82	29	7.1	

WL (ft. BMP) at End of Purge: Sample Intake Depth (ft. BMP):

SAMPLE INVENTORY

Bottles Collected					Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time		Volume	Composition (G, P)	No.			
1255		500mL	P	1	N		
1295		250mL	P	1	N		

Comments:

GOLDER
2201 Double Creek Dr., Suite 4004
Round Rock, Texas 78664
Phone: (512) 671-3434 Fax: (512) 671-3446

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GROUNDWATER SAMPLING RECORD

PAGE 1 of 1

Project Number: 19122262-D Project Name: LUMINANT- AI AREA LANDFILL Date: 7-9-19

Sampling Location (well ID, etc.): BMW-29 Starting Water Level (ft. BMP): 29.62

Sample Number: BMW-29 Casing Stickup (ft.): _____

Sampled by: JTB WL (ft. BMP): _____ (ft. BGL): _____

Measuring Point (MP) of Well: (TOC) - Steel or (PVC) TD (ft. BMP): _____ (ft. BGL): _____

Screened Interval (ft. BGL): — Ft. water: _____ Casing Dia. (In ID): _____

Filter Pack Interval (ft. BGL): — 1X Casing Vol (gal.): _____ 3X (gal): _____

QUALITY ASSURANCE

Gallons/Foot: 2": 0.16 4": 0.65 5.25": 1.12 6": 1.47 6.25": 1.59

METHODS (describe): Low Flow - Dedicated Tubing/Equipment

Cleaning Equipment: DI/Alconox Rinse

Purge: Peristaltic Pump / SS Pump / Bailer Bladder pump Sampling: Peristaltic Pump / SS Pump / Bailer bladder pump

Disposal of Discharged Water:

INSTRUMENTS (Indicate make, model, I.d.)

Water Level: SOLINST Other:

Multi Meter: HORIBA

Field Calibration: AUTOCAL

Filter / Filter Size:

SAMPLING MEASUREMENTS

Begin Purge:

0919 Time	DTW (ft BTOC)	Cum. Vol. (gal. or (L))	Purge Rate (gal. or (L /m))	Temp. (oC)	DO (mg/L)	Spec. Cond. (µs/cm)	pH	ORP (mV)	Turbidity (NTU)	Color & Sediment
0928	29.91	—	.1	22.6	2.16	1930	6.86	-17	16	mentual
0936	29.93		↓	22.7	1.76	1960	6.84	-13	7.3	
0940	29.92		↓	22.7	1.77	1960	6.83	-13	7.4	

WL (ft. BMP) at End of Purge: Sample Intake Depth (ft. BMP):

SAMPLE INVENTORY

Bottles Collected					Filtration	Preservation	Remarks
Time		Volume	Composition (G, P)	No.	(Y / N)	(type)	(quality control sample, other)
0945		500mL	P	1	N		
0945		250mL	P	1	N		

Comments:

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GROUNDWATER SAMPLING RECORD

PAGE 1 of 1

Project Number: 191222 62-D Project Name: LUMINANT - A1AREA LANDFILL Date: 7-9-19

Sampling Location (well ID, etc.): BMW-32

Sample Number: BMW-32

Sampled by: JTB

Measuring Point (MP) of Well: (TOC) - Steel or (PVC)

Screened Interval (ft. BGL): —

Filter Pack Interval (ft. BGL): —

Starting Water Level (ft. BMP): 12.39

Casing Stickup (ft.): _____

WL (ft. BMP): _____ (ft. BGL): _____

TD (ft. BMP): _____ (ft. BGL): _____

Ft. water: _____ Casing Dia. (In ID): _____

1X Casing Vol (gal.): _____ 3X (gal): _____

QUALITY ASSURANCE

Gallons/Foot: 2": 0.16 4": 0.65 5.25": 1.12 6": 1.47 6.25": 1.59

METHODS (describe): Low Flow - Dedicated Tubing/Equipment

Cleaning Equipment: DI/Alconox Rinse

Purge: (Peristaltic Pump) / SS Pump / Bailer Sampling: (Peristaltic Pump) / SS Pump / Bailer

Disposal of Discharged Water:

INSTRUMENTS (Indicate make, model, I.d.)

Water Level: SOLINST Other:

Multi Meter: HORIBA

Field Calibration: AUTO CAL

Filter / Filter Size:

SAMPLING MEASUREMENTS

Begin Purge:

1346 Time	DTW (ft BTOC)	Cum. Vol. (gal. or (L))	Purge Rate (gal. or (L/m))	Temp. (oC)	DO (mg/L)	Spec. Cond. (µs/cm)	pH	ORP (mV)	Turbidity (NTU)	Color & Sediment
1356	12.61	—	.1	21.3	1.62	2160	6.67	-7	6.7	neutral
1402	12.62		↓	21.4	1.32	2130	6.61	-11	7.2	↓
1413	12.62		↓	21.3	1.31	2130	6.62	-12	5.9	↓

WL (ft. BMP) at End of Purge: Sample Intake Depth (ft. BMP):

SAMPLE INVENTORY

Bottles Collected					Filtration	Preservation	Remarks
Time		Volume	Composition (G, P)	No.	(Y / N)	(type)	(quality control sample, other)
1420		500mL	P	1	N		
1420		250mL	P	1	N		

Comments:

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REPORT

CCR ASSESSMENT OF CORRECTIVE MEASURES

Martin Lake Steam Electric Station - Ash Pond Area
Rusk County, Texas

Submitted to:

Luminant Generation Company LLC

Submitted by:

Golder Associates Inc.
2201 Double Creek Dr, Suite 4004, Round Rock, Texas, USA 78664

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19121403

September 2019

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1.0 INTRODUCTION

Golder Associates Inc. (Golder) has prepared this assessment of corrective measures (ACM) report on behalf of Luminant Generation Company LLC (Luminant) for the West Ash Pond (WAP), East Ash Pond (EAP), and New Scrubber Pond (NSP) (collectively referred to as the "Ash Pond Area") located at the Martin Lake Steam Electric Station (MLSES) in Rusk County, Texas (hereafter, the "Site"). The ACM was prepared in accordance with §257.96 of the Coal Combustion Residual (CCR) Rule and was required due to the presence of concentrations of selected Appendix IV constituents at statistically significant levels (SSLs) above the groundwater protection standards (GWPS) established for the constituents at the Site. This ACM Report will be placed in the MLSES operating record in accordance with §257.105(h)(10).

This report also incorporates the results of a site investigation conducted at the Site in May and June 2019. The objectives of the site investigation were:

- delineate the nature and extent of the selected Appendix IV constituents to their respective GWPS;
- update the statistical evaluations of the Appendix IV constituents to include data collected during 2019 to confirm that SSL exceedances continue to occur at the Site;
- collect data to evaluate potential future alternate source demonstrations (ASDs) for the Appendix IV constituents; and
- assess the potential for monitored natural attenuation (MNA) to be successful at the Site for the Appendix IV constituents.

The MLSES is located approximately 5 miles southeast of Tatum, Rusk County, Texas (Figure 1). The MLSES is expected to remain in operation for the foreseeable future, depending on future power demands.

The Ash Pond Area is located immediately east of the MLSES power units (Figure 2). The WAP is constructed with a composite liner consisting of an 18-inch thick compacted clay liner, overlain by two 60-mil HDPE geomembrane liners with a geonet drainage layer between the geomembranes. The EAP is constructed with a composite liner consisting of an 18-inch thick compacted clay liner, overlain by a geotextile, overlain by two 60-mil HDPE geomembrane liners with a geonet drainage layer between the geomembranes. A 4-inch thick concrete revetment mat is installed on top of the upper geomembrane liner in both the WAP and EAP. The WAP and EAP are considered unlined surface impoundments under §257.71(a)(1)(ii) of the CCR Rule (BM 2016).

The NSP is constructed with liner system consisting of two 60-mil HDPE geomembrane liners with a geonet drainage layer between the geomembranes, overlain by a 4-inch thick concrete revetment mat. The NSP is considered an unlined surface impoundment under §257.71(a)(1)(ii) of the CCR Rule (BM 2016).

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2.0 REGIONAL AND SITE SETTING

2.1 Regional Geology

MLSES is located in the outcrop area of the Eocene-aged Wilcox Group (Barnes, 1965). The Wilcox Group in the vicinity of the Site consists mostly of unconsolidated to moderately consolidated clay and silt, with various amounts of interbedded sand and lignite. The depositional environment is associated with fluvial-deltaic processes such as inter-channel crevasse splays, overbank deposits, and localized channel fills. The Wilcox Group is overlain by sands of the Carrizo Formation, which is present only at higher elevations in the area. The Carrizo Formation is not present at the Site.

2.2 Regional Hydrogeology

Groundwater wells completed in the Wilcox Group sands in the area are typically used for domestic, oil and gas supply, or stock watering purposes. Some potable water supply wells in the region are also completed in the Wilcox Group, including two wells at the MLSES that are both located upgradient of the Ash Pond Area and are screened at depths of 300 feet bgs or greater. Groundwater within the upper 100 feet below ground surface (bgs) in the region typically flows under unconfined to semi-confined conditions. The direction and rate of groundwater movement in the Wilcox Group are affected by a number of physical features, including topography, surface drainage, and geology. The natural groundwater potentiometric surface in these shallow flow systems is generally a subdued replica of topography. In general, groundwater flow occurs from high potentiometric areas (recharge zones) toward valleys (discharge zones). Groundwater divides generally coincide with surface drainage divides.

2.3 Site Hydrogeology and CCR Monitoring Well Network

The CCR groundwater monitoring well network at the Ash Pond Area was established in 2015 using newly installed monitoring wells H-26, H-27, H-28, H-29, H-31, H-32, AND H-33 (Figure 2). Based on soil borings completed at the Site, the geology near the CCR units generally consists of an upper zone composed of an approximately 30- to 40-foot thick low- to medium-plasticity, lean clay to clayey sand unit. The upper zone is underlain by an intermediate zone composed of poorly-graded fine sand and silty sand unit that is generally about 5 to 20 feet thick. The intermediate zone is underlain by a laterally-continuous, silty to sandy confining clay unit. The uppermost aquifer occurs in the intermediate sand and silty sand unit at the Site (PBW 2017a). The CCR monitoring wells are completed in the intermediate zone. Geologic cross sections of the Ash Pond Area are presented on Figures 3, 4, and 5.

Groundwater elevations are generally highest near the western side of the Ash Pond Area with an inferred groundwater flow direction to the east toward Martin Lake. A groundwater potentiometric map constructed using groundwater elevation data collected in May 2019 from the CCR monitoring network is presented on Figure 6. Based on the inferred groundwater flow direction, the location of each CCR monitoring well relative to the Ash Pond Area is as follows:

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Upgradient/Background Wells	Downgradient Wells
H-27 H-26 H-33	H-28 H-29 H-31 H-32

Rising- and falling-head aquifer tests (i.e., slug tests) were conducted at the Site as part of a 2011 assessment for the Texas Commission on Environmental Quality (TCEQ) Texas Risk Reduction Program (TRRP) (PBW 2011). Based on the test results, the intermediate zone had an estimated hydraulic conductivity of 1.0E-03 cm/sec and an estimated lateral groundwater flow velocity of 27 feet per year.

Golder performed a survey of water supply wells located in the vicinity of the Ash Pond Area in May 2019 as part of a Texas Commission on Environmental Quality (TCEQ) Texas Risk Reduction Program (TRRP) assessment of the Site. A Drinking Water Survey Report (Golder, 2019) documenting the water well survey activities and findings was approved by the TCEQ in a letter dated August 15, 2019. No imminent threats to water wells or potentially affected drinking water wells were identified.

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3.0 NATURE AND EXTENT EVALUATION

3.1 Groundwater Monitoring Summary

Background monitoring of groundwater in the vicinity of the Ash Pond Area began in October 2015 and was completed in December 2016. Samples collected during this period were analyzed for Appendix III and Appendix IV constituents to establish background concentrations pursuant to §257.94(b).

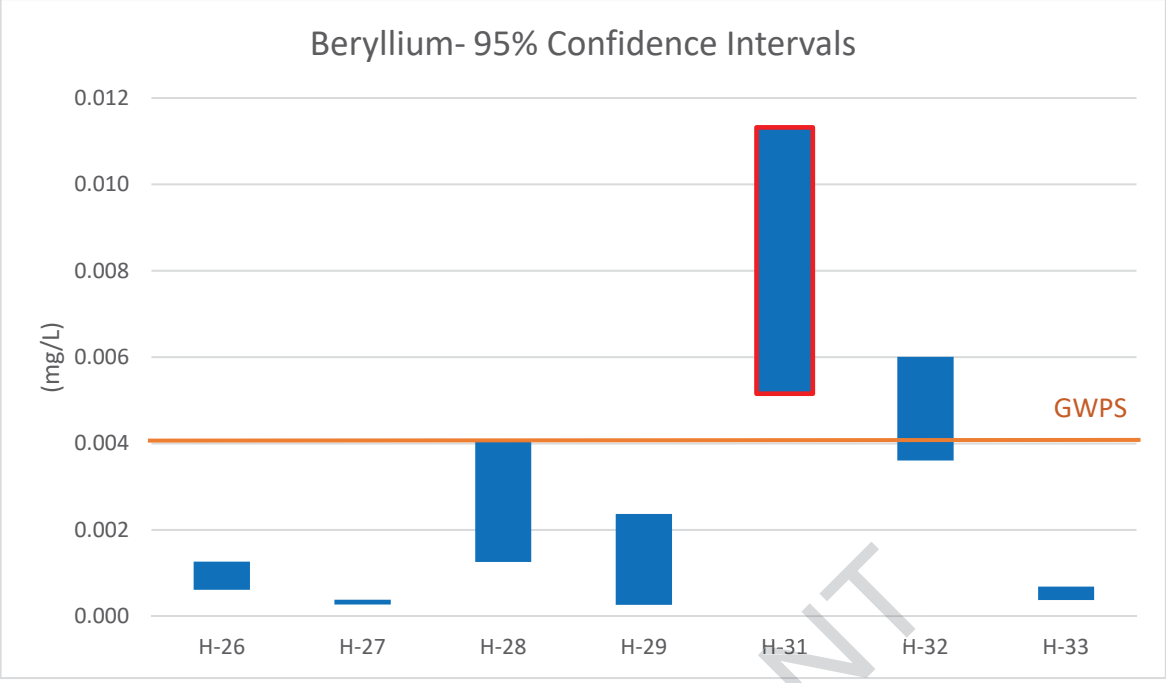
A detection monitoring program in accordance §257.94 was initiated in September 2017. The evaluation of those data was completed in 2018 using procedures described in the Statistical Analysis Plan (PBW 2017b) to identify statistically significant increases (SSIs) of Appendix III parameters above background concentrations. Based on the identification of SSIs for one or more Appendix III parameters, an assessment monitoring program was established pursuant to §257.94(e)(1).

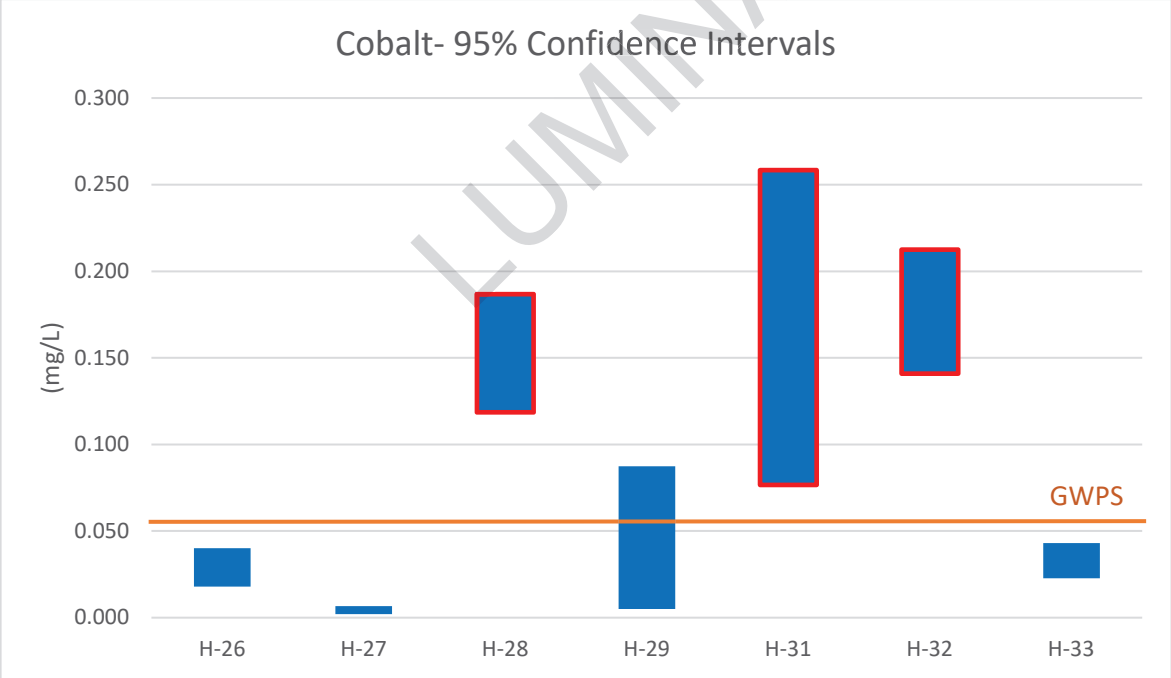
The initial assessment monitoring event was performed in June 2018 and a subsequent semi-annual assessment monitoring event was conducted in September 2018 in accordance with §257.95(a) and §257.95(d). Using the Appendix IV data collected during the assessment monitoring period through September 2018, SSLs above GWPSs were initially identified in downgradient wells in January 2019 for beryllium (H-28, and H-29), cobalt (H-28 and H-29), and lithium (H-28); therefore, an ACM was initiated on April 8, 2019 pursuant to §257.95(g). A justification letter for a 60-day extension due to site-specific circumstances that delayed work on the ACM was certified on July 3, 2019 in accordance with §257.96(a). Based on the extension, the deadline for completing the ACM is September 5, 2019.

3.2 Assessment Monitoring SSL Evaluation

An additional assessment monitoring event was performed in May 2019. Groundwater sampling analytical results for all Appendix IV parameters from 2015 through 2019 are presented in Table 1. An updated statistical analysis of the Appendix IV results from downgradient CCR monitoring wells was conducted including the May 2019 data to evaluate if constituent concentrations detected in the samples remained at SSLs relative to the GWPSs. The updated statistical analysis was performed in accordance with the Statistical Analysis Plan for CCR Groundwater Monitoring (PBW 2017b) and the USEPA Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities-Unified Guidance (USEPA 2009). Confidence intervals were calculated for any Appendix IV parameter that historically has had more than one occurrence in excess of the GWPS in any well within the monitoring network. Plots of the confidence intervals for each of those Appendix IV parameters are presented below (SSLs are highlighted in red around the bars):

DOMINANT


Beryllium- 95% Confidence Intervals
0.012
0.010
0.008
0.006
0.004
0.002
0.000
(mg/L)
GWPS
H-26
H-27
H-28
H-29
H-31
H-32
H-33


Cobalt- 95% Confidence Intervals
0.300
0.250
0.200
0.150
0.100
0.050
0.000
(mg/L)
GWPS
H-26
H-27
H-28
H-29
H-31
H-32
H-33

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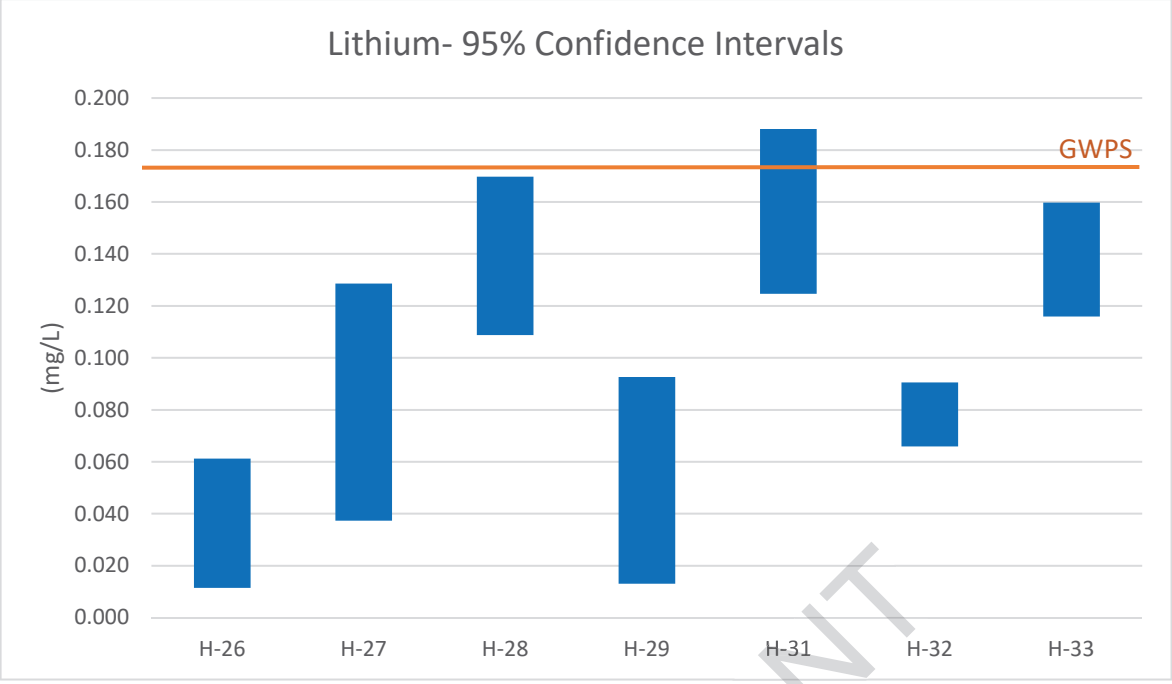

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The previous statistical analysis using data collected during the assessment monitoring period through September 2018 indicated SSLs for beryllium (H-28 and H-29), cobalt (H-28 and H-29), and lithium (H-28) as identified in the February 2019 SSL notification; however, the updated statistical analysis only identified beryllium (H-31) and cobalt (H-28, H-31, and H-32) as having SSLs above GWPSs. The monitoring wells will continue to be monitored to confirm that lithium concentrations remain below SSLs in the future in accordance with the CCR Rule. For the purposes of this ACM evaluation, concentrations are conservatively assumed to be present at SSLs above their respective GWPSs for the following constituents in the wells indicated based on the initial and updated statistical evaluations:

- Beryllium (H-28, H-29, and H-31);
- Cobalt (H-28, H-29, H-31, and H-32); and
- Lithium (H-28).

Figure 7 shows the extent of Appendix IV constituents detected at SSLs above GWPSs based on the initial and updated statistical analysis.

3.3 Field Investigation

3.3.1 General

Field investigation activities conducted as part of the ACM included collection of soil samples for a mineralogical assessment and chemical analysis, a lake sample from Martin Lake, groundwater-level measurements, and groundwater sampling and analysis. Figure 2 presents the locations of soil borings and monitoring wells installed and sampled as part of the field investigation.

3.3.2 Soil Sample Collection

Soil borings were completed in June 2019 at soil boring locations AP-2019-1, AP-2019-2, and AP-2019-3. Soil samples were collected within the target GWBU in each of the soil borings. Soil samples were submitted under chain-of-custody for laboratory analysis of the following parameters:

- Mineralogical composition: The purpose of the mineralogical analysis was to identify and quantify the crystalline mineral phases in each sample. This information is required for geochemical modeling as the release or attenuation of constituents of interest is influenced by the mineral phase(s) present in the aquifer (Hem 1985). The mineralogical testing laboratory (SGS Minerals Services) performed the analysis using quantitative (Rietveld) X-ray diffraction (XRD) (ME-LR-MIN-MET-MN-DO5) and a Bruker AXS D8 Advance Diffractometer.
- Total metals: Analysis of total metals was conducted to quantify the chemical composition of soil materials. The total mass of metals, in combination with the results of sequential extraction testing, can be used to determine the provenance of metals and verify sequential extraction results.
- Sequential extraction (SEP): This test consists of a seven-step metals extraction from solids as per Tessier et al. (1979) to identify the provenance of constituents of interest (i.e. the operationally-defined fraction that contains the metal) and determine their potential environmental mobility. For instance, metals bound in the carbonate fraction, or that are exchangeable, are much more likely to become mobile due to changes in groundwater conditions than metals bound within a sulfide or silicate fraction. The total concentration of a metal measured from all seven steps can be compared to the concentration determined from the total metal analysis for compositional accountability.

3.3.3 Groundwater and Surface Water Sampling

Groundwater samples were collected from the CCR monitoring network and one surface water sample was collected from Martin Lake downgradient of the Ash Pond Area in May 2019. Laboratory analytical reports are provided in Appendix B and sampling records, which include field-measured parameters, are presented in Appendix C.

Chemical/geochemical analysis of groundwater samples included field parameters and radionuclides, nutrients, and major cations and anions. The rationale and methods used are as follows:

- Field Parameters: Parameters measured in the field included pH, dissolved oxygen, oxidation reduction potential (ORP), conductivity, and temperature. These parameters were used to evaluate general geochemical conditions in the groundwater and support geochemical modeling.
- Metals and Regulated COIs: Analysis of Appendix III and IV metals and uranium to better understand the geochemical composition of groundwater. Metals analysis allows for the delineation of a potential plume, evaluation of mineral saturation indices, and evaluation of background contributions from natural sources or anthropogenic sources.
- Major Cations, Anions, and Nutrients: Geochemical modeling of mineral solubility, metals attenuation and background contributions requires analysis of major cations and anions because they affect and participate in sorption and mineral dissolution or precipitation reactions.

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3.4 Evaluation of Groundwater Water

3.4.1 Geochemical Modeling Approach

Geochemical modeling was conducted to evaluate general groundwater quality, determine the potential for precipitation of sorbent media, evaluate the potential for mineral precipitation or adsorption in the aquifer, and determine the speciation of metals of interest. The geochemical computer code developed by the United States Geological Survey (USGS), PHREEQC, was used for these simulations (Parkhurst and Appelo 2013). PHREEQC version 3.4 is a general-purpose geochemical modeling code used to simulate reactions in water and between water and solid mineral phases (e.g., rocks and sediments). Reactions include aqueous equilibria, mineral dissolution and precipitation, ion exchange, surface complexation, solid solutions, gas-water equilibrium, and kinetic biogeochemical reactions. The widely-accepted thermodynamic database Minteq.v4, 2017 edition, was used as a basis for the thermodynamic constants required for modeling.

The Geochemist's Workbench Version 12 (Bethke 2015) was used to generate graphical representations of geochemical modeling outputs in the form of predominance, or Pourbaix diagrams (also known as Eh-pH diagrams) for the species of interest (i.e. beryllium and cobalt) and trilinear plots (also known as Piper plots) displaying the relative abundance of major ions. The Minteq.v4 database was used as the basis for the Pourbaix diagrams.

3.4.2 Summary of Groundwater and Surface Water Data

Groundwater quality data from background wells H-26, H-27, and H-33; downgradient monitoring wells H-28, H-29, H-31, and H-32; and the surface water sample collected from Martin Lake were used for this evaluation. The water quality monitoring data are presented in Appendices B and C and can be summarized as follows:

General Chemistry Parameters

- pH: The pH of groundwater samples collected from CCR monitoring well network ranged from 6.01 to 6.83 in May 2019. Historically, the pH in the CCR monitoring well network has ranged from 5.8 to 7.0. Isolated values as low as 3.64 and as high as 11.20 have been recorded in some wells; however, these conditions do not persist but pH returns to circumneutral values by the next sampling round. The pH of Martin Lake was 6.79 in May 2019.
- ORP (Redox): Field-measured redox values, corrected to Eh (+200mV), ranged from +113 to +174 mV in the groundwater samples in the CCR monitoring well network.
- Total Dissolved Solids (TDS): Groundwater TDS concentrations were variable in May 2019 in the CCR monitoring well network. The lowest TDS concentration (453 mg/L) occurred in groundwater at CCR monitoring well H-26 (upgradient) and the highest TDS value (4,230 mg/L) was observed at CCR monitoring well H-31 (downgradient). The TDS concentration measured in Martin Lake water was 119 mg/L.
- Major ion chemistry: A Piper plot was generated for groundwater and Martin Lake samples to facilitate the identification of water types and source contributions (Figure 8a). Two distinct groupings of wells are apparent based on their relative major ion proportions. Upgradient wells H-26 and H-33 show close similarity with the water sample from Martin Lake, indicating potential influences of Martin Lake on the groundwater in these locations. Groundwater composition in upgradient well H-27, in contrast, is more closely related to that of the downgradient wells. Based on the molar ratios of calcium, sodium, and sulfate (Figure 8b), all groundwater samples and the Martin Lake water sample generally plot as one group.

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- Iron: Oxidized iron (ferric iron - Fe^{+3}) concentrations were variable, ranging from non-detect (<0.05 mg/L) to 8.81 mg/L in May 2019 (Appendix B). Reduced iron (ferrous iron - Fe^{+2}) concentrations were non-detect (<0.05 mg/L) in the groundwater at all CCR monitoring wells except H-31 and H-32. The highest concentration of ferrous iron in groundwater was 49.5 mg/L observed in monitoring well H-31, over 40 times higher than any other monitoring well. This value corresponded to the highest measured beryllium, cobalt, and lithium concentrations in groundwater at the Ash Pond area. Ferric iron in water from Martin Lake was measured at 0.365 mg/L while ferrous iron was non-detect (<0.05 mg/L).
- Nutrients: Nitrate (nitrate as N) was present in groundwater at variable levels, ranging from non-detect (< 0.1 mg/L as N) to 272 mg/L as N at H-32 in May 2019 (Appendix B). Nitrate in CCR monitoring well H-32 at 272 mg/L as N, was orders of magnitude higher than in other monitoring wells, in which nitrate ranged from non-detect (<0.1 mg/L as N) to 0.658 mg/L as N. Nitrate was not detected in Martin Lake water. Phosphate concentrations in groundwater ranged from near non-detect (0.03 mg/L as P) to 0.126 mg/L as P in CCR monitoring wells. Phosphate was not detected in the water of Martin Lake in May 2019. No spatial trend was apparent in the nitrate or phosphate distribution in groundwater.

Constituents Identified in February 2019 SSL Notification

- Beryllium: Beryllium concentrations in groundwater samples historically have exceeded the GWPS (0.004 mg/L) in CCR monitoring wells H-28, H-29, H-31, and H-32 on at least one occasion since October 2015 (Figure 9a). However, due to the variability of beryllium concentrations in groundwater at these wells, only H-31 currently has beryllium at an SSL. As of May 2019, beryllium concentrations in H-31 and H-32 were above the GWPS, at 0.00713 mg/L and 0.00928 mg/L, respectively. The highest beryllium concentration in groundwater was measured in H-31 in December 2016. Beryllium was not detected in the Martin Lake water sample (<0.0003 mg/L). Beryllium is likely present in groundwater as the divalent cation Be^{+2} based on the pH and Eh of groundwater (Figure 10a).
- Cobalt: Cobalt concentrations in groundwater samples historically have exceeded the GWPS (0.0564 mg/L) in all CCR monitoring wells except H-27 on at least one occasion since October 2015 (Figure 9b). All CCR network monitoring wells have also reported groundwater cobalt concentrations below the GWPS on at least one occasion since October 2015, indicating variability in cobalt In May 2019, all wells except H-27 had cobalt concentrations in groundwater above the GWPS. Cobalt was not detected in water from Martin Lake in May 2019 (<0.003 mg/L). Cobalt is likely present in groundwater as the divalent cation Co^{+2} based on the pH and Eh of groundwater (Figure 10b).
- Lithium: Lithium concentrations in groundwater have exceeded the GWPS (0.040 mg/L) since October 2015 in four wells: H-27 (upgradient), H-28, H-31, and H-33 (Figure 9c). In May 2019, only the sample from CCR monitoring well H-31 exceeded the GWPS for lithium. Based on an evaluation of the 95% confidence intervals, the GWPS exceedances for lithium at H-27. H-28. H-31, and H-33 are not at an SSL above the GWPS. Water from Martin Lake did not contain lithium above its detection limit (<0.005 mg/L) in May 2019.

The groundwater analytical results indicate that the Ash Pond Area may be the potential source for the cobalt and/or beryllium concentrations observed at SSLs in monitoring wells H-28, H-31 and H-32. However, the data also indicates that lithium concentrations are not present at SSLs in any of the monitoring wells at the Site.

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3.5 Evaluation of Soil

3.5.1 Mineralogical Composition

Quantitative X-ray diffraction (XRD) with Rietveld refinement was used to identify and quantify minerals in three overburden samples collected during the drilling activities - one sample from each of the soil borings completed in June 2019 (AP-2019-1, AP-2019-2, and AP-2019-3). These samples were obtained to better understand the mineralogical composition of the aquifer system and identify any minerals that would potentially influence attenuation of constituents of interest. In contrast, the presence of certain minerals could also indicate a potential for naturally-occurring release of metals into groundwater, for instance due to oxidation of sulfide minerals.

The mineralogical analysis of soil from borehole samples at the Ash Pond Area identified quartz as the predominant mineral, with varying amounts of albite in all three boreholes. Soil samples from boreholes AP-2019-1 and AP-2019-2 (ranging 30' below ground surface (bgs) to 31' bgs and 35' bgs to 36' bgs) also contained small or trace amounts of the silicate minerals K-felspar, chlorite, muscovite, kaolinite, vermiculite, illite, and montmorillonite. Analytical reports for the XRD samples are provided in Appendix B. These minerals were not identified in the shallower borehole samples of AP-2019-1 (18' bgs to 19' bgs), indicating potentially a greater abundance of clay minerals (kaolinite, vermiculite, illite, montmorillonite) in deeper samples.

3.5.2 Chemical Composition and Sequential Extraction

Chemical analysis and sequential extractions were used to determine the chemical composition of the soil and the distribution of constituents of interest over various operationally-defined fractions comprising the soil. Testing was completed as described in Section 3.3.2 on soil samples obtained from three borehole locations (Figure 2) and the analytical reports for the soil analyses are provided in Appendix B.

Soil sample locations were chosen to gain a better understanding of the underlying geological conditions of the area surrounding the Ash Pond Area, mostly adjacent to or downgradient of a CCR monitoring well. In addition, this information allows for a better understanding of naturally-occurring metal contributions to groundwater or the potential for sequestration of constituents from groundwater.

A description of the individual fractions determined by sequential extraction is presented in Section 3.3.2. Metals extracted in steps 1 through 5 are considered environmentally available, whereas metals extracted in steps 6 and 7 are present in refractory fractions and are not expected to be released under conditions typically encountered in aquifers (Tessier et al. 1979). Total metal quantities from the sequential extraction are expressed as "SEP Total" in Appendix B. The sum of the sequential extraction steps is also presented for comparison but does not represent an analytically-determined value.

The results from the chemical analysis and sequential extraction presented in Appendix B are summarized as follows:

General Chemistry Parameters

- Aluminum: Aluminum is not a constituent of interest (COI) at the site but it has been well studied as a sorbing medium in soils (e.g., Karamalidis and Dzombak 2011). Total aluminum in soils ranged from 14,244 to 33,160 mg/kg, and the environmentally-available fraction ranged from 1,044 (AP-2019-3) to 1,989 mg/kg (AP-2019-2). Aluminum in the soil at the site is, therefore, largely (~84% to 87%) present in the residual, or silicate-bound fraction. This fraction is likely at least partially represented by hydrous aluminum phyllosilicate

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minerals or clays intermixed in the silica sand matrix. Clays can represent an important sorptive reservoir for numerous trace metals and metalloids (Uddin 2017).

- Iron: While not a COI, iron and its minerals commonly represent one of most abundant reservoirs for metal/metalloid attenuation in soils (Dzombak and Morel 1990; Smith 1999). Iron was present in all three core samples analyzed, varying from 5,192 (AP-2019-3) to 13,933 mg/kg (AP-2019-2). In all samples, the non-environmentally available (sulfide and residual) fractions accounted for the largest proportion of total iron (54% to 64%) and, as such, most of the iron is not environmentally available. The remainder of the iron in the samples is present across the exchangeable (except AP-2019-1), carbonate (only in AP-2019-2), amorphous metal, and metal hydroxide phases. These phases, part of the labile fraction in steps 1 through 5, can generally be considered representative of the amount of iron in soil that may be available as a sorbing medium and can, therefore, be important for potential attenuation of beryllium and cobalt.

Constituents Identified in February 2019 SSL Notification

- Beryllium: Total beryllium in soil ranged from 0.23 to 0.68 mg/kg, of which 16% to 75% of the beryllium was present in the environmentally-available fraction. The non-environmentally available fraction of beryllium (25% to 84% of total) is also indicative of naturally occurring beryllium in soil at the Ash Pond Area. All of the environmentally-available beryllium resorted in the amorphous metal and metal hydroxide fractions, indicating potential attenuation of beryllium from groundwater (Smith 1999).
- Cobalt: Total cobalt in soil ranged from 1.68 to 6.29 mg/kg while the environmentally-available fraction ranged from 1.4 mg/kg in AP-2019-3 to 4.39 mg/kg in AP-2019-2, representing from 58% to 83% of total cobalt. The majority of the environmentally-available cobalt was present in the metal hydroxide fractions in soils samples AP-2019-1 and AP-2019-2, while the exchangeable fraction hosted the largest proportion of cobalt in soils sample AP-2019-3. Soil sample AP-2019-2 contained cobalt in every fraction of the sequential extraction test, indicating potential attenuation of cobalt from groundwater, and the potential presence of naturally occurring cobalt in soil.
- Lithium: Total lithium in soil ranged from 7.15 to 17.3 mg/kg, of which between only 7% (AP-2019-3) and 24% (AP-2019-2) resorted in the environmentally-available fraction. Lithium that was environmentally available (0.53 to 4.2 mg/kg) was all contained in the metal hydroxide fraction. This indicates the likelihood of the presence of naturally-occurring lithium at the site that is contained within non-environmentally available fractions while attenuation of lithium by metal hydroxide minerals also appears to be occurring.

The results of the soil analysis indicate the following:

- A naturally-occurring source of beryllium, cobalt, and lithium is present in the vicinity of the Ash Pond Area at the MLSES.
- Attenuation of beryllium, cobalt, and lithium in groundwater is likely occurring in the vicinity of the Ash Pond Area.

3.6 Summary of Site Characterization

Based on the above site characterization and nature and extent investigation, the following is concluded with respect to beryllium, cobalt, and lithium:

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- Beryllium: Beryllium concentrations statistically exceeded the GWPS in groundwater from only one CCR monitoring well (H-31). Beryllium concentrations in groundwater monitoring well H-31 were the highest in December 2016, followed by a stable or decreasing trend since that occurrence. Beryllium was not detected in water from Martin Lake. Sequential extraction results indicate the potential for attenuation of beryllium by amorphous metals and metal hydroxides (Smith 1999). Beryllium should, therefore, be considered for further evaluation as part of an ACM as a viable candidate for monitored natural attenuation based on the results of this initial assessment (USEPA 2007a, b).
- Cobalt: Historical data from CCR monitoring wells in which cobalt concentrations in groundwater exceeded the GWPS indicate a stable or decreasing concentrations since the highest measured cobalt in groundwater of 0.434 mg/L in October 2015. Cobalt concentrations in groundwater currently statistically exceed the GWPS in three CCR monitoring wells (H-28, H-31 and H-32). Cobalt was not detected in water from Martin Lake. Cobalt was present in nearly every fraction of soil as determined from sequential extraction, indicating the strong potential for cobalt attenuation by soils (Smith 1999). Cobalt should, therefore, be considered for further evaluation as part of an ACM as a viable candidate for monitored natural attenuation based on the results of this initial assessment (USEPA 2007a, b).
- Lithium: Recent data indicates that lithium concentrations in groundwater statistically no longer exceed the GWPS at any monitoring well location. Lithium was not detected in water from Martin Lake. Based on the data collected to date, lithium concentrations in groundwater are no longer considered to be present at an SSL above the GWPS; however, lithium concentrations in groundwater will continue to be monitored to confirm that lithium levels remain below the GWPS in the future. For the purposes of this ACM evaluation, lithium concentrations are conservatively assumed to be present at an SSL above the GWPS in well H-31 based on the February 2019 SSL notification.

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4.0 ASSESSMENT OF CORRECTIVE MEASURES

In accordance with §257.96 and §257.97, an ACM was conducted for the Ash Ponds to address concentrations of the following Appendix IV constituents conservatively assumed to occur at SSLs above their respective GWPS based on the February 2019 SSL notification:

- cobalt concentrations in monitoring wells H-28, H-31 and H-32;
- beryllium concentrations in monitoring well H-31; and
- lithium concentrations in monitoring well H-31.

Potential response technologies were identified for Source Control (to reduce the potential for releases of constituents to groundwater) and Groundwater Response Actions (to reduce constituent concentrations below GWPS). The potential response technologies were then screened to identify options that are appropriate for further consideration in developing potential corrective measures alternatives for the Site. The results of the ACM are presented in this section.

4.1 Corrective Measures Objectives and Evaluation Criteria

As described in §257.96(a), the corrective measures must prevent further releases, remediate any releases and restore the affected area to original conditions. Potential corrective measures must meet the requirements specified in §257.97(b):

1) Be protective of human health and the environment;
2) Attain the groundwater protection standard as specified pursuant to § 257.95(h);
3) Control the source(s) of releases to reduce or eliminate, to the maximum extent feasible, further releases of constituents in appendix IV to this part into the environment;
4) Remove from the environment as much of the contaminated material that was released from the CCR unit as is feasible, considering factors such as avoiding inappropriate disturbance of sensitive ecosystems;
5) Comply with standards for management of wastes as specified in § 257.98(d).

In accordance with §257.96(c), the assessment of potential corrective measures alternatives must include an evaluation of the following:

1) The performance, reliability, ease of implementation, and potential impacts of appropriate potential remedies, including safety impacts, cross-media impacts, and control of exposure to any residual contamination
2) The time required to begin and complete the remedy
3) Institutional requirements, such as state or local permit requirements or other environmental or public health requirements that may substantially affect implementation of the remedy(s).

4.2 Potential Source Control Response Technologies

One of the listed objectives in §257.97(b) for the corrective measures is to control the source of releases of Appendix IV constituents to the environment from the CCR Unit. The MLSES Ash Ponds are an integral part of

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the CCR management system at the plant. As a result, any potential source control technology must keep the WAP, EAP and NSP in operation.

The WAP, EAP and NSP are considered unlined surface impoundments under the CCR Rule. As a result, the WAP, EAP and NSP will be retrofitted with new composite liner systems that comply with the requirements of §257.71(a)(1)(ii) of the CCR Rule to improve the level of source control in the ponds. The new liner systems will be installed in general accordance with the following procedures:

- The ponds will be retrofitted one at a time;
- Water will be removed from the pond being retrofitted and transferred to the other Ash Ponds;
- Solids in the ponds will be dewatered, removed and transported to the MLSES A1 Area Landfill for disposal.
- A minimum of 2 feet of compacted clay liner will be placed at the base of each pond;
- A 60-mil HDPE geomembrane liner will be installed over the 2 feet of compacted clay liner;
- A protective layer of soil, ash or other material will be placed over the geomembrane liner.

Retrofitting the WAP, EAP and NSP with new composite liner systems is assumed to serve as the source control component of the potential corrective measures for the Ash Ponds. The estimated time to retrofit the WAP, EAP and NSP is estimated to be approximately 1 to 2 years per pond, including design and construction.

4.3 Potential Groundwater Response Technologies

For the purposes of this ACM, cobalt, beryllium and lithium are conservatively assumed to be present in groundwater at the Site at SSLs above their respective GWPS based on the February 2019 SSL notification. In this section, potential groundwater response technologies to address these constituents are identified and screened for further consideration in developing potential corrective measures alternatives for the Ash Ponds.

4.3.1 Monitored Natural Attenuation

Monitored natural attenuation (MNA) refers to the reliance on natural attenuation processes (within the context of a carefully controlled and monitored site cleanup approach) to achieve site-specific groundwater remediation objectives within a time frame that is reasonable compared to that offered by more active remediation methods (USEPA 2007a). MNA relies on a range of natural processes, including dispersion, dilution, sorption, (co)precipitation, radioactive decay, and abiotic degradation/transformation to achieve remediation objectives (ITRC 2010). Routine groundwater monitoring would be required to verify MNA is occurring at the Site.

Where necessary, MNA processes can be enhanced through the use of low-energy, in-situ techniques to stimulate or increase the attenuation of contaminants or reduce contaminant loading (ITRC 2010). Enhancement options include increasing the attenuation capacity of the aquifer, decreasing the mobility of contaminants, and/or increasing the stability of immobilized contaminants by increasing the ability of aquifer solids to remove contaminants from groundwater and/or manipulating the geochemistry to reduce remobilization of contaminants by desorption or dissolution of precipitates (ITRC 2010).

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MNA has been demonstrated effective in reducing cobalt and beryllium concentrations in groundwater (ITRC 2010; USEPA 2007b). Cobalt is removed through adsorption to iron hydroxides and/or amorphous metals and the level of effectiveness is dependent on iron hydroxide availability as well as pH, alkalinity, and calcium levels (ITRC 2010). Beryllium is removed through adsorption or coprecipitation (DOD 2014). The removal mechanisms for lithium are not identified in the professional literature. As described in Section 3.6 of this report, the Site is a good candidate for MNA, since natural attenuation of cobalt, lithium and beryllium is ongoing at the Site.

MNA would be effective in remediating groundwater beneath t and downgradient of the Ash Ponds. The estimated time to implement MNA is estimated to be approximately 2 to 3 years, including characterization, design, and construction. The estimated time to achieve GWPS for the target Appendix IV constituents is dependent on site-specific conditions and groundwater modelling is needed to evaluate remedial timeframes.

4.3.2 Groundwater Extraction and Treatment

Groundwater extraction and treatment is one of the most widely implemented groundwater remediation technologies and is used to provide 1) hydraulic containment and 2) treatment (USEPA 1996). A groundwater extraction and treatment system consists of the following major components:

- A series of extraction wells or trenches strategically located to modify/interrupt the natural flow of groundwater;
- Extraction pumps installed in each well/trench to pump groundwater from the subsurface;
- A treatment system to remove constituents of concern from the extracted groundwater; and
- A point of discharge for the treated groundwater (surface water, re-injection to groundwater, etc.).

For the Ash Ponds, a system of extraction wells would be installed along the downgradient edge of the ponds to provide hydraulic control of the Appendix IV constituent groundwater plumes. The extracted groundwater would be treated in an on-site treatment system and treated water would be discharged to Martin Lake or re-injected into the aquifer.

Potential groundwater treatment methods for the target Appendix IV constituents include the following:

- Cobalt - ion exchange, adsorptive media, activated carbon, and chemical treatment with membrane filtration (USEPA 2019a).
- Lithium - reverse osmosis, precipitation/co-precipitation, and ion exchange. (USACE, 2010).
- Beryllium - activated alumina, ion exchange, lime softening, coagulation/filtration, and reverse osmosis (USEPA 2003)

Treatment methods for these constituents would need to be bench/pilot tested to evaluate their effectiveness prior to designing a full-scale system. Treatment will generate residual material (sludge, regenerate brine, etc.) containing concentrated levels of the target Appendix IV constituents that must managed.

Groundwater extraction and treatment would be effective in reducing contaminant concentrations in groundwater downgradient of the Ash Ponds through hydraulic containment, but would have little effect on groundwater conditions beneath the ponds. The estimated time to implement groundwater extraction and treatment is estimated to be approximately 3 to 4 years, including testing, design, and construction. The estimated time to achieve GWPS for the target Appendix IV constituents is dependent on site-specific conditions and groundwater modeling is needed to better evaluate remedial timeframes.

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4.3.3 Vertical Hydraulic Barrier

A vertical, low permeability hydraulic barrier can be installed to provide a physical barrier to groundwater flow to contain the migration of contaminated groundwater. Vertical hydraulic barriers that have been demonstrated effective at controlling groundwater flow include the following (USEPA 1998):

- Slurry Wall. Slurry walls consist of a narrow, excavated trench that is filled with a soil-bentonite slurry mixture. The slurry shores and supports the trench walls and forms a low-permeability barrier in the trench. Key design considerations include wall depth, key depth, and material compatibility. Slurry trenches can be excavated to depths of 50 feet using standard excavators and over 80 feet using long-reach excavators or a crane mounted drag line/clamshell bucket. Geosynthetic materials can be placed in the trench in conjunction with the slurry wall to improve the hydraulic performance (decrease permeability) and chemical resistance.
- Soil-Mixed Wall. Soil-mixed walls form a hydraulic barrier through in-situ mixing of soil with amendments, such as bentonite and/or cement. Soil-mixed barrier walls can be installed to depths of over 100 feet. The walls are installed by sections or panels that overlap to achieve a continuous barrier.
- Grout Curtain. Grout curtain barriers are constructed by injecting grout into the subsurface in an overlapping injection pattern to form a continuous barrier. Grouted barriers can be installed using permeation grouting, jet grouting, or vibrating beam technologies. Grouted barriers must be designed and constructed to ensure hydrofracturing does not occur and the completed wall is effective at restricting groundwater flow.
- Sheet-pile Wall. Sheet-pile walls consist of steel, vinyl, or other materials driven into the subsurface using a hydraulic percussion hammer or vibratory hammer. Sheet-pile walls are common in civil engineering applications; however, their use in environmental applications has been more limited. One of the major concerns with sheet-walls in environmental applications is leakage through the vertical joints between piles; however, improvements in pile interlock designs have been made to improve joint sealing.

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For a vertical hydraulic barrier to be effective, the bottom of the barrier must be “keyed” into a low-permeability confining layer. A detailed engineering analysis and design, likely including a bench/pilot test to identify most appropriate barrier materials, would be required for the construction of a vertical hydraulic barrier.

For the Ash Ponds, the vertical hydraulic barrier would be constructed along the downgradient edge of the ponds to provide hydraulic control of the target Appendix IV constituent groundwater plumes. A vertical hydraulic barrier physically interrupts the natural flow of groundwater; consequently, groundwater elevations upgradient of the barrier will rise, potentially to the point that groundwater could begin to flow around the edges of the barrier. To address this concern, a groundwater extraction and treatment system would be required upgradient of the barrier to control the groundwater levels. The groundwater extraction and treatment system used in conjunction with the vertical hydraulic barrier would be similar to the system described in Section 4.3.2; however, the required capacity of the system would be less since the rate of groundwater extraction would be limited to that required to control upgradient groundwater levels.

Construction of a vertical hydraulic barrier is expected to require significant effort and time. Prior to implementation of the barrier, pre-design field work, including site investigations and bench/pilot-scale barrier material testing would be required, followed by full-scale design and construction. The estimated time to

implement a vertical hydraulic barrier with groundwater extraction and treatment is estimated to be approximately 5 to 8 years, including testing, design, and construction. The estimated time to achieve GWPS for the target Appendix IV constituents is dependent on site-specific conditions and groundwater modeling is needed to better evaluate remedial timeframes.

4.3.4 Permeable Reactive Barrier

A permeable reactive barrier (PRB) is an in-situ, permeable treatment zone that contains reactive media designed to intercept impacted groundwater and either immobilize contaminants or transform the contaminants to a more desirable state (ITRC 2011). A PRB is a passive treatment system that acts as a barrier to groundwater contamination but not groundwater flow. The PRB must intercept the flow of impacted groundwater and must be designed and constructed such that impacted groundwater cannot bypass the reactive media by flowing over, under, or around the PRB. A PRB must include the appropriate reactive media and the residence time within the PRB needs to sufficient to allow for effective treatment. The effectiveness of the reactive media will be reduced over time and the media will likely have to be replaced periodically. Groundwater monitoring is used to evaluate the performance/effectiveness of a PRB system.

There are two primary PRB configurations: continuous and funnel-and-gate. A continuous PRB features permeable reactive media across the entire length of the barrier. A funnel-and -gate PRB uses sections of vertical hydraulic barriers to direct groundwater flow through permeable reactive media sections that allow the groundwater to pass through while treating contaminants. In both configurations, the permeability of the reactive media must be greater than the aquifer to ensure flow is not diverted around the PRB media. For the ash Ponds, a PRB system would be constructed along the downgradient edge of the ponds to provide control of the target Appendix IV groundwater plumes.

PRB systems are generally considered a proven technology, however, site conditions and the specific contaminants of interest affect the system performance. The potential applicability of a PRB system for the target Appendix IV constituents can be summarized as follows:

- Cobalt - potentially removed using sulfate-reducing media or combination of zero-valent iron (ZVI) and organic material (Ludwig 2002; ITRC 2011);
- Lithium – potentially precipitated as phosphate using appetite media, (Arnseth 2018).
- Beryllium – potentially removed through in-situ biomass sorption (Goldemund and Robb 2018)

Removal of the target Appendix IV constituents using a PRB system has not been consistently demonstrated under full-scale conditions and bench/pilot-scale testing would be required to confirm the effectiveness of a PRB system at the Site. A groundwater model would be needed to evaluate the remedial timeframes.

Similar to a vertical hydraulic barrier, construction of a PRB system is expected to require significant effort and time. Prior to implementation of the PRB, pre-design field work, including site investigations, groundwater modeling, and bench-scale soil mix testing would be required, followed by full-scale design and construction. The estimated time to implement a PRB system is estimated to be approximately 5 to 8 years, including testing, design, and construction. The estimated time to achieve GWPS for the target Appendix IV constituents is dependent on site-specific conditions and groundwater modeling is needed to better evaluate remedial timeframes.

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4.3.5 In-situ Chemical Treatment

In-situ Chemical Treatment (ICT) involves the injection of a chemical reagent or other material into the groundwater aquifer to adjust the geochemistry to enhance the direct precipitation, co-precipitation, or related adsorption/precipitation of the target contaminants (USEPA 2019c). Direct precipitation occurs when a constituent exceeds its solubility in water and precipitates out of solution. Co-precipitation refers to the removal of a constituent through adsorption onto the precipitate of another chemical reaction.

Cobalt has the potential to be removed through adsorption and/or coprecipitation under reducing groundwater conditions and beryllium can potentially be removed through in-situ biomass sorption (Goldemund and Robb 2018). Lithium has the potential to be precipitated as a phosphate under appropriate geochemical conditions (Arnseth 2018).

Injection wells would be installed into the aquifer along the downgradient edge of Ash Ponds and the chemical reagents would be injected to provide control of the target Appendix IV constituent groundwater plumes.

ICT is considered an emerging remediation technology for the target Appendix IV constituents and the effectiveness of the technology on most of the constituents is uncertain. Bench/pilot-scale testing would be required to confirm the effectiveness of an ICT system at the Site. The estimated time to implement an ICT system is estimated to be approximately 5 to 8 years, including testing, design, and construction. The estimated time to achieve GWPS for the target Appendix IV constituents is dependent on site-specific conditions and groundwater modeling is needed to better evaluate remedial timeframes.

4.3.6 Phytoremediation

Phytoremediation refers to the use of plants to partially or substantially remediate selected contaminants in contaminated soil, sludge, sediment, ground water, surface water, and wastewater (USEPA 2001). The process utilizes a variety of plant biological processes and plant physical characteristics to aid in remediation; however, the primary plant process potentially applicable to the target Appendix IV constituents at the Site is phytoextraction, which is the uptake and accumulation of contaminants within aboveground portions of a plant. The contaminants are removed from the Site when the plants are harvested and managed off-site.

Phytoextraction occurs in the root zone of plants, which is typically relatively shallow, with the bulk of roots at shallower rather than deeper depths. This would limit the effectiveness of phytoextraction at the Site due to the depth of groundwater. Phytoremediation for cobalt removal from groundwater has not been demonstrated under full-scale conditions and no information concerning the effectiveness of phytoremediation for lithium and beryllium removal was identified (USEPA 2001).

Implementation of a phytoremediation process at the Site would involve planting appropriate vegetation at intervals along the downgradient edge of the Ash Ponds and across the affected groundwater plume area. A comprehensive bench/pilot testing program would be required to select the most appropriate plants for removal of the target Appendix IV constituents from groundwater at the Site. Since the target Appendix IV constituents would likely accumulate in the plants, management of harvested plants in accordance with RCRA may be required. The estimated time to implement an ICT system is estimated to be approximately 15 to 20 years, based on the success and rate of vegetation growth. The estimated time to achieve GWPS for the target Appendix IV constituents is dependent on site-specific conditions and groundwater modeling is needed to better evaluate remedial timeframes.

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4.3.7 Screening of Potential Groundwater Response Technologies

Following identification of potential groundwater response technologies, Golder screened the potential options for further consideration in developing potential corrective measures alternatives for the Ash Ponds. The screening results for each potential source technology are summarized in Table 3. Based on the initial screening, the following potential groundwater response technologies were retained for future evaluation as part of the corrective measures alternatives for the Ash Ponds:

- Monitored Natural Attenuation
- Groundwater Extraction and Treatment
- Vertical Hydraulic Barrier

4.4 Potential Corrective Measures Alternatives

Based on the response technology screening discussed above, Golder assembled the following potential corrective measures alternatives that could be both effective and implementable at the Site:

- Retrofit Liners in WAP, EAP and NSP with Monitored Natural Attenuation
- Retrofit Liners in WAP, EAP and NSP with Groundwater Extraction and Treatment
- Retrofit Liners in WAP, EAP and NSP with Vertical Hydraulic Barrier

A summary of the corrective measure alternatives, including an assessment of each alternative against the evaluation criteria presented in §257.96(c) is provided in Table 4.

4.5 Remedy Selection

The corrective measure alternative proposed as the remedy for the Ash Ponds will be selected in accordance with §257.97 a minimum of 30 days after the public meeting required under §257.96(e) has been completed.

It should also be noted that, for the purposes of this ACM, cobalt, beryllium and lithium concentrations were conservatively assumed to be present at SSLs above their respective GWPSs based on the February 2019 SSL notification. However, as discussed in Sections 3.4-3.6, lithium concentrations are no longer considered to be present at SSLs above the GWPS based on recent data and naturally occurring sources of cobalt, beryllium and lithium exist in the vicinity of the Ash Ponds. Cobalt, beryllium and lithium concentrations in groundwater will continue to be monitored in accordance with the CCR rule to confirm that the concentrations of these constituents remain below the GWPSs in the future. These monitoring results, along with updated statistical analysis and alternate source demonstrations (if applicable), will be considered as part of the remedy selection process.

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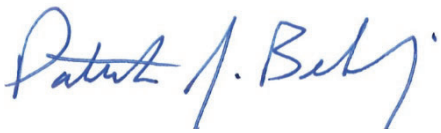

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LUMINANT

TABLES

LUMINANT

TABLE 1
APPENDIX IV GROUNDWATER ANALYTICAL DATA SUMMARY
MARTIN LAKE STEAM ELECTRIC STATION
ASH POND AREA

Sample Location	Date Sampled	Sb (mg/L)	As (mg/L)	Ba (mg/L)	Be (mg/L)	Cd (mg/L)	Cr (mg/L)	Co (mg/L)	Fl (mg/L)	Pb (mg/L)	Li (mg/L)	Hg (mg/L)	Mo (mg/L)	Se (mg/L)	Tl (mg/L)	Ra 226 (pCi/L)	Ra 228 (pCi/L)	Ra 226/228 Comb.^ (pCi/L)
GWPS:		0.006	0.01	2	0.004	0.005	0.1	0.0564	4	0.015	0.177	0.002	0.1	0.05	0.002	--	--	5
Upgradient Wells																		
H-26	10/21/15	<0.0008	0.00364 J	0.0785	0.000349 J	<0.0003	<0.002	0.0385	<0.1	<0.0003	0.0139	<0.00008	<0.002	<0.002	<0.0005	0.919	<1.64	2.56
	12/14/15	<0.0008	<0.002	0.0401	0.000458 J	<0.0003	<0.002	0.0244	<0.1	<0.0003	0.0769	<0.00008	<0.002	<0.002	<0.0005	0.619	<1.95	2.57
	02/23/16	<0.0008	<0.002	0.0423	<0.0003	<0.0003	0.0077	0.00813	0.151 J	0.000315 J	0.0124	<0.00008	0.00248 J	0.0022 J	<0.0005	0.37	<2.06	2.43
	04/05/16	<0.0008	<0.002	0.0408	<0.0003	<0.0003	0.00798	0.0125	0.199 J	<0.0003	0.0121	<0.00008	<0.002	<0.002	<0.0005	<0.243	<1.06	<1.303
	06/07/16	<0.0008	<0.002	0.0467	0.000721 J	<0.0003	<0.002	0.0217	<0.1	<0.0003	0.0132	<0.00008	<0.002	<0.002	<0.0005	0.245	1.67	1.92
	08/09/16	<0.0008	0.0029 J	0.0431	0.00136	<0.0003	<0.002	0.0352	<0.1	<0.0003	0.0155	<0.00008	<0.002	<0.002	<0.0005	<0.2	<0.932	<1.132
	10/18/16	<0.0008	<0.002	0.0497	0.000709 J	<0.0003	<0.002	0.0214	0.127 J	<0.0003	0.0136	<0.00008	<0.002	0.00265 J	<0.0005	0.243	<0.622	0.87
	12/11/16	<0.0008	<0.002	0.0468	0.00146	<0.0003	0.00311 J	0.0275	0.161 J	0.000358 J	0.014	<0.00008	<0.002	<0.002	<0.0005	0.248	1.82	2.07
	06/13/18	<0.0008	<0.002	0.0659	0.0016	<0.0003	0.00213 J	0.0261	<0.100	<0.0003	0.032	<0.00008	<0.002	<0.002	<0.0005	<0.297	3.72	4.017
	09/07/18	NA	<0.002	0.0470	0.00155	<0.0003	0.00319 J	0.0247	<0.100	<0.0003	0.0489	NA	NA	<0.002	NA	<0.473	<0.665	<1.138
	05/14/19	<0.0008	0.0041 J	0.1900	0.00147	<0.0003	0.0406	0.0795	0.140 J	0.000972 J	0.147	<0.00008	<0.002	0.00222 J	<0.0005	1.43	0.598	2.028
H-27	10/21/15	<0.0008	<0.002	0.0378	<0.0003	<0.0003	<0.002	0.00432 J	<0.1	<0.0003	0.0607	<0.00008	<0.002	<0.002	<0.0005	<0.553	<1.67	<2.223
	12/14/15	<0.0008	0.0021 J	0.039	<0.0003	<0.0003	<0.002	0.00326 J	0.156 J	0.000339 J	0.0624	<0.00008	<0.002	<0.002	<0.0005	0.468	<1.68	2.15
	02/23/16	<0.0008	<0.002	0.0266	<0.0003	<0.0003	<0.002	<0.003	0.101 J	<0.0003	0.0601	<0.00008	<0.002	<0.002	<0.0005	0.921	<1.62	2.54
	04/05/16	<0.0008	<0.002	0.0245	<0.0003	<0.0003	<0.002	<0.003	0.124 J	<0.0003	0.0573	<0.00008	<0.002	<0.002	<0.0005	0.269	<2.05	2.32
	06/07/16	<0.0008	<0.002	0.0342	0.000609 J	<0.0003	<0.002	0.016	<0.1	<0.0003	0.0107	<0.00008	<0.002	<0.002	<0.0005	0.269	<0.658	0.927
	08/09/16	<0.0008	<0.002	0.0241	<0.0003	<0.0003	<0.002	<0.003	<0.1	<0.0003	0.0616	<0.00008	<0.002	<0.002	<0.0005	0.408	<0.632	1.04
	10/18/16	<0.0008	<0.002	0.0248	<0.0003	<0.0003	<0.002	<0.003	0.144J	<0.0003	0.0576	<0.00008	<0.002	<0.002	<0.0005	<0.178	1.07	1.25
	12/11/16	<0.0008	<0.002	0.0236	<0.0003	<0.0003	<0.002	<0.003	0.161 J	<0.0003	0.0606	<0.00008	<0.002	<0.002	<0.0005	0.143	1.54	1.68
	06/13/18	<0.0008	<0.002	0.0237	<0.0003	<0.0003	0.00964	<0.003	0.208 J	<0.0003	0.108	<0.00008	<0.002	<0.002	<0.0005	0.267	<1.4	1.667
	09/07/18	NA	<0.002	0.0196	<0.0003	<0.0003	0.0453	<0.003	0.140 J	<0.0003	0.306	NA	NA	0.00773	NA	<0.285	1.43	1.715
	05/14/19	<0.0008	<0.002	0.0208	<0.0003	<0.0003	<0.002	<0.003	0.159 J	<0.0003	0.0678	<0.00008	<0.002	<0.002	<0.0005	1.10	0.928	2.028
H-33	10/20/15	<0.0008	0.00208 J	0.0586	0.000351 J	<0.0003	<0.002	0.0274	<0.1	<0.0003	0.0814	<0.00008	<0.002	<0.002	<0.0005	1.76	1.64	3.40
	12/14/15	<0.0008	0.00205 J	0.0473	0.000382 J	<0.0003	<0.002	0.0293	0.136 J	<0.0003	0.0903	<0.00008	<0.002	<0.002	<0.0005	1.94	<1.79	3.73
	02/23/16	<0.0008	<0.002	0.0529	0.000311 J	<0.0003	0.0194	0.0163	0.125 J	<0.0003	0.182	<0.00008	<0.002	<0.002	<0.0005	0.906	<2.32	3.23
	04/05/16	<0.0008	<0.002	0.0576	0.000302 J	<0.0003	0.0171	0.016	0.14 J	<0.0003	0.16	<0.00008	<0.002	<0.002	<0.0005	0.328	1.08	1.41
	06/07/16	<0.0008	<0.002	0.0774	0.000604 J	<0.0003	0.0153	0.0196	<0.1	<0.0003	0.163	<0.00008	<0.002	<0.002	<0.0005	0.276	0.897	1.17
	08/09/16	<0.0008	<0.002	0.0424	0.000519 J	<0.0003	<0.002	0.00291 J	0.0284	<0.1	<0.0003	0.102	<0.00008	<0.002	<0.002	<0.0005	<0.149	0.649	0.80
	10/18/16	<0.0008	0.00347 J	0.0464	0.000617 J	<0.0003	0.0309	0.0644	<0.1	0.000329 J	0.118	<0.00008	<0.002	<0.002	<0.0005	0.096	<0.517	0.61
	12/11/16	<0.0008	0.00218 J	0.0537	0.000865 J	<0.0003	0.0368	0.0408	0.132 J	0.000495 J	0.115	<0.00008	<0.002	<0.002	<0.0005	0.159	1.29	1.45
	06/13/18	<0.0008	0.00283 J	0.0741	0.0004 J	<0.0003	0.0182	0.0266	0.105 J	0.0009 J	0.183	<0.00008	<0.002	<0.002	<0.0005	0.795	<0.712	1.507
	09/07/18	NA	0.00239 J	0.0757	0.0003 J	<0.0003	0.0105	0.0288	0.135 J	<0.0003	0.160	NA	NA	<0.002	NA	0.334	<0.645	0.979
	05/14/19	<0.0008	0.00355 J	0.158	0.00114	<0.0003	0.0342	0.0648	0.166 J	0.000772 J	0.161	<0.00008	<0.002	<0.002	<0.0005	0.850	1.35	2.200
Downgradient Wells																		
H-28	10/21/15	<0.0008	0.00278 J	0.0396	0.00148	0.00121	<0.002	0.188	<0.1	0.000491 J	0.154	<0.00008	<0.002	0.00682	<0.0005	<0.558	<1.65	<2.208
	12/14/15	<0.0008	<0.002	0.0224	<0.0003	0.000572 J	<0.002	0.0225	<0.1	<0.0003	0.021	<0.00008	<0.002	<0.002	<0.0005	0.707	<1.18	1.89
	02/23/16	<0.0008	0.00225 J	0.0202	0.00133	0.00151	<0.002	0.201	<0.1	0.00053 J	0.159	<0.00008	<0.002	0.00222 J	<0.0005	<0.396	2.24	2.64
	04/05/16	<0.0008	<0.002	0.0173	0.0011	0.00252	<0.002	0.199	<0.1	0.00087 J	0.15	<0.00008	<0.002	0.00237 J	<0.0005	<0.231	1.76	1.99
	06/07/16	<0.0008	<0.002	0.0468	0.000934 J	0.000664 J	<0.002	0.0944	<0.1	<0.0003	0.0959	<0.00008	<0.002	<0.002	<0.0005	0.310	1.48	1.79
	08/09/16	<0.0008	<0.002	0.0155	0.00275	0.0016	<0.002	0.195	<0.1	0.000774 J	0.155	<0.00008	<0.002	0.00286 J	<0.0005	<0.451	1.41	1.86
	10/18/16	<0.0008	0.00284J	0.0174	0.00685	0.000744 J	<0.002	0.169	0.165J	0.00108	0.155	<0.00008	<0.002	0.00273 J	<0.0005	<0.228	0.645	0.87
	12/11/16	<0.0008	<0.002	0.0471	0.000698 J	0.000668 J	<0.002	0.0924	0.114 J	<0.0003	0.0869	<0.00008	<0.002	<0.002	<0.0005	<0.149	1.13	1.28
	06/13/18	<0.0008	<0.002	0.0186	0.00393	0.0038	<0.002	0.169	0.126 J	0.000448 J	0.18	<0.00008	<0.002	<0.002	<0.0005	0.327	<1.56	1.887
	09/07/18	NA	<0.002	0.0192	0.00704	0.00115	<0.002	0.162	<0.100	0.00118 J	0.203	NA	NA	0.00281 J	NA	<0.243	0.845	1.088
	05/14/19	<0.0008	<0.002	0.0141	0.00281	0.00212	<0.002	0.187	<0.100	0.000595 J	0.172	<0.00008	<0.002	0.00619	<0.0005	0.444	0.615	1.059
H-29	10/21/15	<0.0008	<0.002	0.159	0.000359 J	<0.0003	<0.002	0.0301	<0.1	<0.0003	0.0156	<0.00008	<0.002	<0.002	<0.0005	0.464	1.82	2.28
	12/14/15	<0.0008	<0.002	0.277	<0.0003	<0.0003	0.062	<0.003	0.56	0.000542 J	0.0202	<0.00008	0.00819	0.0282	<0.0005	<0.53	<1.25	<1.78
	02/23/16	<0.0008	0.00203 J	0.151	<0.0003	<0.0003	0.019	<0.003	0.239 J	<0.0003	0.0135	<0.00008	0.00603	0.0148	<0.0005	<0.374	<2.22	<2.594
	04/05/16	<0.0008	<0.002	0.167	<0.0003	<0.0003	0.042	<0.003	0.363 J	<0.0003	0.0175	<0.00008	0.00697	0.0232	<0.0005	<0.228	<0.897	<1.125
	06/07/16	<0.0008	<0.002	0.136	<0.0003	<0.0003	0.0274	<0.003	0.27 J	<0.0003	0.0188	<0.00008	0.00551	0.0152	<0.0005	0.173	<0.834	1.01
	08/09/16	<0.0008	0.00995	0.315	<0.0003	<0.0003	0.00297 J	0.00473 J	<0.1	<0.0003	0.0143	<0.00008	<0.002	<0.002	<0.0005	0.261	<0.578	0.84
	10/18/16	<0.0008	<0.002	0.118	<0.0003	<0.0003	0.00412 J	<0.003	1.15	0.000427J	0.0056 J	<0.00008	0.00305 J	0.0681	<0.0005	0.155	<0.439	0.59
	12/11/16	<0.0008	<0.002	0.0779	<0.0003	<0.0003	<0.002	<0.003	1.4	<0.0003	<0.005	<0.00008	0.00307 J	0.0642	<0.0005	<0.113	<0.599	<0.712
	06/13/18	<0.0008	<0.002	0.0157	0.00345	0.00318	<0.002	0.153	0.123 J	0.000779 J	0.153	<0.00008	<0.002	<0.002	<0.0005	<0.274	<1.62	<1.894
	09/07/18	NA	<0.002	0.0374	0.00513	0.000938	<0.002	0.119	<0.100	0.00172	0.145	NA	NA	0.00374 J	NA	<0.371	<0.71	<1.081
	5/14/2019	<0.0008	<0.002	0.0138	0.00341	0.00219	<0.002	0.183	0.104 J	0.000543 J	0.173	<0.00008	<0.002	0.00616	<0.0005	<0.339	<0.707	<1.046

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TABLE 1
APPENDIX IV GROUNDWATER ANALYTICAL DATA SUMMARY
MARTIN LAKE STEAM ELECTRIC STATION
ASH POND AREA

Sample Location	Date Sampled	Sb (mg/L)	As (mg/L)	Ba (mg/L)	Be (mg/L)	Cd (mg/L)	Cr (mg/L)	Co (mg/L)	Fl (mg/L)	Pb (mg/L)	Li (mg/L)	Hg (mg/L)	Mo (mg/L)	Se (mg/L)	Tl (mg/L)	Ra 226 (pCi/L)	Ra 228 (pCi/L)	Ra 226/228 Comb.^ (pCi/L)
GWPS:		0.006	0.01	2	0.004	0.005	0.1	0.0564	4	0.015	0.177	0.002	0.1	0.05	0.002	--	--	5
H-31	10/20/15	<0.0008	0.0168	0.0732	0.0126	0.0032	0.00687	0.434	0.889	<0.0003	0.137	<0.00008	<0.002	0.116	<0.0005	0.943	<1.88	2.82
	12/14/15	<0.0008	0.00513	0.0388	0.00702	<0.0003	0.00456 J	0.0651	0.692	<0.0003	0.149	<0.00008	<0.002	0.0231	<0.0005	1.61	<1.29	2.90
	02/23/16	<0.0008	0.00436 J	0.0243	0.0101	<0.0003	<0.002	0.0594	0.921	<0.0003	0.146	<0.00008	<0.002	0.0209	<0.0005	<0.419	<1.64	<2.059
	04/05/16	<0.0008	0.00514	0.0241	0.00925	<0.0003	0.00435 J	0.0685	1.36	<0.0003	0.146	<0.00008	<0.002	0.0226	<0.0005	<0.334	<0.897	<1.231
	06/07/16	<0.0008	0.0038 J	0.0242	0.00789	<0.0003	<0.002	0.0406	0.783	<0.0003	0.157	<0.00008	<0.002	0.0307	<0.0005	0.257	<0.555	0.81
	08/09/16	<0.0008	0.00886	0.0191	0.00734	<0.0003	<0.002	0.286	0.216 J	<0.0003	0.17	<0.00008	<0.002	0.0202	<0.0005	1.31	0.900	2.21
	10/18/16	<0.0008	0.00351 J	0.0215	0.00167 J	<0.0003	<0.002	0.0304 J	0.298 J	<0.0003	0.165	<0.00008	<0.002	0.00567 J	<0.0005	0.169	1.18	1.35
	12/11/16	<0.0008	0.00875 J	0.0189	0.0197	<0.0003	0.00386 J	0.23 J	0.892	<0.0003	0.198	<0.00008	<0.002	0.0365	<0.0005	0.195	<0.754	0.95
	06/12/18	<0.0008	0.00532	0.0194	0.00545	<0.0003	0.003 J	0.236	0.646	<0.0003	0.214	<0.00008	<0.002	0.00475 J	<0.0005	<0.26	<0.597	<0.857
	09/07/18	NA	<0.002	0.0287	<0.0003	<0.0003	<0.002	0.00353 J	0.275 J	<0.0003	0.0187	NA	NA	0.00424 J	NA	<0.261	<0.567	<0.828
	05/14/19	<0.0008	0.00675	0.0163	0.00928	<0.0003	0.00315 J	0.389	0.96	<0.0003	0.219	<0.0004	<0.002	0.0261	<0.0005	2.62	<0.789	3.409
H-32	10/20/15	<0.0008	0.0028 J	0.16	0.00266	<0.0003	<0.002	0.163	0.374 J	<0.0003	0.0788	<0.00008	<0.002	0.00303 J	<0.0005	1.05	<1.90	2.95
	12/14/15	<0.0008	0.0123	0.0384	0.00313	<0.0003	<0.002	0.155	0.619	<0.0003	0.0733	<0.00008	<0.002	<0.002	<0.0005	0.712	<2.21	2.92
	02/23/16	<0.0008	0.00712	0.0277	0.00452	<0.0003	<0.002	0.188	0.701	0.000326 J	0.0821	<0.00008	<0.002	<0.002	<0.0005	1.12	1.60	2.72
	04/05/16	<0.0008	0.00648	0.0237	0.00527	0.00128	<0.002	0.208	1.05	0.00182	0.0818	<0.00008	<0.002	<0.002	<0.0005	<0.364	<1.15	<1.514
	06/07/16	<0.0008	0.00446 J	0.0238	0.00583	0.000997 J	<0.002	0.207	0.858	0.00168	0.087	<0.00008	<0.002	0.00298 J	<0.0005	<0.165	0.613	0.778
	08/09/16	<0.0008	0.00344 J	0.0234	0.00548	0.000713 J	<0.002	0.19	0.68	0.00115	0.0774	<0.00008	<0.002	0.00281 J	<0.0005	2.56	<0.446	3.01
	10/18/16	<0.0008	0.00289 J	0.02	0.00567	0.00254	<0.002	0.204	0.904	0.00332	0.0834	<0.00008	<0.002	0.00267 J	<0.0005	<0.139	0.683	0.82
	12/11/16	<0.0008	0.00246 J	0.0205	0.00609	0.00108	<0.002	0.208	1	0.00137	0.0838	<0.00008	<0.002	0.00237 J	<0.0005	<0.163	<0.753	<0.916
	06/12/18	<0.0008	<0.002	0.0175	0.00681	0.000586 J	<0.002	0.215	1.02	0.000701 J	0.0957	<0.00008	<0.002	<0.002	<0.0005	<0.275	0.917	1.192
	09/07/18	NA	<0.002	0.0404	<0.0003	<0.0003	<0.002	0.00347 J	0.551	<0.0003	0.0195	NA	NA	0.0157	NA	0.343	1.25	1.593
	05/14/19	<0.0008	0.002 J	0.0162	0.00713	0.000366 J	<0.002	0.202	1.15	0.000574 J	0.0978	<0.00008	<0.002	0.00675	<0.0005	0.303	<0.546	<0.849

Notes:
1. Abbreviations: GWPS - groundwater protection standard; mg/L - milligrams per liter; pCi/L - picocuries per liter.
2. ^ - Sum of Ra 226 and Ra 228 concentrations. Non-detect isotope results were assigned a value equal to the minimum detectable concentration.
3. J - concentration is below method quantitation limit; result is an estimate.
4. NA = Not analyzed.

LUMINANT

Table 2

Screening of Potential Groundwater Response Technologies
Martin Lake Steam Electric Station
Ash Ponds

Groundwater Response Technology	Description	Protective of Human Health and Environment	Attain Groundwater Protection Standard	Control Source of Release	Remove Contaminated Material From Environment	RCRA Compliance	Screening Comments	Retained for Further Evaluation
Monitored Natural Attenuation	Natural processes (dispersion, dilution, sorption, coprecipitation, degradation/transformation, etc.) remove CCR constituents from groundwater in-situ. Groundwater monitoring to verify MNA effectiveness.	Migration of CCR constituents in groundwater controlled and CCR concentrations in groundwater reduced.	CCR constituents removed through adsorption, precipitation or coprecipitation. CCR constituents removed from groundwater and retained in aquifer soil matrix to achieve GWPS below and downgradient of CCR Unit.	CCR constituents removed from groundwater below and downgradient of CCR Unit.	CCR constituents removed from groundwater and retained in aquifer soil matrix.	Purge water from groundwater monitoring requires management in accordance with applicable RCRA requirements.	Site is good MNA candidate for CCR constituents based on field MNA evaluation. Long-term groundwater monitoring required. Easy to implement. Groundwater modelling required to assess remediation timeframe.	Yes
Groundwater Extraction and Treatment	System of extraction wells along downgradient edge of ponds to provide hydraulic control of CCR constituent groundwater plumes. Extracted groundwater treated in an on-site treatment system and discharged to Martin Lake or re-injected into aquifer. Groundwater monitoring to verify system effectiveness.	Migration of CCR constituents in groundwater controlled.	GWPS attained downgradient of CCR Unit, but limited effect on concentrations beneath unit.	CCR groundwater constituents contained at edge of ponds.	CCR constituents removed from extracted groundwater by treatment system. Treatment residuals (sludge, regenerate brine, etc.) require management.	Treatment residuals (sludge, regenerate brine, etc.) require management in accordance with applicable RCRA requirements.	Regulatory authorization for treated water discharge required. Bench/pilot testing of treatment system required. Groundwater modelling required to assess remediation timeframe.	Yes
Vertical Hydraulic Barrier	Vertical, low permeability hydraulic barrier along downgradient edge of ponds to provide hydraulic control of CCR constituent groundwater plumes. Groundwater extraction and treatment required upgradient of barrier to control groundwater elevations. Groundwater monitoring to verify system effectiveness.	Migration of CCR constituents in groundwater controlled.	GWPS attained downgradient of CCR Unit, but limited effect on concentrations beneath unit.	CCR groundwater constituents contained at edge of ponds.	CCR constituents removed from extracted groundwater by treatment system. Treatment residuals (sludge, regenerate brine, etc.) require management.	Excavated soil generated from barrier installation requires testing and management as necessary. Treatment residuals (sludge, regenerate brine, etc.) require management in accordance with applicable RCRA requirements.	Bench/pilot test of barrier materials likely required. Regulatory authorization for treated water discharge required. Bench/pilot testing of treatment system required. Groundwater modelling required to assess remediation timeframe.	Yes

LUMINANT

Groundwater Response Technology	Description	Protective of Human Health and Environment	Attain Groundwater Protection Standard	Control Source of Release	Remove Contaminated Material From Environment	RCRA Compliance	Screening Comments	Retained for Further Evaluation
Permeable Reactive Barrier	In-situ, passive, permeable treatment zone containing reactive media designed to intercept impacted groundwater and adjust geochemistry to immobilize CCR contaminants. CCR constituents removed from groundwater through adsorption and/or coprecipitation under reducing groundwater conditions. PRB acts as a barrier to groundwater contamination but not groundwater flow. Groundwater monitoring to verify system effectiveness.	Migration of CCR constituents in groundwater controlled.	GWPS attained downgradient of CCR Unit, but limited effect on concentrations beneath unit.	CCR groundwater constituents removed from groundwater downgradient of CCR Unit.	CCR constituents removed from groundwater and retained on reactive media or aquifer soil matrix.	Excavated soil generated from PRB installation requires testing and management as necessary.	CCR constituent removal using PRB possible but full-scale performance uncertain. Reactive media effectiveness reduced over time and media likely replaced periodically. Bench/pilot testing of PRB media/system required. Groundwater modelling required to assess remediation timeframe.	No
In-Situ Chemical Treatment	Injection of chemical/material into aquifer to adjust geochemistry and enhance precipitation, co-precipitation, or indirect adsorption of CCR constituents. CCR constituents potentially removed through adsorption, precipitation and/or coprecipitation. Groundwater monitoring to verify system effectiveness.	Migration of CCR constituents in groundwater controlled.	GWPS attained downgradient of CCR Unit, but limited effect on concentrations beneath unit.	CCR groundwater constituents removed from groundwater downgradient of CCR Unit.	CCR constituents removed from groundwater and retained on aquifer soil matrix.	No significant RCRA compliance issues anticipated.	ICT considered emerging remediation technology for CCR constituents - not demonstrated under full-scale conditions. Bench/pilot-scale testing of ICT system required. Groundwater modelling required to assess remediation timeframe.	No
Phytoremediation	Use of plants to remove CCR constituents through uptake and accumulation within above ground portions of the plant. Primary plant process for CCR constituent removal is phytoextraction (uptake/accumulation of contaminants within aboveground portions of a plant). Groundwater monitoring to verify system effectiveness.	Migration of CCR constituents in groundwater controlled.	GWPS attained downgradient of CCR Unit, but limited effect on concentrations beneath unit.	CCR groundwater constituents removed from groundwater downgradient of CCR Unit.	CCR constituents removed from groundwater and accumulates in plants.	Management of harvested plants in accordance with RCRA may be required if accumulated CCR constituent concentrations are high.	Phytoextraction occurs in shallow root zone of plants, which limits the effectiveness for the groundwater depths at the Site. Phytoremediation for CCR constituent removal from groundwater has not been demonstrated under full-scale conditions Bench/pilot-scale testing of phytoremediation system required. Groundwater modelling required to assess remediation timeframe.	No

LUMINANT

Table 3

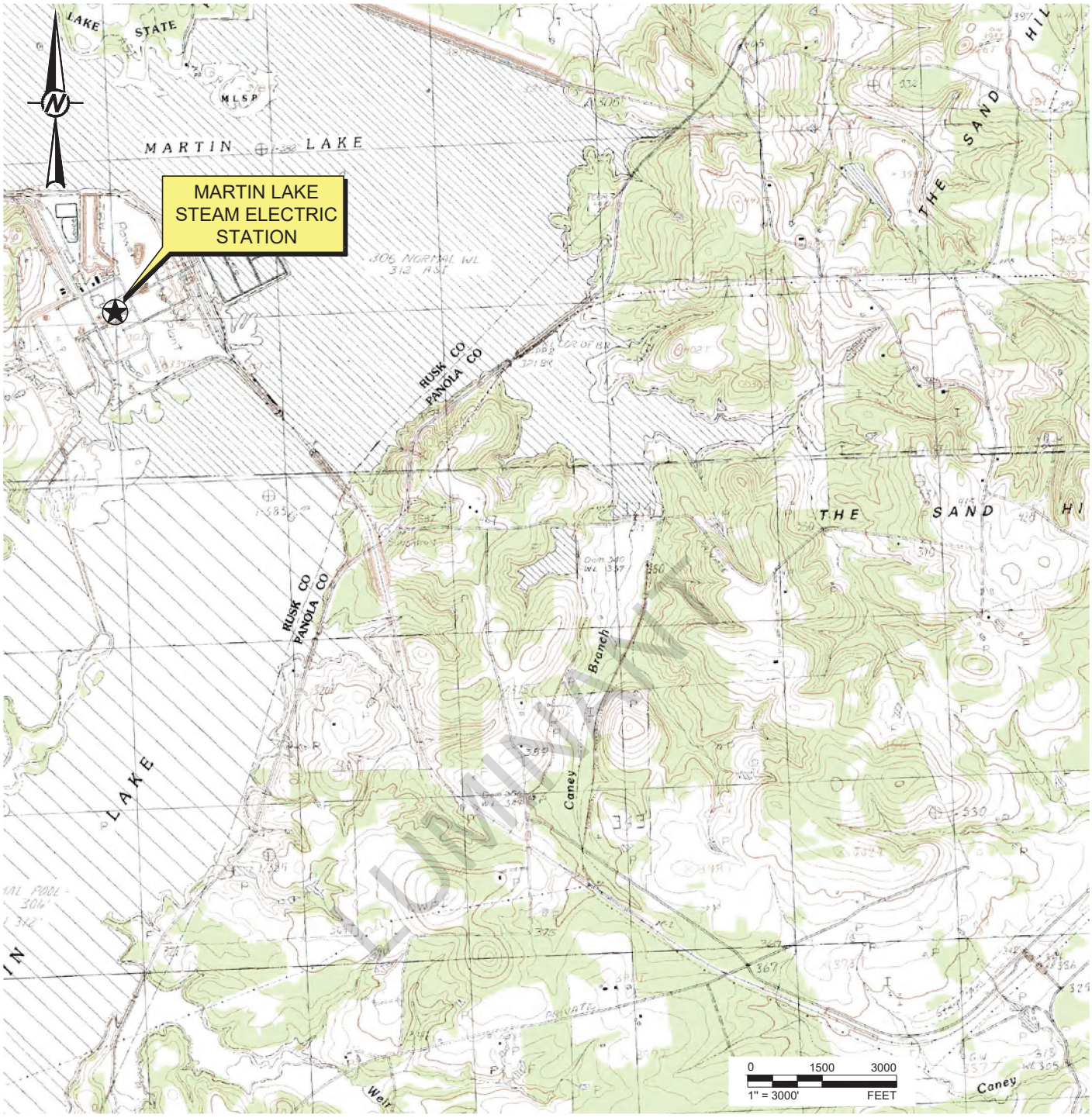
Evaluation of Corrective Measures Alternatives
Martin Lake Steam Electric Station
Ash Ponds

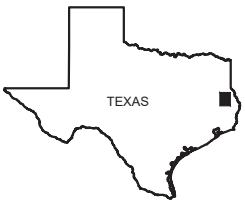
Corrective Measures Alternative	Description	Performance	Reliability	Ease of Implementation	Potential Impacts	Time Requirements	Institutional Requirements
Retrofit Liners in WAP, EAP and NSP with Monitored Natural Attenuation	New Liners in WAP, EAP and NSP. MNA to remove CCR constituents from groundwater and control migration. Groundwater monitoring to verify MNA effectiveness.	New Liners in WAP, EAP and NSP isolate CCR material in pond and mitigate on-going source of CCR constituents to groundwater. Site is good MNA candidate for CCR constituents based on MNA field evaluation.	Liner construction is a common and effective source control technology. On-going attenuation of CCR constituents in groundwater demonstrated during MNA field evaluation. Groundwater monitoring used to verify long-term MNA effectiveness.	Readily implementable with common construction techniques.	Source controlled through pond liner systems. CCR constituents removed from groundwater beneath and downgradient of ponds.	Retrofit Implementation: 1-2 years per pond. MNA Implementation: 2-3 years. Groundwater modelling required to assess remediation timeframe.	Minimal regulatory requirements.
Retrofit Liners in WAP, EAP and NSP with Groundwater Extraction and Treatment	New Liners in WAP, EAP and NSP. System of extraction wells along downgradient edge of ponds to provide hydraulic control of CCR constituent groundwater plumes. Extracted groundwater treated in an on-site treatment system and discharged to Martin Lake or re-injected into aquifer. Groundwater monitoring to verify system effectiveness.	New Liners in WAP, EAP and NSP isolate CCR material in pond and mitigate on-going source of CCR constituents to groundwater. Migration of CCR constituents in groundwater controlled at pond boundaries by extraction wells.	Liner construction is a common and effective source control technology. Groundwater extraction and treatment is a common and effective hydraulic control technology. Treatment system operational reliability is key component of overall reliability.	Readily implementable with common construction techniques. Bench/pilot testing of treatment system required. Regulatory authorization for treated water discharge could be difficult to obtain.	Source controlled through pond liner systems. Control of CCR constituent migration downgradient of ponds by extraction wells. Extraction system does not address groundwater beneath ponds.	Retrofit Implementation: 1-2 years per pond. GW Ext/Treatment Implementation: 3-4 years. Groundwater modelling required to assess remediation timeframe.	Regulatory authorization for treated water discharge required. Treatment system residuals (sludge, regenerate brine, etc.) require management.
Retrofit Liners in WAP, EAP and NSP with Vertical Hydraulic Barrier and Groundwater Extraction and Treatment	New Liners in WAP, EAP and NSP. Vertical, low permeability hydraulic barrier along downgradient edge of ponds to provide hydraulic control of CCR constituent groundwater plumes. Groundwater extraction and treatment required upgradient of barrier to control groundwater elevations. Groundwater monitoring to verify system effectiveness.	New Liners in WAP, EAP and NSP isolate CCR material in pond and mitigate on-going source of CCR constituents to groundwater. Migration of CCR constituents in groundwater controlled at pond boundaries by vertical barrier. Groundwater elevations upgradient of barrier controlled by groundwater extraction.	Liner construction is a common and effective source control technology. Vertical hydraulic barrier must be keyed into lower impermeable layer. Groundwater extraction and treatment is a common and effective hydraulic control technology. Treatment system operational reliability is key component of overall reliability.	Readily implementable with common construction techniques. Bench/pilot testing of treatment system required. Regulatory authorization for treated water discharge could be difficult to obtain.	Source controlled through pond liner systems. Control of CCR constituent migration downgradient of pond by vertical barrier. Vertical barrier does not address groundwater beneath pond.	Retrofit Implementation: 1-2 years per pond. Barrier and GW Ext/Treat Implementation: 5-8 years. Groundwater modelling required to assess remediation timeframe.	Regulatory authorization for treated water discharge required. Treatment system residuals (sludge, regenerate brine, etc.) require management.

DOCUMENT

FIGURES

LUMINANT





QUADRANGLE LOCATION

CLIENT
LUMINANT

PROJECT
MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

TITLE
SITE LOCATION MAP

CONSULTANT
GOLDER

YYYY-MM-DD	2019-08-28
DESIGNED	AJD
PREPARED	AJD
REVIEWED	WFV
APPROVED	WFV

REFERENCE(S)
BASE MAP TAKEN FROM TNRIS.GOV, TATUM, TX 7.5 MIN. USGS QUADRANGLE DATED 1983.

PROJECT NO. 19121403 | REV. 0 | FIGURE 1

APPENDIX F-Revision 2 February 27, 2024

Last Edited By: adiamond Date: 2019-08-28 Time:12:07:47 PM | Printed By: adiamond Date: 2019-08-28 Time:12:09:57 PM
Path: \\texarkanadata\Projects - Round Rock\19121403 - Luminant\Martin Lake Ash Pond Area\ | File Name: FIG 1 - Site Location Map.dwg
IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI A
0 1 in

LEGEND

- DOWNGRADIENT CCR MONITORING WELL
- UPGRADIENT CCR MONITORING WELL
- LAKE WATER/GROUNDWATER MIXING ZONE SAMPLE
- MNA SOIL SAMPLE
- A —— A' CROSS SECTION LOCATION

REFERENCE(S)

BASE MAP TAKEN FROM GOOGLE EARTH IMAGERY DATED 2019.

CLIENT
LUMINANT

PROJECT
MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

TITLE
DETAILED SITE PLAN - ASH POND AREA

CONSULTANT
GOLDER

YYYY-MM-DD	2019-08-28
DESIGNED	AJD
PREPARED	AJD
REVIEWED	WFV
APPROVED	WFV

PROJECT NO.	REV.	FIGURE
19121403	0	2

Last Edited By: adiamond Date: 2019-08-28 Time:12:16:40 PM | Printed By: adiamond Date: 2019-08-28 Time:12:33:09 PM
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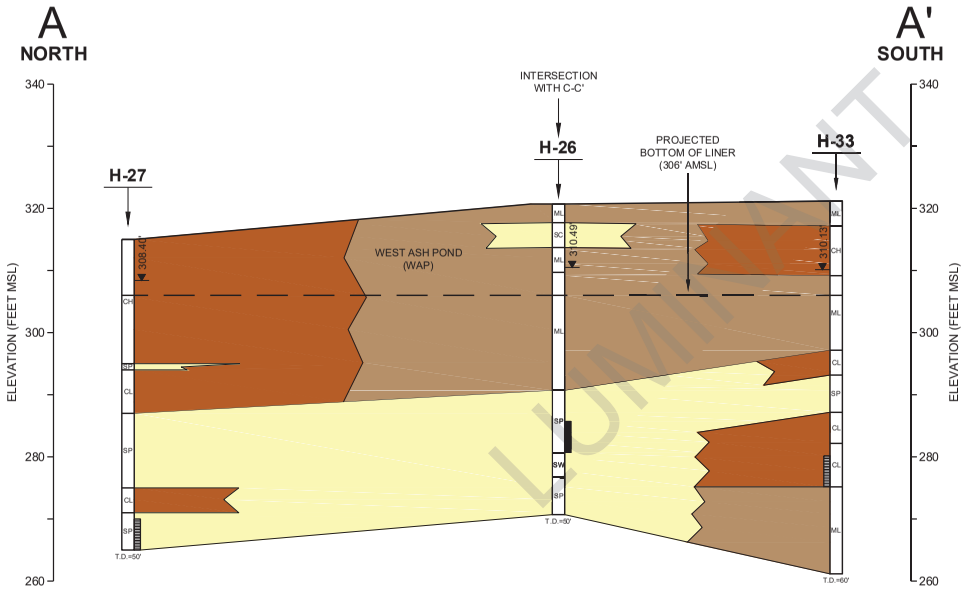
1 in
0

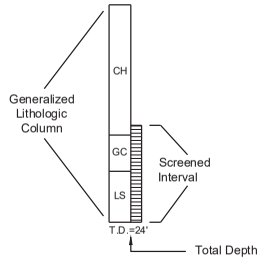


LUMINANT

LEGEND

- FILL
- SAND
- CLAY
- SILT

MONITORING WELL CONSTRUCTION



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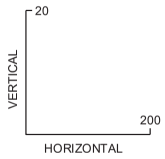

10x Vertical Exaggeration

CLIENT
LUMINANT

PROJECT
MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

TITLE
ASH POND AREA - GEOLOGIC CROSS SECTION A-A'
WEST SIDE OF WEST ASH POND
THROUGH PROCESS WATER POND

CONSULTANT
GOLDER

YYYY-MM-DD	2019-08-28
DESIGNED	AJD
PREPARED	AJD
REVIEWED	WFV
APPROVED	WFV

PROJECT NO. 19121403 | REV. 0 | FIGURE 3

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM ANSI B

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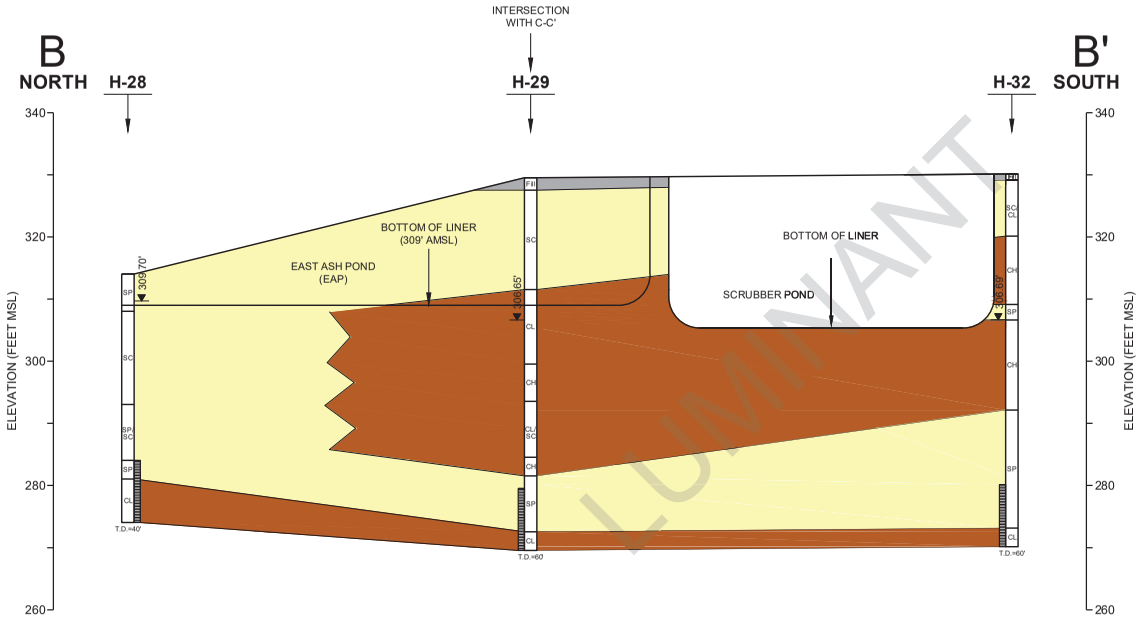
APPENDIX F-Revision 2 February 27, 2024

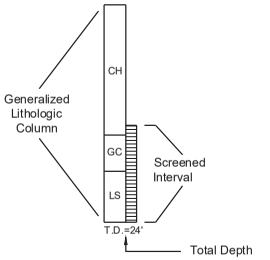


LUMINANT

LEGEND

- FILL
- SAND
- CLAY
- SILT

MONITORING WELL CONSTRUCTION



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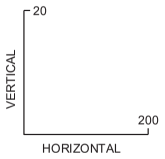

10x Vertical Exaggeration

CLIENT
LUMINANT

PROJECT
MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

TITLE
ASH POND AREA - GEOLOGIC CROSS SECTION B-B'
EAST SIDE OF ASH POND THROUGH SCRUBBER POND

CONSULTANT
GOLDER

YYYY-MM-DD	2019-08-28
DESIGNED	AJD
PREPARED	AJD
REVIEWED	WFV
APPROVED	WFV

PROJECT NO. 19121403 | REV. 0 | FIGURE 4

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM ANSI B

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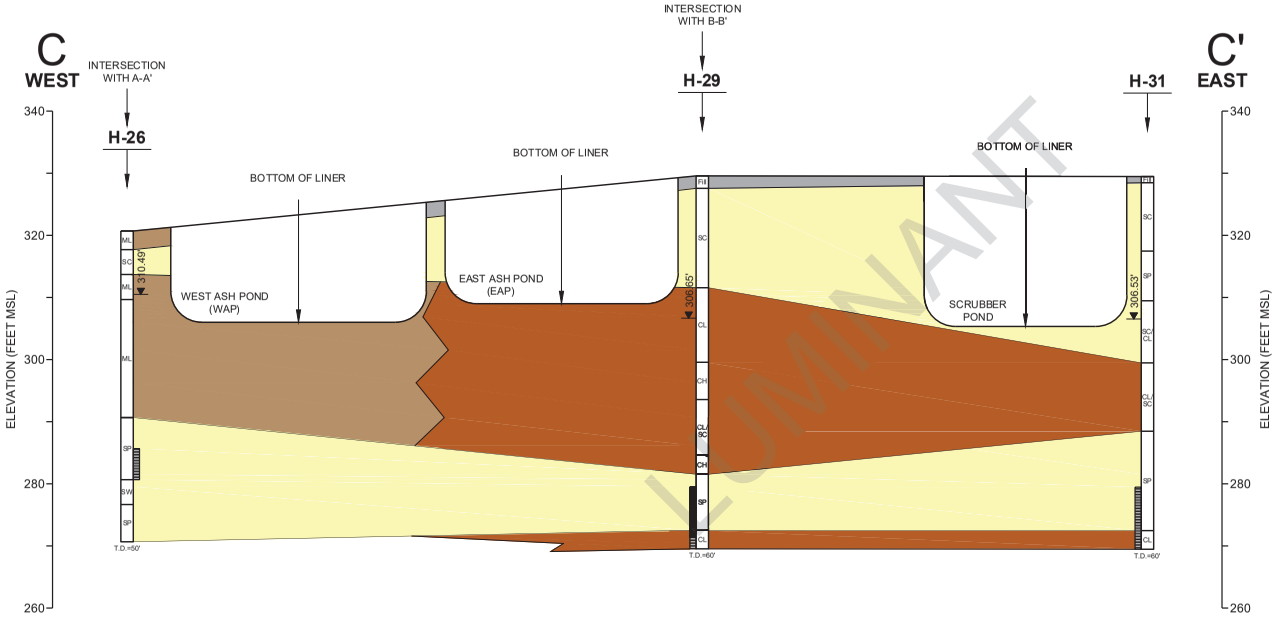
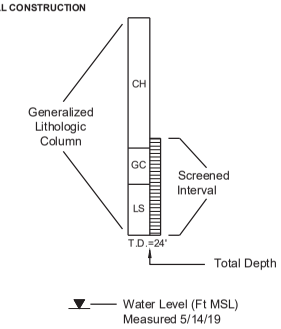


LEGEND

- FILL
- SAND
- CLAY
- SILT

MONITORING WELL CONSTRUCTION



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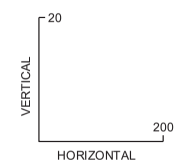

10x Vertical Exaggeration

CLIENT
LUMINANT

PROJECT
MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

TITLE
ASH POND AREA - GEOLOGIC CROSS SECTION C-C' THROUGH WEST ASH POND AND EAST ASH POND

CONSULTANT

GOLDER

YYYY-MM-DD	2019-08-28
DESIGNED	AJD
PREPARED	AJD
REVIEWED	WFV
APPROVED	WFV

PROJECT NO.	REV.	FIGURE
19121403	0	5

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

APPENDIX F-Revision 2 February 27, 2024

LEGEND

- DOWNGRADIENT CCR MONITORING WELL
- UPGRADIENT CCR MONITORING WELL
- (308.70) GROUNDWATER POTENTIOMETRIC SURFACE (FT MSL)
- 308 GROUNDWATER POTENTIOMETRIC SURFACE CONTOUR (C.I. = 1 FT)

REFERENCE(S)
BASE MAP TAKEN FROM GOOGLE EARTH IMAGERY DATED 2019.

CLIENT
LUMINANT

PROJECT
MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

TITLE
ASH POND AREA
POTENTIOMETRIC SURFACE MAP
MAY 14, 2019

CONSULTANT
GOLDER

YYYY-MM-DD	2019-06-24
DESIGNED	AJD
PREPARED	AJD
REVIEWED	WFV
APPROVED	WFV

PROJECT NO.	REV.	FIGURE
19122449	0	6

LUMINANT

Last Edited By: pmcbride Date: 2019-06-26 Time:12:45:32 PM | Printed By: PMcBride Date: 2019-07-15 Time:11:20:29 AM
Path: \\texarkana.golder.gds\data\Projects - Round Rock\19122449 - Luminant\Martin Lake\ | File Name: FIG 3 - POT Surface Map-Ash Pond Area (May 2019).dwg
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1 in
0

LEGEND

- DOWNGRADIENT CCR MONITORING WELL
- UPGRADIENT CCR MONITORING WELL
- LAKE WATER/GROUNDWATER MIXING ZONE SAMPLE
- MNA SOIL SAMPLE
- SSLs FOR ONE OR MORE APPENDIX IV CONSTITUENTS IN DOWNGRADIENT WELLS BASED ON INITIAL STATISTICAL EVALUATION
- SSLs FOR ONE OR MORE APPENDIX IV CONSTITUENTS IN DOWNGRADIENT WELLS BASED ON UPDATED STATISTICAL EVALUATION

REFERENCE(S)

BASE MAP TAKEN FROM GOOGLE EARTH IMAGERY DATED 2019.

CLIENT
LUMINANT

PROJECT
MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

TITLE
ASH POND AREA
EXTENT OF APPENDIX IV CONSTITUENTS DETECTED AT SSLs ABOVE GWPSs

CONSULTANT
GOLDER

YYYY-MM-DD	2019-08-29
DESIGNED	AJD
PREPARED	AJD
REVIEWED	WFV
APPROVED	WFV

PROJECT NO. 19121403 | REV. 0 | FIGURE 7

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Path: \\texarkanadata\Projects - Round Rock\19121403 - Luminant\Martin Lake Ash Pond Area\ | File Name: FIG 7 - Extent of App IV Constituents (Ash Pond Area).dwg
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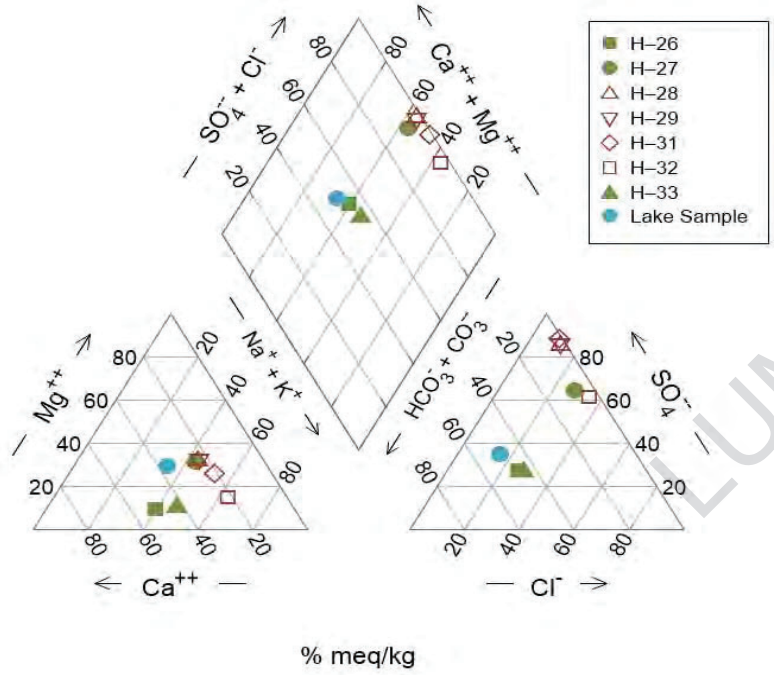
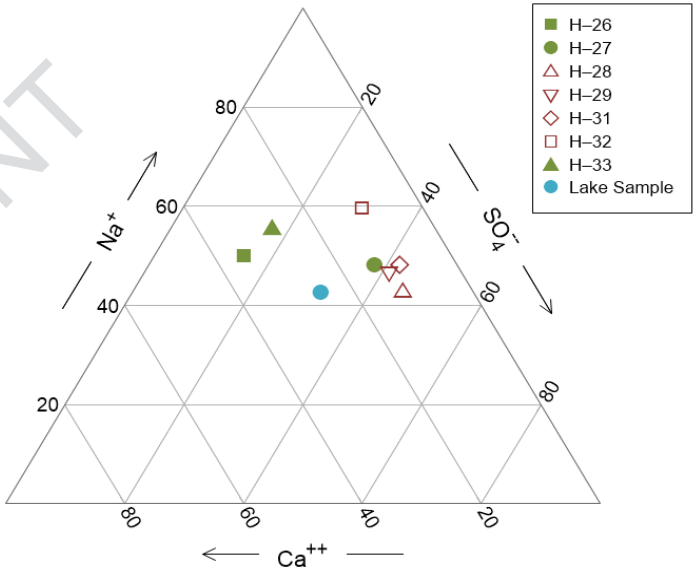


% meq/kg

(b)



% mol

LUMINANT

CLIENT
LUMINANT
MARTIN LAKE SES
ASH POND AREA

CONSULTANT
GOLDER

PROJECT
ASSESSMENT OF CORRECTIVE MEASURES
GEOCHEMICAL ASSESSMENT

TITLE
MAJOR GROUNDWATER CEHMISTRY (A) AND SELECT RELATIVE ION ABUNDANCE (B) IN GROUNDWATER AT MONITORING WELLS

PROJECT NO.	PHASE	REV.	FIGURE
19122434	01	A	8a-b

APPENDIX F-Revision 2 February 27, 2024

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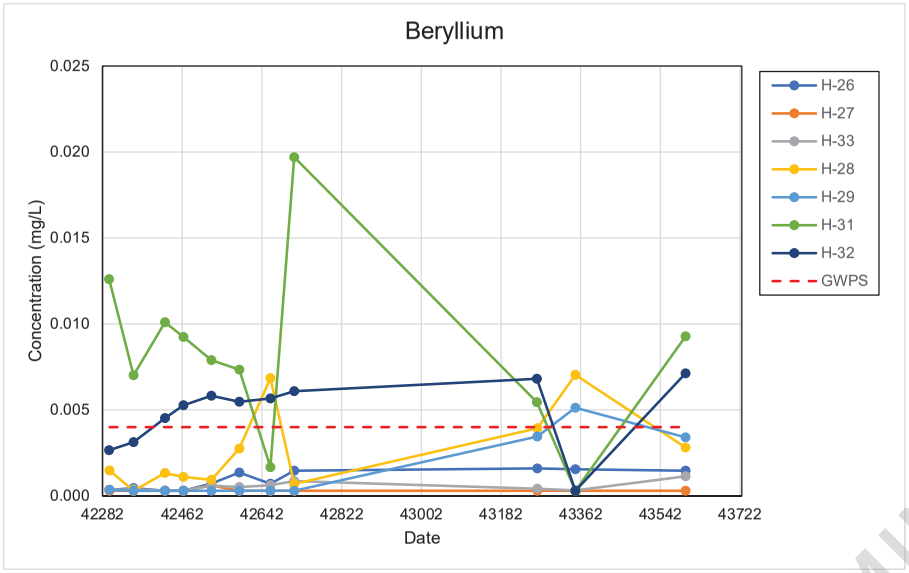

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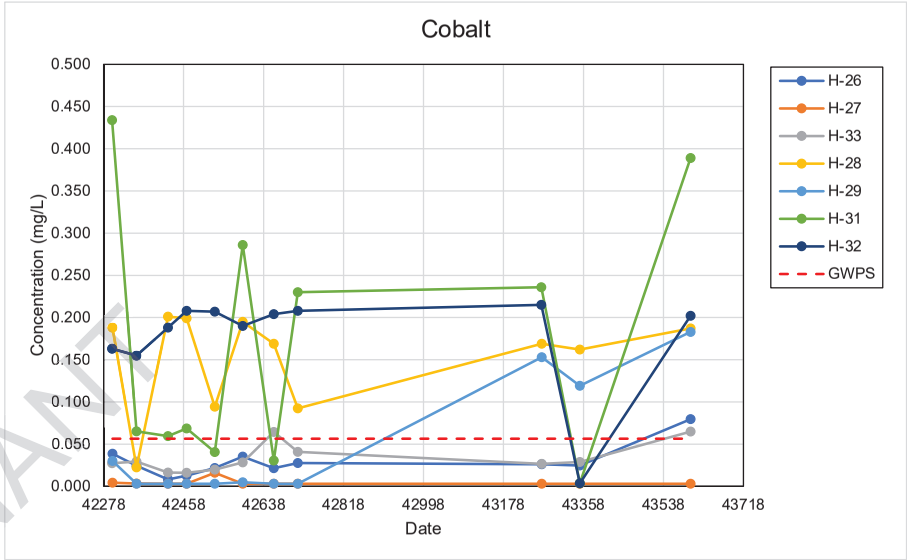

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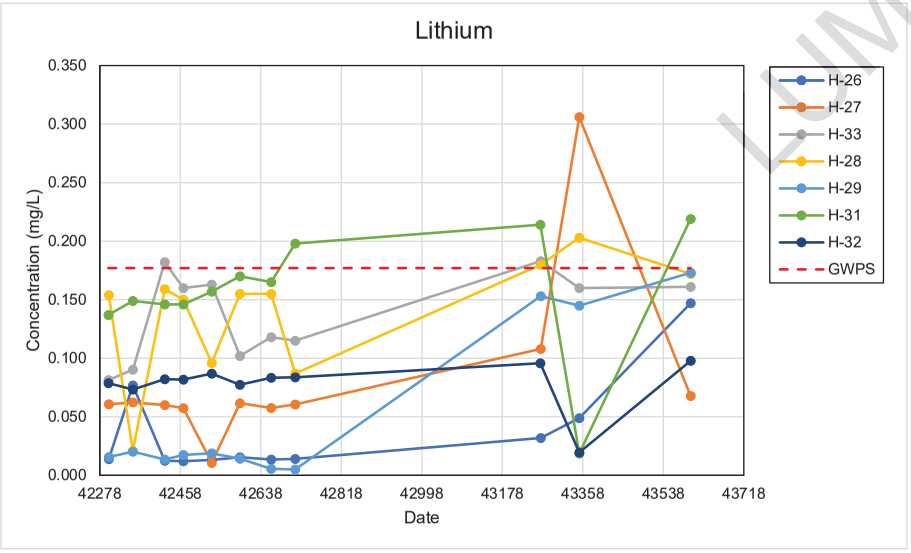


LUMINANT

CLIENT
LUMINANT
MARTIN LAKE SES
ASH POND AREA

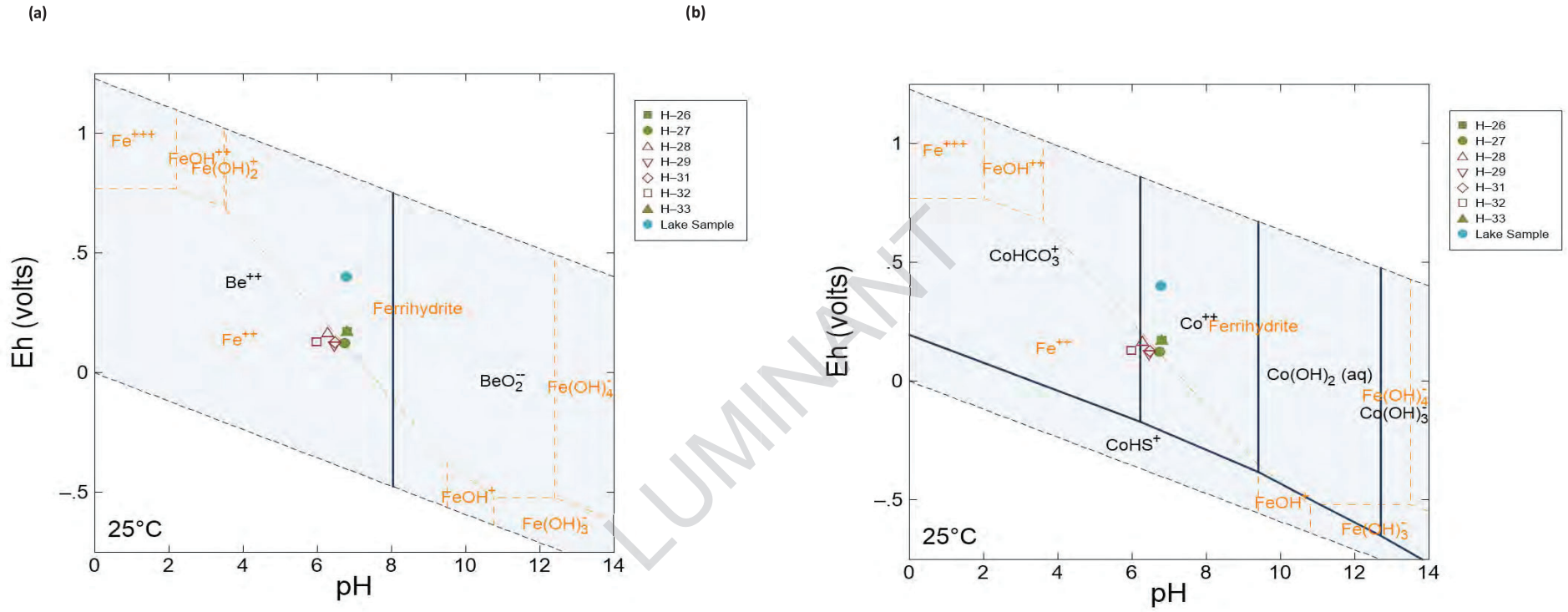
CONSULTANT
GOLDER

PROJECT
ASSESSMENT OF CORRECTIVE MEASURES
GEOCHEMICAL ASSESSMENT

TITLE
HISTORICAL TRENDS OF BERYLLIUM (A), COBALT (B), AND LITHIUM (C), IN GROUNDWATER AT MONITORING WELLS

PROJECT NO.	PHASE	REV.	FIGURE
19122434	01	A	9a-c

PATH: \\Users\pholan\Golder Associates\19121403_Luminant CCR ACM Reports - 5 Technical Work\Phase 1000 - ML Ash Pond Area | FILE NAME: Geochem Figures.xlsx



LUMINANT

CLIENT
LUMINANT
MARTIN LAKE SES
ASH POND AREA

CONSULTANT
GOLDER

PROJECT
ASSESSMENT OF CORRECTIVE MEASURES
GEOCHEMICAL ASSESSMENT

TITLE
SPECIATION OF BERYLLIUM (A), AND
COBALT (B), IN GROUNDWATER

PROJECT NO.	PHASE	REV.	FIGURE
164817101	01	A	10a-b

APPENDIX A

BORING LOGS

LUMINANT

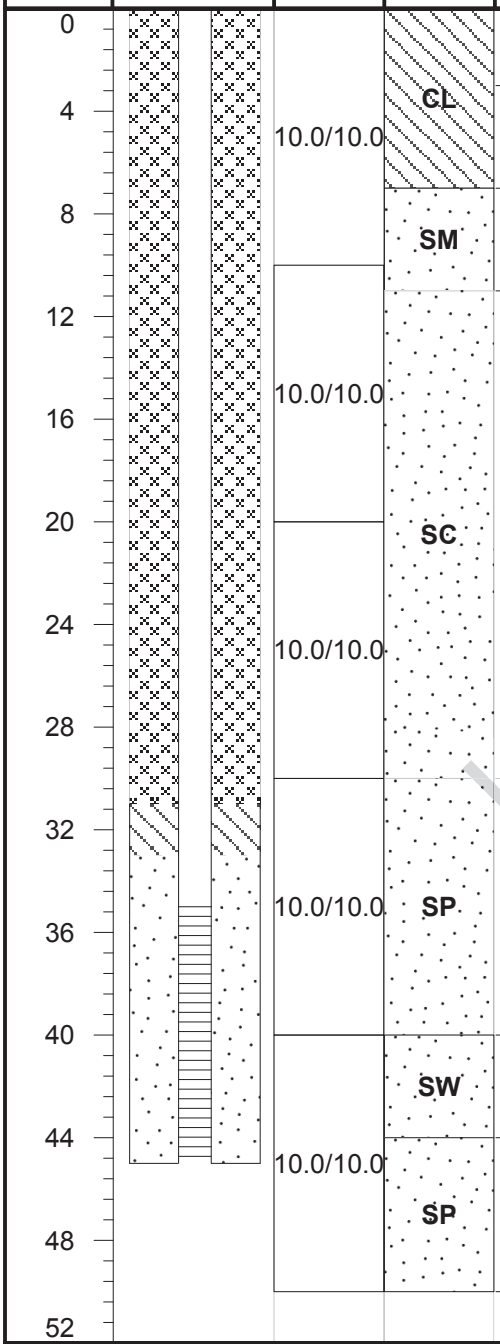
Luminant

Log of Boring: H-26

Martin Lake Steam Electric Station
Tatum, TX

PBW Project No. 5164B

Completion Date:	9/14/2015	Drilling Method:	Sonic
Drilling Company:	Walker-Hill Environmental	Borehole Diameter (in.):	6.5
Driller:	Timmy Beach	Total Depth (ft):	50
Driller's License:	5814M	TOC Elevation (ft. AMSL):	323.701
Logged By:	Ryan Francis	Northing:	1042229019.685
Sampling Method:	4"x10' Core barrel	Easting:	2907068.36



Lithologic Description
(0 - 3) Silty CLAY, dark brown, dry, soft to firm, weak cementation, low plasticity
(3 - 7) Sandy CLAY, red/orange with gray clay ribbons, dry, soft to firm, weak cementation, medium plasticity, minor rounded pebbles
(7 - 11) Silty SAND, gray, dry, soft, weak cementation, subrounded, sharp contact
(11 - 30) Clayey silty SAND, tan with red and gray ribbons, moist to wet, soft, weak cementation, medium plasticity
(30 - 40) SAND, tan and orange, fine grained, higher clay content (31'-34'), wet, very soft to soft, low to medium plasticity
(40 - 44) SAND, red, wet, soft to firm, moderate cementation, heavy iron content, iron concretions ("rocky" texture)
(44 - 50) SAND, red and gray, wet, soft, fine grained, subrounded, gradual color change to dark brown/black (47'-50'), moisture content decreases with depth, hard sand (48'-50')

LUMINANT

PBW
Pastor, Behling & Wheeler, LLC
2201 Double Creek Dr., Suite 4004
Round Rock, TX 78664
Tel (512) 671-3434 Fax (512) 671-3446

Notes:
1. This log should not be used separately from the report to which it is attached.

Well Materials
(0-35) Casing, 2" Sch 40 FJT PVC
(35-40) Screen, 2" Sch 40 FJT PVC, 0.010" slot

Annular Materials
(0'-31') Grout
(31'-33') Bentonite pellets
(33'-40') 20/40 sand

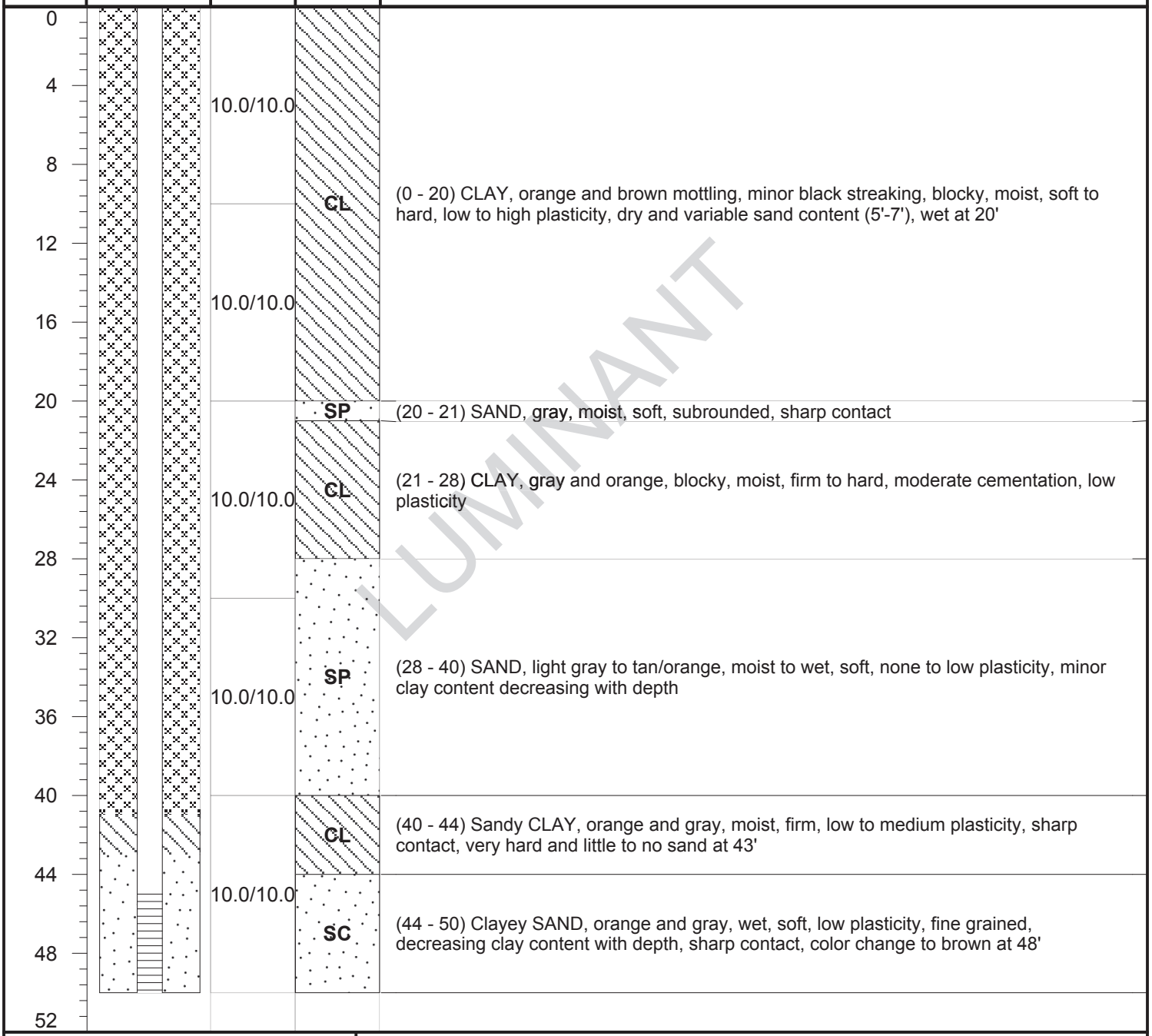
Luminant

Log of Boring: H-27

Martin Lake Steam Electric Station
Tatum, TX

PBW Project No. 5164B

Completion Date:	9/15/2015	Drilling Method:	Sonic
Drilling Company:	Walker-Hill Environmental	Borehole Diameter (in.):	6.5
Driller:	Timmy Beach	Total Depth (ft):	50
Driller's License:	5814M	TOC Elevation (ft. AMSL):	330.423
Logged By:	Ryan Francis	Northing:	1038229615.42
Sampling Method:	4"x10' Core barrel	Easting:	2906850.991



LUMINANT

PBW

Pastor, Behling & Wheeler, LLC
2201 Double Creek Dr., Suite 4004
Round Rock, TX 78664
Tel (512) 671-3434 Fax (512) 671-3446

Notes:
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Well Materials
(0-45) Casing, 2" Sch 40 FJT PVC
(45-50) Screen, 2" Sch 40 FJT PVC, 0.010" slot

Annular Materials
(0'-41') Grout
(41'-43') Bentonite pellets
(43'-50') 20/40 sand

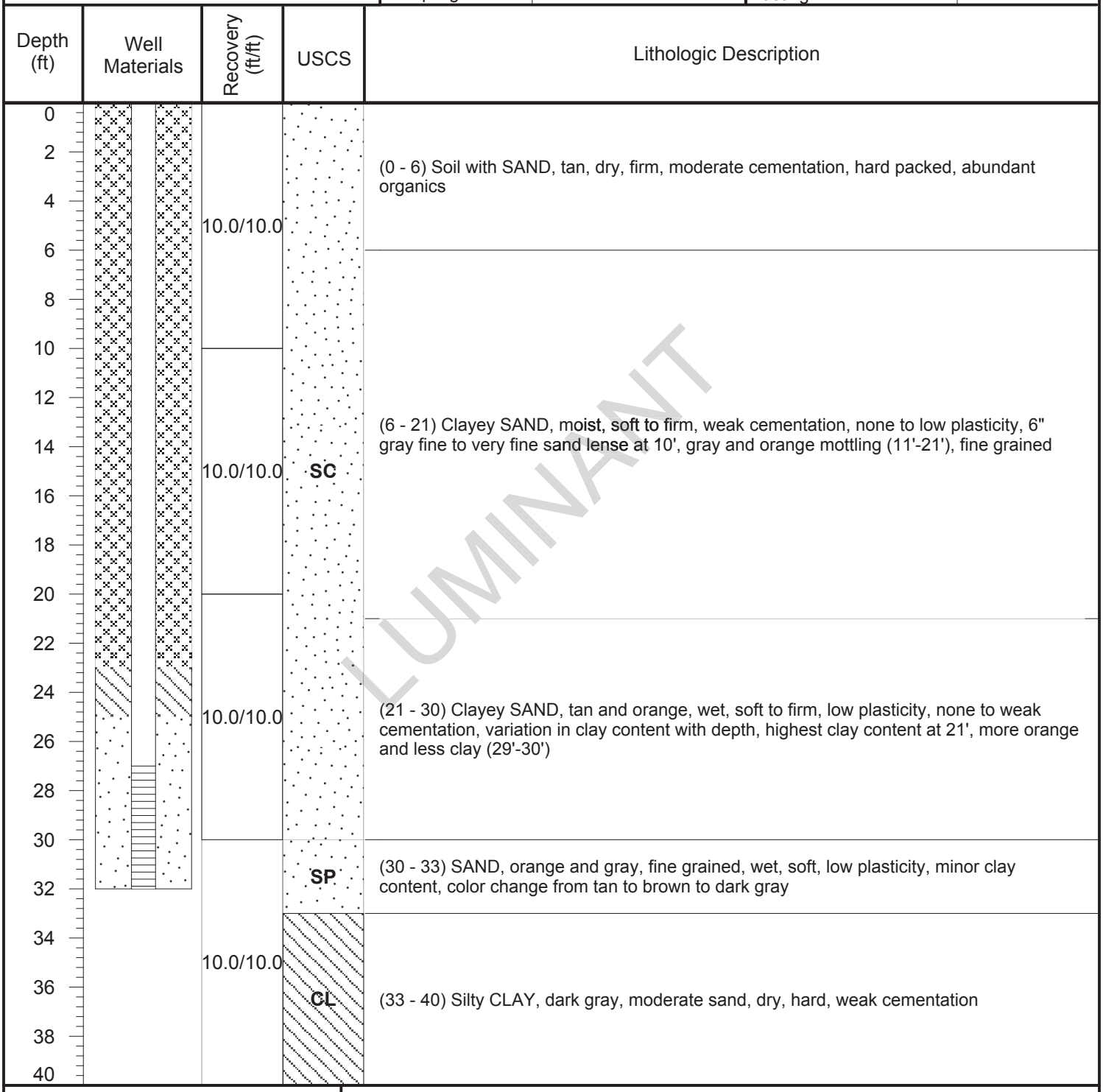
Luminant

Log of Boring: H-28

Martin Lake Steam Electric Station
Tatum, TX

PBW Project No. 5164B

Completion Date:	9/15/2015	Drilling Method:	Sonic
Drilling Company:	Walker-Hill Environmental	Borehole Diameter (in.):	6.5
Driller:	Timmy Beach	Total Depth (ft):	40
Driller's License:	5814M	TOC Elevation (ft. AMSL):	316.821
Logged By:	Ryan Francis	Northing:	1030230033.689
Sampling Method:	4"x10' Core barrel	Easting:	2907668.815



LUMINANT

PBW

Pastor, Behling & Wheeler, LLC
2201 Double Creek Dr., Suite 4004
Round Rock, TX 78664
Tel (512) 671-3434 Fax (512) 671-3446

Notes:
1. This log should not be used separately from the report to which it is attached.

Well Materials
(0-27) Casing, 2" Sch 40 FJT PVC
(27-32) Screen, 2" Sch 40 FJT PVC, 0.010" slot

Annular Materials
(0'-23') Grout
(23'-25') Bentonite pellets
(25'-32') 20/40 sand

Luminant

Log of Boring: H-29

Martin Lake Steam Electric Station
Tatum, TX

PBW Project No. 5164B

Completion Date:	9/23/2015	Drilling Method:	Sonic
Drilling Company:	Walker-Hill Environmental	Borehole Diameter (in.):	6.5
Driller:	Timmy Beach	Total Depth (ft):	60
Driller's License:	5814M	TOC Elevation (ft. AMSL):	329.255
Logged By:	Ryan Francis	Northing:	1026229427.784
Sampling Method:	4"x10' Core barrel	Easting:	2907899.511

Depth (ft)	Well Materials	Recovery (ft/ft)	USCS	Lithologic Description
0			FILL	(0 - 2) Hard rock road bed, dry
4		10.0/10.0	SC	(2 - 18) Clayey SAND, orange and gray mottling, very fine grained, dry to moist, firm, weak cementation, low to medium plasticity, increasing clay content with depth
8				
12				
16		10.0/10.0		
20			CL	(18 - 30) CLAY, orange, moist, firm, low to medium plasticity, very little sand or silt, black striping at 22', increasing sand content with depth (28'-30')
24		10.0/10.0		
28				
32			CH	(30 - 36) CLAY, orange, moist, soft, friable, high plasticity, minor silt
36		10.0/10.0		
40			CL/SC	(36 - 45) Sandy CLAY/Clayey SAND, orange/gray/red mottling, friable, wet, soft to firm, low to medium plasticity, increasing clay content with depth
44		10.0/10.0		
48			CH	(45 - 48) CLAY with sand, orange and gray mottling, wet, soft, high plasticity
52			SP	(48 - 57) SAND, gray, wet, soft, no to low plasticity, some black roots/ organics, interspersed clay lenses
56		10.0/10.0		
60			CL	(57 - 60) Silty CLAY, gray/brown, dry, hard, weak cementation, sharp contact

LUMINANT

PBW
Pastor, Behling & Wheeler, LLC
2201 Double Creek Dr., Suite 4004
Round Rock, TX 78664
Tel (512) 671-3434 Fax (512) 671-3446

Notes:
1. This log should not be used separately from the report to which it is attached.

Well Materials
(0-52) Casing, 2" Sch 40 FJT PVC
(52-57) Screen, 2" Sch 40 FJT PVC, 0.010" slot

Annular Materials
(0'-48') Grout
(48'-50') Bentonite pellets
(50'-57') 20/40 sand

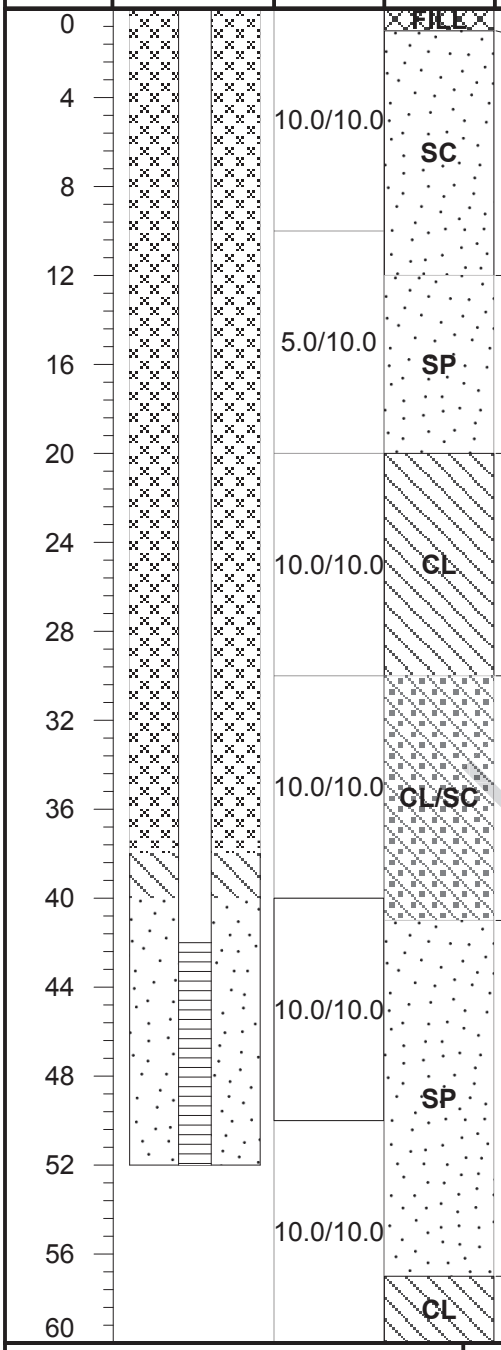
Luminant

Log of Boring: H-31

Martin Lake Steam Electric Station
Tatum, TX

PBW Project No. 5164B

Completion Date:	9/24/2015	Drilling Method:	Sonic
Drilling Company:	Walker-Hill Environmental	Borehole Diameter (in.):	6.5
Driller:	Timmy Beach	Total Depth (ft):	60
Driller's License:	5814M	TOC Elevation (ft. AMSL):	329.258
Logged By:	Ryan Francis	Northing:	1035229262.289
Sampling Method:	4"x10' Core barrel	Easting:	2908596.681



Lithologic Description
(0 - 1) Hard, packed gravel road bed, dry
(1 - 12) Clayey SAND, orange, dry to moist, soft to firm, low plasticity, fine grained, increasing clay content with depth, gray clay ribbons at 10'
(12 - 20) SAND, orange with red and gray mottling, dry to moist, soft, none to low plasticity, weak cementation, fine grained, very little clay
(20 - 30) Sandy CLAY, orange, dry to moist, firm, crumbly, color variation with depth, low plasticity, some gray sand lenses, very fine grained, color change to gray at 29'
(30 - 41) Sandy CLAY/ Clayey SAND, gray and tan, moist, soft, fine grained, low plasticity, variations in clay content and firmness with depth, moisture content changes to wet at 35'
(41 - 57) SAND, orange/tan, wet, very soft, fine grained, subrounded, increasing red color with depth starting at 52', hard iron concretion layer with some black staining at 55'
(57 - 60) Sandy CLAY, gray, dry to moist, hard, fine grained, weak cementation, low plasticity

LUMINANT

PBW
Pastor, Behling & Wheeler, LLC
2201 Double Creek Dr., Suite 4004
Round Rock, TX 78664
Tel (512) 671-3434 Fax (512) 671-3446

Notes:
1. This log should not be used separately from the report to which it is attached.

Well Materials
(0-42) Casing, 2" Sch 40 FJT PVC
(42-52) Screen, 2" Sch 40 FJT PVC, 0.010" slot

Annular Materials
(0'-38') Grout
(38'-40') Bentonite pellets
(40'-52') 20/40 sand

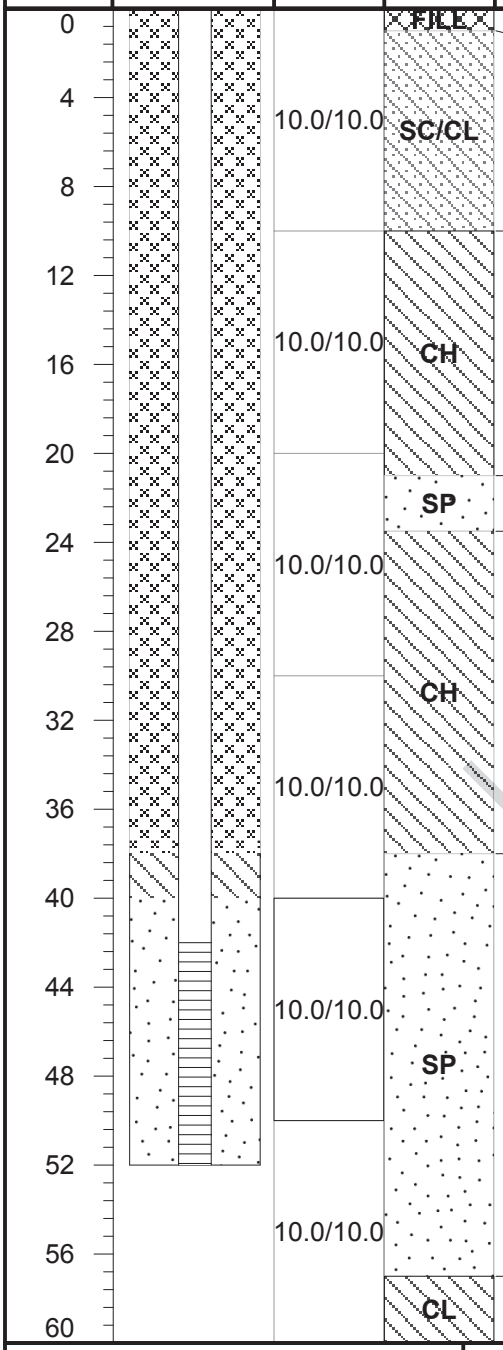
Luminant

Log of Boring: H-32

Martin Lake Steam Electric Station
Tatum, TX

PBW Project No. 5164B

Completion Date:	9/24/2015	Drilling Method:	Sonic
Drilling Company:	Walker-Hill Environmental	Borehole Diameter (in.):	6.5
Driller:	Timmy Beach	Total Depth (ft):	60
Driller's License:	5814M	TOC Elevation (ft. AMSL):	329.854
Logged By:	Ryan Francis	Northing:	1034228728.295
Sampling Method:	4"x10' Core barrel	Easting:	2908232.588



USCS	Lithologic Description
FILL	(0 - 1) Hard, packed gravel road bed, dry
SC/CL	(1 - 10) Sandy CLAY/Clayey SAND, orange/tan, dry, firm, fine grained, low plasticity, weak cementation
CH	(10 - 21) CLAY with minor silt/sand, orange with some black streaks, moist, firm, high plasticity, gradual contact
SP	(21 - 23.5) SAND, gray, dry, soft to firm, friable, fine grained
CH	(23.5 - 38) CLAY, orange/tan/gray, moist, soft to firm, high plasticity, minor sand at 30', tan and gray with orange stripes (30'-38'), sharp contact
SP	(38 - 57) SAND, orange/tan, moist to wet, very soft to soft, fine grained, subrounded, minor clay, low plasticity, no clay content at 42', gradual coarsening of sand grains (48'-55'), some gray streakings at 49', color change to reddish brown at 52'
CL	(57 - 60) Sandy CLAY, dark red and brown, wet, soft, low plasticity, layer of dark red concretions at 57', weak cementation

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PBW
Pastor, Behling & Wheeler, LLC
2201 Double Creek Dr., Suite 4004
Round Rock, TX 78664
Tel (512) 671-3434 Fax (512) 671-3446

Notes:
1. This log should not be used separately from the report to which it is attached.

Well Materials
(0-42) Casing, 2" Sch 40 FJT PVC
(42-52) Screen, 2" Sch 40 FJT PVC, 0.010" slot

Annular Materials
(0'-38') Grout
(38'-40') Bentonite pellets
(40'-52') 20/40 sand

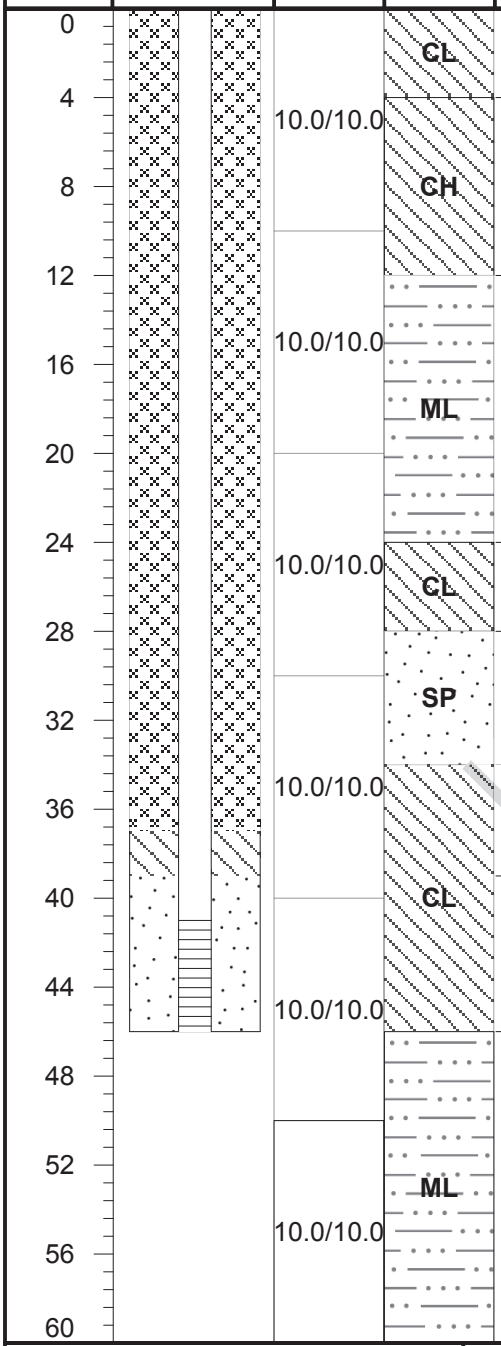
Luminant

Log of Boring: H-33

Martin Lake Steam Electric Station
Tatum, TX

PBW Project No. 5164B

Completion Date:	9/14/2015	Drilling Method:	Sonic
Drilling Company:	Walker-Hill Environmental	Borehole Diameter (in.):	6.5
Driller:	Timmy Beach	Total Depth (ft):	60
Driller's License:	5814M	TOC Elevation (ft. AMSL):	323.845
Logged By:	Ryan Francis	Northing:	1041228608.597
Sampling Method:	4"x10' Core barrel	Easting:	2907267.556



Lithologic Description
(0 - 4) Silty CLAY, minor sand, red and orange with gray ribbons, dry, soft to firm, low to medium plasticity
(4 - 12) CLAY, red with gray concretions, moist, soft to firm, high plasticity, gradual contact
(12 - 24) Sandy SILT, gray and red, dry, soft, weak cementation, sharp contact, red and gray clay lens at 19'
(24 - 28) CLAY, red, moist to wet, soft to firm, high plasticity, pebbles present
(28 - 34) SAND, gray, wet, soft to firm, minor clay, low to medium plasticity, subrounded, increasing clay content with depth, sharp contact
(34 - 39) CLAY, orange and gray mottling, dry, very hard, moderate cementation, low plasticity
(39 - 46) Sandy CLAY, orange and gray, moist to wet, firm, medium plasticity, weak cementation, increasing sand content with depth
(46 - 60) Sandy SILT, dark gray, dry, hard

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PBW

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Round Rock, TX 78664
Tel (512) 671-3434 Fax (512) 671-3446

Notes:
1. This log should not be used separately from the report to which it is attached.

Well Materials
(0-41) Casing, 2" Sch 40 FJT PVC
(41-46) Screen, 2" Sch 40 FJT PVC, 0.010" slot

Annular Materials
(0'-37') Grout
(37'-39') Bentonite pellets
(39'-46') 20/40 sand

Luminant

Log of Boring: AP-2019-1

Big Brown Steam Electric Station
Franklin, TX

Golder Project No. 19122434E

Completion Date:	6/3/2019	Drilling Method:	Sonic
Drilling Company:	Walker-Hill Environmental	Borehole Diameter (in.):	6
Driller:	Rodney Labrosse	Total Depth (ft):	40
Driller's License:	60059	TOC Elevation (ft. AMSL):	
Logged By:	Kelsey Worley	Northing:	3570888
Sampling Method:	4"x10' Core barrel	Easting:	352661.3

Depth (ft)	Recovery (ft/ft)	USCS	Lithologic Description
0			(0 - 1) Silty CLAY, brown, roots present, low plasticity, slightly moist
5	10.0/10.0	CL	(1 - 8) Silty CLAY, brown to orange, moist, moderate plasticity, soft to hard
10		SC	(8 - 12.5) Clayey SAND, orange and brown, moist, soft, clay content increases with depth, moderate plasticity
15	10.0/10.0	CH	(12.5 - 22) CLAY, gray to light brown, blocky, moist, firm to stiff, low plasticity
20			
25	10.0/10.0	SW	(22 - 34) SAND, light brown to gray and orange, moist, very fine to fine grained, subrounded, soft to firm, iron staining 22'-23.5', color change to light gray and light brown at 24', saturated at 30'
30			
35	10.0/10.0	SC	(34 - 40) Clayey SAND, gray and tan, becomes gray to dark gray at 35.5', stiff, moist, variations in clay content and firmness with depth
40			

LUMINANT

GOLDER
2201 Double Creek Dr., Suite 4004
Round Rock, Texas 78664
O·512.671.3434 F·512.671.3446

Notes:
1. This log should not be used separately from the report to which it is attached.

Luminant

Log of Boring: AP-2019-2

Big Brown Steam Electric Station
Franklin, TX

Golder Project No. 19122434E

Completion Date:	6/3/2019	Drilling Method:	Sonic
Drilling Company:	Walker-Hill Environmental	Borehole Diameter (in.):	6
Driller:	Rodney Labrosse	Total Depth (ft):	40
Driller's License:	60059	TOC Elevation (ft. AMSL):	
Logged By:	Kelsey Worley	Northing:	3570800
Sampling Method:	4"x10' Core barrel	Easting:	352739.4

Depth (ft)	Recovery (ft/ft)	USCS	Lithologic Description
0			
5	10.0/10.0	CL	(0 - 6) Silty CLAY, brown to gray, soft to firm, damp, low plasticity
10			(6 - 11) Sandy CLAY, red and orange with gray, clay ribbons, damp, soft to firm, weak cementation, moderate plasticity
15	10.0/10.0	SC	(11 - 20) Clayey Silty SAND, tan with red and gray, clay ribbons, moist, firm, weak cementation, moderate plasticity
20		SW	(20 - 22) SAND, light brown, moist to wet, fine grained, subrounded, soft
25	10.0/10.0	SC	(22 - 34) Clayey SAND, gray and tan, becomes gray to dark, gray at 26', stiff, moist, brown clay ribbons from 27'-29.5'
30			
35	10.0/10.0	SW	(34 - 40) SAND, gray, very fine to fine grained, wet, subrounded, soft to firm, saturated 35'-38', black organics at 38.8'-40.0'
40			

LUMINANT

GOLDER
2201 Double Creek Dr., Suite 4004
Round Rock, Texas 78664
O·512.671.3434 F·512.671.3446

Notes:
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Luminant

Log of Boring: AP-2019-3

Big Brown Steam Electric Station
Franklin, TX

Golder Project No. 19122434E

Completion Date:	6/3/2019	Drilling Method:	Sonic
Drilling Company:	Walker-Hill Environmental	Borehole Diameter (in.):	6
Driller:	Rodney Labrosse	Total Depth (ft):	30
Driller's License:	60059	TOC Elevation (ft. AMSL):	
Logged By:	Kelsey Worley	Northing:	352739.4
Sampling Method:	4"x10' Core barrel	Easting:	3570800

Depth (ft)	Recovery (ft/ft)	USCS	Lithologic Description
0	10.0/10.0	SM	(0 - 6) Silty SAND, light brown, firm, moderate cementation, roots present 0'-1.5'
5			
10	10.0/10.0	SC	(6 - 11) Clayey SAND, orange to brown, moist, soft to firm, no plasticity, weak cementation, gray sand lense, fine grained, at 11', fine to very fine grained
15			(11 - 18) Clayey SAND, wet, gray and tan to orange, soft to firm, sand content increases with depth
20	10.0/10.0	SP	(18 - 25) SAND, orange and gray, saturated, fine grained, soft, no cementation
25		CL	(25 - 30) Silty CLAY, dark gray, dry, hard, moderate sand content, weak cementation
30			

LUMINANT

GOLDER
2201 Double Creek Dr., Suite 4004
Round Rock, Texas 78664
O·512.671.3434 F·512.671.3446

Notes:
1. This log should not be used separately from the report to which it is attached.

APPENDIX B

LABORATORY ANALYTICAL REPORTS

LUMINANT

June 14, 2019

Will Vienne
Golder
2201 Double Creek Dr #4004
Round Rock, Texas 78664
TEL: (512) 671-3434
FAX (512) 671-3446

Order No.: 1905168

RE: Luminant-MLSES Ash Ponds

Dear Will Vienne:

DHL Analytical, Inc. received 7 sample(s) on 5/15/2019 for the analyses presented in the following report.

There were no problems with the analyses and all data met requirements of NELAP except where noted in the Case Narrative. All non-NELAP methods will be identified accordingly in the case narrative and all estimated uncertainties of test results are within method or EPA specifications.

If you have any questions regarding these tests results, please feel free to call. Thank you for using DHL Analytical.

Sincerely,

John DuPont
General Manager

LUMINANT

This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211-19-24

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AnalyticalQCSummaryReport 1905168 32

Subcontract Report 1905168 57

LUMINANT

DHL ANALYTICAL
2300 Double Creek Dr. ■ Round Rock, TX 78664
Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

№ 86479

CHAIN-OF-CUSTODY

APPENDIX IV Revision 2 February 27, 2024

CLIENT: GOLDER
ADDRESS: 2201 DOUBLE CREEK DR, ROUND ROCK, TX 78664
PHONE: 512-671-3434 FAX/E-MAIL: 512-671-3446
DATA REPORTED TO: WILL VIENNE
ADDITIONAL REPORT COPIES TO:

DATE: 5-14-19 PAGE 1 OF 1
PO #: DHL WORK ORDER #: 1905168
PROJECT LOCATION OR NAME: LUMINANT - MLSES ASH PONDS
CLENT PROJECT #: 19122262-C COLLECTOR: J. BEAUDON

Authorize 5% surcharge for TRRP Report? ☐ Yes ☐ No

S=SOIL W=WATER A=AIR L=LIQUID SE=SEDIMENT
P=PAINT SL=SLUDGE O=OTHER SO=SOLID

PRESERVATION: HCl, HNO_3, H_2SO_4 ☐ NaOH ☐, ICE, UNPRESERVED

ANALYSES: BTEX ☐ MTBE ☐ TMETHOD 8021 | TPH 1005 ☐ TPH 1006 ☐ HOLD 1006 ☐ | GRO (METHOD 8015) ☐ DRO (METHOD 8105) ☐ | VOC 8260 ☐ VOC 624 ☐ VOC 8260/5035 ☐ | SVOC 8270 ☐ PAH 8270 ☐ HOLD PAH ☐ SVOC 625 ☐ | 8270 PEST ☐ 625 PEST/PCB ☐ 608 PCB ☐ | 8270 O-P PEST ☐ 8082 PCB ☐ 8270 PCB ☐ | 8321 HERB ☐ T PHOS, AMMONIA ☐ | METALS 6020 ☐ METALS 200.8 ☐ DISS. METALS ☐ | RCRA ☐ TX11 ☐ | PH ☐ HEX CHROM ☐ ALKALINITY ☐ COD ☐ | CHLORIDE ☐ ANIONS ☐ | TCLP-SVOC ☐ VOC ☐ PEST ☐ HERB ☐ | TCLP-METALS ☐ RCRA 8 ☐ TX-11 ☐ Pb ☐ | RCI ☐ FLASHPOINT ☐ DGAS ☐ | TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐ | APPENDIX III & IV ALK, NO3, POU, Na, Mg, K FERROUS+ FERRIC, SEM

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	HCl	HNO_3	H_2SO_4 ☐ NaOH ☐	ICE	UNPRESERVED	ANALYSES	FIELD NOTES
H-31	01	5-14-19	0740	W		7				X		X X X	
H-32	02		0825	W		7				X		X X X	
H-27	03		0940	W		7				X		X X X	
H-29	04		1125	W		7				X		X X X	
H-28	05		1230	W		7				X		X X X	
H-26	06		1425	W		7				X		X X X	
H-33	07		1530	W		7				X		X X X	

LUMINANT

RELINQUISHED BY: (Signature) DATE/TIME 5-14-19 RECEIVED BY: (Signature) Fed Ex
RELINQUISHED BY: (Signature) Fed Ex DATE/TIME 5/15/19 0943 RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature) DATE/TIME RECEIVED BY: (Signature)

☐ DHL DISPOSAL @ $5.00 each ☐ Return

TURN AROUND TIME
RUSH ☐ CALL FIRST
1 DAY ☐ CALL FIRST
2 DAY ☐
NORMAL ☒
OTHER ☐ _____

LABORATORY USE ONLY:
RECEIVING TEMP: 4.5/3.0C THERM #: 78
CUSTODY SEALS: ☐ BROKEN ☐ INTACT ☒ NOT USED
CARRIER: ☐ LONE STAR ☒ FEDEX ☐ UPS ☐ OTHER
☐ COURIER DELIVERY
☐ HAND DELIVERED

DHL COC Rev 1 | FEB 2010

Eric Lau

From: John DuPont
Sent: Tuesday, May 28, 2019 11:35 AM
To: Eric Lau
Subject: FW: CCR Analysis

Appendix III Parameters:
Metals (Ca and B)
Anions (Cl, F, and SO4)
TDS

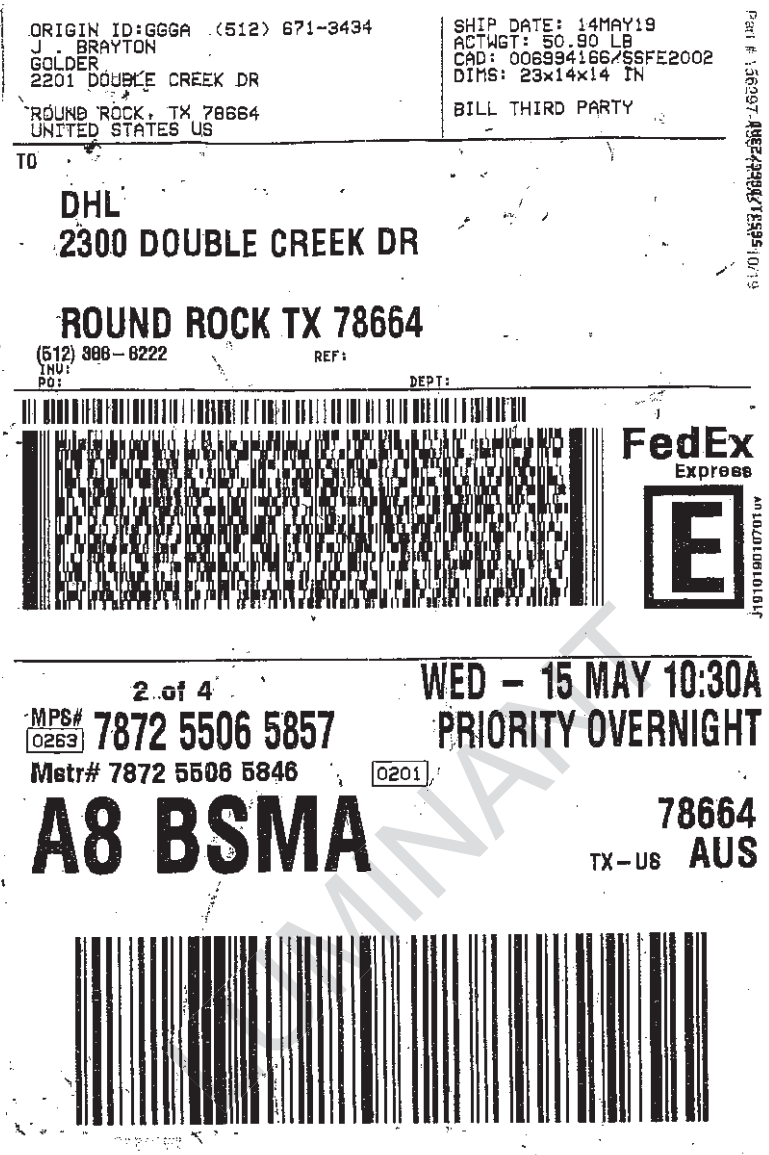
Appendix IV Parameters:

Metals (As, Ba, Be, Cd, Co, Cr, Hg, Li, Mo, Pb, Sb, Se, and Tl)
Ra-226
Ra-228

From: Vienne, Will [mailto:William_Vienne@golder.com]
Sent: Tuesday, April 09, 2019 12:48 PM
To: John DuPont <dupont@dhlanalytical.com>
Subject: CCR Analysis

LUMINANT

ORIGIN ID:GGGA (512) 671-3436
J . BRAYTON
GOLDER
2201 DOUBLE CREEK DR
ROUND ROCK, TX 78664
UNITED STATES US
SHIP DATE: 14MAY19
ACTWGT: 48.70 LB
CAD: 006894186/SSFE2002
DIMS: 23x13x13 IN
BILL THIRD PARTY
TO
DHL
2300 DOUBLE CREEK DR
ROUND ROCK TX 78664
(512) 388-8222
REF:
INV:
PO:
DEPT:
FedEx
Express
4 of 4
MPS# 0263 7872 5506 5879
Mstr# 7872 5506 5846
0201
WED - 15 MAY 10:30A
PRIORITY OVERNIGHT
A8 BSMA
78664
TX-US AUS



ORIGIN ID:GGGA (512) 671-3434
J . BRAYTON
GOLDER
2201 DOUBLE CREEK DR

ROUND ROCK, TX 78664
UNITED STATES US

SHIP DATE: 14MAY19
ACTWGT: 50.90 LB
CAD: 0068994166/SSFE2002
DIMS: 23x14x14 IN

BILL THIRD PARTY

TO

DHL
2300 DOUBLE CREEK DR

ROUND ROCK TX 78664
(512) 388-6222 REF:
INV:
PO: DEPT:

FedEx
Express

2 of 4
MPS# 7872 5506 5857
0263
Mstr# 7872 5506 5846
0201

WED - 15 MAY 10:30A
PRIORITY OVERNIGHT

A8 BSMA

78664
TX-US AUS

MINAT

DHL Analytical, Inc.

Sample Receipt Checklist

Client Name Golder

Date Received: 5/15/2019

Work Order Number 1905168

Received by EL

Checklist completed by: _____ 5/15/2019
Signature Date

Reviewed by DL 5/15/2019
Initials Date

Carrier name FedEx 1day

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	4.5 °C
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH<2 acceptable upon receipt?	Yes ☑	No ☐	NA ☐ LOT # 11837
	Adjusted? no		Checked by EL
Water - ph>9 (S) or ph>10 (CN) acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted?		Checked by

LUMINANT

Any No response must be detailed in the comments section below.

Client contacted _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments: _____

Corrective Action _____

DHL Analytical, Inc. **Date:** *14-Jun-19*

CLIENT: Golder
Project: Luminant-MLSES Ash Ponds
Lab Order: 1905168

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Method SW6020A - Metals Analysis
Method SW7470A - Mercury Analysis
Method E300 - Anions Analysis
Method M2320 B - Alkalinity Analysis
Method M3500-Fe D - Ferrous Iron Analysis (this parameter is not NELAP certified)
Method M3500-Fe D - Ferric Iron (calculation) (this calculation is not NELAP certified).
Method M4500-P E - Orthophosphate Analysis
Method M2540C - TDS Analysis
Sub-contract - Radium-228 and Radium-226 analyses by methods E904 and SM 7500 Ra B M. Analyzed at Pace Analytical.

LOG IN

The samples were received and log-in performed on 5/15/19. A total of 7 samples were received. The samples arrived in good condition and were properly packaged.

METALS ANALYSIS

For Metals analysis performed on 5/20/19 and 5/21/19 the matrix spike and matrix spike duplicate recoveries were out of control limits for a total of four analytes. These are flagged accordingly in the QC summary report. The sample selected for the matrix spike and matrix spike duplicate was not from this work order. The LCS was within control limits for these analytes. No further corrective actions were taken.

For Metals analysis peformed on 5/20/19 LCVL6-190520 was slightly above control limits for Sodium. This is flagged accordingly. The associated CCV6-190520 was within control limits for this analyte. No further corrective actions were taken.

ANIONS ANALYSIS

For Anions analysis performed on 5/15/19 (batch 90908) the matrix spike and matrix spike duplicate recoveries (1905167-02 MS/MSD) were out of control limits for Chloride and Sulfate. This was due to matrix effect. These are flagged accordingly in the QC summary report. The sample selected for the matrix spike and matrix spike duplicate was not from this work order. The LCS was within control limits for these analytes. No further corrective actions were taken.

FERRIC IRON (CALCULATION)

LUMINANT

For Ferric Iron calculation the Ferrous Iron result was slightly higher than the total Iron result for sample H-31. This is within the acceptable variation limits. No further corrective actions were taken.

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DHL Analytical, Inc.

Date: *14-Jun-19*

CLIENT: Golder
Project: Luminant-MLSES Ash Ponds
Lab Order: 1905168

Work Order Sample Summary

Lab Smp ID	Client Sample ID	Tag Number	Date Collected	Date Recved
1905168-01	H-31		05/14/19 07:40 AM	5/15/2019
1905168-02	H-32		05/14/19 08:25 AM	5/15/2019
1905168-03	H-27		05/14/19 09:40 AM	5/15/2019
1905168-04	H-29		05/14/19 11:25 AM	5/15/2019
1905168-05	H-28		05/14/19 12:30 PM	5/15/2019
1905168-06	H-26		05/14/19 02:25 PM	5/15/2019
1905168-07	H-33		05/14/19 03:30 PM	5/15/2019

LUMINANT

DHL Analytical, Inc. *14-Jun-19*

Lab Order: 1905168
Client: Golder
Project: Luminant-MLSES Ash Ponds

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1905168-01A	H-31	05/14/19 07:40 AM	Aqueous	M3500-Fe	Ferrous Iron Prep Water	05/20/19 02:56 PM	91002
	H-31	05/14/19 07:40 AM	Aqueous	M3500-Fe	Ferrous Iron Prep Water	05/20/19 02:56 PM	91002
1905168-01B	H-31	05/14/19 07:40 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/17/19 08:40 AM	90959
	H-31	05/14/19 07:40 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/17/19 08:40 AM	90959
	H-31	05/14/19 07:40 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/17/19 08:40 AM	90959
	H-31	05/14/19 07:40 AM	Aqueous	SW7470A	Mercury Aq Prep	05/21/19 09:56 AM	91017
	H-31	05/14/19 07:40 AM	Aqueous	SW7470A	Mercury Aq Prep	05/21/19 09:56 AM	91017
1905168-01C	H-31	05/14/19 07:40 AM	Aqueous	M2320 B	Alkalinity Preparation	05/16/19 10:12 AM	90940
	H-31	05/14/19 07:40 AM	Aqueous	E300	Anion Preparation	05/15/19 09:07 AM	90908
	H-31	05/14/19 07:40 AM	Aqueous	E300	Anion Preparation	05/15/19 09:07 AM	90908
	H-31	05/14/19 07:40 AM	Aqueous	E300	Anion Preparation	05/16/19 09:16 AM	90935
	H-31	05/14/19 07:40 AM	Aqueous	M4500-P E	Orthophosphate Prep	05/15/19 12:12 PM	90921
	H-31	05/14/19 07:40 AM	Aqueous	M2540C	TDS Preparation	05/16/19 03:23 PM	90953
1905168-02A	H-32	05/14/19 08:25 AM	Aqueous	M3500-Fe	Ferrous Iron Prep Water	05/20/19 02:56 PM	91002
	H-32	05/14/19 08:25 AM	Aqueous	M3500-Fe	Ferrous Iron Prep Water	05/20/19 02:56 PM	91002
1905168-02B	H-32	05/14/19 08:25 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/17/19 08:40 AM	90959
	H-32	05/14/19 08:25 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/17/19 08:40 AM	90959
	H-32	05/14/19 08:25 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/17/19 08:40 AM	90959
	H-32	05/14/19 08:25 AM	Aqueous	SW7470A	Mercury Aq Prep	05/21/19 09:56 AM	91017
1905168-02C	H-32	05/14/19 08:25 AM	Aqueous	M2320 B	Alkalinity Preparation	05/16/19 10:12 AM	90940
	H-32	05/14/19 08:25 AM	Aqueous	E300	Anion Preparation	05/15/19 09:07 AM	90908
	H-32	05/14/19 08:25 AM	Aqueous	E300	Anion Preparation	05/15/19 09:07 AM	90908
	H-32	05/14/19 08:25 AM	Aqueous	M4500-P E	Orthophosphate Prep	05/15/19 12:12 PM	90921
	H-32	05/14/19 08:25 AM	Aqueous	M2540C	TDS Preparation	05/16/19 03:23 PM	90953
1905168-03A	H-27	05/14/19 09:40 AM	Aqueous	M3500-Fe	Ferrous Iron Prep Water	05/20/19 02:56 PM	91002
1905168-03B	H-27	05/14/19 09:40 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/17/19 08:40 AM	90959
	H-27	05/14/19 09:40 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/17/19 08:40 AM	90959
	H-27	05/14/19 09:40 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/17/19 08:40 AM	90959

LUMINANT

DHL Analytical, Inc. *14-Jun-19*

Lab Order: 1905168
Client: Golder
Project: Luminant-MLSES Ash Ponds

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1905168-03B	H-27	05/14/19 09:40 AM	Aqueous	SW7470A	Mercury Aq Prep	05/21/19 09:56 AM	91017
1905168-03C	H-27	05/14/19 09:40 AM	Aqueous	M2320 B	Alkalinity Preparation	05/16/19 10:12 AM	90940
	H-27	05/14/19 09:40 AM	Aqueous	E300	Anion Preparation	05/15/19 09:07 AM	90908
	H-27	05/14/19 09:40 AM	Aqueous	E300	Anion Preparation	05/15/19 09:07 AM	90908
	H-27	05/14/19 09:40 AM	Aqueous	M4500-P E	Orthophosphate Prep	05/15/19 12:12 PM	90921
	H-27	05/14/19 09:40 AM	Aqueous	M2540C	TDS Preparation	05/16/19 03:23 PM	90953
1905168-04A	H-29	05/14/19 11:25 AM	Aqueous	M3500-Fe	Ferrous Iron Prep Water	05/20/19 02:56 PM	91002
1905168-04B	H-29	05/14/19 11:25 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/17/19 08:40 AM	90959
	H-29	05/14/19 11:25 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/17/19 08:40 AM	90959
	H-29	05/14/19 11:25 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/17/19 08:40 AM	90959
	H-29	05/14/19 11:25 AM	Aqueous	SW7470A	Mercury Aq Prep	05/21/19 09:56 AM	91017
1905168-04C	H-29	05/14/19 11:25 AM	Aqueous	M2320 B	Alkalinity Preparation	05/16/19 10:12 AM	90940
	H-29	05/14/19 11:25 AM	Aqueous	E300	Anion Preparation	05/15/19 09:07 AM	90908
	H-29	05/14/19 11:25 AM	Aqueous	E300	Anion Preparation	05/15/19 09:07 AM	90908
	H-29	05/14/19 11:25 AM	Aqueous	M4500-P E	Orthophosphate Prep	05/15/19 12:12 PM	90921
	H-29	05/14/19 11:25 AM	Aqueous	M2540C	TDS Preparation	05/16/19 03:23 PM	90953
1905168-05A	H-28	05/14/19 12:30 PM	Aqueous	M3500-Fe	Ferrous Iron Prep Water	05/20/19 02:56 PM	91002
1905168-05B	H-28	05/14/19 12:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/17/19 08:40 AM	90959
	H-28	05/14/19 12:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/17/19 08:40 AM	90959
	H-28	05/14/19 12:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/17/19 08:40 AM	90959
	H-28	05/14/19 12:30 PM	Aqueous	SW7470A	Mercury Aq Prep	05/21/19 09:56 AM	91017
1905168-05C	H-28	05/14/19 12:30 PM	Aqueous	M2320 B	Alkalinity Preparation	05/16/19 10:12 AM	90940
	H-28	05/14/19 12:30 PM	Aqueous	E300	Anion Preparation	05/15/19 09:07 AM	90908
	H-28	05/14/19 12:30 PM	Aqueous	E300	Anion Preparation	05/15/19 09:07 AM	90908
	H-28	05/14/19 12:30 PM	Aqueous	M4500-P E	Orthophosphate Prep	05/15/19 12:12 PM	90921
	H-28	05/14/19 12:30 PM	Aqueous	M2540C	TDS Preparation	05/16/19 03:23 PM	90953
1905168-06A	H-26	05/14/19 02:25 PM	Aqueous	M3500-Fe	Ferrous Iron Prep Water	05/20/19 02:56 PM	91002
1905168-06B	H-26	05/14/19 02:25 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/17/19 08:40 AM	90959

LUMINANT

DHL Analytical, Inc. *14-Jun-19*

Lab Order: 1905168
Client: Golder
Project: Luminant-MLSES Ash Ponds

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1905168-06B	H-26	05/14/19 02:25 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/17/19 08:40 AM	90959
	H-26	05/14/19 02:25 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/17/19 08:40 AM	90959
	H-26	05/14/19 02:25 PM	Aqueous	SW7470A	Mercury Aq Prep	05/21/19 09:56 AM	91017
1905168-06C	H-26	05/14/19 02:25 PM	Aqueous	M2320 B	Alkalinity Preparation	05/16/19 10:12 AM	90940
	H-26	05/14/19 02:25 PM	Aqueous	E300	Anion Preparation	05/15/19 09:07 AM	90908
	H-26	05/14/19 02:25 PM	Aqueous	E300	Anion Preparation	05/15/19 09:07 AM	90908
	H-26	05/14/19 02:25 PM	Aqueous	M4500-P E	Orthophosphate Prep	05/15/19 12:12 PM	90921
	H-26	05/14/19 02:25 PM	Aqueous	M2540C	TDS Preparation	05/16/19 03:23 PM	90953
1905168-07A	H-33	05/14/19 03:30 PM	Aqueous	M3500-Fe	Ferrous Iron Prep Water	05/20/19 02:56 PM	91002
1905168-07B	H-33	05/14/19 03:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/17/19 08:40 AM	90959
	H-33	05/14/19 03:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/17/19 08:40 AM	90959
	H-33	05/14/19 03:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/17/19 08:40 AM	90959
	H-33	05/14/19 03:30 PM	Aqueous	SW7470A	Mercury Aq Prep	05/21/19 09:56 AM	91017
1905168-07C	H-33	05/14/19 03:30 PM	Aqueous	M2320 B	Alkalinity Preparation	05/16/19 10:12 AM	90940
	H-33	05/14/19 03:30 PM	Aqueous	E300	Anion Preparation	05/15/19 09:07 AM	90908
	H-33	05/14/19 03:30 PM	Aqueous	E300	Anion Preparation	05/15/19 09:07 AM	90908
	H-33	05/14/19 03:30 PM	Aqueous	M4500-P E	Orthophosphate Prep	05/15/19 12:12 PM	90921
	H-33	05/14/19 03:30 PM	Aqueous	M2540C	TDS Preparation	05/16/19 03:23 PM	90953

LUMINANT

DHL Analytical, Inc. *14-Jun-19*

Lab Order: 1905168
Client: Golder
Project: Luminant-MLSES Ash Ponds

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1905168-01A	H-31	Aqueous	M3500-Fe D	Ferric Iron (Calculated)	91002	1	05/24/19	UV/VIS_2_190524A
	H-31	Aqueous	M3500-Fe D	Ferrous Iron	91002	1	05/20/19 03:55 PM	UV/VIS_2_190520A
	H-31	Aqueous	M3500-Fe D	Ferrous Iron	91002	100	05/20/19 04:11 PM	UV/VIS_2_190520A
1905168-01B	H-31	Aqueous	SW7470A	Mercury Total: Aqueous	91017	1	05/22/19 10:16 AM	CETAC2_HG_190522A
	H-31	Aqueous	SW7470A	Mercury Total: Aqueous	91017	5	05/22/19 11:21 AM	CETAC2_HG_190522A
	H-31	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	90959	1	05/20/19 03:43 PM	ICP-MS4_190520B
	H-31	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	90959	50	05/21/19 12:54 PM	ICP-MS5_190521A
	H-31	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	90959	1	05/21/19 02:51 PM	ICP-MS5_190521A
1905168-01C	H-31	Aqueous	M2320 B	Alkalinity	90940	1	05/16/19 04:13 PM	TITRATOR_190516A
	H-31	Aqueous	E300	Anions by IC method - Water	90908	10	05/15/19 02:27 PM	IC2_190515A
	H-31	Aqueous	E300	Anions by IC method - Water	90908	1	05/15/19 05:55 PM	IC2_190515A
	H-31	Aqueous	E300	Anions by IC method - Water	90935	100	05/16/19 05:42 PM	IC4_190516A
	H-31	Aqueous	M4500-P E	Orthophosphate	90921	1	05/15/19 02:47 PM	UV/VIS_2_190515B
	H-31	Aqueous	M2540C	Total Dissolved Solids	90953	1	05/17/19 11:40 AM	WC_190517D
1905168-02A	H-32	Aqueous	M3500-Fe D	Ferric Iron (Calculated)	91002	1	05/24/19	UV/VIS_2_190524A
	H-32	Aqueous	M3500-Fe D	Ferrous Iron	91002	1	05/20/19 03:55 PM	UV/VIS_2_190520A
	H-32	Aqueous	M3500-Fe D	Ferrous Iron	91002	5	05/20/19 04:11 PM	UV/VIS_2_190520A
1905168-02B	H-32	Aqueous	SW7470A	Mercury Total: Aqueous	91017	1	05/22/19 10:27 AM	CETAC2_HG_190522A
	H-32	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	90959	1	05/21/19 02:53 PM	ICP-MS5_190521A
	H-32	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	90959	10	05/21/19 12:56 PM	ICP-MS5_190521A
	H-32	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	90959	1	05/20/19 03:45 PM	ICP-MS4_190520B
1905168-02C	H-32	Aqueous	M2320 B	Alkalinity	90940	1	05/16/19 04:15 PM	TITRATOR_190516A
	H-32	Aqueous	E300	Anions by IC method - Water	90908	10	05/15/19 02:43 PM	IC2_190515A
	H-32	Aqueous	E300	Anions by IC method - Water	90908	1	05/15/19 06:11 PM	IC2_190515A
	H-32	Aqueous	M4500-P E	Orthophosphate	90921	1	05/15/19 12:49 PM	UV/VIS_2_190515B
	H-32	Aqueous	M2540C	Total Dissolved Solids	90953	1	05/17/19 11:40 AM	WC_190517D

LUMINANT

DHL Analytical, Inc. *14-Jun-19*

Lab Order: 1905168
Client: Golder
Project: Luminant-MLSES Ash Ponds

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1905168-03A	H-27	Aqueous	M3500-Fe D	Ferric Iron (Calculated)	91002	1	05/24/19	UV/VIS_2_190524A
	H-27	Aqueous	M3500-Fe D	Ferrous Iron	91002	1	05/20/19 03:56 PM	UV/VIS_2_190520A
1905168-03B	H-27	Aqueous	SW7470A	Mercury Total: Aqueous	91017	1	05/22/19 10:29 AM	CETAC2_HG_190522A
	H-27	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	90959	1	05/20/19 03:47 PM	ICP-MS4_190520B
	H-27	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	90959	10	05/21/19 12:59 PM	ICP-MS5_190521A
	H-27	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	90959	1	05/21/19 02:14 PM	ICP-MS5_190521A
1905168-03C	H-27	Aqueous	M2320 B	Alkalinity	90940	1	05/16/19 04:20 PM	TITRATOR_190516A
	H-27	Aqueous	E300	Anions by IC method - Water	90908	10	05/15/19 02:59 PM	IC2_190515A
	H-27	Aqueous	E300	Anions by IC method - Water	90908	1	05/15/19 06:27 PM	IC2_190515A
	H-27	Aqueous	M4500-P E	Orthophosphate	90921	1	05/15/19 12:49 PM	UV/VIS_2_190515B
	H-27	Aqueous	M2540C	Total Dissolved Solids	90953	1	05/17/19 11:40 AM	WC_190517D
1905168-04A	H-29	Aqueous	M3500-Fe D	Ferric Iron (Calculated)	91002	1	05/24/19	UV/VIS_2_190524A
	H-29	Aqueous	M3500-Fe D	Ferrous Iron	91002	1	05/20/19 03:56 PM	UV/VIS_2_190520A
1905168-04B	H-29	Aqueous	SW7470A	Mercury Total: Aqueous	91017	1	05/22/19 10:31 AM	CETAC2_HG_190522A
	H-29	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	90959	1	05/20/19 03:49 PM	ICP-MS4_190520B
	H-29	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	90959	1	05/21/19 02:55 PM	ICP-MS5_190521A
	H-29	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	90959	20	05/21/19 01:01 PM	ICP-MS5_190521A
1905168-04C	H-29	Aqueous	M2320 B	Alkalinity	90940	1	05/16/19 04:23 PM	TITRATOR_190516A
	H-29	Aqueous	E300	Anions by IC method - Water	90908	10	05/15/19 03:15 PM	IC2_190515A
	H-29	Aqueous	E300	Anions by IC method - Water	90908	1	05/15/19 06:43 PM	IC2_190515A
	H-29	Aqueous	M4500-P E	Orthophosphate	90921	1	05/15/19 12:49 PM	UV/VIS_2_190515B
	H-29	Aqueous	M2540C	Total Dissolved Solids	90953	1	05/17/19 11:40 AM	WC_190517D
1905168-05A	H-28	Aqueous	M3500-Fe D	Ferric Iron (Calculated)	91002	1	05/24/19	UV/VIS_2_190524A
	H-28	Aqueous	M3500-Fe D	Ferrous Iron	91002	1	05/20/19 03:57 PM	UV/VIS_2_190520A
1905168-05B	H-28	Aqueous	SW7470A	Mercury Total: Aqueous	91017	1	05/22/19 10:34 AM	CETAC2_HG_190522A
	H-28	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	90959	20	05/21/19 01:03 PM	ICP-MS5_190521A

LUMINANT

DHL Analytical, Inc. *14-Jun-19*

Lab Order: 1905168
Client: Golder
Project: Luminant-MLSES Ash Ponds

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1905168-05B	H-28	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	90959	1	05/21/19 02:57 PM	ICP-MS5_190521A
	H-28	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	90959	1	05/20/19 03:51 PM	ICP-MS4_190520B
1905168-05C	H-28	Aqueous	M2320 B	Alkalinity	90940	1	05/16/19 04:27 PM	TITRATOR_190516A
	H-28	Aqueous	E300	Anions by IC method - Water	90908	10	05/15/19 03:31 PM	IC2_190515A
	H-28	Aqueous	E300	Anions by IC method - Water	90908	1	05/15/19 06:59 PM	IC2_190515A
	H-28	Aqueous	M4500-P E	Orthophosphate	90921	1	05/15/19 12:50 PM	UV/VIS_2_190515B
	H-28	Aqueous	M2540C	Total Dissolved Solids	90953	1	05/17/19 11:40 AM	WC_190517D
1905168-06A	H-26	Aqueous	M3500-Fe D	Ferric Iron (Calculated)	91002	1	05/24/19	UV/VIS_2_190524A
	H-26	Aqueous	M3500-Fe D	Ferrous Iron	91002	1	05/20/19 03:57 PM	UV/VIS_2_190520A
1905168-06B	H-26	Aqueous	SW7470A	Mercury Total: Aqueous	91017	1	05/22/19 10:36 AM	CETAC2_HG_190522A
	H-26	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	90959	1	05/20/19 03:53 PM	ICP-MS4_190520B
	H-26	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	90959	10	05/21/19 01:05 PM	ICP-MS5_190521A
	H-26	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	90959	1	05/21/19 02:16 PM	ICP-MS5_190521A
1905168-06C	H-26	Aqueous	M2320 B	Alkalinity	90940	1	05/16/19 04:42 PM	TITRATOR_190516A
	H-26	Aqueous	E300	Anions by IC method - Water	90908	10	05/15/19 03:47 PM	IC2_190515A
	H-26	Aqueous	E300	Anions by IC method - Water	90908	1	05/15/19 07:15 PM	IC2_190515A
	H-26	Aqueous	M4500-P E	Orthophosphate	90921	1	05/15/19 12:50 PM	UV/VIS_2_190515B
	H-26	Aqueous	M2540C	Total Dissolved Solids	90953	1	05/17/19 11:40 AM	WC_190517D
1905168-07A	H-33	Aqueous	M3500-Fe D	Ferric Iron (Calculated)	91002	1	05/24/19	UV/VIS_2_190524A
	H-33	Aqueous	M3500-Fe D	Ferrous Iron	91002	1	05/20/19 03:58 PM	UV/VIS_2_190520A
1905168-07B	H-33	Aqueous	SW7470A	Mercury Total: Aqueous	91017	1	05/22/19 10:38 AM	CETAC2_HG_190522A
	H-33	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	90959	1	05/20/19 03:54 PM	ICP-MS4_190520B
	H-33	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	90959	10	05/21/19 01:08 PM	ICP-MS5_190521A
	H-33	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	90959	1	05/21/19 02:19 PM	ICP-MS5_190521A
1905168-07C	H-33	Aqueous	M2320 B	Alkalinity	90940	1	05/16/19 04:49 PM	TITRATOR_190516A
	H-33	Aqueous	E300	Anions by IC method - Water	90908	10	05/15/19 04:03 PM	IC2_190515A
	H-33	Aqueous	E300	Anions by IC method - Water	90908	1	05/15/19 07:31 PM	IC2_190515A

LUMINANT

DHL Analytical, Inc. *14-Jun-19*

Lab Order: 1905168
Client: Golder
Project: Luminant-MLSES Ash Ponds

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1905168-07C	H-33	Aqueous	M4500-P E	Orthophosphate	90921	1	05/15/19 12:50 PM	UV/VIS_2_190515B
	H-33	Aqueous	M2540C	Total Dissolved Solids	90953	1	05/17/19 11:40 AM	WC_190517D

LUMINANT

DHL Analytical, Inc.

Date: *14-Jun-19*

CLIENT:	Golder	**Client Sample ID:**	H-31
Project:	Luminant-MLSES Ash Ponds	**Lab ID:**	1905168-01
Project No:	19122262-C	**Collection Date:**	05/14/19 07:40 AM
Lab Order:	1905168	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	05/20/19 03:43 PM
Arsenic	0.00675	0.00200	0.00500		mg/L	1	05/20/19 03:43 PM
Barium	0.0163	0.00300	0.0100		mg/L	1	05/20/19 03:43 PM
Beryllium	0.00928	0.000300	0.00100		mg/L	1	05/20/19 03:43 PM
Boron	20.0	0.500	1.50		mg/L	50	05/21/19 12:54 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	05/20/19 03:43 PM
Calcium	234	5.00	15.0		mg/L	50	05/21/19 12:54 PM
Chromium	0.00315	0.00200	0.00500	J	mg/L	1	05/20/19 03:43 PM
Cobalt	0.389	0.00300	0.00500		mg/L	1	05/20/19 03:43 PM
Iron	48.7	1.50	5.00		mg/L	50	05/21/19 12:54 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	05/20/19 03:43 PM
Lithium	0.219	0.00500	0.0100		mg/L	1	05/20/19 03:43 PM
Magnesium	170	5.00	15.0		mg/L	50	05/21/19 12:54 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	05/21/19 02:51 PM
Potassium	6.18	0.100	0.300		mg/L	1	05/20/19 03:43 PM
Selenium	0.0261	0.00200	0.00500		mg/L	1	05/20/19 03:43 PM
Sodium	672	5.00	15.0		mg/L	50	05/21/19 12:54 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	05/20/19 03:43 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.000400	0.000400	0.00100		mg/L	5	05/22/19 11:21 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **JL**
Chloride	225	3.00	10.0		mg/L	10	05/15/19 02:27 PM
Fluoride	0.960	0.100	0.400		mg/L	1	05/15/19 05:55 PM
Nitrate-N	<0.100	0.100	0.500		mg/L	1	05/15/19 05:55 PM
Sulfate	2470	100	300		mg/L	100	05/16/19 05:42 PM
ALKALINITY		**M2320 B**					Analyst: **CC**
Alkalinity, Bicarbonate (As CaCO3)	33.9	10.0	20.0		mg/L @ pH 4.52	1	05/16/19 04:13 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.52	1	05/16/19 04:13 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.52	1	05/16/19 04:13 PM
Alkalinity, Total (As CaCO3)	33.9	20.0	20.0		mg/L @ pH 4.52	1	05/16/19 04:13 PM
FERRIC IRON (CALCULATED)		**M3500-FE D**					Analyst: **CAC**
Iron, Ferric	<0.0500	0.0500	0.100	N	mg/L	1	05/24/19
FERROUS IRON		**M3500-FE D**					Analyst: **BTJ**
Iron, Ferrous	49.5	5.00	10.0	N	mg/L	100	05/20/19 04:11 PM

LUMINANT

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
S	Spike Recovery outside control limits	N	Parameter not NELAP certified

CLIENT:	Golder	**Client Sample ID:**	H-31
Project:	Luminant-MLSES Ash Ponds	**Lab ID:**	1905168-01
Project No:	19122262-C	**Collection Date:**	05/14/19 07:40 AM
Lab Order:	1905168	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
ORTHOPHOSPHATE		**M4500-P E**					Analyst: **CC**
Phosphorus, Total Orthophosphate (As P)	0.0770	0.0300	0.100	J	mg/L	1	05/15/19 02:47 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	4230	50.0	50.0		mg/L	1	05/17/19 11:40 AM

LUMINANT

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
	DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit
	ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
	S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *14-Jun-19*

CLIENT:	Golder	**Client Sample ID:**	H-32
Project:	Luminant-MLSES Ash Ponds	**Lab ID:**	1905168-02
Project No:	19122262-C	**Collection Date:**	05/14/19 08:25 AM
Lab Order:	1905168	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	05/20/19 03:45 PM
Arsenic	0.00202	0.00200	0.00500	J	mg/L	1	05/20/19 03:45 PM
Barium	0.0162	0.00300	0.0100		mg/L	1	05/20/19 03:45 PM
Beryllium	0.00713	0.000300	0.00100		mg/L	1	05/20/19 03:45 PM
Boron	2.08	0.100	0.300		mg/L	10	05/21/19 12:56 PM
Cadmium	0.000366	0.000300	0.00100	J	mg/L	1	05/20/19 03:45 PM
Calcium	45.2	1.00	3.00		mg/L	10	05/21/19 12:56 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	05/20/19 03:45 PM
Cobalt	0.202	0.00300	0.00500		mg/L	1	05/20/19 03:45 PM
Iron	1.81	0.0300	0.100		mg/L	1	05/20/19 03:45 PM
Lead	0.000574	0.000300	0.00100	J	mg/L	1	05/20/19 03:45 PM
Lithium	0.0978	0.00500	0.0100		mg/L	1	05/20/19 03:45 PM
Magnesium	18.5	0.100	0.300		mg/L	1	05/20/19 03:45 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	05/21/19 02:53 PM
Potassium	2.57	0.100	0.300		mg/L	1	05/20/19 03:45 PM
Selenium	0.00675	0.00200	0.00500		mg/L	1	05/20/19 03:45 PM
Sodium	151	1.00	3.00		mg/L	10	05/21/19 12:56 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	05/20/19 03:45 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	05/22/19 10:27 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **JL**
Chloride	135	3.00	10.0		mg/L	10	05/15/19 02:43 PM
Fluoride	1.15	0.100	0.400		mg/L	1	05/15/19 06:11 PM
Nitrate-N	273	1.00	5.00		mg/L	10	05/15/19 02:43 PM
Sulfate	320	10.0	30.0		mg/L	10	05/15/19 02:43 PM
ALKALINITY		**M2320 B**					Analyst: **CC**
Alkalinity, Bicarbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 1.76	1	05/16/19 04:15 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 1.76	1	05/16/19 04:15 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 1.76	1	05/16/19 04:15 PM
Alkalinity, Total (As CaCO3)	<20.0	20.0	20.0		mg/L @ pH 1.76	1	05/16/19 04:15 PM
FERRIC IRON (CALCULATED)		**M3500-FE D**					Analyst: **CAC**
Iron, Ferric	0.640	0.0500	0.100	N	mg/L	1	05/24/19
FERROUS IRON		**M3500-FE D**					Analyst: **BTJ**
Iron, Ferrous	1.17	0.250	0.500	N	mg/L	5	05/20/19 04:11 PM

LUMINANT

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *14-Jun-19*

CLIENT:	Golder	**Client Sample ID:**	H-32
Project:	Luminant-MLSES Ash Ponds	**Lab ID:**	1905168-02
Project No:	19122262-C	**Collection Date:**	05/14/19 08:25 AM
Lab Order:	1905168	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
ORTHOPHOSPHATE		**M4500-P E**					Analyst: **CC**
Phosphorus, Total Orthophosphate (As P)	0.0600	0.0300	0.100	J	mg/L	1	05/15/19 12:49 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	910	50.0	50.0		mg/L	1	05/17/19 11:40 AM

LUMINANT

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
	DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit
	ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
	S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *14-Jun-19*

CLIENT:	Golder	**Client Sample ID:**	H-27
Project:	Luminant-MLSES Ash Ponds	**Lab ID:**	1905168-03
Project No:	19122262-C	**Collection Date:**	05/14/19 09:40 AM
Lab Order:	1905168	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	05/20/19 03:47 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	05/20/19 03:47 PM
Barium	0.0208	0.00300	0.0100		mg/L	1	05/20/19 03:47 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	05/20/19 03:47 PM
Boron	0.350	0.0100	0.0300		mg/L	1	05/21/19 02:14 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	05/20/19 03:47 PM
Calcium	61.8	1.00	3.00		mg/L	10	05/21/19 12:59 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	05/20/19 03:47 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	05/20/19 03:47 PM
Iron	0.0711	0.0300	0.100	J	mg/L	1	05/20/19 03:47 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	05/20/19 03:47 PM
Lithium	0.0678	0.00500	0.0100		mg/L	1	05/20/19 03:47 PM
Magnesium	47.3	1.00	3.00		mg/L	10	05/21/19 12:59 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	05/21/19 02:14 PM
Potassium	3.01	0.100	0.300		mg/L	1	05/20/19 03:47 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	05/20/19 03:47 PM
Sodium	123	1.00	3.00		mg/L	10	05/21/19 12:59 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	05/20/19 03:47 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	05/22/19 10:29 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **JL**
Chloride	132	3.00	10.0		mg/L	10	05/15/19 02:59 PM
Fluoride	0.159	0.100	0.400	J	mg/L	1	05/15/19 06:27 PM
Nitrate-N	0.658	0.100	0.500		mg/L	1	05/15/19 06:27 PM
Sulfate	406	10.0	30.0		mg/L	10	05/15/19 02:59 PM
ALKALINITY		**M2320 B**					Analyst: **CC**
Alkalinity, Bicarbonate (As CaCO3)	49.0	10.0	20.0		mg/L @ pH 4.5	1	05/16/19 04:20 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.5	1	05/16/19 04:20 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.5	1	05/16/19 04:20 PM
Alkalinity, Total (As CaCO3)	49.0	20.0	20.0		mg/L @ pH 4.5	1	05/16/19 04:20 PM
FERRIC IRON (CALCULATED)		**M3500-FE D**					Analyst: **CAC**
Iron, Ferric	0.0711	0.0500	0.100	JN	mg/L	1	05/24/19
FERROUS IRON		**M3500-FE D**					Analyst: **BTJ**
Iron, Ferrous	<0.0500	0.0500	0.100	N	mg/L	1	05/20/19 03:56 PM

LUMINANT

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
S	Spike Recovery outside control limits	N	Parameter not NELAP certified

CLIENT:	Golder	**Client Sample ID:**	H-27
Project:	Luminant-MLSES Ash Ponds	**Lab ID:**	1905168-03
Project No:	19122262-C	**Collection Date:**	05/14/19 09:40 AM
Lab Order:	1905168	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
ORTHOPHOSPHATE		**M4500-P E**					Analyst: **CC**
Phosphorus, Total Orthophosphate (As P)	0.126	0.0300	0.100		mg/L	1	05/15/19 12:49 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	897	10.0	10.0		mg/L	1	05/17/19 11:40 AM

LUMINANT

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
	DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit
	ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
	S	Spike Recovery outside control limits	N	Parameter not NELAP certified

CLIENT:	Golder	**Client Sample ID:**	H-29
Project:	Luminant-MLSES Ash Ponds	**Lab ID:**	1905168-04
Project No:	19122262-C	**Collection Date:**	05/14/19 11:25 AM
Lab Order:	1905168	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	05/20/19 03:49 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	05/20/19 03:49 PM
Barium	0.0138	0.00300	0.0100		mg/L	1	05/20/19 03:49 PM
Beryllium	0.00341	0.000300	0.00100		mg/L	1	05/20/19 03:49 PM
Boron	8.12	0.200	0.600		mg/L	20	05/21/19 01:01 PM
Cadmium	0.00219	0.000300	0.00100		mg/L	1	05/20/19 03:49 PM
Calcium	95.9	2.00	6.00		mg/L	20	05/21/19 01:01 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	05/20/19 03:49 PM
Cobalt	0.183	0.00300	0.00500		mg/L	1	05/20/19 03:49 PM
Iron	0.0521	0.0300	0.100	J	mg/L	1	05/20/19 03:49 PM
Lead	0.000543	0.000300	0.00100	J	mg/L	1	05/20/19 03:49 PM
Lithium	0.173	0.00500	0.0100		mg/L	1	05/20/19 03:49 PM
Magnesium	80.5	2.00	6.00		mg/L	20	05/21/19 01:01 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	05/21/19 02:55 PM
Potassium	2.01	0.100	0.300		mg/L	1	05/20/19 03:49 PM
Selenium	0.00616	0.00200	0.00500		mg/L	1	05/20/19 03:49 PM
Sodium	211	2.00	6.00		mg/L	20	05/21/19 01:01 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	05/20/19 03:49 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	05/22/19 10:31 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **JL**
Chloride	81.8	3.00	10.0		mg/L	10	05/15/19 03:15 PM
Fluoride	0.104	0.100	0.400	J	mg/L	1	05/15/19 06:43 PM
Nitrate-N	0.121	0.100	0.500	J	mg/L	1	05/15/19 06:43 PM
Sulfate	780	10.0	30.0		mg/L	10	05/15/19 03:15 PM
ALKALINITY		**M2320 B**					Analyst: **CC**
Alkalinity, Bicarbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.5	1	05/16/19 04:23 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.5	1	05/16/19 04:23 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.5	1	05/16/19 04:23 PM
Alkalinity, Total (As CaCO3)	<20.0	20.0	20.0		mg/L @ pH 4.5	1	05/16/19 04:23 PM
FERRIC IRON (CALCULATED)		**M3500-FE D**					Analyst: **CAC**
Iron, Ferric	0.0521	0.0500	0.100	JN	mg/L	1	05/24/19
FERROUS IRON		**M3500-FE D**					Analyst: **BTJ**
Iron, Ferrous	<0.0500	0.0500	0.100	N	mg/L	1	05/20/19 03:56 PM

LUMINANT

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
S	Spike Recovery outside control limits	N	Parameter not NELAP certified

CLIENT:	Golder	**Client Sample ID:**	H-29
Project:	Luminant-MLSES Ash Ponds	**Lab ID:**	1905168-04
Project No:	19122262-C	**Collection Date:**	05/14/19 11:25 AM
Lab Order:	1905168	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
ORTHOPHOSPHATE		**M4500-P E**					Analyst: **CC**
Phosphorus, Total Orthophosphate (As P)	0.0570	0.0300	0.100	J	mg/L	1	05/15/19 12:49 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	1400	50.0	50.0		mg/L	1	05/17/19 11:40 AM

LUMINANT

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
	DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit
	ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
	S	Spike Recovery outside control limits	N	Parameter not NELAP certified

CLIENT:	Golder	**Client Sample ID:**	H-28
Project:	Luminant-MLSES Ash Ponds	**Lab ID:**	1905168-05
Project No:	19122262-C	**Collection Date:**	05/14/19 12:30 PM
Lab Order:	1905168	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	05/20/19 03:51 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	05/20/19 03:51 PM
Barium	0.0141	0.00300	0.0100		mg/L	1	05/20/19 03:51 PM
Beryllium	0.00281	0.000300	0.00100		mg/L	1	05/20/19 03:51 PM
Boron	8.51	0.200	0.600		mg/L	20	05/21/19 01:03 PM
Cadmium	0.00212	0.000300	0.00100		mg/L	1	05/20/19 03:51 PM
Calcium	99.7	2.00	6.00		mg/L	20	05/21/19 01:03 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	05/20/19 03:51 PM
Cobalt	0.187	0.00300	0.00500		mg/L	1	05/20/19 03:51 PM
Iron	0.0715	0.0300	0.100	J	mg/L	1	05/20/19 03:51 PM
Lead	0.000595	0.000300	0.00100	J	mg/L	1	05/20/19 03:51 PM
Lithium	0.172	0.00500	0.0100		mg/L	1	05/20/19 03:51 PM
Magnesium	81.4	2.00	6.00		mg/L	20	05/21/19 01:03 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	05/21/19 02:57 PM
Potassium	2.06	0.100	0.300		mg/L	1	05/20/19 03:51 PM
Selenium	0.00619	0.00200	0.00500		mg/L	1	05/20/19 03:51 PM
Sodium	210	2.00	6.00		mg/L	20	05/21/19 01:03 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	05/20/19 03:51 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	05/22/19 10:34 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **JL**
Chloride	98.9	3.00	10.0		mg/L	10	05/15/19 03:31 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	05/15/19 06:59 PM
Nitrate-N	<0.100	0.100	0.500		mg/L	1	05/15/19 06:59 PM
Sulfate	935	10.0	30.0		mg/L	10	05/15/19 03:31 PM
ALKALINITY		**M2320 B**					Analyst: **CC**
Alkalinity, Bicarbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.5	1	05/16/19 04:27 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.5	1	05/16/19 04:27 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.5	1	05/16/19 04:27 PM
Alkalinity, Total (As CaCO3)	<20.0	20.0	20.0		mg/L @ pH 4.5	1	05/16/19 04:27 PM
FERRIC IRON (CALCULATED)		**M3500-FE D**					Analyst: **CAC**
Iron, Ferric	0.0715	0.0500	0.100	JN	mg/L	1	05/24/19
FERROUS IRON		**M3500-FE D**					Analyst: **BTJ**
Iron, Ferrous	<0.0500	0.0500	0.100	N	mg/L	1	05/20/19 03:57 PM

LUMINANT

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level
DF	Dilution Factor
J	Analyte detected between MDL and RL
ND	Not Detected at the Method Detection Limit
S	Spike Recovery outside control limits
C	Sample Result or QC discussed in the Case Narrative
E	TPH pattern not Gas or Diesel Range Pattern
MDL	Method Detection Limit
RL	Reporting Limit
N	Parameter not NELAP certified

CLIENT:	Golder	**Client Sample ID:**	H-28
Project:	Luminant-MLSES Ash Ponds	**Lab ID:**	1905168-05
Project No:	19122262-C	**Collection Date:**	05/14/19 12:30 PM
Lab Order:	1905168	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
ORTHOPHOSPHATE		**M4500-P E**					Analyst: **CC**
Phosphorus, Total Orthophosphate (As P)	0.0460	0.0300	0.100	J	mg/L	1	05/15/19 12:50 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	1680	50.0	50.0		mg/L	1	05/17/19 11:40 AM

LUMINANT

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
	DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit
	ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
	S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *14-Jun-19*

CLIENT:	Golder	**Client Sample ID:**	H-26
Project:	Luminant-MLSES Ash Ponds	**Lab ID:**	1905168-06
Project No:	19122262-C	**Collection Date:**	05/14/19 02:25 PM
Lab Order:	1905168	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	05/20/19 03:53 PM
Arsenic	0.00410	0.00200	0.00500	J	mg/L	1	05/20/19 03:53 PM
Barium	0.190	0.00300	0.0100		mg/L	1	05/20/19 03:53 PM
Beryllium	0.00147	0.000300	0.00100		mg/L	1	05/20/19 03:53 PM
Boron	0.0507	0.0100	0.0300		mg/L	1	05/21/19 02:16 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	05/20/19 03:53 PM
Calcium	85.2	1.00	3.00		mg/L	10	05/21/19 01:05 PM
Chromium	0.0406	0.00200	0.00500		mg/L	1	05/20/19 03:53 PM
Cobalt	0.0795	0.00300	0.00500		mg/L	1	05/20/19 03:53 PM
Iron	8.81	0.0300	0.100		mg/L	1	05/20/19 03:53 PM
Lead	0.000972	0.000300	0.00100	J	mg/L	1	05/20/19 03:53 PM
Lithium	0.147	0.00500	0.0100		mg/L	1	05/20/19 03:53 PM
Magnesium	9.31	0.100	0.300		mg/L	1	05/20/19 03:53 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	05/21/19 02:16 PM
Potassium	11.6	0.100	0.300		mg/L	1	05/20/19 03:53 PM
Selenium	0.00222	0.00200	0.00500	J	mg/L	1	05/20/19 03:53 PM
Sodium	69.5	1.00	3.00		mg/L	10	05/21/19 01:05 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	05/20/19 03:53 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	05/22/19 10:36 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **JL**
Chloride	61.7	3.00	10.0		mg/L	10	05/15/19 03:47 PM
Fluoride	0.140	0.100	0.400	J	mg/L	1	05/15/19 07:15 PM
Nitrate-N	0.239	0.100	0.500	J	mg/L	1	05/15/19 07:15 PM
Sulfate	88.2	1.00	3.00		mg/L	1	05/15/19 07:15 PM
ALKALINITY		**M2320 B**					Analyst: **CC**
Alkalinity, Bicarbonate (As CaCO3)	157	10.0	20.0		mg/L @ pH 4.51	1	05/16/19 04:42 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.51	1	05/16/19 04:42 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.51	1	05/16/19 04:42 PM
Alkalinity, Total (As CaCO3)	157	20.0	20.0		mg/L @ pH 4.51	1	05/16/19 04:42 PM
FERRIC IRON (CALCULATED)		**M3500-FE D**					Analyst: **CAC**
Iron, Ferric	8.81	0.0500	0.100	N	mg/L	1	05/24/19
FERROUS IRON		**M3500-FE D**					Analyst: **BTJ**
Iron, Ferrous	<0.0500	0.0500	0.100	N	mg/L	1	05/20/19 03:57 PM

LUMINANT

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
S	Spike Recovery outside control limits	N	Parameter not NELAP certified

CLIENT:	Golder	**Client Sample ID:**	H-26
Project:	Luminant-MLSES Ash Ponds	**Lab ID:**	1905168-06
Project No:	19122262-C	**Collection Date:**	05/14/19 02:25 PM
Lab Order:	1905168	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
ORTHOPHOSPHATE		**M4500-P E**					Analyst: **CC**
Phosphorus, Total Orthophosphate (As P)	0.0310	0.0300	0.100	J	mg/L	1	05/15/19 12:50 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	453	10.0	10.0		mg/L	1	05/17/19 11:40 AM

LUMINANT

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
	DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit
	ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
	S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *14-Jun-19*

CLIENT:	Golder	**Client Sample ID:**	H-33
Project:	Luminant-MLSES Ash Ponds	**Lab ID:**	1905168-07
Project No:	19122262-C	**Collection Date:**	05/14/19 03:30 PM
Lab Order:	1905168	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	05/20/19 03:54 PM
Arsenic	0.00355	0.00200	0.00500	J	mg/L	1	05/20/19 03:54 PM
Barium	0.158	0.00300	0.0100		mg/L	1	05/20/19 03:54 PM
Beryllium	0.00114	0.000300	0.00100		mg/L	1	05/20/19 03:54 PM
Boron	0.0592	0.0100	0.0300		mg/L	1	05/21/19 02:19 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	05/20/19 03:54 PM
Calcium	68.6	1.00	3.00		mg/L	10	05/21/19 01:08 PM
Chromium	0.0342	0.00200	0.00500		mg/L	1	05/20/19 03:54 PM
Cobalt	0.0648	0.00300	0.00500		mg/L	1	05/20/19 03:54 PM
Iron	7.61	0.0300	0.100		mg/L	1	05/20/19 03:54 PM
Lead	0.000772	0.000300	0.00100	J	mg/L	1	05/20/19 03:54 PM
Lithium	0.161	0.00500	0.0100		mg/L	1	05/20/19 03:54 PM
Magnesium	10.6	0.100	0.300		mg/L	1	05/20/19 03:54 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	05/21/19 02:19 PM
Potassium	13.2	0.100	0.300		mg/L	1	05/20/19 03:54 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	05/20/19 03:54 PM
Sodium	79.5	1.00	3.00		mg/L	10	05/21/19 01:08 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	05/20/19 03:54 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	05/22/19 10:38 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **JL**
Chloride	80.4	3.00	10.0		mg/L	10	05/15/19 04:03 PM
Fluoride	0.166	0.100	0.400	J	mg/L	1	05/15/19 07:31 PM
Nitrate-N	0.287	0.100	0.500	J	mg/L	1	05/15/19 07:31 PM
Sulfate	104	10.0	30.0		mg/L	10	05/15/19 04:03 PM
ALKALINITY		**M2320 B**					Analyst: **CC**
Alkalinity, Bicarbonate (As CaCO3)	181	10.0	20.0		mg/L @ pH 4.51	1	05/16/19 04:49 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.51	1	05/16/19 04:49 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.51	1	05/16/19 04:49 PM
Alkalinity, Total (As CaCO3)	181	20.0	20.0		mg/L @ pH 4.51	1	05/16/19 04:49 PM
FERRIC IRON (CALCULATED)		**M3500-FE D**					Analyst: **CAC**
Iron, Ferric	7.61	0.0500	0.100	N	mg/L	1	05/24/19
FERROUS IRON		**M3500-FE D**					Analyst: **BTJ**
Iron, Ferrous	<0.0500	0.0500	0.100	N	mg/L	1	05/20/19 03:58 PM

LUMINANT

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *14-Jun-19*

CLIENT:	Golder	**Client Sample ID:**	H-33
Project:	Luminant-MLSES Ash Ponds	**Lab ID:**	1905168-07
Project No:	19122262-C	**Collection Date:**	05/14/19 03:30 PM
Lab Order:	1905168	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
ORTHOPHOSPHATE		**M4500-P E**					Analyst: **CC**
Phosphorus, Total Orthophosphate (As P)	0.123	0.0300	0.100		mg/L	1	05/15/19 12:50 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	559	10.0	10.0		mg/L	1	05/17/19 11:40 AM

LUMINANT

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
	DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit
	ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
	S	Spike Recovery outside control limits	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905168
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_190522A

The QC data in batch 91017 applies to the following samples: 1905168-01B, 1905168-02B, 1905168-03B, 1905168-04B, 1905168-05B, 1905168-06B, 1905168-07B

Sample ID	**MB-91017**	Batch ID:	**91017**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**CETAC2_HG_190522A**	Analysis Date:	**5/22/2019 10:02:31 AM**	Prep Date:	**5/21/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.0000800	0.000200								

Sample ID	**LCS-91017**	Batch ID:	**91017**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**CETAC2_HG_190522A**	Analysis Date:	**5/22/2019 10:04:46 AM**	Prep Date:	**5/21/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00187	0.000200	0.00200	0	93.5	85	115			

Sample ID	**LCSD-91017**	Batch ID:	**91017**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**LCSD**	Run ID:	**CETAC2_HG_190522A**	Analysis Date:	**5/22/2019 10:07:02 AM**	Prep Date:	**5/21/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00186	0.000200	0.00200	0	93.0	85	115	0.536	15	

Sample ID	**1905168-01B MS**	Batch ID:	**91017**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**MS**	Run ID:	**CETAC2_HG_190522A**	Analysis Date:	**5/22/2019 11:23:23 AM**	Prep Date:	**5/21/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00196	0.00100	0.00200	0	97.8	80	120			

Sample ID	**1905168-01B MSD**	Batch ID:	**91017**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**MSD**	Run ID:	**CETAC2_HG_190522A**	Analysis Date:	**5/22/2019 11:25:39 AM**	Prep Date:	**5/21/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00194	0.00100	0.00200	0	97.0	80	120	0.770	15	

Sample ID	**1905168-01B SD**	Batch ID:	**91017**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**SD**	Run ID:	**CETAC2_HG_190522A**	Analysis Date:	**5/22/2019 11:27:56 AM**	Prep Date:	**5/21/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.00200	0.00500	0	0				0	10	

Sample ID	**1905168-01B PDS**	Batch ID:	**91017**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**PDS**	Run ID:	**CETAC2_HG_190522A**	Analysis Date:	**5/22/2019 11:30:13 AM**	Prep Date:	**5/21/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0122	0.00100	0.0125	0	97.6	85	115			

LUMINANT

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905168
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_190522A

Sample ID	ICV-190522	Batch ID:	R104223	TestNo:	SW7470A	Units:	mg/L
SampType:	ICV	Run ID:	CETAC2_HG_190522A	Analysis Date:	5/22/2019 9:57:56 AM	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00383	0.000200	0.00400	0	95.8	90	110			

Sample ID	CCV1-190522	Batch ID:	R104223	TestNo:	SW7470A	Units:	mg/L
SampType:	CCV	Run ID:	CETAC2_HG_190522A	Analysis Date:	5/22/2019 10:41:04 AM	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00202	0.000200	0.00200	0	101	90	110			

Sample ID	CCV2-190522	Batch ID:	R104223	TestNo:	SW7470A	Units:	mg/L
SampType:	CCV	Run ID:	CETAC2_HG_190522A	Analysis Date:	5/22/2019 11:08:23 AM	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00203	0.000200	0.00200	0	102	90	110			

Sample ID	CCV3-190522	Batch ID:	R104223	TestNo:	SW7470A	Units:	mg/L
SampType:	CCV	Run ID:	CETAC2_HG_190522A	Analysis Date:	5/22/2019 2:51:11 PM	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00203	0.000200	0.00200	0	102	90	110			

LUMINANT

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905168
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190520B

The QC data in batch 90959 applies to the following samples: 1905168-01B, 1905168-02B, 1905168-03B, 1905168-04B, 1905168-05B, 1905168-06B, 1905168-07B

Sample ID **MB-90959** Batch ID: **90959** TestNo: **SW6020A** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_190520B** Analysis Date: **5/20/2019 3:23:00 PM** Prep Date: **5/17/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.000800	0.00250								
Arsenic	<0.00200	0.00500								
Barium	<0.00300	0.0100								
Beryllium	<0.000300	0.00100								
Cadmium	<0.000300	0.00100								
Calcium	<0.100	0.300								
Chromium	<0.00200	0.00500								
Cobalt	<0.00300	0.00500								
Iron	<0.0300	0.100								
Lead	<0.000300	0.00100								
Lithium	<0.00500	0.0100								
Magnesium	<0.100	0.300								
Potassium	<0.100	0.300								
Selenium	<0.00200	0.00500								
Sodium	<0.100	0.300								
Thallium	<0.000500	0.00150								

Sample ID **LCS-90959** Batch ID: **90959** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_190520B** Analysis Date: **5/20/2019 3:27:00 PM** Prep Date: **5/17/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.190	0.00250	0.200	0	94.8	80	120			
Arsenic	0.204	0.00500	0.200	0	102	80	120			
Barium	0.190	0.0100	0.200	0	94.9	80	120			
Beryllium	0.211	0.00100	0.200	0	105	80	120			
Cadmium	0.192	0.00100	0.200	0	95.8	80	120			
Calcium	4.65	0.300	5.00	0	93.1	80	120			
Chromium	0.195	0.00500	0.200	0	97.7	80	120			
Cobalt	0.203	0.00500	0.200	0	101	80	120			
Iron	5.14	0.100	5.00	0	103	80	120			
Lead	0.187	0.00100	0.200	0	93.6	80	120			
Lithium	0.217	0.0100	0.200	0	108	80	120			
Magnesium	5.03	0.300	5.00	0	101	80	120			
Potassium	5.02	0.300	5.00	0	100	80	120			
Selenium	0.204	0.00500	0.200	0	102	80	120			
Sodium	5.07	0.300	5.00	0	101	80	120			
Thallium	0.199	0.00150	0.200	0	99.7	80	120			

LUMINANT

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905168
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190520B

Sample ID **LCSD-90959**	Batch ID: **90959**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCSD**	Run ID: **ICP-MS4_190520B**	Analysis Date: **5/20/2019 3:29:00 PM**	Prep Date: **5/17/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.195	0.00250	0.200	0	97.7	80	120	2.98	15	
Arsenic	0.201	0.00500	0.200	0	100	80	120	1.34	15	
Barium	0.194	0.0100	0.200	0	97.2	80	120	2.37	15	
Beryllium	0.210	0.00100	0.200	0	105	80	120	0.345	15	
Cadmium	0.198	0.00100	0.200	0	98.8	80	120	3.14	15	
Calcium	4.68	0.300	5.00	0	93.5	80	120	0.492	15	
Chromium	0.198	0.00500	0.200	0	99.1	80	120	1.40	15	
Cobalt	0.200	0.00500	0.200	0	100	80	120	1.46	15	
Iron	5.15	0.100	5.00	0	103	80	120	0.209	15	
Lead	0.190	0.00100	0.200	0	95.0	80	120	1.54	15	
Lithium	0.211	0.0100	0.200	0	106	80	120	2.37	15	
Magnesium	5.15	0.300	5.00	0	103	80	120	2.30	15	
Potassium	5.07	0.300	5.00	0	101	80	120	1.08	15	
Selenium	0.200	0.00500	0.200	0	99.9	80	120	1.96	15	
Sodium	5.10	0.300	5.00	0	102	80	120	0.502	15	
Thallium	0.200	0.00150	0.200	0	100	80	120	0.279	15	

Sample ID **1905178-02C SD**	Batch ID: **90959**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS4_190520B**	Analysis Date: **5/20/2019 3:37:00 PM**	Prep Date: **5/17/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.00400	0.0125	0	0				0	10	
Arsenic	0.0115	0.0250	0	0.0113				1.19	10	
Barium	0.0249	0.0500	0	0.0269				7.62	10	
Beryllium	<0.00150	0.00500	0	0				0	10	
Cadmium	<0.00150	0.00500	0	0				0	10	
Chromium	0.0104	0.0250	0	0.0104				0.596	10	
Cobalt	<0.0150	0.0250	0	0				0	10	
Iron	0.313	0.500	0	0.303				3.55	10	
Lead	<0.00150	0.00500	0	0				0	10	
Lithium	0.0378	0.0500	0	0.0361				4.57	10	
Potassium	1.53	1.50	0	1.52				0.244	10	
Selenium	<0.0100	0.0250	0	0				0	10	
Thallium	<0.00250	0.00750	0	0				0	10	

Sample ID **1905178-02C PDS**	Batch ID: **90959**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_190520B**	Analysis Date: **5/20/2019 3:56:00 PM**	Prep Date: **5/17/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.193	0.00250	0.200	0	96.4	80	120			
Arsenic	0.209	0.00500	0.200	0.0113	98.9	80	120			

LUMINANT

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905168
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190520B

Sample ID	1905178-02C PDS	Batch ID:	90959	TestNo:	SW6020A	Units:	mg/L
SampType:	PDS	Run ID:	ICP-MS4_190520B	Analysis Date:	5/20/2019 3:56:00 PM	Prep Date:	5/17/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.214	0.0100	0.200	0.0269	93.7	80	120			
Beryllium	0.184	0.00100	0.200	0	91.9	80	120			
Cadmium	0.184	0.00100	0.200	0	91.8	80	120			
Chromium	0.198	0.00500	0.200	0.0104	93.6	80	120			
Cobalt	0.193	0.00500	0.200	0	96.5	80	120			
Iron	5.19	0.100	5.00	0.303	97.7	80	120			
Lead	0.185	0.00100	0.200	0	92.4	80	120			
Lithium	0.224	0.0100	0.200	0.0361	93.9	80	120			
Potassium	6.27	0.300	5.00	1.52	94.9	80	120			
Selenium	0.195	0.00500	0.200	0	97.6	80	120			
Thallium	0.203	0.00150	0.200	0	101	80	120			

Sample ID	1905178-02C MS	Batch ID:	90959	TestNo:	SW6020A	Units:	mg/L
SampType:	MS	Run ID:	ICP-MS4_190520B	Analysis Date:	5/20/2019 3:58:00 PM	Prep Date:	5/17/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.197	0.00250	0.200	0	98.3	80	120			
Arsenic	0.217	0.00500	0.200	0.0113	103	80	120			
Barium	0.223	0.0100	0.200	0.0269	97.8	80	120			
Beryllium	0.187	0.00100	0.200	0	93.6	80	120			
Cadmium	0.185	0.00100	0.200	0	92.5	80	120			
Calcium	65.6	0.300	5.00	62.5	62.2	80	120			S
Chromium	0.198	0.00500	0.200	0.0104	93.7	80	120			
Cobalt	0.196	0.00500	0.200	0	98.1	80	120			
Iron	5.25	0.100	5.00	0.303	98.9	80	120			
Lead	0.188	0.00100	0.200	0	93.9	80	120			
Lithium	0.221	0.0100	0.200	0.0361	92.5	80	120			
Magnesium	65.8	0.300	5.00	63.5	45.8	80	120			S
Potassium	6.56	0.300	5.00	1.52	101	80	120			
Selenium	0.204	0.00500	0.200	0	102	80	120			
Sodium	223	0.300	5.00	229	-120	80	120			S
Thallium	0.201	0.00150	0.200	0	100	80	120			

Sample ID	1905178-02C MSD	Batch ID:	90959	TestNo:	SW6020A	Units:	mg/L
SampType:	MSD	Run ID:	ICP-MS4_190520B	Analysis Date:	5/20/2019 4:00:00 PM	Prep Date:	5/17/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.199	0.00250	0.200	0	99.4	80	120	1.06	15	
Arsenic	0.214	0.00500	0.200	0.0113	101	80	120	1.22	15	
Barium	0.228	0.0100	0.200	0.0269	100	80	120	2.27	15	
Beryllium	0.186	0.00100	0.200	0	92.8	80	120	0.831	15	

LUMINANT

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905168
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190520B

Sample ID **1905178-02C MSD** Batch ID: **90959** TestNo: **SW6020A** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS4_190520B** Analysis Date: **5/20/2019 4:00:00 PM** Prep Date: **5/17/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cadmium	0.188	0.00100	0.200	0	94.1	80	120	1.65	15	
Calcium	65.6	0.300	5.00	62.5	61.4	80	120	0.058	15	S
Chromium	0.197	0.00500	0.200	0.0104	93.2	80	120	0.455	15	
Cobalt	0.195	0.00500	0.200	0	97.6	80	120	0.571	15	
Iron	5.20	0.100	5.00	0.303	97.9	80	120	0.922	15	
Lead	0.186	0.00100	0.200	0	93.1	80	120	0.842	15	
Lithium	0.227	0.0100	0.200	0.0361	95.5	80	120	2.65	15	
Magnesium	66.6	0.300	5.00	63.5	62.8	80	120	1.28	15	S
Potassium	6.53	0.300	5.00	1.52	100	80	120	0.365	15	
Selenium	0.201	0.00500	0.200	0	101	80	120	1.07	15	
Sodium	224	0.300	5.00	229	-105	80	120	0.347	15	S
Thallium	0.205	0.00150	0.200	0	103	80	120	2.13	15	

LUMINANT

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905168
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190520B

Sample ID	ICV-190520	Batch ID:	R104182	TestNo:	SW6020A	Units:	mg/L
SampType:	ICV	Run ID:	ICP-MS4_190520B	Analysis Date:	5/20/2019 11:23:00 AM	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.0968	0.00250	0.100	0	96.8	90	110			
Arsenic	0.0991	0.00500	0.100	0	99.1	90	110			
Barium	0.0948	0.0100	0.100	0	94.8	90	110			
Beryllium	0.102	0.00100	0.100	0	102	90	110			
Cadmium	0.0974	0.00100	0.100	0	97.4	90	110			
Calcium	2.44	0.300	2.50	0	97.7	90	110			
Chromium	0.102	0.00500	0.100	0	102	90	110			
Cobalt	0.101	0.00500	0.100	0	101	90	110			
Iron	2.61	0.100	2.50	0	104	90	110			
Lead	0.0932	0.00100	0.100	0	93.2	90	110			
Lithium	0.106	0.0100	0.100	0	106	90	110			
Magnesium	2.50	0.300	2.50	0	100	90	110			
Potassium	2.53	0.300	2.50	0	101	90	110			
Selenium	0.0979	0.00500	0.100	0	97.9	90	110			
Sodium	2.59	0.300	2.50	0	104	90	110			
Thallium	0.0911	0.00150	0.100	0	91.1	90	110			

Sample ID	LCVL-190520	Batch ID:	R104182	TestNo:	SW6020A	Units:	mg/L
SampType:	LCVL	Run ID:	ICP-MS4_190520B	Analysis Date:	5/20/2019 11:29:00 AM	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00176	0.00250	0.00200	0	87.9	70	130			
Arsenic	0.00489	0.00500	0.00500	0	97.7	70	130			
Barium	0.00432	0.0100	0.00500	0	86.5	70	130			
Beryllium	0.000893	0.00100	0.00100	0	89.3	70	130			
Cadmium	0.000871	0.00100	0.00100	0	87.1	70	130			
Calcium	0.0919	0.300	0.100	0	91.9	70	130			
Chromium	0.00481	0.00500	0.00500	0	96.1	70	130			
Cobalt	0.00485	0.00500	0.00500	0	97.0	70	130			
Iron	0.107	0.100	0.100	0	107	70	130			
Lead	0.000831	0.00100	0.00100	0	83.1	70	130			
Lithium	0.0104	0.0100	0.0100	0	104	70	130			
Magnesium	0.0970	0.300	0.100	0	97.0	70	130			
Potassium	0.0964	0.300	0.100	0	96.4	70	130			
Selenium	0.00489	0.00500	0.00500	0	97.8	70	130			
Sodium	0.0958	0.300	0.100	0	95.8	70	130			
Thallium	0.000816	0.00150	0.00100	0	81.6	70	130			

LUMINANT

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905168
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190520B

Sample ID	CCV5-190520	Batch ID:	R104182	TestNo:	SW6020A	Units:	mg/L
SampType:	CCV	Run ID:	ICP-MS4_190520B	Analysis Date:	5/20/2019 2:53:00 PM	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.195	0.00250	0.200	0	97.6	90	110			
Arsenic	0.203	0.00500	0.200	0	102	90	110			
Barium	0.193	0.0100	0.200	0	96.5	90	110			
Beryllium	0.202	0.00100	0.200	0	101	90	110			
Cadmium	0.197	0.00100	0.200	0	98.4	90	110			
Calcium	4.64	0.300	5.00	0	92.9	90	110			
Chromium	0.195	0.00500	0.200	0	97.5	90	110			
Cobalt	0.201	0.00500	0.200	0	100	90	110			
Iron	5.06	0.100	5.00	0	101	90	110			
Lead	0.192	0.00100	0.200	0	96.1	90	110			
Lithium	0.206	0.0100	0.200	0	103	90	110			
Magnesium	5.06	0.300	5.00	0	101	90	110			
Potassium	5.03	0.300	5.00	0	101	90	110			
Selenium	0.205	0.00500	0.200	0	102	90	110			
Sodium	5.17	0.300	5.00	0	103	90	110			
Thallium	0.199	0.00150	0.200	0	99.7	90	110			

Sample ID	LCVL5-190520	Batch ID:	R104182	TestNo:	SW6020A	Units:	mg/L
SampType:	LCVL	Run ID:	ICP-MS4_190520B	Analysis Date:	5/20/2019 3:01:00 PM	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00174	0.00250	0.00200	0	87.2	70	130			
Arsenic	0.00487	0.00500	0.00500	0	97.5	70	130			
Barium	0.00423	0.0100	0.00500	0	84.6	70	130			
Beryllium	0.00110	0.00100	0.00100	0	110	70	130			
Cadmium	0.000921	0.00100	0.00100	0	92.1	70	130			
Calcium	0.0952	0.300	0.100	0	95.2	70	130			
Chromium	0.00485	0.00500	0.00500	0	97.1	70	130			
Cobalt	0.00489	0.00500	0.00500	0	97.9	70	130			
Iron	0.108	0.100	0.100	0	108	70	130			
Lead	0.000805	0.00100	0.00100	0	80.5	70	130			
Lithium	0.0108	0.0100	0.0100	0	108	70	130			
Magnesium	0.0983	0.300	0.100	0	98.3	70	130			
Potassium	0.0975	0.300	0.100	0	97.5	70	130			
Selenium	0.00517	0.00500	0.00500	0	103	70	130			
Sodium	0.102	0.300	0.100	0	102	70	130			
Thallium	0.000787	0.00150	0.00100	0	78.7	70	130			

LUMINANT

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905168
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190520B

Sample ID	CCV6-190520	Batch ID:	R104182	TestNo:	SW6020A	Units:	mg/L
SampType:	CCV	Run ID:	ICP-MS4_190520B	Analysis Date:	5/20/2019 4:02:00 PM	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.194	0.00250	0.200	0	96.9	90	110			
Arsenic	0.205	0.00500	0.200	0	102	90	110			
Barium	0.192	0.0100	0.200	0	96.2	90	110			
Beryllium	0.199	0.00100	0.200	0	99.7	90	110			
Cadmium	0.193	0.00100	0.200	0	96.3	90	110			
Calcium	4.67	0.300	5.00	0	93.4	90	110			
Chromium	0.194	0.00500	0.200	0	96.8	90	110			
Cobalt	0.203	0.00500	0.200	0	101	90	110			
Iron	5.07	0.100	5.00	0	101	90	110			
Lead	0.195	0.00100	0.200	0	97.6	90	110			
Lithium	0.204	0.0100	0.200	0	102	90	110			
Magnesium	5.01	0.300	5.00	0	100	90	110			
Potassium	4.98	0.300	5.00	0	99.6	90	110			
Selenium	0.205	0.00500	0.200	0	103	90	110			
Sodium	5.14	0.300	5.00	0	103	90	110			
Thallium	0.205	0.00150	0.200	0	102	90	110			

Sample ID	LCVL6-190520	Batch ID:	R104182	TestNo:	SW6020A	Units:	mg/L
SampType:	LCVL	Run ID:	ICP-MS4_190520B	Analysis Date:	5/20/2019 4:06:00 PM	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00178	0.00250	0.00200	0	89.2	70	130			
Arsenic	0.00492	0.00500	0.00500	0	98.4	70	130			
Barium	0.00435	0.0100	0.00500	0	87.0	70	130			
Beryllium	0.00105	0.00100	0.00100	0	105	70	130			
Cadmium	0.000933	0.00100	0.00100	0	93.3	70	130			
Calcium	0.0988	0.300	0.100	0	98.8	70	130			
Chromium	0.00475	0.00500	0.00500	0	95.0	70	130			
Cobalt	0.00485	0.00500	0.00500	0	97.1	70	130			
Iron	0.107	0.100	0.100	0	107	70	130			
Lead	0.000828	0.00100	0.00100	0	82.8	70	130			
Lithium	0.0104	0.0100	0.0100	0	104	70	130			
Magnesium	0.0986	0.300	0.100	0	98.6	70	130			
Potassium	0.0940	0.300	0.100	0	94.0	70	130			
Selenium	0.00483	0.00500	0.00500	0	96.6	70	130			
Sodium	0.131	0.300	0.100	0	131	70	130			S
Thallium	0.000822	0.00150	0.00100	0	82.2	70	130			

LUMINANT

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905168
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190521A

The QC data in batch 90959 applies to the following samples: 1905168-01B, 1905168-02B, 1905168-03B, 1905168-04B, 1905168-05B, 1905168-06B, 1905168-07B

Sample ID **MB-90959** Batch ID: **90959** TestNo: **SW6020A** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS5_190521A** Analysis Date: **5/21/2019 12:36:00 PM** Prep Date: **5/17/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	<0.0100	0.0300								
Molybdenum	<0.00200	0.00500								

Sample ID **LCS-90959** Batch ID: **90959** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS5_190521A** Analysis Date: **5/21/2019 12:38:00 PM** Prep Date: **5/17/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.201	0.0300	0.200	0	101	80	120			
Molybdenum	0.195	0.00500	0.200	0	97.3	80	120			

Sample ID **LCSD-90959** Batch ID: **90959** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS5_190521A** Analysis Date: **5/21/2019 12:41:00 PM** Prep Date: **5/17/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.208	0.0300	0.200	0	104	80	120	3.23	15	
Molybdenum	0.192	0.00500	0.200	0	96.2	80	120	1.18	15	

Sample ID **1905178-02C SD** Batch ID: **90959** TestNo: **SW6020A** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS5_190521A** Analysis Date: **5/21/2019 12:47:00 PM** Prep Date: **5/17/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	<1.00	3.00	0	0.525				0	10	
Calcium	70.4	30.0	0	68.2				3.15	10	
Magnesium	63.5	30.0	0	63.5				0.085	10	
Molybdenum	<0.200	0.500	0	0				0	10	
Sodium	227	30.0	0	233				2.75	10	

Sample ID **1905178-02C PDS** Batch ID: **90959** TestNo: **SW6020A** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS5_190521A** Analysis Date: **5/21/2019 1:14:00 PM** Prep Date: **5/17/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	4.53	0.600	4.00	0.525	100	80	120			
Calcium	170	6.00	100	68.2	102	80	120			
Magnesium	161	6.00	100	63.5	97.1	80	120			
Molybdenum	3.64	0.100	4.00	0	90.9	80	120			
Sodium	331	6.00	100	233	98.2	80	120			

LUMINANT

Qualifiers:

B	Analyte detected in the associated Method Blank
J	Analyte detected between MDL and RL
ND	Not Detected at the Method Detection Limit
RL	Reporting Limit
J	Analyte detected between SDL and RL
DF	Dilution Factor
MDL	Method Detection Limit
R	RPD outside accepted control limits
S	Spike Recovery outside control limits
N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905168
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190521A

Sample ID	1905178-02C MS	Batch ID:	90959	TestNo:	SW6020A	Units:	mg/L
SampType:	MS	Run ID:	ICP-MS5_190521A	Analysis Date:	5/21/2019 1:17:00 PM	Prep Date:	5/17/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.866	0.600	0.200	0.525	170	80	120			S
Molybdenum	0.192	0.100	0.200	0	96.0	80	120			

Sample ID	1905178-02C MSD	Batch ID:	90959	TestNo:	SW6020A	Units:	mg/L
SampType:	MSD	Run ID:	ICP-MS5_190521A	Analysis Date:	5/21/2019 1:19:00 PM	Prep Date:	5/17/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.750	0.600	0.200	0.525	112	80	120	14.3	15	
Molybdenum	0.189	0.100	0.200	0	94.3	80	120	1.76	15	

LUMINANT

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905168
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190521A

Sample ID **ICV-190521**	Batch ID: **R104204**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS5_190521A**	Analysis Date: **5/21/2019 12:10:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.103	0.0300	0.100	0	103	90	110			
Calcium	2.52	0.300	2.50	0	101	90	110			
Iron	2.60	0.100	2.50	0	104	90	110			
Magnesium	2.49	0.300	2.50	0	99.7	90	110			
Molybdenum	0.0930	0.00500	0.100	0	93.0	90	110			
Sodium	2.56	0.300	2.50	0	103	90	110			

Sample ID **LCVL-190521**	Batch ID: **R104204**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_190521A**	Analysis Date: **5/21/2019 12:15:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0223	0.0300	0.0200	0	111	70	130			
Calcium	0.104	0.300	0.100	0	104	70	130			
Iron	0.0979	0.100	0.100	0	97.9	70	130			
Magnesium	0.0983	0.300	0.100	0	98.3	70	130			
Molybdenum	0.00464	0.00500	0.00500	0	92.8	70	130			
Sodium	0.0960	0.300	0.100	0	96.0	70	130			

Sample ID **CCV1-190521**	Batch ID: **R104204**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_190521A**	Analysis Date: **5/21/2019 1:26:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.196	0.0300	0.200	0	98.1	90	110			
Calcium	4.90	0.300	5.00	0	98.0	90	110			
Iron	5.04	0.100	5.00	0	101	90	110			
Magnesium	4.94	0.300	5.00	0	98.8	90	110			
Molybdenum	0.193	0.00500	0.200	0	96.3	90	110			
Sodium	4.93	0.300	5.00	0	98.6	90	110			

Sample ID **LCVL1-190521**	Batch ID: **R104204**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_190521A**	Analysis Date: **5/21/2019 1:30:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0245	0.0300	0.0200	0	123	70	130			
Calcium	0.0976	0.300	0.100	0	97.6	70	130			
Iron	0.0980	0.100	0.100	0	98.0	70	130			
Magnesium	0.0940	0.300	0.100	0	94.0	70	130			
Molybdenum	0.00478	0.00500	0.00500	0	95.6	70	130			
Sodium	0.0986	0.300	0.100	0	98.6	70	130			

LUMINANT

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905168
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190521A

Sample ID **CCV2-190521**	Batch ID: **R104204**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_190521A**	Analysis Date: **5/21/2019 2:05:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.208	0.0300	0.200	0	104	90	110			
Molybdenum	0.201	0.00500	0.200	0	101	90	110			

Sample ID **LCVL2-190521**	Batch ID: **R104204**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_190521A**	Analysis Date: **5/21/2019 2:09:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0258	0.0300	0.0200	0	129	70	130			
Molybdenum	0.00474	0.00500	0.00500	0	94.7	70	130			

Sample ID **CCV3-190521**	Batch ID: **R104204**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_190521A**	Analysis Date: **5/21/2019 2:34:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.199	0.0300	0.200	0	99.5	90	110			
Molybdenum	0.199	0.00500	0.200	0	99.7	90	110			

Sample ID **LCVL3-190521**	Batch ID: **R104204**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_190521A**	Analysis Date: **5/21/2019 2:46:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0227	0.0300	0.0200	0	113	70	130			
Molybdenum	0.00484	0.00500	0.00500	0	96.8	70	130			

Sample ID **CCV4-190521**	Batch ID: **R104204**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_190521A**	Analysis Date: **5/21/2019 3:00:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Molybdenum	0.199	0.00500	0.200	0	99.7	90	110			

Sample ID **LCVL4-190521**	Batch ID: **R104204**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_190521A**	Analysis Date: **5/21/2019 3:05:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Molybdenum	0.00483	0.00500	0.00500	0	96.6	70	130			

LUMINANT

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905168
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_190515A

The QC data in batch 90908 applies to the following samples: 1905168-01C, 1905168-02C, 1905168-03C, 1905168-04C, 1905168-05C, 1905168-06C, 1905168-07C

Sample ID	MB-90908	Batch ID:	90908	TestNo:	E300	Units:	mg/L
SampType:	MBLK	Run ID:	IC2_190515A	Analysis Date:	5/15/2019 10:10:50 AM	Prep Date:	5/15/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00								
Fluoride	<0.100	0.400								
Nitrate-N	<0.100	0.500								
Sulfate	<1.00	3.00								

Sample ID	LCS-90908	Batch ID:	90908	TestNo:	E300	Units:	mg/L
SampType:	LCS	Run ID:	IC2_190515A	Analysis Date:	5/15/2019 10:26:50 AM	Prep Date:	5/15/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.1	1.00	10.00	0	101	90	110			
Fluoride	4.00	0.400	4.000	0	99.9	90	110			
Nitrate-N	5.09	0.500	5.000	0	102	90	110			
Sulfate	30.4	3.00	30.00	0	101	90	110			

Sample ID	LCSD-90908	Batch ID:	90908	TestNo:	E300	Units:	mg/L
SampType:	LCSD	Run ID:	IC2_190515A	Analysis Date:	5/15/2019 10:42:50 AM	Prep Date:	5/15/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.2	1.00	10.00	0	102	90	110	0.674	20	
Fluoride	4.05	0.400	4.000	0	101	90	110	1.26	20	
Nitrate-N	5.08	0.500	5.000	0	102	90	110	0.146	20	
Sulfate	30.9	3.00	30.00	0	103	90	110	1.55	20	

Sample ID	1905167-01CMS	Batch ID:	90908	TestNo:	E300	Units:	mg/L
SampType:	MS	Run ID:	IC2_190515A	Analysis Date:	5/15/2019 1:07:36 PM	Prep Date:	5/15/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	222	10.0	200.0	12.69	105	90	110			
Fluoride	211	4.00	200.0	0	106	90	110			
Nitrate-N	45.6	5.00	45.16	0	101	90	110			
Sulfate	239	30.0	200.0	41.32	98.7	90	110			

Sample ID	1905167-01CMSD	Batch ID:	90908	TestNo:	E300	Units:	mg/L
SampType:	MSD	Run ID:	IC2_190515A	Analysis Date:	5/15/2019 1:23:36 PM	Prep Date:	5/15/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	221	10.0	200.0	12.69	104	90	110	0.308	20	
Fluoride	210	4.00	200.0	0	105	90	110	0.286	20	
Nitrate-N	45.8	5.00	45.16	0	101	90	110	0.495	20	

LUMINANT

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905168
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_190515A

Sample ID	1905167-01CMSD	Batch ID:	90908	TestNo:	E300	Units:	mg/L
SampType:	MSD	Run ID:	IC2_190515A	Analysis Date:	5/15/2019 1:23:36 PM	Prep Date:	5/15/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	237	30.0	200.0	41.32	97.7	90	110	0.821	20	

Sample ID	1905167-02CMS	Batch ID:	90908	TestNo:	E300	Units:	mg/L
SampType:	MS	Run ID:	IC2_190515A	Analysis Date:	5/15/2019 1:55:36 PM	Prep Date:	5/15/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	686	10.0	200.0	528.8	78.8	90	110			S
Fluoride	229	4.00	200.0	24.26	102	90	110			
Nitrate-N	56.2	5.00	45.16	10.55	101	90	110			
Sulfate	2520	30.0	200.0	0	1260	90	110			S

Sample ID	1905167-02CMSD	Batch ID:	90908	TestNo:	E300	Units:	mg/L
SampType:	MSD	Run ID:	IC2_190515A	Analysis Date:	5/15/2019 2:11:36 PM	Prep Date:	5/15/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	688	10.0	200.0	528.8	79.8	90	110	0.292	20	S
Fluoride	229	4.00	200.0	24.26	102	90	110	0.251	20	
Nitrate-N	57.3	5.00	45.16	10.55	103	90	110	1.85	20	
Sulfate	<10.0	30.0	200.0	0	0	90	110	0	20	S

LUMINANT

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905168
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_190515A

Sample ID **ICV-190515**	Batch ID: **R104097**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC2_190515A**	Analysis Date: **5/15/2019 9:38:50 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	25.8	1.00	25.00	0	103	90	110			
Fluoride	10.3	0.400	10.00	0	103	90	110			
Nitrate-N	13.0	0.500	12.50	0	104	90	110			
Sulfate	77.8	3.00	75.00	0	104	90	110			

Sample ID **CCV1-190515**	Batch ID: **R104097**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_190515A**	Analysis Date: **5/15/2019 4:51:36 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.4	1.00	10.00	0	104	90	110			
Fluoride	4.15	0.400	4.000	0	104	90	110			
Nitrate-N	5.13	0.500	5.000	0	103	90	110			
Sulfate	30.8	3.00	30.00	0	103	90	110			

Sample ID **CCV2-190515**	Batch ID: **R104097**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_190515A**	Analysis Date: **5/15/2019 8:35:35 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.6	1.00	10.00	0	106	90	110			
Fluoride	4.20	0.400	4.000	0	105	90	110			
Nitrate-N	5.20	0.500	5.000	0	104	90	110			
Sulfate	31.5	3.00	30.00	0	105	90	110			

LUMINANT

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905168
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_190516A

The QC data in batch 90935 applies to the following samples: 1905168-01C

Sample ID	MB-90935	Batch ID:	90935	TestNo:	E300	Units:	mg/L
SampType:	MBLK	Run ID:	IC4_190516A	Analysis Date:	5/16/2019 10:26:21 AM	Prep Date:	5/16/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	<1.00	3.00								

Sample ID	LCS-90935	Batch ID:	90935	TestNo:	E300	Units:	mg/L
SampType:	LCS	Run ID:	IC4_190516A	Analysis Date:	5/16/2019 10:42:21 AM	Prep Date:	5/16/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	29.5	3.00	30.00	0	98.3	90	110			

Sample ID	LCSD-90935	Batch ID:	90935	TestNo:	E300	Units:	mg/L
SampType:	LCSD	Run ID:	IC4_190516A	Analysis Date:	5/16/2019 10:58:21 AM	Prep Date:	5/16/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	29.8	3.00	30.00	0	99.2	90	110	0.935	20	

Sample ID	1905167-02CMS	Batch ID:	90935	TestNo:	E300	Units:	mg/L
SampType:	MS	Run ID:	IC4_190516A	Analysis Date:	5/16/2019 5:10:27 PM	Prep Date:	5/16/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	4830	300	2000	2897	96.9	90	110			

Sample ID	1905167-02CMSD	Batch ID:	90935	TestNo:	E300	Units:	mg/L
SampType:	MSD	Run ID:	IC4_190516A	Analysis Date:	5/16/2019 5:26:27 PM	Prep Date:	5/16/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	4880	300	2000	2897	99.1	90	110	0.920	20	

Sample ID	1905168-01CMS	Batch ID:	90935	TestNo:	E300	Units:	mg/L
SampType:	MS	Run ID:	IC4_190516A	Analysis Date:	5/16/2019 5:58:26 PM	Prep Date:	5/16/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	4380	300	2000	2468	95.6	90	110			

Sample ID	1905168-01CMSD	Batch ID:	90935	TestNo:	E300	Units:	mg/L
SampType:	MSD	Run ID:	IC4_190516A	Analysis Date:	5/16/2019 6:14:27 PM	Prep Date:	5/16/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	4390	300	2000	2468	96.2	90	110	0.273	20	

LUMINANT

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_190516A

Sample ID **ICV-190516**	Batch ID: **R104119**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC4_190516A**	Analysis Date: **5/16/2019 9:54:21 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	74.5	3.00	75.00	0	99.4	90	110			

Sample ID **CCV1-190516**	Batch ID: **R104119**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC4_190516A**	Analysis Date: **5/16/2019 9:10:26 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	30.2	3.00	30.00	0	101	90	110			

LUMINANT

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905168
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_190516A

The QC data in batch 90940 applies to the following samples: 1905168-01C, 1905168-02C, 1905168-03C, 1905168-04C, 1905168-05C, 1905168-06C, 1905168-07C

Sample ID **MB-90940** Batch ID: **90940** TestNo: **M2320 B** Units: **mg/L @ pH 4.47**
SampType: **MBLK** Run ID: **TITRATOR_190516A** Analysis Date: **5/16/2019 2:00:00 PM** Prep Date: **5/16/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	<10.0	20.0								
Alkalinity, Carbonate (As CaCO3)	<10.0	20.0								
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0								
Alkalinity, Total (As CaCO3)	<20.0	20.0								

Sample ID **LCS-90940** Batch ID: **90940** TestNo: **M2320 B** Units: **mg/L @ pH 4.08**
SampType: **LCS** Run ID: **TITRATOR_190516A** Analysis Date: **5/16/2019 2:04:00 PM** Prep Date: **5/16/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)	52.3	20.0	50.00	0	105	74	129			

Sample ID **1905134-01C DUP** Batch ID: **90940** TestNo: **M2320 B** Units: **mg/L @ pH 4.52**
SampType: **DUP** Run ID: **TITRATOR_190516A** Analysis Date: **5/16/2019 2:15:00 PM** Prep Date: **5/16/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	205	20.0	0	205.8				0.536	20	
Alkalinity, Carbonate (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Total (As CaCO3)	205	20.0	0	205.8				0.536	20	

Sample ID **1905168-05C DUP** Batch ID: **90940** TestNo: **M2320 B** Units: **mg/L @ pH 4.51**
SampType: **DUP** Run ID: **TITRATOR_190516A** Analysis Date: **5/16/2019 4:30:00 PM** Prep Date: **5/16/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Carbonate (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Total (As CaCO3)	<20.0	20.0	0	0				0	20	

LUMINANT

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905168
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_190516A

Sample ID **ICV-190516**	Batch ID: **R104124**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.34**
SampType: **ICV**	Run ID: **TITRATOR_190516A**	Analysis Date: **5/16/2019 1:58:00 PM**	Prep Date: **5/16/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	8.64	20.0	0							
Alkalinity, Carbonate (As CaCO3)	89.3	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	97.9	20.0	100.0	0	97.9	98	102			

Sample ID **CCV1-190516**	Batch ID: **R104124**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.25**
SampType: **CCV**	Run ID: **TITRATOR_190516A**	Analysis Date: **5/16/2019 3:39:00 PM**	Prep Date: **5/16/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	21.7	20.0	0							
Alkalinity, Carbonate (As CaCO3)	76.8	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	98.5	20.0	100.0	0	98.5	90	110			

Sample ID **CCV2-190516**	Batch ID: **R104124**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.21**
SampType: **CCV**	Run ID: **TITRATOR_190516A**	Analysis Date: **5/16/2019 4:35:00 PM**	Prep Date: **5/16/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	17.7	20.0	0							
Alkalinity, Carbonate (As CaCO3)	81.3	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	99.0	20.0	100.0	0	99.0	90	110			

Sample ID **CCV3-190516**	Batch ID: **R104124**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.39**
SampType: **CCV**	Run ID: **TITRATOR_190516A**	Analysis Date: **5/16/2019 4:54:00 PM**	Prep Date: **5/16/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	20.3	20.0	0							
Alkalinity, Carbonate (As CaCO3)	77.1	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	97.4	20.0	100.0	0	97.4	90	110			

LUMINANT

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905168
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: UV/VIS_2_190515B

The QC data in batch 90921 applies to the following samples: 1905168-01C, 1905168-02C, 1905168-03C, 1905168-04C, 1905168-05C, 1905168-06C, 1905168-07C

Sample ID	MB-90921	Batch ID:	90921	TestNo:	M4500-P E	Units:	mg/L
SampType:	MBLK	Run ID:	UV/VIS_2_190515B	Analysis Date:	5/15/2019 12:42:00 PM	Prep Date:	5/15/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Total Orthophosphate (As	<0.0300	0.100								

Sample ID	LCS-90921	Batch ID:	90921	TestNo:	M4500-P E	Units:	mg/L
SampType:	LCS	Run ID:	UV/VIS_2_190515B	Analysis Date:	5/15/2019 12:43:00 PM	Prep Date:	5/15/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Total Orthophosphate (As	0.513	0.100	0.5000	0	103	80	120			

Sample ID	LCSD-90921	Batch ID:	90921	TestNo:	M4500-P E	Units:	mg/L
SampType:	LCSD	Run ID:	UV/VIS_2_190515B	Analysis Date:	5/15/2019 12:43:00 PM	Prep Date:	5/15/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Total Orthophosphate (As	0.504	0.100	0.5000	0	101	80	120	1.77	15	

Sample ID	1905168-01CMS	Batch ID:	90921	TestNo:	M4500-P E	Units:	mg/L
SampType:	MS	Run ID:	UV/VIS_2_190515B	Analysis Date:	5/15/2019 12:45:00 PM	Prep Date:	5/15/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Total Orthophosphate (As	0.587	0.100	0.5000	0.07700	102	80	120			

Sample ID	1905168-01CMSD	Batch ID:	90921	TestNo:	M4500-P E	Units:	mg/L
SampType:	MSD	Run ID:	UV/VIS_2_190515B	Analysis Date:	5/15/2019 12:45:00 PM	Prep Date:	5/15/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Total Orthophosphate (As	0.525	0.100	0.5000	0.07700	89.6	80	120	11.2	15	

LUMINANT

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905168
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: UV/VIS_2_190515B

Sample ID **ICV-190515**	Batch ID: **R104071**	TestNo: **M4500-P E**	Units: **mg/L**
SampType: **ICV**	Run ID: **UV/VIS_2_190515B**	Analysis Date: **5/15/2019 12:41:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Total Orthophosphate (As	0.204	0.100	0.2000	0	102	85	115			

Sample ID **CCV1-190515**	Batch ID: **R104071**	TestNo: **M4500-P E**	Units: **mg/L**
SampType: **CCV**	Run ID: **UV/VIS_2_190515B**	Analysis Date: **5/15/2019 12:51:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Total Orthophosphate (As	0.509	0.100	0.5000	0	102	85	115			

LUMINANT

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905168
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: UV/VIS_2_190520A

The QC data in batch 91002 applies to the following samples: 1905168-01A, 1905168-02A, 1905168-03A, 1905168-04A, 1905168-05A, 1905168-06A, 1905168-07A

Sample ID	MB-91002	Batch ID:	91002	TestNo:	M3500-Fe D	Units:	mg/L
SampType:	MBLK	Run ID:	UV/VIS_2_190520A	Analysis Date:	5/20/2019 3:53:00 PM	Prep Date:	5/20/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	<0.0500	0.100								N

Sample ID	LCS-91002	Batch ID:	91002	TestNo:	M3500-Fe D	Units:	mg/L
SampType:	LCS	Run ID:	UV/VIS_2_190520A	Analysis Date:	5/20/2019 3:53:00 PM	Prep Date:	5/20/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	0.0888	0.100	0.1000	0	88.8	85	115			N

Sample ID	LCSD-91002	Batch ID:	91002	TestNo:	M3500-Fe D	Units:	mg/L
SampType:	LCSD	Run ID:	UV/VIS_2_190520A	Analysis Date:	5/20/2019 3:53:00 PM	Prep Date:	5/20/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	0.0879	0.100	0.1000	0	87.9	85	115	1.05	15	N

Sample ID	1905185-11AMS	Batch ID:	91002	TestNo:	M3500-Fe D	Units:	mg/L
SampType:	MS	Run ID:	UV/VIS_2_190520A	Analysis Date:	5/20/2019 4:03:00 PM	Prep Date:	5/20/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	0.0860	0.100	0.1000	0	86.0	85	115			N

Sample ID	1905185-11AMSD	Batch ID:	91002	TestNo:	M3500-Fe D	Units:	mg/L
SampType:	MSD	Run ID:	UV/VIS_2_190520A	Analysis Date:	5/20/2019 4:03:00 PM	Prep Date:	5/20/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	0.0861	0.100	0.1000	0	86.1	85	115	0.116	15	N

LUMINANT

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905168
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: UV/VIS_2_190520A

Sample ID	ICV-190520	Batch ID:	R104177	TestNo:	M3500-Fe D	Units:	mg/L
SampType:	ICV	Run ID:	UV/VIS_2_190520A	Analysis Date:	5/20/2019 3:52:00 PM	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	0.0875	0.100	0.1000	0	87.5	85	115			N

Sample ID	CCV1-190520	Batch ID:	R104177	TestNo:	M3500-Fe D	Units:	mg/L
SampType:	CCV	Run ID:	UV/VIS_2_190520A	Analysis Date:	5/20/2019 3:59:00 PM	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	0.197	0.100	0.2000	0	98.4	85	115			N

Sample ID	CCV2-190520	Batch ID:	R104177	TestNo:	M3500-Fe D	Units:	mg/L
SampType:	CCV	Run ID:	UV/VIS_2_190520A	Analysis Date:	5/20/2019 4:12:00 PM	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	0.183	0.100	0.2000	0	91.7	85	115			N

LUMINANT

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905168
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: WC_190517D

The QC data in batch 90953 applies to the following samples: 1905168-01C, 1905168-02C, 1905168-03C, 1905168-04C, 1905168-05C, 1905168-06C, 1905168-07C

Sample ID	**MB-90953**	Batch ID:	**90953**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**WC_190517D**	Analysis Date:	**5/17/2019 11:40:00 AM**	Prep Date:	**5/16/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	<10.0	10.0								

Sample ID	**LCS-90953**	Batch ID:	**90953**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**WC_190517D**	Analysis Date:	**5/17/2019 11:40:00 AM**	Prep Date:	**5/16/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	745	10.0	745.6	0	99.9	90	113			

Sample ID	**1905167-02C-DUP**	Batch ID:	**90953**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**DUP**	Run ID:	**WC_190517D**	Analysis Date:	**5/17/2019 11:40:00 AM**	Prep Date:	**5/16/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	5340	50.0	0	5375				0.747	5	

Sample ID	**1905168-02C-DUP**	Batch ID:	**90953**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**DUP**	Run ID:	**WC_190517D**	Analysis Date:	**5/17/2019 11:40:00 AM**	Prep Date:	**5/16/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	940	50.0	0	910.0				3.24	5	

LUMINANT

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

Pace Analytical®
National Center for Testing & Innovation

ANALYTICAL REPORT

June 10, 2019

DHL Analytical, Inc.

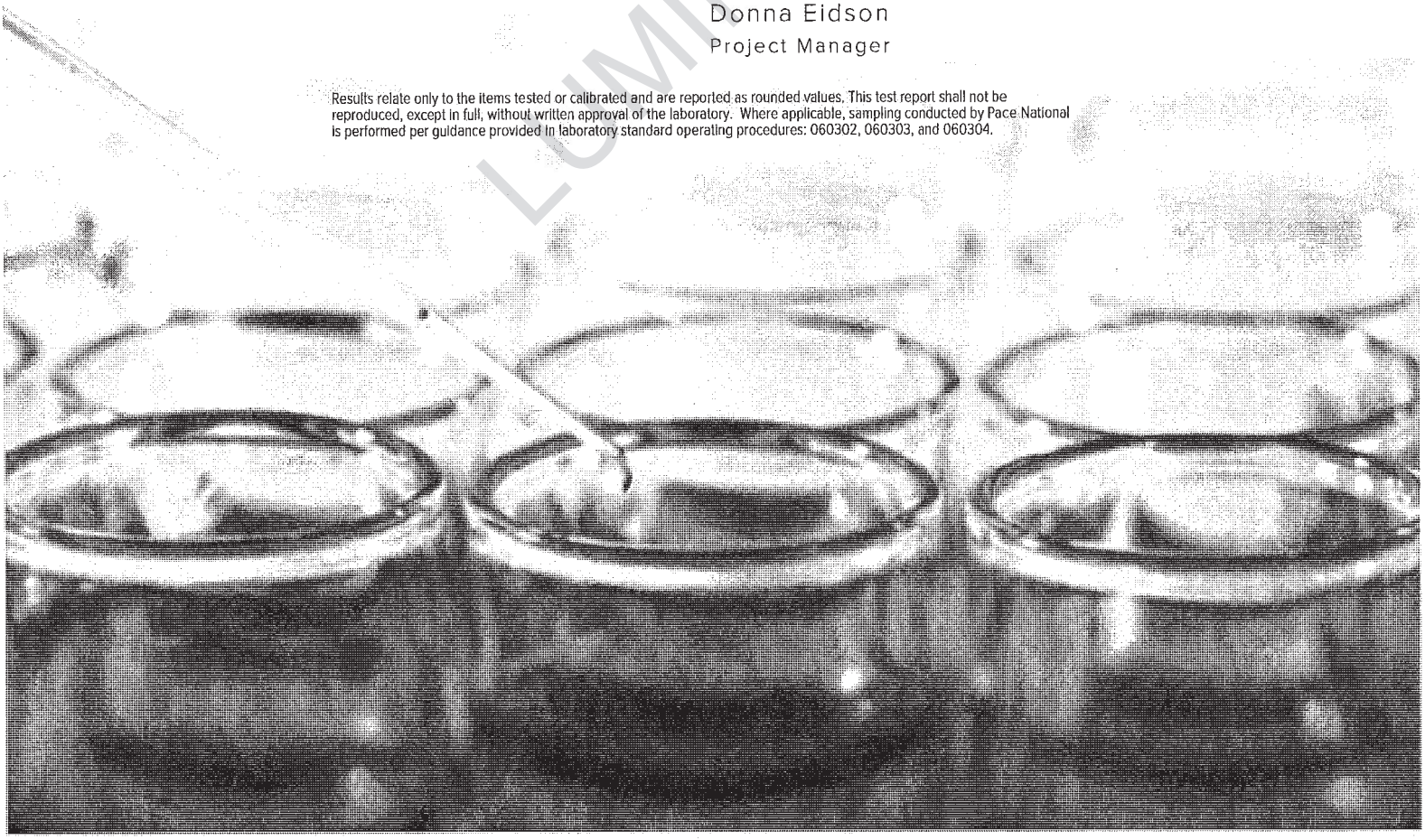
Sample Delivery Group:	L1100989
Samples Received:	05/21/2019
Project Number:	1905168
Description:	
Report To:	John DuPont 2300 Double Creek Drive Round Rock, TX 78664

LUMINANT

Entire Report Reviewed By: Donna Eidson

Donna Eidson
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace National is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.



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LUMINANT

H-31 L1100989-01 Non-Potable Water

Collected by | Collected date/time 05/14/19 07:40 | Received date/time 05/21/19 10:10

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1285651	1	05/24/19 09:05	05/31/19 11:10	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1287234	1	05/29/19 08:27	06/03/19 17:48	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1287234	1	05/29/19 08:27	06/03/19 17:48	RGT	Mt. Juliet, TN

H-32 L1100989-02 Non-Potable Water

Collected by | Collected date/time 05/14/19 08:25 | Received date/time 05/21/19 10:10

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1285651	1	05/24/19 09:05	05/31/19 11:10	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1287234	1	05/29/19 08:27	06/03/19 17:48	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1287234	1	05/29/19 08:27	06/03/19 17:48	RGT	Mt. Juliet, TN

H-27 L1100989-03 Non-Potable Water

Collected by | Collected date/time 05/14/19 09:40 | Received date/time 05/21/19 10:10

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1285651	1	05/24/19 09:05	05/31/19 11:10	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1287234	1	05/29/19 08:27	06/03/19 17:48	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1287234	1	05/29/19 08:27	06/03/19 17:48	RGT	Mt. Juliet, TN

H-29 L1100989-04 Non-Potable Water

Collected by | Collected date/time 05/14/19 11:25 | Received date/time 05/21/19 10:10

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1285651	1	05/24/19 09:05	05/31/19 11:10	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1287234	1	05/29/19 08:27	06/03/19 17:48	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1287234	1	05/29/19 08:27	06/03/19 17:48	RGT	Mt. Juliet, TN

H-28 L1100989-05 Non-Potable Water

Collected by | Collected date/time 05/14/19 12:30 | Received date/time 05/21/19 10:10

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1285651	1	05/24/19 09:05	05/31/19 11:10	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1287234	1	05/29/19 08:27	06/03/19 17:48	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1287234	1	05/29/19 08:27	06/03/19 17:48	RGT	Mt. Juliet, TN

H-26 L1100989-06 Non-Potable Water

Collected by | Collected date/time 05/14/19 14:25 | Received date/time 05/21/19 10:10

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1285651	1	05/24/19 09:05	05/31/19 11:10	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1287234	1	05/29/19 08:27	06/03/19 17:48	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1287234	1	05/29/19 08:27	06/03/19 17:48	RGT	Mt. Juliet, TN

LUMINANT

H-33 L1100989-07 Non-Potable Water			Collected by	Collected date/time 05/14/19 15:30	Received date/time 05/21/19 10:10	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1285651	1	05/24/19 09:05	05/31/19 11:10	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1287234	1	05/29/19 08:27	06/03/19 17:48	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1287234	1	05/29/19 08:27	06/03/19 17:48	RGT	Mt. Juliet, TN

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All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Donna Eidson
Project Manager

LUMINANT

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	0.531		0.515	0.789	05/31/2019 11:10	WG1285651
(T) Barium	*120*			*62.0-143*	*05/31/2019 11:10*	WG1285651
(T) Yttrium	*93.0*			*79.0-136*	*05/31/2019 11:10*	WG1285651

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	3.15		1.09	0.978	06/03/2019 17:48	WG1287234

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	2.62		0.578	0.189	06/03/2019 17:48	WG1287234
(T) Barium-133	*104*			*30.0-143*	*06/03/2019 17:48*	WG1287234

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Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	0.147		0.380	0.546	05/31/2019 11:10	WG1285651
(T) Barium	*100*			*62.0-143*	*05/31/2019 11:10*	WG1285651
(T) Yttrium	*109*			*79.0-136*	*05/31/2019 11:10*	WG1285651

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	0.450		0.625	0.833	06/03/2019 17:48	WG1287234

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.303		0.245	0.287	06/03/2019 17:48	WG1287234
(T) Barium-133	*105*			*30.0-143*	*06/03/2019 17:48*	WG1287234

LUMINANT

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	0.928		0.365	0.563	05/31/2019 11:10	WG1285651
(T) Barium	*96.7*			*62.0-143*	*05/31/2019 11:10*	WG1285651
(T) Yttrium	*98.1*			*79.0-136*	*05/31/2019 11:10*	WG1285651

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	2.03		0.814	0.854	06/03/2019 17:48	WG1287234

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	1.10		0.449	0.291	06/03/2019 17:48	WG1287234
(T) Barium-133	*85.4*			*30.0-143*	*06/03/2019 17:48*	WG1287234

LUMINANT

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	0.352		0.428	0.707	05/31/2019 11:10	WG1285651
(T) Barium	*116*			*62.0-143*	*05/31/2019 11:10*	WG1285651
(T) Yttrium	*96.5*			*79.0-136*	*05/31/2019 11:10*	WG1285651

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	0.474		0.641	1.05	06/03/2019 17:48	WG1287234

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.122		0.213	0.339	06/03/2019 17:48	WG1287234
(T) Barium-133	*72.2*			*30.0-143*	*06/03/2019 17:48*	WG1287234

LUMINANT

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
RADIUM-228	0.615		0.370	0.575	05/31/2019 11:10	WG1285651
(T) Barium	*106*			*62.0-143*	*05/31/2019 11:10*	WG1285651
(T) Yttrium	*95.5*			*79.0-136*	*05/31/2019 11:10*	WG1285651

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
Combined Radium	1.06		0.634	0.777	06/03/2019 17:48	WG1287234

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
RADIUM-226	0.444		0.264	0.202	06/03/2019 17:48	WG1287234
(T) Barium-133	*90.7*			*30.0-143*	*06/03/2019 17:48*	WG1287234

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

LUMINANT

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	0.598		0.330	0.545	05/31/2019 11:10	WG1285651
(T) Barium	*98.4*			*62.0-143*	*05/31/2019 11:10*	WG1285651
(T) Yttrium	*113*			*79.0-136*	*05/31/2019 11:10*	WG1285651

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	2.03		0.761	0.783	06/03/2019 17:48	WG1287234

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	1.43		0.431	0.238	06/03/2019 17:48	WG1287234
(T) Barium-133	*103*			*30.0-143*	*06/03/2019 17:48*	WG1287234

LUMINANT

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	1.35		0.414	0.627	05/31/2019 11:10	WG1285651
(T) Barium	*97.4*			*62.0-143*	*05/31/2019 11:10*	WG1285651
(T) Yttrium	*96.3*			*79.0-136*	*05/31/2019 11:10*	WG1285651

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	2.20		0.764	0.846	06/03/2019 17:48	WG1287234

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.850		0.350	0.219	06/03/2019 17:48	WG1287234
(T) Barium-133	*102*			*30.0-143*	*06/03/2019 17:48*	WG1287234

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APPENDIX F-Revision 2 February 27, 2024

Method Blank (MB)

(MB) R3417363-1 05/30/19 12:10

Analyte	MB Result pCi/l	MB Qualifier	MB MDA pCi/l
Radium-228	-0.0581		0.396
(T) Barium	*105*		
(T) Yttrium	*110*		

L1100977-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1100977-01 05/30/19 12:10 • (DUP) R3417363-5 05/30/19 12:10

Analyte	Original Result pCi/l	DUP Result pCi/l	Dilution	DUP RPD %	DUP RER	DUP Qualifier	DUP RPD Limits %	DUP RER Limit
Radium-228	-0.0695	0.650	1	200	0.741		20	3
(T) Barium	*109*	*111*						
(T) Yttrium	*113*	*107*						

Laboratory Control Sample (LCS)

(LCS) R3417363-2 05/30/19 12:10

Analyte	Spike Amount pCi/l	LCS Result pCi/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Radium-228	5.00	5.29	106	80.0-120	
(T) Barium			*104*		
(T) Yttrium			*114*		

L1100989-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1100989-01 05/31/19 11:10 • (MS) R3417363-3 05/30/19 12:10 • (MSD) R3417363-4 05/30/19 12:10

Analyte	Spike Amount pCi/l	Original Result pCi/l	MS Result pCi/l	MSD Result pCi/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	MS RER	RPD Limits %
Radium-228	20.0	0.531	20.9	19.5	102	94.8	1	70.0-130			7.08		20
(T) Barium		*120*			*102*	*115*							
(T) Yttrium		*93.0*			*117*	*114*							

LUMINANT

Method Blank (MB)

(MB) R3419580-1 06/03/19 17:43

	MB Result	MB Qualifier	MB MDA
Analyte	pCi/l		pCi/l
Radium-226	0.00994		0.0573
(T) Barium-133	*67.4*		

L1103100-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1103100-01 06/03/19 17:43 • (DUP) R3419580-7 06/03/19 17:43

	Original Result	DUP Result	Dilution	DUP RPD	DUP RER	DUP Qualifier	DUP RPD Limits	DUP RER Limit
Analyte	pCi/l	pCi/l		%			%	
Radium-226	0.267	1.33	1	133	2.21		20	3
(T) Barium-133	*110*	*102*						

Laboratory Control Sample (LCS)

(LCS) R3419580-2 06/03/19 17:43

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	pCi/l	pCi/l	%	%	
Radium-226	5.02	5.10	102	80.0-120	
(T) Barium-133			*56.0*		

L1101875-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1101875-03 06/03/19 17:43 • (MS) R3419580-3 06/03/19 17:43 • (MSD) R3419580-6 06/03/19 17:43

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	MS RER	RPD Limits
Analyte	pCi/l	pCi/l	pCi/l	pCi/l	%	%		%			%		%
Radium-226	20.1	0.637	17.9	20.3	86.0	97.8	1	75.0-125			12.4		20
(T) Barium-133		*83.3*			*53.7*	*71.3*							

L1101881-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1101881-03 06/03/19 17:43 • (MS) R3419580-4 06/03/19 17:43 • (MSD) R3419580-5 06/03/19 17:43

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	MS RER	RPD Limits
Analyte	pCi/l	pCi/l	pCi/l	pCi/l	%	%		%			%		%
Radium-226	20.1	0.522	21.1	19.2	102	93.1	1	75.0-125			9.23		20
(T) Barium-133		*105*			*89.6*	*99.7*							

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Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Abbreviations and Definitions

MDA	Minimum Detectable Activity.
Rec.	Recovery.
RER	Replicate Error Ratio.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(T)	Tracer - A radioisotope of known concentration added to a solution of chemically equivalent radioisotopes at a known concentration to assist in monitoring the yield of the chemical separation.
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
	The remainder of this page intentionally left blank, there are no qualifiers applied to this SDG.

PRELIMINARY

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

ACCREDITATIONS & LOCATIONS

ONE LAB. NATIONWIDE.

Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660
Alaska	17-026
Arizona	AZ0612
Arkansas	88-0469
California	2932
Colorado	TN00003
Connecticut	PH-0197
Florida	E87487
Georgia	NELAP
Georgia [1]	923
Idaho	TN00003
Illinois	200008
Indiana	C-TN-01
Iowa	364
Kansas	E-10277
Kentucky [1 6]	90010
Kentucky [2]	16
Louisiana	AI30792
Louisiana [1]	LA180010
Maine	TN0002
Maryland	324
Massachusetts	M-TN003
Michigan	9958
Minnesota	047-999-395
Mississippi	TN00003
Missouri	340
Montana	CERT0086
Nebraska	NE-OS-15-05
Nevada	TN-03-2002-34
New Hampshire	2975
New Jersey–NELAP	TN002
New Mexico [1]	n/a
New York	11742
North Carolina	Env375
North Carolina [1]	DW21704
North Carolina [3]	41
North Dakota	R-140
Ohio–VAP	CL0069
Oklahoma	9915
Oregon	TN200002
Pennsylvania	68-02979
Rhode Island	LAO00356
South Carolina	84004
South Dakota	n/a
Tennessee [1 4]	2006
Texas	T104704245-18-15
Texas [5]	LAB0152
Utah	TN00003
Vermont	VT2006
Virginia	460132
Washington	C847
West Virginia	233
Wisconsin	9980939910
Wyoming	A2LA

Third Party Federal Accreditations

A2LA – ISO 17025	1461.01
A2LA – ISO 17025 [5]	1461.02
Canada	1461.01
EPA–Crypto	TN00003
AIHA-LAP,LLC EMLAP	100789
DOD	1461.01
USDA	P330-15-00234

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

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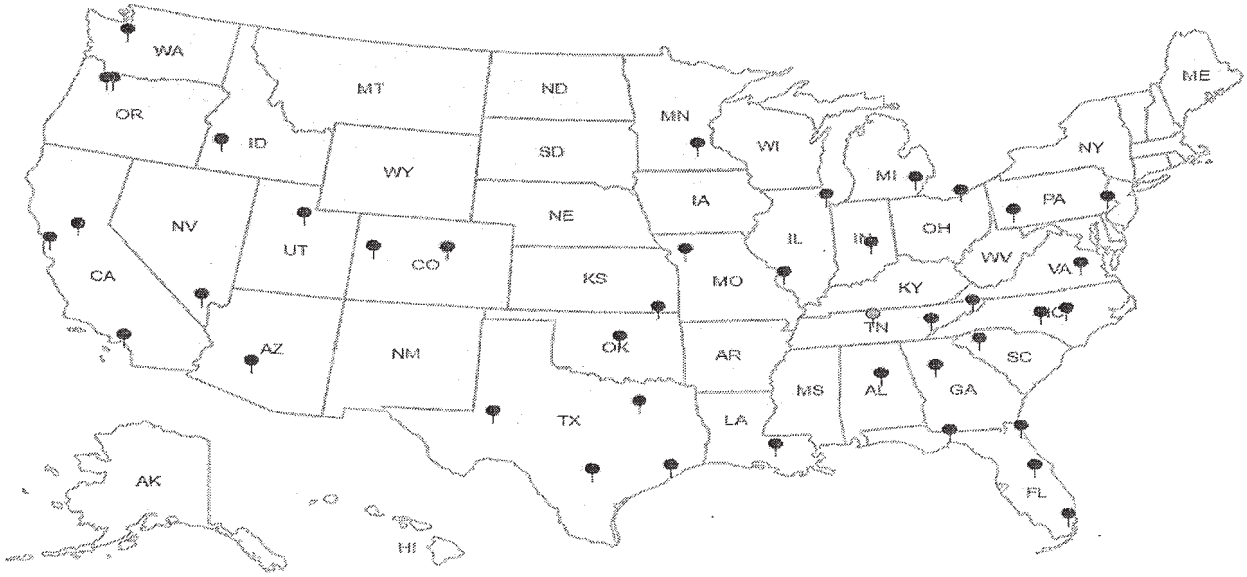
Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



Pace Analytical National Center for Testing & Innovation
Cooler Receipt Form

Client: DHLRTX	SDG#:	1100989
Cooler Received/Opened On: 5/21/19	Temperature:	Amb
Received By: Brock Fariss		
Signature: Fariss		

Receipt Check List	NP	Yes	No
COC Seal Present / Intact?	✓		
COC Signed / Accurate?		✓	
Bottles arrive intact?		✓	
Correct bottles used?		✓	
Sufficient volume sent?		✓	
If Applicable			
VOA Zero headspace?			
Preservation Correct / Checked?		✓	

LUMINANT

Kelsey Stephenson

Pace Analytical®
National Center for Testing & Innovation

Login #: L1100989	Client:DHLRRTX	Date:05/21	Evaluated by:Kelsey S

Non-Conformance (check applicable items)

	Sample Integrity		Chain of Custody Clarification		
	Parameter(s) past holding time		Login Clarification Needed		**If Broken Container:**
	Temperature not in range		Chain of custody is incomplete		Insufficient packing material around container
	Improper container type		Please specify Metals requested.		Insufficient packing material inside cooler
x	pH not in range.		Please specify TCLP requested.		Improper handling by carrier (FedEx / UPS / Courie
	Insufficient sample volume.		Received additional samples not listed on coc.		Sample was frozen
	Sample is biphasic.		Sample ids on containers do not match ids on coc		Container lid not intact
	Vials received with headspace.		Trip Blank not received.		**If no Chain of Custody:**
	Broken container		Client did not "X" analysis.		Received by:
	Broken container:		Chain of Custody is missing		Date/Time:
	Sufficient sample remains				Temp./Cont. Rec./pH:
					Carrier:
					Tracking#

COMPLIANT

Login Comments: 1 of 2 H-32 was received with a pH of 6. pH adj in login 1511 5/21

Client informed by:		Call		Email		Voice Mail		Date:	Time:
TSR Initials:	Client Contact:								

Login Instructions:

Noted 5/21/19 1547

1100989

CHAIN-OF-CUSTODY RECORD

DHL Analytical, Inc.
2300 Double Creek Drive
Round Rock, TX 78664
TEL: *(512) 388-8222* FAX: *(512) 388-8229*

H007

Work Order: 1905168

Subcontractor:
Pace Analytical
12065 Lebanon Rd
Mt. Juliet, TN 37122

TEL: (615) 773-5923
FAX:
Acct #: DHLRRTX

15-May-19

Sample Id	Matrix	DHL#	Date Collected	Bottle Type	Requested Tests: Ra-228 E904.0	Ra-226 M7500 Ra B M				
H-31	Aqueous	-01D	05/14/19 07:40 AM	1LHDPEHNO3		1				01
H-31	Aqueous	-01E	05/14/19 07:40 AM	1LHDPEHNO3	1					1
H-32	Aqueous	-02D	05/14/19 08:25 AM	1LHDPEHNO3		1				02
H-32	Aqueous	-02E	05/14/19 08:25 AM	1LHDPEHNO3	1					1
H-27	Aqueous	-03D	05/14/19 09:40 AM	1LHDPEHNO3		1				03
H-27	Aqueous	-03E	05/14/19 09:40 AM	1LHDPEHNO3	1					1
H-29	Aqueous	-04D	05/14/19 11:25 AM	1LHDPEHNO3		1				04
H-29	Aqueous	-04E	05/14/19 11:25 AM	1LHDPEHNO3	1					1
H-28	Aqueous	-05D	05/14/19 12:30 PM	1LHDPEHNO3		1				05
H-28	Aqueous	-05E	05/14/19 12:30 PM	1LHDPEHNO3	1					1
H-26	Aqueous	-06D	05/14/19 02:25 PM	1LHDPEHNO3		1				06
H-26	Aqueous	-06E	05/14/19 02:25 PM	1LHDPEHNO3	1					1
H-33	Aqueous	-07D	05/14/19 03:30 PM	1LHDPEHNO3		1				07
H-33	Aqueous	-07E	05/14/19 03:30 PM	1LHDPEHNO3	1					

COMPLIANT

General Comments:
Please analyze these samples with Normal Tumaround Time.
Report RA-226, Ra-228 & Combined per Specs.
Quality Control Package Needed: Standard - NELAC Rad Test compliant
Email to cac@dhlanalytical.com & dupont@dhlanalytical.com

UPS
Rec: 14

	Date/Time		Date/Time
Relinquished by:	5/17/19 1700	Received by:	5/21/19 1010
Relinquished by:		Received by:	

RAD SCREEN: <0.5 mR/hr

pH adj @ 1511

May 30, 2019

Will Vienne
Golder
2201 Double Creek Dr #4004
Round Rock, Texas 78664
TEL: (512) 671-3434
FAX (512) 671-3446

Order No.: 1905167

RE: Luminant-MLSES Ash Ponds

Dear Will Vienne:

DHL Analytical, Inc. received 2 sample(s) on 5/15/2019 for the analyses presented in the following report.

There were no problems with the analyses and all data met requirements of NELAP except where noted in the Case Narrative. All non-NELAP methods will be identified accordingly in the case narrative and all estimated uncertainties of test results are within method or EPA specifications.

If you have any questions regarding these tests results, please feel free to call. Thank you for using DHL Analytical.

Sincerely,

John DuPont
General Manager

LUMINANT

This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211-19-24

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LUMINANT

DHL ANALYTICAL
2300 Double Creek Dr. ■ Round Rock, TX 78664
Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

Nº 86480 CHAIN-OF-CUSTODY

CLIENT: GOLDER
ADDRESS: 2201 DOUBLE CREEK DR, ROUND ROCK, TX 78664
PHONE: 512-671-3434 FAX/E-MAIL: 512-671-3446
DATA REPORTED TO: WILL VIENNE
ADDITIONAL REPORT COPIES TO:

DATE: 5-14-19 PAGE 1 OF 1
PO #: DHL WORK ORDER #: 1905167
PROJECT LOCATION OR NAME: LUMINANT - MLSES ASH PONDS
CLENT PROJECT #: 19122262-C COLLECTOR: J. BRAFFORD

Authorize 5% surcharge for TRRP Report? ❑ Yes ❑ No

S=SOIL W=WATER A=AIR L=LIQUID SE=SEDIMENT P=PAINT SL=SLUDGE O=OTHER SO=SOLID

PRESERVATION: HCl | HNO_3 | H_2SO_4 ❑ NaOH ❑ | ICE | UNPRESERVED

ANALYSES: BTEX ❑ MTBE ❑ [METHOD 8021] | TPH 1005 ❑ TPH 1006 ❑ HOLD 1006 ❑ | GRO [METHOD 8015] ❑ DRO [METHOD 8105] ❑ | VOC 8260 ❑ VOC 624 ❑ VOC 8260/5035 ❑ | SVOC 8270 ❑ PAH 8270 ❑ HOLD PAH ❑ SVOC 625 ❑ | 8270 PEST ❑ 625 PEST/PCB ❑ 608 PCB ❑ 8270 PCB ❑ | 8270 O-P PEST ❑ 8082 PCB ❑ T PHOS, AMMONIA ❑ | 8321 HERB ❑ T PHOS, AMMONIA 2008 ❑ DISS. METALS ❑ | METALS 6020 ❑ METALS 2008 ❑ DISS. METALS ❑ | RCRA ❑ TX11 ❑ _____ ❑ | PH ❑ HEX CHROM ❑ ALKALINITY ❑ COD ❑ | CHLORIDE ❑ ANIONS _____ ❑ | TCLP-SVOC ❑ VOC ❑ PEST ❑ HERB ❑ | TCLP-METALS ❑ RCRA 8 ❑ TX-11 ❑ Pb ❑ | RCI ❑ FLASHPOINT ❑ DGAS ❑ | TDS ❑ TSS ❑ % MOISTURE ❑ CYANIDE ❑ | APPENDIX III ETV | ALK, NO3, PO4, Na, Mg, K | FERROUS & FERRIC IRON

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	HCl	HNO_3	H_2SO_4 ❑ NaOH ❑	ICE	UNPRESERVED	ANALYSES	FIELD NOTES
LAKE SAMPLE	01	5-14-19	1005	W		7	~~X~~	X		X		X X X	
POND SAMPLE	02	5-14-19	1020	W		7	~~X~~	X		X		X X X	

LUMINANT

RELINQUISHED BY: (Signature) DATE/TIME 5-14-19 1800 RECEIVED BY: (Signature) FedEx
RELINQUISHED BY: (Signature) DATE/TIME 5/15/19 0943 RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature) DATE/TIME RECEIVED BY: (Signature)

❑ DHL DISPOSAL @ $5.00 each ❑ Return

TURN AROUND TIME
RUSH ❑ CALL FIRST
1 DAY ❑ CALL FIRST
2 DAY ❑
NORMAL ☒
OTHER ❑ _____

LABORATORY USE ONLY:
RECEIVING TEMP: 4.5 °C THERM #: 78
CUSTODY SEALS: ❑ BROKEN ❑ INTACT ☒ NOT USED
CARRIER: ❑ LONE STAR ☒ FEDEX ❑ UPS ❑ OTHER
❑ COURIER DELIVERY
❑ HAND DELIVERED

DHL COC Rev 1 | FEB 2010

APPROVED Revision 2 January 27, 2024

Eric Lau

From: John DuPont
Sent: Tuesday, May 28, 2019 11:35 AM
To: Eric Lau
Subject: FW: CCR Analysis

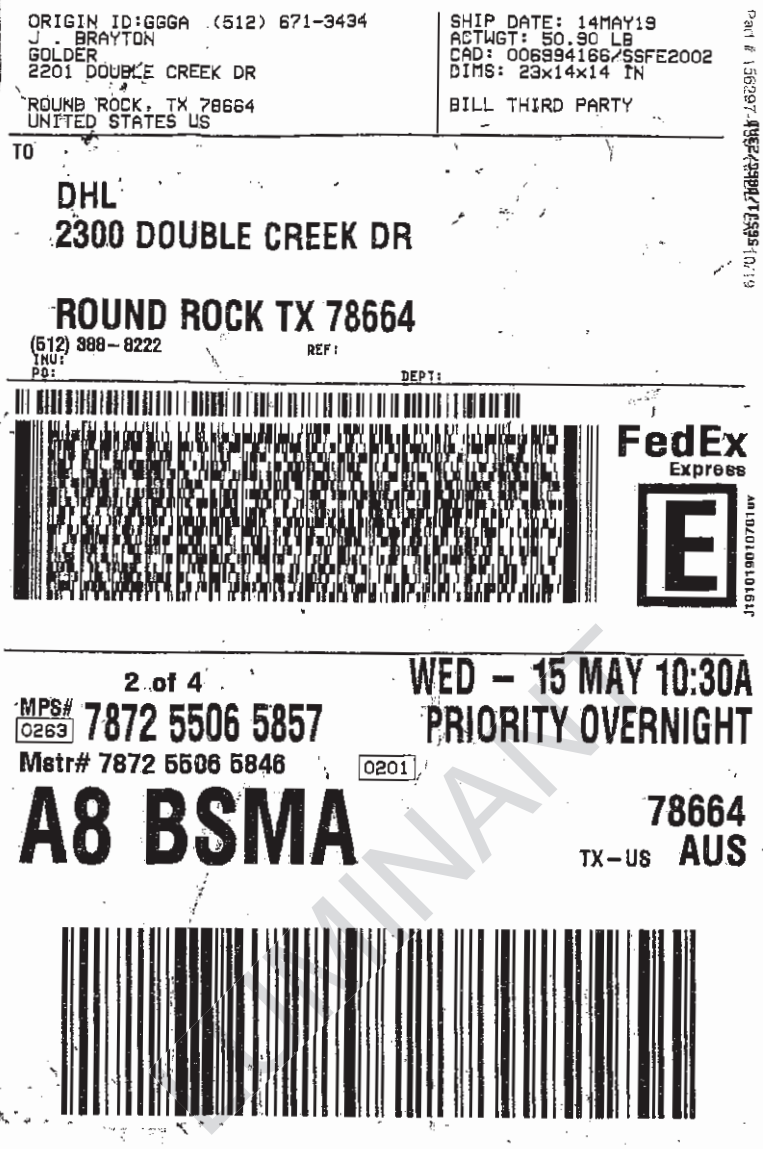
Appendix III Parameters:
Metals (Ca and B)
Anions (Cl, F, and SO4)
TDS

Appendix IV Parameters:

Metals (As, Ba, Be, Cd, Co, Cr, Hg, Li, Mo, Pb, Sb, Se, and Tl)
Ra-226
Ra-228

From: Vienne, Will [mailto:William_Vienne@golder.com]
Sent: Tuesday, April 09, 2019 12:48 PM
To: John DuPont <dupont@dhlanalytical.com>
Subject: CCR Analysis

LUMINANT



ORIGIN ID:GGGA (512) 671-3434
J . BRAYTON
GOLDER
2201 DOUBLE CREEK DR

ROUND ROCK, TX 78664
UNITED STATES US

SHIP DATE: 14MAY19
ACTWGT: 50.90 LB
CAD: 006994166/SSFE2002
DIMS: 23x14x14 IN

BILL THIRD PARTY

TO

DHL
2300 DOUBLE CREEK DR

ROUND ROCK TX 78664
(512) 388-8222 REF:
INV:
PO: DEPT:

FedEx
Express

2 of 4
MPS# 0263 7872 5506 5857
Mstr# 7872 5506 5846 0201

WED - 15 MAY 10:30A
PRIORITY OVERNIGHT

A8 BSMA

78664
TX-US AUS

ORIGINAL

DHL Analytical, Inc.

Sample Receipt Checklist

Client Name Golder | Date Received: 5/15/2019

Work Order Number 1905167 | Received by EL

Checklist completed by: _____ (Signature) 5/15/2019 (Date) | Reviewed by DL (Initials) 5/15/2019 (Date)

Carrier name FedEx 1day

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	4.5 °C
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH<2 acceptable upon receipt?	Yes ☑	No ☐	NA ☐ LOT # 11837
	Adjusted? no		Checked by EL
Water - ph>9 (S) or ph>10 (CN) acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted? _____		Checked by _____

LUMINANT

Any No response must be detailed in the comments section below.

Client contacted _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments: _____

Corrective Action _____

DHL Analytical, Inc. **Date:** *30-May-19*

CLIENT: Golder
Project: Luminant-MLSES Ash Ponds
Lab Order: 1905167

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Method SW6020A - Metals Analysis
Method SW7470A - Mercury Analysis
Method E300 - Anions Analysis
Method M2320 B - Alkalinity Analysis
Method M3500-Fe D - Ferrous Iron Analysis (this parameter is not NELAP certified)
Method M3500-Fe D - Ferric Iron (calculation) (this calculation is not NELAP certified).
Method M4500-P E - Orthophosphate Analysis
Method M2540C - TDS Analysis
Sub-contract - Radium-228 and Radium-226 analyses by methods E904 and SM 7500 Ra B M. Analyzed at Pace Analytical.

LUMINANT

LOG IN

The samples were received and log-in performed on 5/15/19. A total of 2 samples were received. The samples arrived in good condition and were properly packaged.

METALS ANALYSIS

For Metals analysis performed on 5/21/19 the matrix spike and matrix spike duplicate recoveries were below control limits for Calcium and Sodium. These are flagged accordingly in the QC summary report. The sample selected for the matrix spike and matrix spike duplicate was not from this work order. The LCS was within control limits for these analytes. No further corrective actions were taken.

For Metals analysis performed on 5/21/19 the RPD for the serial dilution was slightly above control limits for Potassium. This is flagged accordingly. The PDS was within control limits for this analyte. No further corrective actions were taken.

For Metals analysis performed on 5/21/19 the PDS recovery was out of control limits for three analytes. These are flagged accordingly. The serial dilution was within control limits for these analytes. No further corrective actions were taken.

For Metals analysis peformed on 5/21/19 three LCVLs were out of control limits for Potassium and/or Sodium. These are flagged accordingly. The associated CCVs were within control limits for these analytes. No further corrective actions were taken.

ANIONS ANALYSIS

CLIENT:	Golder
Project:	Luminant-MLSES Ash Ponds
Lab Order:	1905167

CASE NARRATIVE

For Anions analysis performed on 5/15/19 (batch 90908) the matrix spike and matrix spike duplicate recoveries (1905167-02 MS/MSD) were out of control limits for Chloride and Sulfate. These are flagged accordingly in the QC summary report. The sample selected for the matrix spike and matrix spike duplicate was from this work order. The LCS was within control limits for these analytes. No further corrective actions were taken.

LUMINANT

DHL Analytical, Inc.

Date: *30-May-19*

CLIENT: Golder
Project: Luminant-MLSES Ash Ponds
Lab Order: 1905167

Work Order Sample Summary

Lab Smp ID	Client Sample ID	Tag Number	Date Collected	Date Recved
1905167-01	Lake Sample		05/14/19 10:05 AM	5/15/2019
1905167-02	Pond Sample		05/14/19 10:20 AM	5/15/2019

LUMINANT

DHL Analytical, Inc.

30-May-19

Lab Order: 1905167
Client: Golder
Project: Luminant-MLSES Ash Ponds

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1905167-01A	Lake Sample	05/14/19 10:05 AM	Aqueous	M3500-Fe	Ferrous Iron Prep Water	05/20/19 02:56 PM	91002
1905167-01B	Lake Sample	05/14/19 10:05 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/20/19 09:34 AM	90990
	Lake Sample	05/14/19 10:05 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/20/19 09:34 AM	90990
	Lake Sample	05/14/19 10:05 AM	Aqueous	SW7470A	Mercury Aq Prep	05/21/19 09:56 AM	91017
1905167-01C	Lake Sample	05/14/19 10:05 AM	Aqueous	M2320 B	Alkalinity Preparation	05/16/19 10:12 AM	90940
	Lake Sample	05/14/19 10:05 AM	Aqueous	E300	Anion Preparation	05/15/19 09:07 AM	90908
	Lake Sample	05/14/19 10:05 AM	Aqueous	E300	Anion Preparation	05/15/19 09:07 AM	90908
	Lake Sample	05/14/19 10:05 AM	Aqueous	M4500-P E	Orthophosphate Prep	05/15/19 12:12 PM	90921
	Lake Sample	05/14/19 10:05 AM	Aqueous	M2540C	TDS Preparation	05/16/19 03:23 PM	90953
1905167-02A	Pond Sample	05/14/19 10:20 AM	Aqueous	M3500-Fe	Ferrous Iron Prep Water	05/20/19 02:56 PM	91002
1905167-02B	Pond Sample	05/14/19 10:20 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/20/19 09:34 AM	90990
	Pond Sample	05/14/19 10:20 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/20/19 09:34 AM	90990
	Pond Sample	05/14/19 10:20 AM	Aqueous	SW7470A	Mercury Aq Prep	05/21/19 09:56 AM	91017
1905167-02C	Pond Sample	05/14/19 10:20 AM	Aqueous	M2320 B	Alkalinity Preparation	05/16/19 10:12 AM	90940
	Pond Sample	05/14/19 10:20 AM	Aqueous	E300	Anion Preparation	05/15/19 09:07 AM	90908
	Pond Sample	05/14/19 10:20 AM	Aqueous	E300	Anion Preparation	05/15/19 09:07 AM	90908
	Pond Sample	05/14/19 10:20 AM	Aqueous	E300	Anion Preparation	05/16/19 09:16 AM	90935
	Pond Sample	05/14/19 10:20 AM	Aqueous	M4500-P E	Orthophosphate Prep	05/15/19 12:12 PM	90921
	Pond Sample	05/14/19 10:20 AM	Aqueous	M2540C	TDS Preparation	05/16/19 03:23 PM	90953

LUMINANT

DHL Analytical, Inc. *30-May-19*

Lab Order: 1905167
Client: Golder
Project: Luminant-MLSES Ash Ponds

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1905167-01A	Lake Sample	Aqueous	M3500-Fe D	Ferric Iron (Calculated)	91002	1	05/24/19	UV/VIS_2_190524A
	Lake Sample	Aqueous	M3500-Fe D	Ferrous Iron	91002	1	05/20/19 03:54 PM	UV/VIS_2_190520A
1905167-01B	Lake Sample	Aqueous	SW7470A	Mercury Total: Aqueous	91017	1	05/22/19 10:11 AM	CETAC2_HG_190522A
	Lake Sample	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	90990	1	05/22/19 12:01 PM	ICP-MS4_190522B
	Lake Sample	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	90990	1	05/21/19 03:24 PM	ICP-MS5_190521A
1905167-01C	Lake Sample	Aqueous	M2320 B	Alkalinity	90940	1	05/16/19 04:05 PM	TITRATOR_190516A
	Lake Sample	Aqueous	E300	Anions by IC method - Water	90908	10	05/15/19 12:51 PM	IC2_190515A
	Lake Sample	Aqueous	E300	Anions by IC method - Water	90908	1	05/15/19 05:23 PM	IC2_190515A
	Lake Sample	Aqueous	M4500-P E	Orthophosphate	90921	1	05/15/19 02:47 PM	UV/VIS_2_190515B
	Lake Sample	Aqueous	M2540C	Total Dissolved Solids	90953	1	05/17/19 11:40 AM	WC_190517D
1905167-02A	Pond Sample	Aqueous	M3500-Fe D	Ferric Iron (Calculated)	91002	1	05/24/19	UV/VIS_2_190524A
	Pond Sample	Aqueous	M3500-Fe D	Ferrous Iron	91002	1	05/20/19 03:54 PM	UV/VIS_2_190520A
1905167-02B	Pond Sample	Aqueous	SW7470A	Mercury Total: Aqueous	91017	1	05/22/19 10:13 AM	CETAC2_HG_190522A
	Pond Sample	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	90990	100	05/22/19 12:03 PM	ICP-MS4_190522B
	Pond Sample	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	90990	1	05/21/19 03:26 PM	ICP-MS5_190521A
1905167-02C	Pond Sample	Aqueous	M2320 B	Alkalinity	90940	1	05/16/19 04:08 PM	TITRATOR_190516A
	Pond Sample	Aqueous	E300	Anions by IC method - Water	90908	10	05/15/19 01:39 PM	IC2_190515A
	Pond Sample	Aqueous	E300	Anions by IC method - Water	90908	1	05/15/19 05:39 PM	IC2_190515A
	Pond Sample	Aqueous	E300	Anions by IC method - Water	90935	100	05/16/19 04:54 PM	IC4_190516A
	Pond Sample	Aqueous	M4500-P E	Orthophosphate	90921	1	05/15/19 02:47 PM	UV/VIS_2_190515B
	Pond Sample	Aqueous	M2540C	Total Dissolved Solids	90953	1	05/17/19 11:40 AM	WC_190517D

LUMINANT

DHL Analytical, Inc.

Date: *30-May-19*

CLIENT:	Golder	**Client Sample ID:**	Lake Sample
Project:	Luminant-MLSES Ash Ponds	**Lab ID:**	1905167-01
Project No:	19122262-C	**Collection Date:**	05/14/19 10:05 AM
Lab Order:	1905167	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	05/21/19 03:24 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	05/21/19 03:24 PM
Barium	0.0535	0.00300	0.0100		mg/L	1	05/21/19 03:24 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	05/21/19 03:24 PM
Boron	0.0632	0.0100	0.0300		mg/L	1	05/22/19 12:01 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	05/21/19 03:24 PM
Calcium	12.5	0.100	0.300		mg/L	1	05/21/19 03:24 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	05/21/19 03:24 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	05/21/19 03:24 PM
Iron	0.365	0.0300	0.100		mg/L	1	05/21/19 03:24 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	05/21/19 03:24 PM
Lithium	<0.00500	0.00500	0.0100		mg/L	1	05/21/19 03:24 PM
Magnesium	6.09	0.100	0.300		mg/L	1	05/21/19 03:24 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	05/21/19 03:24 PM
Potassium	2.56	0.100	0.300		mg/L	1	05/21/19 03:24 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	05/21/19 03:24 PM
Sodium	11.9	0.100	0.300		mg/L	1	05/21/19 03:24 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	05/21/19 03:24 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	05/22/19 10:11 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **JL**
Chloride	12.2	0.300	1.00		mg/L	1	05/15/19 05:23 PM
Fluoride	0.140	0.100	0.400	J	mg/L	1	05/15/19 05:23 PM
Nitrate-N	<0.100	0.100	0.500		mg/L	1	05/15/19 05:23 PM
Sulfate	37.3	1.00	3.00		mg/L	1	05/15/19 05:23 PM
ALKALINITY		**M2320 B**					Analyst: **CC**
Alkalinity, Bicarbonate (As CaCO3)	55.4	10.0	20.0		mg/L @ pH 4.5	1	05/16/19 04:05 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.5	1	05/16/19 04:05 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.5	1	05/16/19 04:05 PM
Alkalinity, Total (As CaCO3)	55.4	20.0	20.0		mg/L @ pH 4.5	1	05/16/19 04:05 PM
FERRIC IRON (CALCULATED)		**M3500-FE D**					Analyst: **CAC**
Iron, Ferric	0.365	0.0500	0.100	N	mg/L	1	05/24/19
FERROUS IRON		**M3500-FE D**					Analyst: **BTJ**
Iron, Ferrous	<0.0500	0.0500	0.100	N	mg/L	1	05/20/19 03:54 PM

LUMINANT

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *30-May-19*

CLIENT:	Golder	**Client Sample ID:**	Lake Sample
Project:	Luminant-MLSES Ash Ponds	**Lab ID:**	1905167-01
Project No:	19122262-C	**Collection Date:**	05/14/19 10:05 AM
Lab Order:	1905167	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
ORTHOPHOSPHATE		**M4500-P E**					Analyst: **CC**
Phosphorus, Total Orthophosphate (As P)	<0.0300	0.0300	0.100		mg/L	1	05/15/19 02:47 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	119	10.0	10.0		mg/L	1	05/17/19 11:40 AM

LUMINANT

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
	DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit
	ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
	S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *30-May-19*

CLIENT:	Golder	**Client Sample ID:**	Pond Sample
Project:	Luminant-MLSES Ash Ponds	**Lab ID:**	1905167-02
Project No:	19122262-C	**Collection Date:**	05/14/19 10:20 AM
Lab Order:	1905167	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	0.00199	0.000800	0.00250	J	mg/L	1	05/21/19 03:26 PM
Arsenic	0.00305	0.00200	0.00500	J	mg/L	1	05/21/19 03:26 PM
Barium	0.0589	0.00300	0.0100		mg/L	1	05/21/19 03:26 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	05/21/19 03:26 PM
Boron	28.2	1.00	3.00		mg/L	100	05/22/19 12:03 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	05/21/19 03:26 PM
Calcium	319	10.0	30.0		mg/L	100	05/22/19 12:03 PM
Chromium	0.00336	0.00200	0.00500	J	mg/L	1	05/21/19 03:26 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	05/21/19 03:26 PM
Iron	<0.0300	0.0300	0.100		mg/L	1	05/21/19 03:26 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	05/21/19 03:26 PM
Lithium	0.119	0.00500	0.0100		mg/L	1	05/21/19 03:26 PM
Magnesium	553	10.0	30.0		mg/L	100	05/22/19 12:03 PM
Molybdenum	0.0550	0.00200	0.00500		mg/L	1	05/21/19 03:26 PM
Potassium	34.6	10.0	30.0		mg/L	100	05/22/19 12:03 PM
Selenium	2.96	0.200	0.500		mg/L	100	05/22/19 12:03 PM
Sodium	240	10.0	30.0		mg/L	100	05/22/19 12:03 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	05/21/19 03:26 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	0.000119	0.0000800	0.000200	J	mg/L	1	05/22/19 10:13 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **JL**
Chloride	513	30.0	100		mg/L	100	05/16/19 04:54 PM
Fluoride	24.3	1.00	4.00		mg/L	10	05/15/19 01:39 PM
Nitrate-N	11.1	0.100	0.500		mg/L	1	05/15/19 05:39 PM
Sulfate	2900	100	300		mg/L	100	05/16/19 04:54 PM
ALKALINITY		**M2320 B**					Analyst: **CC**
Alkalinity, Bicarbonate (As CaCO3)	79.1	10.0	20.0		mg/L @ pH 4.52	1	05/16/19 04:08 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.52	1	05/16/19 04:08 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.52	1	05/16/19 04:08 PM
Alkalinity, Total (As CaCO3)	79.1	20.0	20.0		mg/L @ pH 4.52	1	05/16/19 04:08 PM
FERRIC IRON (CALCULATED)		**M3500-FE D**					Analyst: **CAC**
Iron, Ferric	<0.0500	0.0500	0.100	N	mg/L	1	05/24/19
FERROUS IRON		**M3500-FE D**					Analyst: **BTJ**
Iron, Ferrous	<0.0500	0.0500	0.100	N	mg/L	1	05/20/19 03:54 PM

LUMINANT

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *30-May-19*

CLIENT:	Golder	**Client Sample ID:**	Pond Sample
Project:	Luminant-MLSES Ash Ponds	**Lab ID:**	1905167-02
Project No:	19122262-C	**Collection Date:**	05/14/19 10:20 AM
Lab Order:	1905167	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
ORTHOPHOSPHATE		**M4500-P E**					Analyst: **CC**
Phosphorus, Total Orthophosphate (As P)	<0.0300	0.0300	0.100		mg/L	1	05/15/19 02:47 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	5380	50.0	50.0		mg/L	1	05/17/19 11:40 AM

LUMINANT

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
	DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit
	ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
	S	Spike Recovery outside control limits	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905167
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_190522A

The QC data in batch 91017 applies to the following samples: 1905167-01B, 1905167-02B

Sample ID	**MB-91017**	Batch ID:	**91017**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**CETAC2_HG_190522A**	Analysis Date:	**5/22/2019 10:02:31 AM**	Prep Date:	**5/21/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.0000800	0.000200								

Sample ID	**LCS-91017**	Batch ID:	**91017**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**CETAC2_HG_190522A**	Analysis Date:	**5/22/2019 10:04:46 AM**	Prep Date:	**5/21/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00187	0.000200	0.00200	0	93.5	85	115			

Sample ID	**LCSD-91017**	Batch ID:	**91017**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**LCSD**	Run ID:	**CETAC2_HG_190522A**	Analysis Date:	**5/22/2019 10:07:02 AM**	Prep Date:	**5/21/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00186	0.000200	0.00200	0	93.0	85	115	0.536	15	

Sample ID	**1905168-01B MS**	Batch ID:	**91017**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**MS**	Run ID:	**CETAC2_HG_190522A**	Analysis Date:	**5/22/2019 11:23:23 AM**	Prep Date:	**5/21/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00196	0.00100	0.00200	0	97.8	80	120			

Sample ID	**1905168-01B MSD**	Batch ID:	**91017**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**MSD**	Run ID:	**CETAC2_HG_190522A**	Analysis Date:	**5/22/2019 11:25:39 AM**	Prep Date:	**5/21/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00194	0.00100	0.00200	0	97.0	80	120	0.770	15	

Sample ID	**1905168-01B SD**	Batch ID:	**91017**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**SD**	Run ID:	**CETAC2_HG_190522A**	Analysis Date:	**5/22/2019 11:27:56 AM**	Prep Date:	**5/21/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.00200	0.00500	0	0				0	10	

Sample ID	**1905168-01B PDS**	Batch ID:	**91017**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**PDS**	Run ID:	**CETAC2_HG_190522A**	Analysis Date:	**5/22/2019 11:30:13 AM**	Prep Date:	**5/21/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0122	0.00100	0.0125	0	97.6	85	115			

LUMINANT

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905167
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_190522A

Sample ID **ICV-190522**	Batch ID: **R104223**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **ICV**	Run ID: **CETAC2_HG_190522A**	Analysis Date: **5/22/2019 9:57:56 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00383	0.000200	0.00400	0	95.8	90	110			

Sample ID **CCV1-190522**	Batch ID: **R104223**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_190522A**	Analysis Date: **5/22/2019 10:41:04 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00202	0.000200	0.00200	0	101	90	110			

Sample ID **CCV2-190522**	Batch ID: **R104223**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_190522A**	Analysis Date: **5/22/2019 11:08:23 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00203	0.000200	0.00200	0	102	90	110			

Sample ID **CCV3-190522**	Batch ID: **R104223**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_190522A**	Analysis Date: **5/22/2019 2:51:11 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00203	0.000200	0.00200	0	102	90	110			

LUMINANT

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905167
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190522B

The QC data in batch 90990 applies to the following samples: 1905167-01B, 1905167-02B

Sample ID	MB-90990	Batch ID:	90990	TestNo:	SW6020A	Units:	mg/L
SampType:	MBLK	Run ID:	ICP-MS4_190522B	Analysis Date:	5/22/2019 11:49:00 AM	Prep Date:	5/20/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	<0.0100	0.0300								

Sample ID	LCS-90990	Batch ID:	90990	TestNo:	SW6020A	Units:	mg/L
SampType:	LCS	Run ID:	ICP-MS4_190522B	Analysis Date:	5/22/2019 11:51:00 AM	Prep Date:	5/20/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.203	0.0300	0.200	0	102	80	120			

Sample ID	LCSD-90990	Batch ID:	90990	TestNo:	SW6020A	Units:	mg/L
SampType:	LCSD	Run ID:	ICP-MS4_190522B	Analysis Date:	5/22/2019 11:53:00 AM	Prep Date:	5/20/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.202	0.0300	0.200	0	101	80	120	0.579	15	

Sample ID	1905218-06A SD	Batch ID:	90990	TestNo:	SW6020A	Units:	mg/L
SampType:	SD	Run ID:	ICP-MS4_190522B	Analysis Date:	5/22/2019 11:59:00 AM	Prep Date:	5/20/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.103	0.150	0	0.0953				7.85	10	

Sample ID	1905218-06A PDS	Batch ID:	90990	TestNo:	SW6020A	Units:	mg/L
SampType:	PDS	Run ID:	ICP-MS4_190522B	Analysis Date:	5/22/2019 12:23:00 PM	Prep Date:	5/20/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.277	0.0300	0.200	0.0953	91.1	80	120			

Sample ID	1905218-06A MS	Batch ID:	90990	TestNo:	SW6020A	Units:	mg/L
SampType:	MS	Run ID:	ICP-MS4_190522B	Analysis Date:	5/22/2019 12:25:00 PM	Prep Date:	5/20/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.288	0.0300	0.200	0.0953	96.1	80	120			

Sample ID	1905218-06A MSD	Batch ID:	90990	TestNo:	SW6020A	Units:	mg/L
SampType:	MSD	Run ID:	ICP-MS4_190522B	Analysis Date:	5/22/2019 12:27:00 PM	Prep Date:	5/20/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.282	0.0300	0.200	0.0953	93.3	80	120	2.01	15	

LUMINANT

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905167
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190522B

Sample ID	ICV-190522	Batch ID:	R104220	TestNo:	SW6020A	Units:	mg/L
SampType:	ICV	Run ID:	ICP-MS4_190522B	Analysis Date:	5/22/2019 11:38:00 AM	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.104	0.0300	0.100	0	104	90	110			
Calcium	2.35	0.300	2.50	0	94.2	90	110			
Magnesium	2.45	0.300	2.50	0	98.2	90	110			
Potassium	2.52	0.300	2.50	0	101	90	110			
Selenium	0.102	0.00500	0.100	0	102	90	110			
Sodium	2.53	0.300	2.50	0	101	90	110			

Sample ID	LCVL-190522	Batch ID:	R104220	TestNo:	SW6020A	Units:	mg/L
SampType:	LCVL	Run ID:	ICP-MS4_190522B	Analysis Date:	5/22/2019 11:43:00 AM	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0197	0.0300	0.0200	0	98.5	70	130			
Calcium	0.0981	0.300	0.100	0	98.1	70	130			
Magnesium	0.0967	0.300	0.100	0	96.7	70	130			
Potassium	0.0964	0.300	0.100	0	96.4	70	130			
Selenium	0.00494	0.00500	0.00500	0	98.8	70	130			
Sodium	0.0966	0.300	0.100	0	96.6	70	130			

Sample ID	CCV1-190522	Batch ID:	R104220	TestNo:	SW6020A	Units:	mg/L
SampType:	CCV	Run ID:	ICP-MS4_190522B	Analysis Date:	5/22/2019 12:33:00 PM	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.210	0.0300	0.200	0	105	90	110			
Calcium	4.65	0.300	5.00	0	92.9	90	110			
Magnesium	5.05	0.300	5.00	0	101	90	110			
Potassium	5.15	0.300	5.00	0	103	90	110			
Selenium	0.215	0.00500	0.200	0	107	90	110			
Sodium	5.08	0.300	5.00	0	102	90	110			

Sample ID	LCVL1-190522	Batch ID:	R104220	TestNo:	SW6020A	Units:	mg/L
SampType:	LCVL	Run ID:	ICP-MS4_190522B	Analysis Date:	5/22/2019 12:38:00 PM	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0203	0.0300	0.0200	0	102	70	130			
Calcium	0.0876	0.300	0.100	0	87.6	70	130			
Magnesium	0.0970	0.300	0.100	0	97.0	70	130			
Potassium	0.0932	0.300	0.100	0	93.2	70	130			
Selenium	0.00547	0.00500	0.00500	0	109	70	130			
Sodium	0.102	0.300	0.100	0	102	70	130			

LUMINANT

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905167
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190521A

The QC data in batch 90990 applies to the following samples: 1905167-01B, 1905167-02B

Sample ID **MB-90990** Batch ID: **90990** TestNo: **SW6020A** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS5_190521A** Analysis Date: **5/21/2019 3:11:00 PM** Prep Date: **5/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.000800	0.00250								
Arsenic	<0.00200	0.00500								
Barium	<0.00300	0.0100								
Beryllium	<0.000300	0.00100								
Cadmium	<0.000300	0.00100								
Calcium	<0.100	0.300								
Chromium	<0.00200	0.00500								
Cobalt	<0.00300	0.00500								
Iron	<0.0300	0.100								
Lead	<0.000300	0.00100								
Lithium	<0.00500	0.0100								
Magnesium	<0.100	0.300								
Molybdenum	<0.00200	0.00500								
Potassium	<0.100	0.300								
Selenium	<0.00200	0.00500								
Sodium	<0.100	0.300								
Thallium	<0.000500	0.00150								

Sample ID **LCS-90990** Batch ID: **90990** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS5_190521A** Analysis Date: **5/21/2019 3:13:00 PM** Prep Date: **5/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.209	0.00250	0.200	0	104	80	120			
Arsenic	0.208	0.00500	0.200	0	104	80	120			
Barium	0.208	0.0100	0.200	0	104	80	120			
Beryllium	0.200	0.00100	0.200	0	99.8	80	120			
Cadmium	0.211	0.00100	0.200	0	105	80	120			
Calcium	5.18	0.300	5.00	0	104	80	120			
Chromium	0.209	0.00500	0.200	0	105	80	120			
Cobalt	0.216	0.00500	0.200	0	108	80	120			
Iron	5.40	0.100	5.00	0	108	80	120			
Lead	0.203	0.00100	0.200	0	101	80	120			
Lithium	0.214	0.0100	0.200	0	107	80	120			
Magnesium	5.35	0.300	5.00	0	107	80	120			
Molybdenum	0.204	0.00500	0.200	0	102	80	120			
Potassium	4.99	0.300	5.00	0	99.9	80	120			
Selenium	0.208	0.00500	0.200	0	104	80	120			
Sodium	5.38	0.300	5.00	0	108	80	120			
Thallium	0.200	0.00150	0.200	0	100	80	120			

LUMINANT

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905167
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190521A

Sample ID **LCSD-90990**	Batch ID: **90990**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCSD**	Run ID: **ICP-MS5_190521A**	Analysis Date: **5/21/2019 3:15:00 PM**	Prep Date: **5/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.209	0.00250	0.200	0	105	80	120	0.307	15	
Arsenic	0.207	0.00500	0.200	0	104	80	120	0.318	15	
Barium	0.207	0.0100	0.200	0	103	80	120	0.392	15	
Beryllium	0.198	0.00100	0.200	0	99.0	80	120	0.810	15	
Cadmium	0.211	0.00100	0.200	0	105	80	120	0.119	15	
Calcium	5.16	0.300	5.00	0	103	80	120	0.293	15	
Chromium	0.209	0.00500	0.200	0	105	80	120	0.129	15	
Cobalt	0.215	0.00500	0.200	0	108	80	120	0.352	15	
Iron	5.41	0.100	5.00	0	108	80	120	0.077	15	
Lead	0.204	0.00100	0.200	0	102	80	120	0.722	15	
Lithium	0.211	0.0100	0.200	0	105	80	120	1.44	15	
Magnesium	5.37	0.300	5.00	0	107	80	120	0.251	15	
Molybdenum	0.202	0.00500	0.200	0	101	80	120	0.822	15	
Potassium	5.00	0.300	5.00	0	100	80	120	0.175	15	
Selenium	0.208	0.00500	0.200	0	104	80	120	0.274	15	
Sodium	5.38	0.300	5.00	0	108	80	120	0.080	15	
Thallium	0.202	0.00150	0.200	0	101	80	120	0.737	15	

Sample ID **1905218-06A SD**	Batch ID: **90990**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS5_190521A**	Analysis Date: **5/21/2019 3:22:00 PM**	Prep Date: **5/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.00400	0.0125	0	0				0	10	
Arsenic	<0.0100	0.0250	0	0				0	10	
Barium	0.0519	0.0500	0	0.0510				1.62	10	
Beryllium	<0.00150	0.00500	0	0				0	10	
Cadmium	<0.00150	0.00500	0	0				0	10	
Calcium	23.9	1.50	0	23.8				0.464	10	
Chromium	<0.0100	0.0250	0	0				0	10	
Cobalt	<0.0150	0.0250	0	0				0	10	
Iron	0.185	0.500	0	0.186				0.629	10	
Lead	<0.00150	0.00500	0	0				0	10	
Lithium	0.0477	0.0500	0	0.0462				3.27	10	
Magnesium	12.2	1.50	0	12.2				0.282	10	
Molybdenum	<0.0100	0.0250	0	0				0	10	
Potassium	1.83	1.50	0	2.08				12.6	10	R
Selenium	<0.0100	0.0250	0	0				0	10	
Sodium	53.2	1.50	0	51.9				2.54	10	
Thallium	<0.00250	0.00750	0	0				0	10	

LUMINANT

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905167
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190521A

Sample ID **1905218-06A PDS**	Batch ID: **90990**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS5_190521A**	Analysis Date: **5/21/2019 3:44:00 PM**	Prep Date: **5/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.192	0.00250	0.200	0	96.2	80	120			
Arsenic	0.183	0.00500	0.200	0	91.7	80	120			
Barium	0.237	0.0100	0.200	0.0510	92.9	80	120			
Beryllium	0.179	0.00100	0.200	0	89.3	80	120			
Cadmium	0.194	0.00100	0.200	0	97.0	80	120			
Calcium	26.2	0.300	5.00	23.8	48.1	80	120			S
Chromium	0.198	0.00500	0.200	0	98.8	80	120			
Cobalt	0.191	0.00500	0.200	0	95.6	80	120			
Iron	5.16	0.100	5.00	0.186	99.5	80	120			
Lead	0.190	0.00100	0.200	0	94.8	80	120			
Lithium	0.238	0.0100	0.200	0.0462	96.1	80	120			
Magnesium	15.8	0.300	5.00	12.2	72.5	80	120			S
Molybdenum	0.179	0.00500	0.200	0	89.4	80	120			
Potassium	6.49	0.300	5.00	2.08	88.3	80	120			
Selenium	0.178	0.00500	0.200	0	89.1	80	120			
Sodium	51.5	0.300	5.00	51.9	-7.46	80	120			S
Thallium	0.189	0.00150	0.200	0	94.5	80	120			

Sample ID **1905218-06A MS**	Batch ID: **90990**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS5_190521A**	Analysis Date: **5/21/2019 3:46:00 PM**	Prep Date: **5/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.196	0.00250	0.200	0	98.1	80	120			
Arsenic	0.189	0.00500	0.200	0	94.4	80	120			
Barium	0.244	0.0100	0.200	0.0510	96.3	80	120			
Beryllium	0.183	0.00100	0.200	0	91.6	80	120			
Cadmium	0.196	0.00100	0.200	0	98.0	80	120			
Calcium	27.3	0.300	5.00	23.8	69.1	80	120			S
Chromium	0.197	0.00500	0.200	0	98.5	80	120			
Cobalt	0.194	0.00500	0.200	0	96.9	80	120			
Iron	5.24	0.100	5.00	0.186	101	80	120			
Lead	0.193	0.00100	0.200	0	96.5	80	120			
Lithium	0.241	0.0100	0.200	0.0462	97.6	80	120			
Magnesium	16.6	0.300	5.00	12.2	89.7	80	120			
Molybdenum	0.189	0.00500	0.200	0	94.4	80	120			
Potassium	6.74	0.300	5.00	2.08	93.2	80	120			
Selenium	0.183	0.00500	0.200	0	91.3	80	120			
Sodium	53.9	0.300	5.00	51.9	39.6	80	120			S
Thallium	0.192	0.00150	0.200	0	95.8	80	120			

LUMINANT

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905167
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190521A

Sample ID **1905218-06A MSD** Batch ID: **90990** TestNo: **SW6020A** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS5_190521A** Analysis Date: **5/21/2019 3:49:00 PM** Prep Date: **5/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.199	0.00250	0.200	0	99.3	80	120	1.17	15	
Arsenic	0.189	0.00500	0.200	0	94.3	80	120	0.111	15	
Barium	0.246	0.0100	0.200	0.0510	97.3	80	120	0.778	15	
Beryllium	0.181	0.00100	0.200	0	90.4	80	120	1.36	15	
Cadmium	0.197	0.00100	0.200	0	98.7	80	120	0.775	15	
Calcium	27.4	0.300	5.00	23.8	72.7	80	120	0.665	15	S
Chromium	0.198	0.00500	0.200	0	99.1	80	120	0.607	15	
Cobalt	0.196	0.00500	0.200	0	97.8	80	120	0.893	15	
Iron	5.30	0.100	5.00	0.186	102	80	120	1.09	15	
Lead	0.192	0.00100	0.200	0	96.1	80	120	0.414	15	
Lithium	0.238	0.0100	0.200	0.0462	96.0	80	120	1.33	15	
Magnesium	16.8	0.300	5.00	12.2	92.6	80	120	0.883	15	
Molybdenum	0.191	0.00500	0.200	0	95.7	80	120	1.34	15	
Potassium	6.80	0.300	5.00	2.08	94.5	80	120	0.968	15	
Selenium	0.183	0.00500	0.200	0	91.7	80	120	0.351	15	
Sodium	54.6	0.300	5.00	51.9	54.2	80	120	1.35	15	S
Thallium	0.192	0.00150	0.200	0	96.0	80	120	0.248	15	

LUMINANT

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905167
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190521A

Sample ID **ICV-190521**	Batch ID: **R104204**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS5_190521A**	Analysis Date: **5/21/2019 12:10:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.102	0.00250	0.100	0	102	90	110			
Arsenic	0.103	0.00500	0.100	0	103	90	110			
Barium	0.0990	0.0100	0.100	0	99.0	90	110			
Beryllium	0.0972	0.00100	0.100	0	97.2	90	110			
Cadmium	0.102	0.00100	0.100	0	102	90	110			
Calcium	2.52	0.300	2.50	0	101	90	110			
Chromium	0.103	0.00500	0.100	0	103	90	110			
Cobalt	0.108	0.00500	0.100	0	108	90	110			
Iron	2.60	0.100	2.50	0	104	90	110			
Lead	0.0982	0.00100	0.100	0	98.2	90	110			
Lithium	0.103	0.0100	0.100	0	103	90	110			
Magnesium	2.49	0.300	2.50	0	99.7	90	110			
Molybdenum	0.0930	0.00500	0.100	0	93.0	90	110			
Potassium	2.38	0.300	2.50	0	95.3	90	110			
Selenium	0.104	0.00500	0.100	0	104	90	110			
Sodium	2.56	0.300	2.50	0	103	90	110			
Thallium	0.0977	0.00150	0.100	0	97.7	90	110			

Sample ID **LCVL-190521**	Batch ID: **R104204**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_190521A**	Analysis Date: **5/21/2019 12:15:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00183	0.00250	0.00200	0	91.4	70	130			
Arsenic	0.00504	0.00500	0.00500	0	101	70	130			
Barium	0.00459	0.0100	0.00500	0	91.8	70	130			
Beryllium	0.000968	0.00100	0.00100	0	96.8	70	130			
Cadmium	0.00106	0.00100	0.00100	0	106	70	130			
Calcium	0.104	0.300	0.100	0	104	70	130			
Chromium	0.00482	0.00500	0.00500	0	96.4	70	130			
Cobalt	0.00494	0.00500	0.00500	0	98.7	70	130			
Iron	0.0979	0.100	0.100	0	97.9	70	130			
Lead	0.000882	0.00100	0.00100	0	88.2	70	130			
Lithium	0.00996	0.0100	0.0100	0	99.6	70	130			
Magnesium	0.0983	0.300	0.100	0	98.3	70	130			
Molybdenum	0.00464	0.00500	0.00500	0	92.8	70	130			
Potassium	0.0691	0.300	0.100	0	69.1	70	130			S
Selenium	0.00633	0.00500	0.00500	0	127	70	130			
Sodium	0.0960	0.300	0.100	0	96.0	70	130			
Thallium	0.000944	0.00150	0.00100	0	94.4	70	130			

LUMINANT

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905167
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190521A

Sample ID **CCV4-190521**	Batch ID: **R104204**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_190521A**	Analysis Date: **5/21/2019 3:00:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.203	0.00250	0.200	0	101	90	110			
Arsenic	0.203	0.00500	0.200	0	102	90	110			
Barium	0.202	0.0100	0.200	0	101	90	110			
Beryllium	0.192	0.00100	0.200	0	95.9	90	110			
Cadmium	0.204	0.00100	0.200	0	102	90	110			
Calcium	4.96	0.300	5.00	0	99.3	90	110			
Chromium	0.203	0.00500	0.200	0	101	90	110			
Cobalt	0.213	0.00500	0.200	0	106	90	110			
Iron	5.15	0.100	5.00	0	103	90	110			
Lead	0.198	0.00100	0.200	0	98.8	90	110			
Lithium	0.205	0.0100	0.200	0	103	90	110			
Magnesium	5.15	0.300	5.00	0	103	90	110			
Molybdenum	0.199	0.00500	0.200	0	99.7	90	110			
Potassium	4.83	0.300	5.00	0	96.6	90	110			
Selenium	0.200	0.00500	0.200	0	100	90	110			
Sodium	5.26	0.300	5.00	0	105	90	110			
Thallium	0.197	0.00150	0.200	0	98.4	90	110			

Sample ID **LCVL4-190521**	Batch ID: **R104204**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_190521A**	Analysis Date: **5/21/2019 3:05:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00207	0.00250	0.00200	0	104	70	130			
Arsenic	0.00491	0.00500	0.00500	0	98.1	70	130			
Barium	0.00487	0.0100	0.00500	0	97.5	70	130			
Beryllium	0.000934	0.00100	0.00100	0	93.4	70	130			
Cadmium	0.00104	0.00100	0.00100	0	104	70	130			
Calcium	0.0913	0.300	0.100	0	91.3	70	130			
Chromium	0.00486	0.00500	0.00500	0	97.1	70	130			
Cobalt	0.00525	0.00500	0.00500	0	105	70	130			
Iron	0.101	0.100	0.100	0	101	70	130			
Lead	0.000868	0.00100	0.00100	0	86.8	70	130			
Lithium	0.0102	0.0100	0.0100	0	102	70	130			
Magnesium	0.104	0.300	0.100	0	104	70	130			
Molybdenum	0.00483	0.00500	0.00500	0	96.6	70	130			
Potassium	0.0524	0.300	0.100	0	52.4	70	130			S
Selenium	0.00506	0.00500	0.00500	0	101	70	130			
Sodium	0.144	0.300	0.100	0	144	70	130			S
Thallium	0.000962	0.00150	0.00100	0	96.2	70	130			

LUMINANT

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905167
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190521A

Sample ID **CCV5-190521**	Batch ID: **R104204**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_190521A**	Analysis Date: **5/21/2019 3:51:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.197	0.00250	0.200	0	98.5	90	110			
Arsenic	0.199	0.00500	0.200	0	99.7	90	110			
Barium	0.194	0.0100	0.200	0	96.8	90	110			
Beryllium	0.181	0.00100	0.200	0	90.6	90	110			
Cadmium	0.197	0.00100	0.200	0	98.4	90	110			
Calcium	4.83	0.300	5.00	0	96.7	90	110			
Chromium	0.199	0.00500	0.200	0	99.4	90	110			
Cobalt	0.207	0.00500	0.200	0	104	90	110			
Iron	5.09	0.100	5.00	0	102	90	110			
Lead	0.192	0.00100	0.200	0	96.2	90	110			
Lithium	0.198	0.0100	0.200	0	99.0	90	110			
Magnesium	5.01	0.300	5.00	0	100	90	110			
Molybdenum	0.192	0.00500	0.200	0	95.8	90	110			
Potassium	4.71	0.300	5.00	0	94.2	90	110			
Selenium	0.200	0.00500	0.200	0	99.8	90	110			
Sodium	5.09	0.300	5.00	0	102	90	110			
Thallium	0.192	0.00150	0.200	0	95.8	90	110			

Sample ID **LCVL5-190521**	Batch ID: **R104204**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_190521A**	Analysis Date: **5/21/2019 3:55:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00208	0.00250	0.00200	0	104	70	130			
Arsenic	0.00481	0.00500	0.00500	0	96.1	70	130			
Barium	0.00469	0.0100	0.00500	0	93.8	70	130			
Beryllium	0.000861	0.00100	0.00100	0	86.1	70	130			
Cadmium	0.000998	0.00100	0.00100	0	99.8	70	130			
Calcium	0.102	0.300	0.100	0	102	70	130			
Chromium	0.00463	0.00500	0.00500	0	92.5	70	130			
Cobalt	0.00508	0.00500	0.00500	0	102	70	130			
Iron	0.0987	0.100	0.100	0	98.7	70	130			
Lead	0.000837	0.00100	0.00100	0	83.7	70	130			
Lithium	0.00978	0.0100	0.0100	0	97.8	70	130			
Magnesium	0.0989	0.300	0.100	0	98.9	70	130			
Molybdenum	0.00479	0.00500	0.00500	0	95.8	70	130			
Potassium	0.0352	0.300	0.100	0	35.2	70	130			S
Selenium	0.00485	0.00500	0.00500	0	97.0	70	130			
Sodium	0.135	0.300	0.100	0	135	70	130			S
Thallium	0.000929	0.00150	0.00100	0	92.9	70	130			

LUMINANT

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905167
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_190515A

The QC data in batch 90908 applies to the following samples: 1905167-01C, 1905167-02C

Sample ID **MB-90908** Batch ID: **90908** TestNo: **E300** Units: **mg/L**
SampType: **MBLK** Run ID: **IC2_190515A** Analysis Date: **5/15/2019 10:10:50 AM** Prep Date: **5/15/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00								
Fluoride	<0.100	0.400								
Nitrate-N	<0.100	0.500								
Sulfate	<1.00	3.00								

Sample ID **LCS-90908** Batch ID: **90908** TestNo: **E300** Units: **mg/L**
SampType: **LCS** Run ID: **IC2_190515A** Analysis Date: **5/15/2019 10:26:50 AM** Prep Date: **5/15/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.1	1.00	10.00	0	101	90	110			
Fluoride	4.00	0.400	4.000	0	99.9	90	110			
Nitrate-N	5.09	0.500	5.000	0	102	90	110			
Sulfate	30.4	3.00	30.00	0	101	90	110			

Sample ID **LCSD-90908** Batch ID: **90908** TestNo: **E300** Units: **mg/L**
SampType: **LCSD** Run ID: **IC2_190515A** Analysis Date: **5/15/2019 10:42:50 AM** Prep Date: **5/15/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.2	1.00	10.00	0	102	90	110	0.674	20	
Fluoride	4.05	0.400	4.000	0	101	90	110	1.26	20	
Nitrate-N	5.08	0.500	5.000	0	102	90	110	0.146	20	
Sulfate	30.9	3.00	30.00	0	103	90	110	1.55	20	

Sample ID **1905167-01CMS** Batch ID: **90908** TestNo: **E300** Units: **mg/L**
SampType: **MS** Run ID: **IC2_190515A** Analysis Date: **5/15/2019 1:07:36 PM** Prep Date: **5/15/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	222	10.0	200.0	12.69	105	90	110			
Fluoride	211	4.00	200.0	0	106	90	110			
Nitrate-N	45.6	5.00	45.16	0	101	90	110			
Sulfate	239	30.0	200.0	41.32	98.7	90	110			

Sample ID **1905167-01CMSD** Batch ID: **90908** TestNo: **E300** Units: **mg/L**
SampType: **MSD** Run ID: **IC2_190515A** Analysis Date: **5/15/2019 1:23:36 PM** Prep Date: **5/15/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	221	10.0	200.0	12.69	104	90	110	0.308	20	
Fluoride	210	4.00	200.0	0	105	90	110	0.286	20	
Nitrate-N	45.8	5.00	45.16	0	101	90	110	0.495	20	
Sulfate	237	30.0	200.0	41.32	97.7	90	110	0.821	20	

LUMINANT

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905167
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_190515A

Sample ID **1905167-02CMS**	Batch ID: **90908**	TestNo: **E300**	Units: **mg/L**
SampType: **MS**	Run ID: **IC2_190515A**	Analysis Date: **5/15/2019 1:55:36 PM**	Prep Date: **5/15/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	686	10.0	200.0	528.8	78.8	90	110			S
Fluoride	229	4.00	200.0	24.26	102	90	110			
Nitrate-N	56.2	5.00	45.16	10.55	101	90	110			
Sulfate	2520	30.0	200.0	0	1260	90	110			S

Sample ID **1905167-02CMSD**	Batch ID: **90908**	TestNo: **E300**	Units: **mg/L**
SampType: **MSD**	Run ID: **IC2_190515A**	Analysis Date: **5/15/2019 2:11:36 PM**	Prep Date: **5/15/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	688	10.0	200.0	528.8	79.8	90	110	0.292	20	S
Fluoride	229	4.00	200.0	24.26	102	90	110	0.251	20	
Nitrate-N	57.3	5.00	45.16	10.55	103	90	110	1.85	20	
Sulfate	<10.0	30.0	200.0	0	0	90	110	0	20	S

LUMINANT

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905167
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_190515A

Sample ID **ICV-190515**	Batch ID: **R104097**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC2_190515A**	Analysis Date: **5/15/2019 9:38:50 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	25.8	1.00	25.00	0	103	90	110			
Fluoride	10.3	0.400	10.00	0	103	90	110			
Nitrate-N	13.0	0.500	12.50	0	104	90	110			
Sulfate	77.8	3.00	75.00	0	104	90	110			

Sample ID **CCV1-190515**	Batch ID: **R104097**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_190515A**	Analysis Date: **5/15/2019 4:51:36 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.4	1.00	10.00	0	104	90	110			
Fluoride	4.15	0.400	4.000	0	104	90	110			
Nitrate-N	5.13	0.500	5.000	0	103	90	110			
Sulfate	30.8	3.00	30.00	0	103	90	110			

Sample ID **CCV2-190515**	Batch ID: **R104097**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_190515A**	Analysis Date: **5/15/2019 8:35:35 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.6	1.00	10.00	0	106	90	110			
Fluoride	4.20	0.400	4.000	0	105	90	110			
Nitrate-N	5.20	0.500	5.000	0	104	90	110			
Sulfate	31.5	3.00	30.00	0	105	90	110			

LUMINANT

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905167
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_190516A

The QC data in batch 90935 applies to the following samples: 1905167-02C

Sample ID	MB-90935	Batch ID:	90935	TestNo:	E300	Units:	mg/L
SampType:	MBLK	Run ID:	IC4_190516A	Analysis Date:	5/16/2019 10:26:21 AM	Prep Date:	5/16/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00								
Sulfate	<1.00	3.00								

Sample ID	LCS-90935	Batch ID:	90935	TestNo:	E300	Units:	mg/L
SampType:	LCS	Run ID:	IC4_190516A	Analysis Date:	5/16/2019 10:42:21 AM	Prep Date:	5/16/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.61	1.00	10.00	0	96.1	90	110			
Sulfate	29.5	3.00	30.00	0	98.3	90	110			

Sample ID	LCSD-90935	Batch ID:	90935	TestNo:	E300	Units:	mg/L
SampType:	LCSD	Run ID:	IC4_190516A	Analysis Date:	5/16/2019 10:58:21 AM	Prep Date:	5/16/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.68	1.00	10.00	0	96.8	90	110	0.745	20	
Sulfate	29.8	3.00	30.00	0	99.2	90	110	0.935	20	

Sample ID	1905167-02CMS	Batch ID:	90935	TestNo:	E300	Units:	mg/L
SampType:	MS	Run ID:	IC4_190516A	Analysis Date:	5/16/2019 5:10:27 PM	Prep Date:	5/16/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	2490	100	2000	512.8	98.6	90	110			
Sulfate	4830	300	2000	2897	96.9	90	110			

Sample ID	1905167-02CMSD	Batch ID:	90935	TestNo:	E300	Units:	mg/L
SampType:	MSD	Run ID:	IC4_190516A	Analysis Date:	5/16/2019 5:26:27 PM	Prep Date:	5/16/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	2500	100	2000	512.8	99.4	90	110	0.622	20	
Sulfate	4880	300	2000	2897	99.1	90	110	0.920	20	

Sample ID	1905168-01CMS	Batch ID:	90935	TestNo:	E300	Units:	mg/L
SampType:	MS	Run ID:	IC4_190516A	Analysis Date:	5/16/2019 5:58:26 PM	Prep Date:	5/16/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	2170	100	2000	212.8	98.1	90	110			
Sulfate	4380	300	2000	2468	95.6	90	110			

LUMINANT

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905167
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_190516A

Sample ID **1905168-01CMSD**	Batch ID: **90935**	TestNo: **E300**		Units: **mg/L**	
SampType: **MSD**	Run ID: **IC4_190516A**	Analysis Date: **5/16/2019 6:14:27 PM**		Prep Date: **5/16/2019**	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	2170	100	2000	212.8	97.8	90	110	0.235	20	
Sulfate	4390	300	2000	2468	96.2	90	110	0.273	20	

LUMINANT

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905167
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_190516A

Sample ID	ICV-190516	Batch ID:	R104119	TestNo:	E300	Units:	mg/L
SampType:	ICV	Run ID:	IC4_190516A	Analysis Date:	5/16/2019 9:54:21 AM	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	24.7	1.00	25.00	0	99.0	90	110			
Sulfate	74.5	3.00	75.00	0	99.4	90	110			

Sample ID	CCV1-190516	Batch ID:	R104119	TestNo:	E300	Units:	mg/L
SampType:	CCV	Run ID:	IC4_190516A	Analysis Date:	5/16/2019 9:10:26 PM	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.75	1.00	10.00	0	97.5	90	110			
Sulfate	30.2	3.00	30.00	0	101	90	110			

LUMINANT

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905167
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_190516A

The QC data in batch 90940 applies to the following samples: 1905167-01C, 1905167-02C

Sample ID **MB-90940** Batch ID: **90940** TestNo: **M2320 B** Units: **mg/L @ pH 4.47**
SampType: **MBLK** Run ID: **TITRATOR_190516A** Analysis Date: **5/16/2019 2:00:00 PM** Prep Date: **5/16/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	<10.0	20.0								
Alkalinity, Carbonate (As CaCO3)	<10.0	20.0								
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0								
Alkalinity, Total (As CaCO3)	<20.0	20.0								

Sample ID **LCS-90940** Batch ID: **90940** TestNo: **M2320 B** Units: **mg/L @ pH 4.08**
SampType: **LCS** Run ID: **TITRATOR_190516A** Analysis Date: **5/16/2019 2:04:00 PM** Prep Date: **5/16/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)	52.3	20.0	50.00	0	105	74	129			

Sample ID **1905134-01C DUP** Batch ID: **90940** TestNo: **M2320 B** Units: **mg/L @ pH 4.52**
SampType: **DUP** Run ID: **TITRATOR_190516A** Analysis Date: **5/16/2019 2:15:00 PM** Prep Date: **5/16/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	205	20.0	0	205.8				0.536	20	
Alkalinity, Carbonate (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Total (As CaCO3)	205	20.0	0	205.8				0.536	20	

Sample ID **1905168-05C DUP** Batch ID: **90940** TestNo: **M2320 B** Units: **mg/L @ pH 4.51**
SampType: **DUP** Run ID: **TITRATOR_190516A** Analysis Date: **5/16/2019 4:30:00 PM** Prep Date: **5/16/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Carbonate (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Total (As CaCO3)	<20.0	20.0	0	0				0	20	

LUMINANT

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905167
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_190516A

Sample ID **ICV-190516**	Batch ID: **R104124**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.34**
SampType: **ICV**	Run ID: **TITRATOR_190516A**	Analysis Date: **5/16/2019 1:58:00 PM**	Prep Date: **5/16/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	8.64	20.0	0							
Alkalinity, Carbonate (As CaCO3)	89.3	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	97.9	20.0	100.0	0	97.9	98	102			

Sample ID **CCV1-190516**	Batch ID: **R104124**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.25**
SampType: **CCV**	Run ID: **TITRATOR_190516A**	Analysis Date: **5/16/2019 3:39:00 PM**	Prep Date: **5/16/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	21.7	20.0	0							
Alkalinity, Carbonate (As CaCO3)	76.8	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	98.5	20.0	100.0	0	98.5	90	110			

Sample ID **CCV2-190516**	Batch ID: **R104124**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.21**
SampType: **CCV**	Run ID: **TITRATOR_190516A**	Analysis Date: **5/16/2019 4:35:00 PM**	Prep Date: **5/16/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	17.7	20.0	0							
Alkalinity, Carbonate (As CaCO3)	81.3	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	99.0	20.0	100.0	0	99.0	90	110			

LUMINANT

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905167
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: UV/VIS_2_190515B

The QC data in batch 90921 applies to the following samples: 1905167-01C, 1905167-02C

Sample ID	MB-90921	Batch ID:	90921	TestNo:	M4500-P E	Units:	mg/L
SampType:	MBLK	Run ID:	UV/VIS_2_190515B	Analysis Date:	5/15/2019 12:42:00 PM	Prep Date:	5/15/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Total Orthophosphate (As	<0.0300	0.100								

Sample ID	LCS-90921	Batch ID:	90921	TestNo:	M4500-P E	Units:	mg/L
SampType:	LCS	Run ID:	UV/VIS_2_190515B	Analysis Date:	5/15/2019 12:43:00 PM	Prep Date:	5/15/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Total Orthophosphate (As	0.513	0.100	0.5000	0	103	80	120			

Sample ID	LCSD-90921	Batch ID:	90921	TestNo:	M4500-P E	Units:	mg/L
SampType:	LCSD	Run ID:	UV/VIS_2_190515B	Analysis Date:	5/15/2019 12:43:00 PM	Prep Date:	5/15/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Total Orthophosphate (As	0.504	0.100	0.5000	0	101	80	120	1.77	15	

Sample ID	1905168-01CMS	Batch ID:	90921	TestNo:	M4500-P E	Units:	mg/L
SampType:	MS	Run ID:	UV/VIS_2_190515B	Analysis Date:	5/15/2019 12:45:00 PM	Prep Date:	5/15/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Total Orthophosphate (As	0.587	0.100	0.5000	0.07700	102	80	120			

Sample ID	1905168-01CMSD	Batch ID:	90921	TestNo:	M4500-P E	Units:	mg/L
SampType:	MSD	Run ID:	UV/VIS_2_190515B	Analysis Date:	5/15/2019 12:45:00 PM	Prep Date:	5/15/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Total Orthophosphate (As	0.525	0.100	0.5000	0.07700	89.6	80	120	11.2	15	

LUMINANT

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905167
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: UV/VIS_2_190515B

Sample ID **ICV-190515**	Batch ID: **R104071**	TestNo: **M4500-P E**	Units: **mg/L**
SampType: **ICV**	Run ID: **UV/VIS_2_190515B**	Analysis Date: **5/15/2019 12:41:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Total Orthophosphate (As	0.204	0.100	0.2000	0	102	85	115			

Sample ID **CCV1-190515**	Batch ID: **R104071**	TestNo: **M4500-P E**	Units: **mg/L**
SampType: **CCV**	Run ID: **UV/VIS_2_190515B**	Analysis Date: **5/15/2019 12:51:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Total Orthophosphate (As	0.509	0.100	0.5000	0	102	85	115			

LUMINANT

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905167
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: UV/VIS_2_190520A

The QC data in batch 91002 applies to the following samples: 1905167-01A, 1905167-02A

Sample ID	MB-91002	Batch ID:	91002	TestNo:	M3500-Fe D	Units:	mg/L
SampType:	MBLK	Run ID:	UV/VIS_2_190520A	Analysis Date:	5/20/2019 3:53:00 PM	Prep Date:	5/20/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	<0.0500	0.100								N

Sample ID	LCS-91002	Batch ID:	91002	TestNo:	M3500-Fe D	Units:	mg/L
SampType:	LCS	Run ID:	UV/VIS_2_190520A	Analysis Date:	5/20/2019 3:53:00 PM	Prep Date:	5/20/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	0.0888	0.100	0.1000	0	88.8	85	115			N

Sample ID	LCSD-91002	Batch ID:	91002	TestNo:	M3500-Fe D	Units:	mg/L
SampType:	LCSD	Run ID:	UV/VIS_2_190520A	Analysis Date:	5/20/2019 3:53:00 PM	Prep Date:	5/20/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	0.0879	0.100	0.1000	0	87.9	85	115	1.05	15	N

Sample ID	1905185-11AMS	Batch ID:	91002	TestNo:	M3500-Fe D	Units:	mg/L
SampType:	MS	Run ID:	UV/VIS_2_190520A	Analysis Date:	5/20/2019 4:03:00 PM	Prep Date:	5/20/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	0.0860	0.100	0.1000	0	86.0	85	115			N

Sample ID	1905185-11AMSD	Batch ID:	91002	TestNo:	M3500-Fe D	Units:	mg/L
SampType:	MSD	Run ID:	UV/VIS_2_190520A	Analysis Date:	5/20/2019 4:03:00 PM	Prep Date:	5/20/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	0.0861	0.100	0.1000	0	86.1	85	115	0.116	15	N

LUMINANT

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905167
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: UV/VIS_2_190520A

Sample ID	ICV-190520	Batch ID:	R104177	TestNo:	M3500-Fe D	Units:	mg/L
SampType:	ICV	Run ID:	UV/VIS_2_190520A	Analysis Date:	5/20/2019 3:52:00 PM	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	0.0875	0.100	0.1000	0	87.5	85	115			N

Sample ID	CCV1-190520	Batch ID:	R104177	TestNo:	M3500-Fe D	Units:	mg/L
SampType:	CCV	Run ID:	UV/VIS_2_190520A	Analysis Date:	5/20/2019 3:59:00 PM	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	0.197	0.100	0.2000	0	98.4	85	115			N

Sample ID	CCV2-190520	Batch ID:	R104177	TestNo:	M3500-Fe D	Units:	mg/L
SampType:	CCV	Run ID:	UV/VIS_2_190520A	Analysis Date:	5/20/2019 4:12:00 PM	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	0.183	0.100	0.2000	0	91.7	85	115			N

LUMINANT

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905167
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: WC_190517D

The QC data in batch 90953 applies to the following samples: 1905167-01C, 1905167-02C

Sample ID	MB-90953	Batch ID:	90953	TestNo:	M2540C	Units:	mg/L
SampType:	MBLK	Run ID:	WC_190517D	Analysis Date:	5/17/2019 11:40:00 AM	Prep Date:	5/16/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	<10.0	10.0								

Sample ID	LCS-90953	Batch ID:	90953	TestNo:	M2540C	Units:	mg/L
SampType:	LCS	Run ID:	WC_190517D	Analysis Date:	5/17/2019 11:40:00 AM	Prep Date:	5/16/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	745	10.0	745.6	0	99.9	90	113			

Sample ID	1905167-02C-DUP	Batch ID:	90953	TestNo:	M2540C	Units:	mg/L
SampType:	DUP	Run ID:	WC_190517D	Analysis Date:	5/17/2019 11:40:00 AM	Prep Date:	5/16/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	5340	50.0	0	5375				0.747	5	

Sample ID	1905168-02C-DUP	Batch ID:	90953	TestNo:	M2540C	Units:	mg/L
SampType:	DUP	Run ID:	WC_190517D	Analysis Date:	5/17/2019 11:40:00 AM	Prep Date:	5/16/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	940	50.0	0	910.0				3.24	5	

LUMINANT

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

Pace Analytical®
National Center for Testing & Innovation

ANALYTICAL REPORT

May 29, 2019

DHL Analytical, Inc.

Sample Delivery Group:	L1100947
Samples Received:	05/21/2019
Project Number:	1905167
Description:	

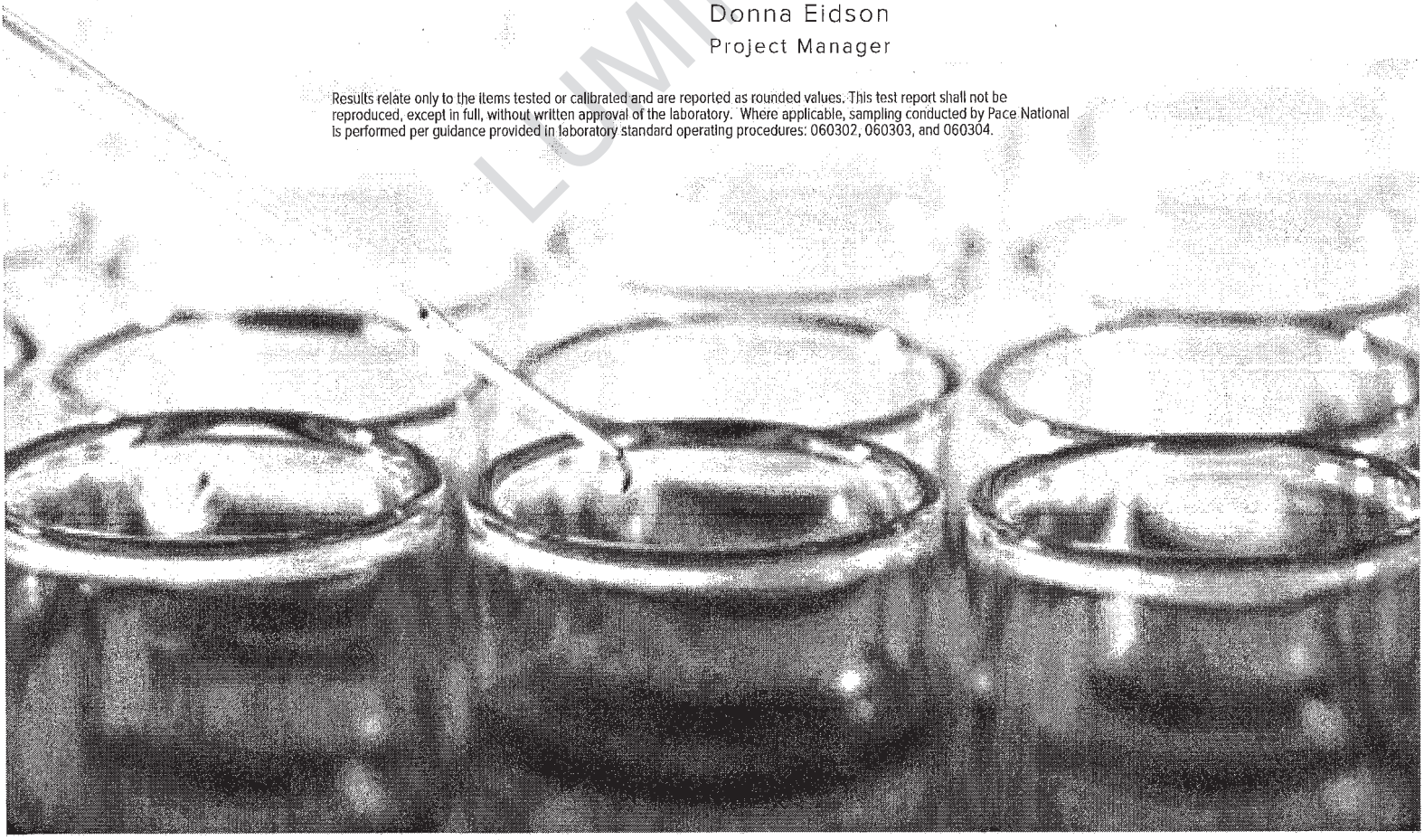
Report To: John DuPont
2300 Double Creek Drive
Round Rock, TX 78664

LUMINANT

Entire Report Reviewed By: Eidson

Donna Eidson
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace National is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.



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Ss: Sample Summary 3
Cn: Case Narrative 4
Sr: Sample Results 5
LAKE SAMPLE L1100947-01 5
LAKE SAMPLE L1100947-02 6
Qc: Quality Control Summary 7
Radiochemistry by Method 904 7
Radiochemistry by Method SM7500Ra B M 8
Gl: Glossary of Terms 9
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LUMINANT

LAKE SAMPLE L1100947-01 Non-Potable Water

			Collected by	Collected date/time	Received date/time
				05/14/19 10:05	05/21/19 10:10

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1284744	1	05/22/19 08:25	05/28/19 10:55	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1284773	1	05/23/19 15:02	05/28/19 10:55	RRE	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1284773	1	05/23/19 15:02	05/24/19 17:05	RRE	Mt. Juliet, TN

LAKE SAMPLE L1100947-02 Non-Potable Water

			Collected by	Collected date/time	Received date/time
				05/14/19 10:20	05/21/19 10:10

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1284744	1	05/22/19 08:25	05/28/19 10:55	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1284773	1	05/23/19 15:02	05/28/19 10:55	RRE	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1284773	1	05/23/19 15:02	05/24/19 17:05	RRE	Mt. Juliet, TN

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All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Donna Eidson
Project Manager

LUMINANT

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	0.369		0.449	0.769	05/28/2019 10:55	WG1284744
(T) Barium	*102*			*62.0-143*	*05/28/2019 10:55*	WG1284744
(T) Yttrium	*118*			*79.0-136*	*05/28/2019 10:55*	WG1284744

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	0.772		0.734	1.08	05/28/2019 10:55	WG1284773

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.403		0.285	0.311	05/24/2019 17:05	WG1284773
(T) Barium-133	*92.1*			*30.0-143*	*05/24/2019 17:05*	WG1284773

LUMINANT

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	-0.0402		0.349	0.599	05/28/2019 10:55	WG1284744
(T) Barium	*113*			*62.0-143*	*05/28/2019 10:55*	WG1284744
(T) Yttrium	*114*			*79.0-136*	*05/28/2019 10:55*	WG1284744

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	0.853		0.752	0.895	05/28/2019 10:55	WG1284773

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.853		0.403	0.296	05/24/2019 17:05	WG1284773
(T) Barium-133	*83.8*			*30.0-143*	*05/24/2019 17:05*	WG1284773

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

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APPENDIX F-Revision 2 February 27, 2024

Method Blank (MB)

(MB) R3415641-1 05/28/19 10:55

Analyte	MB Result pCi/l	MB Qualifier	MB MDA pCi/l
Radium-228	-0.164		0.413
(T) Barium	*108*		
(T) Yttrium	*115*		

L1100192-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1100192-01 05/28/19 10:55 • (DUP) R3415641-5 05/28/19 10:55

Analyte	Original Result pCi/l	DUP Result pCi/l	Dilution	DUP RPD %	DUP RER	DUP Qualifier	DUP RPD Limits %	DUP RER Limit
Radium-228	0.157	-0.0367	1	200	0.366		20	3
(T) Barium	*91.7*	*102*						
(T) Yttrium	*110*	*107*						

Laboratory Control Sample (LCS)

(LCS) R3415641-2 05/28/19 10:55

Analyte	Spike Amount pCi/l	LCS Result pCi/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Radium-228	5.00	4.47	89.4	80.0-120	
(T) Barium			*103*		
(T) Yttrium			*107*		

L1100922-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1100922-01 05/28/19 10:55 • (MS) R3415641-3 05/28/19 10:55 • (MSD) R3415641-4 05/28/19 10:55

Analyte	Spike Amount pCi/l	Original Result pCi/l	MS Result pCi/l	MSD Result pCi/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	MS RER	RPD Limits %
Radium-228	7.14	-0.136	7.62	7.50	107	105	1	70.0-130			1.50		20
(T) Barium		*111*			*107*	*110*							
(T) Yttrium		*114*			*107*	*110*							

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APPENDIX F-Revision 2 February 27, 2024

Method Blank (MB)

(MB) R3415635-1 05/24/19 17:04

	MB Result	MB Qualifier	MB MDA
Analyte	pCi/l		pCi/l
Radium-226	0.459		0.209
(T) Barium-133	*84.6*		

L1100844-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1100844-01 05/24/19 17:04 • (DUP) R3415635-5 05/24/19 17:04

	Original Result	DUP Result	Dilution	DUP RPD	DUP RER	DUP Qualifier	DUP RPD Limits	DUP RER Limit
Analyte	pCi/l	pCi/l		%			%	
Radium-226	0.495	0.573	1	14.6	0.182		20	3
(T) Barium-133	*90.4*	*88.8*						

Laboratory Control Sample (LCS)

(LCS) R3415635-2 05/24/19 17:04

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	pCi/l	pCi/l	%	%	
Radium-226	20.1	19.1	95.0	80.0-120	
(T) Barium-133			*79.1*		

L1100433-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1100433-01 05/24/19 17:04 • (MS) R3415635-3 05/24/19 17:04 • (MSD) R3415635-4 05/24/19 17:04

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	MS RER	RPD Limits
Analyte	pCi/l	pCi/l	pCi/l	pCi/l	%	%		%			%		%
Radium-226	20.1	1.16	19.9	20.9	93.2	98.0	1	75.0-125			4.71		20
(T) Barium-133		*83.2*			*81.1*	*84.7*							

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Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Abbreviations and Definitions

MDA	Minimum Detectable Activity.
Rec.	Recovery.
RER	Replicate Error Ratio.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(T)	Tracer - A radioisotope of known concentration added to a solution of chemically equivalent radioisotopes at a known concentration to assist in monitoring the yield of the chemical separation.
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
	The remainder of this page intentionally left blank, there are no qualifiers applied to this SDG.

DRAFT

ACCREDITATIONS & LOCATIONS

ONE LAB. NATIONWIDE.

Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.
* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

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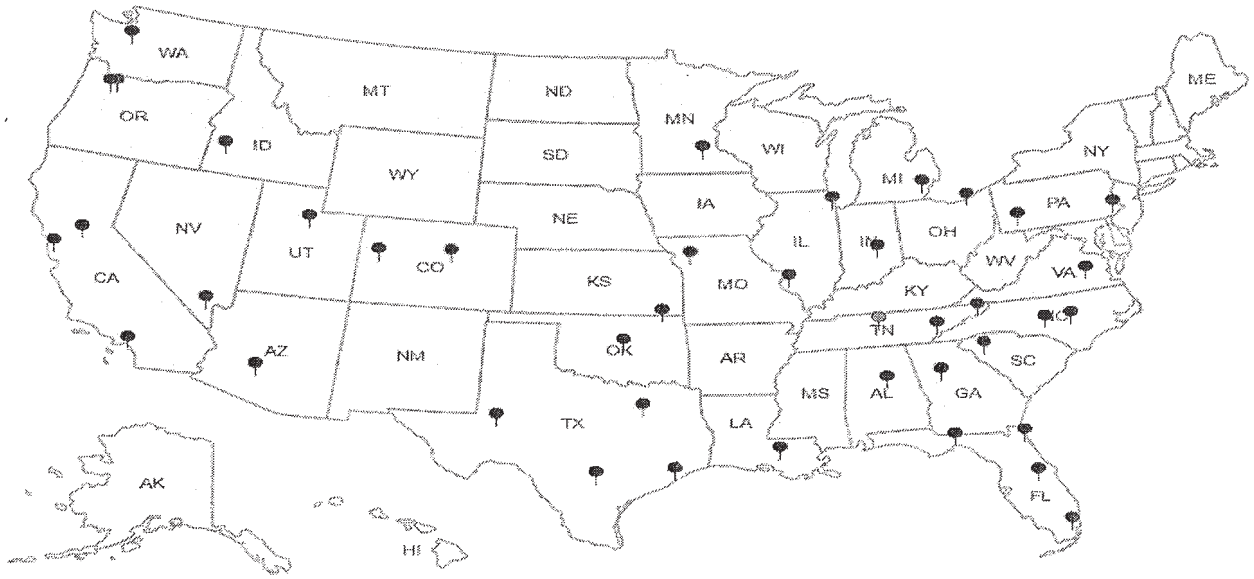
Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



Pace Analytical National Center for Testing & Innovation
Cooler Receipt Form

Client: DHLRTX	SDG#:	1100947
Cooler Received/Opened On: 5/21/19	Temperature:	Amb
Received By: Brock Fariss		
Signature: BF Fariss		

Receipt Check List	NP	Yes	No
COC Seal Present / Intact?	✓		
COC Signed / Accurate?		✓	
Bottles arrive intact?		✓	
Correct bottles used?		✓	
Sufficient volume sent?		✓	
If Applicable			
VOA Zero headspace?			
Preservation Correct / Checked?		✓	

LUMINANT

1100947

Page 1 of 1

CHAIN-OF-CUSTODY RECORD

H004

DHL Analytical, Inc.
2300 Double Creek Drive
Round Rock, TX 78664
TEL: (512) 388-8222 FAX: (512) 388-8229

Work Order: 1905167

Subcontractor:
Pace Analytical
12065 Lebanon Rd
Mt. Juliet, TN 37122

TEL: (615) 773-5923
FAX:
Acct #: DHLRRTX

15-May-19

Sample Id	Matrix	DHL#	Date Collected	Bottle Type	Ra-228 E904.0	Ra-226 M7500 Ra B M	Requested Tests	
Lake Sample	Aqueous	-01D	05/14/19 10:05 AM	1LHDPEHNO3		1		-01
Lake Sample	Aqueous	-01E	05/14/19 10:05 AM	1LHDPEHNO3	1			01
Pond Sample	Aqueous	-02D	05/14/19 10:20 AM	1LHDPEHNO3		1		02
Pond Sample	Aqueous	-02E	05/14/19 10:20 AM	1LHDPEHNO3	1			02

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General Comments:
Please analyze these samples with Normal Turnaround Time.
Report RA-226, Ra-228 & Combined per Specs.
Quality Control Package Needed: Standard - NELAC Rad Test compliant
Email to cac@dhlanalytical.com & dupont@dhlanalytical.com

	Date/Time		Date/Time
Relinquished by:	5/17/19 1700	Received by:	5/21/19 1010
Relinquished by:		Received by:	

VPS
Rec: 4

Anno

mR/hr

Quantitative X-Ray Diffraction by Rietveld Refinement

Report Prepared for:	*Golder Associates - Will Vienne*
Project Number/ LIMS No.	*17431-01 / MI7012-JUN19*
Batch:	*Martin Lake Ash Ponds*
Sample Receipt:	*June 13, 2019*
Sample Analysis:	*June 28, 2019*
Reporting Date:	*July 19, 2019*
Instrument:	Panalytical X'pert Pro Diffractometer
Test Conditions:	Co radiation, 40 kV, 45 mA Regular Scanning: Step: 0.033°, Step time:0.15s, 2θ range: 6-70°
Interpretations :	HighScore Plus software using Crystallography Open Database (COD) and Joint Committee on Powder Diffraction Standards -International Center for Diffraction Data (JCPDS-ICDD).
Detection Limit :	0.5-2%. Strongly dependent on crystallinity.

LUMINANT

Contents:

1) Method Summary
2) Summary of Mineral Assemblages
3) Quantitative XRD Results
4) XRD Pattern(s)

Ben Eaton
Junior Mineralogist

Lain Glossop H.B.Sc
Senior Mineralogist

Method Summary

Mineral Identification and Interpretation:

Mineral identification and interpretation involve matching the diffraction pattern of a test sample material to patterns of single-phase reference materials. The reference patterns from the Crystallography Open Database (COD) and the Joint Committee on Powder Diffraction Standards - International Center for Diffraction Data (JCPDS-ICDD).

Interpretations do not reflect the presence of non-crystalline and/or amorphous compounds, except when internal standards have been added by request. Mineral proportions may be strongly influenced by crystallinity, crystal structure and preferred orientations. Mineral or compound identification and quantitative analysis results should be accompanied by supporting chemical assay data or other additional tests.

Quantitative Rietveld Analysis:

Panalytical HighScore Plus software was used to perform the quantitative Rietveld Analysis. This software uses a graphics based profile analysis program built around a non-linear least squares fitting system, to quantitatively determine the amount of different phases present in a multicomponent sample. Whole pattern analyses are predicated by the fact that the X-ray diffraction pattern is a total sum of both instrumental and specimen factors. Unlike other peak intensity-based methods, the Rietveld method uses a least squares approach to refine a theoretical line profile (shown as a blue pattern in the analyses plots) until it matches the obtained experimental patterns (shown as the coloured pattern in the analyses plots).

Rietveld refinement is completed with a set of minerals specifically identified for the sample. Zero values indicate that the mineral was included in the refinement calculations, but the calculated concentration was less than 0.5 wt%. Minerals not identified by the analyst are not included in refinement calculations for specific samples and are indicated with a dash.

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WARNING: The sample(s) to which the findings recorded herein (the "Findings") relate was(were) drawn and / or provided by the Client or by a third party acting at the Client's direction. The Findings constitute no warranty of the sample's representativeness of any goods and strictly relate to the sample(s). The Company accepts no liability with regard to the origin or source from which the sample(s) is/are said to be extracted.

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Member of the SGS Group (SGS SA)

Summary of Rietveld Quantitative Analysis X-ray Diffraction Results

Quantitative X-ray Diffraction Results

Mineral/Compound	1 AP-2019-1 (30-31")	2 AP-2019-2 (35-36")	3 AP-2019-3 (18-19")
	(wt %)	(wt %)	(wt %)
Quartz	60.8	66.0	99.2
Albite	22.3	16.2	0.8
K-Feldspar	1.3	1.4	--
Chlorite	1.3	2.7	--
Muscovite	1.4	3.2	--
*Vermiculite	0.9	0.7	--
*Kaolinite	3.0	3.4	--
Illite	8.3	6.1	--
*Montmorillonite	0.7	0.4	--
TOTAL	100	100	100

Zero values indicate that the mineral was included in the refinement, but the calculated concentration is below a measurable value.

Dashes indicate that the mineral was not identified by the analyst and not included in the refinement calculation for the sample.

** Tentative identification of clays only, further clay XRD analysis will be required for positive identification*

Mineral/Compound	Formula
Quartz	SiO_2
Albite	$NaAlSi_3O_8$
K-Feldspar	$KAlSi_3O_8$
Chlorite	$(Mg_3,Fe_2)Al(AlSi_3)O_{10}(OH)_8$
Muscovite	$KAl_2(AlSi_3O_{10})(OH)_2$
Vermiculite	$(Mg,Fe,Al)_2(Al,Si)_4O_{10}(OH)_2 \cdot 4(H_2O)$
Kaolinite	$Al_2Si_2O_5(OH)_4$
Illite	$(K,H_3O)(Al,Mg,Fe)_2(Si,Al)_4O_{10}[(OH)_2,(H_2O)]$
Montmorillonite	$Na_{0.2}Ca_{0.1}Al_{1.5}Mg_{0.5}Si_4O_{10}(OH)_2 \cdot 4(H_2O)$

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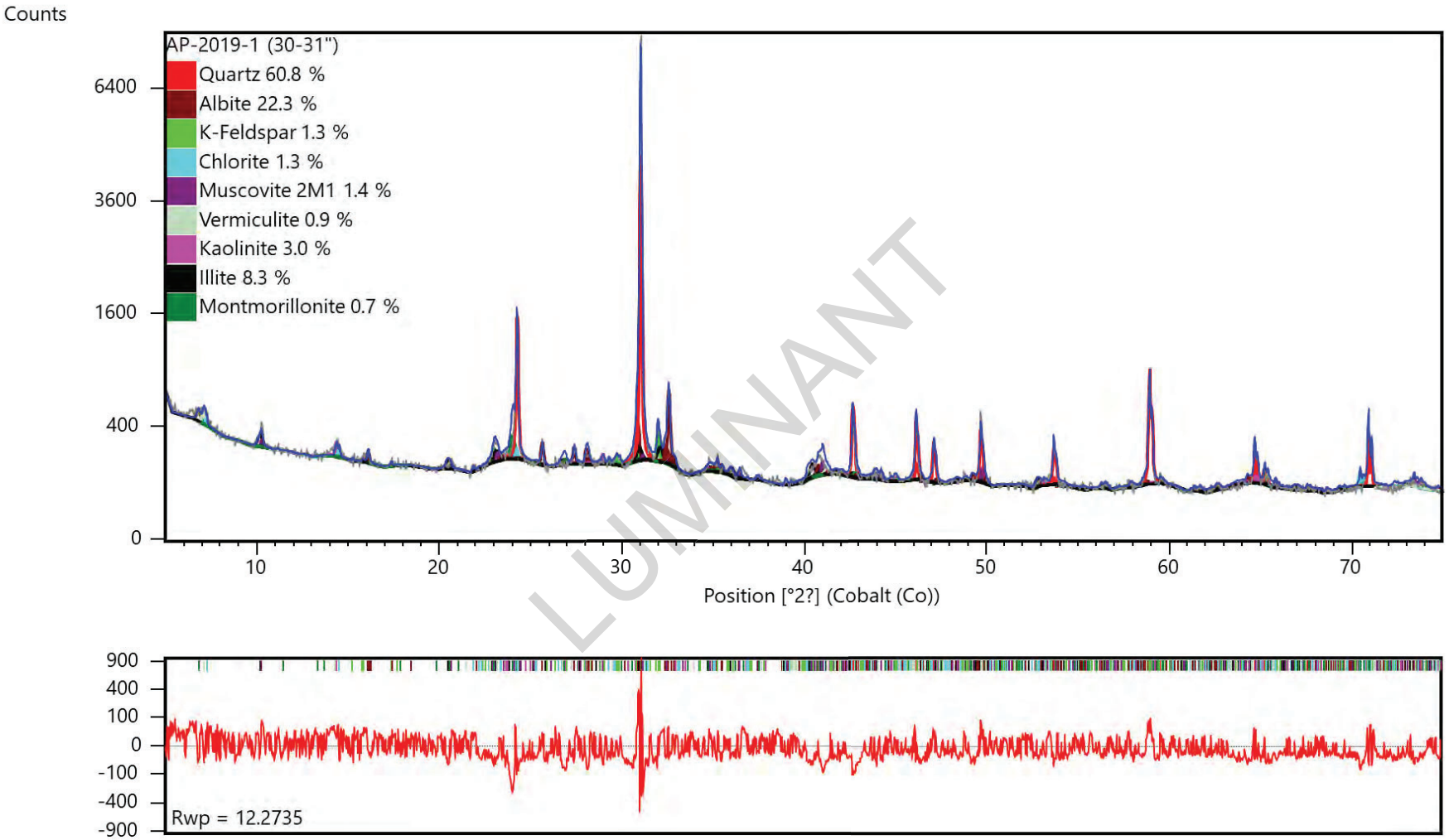

X-ray diffractogram. The upper pattern is the measured diffractogram, the blue curve is the calculated pattern from the Rietveld Refinement and the lower red curve is the difference plot.

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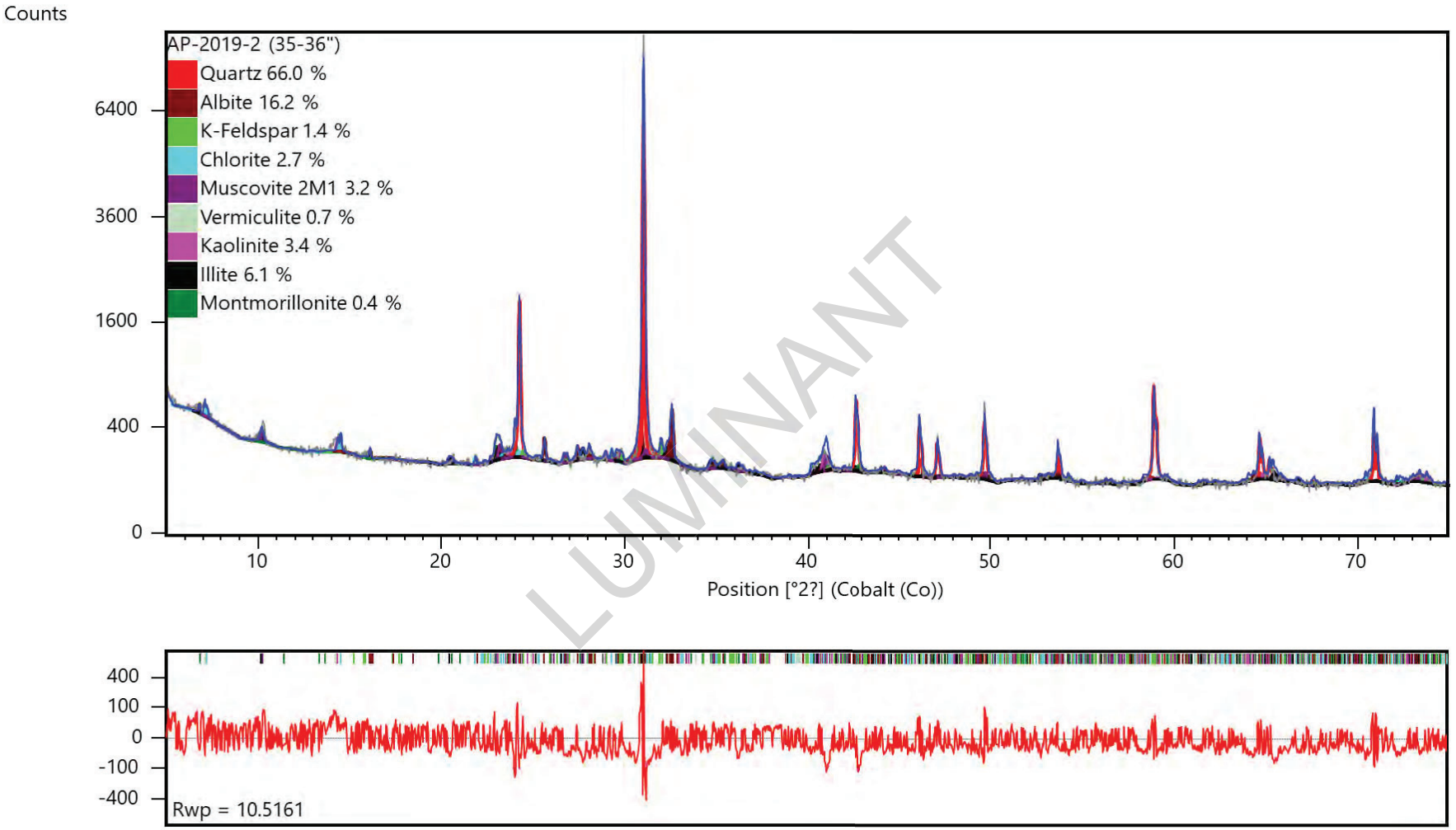
APPENDIX F-Revision 2 February 27, 2024



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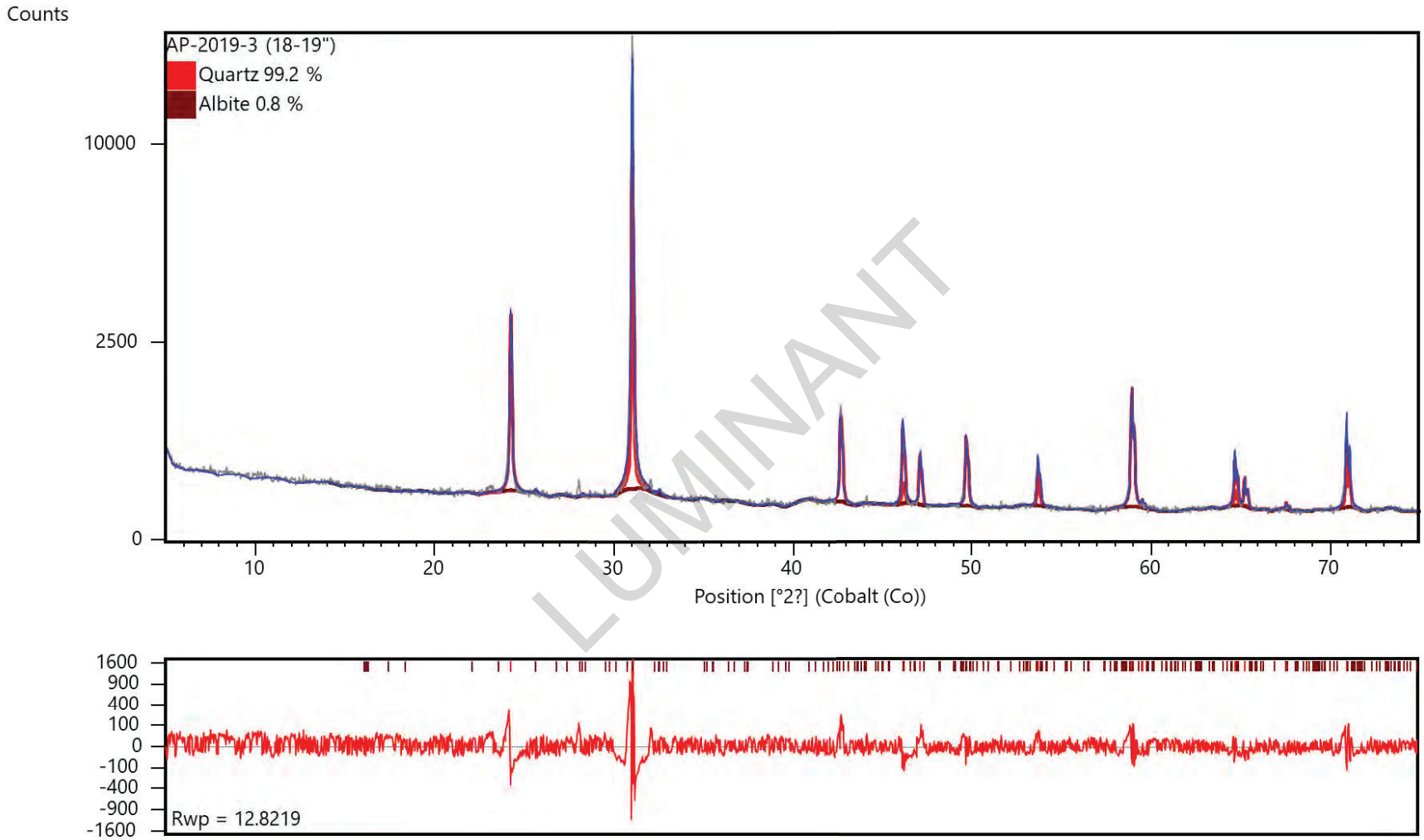
X-ray diffractogram. The upper pattern is the measured diffractogram, the blue curve is the calculated pattern from the Rietveld Refinement and the lower red curve is the difference plot.

APPENDIX F-Revision 2 February 27, 2024



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X-ray diffractogram. The upper pattern is the measured diffractogram, the blue curve is the calculated pattern from the Rietveld Refinement and the lower red curve is the difference plot.

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ANALYTICAL REPORT

Eurofins TestAmerica, Knoxville
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Laboratory Job ID: 140-15490-1
Client Project/Site: Martin Lake Ash Ponds - SEP + Totals

For:
Golder Associates Inc.
2201 Double Creek Dr
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Attn: Will Vienne

Terry Walker Wasmund

Authorized for release by:
7/18/2019 5:51:37 PM

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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LUMINANT

Definitions/Glossary

Client: Golder Associates Inc. Job ID: 140-15490-1
Project/Site: Martin Lake Ash Ponds - SEP + Totals

Qualifiers

Metals

Qualifier	Qualifier Description
*	LCS or LCSD is outside acceptance limits.
*	RPD of the LCS and LCSD exceeds the control limits
B	Compound was found in the blank and sample.
F1	MS and/or MSD Recovery is outside acceptance limits.
F5	Duplicate RPD exceeds limit, and one or both sample results are less than 5 times RL. The data are considered valid because the absolute difference is less than the RL.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

LUMINANT

Job ID: 140-15490-1

Laboratory: Eurofins TestAmerica, Knoxville

Narrative

Job Narrative
140-15490-1

Receipt
The samples were received on 6/5/2019 at 9:20 AM. The samples arrived in good condition, properly preserved, and on ice. The temperature of the cooler at receipt was 1.2º C.

Metals
7 Step Sequential Extraction Procedure

These soil samples were prepared and analyzed using Eurofins TestAmerica Knoxville standard operating procedure KNOX-MT-0008, "7 Step Sequential Extraction Procedure". SW-846 Method 6010B as incorporated in Eurofins TestAmerica Knoxville standard operating procedure KNOX-MT-0007 was used to perform the final instrument analyses.

An aliquot of each sample was sequentially extracted using the steps listed below:

- ***Step 1 - Exchangeable Fraction:*** A 5 gram aliquot of sample was extracted with 25 mL of 1M magnesium sulfate (MgSO4), centrifuged and filtered. 5 mL of the resulting leachate was digested using method 3010A and analyzed by method 6010B. Results are reported in mg/kg on a dry weight basis.
- ***Step 2 - Carbonate Fraction:*** The sample residue from step 1 was extracted with 25 mL of 1M sodium acetate/acetic acid (NaOAc/HOAc) at pH 5, centrifuged and filtered. 5 mL of the resulting leachate was digested using method 3010A and analyzed by method 6010B. Results are reported in mg/kg on a dry weight basis.
- ***Step 3 - Non-crystalline Materials Fraction:*** The sample residue from step 2 was extracted with 25 mL of 0.2M ammonium oxalate (pH 3), centrifuged and filtered. 5 mL of the resulting leachate was digested using method 3010A and analyzed by method 6010B. Results are reported in mg/kg on a dry weight basis.
- ***Step 4 - Metal Hydroxide Fraction***: The sample residue from step 3 was extracted with 25 mL of 1M hydroxylamine hydrochloride solution in 25% v/v acetic acid, centrifuged and filtered. 5 mL of the resulting leachate was digested using method 3010A and analyzed by method 6010B. Results are reported in mg/kg on a dry weight basis.
- ***Step 5 - Organic-bound Fraction:*** The sample residue from step 4 was extracted three times with 25 mL of 5% sodium hypochlorite (NaClO) at pH 9.5, centrifuged and filtered. The resulting leachates were combined and 5 mL were digested using method 3010A and analyzed by method 6010B. Results are reported in mg/kg on a dry weight basis.
- ***Step 6 - Acid/Sulfide Fraction:*** The sample residue from step 5 was extracted with 25 mL of a 3:1:2 v/v solution of HCl-HNO3-H2O, centrifuged and filtered. 5 mL of the resulting leachate was diluted to 50 mL with reagent water and analyzed by method 6010B. Results are reported in mg/kg on a dry weight basis.
- ***Step 7 - Residual Fraction:*** A 1.0 g aliquot of the sample residue from step 6 was digested using HF, HNO3, HCl and H3BO3. The digestate was analyzed by ICP using method 6010B. Results are reported in mg/kg on a dry weight basis.

In addition, a 1.0 g aliquot of the original sample was digested using HF, HNO3, HCl and H3BO3. The digestate was analyzed by ICP using method 6010B. Total metal results are reported in mg/kg on a dry weight basis.

Results were calculated using the following equation:

Result, µg/g or mg/Kg, dry weight = (C × V × V1 × D) / (W × S × V2)

Where:
C = Concentration from instrument readout, µg/mL
V = Final volume of digestate, mL
D = Instrument dilution factor
V1 = Total volume of leachate, mL
V2 = Volume of leachate digested, mL
W = Wet weight of sample, g
S = Percent solids/100

A method blank, laboratory control sample and laboratory control sample duplicate were prepared and analyzed with each SEP step in order to provide information about both the presence of elements of interest in the extraction solutions, and the recovery of elements of

DOMINANT

Job ID: 140-15490-1 (Continued)

Laboratory: Eurofins TestAmerica, Knoxville (Continued)

interest from the extraction solutions. Results outside of laboratory QC limits do not reflect out of control performance, but rather the effect of the extraction solution upon the analyte.

A laboratory sample duplicate was prepared and analyzed with each batch of samples in order to provide information regarding the reproducibility of the procedure.

SEP Report Notes
The final report lists the results for each step, the result for the total digestion of the sample, and a sum of the results of steps 1 through 7 by element.

Magnesium was not reported for step 1 because the extraction solution for this step (magnesium sulfate) contains high levels of magnesium. Sodium was not reported for steps 2 and 5 since the extraction solutions for these steps contain high levels of sodium. The sum of steps 1 through 7 is much higher than the total result for sodium and magnesium due to the magnesium and sodium introduced by the extraction solutions.

The step 1 digestates were reanalyzed for vanadium at a 1/10 dilution due to positive interelement interferences resulting from the high magnesium results. The reporting limits were adjusted accordingly.

The digestates for steps 1, 2 and 5 were analyzed at a dilution due to instrument problems caused by the high solids content of the digestates. The reporting limits were adjusted accordingly.

The serial dilution performed for samples (140-15490-A-1-A SD ^5) and (140-15490-A-1-AD SD ^50) associated with batch 140-31713 was outside control limits.

Samples AP-2019-1 (30-31) (140-15490-1), AP-2019-2 (35-36) (140-15490-2), AP-2019-3 (18-19) (140-15490-3), (140-15490-A-1-AE DU) and (140-15490-A-1-B DU) were diluted due to the presence of Silicon or Titanium which interferes with Arsenic, Cobalt, Selenium and Thallium. Elevated reporting limits (RLs) are provided.

Samples AP-2019-1 (30-31) (140-15490-1), AP-2019-2 (35-36) (140-15490-2), AP-2019-3 (18-19) (140-15490-3), (140-15490-A-1-AE DU) and (140-15490-A-1-B DU) were diluted for Aluminum and Barium due to the nature of the sample matrix. Elevated reporting limits (RLs) are provided.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

General Chemistry - % Moisture
The samples were analyzed for percent moisture using SOP number KNOX-WC-0012 (based on Modified MCAWW 160.3 and SM2540B and on the percent moisture determinations described in methods 3540C and 3550B).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Comments
No additional comments.

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Detection Summary

Client: Golder Associates Inc.
Project/Site: Martin Lake Ash Ponds - SEP + Totals

Job ID: 140-15490-1

Client Sample ID: AP-2019-1 (30-31)

Lab Sample ID: 140-15490-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.88	J	13	0.63	mg/Kg	4	☼	6010B SEP	Step 1
Cobalt	0.54	J	13	0.24	mg/Kg	4	☼	6010B SEP	Step 1
Manganese	3.1	J	3.9	0.16	mg/Kg	4	☼	6010B SEP	Step 1
Aluminum	9.7	J *	39	6.3	mg/Kg	3	☼	6010B SEP	Step 2
Barium	0.76	J *	9.9	0.47	mg/Kg	3	☼	6010B SEP	Step 2
Selenium	0.76	J B	2.0	0.67	mg/Kg	3	☼	6010B SEP	Step 2
Aluminum	88		13	2.8	mg/Kg	1	☼	6010B SEP	Step 3
Arsenic	1.8		0.66	0.17	mg/Kg	1	☼	6010B SEP	Step 3
Barium	4.3	B	3.3	0.16	mg/Kg	1	☼	6010B SEP	Step 3
Beryllium	0.067	J	0.33	0.020	mg/Kg	1	☼	6010B SEP	Step 3
Cobalt	0.34	J	3.3	0.059	mg/Kg	1	☼	6010B SEP	Step 3
Iron	580		6.6	3.8	mg/Kg	1	☼	6010B SEP	Step 3
Manganese	2.4	B	0.99	0.036	mg/Kg	1	☼	6010B SEP	Step 3
Selenium	0.22	J B	0.66	0.22	mg/Kg	1	☼	6010B SEP	Step 3
Aluminum	1700		13	2.1	mg/Kg	1	☼	6010B SEP	Step 4
Arsenic	2.8	B	0.66	0.29	mg/Kg	1	☼	6010B SEP	Step 4
Barium	16		3.3	0.16	mg/Kg	1	☼	6010B SEP	Step 4
Beryllium	0.13	J	0.33	0.021	mg/Kg	1	☼	6010B SEP	Step 4
Cobalt	1.5	J	3.3	0.070	mg/Kg	1	☼	6010B SEP	Step 4
Iron	3900		6.6	3.8	mg/Kg	1	☼	6010B SEP	Step 4
Li	3.0	J	3.3	0.20	mg/Kg	1	☼	6010B SEP	Step 4
Manganese	18		0.99	0.17	mg/Kg	1	☼	6010B SEP	Step 4
Aluminum	62	J *	200	31	mg/Kg	5	☼	6010B SEP	Step 5
Barium	7.0	J *	49	2.4	mg/Kg	5	☼	6010B SEP	Step 5
Aluminum	2300		13	2.1	mg/Kg	1	☼	6010B SEP	Step 6
Arsenic	0.94		0.66	0.20	mg/Kg	1	☼	6010B SEP	Step 6
Barium	18		3.3	0.16	mg/Kg	1	☼	6010B SEP	Step 6
Beryllium	0.067	J	0.33	0.016	mg/Kg	1	☼	6010B SEP	Step 6
Cobalt	0.90	J	3.3	0.061	mg/Kg	1	☼	6010B SEP	Step 6
Iron	2500		6.6	3.8	mg/Kg	1	☼	6010B SEP	Step 6
Li	2.1	J	3.3	0.20	mg/Kg	1	☼	6010B SEP	Step 6
Manganese	16		0.99	0.33	mg/Kg	1	☼	6010B SEP	Step 6
Aluminum	29000		130	21	mg/Kg	10	☼	6010B SEP	Step 7
Arsenic	1.2		0.66	0.17	mg/Kg	1	☼	6010B SEP	Step 7
Barium	390		33	1.6	mg/Kg	10	☼	6010B SEP	Step 7
Beryllium	0.56		0.33	0.0099	mg/Kg	1	☼	6010B SEP	Step 7
Cobalt	0.79	J	6.6	0.39	mg/Kg	2	☼	6010B SEP	Step 7
Iron	5200		6.6	5.4	mg/Kg	1	☼	6010B SEP	Step 7
Li	9.6		3.3	0.20	mg/Kg	1	☼	6010B SEP	Step 7
Manganese	26		0.99	0.068	mg/Kg	1	☼	6010B SEP	Step 7
Mo	0.19	J	2.6	0.11	mg/Kg	1	☼	6010B SEP	Step 7
Thallium	0.48	J	4.6	0.47	mg/Kg	2	☼	6010B SEP	Step 7
Aluminum	33000		10	1.6	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Arsenic	6.9		0.50	0.13	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Barium	440		2.5	0.12	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Beryllium	0.83		0.25	0.0075	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Cobalt	4.0		2.5	0.023	mg/Kg	1		6010B SEP	Sum of Steps 1-7

LUMINANT

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: Golder Associates Inc.
Project/Site: Martin Lake Ash Ponds - SEP + Totals

Job ID: 140-15490-1

Client Sample ID: AP-2019-1 (30-31) (Continued)

Lab Sample ID: 140-15490-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Iron	12000		5.0	4.1	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Li	15		2.5	0.15	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Manganese	66		0.75	0.052	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Mo	0.19	J	2.0	0.082	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Selenium	0.98		0.50	0.17	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Thallium	0.48	J	1.8	0.18	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Chromium	13	F1	1.8	0.27	mg/Kg	1	☼	6010B	Total/NA
Lead	6.4		1.8	0.34	mg/Kg	1	☼	6010B	Total/NA
Aluminum	60000		130	21	mg/Kg	10	☼	6010B	Total/NA
Arsenic	6.8		0.66	0.17	mg/Kg	1	☼	6010B	Total/NA
Barium	680		33	1.6	mg/Kg	10	☼	6010B	Total/NA
Beryllium	0.89		0.33	0.0099	mg/Kg	1	☼	6010B	Total/NA
Cobalt	3.8	J	6.6	0.39	mg/Kg	2	☼	6010B	Total/NA
Iron	11000		6.6	5.4	mg/Kg	1	☼	6010B	Total/NA
Lithium	18		3.3	0.20	mg/Kg	1	☼	6010B	Total/NA
Manganese	66		0.99	0.068	mg/Kg	1	☼	6010B	Total/NA
Molybdenum	0.40	J	2.6	0.11	mg/Kg	1	☼	6010B	Total/NA
Hg	0.081	J	0.13	0.053	mg/Kg	1	☼	7470A	Total/NA

Client Sample ID: AP-2019-2 (35-36)

Lab Sample ID: 140-15490-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Aluminum	19	J	51	8.2	mg/Kg	4	☼	6010B SEP	Step 1
Barium	0.88	J	13	0.61	mg/Kg	4	☼	6010B SEP	Step 1
Cobalt	1.6	J	13	0.23	mg/Kg	4	☼	6010B SEP	Step 1
Iron	23	J	25	15	mg/Kg	4	☼	6010B SEP	Step 1
Manganese	33		3.8	0.16	mg/Kg	4	☼	6010B SEP	Step 1
Aluminum	18	J *	38	6.1	mg/Kg	3	☼	6010B SEP	Step 2
Barium	0.67	J *	9.6	0.46	mg/Kg	3	☼	6010B SEP	Step 2
Cobalt	0.27	J	9.6	0.24	mg/Kg	3	☼	6010B SEP	Step 2
Iron	110	*	19	11	mg/Kg	3	☼	6010B SEP	Step 2
Manganese	4.2		2.9	1.1	mg/Kg	3	☼	6010B SEP	Step 2
Selenium	0.90	J B	1.9	0.65	mg/Kg	3	☼	6010B SEP	Step 2
Aluminum	97		13	2.7	mg/Kg	1	☼	6010B SEP	Step 3
Arsenic	0.97		0.64	0.17	mg/Kg	1	☼	6010B SEP	Step 3
Barium	4.1	B	3.2	0.15	mg/Kg	1	☼	6010B SEP	Step 3
Beryllium	0.028	J	0.32	0.019	mg/Kg	1	☼	6010B SEP	Step 3
Cobalt	0.17	J	3.2	0.057	mg/Kg	1	☼	6010B SEP	Step 3
Iron	1100		6.4	3.7	mg/Kg	1	☼	6010B SEP	Step 3
Manganese	1.5	B	0.96	0.034	mg/Kg	1	☼	6010B SEP	Step 3
Aluminum	1800		13	2.0	mg/Kg	1	☼	6010B SEP	Step 4
Arsenic	0.78	B	0.64	0.28	mg/Kg	1	☼	6010B SEP	Step 4
Barium	23		3.2	0.15	mg/Kg	1	☼	6010B SEP	Step 4
Beryllium	0.078	J	0.32	0.020	mg/Kg	1	☼	6010B SEP	Step 4
Cobalt	1.5	J	3.2	0.068	mg/Kg	1	☼	6010B SEP	Step 4
Iron	3800		6.4	3.7	mg/Kg	1	☼	6010B SEP	Step 4
Li	4.2		3.2	0.19	mg/Kg	1	☼	6010B SEP	Step 4

This Detection Summary does not include radiochemical test results.

LUMINANT

Client Sample ID: AP-2019-2 (35-36) (Continued)

Lab Sample ID: 140-15490-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Manganese	31		0.96	0.17	mg/Kg	1	☼	6010B SEP	Step 4
Aluminum	55	J *	190	30	mg/Kg	5	☼	6010B SEP	Step 5
Barium	11	J *	48	2.3	mg/Kg	5	☼	6010B SEP	Step 5
Cobalt	0.85	J *	48	0.76	mg/Kg	5	☼	6010B SEP	Step 5
Manganese	3.9	J *	14	2.4	mg/Kg	5	☼	6010B SEP	Step 5
Aluminum	2000		13	2.0	mg/Kg	1	☼	6010B SEP	Step 6
Arsenic	0.74		0.64	0.19	mg/Kg	1	☼	6010B SEP	Step 6
Barium	16		3.2	0.15	mg/Kg	1	☼	6010B SEP	Step 6
Beryllium	0.061	J	0.32	0.015	mg/Kg	1	☼	6010B SEP	Step 6
Cobalt	0.80	J	3.2	0.059	mg/Kg	1	☼	6010B SEP	Step 6
Iron	3300		6.4	3.7	mg/Kg	1	☼	6010B SEP	Step 6
Li	2.1	J	3.2	0.19	mg/Kg	1	☼	6010B SEP	Step 6
Manganese	19		0.96	0.32	mg/Kg	1	☼	6010B SEP	Step 6
Aluminum	26000		130	20	mg/Kg	10	☼	6010B SEP	Step 7
Arsenic	0.71		0.64	0.17	mg/Kg	1	☼	6010B SEP	Step 7
Barium	330		32	1.5	mg/Kg	10	☼	6010B SEP	Step 7
Beryllium	0.51		0.32	0.0096	mg/Kg	1	☼	6010B SEP	Step 7
Cobalt	1.1	J	6.4	0.38	mg/Kg	2	☼	6010B SEP	Step 7
Iron	5600		6.4	5.2	mg/Kg	1	☼	6010B SEP	Step 7
Li	11		3.2	0.19	mg/Kg	1	☼	6010B SEP	Step 7
Manganese	34		0.96	0.066	mg/Kg	1	☼	6010B SEP	Step 7
Mo	0.17	J	2.5	0.10	mg/Kg	1	☼	6010B SEP	Step 7
Thallium	0.70	J	4.5	0.46	mg/Kg	2	☼	6010B SEP	Step 7
Aluminum	30000		10	1.6	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Arsenic	3.2		0.50	0.13	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Barium	390		2.5	0.12	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Beryllium	0.68		0.25	0.0075	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Cobalt	6.3		2.5	0.023	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Iron	14000		5.0	4.1	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Li	18		2.5	0.15	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Manganese	130		0.75	0.052	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Mo	0.17	J	2.0	0.082	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Selenium	0.90		0.50	0.17	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Thallium	0.70	J	1.8	0.18	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Chromium	12		1.8	0.27	mg/Kg	1	☼	6010B	Total/NA
Lead	6.2		1.8	0.34	mg/Kg	1	☼	6010B	Total/NA
Aluminum	62000		130	20	mg/Kg	10	☼	6010B	Total/NA
Arsenic	3.0		0.64	0.17	mg/Kg	1	☼	6010B	Total/NA
Barium	560		32	1.5	mg/Kg	10	☼	6010B	Total/NA
Beryllium	0.72		0.32	0.0096	mg/Kg	1	☼	6010B	Total/NA
Cobalt	6.2	J	16	0.96	mg/Kg	5	☼	6010B	Total/NA
Iron	13000		6.4	5.2	mg/Kg	1	☼	6010B	Total/NA
Lithium	26		3.2	0.19	mg/Kg	1	☼	6010B	Total/NA

LUMINANT

This Detection Summary does not include radiochemical test results.

Client Sample ID: AP-2019-2 (35-36) (Continued)

Lab Sample ID: 140-15490-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Manganese	150		0.96	0.066	mg/Kg	1	☼	6010B	Total/NA
Molybdenum	0.41	J	2.5	0.10	mg/Kg	1	☼	6010B	Total/NA
Hg	0.12	J	0.13	0.051	mg/Kg	1	☼	7470A	Total/NA

Client Sample ID: AP-2019-3 (18-19)

Lab Sample ID: 140-15490-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Aluminum	14	J	50	8.0	mg/Kg	4	☼	6010B SEP	Step 1
Cobalt	0.87	J	13	0.23	mg/Kg	4	☼	6010B SEP	Step 1
Iron	15	J	25	15	mg/Kg	4	☼	6010B SEP	Step 1
Manganese	1.2	J	3.8	0.16	mg/Kg	4	☼	6010B SEP	Step 1
Selenium	0.68	J B	1.9	0.64	mg/Kg	3	☼	6010B SEP	Step 2
Aluminum	30		13	2.6	mg/Kg	1	☼	6010B SEP	Step 3
Barium	2.3	J B	3.1	0.15	mg/Kg	1	☼	6010B SEP	Step 3
Beryllium	0.025	J	0.31	0.019	mg/Kg	1	☼	6010B SEP	Step 3
Iron	57		6.3	3.6	mg/Kg	1	☼	6010B SEP	Step 3
Manganese	0.11	J B	0.94	0.034	mg/Kg	1	☼	6010B SEP	Step 3
Selenium	0.23	J B	0.63	0.21	mg/Kg	1	☼	6010B SEP	Step 3
Aluminum	880		13	2.0	mg/Kg	1	☼	6010B SEP	Step 4
Arsenic	0.63	B	0.63	0.28	mg/Kg	1	☼	6010B SEP	Step 4
Barium	6.9		3.1	0.15	mg/Kg	1	☼	6010B SEP	Step 4
Beryllium	0.069	J	0.31	0.020	mg/Kg	1	☼	6010B SEP	Step 4
Cobalt	0.53	J	3.1	0.066	mg/Kg	1	☼	6010B SEP	Step 4
Iron	2300		6.3	3.6	mg/Kg	1	☼	6010B SEP	Step 4
Li	0.53	J	3.1	0.19	mg/Kg	1	☼	6010B SEP	Step 4
Manganese	4.2		0.94	0.16	mg/Kg	1	☼	6010B SEP	Step 4
Selenium	0.65	B *	0.63	0.59	mg/Kg	1	☼	6010B SEP	Step 4
Aluminum	120	J *	190	29	mg/Kg	5	☼	6010B SEP	Step 5
Aluminum	1200		13	2.0	mg/Kg	1	☼	6010B SEP	Step 6
Arsenic	0.24	J	0.63	0.19	mg/Kg	1	☼	6010B SEP	Step 6
Barium	2.1	J	3.1	0.15	mg/Kg	1	☼	6010B SEP	Step 6
Beryllium	0.026	J	0.31	0.015	mg/Kg	1	☼	6010B SEP	Step 6
Cobalt	0.28	J	3.1	0.058	mg/Kg	1	☼	6010B SEP	Step 6
Iron	820		6.3	3.6	mg/Kg	1	☼	6010B SEP	Step 6
Li	0.62	J	3.1	0.19	mg/Kg	1	☼	6010B SEP	Step 6
Manganese	2.9		0.94	0.31	mg/Kg	1	☼	6010B SEP	Step 6
Aluminum	12000		130	20	mg/Kg	10	☼	6010B SEP	Step 7
Arsenic	0.79	J	1.3	0.33	mg/Kg	2	☼	6010B SEP	Step 7
Barium	180		31	1.5	mg/Kg	10	☼	6010B SEP	Step 7
Beryllium	0.11	J	0.31	0.0094	mg/Kg	1	☼	6010B SEP	Step 7
Iron	2000		6.3	5.1	mg/Kg	1	☼	6010B SEP	Step 7
Li	6.0		3.1	0.19	mg/Kg	1	☼	6010B SEP	Step 7
Manganese	26		0.94	0.065	mg/Kg	1	☼	6010B SEP	Step 7
Mo	0.12	J	2.5	0.10	mg/Kg	1	☼	6010B SEP	Step 7
Aluminum	14000		10	1.6	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Arsenic	1.7		0.50	0.13	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Barium	190		2.5	0.12	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Beryllium	0.23	J	0.25	0.0075	mg/Kg	1		6010B SEP	Sum of Steps 1-7

LUMINANT

This Detection Summary does not include radiochemical test results.

Client: Golder Associates Inc.
Job ID: 140-15490-1
Project/Site: Martin Lake Ash Ponds - SEP + Totals

Client Sample ID: AP-2019-3 (18-19) (Continued)
Lab Sample ID: 140-15490-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Cobalt	1.7	J	2.5	0.023	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Iron	5200		5.0	4.1	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Li	7.2		2.5	0.15	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Manganese	35		0.75	0.052	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Mo	0.12	J	2.0	0.082	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Selenium	1.6		0.50	0.17	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Chromium	4.4		1.8	0.26	mg/Kg	1	☼	6010B	Total/NA
Lead	3.9		1.8	0.33	mg/Kg	1	☼	6010B	Total/NA
Aluminum	20000		130	20	mg/Kg	10	☼	6010B	Total/NA
Arsenic	2.9	J	3.1	0.81	mg/Kg	5	☼	6010B	Total/NA
Barium	240		31	1.5	mg/Kg	10	☼	6010B	Total/NA
Beryllium	0.42		0.31	0.0094	mg/Kg	1	☼	6010B	Total/NA
Cobalt	3.3	J	16	0.94	mg/Kg	5	☼	6010B	Total/NA
Iron	8000		6.3	5.1	mg/Kg	1	☼	6010B	Total/NA
Lithium	9.6		3.1	0.19	mg/Kg	1	☼	6010B	Total/NA
Manganese	47		0.94	0.065	mg/Kg	1	☼	6010B	Total/NA
Molybdenum	0.28	J	2.5	0.10	mg/Kg	1	☼	6010B	Total/NA

LUMINANT

This Detection Summary does not include radiochemical test results.

Client Sample ID: AP-2019-1 (30-31)

Date Collected: 06/03/19 11:36
Date Received: 06/05/19 09:20

Lab Sample ID: 140-15490-1

Matrix: Solid
Percent Solids: 76.0

Method: 6010B SEP - SEP Metals (ICP) - Step 1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		53	8.4	mg/Kg	☼	06/29/19 08:00	07/11/19 12:49	4
Antimony	ND		16	1.5	mg/Kg	☼	06/29/19 08:00	07/11/19 12:49	4
Arsenic	ND		2.6	0.68	mg/Kg	☼	06/29/19 08:00	07/11/19 12:49	4
Barium	**0.88**	**J**	13	0.63	mg/Kg	☼	06/29/19 08:00	07/11/19 12:49	4
Beryllium	ND		1.3	0.41	mg/Kg	☼	06/29/19 08:00	07/11/19 12:49	4
Cobalt	**0.54**	**J**	13	0.24	mg/Kg	☼	06/29/19 08:00	07/11/19 12:49	4
Iron	ND		26	15	mg/Kg	☼	06/29/19 08:00	07/11/19 12:49	4
Li	ND		13	0.79	mg/Kg	☼	06/29/19 08:00	07/11/19 12:49	4
Manganese	**3.1**	**J**	3.9	0.16	mg/Kg	☼	06/29/19 08:00	07/11/19 12:49	4
Mo	ND		11	0.43	mg/Kg	☼	06/29/19 08:00	07/11/19 12:49	4
Selenium	ND		2.6	0.89	mg/Kg	☼	06/29/19 08:00	07/11/19 12:49	4
Thallium	ND		9.2	1.1	mg/Kg	☼	06/29/19 08:00	07/11/19 12:49	4

Method: 6010B SEP - SEP Metals (ICP) - Step 2

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**9.7**	**J ***	39	6.3	mg/Kg	☼	06/30/19 08:00	07/11/19 14:21	3
Antimony	ND		12	1.1	mg/Kg	☼	06/30/19 08:00	07/11/19 14:21	3
Arsenic	ND		2.0	0.51	mg/Kg	☼	06/30/19 08:00	07/11/19 14:21	3
Barium	**0.76**	**J ***	9.9	0.47	mg/Kg	☼	06/30/19 08:00	07/11/19 14:21	3
Beryllium	ND	*	0.99	0.063	mg/Kg	☼	06/30/19 08:00	07/11/19 14:21	3
Cobalt	ND		9.9	0.25	mg/Kg	☼	06/30/19 08:00	07/11/19 14:21	3
Iron	ND	*	20	11	mg/Kg	☼	06/30/19 08:00	07/11/19 14:21	3
Li	ND		9.9	0.59	mg/Kg	☼	06/30/19 08:00	07/11/19 14:21	3
Manganese	ND		3.0	1.1	mg/Kg	☼	06/30/19 08:00	07/11/19 14:21	3
Mo	ND		7.9	0.32	mg/Kg	☼	06/30/19 08:00	07/11/19 14:21	3
Selenium	**0.76**	**J B**	2.0	0.67	mg/Kg	☼	06/30/19 08:00	07/11/19 14:21	3
Thallium	ND		6.9	0.83	mg/Kg	☼	06/30/19 08:00	07/11/19 14:21	3

Method: 6010B SEP - SEP Metals (ICP) - Step 3

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**88**		13	2.8	mg/Kg	☼	07/02/19 08:00	07/11/19 16:06	1
Antimony	ND		3.9	0.37	mg/Kg	☼	07/02/19 08:00	07/11/19 16:06	1
Arsenic	**1.8**		0.66	0.17	mg/Kg	☼	07/02/19 08:00	07/11/19 16:06	1
Barium	**4.3**	**B**	3.3	0.16	mg/Kg	☼	07/02/19 08:00	07/11/19 16:06	1
Beryllium	**0.067**	**J**	0.33	0.020	mg/Kg	☼	07/02/19 08:00	07/11/19 16:06	1
Cobalt	**0.34**	**J**	3.3	0.059	mg/Kg	☼	07/02/19 08:00	07/11/19 16:06	1
Iron	**580**		6.6	3.8	mg/Kg	☼	07/02/19 08:00	07/11/19 16:06	1
Li	ND		3.3	0.20	mg/Kg	☼	07/02/19 08:00	07/11/19 16:06	1
Manganese	**2.4**	**B**	0.99	0.036	mg/Kg	☼	07/02/19 08:00	07/11/19 16:06	1
Mo	ND		2.6	0.11	mg/Kg	☼	07/02/19 08:00	07/11/19 16:06	1
Selenium	**0.22**	**J B**	0.66	0.22	mg/Kg	☼	07/02/19 08:00	07/11/19 16:06	1
Thallium	ND		2.3	0.28	mg/Kg	☼	07/02/19 08:00	07/11/19 16:06	1

Method: 6010B SEP - SEP Metals (ICP) - Step 4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**1700**		13	2.1	mg/Kg	☼	07/03/19 08:00	07/11/19 17:49	1
Antimony	ND		3.9	0.59	mg/Kg	☼	07/03/19 08:00	07/11/19 17:49	1
Arsenic	**2.8**	**B**	0.66	0.29	mg/Kg	☼	07/03/19 08:00	07/11/19 17:49	1
Barium	**16**		3.3	0.16	mg/Kg	☼	07/03/19 08:00	07/11/19 17:49	1
Beryllium	**0.13**	**J**	0.33	0.021	mg/Kg	☼	07/03/19 08:00	07/11/19 17:49	1

LUMINANT

Client Sample ID: AP-2019-1 (30-31)
Date Collected: 06/03/19 11:36
Date Received: 06/05/19 09:20

Lab Sample ID: 140-15490-1
Matrix: Solid
Percent Solids: 76.0

Method: 6010B SEP - SEP Metals (ICP) - Step 4 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cobalt	1.5	J	3.3	0.070	mg/Kg	☼	07/03/19 08:00	07/11/19 17:49	1
Iron	3900		6.6	3.8	mg/Kg	☼	07/03/19 08:00	07/11/19 17:49	1
Li	3.0	J	3.3	0.20	mg/Kg	☼	07/03/19 08:00	07/11/19 17:49	1
Manganese	18		0.99	0.17	mg/Kg	☼	07/03/19 08:00	07/11/19 17:49	1
Mo	ND		2.6	0.11	mg/Kg	☼	07/03/19 08:00	07/11/19 17:49	1
Selenium	ND	*	0.66	0.62	mg/Kg	☼	07/03/19 08:00	07/11/19 17:49	1
Thallium	ND		2.3	0.38	mg/Kg	☼	07/03/19 08:00	07/11/19 17:49	1

Method: 6010B SEP - SEP Metals (ICP) - Step 5

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	62	J *	200	31	mg/Kg	☼	07/10/19 08:00	07/12/19 11:54	5
Antimony	ND		59	5.5	mg/Kg	☼	07/10/19 08:00	07/12/19 11:54	5
Arsenic	ND		9.9	2.5	mg/Kg	☼	07/10/19 08:00	07/12/19 11:54	5
Barium	7.0	J *	49	2.4	mg/Kg	☼	07/10/19 08:00	07/12/19 11:54	5
Beryllium	ND	*	4.9	0.41	mg/Kg	☼	07/10/19 08:00	07/12/19 11:54	5
Cobalt	ND	*	49	0.79	mg/Kg	☼	07/10/19 08:00	07/12/19 11:54	5
Iron	ND	*	99	58	mg/Kg	☼	07/10/19 08:00	07/12/19 11:54	5
Li	ND		49	2.9	mg/Kg	☼	07/10/19 08:00	07/12/19 11:54	5
Manganese	ND	*	15	2.4	mg/Kg	☼	07/10/19 08:00	07/12/19 11:54	5
Mo	ND		39	1.6	mg/Kg	☼	07/10/19 08:00	07/12/19 11:54	5
Selenium	ND		9.9	3.4	mg/Kg	☼	07/10/19 08:00	07/12/19 11:54	5
Thallium	ND	*	35	4.6	mg/Kg	☼	07/10/19 08:00	07/12/19 11:54	5

Method: 6010B SEP - SEP Metals (ICP) - Step 6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	2300		13	2.1	mg/Kg	☼	07/10/19 08:00	07/12/19 13:29	1
Antimony	ND		3.9	0.37	mg/Kg	☼	07/10/19 08:00	07/12/19 13:29	1
Arsenic	0.94		0.66	0.20	mg/Kg	☼	07/10/19 08:00	07/12/19 13:29	1
Barium	18		3.3	0.16	mg/Kg	☼	07/10/19 08:00	07/12/19 13:29	1
Beryllium	0.067	J	0.33	0.016	mg/Kg	☼	07/10/19 08:00	07/12/19 13:29	1
Cobalt	0.90	J	3.3	0.061	mg/Kg	☼	07/10/19 08:00	07/12/19 13:29	1
Iron	2500		6.6	3.8	mg/Kg	☼	07/10/19 08:00	07/12/19 13:29	1
Li	2.1	J	3.3	0.20	mg/Kg	☼	07/10/19 08:00	07/12/19 13:29	1
Manganese	16		0.99	0.33	mg/Kg	☼	07/10/19 08:00	07/12/19 13:29	1
Mo	ND		2.6	0.13	mg/Kg	☼	07/10/19 08:00	07/12/19 13:29	1
Selenium	ND		0.66	0.22	mg/Kg	☼	07/10/19 08:00	07/12/19 13:29	1
Thallium	ND		2.3	0.28	mg/Kg	☼	07/10/19 08:00	07/12/19 13:29	1

Method: 6010B SEP - SEP Metals (ICP) - Step 7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	29000		130	21	mg/Kg	☼	07/12/19 09:08	07/15/19 13:08	10
Antimony	ND		3.9	0.18	mg/Kg	☼	07/12/19 09:08	07/15/19 11:39	1
Arsenic	1.2		0.66	0.17	mg/Kg	☼	07/12/19 09:08	07/15/19 11:39	1
Barium	390		33	1.6	mg/Kg	☼	07/12/19 09:08	07/15/19 13:08	10
Beryllium	0.56		0.33	0.0099	mg/Kg	☼	07/12/19 09:08	07/15/19 11:39	1
Cobalt	0.79	J	6.6	0.39	mg/Kg	☼	07/12/19 09:08	07/15/19 17:11	2
Iron	5200		6.6	5.4	mg/Kg	☼	07/12/19 09:08	07/15/19 11:39	1
Li	9.6		3.3	0.20	mg/Kg	☼	07/12/19 09:08	07/15/19 11:39	1
Manganese	26		0.99	0.068	mg/Kg	☼	07/12/19 09:08	07/15/19 11:39	1
Mo	0.19	J	2.6	0.11	mg/Kg	☼	07/12/19 09:08	07/15/19 11:39	1

LUMINANT

Client Sample ID: AP-2019-1 (30-31)
Lab Sample ID: 140-15490-1
Date Collected: 06/03/19 11:36
Matrix: Solid
Date Received: 06/05/19 09:20
Percent Solids: 76.0

Method: 6010B SEP - SEP Metals (ICP) - Step 7 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Selenium	ND		0.66	0.22	mg/Kg	☼	07/12/19 09:08	07/15/19 11:39	1
Thallium	**0.48**	**J**	4.6	0.47	mg/Kg	☼	07/12/19 09:08	07/15/19 17:11	2

Method: 6010B SEP - SEP Metals (ICP) - Sum of Steps 1-7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**33000**		10	1.6	mg/Kg			07/16/19 17:31	1
Antimony	ND		3.0	0.14	mg/Kg			07/16/19 17:31	1
Arsenic	**6.9**		0.50	0.13	mg/Kg			07/16/19 17:31	1
Barium	**440**		2.5	0.12	mg/Kg			07/16/19 17:31	1
Beryllium	**0.83**		0.25	0.0075	mg/Kg			07/16/19 17:31	1
Cobalt	**4.0**		2.5	0.023	mg/Kg			07/16/19 17:31	1
Iron	**12000**		5.0	4.1	mg/Kg			07/16/19 17:31	1
Li	**15**		2.5	0.15	mg/Kg			07/16/19 17:31	1
Manganese	**66**		0.75	0.052	mg/Kg			07/16/19 17:31	1
Mo	**0.19**	**J**	2.0	0.082	mg/Kg			07/16/19 17:31	1
Selenium	**0.98**		0.50	0.17	mg/Kg			07/16/19 17:31	1
Thallium	**0.48**	**J**	1.8	0.18	mg/Kg			07/16/19 17:31	1

Method: 6010B - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		25	12	mg/Kg	☼	06/26/19 08:00	07/10/19 12:59	1
Chromium	**13**	**F1**	1.8	0.27	mg/Kg	☼	06/26/19 08:00	07/10/19 12:59	1
Lead	**6.4**		1.8	0.34	mg/Kg	☼	06/26/19 08:00	07/10/19 12:59	1

Method: 6010B - SEP Metals (ICP) - Total

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**60000**		130	21	mg/Kg	☼	06/11/19 08:00	07/15/19 15:45	10
Antimony	ND		3.9	0.18	mg/Kg	☼	06/11/19 08:00	07/15/19 14:24	1
Arsenic	**6.8**		0.66	0.17	mg/Kg	☼	06/11/19 08:00	07/15/19 14:24	1
Barium	**680**		33	1.6	mg/Kg	☼	06/11/19 08:00	07/15/19 15:45	10
Beryllium	**0.89**		0.33	0.0099	mg/Kg	☼	06/11/19 08:00	07/15/19 14:24	1
Cobalt	**3.8**	**J**	6.6	0.39	mg/Kg	☼	06/11/19 08:00	07/15/19 18:28	2
Iron	**11000**		6.6	5.4	mg/Kg	☼	06/11/19 08:00	07/15/19 14:24	1
Lithium	**18**		3.3	0.20	mg/Kg	☼	06/11/19 08:00	07/15/19 14:24	1
Manganese	**66**		0.99	0.068	mg/Kg	☼	06/11/19 08:00	07/15/19 14:24	1
Molybdenum	**0.40**	**J**	2.6	0.11	mg/Kg	☼	06/11/19 08:00	07/15/19 14:24	1
Selenium	ND		0.66	0.22	mg/Kg	☼	06/11/19 08:00	07/15/19 14:24	1
Thallium	ND		4.6	0.47	mg/Kg	☼	06/11/19 08:00	07/15/19 18:28	2

Method: 7470A - SEP Mercury (CVAA) - Total

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	**0.081**	**J**	0.13	0.053	mg/Kg	☼	06/11/19 08:00	06/16/19 14:04	1

LUMINANT

Client Sample ID: AP-2019-2 (35-36)
Date Collected: 06/03/19 13:20
Date Received: 06/05/19 09:20

Lab Sample ID: 140-15490-2
Matrix: Solid
Percent Solids: 78.5

Method: 6010B SEP - SEP Metals (ICP) - Step 1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**19**	**J**	51	8.2	mg/Kg	☼	06/29/19 08:00	07/11/19 12:59	4
Antimony	ND		15	1.4	mg/Kg	☼	06/29/19 08:00	07/11/19 12:59	4
Arsenic	ND		2.5	0.66	mg/Kg	☼	06/29/19 08:00	07/11/19 12:59	4
Barium	**0.88**	**J**	13	0.61	mg/Kg	☼	06/29/19 08:00	07/11/19 12:59	4
Beryllium	ND		1.3	0.39	mg/Kg	☼	06/29/19 08:00	07/11/19 12:59	4
Cobalt	**1.6**	**J**	13	0.23	mg/Kg	☼	06/29/19 08:00	07/11/19 12:59	4
Iron	**23**	**J**	25	15	mg/Kg	☼	06/29/19 08:00	07/11/19 12:59	4
Li	ND		13	0.76	mg/Kg	☼	06/29/19 08:00	07/11/19 12:59	4
Manganese	**33**		3.8	0.16	mg/Kg	☼	06/29/19 08:00	07/11/19 12:59	4
Mo	ND		10	0.42	mg/Kg	☼	06/29/19 08:00	07/11/19 12:59	4
Selenium	ND		2.5	0.87	mg/Kg	☼	06/29/19 08:00	07/11/19 12:59	4
Thallium	ND		8.9	1.1	mg/Kg	☼	06/29/19 08:00	07/11/19 12:59	4

Method: 6010B SEP - SEP Metals (ICP) - Step 2

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**18**	**J ***	38	6.1	mg/Kg	☼	06/30/19 08:00	07/11/19 14:42	3
Antimony	ND		11	1.1	mg/Kg	☼	06/30/19 08:00	07/11/19 14:42	3
Arsenic	ND		1.9	0.50	mg/Kg	☼	06/30/19 08:00	07/11/19 14:42	3
Barium	**0.67**	**J ***	9.6	0.46	mg/Kg	☼	06/30/19 08:00	07/11/19 14:42	3
Beryllium	ND	*	0.96	0.061	mg/Kg	☼	06/30/19 08:00	07/11/19 14:42	3
Cobalt	**0.27**	**J**	9.6	0.24	mg/Kg	☼	06/30/19 08:00	07/11/19 14:42	3
Iron	**110**	****	19	11	mg/Kg	☼	06/30/19 08:00	07/11/19 14:42	3
Li	ND		9.6	0.57	mg/Kg	☼	06/30/19 08:00	07/11/19 14:42	3
Manganese	**4.2**		2.9	1.1	mg/Kg	☼	06/30/19 08:00	07/11/19 14:42	3
Mo	ND		7.6	0.31	mg/Kg	☼	06/30/19 08:00	07/11/19 14:42	3
Selenium	**0.90**	**J B**	1.9	0.65	mg/Kg	☼	06/30/19 08:00	07/11/19 14:42	3
Thallium	ND		6.7	0.80	mg/Kg	☼	06/30/19 08:00	07/11/19 14:42	3

Method: 6010B SEP - SEP Metals (ICP) - Step 3

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**97**		13	2.7	mg/Kg	☼	07/02/19 08:00	07/11/19 16:16	1
Antimony	ND		3.8	0.36	mg/Kg	☼	07/02/19 08:00	07/11/19 16:16	1
Arsenic	**0.97**		0.64	0.17	mg/Kg	☼	07/02/19 08:00	07/11/19 16:16	1
Barium	**4.1**	**B**	3.2	0.15	mg/Kg	☼	07/02/19 08:00	07/11/19 16:16	1
Beryllium	**0.028**	**J**	0.32	0.019	mg/Kg	☼	07/02/19 08:00	07/11/19 16:16	1
Cobalt	**0.17**	**J**	3.2	0.057	mg/Kg	☼	07/02/19 08:00	07/11/19 16:16	1
Iron	**1100**		6.4	3.7	mg/Kg	☼	07/02/19 08:00	07/11/19 16:16	1
Li	ND		3.2	0.19	mg/Kg	☼	07/02/19 08:00	07/11/19 16:16	1
Manganese	**1.5**	**B**	0.96	0.034	mg/Kg	☼	07/02/19 08:00	07/11/19 16:16	1
Mo	ND		2.5	0.10	mg/Kg	☼	07/02/19 08:00	07/11/19 16:16	1
Selenium	ND		0.64	0.22	mg/Kg	☼	07/02/19 08:00	07/11/19 16:16	1
Thallium	ND		2.2	0.27	mg/Kg	☼	07/02/19 08:00	07/11/19 16:16	1

Method: 6010B SEP - SEP Metals (ICP) - Step 4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**1800**		13	2.0	mg/Kg	☼	07/03/19 08:00	07/11/19 17:59	1
Antimony	ND		3.8	0.57	mg/Kg	☼	07/03/19 08:00	07/11/19 17:59	1
Arsenic	**0.78**	**B**	0.64	0.28	mg/Kg	☼	07/03/19 08:00	07/11/19 17:59	1
Barium	**23**		3.2	0.15	mg/Kg	☼	07/03/19 08:00	07/11/19 17:59	1
Beryllium	**0.078**	**J**	0.32	0.020	mg/Kg	☼	07/03/19 08:00	07/11/19 17:59	1

LUMINANT

Client Sample ID: AP-2019-2 (35-36)
Date Collected: 06/03/19 13:20
Date Received: 06/05/19 09:20

Lab Sample ID: 140-15490-2
Matrix: Solid
Percent Solids: 78.5

Method: 6010B SEP - SEP Metals (ICP) - Step 4 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cobalt	1.5	J	3.2	0.068	mg/Kg	☼	07/03/19 08:00	07/11/19 17:59	1
Iron	3800		6.4	3.7	mg/Kg	☼	07/03/19 08:00	07/11/19 17:59	1
Li	4.2		3.2	0.19	mg/Kg	☼	07/03/19 08:00	07/11/19 17:59	1
Manganese	31		0.96	0.17	mg/Kg	☼	07/03/19 08:00	07/11/19 17:59	1
Mo	ND		2.5	0.10	mg/Kg	☼	07/03/19 08:00	07/11/19 17:59	1
Selenium	ND	*	0.64	0.60	mg/Kg	☼	07/03/19 08:00	07/11/19 17:59	1
Thallium	ND		2.2	0.37	mg/Kg	☼	07/03/19 08:00	07/11/19 17:59	1

Method: 6010B SEP - SEP Metals (ICP) - Step 5

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	55	J *	190	30	mg/Kg	☼	07/10/19 08:00	07/12/19 12:05	5
Antimony	ND		57	5.4	mg/Kg	☼	07/10/19 08:00	07/12/19 12:05	5
Arsenic	ND		9.6	2.4	mg/Kg	☼	07/10/19 08:00	07/12/19 12:05	5
Barium	11	J *	48	2.3	mg/Kg	☼	07/10/19 08:00	07/12/19 12:05	5
Beryllium	ND	*	4.8	0.40	mg/Kg	☼	07/10/19 08:00	07/12/19 12:05	5
Cobalt	0.85	J *	48	0.76	mg/Kg	☼	07/10/19 08:00	07/12/19 12:05	5
Iron	ND	*	96	56	mg/Kg	☼	07/10/19 08:00	07/12/19 12:05	5
Li	ND		48	2.8	mg/Kg	☼	07/10/19 08:00	07/12/19 12:05	5
Manganese	3.9	J *	14	2.4	mg/Kg	☼	07/10/19 08:00	07/12/19 12:05	5
Mo	ND		38	1.6	mg/Kg	☼	07/10/19 08:00	07/12/19 12:05	5
Selenium	ND		9.6	3.3	mg/Kg	☼	07/10/19 08:00	07/12/19 12:05	5
Thallium	ND	*	33	4.5	mg/Kg	☼	07/10/19 08:00	07/12/19 12:05	5

Method: 6010B SEP - SEP Metals (ICP) - Step 6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	2000		13	2.0	mg/Kg	☼	07/10/19 08:00	07/12/19 13:49	1
Antimony	ND		3.8	0.36	mg/Kg	☼	07/10/19 08:00	07/12/19 13:49	1
Arsenic	0.74		0.64	0.19	mg/Kg	☼	07/10/19 08:00	07/12/19 13:49	1
Barium	16		3.2	0.15	mg/Kg	☼	07/10/19 08:00	07/12/19 13:49	1
Beryllium	0.061	J	0.32	0.015	mg/Kg	☼	07/10/19 08:00	07/12/19 13:49	1
Cobalt	0.80	J	3.2	0.059	mg/Kg	☼	07/10/19 08:00	07/12/19 13:49	1
Iron	3300		6.4	3.7	mg/Kg	☼	07/10/19 08:00	07/12/19 13:49	1
Li	2.1	J	3.2	0.19	mg/Kg	☼	07/10/19 08:00	07/12/19 13:49	1
Manganese	19		0.96	0.32	mg/Kg	☼	07/10/19 08:00	07/12/19 13:49	1
Mo	ND		2.5	0.13	mg/Kg	☼	07/10/19 08:00	07/12/19 13:49	1
Selenium	ND		0.64	0.22	mg/Kg	☼	07/10/19 08:00	07/12/19 13:49	1
Thallium	ND		2.2	0.27	mg/Kg	☼	07/10/19 08:00	07/12/19 13:49	1

Method: 6010B SEP - SEP Metals (ICP) - Step 7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	26000		130	20	mg/Kg	☼	07/12/19 09:08	07/15/19 13:19	10
Antimony	ND		3.8	0.18	mg/Kg	☼	07/12/19 09:08	07/15/19 12:05	1
Arsenic	0.71		0.64	0.17	mg/Kg	☼	07/12/19 09:08	07/15/19 12:05	1
Barium	330		32	1.5	mg/Kg	☼	07/12/19 09:08	07/15/19 13:19	10
Beryllium	0.51		0.32	0.0096	mg/Kg	☼	07/12/19 09:08	07/15/19 12:05	1
Cobalt	1.1	J	6.4	0.38	mg/Kg	☼	07/12/19 09:08	07/15/19 17:21	2
Iron	5600		6.4	5.2	mg/Kg	☼	07/12/19 09:08	07/15/19 12:05	1
Li	11		3.2	0.19	mg/Kg	☼	07/12/19 09:08	07/15/19 12:05	1
Manganese	34		0.96	0.066	mg/Kg	☼	07/12/19 09:08	07/15/19 12:05	1
Mo	0.17	J	2.5	0.10	mg/Kg	☼	07/12/19 09:08	07/15/19 12:05	1

LUMINANT

Client Sample ID: AP-2019-2 (35-36)
Date Collected: 06/03/19 13:20
Date Received: 06/05/19 09:20

Lab Sample ID: 140-15490-2
Matrix: Solid
Percent Solids: 78.5

Method: 6010B SEP - SEP Metals (ICP) - Step 7 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Selenium	ND		0.64	0.22	mg/Kg	☼	07/12/19 09:08	07/15/19 12:05	1
Thallium	**0.70**	**J**	4.5	0.46	mg/Kg	☼	07/12/19 09:08	07/15/19 17:21	2

Method: 6010B SEP - SEP Metals (ICP) - Sum of Steps 1-7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**30000**		10	1.6	mg/Kg			07/16/19 17:31	1
Antimony	ND		3.0	0.14	mg/Kg			07/16/19 17:31	1
Arsenic	**3.2**		0.50	0.13	mg/Kg			07/16/19 17:31	1
Barium	**390**		2.5	0.12	mg/Kg			07/16/19 17:31	1
Beryllium	**0.68**		0.25	0.0075	mg/Kg			07/16/19 17:31	1
Cobalt	**6.3**		2.5	0.023	mg/Kg			07/16/19 17:31	1
Iron	**14000**		5.0	4.1	mg/Kg			07/16/19 17:31	1
Li	**18**		2.5	0.15	mg/Kg			07/16/19 17:31	1
Manganese	**130**		0.75	0.052	mg/Kg			07/16/19 17:31	1
Mo	**0.17**	**J**	2.0	0.082	mg/Kg			07/16/19 17:31	1
Selenium	**0.90**		0.50	0.17	mg/Kg			07/16/19 17:31	1
Thallium	**0.70**	**J**	1.8	0.18	mg/Kg			07/16/19 17:31	1

Method: 6010B - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		24	12	mg/Kg	☼	06/26/19 08:00	07/10/19 13:13	1
Chromium	**12**		1.8	0.27	mg/Kg	☼	06/26/19 08:00	07/10/19 13:13	1
Lead	**6.2**		1.8	0.34	mg/Kg	☼	06/26/19 08:00	07/10/19 13:13	1

Method: 6010B - SEP Metals (ICP) - Total

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**62000**		130	20	mg/Kg	☼	06/11/19 08:00	07/15/19 16:10	10
Antimony	ND		3.8	0.18	mg/Kg	☼	06/11/19 08:00	07/15/19 14:36	1
Arsenic	**3.0**		0.64	0.17	mg/Kg	☼	06/11/19 08:00	07/15/19 14:36	1
Barium	**560**		32	1.5	mg/Kg	☼	06/11/19 08:00	07/15/19 16:10	10
Beryllium	**0.72**		0.32	0.0096	mg/Kg	☼	06/11/19 08:00	07/15/19 14:36	1
Cobalt	**6.2**	**J**	16	0.96	mg/Kg	☼	06/11/19 08:00	07/15/19 18:38	5
Iron	**13000**		6.4	5.2	mg/Kg	☼	06/11/19 08:00	07/15/19 14:36	1
Lithium	**26**		3.2	0.19	mg/Kg	☼	06/11/19 08:00	07/15/19 14:36	1
Manganese	**150**		0.96	0.066	mg/Kg	☼	06/11/19 08:00	07/15/19 14:36	1
Molybdenum	**0.41**	**J**	2.5	0.10	mg/Kg	☼	06/11/19 08:00	07/15/19 14:36	1
Selenium	ND		0.64	0.22	mg/Kg	☼	06/11/19 08:00	07/15/19 14:36	1
Thallium	ND		11	1.1	mg/Kg	☼	06/11/19 08:00	07/15/19 18:38	5

Method: 7470A - SEP Mercury (CVAA) - Total

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	**0.12**	**J**	0.13	0.051	mg/Kg	☼	06/11/19 08:00	06/16/19 14:09	1

LUMINANT

Client Sample ID: AP-2019-3 (18-19)
Date Collected: 06/03/19 15:20
Date Received: 06/05/19 09:20

Lab Sample ID: 140-15490-3
Matrix: Solid
Percent Solids: 80.0

Method: 6010B SEP - SEP Metals (ICP) - Step 1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**14**	**J**	50	8.0	mg/Kg	☼	06/29/19 08:00	07/11/19 13:04	4
Antimony	ND		15	1.4	mg/Kg	☼	06/29/19 08:00	07/11/19 13:04	4
Arsenic	ND		2.5	0.65	mg/Kg	☼	06/29/19 08:00	07/11/19 13:04	4
Barium	ND		13	0.60	mg/Kg	☼	06/29/19 08:00	07/11/19 13:04	4
Beryllium	ND		1.3	0.39	mg/Kg	☼	06/29/19 08:00	07/11/19 13:04	4
Cobalt	**0.87**	**J**	13	0.23	mg/Kg	☼	06/29/19 08:00	07/11/19 13:04	4
Iron	**15**	**J**	25	15	mg/Kg	☼	06/29/19 08:00	07/11/19 13:04	4
Li	ND		13	0.75	mg/Kg	☼	06/29/19 08:00	07/11/19 13:04	4
Manganese	**1.2**	**J**	3.8	0.16	mg/Kg	☼	06/29/19 08:00	07/11/19 13:04	4
Mo	ND		10	0.41	mg/Kg	☼	06/29/19 08:00	07/11/19 13:04	4
Selenium	ND		2.5	0.85	mg/Kg	☼	06/29/19 08:00	07/11/19 13:04	4
Thallium	ND		8.8	1.1	mg/Kg	☼	06/29/19 08:00	07/11/19 13:04	4

Method: 6010B SEP - SEP Metals (ICP) - Step 2

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND	*	38	6.0	mg/Kg	☼	06/30/19 08:00	07/11/19 14:47	3
Antimony	ND		11	1.1	mg/Kg	☼	06/30/19 08:00	07/11/19 14:47	3
Arsenic	ND		1.9	0.49	mg/Kg	☼	06/30/19 08:00	07/11/19 14:47	3
Barium	ND	*	9.4	0.45	mg/Kg	☼	06/30/19 08:00	07/11/19 14:47	3
Beryllium	ND	*	0.94	0.060	mg/Kg	☼	06/30/19 08:00	07/11/19 14:47	3
Cobalt	ND		9.4	0.24	mg/Kg	☼	06/30/19 08:00	07/11/19 14:47	3
Iron	ND	*	19	11	mg/Kg	☼	06/30/19 08:00	07/11/19 14:47	3
Li	ND		9.4	0.56	mg/Kg	☼	06/30/19 08:00	07/11/19 14:47	3
Manganese	ND		2.8	1.1	mg/Kg	☼	06/30/19 08:00	07/11/19 14:47	3
Mo	ND		7.5	0.31	mg/Kg	☼	06/30/19 08:00	07/11/19 14:47	3
Selenium	**0.68**	**J B**	1.9	0.64	mg/Kg	☼	06/30/19 08:00	07/11/19 14:47	3
Thallium	ND		6.6	0.79	mg/Kg	☼	06/30/19 08:00	07/11/19 14:47	3

Method: 6010B SEP - SEP Metals (ICP) - Step 3

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**30**		13	2.6	mg/Kg	☼	07/02/19 08:00	07/11/19 16:21	1
Antimony	ND		3.8	0.35	mg/Kg	☼	07/02/19 08:00	07/11/19 16:21	1
Arsenic	ND		0.63	0.16	mg/Kg	☼	07/02/19 08:00	07/11/19 16:21	1
Barium	**2.3**	**J B**	3.1	0.15	mg/Kg	☼	07/02/19 08:00	07/11/19 16:21	1
Beryllium	**0.025**	**J**	0.31	0.019	mg/Kg	☼	07/02/19 08:00	07/11/19 16:21	1
Cobalt	ND		3.1	0.056	mg/Kg	☼	07/02/19 08:00	07/11/19 16:21	1
Iron	**57**		6.3	3.6	mg/Kg	☼	07/02/19 08:00	07/11/19 16:21	1
Li	ND		3.1	0.19	mg/Kg	☼	07/02/19 08:00	07/11/19 16:21	1
Manganese	**0.11**	**J B**	0.94	0.034	mg/Kg	☼	07/02/19 08:00	07/11/19 16:21	1
Mo	ND		2.5	0.10	mg/Kg	☼	07/02/19 08:00	07/11/19 16:21	1
Selenium	**0.23**	**J B**	0.63	0.21	mg/Kg	☼	07/02/19 08:00	07/11/19 16:21	1
Thallium	ND		2.2	0.26	mg/Kg	☼	07/02/19 08:00	07/11/19 16:21	1

Method: 6010B SEP - SEP Metals (ICP) - Step 4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**880**		13	2.0	mg/Kg	☼	07/03/19 08:00	07/11/19 18:04	1
Antimony	ND		3.8	0.56	mg/Kg	☼	07/03/19 08:00	07/11/19 18:04	1
Arsenic	**0.63**	**B**	0.63	0.28	mg/Kg	☼	07/03/19 08:00	07/11/19 18:04	1
Barium	**6.9**		3.1	0.15	mg/Kg	☼	07/03/19 08:00	07/11/19 18:04	1
Beryllium	**0.069**	**J**	0.31	0.020	mg/Kg	☼	07/03/19 08:00	07/11/19 18:04	1

LUMINANT

Client Sample ID: AP-2019-3 (18-19)
Date Collected: 06/03/19 15:20
Date Received: 06/05/19 09:20

Lab Sample ID: 140-15490-3
Matrix: Solid
Percent Solids: 80.0

Method: 6010B SEP - SEP Metals (ICP) - Step 4 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cobalt	0.53	J	3.1	0.066	mg/Kg	☼	07/03/19 08:00	07/11/19 18:04	1
Iron	2300		6.3	3.6	mg/Kg	☼	07/03/19 08:00	07/11/19 18:04	1
Li	0.53	J	3.1	0.19	mg/Kg	☼	07/03/19 08:00	07/11/19 18:04	1
Manganese	4.2		0.94	0.16	mg/Kg	☼	07/03/19 08:00	07/11/19 18:04	1
Mo	ND		2.5	0.10	mg/Kg	☼	07/03/19 08:00	07/11/19 18:04	1
Selenium	0.65	B *	0.63	0.59	mg/Kg	☼	07/03/19 08:00	07/11/19 18:04	1
Thallium	ND		2.2	0.36	mg/Kg	☼	07/03/19 08:00	07/11/19 18:04	1

Method: 6010B SEP - SEP Metals (ICP) - Step 5

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	120	J *	190	29	mg/Kg	☼	07/10/19 08:00	07/12/19 12:10	5
Antimony	ND		56	5.3	mg/Kg	☼	07/10/19 08:00	07/12/19 12:10	5
Arsenic	ND		9.4	2.4	mg/Kg	☼	07/10/19 08:00	07/12/19 12:10	5
Barium	ND	*	47	2.3	mg/Kg	☼	07/10/19 08:00	07/12/19 12:10	5
Beryllium	ND	*	4.7	0.39	mg/Kg	☼	07/10/19 08:00	07/12/19 12:10	5
Cobalt	ND	*	47	0.75	mg/Kg	☼	07/10/19 08:00	07/12/19 12:10	5
Iron	ND	*	94	55	mg/Kg	☼	07/10/19 08:00	07/12/19 12:10	5
Li	ND		47	2.8	mg/Kg	☼	07/10/19 08:00	07/12/19 12:10	5
Manganese	ND	*	14	2.3	mg/Kg	☼	07/10/19 08:00	07/12/19 12:10	5
Mo	ND		38	1.6	mg/Kg	☼	07/10/19 08:00	07/12/19 12:10	5
Selenium	ND		9.4	3.3	mg/Kg	☼	07/10/19 08:00	07/12/19 12:10	5
Thallium	ND	*	33	4.4	mg/Kg	☼	07/10/19 08:00	07/12/19 12:10	5

Method: 6010B SEP - SEP Metals (ICP) - Step 6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	1200		13	2.0	mg/Kg	☼	07/10/19 08:00	07/12/19 13:55	1
Antimony	ND		3.8	0.35	mg/Kg	☼	07/10/19 08:00	07/12/19 13:55	1
Arsenic	0.24	J	0.63	0.19	mg/Kg	☼	07/10/19 08:00	07/12/19 13:55	1
Barium	2.1	J	3.1	0.15	mg/Kg	☼	07/10/19 08:00	07/12/19 13:55	1
Beryllium	0.026	J	0.31	0.015	mg/Kg	☼	07/10/19 08:00	07/12/19 13:55	1
Cobalt	0.28	J	3.1	0.058	mg/Kg	☼	07/10/19 08:00	07/12/19 13:55	1
Iron	820		6.3	3.6	mg/Kg	☼	07/10/19 08:00	07/12/19 13:55	1
Li	0.62	J	3.1	0.19	mg/Kg	☼	07/10/19 08:00	07/12/19 13:55	1
Manganese	2.9		0.94	0.31	mg/Kg	☼	07/10/19 08:00	07/12/19 13:55	1
Mo	ND		2.5	0.12	mg/Kg	☼	07/10/19 08:00	07/12/19 13:55	1
Selenium	ND		0.63	0.21	mg/Kg	☼	07/10/19 08:00	07/12/19 13:55	1
Thallium	ND		2.2	0.26	mg/Kg	☼	07/10/19 08:00	07/12/19 13:55	1

Method: 6010B SEP - SEP Metals (ICP) - Step 7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	12000		130	20	mg/Kg	☼	07/12/19 09:08	07/15/19 13:24	10
Antimony	ND		3.8	0.18	mg/Kg	☼	07/12/19 09:08	07/15/19 12:11	1
Arsenic	0.79	J	1.3	0.33	mg/Kg	☼	07/12/19 09:08	07/15/19 17:27	2
Barium	180		31	1.5	mg/Kg	☼	07/12/19 09:08	07/15/19 13:24	10
Beryllium	0.11	J	0.31	0.0094	mg/Kg	☼	07/12/19 09:08	07/15/19 12:11	1
Cobalt	ND		6.3	0.38	mg/Kg	☼	07/12/19 09:08	07/15/19 17:27	2
Iron	2000		6.3	5.1	mg/Kg	☼	07/12/19 09:08	07/15/19 12:11	1
Li	6.0		3.1	0.19	mg/Kg	☼	07/12/19 09:08	07/15/19 12:11	1
Manganese	26		0.94	0.065	mg/Kg	☼	07/12/19 09:08	07/15/19 12:11	1
Mo	0.12	J	2.5	0.10	mg/Kg	☼	07/12/19 09:08	07/15/19 12:11	1

LUMINANT

Client Sample ID: AP-2019-3 (18-19)

Date Collected: 06/03/19 15:20
Date Received: 06/05/19 09:20

Lab Sample ID: 140-15490-3

Matrix: Solid
Percent Solids: 80.0

Method: 6010B SEP - SEP Metals (ICP) - Step 7 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Selenium	ND		1.3	0.43	mg/Kg	☼	07/12/19 09:08	07/15/19 17:27	2
Thallium	ND		4.4	0.45	mg/Kg	☼	07/12/19 09:08	07/15/19 17:27	2

Method: 6010B SEP - SEP Metals (ICP) - Sum of Steps 1-7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**14000**		10	1.6	mg/Kg			07/16/19 17:31	1
Antimony	ND		3.0	0.14	mg/Kg			07/16/19 17:31	1
Arsenic	**1.7**		0.50	0.13	mg/Kg			07/16/19 17:31	1
Barium	**190**		2.5	0.12	mg/Kg			07/16/19 17:31	1
Beryllium	**0.23**	**J**	0.25	0.0075	mg/Kg			07/16/19 17:31	1
Cobalt	**1.7**	**J**	2.5	0.023	mg/Kg			07/16/19 17:31	1
Iron	**5200**		5.0	4.1	mg/Kg			07/16/19 17:31	1
Li	**7.2**		2.5	0.15	mg/Kg			07/16/19 17:31	1
Manganese	**35**		0.75	0.052	mg/Kg			07/16/19 17:31	1
Mo	**0.12**	**J**	2.0	0.082	mg/Kg			07/16/19 17:31	1
Selenium	**1.6**		0.50	0.17	mg/Kg			07/16/19 17:31	1
Thallium	ND		1.8	0.18	mg/Kg			07/16/19 17:31	1

Method: 6010B - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		24	12	mg/Kg	☼	06/26/19 08:00	07/10/19 13:18	1
Chromium	**4.4**		1.8	0.26	mg/Kg	☼	06/26/19 08:00	07/10/19 13:18	1
Lead	**3.9**		1.8	0.33	mg/Kg	☼	06/26/19 08:00	07/10/19 13:18	1

Method: 6010B - SEP Metals (ICP) - Total

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**20000**		130	20	mg/Kg	☼	06/11/19 08:00	07/15/19 16:15	10
Antimony	ND		3.8	0.18	mg/Kg	☼	06/11/19 08:00	07/15/19 14:41	1
Arsenic	**2.9**	**J**	3.1	0.81	mg/Kg	☼	06/11/19 08:00	07/15/19 18:43	5
Barium	**240**		31	1.5	mg/Kg	☼	06/11/19 08:00	07/15/19 16:15	10
Beryllium	**0.42**		0.31	0.0094	mg/Kg	☼	06/11/19 08:00	07/15/19 14:41	1
Cobalt	**3.3**	**J**	16	0.94	mg/Kg	☼	06/11/19 08:00	07/15/19 18:43	5
Iron	**8000**		6.3	5.1	mg/Kg	☼	06/11/19 08:00	07/15/19 14:41	1
Lithium	**9.6**		3.1	0.19	mg/Kg	☼	06/11/19 08:00	07/15/19 14:41	1
Manganese	**47**		0.94	0.065	mg/Kg	☼	06/11/19 08:00	07/15/19 14:41	1
Molybdenum	**0.28**	**J**	2.5	0.10	mg/Kg	☼	06/11/19 08:00	07/15/19 14:41	1
Selenium	ND		3.1	1.1	mg/Kg	☼	06/11/19 08:00	07/15/19 18:43	5
Thallium	ND		11	1.1	mg/Kg	☼	06/11/19 08:00	07/15/19 18:43	5

Method: 7470A - SEP Mercury (CVAA) - Total

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	ND		0.13	0.050	mg/Kg	☼	06/11/19 08:00	06/16/19 14:17	1

LUMINANT

Method: 6010B SEP - SEP Metals (ICP) - Step 1

Prep: 3010A

SEP: Exchangeable

Analyte	RL	MDL	Units
Aluminum	10	1.6	mg/Kg
Antimony	3.0	0.28	mg/Kg
Arsenic	0.50	0.13	mg/Kg
Barium	2.5	0.12	mg/Kg
Beryllium	0.25	0.077	mg/Kg
Cobalt	2.5	0.045	mg/Kg
Iron	5.0	2.9	mg/Kg
Li	2.5	0.15	mg/Kg
Manganese	0.75	0.031	mg/Kg
Mo	2.0	0.082	mg/Kg
Selenium	0.50	0.17	mg/Kg
Thallium	1.8	0.21	mg/Kg

Method: 6010B SEP - SEP Metals (ICP) - Step 2

Prep: 3010A

SEP: Carbonate

Analyte	RL	MDL	Units
Aluminum	10	1.6	mg/Kg
Antimony	3.0	0.28	mg/Kg
Arsenic	0.50	0.13	mg/Kg
Barium	2.5	0.12	mg/Kg
Beryllium	0.25	0.016	mg/Kg
Cobalt	2.5	0.063	mg/Kg
Iron	5.0	2.9	mg/Kg
Li	2.5	0.15	mg/Kg
Manganese	0.75	0.28	mg/Kg
Mo	2.0	0.082	mg/Kg
Selenium	0.50	0.17	mg/Kg
Thallium	1.8	0.21	mg/Kg

Method: 6010B SEP - SEP Metals (ICP) - Step 3

Prep: 3010A

SEP: Non-Crystalline

Analyte	RL	MDL	Units
Aluminum	10	2.1	mg/Kg
Antimony	3.0	0.28	mg/Kg
Arsenic	0.50	0.13	mg/Kg
Barium	2.5	0.12	mg/Kg
Beryllium	0.25	0.015	mg/Kg
Cobalt	2.5	0.045	mg/Kg
Iron	5.0	2.9	mg/Kg
Li	2.5	0.15	mg/Kg
Manganese	0.75	0.027	mg/Kg
Mo	2.0	0.082	mg/Kg
Selenium	0.50	0.17	mg/Kg
Thallium	1.8	0.21	mg/Kg

Method: 6010B SEP - SEP Metals (ICP) - Step 4

Prep: 3010A

SEP: Metal Hydroxide

LUMINANT

Method: 6010B SEP - SEP Metals (ICP) - Step 4

Prep: 3010A

SEP: Metal Hydroxide

Analyte	RL	MDL	Units
Aluminum	10	1.6	mg/Kg
Antimony	3.0	0.45	mg/Kg
Arsenic	0.50	0.22	mg/Kg
Barium	2.5	0.12	mg/Kg
Beryllium	0.25	0.016	mg/Kg
Cobalt	2.5	0.053	mg/Kg
Iron	5.0	2.9	mg/Kg
Li	2.5	0.15	mg/Kg
Manganese	0.75	0.13	mg/Kg
Mo	2.0	0.082	mg/Kg
Selenium	0.50	0.47	mg/Kg
Thallium	1.8	0.29	mg/Kg

Method: 6010B SEP - SEP Metals (ICP) - Step 5

Prep: 3010A

SEP: Organic-Bound

Analyte	RL	MDL	Units
Aluminum	30	4.7	mg/Kg
Antimony	9.0	0.84	mg/Kg
Arsenic	1.5	0.38	mg/Kg
Barium	7.5	0.36	mg/Kg
Beryllium	0.75	0.063	mg/Kg
Cobalt	7.5	0.12	mg/Kg
Iron	15	8.8	mg/Kg
Li	7.5	0.44	mg/Kg
Manganese	2.3	0.37	mg/Kg
Mo	6.0	0.25	mg/Kg
Selenium	1.5	0.52	mg/Kg
Thallium	5.3	0.70	mg/Kg

LUMINANT

Method: 6010B SEP - SEP Metals (ICP) - Step 6

SEP: Acid/Sulfide

Analyte	RL	MDL	Units
Aluminum	10	1.6	mg/Kg
Antimony	3.0	0.28	mg/Kg
Arsenic	0.50	0.15	mg/Kg
Barium	2.5	0.12	mg/Kg
Beryllium	0.25	0.012	mg/Kg
Cobalt	2.5	0.046	mg/Kg
Iron	5.0	2.9	mg/Kg
Li	2.5	0.15	mg/Kg
Manganese	0.75	0.25	mg/Kg
Mo	2.0	0.099	mg/Kg
Selenium	0.50	0.17	mg/Kg
Thallium	1.8	0.21	mg/Kg

Method: 6010B SEP - SEP Metals (ICP) - Step 7

Prep: Residual

Analyte	RL	MDL	Units
Aluminum	10	1.6	mg/Kg

Method: 6010B SEP - SEP Metals (ICP) - Step 7 (Continued)

Prep: Residual

Analyte	RL	MDL	Units
Antimony	3.0	0.14	mg/Kg
Arsenic	0.50	0.13	mg/Kg
Barium	2.5	0.12	mg/Kg
Beryllium	0.25	0.0075	mg/Kg
Cobalt	2.5	0.15	mg/Kg
Iron	5.0	4.1	mg/Kg
Li	2.5	0.15	mg/Kg
Manganese	0.75	0.052	mg/Kg
Mo	2.0	0.082	mg/Kg
Selenium	0.50	0.17	mg/Kg
Thallium	1.8	0.18	mg/Kg

Method: 6010B SEP - SEP Metals (ICP) - Sum of Steps 1-7

Analyte	RL	MDL	Units
Aluminum	10	1.6	mg/Kg
Antimony	3.0	0.14	mg/Kg
Arsenic	0.50	0.13	mg/Kg
Barium	2.5	0.12	mg/Kg
Beryllium	0.25	0.0075	mg/Kg
Cobalt	2.5	0.023	mg/Kg
Iron	5.0	4.1	mg/Kg
Li	2.5	0.15	mg/Kg
Manganese	0.75	0.052	mg/Kg
Mo	2.0	0.082	mg/Kg
Selenium	0.50	0.17	mg/Kg
Thallium	1.8	0.18	mg/Kg

Method: 6010B - Metals (ICP)

Prep: 3050B

Analyte	RL	MDL	Units
Boron	20	10	mg/Kg
Chromium	1.5	0.22	mg/Kg
Lead	1.5	0.28	mg/Kg

Method: 6010B - SEP Metals (ICP) - Total

Prep: Total

Analyte	RL	MDL	Units
Aluminum	10	1.6	mg/Kg
Antimony	3.0	0.14	mg/Kg
Arsenic	0.50	0.13	mg/Kg
Barium	2.5	0.12	mg/Kg
Beryllium	0.25	0.0075	mg/Kg
Cobalt	2.5	0.15	mg/Kg
Iron	5.0	4.1	mg/Kg
Lithium	2.5	0.15	mg/Kg
Manganese	0.75	0.052	mg/Kg
Molybdenum	2.0	0.082	mg/Kg
Selenium	0.50	0.17	mg/Kg
Thallium	1.8	0.18	mg/Kg

Method: 7470A - SEP Mercury (CVAA) - Total

LUMINANT

Default Detection Limits

Client: Golder Associates Inc.
Job ID: 140-15490-1
Project/Site: Martin Lake Ash Ponds - SEP + Totals

Method: 7470A - SEP Mercury (CVAA) - Total

Prep: Total

Analyte	RL	MDL	Units
Hg	0.10	0.040	mg/Kg

LUMINANT

Client: Golder Associates Inc.
Project/Site: Martin Lake Ash Ponds - SEP + Totals

Job ID: 140-15490-1

Method: 6010B - Metals (ICP)

Lab Sample ID: MB 140-31128/14-A
Matrix: Solid
Analysis Batch: 31553

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 31128

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		20	10	mg/Kg		06/26/19 08:00	07/10/19 11:42	1
Chromium	ND		1.5	0.22	mg/Kg		06/26/19 08:00	07/10/19 11:42	1
Lead	ND		1.5	0.28	mg/Kg		06/26/19 08:00	07/10/19 11:42	1

Lab Sample ID: LCS 140-31128/15-A
Matrix: Solid
Analysis Batch: 31553

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 31128

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	100	101		mg/Kg		101	80 - 120
Chromium	20.0	20.3		mg/Kg		101	90 - 110
Lead	10.0	10.1		mg/Kg		101	90 - 110

Lab Sample ID: 140-15490-1 MS
Matrix: Solid
Analysis Batch: 31553

Client Sample ID: AP-2019-1 (30-31)
Prep Type: Total/NA
Prep Batch: 31128

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	ND		124	124		mg/Kg	☼	100	75 - 125
Chromium	13	F1	24.8	45.6	F1	mg/Kg	☼	131	75 - 125
Lead	6.4		12.4	17.4		mg/Kg	☼	89	75 - 125

Lab Sample ID: 140-15490-1 MSD
Matrix: Solid
Analysis Batch: 31553

Client Sample ID: AP-2019-1 (30-31)
Prep Type: Total/NA
Prep Batch: 31128

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Boron	ND		122	123		mg/Kg	☼	101	75 - 125	0	20
Chromium	13	F1	24.4	45.6	F1	mg/Kg	☼	133	75 - 125	0	20
Lead	6.4		12.2	17.5		mg/Kg	☼	91	75 - 125	0	20

Method: 6010B - SEP Metals (ICP) - Total

Lab Sample ID: MB 140-30683/13-A
Matrix: Solid
Analysis Batch: 31713

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 30683

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		10	1.6	mg/Kg		06/11/19 08:00	07/15/19 11:13	1
Antimony	ND		3.0	0.14	mg/Kg		06/11/19 08:00	07/15/19 11:13	1
Arsenic	ND		0.50	0.13	mg/Kg		06/11/19 08:00	07/15/19 11:13	1
Barium	ND		2.5	0.12	mg/Kg		06/11/19 08:00	07/15/19 11:13	1
Beryllium	ND		0.25	0.0075	mg/Kg		06/11/19 08:00	07/15/19 11:13	1
Cobalt	ND		2.5	0.15	mg/Kg		06/11/19 08:00	07/15/19 11:13	1
Iron	ND		5.0	4.1	mg/Kg		06/11/19 08:00	07/15/19 11:13	1
Lithium	ND		2.5	0.15	mg/Kg		06/11/19 08:00	07/15/19 11:13	1
Manganese	ND		0.75	0.052	mg/Kg		06/11/19 08:00	07/15/19 11:13	1
Molybdenum	ND		2.0	0.082	mg/Kg		06/11/19 08:00	07/15/19 11:13	1
Selenium	ND		0.50	0.17	mg/Kg		06/11/19 08:00	07/15/19 11:13	1
Thallium	ND		1.8	0.18	mg/Kg		06/11/19 08:00	07/15/19 11:13	1

LUMINANT

Method: 6010B - SEP Metals (ICP) - Total

Lab Sample ID: LCS 140-30683/14-A
Matrix: Solid
Analysis Batch: 31713

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 30683

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aluminum	100	97.6		mg/Kg		98	75 - 125
Antimony	25.0	25.9		mg/Kg		103	75 - 125
Arsenic	5.00	5.29		mg/Kg		106	75 - 125
Barium	5.00	4.99		mg/Kg		100	75 - 125
Beryllium	2.50	2.51		mg/Kg		100	75 - 125
Cobalt	5.00	5.20		mg/Kg		104	75 - 125
Iron	50.0	51.1		mg/Kg		102	75 - 125
Lithium	5.00	5.12		mg/Kg		102	75 - 125
Manganese	5.00	5.21		mg/Kg		104	75 - 125
Molybdenum	25.0	26.6		mg/Kg		106	75 - 125
Selenium	7.50	7.55		mg/Kg		101	75 - 125
Thallium	20.0	21.2		mg/Kg		106	75 - 125

Lab Sample ID: LCSD 140-30683/15-A
Matrix: Solid
Analysis Batch: 31713

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 30683

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Aluminum	100	97.0		mg/Kg		97	75 - 125	1	30
Antimony	25.0	25.9		mg/Kg		104	75 - 125	0	30
Arsenic	5.00	5.24		mg/Kg		105	75 - 125	1	30
Barium	5.00	4.95		mg/Kg		99	75 - 125	1	30
Beryllium	2.50	2.48		mg/Kg		99	75 - 125	1	30
Cobalt	5.00	5.16		mg/Kg		103	75 - 125	1	30
Iron	50.0	50.4		mg/Kg		101	75 - 125	1	30
Lithium	5.00	5.04		mg/Kg		101	75 - 125	2	30
Manganese	5.00	5.16		mg/Kg		103	75 - 125	1	30
Molybdenum	25.0	26.5		mg/Kg		106	75 - 125	0	30
Selenium	7.50	7.47		mg/Kg		100	75 - 125	1	30
Thallium	20.0	21.2		mg/Kg		106	75 - 125	0	30

Lab Sample ID: 140-15490-1 DU
Matrix: Solid
Analysis Batch: 31713

Client Sample ID: AP-2019-1 (30-31)
Prep Type: Total/NA
Prep Batch: 30683

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Antimony	ND		ND		mg/Kg	☼	NC	30
Arsenic	6.8		7.11		mg/Kg	☼	5	30
Beryllium	0.89		0.959		mg/Kg	☼	7	30
Iron	11000		12200		mg/Kg	☼	7	30
Lithium	18		19.7		mg/Kg	☼	7	30
Manganese	66		71.7		mg/Kg	☼	8	30
Molybdenum	0.40	J	0.434	J	mg/Kg	☼	7	30
Selenium	ND		ND		mg/Kg	☼	NC	30

LUMINANT

Method: 6010B - SEP Metals (ICP) - Total (Continued)

Lab Sample ID: 140-15490-1 DU
Matrix: Solid
Analysis Batch: 31713

Client Sample ID: AP-2019-1 (30-31)
Prep Type: Total/NA
Prep Batch: 30683

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Aluminum	60000		64600		mg/Kg	☼	7	30
Barium	680		733		mg/Kg	☼	7	30

Lab Sample ID: 140-15490-1 DU
Matrix: Solid
Analysis Batch: 31713

Client Sample ID: AP-2019-1 (30-31)
Prep Type: Total/NA
Prep Batch: 30683

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Cobalt	3.8	J	4.35	J	mg/Kg	☼	13	30
Thallium	ND		0.657	J	mg/Kg	☼	NC	30

Method: 6010B SEP - SEP Metals (ICP)

Lab Sample ID: MB 140-31148/13-B ^4
Matrix: Solid
Analysis Batch: 31604

Client Sample ID: Method Blank
Prep Type: Step 1
Prep Batch: 31252

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		40	6.4	mg/Kg		06/29/19 08:00	07/11/19 12:33	4
Antimony	ND		12	1.1	mg/Kg		06/29/19 08:00	07/11/19 12:33	4
Arsenic	ND		2.0	0.52	mg/Kg		06/29/19 08:00	07/11/19 12:33	4
Barium	ND		10	0.48	mg/Kg		06/29/19 08:00	07/11/19 12:33	4
Beryllium	ND		1.0	0.31	mg/Kg		06/29/19 08:00	07/11/19 12:33	4
Cobalt	ND		10	0.18	mg/Kg		06/29/19 08:00	07/11/19 12:33	4
Iron	ND		20	12	mg/Kg		06/29/19 08:00	07/11/19 12:33	4
Li	ND		10	0.60	mg/Kg		06/29/19 08:00	07/11/19 12:33	4
Manganese	ND		3.0	0.12	mg/Kg		06/29/19 08:00	07/11/19 12:33	4
Mo	ND		8.0	0.33	mg/Kg		06/29/19 08:00	07/11/19 12:33	4
Selenium	ND		2.0	0.68	mg/Kg		06/29/19 08:00	07/11/19 12:33	4
Thallium	ND		7.0	0.84	mg/Kg		06/29/19 08:00	07/11/19 12:33	4

Lab Sample ID: LCS 140-31148/14-B ^5
Matrix: Solid
Analysis Batch: 31604

Client Sample ID: Lab Control Sample
Prep Type: Step 1
Prep Batch: 31252

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aluminum	100	97.0		mg/Kg		97	75 - 125
Antimony	25.0	24.5		mg/Kg		98	75 - 125
Arsenic	5.00	4.89		mg/Kg		98	75 - 125
Barium	5.00	4.35	J	mg/Kg		87	75 - 125
Beryllium	2.50	2.58		mg/Kg		103	75 - 125
Cobalt	5.00	4.93	J	mg/Kg		99	75 - 125
Iron	50.0	49.6		mg/Kg		99	75 - 125
Li	5.00	4.72	J	mg/Kg		94	75 - 125
Manganese	5.00	5.09		mg/Kg		102	75 - 125
Mo	25.0	25.0		mg/Kg		100	75 - 125
Selenium	7.50	7.82		mg/Kg		104	75 - 125
Thallium	20.0	19.7		mg/Kg		98	75 - 125

LUMINANT

Method: 6010B SEP - SEP Metals (ICP) (Continued)

Lab Sample ID: LCSD 140-31148/15-B ^5
Matrix: Solid
Analysis Batch: 31604

Client Sample ID: Lab Control Sample Dup
Prep Type: Step 1
Prep Batch: 31252

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Aluminum			100	99.5		mg/Kg		100	75 - 125	3	30
Antimony			25.0	24.7		mg/Kg		99	75 - 125	1	30
Arsenic			5.00	4.78		mg/Kg		96	75 - 125	2	30
Barium			5.00	4.30	J	mg/Kg		86	75 - 125	1	30
Beryllium			2.50	2.59		mg/Kg		104	75 - 125	0	30
Cobalt			5.00	4.89	J	mg/Kg		98	75 - 125	1	30
Iron			50.0	49.5		mg/Kg		99	75 - 125	0	30
Li			5.00	4.84	J	mg/Kg		97	75 - 125	3	30
Manganese			5.00	5.06		mg/Kg		101	75 - 125	1	30
Mo			25.0	25.1		mg/Kg		100	75 - 125	0	30
Selenium			7.50	8.06		mg/Kg		108	75 - 125	3	30
Thallium			20.0	20.1		mg/Kg		101	75 - 125	2	30

Lab Sample ID: 140-15490-1 DU
Matrix: Solid
Analysis Batch: 31604

Client Sample ID: AP-2019-1 (30-31)
Prep Type: Step 1
Prep Batch: 31252

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Aluminum	ND			ND		mg/Kg	☼			NC	30
Antimony	ND			ND		mg/Kg	☼			NC	30
Arsenic	ND			ND		mg/Kg	☼			NC	30
Barium	0.88	J		0.934	J	mg/Kg	☼			5	30
Beryllium	ND			ND		mg/Kg	☼			NC	30
Cobalt	0.54	J		0.626	J	mg/Kg	☼			15	30
Iron	ND			ND		mg/Kg	☼			NC	30
Li	ND			ND		mg/Kg	☼			NC	30
Manganese	3.1	J		3.66	J	mg/Kg	☼			16	30
Mo	ND			ND		mg/Kg	☼			NC	30
Selenium	ND			ND		mg/Kg	☼			NC	30
Thallium	ND			ND		mg/Kg	☼			NC	30

Lab Sample ID: MB 140-31253/13-B ^3
Matrix: Solid
Analysis Batch: 31604

Client Sample ID: Method Blank
Prep Type: Step 2
Prep Batch: 31256

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		30	4.8	mg/Kg		06/30/19 08:00	07/11/19 14:06	3
Antimony	ND		9.0	0.84	mg/Kg		06/30/19 08:00	07/11/19 14:06	3
Arsenic	ND		1.5	0.39	mg/Kg		06/30/19 08:00	07/11/19 14:06	3
Barium	ND		7.5	0.36	mg/Kg		06/30/19 08:00	07/11/19 14:06	3
Beryllium	ND		0.75	0.048	mg/Kg		06/30/19 08:00	07/11/19 14:06	3
Cobalt	ND		7.5	0.19	mg/Kg		06/30/19 08:00	07/11/19 14:06	3
Iron	ND		15	8.7	mg/Kg		06/30/19 08:00	07/11/19 14:06	3
Li	ND		7.5	0.45	mg/Kg		06/30/19 08:00	07/11/19 14:06	3
Manganese	ND		2.3	0.84	mg/Kg		06/30/19 08:00	07/11/19 14:06	3
Mo	ND		6.0	0.25	mg/Kg		06/30/19 08:00	07/11/19 14:06	3
Selenium	0.587	J	1.5	0.51	mg/Kg		06/30/19 08:00	07/11/19 14:06	3
Thallium	ND		5.3	0.63	mg/Kg		06/30/19 08:00	07/11/19 14:06	3

LUMINANT

Method: 6010B SEP - SEP Metals (ICP) (Continued)

Lab Sample ID: LCS 140-31253/14-B ^5
Matrix: Solid
Analysis Batch: 31604

Client Sample ID: Lab Control Sample
Prep Type: Step 2
Prep Batch: 31256

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aluminum	100	ND	*	mg/Kg		1	75 - 125
Antimony	25.0	21.1		mg/Kg		84	75 - 125
Arsenic	5.00	3.95		mg/Kg		79	75 - 125
Barium	5.00	2.28	J *	mg/Kg		46	75 - 125
Beryllium	2.50	1.35	*	mg/Kg		54	75 - 125
Cobalt	5.00	4.62	J	mg/Kg		92	75 - 125
Iron	50.0	ND	*	mg/Kg		2	75 - 125
Li	5.00	4.14	J	mg/Kg		83	75 - 125
Manganese	5.00	4.79		mg/Kg		96	75 - 125
Mo	25.0	20.7		mg/Kg		83	75 - 125
Selenium	7.50	7.34		mg/Kg		98	75 - 125
Thallium	20.0	18.4		mg/Kg		92	75 - 125

Lab Sample ID: LCSD 140-31253/15-B ^5
Matrix: Solid
Analysis Batch: 31604

Client Sample ID: Lab Control Sample Dup
Prep Type: Step 2
Prep Batch: 31256

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Aluminum	100	ND	*	mg/Kg		-0.3	75 - 125	289	30
Antimony	25.0	21.4		mg/Kg		86	75 - 125	1	30
Arsenic	5.00	4.00		mg/Kg		80	75 - 125	1	30
Barium	5.00	2.28	J *	mg/Kg		46	75 - 125	0	30
Beryllium	2.50	1.32	*	mg/Kg		53	75 - 125	2	30
Cobalt	5.00	4.62	J	mg/Kg		92	75 - 125	0	30
Iron	50.0	ND	*	mg/Kg		3	75 - 125	28	30
Li	5.00	4.15	J	mg/Kg		83	75 - 125	0	30
Manganese	5.00	4.76		mg/Kg		95	75 - 125	1	30
Mo	25.0	20.9		mg/Kg		84	75 - 125	1	30
Selenium	7.50	6.68		mg/Kg		89	75 - 125	10	30
Thallium	20.0	18.6		mg/Kg		93	75 - 125	1	30

Lab Sample ID: 140-15490-1 DU
Matrix: Solid
Analysis Batch: 31604

Client Sample ID: AP-2019-1 (30-31)
Prep Type: Step 2
Prep Batch: 31256

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Aluminum	9.7	J *	11.8	J *	mg/Kg	☼	19	30
Antimony	ND		ND		mg/Kg	☼	NC	30
Arsenic	ND		ND		mg/Kg	☼	NC	30
Barium	0.76	J *	0.792	J *	mg/Kg	☼	4	30
Beryllium	ND	*	ND	*	mg/Kg	☼	NC	30
Cobalt	ND		ND		mg/Kg	☼	NC	30
Iron	ND	*	ND	*	mg/Kg	☼	NC	30
Li	ND		ND		mg/Kg	☼	NC	30
Manganese	ND		ND		mg/Kg	☼	NC	30
Mo	ND		ND		mg/Kg	☼	NC	30
Selenium	0.76	J B	0.794	J	mg/Kg	☼	4	30
Thallium	ND		ND		mg/Kg	☼	NC	30

LUMINANT

Method: 6010B SEP - SEP Metals (ICP) (Continued)

Lab Sample ID: MB 140-31257/13-B
Matrix: Solid
Analysis Batch: 31604

Client Sample ID: Method Blank
Prep Type: Step 3
Prep Batch: 31338

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		10	2.1	mg/Kg		07/02/19 08:00	07/11/19 15:50	1
Antimony	ND		3.0	0.28	mg/Kg		07/02/19 08:00	07/11/19 15:50	1
Arsenic	ND		0.50	0.13	mg/Kg		07/02/19 08:00	07/11/19 15:50	1
Barium	0.151	J	2.5	0.12	mg/Kg		07/02/19 08:00	07/11/19 15:50	1
Beryllium	ND		0.25	0.015	mg/Kg		07/02/19 08:00	07/11/19 15:50	1
Cobalt	ND		2.5	0.045	mg/Kg		07/02/19 08:00	07/11/19 15:50	1
Iron	ND		5.0	2.9	mg/Kg		07/02/19 08:00	07/11/19 15:50	1
Li	ND		2.5	0.15	mg/Kg		07/02/19 08:00	07/11/19 15:50	1
Manganese	0.0515	J	0.75	0.027	mg/Kg		07/02/19 08:00	07/11/19 15:50	1
Mo	ND		2.0	0.082	mg/Kg		07/02/19 08:00	07/11/19 15:50	1
Selenium	0.197	J	0.50	0.17	mg/Kg		07/02/19 08:00	07/11/19 15:50	1
Thallium	ND		1.8	0.21	mg/Kg		07/02/19 08:00	07/11/19 15:50	1

Lab Sample ID: LCS 140-31257/14-B
Matrix: Solid
Analysis Batch: 31604

Client Sample ID: Lab Control Sample
Prep Type: Step 3
Prep Batch: 31338

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aluminum	100	95.8		mg/Kg		96	75 - 125
Antimony	25.0	24.3		mg/Kg		97	75 - 125
Arsenic	5.00	4.90		mg/Kg		98	75 - 125
Barium	5.00	4.34		mg/Kg		87	75 - 125
Beryllium	2.50	2.56		mg/Kg		102	75 - 125
Cobalt	5.00	4.90		mg/Kg		98	75 - 125
Iron	50.0	54.0		mg/Kg		108	75 - 125
Li	5.00	4.87		mg/Kg		97	75 - 125
Manganese	5.00	5.03		mg/Kg		101	75 - 125
Mo	25.0	24.8		mg/Kg		99	75 - 125
Selenium	7.50	7.37		mg/Kg		98	75 - 125
Thallium	20.0	20.2		mg/Kg		101	75 - 125

Lab Sample ID: LCSD 140-31257/15-B
Matrix: Solid
Analysis Batch: 31604

Client Sample ID: Lab Control Sample Dup
Prep Type: Step 3
Prep Batch: 31338

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Aluminum	100	98.1		mg/Kg		98	75 - 125	2	30
Antimony	25.0	24.6		mg/Kg		98	75 - 125	1	30
Arsenic	5.00	5.06		mg/Kg		101	75 - 125	3	30
Barium	5.00	4.49		mg/Kg		90	75 - 125	3	30
Beryllium	2.50	2.61		mg/Kg		104	75 - 125	2	30
Cobalt	5.00	4.97		mg/Kg		99	75 - 125	1	30
Iron	50.0	51.0		mg/Kg		102	75 - 125	6	30
Li	5.00	4.95		mg/Kg		99	75 - 125	2	30
Manganese	5.00	5.06		mg/Kg		101	75 - 125	1	30
Mo	25.0	24.9		mg/Kg		100	75 - 125	0	30
Selenium	7.50	7.63		mg/Kg		102	75 - 125	3	30
Thallium	20.0	20.5		mg/Kg		103	75 - 125	2	30

LUMINANT

Method: 6010B SEP - SEP Metals (ICP) (Continued)

Lab Sample ID: 140-15490-1 DU
Matrix: Solid
Analysis Batch: 31604

Client Sample ID: AP-2019-1 (30-31)
Prep Type: Step 3
Prep Batch: 31338

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Aluminum	88		90.2		mg/Kg	☼	3	30
Antimony	ND		ND		mg/Kg	☼	NC	30
Arsenic	1.8		1.75		mg/Kg	☼	5	30
Barium	4.3	B	4.58		mg/Kg	☼	7	30
Beryllium	0.067	J	0.0665	J	mg/Kg	☼	1	30
Cobalt	0.34	J	0.478	J F5	mg/Kg	☼	32	30
Iron	580		553		mg/Kg	☼	4	30
Li	ND		ND		mg/Kg	☼	NC	30
Manganese	2.4	B	2.99		mg/Kg	☼	20	30
Mo	ND		ND		mg/Kg	☼	NC	30
Selenium	0.22	J B	0.249	J	mg/Kg	☼	14	30
Thallium	ND		ND		mg/Kg	☼	NC	30

Lab Sample ID: MB 140-31341/13-B
Matrix: Solid
Analysis Batch: 31604

Client Sample ID: Method Blank
Prep Type: Step 4
Prep Batch: 31360

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		10	1.6	mg/Kg		07/03/19 08:00	07/11/19 17:24	1
Antimony	ND		3.0	0.45	mg/Kg		07/03/19 08:00	07/11/19 17:24	1
Arsenic	0.260	J	0.50	0.22	mg/Kg		07/03/19 08:00	07/11/19 17:24	1
Barium	ND		2.5	0.12	mg/Kg		07/03/19 08:00	07/11/19 17:24	1
Beryllium	ND		0.25	0.016	mg/Kg		07/03/19 08:00	07/11/19 17:24	1
Cobalt	ND		2.5	0.053	mg/Kg		07/03/19 08:00	07/11/19 17:24	1
Iron	ND		5.0	2.9	mg/Kg		07/03/19 08:00	07/11/19 17:24	1
Li	ND		2.5	0.15	mg/Kg		07/03/19 08:00	07/11/19 17:24	1
Manganese	ND		0.75	0.13	mg/Kg		07/03/19 08:00	07/11/19 17:24	1
Mo	ND		2.0	0.082	mg/Kg		07/03/19 08:00	07/11/19 17:24	1
Selenium	0.561		0.50	0.47	mg/Kg		07/03/19 08:00	07/11/19 17:24	1
Thallium	ND		1.8	0.29	mg/Kg		07/03/19 08:00	07/11/19 17:24	1

Lab Sample ID: LCS 140-31341/14-B
Matrix: Solid
Analysis Batch: 31604

Client Sample ID: Lab Control Sample
Prep Type: Step 4
Prep Batch: 31360

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aluminum	100	98.4		mg/Kg		98	75 - 125
Antimony	25.0	25.6		mg/Kg		102	75 - 125
Arsenic	5.00	5.48		mg/Kg		110	75 - 125
Barium	5.00	4.90		mg/Kg		98	75 - 125
Beryllium	2.50	2.66		mg/Kg		106	75 - 125
Cobalt	5.00	4.92		mg/Kg		98	75 - 125
Iron	50.0	50.0		mg/Kg		100	75 - 125
Li	5.00	4.92		mg/Kg		98	75 - 125
Manganese	5.00	4.98		mg/Kg		100	75 - 125
Mo	25.0	25.7		mg/Kg		103	75 - 125
Selenium	7.50	0.762	*	mg/Kg		10	75 - 125
Thallium	20.0	17.2		mg/Kg		86	75 - 125

LUMINANT

Method: 6010B SEP - SEP Metals (ICP) (Continued)

Lab Sample ID: LCSD 140-31341/15-B
Matrix: Solid
Analysis Batch: 31604

Client Sample ID: Lab Control Sample Dup
Prep Type: Step 4
Prep Batch: 31360

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Aluminum			100	101		mg/Kg		101	75 - 125	3	30
Antimony			25.0	25.9		mg/Kg		103	75 - 125	1	30
Arsenic			5.00	5.55		mg/Kg		111	75 - 125	1	30
Barium			5.00	5.04		mg/Kg		101	75 - 125	3	30
Beryllium			2.50	2.74		mg/Kg		109	75 - 125	3	30
Cobalt			5.00	5.07		mg/Kg		101	75 - 125	3	30
Iron			50.0	51.5		mg/Kg		103	75 - 125	3	30
Li			5.00	5.09		mg/Kg		102	75 - 125	3	30
Manganese			5.00	5.13		mg/Kg		103	75 - 125	3	30
Mo			25.0	25.9		mg/Kg		104	75 - 125	1	30
Selenium			7.50	0.631	*	mg/Kg		8	75 - 125	19	30
Thallium			20.0	17.9		mg/Kg		89	75 - 125	4	30

Lab Sample ID: 140-15490-1 DU
Matrix: Solid
Analysis Batch: 31604

Client Sample ID: AP-2019-1 (30-31)
Prep Type: Step 4
Prep Batch: 31360

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Aluminum	1700			1740		mg/Kg	☼			0.1	30
Antimony	ND			ND		mg/Kg	☼			NC	30
Arsenic	2.8	B		2.56		mg/Kg	☼			10	30
Barium	16			18.8		mg/Kg	☼			15	30
Beryllium	0.13	J		0.135	J	mg/Kg	☼			1	30
Cobalt	1.5	J		1.59	J	mg/Kg	☼			8	30
Iron	3900			3860		mg/Kg	☼			2	30
Li	3.0	J		3.10	J	mg/Kg	☼			2	30
Manganese	18			18.2		mg/Kg	☼			0.4	30
Mo	ND			ND		mg/Kg	☼			NC	30
Selenium	ND	*		0.624	J *	mg/Kg	☼			NC	30
Thallium	ND			ND		mg/Kg	☼			NC	30

Lab Sample ID: MB 140-31436/13-B ^5
Matrix: Solid
Analysis Batch: 31651

Client Sample ID: Method Blank
Prep Type: Step 5
Prep Batch: 31500

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		150	24	mg/Kg		07/10/19 08:00	07/12/19 11:39	5
Antimony	ND		45	4.2	mg/Kg		07/10/19 08:00	07/12/19 11:39	5
Arsenic	ND		7.5	1.9	mg/Kg		07/10/19 08:00	07/12/19 11:39	5
Barium	ND		38	1.8	mg/Kg		07/10/19 08:00	07/12/19 11:39	5
Beryllium	ND		3.8	0.32	mg/Kg		07/10/19 08:00	07/12/19 11:39	5
Cobalt	ND		38	0.60	mg/Kg		07/10/19 08:00	07/12/19 11:39	5
Iron	ND		75	44	mg/Kg		07/10/19 08:00	07/12/19 11:39	5
Li	ND		38	2.2	mg/Kg		07/10/19 08:00	07/12/19 11:39	5
Manganese	ND		11	1.9	mg/Kg		07/10/19 08:00	07/12/19 11:39	5
Mo	ND		30	1.3	mg/Kg		07/10/19 08:00	07/12/19 11:39	5
Selenium	ND		7.5	2.6	mg/Kg		07/10/19 08:00	07/12/19 11:39	5
Thallium	ND		26	3.5	mg/Kg		07/10/19 08:00	07/12/19 11:39	5

LUMINANT

Method: 6010B SEP - SEP Metals (ICP) (Continued)

Lab Sample ID: LCS 140-31436/14-B ^5
Matrix: Solid
Analysis Batch: 31651

Client Sample ID: Lab Control Sample
Prep Type: Step 5
Prep Batch: 31500

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aluminum	300	ND	*	mg/Kg		6	75 - 125
Antimony	75.0	81.2		mg/Kg		108	75 - 125
Arsenic	15.0	12.3		mg/Kg		82	75 - 125
Barium	15.0	7.80	J *	mg/Kg		52	75 - 125
Beryllium	7.50	4.23	*	mg/Kg		56	75 - 125
Cobalt	15.0	4.86	J *	mg/Kg		32	75 - 125
Iron	150	ND	*	mg/Kg		2	75 - 125
Li	15.0	16.4	J	mg/Kg		109	75 - 125
Manganese	15.0	4.82	J *	mg/Kg		32	75 - 125
Mo	75.0	64.7		mg/Kg		86	75 - 125
Selenium	22.5	24.8		mg/Kg		110	75 - 125
Thallium	60.0	ND	*	mg/Kg		2	75 - 125

Lab Sample ID: LCSD 140-31436/15-B ^5
Matrix: Solid
Analysis Batch: 31651

Client Sample ID: Lab Control Sample Dup
Prep Type: Step 5
Prep Batch: 31500

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Aluminum	300	ND	*	mg/Kg		7	75 - 125	14	30
Antimony	75.0	82.5		mg/Kg		110	75 - 125	2	30
Arsenic	15.0	12.5		mg/Kg		83	75 - 125	2	30
Barium	15.0	7.73	J *	mg/Kg		52	75 - 125	1	30
Beryllium	7.50	4.34	*	mg/Kg		58	75 - 125	2	30
Cobalt	15.0	5.05	J *	mg/Kg		34	75 - 125	4	30
Iron	150	ND	*	mg/Kg		3	75 - 125	55	30
Li	15.0	16.1	J	mg/Kg		107	75 - 125	2	30
Manganese	15.0	4.97	J *	mg/Kg		33	75 - 125	3	30
Mo	75.0	64.0		mg/Kg		85	75 - 125	1	30
Selenium	22.5	26.2		mg/Kg		116	75 - 125	6	30
Thallium	60.0	ND	*	mg/Kg		0.9	75 - 125	60	30

Lab Sample ID: 140-15490-1 DU
Matrix: Solid
Analysis Batch: 31651

Client Sample ID: AP-2019-1 (30-31)
Prep Type: Step 5
Prep Batch: 31500

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Aluminum	62	J *	54.9	J *	mg/Kg	☼	12	30
Antimony	ND		ND		mg/Kg	☼	NC	30
Arsenic	ND		ND		mg/Kg	☼	NC	30
Barium	7.0	J *	8.10	J *	mg/Kg	☼	15	30
Beryllium	ND	*	ND	*	mg/Kg	☼	NC	30
Cobalt	ND	*	ND	*	mg/Kg	☼	NC	30
Iron	ND	*	ND	*	mg/Kg	☼	NC	30
Li	ND		ND		mg/Kg	☼	NC	30
Manganese	ND	*	ND	*	mg/Kg	☼	NC	30
Mo	ND		ND		mg/Kg	☼	NC	30
Selenium	ND		ND		mg/Kg	☼	NC	30
Thallium	ND	*	ND	*	mg/Kg	☼	NC	30

LUMINANT

Method: 6010B SEP - SEP Metals (ICP) (Continued)

Lab Sample ID: MB 140-31502/13-A
Matrix: Solid
Analysis Batch: 31651

Client Sample ID: Method Blank
Prep Type: Step 6
Prep Batch: 31502

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		10	1.6	mg/Kg		07/10/19 08:00	07/12/19 13:14	1
Antimony	ND		3.0	0.28	mg/Kg		07/10/19 08:00	07/12/19 13:14	1
Arsenic	ND		0.50	0.15	mg/Kg		07/10/19 08:00	07/12/19 13:14	1
Barium	ND		2.5	0.12	mg/Kg		07/10/19 08:00	07/12/19 13:14	1
Beryllium	ND		0.25	0.012	mg/Kg		07/10/19 08:00	07/12/19 13:14	1
Cobalt	ND		2.5	0.046	mg/Kg		07/10/19 08:00	07/12/19 13:14	1
Iron	ND		5.0	2.9	mg/Kg		07/10/19 08:00	07/12/19 13:14	1
Li	ND		2.5	0.15	mg/Kg		07/10/19 08:00	07/12/19 13:14	1
Manganese	ND		0.75	0.25	mg/Kg		07/10/19 08:00	07/12/19 13:14	1
Mo	ND		2.0	0.099	mg/Kg		07/10/19 08:00	07/12/19 13:14	1
Selenium	ND		0.50	0.17	mg/Kg		07/10/19 08:00	07/12/19 13:14	1
Thallium	ND		1.8	0.21	mg/Kg		07/10/19 08:00	07/12/19 13:14	1

Lab Sample ID: LCS 140-31502/14-A
Matrix: Solid
Analysis Batch: 31651

Client Sample ID: Lab Control Sample
Prep Type: Step 6
Prep Batch: 31502

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aluminum	100	95.4		mg/Kg		95	75 - 125
Antimony	25.0	24.8		mg/Kg		99	75 - 125
Arsenic	5.00	4.94		mg/Kg		99	75 - 125
Barium	5.00	4.58		mg/Kg		92	75 - 125
Beryllium	2.50	2.57		mg/Kg		103	75 - 125
Cobalt	5.00	4.78		mg/Kg		96	75 - 125
Iron	50.0	47.4		mg/Kg		95	75 - 125
Li	5.00	4.71		mg/Kg		94	75 - 125
Manganese	5.00	4.83		mg/Kg		97	75 - 125
Mo	25.0	24.7		mg/Kg		99	75 - 125
Selenium	7.50	7.32		mg/Kg		98	75 - 125
Thallium	20.0	19.8		mg/Kg		99	75 - 125

Lab Sample ID: LCSD 140-31502/15-A
Matrix: Solid
Analysis Batch: 31651

Client Sample ID: Lab Control Sample Dup
Prep Type: Step 6
Prep Batch: 31502

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Aluminum	100	98.8		mg/Kg		99	75 - 125	4	30
Antimony	25.0	25.5		mg/Kg		102	75 - 125	3	30
Arsenic	5.00	5.16		mg/Kg		103	75 - 125	4	30
Barium	5.00	4.77		mg/Kg		95	75 - 125	4	30
Beryllium	2.50	2.67		mg/Kg		107	75 - 125	4	30
Cobalt	5.00	4.97		mg/Kg		99	75 - 125	4	30
Iron	50.0	49.5		mg/Kg		99	75 - 125	4	30
Li	5.00	4.90		mg/Kg		98	75 - 125	4	30
Manganese	5.00	5.02		mg/Kg		100	75 - 125	4	30
Mo	25.0	25.2		mg/Kg		101	75 - 125	2	30
Selenium	7.50	7.50		mg/Kg		100	75 - 125	2	30
Thallium	20.0	20.6		mg/Kg		103	75 - 125	4	30

LUMINANT

Method: 6010B SEP - SEP Metals (ICP) (Continued)

Lab Sample ID: 140-15490-1 DU
Matrix: Solid
Analysis Batch: 31651

Client Sample ID: AP-2019-1 (30-31)
Prep Type: Step 6
Prep Batch: 31502

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Aluminum	2300		2370		mg/Kg	☼	2	30
Antimony	ND		ND		mg/Kg	☼	NC	30
Arsenic	0.94		0.869		mg/Kg	☼	8	30
Barium	18		18.6		mg/Kg	☼	6	30
Beryllium	0.067	J	0.0691	J	mg/Kg	☼	3	30
Cobalt	0.90	J	0.940	J	mg/Kg	☼	5	30
Iron	2500		2510		mg/Kg	☼	0.4	30
Li	2.1	J	2.17	J	mg/Kg	☼	3	30
Manganese	16		16.1		mg/Kg	☼	0.6	30
Mo	ND		ND		mg/Kg	☼	NC	30
Selenium	ND		ND		mg/Kg	☼	NC	30
Thallium	ND		ND		mg/Kg	☼	NC	30

Lab Sample ID: MB 140-31615/13-A
Matrix: Solid
Analysis Batch: 31713

Client Sample ID: Method Blank
Prep Type: Step 7
Prep Batch: 31615

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		10	1.6	mg/Kg		07/12/19 09:08	07/15/19 10:58	1
Antimony	ND		3.0	0.14	mg/Kg		07/12/19 09:08	07/15/19 10:58	1
Arsenic	ND		0.50	0.13	mg/Kg		07/12/19 09:08	07/15/19 10:58	1
Barium	ND		2.5	0.12	mg/Kg		07/12/19 09:08	07/15/19 10:58	1
Beryllium	ND		0.25	0.0075	mg/Kg		07/12/19 09:08	07/15/19 10:58	1
Cobalt	ND		2.5	0.15	mg/Kg		07/12/19 09:08	07/15/19 10:58	1
Iron	ND		5.0	4.1	mg/Kg		07/12/19 09:08	07/15/19 10:58	1
Li	ND		2.5	0.15	mg/Kg		07/12/19 09:08	07/15/19 10:58	1
Manganese	ND		0.75	0.052	mg/Kg		07/12/19 09:08	07/15/19 10:58	1
Mo	ND		2.0	0.082	mg/Kg		07/12/19 09:08	07/15/19 10:58	1
Selenium	ND		0.50	0.17	mg/Kg		07/12/19 09:08	07/15/19 10:58	1
Thallium	ND		1.8	0.18	mg/Kg		07/12/19 09:08	07/15/19 10:58	1

Lab Sample ID: LCS 140-31615/14-A
Matrix: Solid
Analysis Batch: 31713

Client Sample ID: Lab Control Sample
Prep Type: Step 7
Prep Batch: 31615

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aluminum	100	96.8		mg/Kg		97	75 - 125
Antimony	25.0	25.7		mg/Kg		103	75 - 125
Arsenic	5.00	5.23		mg/Kg		105	75 - 125
Barium	5.00	4.99		mg/Kg		100	75 - 125
Beryllium	2.50	2.52		mg/Kg		101	75 - 125
Cobalt	5.00	5.20		mg/Kg		104	75 - 125
Iron	50.0	51.7		mg/Kg		103	75 - 125
Li	5.00	5.15		mg/Kg		103	75 - 125
Manganese	5.00	5.21		mg/Kg		104	75 - 125
Mo	25.0	26.5		mg/Kg		106	75 - 125
Selenium	7.50	7.52		mg/Kg		100	75 - 125
Thallium	20.0	21.2		mg/Kg		106	75 - 125

LUMINANT

Method: 6010B SEP - SEP Metals (ICP) (Continued)

Lab Sample ID: LCSD 140-31615/15-A
Client Sample ID: Lab Control Sample Dup
Matrix: Solid
Prep Type: Step 7
Analysis Batch: 31713
Prep Batch: 31615

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Aluminum			100	98.0		mg/Kg		98	75 - 125	1	30
Antimony			25.0	25.8		mg/Kg		103	75 - 125	0	30
Arsenic			5.00	5.30		mg/Kg		106	75 - 125	1	30
Barium			5.00	4.99		mg/Kg		100	75 - 125	0	30
Beryllium			2.50	2.50		mg/Kg		100	75 - 125	1	30
Cobalt			5.00	5.21		mg/Kg		104	75 - 125	0	30
Iron			50.0	51.5		mg/Kg		103	75 - 125	0	30
Li			5.00	5.18		mg/Kg		104	75 - 125	1	30
Manganese			5.00	5.21		mg/Kg		104	75 - 125	0	30
Mo			25.0	26.7		mg/Kg		107	75 - 125	1	30
Selenium			7.50	7.55		mg/Kg		101	75 - 125	0	30
Thallium			20.0	21.3		mg/Kg		107	75 - 125	1	30

Lab Sample ID: 140-15490-1 DU
Client Sample ID: AP-2019-1 (30-31)
Matrix: Solid
Prep Type: Step 7
Analysis Batch: 31713
Prep Batch: 31615

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Antimony	ND			ND		mg/Kg	☼			NC	30
Arsenic	1.2			1.16		mg/Kg	☼			6	30
Beryllium	0.56			0.602		mg/Kg	☼			7	30
Iron	5200			5740		mg/Kg	☼			11	30
Li	9.6			10.9		mg/Kg	☼			13	30
Manganese	26			29.0		mg/Kg	☼			9	30
Mo	0.19	J		0.209	J	mg/Kg	☼			10	30
Selenium	ND			ND		mg/Kg	☼			NC	30

Lab Sample ID: 140-15490-1 DU
Client Sample ID: AP-2019-1 (30-31)
Matrix: Solid
Prep Type: Step 7
Analysis Batch: 31713
Prep Batch: 31615

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Aluminum	29000			35900		mg/Kg	☼			23	30
Barium	390			447		mg/Kg	☼			14	30

Lab Sample ID: 140-15490-1 DU
Client Sample ID: AP-2019-1 (30-31)
Matrix: Solid
Prep Type: Step 7
Analysis Batch: 31713
Prep Batch: 31615

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Cobalt	0.79	J		0.899	J	mg/Kg	☼			12	30
Thallium	0.48	J		ND		mg/Kg	☼			NC	30

LUMINANT

Client: Golder Associates Inc.
Job ID: 140-15490-1
Project/Site: Martin Lake Ash Ponds - SEP + Totals

Method: 7470A - SEP Mercury (CVAA) - Total

Lab Sample ID: MB 140-30683/13-B
Matrix: Solid
Analysis Batch: 30868

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 30683

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	ND		0.10	0.040	mg/Kg		06/11/19 08:00	06/16/19 13:56	1

Lab Sample ID: LCS 140-30683/14-B
Matrix: Solid
Analysis Batch: 30868

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 30683

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Hg			2.50	2.70		mg/Kg		108	75 - 125		

Lab Sample ID: LCSD 140-30683/15-B
Matrix: Solid
Analysis Batch: 30868

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 30683

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Hg			2.50	2.71		mg/Kg		108	75 - 125	0	30

Lab Sample ID: 140-15490-1 DU
Matrix: Solid
Analysis Batch: 30868

Client Sample ID: AP-2019-1 (30-31)
Prep Type: Total/NA
Prep Batch: 30683

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Hg	0.081	J	0.102	J	mg/Kg	☼			23	30

LUMINANT

Metals

Prep Batch: 30683

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15490-1	AP-2019-1 (30-31)	Total/NA	Solid	Total	
140-15490-2	AP-2019-2 (35-36)	Total/NA	Solid	Total	
140-15490-3	AP-2019-3 (18-19)	Total/NA	Solid	Total	
MB 140-30683/13-A	Method Blank	Total/NA	Solid	Total	
MB 140-30683/13-B	Method Blank	Total/NA	Solid	Total	
LCS 140-30683/14-A	Lab Control Sample	Total/NA	Solid	Total	
LCS 140-30683/14-B	Lab Control Sample	Total/NA	Solid	Total	
LCSD 140-30683/15-A	Lab Control Sample Dup	Total/NA	Solid	Total	
LCSD 140-30683/15-B	Lab Control Sample Dup	Total/NA	Solid	Total	
140-15490-1 DU	AP-2019-1 (30-31)	Total/NA	Solid	Total	

Prep Batch: 30859

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15490-1	AP-2019-1 (30-31)	Total/NA	Solid	7470A	30683
140-15490-2	AP-2019-2 (35-36)	Total/NA	Solid	7470A	30683
140-15490-3	AP-2019-3 (18-19)	Total/NA	Solid	7470A	30683
MB 140-30683/13-B	Method Blank	Total/NA	Solid	7470A	30683
LCS 140-30683/14-B	Lab Control Sample	Total/NA	Solid	7470A	30683
LCSD 140-30683/15-B	Lab Control Sample Dup	Total/NA	Solid	7470A	30683
140-15490-1 DU	AP-2019-1 (30-31)	Total/NA	Solid	7470A	30683

Analysis Batch: 30868

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15490-1	AP-2019-1 (30-31)	Total/NA	Solid	7470A	30859
140-15490-2	AP-2019-2 (35-36)	Total/NA	Solid	7470A	30859
140-15490-3	AP-2019-3 (18-19)	Total/NA	Solid	7470A	30859
MB 140-30683/13-B	Method Blank	Total/NA	Solid	7470A	30859
LCS 140-30683/14-B	Lab Control Sample	Total/NA	Solid	7470A	30859
LCSD 140-30683/15-B	Lab Control Sample Dup	Total/NA	Solid	7470A	30859
140-15490-1 DU	AP-2019-1 (30-31)	Total/NA	Solid	7470A	30859

Prep Batch: 31128

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15490-1	AP-2019-1 (30-31)	Total/NA	Solid	3050B	
140-15490-2	AP-2019-2 (35-36)	Total/NA	Solid	3050B	
140-15490-3	AP-2019-3 (18-19)	Total/NA	Solid	3050B	
MB 140-31128/14-A	Method Blank	Total/NA	Solid	3050B	
LCS 140-31128/15-A	Lab Control Sample	Total/NA	Solid	3050B	
140-15490-1 MS	AP-2019-1 (30-31)	Total/NA	Solid	3050B	
140-15490-1 MSD	AP-2019-1 (30-31)	Total/NA	Solid	3050B	

SEP Batch: 31148

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15490-1	AP-2019-1 (30-31)	Step 1	Solid	Exchangeable	
140-15490-2	AP-2019-2 (35-36)	Step 1	Solid	Exchangeable	
140-15490-3	AP-2019-3 (18-19)	Step 1	Solid	Exchangeable	
MB 140-31148/13-B ^4	Method Blank	Step 1	Solid	Exchangeable	
LCS 140-31148/14-B ^5	Lab Control Sample	Step 1	Solid	Exchangeable	
LCSD 140-31148/15-B ^5	Lab Control Sample Dup	Step 1	Solid	Exchangeable	
140-15490-1 DU	AP-2019-1 (30-31)	Step 1	Solid	Exchangeable	

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Metals

Prep Batch: 31252

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15490-1	AP-2019-1 (30-31)	Step 1	Solid	3010A	31148
140-15490-2	AP-2019-2 (35-36)	Step 1	Solid	3010A	31148
140-15490-3	AP-2019-3 (18-19)	Step 1	Solid	3010A	31148
MB 140-31148/13-B ^4	Method Blank	Step 1	Solid	3010A	31148
LCS 140-31148/14-B ^5	Lab Control Sample	Step 1	Solid	3010A	31148
LCSD 140-31148/15-B ^5	Lab Control Sample Dup	Step 1	Solid	3010A	31148
140-15490-1 DU	AP-2019-1 (30-31)	Step 1	Solid	3010A	31148

SEP Batch: 31253

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15490-1	AP-2019-1 (30-31)	Step 2	Solid	Carbonate	
140-15490-2	AP-2019-2 (35-36)	Step 2	Solid	Carbonate	
140-15490-3	AP-2019-3 (18-19)	Step 2	Solid	Carbonate	
MB 140-31253/13-B ^3	Method Blank	Step 2	Solid	Carbonate	
LCS 140-31253/14-B ^5	Lab Control Sample	Step 2	Solid	Carbonate	
LCSD 140-31253/15-B ^5	Lab Control Sample Dup	Step 2	Solid	Carbonate	
140-15490-1 DU	AP-2019-1 (30-31)	Step 2	Solid	Carbonate	

Prep Batch: 31256

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15490-1	AP-2019-1 (30-31)	Step 2	Solid	3010A	31253
140-15490-2	AP-2019-2 (35-36)	Step 2	Solid	3010A	31253
140-15490-3	AP-2019-3 (18-19)	Step 2	Solid	3010A	31253
MB 140-31253/13-B ^3	Method Blank	Step 2	Solid	3010A	31253
LCS 140-31253/14-B ^5	Lab Control Sample	Step 2	Solid	3010A	31253
LCSD 140-31253/15-B ^5	Lab Control Sample Dup	Step 2	Solid	3010A	31253
140-15490-1 DU	AP-2019-1 (30-31)	Step 2	Solid	3010A	31253

SEP Batch: 31257

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15490-1	AP-2019-1 (30-31)	Step 3	Solid	Non-Crystalline	
140-15490-2	AP-2019-2 (35-36)	Step 3	Solid	Non-Crystalline	
140-15490-3	AP-2019-3 (18-19)	Step 3	Solid	Non-Crystalline	
MB 140-31257/13-B	Method Blank	Step 3	Solid	Non-Crystalline	
LCS 140-31257/14-B	Lab Control Sample	Step 3	Solid	Non-Crystalline	
LCSD 140-31257/15-B	Lab Control Sample Dup	Step 3	Solid	Non-Crystalline	
140-15490-1 DU	AP-2019-1 (30-31)	Step 3	Solid	Non-Crystalline	

Prep Batch: 31338

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15490-1	AP-2019-1 (30-31)	Step 3	Solid	3010A	31257
140-15490-2	AP-2019-2 (35-36)	Step 3	Solid	3010A	31257
140-15490-3	AP-2019-3 (18-19)	Step 3	Solid	3010A	31257
MB 140-31257/13-B	Method Blank	Step 3	Solid	3010A	31257
LCS 140-31257/14-B	Lab Control Sample	Step 3	Solid	3010A	31257
LCSD 140-31257/15-B	Lab Control Sample Dup	Step 3	Solid	3010A	31257
140-15490-1 DU	AP-2019-1 (30-31)	Step 3	Solid	3010A	31257

SEP Batch: 31341

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15490-1	AP-2019-1 (30-31)	Step 4	Solid	Metal Hydroxide	

LUMINANT

Metals (Continued)

SEP Batch: 31341 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15490-2	AP-2019-2 (35-36)	Step 4	Solid	Metal Hydroxide	
140-15490-3	AP-2019-3 (18-19)	Step 4	Solid	Metal Hydroxide	
MB 140-31341/13-B	Method Blank	Step 4	Solid	Metal Hydroxide	
LCS 140-31341/14-B	Lab Control Sample	Step 4	Solid	Metal Hydroxide	
LCSD 140-31341/15-B	Lab Control Sample Dup	Step 4	Solid	Metal Hydroxide	
140-15490-1 DU	AP-2019-1 (30-31)	Step 4	Solid	Metal Hydroxide	

Prep Batch: 31360

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15490-1	AP-2019-1 (30-31)	Step 4	Solid	3010A	31341
140-15490-2	AP-2019-2 (35-36)	Step 4	Solid	3010A	31341
140-15490-3	AP-2019-3 (18-19)	Step 4	Solid	3010A	31341
MB 140-31341/13-B	Method Blank	Step 4	Solid	3010A	31341
LCS 140-31341/14-B	Lab Control Sample	Step 4	Solid	3010A	31341
LCSD 140-31341/15-B	Lab Control Sample Dup	Step 4	Solid	3010A	31341
140-15490-1 DU	AP-2019-1 (30-31)	Step 4	Solid	3010A	31341

SEP Batch: 31436

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15490-1	AP-2019-1 (30-31)	Step 5	Solid	Organic-Bound	
140-15490-2	AP-2019-2 (35-36)	Step 5	Solid	Organic-Bound	
140-15490-3	AP-2019-3 (18-19)	Step 5	Solid	Organic-Bound	
MB 140-31436/13-B ^5	Method Blank	Step 5	Solid	Organic-Bound	
LCS 140-31436/14-B ^5	Lab Control Sample	Step 5	Solid	Organic-Bound	
LCSD 140-31436/15-B ^5	Lab Control Sample Dup	Step 5	Solid	Organic-Bound	
140-15490-1 DU	AP-2019-1 (30-31)	Step 5	Solid	Organic-Bound	

Prep Batch: 31500

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15490-1	AP-2019-1 (30-31)	Step 5	Solid	3010A	31436
140-15490-2	AP-2019-2 (35-36)	Step 5	Solid	3010A	31436
140-15490-3	AP-2019-3 (18-19)	Step 5	Solid	3010A	31436
MB 140-31436/13-B ^5	Method Blank	Step 5	Solid	3010A	31436
LCS 140-31436/14-B ^5	Lab Control Sample	Step 5	Solid	3010A	31436
LCSD 140-31436/15-B ^5	Lab Control Sample Dup	Step 5	Solid	3010A	31436
140-15490-1 DU	AP-2019-1 (30-31)	Step 5	Solid	3010A	31436

SEP Batch: 31502

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15490-1	AP-2019-1 (30-31)	Step 6	Solid	Acid/Sulfide	
140-15490-2	AP-2019-2 (35-36)	Step 6	Solid	Acid/Sulfide	
140-15490-3	AP-2019-3 (18-19)	Step 6	Solid	Acid/Sulfide	
MB 140-31502/13-A	Method Blank	Step 6	Solid	Acid/Sulfide	
LCS 140-31502/14-A	Lab Control Sample	Step 6	Solid	Acid/Sulfide	
LCSD 140-31502/15-A	Lab Control Sample Dup	Step 6	Solid	Acid/Sulfide	
140-15490-1 DU	AP-2019-1 (30-31)	Step 6	Solid	Acid/Sulfide	

Analysis Batch: 31553

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15490-1	AP-2019-1 (30-31)	Total/NA	Solid	6010B	31128
140-15490-2	AP-2019-2 (35-36)	Total/NA	Solid	6010B	31128

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Metals (Continued)

Analysis Batch: 31553 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15490-3	AP-2019-3 (18-19)	Total/NA	Solid	6010B	31128
MB 140-31128/14-A	Method Blank	Total/NA	Solid	6010B	31128
LCS 140-31128/15-A	Lab Control Sample	Total/NA	Solid	6010B	31128
140-15490-1 MS	AP-2019-1 (30-31)	Total/NA	Solid	6010B	31128
140-15490-1 MSD	AP-2019-1 (30-31)	Total/NA	Solid	6010B	31128

Analysis Batch: 31604

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15490-1	AP-2019-1 (30-31)	Step 1	Solid	6010B SEP	31252
140-15490-1	AP-2019-1 (30-31)	Step 2	Solid	6010B SEP	31256
140-15490-1	AP-2019-1 (30-31)	Step 3	Solid	6010B SEP	31338
140-15490-1	AP-2019-1 (30-31)	Step 4	Solid	6010B SEP	31360
140-15490-2	AP-2019-2 (35-36)	Step 1	Solid	6010B SEP	31252
140-15490-2	AP-2019-2 (35-36)	Step 2	Solid	6010B SEP	31256
140-15490-2	AP-2019-2 (35-36)	Step 3	Solid	6010B SEP	31338
140-15490-2	AP-2019-2 (35-36)	Step 4	Solid	6010B SEP	31360
140-15490-3	AP-2019-3 (18-19)	Step 1	Solid	6010B SEP	31252
140-15490-3	AP-2019-3 (18-19)	Step 2	Solid	6010B SEP	31256
140-15490-3	AP-2019-3 (18-19)	Step 3	Solid	6010B SEP	31338
140-15490-3	AP-2019-3 (18-19)	Step 4	Solid	6010B SEP	31360
MB 140-31148/13-B ^4	Method Blank	Step 1	Solid	6010B SEP	31252
MB 140-31253/13-B ^3	Method Blank	Step 2	Solid	6010B SEP	31256
MB 140-31257/13-B	Method Blank	Step 3	Solid	6010B SEP	31338
MB 140-31341/13-B	Method Blank	Step 4	Solid	6010B SEP	31360
LCS 140-31148/14-B ^5	Lab Control Sample	Step 1	Solid	6010B SEP	31252
LCS 140-31253/14-B ^5	Lab Control Sample	Step 2	Solid	6010B SEP	31256
LCS 140-31257/14-B	Lab Control Sample	Step 3	Solid	6010B SEP	31338
LCS 140-31341/14-B	Lab Control Sample	Step 4	Solid	6010B SEP	31360
LCSD 140-31148/15-B ^5	Lab Control Sample Dup	Step 1	Solid	6010B SEP	31252
LCSD 140-31253/15-B ^5	Lab Control Sample Dup	Step 2	Solid	6010B SEP	31256
LCSD 140-31257/15-B	Lab Control Sample Dup	Step 3	Solid	6010B SEP	31338
LCSD 140-31341/15-B	Lab Control Sample Dup	Step 4	Solid	6010B SEP	31360
140-15490-1 DU	AP-2019-1 (30-31)	Step 1	Solid	6010B SEP	31252
140-15490-1 DU	AP-2019-1 (30-31)	Step 2	Solid	6010B SEP	31256
140-15490-1 DU	AP-2019-1 (30-31)	Step 3	Solid	6010B SEP	31338
140-15490-1 DU	AP-2019-1 (30-31)	Step 4	Solid	6010B SEP	31360

Prep Batch: 31615

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15490-1	AP-2019-1 (30-31)	Step 7	Solid	Residual	
140-15490-2	AP-2019-2 (35-36)	Step 7	Solid	Residual	
140-15490-3	AP-2019-3 (18-19)	Step 7	Solid	Residual	
MB 140-31615/13-A	Method Blank	Step 7	Solid	Residual	
LCS 140-31615/14-A	Lab Control Sample	Step 7	Solid	Residual	
LCSD 140-31615/15-A	Lab Control Sample Dup	Step 7	Solid	Residual	
140-15490-1 DU	AP-2019-1 (30-31)	Step 7	Solid	Residual	

Analysis Batch: 31651

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15490-1	AP-2019-1 (30-31)	Step 5	Solid	6010B SEP	31500
140-15490-1	AP-2019-1 (30-31)	Step 6	Solid	6010B SEP	31502

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Metals (Continued)

Analysis Batch: 31651 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15490-2	AP-2019-2 (35-36)	Step 5	Solid	6010B SEP	31500
140-15490-2	AP-2019-2 (35-36)	Step 6	Solid	6010B SEP	31502
140-15490-3	AP-2019-3 (18-19)	Step 5	Solid	6010B SEP	31500
140-15490-3	AP-2019-3 (18-19)	Step 6	Solid	6010B SEP	31502
MB 140-31436/13-B ^5	Method Blank	Step 5	Solid	6010B SEP	31500
MB 140-31502/13-A	Method Blank	Step 6	Solid	6010B SEP	31502
LCS 140-31436/14-B ^5	Lab Control Sample	Step 5	Solid	6010B SEP	31500
LCS 140-31502/14-A	Lab Control Sample	Step 6	Solid	6010B SEP	31502
LCSD 140-31436/15-B ^5	Lab Control Sample Dup	Step 5	Solid	6010B SEP	31500
LCSD 140-31502/15-A	Lab Control Sample Dup	Step 6	Solid	6010B SEP	31502
140-15490-1 DU	AP-2019-1 (30-31)	Step 5	Solid	6010B SEP	31500
140-15490-1 DU	AP-2019-1 (30-31)	Step 6	Solid	6010B SEP	31502

Analysis Batch: 31713

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15490-1	AP-2019-1 (30-31)	Step 7	Solid	6010B SEP	31615
140-15490-1	AP-2019-1 (30-31)	Step 7	Solid	6010B SEP	31615
140-15490-1	AP-2019-1 (30-31)	Step 7	Solid	6010B SEP	31615
140-15490-1	AP-2019-1 (30-31)	Total/NA	Solid	6010B	30683
140-15490-1	AP-2019-1 (30-31)	Total/NA	Solid	6010B	30683
140-15490-1	AP-2019-1 (30-31)	Total/NA	Solid	6010B	30683
140-15490-2	AP-2019-2 (35-36)	Step 7	Solid	6010B SEP	31615
140-15490-2	AP-2019-2 (35-36)	Step 7	Solid	6010B SEP	31615
140-15490-2	AP-2019-2 (35-36)	Step 7	Solid	6010B SEP	31615
140-15490-2	AP-2019-2 (35-36)	Total/NA	Solid	6010B	30683
140-15490-2	AP-2019-2 (35-36)	Total/NA	Solid	6010B	30683
140-15490-2	AP-2019-2 (35-36)	Total/NA	Solid	6010B	30683
140-15490-3	AP-2019-3 (18-19)	Step 7	Solid	6010B SEP	31615
140-15490-3	AP-2019-3 (18-19)	Step 7	Solid	6010B SEP	31615
140-15490-3	AP-2019-3 (18-19)	Step 7	Solid	6010B SEP	31615
140-15490-3	AP-2019-3 (18-19)	Total/NA	Solid	6010B	30683
140-15490-3	AP-2019-3 (18-19)	Total/NA	Solid	6010B	30683
140-15490-3	AP-2019-3 (18-19)	Total/NA	Solid	6010B	30683
MB 140-30683/13-A	Method Blank	Total/NA	Solid	6010B	30683
MB 140-31615/13-A	Method Blank	Step 7	Solid	6010B SEP	31615
LCS 140-30683/14-A	Lab Control Sample	Total/NA	Solid	6010B	30683
LCS 140-31615/14-A	Lab Control Sample	Step 7	Solid	6010B SEP	31615
LCSD 140-30683/15-A	Lab Control Sample Dup	Total/NA	Solid	6010B	30683
LCSD 140-31615/15-A	Lab Control Sample Dup	Step 7	Solid	6010B SEP	31615
140-15490-1 DU	AP-2019-1 (30-31)	Step 7	Solid	6010B SEP	31615
140-15490-1 DU	AP-2019-1 (30-31)	Step 7	Solid	6010B SEP	31615
140-15490-1 DU	AP-2019-1 (30-31)	Step 7	Solid	6010B SEP	31615
140-15490-1 DU	AP-2019-1 (30-31)	Total/NA	Solid	6010B	30683
140-15490-1 DU	AP-2019-1 (30-31)	Total/NA	Solid	6010B	30683
140-15490-1 DU	AP-2019-1 (30-31)	Total/NA	Solid	6010B	30683

Analysis Batch: 31744

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15490-1	AP-2019-1 (30-31)	Sum of Steps 1-7	Solid	6010B SEP	
140-15490-2	AP-2019-2 (35-36)	Sum of Steps 1-7	Solid	6010B SEP	
140-15490-3	AP-2019-3 (18-19)	Sum of Steps 1-7	Solid	6010B SEP	

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QC Association Summary

Client: Golder Associates Inc.
Job ID: 140-15490-1
Project/Site: Martin Lake Ash Ponds - SEP + Totals

General Chemistry

Analysis Batch: 30602

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15490-1	AP-2019-1 (30-31)	Total/NA	Solid	Moisture	
140-15490-2	AP-2019-2 (35-36)	Total/NA	Solid	Moisture	
140-15490-3	AP-2019-3 (18-19)	Total/NA	Solid	Moisture	
140-15490-1 DU	AP-2019-1 (30-31)	Total/NA	Solid	Moisture	

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Client Sample ID: AP-2019-1 (30-31)

Lab Sample ID: 140-15490-1

Date Collected: 06/03/19 11:36

Matrix: Solid

Date Received: 06/05/19 09:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Sum of Steps 1-7	Analysis	6010B SEP		1			31744	07/16/19 17:31	CLJ	TAL KNX
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Moisture		1			30602	06/06/19 14:52	BKD	TAL KNX
	Instrument ID: W3									

Client Sample ID: AP-2019-1 (30-31)

Lab Sample ID: 140-15490-1

Date Collected: 06/03/19 11:36

Matrix: Solid

Date Received: 06/05/19 09:20

Percent Solids: 76.0

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			0.536 g	50 mL	31128	06/26/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			31553	07/10/19 12:59	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	30683	06/11/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			31713	07/15/19 14:24	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	30683	06/11/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		10			31713	07/15/19 15:45	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	30683	06/11/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		2			31713	07/15/19 18:28	KNC	TAL KNX
	Instrument ID: DUO									
Step 1	SEP	Exchangeable			5.000 g	25 mL	31148	06/26/19 09:47	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	31252	06/29/19 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		4			31604	07/11/19 12:49	KNC	TAL KNX
	Instrument ID: DUO									
Step 2	SEP	Carbonate			5.000 g	25 mL	31253	06/29/19 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	31256	06/30/19 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		3			31604	07/11/19 14:21	KNC	TAL KNX
	Instrument ID: DUO									
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	31257	06/30/19 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	31338	07/02/19 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			31604	07/11/19 16:06	KNC	TAL KNX
	Instrument ID: DUO									
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	31341	07/02/19 09:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	31360	07/03/19 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			31604	07/11/19 17:49	KNC	TAL KNX
	Instrument ID: DUO									
Step 5	SEP	Organic-Bound			5.000 g	75 mL	31436	07/08/19 07:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	31500	07/10/19 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			31651	07/12/19 11:54	KNC	TAL KNX
	Instrument ID: DUO									
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	31502	07/10/19 08:00	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			31651	07/12/19 13:29	KNC	TAL KNX
	Instrument ID: DUO									

LUMINANT

Lab Chronicle

Client: Golder Associates Inc.
Job ID: 140-15490-1
Project/Site: Martin Lake Ash Ponds - SEP + Totals

Client Sample ID: AP-2019-1 (30-31)
Lab Sample ID: 140-15490-1
Date Collected: 06/03/19 11:36
Matrix: Solid
Date Received: 06/05/19 09:20
Percent Solids: 76.0

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 7	Prep	Residual			1.000 g	50 mL	31615	07/12/19 09:08	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			31713	07/15/19 11:39	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	31615	07/12/19 09:08	KNC	TAL KNX
Step 7	Analysis	6010B SEP		10			31713	07/15/19 13:08	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	31615	07/12/19 09:08	KNC	TAL KNX
Step 7	Analysis	6010B SEP		2			31713	07/15/19 17:11	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	30683	06/11/19 08:00	KNC	TAL KNX
Total/NA	Prep	7470A			5.0 mL	50.0 mL	30859	06/16/19 08:00	DKW	TAL KNX
Total/NA	Analysis	7470A		1			30868	06/16/19 14:04	DKW	TAL KNX
	Instrument ID: HG									

Client Sample ID: AP-2019-2 (35-36)
Lab Sample ID: 140-15490-2
Date Collected: 06/03/19 13:20
Matrix: Solid
Date Received: 06/05/19 09:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Sum of Steps 1-7	Analysis	6010B SEP		1			31744	07/16/19 17:31	CLJ	TAL KNX
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Moisture		1			30602	06/06/19 14:52	BKD	TAL KNX
	Instrument ID: W3									

Client Sample ID: AP-2019-2 (35-36)
Lab Sample ID: 140-15490-2
Date Collected: 06/03/19 13:20
Matrix: Solid
Date Received: 06/05/19 09:20
Percent Solids: 78.5

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			0.527 g	50 mL	31128	06/26/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			31553	07/10/19 13:13	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	30683	06/11/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			31713	07/15/19 14:36	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	30683	06/11/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		10			31713	07/15/19 16:10	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	30683	06/11/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		5			31713	07/15/19 18:38	KNC	TAL KNX
	Instrument ID: DUO									
Step 1	SEP	Exchangeable			5.000 g	25 mL	31148	06/26/19 09:47	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	31252	06/29/19 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		4			31604	07/11/19 12:59	KNC	TAL KNX
	Instrument ID: DUO									

LUMINANT

Lab Chronicle

Client: Golder Associates Inc.
Job ID: 140-15490-1
Project/Site: Martin Lake Ash Ponds - SEP + Totals

Client Sample ID: AP-2019-2 (35-36)
Lab Sample ID: 140-15490-2
Date Collected: 06/03/19 13:20
Matrix: Solid
Date Received: 06/05/19 09:20
Percent Solids: 78.5

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 2	SEP	Carbonate			5.000 g	25 mL	31253	06/29/19 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	31256	06/30/19 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		3			31604	07/11/19 14:42	KNC	TAL KNX
	Instrument ID: DUO									
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	31257	06/30/19 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	31338	07/02/19 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			31604	07/11/19 16:16	KNC	TAL KNX
	Instrument ID: DUO									
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	31341	07/02/19 09:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	31360	07/03/19 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			31604	07/11/19 17:59	KNC	TAL KNX
	Instrument ID: DUO									
Step 5	SEP	Organic-Bound			5.000 g	75 mL	31436	07/08/19 07:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	31500	07/10/19 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			31651	07/12/19 12:05	KNC	TAL KNX
	Instrument ID: DUO									
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	31502	07/10/19 08:00	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			31651	07/12/19 13:49	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	31615	07/12/19 09:08	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			31713	07/15/19 12:05	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	31615	07/12/19 09:08	KNC	TAL KNX
Step 7	Analysis	6010B SEP		10			31713	07/15/19 13:19	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	31615	07/12/19 09:08	KNC	TAL KNX
Step 7	Analysis	6010B SEP		2			31713	07/15/19 17:21	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	30683	06/11/19 08:00	KNC	TAL KNX
Total/NA	Prep	7470A			5.0 mL	50.0 mL	30859	06/16/19 08:00	DKW	TAL KNX
Total/NA	Analysis	7470A		1			30868	06/16/19 14:09	DKW	TAL KNX
	Instrument ID: HG									

Client Sample ID: AP-2019-3 (18-19)
Lab Sample ID: 140-15490-3
Date Collected: 06/03/19 15:20
Matrix: Solid
Date Received: 06/05/19 09:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Sum of Steps 1-7	Analysis	6010B SEP		1			31744	07/16/19 17:31	CLJ	TAL KNX
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Moisture		1			30602	06/06/19 14:52	BKD	TAL KNX
	Instrument ID: W3									

LUMINANT

Client: Golder Associates Inc.
Job ID: 140-15490-1
Project/Site: Martin Lake Ash Ponds - SEP + Totals

Client Sample ID: AP-2019-3 (18-19)
Lab Sample ID: 140-15490-3
Date Collected: 06/03/19 15:20
Matrix: Solid
Date Received: 06/05/19 09:20
Percent Solids: 80.0

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			0.527 g	50 mL	31128	06/26/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			31553	07/10/19 13:18	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	30683	06/11/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			31713	07/15/19 14:41	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	30683	06/11/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		10			31713	07/15/19 16:15	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	30683	06/11/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		5			31713	07/15/19 18:43	KNC	TAL KNX
	Instrument ID: DUO									
Step 1	SEP	Exchangeable			5.000 g	25 mL	31148	06/26/19 09:47	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	31252	06/29/19 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		4			31604	07/11/19 13:04	KNC	TAL KNX
	Instrument ID: DUO									
Step 2	SEP	Carbonate			5.000 g	25 mL	31253	06/29/19 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	31256	06/30/19 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		3			31604	07/11/19 14:47	KNC	TAL KNX
	Instrument ID: DUO									
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	31257	06/30/19 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	31338	07/02/19 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			31604	07/11/19 16:21	KNC	TAL KNX
	Instrument ID: DUO									
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	31341	07/02/19 09:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	31360	07/03/19 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			31604	07/11/19 18:04	KNC	TAL KNX
	Instrument ID: DUO									
Step 5	SEP	Organic-Bound			5.000 g	75 mL	31436	07/08/19 07:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	31500	07/10/19 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			31651	07/12/19 12:10	KNC	TAL KNX
	Instrument ID: DUO									
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	31502	07/10/19 08:00	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			31651	07/12/19 13:55	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	31615	07/12/19 09:08	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			31713	07/15/19 12:11	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	31615	07/12/19 09:08	KNC	TAL KNX
Step 7	Analysis	6010B SEP		10			31713	07/15/19 13:24	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	31615	07/12/19 09:08	KNC	TAL KNX
Step 7	Analysis	6010B SEP		2			31713	07/15/19 17:27	KNC	TAL KNX
	Instrument ID: DUO									

LUMINANT

Lab Chronicle

Client: Golder Associates Inc.
Job ID: 140-15490-1
Project/Site: Martin Lake Ash Ponds - SEP + Totals

Client Sample ID: AP-2019-3 (18-19)
Lab Sample ID: 140-15490-3
Date Collected: 06/03/19 15:20
Matrix: Solid
Date Received: 06/05/19 09:20
Percent Solids: 80.0

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	30683	06/11/19 08:00	KNC	TAL KNX
Total/NA	Prep	7470A			5.0 mL	50.0 mL	30859	06/16/19 08:00	DKW	TAL KNX
Total/NA	Analysis	7470A		1			30868	06/16/19 14:17	DKW	TAL KNX
	Instrument ID: HG									

Client Sample ID: Method Blank
Lab Sample ID: MB 140-30683/13-A
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	30683	06/11/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			31713	07/15/19 11:13	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Method Blank
Lab Sample ID: MB 140-30683/13-B
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	30683	06/11/19 08:00	KNC	TAL KNX
Total/NA	Prep	7470A			5.0 mL	50.0 mL	30859	06/16/19 08:00	DKW	TAL KNX
Total/NA	Analysis	7470A		1			30868	06/16/19 13:56	DKW	TAL KNX
	Instrument ID: HG									

Client Sample ID: Method Blank
Lab Sample ID: MB 140-31128/14-A
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			0.500 g	50 mL	31128	06/26/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			31553	07/10/19 11:42	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Method Blank
Lab Sample ID: MB 140-31148/13-B ^4
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 1	SEP	Exchangeable			5.000 g	25 mL	31148	06/26/19 09:47	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	31252	06/29/19 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		4			31604	07/11/19 12:33	KNC	TAL KNX
	Instrument ID: DUO									

LUMINANT

Client Sample ID: Method Blank
Lab Sample ID: MB 140-31253/13-B ^3
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 2	SEP	Carbonate			5.000 g	25 mL	31253	06/29/19 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	31256	06/30/19 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		3			31604	07/11/19 14:06	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Method Blank
Lab Sample ID: MB 140-31257/13-B
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	31257	06/30/19 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	31338	07/02/19 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			31604	07/11/19 15:50	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Method Blank
Lab Sample ID: MB 140-31341/13-B
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	31341	07/02/19 09:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	31360	07/03/19 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			31604	07/11/19 17:24	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Method Blank
Lab Sample ID: MB 140-31436/13-B ^5
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 5	SEP	Organic-Bound			5.000 g	75 mL	31436	07/08/19 07:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	31500	07/10/19 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			31651	07/12/19 11:39	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Method Blank
Lab Sample ID: MB 140-31502/13-A
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	31502	07/10/19 08:00	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			31651	07/12/19 13:14	KNC	TAL KNX
	Instrument ID: DUO									

LUMINANT

Client Sample ID: Method Blank
Lab Sample ID: MB 140-31615/13-A
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 7	Prep	Residual			1.000 g	50 mL	31615	07/12/19 09:08	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			31713	07/15/19 10:58	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-30683/14-A
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	30683	06/11/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			31713	07/15/19 11:19	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-30683/14-B
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	30683	06/11/19 08:00	KNC	TAL KNX
Total/NA	Prep	7470A			5.0 mL	50.0 mL	30859	06/16/19 08:00	DKW	TAL KNX
Total/NA	Analysis	7470A		1			30868	06/16/19 13:59	DKW	TAL KNX
	Instrument ID: HG									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-31128/15-A
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			0.500 g	50 mL	31128	06/26/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			31553	07/10/19 11:47	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-31148/14-B ^5
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 1	SEP	Exchangeable			5.000 g	25 mL	31148	06/26/19 09:47	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	31252	06/29/19 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		5			31604	07/11/19 12:38	KNC	TAL KNX
	Instrument ID: DUO									

LUMINANT

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-31253/14-B ^5

Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 2	SEP	Carbonate			5.000 g	25 mL	31253	06/29/19 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	31256	06/30/19 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		5			31604	07/11/19 14:11	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-31257/14-B

Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	31257	06/30/19 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	31338	07/02/19 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			31604	07/11/19 15:56	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-31341/14-B

Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	31341	07/02/19 09:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	31360	07/03/19 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			31604	07/11/19 17:29	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-31436/14-B ^5

Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 5	SEP	Organic-Bound			5.000 g	75 mL	31436	07/08/19 07:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	31500	07/10/19 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			31651	07/12/19 11:44	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-31502/14-A

Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	31502	07/10/19 08:00	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			31651	07/12/19 13:19	KNC	TAL KNX
	Instrument ID: DUO									

LUMINANT

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-31615/14-A
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 7	Prep	Residual			1.000 g	50 mL	31615	07/12/19 09:08	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			31713	07/15/19 11:03	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample Dup
Lab Sample ID: LCSD 140-30683/15-A
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	30683	06/11/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			31713	07/15/19 11:24	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample Dup
Lab Sample ID: LCSD 140-30683/15-B
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	30683	06/11/19 08:00	KNC	TAL KNX
Total/NA	Prep	7470A			5.0 mL	50.0 mL	30859	06/16/19 08:00	DKW	TAL KNX
Total/NA	Analysis	7470A		1			30868	06/16/19 14:02	DKW	TAL KNX
	Instrument ID: HG									

Client Sample ID: Lab Control Sample Dup
Lab Sample ID: LCSD 140-31148/15-B ^5
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 1	SEP	Exchangeable			5.000 g	25 mL	31148	06/26/19 09:47	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	31252	06/29/19 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		5			31604	07/11/19 12:43	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample Dup
Lab Sample ID: LCSD 140-31253/15-B ^5
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 2	SEP	Carbonate			5.000 g	25 mL	31253	06/29/19 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	31256	06/30/19 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		5			31604	07/11/19 14:16	KNC	TAL KNX
	Instrument ID: DUO									

LUMINANT

Client Sample ID: Lab Control Sample Dup — Lab Sample ID: LCSD 140-31257/15-B

Date Collected: N/A — **Matrix: Solid**
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	31257	06/30/19 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	31338	07/02/19 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			31604	07/11/19 16:01	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample Dup — Lab Sample ID: LCSD 140-31341/15-B

Date Collected: N/A — **Matrix: Solid**
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	31341	07/02/19 09:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	31360	07/03/19 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			31604	07/11/19 17:44	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample Dup — Lab Sample ID: LCSD 140-31436/15-B ^5

Date Collected: N/A — **Matrix: Solid**
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 5	SEP	Organic-Bound			5.000 g	75 mL	31436	07/08/19 07:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	31500	07/10/19 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			31651	07/12/19 11:49	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample Dup — Lab Sample ID: LCSD 140-31502/15-A

Date Collected: N/A — **Matrix: Solid**
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	31502	07/10/19 08:00	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			31651	07/12/19 13:24	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample Dup — Lab Sample ID: LCSD 140-31615/15-A

Date Collected: N/A — **Matrix: Solid**
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 7	Prep	Residual			1.000 g	50 mL	31615	07/12/19 09:08	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			31713	07/15/19 11:08	KNC	TAL KNX
	Instrument ID: DUO									

LUMINANT

Lab Chronicle

Client: Golder Associates Inc.
Job ID: 140-15490-1
Project/Site: Martin Lake Ash Ponds - SEP + Totals

Client Sample ID: AP-2019-1 (30-31)
Date Collected: 06/03/19 11:36
Date Received: 06/05/19 09:20

Lab Sample ID: 140-15490-1 MS
Matrix: Solid
Percent Solids: 76.0

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			0.530 g	50 mL	31128	06/26/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			31553	07/10/19 13:04	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: AP-2019-1 (30-31)
Date Collected: 06/03/19 11:36
Date Received: 06/05/19 09:20

Lab Sample ID: 140-15490-1 MSD
Matrix: Solid
Percent Solids: 76.0

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			0.539 g	50 mL	31128	06/26/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			31553	07/10/19 13:08	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: AP-2019-1 (30-31)
Date Collected: 06/03/19 11:36
Date Received: 06/05/19 09:20

Lab Sample ID: 140-15490-1 DU
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1			30602	06/06/19 14:52	BKD	TAL KNX
	Instrument ID: W3									

Client Sample ID: AP-2019-1 (30-31)
Date Collected: 06/03/19 11:36
Date Received: 06/05/19 09:20

Lab Sample ID: 140-15490-1 DU
Matrix: Solid
Percent Solids: 76.0

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	30683	06/11/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			31713	07/15/19 14:30	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	30683	06/11/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		10			31713	07/15/19 15:50	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	30683	06/11/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		2			31713	07/15/19 18:33	KNC	TAL KNX
	Instrument ID: DUO									
Step 1	SEP	Exchangeable			5.000 g	25 mL	31148	06/26/19 09:47	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	31252	06/29/19 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		4			31604	07/11/19 12:54	KNC	TAL KNX
	Instrument ID: DUO									
Step 2	SEP	Carbonate			5.000 g	25 mL	31253	06/29/19 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	31256	06/30/19 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		3			31604	07/11/19 14:37	KNC	TAL KNX
	Instrument ID: DUO									

LUMINANT

Lab Chronicle

Client: Golder Associates Inc.
Job ID: 140-15490-1
Project/Site: Martin Lake Ash Ponds - SEP + Totals

Client Sample ID: AP-2019-1 (30-31)
Date Collected: 06/03/19 11:36
Date Received: 06/05/19 09:20

Lab Sample ID: 140-15490-1 DU
Matrix: Solid
Percent Solids: 76.0

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	31257	06/30/19 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	31338	07/02/19 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			31604	07/11/19 16:11	KNC	TAL KNX
	Instrument ID: DUO									
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	31341	07/02/19 09:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	31360	07/03/19 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			31604	07/11/19 17:54	KNC	TAL KNX
	Instrument ID: DUO									
Step 5	SEP	Organic-Bound			5.000 g	75 mL	31436	07/08/19 07:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	31500	07/10/19 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			31651	07/12/19 12:00	KNC	TAL KNX
	Instrument ID: DUO									
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	31502	07/10/19 08:00	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			31651	07/12/19 13:44	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	31615	07/12/19 09:08	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			31713	07/15/19 12:00	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	31615	07/12/19 09:08	KNC	TAL KNX
Step 7	Analysis	6010B SEP		10			31713	07/15/19 13:14	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	31615	07/12/19 09:08	KNC	TAL KNX
Step 7	Analysis	6010B SEP		2			31713	07/15/19 17:16	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	30683	06/11/19 08:00	KNC	TAL KNX
Total/NA	Prep	7470A			5.0 mL	50.0 mL	30859	06/16/19 08:00	DKW	TAL KNX
Total/NA	Analysis	7470A		1			30868	06/16/19 14:06	DKW	TAL KNX
	Instrument ID: HG									

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Laboratory References:
TAL KNX = Eurofins TestAmerica, Knoxville, 5815 Middlebrook Pike, Knoxville, TN 37921, TEL (865)291-3000

Method Summary

Client: Golder Associates Inc.
Job ID: 140-15490-1
Project/Site: Martin Lake Ash Ponds - SEP + Totals

Method	Method Description	Protocol	Laboratory
6010B	Metals (ICP)	SW846	TAL KNX
6010B	SEP Metals (ICP) - Total	SW846	TAL KNX
6010B SEP	SEP Metals (ICP)	SW846	TAL KNX
7470A	SEP Mercury (CVAA) - Total	SW846	TAL KNX
Moisture	Percent Moisture	EPA	TAL KNX
3010A	Preparation, Total Metals	SW846	TAL KNX
3050B	Preparation, Metals	SW846	TAL KNX
7470A	Preparation, Mercury	SW846	TAL KNX
Acid/Sulfide	Sequential Extraction Procedure, Acid/Sulfide Fraction	TAL-KNOX	TAL KNX
Carbonate	Sequential Extraction Procedure, Carbonate Fraction	TAL-KNOX	TAL KNX
Exchangeable	Sequential Extraction Procedure, Exchangeable Fraction	TAL-KNOX	TAL KNX
Metal Hydroxide	Sequential Extraction Procedure, Metal Hydroxide Fraction	TAL-KNOX	TAL KNX
Non-Crystalline	Sequential Extraction Procedure, Non-crystalline Materials	TAL-KNOX	TAL KNX
Organic-Bound	Sequential Extraction Procedure, Organic Bound Fraction	TAL-KNOX	TAL KNX
Residual	Sequential Extraction Procedure, Residual Fraction	TAL-KNOX	TAL KNX
Total	Preparation, Total Material	TAL-KNOX	TAL KNX

Protocol References:

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

TAL-KNOX = TestAmerica Laboratories, Knoxville, Facility Standard Operating Procedure.

Laboratory References:

TAL KNX = Eurofins TestAmerica, Knoxville, 5815 Middlebrook Pike, Knoxville, TN 37921, TEL (865)291-3000

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Sample Summary

Client: Golder Associates Inc.
Job ID: 140-15490-1
Project/Site: Martin Lake Ash Ponds - SEP + Totals

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
140-15490-1	AP-2019-1 (30-31)	Solid	06/03/19 11:36	06/05/19 09:20	
140-15490-2	AP-2019-2 (35-36)	Solid	06/03/19 13:20	06/05/19 09:20	
140-15490-3	AP-2019-3 (18-19)	Solid	06/03/19 15:20	06/05/19 09:20	

LUMINANT

APPENDIX F-Revision 2 February 27, 2024

Eurofins TestAmerica, Knoxville
5815 Middlebrook Pike
Knoxville, TN 37921
Phone (865) 291-3000 Fax (865) 584-4315

Chain of Custody Record

eurofins | Environment Testing TestAmerica

Client Information	Sampler: Kelsey Worley	Lab PM: Walker Wasmund, Terry	Carrier Tracking No(s):	COC No: 140-6683-2229.1
Client Contact: Will Vienne	Phone: 281-750-2734	E-Mail: terry.wasmund@testamericainc.com		Page: Page 1 of 1
Company: Golder Associates Inc.				Job #:
Address: 2201 Double Creek Dr Suite 4004	Due Date Requested:			
City: Round Rock	TAT Requested (days): Standard			
State, Zip: TX, 78664				
Phone: 512-671-3434(Tel)	PO #: 19122434-C			
Email: William_Vienne@golder.com	WO #: 1922434-C			
Project Name: Martin Lake Ash Ponds - SEP + Totals	Project #: 14005268			
Site:	SSOW#:			

Analysis Requested

140-15490 Chain of Custody

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	6010B_SEP - 7-Step SEP (12 Metals)	6010B - Total B, Cr, Pb	Total Number of containers	Special Instructions/Note:
			Preservation Code:				N	I		
AP-2019-1 (30-31)	06/03/19	1136	C	S			X	X		On Ice
AP-2019-2 (35-36)	06/03/19	1320	C	S			X	X		" "
AP-2019-3 (18-19)	06/03/19	1520	C	S			X	X		" "

BT: 1.2°C CT: 1.2°C, 1 cooler
Fedex ✓, Custody seal intact
trK# 7876 7328 2042
KW 6/5/19

Possible Hazard Identification
☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Kelsey Worley	06/04/19 1245	Golder	[signature]	6/5/19 0920	TA-Knox

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.: | Cooler Temperature(s) °C and Other Remarks:

Ver. 01/16/2019

LUMINANT

Loc: 140
15490

TESTAMERICA KNOXVILLE SAMPLE RECEIPT/CONDITION UPON RECEIPT ANOMALY CHECKLIST

Log In Number:

Review Items	Yes	No	NA	If No, what was the problem?
1. Are the shipping containers intact?	/			☐ Containers, Broken
2. Were ambient air containers received intact?			/	☐ Checked in lab
3. The coolers/containers custody seal if present, is it intact?	/			☐ Yes ☐ NA
4. Is the cooler temperature within limits? (> freezing temp. of water to 6 °C, VOST: 10°C) Thermometer ID : 5C6 Correction factor: +0.0	/			☐ Cooler Out of Temp, Client Contacted, Proceed/Cancel ☐ Cooler Out of Temp, Same Day Receipt
5. Were all of the sample containers received intact?	/			☐ Containers, Broken
6. Were samples received in appropriate containers?	/			☐ Containers, Improper; Client Contacted; Proceed/Cancel
7. Do sample container labels match COC? (IDs, Dates, Times)	/			☐ COC & Samples Do Not Match ☐ COC Incorrect/Incomplete ☐ COC Not Received
8. Were all of the samples listed on the COC received?	/			☐ Sample Received, Not on COC ☐ Sample on COC, Not Received
9. Is the date/time of sample collection noted?	/			☐ COC; No Date/Time; Client Contacted
10. Was the sampler identified on the COC?	/			☐ Sampler Not Listed on COC
11. Is the client and project name/# identified?	/			☐ COC Incorrect/Incomplete
12. Are tests/parameters listed for each sample?	/			☐ COC No tests on COC
13. Is the matrix of the samples noted?	/			☐ COC Incorrect/Incomplete
14. Was COC relinquished? (Signed/Dated/Timed)	/			☐ COC Incorrect/Incomplete
15. Were samples received within holding time?	/			☐ Holding Time - Receipt
16. Were samples received with correct chemical preservative (excluding Encore)?			/	☐ pH Adjusted, pH Included (See box 16A) ☐ Incorrect Preservative
17. Were VOA samples received without headspace?			/	☐ Headspace (VOA only)
18. Did you check for residual chlorine, if necessary? (e.g. 1613B, 1668) Chlorine test strip lot number:			/	☐ Residual Chlorine
19. For 1613B water samples is pH<9?			/	☐ If no, notify lab to adjust
20. For rad samples was sample activity info. Provided?			/	☐ Project missing info

Comments/Actions Taken

Labeling Verified by: **Date:**

pH test strip lot number:

	Box 16A: pH Preservation	Box 18A: Residual Chlorine
Preservative:		
Lot Number:		
Exp Date:		
Analyst:		
Date:		
Time:		

Project #: 1400526B PM Instructions:

Sample Receiving Associate: Date: 6/5/19

QA026R31.doc, 112618

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APPENDIX C

GROUNDWATER SAMPLING RECORDS

LUMINANT

APPENDIX F-Revision 2-February 27, 2024

RECORD OF WATER LEVEL READINGS

GOLDER

Project Name: LUMINANT-MLSES-PONDS Location: TATUM, TX Project No.: 19122262-C

Borehole No.	Date	Time	Measuring Device / Serial No.	Measurement Point (M.P)	Water Level Below M.P.	Correction To Survey Mark	Survey Mark Elevation	Water Level Elevation	By	Comments
H-31	5-14-19	0704	SOLINST	TOC	22.73				JTB	
H-32	5-14-19	0759	SOLINST	TOC	23.16				JTB	
H-27	5-14-19	0903	SOLINST	TOC	22.02				JTB	
H-29	5-14-19	1050	SOLINST	TOC	22.61				JTB	
H-28	5-14-19	1155	SOLINST	TOC	7.12				JTB	
H-26	5-14-19	1350	SOLINST	TOC	13.21				JTB	
H-33	5-14-19	1449	SOLINST	TOC	13.42				JTB	

LUMINANT

Sheet 1 of 1

GROUNDWATER SAMPLING RECORD

PAGE 1 of 1

Project Number: 19122262-C Project Name: LUMINANT- MCSES Date: 5-14-19

Sample Number: H-26

Sampling Location (well ID, etc.): H-26

Sampled by: JTB

Measuring Point (MP) of Well: TOC/PVC

Screened Interval (ft. BGL): —

Filter Pack Interval (ft. BGL): —

Starting Water Level (ft. BMP): 13.21

Casing Stickup (ft.): -

Starting Water Level (ft. BGL): 13.21

Total Depth (ft. BGL): -

Casing Diameter (in ID): 2.0

Casing Volume (gal.): —

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: alconox & DI rinse

Purging: peristaltic / bladder Sampling: same

Disposal of Discharged Water: on site

INSTRUMENTS (Indicate make, model, I.d.)

Water Level: KECK Thermometer: HORIBA

pH Meter: HORIBA Field Calibration: 7-4

Conductivity Meter: HORIBA Field Calibration: 1413

Filter / Filter Size: Other:

SAMPLING MEASUREMENTS

Time (1352)	Cum. Vol. (gal. or L)	Purge Rate (gal. or L /m)	Temp. (oC)	pH	Spec. Cond. (mmhos/cm)	D.O	Redox (mV)	Turbidity & Color	Water Depth (ft BMP)
1401	—	.2	23.1	6.81	1730	0.86	-29	8.1	13.44
1406		1	22.7	6.82	1760	0.63	-31	7.1	13.46
1413		↓	22.8	6.83	1760	0.64	-31	7.7	13.47

Water Level (ft. BMP) at End of Purge: 13.47 Sample Intake Depth (ft. BMP):

SAMPLE INVENTORY

Bottles Collected				Filtration		Remarks
Time	Volume	Composition (G, P)	No.	(Y / N)	Preservation	(quality control sample, other)
1425	250mL	P	1	N	—	GEN CHEM
1425	500mL	P	1	N	HNO_3	METALS

Comments:

Pastor, Behling & Wheeler, LLC
2201 Double Creek Dr., Suite 4004
Round Rock, TX 78664
(512) 671-3434 Fax (512) 671-3446

LUMINANT

GROUNDWATER SAMPLING RECORD

PAGE 1 of 1

Project Number: 191222G2-C Project Name: LUMINANT- MCSES Date: 5-14-19

Sample Number: A-27

Sampling Location (well ID, etc.): A-27

Sampled by: JTB

Measuring Point (MP) of Well: TOC/PVC

Screened Interval (ft. BGL): —

Filter Pack Interval (ft. BGL): —

Starting Water Level (ft. BMP): 22.02

Casing Stickup (ft.): —

Starting Water Level (ft. BGL): 22.02

Total Depth (ft. BGL): —

Casing Diameter (in ID): 2.0

Casing Volume (gal.): —

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: alconox & DI rinse

Purging: peristaltic / bladder Sampling: Same

Disposal of Discharged Water: on site

INSTRUMENTS (Indicate make, model, I.d.)

Water Level: KECK Thermometer: HORIBA

pH Meter: HORIBA Field Calibration: 7-4

Conductivity Meter: HORIBA Field Calibration: 1413

Filter / Filter Size: Other:

SAMPLING MEASUREMENTS

0906 Time	Cum. Vol. (gal. or L)	Purge Rate (gal. or L /m)	Temp. (oC)	pH	Spec. Cond. (mmhos/cm)	D.O	Redox (mV)	Turbidity & Color	Water Depth (ft BMP)
0916	—	.2	22.1	6.74	1610	0.49	-79	7.7	22.23
0921		↓	22.4	6.77	1640	0.51	-81	7.9	22.24
0927		↓	22.4	6.78	1630	0.52	-82	7.9	22.23

Water Level (ft. BMP) at End of Purge: 22.23 Sample Intake Depth (ft. BMP):

SAMPLE INVENTORY

Bottles Collected				Filtration		Remarks
Time	Volume	Composition (G, P)	No.	(Y / N)	Preservation	(quality control sample, other)
0940	250mL	P	1	N	—	GEN CHEM
0940	500mL	P	1	N	HNO_3	METALS

Comments:

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LUMINANT

GROUNDWATER SAMPLING RECORD

PAGE 1 of 1

Project Number: 19122262-C Project Name: LUMINANT- MCSES Date: 5-14-19

Sample Number: H-28

Sampling Location (well ID, etc.): H-28

Sampled by: JTB

Measuring Point (MP) of Well: TOC/PVC

Screened Interval (ft. BGL): —

Filter Pack Interval (ft. BGL): —

Starting Water Level (ft. BMP): 7.12

Casing Stickup (ft.): —

Starting Water Level (ft. BGL): 7.12

Total Depth (ft. BGL): —

Casing Diameter (In ID): 2.0

Casing Volume (gal.): —

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: alconox & DI rinse

Purging: peristaltic / bladder Sampling: Same

Disposal of Discharged Water: on site

INSTRUMENTS (Indicate make, model, I.d.)

Water Level: KECK Thermometer: HORIBA

pH Meter: HORIBA Field Calibration: 7-4

Conductivity Meter: HORIBA Field Calibration: 1413

Filter / Filter Size: Other:

SAMPLING MEASUREMENTS

1157 Time	Cum. Vol (gal. or L)	Purge Rate (gal. or L /m)	Temp (oC)	pH	Spec. Cond. (mmhos/cm)	D.O	Redox (mV)	Turbidity & Color	Water Depth (ft BMP)
1201	—	.2	22.6	6.29	1580	0.39	-34	3.8	7.29
1211		1	22.9	6.31	1520	0.31	-39	4.6	7.31
1218		↓	22.9	6.32	1510	0.32	-39	4.8	7.32

Water Level (ft. BMP) at End of Purge: 7.32 Sample Intake Depth (ft. BMP):

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
1230	250mL	P	1	N	—	GEN CHEM
1230	500mL	P	1	N	HNO_3	METALS

Comments:

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Round Rock, TX 78664
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LUMINANT

GROUNDWATER SAMPLING RECORD

PAGE 1 of 1

Project Number: 19122262-C Project Name: LUMINANT - MCSES Date: 5-14-19

Sample Number: H-29

Sampling Location (well ID, etc.): H-29

Sampled by: JTB

Measuring Point (MP) of Well: TOC/PVC

Screened Interval (ft. BGL): —

Filter Pack Interval (ft. BGL): —

Starting Water Level (ft. BMP): 22.61

Casing Stickup (ft.): —

Starting Water Level (ft. BGL): 22.61

Total Depth (ft. BGL): —

Casing Diameter (in ID): 2.0

Casing Volume (gal.): —

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: alconox & DI rinse

Purging: peristaltic / bladder Sampling: Same

Disposal of Discharged Water: on site

INSTRUMENTS (Indicate make, model, I.d.)

Water Level: KECK Thermometer: HORIBA

pH Meter: HORIBA Field Calibration: 7-4

Conductivity Meter: HORIBA Field Calibration: 1413

Filter / Filter Size: Other:

SAMPLING MEASUREMENTS

Time (1053)	Cum. Vol. (gal. or L)	Purge Rate (gal. or L /m)	Temp. (oC)	pH	Spec. Cond. (mmhos/cm)	D.O	Redox (mV)	Turbidity & Color	Water Depth (ft BMP)
1102	—	.2	21.9	6.46	1710	0.71	-86	7.2	22.88
1107		1	22.6	6.51	1730	0.62	-87	6.2	22.89
1114		↓	22.7	6.52	1730	0.63	-87	6.1	22.89

Water Level (ft. BMP) at End of Purge: 22.89 Sample Intake Depth (ft. BMP):

SAMPLE INVENTORY

Bottles Collected				Filtration		Remarks
Time	Volume	Composition (G, P)	No.	(Y / N)	Preservation	(quality control sample, other)
1125	250mL	P	1	N	—	GEN CHEM
1125	500mL	P	1	N	HNO_3	METALS

Comments:

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2201 Double Creek Dr., Suite 4004
Round Rock, TX 78664
(512) 671-3434 Fax (512) 671-3446

LUMINANT

GROUNDWATER SAMPLING RECORD

PAGE 1 of 1

Project Number: 1912262-C Project Name: LUMINANT - MCSES Date: 5-14-19

Sample Number:	H-31	Starting Water Level (ft. BMP):	22.73
Sampling Location (well ID, etc.):	H-31	Casing Stickup (ft.):	-
Sampled by:	JJB	Starting Water Level (ft. BGL):	22.73
Measuring Point (MP) of Well:	TOC/PVC	Total Depth (ft. BGL):	-
Screened Interval (ft. BGL):	-	Casing Diameter (in ID):	2.0
Filter Pack Interval (ft. BGL):	-	Casing Volume (gal.):	-

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: alconox & DI rinse

Purging: peristaltic / bladder Sampling: same

Disposal of Discharged Water: on site

INSTRUMENTS (Indicate make, model, I.d.)

Water Level:	KECK	Thermometer:	HORIBA
pH Meter:	HORIBA	Field Calibration:	7-4
Conductivity Meter:	HORIBA	Field Calibration:	1413
Filter / Filter Size:		Other:	

SAMPLING MEASUREMENTS

0707 Time	Cum. Vol. (gal. or L)	Purge Rate (gal. or L/m)	Temp (oC)	pH	Spec. Cond. (mmhos/cm)	D.O	Redox (mV)	Turbidity & Color	Water Depth (ft BMP)
0717	-	.2	22.6	6.49	1670	0.79	-76	4.6	22.92
0722		1	22.5	6.41	1630	0.61	-77	5.8	22.93
0726		↓	22.4	6.42	1620	0.60	-77	5.6	22.93

Water Level (ft. BMP) at End of Purge: 22.93 Sample Intake Depth (ft. BMP):

SAMPLE INVENTORY

Bottles Collected				Filtration	Preservation	Remarks
Time	Volume	Composition (G, P)	No.	(Y / N)		(quality control sample, other)
0740	250mL	P	1	N	-	GEN CHEM
0740	500mL	P	1	N	HNO_3	METALS

Comments:

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LUMINANT

GROUNDWATER SAMPLING RECORD

PAGE 1 of 1

Project Number: 19122262-C Project Name: LUMINANT - MCSES Date: 5-14-19

Sample Number: H-32	Starting Water Level (ft. BMP): 23.16
Sampling Location (well ID, etc.): H-32	Casing Stickup (ft.): —
Sampled by: JTB	Starting Water Level (ft. BGL): 23.16
Measuring Point (MP) of Well: TOC/PVC	Total Depth (ft. BGL): —
Screened Interval (ft. BGL): —	Casing Diameter (In ID): 2.0
Filter Pack Interval (ft. BGL): —	Casing Volume (gal.): —

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: alconox & DI rinse

Purging: peristaltic / bladder Sampling: same

Disposal of Discharged Water: on site

INSTRUMENTS (Indicate make, model, I.d.)

Water Level:	KECK	Thermometer:	HORIBA
pH Meter:	HORIBA	Field Calibration:	7-4
Conductivity Meter:	HORIBA	Field Calibration:	1413
Filter / Filter Size:		Other:	

SAMPLING MEASUREMENTS

0757 Time	Cum. Vol. (gal. or L)	Purge Rate (gal. or L /m)	Temp. (oC)	pH	Spec. Cond. (mmhos/cm)	D.O	Redox (mV)	Turbidity & Color	Water Depth (ft BMP)
0807	—	.2	22.4	5.99	1510	0.41	-71	4.8	23.34
0812		1	22.7	6.01	1540	0.31	-76	9.2	23.35
0818		1	22.6	6.02	1540	0.32	-77	8.7	23.35

Water Level (ft. BMP) at End of Purge: 23.35 Sample Intake Depth (ft. BMP):

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
0825	250mL	P	1	N	—	GEN CHEM
0825	500mL	P	1	N	HNO_3	METALS

Comments:

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LUMINANT

GROUNDWATER SAMPLING RECORD

PAGE 1 of 1

Project Number: 19122262-C Project Name: LUMINANT - MCSES Date: 5-14-19

Sample Number:	H-33	Starting Water Level (ft. BMP):	13.42
Sampling Location (well ID, etc.):	H-33	Casing Stickup (ft.):	—
Sampled by:	JJB	Starting Water Level (ft. BGL):	13.42
Measuring Point (MP) of Well:	TOC/PVC	Total Depth (ft. BGL):	—
Screened Interval (ft. BGL):	—	Casing Diameter (in ID):	2.0
Filter Pack Interval (ft. BGL):	—	Casing Volume (gal.):	—

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: alconox & DI rinse

Purging: peristaltic / bladder Sampling: same

Disposal of Discharged Water: on site

INSTRUMENTS (Indicate make, model, I.d.)

Water Level:	KECK	Thermometer:	HORIBA
pH Meter:	HORIBA	Field Calibration:	7-4
Conductivity Meter:	HORIBA	Field Calibration:	1413
Filter / Filter Size:		Other:	

SAMPLING MEASUREMENTS

1451 Time	Cum. Vol. (gal. or L)	Purge Rate (gal. or L /m)	Temp. (oC)	pH	Spec. Cond. (mmhos/cm)	D.O.	Redox (mV)	Turbidity & Color	Water Depth (ft BMP)
1501	—	.2	23.4	6.81	1620	0.77	-29	5.9	13.67
1506		↓	23.6	6.82	1640	0.63	-26	7.8	13.66
1512			23.6	6.81	1650	0.62	-26	7.4	13.66

Water Level (ft. BMP) at End of Purge: 13.66 Sample Intake Depth (ft. BMP):

SAMPLE INVENTORY

Bottles Collected				Filtration		Remarks
Time	Volume	Composition (G, P)	No.	(Y / N)	Preservation	(quality control sample, other)
1530	250mL	P	1	N	—	GEN CHEM
1530	500mL	P	1	N	HNO_3	METALS

Comments:

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Open House

Regarding Martin Lake Power Plant Groundwater Quality

Under a 2015 U.S. EPA rule, Luminant Generation Company LLC has been monitoring groundwater quality near the Martin Lake Power Plant ash storage areas.

The company is hosting an open house for the public to learn more about the groundwater testing, the results, and mitigation options.

The informational open house is a come-and-go event, and provides attendees with an opportunity to ask questions. There will not be a formal presentation.

OPEN HOUSE

Date: Wednesday, Nov. 13, 2019
Time: 6 to 7:30 p.m.
Location: Henderson Chamber of Commerce
201 N. Main St., Henderson, TX 75652

Martin Lake Power Plant
Luminant Generation Company LLC

Changes to Plan F; causing Medicare supplement renewal premiums to rise

Toni:

We have received a 20% increase in our Plan F Medicare Supplement. I'm a 70-year-old female in decent health, but my husband is undergoing cancer treatment. Also, his cardiologist has advised him that he may need a pacemaker.

I've understand told that Medicare Annual Enrollment is our time to change our Medicare Supplement plans. I'm concerned that with the Medicare Supplement increase that we may not be able to afford the premiums with future increases. Would a Medicare Advantage plan be a good option to change to with Fred's cancer issues? What we should do?

Signed
Cathy from Virginia

TONI KING
Medicare

Cathy:

Cathy, you were given wrong information because you do not have to wait until Medicare Annual Enrollment to make a Medicare Supplement change. You can change your Medicare Supplement any time during the year. Medicare Annual Enrollment is a time to change your Medicare Advantage plan or Medicare Part D Prescription Drug plan

You are not alone with receiving a Medicare Supplement plan F increase. It seems that the Plan F renewal increase is more than the Plan G or other Medicare Supplement plan increases. Most insurance agents are finding out about the increases via an email from the insurance company informing of a renewal rate adjustment,

In 2015 Congress passed legislation called "Medicare Access and CHIP Reauthorization Act of 2015" (MACRA) to help the medical industry by correcting the "Doc Fix" proposal. MACRA also made changes to Medicare Supplement's plans F and C which begins January 1, 2020.

Those who want to change their current Medicare Supplement plan and have had their Medicare Part B longer than 6 months must now answer underwriting questions regarding their health as you and your husband will have to do.

Cathy, you have an option to change from Plan F to other Medicare Supplement plans such as plan G or N, but you must qualify medically. If you cannot qualify because of a health issue, then there is a Medicare Advantage plan which puts you in control of your healthcare called a Medicare Savings Account (MSA).

Let's discuss the difference:

Medicare Supplement Plan G: offer lower rates and the same Medicare benefits as Plan F except the Medicare Part B deductible is not covered and will be paid for by the enrolled Medicare beneficiary. Part B deductible for 2019 is $185.

Medicare Supplement Plan N: generally, has lower premiums than Plan G with generally more out of pocket. There is a $20 co pay for a doctor visit with $50 co pay for emergency room. Part B deductible is not covered, and Part B excess charges are not paid for by the insurance company which Plan G includes.

Medicare Advantage MSA (Medicare Savings Account): high deductible Medicare Advantage health plan plus a special savings account for medical expenses. No network...see any Medicare provider or facility that will bill the MSA plan. More MSA (Medicare Savings Account) plan information in next week's article)

Caution: You can change your Medicare Supplement policy at any time. Do not cancel your existing policy until you have been approved by your new Medicare insurance company whether choosing a Medicare Supplement or Medicare Advantage plan.

Toni King, author of the Medicare Survival Guide® is giving a $5 discount on the Medicare Survival Guide® Advanced book and bundle packages for the Toni Says® newspaper article readers at www.tonisays.com.

Courtesy photo

National Home Care and Hospice Month Proclamation
Back row from left: Kathrine Anderson, Angel Care Hospice; Roxanne Nayfa, Angel Care Hospice; Daniel Fluellen, Advancing At Home Health; Michelle Adams, Angel Care Hospice; Lana Simmons, At Home Healthcare; Nikke Martin, AssistCare
Seated from left: Linda Mobley, AssistCare; Melissa Morton, Mayor Protem; Michelle Springfield, AssistCare

TJC earns national award for fundraising excellence

From left: Barbara Greenbauer, TJC director of major gifts and special initiatives; Mitch Andrews, TJC vice president for institutional advancement and executive director of the TJC Foundation; and Whitney Patterson, TJC director of annual giving.

Courtesy photo

SPECIAL TO THE HENDERSON NEWS

Tyler Junior College was one of four higher education institutions in Texas – and the only two-year institution in the state – to be recognized recently by the Council for Advancement and Support of Education (CASE) with a national 2019 Educational Fundraising Award.

The award was recently announced during a semi-annual meeting of the board for the TJC Foundation. TJC was honored in the category of overall improvement, which recognizes colleges and universities that demonstrate significant program growth across three years of data. Based in Washington, D.C., CASE is the national association for advancement professionals in education. CASE annually recognizes educational organizations that have excelled in fundraising.

"We are honored that TJC was selected for this award," said Mitch Andrews, TJC vice president for institutional advancement. Andrews also serves as executive director of the TJC Foundation. "This award recognizes our East Texas community and their generous support of TJC students, faculty, programs and facilities."

Winning institutions were recognized at CASE's 2019 Center for Community College Advancement conference held in San Diego in October.

Selection was based on data submitted to the CASE annual Voluntary Support of Education survey. A CASE member institution is automatically eligible to receive a fundraising award, provided it has participated in the VSE survey for the past three years.

Institutions are evaluated within appropriate peer groups by volunteer judges. When reviewing data profiles, the judging panel does not know the name of the institution tied to the data.

The Tyler Junior College Foundation is a separate, 501(c)(3) support organization governed by a 25-member, self-perpetuating board of directors. Institutionally related foundations play a vital role in raising and managing private resources in support of public institutions like TJC.

For more on the TJC Foundation, go to TJC.edu/foundation.

Arraignments

The following persons were arraigned in the court of Judge Jana Enloe, Justice of the Peace, Precinct 5, Rusk County.

Nov. 2:

• John Dandre Collis, 22, Henderson, False druge test false device, Class B, $1,000 bond, Speeding, Class C, $500 bond, No driver license, Class C, $500 bond, Failure to maintain financial responsibility, Class C, $500 bond, DUI by minor, Class C, $500 bond, Possession of drug paraphernalia, Class C, $500 bond;

• Michelle Verdine Franks, 62, Timpson, Possession of marijuana, Class B, $750 bond;

• Jeffrey Lynn Newman, 51, Garrison, Domestic abuse aggravated assault, Felony, no bond;

• Justin Napier, 22, Lufkin, Assault causes body injury family violence, Class A, $1,500 bond;

• Charles Ward, 64, Henderson, DWI 2nd, Class A, $1,000 bond;

• Sofia Elise Wallace, 20, Harleton, DWI with child under 15 years of age, State Jail felony, $20,000 bond;

• Jerome Ellis Stotsky, 17, League City, Possession of controlled substance, Third degree felony, $20,000 bond, Possession of marijuana, Class B, $1,000 bond;

• Jermaine Edward Boone, 23, Ft. Worth, Tampering/Fabrication of physical evidence with intent to impair, Third degree felony, $10,000 bond, Possession of marijuana, Class B, $1,000 bond.

Nov. 3:

• Starla Danette Davis Johnson, 53, Longview, Terroristic threat, Class A, $1,500 bond;

• Lashondrick Shontae Fields, 41, Houston, DWI, Class B, $750 bond;

• Michael Douglass Dunn, 53, Mt. Enterprise, Assault family/house member impede breath, Third degree felony, $25,000 bond.

Nov. 4:

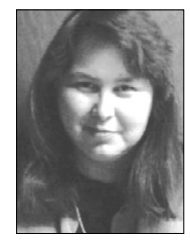
• Ava Antionette Melanson, 54, Longview, Fraud destroy removal conceal writing, Class A, $1,500 bond;

• Christopher Lee James, 25, Avenger, Possession of controlled substance, State Jail felony, $7,500 bond, No driver license, Class C, $500 bond, Failure to appear, Class C, $500;

• Terence Jamal Patrick, 26, Longview, Assault causes bodily injury family violence, Class A, $1,500 bond;

• Stylianos K. Fotinopoulous, 61, Cushing, Assault causes bodily injury/impeded breath, Third degree felony, $15,000 bond.

Buckner is talking turkey



LIZ BUCKNER
Extension Agent

November is here, and the countdown to Thanksgiving is underway. Many of you have started your holiday meal planning, but hopefully the following will serve as a helpful guide.

Buying a Turkey - For a frozen turkey, allow 1 lb. per person, and keep frozen until ready to thaw. For a fresh turkey, allow 1 lb. per person, and buy 1-2 days before cooking. Do not buy pre-stuffed.

Thawing a Turkey - Thawing time of a whole turkey in the refrigerator (40 degrees F) is approximately 24 hours per pound.

Whole Turkey Refrigerator Thawing Guide

8 to 12 pounds = 1 to 2 days

12 to 16 pounds = 2 to 3 days

16 to 20 pounds = 3 to 4 days

20 to 24 pounds = 4 to 5 days

Thawing time of a whole turkey in cold water is approximately 30 minutes per pound.

Whole Turkey Thawing in Cold Water Guide

8 to 12 pounds = 4 to 6 hours

12 to 16 pounds = 6 to 8 hours

16 to 20 pounds = 8 to 10 hours

20 to 24 pounds = 10 to 12 hours

Please note that it is very important that the water is changed every 30 minutes. After thawing, remove neck and giblets from both neck and body cavities, wash turkey inside and out with cold water, drain well. Thawed turkey may remain in refrigerator 1-2 days.

Thawing in the microwave - Check manufacturer's instructions for the size turkey that will fit into your oven, the minutes per pound and the power level to use for thawing. Cook immediately.

Roasting Time - Timetable for Fresh or Thawed Unstuffed Turkey is 325 degrees F. These times are approximate and should be used in conjunction with a properly placed thermometer.

Roasting Time Guide - for Fresh or Thawed Unstuffed Turkey

8 to 12 pounds = 2 3/4 to 3 hours

12 to 14 pounds = 3 to 3 3/4 hours

14 to 18 pounds = 3 3/4 to 4 1/4 hours

18 to 20 pounds = 4 ½ to 5 hours

VERY IMPORTANT NOTE - For food safety reasons, remember to prepare dressing in a separate container rather than stuffing the turkey.

Extension programs serve people of all ages regardless of socioeconomic levels, race, color, sex, religion, disability or national origin.

YARD OF THE MONTH

Courtesy photo

November Yard of the Month award goes to Felipe and Myra Avila at 104 Katy. The Avila's young son was glad to help put up the sign and say cheese for the camera. Congratulations Avila family on your beautiful yard.

Tri-County Livestock

There were 592 head of livestock sold Nov. 2 at Tri-County Livestock Market Inc. in New Summerfield.

Prices were: Steers: under 300 pounds, $ 1.15-$1.80; 300-400 pounds, $ 1.10-$1.75; 400-500 pounds, $ 1.05-$1.62; 500-600 pounds, $ 1.05-$1.40; 600-700 pounds, $ 1.00-$1.33; and 700-800 pounds, $0.95 cents-$1.33.

Heifers: under 300 pounds, $ 1.10-$1.55; 300-400 pounds, $ 1.10-$1.54; 400-500 pounds, $ 1.05-$1.33; 500-600 pounds, $ 1.00-$1.29; 600-700 pounds, $ .95 cents-$1.24; 700-800 pounds, and $0.90 cents-$1.18.

Slaughter cows, $0.15 cents-$0.56 cents; heavy bulls, $0.70 cents-$0.83 cents, and stocker cows, $550-$1,200.

Some plain cattle below these figures. Sale at 10 a.m. every Saturday.

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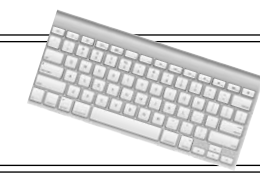

Open House

Regarding Martin Lake Power Plant Groundwater Quality

Under a 2015 U.S. EPA rule, Luminant Generation Company LLC has been monitoring groundwater quality near the Martin Lake Power Plant ash storage areas.

The company is hosting an open house for the public to learn more about the groundwater testing, the results, and mitigation options.

The informational open house is a come-and-go event, and provides attendees with an opportunity to ask questions. There will not be a formal presentation.

OPEN HOUSE

Date: Wednesday, Nov. 13, 2019
Time: 6 to 7:30 p.m.
Location: Henderson Chamber of Commerce
201 N. Main St., Henderson, TX 75652

Martin Lake Power Plant
Luminant Generation Company LLC

Please Sign-In

Thank You!

Martin Lake Power Plant - Open House

Wednesday, Nov. 13, 2019

	NAME	ADDRESS	PHONE	EMAIL
1	John Wiener	600 Lakeforest PKwy	903-657-3512	N/A
2				
3				
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15				
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17				
18				

Sign Up Sheet Templates © 2017 by Vertex42.com. Free to Print.

Remedy Selection Report

Martin Lake Steam Electric Station A1 Area Landfill
Panola County, Texas

Submitted to:

Luminant Generation Company LLC

Submitted by:

Golder Associates Inc.
2201 Double Creek Dr, Suite 4004, Round Rock, Texas, USA 78664

+1 512 671-3434

January 18, 2022

Professional Certification

This document and all attachments were prepared by Golder Associates Inc. under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I hereby certify that this Remedy Selection Report meets the requirements of 40 C.F.R. § 257.97 and 30 TAC §352.971.

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1.0 INTRODUCTION

On behalf of Luminant Generation Company LLC (Luminant), Golder Associates Inc. (Golder), Member of WSP, has prepared this Remedy Selection Report for the A1 Area Landfill located at the Beckville Lignite Mine, approximately 5 miles southeast of Tatum in Panola County, Texas (hereafter, the "Site") (**Figure 1**). Luminant manages coal combustion residuals (CCR) generated from the Martin Lake Steam Electric Station (MLSES) in the A1 Area Landfill per the applicable requirements of 40 C.F.R. Part 257, Subpart D as amended (CCR Final Rule) and 30 TAC Chapter 352 (Texas CCR Rule). The United States Environmental Protection Agency (USEPA) published its final approval of the Texas CCR rule on June 28, 2021. *See* 86 Fed. Reg. 33,892 (June 28, 2021). The Texas CCR Rule became effective on July 28, 2021, and it adopts and incorporates by reference the requirements for remedy selection located at 40 C.F.R. § 257.97.

The initial assessment monitoring event was performed at the Site in 2018 in accordance with § 257.95(a) and § 257.95(d). The Appendix IV data collected during the assessment monitoring period through September 2018 identified statistically significant levels (SSLs) above groundwater protective standards (GWPSs) for arsenic, barium, cobalt, and lithium. Based on the statistical analysis of Appendix IV groundwater data collected through 2021, which was performed in compliance with the USEPA Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities-Unified Guidance (USEPA 2009), cobalt is the only Appendix IV constituent currently present in groundwater at the Site at SSLs above GWPSs. In response to the SSLs identified in 2018, an Assessment of Corrective Measures (ACM) Report was completed for the A1 Area Landfill in September 2019 as required by § 257.96 (Golder 2019a). Although cobalt is the only Appendix IV constituent currently identified at SSLs above GWPSs, the ACM evaluated arsenic, barium, cobalt, and lithium based on the SSLs initially identified in 2018.

The purpose of this remedy selection report is to describe the selected remedy, describe how the selected remedy meets the requirements of § 257.97, and provide a schedule for implementing and completing remedial activities.

2.0 SITE SETTING

The A1 Area Landfill is located at the Beckville Lignite Mine, approximately 2.5 miles southeast of the MLSES in Panola County, Texas (**Figure 1**).

2.1 Site Hydrogeology and CCR Monitoring Well Network

The Site lies in the outcrop area of the Eocene-aged Wilcox Group (Barnes 1965). The Wilcox Group in the vicinity of the Site consists mostly of unconsolidated to moderately consolidated clay and silt, with various amounts of interbedded sand and lignite. The Wilcox Group is overlain by sands of the Carrizo Formation at higher elevations in the area; however, the Carrizo Formation is not present at the Site. The A1 Area Landfill is located within reclaimed areas of the former Beckville Lignite Mine (a subsection of the Martin Lake Lignite Mine).

The CCR groundwater monitoring well network at the A1 Area Landfill was established in 2015 and consists of monitoring wells BMW-11A-R, BMW-18, BMW-19, BMW-20, BMW-21, BMW-22, BMW-23, BMW-24, BMW-26, BMW-27, BMW-28, and BMW-33. The uppermost groundwater-bearing unit (GWBU) occurs under unconfined conditions within the previously mined spoil zone above native Wilcox material.

Golder performed a survey of water supply wells located in the vicinity of the A1 Area Landfill in May 2019 as part of a Texas Commission on Environmental Quality (TCEQ) Texas Risk Reduction Program (TRRP) assessment of the Site. A Drinking Water Survey Report (Golder 2019b) documenting the water well survey activities and

findings was approved by the TCEQ in a letter dated August 2, 2019. No imminent threats to water supply wells or potentially affected drinking water wells were identified.

3.0 SOURCE CONTROL MEASURES

Progressive capping/closure of the A1 Area Landfill is performed as placement of CCR in the landfill reaches design elevations. Existing capped areas have been capped/closed using a 3-foot thick compacted clay cap (in-place permeability of $1x10^{-7}$ cm/sec or less) covered with a minimum 2-foot thick vegetative cover layer (PBW 2016). In 2020, Luminant received TCEQ approval to modify the cap configuration for future capped/closed areas of the A1 Area Landfill to consist of a 2-foot thick compacted mine spoil liner layer (in-place permeability of $1x10^{-7}$ cm/sec or less) covered with a 1.5-foot thick vegetative soil cover layer.

The landfill is lined with a 1-foot thick compacted clay bottom liner consisting of clay-rich mine spoil scarified and re-compacted to achieve an in-place permeability of $1x10^{-7}$ cm/sec or less. The bottom liner is underlain by low-permeability, clay-rich mine spoil 70 to 100 feet or more in thickness.

The landfill is surrounded by earthen embankments constructed of mine spoil that extend approximately 10 to 20 feet or more above surrounding grade. The earthen embankments are provided with a 3-foot thick compacted clay liner.

4.0 POTENTIAL GROUNDWATER CORRECTIVE MEASURES

The ACM Report (Golder 2019a), which assessed potential corrective measures, was prepared to comply with the requirements of § 257.96. Per the applicable screening criteria described in § 257.96(c), potential corrective measures were evaluated based on their overall performance, reliability, ease of implementation, potential impacts of the remedy, time to begin and complete the remedy, and institutional requirements. The source control measures discussed in Section 3 are considered a component of each of the corrective measures that were evaluated. Possible corrective measures for groundwater included the following options to address groundwater impacts:

- Monitored Natural Attenuation (MNA);
- Groundwater Extraction and Treatment;
- Vertical Hydraulic Barrier;
- Permeable Reactive Barrier;
- In-Situ Chemical Treatment; and
- Phytoremediation.

MNA was identified as the most applicable groundwater remedy for further evaluation.

5.0 CCR RULE REMEDY OBJECTIVES

In accordance with § 257.97(a), based on the results of the ACM, as soon as feasible a remedy should be selected for the CCR unit. Specifically, under § 257.97(b) the remedy must (1) protect human health and the environment; (2) attain the groundwater protection standard as specified pursuant to § 257.95(h); (3) control the sources of releases so as to reduce or eliminate, to the maximum extent feasible, further releases of constituents in appendix IV into the environment; (4) remove from the environment as much of the contaminated material that

was released from the CCR unit as is feasible, taking into account factors such as avoiding inappropriate disturbance of sensitive ecosystems; and (5) comply with any relevant standards for management of wastes as specified in § 257.98(d). The CCR Rule also specifies decision criteria to be considered by the owner or operator in selecting the most appropriate remedy. Under § 257.97(c), these criteria include: (1) Long- and short-term effectiveness and protectiveness of the potential remedy(s), along with the degree of certainty that the remedy will prove successful; (2) effectiveness of remedy in controlling the source to reduce further releases; (3) ease or difficulty of implementation; and (4) community concerns.

6.0 REMEDY SELECTION

MNA with source control measures has been selected as the remedy to address the Appendix IV constituents observed at SSLs at the Site. This remedy was selected over the other potential corrective measure alternatives based on its overall high performance, high reliability, ease of implementation, low potential for negative impacts, and minimal required institutional requirements.

MNA refers to the reliance on natural attenuation processes (within the context of a carefully controlled and monitored approach) to achieve site-specific groundwater remediation objectives. MNA relies on a range of natural processes, including sorption, (co)precipitation, radioactive decay, dispersion, dilution, and abiotic degradation/transformation to achieve remediation objectives. A Site-specific feasibility study to evaluate MNA as a potential groundwater remedy for the Appendix IV constituents observed at SSLs was performed in accordance with guidance and best practices promulgated by the USEPA (USEPA 2007a and 2007b) and Interstate Technology and Regulatory Council (ITRC 2010). The overall feasibility of MNA as a groundwater response technology was evaluated based on the following multi-tiered approach:

1) Demonstrate active constituent removal from groundwater and dissolved plume stability (Tier I);

2) Determine the mechanisms and rates of the operative attenuation processes (Tier II);

3) Determine the long-term capacity for attenuation and the stability of immobilized constituents (Tier III); and

4) Prepare a long-term MNA performance monitoring plan (Tier IV).

A Tier I MNA evaluation report was completed in December 2019 (Golder 2019c) and a Tier II/III MNA evaluation report was completed in June 2021 (Golder 2021a). Based on the results of these MNA evaluations, the following was concluded regarding the Appendix IV constituents identified at SSLs:

- Physical and chemical attenuation of arsenic, barium, cobalt, and lithium is occurring at the Site. Concentrations of these constituents in groundwater are stable or decreasing and the aquifer has adequate capacity to attenuate these constituents in a reasonable timeframe. Geochemical modeling indicates that attenuation will be efficient and stable in the long term. Therefore, MNA with source control measures is considered an effective corrective measure for the Site.

Copies of the Tier I and Tier II/III MNA evaluation reports are provided in **Appendix A and B**, respectively.

The selected remedy will attain the objectives stated in §257.97 as outlined below:

(1) Long and short term effectiveness, and degree of certainty of success:

The Tier I through Tier III MNA studies completed for the Site demonstrate that physical and chemical attenuation of Appendix IV constituents identified at SSLs is occurring, that concentrations are stable, and that the aquifer has adequate capacity to attenuate these constituents in a reasonable timeframe.

(i) *Magnitude of reduction of existing risks*:

Source control measures are anticipated to prevent future releases, and MNA feasibility data indicate that conditions are suitable for the ongoing reduction of constituents identified at SSLs in groundwater to concentrations below GWPSs.

(ii) *Magnitude of residual risks in terms of likelihood of further releases due to CCR remaining following implementation of a remedy*:

Source control measures will reduce the risk of future impacts by preventing the transport of CCR constituents to groundwater at concentrations above GWPSs.

(iii) *The type and degree of long-term management required, including monitoring, operation, and maintenance*:

Long-term assessment of the condition of the monitoring network will be required. Maintenance of the monitoring network is anticipated to be low.

(iv) *Short-term risks that might be posed to the community or the environment during implementation of such a remedy, including potential threats to human health and the environment associated with excavation, transportation, and redisposal of contaminant*:

The remedy presents minimal risk of exposure. Results from the ACM nature and extent investigation indicate that Appendix IV constituents at SSLs are contained within the immediate vicinity of the A1 Area Landfill. The Drinking Water Survey Report (Golder 2019b) completed at the Site indicated the CCR unit poses no imminent threats to water supply wells.

(v) *Time until full protection is achieved*:

The selected remedy will require a substantial period of time to achieve GWPSs (up to approximately 50 years); however, this is a reasonable timeframe when compared to other potential corrective measures that were evaluated, which would not significantly decrease the time until full protection would be achieved.

(vi) *Potential for exposure of humans and environmental receptors to remaining wastes, considering the potential threat to human health and the environment associated with excavation, transportation, re-disposal, or containment*:

The selected remedy presents a low risk of exposure because it does not include excavation, transportation, or re-disposal of CCR. Access to the CCR unit and surrounding land are controlled by Luminant. Potential exposure due to containment of CCR will be prevented through source control measures and Site access restrictions.

(vii) *Long-term reliability of the engineering and institutional controls*:

Restriction of access and exposure are currently implemented and will continue at the Site.

(viii) *Potential need for replacement of the remedy*:

Although unlikely, monitoring wells may need to be replaced over the remediation period. Monitoring well replacement will be documented in the Annual Groundwater Monitoring and Corrective Action Report following well replacement activities.

(2) Effectiveness of remedy in controlling the source to reduce further releases:

Source control measures are being implemented as discussed in Section 3. Source control will reduce infiltration of precipitation into the capped CCR unit and leaching to the GWBU, preventing potential releases to the GWBU.

(i) *The extent to which containment practices will reduce further releases*:

Source control measures are likely effective at preventing future releases, and MNA feasibility data indicate that conditions are suitable for the ongoing reduction of Appendix IV constituents identified at SSLs in groundwater.

(ii) *The extent to which treatment technologies may be used*:

MNA feasibility data indicate that conditions are suitable for the ongoing reduction of Appendix IV constituents identified at SSLs in groundwater. Additional treatment technologies are not proposed.

(3) Ease or difficulty of implementation:

MNA is relatively easily implemented. The existing monitoring well network can be used for the monitoring component of the remedy. Source control measures described in Section 3 involve significant cost; however, these measures are being implemented to comply with the requirements of § 257.70. The source control measures will provide long-term stability to groundwater conditions and ensure long-term effectiveness of MNA.

(i) *Degree of difficulty associated with constructing the technology*:

The current monitoring well network will be used to evaluate the effectiveness of the remedy. If required, additional monitoring wells can be installed relatively easily.

(ii) *Expected operational reliability of the technologies*:

There are no anticipated problems with the monitoring network or source control measures.

(iii) *Need to coordinate with and obtain necessary approvals and permits from other agencies*:

The monitoring well network is already in place at the Site. There is no anticipated need to coordinate with and obtain approvals and permits from other agencies.

(iv) *Availability of necessary equipment and specialists*:

Consulting and engineering firms are established that can implement the remedy. Drilling companies and drilling equipment are available in the event that additional wells need to be installed.

(v) *Available capacity and location of needed treatment, storage, and disposal services*:

Adequate treatment, storage, and disposal services are available at the plant or at offsite waste management facilities.

(4) Community concerns:

A public meeting was held on November 13, 2019 at the Henderson Chamber of Commerce in Henderson, Texas to discuss the results of the ACM in accordance with § 257.96(e). No comments were received from the public. As indicated in Section 2.1, there are no potentially affected water supply wells completed within the GWBU below or downgradient of the CCR unit. The ACM (Golder 2019a) demonstrated that groundwater concentrations of Appendix IV constituents identified at SSLs are stable or decreasing at all CCR monitoring wells and the extent of these constituents at SSLs was delineated on-site (i.e., no offsite migration was indicated).

7.0 SCHEDULE

A project schedule for the implementation of the remedy has been developed that considers the factors outlined in § 257.97(d), including the nature and extent of the release, the reasonable probability of the remedy achieving compliance, the availability of disposal capacity and treatment, potential risks, and the resource value of the aquifer. The remedy schedule is being implemented as soon as feasible and will not cause changes or impacts to the aquifer resource value. Below are key milestones in the implementation of the selected remedial activities:

Source Control Implementation	Anticipated Source Control Completion	MNA Sampling and Analysis Activities	Remedy Performance Review
Ongoing	Upon completion of CCR placement in A1 Area Landfill (date undetermined)	Ongoing	Annual – Commencing 2023

The MNA monitoring well network and MNA sampling and analysis procedures will be the same as those used in the current assessment monitoring program. As such, groundwater monitoring activities to satisfy MNA monitoring requirements are ongoing. The MNA groundwater monitoring program and source control measures that constitute the selected remedy have therefore been initiated and the requirement of § 257.98(a) for initiating remedial activities within 90 days of selecting a remedy has been met.

As detailed in the Tier II/III MNA Evaluation Report (Golder 2021b), arsenic, barium, cobalt, and lithium concentrations are stable and the aquifer has adequate capacity to attenuate these constituents. The estimated time to reach GWPSs is approximately 50 years for cobalt and lithium and <2.5 years for arsenic and barium. This attenuation timeframe is based on predictive geochemical modeling using PHAST (Parkhurst et al., 2010) that assumes implementation of source control and increased source concentrations that are higher than actual measured CCR unit porewater concentrations, which were needed to achieve model calibration. It is important to note that arsenic, barium, and lithium are not currently identified at SSLs, and are expected to remain below GWPSs with the implementation of source control measures.

Routine groundwater monitoring as part of an MNA program is required to verify that MNA is occurring. A Tier IV MNA Performance Monitoring Plan (Golder 2021b) has been prepared to describe the monitoring network, sampling and analysis methods, procedures for assessing MNA effectiveness, and reporting for an MNA program. A copy of the Tier IV MNA Performance Monitoring Plan is provided in **Appendix C**. An assessment of MNA effectiveness will be presented in the Annual Groundwater Monitoring and Corrective Action Report for the Site, anticipated to commence in 2023.

8.0 REFERENCES

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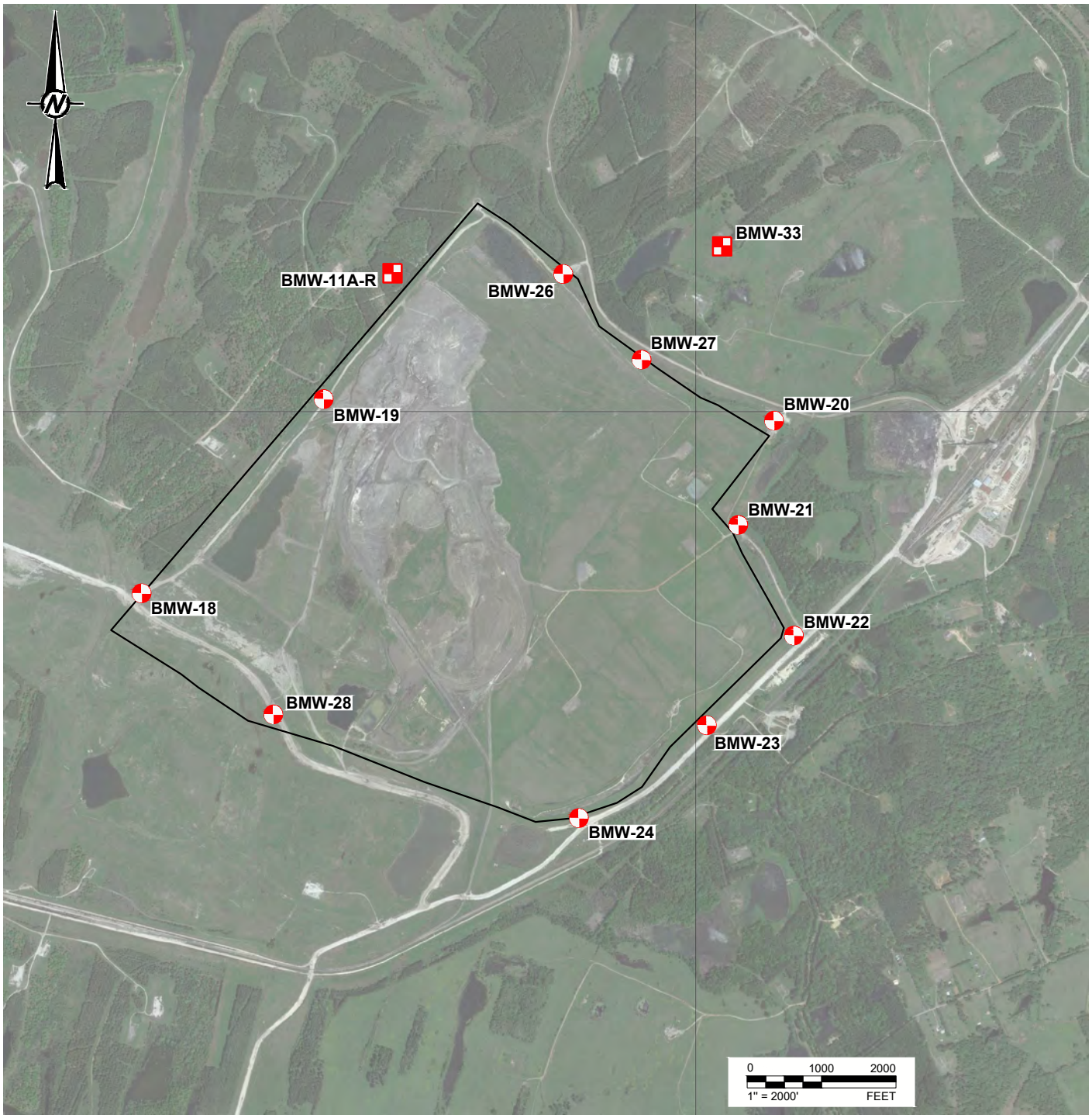
FIGURES



LEGEND

- DOWNGRADIENT CCR MONITORING WELL
- UPGRADIENT CCR MONITORING WELL

REFERENCE(S)

BASE MAP TAKEN FROM GOOGLE EARTH IMAGERY DATED 4/6/17.

CLIENT
LUMINANT

PROJECT
MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

TITLE
DETAILED SITE PLAN - A1 AREA LANDFILL

CONSULTANT
GOLDER

YYYY-MM-DD	2021-01-11
DESIGNED	AJD
PREPARED	AJD
REVIEWED	WFV
APPROVED	WFV

PROJECT NO.	CONTROL	REV.	FIGURE
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Last Edited By: adiamond Date: 2021-01-11 Time:10:21:51 AM | Printed By: adiamond Date: 2021-01-11 Time:10:23:01 AM
Path: \\texarkanadata\Projects - Round Rock_2019\19122262 - Luminant\D - MLSES\2020 CCR GWMR\ | File Name: FIG 1 - Detailed Site Plan (A1 Area Landfill).dwg
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APPENDIX A

Tier I Monitored Natural Attenuation Evaluation

DATE December 13, 2019 **Project No.** 19122434

TO Kim Mireles - Sr. Director, Environmental Services
Luminant Generation Company LLC

CC David Mitchell - Luminant Generation Company LLC

FROM Patrick Behling - Golder Associates, Inc. **EMAIL Patrick_Behling@golder.com**

MARTIN LAKE A1 LANDFILL MONITORED NATURAL ATTENUATION EVALUATION

1.0 OVERVIEW

Groundwater and solid materials were evaluated to determine the feasibility of Monitored Natural Attenuation (MNA) as part of the Assessment of Corrective Measures (ACM) on behalf of Luminant Generation Company LLC (Luminant) for the A1 Area Landfill (A1 LF) located near the Martin Lake Steam Electric Station (MLSES) in Panola County, Texas (hereafter, the "Site"). The structure of this feasibility evaluation closely follows the United States Environmental Protection Agency (USEPA) guidance on using MNA as a remedial strategy (USEPA 2007a and 2007b) and considers best practices from the Interstate Technology Regulatory Council (ITRC) document: "A Decision Framework for Applying Monitored Natural Attenuation Processes to Metals and Radionuclides in Groundwater" (ITRC 2010).

Based on the evaluation presented in this document, arsenic, barium, cobalt, and lithium are candidates for MNA at the MLSES A1 LF area per 40 Code of Federal Regulations (CFR) Part 257 as amended (CCR Final Rule). All four constituents are subject to attenuation controls on their concentrations in downgradient groundwater and meet the initial screening criteria as part of this attenuation assessment. Further geochemical evaluation (i.e. Tier II) of MNA with institutional controls is, therefore, recommended for those constituents that are observed in groundwater at an SSL.

2.0 APPROACH

To assess the feasibility of MNA at the MLSES A1 LF at the Tier 1 MNA screening level, samples of overburden, groundwater, and porewater were collected in May and June 2019 and analyzed to provide a geochemical dataset that was used for a supplemental assessment in addition to previously-reported groundwater data (Golder 2019). Golder performed the supplemental assessment activities in accordance with the MLSES Groundwater Monitoring Program. The supplemental assessment activities included:

- Groundwater characterization to identify temporal and geographical trends, where present.
- Geochemical modeling to identify the major chemical species and evaluate saturation indices of minerals relevant to attenuation of arsenic, barium, cobalt, and lithium.
- Mineralogical analysis of overburden to identify and quantify the major mineral components.

- Chemical analysis of overburden to quantify the total metal content and identify the environmentally-available fraction of metals.

Based on the results generated by this supplemental assessment, a screening-level attenuation evaluation was completed to determine the overall feasibility of MNA at the MLSES A1 LF area.

2.1 Groundwater and Porewater Sampling and Analysis

2.1.1 Sample Collection

Golder personnel collected groundwater samples from the background wells, downgradient or "monitoring" wells, and the nature and extent delineation wells, as presented in Table 1. The nature and extent of the plume were fully delineated in accordance with 40 CFR §257.95(g) (Golder 2019).

2.1.2 Geochemical Analysis

Geochemical analysis of groundwater and porewater samples includes the determination of field parameters and the concentrations of total metals and major cations and anions. The rationale and methods used were as follows:

Field Parameters: Parameters measured in the field included pH, dissolved oxygen, oxidation reduction potential (ORP), conductivity, and temperature. These parameters were used to determine general geochemical conditions in the groundwater and porewater and support geochemical modeling.

Metals: Analysis of Appendix III and IV metals concentrations was conducted to understand the geochemical composition of groundwater and porewater. Metals analysis allows for the delineation of a potential plume, evaluation of mineral saturation indices, development of partitioning coefficients (in conjunction with solid material analyses), and evaluation of background contributions from natural sources or anthropogenic sources.

Major Cations and Anions: Geochemical modeling of mineral solubility, metals attenuation and background contributions requires analysis of major cations and anions because they affect and participate in sorption and mineral dissolution or precipitation reactions.

The groundwater and porewater samples were analyzed using the following methods:

- pH following SW846 9040C "pH Electrometric Measurement" (USEPA 2004)
- Total dissolved solids standard method (SM) 2540C "Total Dissolved Solids Dried at 180°C" (USEPA 1993a)
- Total hardness following SM 2340B (USEPA 1997)
- Chloride and fluoride, following USEPA SW846 9056A "Determination of Inorganic Anions by Ion Chromatography", Revision 1 (USEPA 2007c)
- Nitrate and nitrite following EPA 353.2 "Determination of Nitrate-Nitrite Nitrogen by Automated Colorimetry, Revision 2.0" (USEPA 1993b)
- Alkalinity following SM 2320B "Alkalinity by Titration" (USEPA 2005a)
- Phosphorous following SM 4500-P E "Phosphorous by Ascorbic Acid Method" (USEPA 2005b)

- Total Target Analyte List (TAL) metals following USEPA SW846 6010C “Inductively Coupled Plasma-Atomic Emission Spectrometry”, Revision 3, SW846 6020B “Inductively Coupled Plasma-Mass Spectrometry”, Revision 2, and SW846 6020A “Inductively Coupled Plasma-Mass Spectrometry”, Revision 1 (USEPA 1998)

2.1.3 Geochemical Modeling Approach

Geochemical modeling was conducted to evaluate general groundwater and porewater quality, determine the potential for precipitation of sorbent media, evaluate the potential for mineral precipitation or adsorption in the aquifer, and determine the speciation of metals of interest. The geochemical computer code developed by the United States Geological Survey (USGS), PHREEQC, was used for these simulations (Parkhurst and Appelo 2013). PHREEQC version 3.4 is a general-purpose geochemical modeling code used to simulate reactions in water and between water and solid mineral phases (e.g., rocks and sediments). Reactions include aqueous equilibria, mineral dissolution and precipitation, ion exchange, surface complexation, solid solutions, gas-water equilibrium, and kinetic biogeochemical reactions. The widely-accepted thermodynamic database Minteq.v4, 2017 edition, was used as a basis for the thermodynamic constants required for modeling.

The Geochemist’s Workbench version 12 (Bethke 2015) was used to generate graphical representations of geochemical modeling outputs in the form of predominance, or Pourbaix diagrams (also known as Eh-pH diagrams) for the species of interest (i.e. arsenic, barium, cobalt, and lithium) and trilinear plots (also known as Piper plots) displaying the relative abundance of major ions. The Minteq.v4 database was used as the basis for the Pourbaix diagrams.

The potential for mineral precipitation was assessed in PHREEQC using a saturation index (SI) calculated according to Equation 1.

$$SI = \log (IAP/Ksp) \qquad \text{(Equation 1)}$$

The saturation index is the ratio of the ion activity product (IAP) of a mineral to the solubility product (Ksp). An SI value greater than zero indicates that the water is supersaturated with respect to a particular mineral phase and, therefore, precipitation of the mineral may occur. An evaluation of precipitation kinetics is then required to determine whether the supersaturated mineral will indeed form. An SI value less than zero indicates the water is undersaturated with respect to a particular mineral phase. An SI value close to zero indicates equilibrium conditions exist between the mineral and the solution. SI values between -0.5 and 0.5 are referred to as ‘at equilibrium’ in this report.

2.1.4 Data Handling and Geochemical Modeling Assumptions

Assumptions related to data handling and geochemical modeling assumptions were as follows:

- **Groundwater continuity:** Groundwater and porewater quality data from a sampling event conducted from May 15 to July 8, 2019 were evaluated. This sampling event was selected because all wells related to the MLSES A1 LF were sampled and analyzed for the full suite of parameters described in Section 2.1.2 and the resulting data are assumed to provide a comprehensive overview of Site conditions. Temporal trend analysis of pH, arsenic, barium, cobalt, and lithium in groundwater made use of all available sampling events from a well (up to 12 samples from some wells), dating back to October 2015.
- **Porewater chemistry:** The porewater sample collected from the MLSES A1 LF CCR unit is assumed to be representative of porewater found in the CCR unit.

- **Redox values:** ORP values measured in the field were converted to reduction potential (Eh) by adding 200 millivolts (mV) to the field-measured values as per YSI (2015).
- **Non-detect values:** Constituents with concentrations less than their respective method detection limits were assumed to have a concentration equal to the reporting limit in model simulations.
- **Total recoverable concentrations:** Total recoverable fraction results were used for geochemical modeling.
- **Charge balance:** Groundwater and porewater compositions with charge balance errors less than 10% were considered valid. Compositions with charge balance errors greater than 10% were included in the assessment but would be considered less reliable.

2.2 Overburden Sampling and Analysis

2.2.1 Sample Collection

The A1 LF is located within reclaimed areas of the former Beckville Lignite Mine. A drilling contractor collected continuous cores from four assessment locations downgradient of the CCR monitoring well network and one background location. The assessment locations (BMW-29, BMW-30, BMW-31, and BMW-32) surround the current CCR monitoring network (Golder 2019). The background boring (BMW-33), also outside the CCR well network, is upgradient with respect to groundwater flow direction (Golder 2019). Golder staff collected overburden samples from drill cores obtained at various intervals at the five locations ranging from 14 feet below ground surface (bgs) to up to 41 feet bgs. The core samples are representative of the uppermost water-bearing unit within the spoiled overburden interval, which is underlain by native lignite or silty clay.

The samples were submitted to the laboratory for analysis under chain-of-custody procedures. The unique descriptions used to identify the samples included the overburden boring name and depth of the sample below ground surface (e.g., BMW-29 (30'-31'). Sample locations and depths are described in Table 2. Boring logs are provided in Appendix A.

2.2.2 Overburden Analysis

Multiple geochemical analytical methods were used to assess the mineralogical and chemical composition of the overburden samples. The selected geochemical test methods included:

- **Mineralogical composition**: The purpose of the mineralogical analysis was to identify and quantify the crystalline mineral phases in each sample. This information is required for geochemical modeling as the release or attenuation of constituents of interest (COIs) is influenced by the mineral phase(s) present in the aquifer (Hem 1985). The mineralogical testing laboratory (SGS Minerals Services) performed the mineralogical analysis using quantitative (Rietveld) X-ray diffraction (XRD) (ME-LR-MIN-MET-MN-DO5) and a Bruker AXS D8 Advance Diffractometer.
- **Total metals:** This test was used to quantify the chemical composition of overburden materials. The total mass of metals, in combination with the results of sequential extraction testing, can be used to determine the provenance of metals and verify sequential extraction results. The laboratory analyzed a target analyte list of metals following the methods USEPA SW846 6010C "Inductively Coupled Plasma-Atomic Emission Spectrometry", Revision 3 (November 2000).
- **Sequential extraction (SEP):** This test consists of a seven-step metals extraction from solids as per Tessier et al. (1979) to identify the provenance of COIs (i.e. the operationally-defined fraction that contains

the metal)[1] and determine their potential environmental mobility. For instance, metals bound in the carbonate fraction, or that are exchangeable, are much more likely to become mobile due to changes in groundwater conditions than metals bound within a sulfide or silicate fraction. The total concentration of a metal measured from all seven steps can be compared to the concentration determined from the total metal analysis for compositional accountability. The laboratory analyzed the metals content of the extracted samples using the method USEPA SW846 6020B "Inductively Coupled Plasma-Mass Spectrometry", Revision 2 (July 2014).

3.0 GROUNDWATER AND POREWATER CHARACTERIZATION

Comprehensive water quality data from background wells BMW-11AR, BMW-27, and BMW-33; monitoring wells BMW-18, BMW-19, BMW-20, BMW-21, BMW-22, BMW-23, BMW-24, BMW-26, and BMW-28; nature and extent wells BMW-25, BMW-29, BMW-30, BMW-31, and BMW-32; and porewater sample S-1 were used for this evaluation. For background wells AI-17-SPOIL and AIV-18-OB-95 and nature and extent well AI-2-OB, the only water quality information available was for constituents of concern. The water quality monitoring data are presented in Appendices B and C and can be summarized as follows:

General Chemistry Parameters

- pH: The pH of groundwater samples collected from CCR monitoring network and nature and extent wells ranged from 6.6 to 7.2 in May 2019. Historically, the pH in the CCR monitoring well network has ranged from 5.3 to 7.3, with the majority of values falling between 6.0 and 7.2. The pH of porewater was 6.6 in May 2019.
- ORP (Redox): Field-measured redox values, corrected to Eh (+200mV), ranged from +123 to +184 mV in the groundwater samples in the CCR monitoring well network in May 2019. The Eh of groundwater in the nature and extent monitoring wells ranged from +168 mV to +190 mV, indicating that redox conditions were similar to those in the CCR monitoring network wells. The redox of porewater was not measured during sampling.
- Total Dissolved Solids (TDS): Groundwater TDS concentrations were variable in May 2019 in the CCR monitoring and nature and extent well network. The lowest TDS concentration (327 mg/L) was observed in nature and extent monitoring well BMW-31 and the highest TDS concentration (3,610 mg/L) was reported from CCR monitoring wells BMW-28. Groundwater in CCR monitoring well BMW-28, while having the highest TDS, does not have an SSL of any Appendix IV constituent as of May 2019. The TDS observed in porewater was higher than that of groundwater at 4,220 mg/L.

[1] Sequential extraction of metals from overburden samples consisted of seven discrete steps for this investigation:

Step 1 - Exchangeable Fraction: This extraction includes trace elements that are reversibly adsorbed to overburden minerals, amorphous solids, and/or organic material by electrostatic forces.

Step 2 - Carbonate Fraction: This extraction targets trace elements that are adsorbed or otherwise bound to carbonate minerals.

Step 3 – Non-Crystalline Materials Fraction: This extraction targets trace elements that are complexed by amorphous minerals (e.g., iron).

Step 4 - Metal Hydroxide Fraction: Trace elements bound to hydroxides of iron, manganese, and/or aluminum.

Step 5 - Organic Fraction: This extraction targets trace elements strongly bound via chemisorption to organic material.

Step 6 - Acid/Sulfide Fraction: The extraction is used to identify trace elements precipitated as sulfide minerals.

Step 7 - Residual Fraction: Trace elements remaining in the overburden after the previous extractions will be distributed between silicates, phosphates, and refractory oxides.

- Major ion chemistry: A Piper plot was generated for groundwater samples to facilitate the identification of water types and source contributions (Figure 1). Except for upgradient wells BMW-18, BMW-19 and nature and extent well BMW-31, all background, downgradient, and nature and extent wells demonstrate a similar major ion relative abundance. Generally, groundwater is sodium-bicarbonate or sodium sulfate dominated. Porewater is of the sodium sulfate type. BMW-11AR is the only well with groundwater that is calcium dominated, classified as the calcium bicarbonate type.

- Iron: Oxidized iron (Fe^{+3}) concentrations were variable, ranging from 0.0633 mg/L (BMW-28) to 35.1 mg/L (BMW-24) in May 2019 (Appendix B). Reduced iron (Fe^{+2}) was non-detect (<0.05 mg/L) in all groundwater samples but two: BMW-23 (0.0937 mg/L) and nature and extent well BMW-29 (0.342 mg/L). Porewater iron was predominately reduced (10.5 mg/L Fe^{+2} at a total iron concentration of 16.6 mg/L). Based on the oxidized iron concentrations in groundwater surrounding the CCR unit, it is likely ferrihydrite, an iron hydroxide mineral, is present at the A1 LF, indicating the potential for attenuation of metals and metalloids from groundwater. Iron present in porewater may also cause iron-bearing minerals to form, thereby providing opportunity for attenuation of constituents of concern.

- Nutrients: Nitrate (nitrate as N) was present in groundwater at monitoring wells at variable levels, ranging from non-detect (< 0.1 mg/L as N) to 1.35 mg/L as N at BMW-19 in May 2019 (Appendix B). Nitrate was not detected in nature and extent wells or porewater. Phosphate concentrations in groundwater ranged from non-detect (0.03 mg/L) to 0.202 mg/L in CCR monitoring and nature and extent wells. Porewater phosphate was just above detection at 0.045 mg/L. No spatial trend was apparent in the nitrate or phosphate distribution in groundwater.

Constituents Identified in February 2019 SSL Notification

- Arsenic: Historically, arsenic concentrations in groundwater surrounding the A1 LF have ranged from non-detect (<0.002 mg/L) to 0.0428 mg/L in CCR monitoring well BMW-19 (June 2018; Figure 2a). Only CCR monitoring wells BMW-19 and BMW-26 have ever exceeded the GWPS. Prior to and after the highest groundwater arsenic concentration measured in BMW-19 in June 2018, arsenic concentrations were at or near detection limits in BMW-19 (<0.005 mg/), indicating that the elevated value likely represented an outlier. Arsenic concentrations in groundwater from BMW-26 exceeded the GWPS on four of 12 sampling occasions since October 2016. Based on the evaluation of 95% confidence intervals, no CCR monitoring wells contain arsenic at a concentration above the SSL as of May 2019. Arsenic was below its detection limit in porewater. All arsenic concentrations in CCR monitoring wells were below the GWPS as of May 2019. Arsenic is likely present in groundwater as arsenate, the cation As^{+5}, while based on the pH and Eh of groundwater, ferrihydrite, an iron hydroxide mineral phase known to adsorb arsenic, is expected to be present and stable (Figure 3a). The redox condition for porewater was estimated from the measured Fe^{+2}/Fe^{+3} redox couple.

- Barium: Historically, barium concentrations in groundwater have only exceeded the GWPS of 2.0 mg/L in CCR monitoring well BMW-19 (Figure 2b) on one occasion. Since October 2015, the barium concentration in groundwater at BMW-19 has ranged from 0.181 mg/L to 2.19 mg/L and, as of May 2019, was observed at 0.221 mg/L. No other nature and extent or CCR monitoring wells have ever reported barium concentrations in groundwater exceeding the GWPS. Based on the evaluation of 95% confidence intervals, barium in groundwater is not at an SSL in groundwater at BMW-19, or in any other CCR monitoring well. Porewater barium was measured at 0.0191 mg/L in May 2019, two orders of magnitude lower than the GWPS. Barium

is likely present in groundwater as the divalent cation Ba^{+2} based on the pH and Eh of groundwater (Figure 3b).

- Cobalt: Cobalt concentrations in groundwater samples collected from the nature and extent monitoring wells ranged from non-detect (<0.003 mg/L) to just above non-detect (0.00705 mg/L) in May 2019. The highest observed cobalt concentration in groundwater at a CCR well occurred at monitoring well BMW-24 (0.00643 mg/L; Figure 2c). All other CCR monitoring wells did not contain cobalt concentrations above the detection limit in May 2019. Groundwater at background monitoring well BMW-33 contained cobalt at a concentration of 0.0176 mg/L in May 2019. Historically, cobalt concentrations have ranged from non-detect (<0.003 mg/l) to 0.2550 mg/L in CCR monitoring well BMW-22. The highest cobalt concentration in this well was observed in June 2017, and since then levels have been generally stable or decreasing. CCR monitoring well BMW-24 shows substantial variation in cobalt concentration between sampling events, of +/- 0.2 mg/L in some cases. Based on an evaluation of 95% confidence intervals, CCR monitoring wells BMW-20 and BMW-27 contain cobalt at an SSL above the GWPS of 0.0124 mg/L (Golder 2019). Cobalt was measured in porewater at 0.0388 mg/L in May 2019. Cobalt is likely present in groundwater as the divalent cation Co^{+2},while based on the pH and Eh of groundwater, ferrihydrite, an iron hydroxide mineral phase known to adsorb cobalt, is expected to be present and stable (Figure 3c).

- Lithium: Lithium has exceeded the GWPS (0.103 mg/L) since October 2015 in groundwater from four wells: BMW-18, BMW-23, BMW-26, and BMW-28 (Figure 2d). In May 2019, lithium concentrations in groundwater in the CCR monitoring wells network were only above the GWPS in one well: BMW-28 (0.119 mg/L). The lithium concentration measured in porewater was an order of magnitude lower, 0.0161 mg/L, in May 2019. Based on the evaluation of the 95% confidence intervals, the GWPS exceedances for lithium in BMW-24 are not at an SSL above the GWPS for lithium, nor in any other CCR monitoring well at the A1 LF. Lithium is likely present in groundwater as the monovalent cation Li^{+} based on the pH and Eh of groundwater (Figure 3d).

3.1 Geochemical Modeling Results

The results of speciation modeling of groundwater from background, CCR monitoring wells, nature and extent delineation wells, and porewater are provided in Table 3. Mineral saturation plays an important role in attenuation of metals, either directly by their removal through mineral precipitation, or indirectly by providing a sorptive surface. The results can be summarized as follows:

- **Iron-bearing minerals:** Ferrihydrite [$Fe(OH)_3$] was indicated to be at equilibrium or oversaturated in all groundwater and porewater samples, indicating a strong potential for ongoing precipitation of solid phase iron oxides. Thus, throughout the A1 LF, the prevalence of iron oxides is assumed.

- **Other minerals:** All groundwater samples in which barium was determined and the porewater sample were in equilibrium with respect to barite [$BaSO_4$]. Gypsum [$CaSO_4$:$2H_2O$] was in equilibrium with groundwater in well BMW-19, BMW-28, and with porewater (S-1). Calcite [$CaCO_3$] was in equilibrium with all groundwater and porewater samples except with groundwater from wells BMW-18, BMW-24, and BMW-31.

In summary, barite, calcite, ferrihydrite, and gypsum contribute to controlling groundwater composition at some or all of the monitoring wells and in porewater. In the case of ferrihydrite, the dissolved concentrations of certain COIs can be reduced through the ability of this mineral to act as a substrate for adsorption in addition to precipitation/co-precipitation.

4.0 COMPOSITIONAL ANALYSIS OF OVERBURDEN

4.1 Mineralogical Composition

Quantitative X-ray diffraction (XRD) with Rietveld refinement was used to identify and quantify minerals in five overburden samples collected during the drilling activities - one sample from each of the soil borings completed in May 2019 (BMW-29, BMW-30, BMW-31, BMW-32, and BMW-33). These samples were obtained to better understand the mineralogical composition of the aquifer system and identify any minerals that would potentially influence attenuation of COIs. In contrast, the presence of certain minerals could also indicate a potential for naturally-occurring release of metals into groundwater, for instance due to oxidation of sulfide minerals.

The mineralogical analysis identified the materials in boreholes samples at the A1 LF predominately consist of quartz with varying amounts of the silicate minerals albite, chlorite, K-feldspar, muscovite and illite. Although clay-specific XRD analysis was not conducted, the clay minerals vermiculite, kaolinite and montmorillonite were tentatively identified in addition to the illite. Trace levels of titanomagnetite and ilmenite were also identified in sample BMW-30 (the deepest sample tested). However, even without clay-specific XRD analysis, the presence of clays at the A1 LF can be inferred. Analytical reports for the XRD samples are provided in Appendix B.

4.2 Chemical Composition and Sequential Extraction

Chemical analysis and sequential extractions were used to determine the chemical composition of the overburden and the distribution of COIs over various operationally-defined fractions comprising the overburden. This testing was completed per Table 1 on overburden from five borehole locations, (reported in Table 4).

A description of the individual fractions determined by sequential extraction is presented in Footnote 1, Section 2.2.2. Metals extracted in steps 1 through 5 are considered environmentally available, whereas metals extracted in steps 6 and 7 are present in refractory fractions and are not expected to be released under conditions typically encountered in aquifers (Tessier et al. 1979). Total metal quantities from the sequential extraction are expressed as “SEP Total” in Table 5. The sum of the sequential extraction steps is also presented for comparison but does not represent an analytically-determined value.

The results from the chemical analysis and sequential extraction can be summarized as follows:

General Chemistry Parameters

- Aluminum: Aluminum is not a COI at the site but it has been well studied as a sorbing medium in soils (e.g., Karamalidis and Dzombak 2011). Total aluminum in soils ranged from 29,526 to 53,368 mg/kg, and the environmentally-available fraction ranged from just 1,208 mg/kg (BMW-30) to 3,286 mg/kg (BMW-29). Aluminum in the soil at the site is, therefore, largely (~84% to 94%) present in the residual, or silicate-bound fraction (Figure 4). This fraction is likely at least partially represented by hydrous aluminum phyllosilicates minerals or clays intermixed in the silica sand matrix. Clays represent an important sorptive reservoir for numerous trace metals and metalloids (Uddin 2017).

- Iron: While not a COI, iron and its minerals commonly represent one of most abundant reservoirs for metal/metalloid attenuation in soils (Dzombak and Morel 1990; Smith 1999). Iron was present in all three core samples analyzed, varying from 5,814 mg/kg (BMW-30) to 24,578 mg/kg (BMW-29). In nearly all samples (except BMW-29 and BMW-31), the sulfide and residual fractions accounted for the largest proportion of total iron (59% to 79%) and, as such, most of the iron is not environmentally available (Figure 5). The remainder of the iron in the samples is present in the amorphous metal and metal hydroxide phase

with a small amount <0.6% also occurring in the carbonate fraction. The metal hydroxide fraction, part of the labile fraction in steps 1 through 5, can generally be considered representative of the amount of iron in soil that may be available as a sorbing medium and can, therefore, be used as a proxy for determine the potential for attenuation of cobalt or other COIs.

Constituents Identified with an SSL Notification

- Arsenic: Total arsenic in soil ranged from 3.0 to 4.12 mg/kg while the environmentally-available fraction ranged from 1.38 mg/kg in BMW-31 to 2.27 mg/kg in BMW-29, representing from 46% to 65% of total arsenic (Figure 6). Arsenic in the non-environmentally available fraction (acid/sulfide and residual fractions) ranged from 35% to 54% of total arsenic, demonstrating the presence of a reservoir of naturally-occurring arsenic in soils. All of the arsenic that was present in the environmentally-available fraction was associated with the amorphous metal and metal hydroxide fractions, indicating potential attenuation of arsenic from groundwater.

- Barium: Total barium in soil ranged from 376 to 597 mg/kg while the environmentally-available fraction ranged from 9.9 mg/kg in BMW-30 to 52 mg/kg in BMW-31, representing from 3% to 14% of total barium. The majority of barium (83% to 96%) was present in the silicate mineral or residual fraction, as such indicating the presence of a considerable reservoir of naturally-occurring barium in soils (Figure 7). Of the barium that resided in the environmentally-available fraction, the majority was associated with metal hydroxides, indicating potential attenuation of barium from groundwater.

- Cobalt: Total cobalt in soil ranged from 1.7 to 20 mg/kg while the environmentally-available fraction ranged from 0.66 mg/kg in BMW-32 to 18.8 mg/kg in BMW-31, representing from 39% to 94% of total cobalt (Figure 8). Environmentally-available cobalt was present in all fractions across the A1 LF. In BMW-31, which contained the highest cobalt concentration measured in the overburden samples, the amorphous metal and metal hydroxide fractions accounted for all of the environmentally-available cobalt, indicating its potential attenuation.

- Lithium: Total lithium in soil ranged from 11.7 to 24.7 mg/kg, of which between only 12% and 27% of the lithium occurred in the environmentally-available fraction (Figure 9). Lithium that was environmentally available (1.7 to 6.7 mg/kg), was all present in the metal hydroxide fraction. This distribution of lithium indicates the likelihood of the presence of naturally-occurring lithium contained within the non-environmentally available fractions as well as attenuation of lithium by metal hydroxide minerals.

Based on the above results, attenuation of all four COIs is likely occurring in various soil fractions. The most pronounced attenuation is associated with amorphous metals and metal hydroxides. Clays also present a viable attenuation fraction in the soil matrix.

5.0 ATTENUATION EVALUATION

The potential for natural attenuation of arsenic, barium, cobalt, and lithium was evaluated at a screening level, in accordance with recommended practices and guidance promulgated by the US EPA and the ITRC (EPA 2007a; EPA 2007b; ITRC 2010). According to EPA (2007a), the purpose of the evaluation conducted during this screening phase is to “Demonstrate that the groundwater plume is not expanding and that sorption of the contaminant onto aquifer solids is occurring where immobilization is the predominant attenuation process.” Based on this definition, the following observations support MNA as a viable corrective measure for the MLSES A1 LF:

- **Plume Stability:** Based on the water quality monitoring data presented in this assessment, groundwater concentrations of arsenic, barium, cobalt, and lithium outside of the CCR unit are relatively stable or decreasing. Arsenic, barium, and lithium are unlikely to originate from the CCR unit due to their complete absence or presence in porewater at concentrations below the GWPS. It is also considered likely that cobalt in groundwater does not originate from the CCR unit as its concentration was much lower in porewater than in some groundwater in the CCR monitoring well network. As of the most recent sampling (May 2019), no CCR monitoring network well exceeded the GWPS for cobalt.

- **Magnitude of Exceedances**: Occasional exceedances of the arsenic, barium, and lithium GWPS in some wells do not amount to levels that would be considered an SSL per the CCR Rule (Golder 2019). The highest level of cobalt in groundwater (since monitoring began) at the A1 LF was observed in well BMW-27 (0.255 mg/L on June 29, 2017). During the next sampling round, cobalt in groundwater from BMW-27 was below the detection limit (<0.003 mg/L). Thus, while cobalt exceedances occur periodically, the substantial variability in cobalt concentrations points to variability possibly related to flow conditions and/or natural geochemical variation rather than a continuous source of cobalt.

- **Porewater:** Historical records are not available for ash additions or pore water concentrations over the lifespan of the CCR unit. However, based on recent porewater data, arsenic is not present in the CCR unit at levels above its detection limit. Barium and lithium were observed in porewater at concentrations well below their respective GWPS's. This indicates that porewater from the CCR unit is not likely to be a current source for these metals. Cobalt in porewater was measured at a concentration of 0.0.0388 mg/L in May 2019, well below the level that is observed in groundwater when a periodic exceedance occurs in BMW-20 or BMW-27. This indicates that porewater not likely to be a source for the SSL of cobalt in groundwater at these wells. Arsenic, barium, and lithium are currently not at an SSL in groundwater based on a 95% confidence interval at any CCR monitoring well (ACM report).

- **Groundwater Chemistry:** The groundwater monitoring results and the findings of the geochemical modeling support the potential for natural attenuation of arsenic, barium, cobalt, and lithium. Equilibrium of groundwater with the mineral phase ferrihydrite was indicated in all groundwater samples. Modeling results are consistent with the findings from the sequential extraction analysis, which demonstrate carbonate, amorphous, organic, and metal hydroxide phases sequester arsenic, barium, cobalt, and lithium in overburden at the MLSES A1 LF. Further, differences in relative abundance of the major ions in groundwater indicate that porewater is geochemically distinct from groundwater while the three wells with the most similar groundwater to porewater, BMW-19, BMW-22, and BMW-24, have never reported any constituent at a SSL.

- **Confirmation of Attenuation/Immobilization:** Based on both mineralogical and chemical analysis, it is evident that attenuation of arsenic, barium, cobalt, and lithium by aquifer materials is occurring. Iron, capable of forming (hydr)oxide or amorphous phases that facilitate metals attenuation (Dzombak and Morel 1990), was identified in all overburden samples, consistent with the inferred presence of ferrihydrite based on the geochemical modeling. The ubiquitous presence of aluminum, in the form of aluminum oxides and clay minerals, provides an additional well-studied attenuation reservoir (Karamalidis and Dzombak 2011; Prodromou 2016; Uddin 2017). Thus, overburden samples from the A1 LF demonstrate sequestration of COIs is occurring.

Based on these findings, arsenic, barium, cobalt, and lithium appear to be candidates for an MNA remedy application and meet the criteria for Tier I MNA in accordance with USEPA guidance (USEPA 2007a and 2007b). As such, the feasibility of MNA at the A1 LF should be further evaluated with a Tier II MNA evaluation.

6.0 CONCLUSION

The above serves as the Tier I evaluation of MNA feasibility at the MLSES A1 LF for arsenic, barium, cobalt, and lithium with respect to the A1 LF area. This document and evaluation have been completed in accordance with guidance and best practices promulgated by the USEPA (USEPA 2007a and 2007b) and the ITRC (ITRC 2010). Based on the findings of this evaluation, the A1 LF at the MLSES is a viable candidate for MNA as a corrective measure.

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Tables

Table 1: Overview of the wells used in the MNA assessment. 19122434

Background Wells	Monitoring Wells	Nature and Extent Wells	Porewater Sample
BMW-11AR, BMW-27, BMW-33, AI-17-SPOIL, AIV-18-OB-95	BMW-18, BMW-19, BMW-20, BMW-21, BMW-22, BMW-23, BMW-24, BMW-26, BMW-28,	BMW-25, BMW-29, BMW-30, BMW-31, BMW-32, AI-2-OB	S-1

Table 2: Summary of overburden samples collected 19122434

Sample Location	Core Description
Assessment boring BMW-29 (30'-31')	Mine spoil, clayey sand (SC), fine to very fine sand, gray to brown, wet, unconsolidated
Assessment boring BMW-30 (40'-41')	Mine spoil, clayey sand (SC), very fine sand, light gray to gray with some black, wet, unconsolidated
Assessment boring BMW-31 (14'-15')	Mine spoil, sandy clay (SC), light gray to orange, wet, unconsolidated
Assessment boring BMW-32 (25'-26')	Mine spoil, clayey sand (SC), fine to very fine sand, gray with some orange, wet, unconsolidated
Background boring BMW-33 (38'-39')	Mine spoil, clayey sand (SC); mottled gray, light gray, and tan; lignite fragments, wet, unconsolidated

Table 3: Groundwater Geochemical Modeling Results

Parameter	Units	BMW-11AR	BMW-18	BMW-19	BMW-20	BMW-21	BMW-22	BMW-23	BMW-24	BMW-25	BMW-26	BMW-27	BMW-28
MINERAL PHASES - Saturation Indices													
Otavite	$CdCO_3$	-2.49	-2.79	-2.77	-2.71	-2.51	-2.97	-2.78	-3.07		-2.41	-2.60	-2.75
Ferrihydrite	$Fe(OH)_3$	**3.45**	**2.01**	**3.22**	**3.29**	**3.38**	**4.16**	**4.31**	**4.79**	**3.09**	2.1	1.9	**2.04**
Siderite	$FeCO_3$	-1.79	-2.06	-2.08	-1.89	-1.68	-2.18	-1.72	-2.29	-1.48	-1.7	-1.9	-2.04
Melanterite	$FeSO_4$ $7H_2O$	-7.06	-7.30	-6.73	-7.10	-7.10	-6.85	-6.63	-7.02	-6.97	-7.0	-6.9	-6.75
Anglesite	$PbSO_4$	-5.15	-5.23	-4.60	-5.17	-5.27	-4.71	-4.84	-4.77		-5.1	-5.0	-4.69
Gypsum	$CaSO_4$:$2H_2O$	-1.06	-2.55	**-0.23**	-1.04	-1.04	-0.65	-1.06	-1.40	-0.88	-0.8	-0.8	**-0.43**
Jarosite-H	$(H_3O)Fe_3(SO_4)_2(OH)_6$	-1.03	-5.36	-0.74	-0.85	-1.41	**2.48**	**2.03**	**3.18**	-2.82	-4.77	-4.70	-3.76
Jarosite-K	$KFe_3(SO_4)_2(OH)_6$	**5.28**	**-0.08**	**5.33**	**4.72**	**4.38**	**8.08**	**7.64**	**8.68**	**3.35**	**1.32**	**1.24**	**2.38**
Jarosite-Na	$NaFe_3(SO_4)_2(OH)_6$	**2.53**	-1.70	**3.00**	**3.19**	**2.86**	**6.32**	**6.11**	**6.85**	**1.46**	-0.76	-0.85	**0.54**
Calcite	$CaCO_3$	**0.08**	-1.45	**0.29**	**0.04**	**0.25**	**-0.11**	**-0.28**	-0.79	**0.49**	**0.38**	**0.16**	**0.15**
Magnesite	$MgCO_3$	-0.99	-2.72	-0.69	-0.73	-0.51	-0.96	-1.01	-1.53	**-0.43**	-0.56	-0.77	-0.76
Barite	$BaSO_4$	**0.35**	**0.01**	**0.25**	**0.37**	**0.37**	**0.84**	**0.54**	**1.13**		**0.31**	**0.29**	**0.69**
Witherite	$BaCO_3$	-3.80	-4.18	-4.52	-3.85	-3.64	-3.91	-3.97	-3.55		-3.83	-4.06	-4.03
Fluorite	CaF_2	-2.52	-3.37	-2.49	-2.05	-2.16	-2.12	-3.42	-2.75	-2.87	-3.17	-3.17	-1.83
CoCO3	$CoCO_3$	-3.39	-3.64	-3.62	-3.51	-3.30	-3.74	-3.55	-3.49	-2.88	-3.29	-3.49	-3.60
Cerrusite	$PbCO_3$	-2.51	-2.63	-2.58	-2.60	-2.48	-2.68	-2.57	-2.65		-2.51	-2.59	-2.62
Carbon Dioxide	pCO2(g) [(b)]	-1.09	-1.13	-1.21	-0.82	-1.02	-1.00	-1.20	-1.50	-1.20	-0.97	-0.82	-0.90

Notes:

[(a)] Saturation indices between -0.5 and 0.5 or >0.5 identified by bold type and grey shading

[(b)] pCO2(g) values presented at 10^value atm

Table 4. Sequential Extraction and Total Metals From Overburden 19122434

Sample Location		BMW-29	BMW-30	BMW-31	BMW-32	BMW-33
Sample Depth (feet bgs)		30'-31'	40'-41'	14'-15'	25'-26'	38'-39'
Sample Date		5/31/2019	5/31/2019	5/31/2019	5/31/2019	5/31/2019
Analyte	**SEP Step**					
Aluminum	SEP Step 1	54 U	48 U	47 U	47 U	52 U
Aluminum	SEP Step 2	16 J *	7.3 J *	36 * U	17 J *	10 J *
Aluminum	SEP Step 3	170	35	59	81	94
Aluminum	SEP Step 4	2600	1100	1600	1200	1800
Aluminum	SEP Step 5	500 *	66 J *	67 J *	58 J *	64 J *
Aluminum	SEP Step 6	3500	1300	1800	1100	3400
Aluminum	SEP Step 7	34000	37000	26000	32000	48000
Aluminum	SEP Sum	72000	48000	30000	45000	73000
Aluminum	SEP Total	41000	39000	30000	35000	54000
Antimony	SEP Step 1	16 U	14 U	14 U	14 U	15 U
Antimony	SEP Step 2	12 U	11 U	11 U	11 U	12 U
Antimony	SEP Step 3	4.1 U	3.6 U	3.6 U	3.6 U	3.9 U
Antimony	SEP Step 4	4.1 U	3.6 U	3.6 U	3.6 U	3.9 U
Antimony	SEP Step 5	61 U	53 U	53 U	53 U	58 U
Antimony	SEP Step 6	4.1 U	3.6 U	3.6 U	3.6 U	3.9 U
Antimony	SEP Step 7	4.1 U	3.6 U	3.6 U	3.6 U	3.9 U
Antimony	SEP Sum	4.1 U	3.6 U	3.6 U	3.6 U	3.9 U
Antimony	SEP Total	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U
Arsenic	SEP Step 1	2.7 U	2.4 U	2.4 U	2.4 U	2.6 U
Arsenic	SEP Step 2	2.0 U	1.8 U	1.8 U	1.8 U	1.9 U
Arsenic	SEP Step 3	1.4	1.3	0.29 J	0.60	0.47 J
Arsenic	SEP Step 4	0.87 B	0.78 B	1.8 B	0.78 B	1.2 B
Arsenic	SEP Step 5	10 U	8.9 U	8.9 U	8.9 U	9.7 U
Arsenic	SEP Step 6	1.1	0.75	0.54 J	0.42 J	0.85
Arsenic	SEP Step 7	0.59 J	1.3	0.58 J	1.2	0.64 J
Arsenic	SEP Sum	3.8	4.8	3.0	3.2	3.2
Arsenic	SEP Total	4.0	4.1	3.2	3.0	3.2
Barium	SEP Step 1	14 U	12 U	0.58 J	12 U	1.5 J
Barium	SEP Step 2	1.1 J *	0.52 J *	0.46 J *	8.9 * U	0.90 J *
Barium	SEP Step 3	4.3 B	2.0 J B	14 B	1.3 J B	7.5 B
Barium	SEP Step 4	19	7.4	33	17	20
Barium	SEP Step 5	17 J *	45 * U	3.9 J *	3.3 J *	4.1 J *
Barium	SEP Step 6	30	4.0	4.4	6.4	13
Barium	SEP Step 7	340	380	320	430	550
Barium	SEP Sum	630	490	430	570	830
Barium	SEP Total	410	390	370	460	590
Beryllium	SEP Step 1	1.4 U	1.2 U	1.2 U	1.2 U	1.3 U
Beryllium	SEP Step 2	1.0 * U	0.89 * U	0.89 * U	0.89 * U	0.97 * U
Beryllium	SEP Step 3	0.11 J	0.30 U	0.069 J	0.30 U	0.028 J
Beryllium	SEP Step 4	0.23 J	0.062 J	0.24 J	0.025 J	0.20 J
Beryllium	SEP Step 5	5.1 * U	4.5 * U	4.5 * U	4.5 * U	4.8 * U
Beryllium	SEP Step 6	0.11 J	0.043 J	0.059 J	0.033 J	0.11 J
Beryllium	SEP Step 7	0.69	0.36	0.30	0.50	0.69
Beryllium	SEP Sum	1.2	0.46	0.66	0.53	1.0
Beryllium	SEP Total	1.1	0.46	0.67	0.56	1.0
Boron	Total 3050B	15 J	23 U	24 U	22 U	24 U
Chromium	Total 3050B	19	7.9	7.3	7.6	14

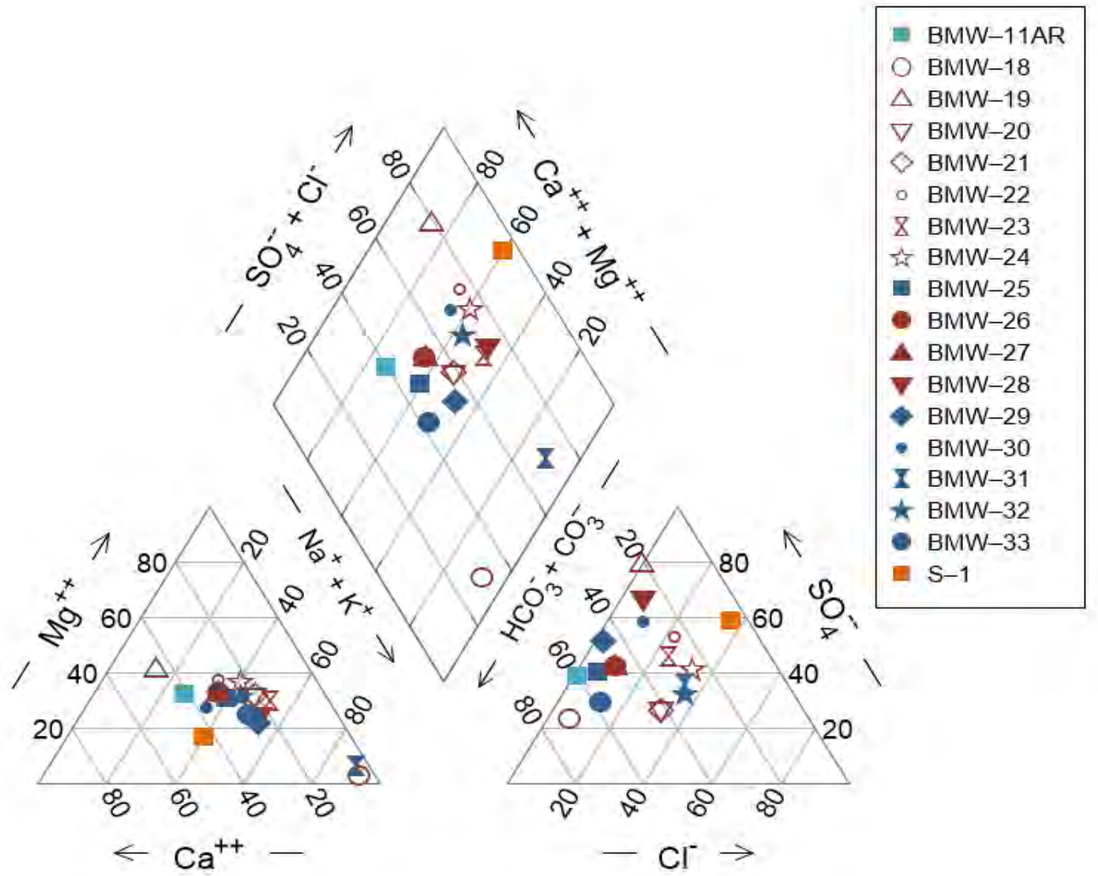
Table 4. Sequential Extraction and Total Metals From Overburden 19122434

Sample Location		BMW-29	BMW-30	BMW-31	BMW-32	BMW-33
Sample Depth (feet bgs)		30'-31'	40'-41'	14'-15'	25'-26'	38'-39'
Sample Date		5/31/2019	5/31/2019	5/31/2019	5/31/2019	5/31/2019
Analyte	**SEP Step**					
Cobalt	SEP Step 1	14 U	0.82 J	12 U	12 U	0.29 J
Cobalt	SEP Step 2	1.4 J	0.28 J	8.9 U	8.9 U	0.74 J
Cobalt	SEP Step 3	1.5 J	0.28 J	16	0.060 J	1.9 J
Cobalt	SEP Step 4	3.2 J	0.50 J	2.8 J	0.60 J	1.5 J
Cobalt	SEP Step 5	1.0 J *	45 * U	45 * U	45 * U	48 * U
Cobalt	SEP Step 6	1.2 J	0.46 J	0.46 J	0.28 J	1.1 J
Cobalt	SEP Step 7	0.90 J	0.76 J	0.82 J	0.76 J	0.57 J
Cobalt	SEP Sum	10 J	3.4 J	18	1.6 J	4.6 J
Cobalt	SEP Total	9.2	3.1	20	1.7 J	6.1
Hg	Total Hg	0.078 J	0.054 J	0.12 U	0.053 J	0.13 U
Iron	SEP Step 1	27 U	24 U	24 U	24 U	26 U
Iron	SEP Step 2	48 *	24 *	18 * U	36 *	14 J *
Iron	SEP Step 3	4200	190	120	500	510
Iron	SEP Step 4	8300	1000	5600	2000	4900
Iron	SEP Step 5	530 *	89 * U	89 * U	89 * U	97 * U
Iron	SEP Step 6	4800	1800	1700	890	3900
Iron	SEP Step 7	6700	2800	3600	2800	6100
Iron	SEP Sum	26000	5800	10000	5600	13000
Iron	SEP Total	25000	5800	11000	6200	15000
Lead	Total 3050B	9.7	5.9	6.8	3.9	5.9
Lithium	SEP Step 1	14 U	12 U	12 U	12 U	13 U
Lithium	SEP Step 2	10 U	8.9 U	8.9 U	8.9 U	9.7 U
Lithium	SEP Step 3	3.4 U	3.0 U	3.0 U	3.0 U	3.2 U
Lithium	SEP Step 4	6.7	1.7 J	2.2 J	2.5 J	2.1 J
Lithium	SEP Step 5	51 U	45 U	45 U	45 U	48 U
Lithium	SEP Step 6	4.0	0.91 J	1.3 J	1.0 J	2.1 J
Lithium	SEP Step 7	14	14	15	8.2	9.1
Lithium	SEP Sum	31	18	18	11	14
Lithium	SEP Total	25	17	19	12	13
Manganese	SEP Step 1	3.8 J	1.5 J	11	1.0 J	17
Manganese	SEP Step 2	35	2.7 U	2.4 J	2.7 U	25
Manganese	SEP Step 3	95 B	0.29 J B	260 B	0.60 J B	85 B
Manganese	SEP Step 4	180	8.7	63	13	55
Manganese	SEP Step 5	33 *	13 * U	13 * U	13 * U	15 * U
Manganese	SEP Step 6	38	8.0	10	10	22
Manganese	SEP Step 7	36	38	24	42	30
Manganese	SEP Sum	490	60	280	70	130
Manganese	SEP Total	420	57	370	67	230
Molybdenum	SEP Step 1	11 U	9.5 U	9.5 U	9.5 U	10 U
Molybdenum	SEP Step 2	8.2 U	7.1 U	7.1 U	7.1 U	7.7 U
Molybdenum	SEP Step 3	0.14 J	2.4 U	2.4 U	2.4 U	2.6 U
Molybdenum	SEP Step 4	2.7 U	2.4 U	2.4 U	2.4 U	2.6 U
Molybdenum	SEP Step 5	41 U	36 U	36 U	36 U	39 U
Molybdenum	SEP Step 6	2.7 U	2.4 U	2.4 U	2.4 U	2.6 U
Molybdenum	SEP Step 7	0.20 J	2.4 U	0.16 J	2.4 U	2.6 U

Table 4. Sequential Extraction and Total Metals From Overburden 19122434

Sample Location		BMW-29	BMW-30	BMW-31	BMW-32	BMW-33
Sample Depth (feet bgs)		30'-31'	40'-41'	14'-15'	25'-26'	38'-39'
Sample Date		5/31/2019	5/31/2019	5/31/2019	5/31/2019	5/31/2019
Analyte	**SEP Step**					
Molybdenum	SEP Sum	0.33 J	2.0 U	0.16 J	2.0 U	2.0 U
Molybdenum	SEP Total	0.70 J	0.17 J	0.29 J	0.33 J	0.22 J
Selenium	SEP Step 1	2.7 U	2.4 U	2.4 U	2.4 U	2.6 U
Selenium	SEP Step 2	1.2 J B	0.67 J B	0.77 J B	0.78 J B	1.9 U
Selenium	SEP Step 3	0.28 J B	0.38 J B	0.23 J B	0.21 J B	0.25 J B
Selenium	SEP Step 4	0.68 * U	0.76 B *	1.1 B *	0.62 B *	0.71 B *
Selenium	SEP Step 5	10 U	8.9 U	8.9 U	8.9 U	9.7 U
Selenium	SEP Step 6	0.68 U	0.59 U	0.59 U	0.59 U	0.65 U
Selenium	SEP Step 7	0.68 U	1.2 U	1.2 U	0.59 U	0.65 U
Selenium	SEP Sum	0.68 U	1.1	0.59 U	0.54 J	0.65 U
Selenium	SEP Total	1.5	1.8	2.1	1.6	0.95
Thallium	SEP Step 1	9.5 U	8.3 U	8.3 U	8.3 U	9.0 U
Thallium	SEP Step 2	7.1 U	6.2 U	6.2 U	6.2 U	6.8 U
Thallium	SEP Step 3	2.4 U	2.1 U	2.1 U	2.1 U	2.3 U
Thallium	SEP Step 4	2.4 U	2.1 U	2.1 U	2.1 U	2.3 U
Thallium	SEP Step 5	36 * U	31 * U	31 * U	31 * U	34 * U
Thallium	SEP Step 6	2.4 U	2.1 U	2.1 U	2.1 U	2.3 U
Thallium	SEP Step 7	0.74 J	0.87 J	0.52 J	4.2 U	4.5 U
Thallium	SEP Sum	1.4 J	10 U	0.67 J	0.44 J	11 U
Thallium	SEP Total	0.74 J	0.87 J	0.52 J	1.8 U	1.8 U

Figures



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LUMINANT
MARTIN LAKE SES
A1 LANDFILL AREA

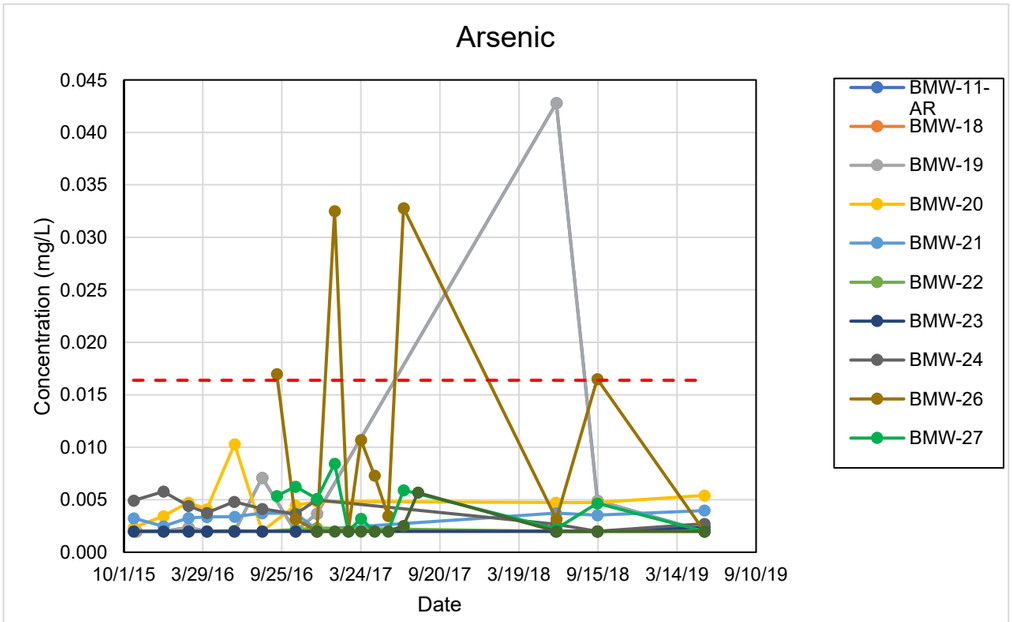
CONSULTANT
GOLDER

PROJECT
ASSESSMENT OF CORRECTIVE MEASURES
GEOCHEMICAL ASSESSMENT

TITLE
MAJOR GROUNDWATER CEHMISTRY

PROJECT NO.	PHASE	REV.	FIGURE
19122434	D	A	1a-b

(a)



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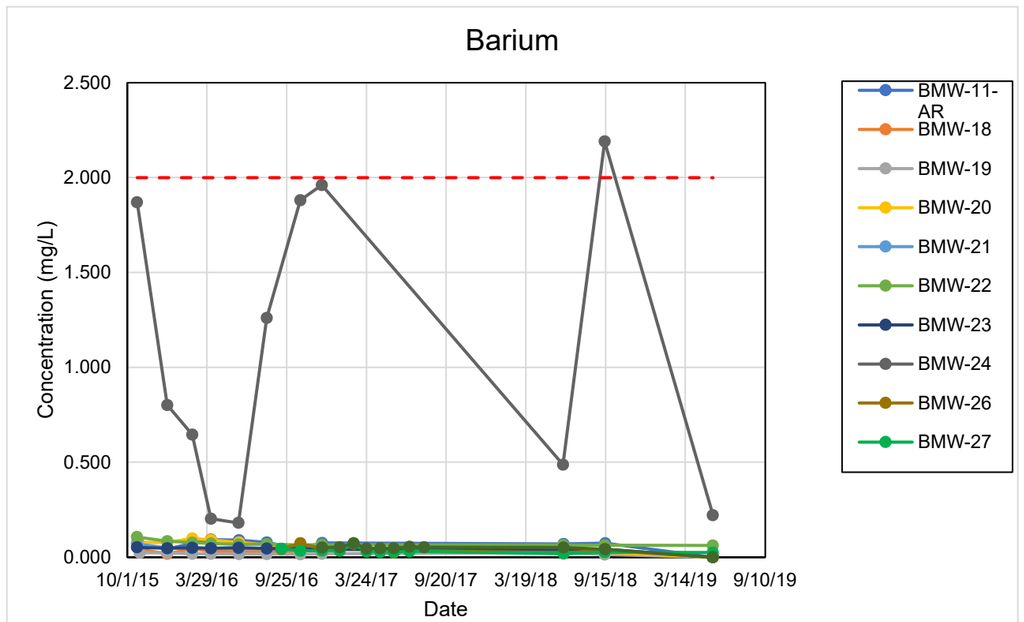

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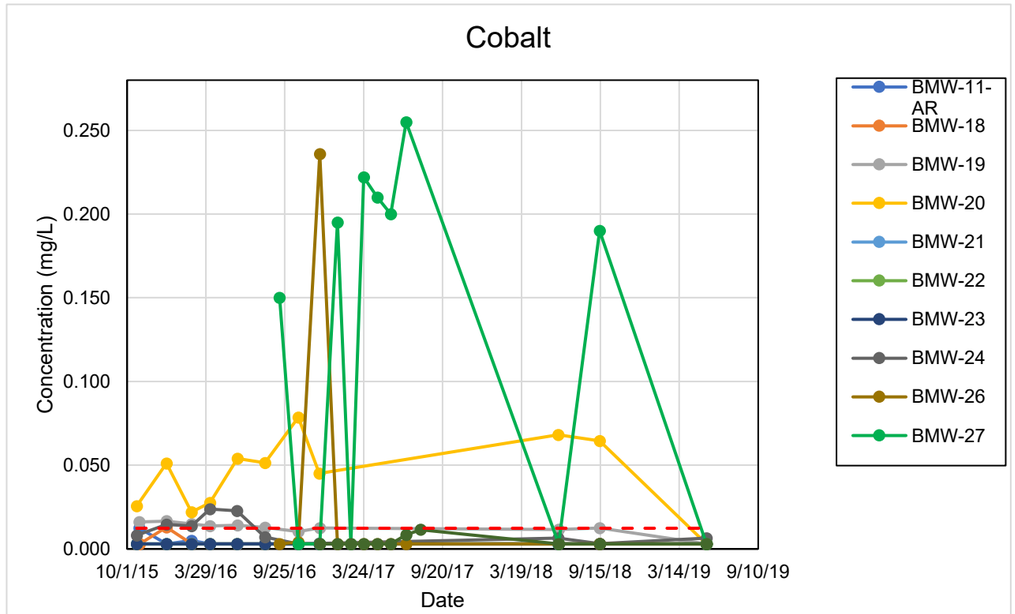
GEOCHEMICAL ASSESSMENT

TITLE
HISTORICAL TRENDS IN ARSENIC (A), and BARIUM (B)

PROJECT NO.	PHASE	REV.	FIGURE
19122434	D	A	2a-b

(c)



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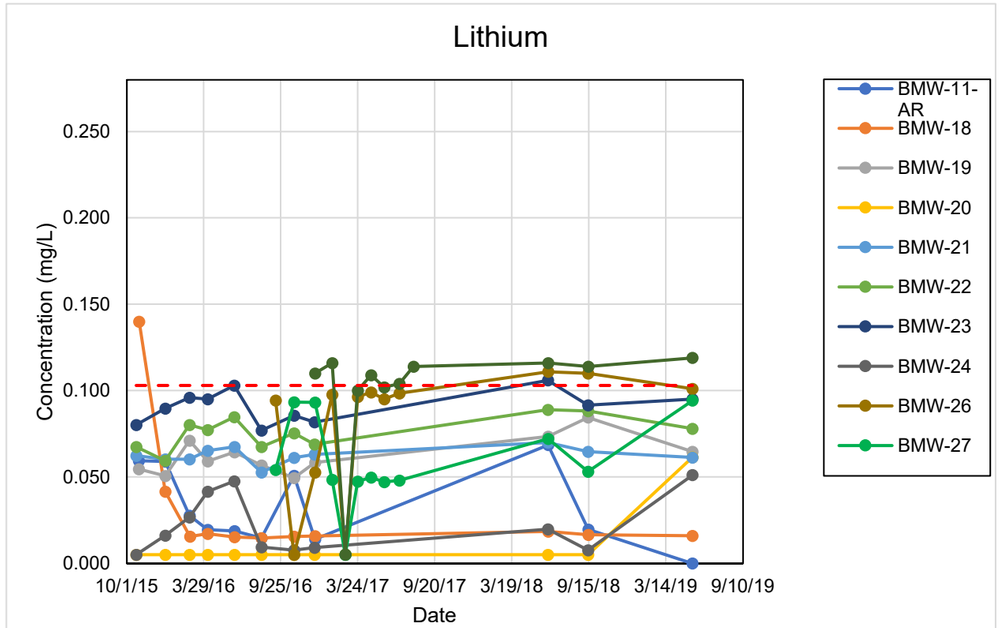

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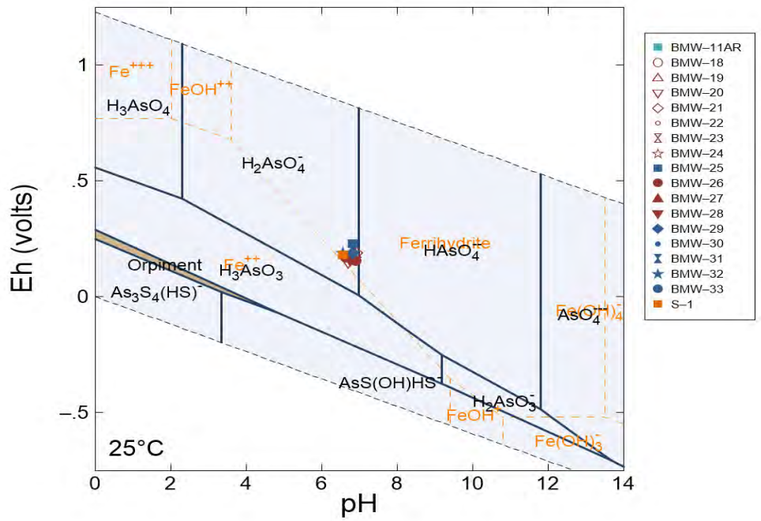
GEOCHEMICAL ASSESSMENT

TITLE
HISTORICAL TRENDS IN COBALT (C), AND LITHIUM (D)

PROJECT NO.	PHASE	REV.	FIGURE
19122434	D	A	2c-d

(a)



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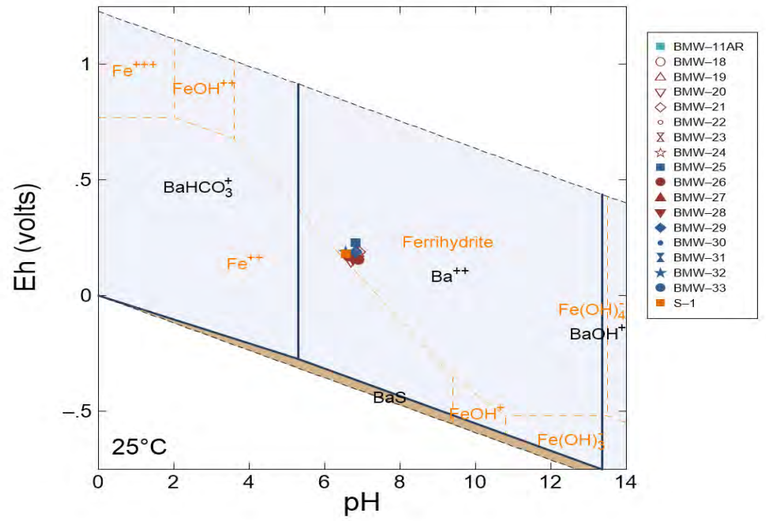

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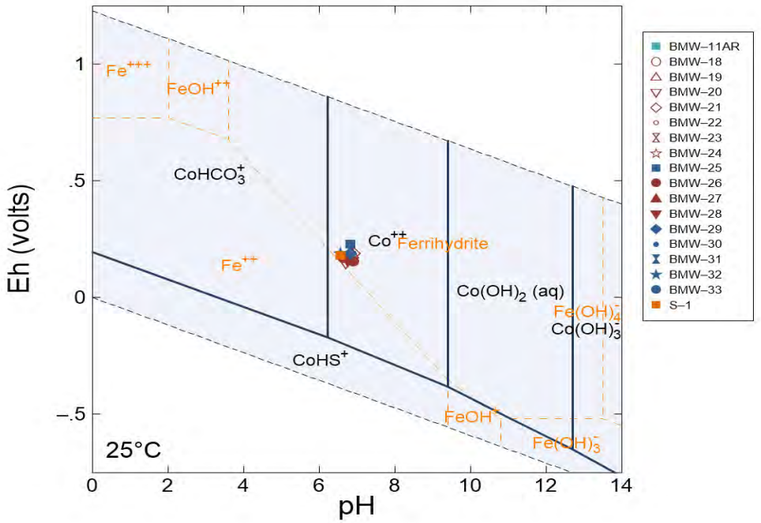

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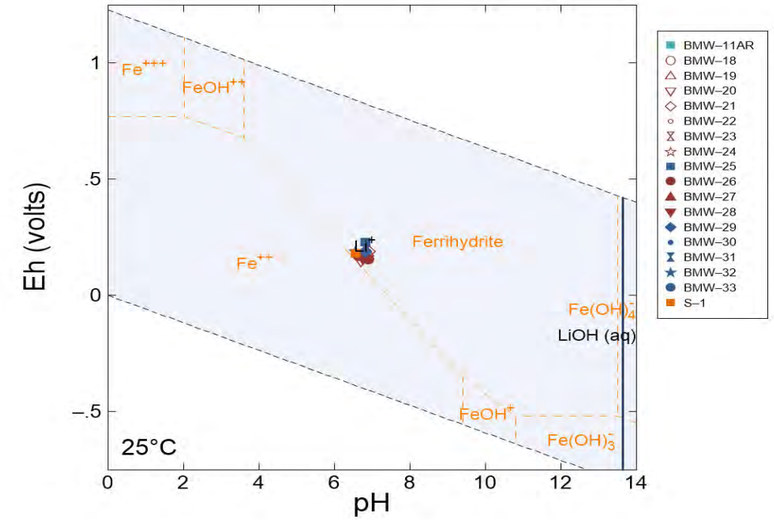

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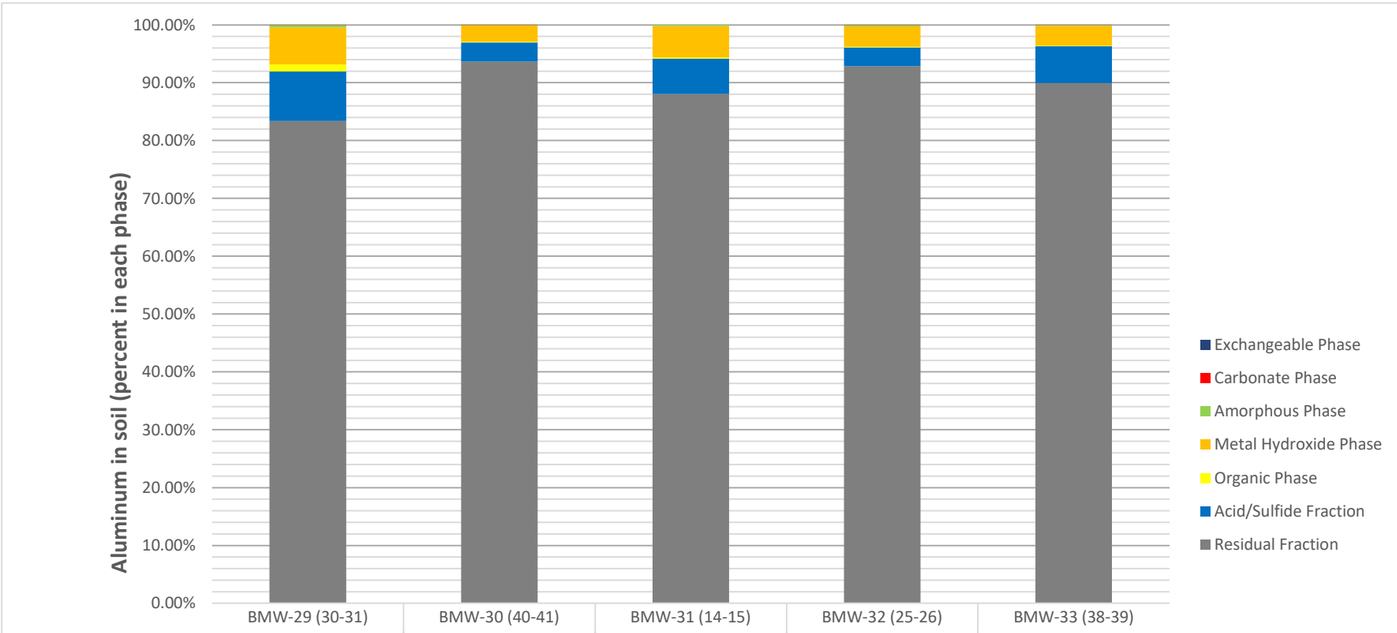
ASSESSMENT OF CORRECTIVE MEASURES
GEOCHEMICAL ASSESSMENT

TITLE
SPECIATION OF ARSENIC (A), BARIUM (B), COBALT (C), AND LITHIUM (D), IN GROUNDWATER

PROJECT NO.	PHASE	REV.	FIGURE
19122434	D	A	3a-d



	BMW-29 (30-31)	BMW-30 (40-41)	BMW-31 (14-15)	BMW-32 (25-26)	BMW-33 (38-39)
Exchangeable Phase	0.00%	0.00%	0.00%	0.00%	0.00%
Carbonate Phase	0.04%	0.02%	0.00%	0.05%	0.02%
Amorphous Phase	0.42%	0.09%	0.20%	0.24%	0.18%
Metal Hydroxide Phase	6.37%	2.78%	5.42%	3.48%	3.37%
Organic Phase	1.23%	0.17%	0.23%	0.17%	0.12%
Acid/Sulfide Fraction	8.58%	3.29%	6.10%	3.19%	6.37%
Residual Fraction	83.36%	93.65%	88.06%	92.87%	89.94%

Borehole and depth below ground surface (Aluminum in perecent of total)

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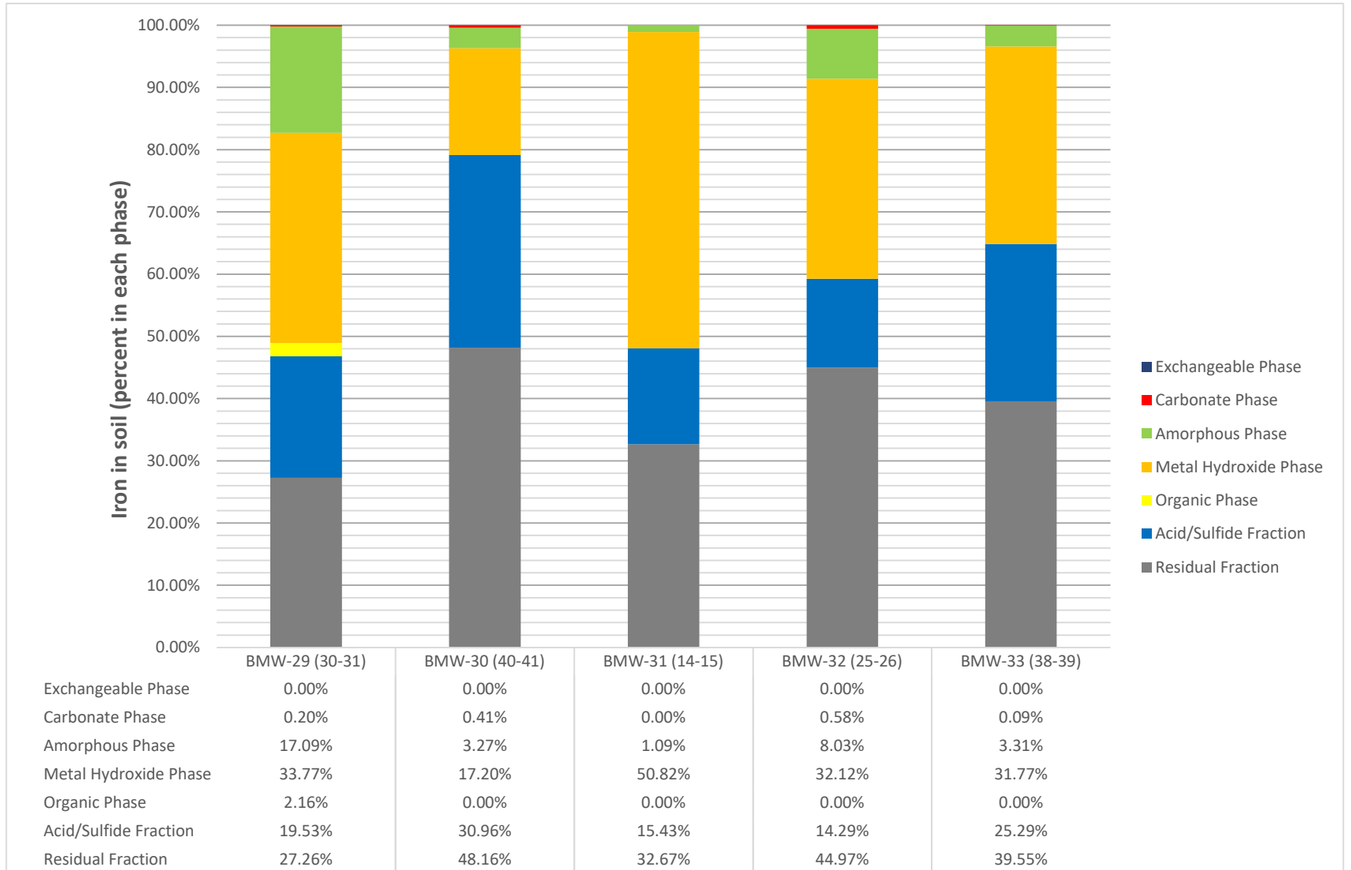
ASSESSMENT OF CORRECTIVE MEASURES
GEOCHEMICAL ASSESSMENT

TITLE
SEQUENTIAL EXTRACTION OF ALUMINUM

PROJECT NO.	PHASE	REV.	FIGURE
19122434	D	A	4



	BMW-29 (30-31)	BMW-30 (40-41)	BMW-31 (14-15)	BMW-32 (25-26)	BMW-33 (38-39)
Exchangeable Phase	0.00%	0.00%	0.00%	0.00%	0.00%
Carbonate Phase	0.20%	0.41%	0.00%	0.58%	0.09%
Amorphous Phase	17.09%	3.27%	1.09%	8.03%	3.31%
Metal Hydroxide Phase	33.77%	17.20%	50.82%	32.12%	31.77%
Organic Phase	2.16%	0.00%	0.00%	0.00%	0.00%
Acid/Sulfide Fraction	19.53%	30.96%	15.43%	14.29%	25.29%
Residual Fraction	27.26%	48.16%	32.67%	44.97%	39.55%

Borehole and depth below ground surface (Iron in perecent of total)

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A1 LANDFILL AREA

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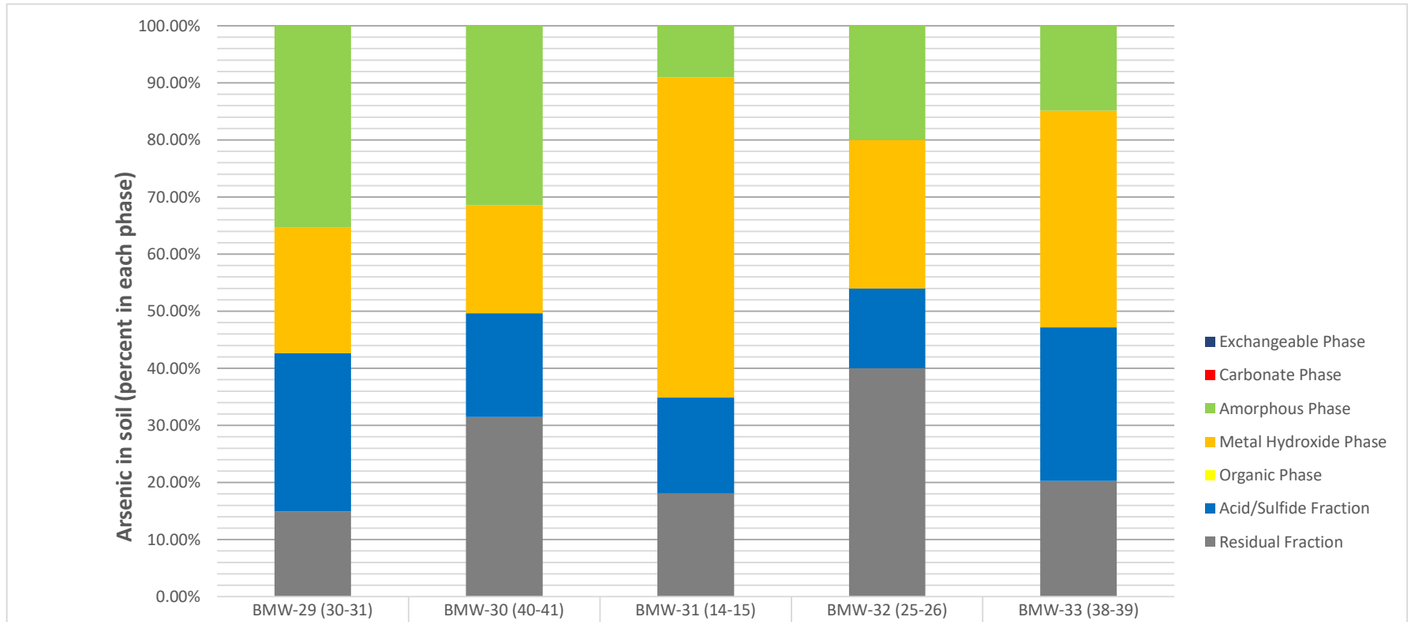
ASSESSMENT OF CORRECTIVE MEASURES
GEOCHEMICAL ASSESSMENT

TITLE
SEQUENTIAL EXTRACTION OF IRON

PROJECT NO.	PHASE	REV.	FIGURE
19122434	D	A	5



	BMW-29 (30-31)	BMW-30 (40-41)	BMW-31 (14-15)	BMW-32 (25-26)	BMW-33 (38-39)
Exchangeable Phase	0.00%	0.00%	0.00%	0.00%	0.00%
Carbonate Phase	0.00%	0.00%	0.00%	0.00%	0.00%
Amorphous Phase	35.35%	31.48%	9.03%	20.00%	14.87%
Metal Hydroxide Phase	21.97%	18.89%	56.07%	26.00%	37.97%
Organic Phase	0.00%	0.00%	0.00%	0.00%	0.00%
Acid/Sulfide Fraction	27.78%	18.16%	16.82%	14.00%	26.90%
Residual Fraction	14.90%	31.48%	18.07%	40.00%	20.25%

Borehole and depth below ground surface (Arsenic in perecent of total)

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MARTIN LAKE SES
A1 LANDFILL AREA

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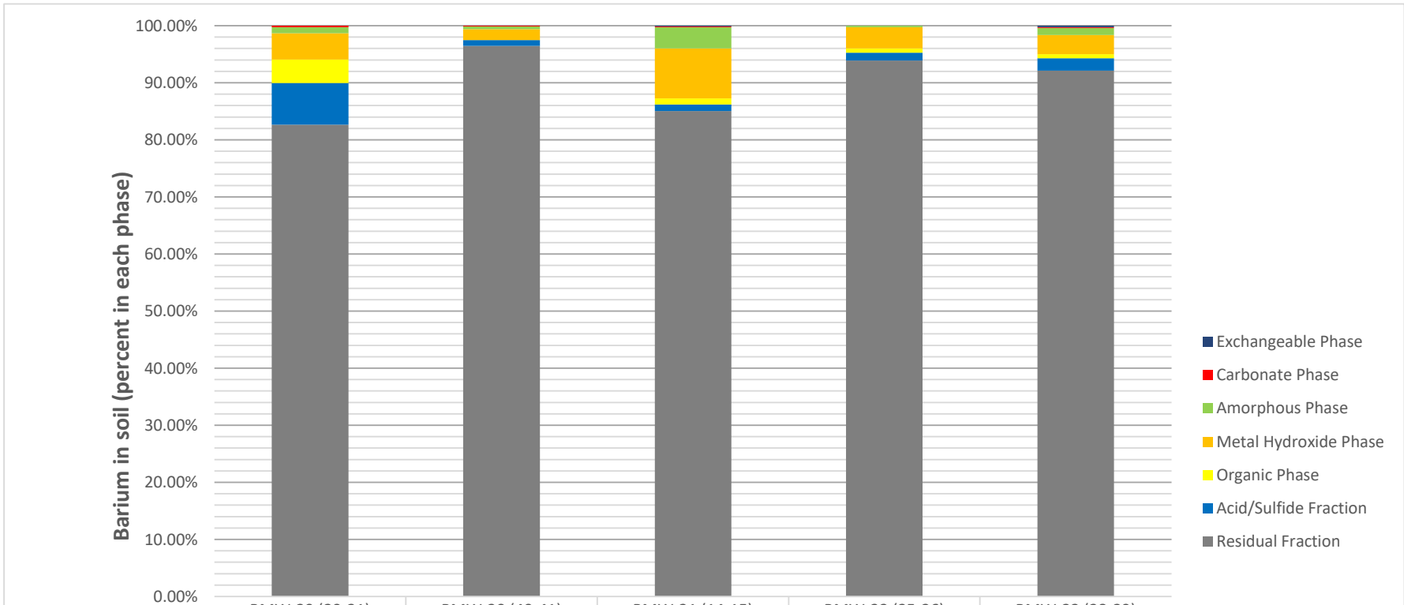
PROJECT
ASSESSMENT OF CORRECTIVE MEASURES
GEOCHEMICAL ASSESSMENT

TITLE
SEQUENTIAL EXTRACTION OF ARSENIC

PROJECT NO.	PHASE	REV.	FIGURE
19122434	D	A	6



	BMW-29 (30-31)	BMW-30 (40-41)	BMW-31 (14-15)	BMW-32 (25-26)	BMW-33 (38-39)
Exchangeable Phase	0.00%	0.00%	0.15%	0.00%	0.25%
Carbonate Phase	0.27%	0.13%	0.12%	0.00%	0.15%
Amorphous Phase	1.05%	0.51%	3.72%	0.28%	1.26%
Metal Hydroxide Phase	4.62%	1.88%	8.77%	3.71%	3.35%
Organic Phase	4.13%	0.00%	1.04%	0.72%	0.69%
Acid/Sulfide Fraction	7.29%	1.02%	1.17%	1.40%	2.18%
Residual Fraction	82.64%	96.47%	85.03%	93.89%	92.13%

Borehole and depth below ground surface (Barium in perecent of total)

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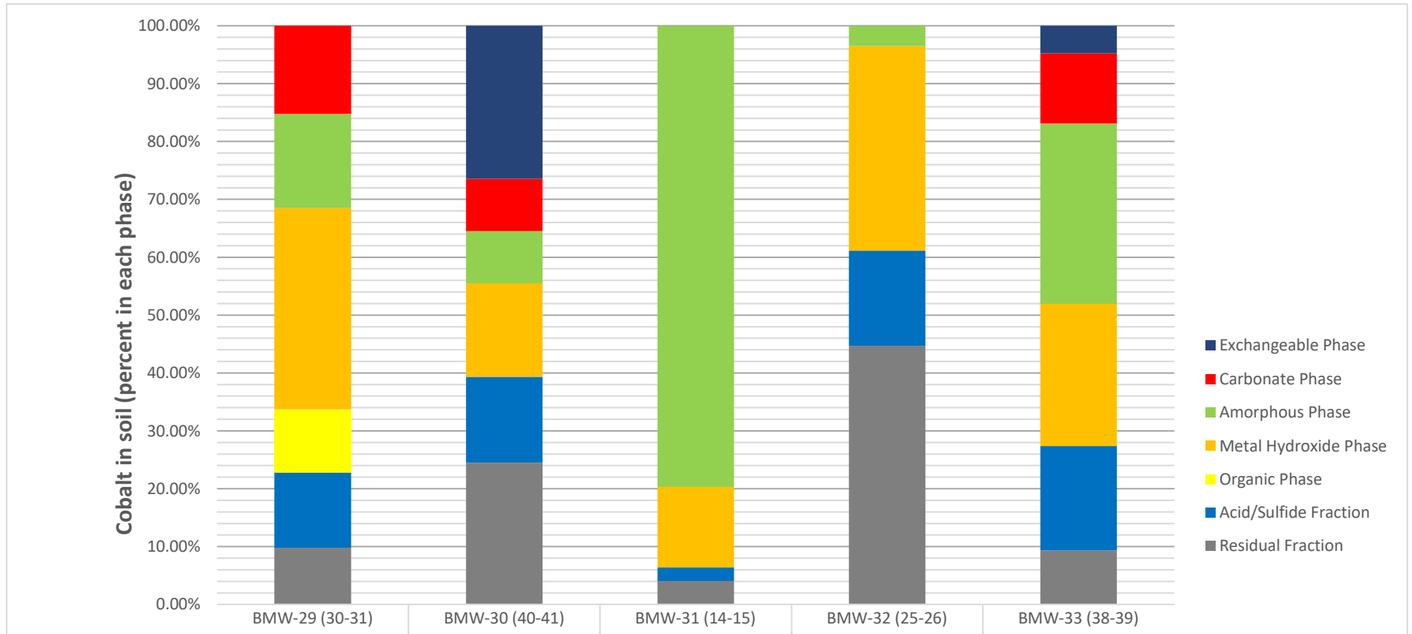
PROJECT
ASSESSMENT OF CORRECTIVE MEASURES
GEOCHEMICAL ASSESSMENT

TITLE
SEQUENTIAL EXTRACTION OF BARIUM

PROJECT NO.	PHASE	REV.	FIGURE
19122434	D	A	7



	BMW-29 (30-31)	BMW-30 (40-41)	BMW-31 (14-15)	BMW-32 (25-26)	BMW-33 (38-39)
Exchangeable Phase	0.00%	26.45%	0.00%	0.00%	4.75%
Carbonate Phase	15.22%	9.03%	0.00%	0.00%	12.13%
Amorphous Phase	16.30%	9.03%	79.68%	3.53%	31.15%
Metal Hydroxide Phase	34.78%	16.13%	13.94%	35.29%	24.59%
Organic Phase	10.87%	0.00%	0.00%	0.00%	0.00%
Acid/Sulfide Fraction	13.04%	14.84%	2.29%	16.47%	18.03%
Residual Fraction	9.78%	24.52%	4.08%	44.71%	9.34%

Borehole and depth below ground surface (Cobalt in perecent of total)

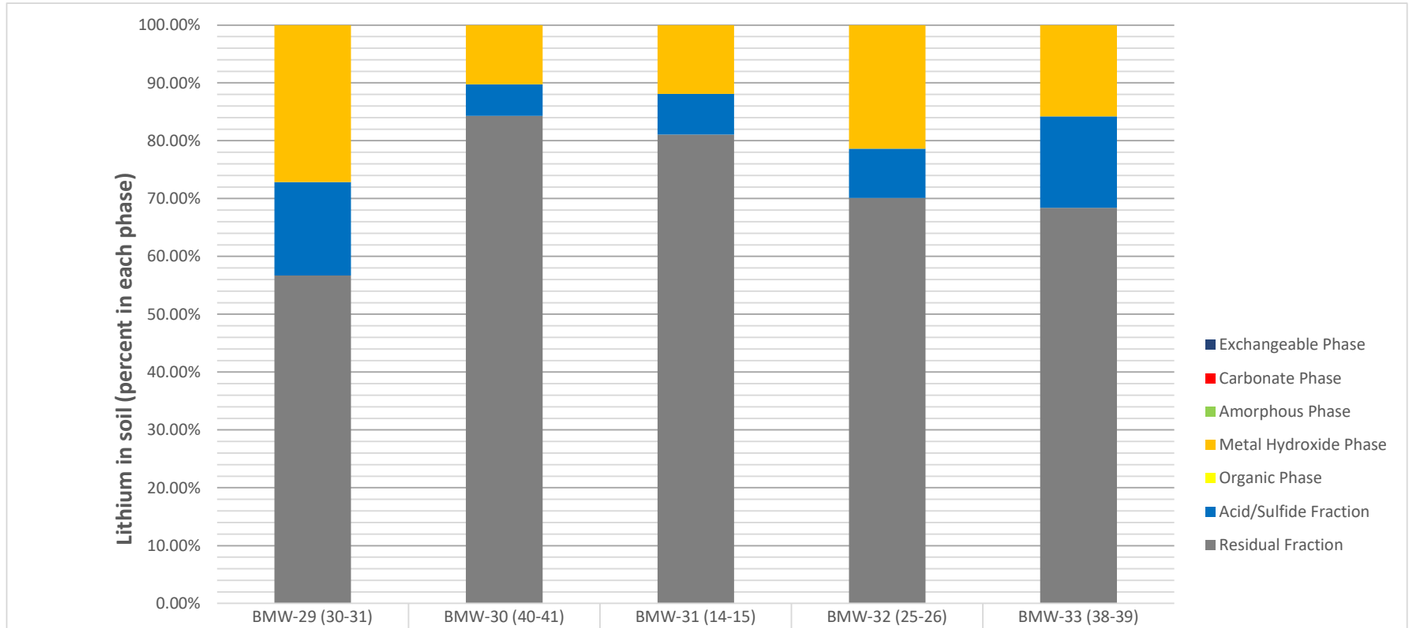
CLIENT
LUMINANT
MARTIN LAKE SES
A1 LANDFILL AREA

CONSULTANT
GOLDER

PROJECT
ASSESSMENT OF CORRECTIVE MEASURES
GEOCHEMICAL ASSESSMENT

TITLE
SEQUENTIAL EXTRACTION OF COBALT

PROJECT NO.	PHASE	REV.	FIGURE
19122434	D	A	8



	BMW-29 (30-31)	BMW-30 (40-41)	BMW-31 (14-15)	BMW-32 (25-26)	BMW-33 (38-39)
Exchangeable Phase	0.00%	0.00%	0.00%	0.00%	0.00%
Carbonate Phase	0.00%	0.00%	0.00%	0.00%	0.00%
Amorphous Phase	0.00%	0.00%	0.00%	0.00%	0.00%
Metal Hydroxide Phase	27.13%	10.23%	11.89%	21.37%	15.79%
Organic Phase	0.00%	0.00%	0.00%	0.00%	0.00%
Acid/Sulfide Fraction	16.19%	5.48%	7.03%	8.55%	15.79%
Residual Fraction	56.68%	84.29%	81.08%	70.09%	68.42%

Borehole and depth below ground surface (Lithium in perecent of total)

CLIENT
LUMINANT
MARTIN LAKE SES
A1 LANDFILL AREA

CONSULTANT
GOLDER

PROJECT
ASSESSMENT OF CORRECTIVE MEASURES
GEOCHEMICAL ASSESSMENT

TITLE
SEQUENTIAL EXTRACTION OF LITHIUM

PROJECT NO.	PHASE	REV.	FIGURE
19122434	D	A	9

APPENDIX A

BORING LOGS

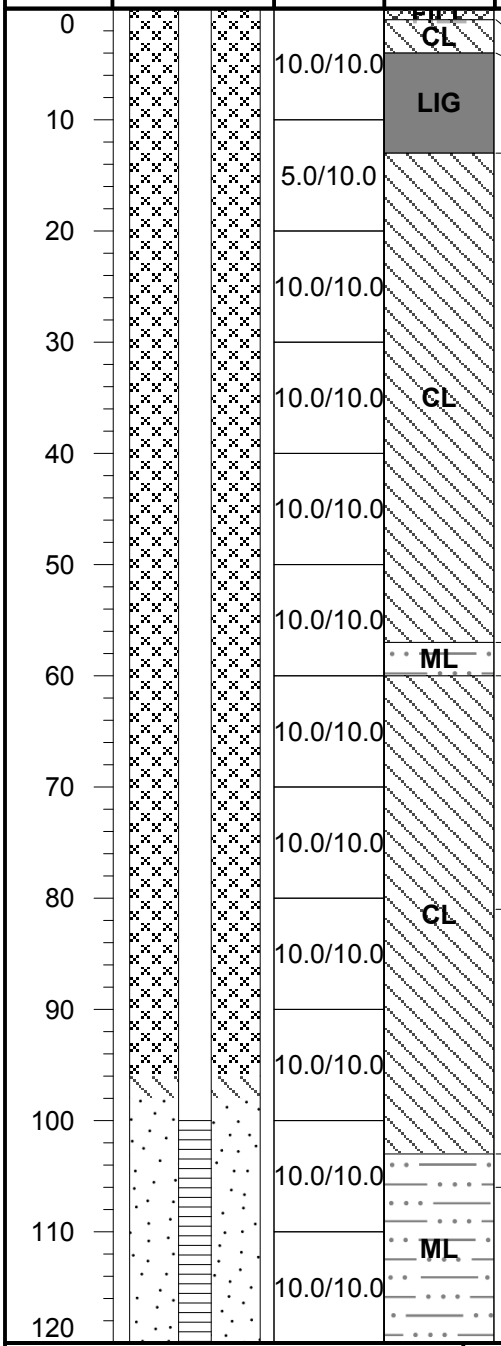
Luminant

Log of Boring: BMW-18

Martin Lake Steam Electric Station
Tatum, TX

PBW Project No. 5164B

Completion Date:	9/29/2015	Drilling Method:	Sonic
Drilling Company:	Walker-Hill Environmental	Borehole Diameter (in.):	6.5
Driller:	Timmy Beach	Total Depth (ft):	120
Driller's License:	5814M	TOC Elevation (ft. AMSL):	357.833
Logged By:	Jeremiah Bihl	Northing:	1051216950.561
Sampling Method:	4"x10' Core barrel	Easting:	2915599.992



USCS	Lithologic Description
CL	(0 - 1) Top soil, light brown, rocks (1-3 cm) present (1 - 4) CLAY spoil, dark gray to black with pale tan mottling, dry, firm, brittle
LIG	(4 - 13) LIGNITE with clay spoil, dark grey to black, dry to moist, soft, brittle, angular, low plasticity
CL	(13 - 57) Silty CLAY spoil, dark gray to dark brown with red and yellow mottling, dry, soft to firm, crumbly, medium plasticity, color change to tan at 30', coal seam at 32' (black, dry to moist, soft), pieces of lignite present, color change to gray to dark gray at 35'
ML	(57 - 60) Clayey SILT spoil, light brown to tan, moist, soft, low plasticity, lignite seam at 59'
CL	(60 - 81) Silty CLAY spoil, black to gray, dry, soft to firm, low plasticity, crumbly, 6" dry white gravel layer at 69', 4" light brown silty sand layer at 81'
CL	(81 - 103) Silty CLAY spoil, light gray, dry to moist, soft, low to medium plasticity, crumbly, rubber tire pieces at 89', hard lignite seam at 90' (hard, dry, black, firm), streaks of black (91'- 94'), becomes hard at 94', light to dark gray (94'-103')
ML	(103 - 106) Clayey SILT spoil, gray, very moist, soft, medium plasticity
ML	(106 - 120) Clayey SILT spoil, gray to dark gray, dry, firm, low plasticity

PBW

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Notes:
1. This log should not be used separately from the report to which it is attached.

Well Materials
(0-100) Casing, 2" Sch 40 FJT PVC
(100-120) Screen, 2" Sch 40 FJT PVC, 0.010" slot

Annular Materials
(0'-96') Grout
(96'-98') Bentonite pellets
(98'-110') 20/40 sand

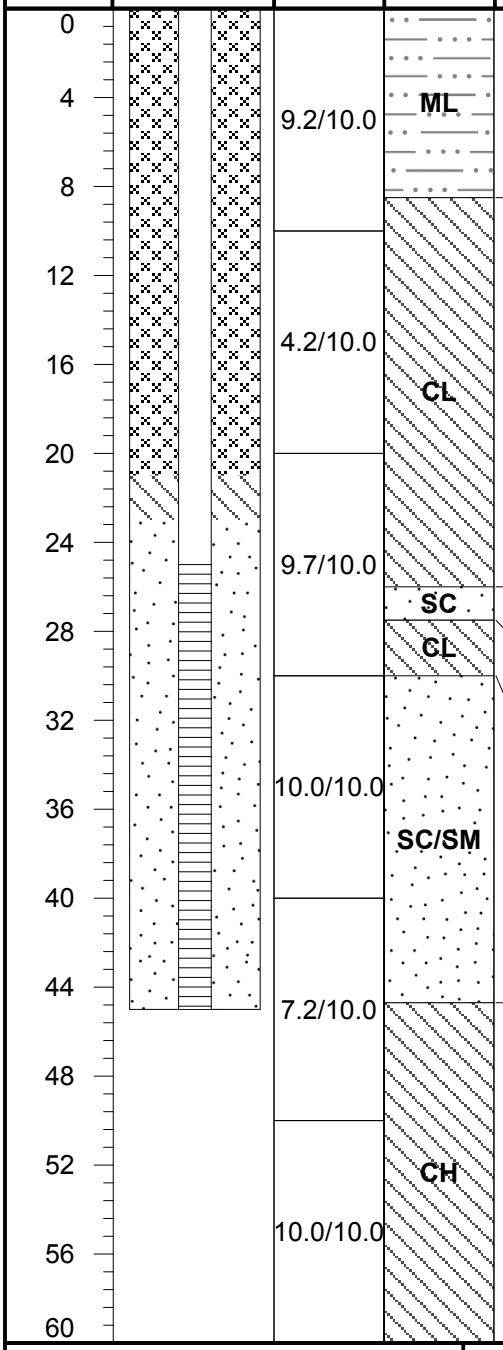
Luminant

Log of Boring: BMW-19

Martin Lake Steam Electric Station
Tatum, TX

PBW Project No. 5164B

Completion Date:	10/7/2015	Drilling Method:	Sonic
Drilling Company:	Walker-Hill Environmental	Borehole Diameter (in.):	6.5
Driller:	Timmy Beach	Total Depth (ft):	60
Driller's License:	5814M	TOC Elevation (ft. AMSL):	400.685
Logged By:	Nolan Townsend	Northing:	1048219535.121
Sampling Method:	4"x10' Core barrel	Easting:	2918071.024



Depth (ft)	Well Materials	Recovery (ft/ft)	USCS	Lithologic Description
0 – 8.5		9.2/10.0	ML	(0 - 8.5) Sandy SILT with clay spoil, light brown to brownish yellow, dry to slightly mosit, soft, low plasticity, more clay content below ~1.0', trace black lignite fragments - dry, firm to hard, brittle, friable, sharp basal contact
8.5 – 26		4.2/10.0	CL	(8.5 - 26) Sandy CLAY spoil, yellowish brown, gray after 9.5', trace to moderate orange-yellow mottling, dry to moist, firm, low plasticity, trace black lignite fragments, very fine sand, sharp basal contact
26 – 27.5		9.7/10.0	SC	(26 - 27.5) Clayey SAND spoil, gray to yellowish brown, very moist to wet, soft, low plasticity, very fine sand, sharp basal conact
27.5 – 30			CL	(27.5 - 30) Sandy CLAY spoil, gray to yellowish brown, trace to moderate orange mottling, moist to very moist, soft to firm, moderate plasticity, very fine sand, small lignite seam 29.7'-30.0', brittle and friable, dry, black, hard, sharp basal contact
30 – 44.7		10.0/10.0	SC/SM	(30 - 44.7) Clayey silty SAND spoil - sandy CLAY spoil, brownish yellow to gray to greenish gray, trace orange mottling, abundant orange mottling 37.5'-38.5' and 42'-44.7', very moist to wet, soft to firm, moderate to high plasicity, very fine sand
44.7 – 60		7.2/10.0	CH	(44.7 - 60) Sandy CLAY spoil, greenish gray to gray, trace orange-red mottling, dry to moist, firm, moderate to high plasticity, trace black lignite fragments, abundant orange and red mottling 56.0'-59.5'
		10.0/10.0		

Depth scale: 0, 4, 8, 12, 16, 20, 24, 28, 32, 36, 40, 44, 48, 52, 56, 60

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APPENDIX F - Revision 2 February 27, 2024

Notes:
1. This log should not be used separately from the report to which it is attached.
2. Hole collapsed - drilled back down to 45' with 6" casing to set well.

Well Materials
(0-25) Casing, 2" Sch 40 FJT PVC
(25-45) Screen, 2" Sch 40 FJT PVC, 0.010" slot

Annular Materials
(0'-21') Grout
(21'-23') Bentonite pellets
(23'-45') 20/40 sand

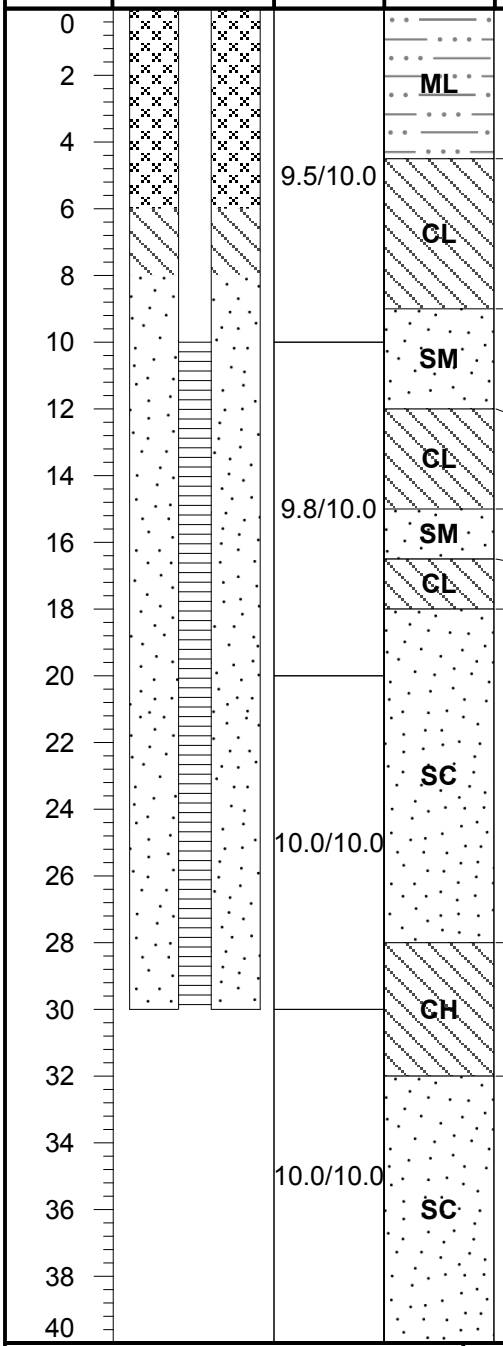
Luminant

Log of Boring: BMW-20

Martin Lake Steam Electric Station
Tatum, TX

PBW Project No. 5164B

Completion Date:	10/8/2015	Drilling Method:	Sonic
Drilling Company:	Walker-Hill Environmental	Borehole Diameter (in.):	6.5
Driller:	Timmy Beach	Total Depth (ft):	40
Driller's License:	5814M	TOC Elevation (ft. AMSL):	357.512
Logged By:	Nolan Townsend	Northing:	1057219166.631
Sampling Method:	4"x10' Core barrel	Easting:	2923995.525



Lithologic Description

(0 - 4.5) Sandy SILT with clay spoil, brownish yellow to gray, trace to moderate orange mottling near 4.0', dry, soft, low plasticity, very fine sand

(4.5 - 9) CLAY spoil with trace sand lenses, gray with trace to moderate orange/yellow mottling, dry to slightly moist, firm to hard, low to moderate plasticity, trace calcareous precipitates, sharp basal contact

(9 - 12) Slightly silty SAND spoil, yellowish orange to tan, moist to very moist, slightly unconsolidated, moderate to high plasticity, very fine sand, moderately to well sorted, mostly quarts with ~5-10% lithic fragments, clay content present 10'-12', dark gray, sharp basal contact

(12 - 15) CLAY spoil, slightly sandy, gray to dark gray, dry to slihgtly moist, firm to hard, low to moderate plasticity, trace black lignite fragments, sandy lenses, trace orange mottling

(15 - 16.5) Silty SAND with clay spoil, tan to yellowish orange, moist to very moist, moderately consolidated, medium to high plasticity, very fine sand

(16.5 - 18) CLAY spoil as above, dry to moist, firm to hard, moderate plasticity

(18 - 28) Clayey SAND spoil, reddish orange and gray, very moist, wet at 20.0', moderately consolidated, moderate to high plasticity, clay composition increases and decreases throughout, very fine sand, becomes gray at 28.0' and more clay content

(28 - 32) Sandy CLAY spoil, gray, trace orange mottling, moist to very moist, firm, moderate to high plasticity, locally sandy lenses/interbeds, trace lignitic fragments (black)

(32 - 40) Clayey SAND spoil, reddish orange with gray clay, very moist to wet, moderately consolidated, moderate to high plasticity, very fine sand, localized small sandy clay seams, trace lignite fragments

PBW

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Notes:
1. This log should not be used separately from the report to which it is attached.

Well Materials
(0-10) Casing, 2" Sch 40 FJT PVC
(10-30) Screen, 2" Sch 40 FJT PVC, 0.010" slot

Annular Materials
(0'-6') Grout
(6'-8') Bentonite pellets
(8'-30') 20/40 sand

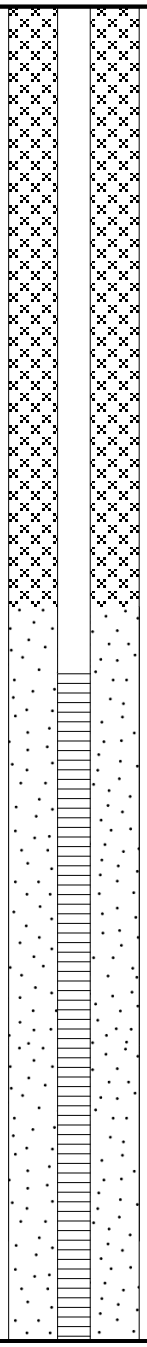
Luminant

Log of Boring: BMW-21

Martin Lake Steam Electric Station
Tatum, TX

PBW Project No. 5164B

Completion Date:	9/27/2015	Drilling Method:	Sonic
Drilling Company:	Walker-Hill Environmental	Borehole Diameter (in.):	6.5
Driller:	Timmy Beach	Total Depth (ft):	40
Driller's License:	5814M	TOC Elevation (ft. AMSL):	350.976
Logged By:	Jeremiah Bihl	Northing:	1054217792.58
Sampling Method:	4"x10' Core barrel	Easting:	2923478.615

Depth (ft)	Well Materials	Recovery (ft/ft)	USCS	Lithologic Description
0				
2			FILL	(0 - 5) Top soil, sandy with small amounts of clay, tan/brown, moist, soft, low plasticity
4		10.0/10.1		
6			CL	(5 - 10) Sandy CLAY spoil, dark gray to black, moist, soft, low to medium plasticity, trace amounts of lignite, clay content increases with depth
8				
10				
12				
14		10.0/10.0		
16				
18				
20			CH	(10 - 30) CLAY spoil with angular lignite, light gray, moist, soft, high plasticity, 1'-thick lignite layer at 25', hardness increases from 26' to 30'
22				
24		10.0/10.0		
26				
28				
30				
32				
34		10.0/10.0	CL	(30 - 40) CLAY spoil with angular lignite pieces, wet, soft with increasing hardness with depth, medium plasticity, water present at 30', moisture decreases at 35'
36				
38				
40				

PBW

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Notes:
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Well Materials
(0-20) Casing, 2" Sch 40 FJT PVC
(20-40) Screen, 2" Sch 40 FJT PVC, 0.010" slot

Annular Materials
(0'-37') Grout
(16'-18') Bentonite pellets
(18'-40') 20/40 sand

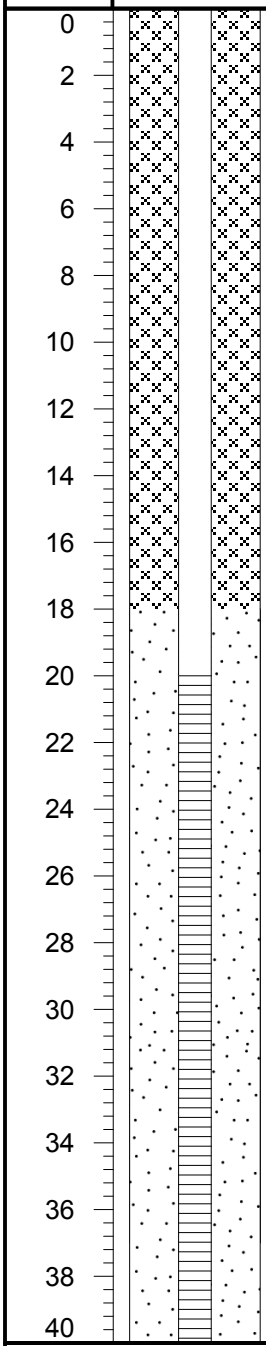
Luminant

Log of Boring: BMW-22

Martin Lake Steam Electric Station
Tatum, TX

PBW Project No. 5164B

Completion Date:	9/27/2015	Drilling Method:	Sonic
Drilling Company:	Walker-Hill Environmental	Borehole Diameter (in.):	6.5
Driller:	Timmy Beach	Total Depth (ft):	40
Driller's License:	5814M	TOC Elevation (ft. AMSL):	332.304
Logged By:	Jeremiah Bihl	Northing:	1060216298.457
Sampling Method:	4"x10' Core barrel	Easting:	2924359.671



Depth (ft)	Recovery (ft/ft)	USCS	Lithologic Description
0		FILL	(0 - 1) Top soil, light brown
2		SM	(1 - 2) Sandy silty spoil with pieces of rock, light brown, abundant organics
		CL	(2 - 3) CLAY spoil, yellow-reddish
4		SM	(3 - 4) Sandy silty spoil with pieces of rock, light brown/tan, abundant organics
6	10.0/10.0		
8			
10			(4 - 20) CLAY spoil, dark gray, lignite present (angular), color change to light gray to yellow clay with some red mottling at 6', firm, moist, medium plasticity, color change to tan at 10', moist and soft lignite layer (12'-13'), hard and lignite layer (angular pieces) at 13'
12			
14	10.0/10.0		
16			
18			
20			
22		CL	
24			(20 - 30) Sandy CLAY spoil, light gray, moist, soft, medium plasticity, moisture content decreases with depth, hardness increases with depth, plasticity decreases with depth
26	10.0/10.0		
28			
30			
32			(30 - 40) Sandy CLAY spoil, light gray, wet, soft, hardness increases with depth
34	10.0/10.0		
36			
38			
40			

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Notes:
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Well Materials
(0-20) Casing, 2" Sch 40 FJT PVC
(20-40) Screen, 2" Sch 40 FJT PVC, 0.010" slot

Annular Materials
(0'-37') Grout
(16'-18') Bentonite pellets
(18'-40') 20/40 sand

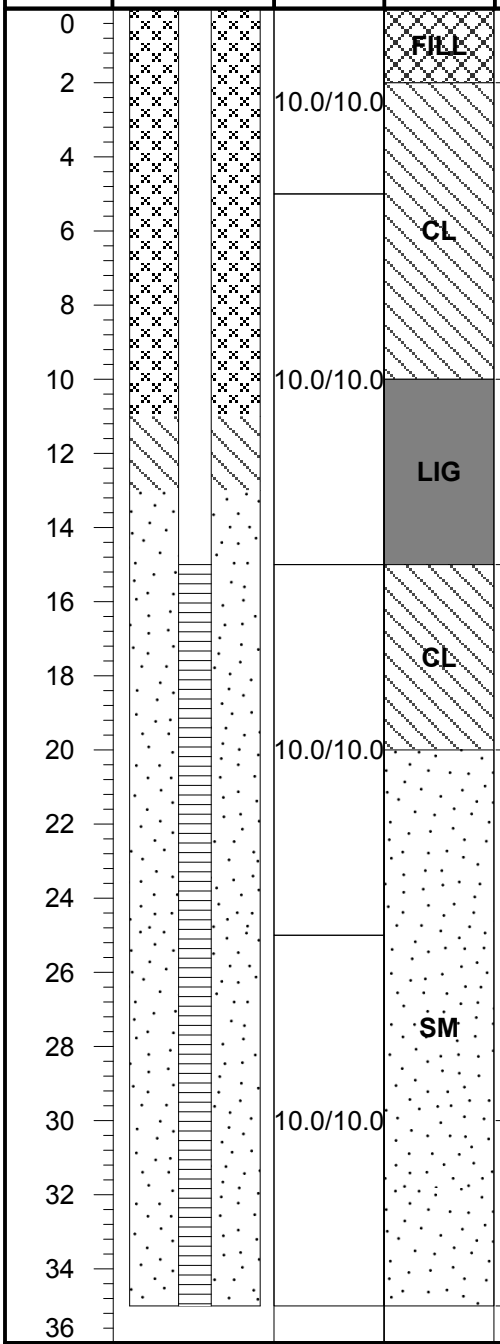
Luminant

Log of Boring: BMW-23

Martin Lake Steam Electric Station
Tatum, TX

PBW Project No. 5164B

Completion Date:	9/28/2015	Drilling Method:	Sonic
Drilling Company:	Walker-Hill Environmental	Borehole Diameter (in.):	6.5
Driller:	Timmy Beach	Total Depth (ft):	35
Driller's License:	5814M	TOC Elevation (ft. AMSL):	341.903
Logged By:	Jeremiah Bihl	Northing:	1061215105.129
Sampling Method:	4"x10' Core barrel	Easting:	2923179.729



Lithologic Description
(0 - 2) Top soil, sandy silty CLAY, moist, soft, light brown
(2 - 10) CLAY spoil, light gray to pale yellow, some sand present, soft, moist, low plasticity, color change to brown at 5'
(10 - 15) LIGNITE spoil, black, soft, moist, crumbly, sharp contact
(15 - 20) CLAY spoil, dark gray and light tan, dry, hard, medium plasticity
(20 - 30) Silty SAND spoil with small amounts of clay, moist, soft, low plasticity, small seams of lignite, clay content increases with depth (20'-30')
(30 - 35) Silty SAND spoil, light gray, wet, very soft, low plasticity, some clay content at 32', sand lenses present

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Notes:
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Well Materials
(0-15) Casing, 2" Sch 40 FJT PVC
(15-35) Screen, 2" Sch 40 FJT PVC, 0.010" slot

Annular Materials
(0'-11') Grout
(11'-13') Bentonite pellets
(13'-35') 20/40 sand

Luminant

Log of Boring: BMW-24

Martin Lake Steam Electric Station
Tatum, TX

PBW Project No. 5164B

Completion Date:	9/28/2015	Drilling Method:	Sonic
Drilling Company:	Walker-Hill Environmental	Borehole Diameter (in.):	6.5
Driller:	Timmy Beach	Total Depth (ft):	45
Driller's License:	5814M	TOC Elevation (ft. AMSL):	347.074
Logged By:	Jeremiah Bihl	Northing:	1066213874.314
Sampling Method:	4"x10' Core barrel	Easting:	2921447.467

Depth (ft)	Well Materials	Recovery (ft/ft)	USCS	Lithologic Description
0			FILL	(0 - 3) Top soil, brown, moist, roots present
4		10.0/10.0	CL	(3 - 4) CLAY spoil, light brown with yellow and orange mottling, dry, soft, low plasticity (4 - 6) CLAY spoil with some silt, tan to yellow/gray, moist, firm, medium plasticity
8				(6 - 12) CLAY spoil, black with lignite pieces (0.2-1 cm), dry, soft, low plasticity, sharp contact
12		10.0/10.0		(12 - 20) CLAY spoil, dark gray with yellow and red mottling, dry, hard, medium to high plasticity
16				
20		10.0/10.0	CH	(20 - 30) Silty CLAY spoil, light gray to gray, yellow and red mottling, moist, very soft, high plasticity, pieces of lignite present, decreasing silt content with depth and becomes harder, more brittle, and dry (28'-30'), increase in red, yellow, and black mottling at 28'
24				
28				
32		10.0/10.0	SM	(30 - 35) Silty SAND spoil, gray, wet, soft, low plasticity, subangular to rounded
36			ML	(35 - 40) Clayey SILT spoil, dry, firm, low plasticity, silt content decreases with depth
40		10.0/10.0	CL	(40 - 45) Silty CLAY spoil, light gray, dry, firm, low plasticity
44				
48				

PBW

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Notes:
1. This log should not be used separately from the report to which it is attached.

Well Materials
(0-20) Casing, 2" Sch 40 FJT PVC
(20-40) Screen, 2" Sch 40 FJT PVC, 0.010" slot

Annular Materials
(0'-16') Grout
(16'-18') Bentonite pellets
(18'-40') 20/40 sand

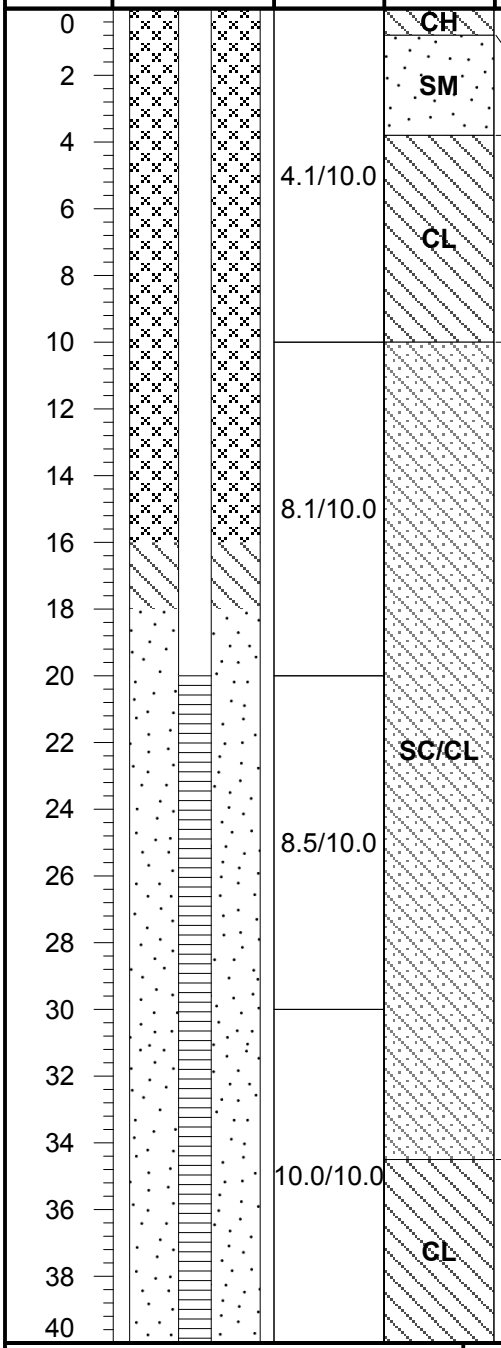
Luminant

Log of Boring: BMW-25

Martin Lake Steam Electric Station
Tatum, TX

PBW Project No. 5164B

Completion Date:	10/7/2015	Drilling Method:	Sonic
Drilling Company:	Walker-Hill Environmental	Borehole Diameter (in.):	6.5
Driller:	Timmy Beach	Total Depth (ft):	40
Driller's License:	5814M	TOC Elevation (ft. AMSL):	339.946
Logged By:	Nolan Townsend	Northing:	1070220215.073
Sampling Method:	4"x10' Core barrel	Easting:	2915715.233



Lithologic Description
(0 - 0.8) Silty CLAY spoil, gray, dry to moist, soft, moderate to high plasticity, trace roots, sharp basal contact
(0.8 - 3.8) Silty, clayey SAND spoil, yellow brown/light brown, dry, soft, low to moderate plasticity, very fine sand, loose/unconsoldated, trace roots, sharp basal contact
(3.8 - 10) Sandy CLAY spoil, gray, dry, frim to hard, low to moderate plasticity, trace sand, trace to moderate red mottling, sharp basal contact
(10 - 34.5) Clayey SAND spoil/sandy CLAY spoil, brownish yellow to light brown to gray, moist to very moist to wet (12'-20', 20'-35'), soft, moderate to high plasticity, trace to moderate orange and rust red mottling, dark gray-gray color 17.5'-20.0', continues as brown-yellow below 20.0', very fine sand, small linterval of clay from 27.4'-28.4' then returns to sandy clay, sharp basal contact
(34.5 - 40) Sandy CLAY spoil, light gray to gray, moist to very moist, firm to hard, low to moderate plasticity, moderate to abundant orange and rust mottling, localized sandy interbeds, very fine sand

PBW

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Notes:
1. This log should not be used separately from the report to which it is attached.

Well Materials
(0-20) Casing, 2" Sch 40 FJT PVC
(20-40) Screen, 2" Sch 40 FJT PVC, 0.010" slot

Annular Materials
(0'-16') Grout
(16'-18') Bentonite pellets
(18'-40') 20/40 sand

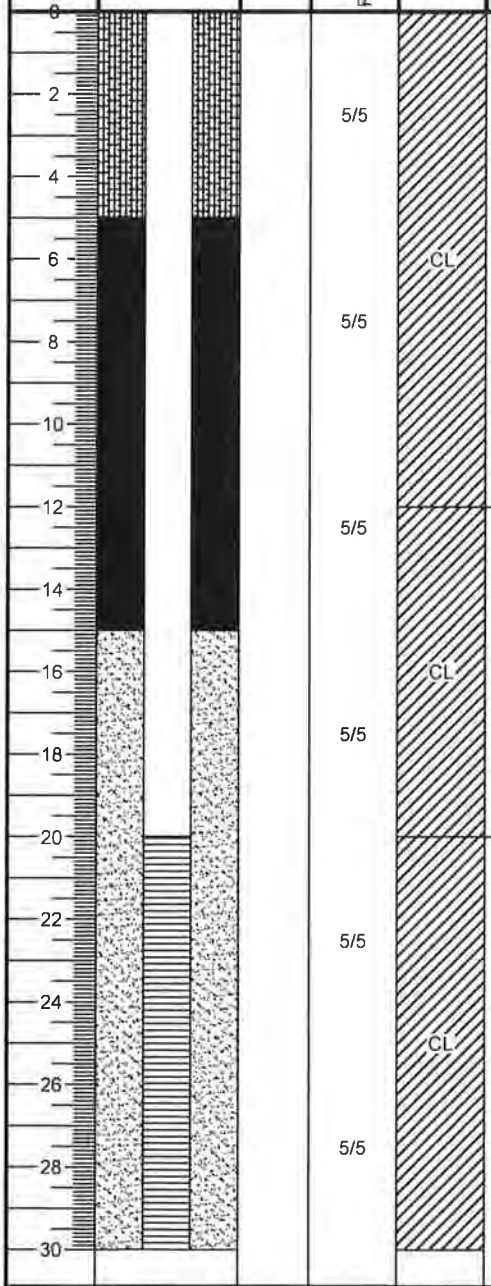
LUMINANT

Log of Boring: BMW-26

A-1 AREA LANDFILL
TATUM, TEXAS

PBW PROJECT No.: 5164-F

Completion Date:	8-31-16	Drilling Method:	HS Auger
Drilling Company:	Walker-Hill Env.	Borehole Diameter (in.):	10.25"
Driller:	Jeremy Thornhill	Total Depth (ft):	30.0'
Driller's License:	NA	Northing:	221187.022
Field Supervisor:	RKS	Easting:	2921306.755
Sampling Method:	5'Macrocore Sampler	Ground Elev. (ft AMSL):	365.958



Lithologic Description

0.0-12.0 - Clay with silt and lignite fragments, dark gray-black, soft, moist, low plasticity

Wet at 4.0'

12.0-20.0 - Silty clay, dark brown, saturated, low plasticity

20.0-30.0 - Silty clay, fine grained, dark brown, saturated, low plasticity

PBW
Pastor, Behling & Wheeler, LLC
2201 Double Creek Dr., Suite 4004
Round Rock, TX 78664
Tel (512) 671-3434 Fax (512) 671-3446

Notes:

1. All logged material is mine spoil.

Depth (bgs)	Well Materials
0' - 20'	Casing, 4" Sch 40 PVC, FJT
20' - 30'	Screen, 4" Sch 40 PVC, .010 Slot

Depth (bgs)	Annular Materials
0' - 5'	Grout
5' - 15'	Bentonite Pellet Seal
15' - 30'	20/40 Sand

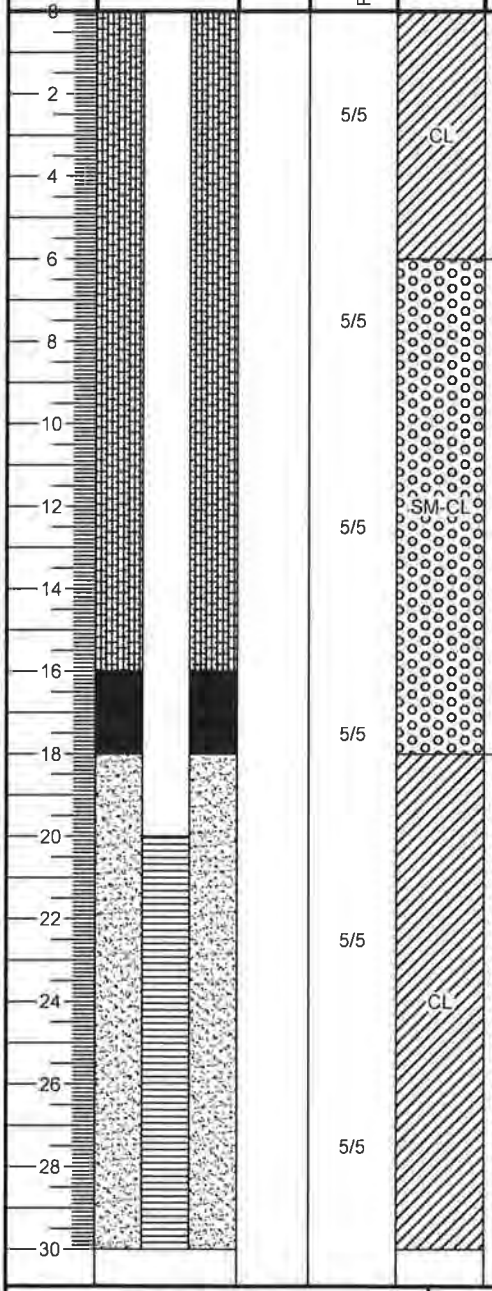
LUMINANT

Log of Boring: BMW-27

A-1 AREA LANDFILL
TATUM, TEXAS

PBW PROJECT No.: 5164-F

Completion Date:	9-1-16	Drilling Method:	HS Auger
Drilling Company:	Walker-Hill Env	Borehole Diameter (in.):	10.25"
Driller:	Jeremy Thornhill	Total Depth (ft):	30.0'
Driller's License:	NA	Northing	220024.389
Field Supervisor:	RKS	Easting	2922347.297
Sampling Method:	5'Macrocore Sampler	Ground Elev. (ft AMSL):	373.463



Lithologic Description

0.0-6.0 - Clay with silt and fine sand, dark gray, soft, moist, low plasticity

Wet at 5.0'

6.0-18.0 - Silty sand with clay, brown, soft, moist

18.0-30.0 - Silty clay with lignite, dark brown-gray, wet, low plasticity

PBW
Pastor, Behling & Wheeler, LLC
2201 Double Creek Dr., Suite 4004
Round Rock, TX 78664
Tel (512) 671-3434 Fax (512) 671-3446

Notes:
1. All logged material is mine spoil.

Depth (bgs)	Well Materials
0' - 20'	Casing, 4" Sch 40 PVC, FJT
20' - 30'	Screen, 4" Sch 40 PVC, .010 Slot

Depth (bgs)	Annular Materials
0' - 16'	Grout
16' - 18'	Bentonite Pellet Seal
18' - 30'	20/40 Sand

Luminant

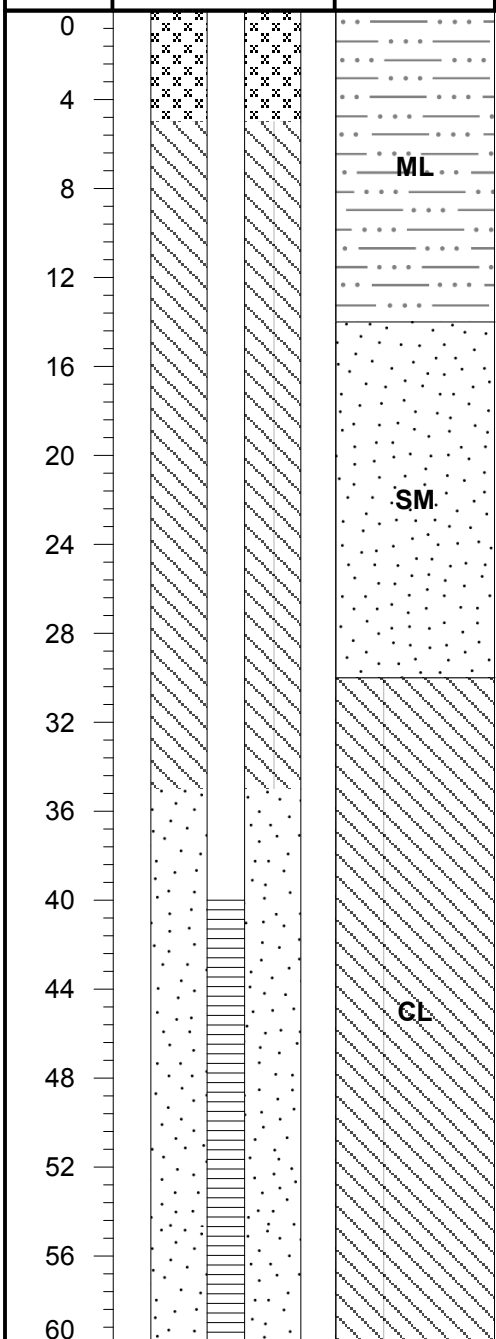
Log of Boring: BMW-28

A-1 Area Landfill
Tatum, TX

PBW Project No. 5164F

Completion Date:	10/27/2016	Drilling Method:	HSA
Drilling Company:	ETTL	Borehole Diameter (in.):	10.25
Driller:	Tommy Cook	Total Depth (ft):	60
Driller's License:	2853	TOC Elevation (ft. AMSL):	373.208
Logged By:	Jeremiah Bihl	Northing:	
Sampling Method:	4"x10' Core barrel	Easting:	

Depth (ft)	Well Materials	USCS	Lithologic Description
0 – 14		ML	(0 - 14) Clayey SILT (spoil), black to brown, some pieces of coal, moist, low plasticity.
14 – 30		SM	(14 - 30) SAND with silt and small amounts of clay (spoil), some coal pieces, black, soft, dry, low plasticity.
30 – 60		CL	(30 - 60) CLAY with some silt (spoil), pieces of coal, soft, black to dark gray, dry, low plasticity, possible sandstone/siltstone boulder at 40'.



PBW

Pastor, Behling & Wheeler, LLC
2201 Double Creek Dr., Suite 4004
Round Rock, TX 78664
Tel (512) 671-3434 - Fax (512) 671-3446

APPENDIX F - Revision 2 February 27, 2024

Notes:
1. This log should not be used separately from the report to which it is attached.
2. All logged material is mine spoil.

Well Materials
(0-40) Casing, 2" Sch 40 FJT PVC
(40-60) Screen, 2" Sch 40 FJT PVC, 0.010" slot

Annular Materials
(0'-5') Grout
(5'-35') Bentonite pellets
(35'-60') 20/40 sand

Luminant

Log of Boring: BMW-29

Big Brown Steam Electric Station
Franklin, Texas

Golder Project No. 19122434E

Completion Date:	5/31/2019	Drilling Method:	Sonic
Drilling Company:	Walker-Hill Environmental	Borehole Diameter (in.):	6
Driller:	Rodney Labrosse	Total Depth (ft):	40
Driller's License:	60059	TOC Elevation (ft. AMSL):	380.83
Logged By:	Kelsey Worley	Northing:	3565716
Sampling Method:	4"x10' Core barrel	Easting:	355228.3

Depth (ft)	Well Materials	Recovery (ft/ft)	USCS	Lithologic Description
0				
5		1.8/10.0	NR	(0 - 8.2) No return
			CH	(8.2 - 10) CLAY, some fine sand present, brown to gray, dry, firm, no plasticity
10			NR	(10 - 12.7) No terturn
15		7.3/10.0	CH	(12.7 - 24) CLAY, dark gray, some organic staining, pieces of lignite present, slighlty moist, firm, moderate plasticity, fine to large lignite 21'-23.6'
20				
25		9.6/10.0	CL	(24 - 29.8) Silty CLAY, gray, moist, soft, moderate plasticity, minor sand conent at 28.2', Saturated at 29.8'
30				
35		9.4/10.0	SC	(29.8 - 40) Clayey SAND, fine to very fine sand, gray to brown, sand content decreases with depth, saturated, moist at 34.7, dry at 38.1
40				

GOLDER
2201 Double Creek Dr., Suite 4004
Round Rock, Texas 78664
O·512.671.3434 F·512.671.3446

Notes:
1. This log should not be used separately from the report to which it is attached.
2. Entire core is composed of mine spoil.

Well Materials
(+3.77 - 30) Casing, 2" Sch 40 FJT PVC
(30 - 40) Screen, 2" Sch 40 FJT PVC, 0.010" slot

Annular Materials
(0'-25') Grout
(25'-28') Bentonite pellets
(28'-40') 20/40 sand

Luminant

Log of Boring: BMW-30

Big Brown Steam Electric Station
Franklin, Texas

Golder Project No. 19122434E

Completion Date:	5/30/2019	Drilling Method:	Sonic
Drilling Company:	Walker-Hill Environmental	Borehole Diameter (in.):	6
Driller:	Rodney Labrosse	Total Depth (ft):	52
Driller's License:	60059	TOC Elevation (ft. AMSL):	363.35
Logged By:	Kelsey Worley	Northing:	3568008
Sampling Method:	4"x10' Core barrel	Easting:	357427.5

Depth (ft)	Well Materials	Recovery (ft/ft)	USCS	Lithologic Description
0				
5		5.7/10.0	CL	(0 - 15.3) Sandy CLAY, dark gray, fine sand throughout, pebble to cobble size lignite throughout, trace Fe staining, roots in top 2', 9'-15.3' dark gray with light gray and some trace mottling
10				
15		6.8/10.0		
20				
25		6.8/10.0	CH	(15.3 - 33.8) CLAY, dark gray transition to mix of tan, orange, gray, mottle hard to very hard, moderate to high plastitcity, transition to greenish/ gray at 20', rooting at 25.2'
30		4.8/5.0		
35			LIG	(33.8 - 39.7) LIGNITE, fine to large cobble size pieces
40		7.0/7.0		
45		10.0/10.0	SC	(39.7 - 52) Clayey SAND, wet at 40' very fine sand in clay, light gray to gray with some black, very tight 42 to 46, wet again below 46'
50				

GOLDER
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Round Rock, Texas 78664
O·512.671.3434 F·512.671.3446

Notes:
1. This log should not be used separately from the report to which it is attached.
2. Entire core is composed of mine spoil.

Well Materials
(+3 - 42) Casing, 2" Sch 40 FJT PVC
(42 - 52) Screen, 2" Sch 40 FJT PVC, 0.010" slot

Annular Materials
(0'-37') Grout
(37'-40') Bentonite pellets
(40'-52') 20/40 sand

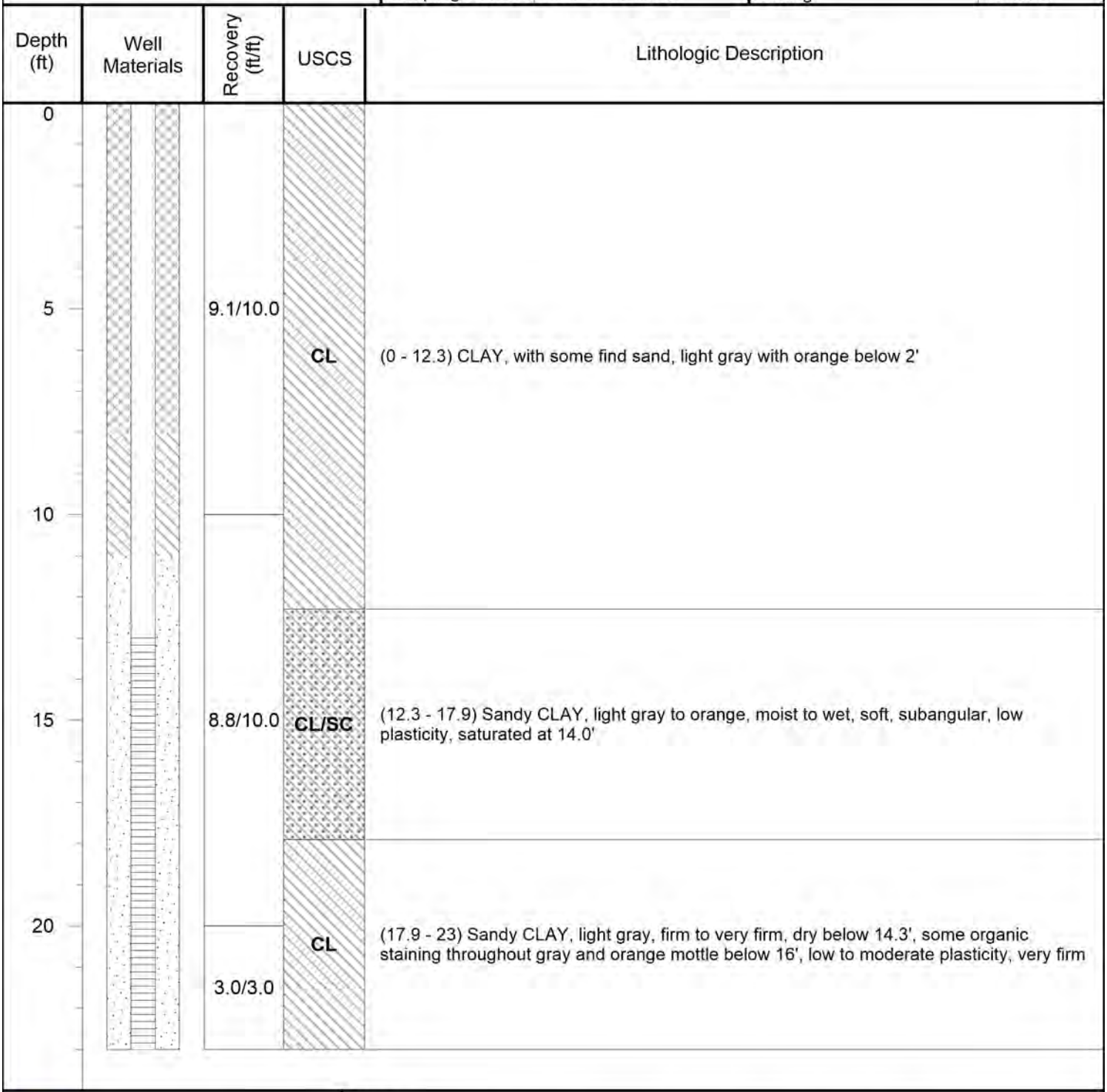
Luminant

Log of Boring: BMW-31

Big Brown Steam Electric Station
Franklin, Texas

Golder Project No. 19122434E

Completion Date:	5/31/2019	Drilling Method:	Sonic
Drilling Company:	Walker-Hill Environmental	Borehole Diameter (in.):	6
Driller:	Rodney Labrosse	Total Depth (ft):	23
Driller's License:	60059	TOC Elevation (ft. AMSL):	324.33
Logged By:	Kelsey Worley	Northing:	3565972
Sampling Method:	4"x10' Core barrel	Easting:	357863.1



GOLDER
2201 Double Creek Dr., Suite 4004
Round Rock, Texas 78664
O·512.671.3434 F·512.671.3446

Notes:
1. This log should not be used separately from the report to which it is attached.
2. Entire core is composed of mine spoil.

Well Materials
(+3.60 - 13) Casing, 2" Sch 40 FJT PVC
(13'- 23') Screen, 2" Sch 40 FJT PVC, 0.010" slot

Annular Materials
(0'-8') Grout
(8'-11') Bentonite pellets
(11'-23') 20/40 sand

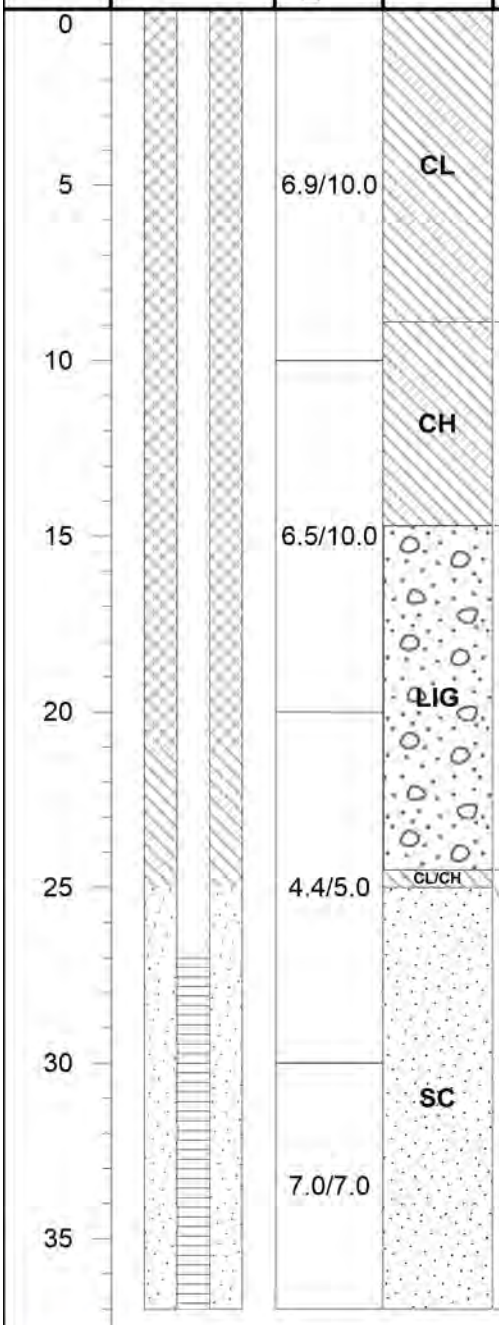
Luminant

Log of Boring: BMW-32

Big Brown Steam Electric Station
Franklin, Texas

Golder Project No. 19122434E

Completion Date:	5/29/2019	Drilling Method:	Sonic
Drilling Company:	Walker-Hill Environmental	Borehole Diameter (in.):	6
Driller:	Rodney Labrosse	Total Depth (ft):	37
Driller's License:	60059	TOC Elevation (ft. AMSL):	344.09
Logged By:	Kelsey Worley	Northing:	3567175
Sampling Method:	4"x10' Core barrel	Easting:	357875



Lithologic Description

(0 - 8.9) CLAY fill material, organics and roots on the top foot, mix of tan gray and orange, some iron content, firm, trace sand, black coal pieces mixed in clay below 8.0'

(8.9 - 14.7) CLAY, mixture of clay with black staining, and lignite pieces, soft to firm, moist to wet, subangular, moderate to high plasticity

(14.7 - 24.5) LIGNITE, fine to large lignite pieces, subangular, wet at 22.5'-23.5' small to fine lignite, hard, black to brown, soft to hard

(24.5 - 25) CLAY, dark brown, black, dry, very hard, some orange streaks throughout with black staining

(25 - 37) Clayey SAND, gray with some oxidation, soft, round, low plasticity, sand is fine to very fine, increasing clay content with depth

GOLDER
2201 Double Creek Dr., Suite 4004
Round Rock, Texas 78664
O·512.671.3434 F·512.671.3446

Notes:
1. This log should not be used separately from the report to which it is attached.
2. Entire core is composed of mine spoil.

Well Materials
(+3 - 27) Casing, 2" Sch 40 FJT PVC
(27 - 37) Screen, 2" Sch 40 FJT PVC, 0.010" slot

Annular Materials
(0'-21') Grout
(21'-25') Bentonite pellets
(25'-37') 20/40 sand

Luminant

Log of Boring: BMW-33

Big Brown Steam Electric Station
Franklin, Texas

Golder Project No. 19122434E

Completion Date:	5/30/2019	Drilling Method:	Sonic
Drilling Company:	Walker-Hill Environmental	Borehole Diameter (in.):	6
Driller:	Rodney Labrosse	Total Depth (ft):	48
Driller's License:	60059	TOC Elevation (ft. AMSL):	427.7
Logged By:	Sergio Ruiz	Northing:	3568008
Sampling Method:	4"x10' Core barrel	Easting:	357427.5

Depth (ft)	Well Materials	Recovery (ft/ft)	USCS	Lithologic Description
0				
5		6.2/10.0	SP	(0 - 16.7) SAND, fine grained, wet, soft, subround, no plasticity, mix of orange, light orange, few gray clay lenses, thick clay lense 7.3' to 7.8', saturated at 11', trace organics in top 1'
10				
15		6.4/10.0		
			CH	(16.7 - 18.4) CLAY, dark gray, moist, very firm, high plasticity
20				
25		7.3/10.0		
30				
35		6.1/10.0	SC	(18.4 - 48.9) Clayey SAND, wet below 20', mix of gray, light gray, and tan, soft to firm, large pieces of lignite 18.5' to 20' and mixed throughout, dark gray fat clay lense 27.7'-28.2', mixed clay nodules below 29', saturated at 38',
40				
45		6.9/9.0		
				(48.9 - 49) CLAY , gray stiff, with some sand throughout, some black lignite pieces
50				

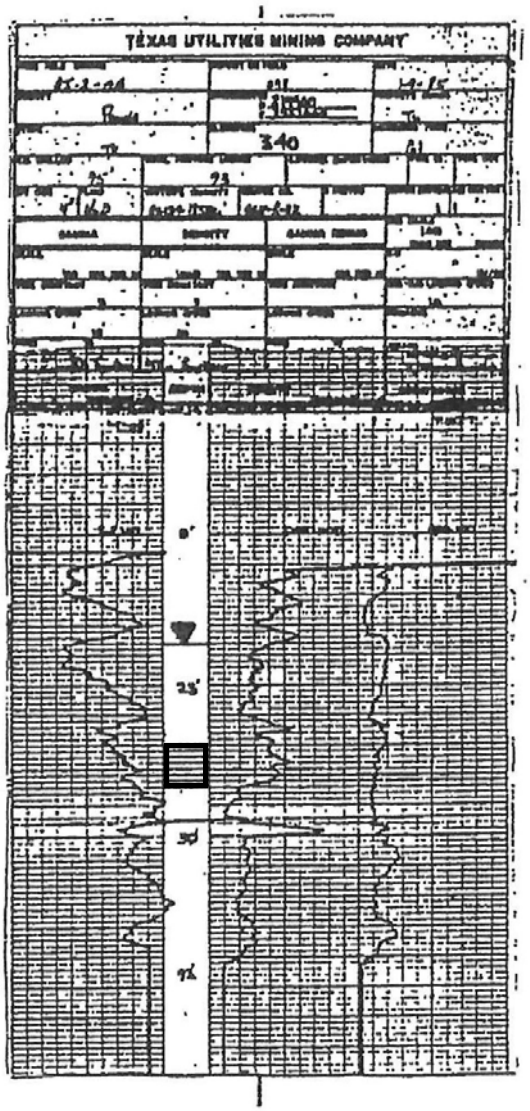
GOLDER
2201 Double Creek Dr., Suite 4004
Round Rock, Texas 78664
O·512.671.3434 F·512.671.3446

Notes:
1. This log should not be used separately from the report to which it is attached.
2. Entire core is composed of mine spoil.

Well Materials
(+3 - 38) Casing, 2" Sch 40 FJT PVC
(38 - 48) Screen, 2" Sch 40 FJT PVC, 0.010" slot

Annular Materials
(0'-32') Grout
(32'-36') Bentonite pellets
(36'-48') 20/40 sand

AI-2-OB



APPENDIX B

LABORATORY ANALYTICAL REPORTS

June 18, 2019

Will Vienne
Golder
2201 Double Creek Dr #4004
Round Rock, Texas 78664
TEL: (512) 671-3434
FAX (512) 671-3446

Order No.: 1905185

RE: Luminant-A1 Landfill

Dear Will Vienne:

DHL Analytical, Inc. received 11 sample(s) on 5/16/2019 for the analyses presented in the following report.

There were no problems with the analyses and all data met requirements of NELAP except where noted in the Case Narrative. All non-NELAP methods will be identified accordingly in the case narrative and all estimated uncertainties of test results are within method or EPA specifications.

If you have any questions regarding these tests results, please feel free to call. Thank you for using DHL Analytical.

Sincerely,

John DuPont
General Manager

This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211-19-24

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DHL ANALYTICAL
2300 Double Creek Dr. ■ Round Rock, TX 78664
Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

№ 82167

CHAIN-OF-CUSTODY

CLIENT: GOLDER
ADDRESS: 2201 DOUBLE CREEK DR, ROUND ROCK, TX 78664
PHONE: 512-671-3434 FAX/E-MAIL: 512-671-3446
DATA REPORTED TO: WILL VIENNE
ADDITIONAL REPORT COPIES TO:

DATE: 5-15-19 PAGE 1 OF 1
PO #:
DHL WORK ORDER #: 1905185
PROJECT LOCATION OR NAME: LUMINANT - A1 LANDFILL
CLENT PROJECT #: 19122262-D COLLECTOR: J. BRAYTON

Authorize 5% surcharge for TRRP Report? ☐ Yes ☐ No

S=SOIL P=PAINT
W=WATER SL=SLUDGE
A=AIR O=OTHER
L=LIQUID SO=SOLID
SE=SEDIMENT

ANALYSES: BTEX ☐ MTBE ☐ [METHOD 8021] TPH 1005 ☐ TPH 1006 ☐ HOLD 1006 ☐ GRO [METHOD 8015] ☐ DRO [METHOD 8105] ☐ VOC 8260 ☐ VOC 624 ☐ VOC 8260/5035 ☐ SVOC 8270 ☐ PAH 8270 ☐ HOLD PAH ☐ SVOC 625 ☐ 8270 PEST ☐ 625 PEST/PCB ☐ 608 PCB ☐ 8270 PCB ☐ 8270 O-P PEST ☐ 8082 PCB ☐ 8270 PCB ☐ 8321 HERB ☐ T PHOS, AMMONIA ☐ METALS 6020 ☐ METALS 200.8 ☐ DISS. METALS ☐ RCRA ☐ TX11 ☐ PH ☐ HEX CHROM ☐ ALKALINITY ☐ COD ☐ CHLORIDE ☐ ANIONS ☐ TCLP-SVOC ☐ VOC ☐ PEST ☐ HERB ☐ TCLP-METALS ☐ RCRA 8 ☐ TX-11 ☐ Pb ☐ RCI ☐ FLASHPOINT ☐ DGAS ☐ TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	HCl	HNO_3	H_2SO_4 ☐ NaOH ☐	ICE	UNPRESERVED	APPENDIX III & IV	Alk, NO_3, PO_4, Na, Mg, K	FERROUS AND FERRIC IRON	FIELD NOTES
BMW-24	01	5-15-19	0735	W		7						X	X	X	
BMW-23	02		0825	W		7						X	X	X	
BMW-22	03		0915	W		7						X	X	X	
BMW-21	04		0955	W		7						X	X	X	
BMW-27	05		1055	W		7						X	X	X	
BMW-26	06		1140	W		7						X	X	X	
BMW-11AR	07		1235	W		7						X	X	X	
BMW-19	08		1325	W		7						X	X	X	
BMW-18	09		1410	W		7						X	X	X	
BMW-28	10		1500	W		7						X	X	X	
BMW-20	11		1600	W		7						X	X	X	

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
[signature]	5-16-19 9:15	[signature]
[signature]	5-16-19 11:21	[signature]

☐ DHL DISPOSAL @ $5.00 each ☐ Return

TURN AROUND TIME
RUSH ☐ CALL FIRST
1 DAY ☐ CALL FIRST
2 DAY ☐
NORMAL ☒
OTHER ☐

LABORATORY USE ONLY:
RECEIVING TEMP: 1.3/0.4/1.0/2.3 THERM #: 73
CUSTODY SEALS: ☐ BROKEN ☐ INTACT ☒ NOT USED
CARRIER: ☐ LONE STAR ☐ FEDEX ☐ UPS ☐ OTHER
☐ COURIER DELIVERY
☒ HAND DELIVERED

DHL COC Rev 1 | FEB 2010

Eric Lau

From: John DuPont
Sent: Tuesday, May 28, 2019 11:35 AM
To: Eric Lau
Subject: FW: CCR Analysis

Appendix III Parameters:
Metals (Ca and B)
Anions (Cl, F, and SO4)
TDS

Appendix IV Parameters:

Metals (As, Ba, Be, Cd, Co, Cr, Hg, Li, Mo, Pb, Sb, Se, and Tl)
Ra-226
Ra-228

From: Vienne, Will [mailto:William_Vienne@golder.com]
Sent: Tuesday, April 09, 2019 12:48 PM
To: John DuPont <dupont@dhlanalytical.com>
Subject: CCR Analysis

DHL Analytical, Inc.

Sample Receipt Checklist

Client Name Golder | Date Received: 5/16/2019

Work Order Number 1905185 | Received by EL

Checklist completed by: _____ (Signature) 5/16/2019 (Date) | Reviewed by DL (Initials) 5/16/2019 (Date)

Carrier name Hand Delivered

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ~~☑~~ EL 5/16/19	No ☑	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	1.3 °C
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH<2 acceptable upon receipt?	Yes ☑	No ☐	NA ☐ LOT # 11837
	Adjusted? No		Checked by EL
Water - ph>9 (S) or ph>10 (CN) acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted? _____		Checked by _____

Any No response must be detailed in the comments section below.

Client contacted _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments: One VOA for sample "B/MW-23" broken in Login.

Corrective Action Proceed w/ 2 remaining unbroken VOAs

DHL Analytical, Inc. **Date:** *18-Jun-19*

CLIENT: Golder
Project: Luminant-A1 Landfill
Lab Order: 1905185

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Method SW6020A - Metals Analysis
Method SW7470A - Mercury Analysis
Method E300 - Anions Analysis
Method M2320 B - Alkalinity Analysis
Method M3500-Fe D - Ferrous Iron Analysis (this parameter is not NELAP certified)
Method M3500-Fe D - Ferric Iron (calculation) (this calculation is not NELAP certified).
Method M4500-P E - Orthophosphate Analysis
Method M2540C - TDS Analysis
Sub-contract - Radium-228 and Radium-226 analyses by methods E904 and SM 7500 Ra B M. Analyzed at Pace Analytical.

LOG IN

The samples were received and log-in performed on 5/16/19. A total of 11 samples were received. For sample BMW-23 one VOA vial was broken in login. Proceeded with analysis [illegible] with the remaining two VOA vials. The samples arrived in good condition and were properly packaged.

METALS ANALYSIS

For Metals analysis performed on 5/22/19 the matrix spike and matrix spike duplicate recoveries were out of control limits for three analytes. These are flagged accordingly in the QC summary report. The sample selected for the matrix spike and matrix spike duplicate was from this work order. The LCS was within control limits for these analytes. No further corrective actions were taken.

For Metals analysis performed on 5/22/19 the RPD for the serial dilution was slightly above control limits for Boron. This is flagged accordingly. The PDS was within control limits for this analyte. No further corrective actions were taken.

DHL Analytical, Inc.

Date: *18-Jun-19*

CLIENT: Golder
Project: Luminant-A1 Landfill
Lab Order: 1905185

Work Order Sample Summary

Lab Smp ID	Client Sample ID	Tag Number	Date Collected	Date Recved
1905185-01	BMW-24		05/15/19 07:35 AM	5/16/2019
1905185-02	BMW-23		05/15/19 08:25 AM	5/16/2019
1905185-03	BMW-22		05/15/19 09:15 AM	5/16/2019
1905185-04	BMW-21		05/15/19 09:55 AM	5/16/2019
1905185-05	BMW-27		05/15/19 10:55 AM	5/16/2019
1905185-06	BMW-26		05/15/19 11:40 AM	5/16/2019
1905185-07	BMW-11AR		05/15/19 12:35 PM	5/16/2019
1905185-08	BMW-19		05/15/19 01:25 PM	5/16/2019
1905185-09	BMW-18		05/15/19 02:10 PM	5/16/2019
1905185-10	BMW-28		05/15/19 03:00 PM	5/16/2019
1905185-11	BMW-20		05/15/19 04:00 PM	5/16/2019

Lab Order: 1905185
Client: Golder
Project: Luminant-A1 Landfill

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1905185-01A	BMW-24	05/15/19 07:35 AM	Aqueous	M3500-Fe	Ferrous Iron Prep Water	05/20/19 02:56 PM	91002
1905185-01B	BMW-24	05/15/19 07:35 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/20/19 09:30 AM	90989
	BMW-24	05/15/19 07:35 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/20/19 09:30 AM	90989
	BMW-24	05/15/19 07:35 AM	Aqueous	SW7470A	Mercury Aq Prep	05/23/19 09:25 AM	91059
1905185-01C	BMW-24	05/15/19 07:35 AM	Aqueous	M2320 B	Alkalinity Preparation	05/17/19 09:00 AM	90967
	BMW-24	05/15/19 07:35 AM	Aqueous	E300	Anion Preparation	05/16/19 01:49 PM	90934
	BMW-24	05/15/19 07:35 AM	Aqueous	E300	Anion Preparation	05/16/19 01:49 PM	90934
	BMW-24	05/15/19 07:35 AM	Aqueous	M4500-P E	Orthophosphate Prep	05/16/19 02:09 PM	90950
	BMW-24	05/15/19 07:35 AM	Aqueous	M2540C	TDS Preparation	05/20/19 12:59 PM	91001
1905185-02A	BMW-23	05/15/19 08:25 AM	Aqueous	M3500-Fe	Ferrous Iron Prep Water	05/20/19 02:56 PM	91002
1905185-02B	BMW-23	05/15/19 08:25 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/20/19 09:30 AM	90989
	BMW-23	05/15/19 08:25 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/20/19 09:30 AM	90989
	BMW-23	05/15/19 08:25 AM	Aqueous	SW7470A	Mercury Aq Prep	05/23/19 09:25 AM	91059
1905185-02C	BMW-23	05/15/19 08:25 AM	Aqueous	M2320 B	Alkalinity Preparation	05/17/19 09:00 AM	90967
	BMW-23	05/15/19 08:25 AM	Aqueous	E300	Anion Preparation	05/16/19 01:49 PM	90934
	BMW-23	05/15/19 08:25 AM	Aqueous	E300	Anion Preparation	05/16/19 01:49 PM	90934
	BMW-23	05/15/19 08:25 AM	Aqueous	M4500-P E	Orthophosphate Prep	05/16/19 02:09 PM	90950
	BMW-23	05/15/19 08:25 AM	Aqueous	M2540C	TDS Preparation	05/20/19 12:59 PM	91001
1905185-03A	BMW-22	05/15/19 09:15 AM	Aqueous	M3500-Fe	Ferrous Iron Prep Water	05/20/19 02:56 PM	91002
1905185-03B	BMW-22	05/15/19 09:15 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/20/19 09:30 AM	90989
	BMW-22	05/15/19 09:15 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/20/19 09:30 AM	90989
	BMW-22	05/15/19 09:15 AM	Aqueous	SW7470A	Mercury Aq Prep	05/23/19 09:25 AM	91059
1905185-03C	BMW-22	05/15/19 09:15 AM	Aqueous	M2320 B	Alkalinity Preparation	05/17/19 09:00 AM	90967
	BMW-22	05/15/19 09:15 AM	Aqueous	E300	Anion Preparation	05/16/19 01:49 PM	90934
	BMW-22	05/15/19 09:15 AM	Aqueous	E300	Anion Preparation	05/16/19 01:49 PM	90934
	BMW-22	05/15/19 09:15 AM	Aqueous	M4500-P E	Orthophosphate Prep	05/16/19 02:09 PM	90950
	BMW-22	05/15/19 09:15 AM	Aqueous	M2540C	TDS Preparation	05/20/19 12:59 PM	91001
1905185-04A	BMW-21	05/15/19 09:55 AM	Aqueous	M3500-Fe	Ferrous Iron Prep Water	05/20/19 02:56 PM	91002

Lab Order: 1905185
Client: Golder
Project: Luminant-A1 Landfill

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1905185-04B	BMW-21	05/15/19 09:55 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/20/19 09:30 AM	90989
	BMW-21	05/15/19 09:55 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/20/19 09:30 AM	90989
	BMW-21	05/15/19 09:55 AM	Aqueous	SW7470A	Mercury Aq Prep	05/23/19 09:25 AM	91059
1905185-04C	BMW-21	05/15/19 09:55 AM	Aqueous	M2320 B	Alkalinity Preparation	05/17/19 09:00 AM	90967
	BMW-21	05/15/19 09:55 AM	Aqueous	E300	Anion Preparation	05/16/19 01:49 PM	90934
	BMW-21	05/15/19 09:55 AM	Aqueous	E300	Anion Preparation	05/16/19 01:49 PM	90934
	BMW-21	05/15/19 09:55 AM	Aqueous	M4500-P E	Orthophosphate Prep	05/16/19 02:09 PM	90950
	BMW-21	05/15/19 09:55 AM	Aqueous	M2540C	TDS Preparation	05/20/19 12:59 PM	91001
1905185-05A	BMW-27	05/15/19 10:55 AM	Aqueous	M3500-Fe	Ferrous Iron Prep Water	05/20/19 02:56 PM	91002
1905185-05B	BMW-27	05/15/19 10:55 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/20/19 09:30 AM	90989
	BMW-27	05/15/19 10:55 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/20/19 09:30 AM	90989
	BMW-27	05/15/19 10:55 AM	Aqueous	SW7470A	Mercury Aq Prep	05/23/19 09:25 AM	91059
1905185-05C	BMW-27	05/15/19 10:55 AM	Aqueous	M2320 B	Alkalinity Preparation	05/17/19 09:00 AM	90967
	BMW-27	05/15/19 10:55 AM	Aqueous	E300	Anion Preparation	05/16/19 01:49 PM	90934
	BMW-27	05/15/19 10:55 AM	Aqueous	E300	Anion Preparation	05/16/19 01:49 PM	90934
	BMW-27	05/15/19 10:55 AM	Aqueous	M4500-P E	Orthophosphate Prep	05/16/19 02:09 PM	90950
	BMW-27	05/15/19 10:55 AM	Aqueous	M2540C	TDS Preparation	05/20/19 12:59 PM	91001
1905185-06A	BMW-26	05/15/19 11:40 AM	Aqueous	M3500-Fe	Ferrous Iron Prep Water	05/20/19 02:56 PM	91002
1905185-06B	BMW-26	05/15/19 11:40 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/20/19 09:30 AM	90989
	BMW-26	05/15/19 11:40 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/20/19 09:30 AM	90989
	BMW-26	05/15/19 11:40 AM	Aqueous	SW7470A	Mercury Aq Prep	05/23/19 09:25 AM	91059
1905185-06C	BMW-26	05/15/19 11:40 AM	Aqueous	M2320 B	Alkalinity Preparation	05/17/19 09:00 AM	90967
	BMW-26	05/15/19 11:40 AM	Aqueous	E300	Anion Preparation	05/16/19 01:49 PM	90934
	BMW-26	05/15/19 11:40 AM	Aqueous	E300	Anion Preparation	05/16/19 01:49 PM	90934
	BMW-26	05/15/19 11:40 AM	Aqueous	M4500-P E	Orthophosphate Prep	05/16/19 02:09 PM	90950
	BMW-26	05/15/19 11:40 AM	Aqueous	M2540C	TDS Preparation	05/20/19 12:59 PM	91001
1905185-07A	BMW-11AR	05/15/19 12:35 PM	Aqueous	M3500-Fe	Ferrous Iron Prep Water	05/20/19 02:56 PM	91002
1905185-07B	BMW-11AR	05/15/19 12:35 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/20/19 09:30 AM	90989

Lab Order: 1905185
Client: Golder
Project: Luminant-A1 Landfill

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1905185-07B	BMW-11AR	05/15/19 12:35 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/20/19 09:30 AM	90989
	BMW-11AR	05/15/19 12:35 PM	Aqueous	SW7470A	Mercury Aq Prep	05/23/19 09:25 AM	91059
1905185-07C	BMW-11AR	05/15/19 12:35 PM	Aqueous	M2320 B	Alkalinity Preparation	05/17/19 09:00 AM	90967
	BMW-11AR	05/15/19 12:35 PM	Aqueous	E300	Anion Preparation	05/16/19 01:49 PM	90934
	BMW-11AR	05/15/19 12:35 PM	Aqueous	E300	Anion Preparation	05/16/19 01:49 PM	90934
	BMW-11AR	05/15/19 12:35 PM	Aqueous	M4500-P E	Orthophosphate Prep	05/16/19 02:09 PM	90950
	BMW-11AR	05/15/19 12:35 PM	Aqueous	M2540C	TDS Preparation	05/20/19 12:59 PM	91001
1905185-08A	BMW-19	05/15/19 01:25 PM	Aqueous	M3500-Fe	Ferrous Iron Prep Water	05/20/19 02:56 PM	91002
1905185-08B	BMW-19	05/15/19 01:25 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/20/19 09:30 AM	90989
	BMW-19	05/15/19 01:25 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/20/19 09:30 AM	90989
	BMW-19	05/15/19 01:25 PM	Aqueous	SW7470A	Mercury Aq Prep	05/23/19 09:25 AM	91059
1905185-08C	BMW-19	05/15/19 01:25 PM	Aqueous	M2320 B	Alkalinity Preparation	05/17/19 09:00 AM	90967
	BMW-19	05/15/19 01:25 PM	Aqueous	E300	Anion Preparation	05/16/19 01:49 PM	90934
	BMW-19	05/15/19 01:25 PM	Aqueous	E300	Anion Preparation	05/16/19 01:49 PM	90934
	BMW-19	05/15/19 01:25 PM	Aqueous	E300	Anion Preparation	05/17/19 09:26 AM	90964
	BMW-19	05/15/19 01:25 PM	Aqueous	M4500-P E	Orthophosphate Prep	05/16/19 02:09 PM	90950
	BMW-19	05/15/19 01:25 PM	Aqueous	M2540C	TDS Preparation	05/20/19 12:59 PM	91001
1905185-09A	BMW-18	05/15/19 02:10 PM	Aqueous	M3500-Fe	Ferrous Iron Prep Water	05/20/19 02:56 PM	91002
1905185-09B	BMW-18	05/15/19 02:10 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/20/19 09:30 AM	90989
	BMW-18	05/15/19 02:10 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/20/19 09:30 AM	90989
	BMW-18	05/15/19 02:10 PM	Aqueous	SW7470A	Mercury Aq Prep	05/23/19 09:25 AM	91059
1905185-09C	BMW-18	05/15/19 02:10 PM	Aqueous	M2320 B	Alkalinity Preparation	05/17/19 09:00 AM	90967
	BMW-18	05/15/19 02:10 PM	Aqueous	E300	Anion Preparation	05/16/19 01:49 PM	90934
	BMW-18	05/15/19 02:10 PM	Aqueous	E300	Anion Preparation	05/16/19 01:49 PM	90934
	BMW-18	05/15/19 02:10 PM	Aqueous	M4500-P E	Orthophosphate Prep	05/16/19 02:09 PM	90950
	BMW-18	05/15/19 02:10 PM	Aqueous	M2540C	TDS Preparation	05/20/19 12:59 PM	91001
1905185-10A	BMW-28	05/15/19 03:00 PM	Aqueous	M3500-Fe	Ferrous Iron Prep Water	05/20/19 02:56 PM	91002
1905185-10B	BMW-28	05/15/19 03:00 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/20/19 09:30 AM	90989

Lab Order: 1905185
Client: Golder
Project: Luminant-A1 Landfill

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1905185-10B	BMW-28	05/15/19 03:00 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/20/19 09:30 AM	90989
	BMW-28	05/15/19 03:00 PM	Aqueous	SW7470A	Mercury Aq Prep	05/23/19 09:25 AM	91059
1905185-10C	BMW-28	05/15/19 03:00 PM	Aqueous	M2320 B	Alkalinity Preparation	05/17/19 09:00 AM	90967
	BMW-28	05/15/19 03:00 PM	Aqueous	E300	Anion Preparation	05/16/19 01:49 PM	90934
	BMW-28	05/15/19 03:00 PM	Aqueous	E300	Anion Preparation	05/16/19 01:49 PM	90934
	BMW-28	05/15/19 03:00 PM	Aqueous	E300	Anion Preparation	05/17/19 09:26 AM	90964
	BMW-28	05/15/19 03:00 PM	Aqueous	M4500-P E	Orthophosphate Prep	05/16/19 02:09 PM	90950
	BMW-28	05/15/19 03:00 PM	Aqueous	M2540C	TDS Preparation	05/20/19 12:59 PM	91001
1905185-11A	BMW-20	05/15/19 04:00 PM	Aqueous	M3500-Fe	Ferrous Iron Prep Water	05/20/19 02:56 PM	91002
1905185-11B	BMW-20	05/15/19 04:00 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/20/19 09:30 AM	90989
	BMW-20	05/15/19 04:00 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/20/19 09:30 AM	90989
	BMW-20	05/15/19 04:00 PM	Aqueous	SW7470A	Mercury Aq Prep	05/23/19 09:25 AM	91059
1905185-11C	BMW-20	05/15/19 04:00 PM	Aqueous	M2320 B	Alkalinity Preparation	05/17/19 09:00 AM	90967
	BMW-20	05/15/19 04:00 PM	Aqueous	E300	Anion Preparation	05/16/19 01:49 PM	90934
	BMW-20	05/15/19 04:00 PM	Aqueous	E300	Anion Preparation	05/16/19 01:49 PM	90934
	BMW-20	05/15/19 04:00 PM	Aqueous	M4500-P E	Orthophosphate Prep	05/16/19 02:09 PM	90950
	BMW-20	05/15/19 04:00 PM	Aqueous	M2540C	TDS Preparation	05/20/19 12:59 PM	91001

Lab Order: 1905185
Client: Golder
Project: Luminant-A1 Landfill

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1905185-01A	BMW-24	Aqueous	M3500-Fe D	Ferric Iron (Calculated)	91002	1	05/24/19	UV/VIS_2_190524A
	BMW-24	Aqueous	M3500-Fe D	Ferrous Iron	91002	1	05/20/19 03:58 PM	UV/VIS_2_190520A
1905185-01B	BMW-24	Aqueous	SW7470A	Mercury Total: Aqueous	91059	1	05/24/19 09:39 AM	CETAC2_HG_190524A
	BMW-24	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	90989	1	05/22/19 02:56 PM	ICP-MS4_190522D
	BMW-24	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	90989	10	05/23/19 11:22 AM	ICP-MS4_190523A
1905185-01C	BMW-24	Aqueous	M2320 B	Alkalinity	90967	1	05/17/19 01:18 PM	TITRATOR_190517A
	BMW-24	Aqueous	E300	Anions by IC method - Water	90934	1	05/16/19 06:01 PM	IC2_190516B
	BMW-24	Aqueous	E300	Anions by IC method - Water	90934	10	05/17/19 01:13 AM	IC2_190516B
	BMW-24	Aqueous	M4500-P E	Orthophosphate	90950	1	05/16/19 02:47 PM	UV/VIS_2_190516B
	BMW-24	Aqueous	M2540C	Total Dissolved Solids	91001	1	05/20/19 04:45 PM	WC_190520A
1905185-02A	BMW-23	Aqueous	M3500-Fe D	Ferric Iron (Calculated)	91002	1	05/24/19	UV/VIS_2_190524A
	BMW-23	Aqueous	M3500-Fe D	Ferrous Iron	91002	1	05/20/19 04:00 PM	UV/VIS_2_190520A
1905185-02B	BMW-23	Aqueous	SW7470A	Mercury Total: Aqueous	91059	1	05/24/19 09:42 AM	CETAC2_HG_190524A
	BMW-23	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	90989	1	05/22/19 02:58 PM	ICP-MS4_190522D
	BMW-23	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	90989	20	05/23/19 11:24 AM	ICP-MS4_190523A
1905185-02C	BMW-23	Aqueous	M2320 B	Alkalinity	90967	1	05/17/19 01:36 PM	TITRATOR_190517A
	BMW-23	Aqueous	E300	Anions by IC method - Water	90934	1	05/16/19 06:17 PM	IC2_190516B
	BMW-23	Aqueous	E300	Anions by IC method - Water	90934	10	05/17/19 01:29 AM	IC2_190516B
	BMW-23	Aqueous	M4500-P E	Orthophosphate	90950	1	05/16/19 02:47 PM	UV/VIS_2_190516B
	BMW-23	Aqueous	M2540C	Total Dissolved Solids	91001	1	05/20/19 04:45 PM	WC_190520A
1905185-03A	BMW-22	Aqueous	M3500-Fe D	Ferric Iron (Calculated)	91002	1	05/24/19	UV/VIS_2_190524A
	BMW-22	Aqueous	M3500-Fe D	Ferrous Iron	91002	1	05/20/19 04:00 PM	UV/VIS_2_190520A
1905185-03B	BMW-22	Aqueous	SW7470A	Mercury Total: Aqueous	91059	1	05/24/19 09:44 AM	CETAC2_HG_190524A
	BMW-22	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	90989	1	05/22/19 03:00 PM	ICP-MS4_190522D
	BMW-22	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	90989	20	05/23/19 11:26 AM	ICP-MS4_190523A
1905185-03C	BMW-22	Aqueous	M2320 B	Alkalinity	90967	1	05/17/19 02:01 PM	TITRATOR_190517A

Lab Order: 1905185
Client: Golder
Project: Luminant-A1 Landfill

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1905185-03C	BMW-22	Aqueous	E300	Anions by IC method - Water	90934	10	05/17/19 01:45 AM	IC2_190516B
	BMW-22	Aqueous	E300	Anions by IC method - Water	90934	1	05/16/19 06:33 PM	IC2_190516B
	BMW-22	Aqueous	M4500-P E	Orthophosphate	90950	1	05/16/19 02:48 PM	UV/VIS_2_190516B
	BMW-22	Aqueous	M2540C	Total Dissolved Solids	91001	1	05/20/19 04:45 PM	WC_190520A
1905185-04A	BMW-21	Aqueous	M3500-Fe D	Ferric Iron (Calculated)	91002	1	05/24/19	UV/VIS_2_190524A
	BMW-21	Aqueous	M3500-Fe D	Ferrous Iron	91002	1	05/20/19 04:00 PM	UV/VIS_2_190520A
1905185-04B	BMW-21	Aqueous	SW7470A	Mercury Total: Aqueous	91059	1	05/24/19 09:46 AM	CETAC2_HG_190524A
	BMW-21	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	90989	1	05/22/19 03:02 PM	ICP-MS4_190522D
	BMW-21	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	90989	20	05/23/19 11:28 AM	ICP-MS4_190523A
1905185-04C	BMW-21	Aqueous	M2320 B	Alkalinity	90967	1	05/17/19 02:47 PM	TITRATOR_190517A
	BMW-21	Aqueous	E300	Anions by IC method - Water	90934	1	05/16/19 06:49 PM	IC2_190516B
	BMW-21	Aqueous	E300	Anions by IC method - Water	90934	10	05/17/19 02:01 AM	IC2_190516B
	BMW-21	Aqueous	M4500-P E	Orthophosphate	90950	1	05/16/19 02:48 PM	UV/VIS_2_190516B
	BMW-21	Aqueous	M2540C	Total Dissolved Solids	91001	1	05/20/19 04:45 PM	WC_190520A
1905185-05A	BMW-27	Aqueous	M3500-Fe D	Ferric Iron (Calculated)	91002	1	05/24/19	UV/VIS_2_190524A
	BMW-27	Aqueous	M3500-Fe D	Ferrous Iron	91002	1	05/20/19 04:01 PM	UV/VIS_2_190520A
1905185-05B	BMW-27	Aqueous	SW7470A	Mercury Total: Aqueous	91059	1	05/24/19 09:48 AM	CETAC2_HG_190524A
	BMW-27	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	90989	20	05/23/19 11:30 AM	ICP-MS4_190523A
	BMW-27	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	90989	1	05/22/19 03:04 PM	ICP-MS4_190522D
1905185-05C	BMW-27	Aqueous	M2320 B	Alkalinity	90967	1	05/17/19 03:13 PM	TITRATOR_190517A
	BMW-27	Aqueous	E300	Anions by IC method - Water	90934	1	05/16/19 07:05 PM	IC2_190516B
	BMW-27	Aqueous	E300	Anions by IC method - Water	90934	10	05/17/19 02:17 AM	IC2_190516B
	BMW-27	Aqueous	M4500-P E	Orthophosphate	90950	1	05/16/19 02:48 PM	UV/VIS_2_190516B
	BMW-27	Aqueous	M2540C	Total Dissolved Solids	91001	1	05/20/19 04:45 PM	WC_190520A
1905185-06A	BMW-26	Aqueous	M3500-Fe D	Ferric Iron (Calculated)	91002	1	05/24/19	UV/VIS_2_190524A
	BMW-26	Aqueous	M3500-Fe D	Ferrous Iron	91002	1	05/20/19 04:01 PM	UV/VIS_2_190520A

Lab Order: 1905185
Client: Golder
Project: Luminant-A1 Landfill

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1905185-06B	BMW-26	Aqueous	SW7470A	Mercury Total: Aqueous	91059	1	05/24/19 09:51 AM	CETAC2_HG_190524A
	BMW-26	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	90989	1	05/22/19 02:52 PM	ICP-MS4_190522D
	BMW-26	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	90989	20	05/23/19 11:18 AM	ICP-MS4_190523A
1905185-06C	BMW-26	Aqueous	M2320 B	Alkalinity	90967	1	05/17/19 03:40 PM	TITRATOR_190517A
	BMW-26	Aqueous	E300	Anions by IC method - Water	90934	10	05/17/19 02:33 AM	IC2_190516B
	BMW-26	Aqueous	E300	Anions by IC method - Water	90934	1	05/16/19 07:21 PM	IC2_190516B
	BMW-26	Aqueous	M4500-P E	Orthophosphate	90950	1	05/16/19 02:49 PM	UV/VIS_2_190516B
	BMW-26	Aqueous	M2540C	Total Dissolved Solids	91001	1	05/20/19 04:45 PM	WC_190520A
1905185-07A	BMW-11AR	Aqueous	M3500-Fe D	Ferric Iron (Calculated)	91002	1	05/24/19	UV/VIS_2_190524A
	BMW-11AR	Aqueous	M3500-Fe D	Ferrous Iron	91002	1	05/20/19 04:01 PM	UV/VIS_2_190520A
1905185-07B	BMW-11AR	Aqueous	SW7470A	Mercury Total: Aqueous	91059	1	05/24/19 09:53 AM	CETAC2_HG_190524A
	BMW-11AR	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	90989	1	05/22/19 03:06 PM	ICP-MS4_190522D
	BMW-11AR	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	90989	10	05/23/19 11:32 AM	ICP-MS4_190523A
1905185-07C	BMW-11AR	Aqueous	M2320 B	Alkalinity	90967	1	05/17/19 03:59 PM	TITRATOR_190517A
	BMW-11AR	Aqueous	E300	Anions by IC method - Water	90934	1	05/16/19 07:37 PM	IC2_190516B
	BMW-11AR	Aqueous	E300	Anions by IC method - Water	90934	10	05/17/19 02:49 AM	IC2_190516B
	BMW-11AR	Aqueous	M4500-P E	Orthophosphate	90950	1	05/16/19 02:49 PM	UV/VIS_2_190516B
	BMW-11AR	Aqueous	M2540C	Total Dissolved Solids	91001	1	05/20/19 04:45 PM	WC_190520A
1905185-08A	BMW-19	Aqueous	M3500-Fe D	Ferric Iron (Calculated)	91002	1	05/24/19	UV/VIS_2_190524A
	BMW-19	Aqueous	M3500-Fe D	Ferrous Iron	91002	1	05/20/19 04:02 PM	UV/VIS_2_190520A
1905185-08B	BMW-19	Aqueous	SW7470A	Mercury Total: Aqueous	91059	1	05/24/19 09:55 AM	CETAC2_HG_190524A
	BMW-19	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	90989	1	05/22/19 03:07 PM	ICP-MS4_190522D
	BMW-19	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	90989	20	05/23/19 11:34 AM	ICP-MS4_190523A
1905185-08C	BMW-19	Aqueous	M2320 B	Alkalinity	90967	1	05/17/19 04:15 PM	TITRATOR_190517A
	BMW-19	Aqueous	E300	Anions by IC method - Water	90934	1	05/16/19 07:53 PM	IC2_190516B
	BMW-19	Aqueous	E300	Anions by IC method - Water	90934	10	05/17/19 03:05 AM	IC2_190516B

Lab Order: 1905185
Client: Golder
Project: Luminant-A1 Landfill

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1905185-08C	BMW-19	Aqueous	E300	Anions by IC method - Water	90964	100	05/17/19 04:09 PM	IC2_190517B
	BMW-19	Aqueous	M4500-P E	Orthophosphate	90950	1	05/16/19 02:49 PM	UV/VIS_2_190516B
	BMW-19	Aqueous	M2540C	Total Dissolved Solids	91001	1	05/20/19 04:45 PM	WC_190520A
1905185-09A	BMW-18	Aqueous	M3500-Fe D	Ferric Iron (Calculated)	91002	1	05/24/19	UV/VIS_2_190524A
	BMW-18	Aqueous	M3500-Fe D	Ferrous Iron	91002	1	05/20/19 04:02 PM	UV/VIS_2_190520A
1905185-09B	BMW-18	Aqueous	SW7470A	Mercury Total: Aqueous	91059	1	05/24/19 09:58 AM	CETAC2_HG_190524A
	BMW-18	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	90989	20	05/23/19 11:36 AM	ICP-MS4_190523A
	BMW-18	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	90989	1	05/22/19 03:09 PM	ICP-MS4_190522D
1905185-09C	BMW-18	Aqueous	M2320 B	Alkalinity	90967	1	05/17/19 04:24 PM	TITRATOR_190517A
	BMW-18	Aqueous	E300	Anions by IC method - Water	90934	1	05/16/19 08:09 PM	IC2_190516B
	BMW-18	Aqueous	E300	Anions by IC method - Water	90934	10	05/17/19 03:21 AM	IC2_190516B
	BMW-18	Aqueous	M4500-P E	Orthophosphate	90950	1	05/16/19 02:50 PM	UV/VIS_2_190516B
	BMW-18	Aqueous	M2540C	Total Dissolved Solids	91001	1	05/20/19 04:45 PM	WC_190520A
1905185-10A	BMW-28	Aqueous	M3500-Fe D	Ferric Iron (Calculated)	91002	1	05/24/19	UV/VIS_2_190524A
	BMW-28	Aqueous	M3500-Fe D	Ferrous Iron	91002	1	05/20/19 04:02 PM	UV/VIS_2_190520A
1905185-10B	BMW-28	Aqueous	SW7470A	Mercury Total: Aqueous	91059	1	05/24/19 10:04 AM	CETAC2_HG_190524A
	BMW-28	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	90989	1	05/22/19 03:11 PM	ICP-MS4_190522D
	BMW-28	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	90989	50	05/23/19 11:38 AM	ICP-MS4_190523A
1905185-10C	BMW-28	Aqueous	M2320 B	Alkalinity	90967	1	05/17/19 04:49 PM	TITRATOR_190517A
	BMW-28	Aqueous	E300	Anions by IC method - Water	90934	1	05/16/19 08:25 PM	IC2_190516B
	BMW-28	Aqueous	E300	Anions by IC method - Water	90934	10	05/17/19 03:37 AM	IC2_190516B
	BMW-28	Aqueous	E300	Anions by IC method - Water	90964	100	05/17/19 04:25 PM	IC2_190517B
	BMW-28	Aqueous	M4500-P E	Orthophosphate	90950	1	05/16/19 02:50 PM	UV/VIS_2_190516B
	BMW-28	Aqueous	M2540C	Total Dissolved Solids	91001	1	05/20/19 04:45 PM	WC_190520A
1905185-11A	BMW-20	Aqueous	M3500-Fe D	Ferric Iron (Calculated)	91002	1	05/24/19	UV/VIS_2_190524A
	BMW-20	Aqueous	M3500-Fe D	Ferrous Iron	91002	1	05/20/19 04:02 PM	UV/VIS_2_190520A

Lab Order: 1905185
Client: Golder
Project: Luminant-A1 Landfill

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1905185-11B	BMW-20	Aqueous	SW7470A	Mercury Total: Aqueous	91059	1	05/24/19 10:07 AM	CETAC2_HG_190524A
	BMW-20	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	90989	1	05/22/19 03:50 PM	ICP-MS4_190522D
	BMW-20	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	90989	20	05/23/19 11:53 AM	ICP-MS4_190523A
1905185-11C	BMW-20	Aqueous	M2320 B	Alkalinity	90967	1	05/17/19 05:15 PM	TITRATOR_190517A
	BMW-20	Aqueous	E300	Anions by IC method - Water	90934	1	05/16/19 10:01 PM	IC2_190516B
	BMW-20	Aqueous	E300	Anions by IC method - Water	90934	10	05/17/19 04:57 AM	IC2_190516B
	BMW-20	Aqueous	M4500-P E	Orthophosphate	90950	1	05/16/19 02:52 PM	UV/VIS_2_190516B
	BMW-20	Aqueous	M2540C	Total Dissolved Solids	91001	1	05/20/19 04:45 PM	WC_190520A

DHL Analytical, Inc.

Date: *18-Jun-19*

CLIENT:	Golder	**Client Sample ID:**	BMW-24
Project:	Luminant-A1 Landfill	**Lab ID:**	1905185-01
Project No:	19122262-D	**Collection Date:**	05/15/19 07:35 AM
Lab Order:	1905185	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	05/22/19 02:56 PM
Arsenic	0.00272	0.00200	0.00500	J	mg/L	1	05/22/19 02:56 PM
Barium	0.221	0.00300	0.0100		mg/L	1	05/22/19 02:56 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	05/22/19 02:56 PM
Boron	0.601	0.0100	0.0300		mg/L	1	05/22/19 02:56 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	05/22/19 02:56 PM
Calcium	57.9	1.00	3.00		mg/L	10	05/23/19 11:22 AM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	05/22/19 02:56 PM
Cobalt	0.00643	0.00300	0.00500		mg/L	1	05/22/19 02:56 PM
Iron	35.1	0.300	1.00		mg/L	10	05/23/19 11:22 AM
Lead	<0.000300	0.000300	0.00100		mg/L	1	05/22/19 02:56 PM
Lithium	0.0512	0.00500	0.0100		mg/L	1	05/22/19 02:56 PM
Magnesium	57.5	1.00	3.00		mg/L	10	05/23/19 11:22 AM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	05/22/19 02:56 PM
Potassium	3.22	0.100	0.300		mg/L	1	05/22/19 02:56 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	05/22/19 02:56 PM
Sodium	119	1.00	3.00		mg/L	10	05/23/19 11:22 AM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	05/22/19 02:56 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	05/24/19 09:39 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **JL**
Chloride	169	3.00	10.0		mg/L	10	05/17/19 01:13 AM
Fluoride	0.219	0.100	0.400	J	mg/L	1	05/16/19 06:01 PM
Nitrate-N	<0.100	0.100	0.500		mg/L	1	05/16/19 06:01 PM
Sulfate	280	10.0	30.0		mg/L	10	05/17/19 01:13 AM
ALKALINITY		**M2320 B**					Analyst: **CC**
Alkalinity, Bicarbonate (As CaCO3)	176	10.0	20.0		mg/L @ pH 4.53	1	05/17/19 01:18 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	05/17/19 01:18 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	05/17/19 01:18 PM
Alkalinity, Total (As CaCO3)	176	20.0	20.0		mg/L @ pH 4.53	1	05/17/19 01:18 PM
FERRIC IRON (CALCULATED)		**M3500-FE D**					Analyst: **CAC**
Iron, Ferric	35.1	0.0500	0.100	N	mg/L	1	05/24/19
FERROUS IRON		**M3500-FE D**					Analyst: **BTJ**
Iron, Ferrous	<0.0500	0.0500	0.100	N	mg/L	1	05/20/19 03:58 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *18-Jun-19*

CLIENT:	Golder	**Client Sample ID:**	BMW-24
Project:	Luminant-A1 Landfill	**Lab ID:**	1905185-01
Project No:	19122262-D	**Collection Date:**	05/15/19 07:35 AM
Lab Order:	1905185	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
ORTHOPHOSPHATE		**M4500-P E**					Analyst: **CC**
Phosphorus, Total Orthophosphate (As P)	0.0510	0.0300	0.100	J	mg/L	1	05/16/19 02:47 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	881	10.0	10.0		mg/L	1	05/20/19 04:45 PM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
	DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit
	ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
	S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *18-Jun-19*

CLIENT:	Golder	**Client Sample ID:**	BMW-23
Project:	Luminant-A1 Landfill	**Lab ID:**	1905185-02
Project No:	19122262-D	**Collection Date:**	05/15/19 08:25 AM
Lab Order:	1905185	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	05/22/19 02:58 PM
Arsenic	0.00240	0.00200	0.00500	J	mg/L	1	05/22/19 02:58 PM
Barium	0.0381	0.00300	0.0100		mg/L	1	05/22/19 02:58 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	05/22/19 02:58 PM
Boron	1.31	0.0100	0.0300		mg/L	1	05/22/19 02:58 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	05/22/19 02:58 PM
Calcium	89.9	2.00	6.00		mg/L	20	05/23/19 11:24 AM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	05/22/19 02:58 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	05/22/19 02:58 PM
Iron	9.64	0.0300	0.100		mg/L	1	05/22/19 02:58 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	05/22/19 02:58 PM
Lithium	0.0951	0.00500	0.0100		mg/L	1	05/22/19 02:58 PM
Magnesium	92.2	2.00	6.00		mg/L	20	05/23/19 11:24 AM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	05/22/19 02:58 PM
Potassium	4.28	0.100	0.300		mg/L	1	05/22/19 02:58 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	05/22/19 02:58 PM
Sodium	311	2.00	6.00		mg/L	20	05/23/19 11:24 AM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	05/22/19 02:58 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	05/24/19 09:42 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **JL**
Chloride	240	3.00	10.0		mg/L	10	05/17/19 01:29 AM
Fluoride	<0.100	0.100	0.400		mg/L	1	05/16/19 06:17 PM
Nitrate-N	<0.100	0.100	0.500		mg/L	1	05/16/19 06:17 PM
Sulfate	613	10.0	30.0		mg/L	10	05/17/19 01:29 AM
ALKALINITY		**M2320 B**					Analyst: **CC**
Alkalinity, Bicarbonate (As CaCO3)	414	10.0	20.0		mg/L @ pH 4.54	1	05/17/19 01:36 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	05/17/19 01:36 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	05/17/19 01:36 PM
Alkalinity, Total (As CaCO3)	414	20.0	20.0		mg/L @ pH 4.54	1	05/17/19 01:36 PM
FERRIC IRON (CALCULATED)		**M3500-FE D**					Analyst: **CAC**
Iron, Ferric	9.55	0.0500	0.100	N	mg/L	1	05/24/19
FERROUS IRON		**M3500-FE D**					Analyst: **BTJ**
Iron, Ferrous	0.0937	0.0500	0.100	JN	mg/L	1	05/20/19 04:00 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *18-Jun-19*

CLIENT:	Golder	**Client Sample ID:**	BMW-23
Project:	Luminant-A1 Landfill	**Lab ID:**	1905185-02
Project No:	19122262-D	**Collection Date:**	05/15/19 08:25 AM
Lab Order:	1905185	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
ORTHOPHOSPHATE		**M4500-P E**					Analyst: **CC**
Phosphorus, Total Orthophosphate (As P)	0.202	0.0300	0.100		mg/L	1	05/16/19 02:47 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	1640	50.0	50.0		mg/L	1	05/20/19 04:45 PM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
	DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit
	ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
	S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *18-Jun-19*

CLIENT:	Golder	**Client Sample ID:**	BMW-22
Project:	Luminant-A1 Landfill	**Lab ID:**	1905185-03
Project No:	19122262-D	**Collection Date:**	05/15/19 09:15 AM
Lab Order:	1905185	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	05/22/19 03:00 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	05/22/19 03:00 PM
Barium	0.0618	0.00300	0.0100		mg/L	1	05/22/19 03:00 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	05/22/19 03:00 PM
Boron	3.39	0.200	0.600		mg/L	20	05/23/19 11:26 AM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	05/22/19 03:00 PM
Calcium	198	2.00	6.00		mg/L	20	05/23/19 11:26 AM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	05/22/19 03:00 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	05/22/19 03:00 PM
Iron	9.99	0.0300	0.100		mg/L	1	05/22/19 03:00 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	05/22/19 03:00 PM
Lithium	0.0779	0.00500	0.0100		mg/L	1	05/22/19 03:00 PM
Magnesium	155	2.00	6.00		mg/L	20	05/23/19 11:26 AM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	05/22/19 03:00 PM
Potassium	6.15	0.100	0.300		mg/L	1	05/22/19 03:00 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	05/22/19 03:00 PM
Sodium	265	2.00	6.00		mg/L	20	05/23/19 11:26 AM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	05/22/19 03:00 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	05/24/19 09:44 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **JL**
Chloride	311	3.00	10.0		mg/L	10	05/17/19 01:45 AM
Fluoride	0.351	0.100	0.400	J	mg/L	1	05/16/19 06:33 PM
Nitrate-N	<0.100	0.100	0.500		mg/L	1	05/16/19 06:33 PM
Sulfate	967	10.0	30.0		mg/L	10	05/17/19 01:45 AM
ALKALINITY		**M2320 B**					Analyst: **CC**
Alkalinity, Bicarbonate (As CaCO3)	474	10.0	20.0		mg/L @ pH 4.54	1	05/17/19 02:01 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	05/17/19 02:01 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	05/17/19 02:01 PM
Alkalinity, Total (As CaCO3)	474	20.0	20.0		mg/L @ pH 4.54	1	05/17/19 02:01 PM
FERRIC IRON (CALCULATED)		**M3500-FE D**					Analyst: **CAC**
Iron, Ferric	9.99	0.0500	0.100	N	mg/L	1	05/24/19
FERROUS IRON		**M3500-FE D**					Analyst: **BTJ**
Iron, Ferrous	<0.0500	0.0500	0.100	N	mg/L	1	05/20/19 04:00 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *18-Jun-19*

CLIENT:	Golder	**Client Sample ID:**	BMW-22
Project:	Luminant-A1 Landfill	**Lab ID:**	1905185-03
Project No:	19122262-D	**Collection Date:**	05/15/19 09:15 AM
Lab Order:	1905185	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
ORTHOPHOSPHATE		**M4500-P E**					Analyst: **CC**
Phosphorus, Total Orthophosphate (As P)	0.0540	0.0300	0.100	J	mg/L	1	05/16/19 02:48 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	2260	50.0	50.0		mg/L	1	05/20/19 04:45 PM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
	DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit
	ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
	S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *18-Jun-19*

CLIENT:	Golder	**Client Sample ID:**	BMW-21
Project:	Luminant-A1 Landfill	**Lab ID:**	1905185-04
Project No:	19122262-D	**Collection Date:**	05/15/19 09:55 AM
Lab Order:	1905185	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	05/22/19 03:02 PM
Arsenic	0.00399	0.00200	0.00500	J	mg/L	1	05/22/19 03:02 PM
Barium	0.0412	0.00300	0.0100		mg/L	1	05/22/19 03:02 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	05/22/19 03:02 PM
Boron	0.994	0.0100	0.0300		mg/L	1	05/22/19 03:02 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	05/22/19 03:02 PM
Calcium	147	2.00	6.00		mg/L	20	05/23/19 11:28 AM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	05/22/19 03:02 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	05/22/19 03:02 PM
Iron	1.02	0.0300	0.100		mg/L	1	05/22/19 03:02 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	05/22/19 03:02 PM
Lithium	0.0613	0.00500	0.0100		mg/L	1	05/22/19 03:02 PM
Magnesium	138	2.00	6.00		mg/L	20	05/23/19 11:28 AM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	05/22/19 03:02 PM
Potassium	5.21	0.100	0.300		mg/L	1	05/22/19 03:02 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	05/22/19 03:02 PM
Sodium	386	2.00	6.00		mg/L	20	05/23/19 11:28 AM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	05/22/19 03:02 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	05/24/19 09:46 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **JL**
Chloride	428	3.00	10.0		mg/L	10	05/17/19 02:01 AM
Fluoride	0.366	0.100	0.400	J	mg/L	1	05/16/19 06:49 PM
Nitrate-N	<0.100	0.100	0.500		mg/L	1	05/16/19 06:49 PM
Sulfate	474	10.0	30.0		mg/L	10	05/17/19 02:01 AM
ALKALINITY		**M2320 B**					Analyst: **CC**
Alkalinity, Bicarbonate (As CaCO3)	780	10.0	20.0		mg/L @ pH 4.54	1	05/17/19 02:47 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	05/17/19 02:47 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	05/17/19 02:47 PM
Alkalinity, Total (As CaCO3)	780	20.0	20.0		mg/L @ pH 4.54	1	05/17/19 02:47 PM
FERRIC IRON (CALCULATED)		**M3500-FE D**					Analyst: **CAC**
Iron, Ferric	1.02	0.0500	0.100	N	mg/L	1	05/24/19
FERROUS IRON		**M3500-FE D**					Analyst: **BTJ**
Iron, Ferrous	<0.0500	0.0500	0.100	N	mg/L	1	05/20/19 04:00 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level
C	Sample Result or QC discussed in the Case Narrative
DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern
J	Analyte detected between MDL and RL
MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit
RL	Reporting Limit
S	Spike Recovery outside control limits
N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *18-Jun-19*

CLIENT:	Golder	**Client Sample ID:**	BMW-21
Project:	Luminant-A1 Landfill	**Lab ID:**	1905185-04
Project No:	19122262-D	**Collection Date:**	05/15/19 09:55 AM
Lab Order:	1905185	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
ORTHOPHOSPHATE		**M4500-P E**					Analyst: **CC**
Phosphorus, Total Orthophosphate (As P)	<0.0300	0.0300	0.100		mg/L	1	05/16/19 02:48 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	1980	50.0	50.0		mg/L	1	05/20/19 04:45 PM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
	DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit
	ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
	S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *18-Jun-19*

CLIENT:	Golder	**Client Sample ID:**	BMW-27
Project:	Luminant-A1 Landfill	**Lab ID:**	1905185-05
Project No:	19122262-D	**Collection Date:**	05/15/19 10:55 AM
Lab Order:	1905185	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	05/22/19 03:04 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	05/22/19 03:04 PM
Barium	0.0238	0.00300	0.0100		mg/L	1	05/22/19 03:04 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	05/22/19 03:04 PM
Boron	0.460	0.0100	0.0300		mg/L	1	05/22/19 03:04 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	05/22/19 03:04 PM
Calcium	190	2.00	6.00		mg/L	20	05/23/19 11:30 AM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	05/22/19 03:04 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	05/22/19 03:04 PM
Iron	0.0447	0.0300	0.100	J	mg/L	1	05/22/19 03:04 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	05/22/19 03:04 PM
Lithium	0.0943	0.00500	0.0100		mg/L	1	05/22/19 03:04 PM
Magnesium	122	2.00	6.00		mg/L	20	05/23/19 11:30 AM
Molybdenum	0.00204	0.00200	0.00500	J	mg/L	1	05/22/19 03:04 PM
Potassium	12.5	0.100	0.300		mg/L	1	05/22/19 03:04 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	05/22/19 03:04 PM
Sodium	251	2.00	6.00		mg/L	20	05/23/19 11:30 AM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	05/22/19 03:04 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	05/24/19 09:48 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **JL**
Chloride	129	3.00	10.0		mg/L	10	05/17/19 02:17 AM
Fluoride	<0.100	0.100	0.400		mg/L	1	05/16/19 07:05 PM
Nitrate-N	0.798	0.100	0.500		mg/L	1	05/16/19 07:05 PM
Sulfate	674	10.0	30.0		mg/L	10	05/17/19 02:17 AM
ALKALINITY		**M2320 B**					Analyst: **CC**
Alkalinity, Bicarbonate (As CaCO3)	783	10.0	20.0		mg/L @ pH 4.54	1	05/17/19 03:13 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	05/17/19 03:13 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	05/17/19 03:13 PM
Alkalinity, Total (As CaCO3)	783	20.0	20.0		mg/L @ pH 4.54	1	05/17/19 03:13 PM
FERRIC IRON (CALCULATED)		**M3500-FE D**					Analyst: **CAC**
Iron, Ferric	<0.0500	0.0500	0.100	N	mg/L	1	05/24/19
FERROUS IRON		**M3500-FE D**					Analyst: **BTJ**
Iron, Ferrous	<0.0500	0.0500	0.100	N	mg/L	1	05/20/19 04:01 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *18-Jun-19*

CLIENT:	Golder	**Client Sample ID:**	BMW-27
Project:	Luminant-A1 Landfill	**Lab ID:**	1905185-05
Project No:	19122262-D	**Collection Date:**	05/15/19 10:55 AM
Lab Order:	1905185	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
ORTHOPHOSPHATE		**M4500-P E**					Analyst: **CC**
Phosphorus, Total Orthophosphate (As P)	<0.0300	0.0300	0.100		mg/L	1	05/16/19 02:48 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	1840	50.0	50.0		mg/L	1	05/20/19 04:45 PM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
	DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit
	ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
	S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *18-Jun-19*

CLIENT:	Golder	**Client Sample ID:**	BMW-26
Project:	Luminant-A1 Landfill	**Lab ID:**	1905185-06
Project No:	19122262-D	**Collection Date:**	05/15/19 11:40 AM
Lab Order:	1905185	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	05/22/19 02:52 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	05/22/19 02:52 PM
Barium	0.0253	0.00300	0.0100		mg/L	1	05/22/19 02:52 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	05/22/19 02:52 PM
Boron	0.449	0.0100	0.0300		mg/L	1	05/22/19 02:52 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	05/22/19 02:52 PM
Calcium	200	2.00	6.00		mg/L	20	05/23/19 11:18 AM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	05/22/19 02:52 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	05/22/19 02:52 PM
Iron	<0.0300	0.0300	0.100		mg/L	1	05/22/19 02:52 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	05/22/19 02:52 PM
Lithium	0.101	0.00500	0.0100		mg/L	1	05/22/19 02:52 PM
Magnesium	130	2.00	6.00		mg/L	20	05/23/19 11:18 AM
Molybdenum	0.00218	0.00200	0.00500	J	mg/L	1	05/22/19 02:52 PM
Potassium	13.3	0.100	0.300		mg/L	1	05/22/19 02:52 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	05/22/19 02:52 PM
Sodium	265	2.00	6.00		mg/L	20	05/23/19 11:18 AM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	05/22/19 02:52 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	05/24/19 09:51 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **JL**
Chloride	135	3.00	10.0		mg/L	10	05/17/19 02:33 AM
Fluoride	<0.100	0.100	0.400		mg/L	1	05/16/19 07:21 PM
Nitrate-N	0.851	0.100	0.500		mg/L	1	05/16/19 07:21 PM
Sulfate	706	10.0	30.0		mg/L	10	05/17/19 02:33 AM
ALKALINITY		**M2320 B**					Analyst: **CC**
Alkalinity, Bicarbonate (As CaCO3)	828	10.0	20.0		mg/L @ pH 4.54	1	05/17/19 03:40 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	05/17/19 03:40 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	05/17/19 03:40 PM
Alkalinity, Total (As CaCO3)	828	20.0	20.0		mg/L @ pH 4.54	1	05/17/19 03:40 PM
FERRIC IRON (CALCULATED)		**M3500-FE D**					Analyst: **CAC**
Iron, Ferric	<0.0500	0.0500	0.100	N	mg/L	1	05/24/19
FERROUS IRON		**M3500-FE D**					Analyst: **BTJ**
Iron, Ferrous	<0.0500	0.0500	0.100	N	mg/L	1	05/20/19 04:01 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *18-Jun-19*

CLIENT:	Golder	**Client Sample ID:**	BMW-26
Project:	Luminant-A1 Landfill	**Lab ID:**	1905185-06
Project No:	19122262-D	**Collection Date:**	05/15/19 11:40 AM
Lab Order:	1905185	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
ORTHOPHOSPHATE		**M4500-P E**					Analyst: **CC**
Phosphorus, Total Orthophosphate (As P)	0.0340	0.0300	0.100	J	mg/L	1	05/16/19 02:49 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	1930	50.0	50.0		mg/L	1	05/20/19 04:45 PM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
	DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit
	ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
	S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *18-Jun-19*

CLIENT:	Golder	**Client Sample ID:**	BMW-11AR
Project:	Luminant-A1 Landfill	**Lab ID:**	1905185-07
Project No:	19122262-D	**Collection Date:**	05/15/19 12:35 PM
Lab Order:	1905185	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	05/22/19 03:06 PM
Arsenic	0.00208	0.00200	0.00500	J	mg/L	1	05/22/19 03:06 PM
Barium	0.0399	0.00300	0.0100		mg/L	1	05/22/19 03:06 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	05/22/19 03:06 PM
Boron	0.374	0.0100	0.0300		mg/L	1	05/22/19 03:06 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	05/22/19 03:06 PM
Calcium	138	1.00	3.00		mg/L	10	05/23/19 11:32 AM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	05/22/19 03:06 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	05/22/19 03:06 PM
Iron	1.35	0.0300	0.100		mg/L	1	05/22/19 03:06 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	05/22/19 03:06 PM
Lithium	0.0404	0.00500	0.0100		mg/L	1	05/22/19 03:06 PM
Magnesium	64.6	1.00	3.00		mg/L	10	05/23/19 11:32 AM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	05/22/19 03:06 PM
Potassium	20.3	0.100	0.300		mg/L	1	05/22/19 03:06 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	05/22/19 03:06 PM
Sodium	90.4	1.00	3.00		mg/L	10	05/23/19 11:32 AM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	05/22/19 03:06 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	05/24/19 09:53 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **JL**
Chloride	6.11	0.300	1.00		mg/L	1	05/16/19 07:37 PM
Fluoride	0.198	0.100	0.400	J	mg/L	1	05/16/19 07:37 PM
Nitrate-N	<0.100	0.100	0.500		mg/L	1	05/16/19 07:37 PM
Sulfate	324	10.0	30.0		mg/L	10	05/17/19 02:49 AM
ALKALINITY		**M2320 B**					Analyst: **CC**
Alkalinity, Bicarbonate (As CaCO3)	527	10.0	20.0		mg/L @ pH 4.54	1	05/17/19 03:59 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	05/17/19 03:59 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	05/17/19 03:59 PM
Alkalinity, Total (As CaCO3)	527	20.0	20.0		mg/L @ pH 4.54	1	05/17/19 03:59 PM
FERRIC IRON (CALCULATED)		**M3500-FE D**					Analyst: **CAC**
Iron, Ferric	1.35	0.0500	0.100	N	mg/L	1	05/24/19
FERROUS IRON		**M3500-FE D**					Analyst: **BTJ**
Iron, Ferrous	<0.0500	0.0500	0.100	N	mg/L	1	05/20/19 04:01 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *18-Jun-19*

CLIENT:	Golder	**Client Sample ID:**	BMW-11AR
Project:	Luminant-A1 Landfill	**Lab ID:**	1905185-07
Project No:	19122262-D	**Collection Date:**	05/15/19 12:35 PM
Lab Order:	1905185	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
ORTHOPHOSPHATE		**M4500-P E**					Analyst: **CC**
Phosphorus, Total Orthophosphate (As P)	<0.0300	0.0300	0.100		mg/L	1	05/16/19 02:49 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	970	10.0	10.0		mg/L	1	05/20/19 04:45 PM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
	DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit
	ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
	S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *18-Jun-19*

CLIENT:	Golder	**Client Sample ID:**	BMW-19
Project:	Luminant-A1 Landfill	**Lab ID:**	1905185-08
Project No:	19122262-D	**Collection Date:**	05/15/19 01:25 PM
Lab Order:	1905185	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	05/22/19 03:07 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	05/22/19 03:07 PM
Barium	0.0104	0.00300	0.0100		mg/L	1	05/22/19 03:07 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	05/22/19 03:07 PM
Boron	0.474	0.0100	0.0300		mg/L	1	05/22/19 03:07 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	05/22/19 03:07 PM
Calcium	388	2.00	6.00		mg/L	20	05/23/19 11:34 AM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	05/22/19 03:07 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	05/22/19 03:07 PM
Iron	0.750	0.0300	0.100		mg/L	1	05/22/19 03:07 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	05/22/19 03:07 PM
Lithium	0.0647	0.00500	0.0100		mg/L	1	05/22/19 03:07 PM
Magnesium	216	2.00	6.00		mg/L	20	05/23/19 11:34 AM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	05/22/19 03:07 PM
Potassium	11.7	0.100	0.300		mg/L	1	05/22/19 03:07 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	05/22/19 03:07 PM
Sodium	135	2.00	6.00		mg/L	20	05/23/19 11:34 AM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	05/22/19 03:07 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	05/24/19 09:55 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **JL**
Chloride	4.66	0.300	1.00		mg/L	1	05/16/19 07:53 PM
Fluoride	0.189	0.100	0.400	J	mg/L	1	05/16/19 07:53 PM
Nitrate-N	1.35	0.100	0.500		mg/L	1	05/16/19 07:53 PM
Sulfate	1760	100	300		mg/L	100	05/17/19 04:09 PM
ALKALINITY		**M2320 B**					Analyst: **CC**
Alkalinity, Bicarbonate (As CaCO3)	482	10.0	20.0		mg/L @ pH 4.53	1	05/17/19 04:15 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	05/17/19 04:15 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	05/17/19 04:15 PM
Alkalinity, Total (As CaCO3)	482	20.0	20.0		mg/L @ pH 4.53	1	05/17/19 04:15 PM
FERRIC IRON (CALCULATED)		**M3500-FE D**					Analyst: **CAC**
Iron, Ferric	0.750	0.0500	0.100	N	mg/L	1	05/24/19
FERROUS IRON		**M3500-FE D**					Analyst: **BTJ**
Iron, Ferrous	<0.0500	0.0500	0.100	N	mg/L	1	05/20/19 04:02 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *18-Jun-19*

CLIENT:	Golder	**Client Sample ID:**	BMW-19
Project:	Luminant-A1 Landfill	**Lab ID:**	1905185-08
Project No:	19122262-D	**Collection Date:**	05/15/19 01:25 PM
Lab Order:	1905185	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
ORTHOPHOSPHATE		**M4500-P E**					Analyst: **CC**
Phosphorus, Total Orthophosphate (As P)	<0.0300	0.0300	0.100		mg/L	1	05/16/19 02:49 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	3090	50.0	50.0		mg/L	1	05/20/19 04:45 PM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
	DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit
	ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
	S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *18-Jun-19*

CLIENT:	Golder	**Client Sample ID:**	BMW-18
Project:	Luminant-A1 Landfill	**Lab ID:**	1905185-09
Project No:	19122262-D	**Collection Date:**	05/15/19 02:10 PM
Lab Order:	1905185	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	05/22/19 03:09 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	05/22/19 03:09 PM
Barium	0.0362	0.00300	0.0100		mg/L	1	05/22/19 03:09 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	05/22/19 03:09 PM
Boron	0.443	0.0100	0.0300		mg/L	1	05/22/19 03:09 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	05/22/19 03:09 PM
Calcium	7.91	0.100	0.300		mg/L	1	05/22/19 03:09 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	05/22/19 03:09 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	05/22/19 03:09 PM
Iron	0.0676	0.0300	0.100	J	mg/L	1	05/22/19 03:09 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	05/22/19 03:09 PM
Lithium	0.0160	0.00500	0.0100		mg/L	1	05/22/19 03:09 PM
Magnesium	2.47	0.100	0.300		mg/L	1	05/22/19 03:09 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	05/22/19 03:09 PM
Potassium	2.91	0.100	0.300		mg/L	1	05/22/19 03:09 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	05/22/19 03:09 PM
Sodium	173	2.00	6.00		mg/L	20	05/23/19 11:36 AM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	05/22/19 03:09 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	05/24/19 09:58 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **JL**
Chloride	20.0	0.300	1.00		mg/L	1	05/16/19 08:09 PM
Fluoride	0.229	0.100	0.400	J	mg/L	1	05/16/19 08:09 PM
Nitrate-N	0.324	0.100	0.500	J	mg/L	1	05/16/19 08:09 PM
Sulfate	89.9	1.00	3.00		mg/L	1	05/16/19 08:09 PM
ALKALINITY		**M2320 B**					Analyst: **CC**
Alkalinity, Bicarbonate (As CaCO3)	285	10.0	20.0		mg/L @ pH 4.52	1	05/17/19 04:24 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.52	1	05/17/19 04:24 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.52	1	05/17/19 04:24 PM
Alkalinity, Total (As CaCO3)	285	20.0	20.0		mg/L @ pH 4.52	1	05/17/19 04:24 PM
FERRIC IRON (CALCULATED)		**M3500-FE D**					Analyst: **CAC**
Iron, Ferric	0.0676	0.0500	0.100	JN	mg/L	1	05/24/19
FERROUS IRON		**M3500-FE D**					Analyst: **BTJ**
Iron, Ferrous	<0.0500	0.0500	0.100	N	mg/L	1	05/20/19 04:02 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *18-Jun-19*

CLIENT:	Golder	**Client Sample ID:**	BMW-18
Project:	Luminant-A1 Landfill	**Lab ID:**	1905185-09
Project No:	19122262-D	**Collection Date:**	05/15/19 02:10 PM
Lab Order:	1905185	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
ORTHOPHOSPHATE		**M4500-P E**					Analyst: **CC**
Phosphorus, Total Orthophosphate (As P)	0.140	0.0300	0.100		mg/L	1	05/16/19 02:50 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	473	10.0	10.0		mg/L	1	05/20/19 04:45 PM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
	DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit
	ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
	S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *18-Jun-19*

CLIENT:	Golder	**Client Sample ID:**	BMW-28
Project:	Luminant-A1 Landfill	**Lab ID:**	1905185-10
Project No:	19122262-D	**Collection Date:**	05/15/19 03:00 PM
Lab Order:	1905185	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	05/22/19 03:11 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	05/22/19 03:11 PM
Barium	0.0285	0.00300	0.0100		mg/L	1	05/22/19 03:11 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	05/22/19 03:11 PM
Boron	1.01	0.0100	0.0300		mg/L	1	05/22/19 03:11 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	05/22/19 03:11 PM
Calcium	249	5.00	15.0		mg/L	50	05/23/19 11:38 AM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	05/22/19 03:11 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	05/22/19 03:11 PM
Iron	0.0633	0.0300	0.100	J	mg/L	1	05/22/19 03:11 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	05/22/19 03:11 PM
Lithium	0.119	0.00500	0.0100		mg/L	1	05/22/19 03:11 PM
Magnesium	163	5.00	15.0		mg/L	50	05/23/19 11:38 AM
Molybdenum	0.0124	0.00200	0.00500		mg/L	1	05/22/19 03:11 PM
Potassium	18.6	0.100	0.300		mg/L	1	05/22/19 03:11 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	05/22/19 03:11 PM
Sodium	652	5.00	15.0		mg/L	50	05/23/19 11:38 AM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	05/22/19 03:11 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	05/24/19 10:04 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **JL**
Chloride	133	3.00	10.0		mg/L	10	05/17/19 03:37 AM
Fluoride	0.496	0.100	0.400		mg/L	1	05/16/19 08:25 PM
Nitrate-N	0.493	0.100	0.500	J	mg/L	1	05/16/19 08:25 PM
Sulfate	1820	100	300		mg/L	100	05/17/19 04:25 PM
ALKALINITY		**M2320 B**					Analyst: **CC**
Alkalinity, Bicarbonate (As CaCO3)	751	10.0	20.0		mg/L @ pH 4.54	1	05/17/19 04:49 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	05/17/19 04:49 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	05/17/19 04:49 PM
Alkalinity, Total (As CaCO3)	751	20.0	20.0		mg/L @ pH 4.54	1	05/17/19 04:49 PM
FERRIC IRON (CALCULATED)		**M3500-FE D**					Analyst: **CAC**
Iron, Ferric	0.0633	0.0500	0.100	JN	mg/L	1	05/24/19
FERROUS IRON		**M3500-FE D**					Analyst: **BTJ**
Iron, Ferrous	<0.0500	0.0500	0.100	N	mg/L	1	05/20/19 04:02 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *18-Jun-19*

CLIENT:	Golder	**Client Sample ID:**	BMW-28
Project:	Luminant-A1 Landfill	**Lab ID:**	1905185-10
Project No:	19122262-D	**Collection Date:**	05/15/19 03:00 PM
Lab Order:	1905185	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
ORTHOPHOSPHATE		**M4500-P E**					Analyst: **CC**
Phosphorus, Total Orthophosphate (As P)	0.0370	0.0300	0.100	J	mg/L	1	05/16/19 02:50 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	3610	50.0	50.0		mg/L	1	05/20/19 04:45 PM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
	DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit
	ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
	S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *18-Jun-19*

CLIENT:	Golder	**Client Sample ID:**	BMW-20
Project:	Luminant-A1 Landfill	**Lab ID:**	1905185-11
Project No:	19122262-D	**Collection Date:**	05/15/19 04:00 PM
Lab Order:	1905185	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	05/22/19 03:50 PM
Arsenic	0.00541	0.00200	0.00500		mg/L	1	05/22/19 03:50 PM
Barium	0.0412	0.00300	0.0100		mg/L	1	05/22/19 03:50 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	05/22/19 03:50 PM
Boron	0.979	0.0100	0.0300		mg/L	1	05/22/19 03:50 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	05/22/19 03:50 PM
Calcium	146	2.00	6.00		mg/L	20	05/23/19 11:53 AM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	05/22/19 03:50 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	05/22/19 03:50 PM
Iron	1.28	0.0300	0.100		mg/L	1	05/22/19 03:50 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	05/22/19 03:50 PM
Lithium	0.0615	0.00500	0.0100		mg/L	1	05/22/19 03:50 PM
Magnesium	136	2.00	6.00		mg/L	20	05/23/19 11:53 AM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	05/22/19 03:50 PM
Potassium	5.21	0.100	0.300		mg/L	1	05/22/19 03:50 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	05/22/19 03:50 PM
Sodium	382	2.00	6.00		mg/L	20	05/23/19 11:53 AM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	05/22/19 03:50 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	05/24/19 10:07 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **JL**
Chloride	426	3.00	10.0		mg/L	10	05/17/19 04:57 AM
Fluoride	0.418	0.100	0.400		mg/L	1	05/16/19 10:01 PM
Nitrate-N	0.595	0.100	0.500		mg/L	1	05/16/19 10:01 PM
Sulfate	474	10.0	30.0		mg/L	10	05/17/19 04:57 AM
ALKALINITY		**M2320 B**					Analyst: **CC**
Alkalinity, Bicarbonate (As CaCO3)	773	10.0	20.0		mg/L @ pH 4.54	1	05/17/19 05:15 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	05/17/19 05:15 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	05/17/19 05:15 PM
Alkalinity, Total (As CaCO3)	773	20.0	20.0		mg/L @ pH 4.54	1	05/17/19 05:15 PM
FERRIC IRON (CALCULATED)		**M3500-FE D**					Analyst: **CAC**
Iron, Ferric	1.28	0.0500	0.100	N	mg/L	1	05/24/19
FERROUS IRON		**M3500-FE D**					Analyst: **BTJ**
Iron, Ferrous	<0.0500	0.0500	0.100	N	mg/L	1	05/20/19 04:02 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *18-Jun-19*

CLIENT:	Golder	**Client Sample ID:**	BMW-20
Project:	Luminant-A1 Landfill	**Lab ID:**	1905185-11
Project No:	19122262-D	**Collection Date:**	05/15/19 04:00 PM
Lab Order:	1905185	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
ORTHOPHOSPHATE		**M4500-P E**					Analyst: **CC**
Phosphorus, Total Orthophosphate (As P)	<0.0300	0.0300	0.100		mg/L	1	05/16/19 02:52 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	2030	50.0	50.0		mg/L	1	05/20/19 04:45 PM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
	DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit
	ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
	S	Spike Recovery outside control limits	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905185
Project: Luminant-A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_190524A

The QC data in batch 91059 applies to the following samples: 1905185-01B, 1905185-02B, 1905185-03B, 1905185-04B, 1905185-05B, 1905185-06B, 1905185-07B, 1905185-08B, 1905185-09B, 1905185-10B, 1905185-11B

Sample ID	**MB-91059**	Batch ID:	**91059**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**CETAC2_HG_190524A**	Analysis Date:	**5/24/2019 9:28:33 AM**	Prep Date:	**5/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.0000800	0.000200								

Sample ID	**LCS-91059**	Batch ID:	**91059**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**CETAC2_HG_190524A**	Analysis Date:	**5/24/2019 9:33:05 AM**	Prep Date:	**5/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00187	0.000200	0.00200	0	93.5	85	115			

Sample ID	**LCSD-91059**	Batch ID:	**91059**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**LCSD**	Run ID:	**CETAC2_HG_190524A**	Analysis Date:	**5/24/2019 9:35:22 AM**	Prep Date:	**5/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00195	0.000200	0.00200	0	97.5	85	115	4.19	15	

Sample ID	**1905231-01A MS**	Batch ID:	**91059**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**MS**	Run ID:	**CETAC2_HG_190524A**	Analysis Date:	**5/24/2019 10:20:46 AM**	Prep Date:	**5/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00960	0.00100	0.0100	0	96.0	80	120			

Sample ID	**1905231-01A MSD**	Batch ID:	**91059**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**MSD**	Run ID:	**CETAC2_HG_190524A**	Analysis Date:	**5/24/2019 10:23:02 AM**	Prep Date:	**5/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00925	0.00100	0.0100	0	92.5	80	120	3.71	15	

Sample ID	**1905231-01A SD**	Batch ID:	**91059**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**SD**	Run ID:	**CETAC2_HG_190524A**	Analysis Date:	**5/24/2019 10:25:18 AM**	Prep Date:	**5/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.00200	0.00500	0	0				0	10	

Sample ID	**1905231-01A PDS**	Batch ID:	**91059**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**PDS**	Run ID:	**CETAC2_HG_190524A**	Analysis Date:	**5/24/2019 10:27:34 AM**	Prep Date:	**5/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0120	0.00100	0.0125	0	95.6	85	115			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905185
Project: Luminant-A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_190524A

Sample ID	**ICV-190524**	Batch ID:	**R104261**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**ICV**	Run ID:	**CETAC2_HG_190524A**	Analysis Date:	**5/24/2019 9:24:00 AM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00400	0.000200	0.00400	0	100	90	110			

Sample ID	**CCV1-190524**	Batch ID:	**R104261**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**CETAC2_HG_190524A**	Analysis Date:	**5/24/2019 10:00:18 AM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00214	0.000200	0.00200	0	107	90	110			

Sample ID	**CCV2-190524**	Batch ID:	**R104261**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**CETAC2_HG_190524A**	Analysis Date:	**5/24/2019 10:36:42 AM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00212	0.000200	0.00200	0	106	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905185
Project: Luminant-A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190522D

The QC data in batch 90989 applies to the following samples: 1905185-01B, 1905185-02B, 1905185-03B, 1905185-04B, 1905185-05B, 1905185-06B, 1905185-07B, 1905185-08B, 1905185-09B, 1905185-10B, 1905185-11B

Sample ID **MB-90989** Batch ID: **90989** TestNo: **SW6020A** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_190522D** Analysis Date: **5/22/2019 2:44:00 PM** Prep Date: **5/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.000800	0.00250								
Arsenic	<0.00200	0.00500								
Barium	<0.00300	0.0100								
Beryllium	<0.000300	0.00100								
Boron	<0.0100	0.0300								
Cadmium	<0.000300	0.00100								
Calcium	<0.100	0.300								
Chromium	<0.00200	0.00500								
Cobalt	<0.00300	0.00500								
Iron	<0.0300	0.100								
Lead	<0.000300	0.00100								
Lithium	<0.00500	0.0100								
Magnesium	<0.100	0.300								
Molybdenum	<0.00200	0.00500								
Potassium	<0.100	0.300								
Selenium	<0.00200	0.00500								
Sodium	<0.100	0.300								
Thallium	<0.000500	0.00150								

Sample ID **LCS-90989** Batch ID: **90989** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_190522D** Analysis Date: **5/22/2019 2:46:00 PM** Prep Date: **5/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.202	0.00250	0.200	0	101	80	120			
Arsenic	0.201	0.00500	0.200	0	100	80	120			
Barium	0.198	0.0100	0.200	0	99.2	80	120			
Beryllium	0.198	0.00100	0.200	0	99.2	80	120			
Boron	0.202	0.0300	0.200	0	101	80	120			
Cadmium	0.199	0.00100	0.200	0	99.6	80	120			
Calcium	4.60	0.300	5.00	0	92.1	80	120			
Chromium	0.200	0.00500	0.200	0	99.8	80	120			
Cobalt	0.202	0.00500	0.200	0	101	80	120			
Iron	5.23	0.100	5.00	0	105	80	120			
Lead	0.184	0.00100	0.200	0	91.9	80	120			
Lithium	0.196	0.0100	0.200	0	98.0	80	120			
Magnesium	5.02	0.300	5.00	0	100	80	120			
Molybdenum	0.190	0.00500	0.200	0	95.1	80	120			
Potassium	5.06	0.300	5.00	0	101	80	120			
Selenium	0.209	0.00500	0.200	0	104	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905185
Project: Luminant-A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190522D

Sample ID **LCS-90989**	Batch ID: **90989**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCS**	Run ID: **ICP-MS4_190522D**	Analysis Date: **5/22/2019 2:46:00 PM**	Prep Date: **5/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	5.02	0.300	5.00	0	100	80	120			
Thallium	0.202	0.00150	0.200	0	101	80	120			

Sample ID **LCSD-90989**	Batch ID: **90989**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCSD**	Run ID: **ICP-MS4_190522D**	Analysis Date: **5/22/2019 2:48:00 PM**	Prep Date: **5/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.201	0.00250	0.200	0	100	80	120	0.333	15	
Arsenic	0.203	0.00500	0.200	0	101	80	120	0.942	15	
Barium	0.199	0.0100	0.200	0	99.3	80	120	0.128	15	
Beryllium	0.198	0.00100	0.200	0	99.1	80	120	0.129	15	
Boron	0.201	0.0300	0.200	0	101	80	120	0.298	15	
Cadmium	0.198	0.00100	0.200	0	99.2	80	120	0.362	15	
Calcium	4.62	0.300	5.00	0	92.4	80	120	0.325	15	
Chromium	0.199	0.00500	0.200	0	99.7	80	120	0.085	15	
Cobalt	0.203	0.00500	0.200	0	102	80	120	0.820	15	
Iron	5.15	0.100	5.00	0	103	80	120	1.50	15	
Lead	0.185	0.00100	0.200	0	92.3	80	120	0.421	15	
Lithium	0.200	0.0100	0.200	0	100	80	120	2.22	15	
Magnesium	5.07	0.300	5.00	0	101	80	120	0.937	15	
Molybdenum	0.190	0.00500	0.200	0	95.0	80	120	0.081	15	
Potassium	5.12	0.300	5.00	0	102	80	120	1.16	15	
Selenium	0.204	0.00500	0.200	0	102	80	120	2.39	15	
Sodium	5.05	0.300	5.00	0	101	80	120	0.519	15	
Thallium	0.199	0.00150	0.200	0	99.3	80	120	1.55	15	

Sample ID **1905185-06B SD**	Batch ID: **90989**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS4_190522D**	Analysis Date: **5/22/2019 2:54:00 PM**	Prep Date: **5/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.00400	0.0125	0	0				0	10	
Arsenic	<0.0100	0.0250	0	0				0	10	
Barium	0.0256	0.0500	0	0.0253				1.30	10	
Beryllium	<0.00150	0.00500	0	0				0	10	
Boron	0.501	0.150	0	0.449				10.8	10	R
Cadmium	<0.00150	0.00500	0	0				0	10	
Chromium	<0.0100	0.0250	0	0				0	10	
Cobalt	<0.0150	0.0250	0	0				0	10	
Iron	<0.150	0.500	0	0				0	10	
Lead	<0.00150	0.00500	0	0				0	10	
Lithium	0.109	0.0500	0	0.101				7.40	10	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905185
Project: Luminant-A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190522D

Sample ID **1905185-06B SD**	Batch ID: **90989**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS4_190522D**	Analysis Date: **5/22/2019 2:54:00 PM**	Prep Date: **5/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Molybdenum	<0.0100	0.0250	0	0.00218				0	10	
Potassium	13.4	1.50	0	13.2				1.21	10	
Selenium	<0.0100	0.0250	0	0				0	10	
Thallium	<0.00250	0.00750	0	0				0	10	

Sample ID **1905185-06B PDS**	Batch ID: **90989**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_190522D**	Analysis Date: **5/22/2019 3:13:00 PM**	Prep Date: **5/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.201	0.00250	0.200	0	100	80	120			
Arsenic	0.204	0.00500	0.200	0	102	80	120			
Barium	0.218	0.0100	0.200	0.0253	96.3	80	120			
Beryllium	0.174	0.00100	0.200	0	87.2	80	120			
Boron	0.613	0.0300	0.200	0.449	81.7	80	120			
Cadmium	0.183	0.00100	0.200	0	91.4	80	120			
Chromium	0.188	0.00500	0.200	0	94.2	80	120			
Cobalt	0.193	0.00500	0.200	0	96.4	80	120			
Iron	4.70	0.100	5.00	0	94.1	80	120			
Lead	0.186	0.00100	0.200	0	93.0	80	120			
Lithium	0.265	0.0100	0.200	0.101	81.8	80	120			
Molybdenum	0.186	0.00500	0.200	0.00218	91.9	80	120			
Potassium	17.5	0.300	5.00	13.3	84.0	80	120			
Selenium	0.213	0.00500	0.200	0	106	80	120			
Thallium	0.200	0.00150	0.200	0	100	80	120			

Sample ID **1905185-06B MS**	Batch ID: **90989**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS4_190522D**	Analysis Date: **5/22/2019 3:15:00 PM**	Prep Date: **5/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.202	0.00250	0.200	0	101	80	120			
Arsenic	0.208	0.00500	0.200	0	104	80	120			
Barium	0.226	0.0100	0.200	0.0253	100	80	120			
Beryllium	0.174	0.00100	0.200	0	87.0	80	120			
Boron	0.654	0.0300	0.200	0.449	103	80	120			
Cadmium	0.185	0.00100	0.200	0	92.7	80	120			
Calcium	197	0.300	5.00	194	64.2	80	120			S
Chromium	0.186	0.00500	0.200	0	93.0	80	120			
Cobalt	0.193	0.00500	0.200	0	96.7	80	120			
Iron	4.82	0.100	5.00	0	96.4	80	120			
Lead	0.187	0.00100	0.200	0	93.7	80	120			
Lithium	0.270	0.0100	0.200	0.101	84.2	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905185
Project: Luminant-A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190522D

Sample ID **1905185-06B MS**	Batch ID: **90989**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS4_190522D**	Analysis Date: **5/22/2019 3:15:00 PM**	Prep Date: **5/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Magnesium	128	0.300	5.00	128	-3.79	80	120			S
Molybdenum	0.195	0.00500	0.200	0.00218	96.2	80	120			
Potassium	18.5	0.300	5.00	13.3	105	80	120			
Selenium	0.214	0.00500	0.200	0	107	80	120			
Sodium	252	0.300	5.00	257	-103	80	120			S
Thallium	0.203	0.00150	0.200	0	101	80	120			

Sample ID **1905185-06B MSD**	Batch ID: **90989**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS4_190522D**	Analysis Date: **5/22/2019 3:17:00 PM**	Prep Date: **5/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.200	0.00250	0.200	0	100	80	120	0.836	15	
Arsenic	0.208	0.00500	0.200	0	104	80	120	0.067	15	
Barium	0.227	0.0100	0.200	0.0253	101	80	120	0.141	15	
Beryllium	0.174	0.00100	0.200	0	86.8	80	120	0.265	15	
Boron	0.618	0.0300	0.200	0.449	84.6	80	120	5.65	15	
Cadmium	0.184	0.00100	0.200	0	92.1	80	120	0.555	15	
Calcium	195	0.300	5.00	194	16.8	80	120	1.21	15	S
Chromium	0.187	0.00500	0.200	0	93.6	80	120	0.569	15	
Cobalt	0.192	0.00500	0.200	0	95.8	80	120	1.00	15	
Iron	4.73	0.100	5.00	0	94.7	80	120	1.78	15	
Lead	0.190	0.00100	0.200	0	94.8	80	120	1.15	15	
Lithium	0.265	0.0100	0.200	0.101	81.8	80	120	1.82	15	
Magnesium	127	0.300	5.00	128	-17.7	80	120	0.544	15	S
Molybdenum	0.197	0.00500	0.200	0.00218	97.5	80	120	1.33	15	
Potassium	18.3	0.300	5.00	13.3	100	80	120	1.25	15	
Selenium	0.213	0.00500	0.200	0	107	80	120	0.639	15	
Sodium	256	0.300	5.00	257	-34.0	80	120	1.36	15	S
Thallium	0.206	0.00150	0.200	0	103	80	120	1.46	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905185
Project: Luminant-A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190522D

Sample ID **ICV-190522**	Batch ID: **R104232**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_190522D**	Analysis Date: **5/22/2019 11:38:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.101	0.00250	0.100	0	101	90	110			
Arsenic	0.102	0.00500	0.100	0	102	90	110			
Barium	0.0975	0.0100	0.100	0	97.5	90	110			
Beryllium	0.0986	0.00100	0.100	0	98.6	90	110			
Boron	0.104	0.0300	0.100	0	104	90	110			
Cadmium	0.0995	0.00100	0.100	0	99.5	90	110			
Calcium	2.35	0.300	2.50	0	94.2	90	110			
Chromium	0.104	0.00500	0.100	0	104	90	110			
Cobalt	0.105	0.00500	0.100	0	105	90	110			
Iron	2.57	0.100	2.50	0	103	90	110			
Lead	0.0926	0.00100	0.100	0	92.6	90	110			
Lithium	0.103	0.0100	0.100	0	103	90	110			
Magnesium	2.45	0.300	2.50	0	98.2	90	110			
Molybdenum	0.0911	0.00500	0.100	0	91.1	90	110			
Potassium	2.52	0.300	2.50	0	101	90	110			
Selenium	0.102	0.00500	0.100	0	102	90	110			
Sodium	2.53	0.300	2.50	0	101	90	110			
Thallium	0.0926	0.00150	0.100	0	92.6	90	110			

Sample ID **LCVL-190522**	Batch ID: **R104232**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_190522D**	Analysis Date: **5/22/2019 11:43:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00190	0.00250	0.00200	0	95.0	70	130			
Arsenic	0.00497	0.00500	0.00500	0	99.4	70	130			
Barium	0.00463	0.0100	0.00500	0	92.6	70	130			
Beryllium	0.00117	0.00100	0.00100	0	117	70	130			
Boron	0.0197	0.0300	0.0200	0	98.5	70	130			
Cadmium	0.000953	0.00100	0.00100	0	95.3	70	130			
Calcium	0.0981	0.300	0.100	0	98.1	70	130			
Chromium	0.00486	0.00500	0.00500	0	97.2	70	130			
Cobalt	0.00493	0.00500	0.00500	0	98.7	70	130			
Iron	0.111	0.100	0.100	0	111	70	130			
Lead	0.000870	0.00100	0.00100	0	87.0	70	130			
Lithium	0.00926	0.0100	0.0100	0	92.6	70	130			
Magnesium	0.0967	0.300	0.100	0	96.7	70	130			
Molybdenum	0.00458	0.00500	0.00500	0	91.5	70	130			
Potassium	0.0964	0.300	0.100	0	96.4	70	130			
Selenium	0.00494	0.00500	0.00500	0	98.8	70	130			
Sodium	0.0966	0.300	0.100	0	96.6	70	130			
Thallium	0.000843	0.00150	0.00100	0	84.3	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905185
Project: Luminant-A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190522D

Sample ID **CCV4-190522**	Batch ID: **R104232**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_190522D**	Analysis Date: **5/22/2019 2:34:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.203	0.00250	0.200	0	102	90	110			
Arsenic	0.209	0.00500	0.200	0	104	90	110			
Barium	0.202	0.0100	0.200	0	101	90	110			
Beryllium	0.201	0.00100	0.200	0	100	90	110			
Boron	0.215	0.0300	0.200	0	108	90	110			
Cadmium	0.202	0.00100	0.200	0	101	90	110			
Calcium	4.66	0.300	5.00	0	93.3	90	110			
Chromium	0.203	0.00500	0.200	0	102	90	110			
Cobalt	0.208	0.00500	0.200	0	104	90	110			
Iron	5.05	0.100	5.00	0	101	90	110			
Lead	0.193	0.00100	0.200	0	96.7	90	110			
Lithium	0.195	0.0100	0.200	0	97.5	90	110			
Magnesium	5.05	0.300	5.00	0	101	90	110			
Molybdenum	0.193	0.00500	0.200	0	96.4	90	110			
Potassium	5.13	0.300	5.00	0	103	90	110			
Selenium	0.212	0.00500	0.200	0	106	90	110			
Sodium	5.03	0.300	5.00	0	101	90	110			
Thallium	0.205	0.00150	0.200	0	103	90	110			

Sample ID **LCVL4-190522**	Batch ID: **R104232**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_190522D**	Analysis Date: **5/22/2019 2:40:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00194	0.00250	0.00200	0	96.9	70	130			
Arsenic	0.00504	0.00500	0.00500	0	101	70	130			
Barium	0.00472	0.0100	0.00500	0	94.5	70	130			
Beryllium	0.00124	0.00100	0.00100	0	124	70	130			
Boron	0.0223	0.0300	0.0200	0	111	70	130			
Cadmium	0.000955	0.00100	0.00100	0	95.5	70	130			
Calcium	0.111	0.300	0.100	0	111	70	130			
Chromium	0.00487	0.00500	0.00500	0	97.4	70	130			
Cobalt	0.00501	0.00500	0.00500	0	100	70	130			
Iron	0.114	0.100	0.100	0	114	70	130			
Lead	0.000846	0.00100	0.00100	0	84.6	70	130			
Lithium	0.00964	0.0100	0.0100	0	96.4	70	130			
Magnesium	0.101	0.300	0.100	0	101	70	130			
Molybdenum	0.00453	0.00500	0.00500	0	90.7	70	130			
Potassium	0.0997	0.300	0.100	0	99.7	70	130			
Selenium	0.00427	0.00500	0.00500	0	85.3	70	130			
Sodium	0.111	0.300	0.100	0	111	70	130			
Thallium	0.000835	0.00150	0.00100	0	83.5	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905185
Project: Luminant-A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190522D

Sample ID **CCV5-190522**	Batch ID: **R104232**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_190522D**	Analysis Date: **5/22/2019 3:26:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.205	0.00250	0.200	0	102	90	110			
Arsenic	0.205	0.00500	0.200	0	103	90	110			
Barium	0.200	0.0100	0.200	0	99.8	90	110			
Beryllium	0.200	0.00100	0.200	0	100	90	110			
Boron	0.220	0.0300	0.200	0	110	90	110			
Cadmium	0.202	0.00100	0.200	0	101	90	110			
Calcium	4.68	0.300	5.00	0	93.5	90	110			
Chromium	0.203	0.00500	0.200	0	101	90	110			
Cobalt	0.205	0.00500	0.200	0	102	90	110			
Iron	5.15	0.100	5.00	0	103	90	110			
Lead	0.188	0.00100	0.200	0	93.8	90	110			
Lithium	0.203	0.0100	0.200	0	102	90	110			
Magnesium	5.17	0.300	5.00	0	103	90	110			
Molybdenum	0.195	0.00500	0.200	0	97.3	90	110			
Potassium	5.20	0.300	5.00	0	104	90	110			
Selenium	0.213	0.00500	0.200	0	107	90	110			
Sodium	5.13	0.300	5.00	0	103	90	110			
Thallium	0.201	0.00150	0.200	0	101	90	110			

Sample ID **LCVL5-190522**	Batch ID: **R104232**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_190522D**	Analysis Date: **5/22/2019 3:46:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00186	0.00250	0.00200	0	93.2	70	130			
Arsenic	0.00475	0.00500	0.00500	0	95.0	70	130			
Barium	0.00461	0.0100	0.00500	0	92.3	70	130			
Beryllium	0.000947	0.00100	0.00100	0	94.7	70	130			
Boron	0.0229	0.0300	0.0200	0	115	70	130			
Cadmium	0.000924	0.00100	0.00100	0	92.4	70	130			
Calcium	0.102	0.300	0.100	0	102	70	130			
Chromium	0.00452	0.00500	0.00500	0	90.4	70	130			
Cobalt	0.00479	0.00500	0.00500	0	95.8	70	130			
Iron	0.106	0.100	0.100	0	106	70	130			
Lead	0.000756	0.00100	0.00100	0	75.6	70	130			
Lithium	0.00948	0.0100	0.0100	0	94.8	70	130			
Magnesium	0.0981	0.300	0.100	0	98.1	70	130			
Molybdenum	0.00455	0.00500	0.00500	0	91.0	70	130			
Potassium	0.0951	0.300	0.100	0	95.1	70	130			
Selenium	0.00474	0.00500	0.00500	0	94.7	70	130			
Sodium	0.126	0.300	0.100	0	126	70	130			
Thallium	0.000763	0.00150	0.00100	0	76.3	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905185
Project: Luminant-A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190522D

Sample ID **CCV6-190522**	Batch ID: **R104232**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_190522D**	Analysis Date: **5/22/2019 4:12:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.208	0.00250	0.200	0	104	90	110			
Arsenic	0.211	0.00500	0.200	0	106	90	110			
Barium	0.208	0.0100	0.200	0	104	90	110			
Beryllium	0.195	0.00100	0.200	0	97.5	90	110			
Boron	0.207	0.0300	0.200	0	104	90	110			
Cadmium	0.202	0.00100	0.200	0	101	90	110			
Chromium	0.202	0.00500	0.200	0	101	90	110			
Cobalt	0.209	0.00500	0.200	0	104	90	110			
Iron	5.12	0.100	5.00	0	102	90	110			
Lead	0.192	0.00100	0.200	0	96.1	90	110			
Lithium	0.197	0.0100	0.200	0	98.7	90	110			
Molybdenum	0.197	0.00500	0.200	0	98.4	90	110			
Potassium	5.17	0.300	5.00	0	103	90	110			
Selenium	0.213	0.00500	0.200	0	107	90	110			
Thallium	0.206	0.00150	0.200	0	103	90	110			

Sample ID **LCVL6-190522**	Batch ID: **R104232**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_190522D**	Analysis Date: **5/22/2019 4:22:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00200	0.00250	0.00200	0	100	70	130			
Arsenic	0.00486	0.00500	0.00500	0	97.1	70	130			
Barium	0.00495	0.0100	0.00500	0	99.0	70	130			
Beryllium	0.000939	0.00100	0.00100	0	93.9	70	130			
Boron	0.0216	0.0300	0.0200	0	108	70	130			
Cadmium	0.00101	0.00100	0.00100	0	101	70	130			
Chromium	0.00486	0.00500	0.00500	0	97.1	70	130			
Cobalt	0.00489	0.00500	0.00500	0	97.8	70	130			
Iron	0.113	0.100	0.100	0	113	70	130			
Lead	0.000805	0.00100	0.00100	0	80.5	70	130			
Lithium	0.00903	0.0100	0.0100	0	90.3	70	130			
Molybdenum	0.00464	0.00500	0.00500	0	92.8	70	130			
Potassium	0.0982	0.300	0.100	0	98.2	70	130			
Selenium	0.00531	0.00500	0.00500	0	106	70	130			
Thallium	0.000807	0.00150	0.00100	0	80.7	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905185
Project: Luminant-A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190523A

The QC data in batch 90989 applies to the following samples: 1905185-01B, 1905185-02B, 1905185-03B, 1905185-04B, 1905185-05B, 1905185-06B, 1905185-07B, 1905185-08B, 1905185-09B, 1905185-10B, 1905185-11B

Sample ID **1905185-06B SD** Batch ID: **90989** TestNo: **SW6020A** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS4_190523A** Analysis Date: **5/23/2019 11:20:00 AM** Prep Date: **5/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	207	30.0	0	200				3.62	10	
Magnesium	134	30.0	0	130				2.71	10	
Sodium	266	30.0	0	265				0.189	10	

Sample ID **1905185-06B PDS** Batch ID: **90989** TestNo: **SW6020A** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS4_190523A** Analysis Date: **5/23/2019 11:40:00 AM** Prep Date: **5/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	295	6.00	100	200	95.2	80	120			
Magnesium	227	6.00	100	130	96.8	80	120			
Sodium	365	6.00	100	265	99.6	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905185
Project: Luminant-A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190523A

Sample ID **ICV-190523**	Batch ID: **R104240**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_190523A**	Analysis Date: **5/23/2019 11:01:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.104	0.0300	0.100	0	104	90	110			
Calcium	2.39	0.300	2.50	0	95.8	90	110			
Iron	2.56	0.100	2.50	0	102	90	110			
Magnesium	2.53	0.300	2.50	0	101	90	110			
Sodium	2.56	0.300	2.50	0	102	90	110			

Sample ID **LCVL-190523**	Batch ID: **R104240**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_190523A**	Analysis Date: **5/23/2019 11:09:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0214	0.0300	0.0200	0	107	70	130			
Calcium	0.0901	0.300	0.100	0	90.1	70	130			
Iron	0.105	0.100	0.100	0	105	70	130			
Magnesium	0.0985	0.300	0.100	0	98.5	70	130			
Sodium	0.0949	0.300	0.100	0	94.9	70	130			

Sample ID **CCV1-190523**	Batch ID: **R104240**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_190523A**	Analysis Date: **5/23/2019 11:42:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.210	0.0300	0.200	0	105	90	110			
Calcium	4.76	0.300	5.00	0	95.2	90	110			
Iron	5.10	0.100	5.00	0	102	90	110			
Magnesium	5.21	0.300	5.00	0	104	90	110			
Sodium	5.14	0.300	5.00	0	103	90	110			

Sample ID **LCVL1-190523**	Batch ID: **R104240**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_190523A**	Analysis Date: **5/23/2019 11:48:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0248	0.0300	0.0200	0	124	70	130			
Calcium	0.0899	0.300	0.100	0	89.9	70	130			
Iron	0.105	0.100	0.100	0	105	70	130			
Magnesium	0.0985	0.300	0.100	0	98.5	70	130			
Sodium	0.0973	0.300	0.100	0	97.3	70	130			

Sample ID **CCV2-190523**	Batch ID: **R104240**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_190523A**	Analysis Date: **5/23/2019 12:21:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.79	0.300	5.00	0	95.7	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905185
Project: Luminant-A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190523A

Sample ID **CCV2-190523**	Batch ID: **R104240**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_190523A**	Analysis Date: **5/23/2019 12:21:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Magnesium	5.29	0.300	5.00	0	106	90	110			
Sodium	5.22	0.300	5.00	0	104	90	110			

Sample ID **LCVL2-190523**	Batch ID: **R104240**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_190523A**	Analysis Date: **5/23/2019 12:29:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.101	0.300	0.100	0	101	70	130			
Magnesium	0.0985	0.300	0.100	0	98.5	70	130			
Sodium	0.0994	0.300	0.100	0	99.4	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905185
Project: Luminant-A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_190516B

The QC data in batch 90934 applies to the following samples: 1905185-01C, 1905185-02C, 1905185-03C, 1905185-04C, 1905185-05C, 1905185-06C, 1905185-07C, 1905185-08C, 1905185-09C, 1905185-10C, 1905185-11C

Sample ID	**MB-90934**	Batch ID:	**90934**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**IC2_190516B**	Analysis Date:	**5/16/2019 10:26:41 AM**	Prep Date:	**5/16/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00								
Fluoride	<0.100	0.400								
Nitrate-N	<0.100	0.500								
Sulfate	<1.00	3.00								

Sample ID	**LCS-90934**	Batch ID:	**90934**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**IC2_190516B**	Analysis Date:	**5/16/2019 10:42:42 AM**	Prep Date:	**5/16/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.2	1.00	10.00	0	102	90	110			
Fluoride	4.08	0.400	4.000	0	102	90	110			
Nitrate-N	5.10	0.500	5.000	0	102	90	110			
Sulfate	30.6	3.00	30.00	0	102	90	110			

Sample ID	**LCSD-90934**	Batch ID:	**90934**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**LCSD**	Run ID:	**IC2_190516B**	Analysis Date:	**5/16/2019 10:58:41 AM**	Prep Date:	**5/16/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.2	1.00	10.00	0	102	90	110	0.034	20	
Fluoride	4.08	0.400	4.000	0	102	90	110	0.128	20	
Nitrate-N	5.18	0.500	5.000	0	104	90	110	1.47	20	
Sulfate	30.8	3.00	30.00	0	103	90	110	0.343	20	

Sample ID	**1905178-02DMS**	Batch ID:	**90934**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**MS**	Run ID:	**IC2_190516B**	Analysis Date:	**5/16/2019 12:59:35 PM**	Prep Date:	**5/16/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	21400	1000	20000	0	107	90	110			
Fluoride	21400	400	20000	0	107	90	110			
Nitrate-N	4620	500	4516	0	102	90	110			
Sulfate	20700	3000	20000	0	103	90	110			

Sample ID	**1905178-02DMSD**	Batch ID:	**90934**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**MSD**	Run ID:	**IC2_190516B**	Analysis Date:	**5/16/2019 1:15:35 PM**	Prep Date:	**5/16/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	21000	1000	20000	0	105	90	110	2.04	20	
Fluoride	21000	400	20000	0	105	90	110	1.92	20	
Nitrate-N	4530	500	4516	0	100	90	110	2.06	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905185
Project: Luminant-A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_190516B

Sample ID **1905178-02DMSD**	Batch ID: **90934**	TestNo: **E300**	Units: **mg/L**
SampType: **MSD**	Run ID: **IC2_190516B**	Analysis Date: **5/16/2019 1:15:35 PM**	Prep Date: **5/16/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	20200	3000	20000	0	101	90	110	2.16	20	

Sample ID **1905178-03DMS**	Batch ID: **90934**	TestNo: **E300**	Units: **mg/L**
SampType: **MS**	Run ID: **IC2_190516B**	Analysis Date: **5/16/2019 1:47:35 PM**	Prep Date: **5/16/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	24300	1000	20000	3227	105	90	110			
Fluoride	21100	400	20000	0	106	90	110			
Nitrate-N	4600	500	4516	0	102	90	110			
Sulfate	20400	3000	20000	0	102	90	110			

Sample ID **1905178-03DMSD**	Batch ID: **90934**	TestNo: **E300**	Units: **mg/L**
SampType: **MSD**	Run ID: **IC2_190516B**	Analysis Date: **5/16/2019 2:03:35 PM**	Prep Date: **5/16/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	24200	1000	20000	3227	105	90	110	0.381	20	
Fluoride	21100	400	20000	0	106	90	110	0.221	20	
Nitrate-N	4550	500	4516	0	101	90	110	1.04	20	
Sulfate	20100	3000	20000	0	101	90	110	1.20	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905185
Project: Luminant-A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_190516B

Sample ID **ICV-190516**	Batch ID: **R104123**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC2_190516B**	Analysis Date: **5/16/2019 9:54:41 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	26.3	1.00	25.00	0	105	90	110			
Fluoride	10.5	0.400	10.00	0	105	90	110			
Nitrate-N	13.3	0.500	12.50	0	106	90	110			
Sulfate	78.9	3.00	75.00	0	105	90	110			

Sample ID **CCV1-190516**	Batch ID: **R104123**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_190516B**	Analysis Date: **5/16/2019 5:29:14 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.5	1.00	10.00	0	105	90	110			
Fluoride	4.18	0.400	4.000	0	104	90	110			
Nitrate-N	5.22	0.500	5.000	0	104	90	110			
Sulfate	31.5	3.00	30.00	0	105	90	110			

Sample ID **CCV2-190516**	Batch ID: **R104123**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_190516B**	Analysis Date: **5/16/2019 9:29:14 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.5	1.00	10.00	0	105	90	110			
Fluoride	4.18	0.400	4.000	0	105	90	110			
Nitrate-N	5.22	0.500	5.000	0	104	90	110			
Sulfate	31.9	3.00	30.00	0	106	90	110			

Sample ID **CCV3-190516**	Batch ID: **R104123**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_190516B**	Analysis Date: **5/17/2019 12:41:14 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.8	1.00	10.00	0	108	90	110			
Fluoride	4.24	0.400	4.000	0	106	90	110			
Nitrate-N	5.27	0.500	5.000	0	105	90	110			
Sulfate	31.9	3.00	30.00	0	106	90	110			

Sample ID **CCV4-190516**	Batch ID: **R104123**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_190516B**	Analysis Date: **5/17/2019 4:25:14 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.6	1.00	10.00	0	106	90	110			
Sulfate	31.6	3.00	30.00	0	105	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905185
Project: Luminant-A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_190516B

Sample ID **CCV5-190516**	Batch ID: **R104123**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_190516B**	Analysis Date: **5/17/2019 6:49:14 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.6	1.00	10.00	0	106	90	110			
Sulfate	31.8	3.00	30.00	0	106	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905185
Project: Luminant-A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_190517B

The QC data in batch 90964 applies to the following samples: 1905185-08C, 1905185-10C

Sample ID	**MB-90964**	Batch ID:	**90964**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**IC2_190517B**	Analysis Date:	**5/17/2019 10:29:03 AM**	Prep Date:	**5/17/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	<1.00	3.00								

Sample ID	**LCS-90964**	Batch ID:	**90964**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**IC2_190517B**	Analysis Date:	**5/17/2019 10:45:03 AM**	Prep Date:	**5/17/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	31.5	3.00	30.00	0	105	90	110			

Sample ID	**LCSD-90964**	Batch ID:	**90964**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**LCSD**	Run ID:	**IC2_190517B**	Analysis Date:	**5/17/2019 11:01:03 AM**	Prep Date:	**5/17/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	31.6	3.00	30.00	0	105	90	110	0.320	20	

Sample ID	**1905169-06BMS**	Batch ID:	**90964**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**MS**	Run ID:	**IC2_190517B**	Analysis Date:	**5/17/2019 3:37:12 PM**	Prep Date:	**5/17/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	388	30.0	200.0	177.5	105	90	110			

Sample ID	**1905169-06BMSD**	Batch ID:	**90964**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**MSD**	Run ID:	**IC2_190517B**	Analysis Date:	**5/17/2019 3:53:11 PM**	Prep Date:	**5/17/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	394	30.0	200.0	177.5	108	90	110	1.58	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905185
Project: Luminant-A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_190517B

Sample ID **ICV-190517**	Batch ID: **R104148**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC2_190517B**	Analysis Date: **5/17/2019 9:57:03 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	80.5	3.00	75.00	0	107	90	110			

Sample ID **CCV1-190517**	Batch ID: **R104148**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_190517B**	Analysis Date: **5/17/2019 7:21:11 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	31.9	3.00	30.00	0	106	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905185
Project: Luminant-A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_190517A

The QC data in batch 90967 applies to the following samples: 1905185-01C, 1905185-02C, 1905185-03C, 1905185-04C, 1905185-05C, 1905185-06C, 1905185-07C, 1905185-08C, 1905185-09C, 1905185-10C, 1905185-11C

Sample ID **MB-90967** Batch ID: **90967** TestNo: **M2320 B** Units: **mg/L @ pH 4.18**
SampType: **MBLK** Run ID: **TITRATOR_190517A** Analysis Date: **5/17/2019 10:37:00 AM** Prep Date: **5/17/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	<10.0	20.0								
Alkalinity, Carbonate (As CaCO3)	<10.0	20.0								
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0								
Alkalinity, Total (As CaCO3)	<20.0	20.0								

Sample ID **LCS-90967** Batch ID: **90967** TestNo: **M2320 B** Units: **mg/L @ pH 4.07**
SampType: **LCS** Run ID: **TITRATOR_190517A** Analysis Date: **5/17/2019 10:42:00 AM** Prep Date: **5/17/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)	52.8	20.0	50.00	0	106	74	129			

Sample ID **LCSD-90967** Batch ID: **90967** TestNo: **M2320 B** Units: **mg/L @ pH 4.09**
SampType: **LCSD** Run ID: **TITRATOR_190517A** Analysis Date: **5/17/2019 11:23:00 AM** Prep Date: **5/17/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)	52.7	20.0	50.00	0	105	74	129	0.152	20	

Sample ID **1905178-02D DUP** Batch ID: **90967** TestNo: **M2320 B** Units: **mg/L @ pH 4.53**
SampType: **DUP** Run ID: **TITRATOR_190517A** Analysis Date: **5/17/2019 12:39:00 PM** Prep Date: **5/17/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	460	20.0	0	469.5				2.04	20	
Alkalinity, Carbonate (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Total (As CaCO3)	460	20.0	0	469.5				2.04	20	

Sample ID **1905185-03C DUP** Batch ID: **90967** TestNo: **M2320 B** Units: **mg/L @ pH 4.54**
SampType: **DUP** Run ID: **TITRATOR_190517A** Analysis Date: **5/17/2019 2:20:00 PM** Prep Date: **5/17/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	469	20.0	0	473.7				1.06	20	
Alkalinity, Carbonate (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Total (As CaCO3)	469	20.0	0	473.7				1.06	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905185
Project: Luminant-A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_190517A

Sample ID **ICV-190517**	Batch ID: **R104143**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.21**
SampType: **ICV**	Run ID: **TITRATOR_190517A**	Analysis Date: **5/17/2019 10:16:00 AM**	Prep Date: **5/17/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	10.2	20.0	0							
Alkalinity, Carbonate (As CaCO3)	88.2	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	98.3	20.0	100.0	0	98.3	98	102			

Sample ID **CCV1-190517**	Batch ID: **R104143**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.25**
SampType: **CCV**	Run ID: **TITRATOR_190517A**	Analysis Date: **5/17/2019 1:41:00 PM**	Prep Date: **5/17/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	25.5	20.0	0							
Alkalinity, Carbonate (As CaCO3)	73.1	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	98.6	20.0	100.0	0	98.6	90	110			

Sample ID **CCV2-190517**	Batch ID: **R104143**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.22**
SampType: **CCV**	Run ID: **TITRATOR_190517A**	Analysis Date: **5/17/2019 5:20:00 PM**	Prep Date: **5/17/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	14.9	20.0	0							
Alkalinity, Carbonate (As CaCO3)	84.2	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	99.0	20.0	100.0	0	99.0	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905185
Project: Luminant-A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: UV/VIS_2_190516B

The QC data in batch 90950 applies to the following samples: 1905185-01C, 1905185-02C, 1905185-03C, 1905185-04C, 1905185-05C, 1905185-06C, 1905185-07C, 1905185-08C, 1905185-09C, 1905185-10C, 1905185-11C

Sample ID	**MB-90950**	Batch ID:	**90950**	TestNo:	**M4500-P E**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**UV/VIS_2_190516B**	Analysis Date:	**5/16/2019 2:45:00 PM**	Prep Date:	**5/16/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Total Orthophosphate (As	<0.0300	0.100								

Sample ID	**LCS-90950**	Batch ID:	**90950**	TestNo:	**M4500-P E**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**UV/VIS_2_190516B**	Analysis Date:	**5/16/2019 2:45:00 PM**	Prep Date:	**5/16/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Total Orthophosphate (As	0.523	0.100	0.5000	0	105	80	120			

Sample ID	**LCSD-90950**	Batch ID:	**90950**	TestNo:	**M4500-P E**	Units:	**mg/L**
SampType:	**LCSD**	Run ID:	**UV/VIS_2_190516B**	Analysis Date:	**5/16/2019 2:46:00 PM**	Prep Date:	**5/16/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Total Orthophosphate (As	0.496	0.100	0.5000	0	99.2	80	120	5.30	15	

Sample ID	**1905185-01CMS**	Batch ID:	**90950**	TestNo:	**M4500-P E**	Units:	**mg/L**
SampType:	**MS**	Run ID:	**UV/VIS_2_190516B**	Analysis Date:	**5/16/2019 2:46:00 PM**	Prep Date:	**5/16/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Total Orthophosphate (As	0.647	0.100	0.5000	0.05100	119	80	120			

Sample ID	**1905185-01CMSD**	Batch ID:	**90950**	TestNo:	**M4500-P E**	Units:	**mg/L**
SampType:	**MSD**	Run ID:	**UV/VIS_2_190516B**	Analysis Date:	**5/16/2019 2:47:00 PM**	Prep Date:	**5/16/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Total Orthophosphate (As	0.614	0.100	0.5000	0.05100	113	80	120	5.23	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905185
Project: Luminant-A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: UV/VIS_2_190516B

Sample ID **ICV-190516**	Batch ID: **R104109**	TestNo: **M4500-P E**	Units: **mg/L**
SampType: **ICV**	Run ID: **UV/VIS_2_190516B**	Analysis Date: **5/16/2019 2:44:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Total Orthophosphate (As	0.204	0.100	0.2000	0	102	85	115			

Sample ID **CCV1-190516**	Batch ID: **R104109**	TestNo: **M4500-P E**	Units: **mg/L**
SampType: **CCV**	Run ID: **UV/VIS_2_190516B**	Analysis Date: **5/16/2019 2:51:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Total Orthophosphate (As	0.510	0.100	0.5000	0	102	85	115			

Sample ID **CCV2-190516**	Batch ID: **R104109**	TestNo: **M4500-P E**	Units: **mg/L**
SampType: **CCV**	Run ID: **UV/VIS_2_190516B**	Analysis Date: **5/16/2019 2:53:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Total Orthophosphate (As	0.485	0.100	0.5000	0	97.0	85	115			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905185
Project: Luminant-A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: UV/VIS_2_190520A

The QC data in batch 91002 applies to the following samples: 1905185-01A, 1905185-02A, 1905185-03A, 1905185-04A, 1905185-05A, 1905185-06A, 1905185-07A, 1905185-08A, 1905185-09A, 1905185-10A, 1905185-11A

Sample ID	**MB-91002**	Batch ID:	**91002**	TestNo:	**M3500-Fe D**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**UV/VIS_2_190520A**	Analysis Date:	**5/20/2019 3:53:00 PM**	Prep Date:	**5/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	<0.0500	0.100								N

Sample ID	**LCS-91002**	Batch ID:	**91002**	TestNo:	**M3500-Fe D**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**UV/VIS_2_190520A**	Analysis Date:	**5/20/2019 3:53:00 PM**	Prep Date:	**5/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	0.0888	0.100	0.1000	0	88.8	85	115			N

Sample ID	**LCSD-91002**	Batch ID:	**91002**	TestNo:	**M3500-Fe D**	Units:	**mg/L**
SampType:	**LCSD**	Run ID:	**UV/VIS_2_190520A**	Analysis Date:	**5/20/2019 3:53:00 PM**	Prep Date:	**5/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	0.0879	0.100	0.1000	0	87.9	85	115	1.05	15	N

Sample ID	**1905185-11AMS**	Batch ID:	**91002**	TestNo:	**M3500-Fe D**	Units:	**mg/L**
SampType:	**MS**	Run ID:	**UV/VIS_2_190520A**	Analysis Date:	**5/20/2019 4:03:00 PM**	Prep Date:	**5/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	0.0860	0.100	0.1000	0	86.0	85	115			N

Sample ID	**1905185-11AMSD**	Batch ID:	**91002**	TestNo:	**M3500-Fe D**	Units:	**mg/L**
SampType:	**MSD**	Run ID:	**UV/VIS_2_190520A**	Analysis Date:	**5/20/2019 4:03:00 PM**	Prep Date:	**5/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	0.0861	0.100	0.1000	0	86.1	85	115	0.116	15	N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905185
Project: Luminant-A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: UV/VIS_2_190520A

Sample ID	**ICV-190520**	Batch ID:	**R104177**	TestNo:	**M3500-Fe D**	Units:	**mg/L**
SampType:	**ICV**	Run ID:	**UV/VIS_2_190520A**	Analysis Date:	**5/20/2019 3:52:00 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	0.0875	0.100	0.1000	0	87.5	85	115			N

Sample ID	**CCV1-190520**	Batch ID:	**R104177**	TestNo:	**M3500-Fe D**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**UV/VIS_2_190520A**	Analysis Date:	**5/20/2019 3:59:00 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	0.197	0.100	0.2000	0	98.4	85	115			N

Sample ID	**CCV2-190520**	Batch ID:	**R104177**	TestNo:	**M3500-Fe D**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**UV/VIS_2_190520A**	Analysis Date:	**5/20/2019 4:12:00 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	0.183	0.100	0.2000	0	91.7	85	115			N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905185
Project: Luminant-A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: WC_190520A

The QC data in batch 91001 applies to the following samples: 1905185-01C, 1905185-02C, 1905185-03C, 1905185-04C, 1905185-05C, 1905185-06C, 1905185-07C, 1905185-08C, 1905185-09C, 1905185-10C, 1905185-11C

Sample ID	**MB-91001**	Batch ID:	**91001**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**WC_190520A**	Analysis Date:	**5/20/2019 4:45:00 PM**	Prep Date:	**5/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	<10.0	10.0								

Sample ID	**LCS-91001**	Batch ID:	**91001**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**WC_190520A**	Analysis Date:	**5/20/2019 4:45:00 PM**	Prep Date:	**5/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	751	10.0	745.6	0	101	90	113			

Sample ID	**1905182-01D-DUP**	Batch ID:	**91001**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**DUP**	Run ID:	**WC_190520A**	Analysis Date:	**5/20/2019 4:45:00 PM**	Prep Date:	**5/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	6840	200	0	6820				0.293	5	

Sample ID	**1905182-02D-DUP**	Batch ID:	**91001**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**DUP**	Run ID:	**WC_190520A**	Analysis Date:	**5/20/2019 4:45:00 PM**	Prep Date:	**5/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	5030	50.0	0	5065				0.693	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

Pace Analytical®
National Center for Testing & Innovation

ANALYTICAL REPORT

June 18, 2019

DHL Analytical, Inc.

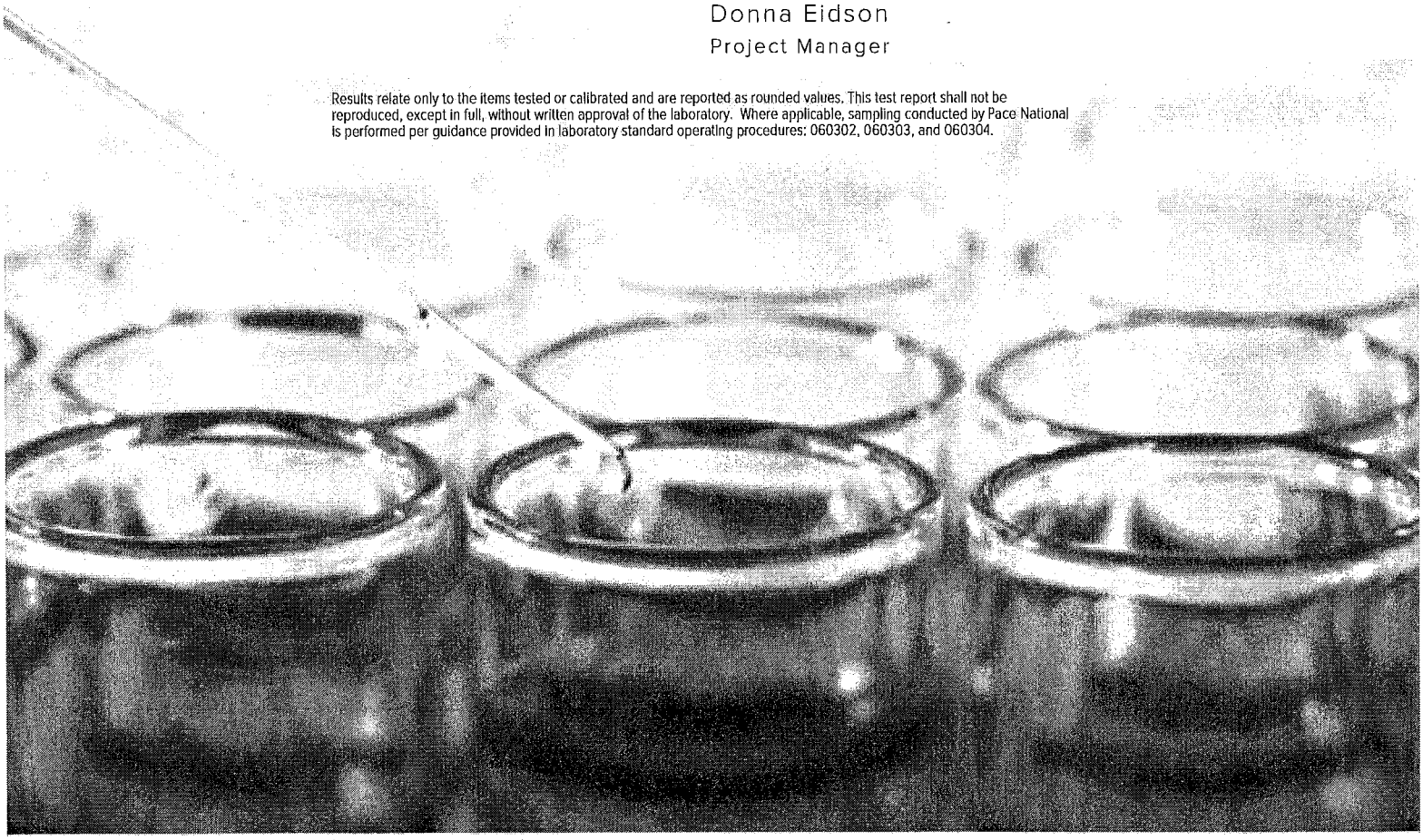
Sample Delivery Group:	L1100977
Samples Received:	05/21/2019
Project Number:	1905185
Description:	

Report To: John DuPont
2300 Double Creek Drive
Round Rock, TX 78664

Entire Report Reviewed By:

Donna Eidson
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace National is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.



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BMW-24 L1100977-01 Non-Potable Water

Collected by | Collected date/time 05/15/19 07:35 | Received date/time 05/21/19 10:10

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1285651	1	05/24/19 09:05	05/30/19 12:10	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1285448	1	05/28/19 16:20	05/30/19 13:00	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1285448	1	05/28/19 16:20	05/30/19 13:00	RGT	Mt. Juliet, TN

BMW-23 L1100977-02 Non-Potable Water

Collected by | Collected date/time 05/15/19 08:25 | Received date/time 05/21/19 10:10

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1285651	1	05/24/19 09:05	06/13/19 16:05	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1285448	1	05/28/19 16:20	06/13/19 16:05	JMR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1285448	1	05/28/19 16:20	05/30/19 13:00	RGT	Mt. Juliet, TN

BMW-22 L1100977-03 Non-Potable Water

Collected by | Collected date/time 05/15/19 09:15 | Received date/time 05/21/19 10:10

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1285651	1	05/24/19 09:05	05/30/19 12:10	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1285448	1	05/28/19 16:20	05/30/19 13:00	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1285448	1	05/28/19 16:20	05/30/19 13:00	RGT	Mt. Juliet, TN

BMW-21 L1100977-04 Non-Potable Water

Collected by | Collected date/time 05/15/19 09:55 | Received date/time 05/21/19 10:10

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1285651	1	05/24/19 09:05	05/30/19 12:10	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1285448	1	05/28/19 16:20	05/30/19 13:00	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1285448	1	05/28/19 16:20	05/30/19 13:00	RGT	Mt. Juliet, TN

BMW-27 L1100977-05 Non-Potable Water

Collected by | Collected date/time 05/15/19 10:55 | Received date/time 05/21/19 10:10

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1285651	1	05/24/19 09:05	05/30/19 12:10	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1285448	1	05/28/19 16:20	05/30/19 17:30	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1285448	1	05/28/19 16:20	05/30/19 17:30	RGT	Mt. Juliet, TN

BMW-26 L1100977-06 Non-Potable Water

Collected by | Collected date/time 05/15/19 11:40 | Received date/time 05/21/19 10:10

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1285651	1	05/24/19 09:05	05/30/19 12:10	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1285448	1	05/28/19 16:20	05/30/19 17:30	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1285448	1	05/28/19 16:20	05/30/19 17:30	RGT	Mt. Juliet, TN

BMW-11AR L1100977-07 Non-Potable Water

Collected by | Collected date/time 05/15/19 12:35 | Received date/time 05/21/19 10:10

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1285651	1	05/24/19 09:05	05/30/19 12:10	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1285448	1	05/28/19 16:20	05/30/19 17:30	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1285448	1	05/28/19 16:20	05/30/19 17:30	RGT	Mt. Juliet, TN

BMW-19 L1100977-08 Non-Potable Water

Collected by | Collected date/time 05/15/19 13:25 | Received date/time 05/21/19 10:10

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1285651	1	05/24/19 09:05	05/30/19 12:10	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1285448	1	05/28/19 16:20	05/30/19 17:30	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1285448	1	05/28/19 16:20	05/30/19 17:30	RGT	Mt. Juliet, TN

BMW-18 L1100977-09 Non-Potable Water

Collected by | Collected date/time 05/15/19 14:10 | Received date/time 05/21/19 10:10

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1285651	1	05/24/19 09:05	05/30/19 12:10	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1285448	1	05/28/19 16:20	05/30/19 17:30	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1285448	1	05/28/19 16:20	05/30/19 17:30	RGT	Mt. Juliet, TN

BMW-28 L1100977-10 Non-Potable Water

Collected by | Collected date/time 05/15/19 15:00 | Received date/time 05/21/19 10:10

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1285651	1	05/24/19 09:05	05/31/19 11:10	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1285448	1	05/28/19 16:20	05/31/19 11:10	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1285448	1	05/28/19 16:20	05/30/19 17:30	RGT	Mt. Juliet, TN

BMW-20 L1100977-11 Non-Potable Water

Collected by | Collected date/time 05/15/19 16:00 | Received date/time 05/21/19 10:10

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1285651	1	05/24/19 09:05	05/31/19 11:10	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1285448	1	05/28/19 16:20	05/31/19 11:10	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1285448	1	05/28/19 16:20	05/30/19 17:30	RGT	Mt. Juliet, TN

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Donna Eidson
Project Manager

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	-0.0695		0.728	1.21	05/30/2019 12:10	WG1285651
(T) Barium	*109*			*62.0-143*	*05/30/2019 12:10*	WG1285651
(T) Yttrium	*113*			*79.0-136*	*05/30/2019 12:10*	WG1285651

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	1.45		1.23	1.48	05/30/2019 13:00	WG1285448

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	1.45		0.499	0.265	05/30/2019 13:00	WG1285448
(T) Barium-133	*80.0*			*30.0-143*	*05/30/2019 13:00*	WG1285448

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Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
RADIUM-228	1.00		0.384	0.82	06/13/2019 16:05	WG1285651
(T) Barium	*88.9*			*62.0-143*	*06/13/2019 16:05*	WG1285651
(T) Yttrium	*104*			*79.0-136*	*06/13/2019 16:05*	WG1285651

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
Combined Radium	3.54		1.14	1.55	06/13/2019 16:05	WG1285448

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
RADIUM-226	2.54		0.757	0.731	05/30/2019 13:00	WG1285448
(T) Barium-133	*89.6*			*30.0-143*	*05/30/2019 13:00*	WG1285448

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
RADIUM-228	1.64		0.361	0.547	05/30/2019 12:10	WG1285651
(T) Barium	*112*			*62.0-143*	*05/30/2019 12:10*	WG1285651
(T) Yttrium	*113*			*79.0-136*	*05/30/2019 12:10*	WG1285651

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
Combined Radium	5.00		1.19	0.945	05/30/2019 13:00	WG1285448

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
RADIUM-226	3.36		0.831	0.398	05/30/2019 13:00	WG1285448
(T) Barium-133	*79.4*			*30.0-143*	*05/30/2019 13:00*	WG1285448

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	1.07		0.398	0.586	05/30/2019 12:10	WG1285651
(T) Barium	*108*			*62.0-143*	*05/30/2019 12:10*	WG1285651
(T) Yttrium	*120*			*79.0-136*	*05/30/2019 12:10*	WG1285651

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	1.31		0.656	0.908	05/30/2019 13:00	WG1285448

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.245		0.258	0.322	05/30/2019 13:00	WG1285448
(T) Barium-133	*73.1*			*30.0-143*	*05/30/2019 13:00*	WG1285448

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
RADIUM-228	0.962		0.387	0.609	05/30/2019 12:10	WG1285651
(T) Barium	*112*			*62.0-143*	*05/30/2019 12:10*	WG1285651
(T) Yttrium	*115*			*79.0-136*	*05/30/2019 12:10*	WG1285651

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
Combined Radium	1.02		0.499	0.804	05/30/2019 17:30	WG1285448

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
RADIUM-226	0.0591		0.112	0.195	05/30/2019 17:30	WG1285448
(T) Barium-133	*90.6*			*30.0-143*	*05/30/2019 17:30*	WG1285448

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	1.13		0.329	0.524	05/30/2019 12:10	WG1285651
(T) Barium	*114*			*62.0-143*	*05/30/2019 12:10*	WG1285651
(T) Yttrium	*120*			*79.0-136*	*05/30/2019 12:10*	WG1285651

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	1.59		0.595	0.737	05/30/2019 17:30	WG1285448

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.457		0.266	0.213	05/30/2019 17:30	WG1285448
(T) Barium-133	*86.2*			*30.0-143*	*05/30/2019 17:30*	WG1285448

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	4.89		0.423	0.671	05/30/2019 12:10	WG1285651
(T) Barium	*103*			*62.0-143*	*05/30/2019 12:10*	WG1285651
(T) Yttrium	*116*			*79.0-136*	*05/30/2019 12:10*	WG1285651

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	5.71		0.795	0.964	05/30/2019 17:30	WG1285448

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.830		0.372	0.293	05/30/2019 17:30	WG1285448
(T) Barium-133	*87.9*			*30.0-143*	*05/30/2019 17:30*	WG1285448

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
RADIUM-228	4.66		0.515	0.78	05/30/2019 12:10	WG1285651
(T) Barium	*99.1*			*62.0-143*	*05/30/2019 12:10*	WG1285651
(T) Yttrium	*118*			*79.0-136*	*05/30/2019 12:10*	WG1285651

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
Combined Radium	5.47		1.05	1.23	05/30/2019 17:30	WG1285448

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
RADIUM-226	0.487		0.321	0.268	05/30/2019 17:30	WG1285448
(T) Barium-133	*71.8*			*30.0-143*	*05/30/2019 17:30*	WG1285448

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	3.95		0.414	0.603	05/30/2019 12:10	WG1285651
(T) Barium	*96.9*			*62.0-143*	*05/30/2019 12:10*	WG1285651
(T) Yttrium	*118*			*79.0-136*	*05/30/2019 12:10*	WG1285651

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	4.06		0.584	0.867	05/30/2019 17:30	WG1285448

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.107		0.170	0.264	05/30/2019 17:30	WG1285448
(T) Barium-133	*84.7*			*30.0-143*	*05/30/2019 17:30*	WG1285448

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
RADIUM-228	0.924		0.410	0.59	05/31/2019 11:10	WG1285651
(T) Barium	*122*			*62.0-143*	*05/31/2019 11:10*	WG1285651
(T) Yttrium	*96.5*			*79.0-136*	*05/31/2019 11:10*	WG1285651

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
Combined Radium	1.12		0.635	0.879	05/31/2019 11:10	WG1285448

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
RADIUM-226	0.197		0.225	0.289	05/30/2019 17:30	WG1285448
(T) Barium-133	*55.5*			*30.0-143*	*05/30/2019 17:30*	WG1285448

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty +/-	MDA	Analysis Date	Batch
	pCi/l			pCi/l	date / time	
RADIUM-228	0.174		0.384	0.657	05/31/2019 11:10	WG1285651
(T) Barium	*85.3*			*62.0-143*	*05/31/2019 11:10*	WG1285651
(T) Yttrium	*108*			*79.0-136*	*05/31/2019 11:10*	WG1285651

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty +/-	MDA	Analysis Date	Batch
	pCi/l			pCi/l	date / time	
Combined Radium	1.36		0.877	1.01	05/31/2019 11:10	WG1285448

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty +/-	MDA	Analysis Date	Batch
	pCi/l			pCi/l	date / time	
RADIUM-226	1.18		0.493	0.349	05/30/2019 17:30	WG1285448
(T) Barium-133	*73.8*			*30.0-143*	*05/30/2019 17:30*	WG1285448

Method Blank (MB)

(MB) R3417363-1 05/30/19 12:10

Analyte	MB Result pCi/l	MB Qualifier	MB MDA pCi/l
Radium-228	-0.0581		0.396
(T) Barium	*105*		
(T) Yttrium	*110*		

L1100977-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1100977-01 05/30/19 12:10 • (DUP) R3417363-5 05/30/19 12:10

Analyte	Original Result pCi/l	DUP Result pCi/l	Dilution	DUP RPD %	DUP RER	DUP Qualifier	DUP RPD Limits %	DUP RER Limit
Radium-228	-0.0695	0.650	1	200	0.741		20	3
(T) Barium	*109*	*111*						
(T) Yttrium	*113*	*107*						

Laboratory Control Sample (LCS)

(LCS) R3417363-2 05/30/19 12:10

Analyte	Spike Amount pCi/l	LCS Result pCi/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Radium-228	5.00	5.29	106	80.0-120	
(T) Barium			*104*		
(T) Yttrium			*114*		

L1100989-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1100989-01 05/31/19 11:10 • (MS) R3417363-3 05/30/19 12:10 • (MSD) R3417363-4 05/30/19 12:10

Analyte	Spike Amount pCi/l	Original Result pCi/l	MS Result pCi/l	MSD Result pCi/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	MS RER	RPD Limits %
Radium-228	20.0	0.531	20.9	19.5	102	94.8	1	70.0-130			7.08		20
(T) Barium		*120*			*102*	*115*							
(T) Yttrium		*93.0*			*117*	*114*							

Method Blank (MB)

(MB) R3418748-1 05/30/19 13:00

Analyte	MB Result pCi/l	MB Qualifier	MB MDA pCi/l
Radium-226	0.0330		0.399
(T) Barium-133	*58.0*		

L1102014-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1102014-01 05/30/19 17:30 • (DUP) R3418748-5 05/30/19 13:00

Analyte	Original Result pCi/l	DUP Result pCi/l	Dilution	DUP RPD %	DUP RER	DUP Qualifier	DUP RPD Limits %	DUP RER Limit
Radium-226	0.955	0.488	1	64.8	0.623		20	3
(T) Barium-133	*41.0*	*37.0*						

Laboratory Control Sample (LCS)

(LCS) R3418748-2 05/30/19 13:00

Analyte	Spike Amount pCi/l	LCS Result pCi/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Radium-226	20.1	19.8	98.4	80.0-120	
(T) Barium-133			*57.4*		

L1102014-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1102014-02 05/30/19 17:30 • (MS) R3418748-3 05/30/19 13:00 • (MSD) R3418748-4 05/30/19 13:00

Analyte	Spike Amount pCi/l	Original Result pCi/l	MS Result pCi/l	MSD Result pCi/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	MS RER	RPD Limits %
Radium-226	20.1	0.487	22.6	23.9	110	116	1	75.0-125			5.68		20
(T) Barium-133		*59.1*			*47.0*	*45.7*							

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Abbreviations and Definitions

MDA	Minimum Detectable Activity.
Rec.	Recovery.
RER	Replicate Error Ratio.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(T)	Tracer - A radioisotope of known concentration added to a solution of chemically equivalent radioisotopes at a known concentration to assist in monitoring the yield of the chemical separation.
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description

The remainder of this page intentionally left blank, there are no qualifiers applied to this SDG.

ACCREDITATIONS & LOCATIONS

ONE LAB. NATIONWIDE.

Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.
* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

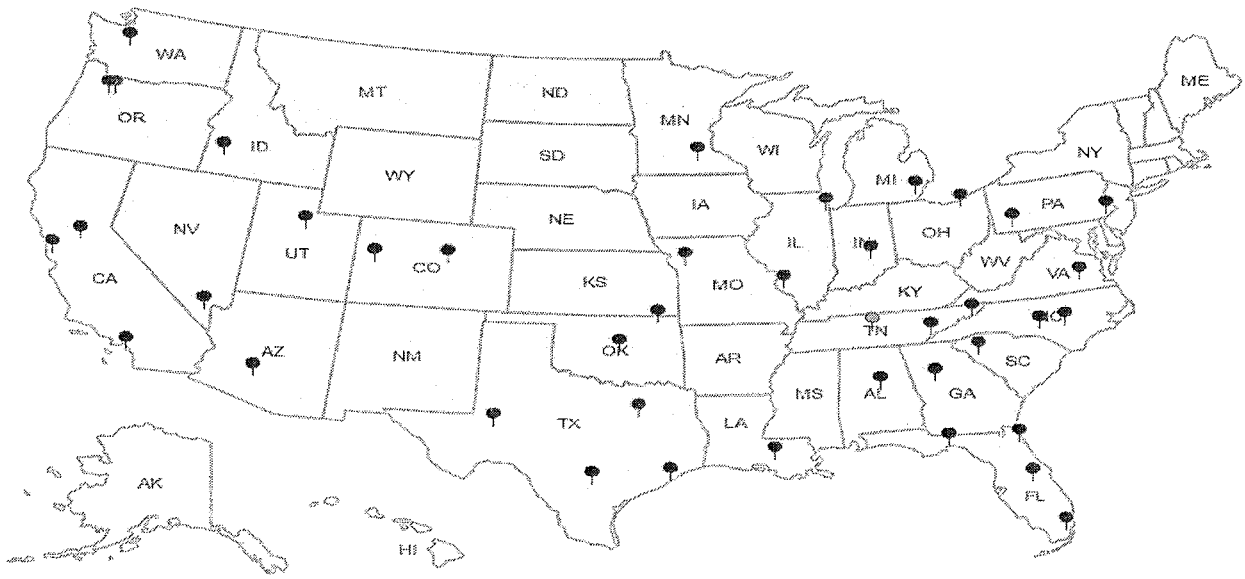
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



Pace Analytical National Center for Testing & Innovation
Cooler Receipt Form

Client: DHURTX		SDG#:	1100977
Cooler Received/Opened On: 5/21/19		Temperature:	Amb
Received By: Brock Fariss			
Signature: [signature] Fariss			

Receipt Check List	NP	Yes	No
COC Seal Present / Intact?	✓		
COC Signed / Accurate?		✓	
Bottles arrive intact?		✓	
Correct bottles used?		✓	
Sufficient volume sent?		✓	
If Applicable			
VOA Zero headspace?			
Preservation Correct / Checked?		✓	

Pace Analytical®
National Center for Testing & Innovation

Login #:L1100977	Client:DHLRRTX	Date:05/21	Evaluated by:Kelsey S

Non-Conformance (check applicable items)

	Sample Integrity		Chain of Custody Clarification		
	Parameter(s) past holding time		Login Clarification Needed		**If Broken Container:**
	Temperature not in range		Chain of custody is incomplete		Insufficient packing material around container
	Improper container type		Please specify Metals requested.		Insufficient packing material inside cooler
	pH not in range.		Please specify TCLP requested.		Improper handling by carrier (FedEx / UPS / Courier
	Insufficient sample volume.		Received additional samples not listed on coc.		Sample was frozen
	Sample is biphasic.		Sample ids on containers do not match ids on coc		Container lid not intact
	Vials received with headspace.		Trip Blank not received.		**If no Chain of Custody:**
	Broken container		Client did not "X" analysis.		Received by:
	Broken container:		Chain of Custody is missing		Date/Time:
	Sufficient sample remains				Temp./Cont. Rec./pH:
					Carrier:
					Tracking#

Login Comments:
Sample BMW-23,-22,-11AR, and -19 were received ith a pH oh 5
Samples BMW- 21,-27,-26,-28,-20 were received with a pH pf 8

Client informed by:		Call		Email		Voice Mail		Date:	Time:
TSR Initials:	Client Contact:								

Login Instructions:

Noted

DE 5/21/19 1547

1100977

DHL Analytical, Inc.
2300 Double Creek Drive
Round Rock, TX 78664
TEL: *(512) 388-8222* FAX: *(512) 388-8229*

CHAIN-OF-CUSTODY RECORD

H006

Work Order: 1905185

Subcontractor:

Pace Analytical
12065 Lebanon Rd
Mt. Juliet, TN 37122

TEL: (615) 773-5923
FAX:
Acct #: DHLRRTX

c2 c2

16-May-19

Sample Id	Matrix	DHL#	Date Collected	Bottle Type	Ra-228 E904.0	Ra-226 M7500 Ra B M	Requested Tests			
BMW-24	Aqueous	-01D	05/15/19 07:35 AM	1LHDPEHNO3		1				-01
BMW-24	Aqueous	-01E	05/15/19 07:35 AM	1LHDPEHNO3	1					
BMW-23	Aqueous	-02D	05/15/19 08:25 AM	1LHDPEHNO3		1				02
BMW-23	Aqueous	-02E	05/15/19 08:25 AM	1LHDPEHNO3	1					
BMW-22	Aqueous	-03D	05/15/19 09:15 AM	1LHDPEHNO3		1				03
BMW-22	Aqueous	-03E	05/15/19 09:15 AM	1LHDPEHNO3	1					
BMW-21	Aqueous	-04D	05/15/19 09:55 AM	1LHDPEHNO3		1				04
BMW-21	Aqueous	-04E	05/15/19 09:55 AM	1LHDPEHNO3	1					
BMW-27	Aqueous	-05D	05/15/19 10:55 AM	1LHDPEHNO3		1				05
BMW-27	Aqueous	-05E	05/15/19 10:55 AM	1LHDPEHNO3	1					
BMW-26	Aqueous	-06D	05/15/19 11:40 AM	1LHDPEHNO3		1				06
BMW-26	Aqueous	-06E	05/15/19 11:40 AM	1LHDPEHNO3	1					
BMW-11AR	Aqueous	-07D	05/15/19 12:35 PM	1LHDPEHNO3		1				07
BMW-11AR	Aqueous	-07E	05/15/19 12:35 PM	1LHDPEHNO3	1					
BMW-19	Aqueous	-08D	05/15/19 01:25 PM	1LHDPEHNO3		1				08
BMW-19	Aqueous	-08E	05/15/19 01:25 PM	1LHDPEHNO3	1					
BMW-18	Aqueous	-09D	05/15/19 02:10 PM	1LHDPEHNO3		1				09
BMW-18	Aqueous	-09E	05/15/19 02:10 PM	1LHDPEHNO3	1					

General Comments:

Please analyze these samples with Normal Turnaround Time.
Report RA-226, Ra-228 & Combined per Specs.
Quality Control Package Needed: Standard - NELAC Rad Test compliant
Email to cac@dhlanalytical.com & dupont@dhlanalytical.com

UPS
Rec: 22

	Date/Time		Date/Time
Relinquished by:	5/17/19 1700	Received by:	5/21/19 0815/1010
Relinquished by:		Received by:	

pH adj @ 1457

Amy RAD SCREEN: <0.5 mR/hr

1160977

DHL Analytical, Inc.
2300 Double Creek Drive
Round Rock, TX 78664
TEL: *(512) 388-8222* FAX: *(512) 388-8229*

CHAIN-OF-CUSTODY RECORD

Work Order: 1905185

Subcontractor:
Pace Analytical
12065 Lebanon Rd
Mt. Juliet, TN 37122

TEL: (615) 773-5923
FAX:
Acct #: DHLRRTX

< 2 < 2

16-May-19

Sample Id	Matrix	DHL#	Date Collected	Bottle Type	Ra-228 E904.0	Ra-226 M7500 Ra B M	Requested Tests			
BMW-28	Aqueous	-10D	05/15/19 03:00 PM	1LHDPEHNO3		1				10
BMW-28	Aqueous	-10E	05/15/19 03:00 PM	1LHDPEHNO3	1					
BMW-20	Aqueous	-11D	05/15/19 04:00 PM	1LHDPEHNO3		1				11
BMW-20	Aqueous	-11E	05/15/19 04:00 PM	1LHDPEHNO3	1					

General Comments:
Please analyze these samples with Normal Turnaround Time.
Report RA-226, Ra-228 & Combined per Specs.
Quality Control Package Needed: Standard - NELAC Rad Test compliant
Email to cac@dhlanalytical.com & dupont@dhlanalytical.com

UPS
Rec: 22

	Date/Time		Date/Time
Relinquished by:		Received by:	5/21/19 1010
Relinquished by:		Received by:	

Amb

RAD SCREEN: <0.5 mR/hr

June 21, 2019

Will Vienne
Golder
2201 Double Creek Dr #4004
Round Rock, Texas 78664
TEL: (512) 671-3434
FAX (512) 671-3446

Order No.: 1906152

RE: A1 Area Landfill

Dear Will Vienne:

DHL Analytical, Inc. received 6 sample(s) on 6/14/2019 for the analyses presented in the following report.

There were no problems with the analyses and all data met requirements of NELAP except where noted in the Case Narrative. All non-NELAP methods will be identified accordingly in the case narrative and all estimated uncertainties of test results are within method or EPA specifications.

If you have any questions regarding these tests results, please feel free to call. Thank you for using DHL Analytical.

Sincerely,

John DuPont
General Manager

This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211-19-24

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AnalyticalQCSummaryReport 1906152 ..... **22**

DHL ANALYTICAL
2300 Double Creek Dr. ■ Round Rock, TX 78664
Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

nelap

№ 83013

CHAIN-OF-CUSTODY

CLIENT: Golder Associates
ADDRESS: 5416 Plaza Dr Texarkana TX 75501
PHONE: 903-794-0625 FAX/E-MAIL:
DATA REPORTED TO:
ADDITIONAL REPORT COPIES TO:

DATE: PAGE 1 OF 1
PO #: 19122434-D DHL WORK ORDER #: 1906152
PROJECT LOCATION OR NAME: A1 Area Landfill
CLENT PROJECT #: 19122434-D COLLECTOR: Alex Gonzales

Authorize 5% surcharge for TRRP Report? ❑ Yes ❑ No

S=SOIL W=WATER A=AIR L=LIQUID SE=SEDIMENT P=PAINT SL=SLUDGE O=OTHER SO=SOLID

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	HCl	HNO_3	H_2SO_4 ❑ NaOH ❑	ICE	UNPRESERVED	Cobalt, Sulfate, Lithium, Sulfate	Lithium	Barium	Arsenic	Alk, No, F, SO_4, Cl, Other, TDS	Mg, K, Na, Fe, Cr, Cons, Ferric	FIELD NOTES
BMW-25	01	6/13	0930	W		7		X		X	X	X				X	X	X
BMW-29	02	6/13	1030	W		7		X		X	X		X			X	X	X
BMW-30	03	6/13	1250	W		7		X		X	X			X		X	X	X
BMW-31	04	6/13	1430	W		7		X		X	X		X			X	X	X
BMW-32	05	6/13	0730	W		7		X		X	X	X				X	X	X
BMW-33	06	6/13	0815	W		7		X		X	X	X			X	X	X	X
		~~6/13~~																

ANALYSES: BTEX ❑ MTBE ❑ [METHOD 8021] TPH 1005 ❑ TPH 1006 ❑ HOLD 1006 ❑ GRO [METHOD 8015] ❑ DRO [METHOD 8105] ❑ VOC 8260 ❑ VOC 624 ❑ VOC 8260/5035 ❑ SVOC 8270 ❑ PAH 8270 ❑ HOLD PAH ❑ SVOC 625 ❑ 8270 PEST ❑ 625 PEST/PCB ❑ 608 PCB ❑ 8270 PCB ❑ 8270 O-P PEST ❑ 8082 PCB ❑ 8270 PCB ❑ 8321 HERB ❑ T PHOS, AMMONIA ❑ METALS 6020 ❑ METALS 200.8 ❑ DISS. METALS ❑ RCRA ❑ TX11 ❑ PH ❑ HEX CHROM ❑ ALKALINITY ❑ COD ❑ CHLORIDE ❑ ANIONS ❑ TCLP-SVOC ❑ VOC ❑ PEST ❑ HERB ❑ TCLP-METALS ❑ RCRA 8 ❑ TX-11 ❑ Pb ❑ RCI ❑ FLASHPOINT ❑ DGAS ❑ TDS ❑ TSS ❑ % MOISTURE ❑ CYANIDE ❑

add per Will Vienne (JO) 06/14/19

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
Alex Gonzales	6/13/19 1730	FEL EX
FEL EX	6/14/19 10:08	Sam Lehman

❑ DHL DISPOSAL @ $5.00 each ❑ Return

TURN AROUND TIME
RUSH ❑ CALL FIRST
1 DAY ❑ CALL FIRST
2 DAY ❑
NORMAL ☑
OTHER ❑

LABORATORY USE ONLY:
RECEIVING TEMP: 1.8°C/1.6°C THERM #: 78
CUSTODY SEALS: ❑ BROKEN ☒ INTACT ❑ NOT USED
CARRIER: ❑ LONE STAR ☒ FEDEX ❑ UPS ❑ OTHER
❑ COURIER DELIVERY
❑ HAND DELIVERED

DHL COC Rev 1 | FEB 2010

Eric Lau

From: John DuPont
Sent: Tuesday, May 28, 2019 11:35 AM
To: Eric Lau
Subject: FW: CCR Analysis

Appendix III Parameters:
Metals (Ca and B)
Anions (Cl, F, and SO4)
TDS

Appendix IV Parameters:

Metals (As, Ba, Be, Cd, Co, Cr, Hg, Li, Mo, Pb, Sb, Se, and Tl)
Ra-226
Ra-228

From: Vienne, Will [mailto:William_Vienne@golder.com]
Sent: Tuesday, April 09, 2019 12:48 PM
To: John DuPont <dupont@dhlanalytical.com>
Subject: CCR Analysis

ORIGIN ID:GGGA (903) 794-0625
GOLDER ASSOCIATES

5416 PLAZA DR

TEXARKANA, TX 75501
UNITED STATES US

SHIP DATE: 13JUN15
ACTWGT: 39.50 LB
CAD: 006994167/SSFE2002
DIMS: 27x14x14 IN

BILL THIRD PARTY

TO SAMPLE RECEIVING
DHL 19122434-D FOR A1
2300 DOUBLE CREEK DR

ROUND ROCK TX 78664
(512) 388-8222 REF:
INV:
PO: DEPT:

FedEx Express

FRI - 14 JUN 10:30A
PRIORITY OVERNIGHT

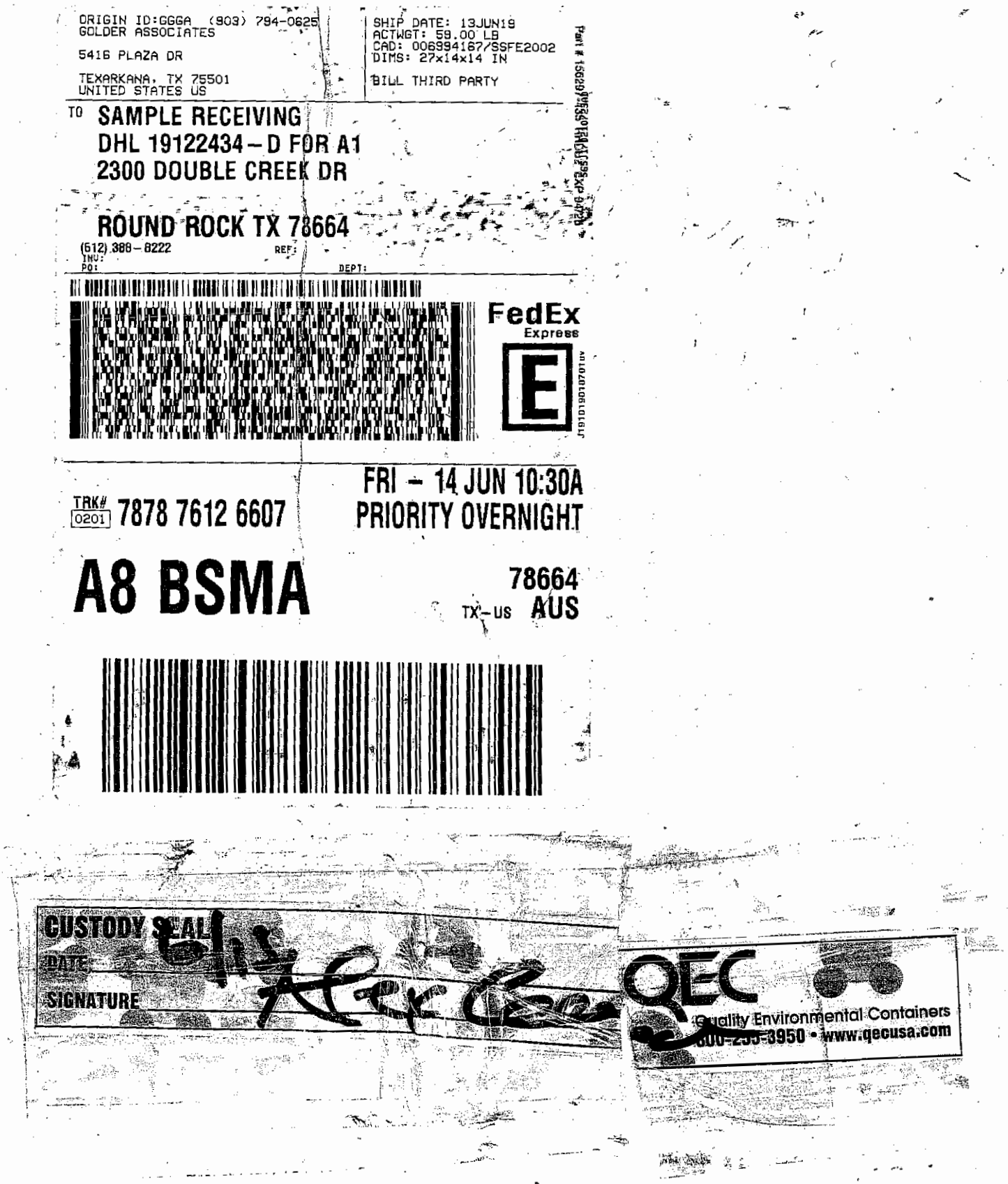
TRK# 0201 7878 7609 9128

A8 BSMA

78664
TX-US AUS

CUSTODY SEAL
DATE
SIGNATURE

QEC
Quality Environmental Containers
800-255-3950 • www.qecusa.com



ORIGIN ID:GGGA (903) 794-0625
GOLDER ASSOCIATES

5416 PLAZA DR

TEXARKANA, TX 75501
UNITED STATES US

SHIP DATE: 13JUN19
ACTWGT: 58.00 LB
CAD: 006994167/SSFE2002
DIMS: 27x14x14 IN

BILL THIRD PARTY

TO SAMPLE RECEIVING
DHL 19122434 – D FOR A1
2300 DOUBLE CREEK DR

ROUND ROCK TX 78664
(512) 388-8222 REF:
INV:
PO: DEPT:

FedEx
Express

TRK# 0201 7878 7612 6607

FRI – 14 JUN 10:30A
PRIORITY OVERNIGHT

A8 BSMA

78664
TX-US AUS

CUSTODY SEAL
DATE
SIGNATURE

QEC
Quality Environmental Containers
800-255-3950 • www.qecusa.com

DHL Analytical, Inc.

Sample Receipt Checklist

Client Name Golder | Date Received: 6/14/2019

Work Order Number 1906152 | Received by EL

Checklist completed by: _____ (Signature) 6/14/2019 (Date) | Reviewed by (02) (Initials) 6/14/2019 (Date)

Carrier name FedEx 1day

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	1.6 °C
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH<2 acceptable upon receipt?	Yes ☑	No ☐	NA ☐ LOT # 11837
	Adjusted? no		Checked by tu
Water - ph>9 (S) or ph>10 (CN) acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted? _____		Checked by _____

Any No response must be detailed in the comments section below.

Client contacted _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments: _____

Corrective Action _____

DHL Analytical, Inc. **Date:** *21-Jun-19*

CLIENT: Golder
Project: A1 Area Landfill
Lab Order: 1906152

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Method SW6020A - Metals Analysis
Method E300 - Anions Analysis
Method M2320 B - Alkalinity Analysis
Method M3500-Fe D - Ferrous Iron Analysis (this parameter is not NELAP certified)
Method M3500-Fe D - Ferric Iron (calculation) (this calculation is not NELAP certified).
Method M4500-P E - Orthophosphate Analysis
Method M2540C - TDS Analysis

LOG IN

The samples were received and log-in performed on 6/14/19. A total of 6 samples were received. On 6/14/19 several test parameters were added to all samples as per the client. These were performed as reque3sted. The samples arrived in good condition and were properly packaged.

METALS ANALYSIS

For Metals analysis performed on 6/19/19 the matrix spike and matrix spike duplicate recoveries were below control limits for Sodium. These are flagged accordingly in the QC summary report. The sample selected for the matrix spike and matrix spike duplicate was not from this work order. The LCS was within control limits for this analyte. No further corrective actions were taken.

For Metals analysis performed on 6/19/19 the PDS recovery was out of control limits for Sodium. This is flagged accordingly. The serial dilution was within control limits for this analyte. No further corrective actions were taken.

FERRIC IRON CALCULATION

The Ferric Iron is calculated as the Total Iron minus the Ferrous Iron.

DHL Analytical, Inc.

Date: *21-Jun-19*

CLIENT: Golder
Project: A1 Area Landfill
Lab Order: 1906152

Work Order Sample Summary

Lab Smp ID	Client Sample ID	Tag Number	Date Collected	Date Recved
1906152-01	BMW-25		06/13/19 09:30 AM	6/14/2019
1906152-02	BMW-29		06/13/19 10:30 AM	6/14/2019
1906152-03	BMW-30		06/13/19 12:50 PM	6/14/2019
1906152-04	BMW-31		06/13/19 02:30 PM	6/14/2019
1906152-05	BMW-32		06/13/19 07:30 AM	6/14/2019
1906152-06	BMW-33		06/13/19 08:15 AM	6/14/2019

Lab Order: 1906152
Client: Golder
Project: A1 Area Landfill

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1906152-01A	BMW-25	06/13/19 09:30 AM	Aqueous	M3500-Fe	Ferrous Iron Prep Water	06/14/19 02:08 PM	91344
1906152-01B	BMW-25	06/13/19 09:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/18/19 08:21 AM	91364
	BMW-25	06/13/19 09:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/18/19 08:21 AM	91364
	BMW-25	06/13/19 09:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/18/19 08:21 AM	91364
1906152-01C	BMW-25	06/13/19 09:30 AM	Aqueous	M2320 B	Alkalinity Preparation	06/17/19 08:32 AM	91346
	BMW-25	06/13/19 09:30 AM	Aqueous	E300	Anion Preparation	06/14/19 11:45 AM	91339
	BMW-25	06/13/19 09:30 AM	Aqueous	E300	Anion Preparation	06/14/19 11:45 AM	91339
	BMW-25	06/13/19 09:30 AM	Aqueous	E300	Anion Preparation	06/14/19 11:45 AM	91339
	BMW-25	06/13/19 09:30 AM	Aqueous	M4500-P E	Orthophosphate Prep	06/14/19 11:55 AM	91343
	BMW-25	06/13/19 09:30 AM	Aqueous	M2540C	TDS Preparation	06/18/19 01:25 PM	91377
1906152-02A	BMW-29	06/13/19 10:30 AM	Aqueous	M3500-Fe	Ferrous Iron Prep Water	06/14/19 02:08 PM	91344
1906152-02B	BMW-29	06/13/19 10:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/18/19 08:21 AM	91364
	BMW-29	06/13/19 10:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/18/19 08:21 AM	91364
1906152-02C	BMW-29	06/13/19 10:30 AM	Aqueous	M2320 B	Alkalinity Preparation	06/17/19 08:32 AM	91346
	BMW-29	06/13/19 10:30 AM	Aqueous	E300	Anion Preparation	06/14/19 11:45 AM	91339
	BMW-29	06/13/19 10:30 AM	Aqueous	E300	Anion Preparation	06/14/19 11:45 AM	91339
	BMW-29	06/13/19 10:30 AM	Aqueous	E300	Anion Preparation	06/14/19 11:45 AM	91339
	BMW-29	06/13/19 10:30 AM	Aqueous	M4500-P E	Orthophosphate Prep	06/14/19 11:55 AM	91343
	BMW-29	06/13/19 10:30 AM	Aqueous	M2540C	TDS Preparation	06/18/19 01:25 PM	91377
1906152-03A	BMW-30	06/13/19 12:50 PM	Aqueous	M3500-Fe	Ferrous Iron Prep Water	06/14/19 02:08 PM	91344
1906152-03B	BMW-30	06/13/19 12:50 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/18/19 08:21 AM	91364
	BMW-30	06/13/19 12:50 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/18/19 08:21 AM	91364
1906152-03C	BMW-30	06/13/19 12:50 PM	Aqueous	M2320 B	Alkalinity Preparation	06/17/19 08:32 AM	91346
	BMW-30	06/13/19 12:50 PM	Aqueous	E300	Anion Preparation	06/14/19 11:45 AM	91339
	BMW-30	06/13/19 12:50 PM	Aqueous	E300	Anion Preparation	06/14/19 11:45 AM	91339
	BMW-30	06/13/19 12:50 PM	Aqueous	E300	Anion Preparation	06/14/19 11:45 AM	91339
	BMW-30	06/13/19 12:50 PM	Aqueous	M4500-P E	Orthophosphate Prep	06/14/19 11:55 AM	91343
	BMW-30	06/13/19 12:50 PM	Aqueous	M2540C	TDS Preparation	06/18/19 01:25 PM	91377

Lab Order: 1906152
Client: Golder
Project: A1 Area Landfill

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1906152-04A	BMW-31	06/13/19 02:30 PM	Aqueous	M3500-Fe	Ferrous Iron Prep Water	06/14/19 02:08 PM	91344
1906152-04B	BMW-31	06/13/19 02:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/18/19 08:21 AM	91364
	BMW-31	06/13/19 02:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/18/19 08:21 AM	91364
	BMW-31	06/13/19 02:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/18/19 08:21 AM	91364
1906152-04C	BMW-31	06/13/19 02:30 PM	Aqueous	M2320 B	Alkalinity Preparation	06/17/19 08:32 AM	91346
	BMW-31	06/13/19 02:30 PM	Aqueous	E300	Anion Preparation	06/14/19 11:45 AM	91339
	BMW-31	06/13/19 02:30 PM	Aqueous	E300	Anion Preparation	06/14/19 11:45 AM	91339
	BMW-31	06/13/19 02:30 PM	Aqueous	E300	Anion Preparation	06/14/19 11:45 AM	91339
	BMW-31	06/13/19 02:30 PM	Aqueous	M4500-P E	Orthophosphate Prep	06/14/19 11:55 AM	91343
	BMW-31	06/13/19 02:30 PM	Aqueous	M2540C	TDS Preparation	06/18/19 01:25 PM	91377
1906152-05A	BMW-32	06/13/19 07:30 AM	Aqueous	M3500-Fe	Ferrous Iron Prep Water	06/14/19 02:08 PM	91344
1906152-05B	BMW-32	06/13/19 07:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/18/19 08:21 AM	91364
	BMW-32	06/13/19 07:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/18/19 08:21 AM	91364
	BMW-32	06/13/19 07:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/18/19 08:21 AM	91364
1906152-05C	BMW-32	06/13/19 07:30 AM	Aqueous	M2320 B	Alkalinity Preparation	06/17/19 08:32 AM	91346
	BMW-32	06/13/19 07:30 AM	Aqueous	E300	Anion Preparation	06/14/19 11:45 AM	91339
	BMW-32	06/13/19 07:30 AM	Aqueous	E300	Anion Preparation	06/14/19 11:45 AM	91339
	BMW-32	06/13/19 07:30 AM	Aqueous	E300	Anion Preparation	06/14/19 11:45 AM	91339
	BMW-32	06/13/19 07:30 AM	Aqueous	M4500-P E	Orthophosphate Prep	06/14/19 11:55 AM	91343
	BMW-32	06/13/19 07:30 AM	Aqueous	M2540C	TDS Preparation	06/18/19 01:25 PM	91377
1906152-06A	BMW-33	06/13/19 08:15 AM	Aqueous	M3500-Fe	Ferrous Iron Prep Water	06/14/19 02:08 PM	91344
1906152-06B	BMW-33	06/13/19 08:15 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/18/19 08:21 AM	91364
	BMW-33	06/13/19 08:15 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	06/18/19 08:21 AM	91364
1906152-06C	BMW-33	06/13/19 08:15 AM	Aqueous	M2320 B	Alkalinity Preparation	06/17/19 08:32 AM	91346
	BMW-33	06/13/19 08:15 AM	Aqueous	E300	Anion Preparation	06/14/19 11:45 AM	91339
	BMW-33	06/13/19 08:15 AM	Aqueous	E300	Anion Preparation	06/14/19 11:45 AM	91339
	BMW-33	06/13/19 08:15 AM	Aqueous	E300	Anion Preparation	06/14/19 11:45 AM	91339
	BMW-33	06/13/19 08:15 AM	Aqueous	M4500-P E	Orthophosphate Prep	06/14/19 11:55 AM	91343

Lab Order: 1906152
Client: Golder
Project: A1 Area Landfill

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1906152-06C	BMW-33	06/13/19 08:15 AM	Aqueous	M2540C	TDS Preparation	06/18/19 01:25 PM	91377

Lab Order: 1906152
Client: Golder
Project: A1 Area Landfill

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1906152-01A	BMW-25	Aqueous	M3500-Fe D	Ferric Iron (Calculated)	91344	1	06/21/19	UV/VIS_2_190621A
	BMW-25	Aqueous	M3500-Fe D	Ferrous Iron	91344	1	06/14/19 02:57 PM	UV/VIS_2_190614C
1906152-01B	BMW-25	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91364	10	06/19/19 02:34 PM	ICP-MS4_190619B
	BMW-25	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91364	20	06/19/19 02:37 PM	ICP-MS4_190619B
	BMW-25	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91364	1	06/19/19 12:25 PM	ICP-MS5_190619B
1906152-01C	BMW-25	Aqueous	M2320 B	Alkalinity	91346	1	06/17/19 10:31 AM	TITRATOR_190617A
	BMW-25	Aqueous	E300	Anions by IC method - Water	91339	100	06/14/19 12:17 PM	IC2_190614A
	BMW-25	Aqueous	E300	Anions by IC method - Water	91339	10	06/14/19 02:57 PM	IC2_190614A
	BMW-25	Aqueous	E300	Anions by IC method - Water	91339	1	06/14/19 05:37 PM	IC2_190614A
	BMW-25	Aqueous	M4500-P E	Orthophosphate	91343	1	06/14/19 12:26 PM	UV/VIS_2_190614B
	BMW-25	Aqueous	M2540C	Total Dissolved Solids	91377	1	06/18/19 03:40 PM	WC_190618A
1906152-02A	BMW-29	Aqueous	M3500-Fe D	Ferric Iron (Calculated)	91344	1	06/21/19	UV/VIS_2_190621A
	BMW-29	Aqueous	M3500-Fe D	Ferrous Iron	91344	1	06/14/19 02:57 PM	UV/VIS_2_190614C
1906152-02B	BMW-29	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91364	1	06/19/19 12:27 PM	ICP-MS5_190619B
	BMW-29	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91364	20	06/19/19 02:39 PM	ICP-MS4_190619B
1906152-02C	BMW-29	Aqueous	M2320 B	Alkalinity	91346	1	06/17/19 11:00 AM	TITRATOR_190617A
	BMW-29	Aqueous	E300	Anions by IC method - Water	91339	100	06/14/19 12:33 PM	IC2_190614A
	BMW-29	Aqueous	E300	Anions by IC method - Water	91339	10	06/14/19 03:13 PM	IC2_190614A
	BMW-29	Aqueous	E300	Anions by IC method - Water	91339	1	06/14/19 05:53 PM	IC2_190614A
	BMW-29	Aqueous	M4500-P E	Orthophosphate	91343	1	06/14/19 12:27 PM	UV/VIS_2_190614B
	BMW-29	Aqueous	M2540C	Total Dissolved Solids	91377	1	06/18/19 03:40 PM	WC_190618A
1906152-03A	BMW-30	Aqueous	M3500-Fe D	Ferric Iron (Calculated)	91344	1	06/21/19	UV/VIS_2_190621A
	BMW-30	Aqueous	M3500-Fe D	Ferrous Iron	91344	1	06/14/19 02:57 PM	UV/VIS_2_190614C
1906152-03B	BMW-30	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91364	10	06/19/19 02:41 PM	ICP-MS4_190619B
	BMW-30	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91364	1	06/19/19 12:29 PM	ICP-MS5_190619B
1906152-03C	BMW-30	Aqueous	M2320 B	Alkalinity	91346	1	06/17/19 11:15 AM	TITRATOR_190617A
	BMW-30	Aqueous	E300	Anions by IC method - Water	91339	100	06/14/19 12:49 PM	IC2_190614A
	BMW-30	Aqueous	E300	Anions by IC method - Water	91339	10	06/14/19 03:29 PM	IC2_190614A

Lab Order: 1906152
Client: Golder
Project: A1 Area Landfill

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1906152-03C	BMW-30	Aqueous	E300	Anions by IC method - Water	91339	1	06/14/19 06:09 PM	IC2_190614A
	BMW-30	Aqueous	M4500-P E	Orthophosphate	91343	1	06/14/19 12:27 PM	UV/VIS_2_190614B
	BMW-30	Aqueous	M2540C	Total Dissolved Solids	91377	1	06/18/19 03:40 PM	WC_190618A
1906152-04A	BMW-31	Aqueous	M3500-Fe D	Ferric Iron (Calculated)	91344	1	06/21/19	UV/VIS_2_190621A
	BMW-31	Aqueous	M3500-Fe D	Ferrous Iron	91344	1	06/14/19 02:58 PM	UV/VIS_2_190614C
1906152-04B	BMW-31	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91364	1	06/19/19 02:43 PM	ICP-MS4_190619B
	BMW-31	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91364	10	06/19/19 02:45 PM	ICP-MS4_190619B
	BMW-31	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91364	1	06/19/19 12:31 PM	ICP-MS5_190619B
1906152-04C	BMW-31	Aqueous	M2320 B	Alkalinity	91346	1	06/17/19 11:19 AM	TITRATOR_190617A
	BMW-31	Aqueous	E300	Anions by IC method - Water	91339	10	06/14/19 03:45 PM	IC2_190614A
	BMW-31	Aqueous	E300	Anions by IC method - Water	91339	1	06/14/19 06:25 PM	IC2_190614A
	BMW-31	Aqueous	E300	Anions by IC method - Water	91339	100	06/14/19 01:05 PM	IC2_190614A
	BMW-31	Aqueous	M4500-P E	Orthophosphate	91343	1	06/14/19 12:28 PM	UV/VIS_2_190614B
	BMW-31	Aqueous	M2540C	Total Dissolved Solids	91377	1	06/18/19 03:40 PM	WC_190618A
1906152-05A	BMW-32	Aqueous	M3500-Fe D	Ferric Iron (Calculated)	91344	1	06/21/19	UV/VIS_2_190621A
	BMW-32	Aqueous	M3500-Fe D	Ferrous Iron	91344	1	06/14/19 02:58 PM	UV/VIS_2_190614C
1906152-05B	BMW-32	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91364	1	06/19/19 12:34 PM	ICP-MS5_190619B
	BMW-32	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91364	10	06/19/19 02:47 PM	ICP-MS4_190619B
	BMW-32	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91364	20	06/19/19 03:12 PM	ICP-MS4_190619B
1906152-05C	BMW-32	Aqueous	M2320 B	Alkalinity	91346	1	06/17/19 11:46 AM	TITRATOR_190617A
	BMW-32	Aqueous	E300	Anions by IC method - Water	91339	100	06/14/19 01:21 PM	IC2_190614A
	BMW-32	Aqueous	E300	Anions by IC method - Water	91339	10	06/14/19 04:01 PM	IC2_190614A
	BMW-32	Aqueous	E300	Anions by IC method - Water	91339	1	06/14/19 06:41 PM	IC2_190614A
	BMW-32	Aqueous	M4500-P E	Orthophosphate	91343	1	06/14/19 12:28 PM	UV/VIS_2_190614B
	BMW-32	Aqueous	M2540C	Total Dissolved Solids	91377	1	06/18/19 03:40 PM	WC_190618A
1906152-06A	BMW-33	Aqueous	M3500-Fe D	Ferric Iron (Calculated)	91344	1	06/21/19	UV/VIS_2_190621A
	BMW-33	Aqueous	M3500-Fe D	Ferrous Iron	91344	1	06/14/19 02:59 PM	UV/VIS_2_190614C
1906152-06B	BMW-33	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91364	10	06/19/19 02:51 PM	ICP-MS4_190619B

Lab Order: 1906152
Client: Golder
Project: A1 Area Landfill

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1906152-06B	BMW-33	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91364	1	06/19/19 12:36 PM	ICP-MS5_190619B
1906152-06C	BMW-33	Aqueous	M2320 B	Alkalinity	91346	1	06/17/19 12:05 PM	TITRATOR_190617A
	BMW-33	Aqueous	E300	Anions by IC method - Water	91339	100	06/14/19 01:37 PM	IC2_190614A
	BMW-33	Aqueous	E300	Anions by IC method - Water	91339	10	06/14/19 04:17 PM	IC2_190614A
	BMW-33	Aqueous	E300	Anions by IC method - Water	91339	1	06/14/19 06:57 PM	IC2_190614A
	BMW-33	Aqueous	M4500-P E	Orthophosphate	91343	1	06/14/19 12:28 PM	UV/VIS_2_190614B
	BMW-33	Aqueous	M2540C	Total Dissolved Solids	91377	1	06/18/19 03:40 PM	WC_190618A

DHL Analytical, Inc.

Date: *21-Jun-19*

CLIENT:	Golder	**Client Sample ID:**	BMW-25
Project:	A1 Area Landfill	**Lab ID:**	1906152-01
Project No:	19122434-D	**Collection Date:**	06/13/19 09:30 AM
Lab Order:	1906152	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **SP**
Calcium	167	1.00	3.00		mg/L	10	06/19/19 02:34 PM
Cobalt	0.0130	0.00300	0.00500		mg/L	1	06/19/19 12:25 PM
Iron	0.354	0.0300	0.100		mg/L	1	06/19/19 12:25 PM
Lithium	0.0501	0.00500	0.0100		mg/L	1	06/19/19 12:25 PM
Magnesium	106	1.00	3.00		mg/L	10	06/19/19 02:34 PM
Potassium	7.77	1.00	3.00		mg/L	10	06/19/19 02:34 PM
Sodium	253	2.00	6.00		mg/L	20	06/19/19 02:37 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **JL**
Chloride	65.0	3.00	10.0		mg/L	10	06/14/19 02:57 PM
Fluoride	0.142	0.100	0.400	J	mg/L	1	06/14/19 05:37 PM
Nitrate-N	<0.100	0.100	0.500		mg/L	1	06/14/19 05:37 PM
Sulfate	556	10.0	30.0		mg/L	10	06/14/19 02:57 PM
ALKALINITY		**M2320 B**					Analyst: **CC**
Alkalinity, Bicarbonate (As CaCO3)	771	10.0	20.0		mg/L @ pH 4.54	1	06/17/19 10:31 AM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	06/17/19 10:31 AM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	06/17/19 10:31 AM
Alkalinity, Total (As CaCO3)	771	20.0	20.0		mg/L @ pH 4.54	1	06/17/19 10:31 AM
FERRIC IRON (CALCULATED)		**M3500-FE D**					Analyst: **CAC**
Iron, Ferric	0.354	0.0500	0.100	N	mg/L	1	06/21/19
FERROUS IRON		**M3500-FE D**					Analyst: **BTJ**
Iron, Ferrous	<0.0500	0.0500	0.100	N	mg/L	1	06/14/19 02:57 PM
ORTHOPHOSPHATE		**M4500-P E**					Analyst: **BTJ**
Phosphorus, Total Orthophosphate (As P)	<0.0300	0.0300	0.100		mg/L	1	06/14/19 12:26 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	1650	50.0	50.0		mg/L	1	06/18/19 03:40 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *21-Jun-19*

CLIENT:	Golder	**Client Sample ID:**	BMW-29
Project:	A1 Area Landfill	**Lab ID:**	1906152-02
Project No:	19122434-D	**Collection Date:**	06/13/19 10:30 AM
Lab Order:	1906152	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **SP**
Calcium	176	2.00	6.00		mg/L	20	06/19/19 02:39 PM
Iron	1.01	0.0300	0.100		mg/L	1	06/19/19 12:27 PM
Lithium	0.114	0.00500	0.0100		mg/L	1	06/19/19 12:27 PM
Magnesium	94.5	2.00	6.00		mg/L	20	06/19/19 02:39 PM
Potassium	15.3	2.00	6.00		mg/L	20	06/19/19 02:39 PM
Sodium	429	2.00	6.00		mg/L	20	06/19/19 02:39 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **JL**
Chloride	36.6	3.00	10.0		mg/L	10	06/14/19 03:13 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	06/14/19 05:53 PM
Nitrate-N	<0.100	0.100	0.500		mg/L	1	06/14/19 05:53 PM
Sulfate	867	10.0	30.0		mg/L	10	06/14/19 03:13 PM
ALKALINITY		**M2320 B**					Analyst: **CC**
Alkalinity, Bicarbonate (As CaCO3)	819	10.0	20.0		mg/L @ pH 4.54	1	06/17/19 11:00 AM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	06/17/19 11:00 AM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	06/17/19 11:00 AM
Alkalinity, Total (As CaCO3)	819	20.0	20.0		mg/L @ pH 4.54	1	06/17/19 11:00 AM
FERRIC IRON (CALCULATED)		**M3500-FE D**					Analyst: **CAC**
Iron, Ferric	0.668	0.0500	0.100	N	mg/L	1	06/21/19
FERROUS IRON		**M3500-FE D**					Analyst: **BTJ**
Iron, Ferrous	0.342	0.0500	0.100	N	mg/L	1	06/14/19 02:57 PM
ORTHOPHOSPHATE		**M4500-P E**					Analyst: **BTJ**
Phosphorus, Total Orthophosphate (As P)	<0.0300	0.0300	0.100		mg/L	1	06/14/19 12:27 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	2100	50.0	50.0		mg/L	1	06/18/19 03:40 PM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
	DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit
	ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
	S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *21-Jun-19*

CLIENT:	Golder	**Client Sample ID:**	BMW-30
Project:	A1 Area Landfill	**Lab ID:**	1906152-03
Project No:	19122434-D	**Collection Date:**	06/13/19 12:50 PM
Lab Order:	1906152	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **SP**
Barium	0.0982	0.00300	0.0100		mg/L	1	06/19/19 12:29 PM
Calcium	147	1.00	3.00		mg/L	10	06/19/19 02:41 PM
Iron	3.01	0.0300	0.100		mg/L	1	06/19/19 12:29 PM
Magnesium	65.9	1.00	3.00		mg/L	10	06/19/19 02:41 PM
Potassium	7.05	1.00	3.00		mg/L	10	06/19/19 02:41 PM
Sodium	158	1.00	3.00		mg/L	10	06/19/19 02:41 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **JL**
Chloride	79.5	3.00	10.0		mg/L	10	06/14/19 03:29 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	06/14/19 06:09 PM
Nitrate-N	<0.100	0.100	0.500		mg/L	1	06/14/19 06:09 PM
Sulfate	574	10.0	30.0		mg/L	10	06/14/19 03:29 PM
ALKALINITY		**M2320 B**					Analyst: **CC**
Alkalinity, Bicarbonate (As CaCO3)	315	10.0	20.0		mg/L @ pH 4.53	1	06/17/19 11:15 AM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	06/17/19 11:15 AM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	06/17/19 11:15 AM
Alkalinity, Total (As CaCO3)	315	20.0	20.0		mg/L @ pH 4.53	1	06/17/19 11:15 AM
FERRIC IRON (CALCULATED)		**M3500-FE D**					Analyst: **CAC**
Iron, Ferric	3.01	0.0500	0.100	N	mg/L	1	06/21/19
FERROUS IRON		**M3500-FE D**					Analyst: **BTJ**
Iron, Ferrous	<0.0500	0.0500	0.100	N	mg/L	1	06/14/19 02:57 PM
ORTHOPHOSPHATE		**M4500-P E**					Analyst: **BTJ**
Phosphorus, Total Orthophosphate (As P)	<0.0300	0.0300	0.100		mg/L	1	06/14/19 12:27 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	1320	50.0	50.0		mg/L	1	06/18/19 03:40 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *21-Jun-19*

CLIENT:	Golder	**Client Sample ID:**	BMW-31
Project:	A1 Area Landfill	**Lab ID:**	1906152-04
Project No:	19122434-D	**Collection Date:**	06/13/19 02:30 PM
Lab Order:	1906152	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **SP**
Calcium	1.70	0.100	0.300		mg/L	1	06/19/19 02:43 PM
Iron	0.102	0.0300	0.100		mg/L	1	06/19/19 12:31 PM
Lithium	0.0203	0.00500	0.0100		mg/L	1	06/19/19 12:31 PM
Magnesium	1.52	0.100	0.300		mg/L	1	06/19/19 12:31 PM
Potassium	0.238	0.100	0.300	J	mg/L	1	06/19/19 02:43 PM
Sodium	43.3	1.00	3.00		mg/L	10	06/19/19 02:45 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **JL**
Chloride	24.7	0.300	1.00		mg/L	1	06/14/19 06:25 PM
Fluoride	0.255	0.100	0.400	J	mg/L	1	06/14/19 06:25 PM
Nitrate-N	<0.100	0.100	0.500		mg/L	1	06/14/19 06:25 PM
Sulfate	34.4	1.00	3.00		mg/L	1	06/14/19 06:25 PM
ALKALINITY		**M2320 B**					Analyst: **CC**
Alkalinity, Bicarbonate (As CaCO3)	30.4	10.0	20.0		mg/L @ pH 4.49	1	06/17/19 11:19 AM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.49	1	06/17/19 11:19 AM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.49	1	06/17/19 11:19 AM
Alkalinity, Total (As CaCO3)	30.4	20.0	20.0		mg/L @ pH 4.49	1	06/17/19 11:19 AM
FERRIC IRON (CALCULATED)		**M3500-FE D**					Analyst: **CAC**
Iron, Ferric	0.102	0.0500	0.100	N	mg/L	1	06/21/19
FERROUS IRON		**M3500-FE D**					Analyst: **BTJ**
Iron, Ferrous	<0.0500	0.0500	0.100	N	mg/L	1	06/14/19 02:58 PM
ORTHOPHOSPHATE		**M4500-P E**					Analyst: **BTJ**
Phosphorus, Total Orthophosphate (As P)	<0.0300	0.0300	0.100		mg/L	1	06/14/19 12:28 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	327	10.0	10.0		mg/L	1	06/18/19 03:40 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *21-Jun-19*

CLIENT:	Golder	**Client Sample ID:**	BMW-32
Project:	A1 Area Landfill	**Lab ID:**	1906152-05
Project No:	19122434-D	**Collection Date:**	06/13/19 07:30 AM
Lab Order:	1906152	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **SP**
Calcium	134	1.00	3.00		mg/L	10	06/19/19 02:47 PM
Cobalt	0.00705	0.00300	0.00500		mg/L	1	06/19/19 12:34 PM
Iron	4.61	0.0300	0.100		mg/L	1	06/19/19 12:34 PM
Lithium	0.115	0.00500	0.0100		mg/L	1	06/19/19 12:34 PM
Magnesium	102	1.00	3.00		mg/L	10	06/19/19 02:47 PM
Potassium	4.56	1.00	3.00		mg/L	10	06/19/19 02:47 PM
Sodium	266	2.00	6.00		mg/L	20	06/19/19 03:12 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **JL**
Chloride	364	3.00	10.0		mg/L	10	06/14/19 04:01 PM
Fluoride	0.822	0.100	0.400		mg/L	1	06/14/19 06:41 PM
Nitrate-N	<0.100	0.100	0.500		mg/L	1	06/14/19 06:41 PM
Sulfate	446	10.0	30.0		mg/L	10	06/14/19 04:01 PM
ALKALINITY		**M2320 B**					Analyst: **CC**
Alkalinity, Bicarbonate (As CaCO3)	456	10.0	20.0		mg/L @ pH 4.54	1	06/17/19 11:46 AM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	06/17/19 11:46 AM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	06/17/19 11:46 AM
Alkalinity, Total (As CaCO3)	456	20.0	20.0		mg/L @ pH 4.54	1	06/17/19 11:46 AM
FERRIC IRON (CALCULATED)		**M3500-FE D**					Analyst: **CAC**
Iron, Ferric	4.61	0.0500	0.100	N	mg/L	1	06/21/19
FERROUS IRON		**M3500-FE D**					Analyst: **BTJ**
Iron, Ferrous	<0.0500	0.0500	0.100	N	mg/L	1	06/14/19 02:58 PM
ORTHOPHOSPHATE		**M4500-P E**					Analyst: **BTJ**
Phosphorus, Total Orthophosphate (As P)	0.0340	0.0300	0.100	J	mg/L	1	06/14/19 12:28 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	1720	50.0	50.0		mg/L	1	06/18/19 03:40 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *21-Jun-19*

CLIENT:	Golder	**Client Sample ID:**	BMW-33
Project:	A1 Area Landfill	**Lab ID:**	1906152-06
Project No:	19122434-D	**Collection Date:**	06/13/19 08:15 AM
Lab Order:	1906152	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **SP**
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	06/19/19 12:36 PM
Calcium	97.5	1.00	3.00		mg/L	10	06/19/19 02:51 PM
Cobalt	0.0176	0.00300	0.00500		mg/L	1	06/19/19 12:36 PM
Iron	2.83	0.0300	0.100		mg/L	1	06/19/19 12:36 PM
Lithium	0.0206	0.00500	0.0100		mg/L	1	06/19/19 12:36 PM
Magnesium	56.5	1.00	3.00		mg/L	10	06/19/19 02:51 PM
Potassium	6.29	1.00	3.00		mg/L	10	06/19/19 02:51 PM
Sodium	207	1.00	3.00		mg/L	10	06/19/19 02:51 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **JL**
Chloride	83.8	3.00	10.0		mg/L	10	06/14/19 04:17 PM
Fluoride	0.342	0.100	0.400	J	mg/L	1	06/14/19 06:57 PM
Nitrate-N	<0.100	0.100	0.500		mg/L	1	06/14/19 06:57 PM
Sulfate	256	10.0	30.0		mg/L	10	06/14/19 04:17 PM
ALKALINITY		**M2320 B**					Analyst: **CC**
Alkalinity, Bicarbonate (As CaCO3)	528	10.0	20.0		mg/L @ pH 4.53	1	06/17/19 12:05 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	06/17/19 12:05 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	06/17/19 12:05 PM
Alkalinity, Total (As CaCO3)	528	20.0	20.0		mg/L @ pH 4.53	1	06/17/19 12:05 PM
FERRIC IRON (CALCULATED)		**M3500-FE D**					Analyst: **CAC**
Iron, Ferric	2.83	0.0500	0.100	N	mg/L	1	06/21/19
FERROUS IRON		**M3500-FE D**					Analyst: **BTJ**
Iron, Ferrous	<0.0500	0.0500	0.100	N	mg/L	1	06/14/19 02:59 PM
ORTHOPHOSPHATE		**M4500-P E**					Analyst: **BTJ**
Phosphorus, Total Orthophosphate (As P)	<0.0300	0.0300	0.100		mg/L	1	06/14/19 12:28 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	1100	50.0	50.0		mg/L	1	06/18/19 03:40 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
S	Spike Recovery outside control limits	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906152
Project: A1 Area Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190619B

The QC data in batch 91364 applies to the following samples: 1906152-01B, 1906152-02B, 1906152-03B, 1906152-04B, 1906152-05B, 1906152-06B

Sample ID **MB-91364** Batch ID: **91364** TestNo: **SW6020A** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_190619B** Analysis Date: **6/19/2019 2:20:00 PM** Prep Date: **6/18/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	<0.100	0.300								
Potassium	<0.100	0.300								
Sodium	<0.100	0.300								

Sample ID **LCS-91364** Batch ID: **91364** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_190619B** Analysis Date: **6/19/2019 2:22:00 PM** Prep Date: **6/18/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.85	0.300	5.00	0	97.0	80	120			
Potassium	4.93	0.300	5.00	0	98.6	80	120			
Sodium	5.25	0.300	5.00	0	105	80	120			

Sample ID **LCSD-91364** Batch ID: **91364** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_190619B** Analysis Date: **6/19/2019 2:24:00 PM** Prep Date: **6/18/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.83	0.300	5.00	0	96.6	80	120	0.496	15	
Potassium	5.07	0.300	5.00	0	101	80	120	2.80	15	
Sodium	5.32	0.300	5.00	0	106	80	120	1.32	15	

Sample ID **1906156-01A SD** Batch ID: **91364** TestNo: **SW6020A** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS4_190619B** Analysis Date: **6/19/2019 2:32:00 PM** Prep Date: **6/18/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	8.18	1.50	0	8.11				0.846	10	
Potassium	2.17	1.50	0	2.15				0.715	10	
Sodium	76.4	1.50	0	73.6				3.77	10	

Sample ID **1906156-01A PDS** Batch ID: **91364** TestNo: **SW6020A** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS4_190619B** Analysis Date: **6/19/2019 2:53:00 PM** Prep Date: **6/18/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	12.4	0.300	5.00	8.11	86.2	80	120			
Potassium	6.91	0.300	5.00	2.15	95.1	80	120			
Sodium	73.3	0.300	5.00	73.6	-5.52	80	120			S

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906152
Project: A1 Area Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190619B

Sample ID **1906156-01A MS**	Batch ID: **91364**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS4_190619B**	Analysis Date: **6/19/2019 2:55:00 PM**	Prep Date: **6/18/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	12.8	0.300	5.00	8.11	92.9	80	120			
Potassium	7.18	0.300	5.00	2.15	100	80	120			
Sodium	76.9	0.300	5.00	73.6	67.1	80	120			S

Sample ID **1906156-01A MSD**	Batch ID: **91364**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS4_190619B**	Analysis Date: **6/19/2019 2:57:00 PM**	Prep Date: **6/18/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	12.7	0.300	5.00	8.11	92.7	80	120	0.075	15	
Potassium	7.12	0.300	5.00	2.15	99.2	80	120	0.869	15	
Sodium	75.0	0.300	5.00	73.6	29.2	80	120	2.49	15	S

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906152
Project: A1 Area Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190619B

Sample ID **ICV-190619**	Batch ID: **R104661**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_190619B**	Analysis Date: **6/19/2019 11:08:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	2.53	0.300	2.50	0	101	90	110			
Magnesium	2.44	0.300	2.50	0	97.7	90	110			
Potassium	2.53	0.300	2.50	0	101	90	110			
Sodium	2.61	0.300	2.50	0	104	90	110			

Sample ID **LCVL-190619**	Batch ID: **R104661**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_190619B**	Analysis Date: **6/19/2019 11:12:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.101	0.300	0.100	0	101	70	130			
Magnesium	0.0980	0.300	0.100	0	98.0	70	130			
Potassium	0.0981	0.300	0.100	0	98.1	70	130			
Sodium	0.104	0.300	0.100	0	104	70	130			

Sample ID **CCV1-190619**	Batch ID: **R104661**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_190619B**	Analysis Date: **6/19/2019 11:46:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.77	0.300	5.00	0	95.3	90	110			
Magnesium	4.91	0.300	5.00	0	98.2	90	110			
Potassium	4.90	0.300	5.00	0	98.0	90	110			
Sodium	5.18	0.300	5.00	0	104	90	110			

Sample ID **LCVL1-190619**	Batch ID: **R104661**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_190619B**	Analysis Date: **6/19/2019 11:53:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.101	0.300	0.100	0	101	70	130			
Magnesium	0.0993	0.300	0.100	0	99.3	70	130			
Potassium	0.0994	0.300	0.100	0	99.4	70	130			
Sodium	0.124	0.300	0.100	0	124	70	130			

Sample ID **CCV2-190619**	Batch ID: **R104661**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_190619B**	Analysis Date: **6/19/2019 2:59:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.77	0.300	5.00	0	95.4	90	110			
Magnesium	4.95	0.300	5.00	0	99.1	90	110			
Potassium	4.94	0.300	5.00	0	98.9	90	110			
Sodium	5.19	0.300	5.00	0	104	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906152
Project: A1 Area Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190619B

Sample ID **LCVL2-190619**	Batch ID: **R104661**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_190619B**	Analysis Date: **6/19/2019 3:06:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.0955	0.300	0.100	0	95.5	70	130			
Magnesium	0.0994	0.300	0.100	0	99.4	70	130			
Potassium	0.0956	0.300	0.100	0	95.6	70	130			
Sodium	0.112	0.300	0.100	0	112	70	130			

Sample ID **CCV3-190619**	Batch ID: **R104661**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_190619B**	Analysis Date: **6/19/2019 3:14:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	5.12	0.300	5.00	0	102	90	110			

Sample ID **LCVL3-190619**	Batch ID: **R104661**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_190619B**	Analysis Date: **6/19/2019 3:21:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	0.109	0.300	0.100	0	109	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906152
Project: A1 Area Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190619B

The QC data in batch 91364 applies to the following samples: 1906152-01B, 1906152-02B, 1906152-03B, 1906152-04B, 1906152-05B, 1906152-06B

Sample ID **MB-91364** Batch ID: **91364** TestNo: **SW6020A** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS5_190619B** Analysis Date: **6/19/2019 12:04:00 PM** Prep Date: **6/18/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	<0.00200	0.00500								
Barium	<0.00300	0.0100								
Cobalt	<0.00300	0.00500								
Iron	<0.0300	0.100								
Lithium	<0.00500	0.0100								
Magnesium	<0.100	0.300								

Sample ID **LCS-91364** Batch ID: **91364** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS5_190619B** Analysis Date: **6/19/2019 12:07:00 PM** Prep Date: **6/18/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.206	0.00500	0.200	0	103	80	120			
Barium	0.202	0.0100	0.200	0	101	80	120			
Cobalt	0.211	0.00500	0.200	0	105	80	120			
Iron	5.08	0.100	5.00	0	102	80	120			
Lithium	0.203	0.0100	0.200	0	102	80	120			
Magnesium	4.99	0.300	5.00	0	99.9	80	120			

Sample ID **LCSD-91364** Batch ID: **91364** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS5_190619B** Analysis Date: **6/19/2019 12:09:00 PM** Prep Date: **6/18/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.208	0.00500	0.200	0	104	80	120	0.963	15	
Barium	0.201	0.0100	0.200	0	101	80	120	0.125	15	
Cobalt	0.210	0.00500	0.200	0	105	80	120	0.544	15	
Iron	5.10	0.100	5.00	0	102	80	120	0.434	15	
Lithium	0.201	0.0100	0.200	0	101	80	120	0.963	15	
Magnesium	5.10	0.300	5.00	0	102	80	120	2.20	15	

Sample ID **1906156-01A SD** Batch ID: **91364** TestNo: **SW6020A** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS5_190619B** Analysis Date: **6/19/2019 12:16:00 PM** Prep Date: **6/18/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	<0.0100	0.0250	0	0				0	10	
Barium	0.190	0.0500	0	0.188				1.33	10	
Cobalt	0.0257	0.0250	0	0.0256				0.487	10	
Iron	0.159	0.500	0	0.161				1.10	10	
Lithium	<0.0250	0.0500	0	0.0130				0	10	
Magnesium	4.47	1.50	0	4.44				0.596	10	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906152
Project: A1 Area Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190619B

Sample ID **1906156-01A PDS**	Batch ID: **91364**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS5_190619B**	Analysis Date: **6/19/2019 12:38:00 PM**	Prep Date: **6/18/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.187	0.00500	0.200	0	93.5	80	120			
Barium	0.374	0.0100	0.200	0.188	93.3	80	120			
Cobalt	0.221	0.00500	0.200	0.0256	97.5	80	120			
Iron	5.30	0.100	5.00	0.161	103	80	120			
Lithium	0.218	0.0100	0.200	0.0130	102	80	120			
Magnesium	9.48	0.300	5.00	4.44	101	80	120			

Sample ID **1906156-01A MS**	Batch ID: **91364**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS5_190619B**	Analysis Date: **6/19/2019 12:40:00 PM**	Prep Date: **6/18/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.193	0.00500	0.200	0	96.6	80	120			
Barium	0.384	0.0100	0.200	0.188	97.9	80	120			
Cobalt	0.225	0.00500	0.200	0.0256	99.6	80	120			
Iron	5.29	0.100	5.00	0.161	103	80	120			
Lithium	0.216	0.0100	0.200	0.0130	102	80	120			
Magnesium	9.65	0.300	5.00	4.44	104	80	120			

Sample ID **1906156-01A MSD**	Batch ID: **91364**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS5_190619B**	Analysis Date: **6/19/2019 12:42:00 PM**	Prep Date: **6/18/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.194	0.00500	0.200	0	96.9	80	120	0.339	15	
Barium	0.387	0.0100	0.200	0.188	99.8	80	120	0.972	15	
Cobalt	0.226	0.00500	0.200	0.0256	100	80	120	0.650	15	
Iron	5.29	0.100	5.00	0.161	103	80	120	0.019	15	
Lithium	0.216	0.0100	0.200	0.0130	101	80	120	0.236	15	
Magnesium	9.55	0.300	5.00	4.44	102	80	120	0.948	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906152
Project: A1 Area Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190619B

Sample ID **ICV-190619**	Batch ID: **R104660**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS5_190619B**	Analysis Date: **6/19/2019 10:49:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.102	0.00500	0.100	0	102	90	110			
Barium	0.0979	0.0100	0.100	0	97.9	90	110			
Cobalt	0.102	0.00500	0.100	0	102	90	110			
Iron	2.48	0.100	2.50	0	99.4	90	110			
Lithium	0.101	0.0100	0.100	0	101	90	110			
Magnesium	2.45	0.300	2.50	0	98.2	90	110			

Sample ID **LCVL-190619**	Batch ID: **R104660**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_190619B**	Analysis Date: **6/19/2019 11:01:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.00481	0.00500	0.00500	0	96.2	70	130			
Barium	0.00509	0.0100	0.00500	0	102	70	130			
Cobalt	0.00504	0.00500	0.00500	0	101	70	130			
Iron	0.0961	0.100	0.100	0	96.1	70	130			
Lithium	0.0101	0.0100	0.0100	0	101	70	130			
Magnesium	0.0951	0.300	0.100	0	95.1	70	130			

Sample ID **CCV1-190619**	Batch ID: **R104660**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_190619B**	Analysis Date: **6/19/2019 11:50:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.203	0.00500	0.200	0	102	90	110			
Barium	0.202	0.0100	0.200	0	101	90	110			
Cobalt	0.207	0.00500	0.200	0	103	90	110			
Iron	5.05	0.100	5.00	0	101	90	110			
Lithium	0.201	0.0100	0.200	0	100	90	110			
Magnesium	5.02	0.300	5.00	0	100	90	110			

Sample ID **LCVL1-190619**	Batch ID: **R104660**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_190619B**	Analysis Date: **6/19/2019 11:56:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.00500	0.00500	0.00500	0	100	70	130			
Barium	0.00470	0.0100	0.00500	0	94.1	70	130			
Cobalt	0.00498	0.00500	0.00500	0	99.5	70	130			
Iron	0.0962	0.100	0.100	0	96.2	70	130			
Lithium	0.0101	0.0100	0.0100	0	101	70	130			
Magnesium	0.100	0.300	0.100	0	100	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906152
Project: A1 Area Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190619B

Sample ID **CCV2-190619**	Batch ID: **R104660**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_190619B**	Analysis Date: **6/19/2019 12:45:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.202	0.00500	0.200	0	101	90	110			
Barium	0.201	0.0100	0.200	0	101	90	110			
Cobalt	0.209	0.00500	0.200	0	105	90	110			
Iron	5.12	0.100	5.00	0	102	90	110			
Lithium	0.203	0.0100	0.200	0	101	90	110			
Magnesium	5.09	0.300	5.00	0	102	90	110			

Sample ID **LCVL2-190619**	Batch ID: **R104660**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_190619B**	Analysis Date: **6/19/2019 12:50:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.00496	0.00500	0.00500	0	99.3	70	130			
Barium	0.00514	0.0100	0.00500	0	103	70	130			
Cobalt	0.00512	0.00500	0.00500	0	102	70	130			
Iron	0.0963	0.100	0.100	0	96.3	70	130			
Lithium	0.0104	0.0100	0.0100	0	104	70	130			
Magnesium	0.0964	0.300	0.100	0	96.4	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906152
Project: A1 Area Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_190614A

The QC data in batch 91339 applies to the following samples: 1906152-01C, 1906152-02C, 1906152-03C, 1906152-04C, 1906152-05C, 1906152-06C

Sample ID	**MB-91339**	Batch ID:	**91339**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**IC2_190614A**	Analysis Date:	**6/14/2019 10:18:32 AM**	Prep Date:	**6/14/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00								
Fluoride	<0.100	0.400								
Nitrate-N	<0.100	0.500								
Sulfate	<1.00	3.00								

Sample ID	**LCS-91339**	Batch ID:	**91339**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**IC2_190614A**	Analysis Date:	**6/14/2019 10:34:32 AM**	Prep Date:	**6/14/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.0	1.00	10.00	0	100	90	110			
Fluoride	3.99	0.400	4.000	0	99.8	90	110			
Nitrate-N	5.09	0.500	5.000	0	102	90	110			
Sulfate	30.3	3.00	30.00	0	101	90	110			

Sample ID	**LCSD-91339**	Batch ID:	**91339**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**LCSD**	Run ID:	**IC2_190614A**	Analysis Date:	**6/14/2019 10:50:32 AM**	Prep Date:	**6/14/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.1	1.00	10.00	0	101	90	110	0.555	20	
Fluoride	4.01	0.400	4.000	0	100	90	110	0.489	20	
Nitrate-N	5.10	0.500	5.000	0	102	90	110	0.295	20	
Sulfate	30.5	3.00	30.00	0	102	90	110	0.758	20	

Sample ID	**1906110-04BMS**	Batch ID:	**91339**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**MS**	Run ID:	**IC2_190614A**	Analysis Date:	**6/14/2019 11:26:46 AM**	Prep Date:	**6/14/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	2380	100	2000	317.4	103	90	110			
Fluoride	2080	40.0	2000	0	104	90	110			
Nitrate-N	451	50.0	451.6	0	99.8	90	110			
Sulfate	4020	300	2000	2016	100	90	110			

Sample ID	**1906110-04BMSD**	Batch ID:	**91339**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**MSD**	Run ID:	**IC2_190614A**	Analysis Date:	**6/14/2019 11:42:46 AM**	Prep Date:	**6/14/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	2390	100	2000	317.4	103	90	110	0.283	20	
Fluoride	2090	40.0	2000	0	104	90	110	0.334	20	
Nitrate-N	452	50.0	451.6	0	100	90	110	0.221	20	
Sulfate	4040	300	2000	2016	101	90	110	0.513	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906152
Project: A1 Area Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_190614A

Sample ID **ICV-190614**	Batch ID: **R104590**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC2_190614A**	Analysis Date: **6/14/2019 9:46:32 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	25.7	1.00	25.00	0	103	90	110			
Fluoride	10.2	0.400	10.00	0	102	90	110			
Nitrate-N	13.1	0.500	12.50	0	105	90	110			
Sulfate	77.5	3.00	75.00	0	103	90	110			

Sample ID **CCV1-190614**	Batch ID: **R104590**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_190614A**	Analysis Date: **6/14/2019 2:25:37 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.2	1.00	10.00	0	102	90	110			
Fluoride	4.09	0.400	4.000	0	102	90	110			
Nitrate-N	5.17	0.500	5.000	0	103	90	110			
Sulfate	30.9	3.00	30.00	0	103	90	110			

Sample ID **CCV2-190614**	Batch ID: **R104590**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_190614A**	Analysis Date: **6/14/2019 5:05:37 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.3	1.00	10.00	0	103	90	110			
Fluoride	4.13	0.400	4.000	0	103	90	110			
Nitrate-N	5.22	0.500	5.000	0	104	90	110			
Sulfate	31.2	3.00	30.00	0	104	90	110			

Sample ID **CCV3-190614**	Batch ID: **R104590**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_190614A**	Analysis Date: **6/14/2019 7:45:37 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.4	1.00	10.00	0	104	90	110			
Fluoride	4.17	0.400	4.000	0	104	90	110			
Nitrate-N	5.25	0.500	5.000	0	105	90	110			
Sulfate	31.6	3.00	30.00	0	105	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906152
Project: A1 Area Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_190617A

The QC data in batch 91346 applies to the following samples: 1906152-01C, 1906152-02C, 1906152-03C, 1906152-04C, 1906152-05C, 1906152-06C

Sample ID **MB-91346**	Batch ID: **91346**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.53**
SampType: **MBLK**	Run ID: **TITRATOR_190617A**	Analysis Date: **6/17/2019 9:13:00 AM**	Prep Date: **6/17/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	<10.0	20.0								
Alkalinity, Carbonate (As CaCO3)	<10.0	20.0								
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0								
Alkalinity, Total (As CaCO3)	<20.0	20.0								

Sample ID **LCS-91346**	Batch ID: **91346**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.23**
SampType: **LCS**	Run ID: **TITRATOR_190617A**	Analysis Date: **6/17/2019 9:17:00 AM**	Prep Date: **6/17/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)	51.5	20.0	50.00	0	103	74	129			

Sample ID **1906152-04C DUP**	Batch ID: **91346**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.5**
SampType: **DUP**	Run ID: **TITRATOR_190617A**	Analysis Date: **6/17/2019 11:22:00 AM**	Prep Date: **6/17/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	30.3	20.0	0	30.40				0.329	20	
Alkalinity, Carbonate (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Total (As CaCO3)	30.3	20.0	0	30.40				0.329	20	

Sample ID **1906152-06C DUP**	Batch ID: **91346**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.53**
SampType: **DUP**	Run ID: **TITRATOR_190617A**	Analysis Date: **6/17/2019 12:24:00 PM**	Prep Date: **6/17/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	525	20.0	0	527.6				0.418	20	
Alkalinity, Carbonate (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Total (As CaCO3)	525	20.0	0	527.6				0.418	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906152
Project: A1 Area Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_190617A

Sample ID **ICV-190617**	Batch ID: **R104621**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.34**
SampType: **ICV**	Run ID: **TITRATOR_190617A**	Analysis Date: **6/17/2019 9:10:00 AM**	Prep Date: **6/17/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	7.60	20.0	0							
Alkalinity, Carbonate (As CaCO3)	92.5	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	100	20.0	100.0	0	100	98	102			

Sample ID **CCV1-190617**	Batch ID: **R104621**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.33**
SampType: **CCV**	Run ID: **TITRATOR_190617A**	Analysis Date: **6/17/2019 11:27:00 AM**	Prep Date: **6/17/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	24.5	20.0	0							
Alkalinity, Carbonate (As CaCO3)	74.1	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	98.6	20.0	100.0	0	98.6	90	110			

Sample ID **CCV2-190617**	Batch ID: **R104621**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.37**
SampType: **CCV**	Run ID: **TITRATOR_190617A**	Analysis Date: **6/17/2019 12:53:00 PM**	Prep Date: **6/17/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	33.0	20.0	0							
Alkalinity, Carbonate (As CaCO3)	65.8	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	98.8	20.0	100.0	0	98.8	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank
J	Analyte detected between MDL and RL
ND	Not Detected at the Method Detection Limit
RL	Reporting Limit
J	Analyte detected between SDL and RL
DF	Dilution Factor
MDL	Method Detection Limit
R	RPD outside accepted control limits
S	Spike Recovery outside control limits
N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906152
Project: A1 Area Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: UV/VIS_2_190614B

The QC data in batch 91343 applies to the following samples: 1906152-01C, 1906152-02C, 1906152-03C, 1906152-04C, 1906152-05C, 1906152-06C

Sample ID	**MB-91343**	Batch ID:	**91343**	TestNo:	**M4500-P E**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**UV/VIS_2_190614B**	Analysis Date:	**6/14/2019 12:25:00 PM**	Prep Date:	**6/14/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Total Orthophosphate (As	<0.0300	0.100								

Sample ID	**LCS-91343**	Batch ID:	**91343**	TestNo:	**M4500-P E**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**UV/VIS_2_190614B**	Analysis Date:	**6/14/2019 12:25:00 PM**	Prep Date:	**6/14/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Total Orthophosphate (As	0.479	0.100	0.5000	0	95.8	80	120			

Sample ID	**LCSD-91343**	Batch ID:	**91343**	TestNo:	**M4500-P E**	Units:	**mg/L**
SampType:	**LCSD**	Run ID:	**UV/VIS_2_190614B**	Analysis Date:	**6/14/2019 12:25:00 PM**	Prep Date:	**6/14/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Total Orthophosphate (As	0.477	0.100	0.5000	0	95.4	80	120	0.418	15	

Sample ID	**1906152-01CMS**	Batch ID:	**91343**	TestNo:	**M4500-P E**	Units:	**mg/L**
SampType:	**MS**	Run ID:	**UV/VIS_2_190614B**	Analysis Date:	**6/14/2019 12:26:00 PM**	Prep Date:	**6/14/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Total Orthophosphate (As	0.514	0.100	0.5000	0	103	80	120			

Sample ID	**1906152-01CMSD**	Batch ID:	**91343**	TestNo:	**M4500-P E**	Units:	**mg/L**
SampType:	**MSD**	Run ID:	**UV/VIS_2_190614B**	Analysis Date:	**6/14/2019 12:26:00 PM**	Prep Date:	**6/14/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Total Orthophosphate (As	0.516	0.100	0.5000	0	103	80	120	0.388	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906152
Project: A1 Area Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: UV/VIS_2_190614B

Sample ID **ICV-190614**	Batch ID: **R104598**	TestNo: **M4500-P E**	Units: **mg/L**
SampType: **ICV**	Run ID: **UV/VIS_2_190614B**	Analysis Date: **6/14/2019 12:24:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Total Orthophosphate (As	0.197	0.100	0.2000	0	98.5	85	115			

Sample ID **CCV1-190614**	Batch ID: **R104598**	TestNo: **M4500-P E**	Units: **mg/L**
SampType: **CCV**	Run ID: **UV/VIS_2_190614B**	Analysis Date: **6/14/2019 12:29:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Total Orthophosphate (As	0.547	0.100	0.5000	0	109	85	115			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906152
Project: A1 Area Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: UV/VIS_2_190614C

The QC data in batch 91344 applies to the following samples: 1906152-01A, 1906152-02A, 1906152-03A, 1906152-04A, 1906152-05A, 1906152-06A

Sample ID **MB-91344**	Batch ID: **91344**	TestNo: **M3500-Fe D**	Units: **mg/L**
SampType: **MBLK**	Run ID: **UV/VIS_2_190614C**	Analysis Date: **6/14/2019 2:51:00 PM**	Prep Date: **6/14/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	<0.0500	0.100								N

Sample ID **LCS-91344**	Batch ID: **91344**	TestNo: **M3500-Fe D**	Units: **mg/L**
SampType: **LCS**	Run ID: **UV/VIS_2_190614C**	Analysis Date: **6/14/2019 2:52:00 PM**	Prep Date: **6/14/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	0.0968	0.100	0.1000	0	96.8	85	115			N

Sample ID **LCSD-91344**	Batch ID: **91344**	TestNo: **M3500-Fe D**	Units: **mg/L**
SampType: **LCSD**	Run ID: **UV/VIS_2_190614C**	Analysis Date: **6/14/2019 2:52:00 PM**	Prep Date: **6/14/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	0.0877	0.100	0.1000	0	87.7	85	115	9.92	15	N

Sample ID **1906089-01AMS**	Batch ID: **91344**	TestNo: **M3500-Fe D**	Units: **mg/L**
SampType: **MS**	Run ID: **UV/VIS_2_190614C**	Analysis Date: **6/14/2019 2:54:00 PM**	Prep Date: **6/14/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	0.0880	0.100	0.1000	0	88.0	85	115			N

Sample ID **1906089-01AMSD**	Batch ID: **91344**	TestNo: **M3500-Fe D**	Units: **mg/L**
SampType: **MSD**	Run ID: **UV/VIS_2_190614C**	Analysis Date: **6/14/2019 2:54:00 PM**	Prep Date: **6/14/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	0.0896	0.100	0.1000	0	89.6	85	115	1.77	15	N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906152
Project: A1 Area Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: UV/VIS_2_190614C

Sample ID **ICV-190614**	Batch ID: **R104612**	TestNo: **M3500-Fe D**	Units: **mg/L**
SampType: **ICV**	Run ID: **UV/VIS_2_190614C**	Analysis Date: **6/14/2019 2:50:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	0.0902	0.100	0.1000	0	90.2	85	115			N

Sample ID **CCV1-190614**	Batch ID: **R104612**	TestNo: **M3500-Fe D**	Units: **mg/L**
SampType: **CCV**	Run ID: **UV/VIS_2_190614C**	Analysis Date: **6/14/2019 3:01:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	0.192	0.100	0.2000	0	96.1	85	115			N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1906152
Project: A1 Area Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: WC_190618A

The QC data in batch 91377 applies to the following samples: 1906152-01C, 1906152-02C, 1906152-03C, 1906152-04C, 1906152-05C, 1906152-06C

Sample ID	**MB-91377**	Batch ID:	**91377**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**WC_190618A**	Analysis Date:	**6/18/2019 3:40:00 PM**	Prep Date:	**6/18/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	<10.0	10.0								

Sample ID	**LCS-91377**	Batch ID:	**91377**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**WC_190618A**	Analysis Date:	**6/18/2019 3:40:00 PM**	Prep Date:	**6/18/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	756	10.0	745.6	0	101	90	113			

Sample ID	**1906152-01C-DUP**	Batch ID:	**91377**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**DUP**	Run ID:	**WC_190618A**	Analysis Date:	**6/18/2019 3:40:00 PM**	Prep Date:	**6/18/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	1620	50.0	0	1645				1.84	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

July 19, 2019

Will Vienne
Golder
2201 Double Creek Dr #4004
Round Rock, Texas 78664
TEL: (512) 671-3434
FAX (512) 671-3446

Order No.: 1907114

RE: Luminant-MLSES-A1 Area Landfill

Dear Will Vienne:

DHL Analytical, Inc. received 4 sample(s) on 7/10/2019 for the analyses presented in the following report.

There were no problems with the analyses and all data met requirements of NELAP except where noted in the Case Narrative. All non-NELAP methods will be identified accordingly in the case narrative and all estimated uncertainties of test results are within method or EPA specifications.

If you have any questions regarding these tests results, please feel free to call. Thank you for using DHL Analytical.

Sincerely,

John DuPont
General Manager

This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211-19-24

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DHL ANALYTICAL
2300 Double Creek Dr. ■ Round Rock, TX 78664
Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

CHAIN-OF-CUSTODY

№ 83671

CLIENT: GOLDER
ADDRESS: 2201 DOUBLE CREEK DR ROUND ROCK, TX 78664
PHONE: 512-671-3434 FAX/E-MAIL: 512-671-3446
DATA REPORTED TO: WILL VIENNE
ADDITIONAL REPORT COPIES TO:

DATE: 7-9-19 PAGE 1 OF 1
PO #: 19122262-D DHL WORK ORDER #: 1907114
PROJECT LOCATION OR NAME: LUMINANT - MLSES - A1 AREA LANDFILL
CLENT PROJECT #: 19122262-D COLLECTOR: J. BRAMTON

Authorize 5% surcharge for TRRP Report? ☐ Yes ☐ No

S=SOIL W=WATER A=AIR L=LIQUID SE=SEDIMENT P=PAINT SL=SLUDGE O=OTHER SO=SOLID

PRESERVATION: HCl | HNO_3 | H_2SO_4 ☐ NaOH ☐ | ICE | UNPRESERVED

ANALYSES: BTEX ☐ MTBE ☐ [METHOD 8021] | TPH 1005 ☐ TPH 1006 ☐ HOLD 1006 ☐ | GRO [METHOD 8015] ☐ DRO [METHOD 8015] ☐ | VOC 8260 ☐ VOC 624 ☐ VOC 8260/5035 ☐ | SVOC8270 ☐ PAH8270 ☐ HOLD PAH ☐ SVOC625 ☐ | 8270 PEST ☐ 625 PEST/PCB ☐ 608 PCB ☐ | 8270 O-P PEST ☐ 8082 PCB ☐ 8270 PCB ☐ | 8321 HERB ☐ T PHOS; AMMONIA ☐ | METALS 6020 ☐ METALS 200.8 ☐ DISS. METALS ☐ | RCRA ☐ TX11 ☐ ___ ☐ | PH ☐ HEX CHROM ☐ ALKALINITY ☐ COD ☐ | CHLORIDE ☐ ANIONS ___ ☐ | TCLP-SVOC ☐ VOC ☐ PEST ☐ HERB ☐ | TCLP-METALS ☐ RCRA 8 ☐ TX-11 ☐ Pb ☐ | RCI ☐ FLASHPOINT ☐ DGAS ☐ | TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐ | LITHIUM | COBALT | FIELD NOTES

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	HCl	HNO_3	H_2SO_4 ☐ NaOH ☐	ICE	UNPRESERVED	ANALYSES	FIELD NOTES
BMW-29	01	7-8-19	0945	W	P	1		X		X		Cobalt	
BMW-32	02	↓	1420	W	P	1		X		X		Cobalt	
BMW-25	03		1255	W	P	1		X		X		Lithium	
AIV-18-OB-95	04		1135	W	P	1		X		X		Cobalt	

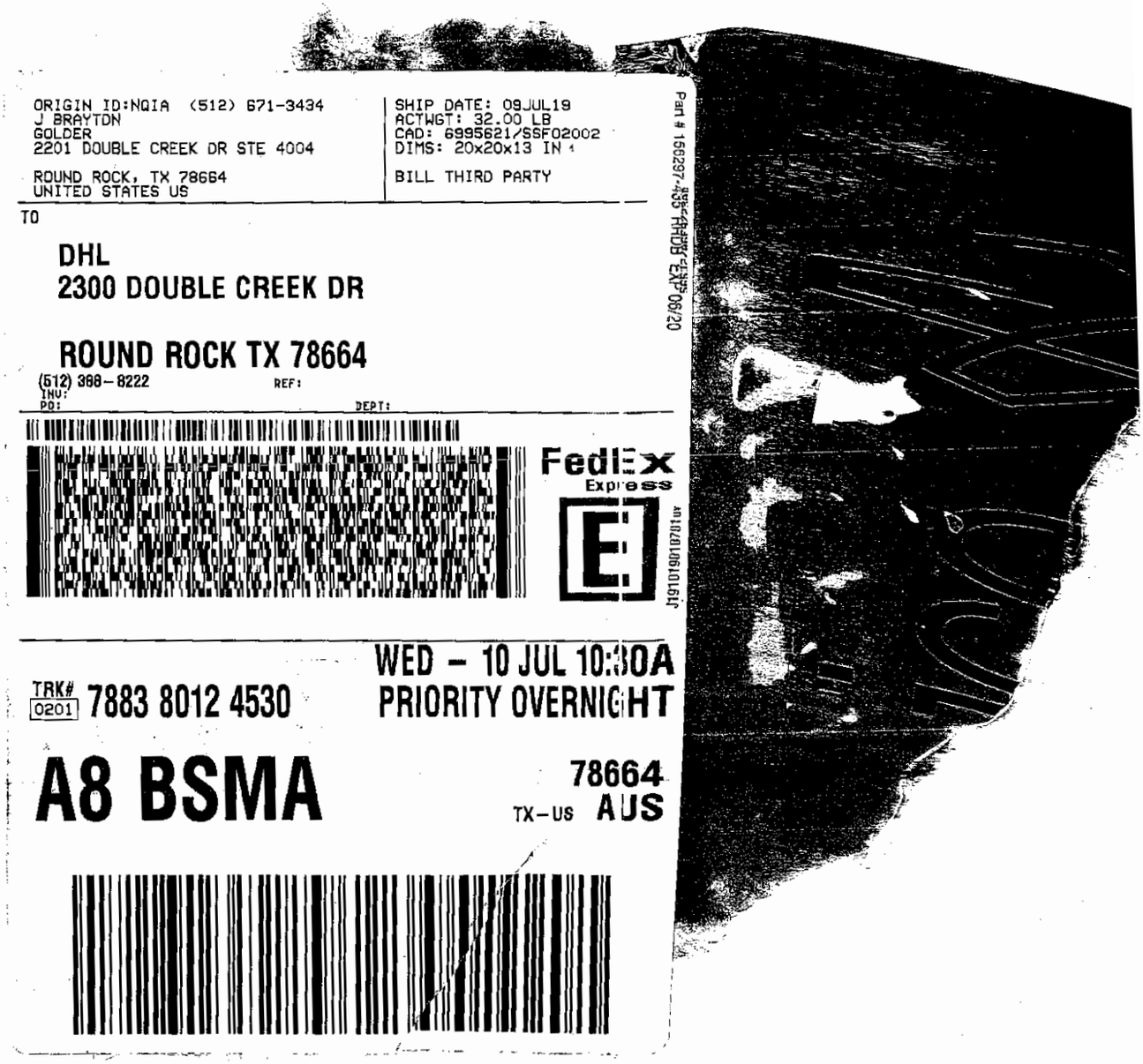
RELINQUISHED BY: (Signature) DATE/TIME 7-9-19 1800 RECEIVED BY: (Signature) FedEx
RELINQUISHED BY: (Signature) DATE/TIME 7/10/19 1011 RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature) DATE/TIME RECEIVED BY: (Signature)

APPENDIX F-Revision 2 February 27, 2024 ☐ DHL DISPOSAL @ $5.00 each ☐ Return

TURN AROUND TIME
RUSH ☐ CALL FIRST
1 DAY ☐ CALL FIRST
2 DAY ☐
NORMAL ☒
OTHER ☐ _____

LABORATORY USE ONLY:
RECEIVING TEMP: 1.4°C THERM #: 78
CUSTODY SEALS: ☐ BROKEN ☐ INTACT ☑ NOT USED
CARRIER: ☐ LONE STAR ☑ FEDEX ☐ UPS ☐ OTHER
☐ COURIER DELIVERY ☐ HAND DELIVERED

DHL COC Rev 1 | FEB 2010


ORIGIN ID:NQIA (512) 671-3434
J BRAYTON
GOLDER
2201 DOUBLE CREEK DR STE 4004
ROUND ROCK, TX 78664
UNITED STATES US
SHIP DATE: 09JUL19
ACTWGT: 32.00 LB
CAD: 6995621/SSF02002
DIMS: 20x20x13 IN
BILL THIRD PARTY
TO
DHL
2300 DOUBLE CREEK DR
ROUND ROCK TX 78664
(512) 388-8222
REF:
INV:
PO:
DEPT:
FedEx
Express
TRK# 0201 7883 8012 4530
WED - 10 JUL 10:30A
PRIORITY OVERNIGHT
A8 BSMA
78664
TX-US AUS

DHL Analytical, Inc.

Sample Receipt Checklist

Client Name Golder | Date Received: 7/10/2019

Work Order Number 1907114 | Received by JW

Checklist completed by: Signature 7/10/2019 Date | Reviewed by Initials 7/10/2019 Date

Carrier name FedEx 1day

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	1.4 °C
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH<2 acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted?		Checked by
Water - ph>9 (S) or ph>10 (CN) acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted?		Checked by

Any No response must be detailed in the comments section below.

Client contacted _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments: _____

Corrective Action _____

Page 1 of 1

DHL Analytical, Inc. **Date:** *19-Jul-19*

CLIENT: Golder
Project: Luminant-MLSES-A1 Area Landfill
Lab Order: 1907114

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Method SW6020A - Metals Analysis

LOG IN

The samples were received and log-in performed on 7/10/2019. A total of 4 samples were received and analyzed. The samples arrived in good condition and were properly packaged. All method blanks, laboratory spikes, and/or matrix spikes met quality assurance objectives.

DHL Analytical, Inc.

Date: *19-Jul-19*

CLIENT: Golder
Project: Luminant-MLSES-A1 Area Landfill
Lab Order: 1907114

Work Order Sample Summary

Lab Smp ID	Client Sample ID	Tag Number	Date Collected	Date Recved
1907114-01	BMW-29		07/08/19 09:45 AM	7/10/2019
1907114-02	BMW-32		07/08/19 02:20 PM	7/10/2019
1907114-03	BMW-25		07/08/19 12:55 PM	7/10/2019
1907114-04	A1V-18-OB-95		07/08/19 11:35 AM	7/10/2019

Lab Order: 1907114
Client: Golder
Project: Luminant-MLSES-A1 Area Landfi

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1907114-01A	BMW-29	07/08/19 09:45 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	07/12/19 10:48 AM	91752
1907114-02A	BMW-32	07/08/19 02:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	07/12/19 10:48 AM	91752
1907114-03A	BMW-25	07/08/19 12:55 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	07/12/19 10:48 AM	91752
1907114-04A	A1V-18-OB-95	07/08/19 11:35 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	07/12/19 10:48 AM	91752
	A1V-18-OB-95	07/08/19 11:35 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	07/12/19 10:48 AM	91752

Lab Order: 1907114
Client: Golder
Project: Luminant-MLSES-A1 Area Landfi

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1907114-01A	BMW-29	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91752	1	07/15/19 11:41 AM	ICP-MS5_190715A
1907114-02A	BMW-32	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91752	1	07/15/19 11:43 AM	ICP-MS5_190715A
1907114-03A	BMW-25	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91752	1	07/15/19 11:45 AM	ICP-MS5_190715A
1907114-04A	A1V-18-OB-95	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91752	1	07/15/19 11:32 AM	ICP-MS5_190715A
	A1V-18-OB-95	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	91752	1	07/16/19 11:00 AM	ICP-MS4_190716A

DHL Analytical, Inc.

Date: *19-Jul-19*

CLIENT:	Golder	**Client Sample ID:**	BMW-29
Project:	Luminant-MLSES-A1 Area Landfill	**Lab ID:**	1907114-01
Project No:	19122262-D	**Collection Date:**	07/08/19 09:45 AM
Lab Order:	1907114	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **SP**
Lithium	0.104	0.00500	0.0100		mg/L	1	07/15/19 11:41 AM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
	DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit
	ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
	S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *19-Jul-19*

CLIENT:	Golder	**Client Sample ID:**	BMW-32
Project:	Luminant-MLSES-A1 Area Landfill	**Lab ID:**	1907114-02
Project No:	19122262-D	**Collection Date:**	07/08/19 02:20 PM
Lab Order:	1907114	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **SP**
Lithium	0.116	0.00500	0.0100		mg/L	1	07/15/19 11:43 AM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
	DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit
	ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
	S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *19-Jul-19*

CLIENT:	Golder	**Client Sample ID:**	BMW-25
Project:	Luminant-MLSES-A1 Area Landfill	**Lab ID:**	1907114-03
Project No:	19122262-D	**Collection Date:**	07/08/19 12:55 PM
Lab Order:	1907114	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **SP**
Cobalt	0.00514	0.00300	0.00500		mg/L	1	07/15/19 11:45 AM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
	DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit
	ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
	S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *19-Jul-19*

CLIENT:	Golder	**Client Sample ID:**	A1V-18-OB-95
Project:	Luminant-MLSES-A1 Area Landfill	**Lab ID:**	1907114-04
Project No:	19122262-D	**Collection Date:**	07/08/19 11:35 AM
Lab Order:	1907114	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **SP**
Lithium	0.0454	0.00500	0.0100		mg/L	1	07/15/19 11:32 AM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
	DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit
	ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
	S	Spike Recovery outside control limits	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1907114
Project: Luminant-MLSES-A1 Area Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190715A

The QC data in batch 91752 applies to the following samples: 1907114-01A, 1907114-02A, 1907114-03A, 1907114-04A

Sample ID **MB-91752** Batch ID: **91752** TestNo: **SW6020A** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS5_190715A** Analysis Date: **7/15/2019 11:23:00 AM** Prep Date: **7/12/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cobalt	<0.00300	0.00500								
Lithium	<0.00500	0.0100								

Sample ID **LCS-91752** Batch ID: **91752** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS5_190715A** Analysis Date: **7/15/2019 11:26:00 AM** Prep Date: **7/12/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cobalt	0.205	0.00500	0.200	0	102	80	120			
Lithium	0.201	0.0100	0.200	0	100	80	120			

Sample ID **LCSD-91752** Batch ID: **91752** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS5_190715A** Analysis Date: **7/15/2019 11:28:00 AM** Prep Date: **7/12/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cobalt	0.205	0.00500	0.200	0	102	80	120	0.097	15	
Lithium	0.200	0.0100	0.200	0	100	80	120	0.171	15	

Sample ID **1907114-04A SD** Batch ID: **91752** TestNo: **SW6020A** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS5_190715A** Analysis Date: **7/15/2019 11:34:00 AM** Prep Date: **7/12/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cobalt	<0.0150	0.0250	0	0				0	10	
Lithium	0.0460	0.0500	0	0.0454				1.23	10	

Sample ID **1907114-04A PDS** Batch ID: **91752** TestNo: **SW6020A** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS5_190715A** Analysis Date: **7/15/2019 11:56:00 AM** Prep Date: **7/12/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cobalt	0.189	0.00500	0.200	0	94.7	80	120			
Lithium	0.247	0.0100	0.200	0.0454	101	80	120			

Sample ID **1907114-04A MS** Batch ID: **91752** TestNo: **SW6020A** Units: **mg/L**
SampType: **MS** Run ID: **ICP-MS5_190715A** Analysis Date: **7/15/2019 11:58:00 AM** Prep Date: **7/12/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cobalt	0.191	0.00500	0.200	0	95.3	80	120			
Lithium	0.244	0.0100	0.200	0.0454	99.4	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1907114
Project: Luminant-MLSES-A1 Area Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190715A

Sample ID **1907114-04A MSD**	Batch ID: **91752**	TestNo: **SW6020A**	Units: **mg/L**		
SampType: **MSD**	Run ID: **ICP-MS5_190715A**	Analysis Date: **7/15/2019 12:01:00 PM**	Prep Date: **7/12/2019**		

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cobalt	0.190	0.00500	0.200	0	94.9	80	120	0.463	15	
Lithium	0.242	0.0100	0.200	0.0454	98.1	80	120	1.07	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1907114
Project: Luminant-MLSES-A1 Area Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190715A

Sample ID **ICV-190715**	Batch ID: **R105116**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS5_190715A**	Analysis Date: **7/15/2019 11:07:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cobalt	0.101	0.00500	0.100	0	101	90	110			
Lithium	0.103	0.0100	0.100	0	103	90	110			

Sample ID **LCVL-190715**	Batch ID: **R105116**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_190715A**	Analysis Date: **7/15/2019 11:15:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cobalt	0.00489	0.00500	0.00500	0	97.7	70	130			
Lithium	0.0103	0.0100	0.0100	0	103	70	130			

Sample ID **CCV1-190715**	Batch ID: **R105116**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_190715A**	Analysis Date: **7/15/2019 12:03:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cobalt	0.192	0.00500	0.200	0	96.1	90	110			
Lithium	0.197	0.0100	0.200	0	98.7	90	110			

Sample ID **LCVL1-190715**	Batch ID: **R105116**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_190715A**	Analysis Date: **7/15/2019 12:08:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cobalt	0.00495	0.00500	0.00500	0	98.9	70	130			
Lithium	0.00992	0.0100	0.0100	0	99.2	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

August 20, 2019

Will Vienne
Golder
2201 Double Creek Dr #4004
Round Rock, Texas 78664
TEL: (512) 671-3434
FAX (512) 671-3446

Order No.: 1908174

RE: Luminant-A1 Area

Dear Will Vienne:

DHL Analytical, Inc. received 2 sample(s) on 8/16/2019 for the analyses presented in the following report.

There were no problems with the analyses and all data met requirements of NELAP except where noted in the Case Narrative. All non-NELAP methods will be identified accordingly in the case narrative and all estimated uncertainties of test results are within method or EPA specifications.

If you have any questions regarding these tests results, please feel free to call. Thank you for using DHL Analytical.

Sincerely,

John DuPont
General Manager

This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211-19-24

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DHL ANALYTICAL
2300 Double Creek Dr. ■ Round Rock, TX 78664
Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

№ 85327

CHAIN-OF-CUSTODY

CLIENT: GOLDER
ADDRESS: 2201 DOUBLE CREEK DR ROUND ROCK, TX 78664
PHONE: 512-671-3434 FAX/E-MAIL: 512-671-3446
DATA REPORTED TO: WILL VIENNE
ADDITIONAL REPORT COPIES TO:

DATE: 8-14-19 PAGE 1 OF 1
PO #: 1912226.2-C DHL WORK ORDER #: 1908174
PROJECT LOCATION OR NAME: LUMINANT - A1 AREA
CLENT PROJECT #: 1912226.2-C COLLECTOR: J. BRAYTON

Authorize 5% surcharge for TRRP Report? ☐ Yes ☐ No

S=SOIL W=WATER A=AIR L=LIQUID SE=SEDIMENT P=PAINT SL=SLUDGE O=OTHER SO=SOLID

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	PRESERVATION: HCl	HNO_3	H_2SO_4 ☐ NaOH ☐	ICE	UNPRESERVED	ANALYSES: COBALT LITHIUM	FIELD NOTES
A1-2-OB	01	8-14-19	1100		P	1		X				XX	
A1-17-SPOIL	02	8-14-19	1205		P	1		X				XX	

RELINQUISHED BY: (Signature) DATE/TIME 8-15-19 1730 RECEIVED BY: (Signature) FedEx
RELINQUISHED BY: (Signature) DATE/TIME 8/16/19 0943 RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature) DATE/TIME RECEIVED BY: (Signature)

APPENDIX F-Revision 2 February 27, 2004 ☐ DHL DISPOSAL @ $5.00 each ☐ Return

TURN AROUND TIME
RUSH ☒ CALL FIRST
1 DAY ☐ CALL FIRST
2 DAY ☐
~~NORMAL~~ X per Will 8/16/19
OTHER ☐ _____

LABORATORY USE ONLY:
RECEIVING TEMP: 1.4°C THERM #: 78
CUSTODY SEALS: ☐ BROKEN ☐ INTACT ☒ NOT USED
CARRIER: ☐ LONE STAR ☒ FEDEX ☐ UPS ☐ OTHER
☐ COURIER DELIVERY
☐ HAND DELIVERED

DHL COC Rev 1 | FEB 2010

ORIGIN ID:FWHA (512) 671-3434
JIBRAYTON
GOLDER
2201 DOUBLE CREECK DR

ROUND ROCK, TX 78664
UNITED STATES US

SHIP DATE: 15AUG19
ACTWGT: 18.30 LB
CAD: 6995323/SSFO2002
DIMS: 13x15x10 IN

BILL THIRD PARTY

TO DHL ANALYTICAL
DHL ANALYTICAL
2300 DOUBLE CREEK DR

ROUND ROCK TX 78664
(512) 388-8222 REF:
INV:
PO: DEPT:

FedEx Express

TRK# 0201 7891 6544 7941

FRI - 16 AUG 10:30A
PRIORITY OVERNIGHT

A8 BSMA

78664
TX-US AUS

DHL Analytical, Inc.

Sample Receipt Checklist

Client Name Golder

Date Received: 8/16/2019

Work Order Number 1908174

Received by

Checklist completed by: _____ 8/16/2019
Signature Date

Reviewed by JD 8/16/2019
Initials Date

Carrier name FedEx 1day

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	1.4 °C
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH<2 acceptable upon receipt?	Yes ☑	No ☐	NA ☐ LOT # 13171
	Adjusted? NO		Checked by EL
Water - ph>9 (S) or ph>10 (CN) acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted?		Checked by

Any No response must be detailed in the comments section below.

Client contacted Date contacted: Person contacted

Contacted by: Regarding:

Comments:

Corrective Action

Laboratory Name: DHL Analytical, Inc.

Laboratory Review Checklist: Reportable Data

Project Name: Luminant-A1 Area	**LRC Date:** 8/20/2019
Reviewer Name: Angie O'Donnell	**Laboratory Work Order: 1908174**
Prep Batch Number(s): See Prep Dates Report	**Run Batch:** See Analytical Dates Report

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
		Chain-of-Custody (C-O-C)					
R1	OI	**1)** Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	**X**				**R1-01**
		2) Were all departures from standard conditions described in an exception report?			**X**		
R2	OI	**Sample and Quality Control (QC) Identification**					
		1) Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	**X**				
		2) Are all laboratory ID numbers cross-referenced to the corresponding QC data?	**X**				
R3	OI	**Test Reports**					
		1) Were all samples prepared and analyzed within holding times?	**X**				
		2) Other than those results < MQL, were all other raw values bracketed by calibration standards?	**X**				
		3) Were calculations checked by a peer or supervisor?	**X**				
		4) Were all analyte identifications checked by a peer or supervisor?	**X**				
		5) Were sample detection limits reported for all analytes not detected?	**X**				
		6) Were all results for soil and sediment samples reported on a dry weight basis?			**X**		
		7) Were % moisture (or solids) reported for all soil and sediment samples?			**X**		
		8) Were bulk soils/solids samples for volatile analysis extracted with methanol per EPA Method 5035?			**X**		
		9) If required for the project, TICs reported?			**X**		
R4	O	**Surrogate Recovery Data**					
		1) Were surrogates added prior to extraction?			**X**		
		2) Were surrogate percent recoveries in all samples within the laboratory QC limits?			**X**		
R5	OI	**Test Reports/Summary Forms for Blank Samples**					
		1) Were appropriate type(s) of blanks analyzed?	**X**				
		2) Were blanks analyzed at the appropriate frequency?	**X**				
		3) Where method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	**X**				
		4) Were blank concentrations < MDL?	**X**				
		5) For analyte(s) detected in a blank sample, was the concentration, unadjusted for sample specific factors, in all associated field samples, **greater** than 10 times the concentration in the blank sample?			**X**		
R6	OI	**Laboratory Control Samples (LCS):**					
		1) Were all COCs included in the LCS?	**X**				
		2) Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	**X**				
		3) Were LCSs analyzed at the required frequency?	**X**				
		4) Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	**X**				
		5) Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	**X**				
		6) Was the LCSD RPD within QC limits (if applicable)?	**X**				
R7	OI	**Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Data**					
		1) Were the project/method specified analytes included in the MS and MSD?	**X**				
		2) Were MS/MSD analyzed at the appropriate frequency?	**X**				
		3) Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?		**X**			**R7-03**
		4) Were MS/MSD RPDs within laboratory QC limits?	**X**				
R8	OI	**Analytical Duplicate Data**					
		1) Were appropriate analytical duplicates analyzed for each matrix?			**X**		
		2) Were analytical duplicates analyzed at the appropriate frequency?			**X**		
		3) Were RPDs or relative standard deviations within the laboratory QC limits?			**X**		
R9	OI	**Method Quantitation Limits (MQLs):**					
		1) Are the MQLs for each method analyte included in the laboratory data package?	**X**				
		2) Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	**X**				
		3) Are unadjusted MQLs and DCSs included in the laboratory data package?	**X**				
R10	OI	**Other Problems/Anomalies**					
		1) Are all known problems/anomalies/special conditions noted in this LRC and ER?	**X**				
		2) Was applicable and available technology used to lower the SDL to minimize the matrix interference affects on the sample results?	**X**				
		3) Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices and methods associated with this laboratory data package?	**X**				

Laboratory Name: DHL Analytical, Inc.

Laboratory Review Checklist (continued): Supporting Data

Project Name: Luminant-A1 Area	**LRC Date:** 8/20/2019
Reviewer Name: Angie O'Donnell	**Laboratory Work Order: 1908174**
Prep Batch Number(s): See Prep Dates Report	**Run Batch:** See Analytical Dates Report

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
S1	OI	**Initial Calibration (ICAL)**					
		1) Were response factors and/or relative response factors for each analyte within QC limits?	X				
		2) Were percent RSDs or correlation coefficient criteria met?	X				
		3) Was the number of standards recommended in the method used for all analytes?	X				
		4) Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		5) Are ICAL data available for all instruments used?	X				
		6) Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	**Initial and Continuing calibration Verification (ICCV and CCV) and Continuing Calibration blank (CCB):**					
		1) Was the CCV analyzed at the method-required frequency?	X				
		2) Were percent differences for each analyte within the method-required QC limits?	X				
		3) Was the ICAL curve verified for each analyte?	X				
		4) Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	X				
S3	O	**Mass Spectral Tuning:**					
		1) Was the appropriate compound for the method used for tuning?	X				
		2) Were ion abundance data within the method-required QC limits?	X				
S4	O	**Internal Standards (IS):**					
		1) Were IS area counts and retention times within the method-required QC limits?	X				
S5	OI	**Raw Data (NELAC Section 5.5.10)**					
		1) Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		2) Were data associated with manual integrations flagged on the raw data?	X				
S6	O	**Dual Column Confirmation**					
		1) Did dual column confirmation results meet the method-required QC?			X		
S7	O	**Tentatively Identified Compounds (TICs):**					
		1) If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) Results:**					
		1) Were percent recoveries within method QC limits?	X				
S9	I	**Serial Dilutions, Post Digestion Spikes, and Method of Standard Additions**					
		1) Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	X				
S10	OI	**Method Detection Limit (MDL) Studies**					
		1) Was a MDL study performed for each reported analyte?	X				
		2) Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	**Proficiency Test Reports:**					
		1) Was the lab's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	**Standards Documentation**					
		1) Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound/Analyte Identification Procedures**					
		1) Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of Analyst Competency (DOC)**					
		1) Was DOC conducted consistent with NELAC Chapter 5 – Appendix C?	X				
		2) Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/Validation Documentation for Methods** (NELAC Chapter 5)					
		1) Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	**Laboratory Standard Operating Procedures (SOPs):**					
		1) Are laboratory SOPs current and on file for each method performed?	X				

1 Items identified by the letter "R" should be included in the laboratory data package submitted to the TCEQ in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.

2 O = organic analyses; I = inorganic analyses (and general chemistry, when applicable).

3 NA = Not applicable.

4 NR = Not Reviewed.

5 ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Data Package Signature Page – RG-366/TRRP-13

This data package consists of:

This signature page, the laboratory review checklist, and the following reportable data:

R1 Field chain-of-custody documentation;
R2 Sample identification cross-reference;
R3 Test reports (analytical data sheets) for each environmental sample that includes:
  a) Items consistent with NELAC Chapter 5,
  b) dilution factors,
  c) preparation methods,
  d) cleanup methods, and
  e) if required for the project, tentatively identified compounds (TICs).
R4 Surrogate recovery data including:
  a) Calculated recovery (%R), and
  b) The laboratory's surrogate QC limits.
R5 Test reports/summary forms for blank samples;
R6 Test reports/summary forms for laboratory control samples (LCSs) including:
  a) LCS spiking amounts,
  b) Calculated %R for each analyte, and
  c) The laboratory's LCS QC limits.
R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
  a) Samples associated with the MS/MSD clearly identified,
  b) MS/MSD spiking amounts,
  c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
  d) Calculated %Rs and relative percent differences (RPDs), and
  e) The laboratory's MS/MSD QC limits
R8 Laboratory analytical duplicate (if applicable) recovery and precision:
  a) The amount of analyte measured in the duplicate,
  b) The calculated RPD, and
  c) The laboratory's QC limits for analytical duplicates.
R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix;
R10 Other problems or anomalies.

The Exception Report for each "No" or "Not Reviewed (NR)" item in the Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory is not accredited under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature below, I affirm to the best of my knowledge that all problems/anomalies observed by the laboratory have been identified in the Laboratory Review Checklist, and no information or data affecting the quality of the data has been knowingly withheld.

This laboratory was last inspected by TCEQ on February 25-28, 2019. Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Name: John DuPont
Official Title: General Manager

Signature

0□/20/1□
Date

Name: Dr. Derhsing Luu
Official Title: Technical Director

CLIENT: Golder
Project: Luminant-A1 Area
Lab Order: 1908174

CASE NARRATIVE

Samples were analyzed using the following references:

Method SW6020A - Metals Analysis

Exception Report R1-01

The samples were received and log-in performed on 8/16/2019. A total of 2 samples were received and analyzed. The samples arrived in good condition and were properly packaged.

Exception Report R7-03

For Metals Analysis, the recovery of Lithium for the Matrix Spike and Matrix Spike Duplicate (1908175-03 MS/MSD) was outside of the method control limits. This is flagged accordingly in the QC Summary Report. This analyte was within method control limits in the associated LCS. No further corrective action was taken.

DHL Analytical, Inc.

Date: *20-Aug-19*

CLIENT: Golder
Project: Luminant-A1 Area
Lab Order: 1908174

Work Order Sample Summary

Lab Smp ID	Client Sample ID	Tag Number	Date Collected	Date Recved
1908174-01	A1-2-OB		08/14/19 11:00 AM	8/16/2019
1908174-02	A1-17-Spoil		08/14/19 12:05 PM	8/16/2019

Lab Order: 1908174
Client: Golder
Project: Luminant-A1 Area

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1908174-01A	A1-2-OB	08/14/19 11:00 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/19/19 08:43 AM	92407
1908174-02A	A1-17-Spoil	08/14/19 12:05 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/19/19 08:43 AM	92407

Lab Order: 1908174
Client: Golder
Project: Luminant-A1 Area

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1908174-01A	A1-2-OB	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92407	1	08/20/19 11:17 AM	ICP-MS5_190820A
1908174-02A	A1-17-Spoil	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92407	1	08/20/19 11:19 AM	ICP-MS5_190820A

DHL Analytical, Inc.

Date: *20-Aug-19*

CLIENT:	Golder	**Client Sample ID:**	A1-2-OB
Project:	Luminant-A1 Area	**Lab ID:**	1908174-01
Project No:	19122262-C	**Collection Date:**	08/14/19 11:00 AM
Lab Order:	1908174	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **SP**
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	08/20/19 11:17 AM
Lithium	<0.00500	0.00500	0.0100		mg/L	1	08/20/19 11:17 AM

Qualifiers:

- ND - Not Detected at the SDL
- J - Analyte detected between SDL and RL
- B - Analyte detected in the associated Method Blank
- DF- Dilution Factor
- N - Parameter not NELAP certified
- See Final Page of Report for MQLs and MDLs
- S - Spike Recovery outside control limits
- C - Sample Result or QC discussed in Case Narrative
- RL - Reporting Limit (MQL adjusted for moisture and sample size)
- SDL - Sample Detection Limit
- E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *20-Aug-19*

CLIENT:	Golder	**Client Sample ID:**	A1-17-Spoil
Project:	Luminant-A1 Area	**Lab ID:**	1908174-02
Project No:	19122262-C	**Collection Date:**	08/14/19 12:05 PM
Lab Order:	1908174	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **SP**
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	08/20/19 11:19 AM
Lithium	0.0394	0.00500	0.0100		mg/L	1	08/20/19 11:19 AM

Qualifiers:

- ND - Not Detected at the SDL
- J - Analyte detected between SDL and RL
- B - Analyte detected in the associated Method Blank
- DF- Dilution Factor
- N - Parameter not NELAP certified
- See Final Page of Report for MQLs and MDLs
- S - Spike Recovery outside control limits
- C - Sample Result or QC discussed in Case Narrative
- RL - Reporting Limit (MQL adjusted for moisture and sample size)
- SDL - Sample Detection Limit
- E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *20-Aug-19*

CLIENT: Golder
Work Order: 1908174
Project: Luminant-A1 Area

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190621A

Sample ID **DCS3-91398**	Batch ID: **91398**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **DCS3**	Run ID: **ICP-MS5_190621A**	Analysis Date: **6/21/2019 11:16:00 AM**	Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cobalt	0.00516	0.00500	0.00500	0	103	70	130	0	0	
Lithium	0.00535	0.0100	0.00500	0	107	70	130	0	0	

Qualifiers:	B	Analyte detected in the associated Method Blank	DF	Dilution Factor	
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit	Page 1 of 4
	ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits	
	RL	Reporting Limit	S	Spike Recovery outside control limits	
	J	Analyte detected between SDL and RL	N	Parameter not NELAP certified	

CLIENT: Golder
Work Order: 1908174
Project: Luminant-A1 Area

ANALYTICAL QC SUMMARY REPORT

RunID: **ICP-MS5_190820A**

The QC data in batch 92407 applies to the following samples: 1908174-01A, 1908174-02A

Sample ID	**MB-92407**	Batch ID:	**92407**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**ICP-MS5_190820A**	Analysis Date:	**8/20/2019 11:00:00 AM**	Prep Date:	**8/19/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cobalt	<0.00300	0.00500								
Lithium	<0.00500	0.0100								

Sample ID	**LCS-92407**	Batch ID:	**92407**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**ICP-MS5_190820A**	Analysis Date:	**8/20/2019 11:03:00 AM**	Prep Date:	**8/19/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cobalt	0.194	0.00500	0.200	0	97.1	80	120			
Lithium	0.201	0.0100	0.200	0	100	80	120			

Sample ID	**LCSD-92407**	Batch ID:	**92407**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**LCSD**	Run ID:	**ICP-MS5_190820A**	Analysis Date:	**8/20/2019 11:05:00 AM**	Prep Date:	**8/19/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cobalt	0.191	0.00500	0.200	0	95.5	80	120	1.60	15	
Lithium	0.201	0.0100	0.200	0	101	80	120	0.137	15	

Sample ID	**1908175-03A SD**	Batch ID:	**92407**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**SD**	Run ID:	**ICP-MS5_190820A**	Analysis Date:	**8/20/2019 11:12:00 AM**	Prep Date:	**8/19/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cobalt	0.101	0.0250	0	0.0985				2.91	10	
Lithium	1.17	0.0500	0	1.10				6.21	10	

Sample ID	**1908175-03A PDS**	Batch ID:	**92407**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**PDS**	Run ID:	**ICP-MS5_190820A**	Analysis Date:	**8/20/2019 11:26:00 AM**	Prep Date:	**8/19/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cobalt	0.270	0.00500	0.200	0.0985	85.9	80	120			
Lithium	1.29	0.0100	0.200	1.10	94.0	80	120			

Sample ID	**1908175-03A MS**	Batch ID:	**92407**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**MS**	Run ID:	**ICP-MS5_190820A**	Analysis Date:	**8/20/2019 11:28:00 AM**	Prep Date:	**8/19/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cobalt	0.274	0.00500	0.200	0.0985	87.5	80	120			
Lithium	1.36	0.0100	0.200	1.10	131	80	120			S

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1908174
Project: Luminant-A1 Area

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190820A

Sample ID **1908175-03A MSD** Batch ID: **92407** TestNo: **SW6020A** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS5_190820A** Analysis Date: **8/20/2019 11:30:00 AM** Prep Date: **8/19/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cobalt	0.263	0.00500	0.200	0.0985	82.5	80	120	3.78	15	
Lithium	1.24	0.0100	0.200	1.10	71.2	80	120	9.15	15	S

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1908174
Project: Luminant-A1 Area

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190820A

Sample ID **ICV-190820**	Batch ID: **R105890**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS5_190820A**	Analysis Date: **8/20/2019 10:46:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cobalt	0.0990	0.00500	0.100	0	99.0	90	110			
Lithium	0.106	0.0100	0.100	0	106	90	110			

Sample ID **LCVL-190820**	Batch ID: **R105890**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_190820A**	Analysis Date: **8/20/2019 10:54:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cobalt	0.00494	0.00500	0.00500	0	98.7	70	130			
Lithium	0.0107	0.0100	0.0100	0	107	70	130			

Sample ID **CCV1-190820**	Batch ID: **R105890**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_190820A**	Analysis Date: **8/20/2019 11:41:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cobalt	0.198	0.00500	0.200	0	98.9	90	110			
Lithium	0.215	0.0100	0.200	0	108	90	110			

Sample ID **LCVL1-190820**	Batch ID: **R105890**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_190820A**	Analysis Date: **8/20/2019 11:50:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cobalt	0.00510	0.00500	0.00500	0	102	70	130			
Lithium	0.0122	0.0100	0.0100	0	122	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1908174
Project: Luminant-A1 Area

MQL SUMMARY REPORT

TestNo: SW6020A	MDL	MQL
Analyte	**mg/L**	**mg/L**
Cobalt	0.00300	0.00500
Lithium	0.00500	0.0100

Qualifiers: MQL -Method Quantitation Limit as defined by TRRP

MDL -Method Detection Limit as defined by TRRP

Quantitative X-Ray Diffraction by Rietveld Refinement

Report Prepared for:	*Golder Associates - Will Vienne*
Project Number/ LIMS No.	*17431-01 / MI7013-JUN19*
Batch:	*Martin Lake A1 Area Landfill*
Sample Receipt:	*June 13, 2019*
Sample Analysis:	*June 28, 2019*
Reporting Date:	*July 19, 2019*
Instrument:	Panalytical X'pert Pro Diffractometer
Test Conditions:	Co radiation, 40 kV, 45 mA Regular Scanning: Step: 0.033°, Step time:0.15s, 2θ range: 6-70°
Interpretations :	HighScore Plus software using Crystallography Open Database (COD) and Joint Committee on Powder Diffraction Standards -International Center for Diffraction Data (JCPDS-ICDD).
Detection Limit :	0.5-2%. Strongly dependent on crystallinity.

Contents:

1) Method Summary
2) Summary of Mineral Assemblages
3) Quantitative XRD Results
4) XRD Pattern(s)

Ben Eaton
Junior Mineralogist

Lain Glossop H.B.Sc
Senior Mineralogist

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Member of the SGS Group (SGS SA)

Method Summary

Mineral Identification and Interpretation:

Mineral identification and interpretation involve matching the diffraction pattern of a test sample material to patterns of single-phase reference materials. The reference patterns from the Crystallography Open Database (COD) and the Joint Committee on Powder Diffraction Standards - International Center for Diffraction Data (JCPDS-ICDD).

Interpretations do not reflect the presence of non-crystalline and/or amorphous compounds, except when internal standards have been added by request. Mineral proportions may be strongly influenced by crystallinity, crystal structure and preferred orientations. Mineral or compound identification and quantitative analysis results should be accompanied by supporting chemical assay data or other additional tests.

Quantitative Rietveld Analysis:

Panalytical HighScore Plus software was used to perform the quantitative Rietveld Analysis. This software uses a graphics based profile analysis program built around a non-linear least squares fitting system, to quantitatively determine the amount of different phases present in a multicomponent sample. Whole pattern analyses are predicated by the fact that the X-ray diffraction pattern is a total sum of both instrumental and specimen factors. Unlike other peak intensity-based methods, the Rietveld method uses a least squares approach to refine a theoretical line profile (shown as a blue pattern in the analyses plots) until it matches the obtained experimental patterns (shown as the coloured pattern in the analyses plots).

Rietveld refinement is completed with a set of minerals specifically identified for the sample. Zero values indicate that the mineral was included in the refinement calculations, but the calculated concentration was less than 0.5 wt%. Minerals not identified by the analyst are not included in refinement calculations for specific samples and are indicated with a dash.

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Summary of Rietveld Quantitative Analysis X-ray Diffraction Results

Quantitative X-ray Diffraction Results

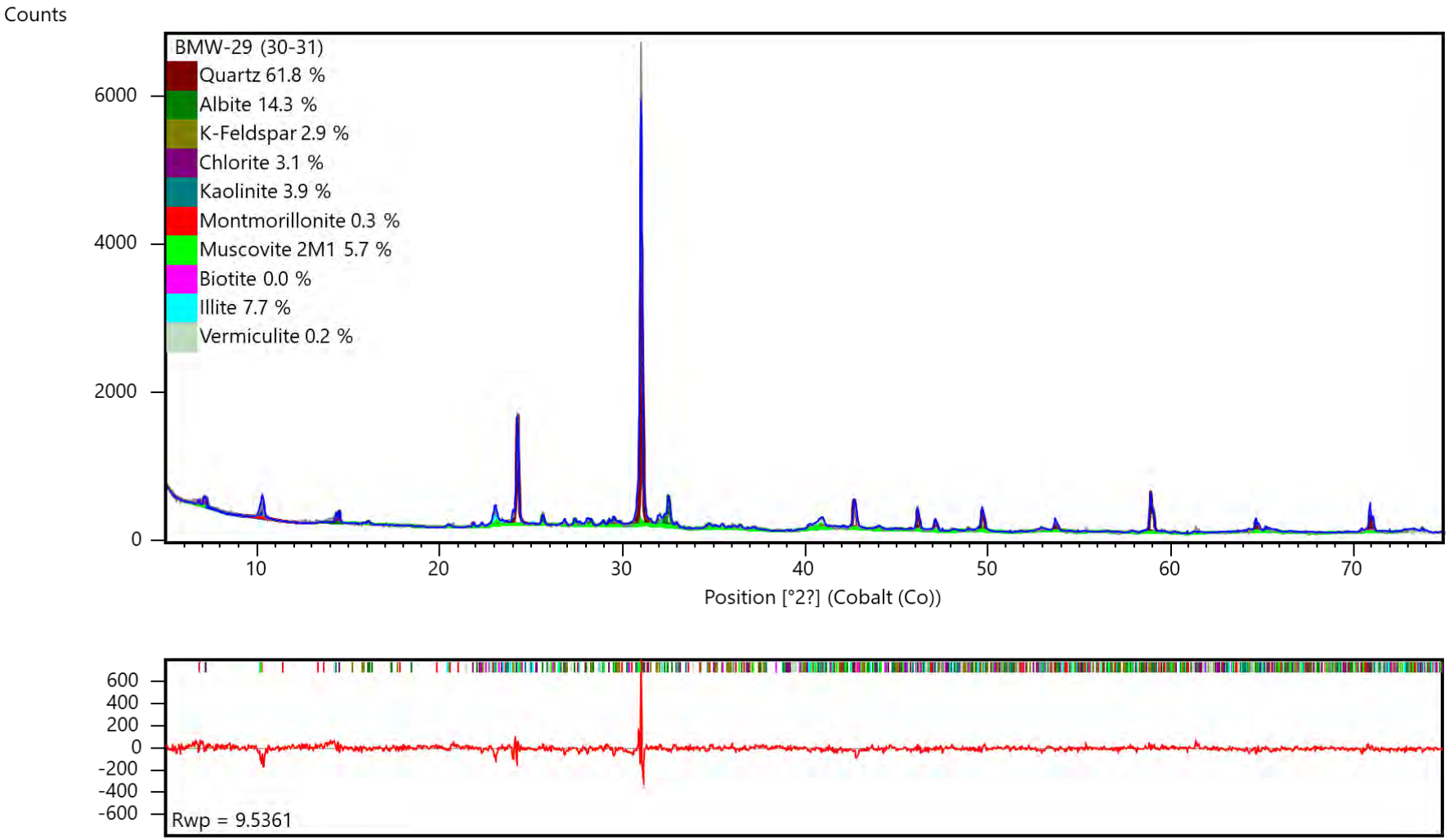
Mineral/Compound	1 BMW-29 (30-31)	2 BMW-30 (40-41)	3 BMW-31 (14-15)	4 BMW-32 (25-26)	5 BMW-33 (38-39)
	(wt %)	(wt %)	(wt %)	(wt %)	(wt %)
Quartz	61.8	82.3	90.3	81.7	68.0
Albite	14.3	0.0	2.1	6.6	17.1
K-Feldspar	2.9	7.3	5.6	7.6	3.0
Chlorite	3.1	1.6	0.1	0.0	1.7
*Kaolinite	3.9	3.9	0.0	2.5	3.4
*Montmorillonite	0.3	0.0	0.1	0.0	0.6
Muscovite	5.7	1.5	0.7	0.8	4.0
Biotite	0.0	0.0	0.0	0.0	0.0
Illite	7.7	2.1	1.0	0.6	2.1
*Vermiculite	0.2	0.0	0.1	0.1	0.2
Titanomagnetite	--	0.2	--	--	--
Ilmenite	--	1.0	--	--	--
TOTAL	100	100	100	100	100

Zero values indicate that the mineral was included in the refinement, but the calculated concentration is below a measurable value.

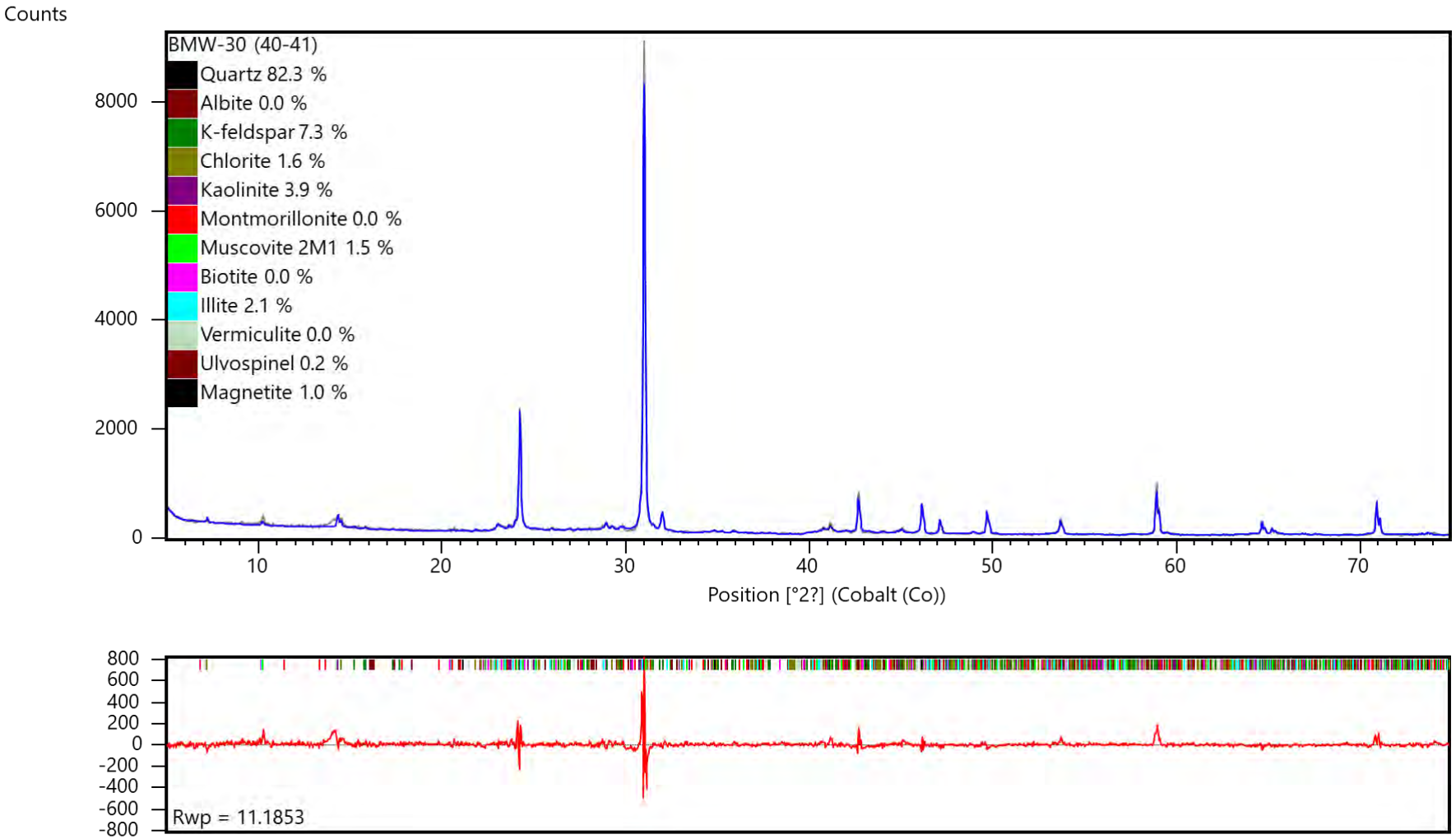
Dashes indicate that the mineral was not identified by the analyst and not included in the refinement calculation for the sample.

** Tentative identification of clays only, further clay XRD analysis will be required for positive identification.*

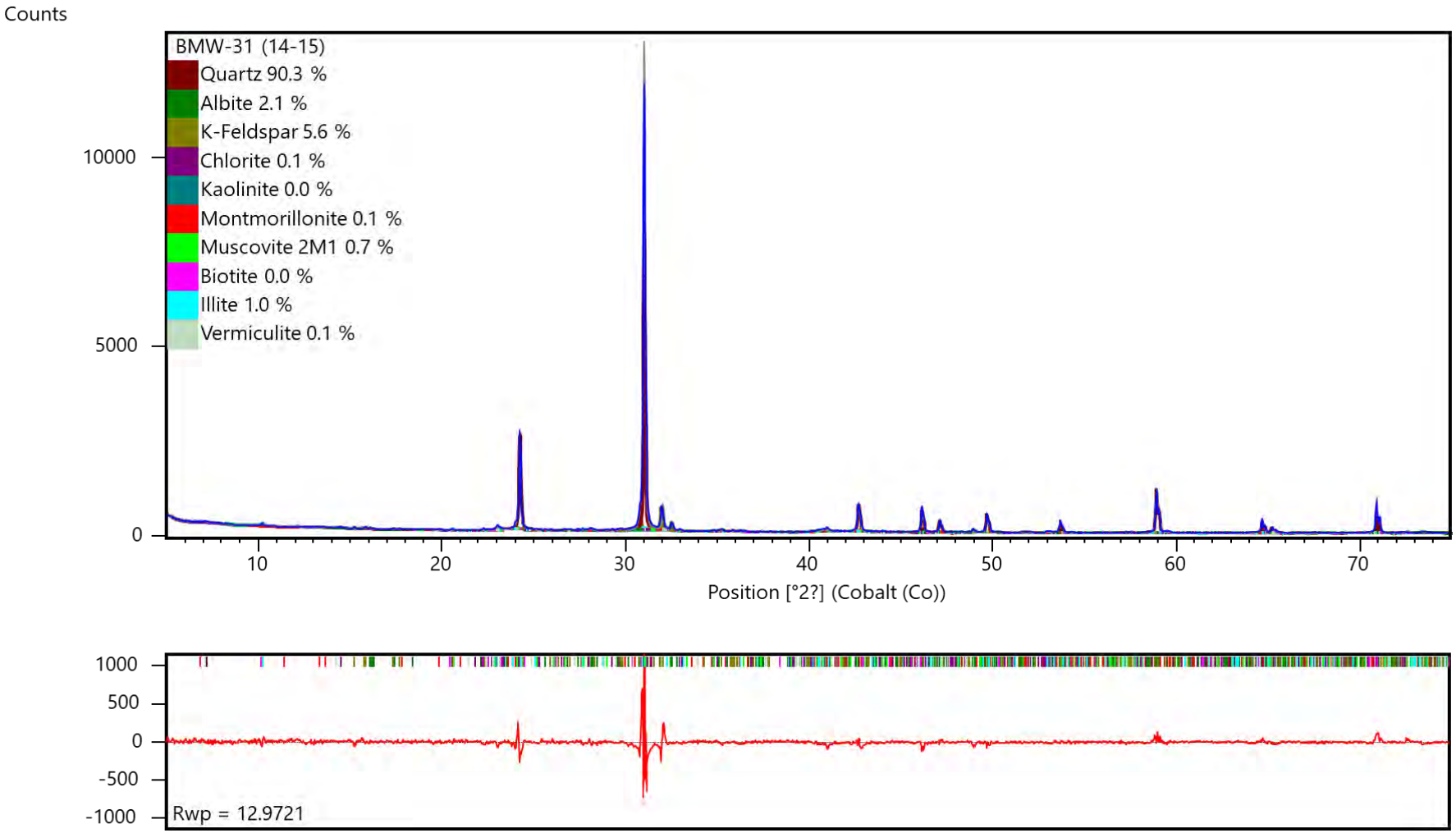
Mineral/Compound	Formula
Quartz	SiO_2
Albite	$NaAlSi_3O_8$
K-Feldspar	$KAlSi_3O_8$
Chlorite	$(Mg_3,Fe_2)Al(AlSi_3)O_{10}(OH)_8$
Kaolinite	$Al_2Si_2O_5(OH)_4$
Montmorillonite	$Na_{0.2}Ca_{0.1}Al_{1.5}Mg_{0.5}Si_4O_{10}(OH)_2 \cdot 4(H_2O)$
Muscovite	$KAl_2(AlSi_3O_{10})(OH)_2$
Biotite	$KMg_{2.5}Fe_{0.5}AlSi_3O_{10}(OH)_{1.75}F_{0.25}$
Illite	$(K,H_3O)(Al,Mg,Fe)_2(Si,Al)_4O_{10}[(OH)_2,(H_2O)]$
Vermiculite	$(Mg,Fe,Al)_2(Al,Si)_4O_{10}(OH)_2 \cdot 4(H_2O)$
Titanomagnetite	Fe_2TiO_4
Magnetite	Fe_2O_4



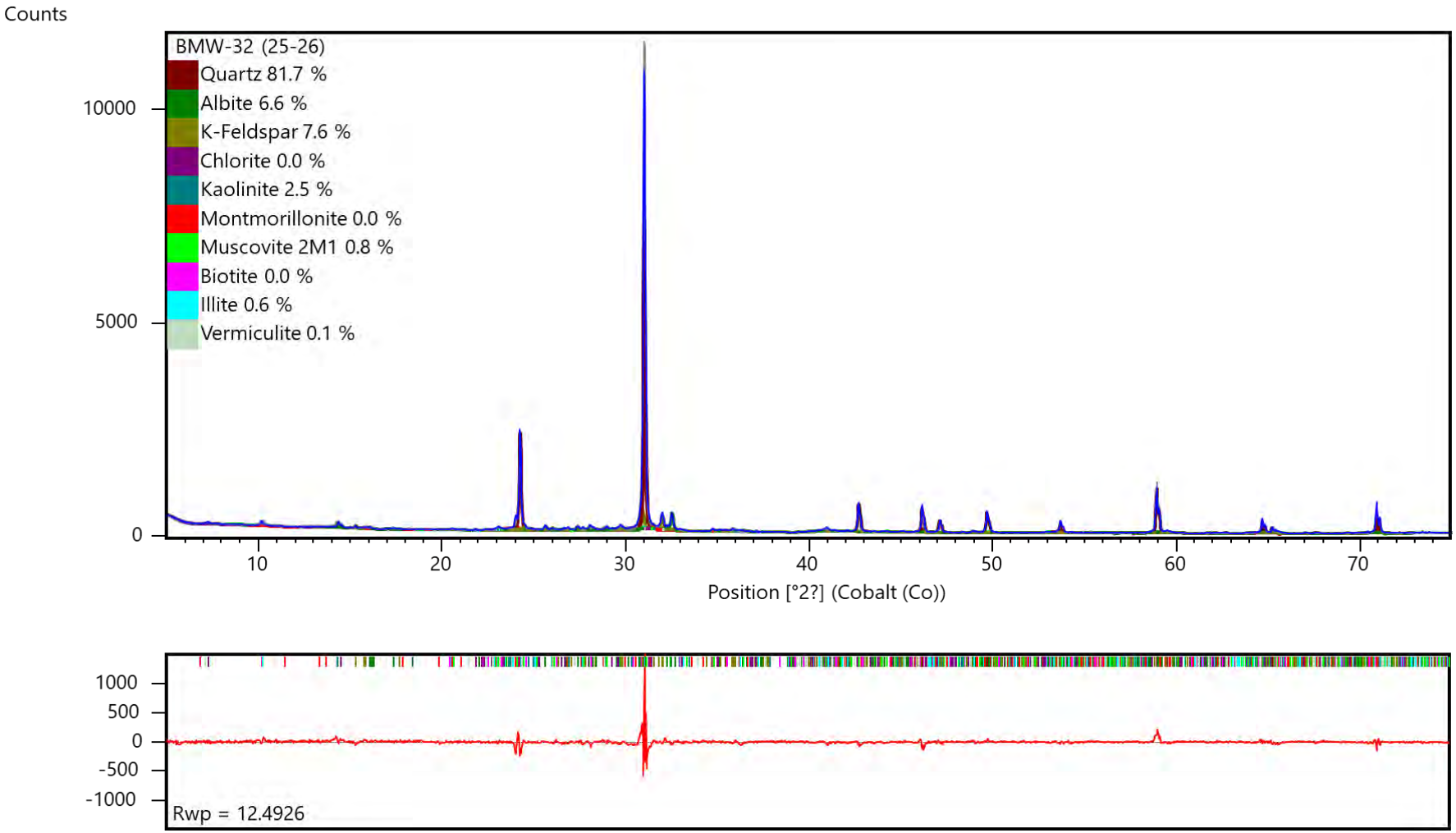
X-ray diffractogram. The upper pattern is the measured diffractogram, the blue curve is the calculated pattern from the Rietveld Refinement and the lower red curve is the difference plot.



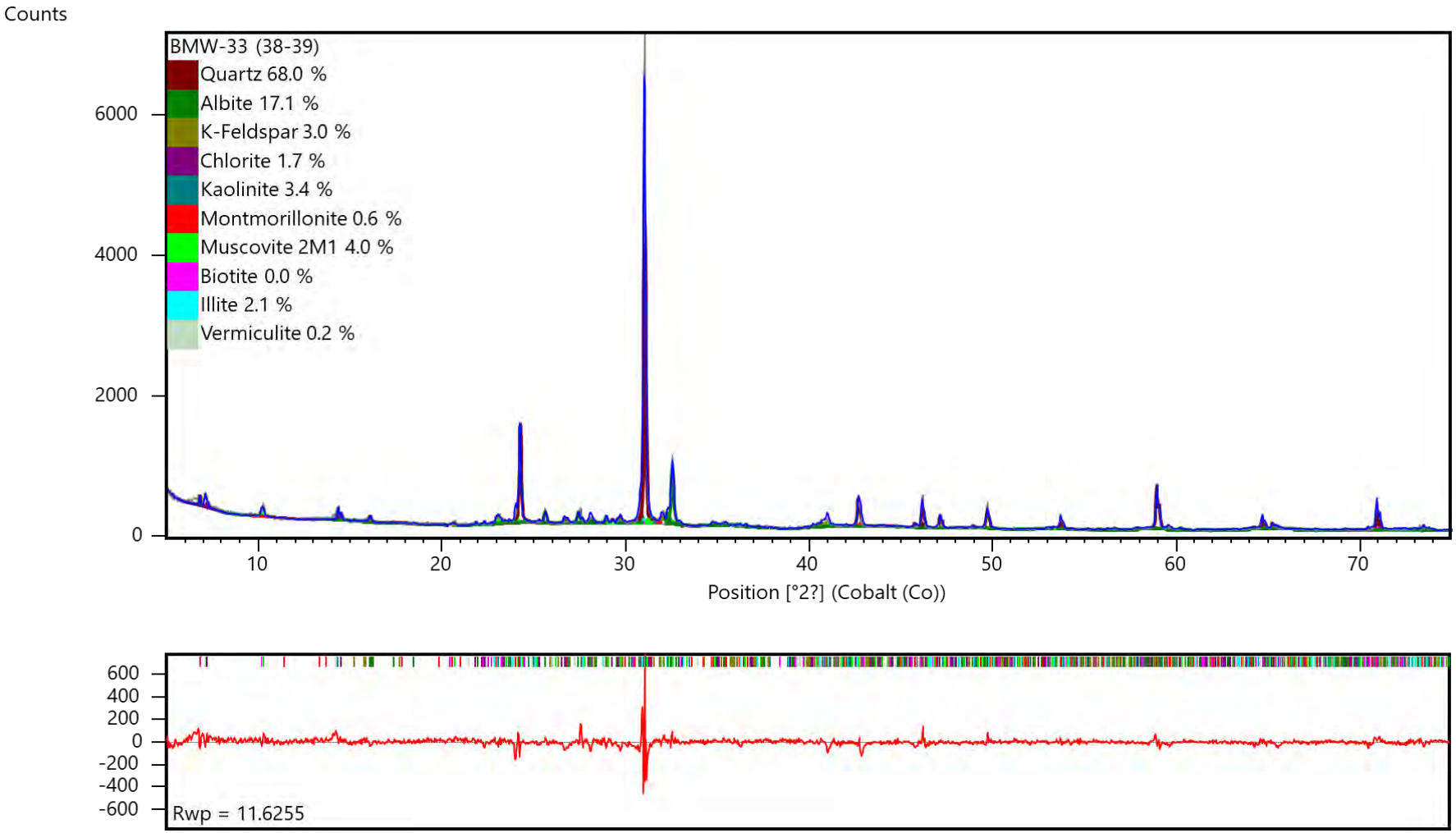
X-ray diffractogram. The upper pattern is the measured diffractogram, the blue curve is the calculated pattern from the Rietveld Refinement and the lower red curve is the difference plot.



X-ray diffractogram. The upper pattern is the measured diffractogram, the blue curve is the calculated pattern from the Rietveld Refinement and the lower red curve is the difference plot.



X-ray diffractogram. The upper pattern is the measured diffractogram, the blue curve is the calculated pattern from the Rietveld Refinement and the lower red curve is the difference plot.



X-ray diffractogram. The upper pattern is the measured diffractogram, the blue curve is the calculated pattern from the Rietveld Refinement and the lower red curve is the difference plot.

May 30, 2019

Will Vienne
Golder
2201 Double Creek Dr #4004
Round Rock, Texas 78664
TEL: (512) 671-3434
FAX (512) 671-3446

Order No.: 1905186

RE: Luminant-A1 Landfill

Dear Will Vienne:

DHL Analytical, Inc. received 1 sample(s) on 5/16/2019 for the analyses presented in the following report.

There were no problems with the analyses and all data met requirements of NELAP except where noted in the Case Narrative. All non-NELAP methods will be identified accordingly in the case narrative and all estimated uncertainties of test results are within method or EPA specifications.

If you have any questions regarding these tests results, please feel free to call. Thank you for using DHL Analytical.

Sincerely,

John DuPont
General Manager

This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211-19-24

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DHL ANALYTICAL
2300 Double Creek Dr. ■ Round Rock, TX 78664
Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

№ 82166 CHAIN-OF-CUSTODY

CLIENT: GOLDER
ADDRESS: 2201 DOUBLE CREEK DR ROUND ROCK, TX 78664
PHONE: 512-671-3434 FAX/E-MAIL: 512-671-3446
DATA REPORTED TO: WILL VIENNE
ADDITIONAL REPORT COPIES TO:

DATE: 5-15-19 PAGE 1 OF 1
PO #: DHL WORK ORDER #: 1905186
PROJECT LOCATION OR NAME: LUMINANT - AI LANDFILL
CLENT PROJECT #: 19122262-D COLLECTOR: J. BRAYTON

Authorize 5% surcharge for TRRP Report? ☐ Yes ☐ No

S=SOIL P=PAINT
W=WATER SL=SLUDGE
A=AIR O=OTHER
L=LIQUID SO=SOLID
SE=SEDIMENT

PRESERVATION: HCl, HNO_3, H_2SO_4 ☐ NaOH ☐, ICE, UNPRESERVED

ANALYSES: BTEX ☐ MTBE ☐ [METHOD 8021] | TPH 1005 ☐ TPH 1006 ☐ HOLD 1006 ☐ | GRO [METHOD 8015] ☐ DRO [METHOD 8105] ☐ | VOC 8260 ☐ VOC 624 ☐ VOC 8260/5035 ☐ | SVOC 8270 ☐ PAH 8270 ☐ HOLD PAH ☐ SVOC 625 ☐ | 8270 PEST ☐ 625 PEST/PCB ☐ 608 PCB ☐ 8270 PCB ☐ | 8270 O-P PEST ☐ 8082 PCB ☐ 8270 PCB ☐ | 8321 HERB ☐ T PHOS, AMMONIA ☐ | METALS 6020 ☐ METALS 200.8 ☐ DISS. METALS ☐ | RCRA ☐ TX11 ☐ ☐ | PH ☐ HEX CHROM ☐ ALKALINITY ☐ COD ☐ | CHLORIDE ☐ ANIONS ☐ | TCLP-SVOC ☐ VOC ☐ PEST ☐ HERB ☐ | TCLP-METALS ☐ RCRA 8 ☐ TX-11 ☐ Pb ☐ | RCI ☐ FLASHPOINT ☐ DGAS ☐ | TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐ | APPENDIX III & IV ALK, NO$_3$, PO$_4$, Mg, K FERROUS AND FERRIC IRON

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	HCl	HNO_3	H_2SO_4 ☐ NaOH ☐	ICE	UNPRESERVED	ANALYSES	FIELD NOTES
S-1	01	5-15-19	1630	W		7						X X X	

RELINQUISHED BY: (Signature) DATE/TIME 5-16-19 9:15 RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature) DATE/TIME RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature) DATE/TIME 5-16-19 11:21 RECEIVED BY: (Signature)

APPENDIX F Revision 2 February 27, 2024

☐ DHL DISPOSAL @ $5.00 each ☐ Return

TURN AROUND TIME
RUSH ☐ CALL FIRST
1 DAY ☐ CALL FIRST
2 DAY ☐
NORMAL ☒
OTHER ☐ _____

LABORATORY USE ONLY:
RECEIVING TEMP: 1.3/0.4/1.0/2.0°C THERM #: 78
CUSTODY SEALS: ☐ BROKEN ☐ INTACT ☒ NOT USED
CARRIER: ☐ LONE STAR ☐ FEDEX ☐ UPS ☐ OTHER
☐ COURIER DELIVERY
☒ HAND DELIVERED

DHL COC Rev 1 | FEB 2010

Eric Lau

From: John DuPont
Sent: Tuesday, May 28, 2019 11:35 AM
To: Eric Lau
Subject: FW: CCR Analysis

Appendix III Parameters:
Metals (Ca and B)
Anions (Cl, F, and SO4)
TDS

Appendix IV Parameters:

Metals (As, Ba, Be, Cd, Co, Cr, Hg, Li, Mo, Pb, Sb, Se, and Tl)
Ra-226
Ra-228

From: Vienne, Will [mailto:William_Vienne@golder.com]
Sent: Tuesday, April 09, 2019 12:48 PM
To: John DuPont <dupont@dhlanalytical.com>
Subject: CCR Analysis

DHL Analytical, Inc.

Sample Receipt Checklist

Client Name Golder | Date Received: 5/16/2019

Work Order Number 1905186 | Received by EL

Checklist completed by: _____ (Signature) 5/16/2019 (Date) | Reviewed by PB (Initials) 5/16/2019 (Date)

Carrier name Hand Delivered

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☑ EA 5/16/19	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	1.3 °C
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH<2 acceptable upon receipt?	Yes ☑	No ☐	NA ☐ LOT # 11837
	Adjusted? no		Checked by EL
Water - ph>9 (S) or ph>10 (CN) acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted?		Checked by

Any No response must be detailed in the comments section below.

Client contacted _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments: _____

Corrective Action _____

DHL Analytical, Inc. **Date:** *30-May-19*

CLIENT: Golder
Project: Luminant-A1 Landfill
Lab Order: 1905186

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Method SW6020A - Metals Analysis
Method SW7470A - Mercury Analysis
Method E300 - Anions Analysis
Method M2320 B - Alkalinity Analysis
Method M3500-Fe D - Ferrous Iron Analysis (this parameter is not NELAP certified)
Method M3500-Fe D - Ferric Iron (calculation) (this calculation is not NELAP certified).
Method M4500-P E - Orthophosphate Analysis
Method M2540C - TDS Analysis
Sub-contract - Radium-228 and Radium-226 analyses by methods E904 and SM 7500 Ra B M. Analyzed at Pace Analytical.

LOG IN

The sample was received and log-in performed on 5/16/19. A total of 1 sample was received. The sample arrived in good condition and was properly packaged.

METALS ANALYSIS

For Metals analysis performed on 5/20/19 and 5/21/19 the matrix spike and matrix spike duplicate recoveries were out of control limits for a total of four analytes. These are flagged accordingly in the QC summary report. The sample selected for the matrix spike and matrix spike duplicate was not from this work order. The LCS was within control limits for these analytes. No further corrective actions were taken.

For Metals analysis peformed on 5/20/19 and 5/21/19 LCVL6-190520 and LCVL-190521 were out of control limits for Sodium or Potassium. These are flagged accordingly. The associated CCVs were within control limits for these analytes. No further corrective actions were taken.

ANIONS ANALYSIS

For Anions analysis performed on 5/17/19 (batch 90964) the matrix spike duplicate recovery was slightly above control limits for Chloride. This was due to matrix effect. This is flagged accordingly in the QC summary report. The sample selected for the matrix spike and matrix spike duplicate was not from this work order. The LCS was within control limits for this analyte. No further corrective actions were taken.

DHL Analytical, Inc.

Date: *30-May-19*

CLIENT: Golder
Project: Luminant-A1 Landfill
Lab Order: 1905186

Work Order Sample Summary

Lab Smp ID	Client Sample ID	Tag Number	Date Collected	Date Recved
1905186-01	S-1		05/15/19 04:30 PM	5/16/2019

Lab Order: 1905186
Client: Golder
Project: Luminant-A1 Landfill

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1905186-01A	S-1	05/15/19 04:30 PM	Aqueous	M3500-Fe	Ferrous Iron Prep Water	05/21/19 04:52 PM	91028
	S-1	05/15/19 04:30 PM	Aqueous	M3500-Fe	Ferrous Iron Prep Water	05/21/19 04:52 PM	91028
	S-1	05/15/19 04:30 PM	Aqueous	M3500-Fe	Ferrous Iron Prep Water	05/21/19 04:52 PM	91028
1905186-01B	S-1	05/15/19 04:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/17/19 08:40 AM	90959
	S-1	05/15/19 04:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/17/19 08:40 AM	90959
	S-1	05/15/19 04:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/17/19 08:40 AM	90959
	S-1	05/15/19 04:30 PM	Aqueous	SW7470A	Mercury Aq Prep	05/23/19 09:25 AM	91059
1905186-01C	S-1	05/15/19 04:30 PM	Aqueous	M2320 B	Alkalinity Preparation	05/17/19 09:00 AM	90967
	S-1	05/15/19 04:30 PM	Aqueous	E300	Anion Preparation	05/17/19 09:26 AM	90964
	S-1	05/15/19 04:30 PM	Aqueous	E300	Anion Preparation	05/16/19 01:49 PM	90934
	S-1	05/15/19 04:30 PM	Aqueous	E300	Anion Preparation	05/16/19 01:49 PM	90934
	S-1	05/15/19 04:30 PM	Aqueous	M4500-P E	Orthophosphate Prep	05/16/19 02:09 PM	90950
	S-1	05/15/19 04:30 PM	Aqueous	M2540C	TDS Preparation	05/20/19 12:59 PM	91001

Lab Order: 1905186
Client: Golder
Project: Luminant-A1 Landfill

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1905186-01A	S-1	Aqueous	M3500-Fe D	Ferric Iron (Calculated)	91028	1	05/28/19	UV/VIS_2_190528B
	S-1	Aqueous	M3500-Fe D	Ferrous Iron	91028	50	05/21/19 05:59 PM	UV/VIS_2_190521B
	S-1	Aqueous	M3500-Fe D	Ferrous Iron	91028	20	05/21/19 05:52 PM	UV/VIS_2_190521B
	S-1	Aqueous	M3500-Fe D	Ferrous Iron	91028	1	05/21/19 05:41 PM	UV/VIS_2_190521B
1905186-01B	S-1	Aqueous	SW7470A	Mercury Total: Aqueous	91059	1	05/24/19 10:09 AM	CETAC2_HG_190524A
	S-1	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	90959	1	05/23/19 02:35 PM	ICP-MS5_190523A
	S-1	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	90959	100	05/21/19 01:58 PM	ICP-MS5_190521A
	S-1	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	90959	1	05/20/19 04:29 PM	ICP-MS4_190520B
1905186-01C	S-1	Aqueous	M2320 B	Alkalinity	90967	1	05/17/19 05:29 PM	TITRATOR_190517A
	S-1	Aqueous	E300	Anions by IC method - Water	90964	100	05/17/19 04:41 PM	IC2_190517B
	S-1	Aqueous	E300	Anions by IC method - Water	90934	10	05/17/19 05:13 AM	IC2_190516B
	S-1	Aqueous	E300	Anions by IC method - Water	90934	1	05/16/19 10:17 PM	IC2_190516B
	S-1	Aqueous	M4500-P E	Orthophosphate	90950	1	05/16/19 02:52 PM	UV/VIS_2_190516B
	S-1	Aqueous	M2540C	Total Dissolved Solids	91001	1	05/20/19 04:45 PM	WC_190520A

DHL Analytical, Inc.

Date: *30-May-19*

CLIENT:	Golder	**Client Sample ID:**	S-1
Project:	Luminant-A1 Landfill	**Lab ID:**	1905186-01
Project No:	19122262-D	**Collection Date:**	05/15/19 04:30 PM
Lab Order:	1905186	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	05/20/19 04:29 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	05/20/19 04:29 PM
Barium	0.0191	0.00300	0.0100		mg/L	1	05/20/19 04:29 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	05/20/19 04:29 PM
Boron	30.7	1.00	3.00		mg/L	100	05/21/19 01:58 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	05/20/19 04:29 PM
Calcium	521	10.0	30.0		mg/L	100	05/21/19 01:58 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	05/20/19 04:29 PM
Cobalt	0.0388	0.00300	0.00500		mg/L	1	05/20/19 04:29 PM
Iron	16.6	3.00	10.0		mg/L	100	05/21/19 01:58 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	05/20/19 04:29 PM
Lithium	0.0161	0.00500	0.0100		mg/L	1	05/20/19 04:29 PM
Magnesium	121	10.0	30.0		mg/L	100	05/21/19 01:58 PM
Molybdenum	0.276	0.00200	0.00500		mg/L	1	05/23/19 02:35 PM
Potassium	35.5	10.0	30.0		mg/L	100	05/21/19 01:58 PM
Selenium	0.0441	0.00200	0.00500		mg/L	1	05/20/19 04:29 PM
Sodium	534	10.0	30.0		mg/L	100	05/21/19 01:58 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	05/20/19 04:29 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	05/24/19 10:09 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **JL**
Chloride	814	30.0	100		mg/L	100	05/17/19 04:41 PM
Fluoride	0.447	0.100	0.400		mg/L	1	05/16/19 10:17 PM
Nitrate-N	<0.100	0.100	0.500		mg/L	1	05/16/19 10:17 PM
Sulfate	1770	100	300		mg/L	100	05/17/19 04:41 PM
ALKALINITY		**M2320 B**					Analyst: **CC**
Alkalinity, Bicarbonate (As CaCO3)	155	10.0	20.0		mg/L @ pH 4.52	1	05/17/19 05:29 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.52	1	05/17/19 05:29 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.52	1	05/17/19 05:29 PM
Alkalinity, Total (As CaCO3)	155	20.0	20.0		mg/L @ pH 4.52	1	05/17/19 05:29 PM
FERRIC IRON (CALCULATED)		**M3500-FE D**					Analyst: **CAC**
Iron, Ferric	6.10	0.0500	0.100	N	mg/L	1	05/28/19
FERROUS IRON		**M3500-FE D**					Analyst: **BTJ**
Iron, Ferrous	10.5	2.50	5.00	N	mg/L	50	05/21/19 05:59 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *30-May-19*

CLIENT:	Golder	**Client Sample ID:**	S-1
Project:	Luminant-A1 Landfill	**Lab ID:**	1905186-01
Project No:	19122262-D	**Collection Date:**	05/15/19 04:30 PM
Lab Order:	1905186	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
ORTHOPHOSPHATE		**M4500-P E**					Analyst: **CC**
Phosphorus, Total Orthophosphate (As P)	0.0450	0.0300	0.100	J	mg/L	1	05/16/19 02:52 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	4220	50.0	50.0		mg/L	1	05/20/19 04:45 PM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
	DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit
	ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
	S	Spike Recovery outside control limits	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905186
Project: Luminant-A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_190524A

The QC data in batch 91059 applies to the following samples: 1905186-01B

Sample ID	**MB-91059**	Batch ID:	**91059**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**CETAC2_HG_190524A**	Analysis Date:	**5/24/2019 9:28:33 AM**	Prep Date:	**5/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.0000800	0.000200								

Sample ID	**LCS-91059**	Batch ID:	**91059**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**CETAC2_HG_190524A**	Analysis Date:	**5/24/2019 9:33:05 AM**	Prep Date:	**5/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00187	0.000200	0.00200	0	93.5	85	115			

Sample ID	**LCSD-91059**	Batch ID:	**91059**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**LCSD**	Run ID:	**CETAC2_HG_190524A**	Analysis Date:	**5/24/2019 9:35:22 AM**	Prep Date:	**5/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00195	0.000200	0.00200	0	97.5	85	115	4.19	15	

Sample ID	**1905231-01A MS**	Batch ID:	**91059**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**MS**	Run ID:	**CETAC2_HG_190524A**	Analysis Date:	**5/24/2019 10:20:46 AM**	Prep Date:	**5/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00960	0.00100	0.0100	0	96.0	80	120			

Sample ID	**1905231-01A MSD**	Batch ID:	**91059**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**MSD**	Run ID:	**CETAC2_HG_190524A**	Analysis Date:	**5/24/2019 10:23:02 AM**	Prep Date:	**5/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00925	0.00100	0.0100	0	92.5	80	120	3.71	15	

Sample ID	**1905231-01A SD**	Batch ID:	**91059**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**SD**	Run ID:	**CETAC2_HG_190524A**	Analysis Date:	**5/24/2019 10:25:18 AM**	Prep Date:	**5/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.00200	0.00500	0	0				0	10	

Sample ID	**1905231-01A PDS**	Batch ID:	**91059**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**PDS**	Run ID:	**CETAC2_HG_190524A**	Analysis Date:	**5/24/2019 10:27:34 AM**	Prep Date:	**5/23/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0120	0.00100	0.0125	0	95.6	85	115			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905186
Project: Luminant-A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_190524A

Sample ID	**ICV-190524**	Batch ID:	**R104261**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**ICV**	Run ID:	**CETAC2_HG_190524A**	Analysis Date:	**5/24/2019 9:24:00 AM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00400	0.000200	0.00400	0	100	90	110			

Sample ID	**CCV1-190524**	Batch ID:	**R104261**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**CETAC2_HG_190524A**	Analysis Date:	**5/24/2019 10:00:18 AM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00214	0.000200	0.00200	0	107	90	110			

Sample ID	**CCV2-190524**	Batch ID:	**R104261**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**CETAC2_HG_190524A**	Analysis Date:	**5/24/2019 10:36:42 AM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00212	0.000200	0.00200	0	106	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905186
Project: Luminant-A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190520B

The QC data in batch 90959 applies to the following samples: 1905186-01B

Sample ID	**MB-90959**	Batch ID:	**90959**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**ICP-MS4_190520B**	Analysis Date:	**5/20/2019 3:23:00 PM**	Prep Date:	**5/17/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.000800	0.00250								
Arsenic	<0.00200	0.00500								
Barium	<0.00300	0.0100								
Beryllium	<0.000300	0.00100								
Cadmium	<0.000300	0.00100								
Calcium	<0.100	0.300								
Chromium	<0.00200	0.00500								
Cobalt	<0.00300	0.00500								
Iron	<0.0300	0.100								
Lead	<0.000300	0.00100								
Lithium	<0.00500	0.0100								
Magnesium	<0.100	0.300								
Potassium	<0.100	0.300								
Selenium	<0.00200	0.00500								
Sodium	<0.100	0.300								
Thallium	<0.000500	0.00150								

Sample ID	**LCS-90959**	Batch ID:	**90959**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**ICP-MS4_190520B**	Analysis Date:	**5/20/2019 3:27:00 PM**	Prep Date:	**5/17/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.190	0.00250	0.200	0	94.8	80	120			
Arsenic	0.204	0.00500	0.200	0	102	80	120			
Barium	0.190	0.0100	0.200	0	94.9	80	120			
Beryllium	0.211	0.00100	0.200	0	105	80	120			
Cadmium	0.192	0.00100	0.200	0	95.8	80	120			
Calcium	4.65	0.300	5.00	0	93.1	80	120			
Chromium	0.195	0.00500	0.200	0	97.7	80	120			
Cobalt	0.203	0.00500	0.200	0	101	80	120			
Iron	5.14	0.100	5.00	0	103	80	120			
Lead	0.187	0.00100	0.200	0	93.6	80	120			
Lithium	0.217	0.0100	0.200	0	108	80	120			
Magnesium	5.03	0.300	5.00	0	101	80	120			
Potassium	5.02	0.300	5.00	0	100	80	120			
Selenium	0.204	0.00500	0.200	0	102	80	120			
Sodium	5.07	0.300	5.00	0	101	80	120			
Thallium	0.199	0.00150	0.200	0	99.7	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905186
Project: Luminant-A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190520B

Sample ID **LCSD-90959**	Batch ID: **90959**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCSD**	Run ID: **ICP-MS4_190520B**	Analysis Date: **5/20/2019 3:29:00 PM**	Prep Date: **5/17/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.195	0.00250	0.200	0	97.7	80	120	2.98	15	
Arsenic	0.201	0.00500	0.200	0	100	80	120	1.34	15	
Barium	0.194	0.0100	0.200	0	97.2	80	120	2.37	15	
Beryllium	0.210	0.00100	0.200	0	105	80	120	0.345	15	
Cadmium	0.198	0.00100	0.200	0	98.8	80	120	3.14	15	
Calcium	4.68	0.300	5.00	0	93.5	80	120	0.492	15	
Chromium	0.198	0.00500	0.200	0	99.1	80	120	1.40	15	
Cobalt	0.200	0.00500	0.200	0	100	80	120	1.46	15	
Iron	5.15	0.100	5.00	0	103	80	120	0.209	15	
Lead	0.190	0.00100	0.200	0	95.0	80	120	1.54	15	
Lithium	0.211	0.0100	0.200	0	106	80	120	2.37	15	
Magnesium	5.15	0.300	5.00	0	103	80	120	2.30	15	
Potassium	5.07	0.300	5.00	0	101	80	120	1.08	15	
Selenium	0.200	0.00500	0.200	0	99.9	80	120	1.96	15	
Sodium	5.10	0.300	5.00	0	102	80	120	0.502	15	
Thallium	0.200	0.00150	0.200	0	100	80	120	0.279	15	

Sample ID **1905178-02C SD**	Batch ID: **90959**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS4_190520B**	Analysis Date: **5/20/2019 3:37:00 PM**	Prep Date: **5/17/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.00400	0.0125	0	0				0	10	
Arsenic	0.0115	0.0250	0	0.0113				1.19	10	
Barium	0.0249	0.0500	0	0.0269				7.62	10	
Beryllium	<0.00150	0.00500	0	0				0	10	
Cadmium	<0.00150	0.00500	0	0				0	10	
Chromium	0.0104	0.0250	0	0.0104				0.596	10	
Cobalt	<0.0150	0.0250	0	0				0	10	
Iron	0.313	0.500	0	0.303				3.55	10	
Lead	<0.00150	0.00500	0	0				0	10	
Lithium	0.0378	0.0500	0	0.0361				4.57	10	
Potassium	1.53	1.50	0	1.52				0.244	10	
Selenium	<0.0100	0.0250	0	0				0	10	
Thallium	<0.00250	0.00750	0	0				0	10	

Sample ID **1905178-02C PDS**	Batch ID: **90959**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_190520B**	Analysis Date: **5/20/2019 3:56:00 PM**	Prep Date: **5/17/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.193	0.00250	0.200	0	96.4	80	120			
Arsenic	0.209	0.00500	0.200	0.0113	98.9	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905186
Project: Luminant-A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190520B

Sample ID **1905178-02C PDS**	Batch ID: **90959**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_190520B**	Analysis Date: **5/20/2019 3:56:00 PM**	Prep Date: **5/17/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.214	0.0100	0.200	0.0269	93.7	80	120			
Beryllium	0.184	0.00100	0.200	0	91.9	80	120			
Cadmium	0.184	0.00100	0.200	0	91.8	80	120			
Chromium	0.198	0.00500	0.200	0.0104	93.6	80	120			
Cobalt	0.193	0.00500	0.200	0	96.5	80	120			
Iron	5.19	0.100	5.00	0.303	97.7	80	120			
Lead	0.185	0.00100	0.200	0	92.4	80	120			
Lithium	0.224	0.0100	0.200	0.0361	93.9	80	120			
Potassium	6.27	0.300	5.00	1.52	94.9	80	120			
Selenium	0.195	0.00500	0.200	0	97.6	80	120			
Thallium	0.203	0.00150	0.200	0	101	80	120			

Sample ID **1905178-02C MS**	Batch ID: **90959**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS4_190520B**	Analysis Date: **5/20/2019 3:58:00 PM**	Prep Date: **5/17/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.197	0.00250	0.200	0	98.3	80	120			
Arsenic	0.217	0.00500	0.200	0.0113	103	80	120			
Barium	0.223	0.0100	0.200	0.0269	97.8	80	120			
Beryllium	0.187	0.00100	0.200	0	93.6	80	120			
Cadmium	0.185	0.00100	0.200	0	92.5	80	120			
Calcium	65.6	0.300	5.00	62.5	62.2	80	120			S
Chromium	0.198	0.00500	0.200	0.0104	93.7	80	120			
Cobalt	0.196	0.00500	0.200	0	98.1	80	120			
Iron	5.25	0.100	5.00	0.303	98.9	80	120			
Lead	0.188	0.00100	0.200	0	93.9	80	120			
Lithium	0.221	0.0100	0.200	0.0361	92.5	80	120			
Magnesium	65.8	0.300	5.00	63.5	45.8	80	120			S
Potassium	6.56	0.300	5.00	1.52	101	80	120			
Selenium	0.204	0.00500	0.200	0	102	80	120			
Sodium	223	0.300	5.00	229	-120	80	120			S
Thallium	0.201	0.00150	0.200	0	100	80	120			

Sample ID **1905178-02C MSD**	Batch ID: **90959**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS4_190520B**	Analysis Date: **5/20/2019 4:00:00 PM**	Prep Date: **5/17/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.199	0.00250	0.200	0	99.4	80	120	1.06	15	
Arsenic	0.214	0.00500	0.200	0.0113	101	80	120	1.22	15	
Barium	0.228	0.0100	0.200	0.0269	100	80	120	2.27	15	
Beryllium	0.186	0.00100	0.200	0	92.8	80	120	0.831	15	

Qualifiers:

B	Analyte detected in the associated Method Blank
J	Analyte detected between MDL and RL
ND	Not Detected at the Method Detection Limit
RL	Reporting Limit
J	Analyte detected between SDL and RL
DF	Dilution Factor
MDL	Method Detection Limit
R	RPD outside accepted control limits
S	Spike Recovery outside control limits
N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905186
Project: Luminant-A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190520B

Sample ID **1905178-02C MSD** Batch ID: **90959** TestNo: **SW6020A** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS4_190520B** Analysis Date: **5/20/2019 4:00:00 PM** Prep Date: **5/17/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cadmium	0.188	0.00100	0.200	0	94.1	80	120	1.65	15	
Calcium	65.6	0.300	5.00	62.5	61.4	80	120	0.058	15	S
Chromium	0.197	0.00500	0.200	0.0104	93.2	80	120	0.455	15	
Cobalt	0.195	0.00500	0.200	0	97.6	80	120	0.571	15	
Iron	5.20	0.100	5.00	0.303	97.9	80	120	0.922	15	
Lead	0.186	0.00100	0.200	0	93.1	80	120	0.842	15	
Lithium	0.227	0.0100	0.200	0.0361	95.5	80	120	2.65	15	
Magnesium	66.6	0.300	5.00	63.5	62.8	80	120	1.28	15	S
Potassium	6.53	0.300	5.00	1.52	100	80	120	0.365	15	
Selenium	0.201	0.00500	0.200	0	101	80	120	1.07	15	
Sodium	224	0.300	5.00	229	-105	80	120	0.347	15	S
Thallium	0.205	0.00150	0.200	0	103	80	120	2.13	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905186
Project: Luminant-A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190520B

Sample ID **ICV-190520**	Batch ID: **R104182**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_190520B**	Analysis Date: **5/20/2019 11:23:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.0968	0.00250	0.100	0	96.8	90	110			
Arsenic	0.0991	0.00500	0.100	0	99.1	90	110			
Barium	0.0948	0.0100	0.100	0	94.8	90	110			
Beryllium	0.102	0.00100	0.100	0	102	90	110			
Cadmium	0.0974	0.00100	0.100	0	97.4	90	110			
Calcium	2.44	0.300	2.50	0	97.7	90	110			
Chromium	0.102	0.00500	0.100	0	102	90	110			
Cobalt	0.101	0.00500	0.100	0	101	90	110			
Iron	2.61	0.100	2.50	0	104	90	110			
Lead	0.0932	0.00100	0.100	0	93.2	90	110			
Lithium	0.106	0.0100	0.100	0	106	90	110			
Magnesium	2.50	0.300	2.50	0	100	90	110			
Potassium	2.53	0.300	2.50	0	101	90	110			
Selenium	0.0979	0.00500	0.100	0	97.9	90	110			
Sodium	2.59	0.300	2.50	0	104	90	110			
Thallium	0.0911	0.00150	0.100	0	91.1	90	110			

Sample ID **LCVL-190520**	Batch ID: **R104182**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_190520B**	Analysis Date: **5/20/2019 11:29:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00176	0.00250	0.00200	0	87.9	70	130			
Arsenic	0.00489	0.00500	0.00500	0	97.7	70	130			
Barium	0.00432	0.0100	0.00500	0	86.5	70	130			
Beryllium	0.000893	0.00100	0.00100	0	89.3	70	130			
Cadmium	0.000871	0.00100	0.00100	0	87.1	70	130			
Calcium	0.0919	0.300	0.100	0	91.9	70	130			
Chromium	0.00481	0.00500	0.00500	0	96.1	70	130			
Cobalt	0.00485	0.00500	0.00500	0	97.0	70	130			
Iron	0.107	0.100	0.100	0	107	70	130			
Lead	0.000831	0.00100	0.00100	0	83.1	70	130			
Lithium	0.0104	0.0100	0.0100	0	104	70	130			
Magnesium	0.0970	0.300	0.100	0	97.0	70	130			
Potassium	0.0964	0.300	0.100	0	96.4	70	130			
Selenium	0.00489	0.00500	0.00500	0	97.8	70	130			
Sodium	0.0958	0.300	0.100	0	95.8	70	130			
Thallium	0.000816	0.00150	0.00100	0	81.6	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905186
Project: Luminant-A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190520B

Sample ID **CCV5-190520**	Batch ID: **R104182**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_190520B**	Analysis Date: **5/20/2019 2:53:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.195	0.00250	0.200	0	97.6	90	110			
Arsenic	0.203	0.00500	0.200	0	102	90	110			
Barium	0.193	0.0100	0.200	0	96.5	90	110			
Beryllium	0.202	0.00100	0.200	0	101	90	110			
Cadmium	0.197	0.00100	0.200	0	98.4	90	110			
Calcium	4.64	0.300	5.00	0	92.9	90	110			
Chromium	0.195	0.00500	0.200	0	97.5	90	110			
Cobalt	0.201	0.00500	0.200	0	100	90	110			
Iron	5.06	0.100	5.00	0	101	90	110			
Lead	0.192	0.00100	0.200	0	96.1	90	110			
Lithium	0.206	0.0100	0.200	0	103	90	110			
Magnesium	5.06	0.300	5.00	0	101	90	110			
Potassium	5.03	0.300	5.00	0	101	90	110			
Selenium	0.205	0.00500	0.200	0	102	90	110			
Sodium	5.17	0.300	5.00	0	103	90	110			
Thallium	0.199	0.00150	0.200	0	99.7	90	110			

Sample ID **LCVL5-190520**	Batch ID: **R104182**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_190520B**	Analysis Date: **5/20/2019 3:01:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00174	0.00250	0.00200	0	87.2	70	130			
Arsenic	0.00487	0.00500	0.00500	0	97.5	70	130			
Barium	0.00423	0.0100	0.00500	0	84.6	70	130			
Beryllium	0.00110	0.00100	0.00100	0	110	70	130			
Cadmium	0.000921	0.00100	0.00100	0	92.1	70	130			
Calcium	0.0952	0.300	0.100	0	95.2	70	130			
Chromium	0.00485	0.00500	0.00500	0	97.1	70	130			
Cobalt	0.00489	0.00500	0.00500	0	97.9	70	130			
Iron	0.108	0.100	0.100	0	108	70	130			
Lead	0.000805	0.00100	0.00100	0	80.5	70	130			
Lithium	0.0108	0.0100	0.0100	0	108	70	130			
Magnesium	0.0983	0.300	0.100	0	98.3	70	130			
Potassium	0.0975	0.300	0.100	0	97.5	70	130			
Selenium	0.00517	0.00500	0.00500	0	103	70	130			
Sodium	0.102	0.300	0.100	0	102	70	130			
Thallium	0.000787	0.00150	0.00100	0	78.7	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905186
Project: Luminant-A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190520B

Sample ID **CCV6-190520**	Batch ID: **R104182**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_190520B**	Analysis Date: **5/20/2019 4:02:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.194	0.00250	0.200	0	96.9	90	110			
Arsenic	0.205	0.00500	0.200	0	102	90	110			
Barium	0.192	0.0100	0.200	0	96.2	90	110			
Beryllium	0.199	0.00100	0.200	0	99.7	90	110			
Cadmium	0.193	0.00100	0.200	0	96.3	90	110			
Calcium	4.67	0.300	5.00	0	93.4	90	110			
Chromium	0.194	0.00500	0.200	0	96.8	90	110			
Cobalt	0.203	0.00500	0.200	0	101	90	110			
Iron	5.07	0.100	5.00	0	101	90	110			
Lead	0.195	0.00100	0.200	0	97.6	90	110			
Lithium	0.204	0.0100	0.200	0	102	90	110			
Magnesium	5.01	0.300	5.00	0	100	90	110			
Potassium	4.98	0.300	5.00	0	99.6	90	110			
Selenium	0.205	0.00500	0.200	0	103	90	110			
Sodium	5.14	0.300	5.00	0	103	90	110			
Thallium	0.205	0.00150	0.200	0	102	90	110			

Sample ID **LCVL6-190520**	Batch ID: **R104182**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_190520B**	Analysis Date: **5/20/2019 4:06:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00178	0.00250	0.00200	0	89.2	70	130			
Arsenic	0.00492	0.00500	0.00500	0	98.4	70	130			
Barium	0.00435	0.0100	0.00500	0	87.0	70	130			
Beryllium	0.00105	0.00100	0.00100	0	105	70	130			
Cadmium	0.000933	0.00100	0.00100	0	93.3	70	130			
Calcium	0.0988	0.300	0.100	0	98.8	70	130			
Chromium	0.00475	0.00500	0.00500	0	95.0	70	130			
Cobalt	0.00485	0.00500	0.00500	0	97.1	70	130			
Iron	0.107	0.100	0.100	0	107	70	130			
Lead	0.000828	0.00100	0.00100	0	82.8	70	130			
Lithium	0.0104	0.0100	0.0100	0	104	70	130			
Magnesium	0.0986	0.300	0.100	0	98.6	70	130			
Potassium	0.0940	0.300	0.100	0	94.0	70	130			
Selenium	0.00483	0.00500	0.00500	0	96.6	70	130			
Sodium	0.131	0.300	0.100	0	131	70	130			S
Thallium	0.000822	0.00150	0.00100	0	82.2	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905186
Project: Luminant-A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190520B

Sample ID **CCV7-190520**	Batch ID: **R104182**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_190520B**	Analysis Date: **5/20/2019 4:30:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.192	0.00250	0.200	0	96.1	90	110			
Arsenic	0.202	0.00500	0.200	0	101	90	110			
Barium	0.194	0.0100	0.200	0	97.2	90	110			
Beryllium	0.196	0.00100	0.200	0	97.9	90	110			
Cadmium	0.193	0.00100	0.200	0	96.5	90	110			
Chromium	0.194	0.00500	0.200	0	96.8	90	110			
Cobalt	0.199	0.00500	0.200	0	99.3	90	110			
Lead	0.190	0.00100	0.200	0	95.2	90	110			
Lithium	0.202	0.0100	0.200	0	101	90	110			
Selenium	0.203	0.00500	0.200	0	101	90	110			
Thallium	0.200	0.00150	0.200	0	99.8	90	110			

Sample ID **LCVL7-190520**	Batch ID: **R104182**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_190520B**	Analysis Date: **5/20/2019 4:36:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00173	0.00250	0.00200	0	86.3	70	130			
Arsenic	0.00485	0.00500	0.00500	0	97.0	70	130			
Barium	0.00429	0.0100	0.00500	0	85.7	70	130			
Beryllium	0.00105	0.00100	0.00100	0	105	70	130			
Cadmium	0.000850	0.00100	0.00100	0	85.0	70	130			
Chromium	0.00476	0.00500	0.00500	0	95.2	70	130			
Cobalt	0.00485	0.00500	0.00500	0	97.0	70	130			
Lead	0.000798	0.00100	0.00100	0	79.8	70	130			
Lithium	0.0115	0.0100	0.0100	0	115	70	130			
Selenium	0.00474	0.00500	0.00500	0	94.8	70	130			
Thallium	0.000788	0.00150	0.00100	0	78.8	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905186
Project: Luminant-A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190521A

The QC data in batch 90959 applies to the following samples: 1905186-01B

Sample ID **MB-90959**	Batch ID: **90959**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MBLK**	Run ID: **ICP-MS5_190521A**	Analysis Date: **5/21/2019 12:36:00 PM**	Prep Date: **5/17/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	<0.0100	0.0300								
Molybdenum	<0.00200	0.00500								

Sample ID **LCS-90959**	Batch ID: **90959**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCS**	Run ID: **ICP-MS5_190521A**	Analysis Date: **5/21/2019 12:38:00 PM**	Prep Date: **5/17/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.201	0.0300	0.200	0	101	80	120			
Molybdenum	0.195	0.00500	0.200	0	97.3	80	120			

Sample ID **LCSD-90959**	Batch ID: **90959**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCSD**	Run ID: **ICP-MS5_190521A**	Analysis Date: **5/21/2019 12:41:00 PM**	Prep Date: **5/17/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.208	0.0300	0.200	0	104	80	120	3.23	15	
Molybdenum	0.192	0.00500	0.200	0	96.2	80	120	1.18	15	

Sample ID **1905178-02C SD**	Batch ID: **90959**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS5_190521A**	Analysis Date: **5/21/2019 12:47:00 PM**	Prep Date: **5/17/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	<1.00	3.00	0	0.525				0	10	
Calcium	70.4	30.0	0	68.2				3.15	10	
Magnesium	63.5	30.0	0	63.5				0.085	10	
Molybdenum	<0.200	0.500	0	0				0	10	
Sodium	227	30.0	0	233				2.75	10	

Sample ID **1905178-02C PDS**	Batch ID: **90959**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS5_190521A**	Analysis Date: **5/21/2019 1:14:00 PM**	Prep Date: **5/17/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	4.53	0.600	4.00	0.525	100	80	120			
Calcium	170	6.00	100	68.2	102	80	120			
Magnesium	161	6.00	100	63.5	97.1	80	120			
Molybdenum	3.64	0.100	4.00	0	90.9	80	120			
Sodium	331	6.00	100	233	98.2	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905186
Project: Luminant-A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190521A

Sample ID **1905178-02C MS**	Batch ID: **90959**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS5_190521A**	Analysis Date: **5/21/2019 1:17:00 PM**	Prep Date: **5/17/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.866	0.600	0.200	0.525	170	80	120			S
Molybdenum	0.192	0.100	0.200	0	96.0	80	120			

Sample ID **1905178-02C MSD**	Batch ID: **90959**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS5_190521A**	Analysis Date: **5/21/2019 1:19:00 PM**	Prep Date: **5/17/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.750	0.600	0.200	0.525	112	80	120	14.3	15	
Molybdenum	0.189	0.100	0.200	0	94.3	80	120	1.76	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905186
Project: Luminant-A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190521A

Sample ID **ICV-190521**	Batch ID: **R104204**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS5_190521A**	Analysis Date: **5/21/2019 12:10:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.103	0.0300	0.100	0	103	90	110			
Calcium	2.52	0.300	2.50	0	101	90	110			
Iron	2.60	0.100	2.50	0	104	90	110			
Magnesium	2.49	0.300	2.50	0	99.7	90	110			
Molybdenum	0.0930	0.00500	0.100	0	93.0	90	110			
Potassium	2.38	0.300	2.50	0	95.3	90	110			
Sodium	2.56	0.300	2.50	0	103	90	110			

Sample ID **LCVL-190521**	Batch ID: **R104204**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_190521A**	Analysis Date: **5/21/2019 12:15:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0223	0.0300	0.0200	0	111	70	130			
Calcium	0.104	0.300	0.100	0	104	70	130			
Iron	0.0979	0.100	0.100	0	97.9	70	130			
Magnesium	0.0983	0.300	0.100	0	98.3	70	130			
Molybdenum	0.00464	0.00500	0.00500	0	92.8	70	130			
Potassium	0.0691	0.300	0.100	0	69.1	70	130			S
Sodium	0.0960	0.300	0.100	0	96.0	70	130			

Sample ID **CCV1-190521**	Batch ID: **R104204**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_190521A**	Analysis Date: **5/21/2019 1:26:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.196	0.0300	0.200	0	98.1	90	110			
Calcium	4.90	0.300	5.00	0	98.0	90	110			
Iron	5.04	0.100	5.00	0	101	90	110			
Magnesium	4.94	0.300	5.00	0	98.8	90	110			
Molybdenum	0.193	0.00500	0.200	0	96.3	90	110			
Potassium	4.74	0.300	5.00	0	94.7	90	110			
Sodium	4.93	0.300	5.00	0	98.6	90	110			

Sample ID **LCVL1-190521**	Batch ID: **R104204**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_190521A**	Analysis Date: **5/21/2019 1:30:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0245	0.0300	0.0200	0	123	70	130			
Calcium	0.0976	0.300	0.100	0	97.6	70	130			
Iron	0.0980	0.100	0.100	0	98.0	70	130			
Magnesium	0.0940	0.300	0.100	0	94.0	70	130			
Molybdenum	0.00478	0.00500	0.00500	0	95.6	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905186
Project: Luminant-A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190521A

Sample ID **LCVL1-190521**	Batch ID: **R104204**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_190521A**	Analysis Date: **5/21/2019 1:30:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Potassium	0.0845	0.300	0.100	0	84.5	70	130			
Sodium	0.0986	0.300	0.100	0	98.6	70	130			

Sample ID **CCV2-190521**	Batch ID: **R104204**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_190521A**	Analysis Date: **5/21/2019 2:05:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.208	0.0300	0.200	0	104	90	110			
Calcium	5.13	0.300	5.00	0	103	90	110			
Iron	5.25	0.100	5.00	0	105	90	110			
Magnesium	5.17	0.300	5.00	0	103	90	110			
Molybdenum	0.201	0.00500	0.200	0	101	90	110			
Potassium	4.97	0.300	5.00	0	99.4	90	110			
Sodium	5.14	0.300	5.00	0	103	90	110			

Sample ID **LCVL2-190521**	Batch ID: **R104204**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_190521A**	Analysis Date: **5/21/2019 2:09:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0258	0.0300	0.0200	0	129	70	130			
Calcium	0.102	0.300	0.100	0	102	70	130			
Iron	0.101	0.100	0.100	0	101	70	130			
Magnesium	0.0962	0.300	0.100	0	96.2	70	130			
Molybdenum	0.00474	0.00500	0.00500	0	94.7	70	130			
Potassium	0.0844	0.300	0.100	0	84.4	70	130			
Sodium	0.105	0.300	0.100	0	105	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905186
Project: Luminant-A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190523A

Sample ID **ICV-190523**	Batch ID: **R104250**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS5_190523A**	Analysis Date: **5/23/2019 12:59:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Molybdenum	0.0950	0.00500	0.100	0	95.0	90	110			

Sample ID **LCVL-190523**	Batch ID: **R104250**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_190523A**	Analysis Date: **5/23/2019 1:03:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Molybdenum	0.00493	0.00500	0.00500	0	98.6	70	130			

Sample ID **CCV1-190523**	Batch ID: **R104250**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_190523A**	Analysis Date: **5/23/2019 1:56:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Molybdenum	0.200	0.00500	0.200	0	100	90	110			

Sample ID **LCVL1-190523**	Batch ID: **R104250**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_190523A**	Analysis Date: **5/23/2019 2:10:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Molybdenum	0.00501	0.00500	0.00500	0	100	70	130			

Sample ID **CCV2-190523**	Batch ID: **R104250**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_190523A**	Analysis Date: **5/23/2019 2:42:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Molybdenum	0.199	0.00500	0.200	0	99.6	90	110			

Sample ID **LCVL2-190523**	Batch ID: **R104250**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_190523A**	Analysis Date: **5/23/2019 3:00:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Molybdenum	0.00479	0.00500	0.00500	0	95.7	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905186
Project: Luminant-A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_190516B

The QC data in batch 90934 applies to the following samples: 1905186-01C

Sample ID	**MB-90934**	Batch ID:	**90934**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**IC2_190516B**	Analysis Date:	**5/16/2019 10:26:41 AM**	Prep Date:	**5/16/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00								
Fluoride	<0.100	0.400								
Nitrate-N	<0.100	0.500								
Sulfate	<1.00	3.00								

Sample ID	**LCS-90934**	Batch ID:	**90934**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**IC2_190516B**	Analysis Date:	**5/16/2019 10:42:42 AM**	Prep Date:	**5/16/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	4.08	0.400	4.000	0	102	90	110			
Nitrate-N	5.10	0.500	5.000	0	102	90	110			

Sample ID	**LCSD-90934**	Batch ID:	**90934**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**LCSD**	Run ID:	**IC2_190516B**	Analysis Date:	**5/16/2019 10:58:41 AM**	Prep Date:	**5/16/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	4.08	0.400	4.000	0	102	90	110	0.128	20	
Nitrate-N	5.18	0.500	5.000	0	104	90	110	1.47	20	

Sample ID	**1905178-02DMS**	Batch ID:	**90934**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**MS**	Run ID:	**IC2_190516B**	Analysis Date:	**5/16/2019 12:59:35 PM**	Prep Date:	**5/16/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	21400	400	20000	0	107	90	110			
Nitrate-N	4620	500	4516	0	102	90	110			

Sample ID	**1905178-02DMSD**	Batch ID:	**90934**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**MSD**	Run ID:	**IC2_190516B**	Analysis Date:	**5/16/2019 1:15:35 PM**	Prep Date:	**5/16/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	21000	400	20000	0	105	90	110	1.92	20	
Nitrate-N	4530	500	4516	0	100	90	110	2.06	20	

Sample ID	**1905178-03DMS**	Batch ID:	**90934**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**MS**	Run ID:	**IC2_190516B**	Analysis Date:	**5/16/2019 1:47:35 PM**	Prep Date:	**5/16/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	21100	400	20000	0	106	90	110			
Nitrate-N	4600	500	4516	0	102	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905186
Project: Luminant-A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_190516B

Sample ID **1905178-03DMSD**	Batch ID: **90934**	TestNo: **E300**	Units: **mg/L**		
SampType: **MSD**	Run ID: **IC2_190516B**	Analysis Date: **5/16/2019 2:03:35 PM**	Prep Date: **5/16/2019**		

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	21100	400	20000	0	106	90	110	0.221	20	
Nitrate-N	4550	500	4516	0	101	90	110	1.04	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905186
Project: Luminant-A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_190516B

Sample ID **ICV-190516**	Batch ID: **R104123**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC2_190516B**	Analysis Date: **5/16/2019 9:54:41 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	10.5	0.400	10.00	0	105	90	110			
Nitrate-N	13.3	0.500	12.50	0	106	90	110			

Sample ID **CCV1-190516**	Batch ID: **R104123**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_190516B**	Analysis Date: **5/16/2019 5:29:14 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	4.18	0.400	4.000	0	104	90	110			
Nitrate-N	5.22	0.500	5.000	0	104	90	110			

Sample ID **CCV2-190516**	Batch ID: **R104123**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_190516B**	Analysis Date: **5/16/2019 9:29:14 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	4.18	0.400	4.000	0	105	90	110			
Nitrate-N	5.22	0.500	5.000	0	104	90	110			

Sample ID **CCV3-190516**	Batch ID: **R104123**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_190516B**	Analysis Date: **5/17/2019 12:41:14 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	4.24	0.400	4.000	0	106	90	110			
Nitrate-N	5.27	0.500	5.000	0	105	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905186
Project: Luminant-A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_190517B

The QC data in batch 90964 applies to the following samples: 1905186-01C

Sample ID	**MB-90964**	Batch ID:	**90964**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**IC2_190517B**	Analysis Date:	**5/17/2019 10:29:03 AM**	Prep Date:	**5/17/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00								
Sulfate	<1.00	3.00								

Sample ID	**LCS-90964**	Batch ID:	**90964**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**IC2_190517B**	Analysis Date:	**5/17/2019 10:45:03 AM**	Prep Date:	**5/17/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.5	1.00	10.00	0	105	90	110			
Sulfate	31.5	3.00	30.00	0	105	90	110			

Sample ID	**LCSD-90964**	Batch ID:	**90964**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**LCSD**	Run ID:	**IC2_190517B**	Analysis Date:	**5/17/2019 11:01:03 AM**	Prep Date:	**5/17/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.5	1.00	10.00	0	105	90	110	0.421	20	
Sulfate	31.6	3.00	30.00	0	105	90	110	0.320	20	

Sample ID	**1905169-06BMS**	Batch ID:	**90964**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**MS**	Run ID:	**IC2_190517B**	Analysis Date:	**5/17/2019 3:37:12 PM**	Prep Date:	**5/17/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	228	10.0	200.0	10.78	109	90	110			
Sulfate	388	30.0	200.0	177.5	105	90	110			

Sample ID	**1905169-06BMSD**	Batch ID:	**90964**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**MSD**	Run ID:	**IC2_190517B**	Analysis Date:	**5/17/2019 3:53:11 PM**	Prep Date:	**5/17/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	234	10.0	200.0	10.78	112	90	110	2.69	20	S
Sulfate	394	30.0	200.0	177.5	108	90	110	1.58	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905186
Project: Luminant-A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_190517B

Sample ID **ICV-190517**	Batch ID: **R104148**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC2_190517B**	Analysis Date: **5/17/2019 9:57:03 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	26.8	1.00	25.00	0	107	90	110			
Sulfate	80.5	3.00	75.00	0	107	90	110			

Sample ID **CCV1-190517**	Batch ID: **R104148**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_190517B**	Analysis Date: **5/17/2019 7:21:11 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.7	1.00	10.00	0	107	90	110			
Sulfate	31.9	3.00	30.00	0	106	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905186
Project: Luminant-A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_190517A

The QC data in batch 90967 applies to the following samples: 1905186-01C

Sample ID	MB-90967	Batch ID:	90967	TestNo:	M2320 B	Units:	mg/L @ pH 4.18
SampType:	MBLK	Run ID:	TITRATOR_190517A	Analysis Date:	5/17/2019 10:37:00 AM	Prep Date:	5/17/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	<10.0	20.0								
Alkalinity, Carbonate (As CaCO3)	<10.0	20.0								
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0								
Alkalinity, Total (As CaCO3)	<20.0	20.0								

Sample ID	LCS-90967	Batch ID:	90967	TestNo:	M2320 B	Units:	mg/L @ pH 4.07
SampType:	LCS	Run ID:	TITRATOR_190517A	Analysis Date:	5/17/2019 10:42:00 AM	Prep Date:	5/17/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)	52.8	20.0	50.00	0	106	74	129			

Sample ID	LCSD-90967	Batch ID:	90967	TestNo:	M2320 B	Units:	mg/L @ pH 4.09
SampType:	LCSD	Run ID:	TITRATOR_190517A	Analysis Date:	5/17/2019 11:23:00 AM	Prep Date:	5/17/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)	52.7	20.0	50.00	0	105	74	129	0.152	20	

Sample ID	1905178-02D DUP	Batch ID:	90967	TestNo:	M2320 B	Units:	mg/L @ pH 4.53
SampType:	DUP	Run ID:	TITRATOR_190517A	Analysis Date:	5/17/2019 12:39:00 PM	Prep Date:	5/17/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	460	20.0	0	469.5				2.04	20	
Alkalinity, Carbonate (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Total (As CaCO3)	460	20.0	0	469.5				2.04	20	

Sample ID	1905185-03C DUP	Batch ID:	90967	TestNo:	M2320 B	Units:	mg/L @ pH 4.54
SampType:	DUP	Run ID:	TITRATOR_190517A	Analysis Date:	5/17/2019 2:20:00 PM	Prep Date:	5/17/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	469	20.0	0	473.7				1.06	20	
Alkalinity, Carbonate (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Total (As CaCO3)	469	20.0	0	473.7				1.06	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905186
Project: Luminant-A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_190517A

Sample ID **ICV-190517**	Batch ID: **R104143**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.21**
SampType: **ICV**	Run ID: **TITRATOR_190517A**	Analysis Date: **5/17/2019 10:16:00 AM**	Prep Date: **5/17/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	10.2	20.0	0							
Alkalinity, Carbonate (As CaCO3)	88.2	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	98.3	20.0	100.0	0	98.3	98	102			

Sample ID **CCV1-190517**	Batch ID: **R104143**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.25**
SampType: **CCV**	Run ID: **TITRATOR_190517A**	Analysis Date: **5/17/2019 1:41:00 PM**	Prep Date: **5/17/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	25.5	20.0	0							
Alkalinity, Carbonate (As CaCO3)	73.1	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	98.6	20.0	100.0	0	98.6	90	110			

Sample ID **CCV2-190517**	Batch ID: **R104143**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.22**
SampType: **CCV**	Run ID: **TITRATOR_190517A**	Analysis Date: **5/17/2019 5:20:00 PM**	Prep Date: **5/17/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	14.9	20.0	0							
Alkalinity, Carbonate (As CaCO3)	84.2	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	99.0	20.0	100.0	0	99.0	90	110			

Sample ID **CCV3-190517**	Batch ID: **R104143**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.21**
SampType: **CCV**	Run ID: **TITRATOR_190517A**	Analysis Date: **5/17/2019 5:36:00 PM**	Prep Date: **5/17/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	16.4	20.0	0							
Alkalinity, Carbonate (As CaCO3)	82.2	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	98.6	20.0	100.0	0	98.6	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905186
Project: Luminant-A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: UV/VIS_2_190516B

The QC data in batch 90950 applies to the following samples: 1905186-01C

Sample ID	**MB-90950**	Batch ID:	**90950**	TestNo:	**M4500-P E**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**UV/VIS_2_190516B**	Analysis Date:	**5/16/2019 2:45:00 PM**	Prep Date:	**5/16/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Total Orthophosphate (As	<0.0300	0.100								

Sample ID	**LCS-90950**	Batch ID:	**90950**	TestNo:	**M4500-P E**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**UV/VIS_2_190516B**	Analysis Date:	**5/16/2019 2:45:00 PM**	Prep Date:	**5/16/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Total Orthophosphate (As	0.523	0.100	0.5000	0	105	80	120			

Sample ID	**LCSD-90950**	Batch ID:	**90950**	TestNo:	**M4500-P E**	Units:	**mg/L**
SampType:	**LCSD**	Run ID:	**UV/VIS_2_190516B**	Analysis Date:	**5/16/2019 2:46:00 PM**	Prep Date:	**5/16/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Total Orthophosphate (As	0.496	0.100	0.5000	0	99.2	80	120	5.30	15	

Sample ID	**1905185-01CMS**	Batch ID:	**90950**	TestNo:	**M4500-P E**	Units:	**mg/L**
SampType:	**MS**	Run ID:	**UV/VIS_2_190516B**	Analysis Date:	**5/16/2019 2:46:00 PM**	Prep Date:	**5/16/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Total Orthophosphate (As	0.647	0.100	0.5000	0.05100	119	80	120			

Sample ID	**1905185-01CMSD**	Batch ID:	**90950**	TestNo:	**M4500-P E**	Units:	**mg/L**
SampType:	**MSD**	Run ID:	**UV/VIS_2_190516B**	Analysis Date:	**5/16/2019 2:47:00 PM**	Prep Date:	**5/16/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Total Orthophosphate (As	0.614	0.100	0.5000	0.05100	113	80	120	5.23	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905186
Project: Luminant-A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: UV/VIS_2_190516B

Sample ID **ICV-190516**	Batch ID: **R104109**	TestNo: **M4500-P E**	Units: **mg/L**
SampType: **ICV**	Run ID: **UV/VIS_2_190516B**	Analysis Date: **5/16/2019 2:44:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Total Orthophosphate (As	0.204	0.100	0.2000	0	102	85	115			

Sample ID **CCV1-190516**	Batch ID: **R104109**	TestNo: **M4500-P E**	Units: **mg/L**
SampType: **CCV**	Run ID: **UV/VIS_2_190516B**	Analysis Date: **5/16/2019 2:51:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Total Orthophosphate (As	0.510	0.100	0.5000	0	102	85	115			

Sample ID **CCV2-190516**	Batch ID: **R104109**	TestNo: **M4500-P E**	Units: **mg/L**
SampType: **CCV**	Run ID: **UV/VIS_2_190516B**	Analysis Date: **5/16/2019 2:53:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Total Orthophosphate (As	0.485	0.100	0.5000	0	97.0	85	115			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905186
Project: Luminant-A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: UV/VIS_2_190521B

The QC data in batch 91028 applies to the following samples: 1905186-01A

Sample ID	**MB-91028**	Batch ID:	**91028**	TestNo:	**M3500-Fe D**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**UV/VIS_2_190521B**	Analysis Date:	**5/21/2019 5:39:00 PM**	Prep Date:	**5/21/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	<0.0500	0.100								N

Sample ID	**LCS-91028**	Batch ID:	**91028**	TestNo:	**M3500-Fe D**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**UV/VIS_2_190521B**	Analysis Date:	**5/21/2019 5:40:00 PM**	Prep Date:	**5/21/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	0.103	0.100	0.1000	0	103	85	115			N

Sample ID	**LCSD-91028**	Batch ID:	**91028**	TestNo:	**M3500-Fe D**	Units:	**mg/L**
SampType:	**LCSD**	Run ID:	**UV/VIS_2_190521B**	Analysis Date:	**5/21/2019 5:40:00 PM**	Prep Date:	**5/21/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	0.0959	0.100	0.1000	0	95.9	85	115	7.39	15	N

Sample ID	**1905205-09AMS**	Batch ID:	**91028**	TestNo:	**M3500-Fe D**	Units:	**mg/L**
SampType:	**MS**	Run ID:	**UV/VIS_2_190521B**	Analysis Date:	**5/21/2019 5:45:00 PM**	Prep Date:	**5/21/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	0.108	0.100	0.1000	0	108	85	115			N

Sample ID	**1905205-09AMSD**	Batch ID:	**91028**	TestNo:	**M3500-Fe D**	Units:	**mg/L**
SampType:	**MSD**	Run ID:	**UV/VIS_2_190521B**	Analysis Date:	**5/21/2019 5:45:00 PM**	Prep Date:	**5/21/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	0.110	0.100	0.1000	0	110	85	115	2.25	15	N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905186
Project: Luminant-A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: UV/VIS_2_190521B

Sample ID	**ICV-190521**	Batch ID:	**R104200**	TestNo:	**M3500-Fe D**	Units:	**mg/L**
SampType:	**ICV**	Run ID:	**UV/VIS_2_190521B**	Analysis Date:	**5/21/2019 5:38:00 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	0.0971	0.100	0.1000	0	97.1	85	115			N

Sample ID	**CCV1-190521**	Batch ID:	**R104200**	TestNo:	**M3500-Fe D**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**UV/VIS_2_190521B**	Analysis Date:	**5/21/2019 5:46:00 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	0.221	0.100	0.2000	0	111	85	115			N

Sample ID	**CCV2-190521**	Batch ID:	**R104200**	TestNo:	**M3500-Fe D**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**UV/VIS_2_190521B**	Analysis Date:	**5/21/2019 6:00:00 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	0.212	0.100	0.2000	0	106	85	115			N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905186
Project: Luminant-A1 Landfill

ANALYTICAL QC SUMMARY REPORT

RunID: WC_190520A

The QC data in batch 91001 applies to the following samples: 1905186-01C

Sample ID	**MB-91001**	Batch ID:	**91001**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**WC_190520A**	Analysis Date:	**5/20/2019 4:45:00 PM**	Prep Date:	**5/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	<10.0	10.0								

Sample ID	**LCS-91001**	Batch ID:	**91001**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**WC_190520A**	Analysis Date:	**5/20/2019 4:45:00 PM**	Prep Date:	**5/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	751	10.0	745.6	0	101	90	113			

Sample ID	**1905182-01D-DUP**	Batch ID:	**91001**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**DUP**	Run ID:	**WC_190520A**	Analysis Date:	**5/20/2019 4:45:00 PM**	Prep Date:	**5/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	6840	200	0	6820				0.293	5	

Sample ID	**1905182-02D-DUP**	Batch ID:	**91001**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**DUP**	Run ID:	**WC_190520A**	Analysis Date:	**5/20/2019 4:45:00 PM**	Prep Date:	**5/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	5030	50.0	0	5065				0.693	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

Pace Analytical®
National Center for Testing & Innovation

ANALYTICAL REPORT

May 29, 2019

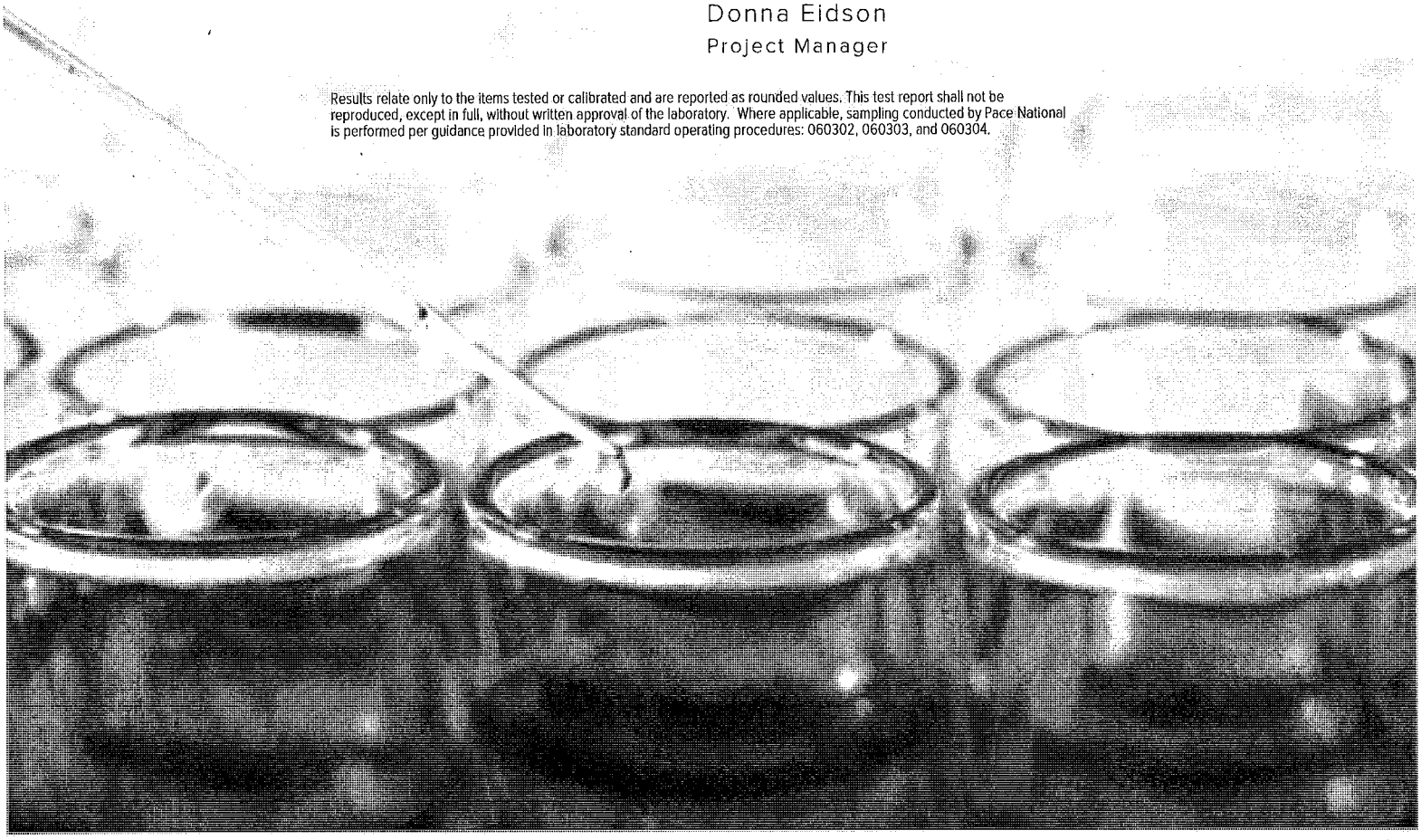
DHL Analytical, Inc.

Sample Delivery Group:	L1100939
Samples Received:	05/21/2019
Project Number:	1905186
Description:	
Report To:	John DuPont
	2300 Double Creek Drive
	Round Rock, TX 78664

Entire Report Reviewed By:

Donna Eidson
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace National is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.



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ONE LAB. NATIONWIDE.

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	Collected by	Collected date/time	Received date/time
S-1 L1100939-01 Non-Potable Water		05/15/19 16:30	05/21/19 10:10

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1284744	1	05/22/19 08:25	05/28/19 10:55	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1284773	1	05/23/19 15:02	05/28/19 10:55	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1284773	1	05/23/19 15:02	05/28/19 10:55	RRE	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1284773	1	05/23/19 15:02	05/24/19 17:05	RRE	Mt. Juliet, TN

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Donna Eidson
Project Manager

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	2.00		0.355	0.544	05/28/2019 10:55	WG1284744
(T) Barium	*111*			*62.0-143*	*05/28/2019 10:55*	WG1284744
(T) Yttrium	*112*			*79.0-136*	*05/28/2019 10:55*	WG1284744

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	2.78		0.703	0.765	05/28/2019 10:55	WG1284773
Combined Radium	2.78		0.703	0.765	05/28/2019 10:55	WG1284773

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.780		0.348	0.221	05/24/2019 17:05	WG1284773
(T) Barium-133	*85.3*			*30.0-143*	*05/24/2019 17:05*	WG1284773

Method Blank (MB)

(MB) R3415641-1 05/28/19 10:55

Analyte	MB Result pCi/l	MB Qualifier	MB MDA pCi/l
Radium-228	-0.164		0.413
(T) Barium	*108*		
(T) Yttrium	*115*		

L1100192-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1100192-01 05/28/19 10:55 • (DUP) R3415641-5 05/28/19 10:55

Analyte	Original Result pCi/l	DUP Result pCi/l	Dilution	DUP RPD %	DUP RER	DUP Qualifier	DUP RPD Limits %	DUP RER Limit
Radium-228	0.157	-0.0367	1	200	0.366		20	3
(T) Barium	*91.7*	*102*						
(T) Yttrium	*110*	*107*						

Laboratory Control Sample (LCS)

(LCS) R3415641-2 05/28/19 10:55

Analyte	Spike Amount pCi/l	LCS Result pCi/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Radium-228	5.00	4.47	89.4	80.0-120	
(T) Barium			*103*		
(T) Yttrium			*107*		

L1100922-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1100922-01 05/28/19 10:55 • (MS) R3415641-3 05/28/19 10:55 • (MSD) R3415641-4 05/28/19 10:55

Analyte	Spike Amount pCi/l	Original Result pCi/l	MS Result pCi/l	MSD Result pCi/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	MS RER	RPD Limits %
Radium-228	7.14	-0.136	7.62	7.50	107	105	1	70.0-130			1.50		20
(T) Barium		*111*			*107*	*110*							
(T) Yttrium		*114*			*107*	*110*							

Method Blank (MB)

(MB) R3415635-1 05/24/19 17:04

Analyte	MB Result	MB Qualifier	MB MDA
	pCi/l		pCi/l
Radium-226	0.459		0.209
(T) Barium-133	*84.6*		

L1100844-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1100844-01 05/24/19 17:04 • (DUP) R3415635-5 05/24/19 17:04

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP RER	DUP Qualifier	DUP RPD Limits	DUP RER Limit
	pCi/l	pCi/l		%			%	
Radium-226	0.495	0.573	1	14.6	0.182		20	3
(T) Barium-133	*90.4*	*88.8*						

Laboratory Control Sample (LCS)

(LCS) R3415635-2 05/24/19 17:04

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	pCi/l	pCi/l	%	%	
Radium-226	20.1	19.1	95.0	80.0-120	
(T) Barium-133			*79.1*		

L1100433-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1100433-01 05/24/19 17:04 • (MS) R3415635-3 05/24/19 17:04 • (MSD) R3415635-4 05/24/19 17:04

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	MS RER	RPD Limits
	pCi/l	pCi/l	pCi/l	pCi/l	%	%		%			%		%
Radium-226	20.1	1.16	19.9	20.9	93.2	98.0	1	75.0-125			4.71		20
(T) Barium-133		*83.2*			*81.1*	*84.7*							

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Abbreviations and Definitions

MDA	Minimum Detectable Activity.
Rec.	Recovery.
RER	Replicate Error Ratio.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(T)	Tracer - A radioisotope of known concentration added to a solution of chemically equivalent radioisotopes at a known concentration to assist in monitoring the yield of the chemical separation.
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
	The remainder of this page intentionally left blank, there are no qualifiers applied to this SDG.

ACCREDITATIONS & LOCATIONS

ONE LAB. NATIONWIDE.

Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.
* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

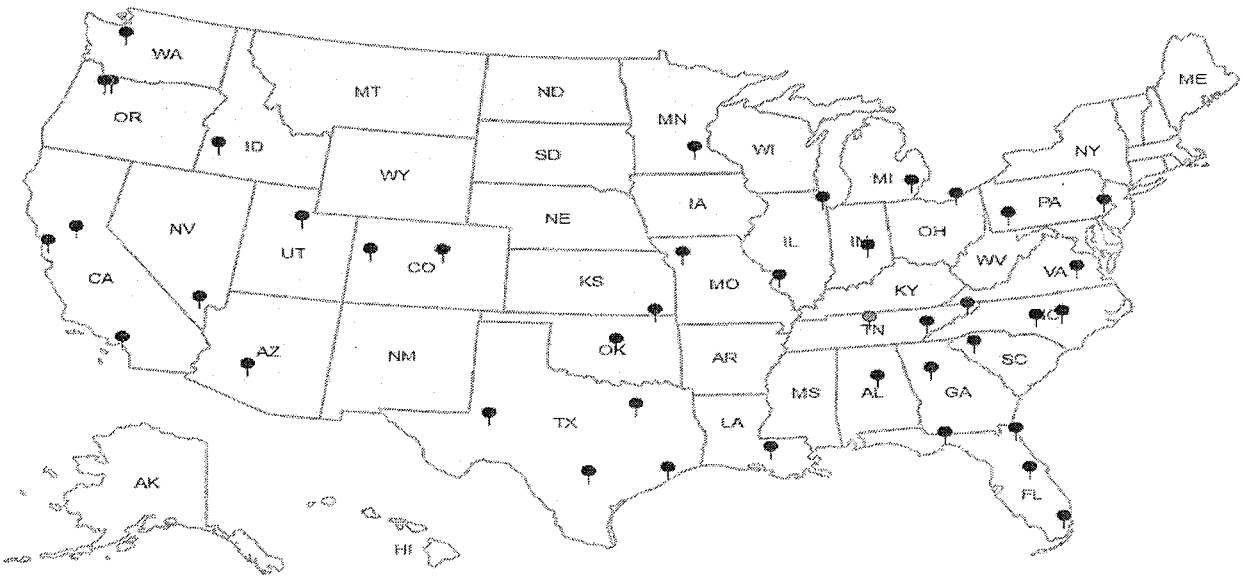
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



Pace Analytical National Center for Testing & Innovation
Cooler Receipt Form

Client: DHLRTX	SDG#:	1100939
Cooler Received/Opened On: 5/21/19	Temperature:	Amb
Received By: Brock Fariss		
Signature: BF Fariss		

Receipt Check List	NP	Yes	No
COC Seal Present / Intact?	✓		
COC Signed / Accurate?		✓	
Bottles arrive intact?		✓	
Correct bottles used?		✓	
Sufficient volume sent?		✓	
If Applicable			
VOA Zero headspace?			
Preservation Correct / Checked?		✓	

1100939

CHAIN-OF-CUSTODY RECORD

DHL Analytical, Inc.
2300 Double Creek Drive
Round Rock, TX 78664
TEL: *(512) 388-8222* FAX: *(512) 388-8229*

H003

Work Order: 1905186

Subcontractor:
Pace Analytical
12065 Lebanon Rd
Mt. Juliet, TN 37122

TEL: (615) 773-5923
FAX:
Acct #: DHLRRTX

16-May-19

Sample Id	Matrix	DHL#	Date Collected	Bottle Type	Requested Tests: Ra-228 E904.0	Ra-226 M7500 Ra B M					
S-1	Aqueous	-01D	05/15/19 04:30 PM	1LHDPEHNO3		1					-01
S-1	Aqueous	-01E	05/15/19 04:30 PM	1LHDPEHNO3	1						01

General Comments:
Please analyze these samples with Normal Turnaround Time.
Report RA-226, Ra-228 & Combined per Specs.
Quality Control Package Needed: Standard - NELAC Rad Test compliant
Email to cac@dhlanalytical.com & dupont@dhlanalytical.com

	Date/Time		Date/Time
Relinquished by:	5/17/19 1760	Received by:	5/21/19 0845/010
Relinquished by:		Received by:	

AWD RAD SCREEN: <0.5 mR/hr

eurofins | Environment Testing TestAmerica

ANALYTICAL REPORT

Eurofins TestAmerica, Knoxville
5815 Middlebrook Pike
Knoxville, TN 37921
Tel: (865)291-3000

Laboratory Job ID: 140-15492-1
Client Project/Site: Martin Lake A1 Area LF SEP + Totals

For:
Golder Associates Inc.
2201 Double Creek Dr
Suite 4004
Round Rock, Texas 78664

Attn: Will Vienne

Terry Walker Wasmund

Authorized for release by:
7/18/2019 6:22:20 PM

Terry Walker Wasmund, Project Manager II
(865)291-3000
terry.wasmund@testamericainc.com

LINKS
Review your project results through TotalAccess
Have a Question? Ask The Expert
Visit us at:
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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: Golder Associates Inc. Job ID: 140-15492-1
Project/Site: Martin Lake A1 Area LF SEP + Totals

Qualifiers

Metals

Qualifier	Qualifier Description
*	LCS or LCSD is outside acceptance limits.
*	RPD of the LCS and LCSD exceeds the control limits
B	Compound was found in the blank and sample.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job ID: 140-15492-1

Laboratory: Eurofins TestAmerica, Knoxville

Narrative

Job Narrative
140-15492-1

Receipt
The samples were received on 6/5/2019 at 9:20 AM. The samples arrived in good condition, properly preserved, and on ice. The temperature of the cooler at receipt was 1.4º C.

Metals
7 Step Sequential Extraction Procedure

These soil samples were prepared and analyzed using Eurofins TestAmerica Knoxville standard operating procedure KNOX-MT-0008, "7 Step Sequential Extraction Procedure". SW-846 Method 6010B as incorporated in Eurofins TestAmerica Knoxville standard operating procedure KNOX-MT-0007 was used to perform the final instrument analyses.

An aliquot of each sample was sequentially extracted using the steps listed below:

- ***Step 1 - Exchangeable Fraction***: A 5 gram aliquot of sample was extracted with 25 mL of 1M magnesium sulfate (MgSO4), centrifuged and filtered. 5 mL of the resulting leachate was digested using method 3010A and analyzed by method 6010B. Results are reported in mg/kg on a dry weight basis.
- ***Step 2 - Carbonate Fraction:*** The sample residue from step 1 was extracted with 25 mL of 1M sodium acetate/acetic acid (NaOAc/HOAc) at pH 5, centrifuged and filtered. 5 mL of the resulting leachate was digested using method 3010A and analyzed by method 6010B. Results are reported in mg/kg on a dry weight basis.
- ***Step 3 - Non-crystalline Materials Fraction:*** The sample residue from step 2 was extracted with 25 mL of 0.2M ammonium oxalate (pH 3), centrifuged and filtered. 5 mL of the resulting leachate was digested using method 3010A and analyzed by method 6010B. Results are reported in mg/kg on a dry weight basis.
- ***Step 4 - Metal Hydroxide Fraction:*** The sample residue from step 3 was extracted with 25 mL of 1M hydroxylamine hydrochloride solution in 25% v/v acetic acid, centrifuged and filtered. 5 mL of the resulting leachate was digested using method 3010A and analyzed by method 6010B. Results are reported in mg/kg on a dry weight basis.
- ***Step 5 - Organic-bound Fraction:*** The sample residue from step 4 was extracted three times with 25 mL of 5% sodium hypochlorite (NaClO) at pH 9.5, centrifuged and filtered. The resulting leachates were combined and 5 mL were digested using method 3010A and analyzed by method 6010B. Results are reported in mg/kg on a dry weight basis.
- ***Step 6 - Acid/Sulfide Fraction***: The sample residue from step 5 was extracted with 25 mL of a 3:1:2 v/v solution of HCl-HNO3-H2O, centrifuged and filtered. 5 mL of the resulting leachate was diluted to 50 mL with reagent water and analyzed by method 6010B. Results are reported in mg/kg on a dry weight basis.
- ***Step 7 - Residual Fraction:*** A 1.0 g aliquot of the sample residue from step 6 was digested using HF, HNO3, HCl and H3BO3. The digestate was analyzed by ICP using method 6010B. Results are reported in mg/kg on a dry weight basis.

In addition, a 1.0 g aliquot of the original sample was digested using HF, HNO3, HCl and H3BO3. The digestate was analyzed by ICP using method 6010B. Total metal results are reported in mg/kg on a dry weight basis.

Results were calculated using the following equation:

Result, µg/g or mg/Kg, dry weight = (C × V × V1 × D) / (W × S × V2)

Where:
C = Concentration from instrument readout, µg/mL
V = Final volume of digestate, mL
D = Instrument dilution factor
V1 = Total volume of leachate, mL
V2 = Volume of leachate digested, mL
W = Wet weight of sample, g
S = Percent solids/100

A method blank, laboratory control sample and laboratory control sample duplicate were prepared and analyzed with each SEP step in order to provide information about both the presence of elements of interest in the extraction solutions, and the recovery of elements of

Job ID: 140-15492-1 (Continued)

Laboratory: Eurofins TestAmerica, Knoxville (Continued)

interest from the extraction solutions. Results outside of laboratory QC limits do not reflect out of control performance, but rather the effect of the extraction solution upon the analyte.

A laboratory sample duplicate was prepared and analyzed with each batch of samples in order to provide information regarding the reproducibility of the procedure.

SEP Report Notes
The final report lists the results for each step, the result for the total digestion of the sample, and a sum of the results of steps 1 through 7 by element.

Magnesium was not reported for step 1 because the extraction solution for this step (magnesium sulfate) contains high levels of magnesium. Sodium was not reported for steps 2 and 5 since the extraction solutions for these steps contain high levels of sodium. The sum of steps 1 through 7 is much higher than the total result for sodium and magnesium due to the magnesium and sodium introduced by the extraction solutions.

The step 1 digestates were reanalyzed for vanadium at a 1/10 dilution due to positive interelement interferences resulting from the high magnesium results. The reporting limits were adjusted accordingly.

The digestates for steps 1, 2 and 5 were analyzed at a dilution due to instrument problems caused by the high solids content of the digestates. The reporting limits were adjusted accordingly.

Samples BMW-29 (30-31) (140-15492-1), BMW-30 (40-41) (140-15492-2), BMW-31 (14-15) (140-15492-3), BMW-32 (25-26) (140-15492-4) and BMW-33 (38-39) (140-15492-5) were diluted due to the presence of Silicon or Titanium which interferes with Arsenic, Cobalt, Selenium and Thallium: Elevated reporting limits (RLs) are provided.

Samples BMW-29 (30-31) (140-15492-1), BMW-30 (40-41) (140-15492-2), BMW-31 (14-15) (140-15492-3), BMW-32 (25-26) (140-15492-4) and BMW-33 (38-39) (140-15492-5) were diluted for Aluminum and Barium due to the nature of the sample matrix. Elevated reporting limits (RLs) are provided.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

General Chemistry - % Moisture
The samples were analyzed for percent moisture using SOP number KNOX-WC-0012 (based on Modified MCAWW 160.3 and SM2540B and on the percent moisture determinations described in methods 3540C and 3550B).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Comments
No additional comments.

Detection Summary

Client: Golder Associates Inc.
Job ID: 140-15492-1
Project/Site: Martin Lake A1 Area LF SEP + Totals

Client Sample ID: BMW-29 (30-31)
Lab Sample ID: 140-15492-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Manganese	3.8	J	4.1	0.17	mg/Kg	4	☼	6010B SEP	Step 1
Aluminum	16	J *	41	6.5	mg/Kg	3	☼	6010B SEP	Step 2
Barium	1.1	J *	10	0.49	mg/Kg	3	☼	6010B SEP	Step 2
Cobalt	1.4	J	10	0.26	mg/Kg	3	☼	6010B SEP	Step 2
Iron	48	*	20	12	mg/Kg	3	☼	6010B SEP	Step 2
Manganese	35		3.1	1.1	mg/Kg	3	☼	6010B SEP	Step 2
Selenium	1.2	J B	2.0	0.69	mg/Kg	3	☼	6010B SEP	Step 2
Aluminum	170		14	2.9	mg/Kg	1	☼	6010B SEP	Step 3
Arsenic	1.4		0.68	0.18	mg/Kg	1	☼	6010B SEP	Step 3
Barium	4.3	B	3.4	0.16	mg/Kg	1	☼	6010B SEP	Step 3
Beryllium	0.11	J	0.34	0.020	mg/Kg	1	☼	6010B SEP	Step 3
Cobalt	1.5	J	3.4	0.061	mg/Kg	1	☼	6010B SEP	Step 3
Iron	4200		6.8	3.9	mg/Kg	1	☼	6010B SEP	Step 3
Manganese	95	B	1.0	0.037	mg/Kg	1	☼	6010B SEP	Step 3
Mo	0.14	J	2.7	0.11	mg/Kg	1	☼	6010B SEP	Step 3
Selenium	0.28	J B	0.68	0.23	mg/Kg	1	☼	6010B SEP	Step 3
Aluminum	2600		14	2.2	mg/Kg	1	☼	6010B SEP	Step 4
Arsenic	0.87	B	0.68	0.30	mg/Kg	1	☼	6010B SEP	Step 4
Barium	19		3.4	0.16	mg/Kg	1	☼	6010B SEP	Step 4
Beryllium	0.23	J	0.34	0.022	mg/Kg	1	☼	6010B SEP	Step 4
Cobalt	3.2	J	3.4	0.072	mg/Kg	1	☼	6010B SEP	Step 4
Iron	8300		6.8	3.9	mg/Kg	1	☼	6010B SEP	Step 4
Li	6.7		3.4	0.20	mg/Kg	1	☼	6010B SEP	Step 4
Manganese	180		1.0	0.18	mg/Kg	1	☼	6010B SEP	Step 4
Aluminum	500	*	200	32	mg/Kg	5	☼	6010B SEP	Step 5
Barium	17	J *	51	2.4	mg/Kg	5	☼	6010B SEP	Step 5
Cobalt	1.0	J *	51	0.82	mg/Kg	5	☼	6010B SEP	Step 5
Iron	530	*	100	60	mg/Kg	5	☼	6010B SEP	Step 5
Manganese	33	*	15	2.5	mg/Kg	5	☼	6010B SEP	Step 5
Aluminum	3500		14	2.2	mg/Kg	1	☼	6010B SEP	Step 6
Arsenic	1.1		0.68	0.20	mg/Kg	1	☼	6010B SEP	Step 6
Barium	30		3.4	0.16	mg/Kg	1	☼	6010B SEP	Step 6
Beryllium	0.11	J	0.34	0.016	mg/Kg	1	☼	6010B SEP	Step 6
Cobalt	1.2	J	3.4	0.063	mg/Kg	1	☼	6010B SEP	Step 6
Iron	4800		6.8	3.9	mg/Kg	1	☼	6010B SEP	Step 6
Li	4.0		3.4	0.20	mg/Kg	1	☼	6010B SEP	Step 6
Manganese	38		1.0	0.34	mg/Kg	1	☼	6010B SEP	Step 6
Aluminum	34000		140	22	mg/Kg	10	☼	6010B SEP	Step 7
Arsenic	0.59	J	0.68	0.18	mg/Kg	1	☼	6010B SEP	Step 7
Barium	340		34	1.6	mg/Kg	10	☼	6010B SEP	Step 7
Beryllium	0.69		0.34	0.010	mg/Kg	1	☼	6010B SEP	Step 7
Cobalt	0.90	J	6.8	0.41	mg/Kg	2	☼	6010B SEP	Step 7
Iron	6700		6.8	5.6	mg/Kg	1	☼	6010B SEP	Step 7
Li	14		3.4	0.20	mg/Kg	1	☼	6010B SEP	Step 7
Manganese	36		1.0	0.071	mg/Kg	1	☼	6010B SEP	Step 7
Mo	0.20	J	2.7	0.11	mg/Kg	1	☼	6010B SEP	Step 7
Thallium	0.74	J	4.8	0.49	mg/Kg	2	☼	6010B SEP	Step 7
Aluminum	41000		10	1.6	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Arsenic	4.0		0.50	0.13	mg/Kg	1		6010B SEP	Sum of Steps 1-7

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: Golder Associates Inc.
Project/Site: Martin Lake A1 Area LF SEP + Totals

Job ID: 140-15492-1

Client Sample ID: BMW-29 (30-31) (Continued) — Lab Sample ID: 140-15492-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	410		2.5	0.12	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Beryllium	1.1		0.25	0.0075	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Cobalt	9.2		2.5	0.023	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Iron	25000		5.0	4.1	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Li	25		2.5	0.15	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Manganese	420		0.75	0.052	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Mo	0.33	J	2.0	0.082	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Selenium	1.5		0.50	0.17	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Thallium	0.74	J	1.8	0.18	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Boron	15	J	25	13	mg/Kg	1	☼	6010B	Total/NA
Chromium	19		1.9	0.28	mg/Kg	1	☼	6010B	Total/NA
Lead	9.7		1.9	0.35	mg/Kg	1	☼	6010B	Total/NA
Aluminum	72000		140	22	mg/Kg	10	☼	6010B	Total/NA
Arsenic	3.8		0.68	0.18	mg/Kg	1	☼	6010B	Total/NA
Barium	630		34	1.6	mg/Kg	10	☼	6010B	Total/NA
Beryllium	1.2		0.34	0.010	mg/Kg	1	☼	6010B	Total/NA
Cobalt	10	J	17	1.0	mg/Kg	5	☼	6010B	Total/NA
Iron	26000		6.8	5.6	mg/Kg	1	☼	6010B	Total/NA
Lithium	31		3.4	0.20	mg/Kg	1	☼	6010B	Total/NA
Manganese	490		1.0	0.071	mg/Kg	1	☼	6010B	Total/NA
Molybdenum	0.70	J	2.7	0.11	mg/Kg	1	☼	6010B	Total/NA
Thallium	1.4	J	12	1.2	mg/Kg	5	☼	6010B	Total/NA
Hg	0.078	J	0.14	0.054	mg/Kg	1	☼	7470A	Total/NA

Client Sample ID: BMW-30 (40-41) — Lab Sample ID: 140-15492-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Cobalt	0.82	J	12	0.21	mg/Kg	4	☼	6010B SEP	Step 1
Manganese	1.5	J	3.6	0.15	mg/Kg	4	☼	6010B SEP	Step 1
Aluminum	7.3	J *	36	5.7	mg/Kg	3	☼	6010B SEP	Step 2
Barium	0.52	J *	8.9	0.43	mg/Kg	3	☼	6010B SEP	Step 2
Cobalt	0.28	J	8.9	0.22	mg/Kg	3	☼	6010B SEP	Step 2
Iron	24	*	18	10	mg/Kg	3	☼	6010B SEP	Step 2
Selenium	0.67	J B	1.8	0.61	mg/Kg	3	☼	6010B SEP	Step 2
Aluminum	35		12	2.5	mg/Kg	1	☼	6010B SEP	Step 3
Arsenic	1.3		0.59	0.15	mg/Kg	1	☼	6010B SEP	Step 3
Barium	2.0	J B	3.0	0.14	mg/Kg	1	☼	6010B SEP	Step 3
Cobalt	0.28	J	3.0	0.053	mg/Kg	1	☼	6010B SEP	Step 3
Iron	190		5.9	3.4	mg/Kg	1	☼	6010B SEP	Step 3
Manganese	0.29	J B	0.89	0.032	mg/Kg	1	☼	6010B SEP	Step 3
Selenium	0.38	J B	0.59	0.20	mg/Kg	1	☼	6010B SEP	Step 3
Aluminum	1100		12	1.9	mg/Kg	1	☼	6010B SEP	Step 4
Arsenic	0.78	B	0.59	0.26	mg/Kg	1	☼	6010B SEP	Step 4
Barium	7.4		3.0	0.14	mg/Kg	1	☼	6010B SEP	Step 4
Beryllium	0.062	J	0.30	0.019	mg/Kg	1	☼	6010B SEP	Step 4

This Detection Summary does not include radiochemical test results.

Client Sample ID: BMW-30 (40-41) (Continued)
Lab Sample ID: 140-15492-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Cobalt	0.50	J	3.0	0.063	mg/Kg	1	☼	6010B SEP	Step 4
Iron	1000		5.9	3.4	mg/Kg	1	☼	6010B SEP	Step 4
Li	1.7	J	3.0	0.18	mg/Kg	1	☼	6010B SEP	Step 4
Manganese	8.7		0.89	0.15	mg/Kg	1	☼	6010B SEP	Step 4
Selenium	0.76	B *	0.59	0.56	mg/Kg	1	☼	6010B SEP	Step 4
Aluminum	66	J *	180	28	mg/Kg	5	☼	6010B SEP	Step 5
Aluminum	1300		12	1.9	mg/Kg	1	☼	6010B SEP	Step 6
Arsenic	0.75		0.59	0.18	mg/Kg	1	☼	6010B SEP	Step 6
Barium	4.0		3.0	0.14	mg/Kg	1	☼	6010B SEP	Step 6
Beryllium	0.043	J	0.30	0.014	mg/Kg	1	☼	6010B SEP	Step 6
Cobalt	0.46	J	3.0	0.055	mg/Kg	1	☼	6010B SEP	Step 6
Iron	1800		5.9	3.4	mg/Kg	1	☼	6010B SEP	Step 6
Li	0.91	J	3.0	0.18	mg/Kg	1	☼	6010B SEP	Step 6
Manganese	8.0		0.89	0.30	mg/Kg	1	☼	6010B SEP	Step 6
Aluminum	37000		120	19	mg/Kg	10	☼	6010B SEP	Step 7
Arsenic	1.3		1.2	0.31	mg/Kg	2	☼	6010B SEP	Step 7
Barium	380		30	1.4	mg/Kg	10	☼	6010B SEP	Step 7
Beryllium	0.36		0.30	0.0089	mg/Kg	1	☼	6010B SEP	Step 7
Cobalt	0.76	J	5.9	0.36	mg/Kg	2	☼	6010B SEP	Step 7
Iron	2800		5.9	4.9	mg/Kg	1	☼	6010B SEP	Step 7
Li	14		3.0	0.18	mg/Kg	1	☼	6010B SEP	Step 7
Manganese	38		0.89	0.062	mg/Kg	1	☼	6010B SEP	Step 7
Thallium	0.87	J	4.2	0.43	mg/Kg	2	☼	6010B SEP	Step 7
Aluminum	39000		10	1.6	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Arsenic	4.1		0.50	0.13	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Barium	390		2.5	0.12	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Beryllium	0.46		0.25	0.0075	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Cobalt	3.1		2.5	0.023	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Iron	5800		5.0	4.1	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Li	17		2.5	0.15	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Manganese	57		0.75	0.052	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Selenium	1.8		0.50	0.17	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Thallium	0.87	J	1.8	0.18	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Chromium	7.9		1.7	0.25	mg/Kg	1	☼	6010B	Total/NA
Lead	5.9		1.7	0.32	mg/Kg	1	☼	6010B	Total/NA
Aluminum	48000		120	19	mg/Kg	10	☼	6010B	Total/NA
Arsenic	4.8		0.59	0.15	mg/Kg	1	☼	6010B	Total/NA
Barium	490		30	1.4	mg/Kg	10	☼	6010B	Total/NA
Beryllium	0.46		0.30	0.0089	mg/Kg	1	☼	6010B	Total/NA
Cobalt	3.4	J	15	0.89	mg/Kg	5	☼	6010B	Total/NA
Iron	5800		5.9	4.9	mg/Kg	1	☼	6010B	Total/NA
Lithium	18		3.0	0.18	mg/Kg	1	☼	6010B	Total/NA
Manganese	60		0.89	0.062	mg/Kg	1	☼	6010B	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: Golder Associates Inc.
Job ID: 140-15492-1
Project/Site: Martin Lake A1 Area LF SEP + Totals

Client Sample ID: BMW-30 (40-41) (Continued)
Lab Sample ID: 140-15492-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Molybdenum	0.17	J	2.4	0.097	mg/Kg	1	☼	6010B	Total/NA
Selenium	1.1		0.59	0.20	mg/Kg	1	☼	6010B	Total/NA
Hg	0.054	J	0.12	0.048	mg/Kg	1	☼	7470A	Total/NA

Client Sample ID: BMW-31 (14-15)
Lab Sample ID: 140-15492-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.58	J	12	0.57	mg/Kg	4	☼	6010B SEP	Step 1
Manganese	11		3.6	0.15	mg/Kg	4	☼	6010B SEP	Step 1
Barium	0.46	J *	8.9	0.43	mg/Kg	3	☼	6010B SEP	Step 2
Manganese	2.4	J	2.7	1.0	mg/Kg	3	☼	6010B SEP	Step 2
Selenium	0.77	J B	1.8	0.61	mg/Kg	3	☼	6010B SEP	Step 2
Aluminum	59		12	2.5	mg/Kg	1	☼	6010B SEP	Step 3
Arsenic	0.29	J	0.59	0.15	mg/Kg	1	☼	6010B SEP	Step 3
Barium	14	B	3.0	0.14	mg/Kg	1	☼	6010B SEP	Step 3
Beryllium	0.069	J	0.30	0.018	mg/Kg	1	☼	6010B SEP	Step 3
Cobalt	16		3.0	0.053	mg/Kg	1	☼	6010B SEP	Step 3
Iron	120		5.9	3.4	mg/Kg	1	☼	6010B SEP	Step 3
Manganese	260	B	0.89	0.032	mg/Kg	1	☼	6010B SEP	Step 3
Selenium	0.23	J B	0.59	0.20	mg/Kg	1	☼	6010B SEP	Step 3
Aluminum	1600		12	1.9	mg/Kg	1	☼	6010B SEP	Step 4
Arsenic	1.8	B	0.59	0.26	mg/Kg	1	☼	6010B SEP	Step 4
Barium	33		3.0	0.14	mg/Kg	1	☼	6010B SEP	Step 4
Beryllium	0.24	J	0.30	0.019	mg/Kg	1	☼	6010B SEP	Step 4
Cobalt	2.8	J	3.0	0.063	mg/Kg	1	☼	6010B SEP	Step 4
Iron	5600		5.9	3.4	mg/Kg	1	☼	6010B SEP	Step 4
Li	2.2	J	3.0	0.18	mg/Kg	1	☼	6010B SEP	Step 4
Manganese	63		0.89	0.15	mg/Kg	1	☼	6010B SEP	Step 4
Selenium	1.1	B *	0.59	0.56	mg/Kg	1	☼	6010B SEP	Step 4
Aluminum	67	J *	180	28	mg/Kg	5	☼	6010B SEP	Step 5
Barium	3.9	J *	45	2.1	mg/Kg	5	☼	6010B SEP	Step 5
Aluminum	1800		12	1.9	mg/Kg	1	☼	6010B SEP	Step 6
Arsenic	0.54	J	0.59	0.18	mg/Kg	1	☼	6010B SEP	Step 6
Barium	4.4		3.0	0.14	mg/Kg	1	☼	6010B SEP	Step 6
Beryllium	0.059	J	0.30	0.014	mg/Kg	1	☼	6010B SEP	Step 6
Cobalt	0.46	J	3.0	0.055	mg/Kg	1	☼	6010B SEP	Step 6
Iron	1700		5.9	3.4	mg/Kg	1	☼	6010B SEP	Step 6
Li	1.3	J	3.0	0.18	mg/Kg	1	☼	6010B SEP	Step 6
Manganese	10		0.89	0.30	mg/Kg	1	☼	6010B SEP	Step 6
Aluminum	26000		120	19	mg/Kg	10	☼	6010B SEP	Step 7
Arsenic	0.58	J	1.2	0.31	mg/Kg	2	☼	6010B SEP	Step 7
Barium	320		30	1.4	mg/Kg	10	☼	6010B SEP	Step 7
Beryllium	0.30		0.30	0.0089	mg/Kg	1	☼	6010B SEP	Step 7
Cobalt	0.82	J	5.9	0.36	mg/Kg	2	☼	6010B SEP	Step 7
Iron	3600		5.9	4.9	mg/Kg	1	☼	6010B SEP	Step 7
Li	15		3.0	0.18	mg/Kg	1	☼	6010B SEP	Step 7
Manganese	24		0.89	0.062	mg/Kg	1	☼	6010B SEP	Step 7
Mo	0.16	J	2.4	0.097	mg/Kg	1	☼	6010B SEP	Step 7
Thallium	0.52	J	4.2	0.43	mg/Kg	2	☼	6010B SEP	Step 7
Aluminum	30000		10	1.6	mg/Kg	1		6010B SEP	Sum of Steps 1-7

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: Golder Associates Inc.
Project/Site: Martin Lake A1 Area LF SEP + Totals

Job ID: 140-15492-1

Client Sample ID: BMW-31 (14-15) (Continued) — Lab Sample ID: 140-15492-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	3.2		0.50	0.13	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Barium	370		2.5	0.12	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Beryllium	0.67		0.25	0.0075	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Cobalt	20		2.5	0.023	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Iron	11000		5.0	4.1	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Li	19		2.5	0.15	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Manganese	370		0.75	0.052	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Mo	0.16	J	2.0	0.082	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Selenium	2.1		0.50	0.17	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Thallium	0.52	J	1.8	0.18	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Chromium	7.3		1.8	0.26	mg/Kg	1	☼	6010B	Total/NA
Lead	6.8		1.8	0.33	mg/Kg	1	☼	6010B	Total/NA
Aluminum	30000		120	19	mg/Kg	10	☼	6010B	Total/NA
Arsenic	3.0		0.59	0.15	mg/Kg	1	☼	6010B	Total/NA
Barium	430		30	1.4	mg/Kg	10	☼	6010B	Total/NA
Beryllium	0.66		0.30	0.0089	mg/Kg	1	☼	6010B	Total/NA
Cobalt	18		5.9	0.36	mg/Kg	2	☼	6010B	Total/NA
Iron	10000		5.9	4.9	mg/Kg	1	☼	6010B	Total/NA
Lithium	18		3.0	0.18	mg/Kg	1	☼	6010B	Total/NA
Manganese	280		0.89	0.062	mg/Kg	1	☼	6010B	Total/NA
Molybdenum	0.29	J	2.4	0.097	mg/Kg	1	☼	6010B	Total/NA
Thallium	0.67	J	4.2	0.43	mg/Kg	2	☼	6010B	Total/NA

Client Sample ID: BMW-32 (25-26) — Lab Sample ID: 140-15492-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Manganese	1.0	J	3.6	0.15	mg/Kg	4	☼	6010B SEP	Step 1
Aluminum	17	J *	36	5.7	mg/Kg	3	☼	6010B SEP	Step 2
Iron	36	*	18	10	mg/Kg	3	☼	6010B SEP	Step 2
Selenium	0.78	J B	1.8	0.61	mg/Kg	3	☼	6010B SEP	Step 2
Aluminum	81		12	2.5	mg/Kg	1	☼	6010B SEP	Step 3
Arsenic	0.60		0.59	0.15	mg/Kg	1	☼	6010B SEP	Step 3
Barium	1.3	J B	3.0	0.14	mg/Kg	1	☼	6010B SEP	Step 3
Cobalt	0.060	J	3.0	0.053	mg/Kg	1	☼	6010B SEP	Step 3
Iron	500		5.9	3.4	mg/Kg	1	☼	6010B SEP	Step 3
Manganese	0.60	J B	0.89	0.032	mg/Kg	1	☼	6010B SEP	Step 3
Selenium	0.21	J B	0.59	0.20	mg/Kg	1	☼	6010B SEP	Step 3
Aluminum	1200		12	1.9	mg/Kg	1	☼	6010B SEP	Step 4
Arsenic	0.78	B	0.59	0.26	mg/Kg	1	☼	6010B SEP	Step 4
Barium	17		3.0	0.14	mg/Kg	1	☼	6010B SEP	Step 4
Beryllium	0.025	J	0.30	0.019	mg/Kg	1	☼	6010B SEP	Step 4
Cobalt	0.60	J	3.0	0.063	mg/Kg	1	☼	6010B SEP	Step 4
Iron	2000		5.9	3.4	mg/Kg	1	☼	6010B SEP	Step 4
Li	2.5	J	3.0	0.18	mg/Kg	1	☼	6010B SEP	Step 4

This Detection Summary does not include radiochemical test results.

Client Sample ID: BMW-32 (25-26) (Continued)
Lab Sample ID: 140-15492-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Manganese	13		0.89	0.15	mg/Kg	1	☼	6010B SEP	Step 4
Selenium	0.62	B *	0.59	0.56	mg/Kg	1	☼	6010B SEP	Step 4
Aluminum	58	J *	180	28	mg/Kg	5	☼	6010B SEP	Step 5
Barium	3.3	J *	45	2.1	mg/Kg	5	☼	6010B SEP	Step 5
Aluminum	1100		12	1.9	mg/Kg	1	☼	6010B SEP	Step 6
Arsenic	0.42	J	0.59	0.18	mg/Kg	1	☼	6010B SEP	Step 6
Barium	6.4		3.0	0.14	mg/Kg	1	☼	6010B SEP	Step 6
Beryllium	0.033	J	0.30	0.014	mg/Kg	1	☼	6010B SEP	Step 6
Cobalt	0.28	J	3.0	0.055	mg/Kg	1	☼	6010B SEP	Step 6
Iron	890		5.9	3.4	mg/Kg	1	☼	6010B SEP	Step 6
Li	1.0	J	3.0	0.18	mg/Kg	1	☼	6010B SEP	Step 6
Manganese	10		0.89	0.30	mg/Kg	1	☼	6010B SEP	Step 6
Aluminum	32000		120	19	mg/Kg	10	☼	6010B SEP	Step 7
Arsenic	1.2		0.59	0.15	mg/Kg	1	☼	6010B SEP	Step 7
Barium	430		30	1.4	mg/Kg	10	☼	6010B SEP	Step 7
Beryllium	0.50		0.30	0.0089	mg/Kg	1	☼	6010B SEP	Step 7
Cobalt	0.76	J	5.9	0.36	mg/Kg	2	☼	6010B SEP	Step 7
Iron	2800		5.9	4.9	mg/Kg	1	☼	6010B SEP	Step 7
Li	8.2		3.0	0.18	mg/Kg	1	☼	6010B SEP	Step 7
Manganese	42		0.89	0.062	mg/Kg	1	☼	6010B SEP	Step 7
Aluminum	35000		10	1.6	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Arsenic	3.0		0.50	0.13	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Barium	460		2.5	0.12	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Beryllium	0.56		0.25	0.0075	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Cobalt	1.7	J	2.5	0.023	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Iron	6200		5.0	4.1	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Li	12		2.5	0.15	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Manganese	67		0.75	0.052	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Selenium	1.6		0.50	0.17	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Chromium	7.6		1.7	0.25	mg/Kg	1	☼	6010B	Total/NA
Lead	3.9		1.7	0.31	mg/Kg	1	☼	6010B	Total/NA
Aluminum	45000		120	19	mg/Kg	10	☼	6010B	Total/NA
Arsenic	3.2		0.59	0.15	mg/Kg	1	☼	6010B	Total/NA
Barium	570		30	1.4	mg/Kg	10	☼	6010B	Total/NA
Beryllium	0.53		0.30	0.0089	mg/Kg	1	☼	6010B	Total/NA
Cobalt	1.6	J	5.9	0.36	mg/Kg	2	☼	6010B	Total/NA
Iron	5600		5.9	4.9	mg/Kg	1	☼	6010B	Total/NA
Lithium	11		3.0	0.18	mg/Kg	1	☼	6010B	Total/NA
Manganese	70		0.89	0.062	mg/Kg	1	☼	6010B	Total/NA
Molybdenum	0.33	J	2.4	0.097	mg/Kg	1	☼	6010B	Total/NA
Selenium	0.54	J	0.59	0.20	mg/Kg	1	☼	6010B	Total/NA
Thallium	0.44	J	4.2	0.43	mg/Kg	2	☼	6010B	Total/NA
Hg	0.053	J	0.12	0.047	mg/Kg	1	☼	7470A	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: Golder Associates Inc.
Job ID: 140-15492-1
Project/Site: Martin Lake A1 Area LF SEP + Totals

Client Sample ID: BMW-33 (38-39)
Lab Sample ID: 140-15492-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	1.5	J	13	0.62	mg/Kg	4	☼	6010B SEP	Step 1
Cobalt	0.29	J	13	0.23	mg/Kg	4	☼	6010B SEP	Step 1
Manganese	17		3.9	0.16	mg/Kg	4	☼	6010B SEP	Step 1
Aluminum	10	J *	39	6.2	mg/Kg	3	☼	6010B SEP	Step 2
Barium	0.90	J *	9.7	0.46	mg/Kg	3	☼	6010B SEP	Step 2
Cobalt	0.74	J	9.7	0.24	mg/Kg	3	☼	6010B SEP	Step 2
Iron	14	J *	19	11	mg/Kg	3	☼	6010B SEP	Step 2
Manganese	25		2.9	1.1	mg/Kg	3	☼	6010B SEP	Step 2
Aluminum	94		13	2.7	mg/Kg	1	☼	6010B SEP	Step 3
Arsenic	0.47	J	0.65	0.17	mg/Kg	1	☼	6010B SEP	Step 3
Barium	7.5	B	3.2	0.15	mg/Kg	1	☼	6010B SEP	Step 3
Beryllium	0.028	J	0.32	0.019	mg/Kg	1	☼	6010B SEP	Step 3
Cobalt	1.9	J	3.2	0.058	mg/Kg	1	☼	6010B SEP	Step 3
Iron	510		6.5	3.7	mg/Kg	1	☼	6010B SEP	Step 3
Manganese	85	B	0.97	0.035	mg/Kg	1	☼	6010B SEP	Step 3
Selenium	0.25	J B	0.65	0.22	mg/Kg	1	☼	6010B SEP	Step 3
Aluminum	1800		13	2.1	mg/Kg	1	☼	6010B SEP	Step 4
Arsenic	1.2	B	0.65	0.28	mg/Kg	1	☼	6010B SEP	Step 4
Barium	20		3.2	0.15	mg/Kg	1	☼	6010B SEP	Step 4
Beryllium	0.20	J	0.32	0.021	mg/Kg	1	☼	6010B SEP	Step 4
Cobalt	1.5	J	3.2	0.068	mg/Kg	1	☼	6010B SEP	Step 4
Iron	4900		6.5	3.7	mg/Kg	1	☼	6010B SEP	Step 4
Li	2.1	J	3.2	0.19	mg/Kg	1	☼	6010B SEP	Step 4
Manganese	55		0.97	0.17	mg/Kg	1	☼	6010B SEP	Step 4
Selenium	0.71	B *	0.65	0.61	mg/Kg	1	☼	6010B SEP	Step 4
Aluminum	64	J *	190	30	mg/Kg	5	☼	6010B SEP	Step 5
Barium	4.1	J *	48	2.3	mg/Kg	5	☼	6010B SEP	Step 5
Aluminum	3400		13	2.1	mg/Kg	1	☼	6010B SEP	Step 6
Arsenic	0.85		0.65	0.19	mg/Kg	1	☼	6010B SEP	Step 6
Barium	13		3.2	0.15	mg/Kg	1	☼	6010B SEP	Step 6
Beryllium	0.11	J	0.32	0.015	mg/Kg	1	☼	6010B SEP	Step 6
Cobalt	1.1	J	3.2	0.059	mg/Kg	1	☼	6010B SEP	Step 6
Iron	3900		6.5	3.7	mg/Kg	1	☼	6010B SEP	Step 6
Li	2.1	J	3.2	0.19	mg/Kg	1	☼	6010B SEP	Step 6
Manganese	22		0.97	0.32	mg/Kg	1	☼	6010B SEP	Step 6
Aluminum	48000		130	21	mg/Kg	10	☼	6010B SEP	Step 7
Arsenic	0.64	J	0.65	0.17	mg/Kg	1	☼	6010B SEP	Step 7
Barium	550		32	1.5	mg/Kg	10	☼	6010B SEP	Step 7
Beryllium	0.69		0.32	0.0097	mg/Kg	1	☼	6010B SEP	Step 7
Cobalt	0.57	J	6.5	0.39	mg/Kg	2	☼	6010B SEP	Step 7
Iron	6100		6.5	5.3	mg/Kg	1	☼	6010B SEP	Step 7
Li	9.1		3.2	0.19	mg/Kg	1	☼	6010B SEP	Step 7
Manganese	30		0.97	0.067	mg/Kg	1	☼	6010B SEP	Step 7
Aluminum	54000		10	1.6	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Arsenic	3.2		0.50	0.13	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Barium	590		2.5	0.12	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Beryllium	1.0		0.25	0.0075	mg/Kg	1		6010B SEP	Sum of Steps 1-7

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: Golder Associates Inc.
Job ID: 140-15492-1
Project/Site: Martin Lake A1 Area LF SEP + Totals

Client Sample ID: BMW-33 (38-39) (Continued)
Lab Sample ID: 140-15492-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Cobalt	6.1		2.5	0.023	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Iron	15000		5.0	4.1	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Li	13		2.5	0.15	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Manganese	230		0.75	0.052	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Selenium	0.95		0.50	0.17	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Chromium	14		1.8	0.27	mg/Kg	1	☼	6010B	Total/NA
Lead	5.9		1.8	0.34	mg/Kg	1	☼	6010B	Total/NA
Aluminum	73000		130	21	mg/Kg	10	☼	6010B	Total/NA
Arsenic	3.2		0.65	0.17	mg/Kg	1	☼	6010B	Total/NA
Barium	830		32	1.5	mg/Kg	10	☼	6010B	Total/NA
Beryllium	1.0		0.32	0.0097	mg/Kg	1	☼	6010B	Total/NA
Cobalt	4.6	J	16	0.97	mg/Kg	5	☼	6010B	Total/NA
Iron	13000		6.5	5.3	mg/Kg	1	☼	6010B	Total/NA
Lithium	14		3.2	0.19	mg/Kg	1	☼	6010B	Total/NA
Manganese	130		0.97	0.067	mg/Kg	1	☼	6010B	Total/NA
Molybdenum	0.22	J	2.6	0.11	mg/Kg	1	☼	6010B	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: BMW-29 (30-31)
Date Collected: 05/31/19 16:45
Date Received: 06/05/19 09:20

Lab Sample ID: 140-15492-1
Matrix: Solid
Percent Solids: 73.5

Method: 6010B SEP - SEP Metals (ICP) - Step 1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		54	8.7	mg/Kg	☼	06/29/19 08:00	07/11/19 13:09	4
Antimony	ND		16	1.5	mg/Kg	☼	06/29/19 08:00	07/11/19 13:09	4
Arsenic	ND		2.7	0.71	mg/Kg	☼	06/29/19 08:00	07/11/19 13:09	4
Barium	ND		14	0.65	mg/Kg	☼	06/29/19 08:00	07/11/19 13:09	4
Beryllium	ND		1.4	0.42	mg/Kg	☼	06/29/19 08:00	07/11/19 13:09	4
Cobalt	ND		14	0.24	mg/Kg	☼	06/29/19 08:00	07/11/19 13:09	4
Iron	ND		27	16	mg/Kg	☼	06/29/19 08:00	07/11/19 13:09	4
Li	ND		14	0.82	mg/Kg	☼	06/29/19 08:00	07/11/19 13:09	4
Manganese	**3.8**	**J**	4.1	0.17	mg/Kg	☼	06/29/19 08:00	07/11/19 13:09	4
Mo	ND		11	0.45	mg/Kg	☼	06/29/19 08:00	07/11/19 13:09	4
Selenium	ND		2.7	0.93	mg/Kg	☼	06/29/19 08:00	07/11/19 13:09	4
Thallium	ND		9.5	1.1	mg/Kg	☼	06/29/19 08:00	07/11/19 13:09	4

Method: 6010B SEP - SEP Metals (ICP) - Step 2

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**16**	**J ***	41	6.5	mg/Kg	☼	06/30/19 08:00	07/11/19 14:53	3
Antimony	ND		12	1.1	mg/Kg	☼	06/30/19 08:00	07/11/19 14:53	3
Arsenic	ND		2.0	0.53	mg/Kg	☼	06/30/19 08:00	07/11/19 14:53	3
Barium	**1.1**	**J ***	10	0.49	mg/Kg	☼	06/30/19 08:00	07/11/19 14:53	3
Beryllium	ND	*	1.0	0.065	mg/Kg	☼	06/30/19 08:00	07/11/19 14:53	3
Cobalt	**1.4**	**J**	10	0.26	mg/Kg	☼	06/30/19 08:00	07/11/19 14:53	3
Iron	**48**	****	20	12	mg/Kg	☼	06/30/19 08:00	07/11/19 14:53	3
Li	ND		10	0.61	mg/Kg	☼	06/30/19 08:00	07/11/19 14:53	3
Manganese	**35**		3.1	1.1	mg/Kg	☼	06/30/19 08:00	07/11/19 14:53	3
Mo	ND		8.2	0.33	mg/Kg	☼	06/30/19 08:00	07/11/19 14:53	3
Selenium	**1.2**	**J B**	2.0	0.69	mg/Kg	☼	06/30/19 08:00	07/11/19 14:53	3
Thallium	ND		7.1	0.86	mg/Kg	☼	06/30/19 08:00	07/11/19 14:53	3

Method: 6010B SEP - SEP Metals (ICP) - Step 3

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**170**		14	2.9	mg/Kg	☼	07/02/19 08:00	07/11/19 16:42	1
Antimony	ND		4.1	0.38	mg/Kg	☼	07/02/19 08:00	07/11/19 16:42	1
Arsenic	**1.4**		0.68	0.18	mg/Kg	☼	07/02/19 08:00	07/11/19 16:42	1
Barium	**4.3**	**B**	3.4	0.16	mg/Kg	☼	07/02/19 08:00	07/11/19 16:42	1
Beryllium	**0.11**	**J**	0.34	0.020	mg/Kg	☼	07/02/19 08:00	07/11/19 16:42	1
Cobalt	**1.5**	**J**	3.4	0.061	mg/Kg	☼	07/02/19 08:00	07/11/19 16:42	1
Iron	**4200**		6.8	3.9	mg/Kg	☼	07/02/19 08:00	07/11/19 16:42	1
Li	ND		3.4	0.20	mg/Kg	☼	07/02/19 08:00	07/11/19 16:42	1
Manganese	**95**	**B**	1.0	0.037	mg/Kg	☼	07/02/19 08:00	07/11/19 16:42	1
Mo	**0.14**	**J**	2.7	0.11	mg/Kg	☼	07/02/19 08:00	07/11/19 16:42	1
Selenium	**0.28**	**J B**	0.68	0.23	mg/Kg	☼	07/02/19 08:00	07/11/19 16:42	1
Thallium	ND		2.4	0.29	mg/Kg	☼	07/02/19 08:00	07/11/19 16:42	1

Method: 6010B SEP - SEP Metals (ICP) - Step 4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**2600**		14	2.2	mg/Kg	☼	07/03/19 08:00	07/11/19 18:09	1
Antimony	ND		4.1	0.61	mg/Kg	☼	07/03/19 08:00	07/11/19 18:09	1
Arsenic	**0.87**	**B**	0.68	0.30	mg/Kg	☼	07/03/19 08:00	07/11/19 18:09	1
Barium	**19**		3.4	0.16	mg/Kg	☼	07/03/19 08:00	07/11/19 18:09	1
Beryllium	**0.23**	**J**	0.34	0.022	mg/Kg	☼	07/03/19 08:00	07/11/19 18:09	1

Client Sample ID: BMW-29 (30-31)
Date Collected: 05/31/19 16:45
Date Received: 06/05/19 09:20

Lab Sample ID: 140-15492-1
Matrix: Solid
Percent Solids: 73.5

Method: 6010B SEP - SEP Metals (ICP) - Step 4 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cobalt	3.2	J	3.4	0.072	mg/Kg	☼	07/03/19 08:00	07/11/19 18:09	1
Iron	8300		6.8	3.9	mg/Kg	☼	07/03/19 08:00	07/11/19 18:09	1
Li	6.7		3.4	0.20	mg/Kg	☼	07/03/19 08:00	07/11/19 18:09	1
Manganese	180		1.0	0.18	mg/Kg	☼	07/03/19 08:00	07/11/19 18:09	1
Mo	ND		2.7	0.11	mg/Kg	☼	07/03/19 08:00	07/11/19 18:09	1
Selenium	ND	*	0.68	0.64	mg/Kg	☼	07/03/19 08:00	07/11/19 18:09	1
Thallium	ND		2.4	0.39	mg/Kg	☼	07/03/19 08:00	07/11/19 18:09	1

Method: 6010B SEP - SEP Metals (ICP) - Step 5

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	500	*	200	32	mg/Kg	☼	07/10/19 08:00	07/12/19 12:16	5
Antimony	ND		61	5.7	mg/Kg	☼	07/10/19 08:00	07/12/19 12:16	5
Arsenic	ND		10	2.6	mg/Kg	☼	07/10/19 08:00	07/12/19 12:16	5
Barium	17	J *	51	2.4	mg/Kg	☼	07/10/19 08:00	07/12/19 12:16	5
Beryllium	ND	*	5.1	0.43	mg/Kg	☼	07/10/19 08:00	07/12/19 12:16	5
Cobalt	1.0	J *	51	0.82	mg/Kg	☼	07/10/19 08:00	07/12/19 12:16	5
Iron	530	*	100	60	mg/Kg	☼	07/10/19 08:00	07/12/19 12:16	5
Li	ND		51	3.0	mg/Kg	☼	07/10/19 08:00	07/12/19 12:16	5
Manganese	33	*	15	2.5	mg/Kg	☼	07/10/19 08:00	07/12/19 12:16	5
Mo	ND		41	1.7	mg/Kg	☼	07/10/19 08:00	07/12/19 12:16	5
Selenium	ND		10	3.5	mg/Kg	☼	07/10/19 08:00	07/12/19 12:16	5
Thallium	ND	*	36	4.8	mg/Kg	☼	07/10/19 08:00	07/12/19 12:16	5

Method: 6010B SEP - SEP Metals (ICP) - Step 6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	3500		14	2.2	mg/Kg	☼	07/10/19 08:00	07/12/19 14:00	1
Antimony	ND		4.1	0.38	mg/Kg	☼	07/10/19 08:00	07/12/19 14:00	1
Arsenic	1.1		0.68	0.20	mg/Kg	☼	07/10/19 08:00	07/12/19 14:00	1
Barium	30		3.4	0.16	mg/Kg	☼	07/10/19 08:00	07/12/19 14:00	1
Beryllium	0.11	J	0.34	0.016	mg/Kg	☼	07/10/19 08:00	07/12/19 14:00	1
Cobalt	1.2	J	3.4	0.063	mg/Kg	☼	07/10/19 08:00	07/12/19 14:00	1
Iron	4800		6.8	3.9	mg/Kg	☼	07/10/19 08:00	07/12/19 14:00	1
Li	4.0		3.4	0.20	mg/Kg	☼	07/10/19 08:00	07/12/19 14:00	1
Manganese	38		1.0	0.34	mg/Kg	☼	07/10/19 08:00	07/12/19 14:00	1
Mo	ND		2.7	0.13	mg/Kg	☼	07/10/19 08:00	07/12/19 14:00	1
Selenium	ND		0.68	0.23	mg/Kg	☼	07/10/19 08:00	07/12/19 14:00	1
Thallium	ND		2.4	0.29	mg/Kg	☼	07/10/19 08:00	07/12/19 14:00	1

Method: 6010B SEP - SEP Metals (ICP) - Step 7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	34000		140	22	mg/Kg	☼	07/12/19 09:08	07/15/19 13:29	10
Antimony	ND		4.1	0.19	mg/Kg	☼	07/12/19 09:08	07/15/19 12:16	1
Arsenic	0.59	J	0.68	0.18	mg/Kg	☼	07/12/19 09:08	07/15/19 12:16	1
Barium	340		34	1.6	mg/Kg	☼	07/12/19 09:08	07/15/19 13:29	10
Beryllium	0.69		0.34	0.010	mg/Kg	☼	07/12/19 09:08	07/15/19 12:16	1
Cobalt	0.90	J	6.8	0.41	mg/Kg	☼	07/12/19 09:08	07/15/19 17:32	2
Iron	6700		6.8	5.6	mg/Kg	☼	07/12/19 09:08	07/15/19 12:16	1
Li	14		3.4	0.20	mg/Kg	☼	07/12/19 09:08	07/15/19 12:16	1
Manganese	36		1.0	0.071	mg/Kg	☼	07/12/19 09:08	07/15/19 12:16	1
Mo	0.20	J	2.7	0.11	mg/Kg	☼	07/12/19 09:08	07/15/19 12:16	1

Client Sample ID: BMW-29 (30-31)
Lab Sample ID: 140-15492-1
Date Collected: 05/31/19 16:45
Matrix: Solid
Date Received: 06/05/19 09:20
Percent Solids: 73.5

Method: 6010B SEP - SEP Metals (ICP) - Step 7 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Selenium	ND		0.68	0.23	mg/Kg	☼	07/12/19 09:08	07/15/19 12:16	1
Thallium	**0.74**	**J**	4.8	0.49	mg/Kg	☼	07/12/19 09:08	07/15/19 17:32	2

Method: 6010B SEP - SEP Metals (ICP) - Sum of Steps 1-7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**41000**		10	1.6	mg/Kg			07/16/19 17:31	1
Antimony	ND		3.0	0.14	mg/Kg			07/16/19 17:31	1
Arsenic	**4.0**		0.50	0.13	mg/Kg			07/16/19 17:31	1
Barium	**410**		2.5	0.12	mg/Kg			07/16/19 17:31	1
Beryllium	**1.1**		0.25	0.0075	mg/Kg			07/16/19 17:31	1
Cobalt	**9.2**		2.5	0.023	mg/Kg			07/16/19 17:31	1
Iron	**25000**		5.0	4.1	mg/Kg			07/16/19 17:31	1
Li	**25**		2.5	0.15	mg/Kg			07/16/19 17:31	1
Manganese	**420**		0.75	0.052	mg/Kg			07/16/19 17:31	1
Mo	**0.33**	**J**	2.0	0.082	mg/Kg			07/16/19 17:31	1
Selenium	**1.5**		0.50	0.17	mg/Kg			07/16/19 17:31	1
Thallium	**0.74**	**J**	1.8	0.18	mg/Kg			07/16/19 17:31	1

Method: 6010B - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**15**	**J**	25	13	mg/Kg	☼	06/26/19 08:00	07/10/19 12:23	1
Chromium	**19**		1.9	0.28	mg/Kg	☼	06/26/19 08:00	07/10/19 12:23	1
Lead	**9.7**		1.9	0.35	mg/Kg	☼	06/26/19 08:00	07/10/19 12:23	1

Method: 6010B - SEP Metals (ICP) - Total

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**72000**		140	22	mg/Kg	☼	06/11/19 08:00	07/15/19 16:20	10
Antimony	ND		4.1	0.19	mg/Kg	☼	06/11/19 08:00	07/15/19 14:46	1
Arsenic	**3.8**		0.68	0.18	mg/Kg	☼	06/11/19 08:00	07/15/19 14:46	1
Barium	**630**		34	1.6	mg/Kg	☼	06/11/19 08:00	07/15/19 16:20	10
Beryllium	**1.2**		0.34	0.010	mg/Kg	☼	06/11/19 08:00	07/15/19 14:46	1
Cobalt	**10**	**J**	17	1.0	mg/Kg	☼	06/11/19 08:00	07/15/19 18:48	5
Iron	**26000**		6.8	5.6	mg/Kg	☼	06/11/19 08:00	07/15/19 14:46	1
Lithium	**31**		3.4	0.20	mg/Kg	☼	06/11/19 08:00	07/15/19 14:46	1
Manganese	**490**		1.0	0.071	mg/Kg	☼	06/11/19 08:00	07/15/19 14:46	1
Molybdenum	**0.70**	**J**	2.7	0.11	mg/Kg	☼	06/11/19 08:00	07/15/19 14:46	1
Selenium	ND		0.68	0.23	mg/Kg	☼	06/11/19 08:00	07/15/19 14:46	1
Thallium	**1.4**	**J**	12	1.2	mg/Kg	☼	06/11/19 08:00	07/15/19 18:48	5

Method: 7470A - SEP Mercury (CVAA) - Total

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	**0.078**	**J**	0.14	0.054	mg/Kg	☼	06/11/19 08:00	06/16/19 14:19	1

Client Sample ID: BMW-30 (40-41)
Date Collected: 05/30/19 15:55
Date Received: 06/05/19 09:20

Lab Sample ID: 140-15492-2
Matrix: Solid
Percent Solids: 84.1

Method: 6010B SEP - SEP Metals (ICP) - Step 1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		48	7.6	mg/Kg	☼	06/29/19 08:00	07/11/19 13:14	4
Antimony	ND		14	1.3	mg/Kg	☼	06/29/19 08:00	07/11/19 13:14	4
Arsenic	ND		2.4	0.62	mg/Kg	☼	06/29/19 08:00	07/11/19 13:14	4
Barium	ND		12	0.57	mg/Kg	☼	06/29/19 08:00	07/11/19 13:14	4
Beryllium	ND		1.2	0.37	mg/Kg	☼	06/29/19 08:00	07/11/19 13:14	4
Cobalt	**0.82**	**J**	12	0.21	mg/Kg	☼	06/29/19 08:00	07/11/19 13:14	4
Iron	ND		24	14	mg/Kg	☼	06/29/19 08:00	07/11/19 13:14	4
Li	ND		12	0.71	mg/Kg	☼	06/29/19 08:00	07/11/19 13:14	4
Manganese	**1.5**	**J**	3.6	0.15	mg/Kg	☼	06/29/19 08:00	07/11/19 13:14	4
Mo	ND		9.5	0.39	mg/Kg	☼	06/29/19 08:00	07/11/19 13:14	4
Selenium	ND		2.4	0.81	mg/Kg	☼	06/29/19 08:00	07/11/19 13:14	4
Thallium	ND		8.3	1.0	mg/Kg	☼	06/29/19 08:00	07/11/19 13:14	4

Method: 6010B SEP - SEP Metals (ICP) - Step 2

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**7.3**	**J ***	36	5.7	mg/Kg	☼	06/30/19 08:00	07/11/19 14:58	3
Antimony	ND		11	1.0	mg/Kg	☼	06/30/19 08:00	07/11/19 14:58	3
Arsenic	ND		1.8	0.46	mg/Kg	☼	06/30/19 08:00	07/11/19 14:58	3
Barium	**0.52**	**J ***	8.9	0.43	mg/Kg	☼	06/30/19 08:00	07/11/19 14:58	3
Beryllium	ND	*	0.89	0.057	mg/Kg	☼	06/30/19 08:00	07/11/19 14:58	3
Cobalt	**0.28**	**J**	8.9	0.22	mg/Kg	☼	06/30/19 08:00	07/11/19 14:58	3
Iron	**24**	****	18	10	mg/Kg	☼	06/30/19 08:00	07/11/19 14:58	3
Li	ND		8.9	0.53	mg/Kg	☼	06/30/19 08:00	07/11/19 14:58	3
Manganese	ND		2.7	1.0	mg/Kg	☼	06/30/19 08:00	07/11/19 14:58	3
Mo	ND		7.1	0.29	mg/Kg	☼	06/30/19 08:00	07/11/19 14:58	3
Selenium	**0.67**	**J B**	1.8	0.61	mg/Kg	☼	06/30/19 08:00	07/11/19 14:58	3
Thallium	ND		6.2	0.75	mg/Kg	☼	06/30/19 08:00	07/11/19 14:58	3

Method: 6010B SEP - SEP Metals (ICP) - Step 3

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**35**		12	2.5	mg/Kg	☼	07/02/19 08:00	07/11/19 16:47	1
Antimony	ND		3.6	0.33	mg/Kg	☼	07/02/19 08:00	07/11/19 16:47	1
Arsenic	**1.3**		0.59	0.15	mg/Kg	☼	07/02/19 08:00	07/11/19 16:47	1
Barium	**2.0**	**J B**	3.0	0.14	mg/Kg	☼	07/02/19 08:00	07/11/19 16:47	1
Beryllium	ND		0.30	0.018	mg/Kg	☼	07/02/19 08:00	07/11/19 16:47	1
Cobalt	**0.28**	**J**	3.0	0.053	mg/Kg	☼	07/02/19 08:00	07/11/19 16:47	1
Iron	**190**		5.9	3.4	mg/Kg	☼	07/02/19 08:00	07/11/19 16:47	1
Li	ND		3.0	0.18	mg/Kg	☼	07/02/19 08:00	07/11/19 16:47	1
Manganese	**0.29**	**J B**	0.89	0.032	mg/Kg	☼	07/02/19 08:00	07/11/19 16:47	1
Mo	ND		2.4	0.097	mg/Kg	☼	07/02/19 08:00	07/11/19 16:47	1
Selenium	**0.38**	**J B**	0.59	0.20	mg/Kg	☼	07/02/19 08:00	07/11/19 16:47	1
Thallium	ND		2.1	0.25	mg/Kg	☼	07/02/19 08:00	07/11/19 16:47	1

Method: 6010B SEP - SEP Metals (ICP) - Step 4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**1100**		12	1.9	mg/Kg	☼	07/03/19 08:00	07/11/19 18:15	1
Antimony	ND		3.6	0.53	mg/Kg	☼	07/03/19 08:00	07/11/19 18:15	1
Arsenic	**0.78**	**B**	0.59	0.26	mg/Kg	☼	07/03/19 08:00	07/11/19 18:15	1
Barium	**7.4**		3.0	0.14	mg/Kg	☼	07/03/19 08:00	07/11/19 18:15	1
Beryllium	**0.062**	**J**	0.30	0.019	mg/Kg	☼	07/03/19 08:00	07/11/19 18:15	1

Client Sample ID: BMW-30 (40-41)
Date Collected: 05/30/19 15:55
Date Received: 06/05/19 09:20

Lab Sample ID: 140-15492-2
Matrix: Solid
Percent Solids: 84.1

Method: 6010B SEP - SEP Metals (ICP) - Step 4 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cobalt	**0.50**	**J**	3.0	0.063	mg/Kg	☼	07/03/19 08:00	07/11/19 18:15	1
Iron	**1000**		5.9	3.4	mg/Kg	☼	07/03/19 08:00	07/11/19 18:15	1
Li	**1.7**	**J**	3.0	0.18	mg/Kg	☼	07/03/19 08:00	07/11/19 18:15	1
Manganese	**8.7**		0.89	0.15	mg/Kg	☼	07/03/19 08:00	07/11/19 18:15	1
Mo	ND		2.4	0.097	mg/Kg	☼	07/03/19 08:00	07/11/19 18:15	1
Selenium	**0.76**	**B ***	0.59	0.56	mg/Kg	☼	07/03/19 08:00	07/11/19 18:15	1
Thallium	ND		2.1	0.34	mg/Kg	☼	07/03/19 08:00	07/11/19 18:15	1

Method: 6010B SEP - SEP Metals (ICP) - Step 5

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**66**	**J ***	180	28	mg/Kg	☼	07/10/19 08:00	07/12/19 12:21	5
Antimony	ND		53	5.0	mg/Kg	☼	07/10/19 08:00	07/12/19 12:21	5
Arsenic	ND		8.9	2.3	mg/Kg	☼	07/10/19 08:00	07/12/19 12:21	5
Barium	ND	*	45	2.1	mg/Kg	☼	07/10/19 08:00	07/12/19 12:21	5
Beryllium	ND	*	4.5	0.37	mg/Kg	☼	07/10/19 08:00	07/12/19 12:21	5
Cobalt	ND	*	45	0.71	mg/Kg	☼	07/10/19 08:00	07/12/19 12:21	5
Iron	ND	*	89	52	mg/Kg	☼	07/10/19 08:00	07/12/19 12:21	5
Li	ND		45	2.6	mg/Kg	☼	07/10/19 08:00	07/12/19 12:21	5
Manganese	ND	*	13	2.2	mg/Kg	☼	07/10/19 08:00	07/12/19 12:21	5
Mo	ND		36	1.5	mg/Kg	☼	07/10/19 08:00	07/12/19 12:21	5
Selenium	ND		8.9	3.1	mg/Kg	☼	07/10/19 08:00	07/12/19 12:21	5
Thallium	ND	*	31	4.2	mg/Kg	☼	07/10/19 08:00	07/12/19 12:21	5

Method: 6010B SEP - SEP Metals (ICP) - Step 6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**1300**		12	1.9	mg/Kg	☼	07/10/19 08:00	07/12/19 14:05	1
Antimony	ND		3.6	0.33	mg/Kg	☼	07/10/19 08:00	07/12/19 14:05	1
Arsenic	**0.75**		0.59	0.18	mg/Kg	☼	07/10/19 08:00	07/12/19 14:05	1
Barium	**4.0**		3.0	0.14	mg/Kg	☼	07/10/19 08:00	07/12/19 14:05	1
Beryllium	**0.043**	**J**	0.30	0.014	mg/Kg	☼	07/10/19 08:00	07/12/19 14:05	1
Cobalt	**0.46**	**J**	3.0	0.055	mg/Kg	☼	07/10/19 08:00	07/12/19 14:05	1
Iron	**1800**		5.9	3.4	mg/Kg	☼	07/10/19 08:00	07/12/19 14:05	1
Li	**0.91**	**J**	3.0	0.18	mg/Kg	☼	07/10/19 08:00	07/12/19 14:05	1
Manganese	**8.0**		0.89	0.30	mg/Kg	☼	07/10/19 08:00	07/12/19 14:05	1
Mo	ND		2.4	0.12	mg/Kg	☼	07/10/19 08:00	07/12/19 14:05	1
Selenium	ND		0.59	0.20	mg/Kg	☼	07/10/19 08:00	07/12/19 14:05	1
Thallium	ND		2.1	0.25	mg/Kg	☼	07/10/19 08:00	07/12/19 14:05	1

Method: 6010B SEP - SEP Metals (ICP) - Step 7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**37000**		120	19	mg/Kg	☼	07/12/19 09:08	07/15/19 13:34	10
Antimony	ND		3.6	0.17	mg/Kg	☼	07/12/19 09:08	07/15/19 12:21	1
Arsenic	**1.3**		1.2	0.31	mg/Kg	☼	07/12/19 09:08	07/15/19 17:37	2
Barium	**380**		30	1.4	mg/Kg	☼	07/12/19 09:08	07/15/19 13:34	10
Beryllium	**0.36**		0.30	0.0089	mg/Kg	☼	07/12/19 09:08	07/15/19 12:21	1
Cobalt	**0.76**	**J**	5.9	0.36	mg/Kg	☼	07/12/19 09:08	07/15/19 17:37	2
Iron	**2800**		5.9	4.9	mg/Kg	☼	07/12/19 09:08	07/15/19 12:21	1
Li	**14**		3.0	0.18	mg/Kg	☼	07/12/19 09:08	07/15/19 12:21	1
Manganese	**38**		0.89	0.062	mg/Kg	☼	07/12/19 09:08	07/15/19 12:21	1
Mo	ND		2.4	0.097	mg/Kg	☼	07/12/19 09:08	07/15/19 12:21	1

Client Sample ID: BMW-30 (40-41)
Date Collected: 05/30/19 15:55
Date Received: 06/05/19 09:20

Lab Sample ID: 140-15492-2
Matrix: Solid
Percent Solids: 84.1

Method: 6010B SEP - SEP Metals (ICP) - Step 7 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Selenium	ND		1.2	0.40	mg/Kg	☼	07/12/19 09:08	07/15/19 17:37	2
Thallium	**0.87**	**J**	4.2	0.43	mg/Kg	☼	07/12/19 09:08	07/15/19 17:37	2

Method: 6010B SEP - SEP Metals (ICP) - Sum of Steps 1-7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**39000**		10	1.6	mg/Kg			07/16/19 17:31	1
Antimony	ND		3.0	0.14	mg/Kg			07/16/19 17:31	1
Arsenic	**4.1**		0.50	0.13	mg/Kg			07/16/19 17:31	1
Barium	**390**		2.5	0.12	mg/Kg			07/16/19 17:31	1
Beryllium	**0.46**		0.25	0.0075	mg/Kg			07/16/19 17:31	1
Cobalt	**3.1**		2.5	0.023	mg/Kg			07/16/19 17:31	1
Iron	**5800**		5.0	4.1	mg/Kg			07/16/19 17:31	1
Li	**17**		2.5	0.15	mg/Kg			07/16/19 17:31	1
Manganese	**57**		0.75	0.052	mg/Kg			07/16/19 17:31	1
Mo	ND		2.0	0.082	mg/Kg			07/16/19 17:31	1
Selenium	**1.8**		0.50	0.17	mg/Kg			07/16/19 17:31	1
Thallium	**0.87**	**J**	1.8	0.18	mg/Kg			07/16/19 17:31	1

Method: 6010B - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		23	11	mg/Kg	☼	06/26/19 08:00	07/10/19 12:28	1
Chromium	**7.9**		1.7	0.25	mg/Kg	☼	06/26/19 08:00	07/10/19 12:28	1
Lead	**5.9**		1.7	0.32	mg/Kg	☼	06/26/19 08:00	07/10/19 12:28	1

Method: 6010B - SEP Metals (ICP) - Total

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**48000**		120	19	mg/Kg	☼	06/11/19 08:00	07/15/19 16:25	10
Antimony	ND		3.6	0.17	mg/Kg	☼	06/11/19 08:00	07/15/19 15:07	1
Arsenic	**4.8**		0.59	0.15	mg/Kg	☼	06/11/19 08:00	07/15/19 15:07	1
Barium	**490**		30	1.4	mg/Kg	☼	06/11/19 08:00	07/15/19 16:25	10
Beryllium	**0.46**		0.30	0.0089	mg/Kg	☼	06/11/19 08:00	07/15/19 15:07	1
Cobalt	**3.4**	**J**	15	0.89	mg/Kg	☼	06/11/19 08:00	07/15/19 18:53	5
Iron	**5800**		5.9	4.9	mg/Kg	☼	06/11/19 08:00	07/15/19 15:07	1
Lithium	**18**		3.0	0.18	mg/Kg	☼	06/11/19 08:00	07/15/19 15:07	1
Manganese	**60**		0.89	0.062	mg/Kg	☼	06/11/19 08:00	07/15/19 15:07	1
Molybdenum	**0.17**	**J**	2.4	0.097	mg/Kg	☼	06/11/19 08:00	07/15/19 15:07	1
Selenium	**1.1**		0.59	0.20	mg/Kg	☼	06/11/19 08:00	07/15/19 15:07	1
Thallium	ND		10	1.1	mg/Kg	☼	06/11/19 08:00	07/15/19 18:53	5

Method: 7470A - SEP Mercury (CVAA) - Total

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	**0.054**	**J**	0.12	0.048	mg/Kg	☼	06/11/19 08:00	06/16/19 14:21	1

Client Sample ID: BMW-31 (14-15)
Date Collected: 05/31/19 11:15
Date Received: 06/05/19 09:20

Lab Sample ID: 140-15492-3
Matrix: Solid
Percent Solids: 84.2

Method: 6010B SEP - SEP Metals (ICP) - Step 1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		47	7.6	mg/Kg	☼	06/29/19 08:00	07/11/19 13:35	4
Antimony	ND		14	1.3	mg/Kg	☼	06/29/19 08:00	07/11/19 13:35	4
Arsenic	ND		2.4	0.62	mg/Kg	☼	06/29/19 08:00	07/11/19 13:35	4
Barium	**0.58**	**J**	12	0.57	mg/Kg	☼	06/29/19 08:00	07/11/19 13:35	4
Beryllium	ND		1.2	0.37	mg/Kg	☼	06/29/19 08:00	07/11/19 13:35	4
Cobalt	ND		12	0.21	mg/Kg	☼	06/29/19 08:00	07/11/19 13:35	4
Iron	ND		24	14	mg/Kg	☼	06/29/19 08:00	07/11/19 13:35	4
Li	ND		12	0.71	mg/Kg	☼	06/29/19 08:00	07/11/19 13:35	4
Manganese	**11**		3.6	0.15	mg/Kg	☼	06/29/19 08:00	07/11/19 13:35	4
Mo	ND		9.5	0.39	mg/Kg	☼	06/29/19 08:00	07/11/19 13:35	4
Selenium	ND		2.4	0.81	mg/Kg	☼	06/29/19 08:00	07/11/19 13:35	4
Thallium	ND		8.3	1.0	mg/Kg	☼	06/29/19 08:00	07/11/19 13:35	4

Method: 6010B SEP - SEP Metals (ICP) - Step 2

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND	*	36	5.7	mg/Kg	☼	06/30/19 08:00	07/11/19 15:03	3
Antimony	ND		11	1.0	mg/Kg	☼	06/30/19 08:00	07/11/19 15:03	3
Arsenic	ND		1.8	0.46	mg/Kg	☼	06/30/19 08:00	07/11/19 15:03	3
Barium	**0.46**	**J ***	8.9	0.43	mg/Kg	☼	06/30/19 08:00	07/11/19 15:03	3
Beryllium	ND	*	0.89	0.057	mg/Kg	☼	06/30/19 08:00	07/11/19 15:03	3
Cobalt	ND		8.9	0.22	mg/Kg	☼	06/30/19 08:00	07/11/19 15:03	3
Iron	ND	*	18	10	mg/Kg	☼	06/30/19 08:00	07/11/19 15:03	3
Li	ND		8.9	0.53	mg/Kg	☼	06/30/19 08:00	07/11/19 15:03	3
Manganese	**2.4**	**J**	2.7	1.0	mg/Kg	☼	06/30/19 08:00	07/11/19 15:03	3
Mo	ND		7.1	0.29	mg/Kg	☼	06/30/19 08:00	07/11/19 15:03	3
Selenium	**0.77**	**J B**	1.8	0.61	mg/Kg	☼	06/30/19 08:00	07/11/19 15:03	3
Thallium	ND		6.2	0.75	mg/Kg	☼	06/30/19 08:00	07/11/19 15:03	3

Method: 6010B SEP - SEP Metals (ICP) - Step 3

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**59**		12	2.5	mg/Kg	☼	07/02/19 08:00	07/11/19 16:52	1
Antimony	ND		3.6	0.33	mg/Kg	☼	07/02/19 08:00	07/11/19 16:52	1
Arsenic	**0.29**	**J**	0.59	0.15	mg/Kg	☼	07/02/19 08:00	07/11/19 16:52	1
Barium	**14**	**B**	3.0	0.14	mg/Kg	☼	07/02/19 08:00	07/11/19 16:52	1
Beryllium	**0.069**	**J**	0.30	0.018	mg/Kg	☼	07/02/19 08:00	07/11/19 16:52	1
Cobalt	**16**		3.0	0.053	mg/Kg	☼	07/02/19 08:00	07/11/19 16:52	1
Iron	**120**		5.9	3.4	mg/Kg	☼	07/02/19 08:00	07/11/19 16:52	1
Li	ND		3.0	0.18	mg/Kg	☼	07/02/19 08:00	07/11/19 16:52	1
Manganese	**260**	**B**	0.89	0.032	mg/Kg	☼	07/02/19 08:00	07/11/19 16:52	1
Mo	ND		2.4	0.097	mg/Kg	☼	07/02/19 08:00	07/11/19 16:52	1
Selenium	**0.23**	**J B**	0.59	0.20	mg/Kg	☼	07/02/19 08:00	07/11/19 16:52	1
Thallium	ND		2.1	0.25	mg/Kg	☼	07/02/19 08:00	07/11/19 16:52	1

Method: 6010B SEP - SEP Metals (ICP) - Step 4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**1600**		12	1.9	mg/Kg	☼	07/03/19 08:00	07/11/19 18:20	1
Antimony	ND		3.6	0.53	mg/Kg	☼	07/03/19 08:00	07/11/19 18:20	1
Arsenic	**1.8**	**B**	0.59	0.26	mg/Kg	☼	07/03/19 08:00	07/11/19 18:20	1
Barium	**33**		3.0	0.14	mg/Kg	☼	07/03/19 08:00	07/11/19 18:20	1
Beryllium	**0.24**	**J**	0.30	0.019	mg/Kg	☼	07/03/19 08:00	07/11/19 18:20	1

Client Sample ID: BMW-31 (14-15) **Lab Sample ID: 140-15492-3**
Date Collected: 05/31/19 11:15 **Matrix: Solid**
Date Received: 06/05/19 09:20 **Percent Solids: 84.2**

Method: 6010B SEP - SEP Metals (ICP) - Step 4 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cobalt	2.8	J	3.0	0.063	mg/Kg	☼	07/03/19 08:00	07/11/19 18:20	1
Iron	5600		5.9	3.4	mg/Kg	☼	07/03/19 08:00	07/11/19 18:20	1
Li	2.2	J	3.0	0.18	mg/Kg	☼	07/03/19 08:00	07/11/19 18:20	1
Manganese	63		0.89	0.15	mg/Kg	☼	07/03/19 08:00	07/11/19 18:20	1
Mo	ND		2.4	0.097	mg/Kg	☼	07/03/19 08:00	07/11/19 18:20	1
Selenium	1.1	B *	0.59	0.56	mg/Kg	☼	07/03/19 08:00	07/11/19 18:20	1
Thallium	ND		2.1	0.34	mg/Kg	☼	07/03/19 08:00	07/11/19 18:20	1

Method: 6010B SEP - SEP Metals (ICP) - Step 5

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	67	J *	180	28	mg/Kg	☼	07/10/19 08:00	07/12/19 12:42	5
Antimony	ND		53	5.0	mg/Kg	☼	07/10/19 08:00	07/12/19 12:42	5
Arsenic	ND		8.9	2.3	mg/Kg	☼	07/10/19 08:00	07/12/19 12:42	5
Barium	3.9	J *	45	2.1	mg/Kg	☼	07/10/19 08:00	07/12/19 12:42	5
Beryllium	ND	*	4.5	0.37	mg/Kg	☼	07/10/19 08:00	07/12/19 12:42	5
Cobalt	ND	*	45	0.71	mg/Kg	☼	07/10/19 08:00	07/12/19 12:42	5
Iron	ND	*	89	52	mg/Kg	☼	07/10/19 08:00	07/12/19 12:42	5
Li	ND		45	2.6	mg/Kg	☼	07/10/19 08:00	07/12/19 12:42	5
Manganese	ND	*	13	2.2	mg/Kg	☼	07/10/19 08:00	07/12/19 12:42	5
Mo	ND		36	1.5	mg/Kg	☼	07/10/19 08:00	07/12/19 12:42	5
Selenium	ND		8.9	3.1	mg/Kg	☼	07/10/19 08:00	07/12/19 12:42	5
Thallium	ND	*	31	4.2	mg/Kg	☼	07/10/19 08:00	07/12/19 12:42	5

Method: 6010B SEP - SEP Metals (ICP) - Step 6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	1800		12	1.9	mg/Kg	☼	07/10/19 08:00	07/12/19 14:10	1
Antimony	ND		3.6	0.33	mg/Kg	☼	07/10/19 08:00	07/12/19 14:10	1
Arsenic	0.54	J	0.59	0.18	mg/Kg	☼	07/10/19 08:00	07/12/19 14:10	1
Barium	4.4		3.0	0.14	mg/Kg	☼	07/10/19 08:00	07/12/19 14:10	1
Beryllium	0.059	J	0.30	0.014	mg/Kg	☼	07/10/19 08:00	07/12/19 14:10	1
Cobalt	0.46	J	3.0	0.055	mg/Kg	☼	07/10/19 08:00	07/12/19 14:10	1
Iron	1700		5.9	3.4	mg/Kg	☼	07/10/19 08:00	07/12/19 14:10	1
Li	1.3	J	3.0	0.18	mg/Kg	☼	07/10/19 08:00	07/12/19 14:10	1
Manganese	10		0.89	0.30	mg/Kg	☼	07/10/19 08:00	07/12/19 14:10	1
Mo	ND		2.4	0.12	mg/Kg	☼	07/10/19 08:00	07/12/19 14:10	1
Selenium	ND		0.59	0.20	mg/Kg	☼	07/10/19 08:00	07/12/19 14:10	1
Thallium	ND		2.1	0.25	mg/Kg	☼	07/10/19 08:00	07/12/19 14:10	1

Method: 6010B SEP - SEP Metals (ICP) - Step 7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	26000		120	19	mg/Kg	☼	07/12/19 09:08	07/15/19 13:39	10
Antimony	ND		3.6	0.17	mg/Kg	☼	07/12/19 09:08	07/15/19 12:26	1
Arsenic	0.58	J	1.2	0.31	mg/Kg	☼	07/12/19 09:08	07/15/19 17:42	2
Barium	320		30	1.4	mg/Kg	☼	07/12/19 09:08	07/15/19 13:39	10
Beryllium	0.30		0.30	0.0089	mg/Kg	☼	07/12/19 09:08	07/15/19 12:26	1
Cobalt	0.82	J	5.9	0.36	mg/Kg	☼	07/12/19 09:08	07/15/19 17:42	2
Iron	3600		5.9	4.9	mg/Kg	☼	07/12/19 09:08	07/15/19 12:26	1
Li	15		3.0	0.18	mg/Kg	☼	07/12/19 09:08	07/15/19 12:26	1
Manganese	24		0.89	0.062	mg/Kg	☼	07/12/19 09:08	07/15/19 12:26	1
Mo	0.16	J	2.4	0.097	mg/Kg	☼	07/12/19 09:08	07/15/19 12:26	1

Client Sample ID: BMW-31 (14-15)
Date Collected: 05/31/19 11:15
Date Received: 06/05/19 09:20

Lab Sample ID: 140-15492-3
Matrix: Solid
Percent Solids: 84.2

Method: 6010B SEP - SEP Metals (ICP) - Step 7 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Selenium	ND		1.2	0.40	mg/Kg	☼	07/12/19 09:08	07/15/19 17:42	2
Thallium	**0.52**	**J**	4.2	0.43	mg/Kg	☼	07/12/19 09:08	07/15/19 17:42	2

Method: 6010B SEP - SEP Metals (ICP) - Sum of Steps 1-7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**30000**		10	1.6	mg/Kg			07/16/19 17:31	1
Antimony	ND		3.0	0.14	mg/Kg			07/16/19 17:31	1
Arsenic	**3.2**		0.50	0.13	mg/Kg			07/16/19 17:31	1
Barium	**370**		2.5	0.12	mg/Kg			07/16/19 17:31	1
Beryllium	**0.67**		0.25	0.0075	mg/Kg			07/16/19 17:31	1
Cobalt	**20**		2.5	0.023	mg/Kg			07/16/19 17:31	1
Iron	**11000**		5.0	4.1	mg/Kg			07/16/19 17:31	1
Li	**19**		2.5	0.15	mg/Kg			07/16/19 17:31	1
Manganese	**370**		0.75	0.052	mg/Kg			07/16/19 17:31	1
Mo	**0.16**	**J**	2.0	0.082	mg/Kg			07/16/19 17:31	1
Selenium	**2.1**		0.50	0.17	mg/Kg			07/16/19 17:31	1
Thallium	**0.52**	**J**	1.8	0.18	mg/Kg			07/16/19 17:31	1

Method: 6010B - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		24	12	mg/Kg	☼	06/26/19 08:00	07/10/19 12:43	1
Chromium	**7.3**		1.8	0.26	mg/Kg	☼	06/26/19 08:00	07/10/19 12:43	1
Lead	**6.8**		1.8	0.33	mg/Kg	☼	06/26/19 08:00	07/10/19 12:43	1

Method: 6010B - SEP Metals (ICP) - Total

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**30000**		120	19	mg/Kg	☼	06/11/19 08:00	07/15/19 16:30	10
Antimony	ND		3.6	0.17	mg/Kg	☼	06/11/19 08:00	07/15/19 15:12	1
Arsenic	**3.0**		0.59	0.15	mg/Kg	☼	06/11/19 08:00	07/15/19 15:12	1
Barium	**430**		30	1.4	mg/Kg	☼	06/11/19 08:00	07/15/19 16:30	10
Beryllium	**0.66**		0.30	0.0089	mg/Kg	☼	06/11/19 08:00	07/15/19 15:12	1
Cobalt	**18**		5.9	0.36	mg/Kg	☼	06/11/19 08:00	07/15/19 19:14	2
Iron	**10000**		5.9	4.9	mg/Kg	☼	06/11/19 08:00	07/15/19 15:12	1
Lithium	**18**		3.0	0.18	mg/Kg	☼	06/11/19 08:00	07/15/19 15:12	1
Manganese	**280**		0.89	0.062	mg/Kg	☼	06/11/19 08:00	07/15/19 15:12	1
Molybdenum	**0.29**	**J**	2.4	0.097	mg/Kg	☼	06/11/19 08:00	07/15/19 15:12	1
Selenium	ND		0.59	0.20	mg/Kg	☼	06/11/19 08:00	07/15/19 15:12	1
Thallium	**0.67**	**J**	4.2	0.43	mg/Kg	☼	06/11/19 08:00	07/15/19 19:14	2

Method: 7470A - SEP Mercury (CVAA) - Total

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	ND		0.12	0.047	mg/Kg	☼	06/11/19 08:00	06/16/19 14:24	1

Client Sample ID: BMW-32 (25-26)
Date Collected: 05/29/19 15:45
Date Received: 06/05/19 09:20

Lab Sample ID: 140-15492-4
Matrix: Solid
Percent Solids: 84.2

Method: 6010B SEP - SEP Metals (ICP) - Step 1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		47	7.6	mg/Kg	☼	06/29/19 08:00	07/11/19 13:40	4
Antimony	ND		14	1.3	mg/Kg	☼	06/29/19 08:00	07/11/19 13:40	4
Arsenic	ND		2.4	0.62	mg/Kg	☼	06/29/19 08:00	07/11/19 13:40	4
Barium	ND		12	0.57	mg/Kg	☼	06/29/19 08:00	07/11/19 13:40	4
Beryllium	ND		1.2	0.37	mg/Kg	☼	06/29/19 08:00	07/11/19 13:40	4
Cobalt	ND		12	0.21	mg/Kg	☼	06/29/19 08:00	07/11/19 13:40	4
Iron	ND		24	14	mg/Kg	☼	06/29/19 08:00	07/11/19 13:40	4
Li	ND		12	0.71	mg/Kg	☼	06/29/19 08:00	07/11/19 13:40	4
Manganese	**1.0**	**J**	3.6	0.15	mg/Kg	☼	06/29/19 08:00	07/11/19 13:40	4
Mo	ND		9.5	0.39	mg/Kg	☼	06/29/19 08:00	07/11/19 13:40	4
Selenium	ND		2.4	0.81	mg/Kg	☼	06/29/19 08:00	07/11/19 13:40	4
Thallium	ND		8.3	1.0	mg/Kg	☼	06/29/19 08:00	07/11/19 13:40	4

Method: 6010B SEP - SEP Metals (ICP) - Step 2

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**17**	**J ***	36	5.7	mg/Kg	☼	06/30/19 08:00	07/11/19 15:09	3
Antimony	ND		11	1.0	mg/Kg	☼	06/30/19 08:00	07/11/19 15:09	3
Arsenic	ND		1.8	0.46	mg/Kg	☼	06/30/19 08:00	07/11/19 15:09	3
Barium	ND	*	8.9	0.43	mg/Kg	☼	06/30/19 08:00	07/11/19 15:09	3
Beryllium	ND	*	0.89	0.057	mg/Kg	☼	06/30/19 08:00	07/11/19 15:09	3
Cobalt	ND		8.9	0.22	mg/Kg	☼	06/30/19 08:00	07/11/19 15:09	3
Iron	**36**	****	18	10	mg/Kg	☼	06/30/19 08:00	07/11/19 15:09	3
Li	ND		8.9	0.53	mg/Kg	☼	06/30/19 08:00	07/11/19 15:09	3
Manganese	ND		2.7	1.0	mg/Kg	☼	06/30/19 08:00	07/11/19 15:09	3
Mo	ND		7.1	0.29	mg/Kg	☼	06/30/19 08:00	07/11/19 15:09	3
Selenium	**0.78**	**J B**	1.8	0.61	mg/Kg	☼	06/30/19 08:00	07/11/19 15:09	3
Thallium	ND		6.2	0.75	mg/Kg	☼	06/30/19 08:00	07/11/19 15:09	3

Method: 6010B SEP - SEP Metals (ICP) - Step 3

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**81**		12	2.5	mg/Kg	☼	07/02/19 08:00	07/11/19 16:58	1
Antimony	ND		3.6	0.33	mg/Kg	☼	07/02/19 08:00	07/11/19 16:58	1
Arsenic	**0.60**		0.59	0.15	mg/Kg	☼	07/02/19 08:00	07/11/19 16:58	1
Barium	**1.3**	**J B**	3.0	0.14	mg/Kg	☼	07/02/19 08:00	07/11/19 16:58	1
Beryllium	ND		0.30	0.018	mg/Kg	☼	07/02/19 08:00	07/11/19 16:58	1
Cobalt	**0.060**	**J**	3.0	0.053	mg/Kg	☼	07/02/19 08:00	07/11/19 16:58	1
Iron	**500**		5.9	3.4	mg/Kg	☼	07/02/19 08:00	07/11/19 16:58	1
Li	ND		3.0	0.18	mg/Kg	☼	07/02/19 08:00	07/11/19 16:58	1
Manganese	**0.60**	**J B**	0.89	0.032	mg/Kg	☼	07/02/19 08:00	07/11/19 16:58	1
Mo	ND		2.4	0.097	mg/Kg	☼	07/02/19 08:00	07/11/19 16:58	1
Selenium	**0.21**	**J B**	0.59	0.20	mg/Kg	☼	07/02/19 08:00	07/11/19 16:58	1
Thallium	ND		2.1	0.25	mg/Kg	☼	07/02/19 08:00	07/11/19 16:58	1

Method: 6010B SEP - SEP Metals (ICP) - Step 4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**1200**		12	1.9	mg/Kg	☼	07/03/19 08:00	07/11/19 18:25	1
Antimony	ND		3.6	0.53	mg/Kg	☼	07/03/19 08:00	07/11/19 18:25	1
Arsenic	**0.78**	**B**	0.59	0.26	mg/Kg	☼	07/03/19 08:00	07/11/19 18:25	1
Barium	**17**		3.0	0.14	mg/Kg	☼	07/03/19 08:00	07/11/19 18:25	1
Beryllium	**0.025**	**J**	0.30	0.019	mg/Kg	☼	07/03/19 08:00	07/11/19 18:25	1

Client Sample ID: BMW-32 (25-26)
Date Collected: 05/29/19 15:45
Date Received: 06/05/19 09:20

Lab Sample ID: 140-15492-4
Matrix: Solid
Percent Solids: 84.2

Method: 6010B SEP - SEP Metals (ICP) - Step 4 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cobalt	**0.60**	**J**	3.0	0.063	mg/Kg	☼	07/03/19 08:00	07/11/19 18:25	1
Iron	**2000**		5.9	3.4	mg/Kg	☼	07/03/19 08:00	07/11/19 18:25	1
Li	**2.5**	**J**	3.0	0.18	mg/Kg	☼	07/03/19 08:00	07/11/19 18:25	1
Manganese	**13**		0.89	0.15	mg/Kg	☼	07/03/19 08:00	07/11/19 18:25	1
Mo	ND		2.4	0.097	mg/Kg	☼	07/03/19 08:00	07/11/19 18:25	1
Selenium	**0.62**	**B ***	0.59	0.56	mg/Kg	☼	07/03/19 08:00	07/11/19 18:25	1
Thallium	ND		2.1	0.34	mg/Kg	☼	07/03/19 08:00	07/11/19 18:25	1

Method: 6010B SEP - SEP Metals (ICP) - Step 5

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**58**	**J ***	180	28	mg/Kg	☼	07/10/19 08:00	07/12/19 12:47	5
Antimony	ND		53	5.0	mg/Kg	☼	07/10/19 08:00	07/12/19 12:47	5
Arsenic	ND		8.9	2.3	mg/Kg	☼	07/10/19 08:00	07/12/19 12:47	5
Barium	**3.3**	**J ***	45	2.1	mg/Kg	☼	07/10/19 08:00	07/12/19 12:47	5
Beryllium	ND	*	4.5	0.37	mg/Kg	☼	07/10/19 08:00	07/12/19 12:47	5
Cobalt	ND	*	45	0.71	mg/Kg	☼	07/10/19 08:00	07/12/19 12:47	5
Iron	ND	*	89	52	mg/Kg	☼	07/10/19 08:00	07/12/19 12:47	5
Li	ND		45	2.6	mg/Kg	☼	07/10/19 08:00	07/12/19 12:47	5
Manganese	ND	*	13	2.2	mg/Kg	☼	07/10/19 08:00	07/12/19 12:47	5
Mo	ND		36	1.5	mg/Kg	☼	07/10/19 08:00	07/12/19 12:47	5
Selenium	ND		8.9	3.1	mg/Kg	☼	07/10/19 08:00	07/12/19 12:47	5
Thallium	ND	*	31	4.2	mg/Kg	☼	07/10/19 08:00	07/12/19 12:47	5

Method: 6010B SEP - SEP Metals (ICP) - Step 6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**1100**		12	1.9	mg/Kg	☼	07/10/19 08:00	07/12/19 14:15	1
Antimony	ND		3.6	0.33	mg/Kg	☼	07/10/19 08:00	07/12/19 14:15	1
Arsenic	**0.42**	**J**	0.59	0.18	mg/Kg	☼	07/10/19 08:00	07/12/19 14:15	1
Barium	**6.4**		3.0	0.14	mg/Kg	☼	07/10/19 08:00	07/12/19 14:15	1
Beryllium	**0.033**	**J**	0.30	0.014	mg/Kg	☼	07/10/19 08:00	07/12/19 14:15	1
Cobalt	**0.28**	**J**	3.0	0.055	mg/Kg	☼	07/10/19 08:00	07/12/19 14:15	1
Iron	**890**		5.9	3.4	mg/Kg	☼	07/10/19 08:00	07/12/19 14:15	1
Li	**1.0**	**J**	3.0	0.18	mg/Kg	☼	07/10/19 08:00	07/12/19 14:15	1
Manganese	**10**		0.89	0.30	mg/Kg	☼	07/10/19 08:00	07/12/19 14:15	1
Mo	ND		2.4	0.12	mg/Kg	☼	07/10/19 08:00	07/12/19 14:15	1
Selenium	ND		0.59	0.20	mg/Kg	☼	07/10/19 08:00	07/12/19 14:15	1
Thallium	ND		2.1	0.25	mg/Kg	☼	07/10/19 08:00	07/12/19 14:15	1

Method: 6010B SEP - SEP Metals (ICP) - Step 7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**32000**		120	19	mg/Kg	☼	07/12/19 09:08	07/15/19 13:44	10
Antimony	ND		3.6	0.17	mg/Kg	☼	07/12/19 09:08	07/15/19 12:32	1
Arsenic	**1.2**		0.59	0.15	mg/Kg	☼	07/12/19 09:08	07/15/19 12:32	1
Barium	**430**		30	1.4	mg/Kg	☼	07/12/19 09:08	07/15/19 13:44	10
Beryllium	**0.50**		0.30	0.0089	mg/Kg	☼	07/12/19 09:08	07/15/19 12:32	1
Cobalt	**0.76**	**J**	5.9	0.36	mg/Kg	☼	07/12/19 09:08	07/15/19 17:47	2
Iron	**2800**		5.9	4.9	mg/Kg	☼	07/12/19 09:08	07/15/19 12:32	1
Li	**8.2**		3.0	0.18	mg/Kg	☼	07/12/19 09:08	07/15/19 12:32	1
Manganese	**42**		0.89	0.062	mg/Kg	☼	07/12/19 09:08	07/15/19 12:32	1
Mo	ND		2.4	0.097	mg/Kg	☼	07/12/19 09:08	07/15/19 12:32	1

Client Sample ID: BMW-32 (25-26)
Date Collected: 05/29/19 15:45
Date Received: 06/05/19 09:20

Lab Sample ID: 140-15492-4
Matrix: Solid
Percent Solids: 84.2

Method: 6010B SEP - SEP Metals (ICP) - Step 7 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Selenium	ND		0.59	0.20	mg/Kg	☼	07/12/19 09:08	07/15/19 12:32	1
Thallium	ND		4.2	0.43	mg/Kg	☼	07/12/19 09:08	07/15/19 17:47	2

Method: 6010B SEP - SEP Metals (ICP) - Sum of Steps 1-7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**35000**		10	1.6	mg/Kg			07/16/19 17:31	1
Antimony	ND		3.0	0.14	mg/Kg			07/16/19 17:31	1
Arsenic	**3.0**		0.50	0.13	mg/Kg			07/16/19 17:31	1
Barium	**460**		2.5	0.12	mg/Kg			07/16/19 17:31	1
Beryllium	**0.56**		0.25	0.0075	mg/Kg			07/16/19 17:31	1
Cobalt	**1.7**	**J**	2.5	0.023	mg/Kg			07/16/19 17:31	1
Iron	**6200**		5.0	4.1	mg/Kg			07/16/19 17:31	1
Li	**12**		2.5	0.15	mg/Kg			07/16/19 17:31	1
Manganese	**67**		0.75	0.052	mg/Kg			07/16/19 17:31	1
Mo	ND		2.0	0.082	mg/Kg			07/16/19 17:31	1
Selenium	**1.6**		0.50	0.17	mg/Kg			07/16/19 17:31	1
Thallium	ND		1.8	0.18	mg/Kg			07/16/19 17:31	1

Method: 6010B - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		22	11	mg/Kg	☼	06/26/19 08:00	07/10/19 12:49	1
Chromium	**7.6**		1.7	0.25	mg/Kg	☼	06/26/19 08:00	07/10/19 12:49	1
Lead	**3.9**		1.7	0.31	mg/Kg	☼	06/26/19 08:00	07/10/19 12:49	1

Method: 6010B - SEP Metals (ICP) - Total

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**45000**		120	19	mg/Kg	☼	06/11/19 08:00	07/15/19 16:35	10
Antimony	ND		3.6	0.17	mg/Kg	☼	06/11/19 08:00	07/15/19 15:18	1
Arsenic	**3.2**		0.59	0.15	mg/Kg	☼	06/11/19 08:00	07/15/19 15:18	1
Barium	**570**		30	1.4	mg/Kg	☼	06/11/19 08:00	07/15/19 16:35	10
Beryllium	**0.53**		0.30	0.0089	mg/Kg	☼	06/11/19 08:00	07/15/19 15:18	1
Cobalt	**1.6**	**J**	5.9	0.36	mg/Kg	☼	06/11/19 08:00	07/15/19 19:19	2
Iron	**5600**		5.9	4.9	mg/Kg	☼	06/11/19 08:00	07/15/19 15:18	1
Lithium	**11**		3.0	0.18	mg/Kg	☼	06/11/19 08:00	07/15/19 15:18	1
Manganese	**70**		0.89	0.062	mg/Kg	☼	06/11/19 08:00	07/15/19 15:18	1
Molybdenum	**0.33**	**J**	2.4	0.097	mg/Kg	☼	06/11/19 08:00	07/15/19 15:18	1
Selenium	**0.54**	**J**	0.59	0.20	mg/Kg	☼	06/11/19 08:00	07/15/19 15:18	1
Thallium	**0.44**	**J**	4.2	0.43	mg/Kg	☼	06/11/19 08:00	07/15/19 19:19	2

Method: 7470A - SEP Mercury (CVAA) - Total

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	**0.053**	**J**	0.12	0.047	mg/Kg	☼	06/11/19 08:00	06/16/19 14:27	1

Client Sample ID: BMW-33 (38-39)
Date Collected: 05/30/19 11:35
Date Received: 06/05/19 09:20

Lab Sample ID: 140-15492-5
Matrix: Solid
Percent Solids: 77.5

Method: 6010B SEP - SEP Metals (ICP) - Step 1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		52	8.3	mg/Kg	☼	06/29/19 08:00	07/11/19 13:45	4
Antimony	ND		15	1.4	mg/Kg	☼	06/29/19 08:00	07/11/19 13:45	4
Arsenic	ND		2.6	0.67	mg/Kg	☼	06/29/19 08:00	07/11/19 13:45	4
Barium	**1.5**	**J**	13	0.62	mg/Kg	☼	06/29/19 08:00	07/11/19 13:45	4
Beryllium	ND		1.3	0.40	mg/Kg	☼	06/29/19 08:00	07/11/19 13:45	4
Cobalt	**0.29**	**J**	13	0.23	mg/Kg	☼	06/29/19 08:00	07/11/19 13:45	4
Iron	ND		26	15	mg/Kg	☼	06/29/19 08:00	07/11/19 13:45	4
Li	ND		13	0.77	mg/Kg	☼	06/29/19 08:00	07/11/19 13:45	4
Manganese	**17**		3.9	0.16	mg/Kg	☼	06/29/19 08:00	07/11/19 13:45	4
Mo	ND		10	0.42	mg/Kg	☼	06/29/19 08:00	07/11/19 13:45	4
Selenium	ND		2.6	0.88	mg/Kg	☼	06/29/19 08:00	07/11/19 13:45	4
Thallium	ND		9.0	1.1	mg/Kg	☼	06/29/19 08:00	07/11/19 13:45	4

Method: 6010B SEP - SEP Metals (ICP) - Step 2

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**10**	**J ***	39	6.2	mg/Kg	☼	06/30/19 08:00	07/11/19 15:14	3
Antimony	ND		12	1.1	mg/Kg	☼	06/30/19 08:00	07/11/19 15:14	3
Arsenic	ND		1.9	0.50	mg/Kg	☼	06/30/19 08:00	07/11/19 15:14	3
Barium	**0.90**	**J ***	9.7	0.46	mg/Kg	☼	06/30/19 08:00	07/11/19 15:14	3
Beryllium	ND	*	0.97	0.062	mg/Kg	☼	06/30/19 08:00	07/11/19 15:14	3
Cobalt	**0.74**	**J**	9.7	0.24	mg/Kg	☼	06/30/19 08:00	07/11/19 15:14	3
Iron	**14**	**J ***	19	11	mg/Kg	☼	06/30/19 08:00	07/11/19 15:14	3
Li	ND		9.7	0.58	mg/Kg	☼	06/30/19 08:00	07/11/19 15:14	3
Manganese	**25**		2.9	1.1	mg/Kg	☼	06/30/19 08:00	07/11/19 15:14	3
Mo	ND		7.7	0.32	mg/Kg	☼	06/30/19 08:00	07/11/19 15:14	3
Selenium	ND		1.9	0.66	mg/Kg	☼	06/30/19 08:00	07/11/19 15:14	3
Thallium	ND		6.8	0.81	mg/Kg	☼	06/30/19 08:00	07/11/19 15:14	3

Method: 6010B SEP - SEP Metals (ICP) - Step 3

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**94**		13	2.7	mg/Kg	☼	07/02/19 08:00	07/11/19 17:03	1
Antimony	ND		3.9	0.36	mg/Kg	☼	07/02/19 08:00	07/11/19 17:03	1
Arsenic	**0.47**	**J**	0.65	0.17	mg/Kg	☼	07/02/19 08:00	07/11/19 17:03	1
Barium	**7.5**	**B**	3.2	0.15	mg/Kg	☼	07/02/19 08:00	07/11/19 17:03	1
Beryllium	**0.028**	**J**	0.32	0.019	mg/Kg	☼	07/02/19 08:00	07/11/19 17:03	1
Cobalt	**1.9**	**J**	3.2	0.058	mg/Kg	☼	07/02/19 08:00	07/11/19 17:03	1
Iron	**510**		6.5	3.7	mg/Kg	☼	07/02/19 08:00	07/11/19 17:03	1
Li	ND		3.2	0.19	mg/Kg	☼	07/02/19 08:00	07/11/19 17:03	1
Manganese	**85**	**B**	0.97	0.035	mg/Kg	☼	07/02/19 08:00	07/11/19 17:03	1
Mo	ND		2.6	0.11	mg/Kg	☼	07/02/19 08:00	07/11/19 17:03	1
Selenium	**0.25**	**J B**	0.65	0.22	mg/Kg	☼	07/02/19 08:00	07/11/19 17:03	1
Thallium	ND		2.3	0.27	mg/Kg	☼	07/02/19 08:00	07/11/19 17:03	1

Method: 6010B SEP - SEP Metals (ICP) - Step 4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**1800**		13	2.1	mg/Kg	☼	07/03/19 08:00	07/11/19 18:45	1
Antimony	ND		3.9	0.58	mg/Kg	☼	07/03/19 08:00	07/11/19 18:45	1
Arsenic	**1.2**	**B**	0.65	0.28	mg/Kg	☼	07/03/19 08:00	07/11/19 18:45	1
Barium	**20**		3.2	0.15	mg/Kg	☼	07/03/19 08:00	07/11/19 18:45	1
Beryllium	**0.20**	**J**	0.32	0.021	mg/Kg	☼	07/03/19 08:00	07/11/19 18:45	1

Client Sample ID: BMW-33 (38-39)
Date Collected: 05/30/19 11:35
Date Received: 06/05/19 09:20

Lab Sample ID: 140-15492-5
Matrix: Solid
Percent Solids: 77.5

Method: 6010B SEP - SEP Metals (ICP) - Step 4 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cobalt	**1.5**	**J**	3.2	0.068	mg/Kg	☼	07/03/19 08:00	07/11/19 18:45	1
Iron	**4900**		6.5	3.7	mg/Kg	☼	07/03/19 08:00	07/11/19 18:45	1
Li	**2.1**	**J**	3.2	0.19	mg/Kg	☼	07/03/19 08:00	07/11/19 18:45	1
Manganese	**55**		0.97	0.17	mg/Kg	☼	07/03/19 08:00	07/11/19 18:45	1
Mo	ND		2.6	0.11	mg/Kg	☼	07/03/19 08:00	07/11/19 18:45	1
Selenium	**0.71**	**B ***	0.65	0.61	mg/Kg	☼	07/03/19 08:00	07/11/19 18:45	1
Thallium	ND		2.3	0.37	mg/Kg	☼	07/03/19 08:00	07/11/19 18:45	1

Method: 6010B SEP - SEP Metals (ICP) - Step 5

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**64**	**J ***	190	30	mg/Kg	☼	07/10/19 08:00	07/12/19 12:53	5
Antimony	ND		58	5.4	mg/Kg	☼	07/10/19 08:00	07/12/19 12:53	5
Arsenic	ND		9.7	2.5	mg/Kg	☼	07/10/19 08:00	07/12/19 12:53	5
Barium	**4.1**	**J ***	48	2.3	mg/Kg	☼	07/10/19 08:00	07/12/19 12:53	5
Beryllium	ND	*	4.8	0.41	mg/Kg	☼	07/10/19 08:00	07/12/19 12:53	5
Cobalt	ND	*	48	0.77	mg/Kg	☼	07/10/19 08:00	07/12/19 12:53	5
Iron	ND	*	97	57	mg/Kg	☼	07/10/19 08:00	07/12/19 12:53	5
Li	ND		48	2.8	mg/Kg	☼	07/10/19 08:00	07/12/19 12:53	5
Manganese	ND	*	15	2.4	mg/Kg	☼	07/10/19 08:00	07/12/19 12:53	5
Mo	ND		39	1.6	mg/Kg	☼	07/10/19 08:00	07/12/19 12:53	5
Selenium	ND		9.7	3.4	mg/Kg	☼	07/10/19 08:00	07/12/19 12:53	5
Thallium	ND	*	34	4.5	mg/Kg	☼	07/10/19 08:00	07/12/19 12:53	5

Method: 6010B SEP - SEP Metals (ICP) - Step 6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**3400**		13	2.1	mg/Kg	☼	07/10/19 08:00	07/12/19 14:21	1
Antimony	ND		3.9	0.36	mg/Kg	☼	07/10/19 08:00	07/12/19 14:21	1
Arsenic	**0.85**		0.65	0.19	mg/Kg	☼	07/10/19 08:00	07/12/19 14:21	1
Barium	**13**		3.2	0.15	mg/Kg	☼	07/10/19 08:00	07/12/19 14:21	1
Beryllium	**0.11**	**J**	0.32	0.015	mg/Kg	☼	07/10/19 08:00	07/12/19 14:21	1
Cobalt	**1.1**	**J**	3.2	0.059	mg/Kg	☼	07/10/19 08:00	07/12/19 14:21	1
Iron	**3900**		6.5	3.7	mg/Kg	☼	07/10/19 08:00	07/12/19 14:21	1
Li	**2.1**	**J**	3.2	0.19	mg/Kg	☼	07/10/19 08:00	07/12/19 14:21	1
Manganese	**22**		0.97	0.32	mg/Kg	☼	07/10/19 08:00	07/12/19 14:21	1
Mo	ND		2.6	0.13	mg/Kg	☼	07/10/19 08:00	07/12/19 14:21	1
Selenium	ND		0.65	0.22	mg/Kg	☼	07/10/19 08:00	07/12/19 14:21	1
Thallium	ND		2.3	0.27	mg/Kg	☼	07/10/19 08:00	07/12/19 14:21	1

Method: 6010B SEP - SEP Metals (ICP) - Step 7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**48000**		130	21	mg/Kg	☼	07/12/19 09:08	07/15/19 14:04	10
Antimony	ND		3.9	0.18	mg/Kg	☼	07/12/19 09:08	07/15/19 12:37	1
Arsenic	**0.64**	**J**	0.65	0.17	mg/Kg	☼	07/12/19 09:08	07/15/19 12:37	1
Barium	**550**		32	1.5	mg/Kg	☼	07/12/19 09:08	07/15/19 14:04	10
Beryllium	**0.69**		0.32	0.0097	mg/Kg	☼	07/12/19 09:08	07/15/19 12:37	1
Cobalt	**0.57**	**J**	6.5	0.39	mg/Kg	☼	07/12/19 09:08	07/15/19 17:52	2
Iron	**6100**		6.5	5.3	mg/Kg	☼	07/12/19 09:08	07/15/19 12:37	1
Li	**9.1**		3.2	0.19	mg/Kg	☼	07/12/19 09:08	07/15/19 12:37	1
Manganese	**30**		0.97	0.067	mg/Kg	☼	07/12/19 09:08	07/15/19 12:37	1
Mo	ND		2.6	0.11	mg/Kg	☼	07/12/19 09:08	07/15/19 12:37	1

Client Sample ID: BMW-33 (38-39)
Date Collected: 05/30/19 11:35
Date Received: 06/05/19 09:20

Lab Sample ID: 140-15492-5
Matrix: Solid
Percent Solids: 77.5

Method: 6010B SEP - SEP Metals (ICP) - Step 7 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Selenium	ND		0.65	0.22	mg/Kg	☼	07/12/19 09:08	07/15/19 12:37	1
Thallium	ND		4.5	0.46	mg/Kg	☼	07/12/19 09:08	07/15/19 17:52	2

Method: 6010B SEP - SEP Metals (ICP) - Sum of Steps 1-7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**54000**		10	1.6	mg/Kg			07/16/19 17:31	1
Antimony	ND		3.0	0.14	mg/Kg			07/16/19 17:31	1
Arsenic	**3.2**		0.50	0.13	mg/Kg			07/16/19 17:31	1
Barium	**590**		2.5	0.12	mg/Kg			07/16/19 17:31	1
Beryllium	**1.0**		0.25	0.0075	mg/Kg			07/16/19 17:31	1
Cobalt	**6.1**		2.5	0.023	mg/Kg			07/16/19 17:31	1
Iron	**15000**		5.0	4.1	mg/Kg			07/16/19 17:31	1
Li	**13**		2.5	0.15	mg/Kg			07/16/19 17:31	1
Manganese	**230**		0.75	0.052	mg/Kg			07/16/19 17:31	1
Mo	ND		2.0	0.082	mg/Kg			07/16/19 17:31	1
Selenium	**0.95**		0.50	0.17	mg/Kg			07/16/19 17:31	1
Thallium	ND		1.8	0.18	mg/Kg			07/16/19 17:31	1

Method: 6010B - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		24	12	mg/Kg	☼	06/26/19 08:00	07/10/19 12:54	1
Chromium	**14**		1.8	0.27	mg/Kg	☼	06/26/19 08:00	07/10/19 12:54	1
Lead	**5.9**		1.8	0.34	mg/Kg	☼	06/26/19 08:00	07/10/19 12:54	1

Method: 6010B - SEP Metals (ICP) - Total

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**73000**		130	21	mg/Kg	☼	06/11/19 08:00	07/15/19 16:40	10
Antimony	ND		3.9	0.18	mg/Kg	☼	06/11/19 08:00	07/15/19 15:23	1
Arsenic	**3.2**		0.65	0.17	mg/Kg	☼	06/11/19 08:00	07/15/19 15:23	1
Barium	**830**		32	1.5	mg/Kg	☼	06/11/19 08:00	07/15/19 16:40	10
Beryllium	**1.0**		0.32	0.0097	mg/Kg	☼	06/11/19 08:00	07/15/19 15:23	1
Cobalt	**4.6**	**J**	16	0.97	mg/Kg	☼	06/11/19 08:00	07/15/19 19:24	5
Iron	**13000**		6.5	5.3	mg/Kg	☼	06/11/19 08:00	07/15/19 15:23	1
Lithium	**14**		3.2	0.19	mg/Kg	☼	06/11/19 08:00	07/15/19 15:23	1
Manganese	**130**		0.97	0.067	mg/Kg	☼	06/11/19 08:00	07/15/19 15:23	1
Molybdenum	**0.22**	**J**	2.6	0.11	mg/Kg	☼	06/11/19 08:00	07/15/19 15:23	1
Selenium	ND		0.65	0.22	mg/Kg	☼	06/11/19 08:00	07/15/19 15:23	1
Thallium	ND		11	1.2	mg/Kg	☼	06/11/19 08:00	07/15/19 19:24	5

Method: 7470A - SEP Mercury (CVAA) - Total

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	ND		0.13	0.052	mg/Kg	☼	06/11/19 08:00	06/16/19 14:29	1

Default Detection Limits

Client: Golder Associates Inc.
Job ID: 140-15492-1
Project/Site: Martin Lake A1 Area LF SEP + Totals

Method: 6010B SEP - SEP Metals (ICP) - Step 1

Prep: 3010A

SEP: Exchangeable

Analyte	RL	MDL	Units
Aluminum	10	1.6	mg/Kg
Antimony	3.0	0.28	mg/Kg
Arsenic	0.50	0.13	mg/Kg
Barium	2.5	0.12	mg/Kg
Beryllium	0.25	0.077	mg/Kg
Cobalt	2.5	0.045	mg/Kg
Iron	5.0	2.9	mg/Kg
Li	2.5	0.15	mg/Kg
Manganese	0.75	0.031	mg/Kg
Mo	2.0	0.082	mg/Kg
Selenium	0.50	0.17	mg/Kg
Thallium	1.8	0.21	mg/Kg

Method: 6010B SEP - SEP Metals (ICP) - Step 2

Prep: 3010A

SEP: Carbonate

Analyte	RL	MDL	Units
Aluminum	10	1.6	mg/Kg
Antimony	3.0	0.28	mg/Kg
Arsenic	0.50	0.13	mg/Kg
Barium	2.5	0.12	mg/Kg
Beryllium	0.25	0.016	mg/Kg
Cobalt	2.5	0.063	mg/Kg
Iron	5.0	2.9	mg/Kg
Li	2.5	0.15	mg/Kg
Manganese	0.75	0.28	mg/Kg
Mo	2.0	0.082	mg/Kg
Selenium	0.50	0.17	mg/Kg
Thallium	1.8	0.21	mg/Kg

Method: 6010B SEP - SEP Metals (ICP) - Step 3

Prep: 3010A

SEP: Non-Crystalline

Analyte	RL	MDL	Units
Aluminum	10	2.1	mg/Kg
Antimony	3.0	0.28	mg/Kg
Arsenic	0.50	0.13	mg/Kg
Barium	2.5	0.12	mg/Kg
Beryllium	0.25	0.015	mg/Kg
Cobalt	2.5	0.045	mg/Kg
Iron	5.0	2.9	mg/Kg
Li	2.5	0.15	mg/Kg
Manganese	0.75	0.027	mg/Kg
Mo	2.0	0.082	mg/Kg
Selenium	0.50	0.17	mg/Kg
Thallium	1.8	0.21	mg/Kg

Method: 6010B SEP - SEP Metals (ICP) - Step 4

Prep: 3010A

SEP: Metal Hydroxide

Default Detection Limits

Client: Golder Associates Inc.
Job ID: 140-15492-1
Project/Site: Martin Lake A1 Area LF SEP + Totals

Method: 6010B SEP - SEP Metals (ICP) - Step 4

Prep: 3010A

SEP: Metal Hydroxide

Analyte	RL	MDL	Units
Aluminum	10	1.6	mg/Kg
Antimony	3.0	0.45	mg/Kg
Arsenic	0.50	0.22	mg/Kg
Barium	2.5	0.12	mg/Kg
Beryllium	0.25	0.016	mg/Kg
Cobalt	2.5	0.053	mg/Kg
Iron	5.0	2.9	mg/Kg
Li	2.5	0.15	mg/Kg
Manganese	0.75	0.13	mg/Kg
Mo	2.0	0.082	mg/Kg
Selenium	0.50	0.47	mg/Kg
Thallium	1.8	0.29	mg/Kg

Method: 6010B SEP - SEP Metals (ICP) - Step 5

Prep: 3010A

SEP: Organic-Bound

Analyte	RL	MDL	Units
Aluminum	30	4.7	mg/Kg
Antimony	9.0	0.84	mg/Kg
Arsenic	1.5	0.38	mg/Kg
Barium	7.5	0.36	mg/Kg
Beryllium	0.75	0.063	mg/Kg
Cobalt	7.5	0.12	mg/Kg
Iron	15	8.8	mg/Kg
Li	7.5	0.44	mg/Kg
Manganese	2.3	0.37	mg/Kg
Mo	6.0	0.25	mg/Kg
Selenium	1.5	0.52	mg/Kg
Thallium	5.3	0.70	mg/Kg

Method: 6010B SEP - SEP Metals (ICP) - Step 6

SEP: Acid/Sulfide

Analyte	RL	MDL	Units
Aluminum	10	1.6	mg/Kg
Antimony	3.0	0.28	mg/Kg
Arsenic	0.50	0.15	mg/Kg
Barium	2.5	0.12	mg/Kg
Beryllium	0.25	0.012	mg/Kg
Cobalt	2.5	0.046	mg/Kg
Iron	5.0	2.9	mg/Kg
Li	2.5	0.15	mg/Kg
Manganese	0.75	0.25	mg/Kg
Mo	2.0	0.099	mg/Kg
Selenium	0.50	0.17	mg/Kg
Thallium	1.8	0.21	mg/Kg

Method: 6010B SEP - SEP Metals (ICP) - Step 7

Prep: Residual

Analyte	RL	MDL	Units
Aluminum	10	1.6	mg/Kg

Method: 6010B SEP - SEP Metals (ICP) - Step 7 (Continued)

Prep: Residual

Analyte	RL	MDL	Units
Antimony	3.0	0.14	mg/Kg
Arsenic	0.50	0.13	mg/Kg
Barium	2.5	0.12	mg/Kg
Beryllium	0.25	0.0075	mg/Kg
Cobalt	2.5	0.15	mg/Kg
Iron	5.0	4.1	mg/Kg
Li	2.5	0.15	mg/Kg
Manganese	0.75	0.052	mg/Kg
Mo	2.0	0.082	mg/Kg
Selenium	0.50	0.17	mg/Kg
Thallium	1.8	0.18	mg/Kg

Method: 6010B SEP - SEP Metals (ICP) - Sum of Steps 1-7

Analyte	RL	MDL	Units
Aluminum	10	1.6	mg/Kg
Antimony	3.0	0.14	mg/Kg
Arsenic	0.50	0.13	mg/Kg
Barium	2.5	0.12	mg/Kg
Beryllium	0.25	0.0075	mg/Kg
Cobalt	2.5	0.023	mg/Kg
Iron	5.0	4.1	mg/Kg
Li	2.5	0.15	mg/Kg
Manganese	0.75	0.052	mg/Kg
Mo	2.0	0.082	mg/Kg
Selenium	0.50	0.17	mg/Kg
Thallium	1.8	0.18	mg/Kg

Method: 6010B - Metals (ICP)

Prep: 3050B

Analyte	RL	MDL	Units
Boron	20	10	mg/Kg
Chromium	1.5	0.22	mg/Kg
Lead	1.5	0.28	mg/Kg

Method: 6010B - SEP Metals (ICP) - Total

Prep: Total

Analyte	RL	MDL	Units
Aluminum	10	1.6	mg/Kg
Antimony	3.0	0.14	mg/Kg
Arsenic	0.50	0.13	mg/Kg
Barium	2.5	0.12	mg/Kg
Beryllium	0.25	0.0075	mg/Kg
Cobalt	2.5	0.15	mg/Kg
Iron	5.0	4.1	mg/Kg
Lithium	2.5	0.15	mg/Kg
Manganese	0.75	0.052	mg/Kg
Molybdenum	2.0	0.082	mg/Kg
Selenium	0.50	0.17	mg/Kg
Thallium	1.8	0.18	mg/Kg

Method: 7470A - SEP Mercury (CVAA) - Total

Default Detection Limits

Client: Golder Associates Inc.
Job ID: 140-15492-1
Project/Site: Martin Lake A1 Area LF SEP + Totals

Method: 7470A - SEP Mercury (CVAA) - Total

Prep: Total

Analyte	RL	MDL	Units
Hg	0.10	0.040	mg/Kg

Method: 6010B - Metals (ICP)

Lab Sample ID: MB 140-31128/14-A
Matrix: Solid
Analysis Batch: 31553

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 31128

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		20	10	mg/Kg		06/26/19 08:00	07/10/19 11:42	1
Chromium	ND		1.5	0.22	mg/Kg		06/26/19 08:00	07/10/19 11:42	1
Lead	ND		1.5	0.28	mg/Kg		06/26/19 08:00	07/10/19 11:42	1

Lab Sample ID: LCS 140-31128/15-A
Matrix: Solid
Analysis Batch: 31553

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 31128

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	100	101		mg/Kg		101	80 - 120
Chromium	20.0	20.3		mg/Kg		101	90 - 110
Lead	10.0	10.1		mg/Kg		101	90 - 110

Method: 6010B - SEP Metals (ICP) - Total

Lab Sample ID: MB 140-30683/13-A
Matrix: Solid
Analysis Batch: 31713

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 30683

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		10	1.6	mg/Kg		06/11/19 08:00	07/15/19 11:13	1
Antimony	ND		3.0	0.14	mg/Kg		06/11/19 08:00	07/15/19 11:13	1
Arsenic	ND		0.50	0.13	mg/Kg		06/11/19 08:00	07/15/19 11:13	1
Barium	ND		2.5	0.12	mg/Kg		06/11/19 08:00	07/15/19 11:13	1
Beryllium	ND		0.25	0.0075	mg/Kg		06/11/19 08:00	07/15/19 11:13	1
Cobalt	ND		2.5	0.15	mg/Kg		06/11/19 08:00	07/15/19 11:13	1
Iron	ND		5.0	4.1	mg/Kg		06/11/19 08:00	07/15/19 11:13	1
Lithium	ND		2.5	0.15	mg/Kg		06/11/19 08:00	07/15/19 11:13	1
Manganese	ND		0.75	0.052	mg/Kg		06/11/19 08:00	07/15/19 11:13	1
Molybdenum	ND		2.0	0.082	mg/Kg		06/11/19 08:00	07/15/19 11:13	1
Selenium	ND		0.50	0.17	mg/Kg		06/11/19 08:00	07/15/19 11:13	1
Thallium	ND		1.8	0.18	mg/Kg		06/11/19 08:00	07/15/19 11:13	1

Lab Sample ID: LCS 140-30683/14-A
Matrix: Solid
Analysis Batch: 31713

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 30683

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aluminum	100	97.6		mg/Kg		98	75 - 125
Antimony	25.0	25.9		mg/Kg		103	75 - 125
Arsenic	5.00	5.29		mg/Kg		106	75 - 125
Barium	5.00	4.99		mg/Kg		100	75 - 125
Beryllium	2.50	2.51		mg/Kg		100	75 - 125
Cobalt	5.00	5.20		mg/Kg		104	75 - 125
Iron	50.0	51.1		mg/Kg		102	75 - 125
Lithium	5.00	5.12		mg/Kg		102	75 - 125
Manganese	5.00	5.21		mg/Kg		104	75 - 125
Molybdenum	25.0	26.6		mg/Kg		106	75 - 125
Selenium	7.50	7.55		mg/Kg		101	75 - 125

Method: 6010B - SEP Metals (ICP) - Total (Continued)

Lab Sample ID: LCS 140-30683/14-A
Matrix: Solid
Analysis Batch: 31713

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 30683

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Thallium	20.0	21.2		mg/Kg		106	75 - 125

Lab Sample ID: LCSD 140-30683/15-A
Matrix: Solid
Analysis Batch: 31713

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 30683

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Aluminum	100	97.0		mg/Kg		97	75 - 125	1	30
Antimony	25.0	25.9		mg/Kg		104	75 - 125	0	30
Arsenic	5.00	5.24		mg/Kg		105	75 - 125	1	30
Barium	5.00	4.95		mg/Kg		99	75 - 125	1	30
Beryllium	2.50	2.48		mg/Kg		99	75 - 125	1	30
Cobalt	5.00	5.16		mg/Kg		103	75 - 125	1	30
Iron	50.0	50.4		mg/Kg		101	75 - 125	1	30
Lithium	5.00	5.04		mg/Kg		101	75 - 125	2	30
Manganese	5.00	5.16		mg/Kg		103	75 - 125	1	30
Molybdenum	25.0	26.5		mg/Kg		106	75 - 125	0	30
Selenium	7.50	7.47		mg/Kg		100	75 - 125	1	30
Thallium	20.0	21.2		mg/Kg		106	75 - 125	0	30

Method: 6010B SEP - SEP Metals (ICP)

Lab Sample ID: MB 140-31148/13-B ^4
Matrix: Solid
Analysis Batch: 31604

Client Sample ID: Method Blank
Prep Type: Step 1
Prep Batch: 31252

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		40	6.4	mg/Kg		06/29/19 08:00	07/11/19 12:33	4
Antimony	ND		12	1.1	mg/Kg		06/29/19 08:00	07/11/19 12:33	4
Arsenic	ND		2.0	0.52	mg/Kg		06/29/19 08:00	07/11/19 12:33	4
Barium	ND		10	0.48	mg/Kg		06/29/19 08:00	07/11/19 12:33	4
Beryllium	ND		1.0	0.31	mg/Kg		06/29/19 08:00	07/11/19 12:33	4
Cobalt	ND		10	0.18	mg/Kg		06/29/19 08:00	07/11/19 12:33	4
Iron	ND		20	12	mg/Kg		06/29/19 08:00	07/11/19 12:33	4
Li	ND		10	0.60	mg/Kg		06/29/19 08:00	07/11/19 12:33	4
Manganese	ND		3.0	0.12	mg/Kg		06/29/19 08:00	07/11/19 12:33	4
Mo	ND		8.0	0.33	mg/Kg		06/29/19 08:00	07/11/19 12:33	4
Selenium	ND		2.0	0.68	mg/Kg		06/29/19 08:00	07/11/19 12:33	4
Thallium	ND		7.0	0.84	mg/Kg		06/29/19 08:00	07/11/19 12:33	4

Lab Sample ID: LCS 140-31148/14-B ^5
Matrix: Solid
Analysis Batch: 31604

Client Sample ID: Lab Control Sample
Prep Type: Step 1
Prep Batch: 31252

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aluminum	100	97.0		mg/Kg		97	75 - 125
Antimony	25.0	24.5		mg/Kg		98	75 - 125
Arsenic	5.00	4.89		mg/Kg		98	75 - 125
Barium	5.00	4.35	J	mg/Kg		87	75 - 125
Beryllium	2.50	2.58		mg/Kg		103	75 - 125

Method: 6010B SEP - SEP Metals (ICP) (Continued)

Lab Sample ID: LCS 140-31148/14-B ^5
Matrix: Solid
Analysis Batch: 31604

Client Sample ID: Lab Control Sample
Prep Type: Step 1
Prep Batch: 31252

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cobalt	5.00	4.93	J	mg/Kg		99	75 - 125
Iron	50.0	49.6		mg/Kg		99	75 - 125
Li	5.00	4.72	J	mg/Kg		94	75 - 125
Manganese	5.00	5.09		mg/Kg		102	75 - 125
Mo	25.0	25.0		mg/Kg		100	75 - 125
Selenium	7.50	7.82		mg/Kg		104	75 - 125
Thallium	20.0	19.7		mg/Kg		98	75 - 125

Lab Sample ID: LCSD 140-31148/15-B ^5
Matrix: Solid
Analysis Batch: 31604

Client Sample ID: Lab Control Sample Dup
Prep Type: Step 1
Prep Batch: 31252

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Aluminum	100	99.5		mg/Kg		100	75 - 125	3	30
Antimony	25.0	24.7		mg/Kg		99	75 - 125	1	30
Arsenic	5.00	4.78		mg/Kg		96	75 - 125	2	30
Barium	5.00	4.30	J	mg/Kg		86	75 - 125	1	30
Beryllium	2.50	2.59		mg/Kg		104	75 - 125	0	30
Cobalt	5.00	4.89	J	mg/Kg		98	75 - 125	1	30
Iron	50.0	49.5		mg/Kg		99	75 - 125	0	30
Li	5.00	4.84	J	mg/Kg		97	75 - 125	3	30
Manganese	5.00	5.06		mg/Kg		101	75 - 125	1	30
Mo	25.0	25.1		mg/Kg		100	75 - 125	0	30
Selenium	7.50	8.06		mg/Kg		108	75 - 125	3	30
Thallium	20.0	20.1		mg/Kg		101	75 - 125	2	30

Lab Sample ID: MB 140-31253/13-B ^3
Matrix: Solid
Analysis Batch: 31604

Client Sample ID: Method Blank
Prep Type: Step 2
Prep Batch: 31256

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		30	4.8	mg/Kg		06/30/19 08:00	07/11/19 14:06	3
Antimony	ND		9.0	0.84	mg/Kg		06/30/19 08:00	07/11/19 14:06	3
Arsenic	ND		1.5	0.39	mg/Kg		06/30/19 08:00	07/11/19 14:06	3
Barium	ND		7.5	0.36	mg/Kg		06/30/19 08:00	07/11/19 14:06	3
Beryllium	ND		0.75	0.048	mg/Kg		06/30/19 08:00	07/11/19 14:06	3
Cobalt	ND		7.5	0.19	mg/Kg		06/30/19 08:00	07/11/19 14:06	3
Iron	ND		15	8.7	mg/Kg		06/30/19 08:00	07/11/19 14:06	3
Li	ND		7.5	0.45	mg/Kg		06/30/19 08:00	07/11/19 14:06	3
Manganese	ND		2.3	0.84	mg/Kg		06/30/19 08:00	07/11/19 14:06	3
Mo	ND		6.0	0.25	mg/Kg		06/30/19 08:00	07/11/19 14:06	3
Selenium	0.587	J	1.5	0.51	mg/Kg		06/30/19 08:00	07/11/19 14:06	3
Thallium	ND		5.3	0.63	mg/Kg		06/30/19 08:00	07/11/19 14:06	3

Method: 6010B SEP - SEP Metals (ICP) (Continued)

Lab Sample ID: LCS 140-31253/14-B ^5
Matrix: Solid
Analysis Batch: 31604

Client Sample ID: Lab Control Sample
Prep Type: Step 2
Prep Batch: 31256

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aluminum	100	ND	*	mg/Kg		1	75 - 125
Antimony	25.0	21.1		mg/Kg		84	75 - 125
Arsenic	5.00	3.95		mg/Kg		79	75 - 125
Barium	5.00	2.28	J *	mg/Kg		46	75 - 125
Beryllium	2.50	1.35	*	mg/Kg		54	75 - 125
Cobalt	5.00	4.62	J	mg/Kg		92	75 - 125
Iron	50.0	ND	*	mg/Kg		2	75 - 125
Li	5.00	4.14	J	mg/Kg		83	75 - 125
Manganese	5.00	4.79		mg/Kg		96	75 - 125
Mo	25.0	20.7		mg/Kg		83	75 - 125
Selenium	7.50	7.34		mg/Kg		98	75 - 125
Thallium	20.0	18.4		mg/Kg		92	75 - 125

Lab Sample ID: LCSD 140-31253/15-B ^5
Matrix: Solid
Analysis Batch: 31604

Client Sample ID: Lab Control Sample Dup
Prep Type: Step 2
Prep Batch: 31256

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Aluminum	100	ND	*	mg/Kg		-0.3	75 - 125	289	30
Antimony	25.0	21.4		mg/Kg		86	75 - 125	1	30
Arsenic	5.00	4.00		mg/Kg		80	75 - 125	1	30
Barium	5.00	2.28	J *	mg/Kg		46	75 - 125	0	30
Beryllium	2.50	1.32	*	mg/Kg		53	75 - 125	2	30
Cobalt	5.00	4.62	J	mg/Kg		92	75 - 125	0	30
Iron	50.0	ND	*	mg/Kg		3	75 - 125	28	30
Li	5.00	4.15	J	mg/Kg		83	75 - 125	0	30
Manganese	5.00	4.76		mg/Kg		95	75 - 125	1	30
Mo	25.0	20.9		mg/Kg		84	75 - 125	1	30
Selenium	7.50	6.68		mg/Kg		89	75 - 125	10	30
Thallium	20.0	18.6		mg/Kg		93	75 - 125	1	30

Lab Sample ID: MB 140-31257/13-B
Matrix: Solid
Analysis Batch: 31604

Client Sample ID: Method Blank
Prep Type: Step 3
Prep Batch: 31338

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		10	2.1	mg/Kg		07/02/19 08:00	07/11/19 15:50	1
Antimony	ND		3.0	0.28	mg/Kg		07/02/19 08:00	07/11/19 15:50	1
Arsenic	ND		0.50	0.13	mg/Kg		07/02/19 08:00	07/11/19 15:50	1
Barium	0.151	J	2.5	0.12	mg/Kg		07/02/19 08:00	07/11/19 15:50	1
Beryllium	ND		0.25	0.015	mg/Kg		07/02/19 08:00	07/11/19 15:50	1
Cobalt	ND		2.5	0.045	mg/Kg		07/02/19 08:00	07/11/19 15:50	1
Iron	ND		5.0	2.9	mg/Kg		07/02/19 08:00	07/11/19 15:50	1
Li	ND		2.5	0.15	mg/Kg		07/02/19 08:00	07/11/19 15:50	1
Manganese	0.0515	J	0.75	0.027	mg/Kg		07/02/19 08:00	07/11/19 15:50	1
Mo	ND		2.0	0.082	mg/Kg		07/02/19 08:00	07/11/19 15:50	1
Selenium	0.197	J	0.50	0.17	mg/Kg		07/02/19 08:00	07/11/19 15:50	1
Thallium	ND		1.8	0.21	mg/Kg		07/02/19 08:00	07/11/19 15:50	1

Method: 6010B SEP - SEP Metals (ICP) (Continued)

Lab Sample ID: LCS 140-31257/14-B
Matrix: Solid
Analysis Batch: 31604

Client Sample ID: Lab Control Sample
Prep Type: Step 3
Prep Batch: 31338

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aluminum	100	95.8		mg/Kg		96	75 - 125
Antimony	25.0	24.3		mg/Kg		97	75 - 125
Arsenic	5.00	4.90		mg/Kg		98	75 - 125
Barium	5.00	4.34		mg/Kg		87	75 - 125
Beryllium	2.50	2.56		mg/Kg		102	75 - 125
Cobalt	5.00	4.90		mg/Kg		98	75 - 125
Iron	50.0	54.0		mg/Kg		108	75 - 125
Li	5.00	4.87		mg/Kg		97	75 - 125
Manganese	5.00	5.03		mg/Kg		101	75 - 125
Mo	25.0	24.8		mg/Kg		99	75 - 125
Selenium	7.50	7.37		mg/Kg		98	75 - 125
Thallium	20.0	20.2		mg/Kg		101	75 - 125

Lab Sample ID: LCSD 140-31257/15-B
Matrix: Solid
Analysis Batch: 31604

Client Sample ID: Lab Control Sample Dup
Prep Type: Step 3
Prep Batch: 31338

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Aluminum	100	98.1		mg/Kg		98	75 - 125	2	30
Antimony	25.0	24.6		mg/Kg		98	75 - 125	1	30
Arsenic	5.00	5.06		mg/Kg		101	75 - 125	3	30
Barium	5.00	4.49		mg/Kg		90	75 - 125	3	30
Beryllium	2.50	2.61		mg/Kg		104	75 - 125	2	30
Cobalt	5.00	4.97		mg/Kg		99	75 - 125	1	30
Iron	50.0	51.0		mg/Kg		102	75 - 125	6	30
Li	5.00	4.95		mg/Kg		99	75 - 125	2	30
Manganese	5.00	5.06		mg/Kg		101	75 - 125	1	30
Mo	25.0	24.9		mg/Kg		100	75 - 125	0	30
Selenium	7.50	7.63		mg/Kg		102	75 - 125	3	30
Thallium	20.0	20.5		mg/Kg		103	75 - 125	2	30

Lab Sample ID: MB 140-31341/13-B
Matrix: Solid
Analysis Batch: 31604

Client Sample ID: Method Blank
Prep Type: Step 4
Prep Batch: 31360

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		10	1.6	mg/Kg		07/03/19 08:00	07/11/19 17:24	1
Antimony	ND		3.0	0.45	mg/Kg		07/03/19 08:00	07/11/19 17:24	1
Arsenic	0.260	J	0.50	0.22	mg/Kg		07/03/19 08:00	07/11/19 17:24	1
Barium	ND		2.5	0.12	mg/Kg		07/03/19 08:00	07/11/19 17:24	1
Beryllium	ND		0.25	0.016	mg/Kg		07/03/19 08:00	07/11/19 17:24	1
Cobalt	ND		2.5	0.053	mg/Kg		07/03/19 08:00	07/11/19 17:24	1
Iron	ND		5.0	2.9	mg/Kg		07/03/19 08:00	07/11/19 17:24	1
Li	ND		2.5	0.15	mg/Kg		07/03/19 08:00	07/11/19 17:24	1
Manganese	ND		0.75	0.13	mg/Kg		07/03/19 08:00	07/11/19 17:24	1
Mo	ND		2.0	0.082	mg/Kg		07/03/19 08:00	07/11/19 17:24	1
Selenium	0.561		0.50	0.47	mg/Kg		07/03/19 08:00	07/11/19 17:24	1
Thallium	ND		1.8	0.29	mg/Kg		07/03/19 08:00	07/11/19 17:24	1

Method: 6010B SEP - SEP Metals (ICP) (Continued)

Lab Sample ID: LCS 140-31341/14-B
Matrix: Solid
Analysis Batch: 31604

Client Sample ID: Lab Control Sample
Prep Type: Step 4
Prep Batch: 31360

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aluminum	100	98.4		mg/Kg		98	75 - 125
Antimony	25.0	25.6		mg/Kg		102	75 - 125
Arsenic	5.00	5.48		mg/Kg		110	75 - 125
Barium	5.00	4.90		mg/Kg		98	75 - 125
Beryllium	2.50	2.66		mg/Kg		106	75 - 125
Cobalt	5.00	4.92		mg/Kg		98	75 - 125
Iron	50.0	50.0		mg/Kg		100	75 - 125
Li	5.00	4.92		mg/Kg		98	75 - 125
Manganese	5.00	4.98		mg/Kg		100	75 - 125
Mo	25.0	25.7		mg/Kg		103	75 - 125
Selenium	7.50	0.762	*	mg/Kg		10	75 - 125
Thallium	20.0	17.2		mg/Kg		86	75 - 125

Lab Sample ID: LCSD 140-31341/15-B
Matrix: Solid
Analysis Batch: 31604

Client Sample ID: Lab Control Sample Dup
Prep Type: Step 4
Prep Batch: 31360

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Aluminum	100	101		mg/Kg		101	75 - 125	3	30
Antimony	25.0	25.9		mg/Kg		103	75 - 125	1	30
Arsenic	5.00	5.55		mg/Kg		111	75 - 125	1	30
Barium	5.00	5.04		mg/Kg		101	75 - 125	3	30
Beryllium	2.50	2.74		mg/Kg		109	75 - 125	3	30
Cobalt	5.00	5.07		mg/Kg		101	75 - 125	3	30
Iron	50.0	51.5		mg/Kg		103	75 - 125	3	30
Li	5.00	5.09		mg/Kg		102	75 - 125	3	30
Manganese	5.00	5.13		mg/Kg		103	75 - 125	3	30
Mo	25.0	25.9		mg/Kg		104	75 - 125	1	30
Selenium	7.50	0.631	*	mg/Kg		8	75 - 125	19	30
Thallium	20.0	17.9		mg/Kg		89	75 - 125	4	30

Lab Sample ID: MB 140-31436/13-B ^5
Matrix: Solid
Analysis Batch: 31651

Client Sample ID: Method Blank
Prep Type: Step 5
Prep Batch: 31500

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		150	24	mg/Kg		07/10/19 08:00	07/12/19 11:39	5
Antimony	ND		45	4.2	mg/Kg		07/10/19 08:00	07/12/19 11:39	5
Arsenic	ND		7.5	1.9	mg/Kg		07/10/19 08:00	07/12/19 11:39	5
Barium	ND		38	1.8	mg/Kg		07/10/19 08:00	07/12/19 11:39	5
Beryllium	ND		3.8	0.32	mg/Kg		07/10/19 08:00	07/12/19 11:39	5
Cobalt	ND		38	0.60	mg/Kg		07/10/19 08:00	07/12/19 11:39	5
Iron	ND		75	44	mg/Kg		07/10/19 08:00	07/12/19 11:39	5
Li	ND		38	2.2	mg/Kg		07/10/19 08:00	07/12/19 11:39	5
Manganese	ND		11	1.9	mg/Kg		07/10/19 08:00	07/12/19 11:39	5
Mo	ND		30	1.3	mg/Kg		07/10/19 08:00	07/12/19 11:39	5
Selenium	ND		7.5	2.6	mg/Kg		07/10/19 08:00	07/12/19 11:39	5
Thallium	ND		26	3.5	mg/Kg		07/10/19 08:00	07/12/19 11:39	5

Method: 6010B SEP - SEP Metals (ICP) (Continued)

Lab Sample ID: LCS 140-31436/14-B ^5
Matrix: Solid
Analysis Batch: 31651

Client Sample ID: Lab Control Sample
Prep Type: Step 5
Prep Batch: 31500

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aluminum	300	ND	*	mg/Kg		6	75 - 125
Antimony	75.0	81.2		mg/Kg		108	75 - 125
Arsenic	15.0	12.3		mg/Kg		82	75 - 125
Barium	15.0	7.80	J *	mg/Kg		52	75 - 125
Beryllium	7.50	4.23	*	mg/Kg		56	75 - 125
Cobalt	15.0	4.86	J *	mg/Kg		32	75 - 125
Iron	150	ND	*	mg/Kg		2	75 - 125
Li	15.0	16.4	J	mg/Kg		109	75 - 125
Manganese	15.0	4.82	J *	mg/Kg		32	75 - 125
Mo	75.0	64.7		mg/Kg		86	75 - 125
Selenium	22.5	24.8		mg/Kg		110	75 - 125
Thallium	60.0	ND	*	mg/Kg		2	75 - 125

Lab Sample ID: LCSD 140-31436/15-B ^5
Matrix: Solid
Analysis Batch: 31651

Client Sample ID: Lab Control Sample Dup
Prep Type: Step 5
Prep Batch: 31500

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Aluminum	300	ND	*	mg/Kg		7	75 - 125	14	30
Antimony	75.0	82.5		mg/Kg		110	75 - 125	2	30
Arsenic	15.0	12.5		mg/Kg		83	75 - 125	2	30
Barium	15.0	7.73	J *	mg/Kg		52	75 - 125	1	30
Beryllium	7.50	4.34	*	mg/Kg		58	75 - 125	2	30
Cobalt	15.0	5.05	J *	mg/Kg		34	75 - 125	4	30
Iron	150	ND	*	mg/Kg		3	75 - 125	55	30
Li	15.0	16.1	J	mg/Kg		107	75 - 125	2	30
Manganese	15.0	4.97	J *	mg/Kg		33	75 - 125	3	30
Mo	75.0	64.0		mg/Kg		85	75 - 125	1	30
Selenium	22.5	26.2		mg/Kg		116	75 - 125	6	30
Thallium	60.0	ND	*	mg/Kg		0.9	75 - 125	60	30

Lab Sample ID: MB 140-31502/13-A
Matrix: Solid
Analysis Batch: 31651

Client Sample ID: Method Blank
Prep Type: Step 6
Prep Batch: 31502

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		10	1.6	mg/Kg		07/10/19 08:00	07/12/19 13:14	1
Antimony	ND		3.0	0.28	mg/Kg		07/10/19 08:00	07/12/19 13:14	1
Arsenic	ND		0.50	0.15	mg/Kg		07/10/19 08:00	07/12/19 13:14	1
Barium	ND		2.5	0.12	mg/Kg		07/10/19 08:00	07/12/19 13:14	1
Beryllium	ND		0.25	0.012	mg/Kg		07/10/19 08:00	07/12/19 13:14	1
Cobalt	ND		2.5	0.046	mg/Kg		07/10/19 08:00	07/12/19 13:14	1
Iron	ND		5.0	2.9	mg/Kg		07/10/19 08:00	07/12/19 13:14	1
Li	ND		2.5	0.15	mg/Kg		07/10/19 08:00	07/12/19 13:14	1
Manganese	ND		0.75	0.25	mg/Kg		07/10/19 08:00	07/12/19 13:14	1
Mo	ND		2.0	0.099	mg/Kg		07/10/19 08:00	07/12/19 13:14	1
Selenium	ND		0.50	0.17	mg/Kg		07/10/19 08:00	07/12/19 13:14	1
Thallium	ND		1.8	0.21	mg/Kg		07/10/19 08:00	07/12/19 13:14	1

Method: 6010B SEP - SEP Metals (ICP) (Continued)

Lab Sample ID: LCS 140-31502/14-A
Matrix: Solid
Analysis Batch: 31651

Client Sample ID: Lab Control Sample
Prep Type: Step 6
Prep Batch: 31502

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aluminum	100	95.4		mg/Kg		95	75 - 125
Antimony	25.0	24.8		mg/Kg		99	75 - 125
Arsenic	5.00	4.94		mg/Kg		99	75 - 125
Barium	5.00	4.58		mg/Kg		92	75 - 125
Beryllium	2.50	2.57		mg/Kg		103	75 - 125
Cobalt	5.00	4.78		mg/Kg		96	75 - 125
Iron	50.0	47.4		mg/Kg		95	75 - 125
Li	5.00	4.71		mg/Kg		94	75 - 125
Manganese	5.00	4.83		mg/Kg		97	75 - 125
Mo	25.0	24.7		mg/Kg		99	75 - 125
Selenium	7.50	7.32		mg/Kg		98	75 - 125
Thallium	20.0	19.8		mg/Kg		99	75 - 125

Lab Sample ID: LCSD 140-31502/15-A
Matrix: Solid
Analysis Batch: 31651

Client Sample ID: Lab Control Sample Dup
Prep Type: Step 6
Prep Batch: 31502

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Aluminum	100	98.8		mg/Kg		99	75 - 125	4	30
Antimony	25.0	25.5		mg/Kg		102	75 - 125	3	30
Arsenic	5.00	5.16		mg/Kg		103	75 - 125	4	30
Barium	5.00	4.77		mg/Kg		95	75 - 125	4	30
Beryllium	2.50	2.67		mg/Kg		107	75 - 125	4	30
Cobalt	5.00	4.97		mg/Kg		99	75 - 125	4	30
Iron	50.0	49.5		mg/Kg		99	75 - 125	4	30
Li	5.00	4.90		mg/Kg		98	75 - 125	4	30
Manganese	5.00	5.02		mg/Kg		100	75 - 125	4	30
Mo	25.0	25.2		mg/Kg		101	75 - 125	2	30
Selenium	7.50	7.50		mg/Kg		100	75 - 125	2	30
Thallium	20.0	20.6		mg/Kg		103	75 - 125	4	30

Lab Sample ID: MB 140-31615/13-A
Matrix: Solid
Analysis Batch: 31713

Client Sample ID: Method Blank
Prep Type: Step 7
Prep Batch: 31615

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		10	1.6	mg/Kg		07/12/19 09:08	07/15/19 10:58	1
Antimony	ND		3.0	0.14	mg/Kg		07/12/19 09:08	07/15/19 10:58	1
Arsenic	ND		0.50	0.13	mg/Kg		07/12/19 09:08	07/15/19 10:58	1
Barium	ND		2.5	0.12	mg/Kg		07/12/19 09:08	07/15/19 10:58	1
Beryllium	ND		0.25	0.0075	mg/Kg		07/12/19 09:08	07/15/19 10:58	1
Cobalt	ND		2.5	0.15	mg/Kg		07/12/19 09:08	07/15/19 10:58	1
Iron	ND		5.0	4.1	mg/Kg		07/12/19 09:08	07/15/19 10:58	1
Li	ND		2.5	0.15	mg/Kg		07/12/19 09:08	07/15/19 10:58	1
Manganese	ND		0.75	0.052	mg/Kg		07/12/19 09:08	07/15/19 10:58	1
Mo	ND		2.0	0.082	mg/Kg		07/12/19 09:08	07/15/19 10:58	1
Selenium	ND		0.50	0.17	mg/Kg		07/12/19 09:08	07/15/19 10:58	1
Thallium	ND		1.8	0.18	mg/Kg		07/12/19 09:08	07/15/19 10:58	1

Method: 6010B SEP - SEP Metals (ICP) (Continued)

Lab Sample ID: LCS 140-31615/14-A
Matrix: Solid
Analysis Batch: 31713

Client Sample ID: Lab Control Sample
Prep Type: Step 7
Prep Batch: 31615

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aluminum	100	96.8		mg/Kg		97	75 - 125
Antimony	25.0	25.7		mg/Kg		103	75 - 125
Arsenic	5.00	5.23		mg/Kg		105	75 - 125
Barium	5.00	4.99		mg/Kg		100	75 - 125
Beryllium	2.50	2.52		mg/Kg		101	75 - 125
Cobalt	5.00	5.20		mg/Kg		104	75 - 125
Iron	50.0	51.7		mg/Kg		103	75 - 125
Li	5.00	5.15		mg/Kg		103	75 - 125
Manganese	5.00	5.21		mg/Kg		104	75 - 125
Mo	25.0	26.5		mg/Kg		106	75 - 125
Selenium	7.50	7.52		mg/Kg		100	75 - 125
Thallium	20.0	21.2		mg/Kg		106	75 - 125

Lab Sample ID: LCSD 140-31615/15-A
Matrix: Solid
Analysis Batch: 31713

Client Sample ID: Lab Control Sample Dup
Prep Type: Step 7
Prep Batch: 31615

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Aluminum	100	98.0		mg/Kg		98	75 - 125	1	30
Antimony	25.0	25.8		mg/Kg		103	75 - 125	0	30
Arsenic	5.00	5.30		mg/Kg		106	75 - 125	1	30
Barium	5.00	4.99		mg/Kg		100	75 - 125	0	30
Beryllium	2.50	2.50		mg/Kg		100	75 - 125	1	30
Cobalt	5.00	5.21		mg/Kg		104	75 - 125	0	30
Iron	50.0	51.5		mg/Kg		103	75 - 125	0	30
Li	5.00	5.18		mg/Kg		104	75 - 125	1	30
Manganese	5.00	5.21		mg/Kg		104	75 - 125	0	30
Mo	25.0	26.7		mg/Kg		107	75 - 125	1	30
Selenium	7.50	7.55		mg/Kg		101	75 - 125	0	30
Thallium	20.0	21.3		mg/Kg		107	75 - 125	1	30

Method: 7470A - SEP Mercury (CVAA) - Total

Lab Sample ID: MB 140-30683/13-B
Matrix: Solid
Analysis Batch: 30868

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 30683

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	ND		0.10	0.040	mg/Kg		06/11/19 08:00	06/16/19 13:56	1

Lab Sample ID: LCS 140-30683/14-B
Matrix: Solid
Analysis Batch: 30868

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 30683

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Hg	2.50	2.70		mg/Kg		108	75 - 125

Client: Golder Associates Inc.
Job ID: 140-15492-1
Project/Site: Martin Lake A1 Area LF SEP + Totals

Method: 7470A - SEP Mercury (CVAA) - Total (Continued)

Lab Sample ID: LCSD 140-30683/15-B
Matrix: Solid
Analysis Batch: 30868

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 30683

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Hg			2.50	2.71		mg/Kg		108	75 - 125	0	30

QC Association Summary

Client: Golder Associates Inc.
Job ID: 140-15492-1
Project/Site: Martin Lake A1 Area LF SEP + Totals

Metals

Prep Batch: 30683

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15492-1	BMW-29 (30-31)	Total/NA	Solid	Total	
140-15492-2	BMW-30 (40-41)	Total/NA	Solid	Total	
140-15492-3	BMW-31 (14-15)	Total/NA	Solid	Total	
140-15492-4	BMW-32 (25-26)	Total/NA	Solid	Total	
140-15492-5	BMW-33 (38-39)	Total/NA	Solid	Total	
MB 140-30683/13-A	Method Blank	Total/NA	Solid	Total	
MB 140-30683/13-B	Method Blank	Total/NA	Solid	Total	
LCS 140-30683/14-A	Lab Control Sample	Total/NA	Solid	Total	
LCS 140-30683/14-B	Lab Control Sample	Total/NA	Solid	Total	
LCSD 140-30683/15-A	Lab Control Sample Dup	Total/NA	Solid	Total	
LCSD 140-30683/15-B	Lab Control Sample Dup	Total/NA	Solid	Total	

Prep Batch: 30859

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15492-1	BMW-29 (30-31)	Total/NA	Solid	7470A	30683
140-15492-2	BMW-30 (40-41)	Total/NA	Solid	7470A	30683
140-15492-3	BMW-31 (14-15)	Total/NA	Solid	7470A	30683
140-15492-4	BMW-32 (25-26)	Total/NA	Solid	7470A	30683
140-15492-5	BMW-33 (38-39)	Total/NA	Solid	7470A	30683
MB 140-30683/13-B	Method Blank	Total/NA	Solid	7470A	30683
LCS 140-30683/14-B	Lab Control Sample	Total/NA	Solid	7470A	30683
LCSD 140-30683/15-B	Lab Control Sample Dup	Total/NA	Solid	7470A	30683

Analysis Batch: 30868

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15492-1	BMW-29 (30-31)	Total/NA	Solid	7470A	30859
140-15492-2	BMW-30 (40-41)	Total/NA	Solid	7470A	30859
140-15492-3	BMW-31 (14-15)	Total/NA	Solid	7470A	30859
140-15492-4	BMW-32 (25-26)	Total/NA	Solid	7470A	30859
140-15492-5	BMW-33 (38-39)	Total/NA	Solid	7470A	30859
MB 140-30683/13-B	Method Blank	Total/NA	Solid	7470A	30859
LCS 140-30683/14-B	Lab Control Sample	Total/NA	Solid	7470A	30859
LCSD 140-30683/15-B	Lab Control Sample Dup	Total/NA	Solid	7470A	30859

Prep Batch: 31128

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15492-1	BMW-29 (30-31)	Total/NA	Solid	3050B	
140-15492-2	BMW-30 (40-41)	Total/NA	Solid	3050B	
140-15492-3	BMW-31 (14-15)	Total/NA	Solid	3050B	
140-15492-4	BMW-32 (25-26)	Total/NA	Solid	3050B	
140-15492-5	BMW-33 (38-39)	Total/NA	Solid	3050B	
MB 140-31128/14-A	Method Blank	Total/NA	Solid	3050B	
LCS 140-31128/15-A	Lab Control Sample	Total/NA	Solid	3050B	

SEP Batch: 31148

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15492-1	BMW-29 (30-31)	Step 1	Solid	Exchangeable	
140-15492-2	BMW-30 (40-41)	Step 1	Solid	Exchangeable	
140-15492-3	BMW-31 (14-15)	Step 1	Solid	Exchangeable	
140-15492-4	BMW-32 (25-26)	Step 1	Solid	Exchangeable	
140-15492-5	BMW-33 (38-39)	Step 1	Solid	Exchangeable	

Metals (Continued)

SEP Batch: 31148 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 140-31148/13-B ^4	Method Blank	Step 1	Solid	Exchangeable	
LCS 140-31148/14-B ^5	Lab Control Sample	Step 1	Solid	Exchangeable	
LCSD 140-31148/15-B ^5	Lab Control Sample Dup	Step 1	Solid	Exchangeable	

Prep Batch: 31252

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15492-1	BMW-29 (30-31)	Step 1	Solid	3010A	31148
140-15492-2	BMW-30 (40-41)	Step 1	Solid	3010A	31148
140-15492-3	BMW-31 (14-15)	Step 1	Solid	3010A	31148
140-15492-4	BMW-32 (25-26)	Step 1	Solid	3010A	31148
140-15492-5	BMW-33 (38-39)	Step 1	Solid	3010A	31148
MB 140-31148/13-B ^4	Method Blank	Step 1	Solid	3010A	31148
LCS 140-31148/14-B ^5	Lab Control Sample	Step 1	Solid	3010A	31148
LCSD 140-31148/15-B ^5	Lab Control Sample Dup	Step 1	Solid	3010A	31148

SEP Batch: 31253

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15492-1	BMW-29 (30-31)	Step 2	Solid	Carbonate	
140-15492-2	BMW-30 (40-41)	Step 2	Solid	Carbonate	
140-15492-3	BMW-31 (14-15)	Step 2	Solid	Carbonate	
140-15492-4	BMW-32 (25-26)	Step 2	Solid	Carbonate	
140-15492-5	BMW-33 (38-39)	Step 2	Solid	Carbonate	
MB 140-31253/13-B ^3	Method Blank	Step 2	Solid	Carbonate	
LCS 140-31253/14-B ^5	Lab Control Sample	Step 2	Solid	Carbonate	
LCSD 140-31253/15-B ^5	Lab Control Sample Dup	Step 2	Solid	Carbonate	

Prep Batch: 31256

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15492-1	BMW-29 (30-31)	Step 2	Solid	3010A	31253
140-15492-2	BMW-30 (40-41)	Step 2	Solid	3010A	31253
140-15492-3	BMW-31 (14-15)	Step 2	Solid	3010A	31253
140-15492-4	BMW-32 (25-26)	Step 2	Solid	3010A	31253
140-15492-5	BMW-33 (38-39)	Step 2	Solid	3010A	31253
MB 140-31253/13-B ^3	Method Blank	Step 2	Solid	3010A	31253
LCS 140-31253/14-B ^5	Lab Control Sample	Step 2	Solid	3010A	31253
LCSD 140-31253/15-B ^5	Lab Control Sample Dup	Step 2	Solid	3010A	31253

SEP Batch: 31257

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15492-1	BMW-29 (30-31)	Step 3	Solid	Non-Crystalline	
140-15492-2	BMW-30 (40-41)	Step 3	Solid	Non-Crystalline	
140-15492-3	BMW-31 (14-15)	Step 3	Solid	Non-Crystalline	
140-15492-4	BMW-32 (25-26)	Step 3	Solid	Non-Crystalline	
140-15492-5	BMW-33 (38-39)	Step 3	Solid	Non-Crystalline	
MB 140-31257/13-B	Method Blank	Step 3	Solid	Non-Crystalline	
LCS 140-31257/14-B	Lab Control Sample	Step 3	Solid	Non-Crystalline	
LCSD 140-31257/15-B	Lab Control Sample Dup	Step 3	Solid	Non-Crystalline	

Prep Batch: 31338

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15492-1	BMW-29 (30-31)	Step 3	Solid	3010A	31257

Metals (Continued)

Prep Batch: 31338 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15492-2	BMW-30 (40-41)	Step 3	Solid	3010A	31257
140-15492-3	BMW-31 (14-15)	Step 3	Solid	3010A	31257
140-15492-4	BMW-32 (25-26)	Step 3	Solid	3010A	31257
140-15492-5	BMW-33 (38-39)	Step 3	Solid	3010A	31257
MB 140-31257/13-B	Method Blank	Step 3	Solid	3010A	31257
LCS 140-31257/14-B	Lab Control Sample	Step 3	Solid	3010A	31257
LCSD 140-31257/15-B	Lab Control Sample Dup	Step 3	Solid	3010A	31257

SEP Batch: 31341

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15492-1	BMW-29 (30-31)	Step 4	Solid	Metal Hydroxide	
140-15492-2	BMW-30 (40-41)	Step 4	Solid	Metal Hydroxide	
140-15492-3	BMW-31 (14-15)	Step 4	Solid	Metal Hydroxide	
140-15492-4	BMW-32 (25-26)	Step 4	Solid	Metal Hydroxide	
140-15492-5	BMW-33 (38-39)	Step 4	Solid	Metal Hydroxide	
MB 140-31341/13-B	Method Blank	Step 4	Solid	Metal Hydroxide	
LCS 140-31341/14-B	Lab Control Sample	Step 4	Solid	Metal Hydroxide	
LCSD 140-31341/15-B	Lab Control Sample Dup	Step 4	Solid	Metal Hydroxide	

Prep Batch: 31360

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15492-1	BMW-29 (30-31)	Step 4	Solid	3010A	31341
140-15492-2	BMW-30 (40-41)	Step 4	Solid	3010A	31341
140-15492-3	BMW-31 (14-15)	Step 4	Solid	3010A	31341
140-15492-4	BMW-32 (25-26)	Step 4	Solid	3010A	31341
140-15492-5	BMW-33 (38-39)	Step 4	Solid	3010A	31341
MB 140-31341/13-B	Method Blank	Step 4	Solid	3010A	31341
LCS 140-31341/14-B	Lab Control Sample	Step 4	Solid	3010A	31341
LCSD 140-31341/15-B	Lab Control Sample Dup	Step 4	Solid	3010A	31341

SEP Batch: 31436

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15492-1	BMW-29 (30-31)	Step 5	Solid	Organic-Bound	
140-15492-2	BMW-30 (40-41)	Step 5	Solid	Organic-Bound	
140-15492-3	BMW-31 (14-15)	Step 5	Solid	Organic-Bound	
140-15492-4	BMW-32 (25-26)	Step 5	Solid	Organic-Bound	
140-15492-5	BMW-33 (38-39)	Step 5	Solid	Organic-Bound	
MB 140-31436/13-B ^5	Method Blank	Step 5	Solid	Organic-Bound	
LCS 140-31436/14-B ^5	Lab Control Sample	Step 5	Solid	Organic-Bound	
LCSD 140-31436/15-B ^5	Lab Control Sample Dup	Step 5	Solid	Organic-Bound	

Prep Batch: 31500

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15492-1	BMW-29 (30-31)	Step 5	Solid	3010A	31436
140-15492-2	BMW-30 (40-41)	Step 5	Solid	3010A	31436
140-15492-3	BMW-31 (14-15)	Step 5	Solid	3010A	31436
140-15492-4	BMW-32 (25-26)	Step 5	Solid	3010A	31436
140-15492-5	BMW-33 (38-39)	Step 5	Solid	3010A	31436
MB 140-31436/13-B ^5	Method Blank	Step 5	Solid	3010A	31436
LCS 140-31436/14-B ^5	Lab Control Sample	Step 5	Solid	3010A	31436
LCSD 140-31436/15-B ^5	Lab Control Sample Dup	Step 5	Solid	3010A	31436

Metals

SEP Batch: 31502

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15492-1	BMW-29 (30-31)	Step 6	Solid	Acid/Sulfide	
140-15492-2	BMW-30 (40-41)	Step 6	Solid	Acid/Sulfide	
140-15492-3	BMW-31 (14-15)	Step 6	Solid	Acid/Sulfide	
140-15492-4	BMW-32 (25-26)	Step 6	Solid	Acid/Sulfide	
140-15492-5	BMW-33 (38-39)	Step 6	Solid	Acid/Sulfide	
MB 140-31502/13-A	Method Blank	Step 6	Solid	Acid/Sulfide	
LCS 140-31502/14-A	Lab Control Sample	Step 6	Solid	Acid/Sulfide	
LCSD 140-31502/15-A	Lab Control Sample Dup	Step 6	Solid	Acid/Sulfide	

Analysis Batch: 31553

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15492-1	BMW-29 (30-31)	Total/NA	Solid	6010B	31128
140-15492-2	BMW-30 (40-41)	Total/NA	Solid	6010B	31128
140-15492-3	BMW-31 (14-15)	Total/NA	Solid	6010B	31128
140-15492-4	BMW-32 (25-26)	Total/NA	Solid	6010B	31128
140-15492-5	BMW-33 (38-39)	Total/NA	Solid	6010B	31128
MB 140-31128/14-A	Method Blank	Total/NA	Solid	6010B	31128
LCS 140-31128/15-A	Lab Control Sample	Total/NA	Solid	6010B	31128

Analysis Batch: 31604

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15492-1	BMW-29 (30-31)	Step 1	Solid	6010B SEP	31252
140-15492-1	BMW-29 (30-31)	Step 2	Solid	6010B SEP	31256
140-15492-1	BMW-29 (30-31)	Step 3	Solid	6010B SEP	31338
140-15492-1	BMW-29 (30-31)	Step 4	Solid	6010B SEP	31360
140-15492-2	BMW-30 (40-41)	Step 1	Solid	6010B SEP	31252
140-15492-2	BMW-30 (40-41)	Step 2	Solid	6010B SEP	31256
140-15492-2	BMW-30 (40-41)	Step 3	Solid	6010B SEP	31338
140-15492-2	BMW-30 (40-41)	Step 4	Solid	6010B SEP	31360
140-15492-3	BMW-31 (14-15)	Step 1	Solid	6010B SEP	31252
140-15492-3	BMW-31 (14-15)	Step 2	Solid	6010B SEP	31256
140-15492-3	BMW-31 (14-15)	Step 3	Solid	6010B SEP	31338
140-15492-3	BMW-31 (14-15)	Step 4	Solid	6010B SEP	31360
140-15492-4	BMW-32 (25-26)	Step 1	Solid	6010B SEP	31252
140-15492-4	BMW-32 (25-26)	Step 2	Solid	6010B SEP	31256
140-15492-4	BMW-32 (25-26)	Step 3	Solid	6010B SEP	31338
140-15492-4	BMW-32 (25-26)	Step 4	Solid	6010B SEP	31360
140-15492-5	BMW-33 (38-39)	Step 1	Solid	6010B SEP	31252
140-15492-5	BMW-33 (38-39)	Step 2	Solid	6010B SEP	31256
140-15492-5	BMW-33 (38-39)	Step 3	Solid	6010B SEP	31338
140-15492-5	BMW-33 (38-39)	Step 4	Solid	6010B SEP	31360
MB 140-31148/13-B ^4	Method Blank	Step 1	Solid	6010B SEP	31252
MB 140-31253/13-B ^3	Method Blank	Step 2	Solid	6010B SEP	31256
MB 140-31257/13-B	Method Blank	Step 3	Solid	6010B SEP	31338
MB 140-31341/13-B	Method Blank	Step 4	Solid	6010B SEP	31360
LCS 140-31148/14-B ^5	Lab Control Sample	Step 1	Solid	6010B SEP	31252
LCS 140-31253/14-B ^5	Lab Control Sample	Step 2	Solid	6010B SEP	31256
LCS 140-31257/14-B	Lab Control Sample	Step 3	Solid	6010B SEP	31338
LCS 140-31341/14-B	Lab Control Sample	Step 4	Solid	6010B SEP	31360
LCSD 140-31148/15-B ^5	Lab Control Sample Dup	Step 1	Solid	6010B SEP	31252
LCSD 140-31253/15-B ^5	Lab Control Sample Dup	Step 2	Solid	6010B SEP	31256

Metals (Continued)

Analysis Batch: 31604 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCSD 140-31257/15-B	Lab Control Sample Dup	Step 3	Solid	6010B SEP	31338
LCSD 140-31341/15-B	Lab Control Sample Dup	Step 4	Solid	6010B SEP	31360

Prep Batch: 31615

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15492-1	BMW-29 (30-31)	Step 7	Solid	Residual	
140-15492-2	BMW-30 (40-41)	Step 7	Solid	Residual	
140-15492-3	BMW-31 (14-15)	Step 7	Solid	Residual	
140-15492-4	BMW-32 (25-26)	Step 7	Solid	Residual	
140-15492-5	BMW-33 (38-39)	Step 7	Solid	Residual	
MB 140-31615/13-A	Method Blank	Step 7	Solid	Residual	
LCS 140-31615/14-A	Lab Control Sample	Step 7	Solid	Residual	
LCSD 140-31615/15-A	Lab Control Sample Dup	Step 7	Solid	Residual	

Analysis Batch: 31651

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15492-1	BMW-29 (30-31)	Step 5	Solid	6010B SEP	31500
140-15492-1	BMW-29 (30-31)	Step 6	Solid	6010B SEP	31502
140-15492-2	BMW-30 (40-41)	Step 5	Solid	6010B SEP	31500
140-15492-2	BMW-30 (40-41)	Step 6	Solid	6010B SEP	31502
140-15492-3	BMW-31 (14-15)	Step 5	Solid	6010B SEP	31500
140-15492-3	BMW-31 (14-15)	Step 6	Solid	6010B SEP	31502
140-15492-4	BMW-32 (25-26)	Step 5	Solid	6010B SEP	31500
140-15492-4	BMW-32 (25-26)	Step 6	Solid	6010B SEP	31502
140-15492-5	BMW-33 (38-39)	Step 5	Solid	6010B SEP	31500
140-15492-5	BMW-33 (38-39)	Step 6	Solid	6010B SEP	31502
MB 140-31436/13-B ^5	Method Blank	Step 5	Solid	6010B SEP	31500
MB 140-31502/13-A	Method Blank	Step 6	Solid	6010B SEP	31502
LCS 140-31436/14-B ^5	Lab Control Sample	Step 5	Solid	6010B SEP	31500
LCS 140-31502/14-A	Lab Control Sample	Step 6	Solid	6010B SEP	31502
LCSD 140-31436/15-B ^5	Lab Control Sample Dup	Step 5	Solid	6010B SEP	31500
LCSD 140-31502/15-A	Lab Control Sample Dup	Step 6	Solid	6010B SEP	31502

Analysis Batch: 31713

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15492-1	BMW-29 (30-31)	Step 7	Solid	6010B SEP	31615
140-15492-1	BMW-29 (30-31)	Step 7	Solid	6010B SEP	31615
140-15492-1	BMW-29 (30-31)	Step 7	Solid	6010B SEP	31615
140-15492-1	BMW-29 (30-31)	Total/NA	Solid	6010B	30683
140-15492-1	BMW-29 (30-31)	Total/NA	Solid	6010B	30683
140-15492-1	BMW-29 (30-31)	Total/NA	Solid	6010B	30683
140-15492-2	BMW-30 (40-41)	Step 7	Solid	6010B SEP	31615
140-15492-2	BMW-30 (40-41)	Step 7	Solid	6010B SEP	31615
140-15492-2	BMW-30 (40-41)	Step 7	Solid	6010B SEP	31615
140-15492-2	BMW-30 (40-41)	Total/NA	Solid	6010B	30683
140-15492-2	BMW-30 (40-41)	Total/NA	Solid	6010B	30683
140-15492-2	BMW-30 (40-41)	Total/NA	Solid	6010B	30683
140-15492-3	BMW-31 (14-15)	Step 7	Solid	6010B SEP	31615
140-15492-3	BMW-31 (14-15)	Step 7	Solid	6010B SEP	31615
140-15492-3	BMW-31 (14-15)	Step 7	Solid	6010B SEP	31615
140-15492-3	BMW-31 (14-15)	Total/NA	Solid	6010B	30683

Metals (Continued)

Analysis Batch: 31713 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15492-3	BMW-31 (14-15)	Total/NA	Solid	6010B	30683
140-15492-3	BMW-31 (14-15)	Total/NA	Solid	6010B	30683
140-15492-4	BMW-32 (25-26)	Step 7	Solid	6010B SEP	31615
140-15492-4	BMW-32 (25-26)	Step 7	Solid	6010B SEP	31615
140-15492-4	BMW-32 (25-26)	Step 7	Solid	6010B SEP	31615
140-15492-4	BMW-32 (25-26)	Total/NA	Solid	6010B	30683
140-15492-4	BMW-32 (25-26)	Total/NA	Solid	6010B	30683
140-15492-4	BMW-32 (25-26)	Total/NA	Solid	6010B	30683
140-15492-5	BMW-33 (38-39)	Step 7	Solid	6010B SEP	31615
140-15492-5	BMW-33 (38-39)	Step 7	Solid	6010B SEP	31615
140-15492-5	BMW-33 (38-39)	Step 7	Solid	6010B SEP	31615
140-15492-5	BMW-33 (38-39)	Total/NA	Solid	6010B	30683
140-15492-5	BMW-33 (38-39)	Total/NA	Solid	6010B	30683
140-15492-5	BMW-33 (38-39)	Total/NA	Solid	6010B	30683
MB 140-30683/13-A	Method Blank	Total/NA	Solid	6010B	30683
MB 140-31615/13-A	Method Blank	Step 7	Solid	6010B SEP	31615
LCS 140-30683/14-A	Lab Control Sample	Total/NA	Solid	6010B	30683
LCS 140-31615/14-A	Lab Control Sample	Step 7	Solid	6010B SEP	31615
LCSD 140-30683/15-A	Lab Control Sample Dup	Total/NA	Solid	6010B	30683
LCSD 140-31615/15-A	Lab Control Sample Dup	Step 7	Solid	6010B SEP	31615

Analysis Batch: 31744

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15492-1	BMW-29 (30-31)	Sum of Steps 1-7	Solid	6010B SEP	
140-15492-2	BMW-30 (40-41)	Sum of Steps 1-7	Solid	6010B SEP	
140-15492-3	BMW-31 (14-15)	Sum of Steps 1-7	Solid	6010B SEP	
140-15492-4	BMW-32 (25-26)	Sum of Steps 1-7	Solid	6010B SEP	
140-15492-5	BMW-33 (38-39)	Sum of Steps 1-7	Solid	6010B SEP	

General Chemistry

Analysis Batch: 30602

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15492-1	BMW-29 (30-31)	Total/NA	Solid	Moisture	
140-15492-2	BMW-30 (40-41)	Total/NA	Solid	Moisture	
140-15492-3	BMW-31 (14-15)	Total/NA	Solid	Moisture	
140-15492-4	BMW-32 (25-26)	Total/NA	Solid	Moisture	
140-15492-5	BMW-33 (38-39)	Total/NA	Solid	Moisture	

Lab Chronicle

Client: Golder Associates Inc.
Job ID: 140-15492-1
Project/Site: Martin Lake A1 Area LF SEP + Totals

Client Sample ID: BMW-29 (30-31)
Lab Sample ID: 140-15492-1
Date Collected: 05/31/19 16:45
Matrix: Solid
Date Received: 06/05/19 09:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Sum of Steps 1-7	Analysis	6010B SEP		1			31744	07/16/19 17:31	CLJ	TAL KNX
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Moisture		1			30602	06/06/19 14:52	BKD	TAL KNX
	Instrument ID: W3									

Client Sample ID: BMW-29 (30-31)
Lab Sample ID: 140-15492-1
Date Collected: 05/31/19 16:45
Matrix: Solid
Date Received: 06/05/19 09:20
Percent Solids: 73.5

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			0.539 g	50 mL	31128	06/26/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			31553	07/10/19 12:23	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	30683	06/11/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			31713	07/15/19 14:46	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	30683	06/11/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		10			31713	07/15/19 16:20	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	30683	06/11/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		5			31713	07/15/19 18:48	KNC	TAL KNX
	Instrument ID: DUO									
Step 1	SEP	Exchangeable			5.000 g	25 mL	31148	06/26/19 09:47	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	31252	06/29/19 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		4			31604	07/11/19 13:09	KNC	TAL KNX
	Instrument ID: DUO									
Step 2	SEP	Carbonate			5.000 g	25 mL	31253	06/29/19 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	31256	06/30/19 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		3			31604	07/11/19 14:53	KNC	TAL KNX
	Instrument ID: DUO									
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	31257	06/30/19 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	31338	07/02/19 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			31604	07/11/19 16:42	KNC	TAL KNX
	Instrument ID: DUO									
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	31341	07/02/19 09:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	31360	07/03/19 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			31604	07/11/19 18:09	KNC	TAL KNX
	Instrument ID: DUO									
Step 5	SEP	Organic-Bound			5.000 g	75 mL	31436	07/08/19 07:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	31500	07/10/19 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			31651	07/12/19 12:16	KNC	TAL KNX
	Instrument ID: DUO									
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	31502	07/10/19 08:00	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			31651	07/12/19 14:00	KNC	TAL KNX
	Instrument ID: DUO									

Lab Chronicle

Client: Golder Associates Inc.
Job ID: 140-15492-1
Project/Site: Martin Lake A1 Area LF SEP + Totals

Client Sample ID: BMW-29 (30-31)
Lab Sample ID: 140-15492-1
Date Collected: 05/31/19 16:45
Matrix: Solid
Date Received: 06/05/19 09:20
Percent Solids: 73.5

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 7	Prep	Residual			1.000 g	50 mL	31615	07/12/19 09:08	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			31713	07/15/19 12:16	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	31615	07/12/19 09:08	KNC	TAL KNX
Step 7	Analysis	6010B SEP		10			31713	07/15/19 13:29	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	31615	07/12/19 09:08	KNC	TAL KNX
Step 7	Analysis	6010B SEP		2			31713	07/15/19 17:32	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	30683	06/11/19 08:00	KNC	TAL KNX
Total/NA	Prep	7470A			5.0 mL	50.0 mL	30859	06/16/19 08:00	DKW	TAL KNX
Total/NA	Analysis	7470A		1			30868	06/16/19 14:19	DKW	TAL KNX
	Instrument ID: HG									

Client Sample ID: BMW-30 (40-41)
Lab Sample ID: 140-15492-2
Date Collected: 05/30/19 15:55
Matrix: Solid
Date Received: 06/05/19 09:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Sum of Steps 1-7	Analysis	6010B SEP		1			31744	07/16/19 17:31	CLJ	TAL KNX
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Moisture		1			30602	06/06/19 14:52	BKD	TAL KNX
	Instrument ID: W3									

Client Sample ID: BMW-30 (40-41)
Lab Sample ID: 140-15492-2
Date Collected: 05/30/19 15:55
Matrix: Solid
Date Received: 06/05/19 09:20
Percent Solids: 84.1

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			0.528 g	50 mL	31128	06/26/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			31553	07/10/19 12:28	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	30683	06/11/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			31713	07/15/19 15:07	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	30683	06/11/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		10			31713	07/15/19 16:25	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	30683	06/11/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		5			31713	07/15/19 18:53	KNC	TAL KNX
	Instrument ID: DUO									
Step 1	SEP	Exchangeable			5.000 g	25 mL	31148	06/26/19 09:47	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	31252	06/29/19 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		4			31604	07/11/19 13:14	KNC	TAL KNX
	Instrument ID: DUO									

Lab Chronicle

Client: Golder Associates Inc.
Job ID: 140-15492-1
Project/Site: Martin Lake A1 Area LF SEP + Totals

Client Sample ID: BMW-30 (40-41)
Lab Sample ID: 140-15492-2

Date Collected: 05/30/19 15:55
Matrix: Solid
Date Received: 06/05/19 09:20
Percent Solids: 84.1

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 2	SEP	Carbonate			5.000 g	25 mL	31253	06/29/19 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	31256	06/30/19 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		3			31604	07/11/19 14:58	KNC	TAL KNX
	Instrument ID: DUO									
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	31257	06/30/19 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	31338	07/02/19 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			31604	07/11/19 16:47	KNC	TAL KNX
	Instrument ID: DUO									
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	31341	07/02/19 09:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	31360	07/03/19 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			31604	07/11/19 18:15	KNC	TAL KNX
	Instrument ID: DUO									
Step 5	SEP	Organic-Bound			5.000 g	75 mL	31436	07/08/19 07:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	31500	07/10/19 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			31651	07/12/19 12:21	KNC	TAL KNX
	Instrument ID: DUO									
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	31502	07/10/19 08:00	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			31651	07/12/19 14:05	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	31615	07/12/19 09:08	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			31713	07/15/19 12:21	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	31615	07/12/19 09:08	KNC	TAL KNX
Step 7	Analysis	6010B SEP		10			31713	07/15/19 13:34	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	31615	07/12/19 09:08	KNC	TAL KNX
Step 7	Analysis	6010B SEP		2			31713	07/15/19 17:37	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	30683	06/11/19 08:00	KNC	TAL KNX
Total/NA	Prep	7470A			5.0 mL	50.0 mL	30859	06/16/19 08:00	DKW	TAL KNX
Total/NA	Analysis	7470A		1			30868	06/16/19 14:21	DKW	TAL KNX
	Instrument ID: HG									

Client Sample ID: BMW-31 (14-15)
Lab Sample ID: 140-15492-3

Date Collected: 05/31/19 11:15
Matrix: Solid
Date Received: 06/05/19 09:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Sum of Steps 1-7	Analysis	6010B SEP		1			31744	07/16/19 17:31	CLJ	TAL KNX
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Moisture		1			30602	06/06/19 14:52	BKD	TAL KNX
	Instrument ID: W3									

Lab Chronicle

Client: Golder Associates Inc.
Job ID: 140-15492-1
Project/Site: Martin Lake A1 Area LF SEP + Totals

Client Sample ID: BMW-31 (14-15)
Date Collected: 05/31/19 11:15
Date Received: 06/05/19 09:20

Lab Sample ID: 140-15492-3
Matrix: Solid
Percent Solids: 84.2

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			0.502 g	50 mL	31128	06/26/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			31553	07/10/19 12:43	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	30683	06/11/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			31713	07/15/19 15:12	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	30683	06/11/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		10			31713	07/15/19 16:30	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	30683	06/11/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		2			31713	07/15/19 19:14	KNC	TAL KNX
	Instrument ID: DUO									
Step 1	SEP	Exchangeable			5.000 g	25 mL	31148	06/26/19 09:47	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	31252	06/29/19 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		4			31604	07/11/19 13:35	KNC	TAL KNX
	Instrument ID: DUO									
Step 2	SEP	Carbonate			5.000 g	25 mL	31253	06/29/19 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	31256	06/30/19 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		3			31604	07/11/19 15:03	KNC	TAL KNX
	Instrument ID: DUO									
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	31257	06/30/19 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	31338	07/02/19 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			31604	07/11/19 16:52	KNC	TAL KNX
	Instrument ID: DUO									
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	31341	07/02/19 09:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	31360	07/03/19 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			31604	07/11/19 18:20	KNC	TAL KNX
	Instrument ID: DUO									
Step 5	SEP	Organic-Bound			5.000 g	75 mL	31436	07/08/19 07:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	31500	07/10/19 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			31651	07/12/19 12:42	KNC	TAL KNX
	Instrument ID: DUO									
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	31502	07/10/19 08:00	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			31651	07/12/19 14:10	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	31615	07/12/19 09:08	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			31713	07/15/19 12:26	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	31615	07/12/19 09:08	KNC	TAL KNX
Step 7	Analysis	6010B SEP		10			31713	07/15/19 13:39	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	31615	07/12/19 09:08	KNC	TAL KNX
Step 7	Analysis	6010B SEP		2			31713	07/15/19 17:42	KNC	TAL KNX
	Instrument ID: DUO									

Lab Chronicle

Client: Golder Associates Inc.
Job ID: 140-15492-1
Project/Site: Martin Lake A1 Area LF SEP + Totals

Client Sample ID: BMW-31 (14-15)
Lab Sample ID: 140-15492-3
Date Collected: 05/31/19 11:15
Matrix: Solid
Date Received: 06/05/19 09:20
Percent Solids: 84.2

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	30683	06/11/19 08:00	KNC	TAL KNX
Total/NA	Prep	7470A			5.0 mL	50.0 mL	30859	06/16/19 08:00	DKW	TAL KNX
Total/NA	Analysis	7470A		1			30868	06/16/19 14:24	DKW	TAL KNX
	Instrument ID: HG									

Client Sample ID: BMW-32 (25-26)
Lab Sample ID: 140-15492-4
Date Collected: 05/29/19 15:45
Matrix: Solid
Date Received: 06/05/19 09:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Sum of Steps 1-7	Analysis	6010B SEP		1			31744	07/16/19 17:31	CLJ	TAL KNX
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Moisture		1			30602	06/06/19 14:52	BKD	TAL KNX
	Instrument ID: W3									

Client Sample ID: BMW-32 (25-26)
Lab Sample ID: 140-15492-4
Date Collected: 05/29/19 15:45
Matrix: Solid
Date Received: 06/05/19 09:20
Percent Solids: 84.2

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			0.529 g	50 mL	31128	06/26/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			31553	07/10/19 12:49	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	30683	06/11/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			31713	07/15/19 15:18	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	30683	06/11/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		10			31713	07/15/19 16:35	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	30683	06/11/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		2			31713	07/15/19 19:19	KNC	TAL KNX
	Instrument ID: DUO									
Step 1	SEP	Exchangeable			5.000 g	25 mL	31148	06/26/19 09:47	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	31252	06/29/19 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		4			31604	07/11/19 13:40	KNC	TAL KNX
	Instrument ID: DUO									
Step 2	SEP	Carbonate			5.000 g	25 mL	31253	06/29/19 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	31256	06/30/19 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		3			31604	07/11/19 15:09	KNC	TAL KNX
	Instrument ID: DUO									
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	31257	06/30/19 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	31338	07/02/19 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			31604	07/11/19 16:58	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: BMW-32 (25-26)
Lab Sample ID: 140-15492-4

Date Collected: 05/29/19 15:45
Matrix: Solid
Date Received: 06/05/19 09:20
Percent Solids: 84.2

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	31341	07/02/19 09:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	31360	07/03/19 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			31604	07/11/19 18:25	KNC	TAL KNX
	Instrument ID: DUO									
Step 5	SEP	Organic-Bound			5.000 g	75 mL	31436	07/08/19 07:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	31500	07/10/19 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			31651	07/12/19 12:47	KNC	TAL KNX
	Instrument ID: DUO									
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	31502	07/10/19 08:00	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			31651	07/12/19 14:15	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	31615	07/12/19 09:08	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			31713	07/15/19 12:32	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	31615	07/12/19 09:08	KNC	TAL KNX
Step 7	Analysis	6010B SEP		10			31713	07/15/19 13:44	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	31615	07/12/19 09:08	KNC	TAL KNX
Step 7	Analysis	6010B SEP		2			31713	07/15/19 17:47	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	30683	06/11/19 08:00	KNC	TAL KNX
Total/NA	Prep	7470A			5.0 mL	50.0 mL	30859	06/16/19 08:00	DKW	TAL KNX
Total/NA	Analysis	7470A		1			30868	06/16/19 14:27	DKW	TAL KNX
	Instrument ID: HG									

Client Sample ID: BMW-33 (38-39)
Lab Sample ID: 140-15492-5

Date Collected: 05/30/19 11:35
Matrix: Solid
Date Received: 06/05/19 09:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Sum of Steps 1-7	Analysis	6010B SEP		1			31744	07/16/19 17:31	CLJ	TAL KNX
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Moisture		1			30602	06/06/19 14:52	BKD	TAL KNX
	Instrument ID: W3									

Client Sample ID: BMW-33 (38-39)
Lab Sample ID: 140-15492-5

Date Collected: 05/30/19 11:35
Matrix: Solid
Date Received: 06/05/19 09:20
Percent Solids: 77.5

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			0.527 g	50 mL	31128	06/26/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			31553	07/10/19 12:54	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	30683	06/11/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			31713	07/15/19 15:23	KNC	TAL KNX
	Instrument ID: DUO									

Lab Chronicle

Client: Golder Associates Inc.
Job ID: 140-15492-1
Project/Site: Martin Lake A1 Area LF SEP + Totals

Client Sample ID: BMW-33 (38-39)
Date Collected: 05/30/19 11:35
Date Received: 06/05/19 09:20

Lab Sample ID: 140-15492-5
Matrix: Solid
Percent Solids: 77.5

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	30683	06/11/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		10			31713	07/15/19 16:40	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	30683	06/11/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		5			31713	07/15/19 19:24	KNC	TAL KNX
	Instrument ID: DUO									
Step 1	SEP	Exchangeable			5.000 g	25 mL	31148	06/26/19 09:47	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	31252	06/29/19 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		4			31604	07/11/19 13:45	KNC	TAL KNX
	Instrument ID: DUO									
Step 2	SEP	Carbonate			5.000 g	25 mL	31253	06/29/19 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	31256	06/30/19 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		3			31604	07/11/19 15:14	KNC	TAL KNX
	Instrument ID: DUO									
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	31257	06/30/19 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	31338	07/02/19 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			31604	07/11/19 17:03	KNC	TAL KNX
	Instrument ID: DUO									
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	31341	07/02/19 09:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	31360	07/03/19 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			31604	07/11/19 18:45	KNC	TAL KNX
	Instrument ID: DUO									
Step 5	SEP	Organic-Bound			5.000 g	75 mL	31436	07/08/19 07:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	31500	07/10/19 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			31651	07/12/19 12:53	KNC	TAL KNX
	Instrument ID: DUO									
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	31502	07/10/19 08:00	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			31651	07/12/19 14:21	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	31615	07/12/19 09:08	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			31713	07/15/19 12:37	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	31615	07/12/19 09:08	KNC	TAL KNX
Step 7	Analysis	6010B SEP		10			31713	07/15/19 14:04	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	31615	07/12/19 09:08	KNC	TAL KNX
Step 7	Analysis	6010B SEP		2			31713	07/15/19 17:52	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	30683	06/11/19 08:00	KNC	TAL KNX
Total/NA	Prep	7470A			5.0 mL	50.0 mL	30859	06/16/19 08:00	DKW	TAL KNX
Total/NA	Analysis	7470A		1			30868	06/16/19 14:29	DKW	TAL KNX
	Instrument ID: HG									

Lab Chronicle

Client: Golder Associates Inc. Job ID: 140-15492-1
Project/Site: Martin Lake A1 Area LF SEP + Totals

Client Sample ID: Method Blank — Lab Sample ID: MB 140-30683/13-A
Date Collected: N/A — **Matrix: Solid**
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	30683	06/11/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			31713	07/15/19 11:13	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Method Blank — Lab Sample ID: MB 140-30683/13-B
Date Collected: N/A — **Matrix: Solid**
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	30683	06/11/19 08:00	KNC	TAL KNX
Total/NA	Prep	7470A			5.0 mL	50.0 mL	30859	06/16/19 08:00	DKW	TAL KNX
Total/NA	Analysis	7470A		1			30868	06/16/19 13:56	DKW	TAL KNX
	Instrument ID: HG									

Client Sample ID: Method Blank — Lab Sample ID: MB 140-31128/14-A
Date Collected: N/A — **Matrix: Solid**
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			0.500 g	50 mL	31128	06/26/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			31553	07/10/19 11:42	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Method Blank — Lab Sample ID: MB 140-31148/13-B ^4
Date Collected: N/A — **Matrix: Solid**
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 1	SEP	Exchangeable			5.000 g	25 mL	31148	06/26/19 09:47	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	31252	06/29/19 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		4			31604	07/11/19 12:33	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Method Blank — Lab Sample ID: MB 140-31253/13-B ^3
Date Collected: N/A — **Matrix: Solid**
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 2	SEP	Carbonate			5.000 g	25 mL	31253	06/29/19 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	31256	06/30/19 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		3			31604	07/11/19 14:06	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Method Blank — Lab Sample ID: MB 140-31257/13-B

Date Collected: N/A **Matrix: Solid**
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	31257	06/30/19 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	31338	07/02/19 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			31604	07/11/19 15:50	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Method Blank — Lab Sample ID: MB 140-31341/13-B

Date Collected: N/A **Matrix: Solid**
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	31341	07/02/19 09:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	31360	07/03/19 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			31604	07/11/19 17:24	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Method Blank — Lab Sample ID: MB 140-31436/13-B ^5

Date Collected: N/A **Matrix: Solid**
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 5	SEP	Organic-Bound			5.000 g	75 mL	31436	07/08/19 07:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	31500	07/10/19 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			31651	07/12/19 11:39	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Method Blank — Lab Sample ID: MB 140-31502/13-A

Date Collected: N/A **Matrix: Solid**
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	31502	07/10/19 08:00	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			31651	07/12/19 13:14	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Method Blank — Lab Sample ID: MB 140-31615/13-A

Date Collected: N/A **Matrix: Solid**
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 7	Prep	Residual			1.000 g	50 mL	31615	07/12/19 09:08	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			31713	07/15/19 10:58	KNC	TAL KNX
	Instrument ID: DUO									

Lab Chronicle

Client: Golder Associates Inc. Job ID: 140-15492-1
Project/Site: Martin Lake A1 Area LF SEP + Totals

Client Sample ID: Lab Control Sample — Lab Sample ID: LCS 140-30683/14-A
Date Collected: N/A — **Matrix: Solid**
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	30683	06/11/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			31713	07/15/19 11:19	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample — Lab Sample ID: LCS 140-30683/14-B
Date Collected: N/A — **Matrix: Solid**
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	30683	06/11/19 08:00	KNC	TAL KNX
Total/NA	Prep	7470A			5.0 mL	50.0 mL	30859	06/16/19 08:00	DKW	TAL KNX
Total/NA	Analysis	7470A		1			30868	06/16/19 13:59	DKW	TAL KNX
	Instrument ID: HG									

Client Sample ID: Lab Control Sample — Lab Sample ID: LCS 140-31128/15-A
Date Collected: N/A — **Matrix: Solid**
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			0.500 g	50 mL	31128	06/26/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			31553	07/10/19 11:47	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample — Lab Sample ID: LCS 140-31148/14-B ^5
Date Collected: N/A — **Matrix: Solid**
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 1	SEP	Exchangeable			5.000 g	25 mL	31148	06/26/19 09:47	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	31252	06/29/19 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		5			31604	07/11/19 12:38	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample — Lab Sample ID: LCS 140-31253/14-B ^5
Date Collected: N/A — **Matrix: Solid**
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 2	SEP	Carbonate			5.000 g	25 mL	31253	06/29/19 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	31256	06/30/19 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		5			31604	07/11/19 14:11	KNC	TAL KNX
	Instrument ID: DUO									

Lab Chronicle

Client: Golder Associates Inc.
Job ID: 140-15492-1
Project/Site: Martin Lake A1 Area LF SEP + Totals

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-31257/14-B
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	31257	06/30/19 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	31338	07/02/19 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			31604	07/11/19 15:56	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-31341/14-B
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	31341	07/02/19 09:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	31360	07/03/19 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			31604	07/11/19 17:29	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-31436/14-B ^5
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 5	SEP	Organic-Bound			5.000 g	75 mL	31436	07/08/19 07:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	31500	07/10/19 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			31651	07/12/19 11:44	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-31502/14-A
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	31502	07/10/19 08:00	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			31651	07/12/19 13:19	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-31615/14-A
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 7	Prep	Residual			1.000 g	50 mL	31615	07/12/19 09:08	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			31713	07/15/19 11:03	KNC	TAL KNX
	Instrument ID: DUO									

Lab Chronicle

Client: Golder Associates Inc. Job ID: 140-15492-1
Project/Site: Martin Lake A1 Area LF SEP + Totals

Client Sample ID: Lab Control Sample Dup — Lab Sample ID: LCSD 140-30683/15-A
Date Collected: N/A **Matrix: Solid**
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	30683	06/11/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			31713	07/15/19 11:24	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample Dup — Lab Sample ID: LCSD 140-30683/15-B
Date Collected: N/A **Matrix: Solid**
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	30683	06/11/19 08:00	KNC	TAL KNX
Total/NA	Prep	7470A			5.0 mL	50.0 mL	30859	06/16/19 08:00	DKW	TAL KNX
Total/NA	Analysis	7470A		1			30868	06/16/19 14:02	DKW	TAL KNX
	Instrument ID: HG									

Client Sample ID: Lab Control Sample Dup — Lab Sample ID: LCSD 140-31148/15-B ^5
Date Collected: N/A **Matrix: Solid**
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 1	SEP	Exchangeable			5.000 g	25 mL	31148	06/26/19 09:47	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	31252	06/29/19 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		5			31604	07/11/19 12:43	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample Dup — Lab Sample ID: LCSD 140-31253/15-B ^5
Date Collected: N/A **Matrix: Solid**
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 2	SEP	Carbonate			5.000 g	25 mL	31253	06/29/19 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	31256	06/30/19 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		5			31604	07/11/19 14:16	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample Dup — Lab Sample ID: LCSD 140-31257/15-B
Date Collected: N/A **Matrix: Solid**
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	31257	06/30/19 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	31338	07/02/19 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			31604	07/11/19 16:01	KNC	TAL KNX
	Instrument ID: DUO									

Lab Chronicle

Client: Golder Associates Inc.
Job ID: 140-15492-1
Project/Site: Martin Lake A1 Area LF SEP + Totals

Client Sample ID: Lab Control Sample Dup
Lab Sample ID: LCSD 140-31341/15-B
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	31341	07/02/19 09:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	31360	07/03/19 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			31604	07/11/19 17:44	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample Dup
Lab Sample ID: LCSD 140-31436/15-B ^5
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 5	SEP	Organic-Bound			5.000 g	75 mL	31436	07/08/19 07:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	31500	07/10/19 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			31651	07/12/19 11:49	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample Dup
Lab Sample ID: LCSD 140-31502/15-A
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	31502	07/10/19 08:00	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			31651	07/12/19 13:24	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample Dup
Lab Sample ID: LCSD 140-31615/15-A
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 7	Prep	Residual			1.000 g	50 mL	31615	07/12/19 09:08	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			31713	07/15/19 11:08	KNC	TAL KNX
	Instrument ID: DUO									

Laboratory References:
TAL KNX = Eurofins TestAmerica, Knoxville, 5815 Middlebrook Pike, Knoxville, TN 37921, TEL (865)291-3000

Method Summary

Client: Golder Associates Inc.
Job ID: 140-15492-1
Project/Site: Martin Lake A1 Area LF SEP + Totals

Method	Method Description	Protocol	Laboratory
6010B	Metals (ICP)	SW846	TAL KNX
6010B	SEP Metals (ICP) - Total	SW846	TAL KNX
6010B SEP	SEP Metals (ICP)	SW846	TAL KNX
7470A	SEP Mercury (CVAA) - Total	SW846	TAL KNX
Moisture	Percent Moisture	EPA	TAL KNX
3010A	Preparation, Total Metals	SW846	TAL KNX
3050B	Preparation, Metals	SW846	TAL KNX
7470A	Preparation, Mercury	SW846	TAL KNX
Acid/Sulfide	Sequential Extraction Procedure, Acid/Sulfide Fraction	TAL-KNOX	TAL KNX
Carbonate	Sequential Extraction Procedure, Carbonate Fraction	TAL-KNOX	TAL KNX
Exchangeable	Sequential Extraction Procedure, Exchangeable Fraction	TAL-KNOX	TAL KNX
Metal Hydroxide	Sequential Extraction Procedure, Metal Hydroxide Fraction	TAL-KNOX	TAL KNX
Non-Crystalline	Sequential Extraction Procedure, Non-crystalline Materials	TAL-KNOX	TAL KNX
Organic-Bound	Sequential Extraction Procedure, Organic Bound Fraction	TAL-KNOX	TAL KNX
Residual	Sequential Extraction Procedure, Residual Fraction	TAL-KNOX	TAL KNX
Total	Preparation, Total Material	TAL-KNOX	TAL KNX

Protocol References:

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

TAL-KNOX = TestAmerica Laboratories, Knoxville, Facility Standard Operating Procedure.

Laboratory References:

TAL KNX = Eurofins TestAmerica, Knoxville, 5815 Middlebrook Pike, Knoxville, TN 37921, TEL (865)291-3000

Sample Summary

Client: Golder Associates Inc.
Job ID: 140-15492-1
Project/Site: Martin Lake A1 Area LF SEP + Totals

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
140-15492-1	BMW-29 (30-31)	Solid	05/31/19 16:45	06/05/19 09:20	
140-15492-2	BMW-30 (40-41)	Solid	05/30/19 15:55	06/05/19 09:20	
140-15492-3	BMW-31 (14-15)	Solid	05/31/19 11:15	06/05/19 09:20	
140-15492-4	BMW-32 (25-26)	Solid	05/29/19 15:45	06/05/19 09:20	
140-15492-5	BMW-33 (38-39)	Solid	05/30/19 11:35	06/05/19 09:20	

Eurofins TestAmerica, Knoxville
5815 Middlebrook Pike
Knoxville, TN 37921
Phone (865) 291-3000 Fax (865) 584-4315

Chain of Custody Record

eurofins | Environment Testing TestAmerica

Client Information	Sampler: S. Ruiz / K. Worley	Lab PM: Walker Wasmund, Terry	Carrier Tracking No(s):	COC No: 140-6682-2228.1
Client Contact: Will Vienne	Phone: 281-750-2734	E-Mail: terry.wasmund@testamericainc.com		Page: Page 1 of 1
Company: Golder Associates Inc.				Job #:

Address: 2201 Double Creek Dr Suite 4004	Due Date Requested:
City: Round Rock	TAT Requested (days): Standard
State, Zip: TX, 78664	
Phone: 512-671-3434(Tel)	PO #: 19122434-D
Email: William_Vienne@golder.com	WO #: 19122434-D
Project Name: Martin Lake A1 Area LF SEP + Totals	Project #: 14005267
Site:	SSOW#:

Analysis Requested

140-15492 Chain of Custody

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	6010B_SEP - SEP Metals (12 Metals)	6010B - Total B, Cr, Pb	Total Number of containers	Special Instructions/Note:
			Preservation Code:		N		N	I		
Bmw-29 (30-31)	5/31/19	1645	C	S	N		X	X		On Ice
Bmw-30 (40-41)	5/30/19	1555	C	S	N		X	X		" "
Bmw-31 (14-15)	5/31/19	1115	C	S	N		X	X		" "
Bmw-32 (25-26)	5/29/19	1545	C	S	N		X	X		" "
Bmw-33 (38-39)	5/30/19	1135	C	S	N		X	X		" "

RT: 1.4°C CT: 1.4°C, 1 Cooler
FedEx SO, trk# 7876 7321 5641
Custody Seal intact
KL 6/5/19

Possible Hazard Identification
☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1	[signature]	06/04/19 1245	Golder	[signature]	6/5/19 0920	TA Knox
2	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.: | Cooler Temperature(s) °C and Other Remarks:

Ver: 01/16/2019

TESTAMERICA KNOXVILLE SAMPLE RECEIPT/CONDITION UPON RECEIPT ANOMALY CHECKLIST

Log In Number: Loc: 140 15492

Review Items	Yes	No	NA	If No, what was the problem?
1. Are the shipping containers intact?	/			☐ Containers, Broken
2. Were ambient air containers received intact?			/	☐ Checked in lab
3. The coolers/containers custody seal if present, is it intact?	/			☐ Yes ☐ NA
4. Is the cooler temperature within limits? (> freezing temp. of water to 6 °C, VOST: 10°C) Thermometer ID : IR68 Correction factor: +0.0	/			☐ Cooler Out of Temp, Client Contacted, Proceed/Cancel ☐ Cooler Out of Temp, Same Day Receipt
5. Were all of the sample containers received intact?	/			☐ Containers, Broken
6. Were samples received in appropriate containers?	/			☐ Containers, Improper; Client Contacted; Proceed/Cancel
7. Do sample container labels match COC? (IDs, Dates, Times)	/			☐ COC & Samples Do Not Match ☐ COC Incorrect/Incomplete ☐ COC Not Received
8. Were all of the samples listed on the COC received?	/			☐ Sample Received, Not on COC ☐ Sample on COC, Not Received
9. Is the date/time of sample collection noted?	/			☐ COC; No Date/Time; Client Contacted
10. Was the sampler identified on the COC?	/			☐ Sampler Not Listed on COC
11. Is the client and project name/# identified?	/			☐ COC Incorrect/Incomplete
12. Are tests/parameters listed for each sample?	/			☐ COC No tests on COC
13. Is the matrix of the samples noted?	/			☐ COC Incorrect/Incomplete
14. Was COC relinquished? (Signed/Dated/Timed)	/			☐ COC Incorrect/Incomplete
15. Were samples received within holding time?	/			☐ Holding Time - Receipt
16. Were samples received with correct chemical preservative (excluding Encore)?			/	☐ pH Adjusted, pH Included (See box 16A) ☐ Incorrect Preservative
17. Were VOA samples received without headspace?			/	☐ Headspace (VOA only)
18. Did you check for residual chlorine, if necessary? (e.g. 1613B, 1668) Chlorine test strip lot number:			/	☐ Residual Chlorine
19. For 1613B water samples is pH<9?			/	☐ If no, notify lab to adjust
20. For rad samples was sample activity info. Provided?			/	☐ Project missing info

Comments/Actions Taken

Labeling Verified by: **Date:**

pH test strip lot number:

	Box 16A: pH Preservation	Box 18A: Residual Chlorine
Preservative:		
Lot Number:		
Exp Date:		
Analyst:		
Date:		
Time:		

Project #: 1400526 7 PM Instructions:

Sample Receiving Associate: Ken Zl Date: 6/5/19

QA026R31.doc, 112618

APPENDIX C

GROUNDWATER SAMPLING RECORDS

RECORD OF WATER LEVEL READINGS

GOLDER

Project Name: LUMINANT- MLSES-A1 Location: TAYLOR TX Project No.: 19122262-D

Borehole No.	Date	Time	Measuring Device / Serial No.	Measurement Point (M.P)	Water Level Below M.P.	Correction To Survey Mark	Survey Mark Elevation	Water Level Elevation	By	Comments
BMW-24	5-15-19	0701	SOLINST	TOC	9.83				JTB	
BMW-23	5-15-19	0751		TOC	9.98					
BMW-22	5-15-19	0838		TOC	4.47					
BMW-21	5-15-19	0923		TOC	4.23					
BMW-27	5-15-19	1019		TOC	2.79					
BMW-26	5-15-19	1106		TOC	1.62					
BMW-11AR	5-15-19	1159		TOC	31.87					
BMW-19	5-15-19	1250		TOC	12.49					
BMW-18	5-15-19	1336		TOC	21.97					
BMW-28	5-15-19	1424		TOC	18.22					
BMW-20	5-15-19	1523		TOC	7.16					

Sheet 1 of 1

GROUNDWATER SAMPLING RECORD

PAGE 1 of 1

Project Number: 191222G2-D Project Name: LUMINANT - MCSES - A1 Date: 5-15-19

Sample Number: BMW-20

Sampling Location (well ID, etc.): BMW-20

Sampled by: JTB

Measuring Point (MP) of Well: TOC/PVC

Screened Interval (ft. BGL): —

Filter Pack Interval (ft. BGL): —

Starting Water Level (ft. BMP): 7.16

Casing Stickup (ft.): —

Starting Water Level (ft. BGL): 7.16

Total Depth (ft. BGL): —

Casing Diameter (in ID): 2.0

Casing Volume (gal.): —

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: alconox & DI rinse

Purging: peristaltic / bladder Sampling: same

Disposal of Discharged Water: on site

INSTRUMENTS (Indicate make, model, I.d.)

Water Level: KECK Thermometer: HORIBA

pH Meter: HORIBA Field Calibration: 7-4

Conductivity Meter: HORIBA Field Calibration: 1413

Filter / Filter Size: — Other:

SAMPLING MEASUREMENTS

1526 Time	Cum. Vol (gal. or L)	Purge Rate (gal. or L/m)	Temp. (oC)	pH	Spec. Cond. (mmhos/cm)	D.O	Redox (mV)	Turbidity & Color	Water Depth (ft BMP)
1536	—	.2	22.7	6.71	1660	0.47	-52	4.8	7.39
1541		↓	22.9	6.72	1640	0.39	-51	5.6	7.41
1546		↓	22.9	6.71	1640	0.38	-51	5.8	7.42

Water Level (ft. BMP) at End of Purge: 7.42 Sample Intake Depth (ft. BMP):

SAMPLE INVENTORY

Bottles Collected				Filtration		Remarks
Time	Volume	Composition (G, P)	No.	(Y / N)	Preservation	(quality control sample, other)
1600	250mL	P	1	N	—	GEN CHEM
↓	500mL	P	1	N	HNO_3	METALS
	1L	P	2	N	HNO_3	—
↓	40mL	G	3	N	—	—

Comments:

Pastor, Behling & Wheeler, LLC
2201 Double Creek Dr., Suite 4004
Round Rock, TX 78664
(512) 671-3434 Fax (512) 671-3446

GROUNDWATER SAMPLING RECORD

PAGE 1 of 1

Project Number: 191222G2-D Project Name: LUMINANT - MCSES - AI Date: 5-15-19

Sample Number: BMW-28
Sampling Location (well ID, etc.): BMW-28
Sampled by: JTB
Measuring Point (MP) of Well: TOC/PVC
Screened Interval (ft. BGL): —
Filter Pack Interval (ft. BGL): —

Starting Water Level (ft. BMP): 18.22
Casing Stickup (ft.): —
Starting Water Level (ft. BGL): 18.22
Total Depth (ft. BGL): —
Casing Diameter (in ID): 2.0
Casing Volume (gal.): —

QUALITY ASSURANCE

METHODS (describe):
Cleaning Equipment: alconox & DI rinse
Purging: peristaltic / bladder Sampling: same
Disposal of Discharged Water: on site

INSTRUMENTS (Indicate make, model, I.d.)

Water Level: KECK Thermometer: HORIBA
pH Meter: HORIBA Field Calibration: 7-4
Conductivity Meter: HORIBA Field Calibration: 1413
Filter / Filter Size: — Other:

SAMPLING MEASUREMENTS

Time (1427)	Cum. Vol. (gal. or L)	Purge Rate (gal. or L/m)	Temp. (oC)	pH	Spec. Cond. (mmhos/cm)	D.O	Redox (mV)	Turbidity & Color	Water Depth (ft BMP)
1437	—	.2	23.2	6.79	1720	0.41	-41	6.9	18.41
1442		↓	23.1	6.77	1740	0.26	-44	5.7	18.42
1447		↓	23.2	6.77	1740	0.25	-43	5.9	18.41

Water Level (ft. BMP) at End of Purge: 18.41 Sample Intake Depth (ft. BMP):

SAMPLE INVENTORY

Bottles Collected				Filtration		Remarks
Time	Volume	Composition (G, P)	No.	(Y / N)	Preservation	(quality control sample, other)
1500	250mL	P	1	N	—	GEN CHEM
↓	500mL	P	1	N	HNO_3	METALS
	1L	P	2	N	HNO_3	—
	40mL	G	3	N	—	—

Comments:

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GROUNDWATER SAMPLING RECORD

PAGE 1 of 1

Project Number: 191222G2-D Project Name: LUMINANT - MCSES - AI Date: 5-15-19

Sample Number: BMW-18	Starting Water Level (ft. BMP): 21.97
Sampling Location (well ID, etc.): BMW-18	Casing Stickup (ft.): -
Sampled by: JTB	Starting Water Level (ft. BGL): 21.97
Measuring Point (MP) of Well: TOC/PVC	Total Depth (ft. BGL): -
Screened Interval (ft. BGL): -	Casing Diameter (in ID): 2.0
Filter Pack Interval (ft. BGL): -	Casing Volume (gal.): -

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: alconox & DI rinse

Purging: peristaltic / bladder Sampling: same

Disposal of Discharged Water: on site

INSTRUMENTS (Indicate make, model, I.d.)

Water Level:	KECK	Thermometer:	HORIBA
pH Meter:	HORIBA	Field Calibration:	7-4
Conductivity Meter:	HORIBA	Field Calibration:	1413
Filter / Filter Size:	-	Other:	

SAMPLING MEASUREMENTS

Time (1338)	Cum. Vol (gal. or L)	Purge Rate (gal. or L/m)	Temp. (oC)	pH	Spec. Cond. (mmhos/cm)	D.O.	Redox (mV)	Turbidity & Color	Water Depth (ft BMP)
1348	-	.2	23.4	6.68	1870	0.61	-29	6.7	22.17
1352		↓	23.5	6.64	1910	0.49	-31	7.1	22.16
1358			23.4	6.65	1920	0.49	-32	7.2	22.16

Water Level (ft. BMP) at End of Purge: 22.16 Sample Intake Depth (ft. BMP):

SAMPLE INVENTORY

Bottles Collected				Filtration		Remarks
Time	Volume	Composition (G, P)	No.	(Y / N)	Preservation	(quality control sample, other)
1410	250mL	P	1	N	-	GEN CHEM
↓	500mL	P	1	N	HNO_3	METALS
	1L	P	2	N	HNO_3	-
	40mL	G	3	N	-	-

Comments:

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GROUNDWATER SAMPLING RECORD

PAGE 1 of 1

Project Number: 191222b2-D Project Name: LUMINANT - MCSES - A1 Date: 5-15-19

Sample Number:	BMW-19	Starting Water Level (ft. BMP):	12.49
Sampling Location (well ID, etc.):	BMW-19	Casing Stickup (ft.):	-
Sampled by:	JTB	Starting Water Level (ft. BGL):	12.49
Measuring Point (MP) of Well:	TOC/PVC	Total Depth (ft. BGL):	-
Screened Interval (ft. BGL):	-	Casing Diameter (in ID):	2.0
Filter Pack Interval (ft. BGL):	-	Casing Volume (gal.):	-

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: alconox & DI rinse

Purging: peristaltic / bladder Sampling: same

Disposal of Discharged Water: on site

INSTRUMENTS (Indicate make, model, I.d.)

Water Level:	KECK	Thermometer:	HORIBA
pH Meter:	HORIBA	Field Calibration:	7-4
Conductivity Meter:	HORIBA	Field Calibration:	1413
Filter / Filter Size:	-	Other:	

SAMPLING MEASUREMENTS

1252 Time	Cum. Vol. (gal. or L)	Purge Rate (gal. or L/m)	Temp. (oC)	pH	Spec. Cond. (mmhos/cm)	D.O	Redox (mV)	Turbidity & Color	Water Depth (ft BMP)
1302	-	.2	22.9	6.86	1830	1.16	-13	9.6	12.71
1308			27.0	6.89	1860	1.09	-14	4.6	12.70
1315		↓	23.0	6.88	1870	1.16	-14	5.2	12.70

Water Level (ft. BMP) at End of Purge: 12.70 Sample Intake Depth (ft. BMP):

SAMPLE INVENTORY

Bottles Collected				Filtration		Remarks
Time	Volume	Composition (G, P)	No.	(Y / N)	Preservation	(quality control sample, other)
1325	250mL	P	1	N	-	GEN CHEM
↓	500mL	P	1	N	HNO_3	METALS
	1L	P	2	N	HNO_3	-
	40mL	G	3	N	-	-

Comments:

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GROUNDWATER SAMPLING RECORD

PAGE 1 of 1

Project Number: 191222b2-D Project Name: LUMINANT - MCSES - A1 Date: 5-15-19

Sample Number: BMW-11AR

Sampling Location (well ID, etc.): BMW-11AR

Sampled by: JTB

Measuring Point (MP) of Well: TOC/PVC

Screened Interval (ft. BGL): —

Filter Pack Interval (ft. BGL): —

Starting Water Level (ft. BMP): 31.87

Casing Stickup (ft.): —

Starting Water Level (ft. BGL): 31.87

Total Depth (ft. BGL): —

Casing Diameter (in ID): 2.0

Casing Volume (gal.): —

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: alconox & DI rinse

Purging: peristaltic / bladder Sampling: Same

Disposal of Discharged Water: on site

INSTRUMENTS (Indicate make, model, I.d.)

Water Level: KECK Thermometer: HORIBA

pH Meter: HORIBA Field Calibration: 7-4

Conductivity Meter: HORIBA Field Calibration: 1413

Filter / Filter Size: — Other:

SAMPLING MEASUREMENTS

1302 Time	Cum. Vol (gal. or L)	Purge Rate (gal. or L/m)	Temp. (oC)	pH	Spec. Cond. (mmhos/cm)	D.O	Redox (mV)	Turbidity & Color	Water Depth (ft BMP)
1211	—	.2	22.7	6.83	1570	0.39	-17	4.8	32.09
1216		↓	22.9	6.84	1590	0.33	-21	3.8	32.11
1223		↓	22.9	6.84	1590	0.34	-22	4.4	32.12

Water Level (ft. BMP) at End of Purge: 32.12 Sample Intake Depth (ft. BMP):

SAMPLE INVENTORY

Bottles Collected				Filtration		Remarks
Time	Volume	Composition (G, P)	No.	(Y / N)	Preservation	(quality control sample, other)
1235	250mL	P	1	N	—	GEN CHEM
↓	500mL	P	1	N	HNO_3	METALS
	1L	P	2	N	HNO_3	—
↓	40mL	G	3	N	—	—

Comments:

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GROUNDWATER SAMPLING RECORD

PAGE 1 of 1

Project Number: 191222b2-D Project Name: LUMINANT - MCSES - A1 Date: 5-15-19

Sample Number:	BMW-26	Starting Water Level (ft. BMP):	1.62
Sampling Location (well ID, etc.):	BMW-26	Casing Stickup (ft.):	-
Sampled by:	JTB	Starting Water Level (ft. BGL):	1.62
Measuring Point (MP) of Well:	TOC/PVC	Total Depth (ft. BGL):	-
Screened Interval (ft. BGL):	-	Casing Diameter (in ID):	2.0
Filter Pack Interval (ft. BGL):	-	Casing Volume (gal.):	-

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: alconox & DI rinse

Purging: peristaltic / bladder Sampling: same

Disposal of Discharged Water: on site

INSTRUMENTS (Indicate make, model, I.d.)

Water Level:	KECK	Thermometer:	HORIBA
pH Meter:	HORIBA	Field Calibration:	7-4
Conductivity Meter:	HORIBA	Field Calibration:	1413
Filter / Filter Size:	-	Other:	

SAMPLING MEASUREMENTS

Time (1409)	Cum. Vol. (gal. or (L))	Purge Rate (gal. or (L)/m)	Temp. (oC)	pH	Spec. Cond. (mmhos/cm)	D.O	Redox (mV)	Turbidity & Color	Water Depth (ft BMP)
1119	-	.2	23.9	6.91	1320	0.71	-47	8.6	1.81
1123		↓	24.1	6.90	1360	0.49	-44	6.7	1.82
1129		↓	24.2	6.90	1370	0.51	-46	6.8	1.81

Water Level (ft. BMP) at End of Purge: 1.81 Sample Intake Depth (ft. BMP):

SAMPLE INVENTORY

Bottles Collected				Filtration		Remarks
Time	Volume	Composition (G, P)	No.	(Y / N)	Preservation	(quality control sample, other)
1140	250mL	P	1	N	-	GEN CHEM
↓	500mL	P	1	N	HNO_3	METALS
	1L	P	2	N	HNO_3	-
↓	40mL	G	3	N	-	-

Comments:

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GROUNDWATER SAMPLING RECORD

PAGE 1 of 1

Project Number: 191222b2-D Project Name: LUMINANT - MCSES - A1 Date: 5-15-19

Sample Number: BMW-27

Sampling Location (well ID, etc.): BMW-27

Sampled by: JTB

Measuring Point (MP) of Well: TOC/PVC

Screened Interval (ft. BGL): —

Filter Pack Interval (ft. BGL): —

Starting Water Level (ft. BMP): 2.79

Casing Stickup (ft.): —

Starting Water Level (ft. BGL): 2.79

Total Depth (ft. BGL): —

Casing Diameter (in ID): 2.0

Casing Volume (gal.): —

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: alconox & DI rinse

Purging: peristaltic / bladder Sampling: same

Disposal of Discharged Water: on site

INSTRUMENTS (Indicate make, model, I.d.)

Water Level: KECK Thermometer: HORIBA

pH Meter: HORIBA Field Calibration: 7-4

Conductivity Meter: HORIBA Field Calibration: 1413

Filter / Filter Size: — Other:

SAMPLING MEASUREMENTS

1022 Time	Cum. Vol. (gal. or L)	Purge Rate (gal. or L/m)	Temp. (oC)	pH	Spec. Cond. (mmhos/cm)	D.O.	Redox (mV)	Turbidity & Color	Water Depth (ft BMP)
1032	—	.2	23.4	6.71	1970	0.60	-27	13	3.11
1037		↓	23.3	6.72	1940	0.46	-28	9.1	3.12
1043		↓	23.3	6.72	1950	0.44	-28	7.8	3.12

Water Level (ft. BMP) at End of Purge: 3.12 Sample Intake Depth (ft. BMP):

SAMPLE INVENTORY

Bottles Collected				Filtration		Remarks
Time	Volume	Composition (G, P)	No.	(Y / N)	Preservation	(quality control sample, other)
1055	250mL	P	1	N	—	GEN CHEM
↓	500mL	P	1	N	HNO_3	METALS
	1L	P	2	N	HNO_3	—
↓	40mL	G	3	N	—	—

Comments:

Pastor, Behling & Wheeler, LLC
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GROUNDWATER SAMPLING RECORD

PAGE 1 of 1

Project Number: 191222G2-D Project Name: LUMINANT - MCSES - AI Date: 5-15-19

Sample Number: BMW-21

Sampling Location (well ID, etc.): BMW-21

Sampled by: JTB

Measuring Point (MP) of Well: TOC/PVC

Screened Interval (ft. BGL): —

Filter Pack Interval (ft. BGL): —

Starting Water Level (ft. BMP): 4.23

Casing Stickup (ft.): —

Starting Water Level (ft. BGL): 4.23

Total Depth (ft. BGL): —

Casing Diameter (in ID): 2.0

Casing Volume (gal.): —

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: alconox & DI rinse

Purging: peristaltic / bladder Sampling: same

Disposal of Discharged Water: on site

INSTRUMENTS (Indicate make, model, I.d.)

Water Level: KECK Thermometer: HORIBA

pH Meter: HORIBA Field Calibration: 7-4

Conductivity Meter: HORIBA Field Calibration: 1413

Filter / Filter Size: — Other:

SAMPLING MEASUREMENTS

Time	Cum. Vol (gal. or L)	Purge Rate (gal. or L/m)	Temp. (oC)	pH	Spec. Cond. (mmhos/cm)	D.O.	Redox (mV)	Turbidity & Color	Water Depth (ft BMP)
0926	—	.2	22.9	6.89	1810	0.91	-6	5.7	4.91
0942			22.7	6.91	1840	0.77	-11	5.1	4.43
0947		↓	22.7	6.92	1850	0.78	-12	6.8	4.43

Water Level (ft. BMP) at End of Purge: 4.43 Sample Intake Depth (ft. BMP):

SAMPLE INVENTORY

Bottles Collected				Filtration		Remarks
Time	Volume	Composition (G, P)	No.	(Y / N)	Preservation	(quality control sample, other)
0945	250mL	P	1	N	—	GEN CHEM
↓	500mL	P	1	N	HNO_3	METALS
	1L	P	2	N	HNO_3	—
	40mL	G	3	N	—	—

Comments:

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GROUNDWATER SAMPLING RECORD

PAGE 1 of 1

Project Number: 191222G2-D Project Name: LUMINANT - MCSES - AI Date: 5-15-19

Sample Number: BMW-22

Sampling Location (well ID, etc.): BMW-22

Sampled by: JTB

Measuring Point (MP) of Well: TOC/PVC

Screened Interval (ft. BGL): —

Filter Pack Interval (ft. BGL): —

Starting Water Level (ft. BMP): 4.47

Casing Stickup (ft.): —

Starting Water Level (ft. BGL): 4.47

Total Depth (ft. BGL): —

Casing Diameter (in ID): 2.0

Casing Volume (gal.): —

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: alconox & DI rinse

Purging: peristaltic / bladder Sampling: same

Disposal of Discharged Water: on site

INSTRUMENTS (Indicate make, model, I.d.)

Water Level: KECK Thermometer: HORIBA

pH Meter: HORIBA Field Calibration: 7-4

Conductivity Meter: HORIBA Field Calibration: 1413

Filter / Filter Size: — Other:

SAMPLING MEASUREMENTS

Time	Cum. Vol (gal. or L)	Purge Rate (gal. or L/m)	Temp (oC)	pH	Spec. Cond. (mmhos/cm)	D.O	Redox (mV)	Turbidity & Color	Water Depth (ft BMP)
0852	—	.2	23.1	6.64	1790	1.26	-39	13	4.61
0858		↓	23.2	6.67	1810	0.92	-41	10	4.64
0902		↓	23.1	6.68	1810	0.91	-42	10	4.63

Water Level (ft. BMP) at End of Purge: 4.63 Sample Intake Depth (ft. BMP):

SAMPLE INVENTORY

Bottles Collected				Filtration		Remarks
Time	Volume	Composition (G, P)	No.	(Y / N)	Preservation	(quality control sample, other)
0915	250mL	P	1	N	—	GEN CHEM
↓	500mL	P	1	N	HNO_3	METALS
↓	1L	P	2	N	HNO_3	—
↓	40mL	G	3	N	—	—

Comments:

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GROUNDWATER SAMPLING RECORD

PAGE 1 of 1

Project Number: 191222b2-D Project Name: LUMINANT - MCSES - A1 Date: 5-15-19

Sample Number:	BMW-23	Starting Water Level (ft. BMP):	9.98
Sampling Location (well ID, etc.):	BMW-23	Casing Stickup (ft.):	—
Sampled by:	JTB	Starting Water Level (ft. BGL):	9.98
Measuring Point (MP) of Well:	TOC/PVC	Total Depth (ft. BGL):	—
Screened Interval (ft. BGL):	—	Casing Diameter (In ID):	2.0
Filter Pack Interval (ft. BGL):	—	Casing Volume (gal.):	—

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: alconox & DI rinse

Purging: peristaltic / bladder Sampling: None

Disposal of Discharged Water: on site

INSTRUMENTS (Indicate make, model, I.d.)

Water Level:	KECK	Thermometer:	HORIBA
pH Meter	HORIBA	Field Calibration:	7-4
Conductivity Meter:	HORIBA	Field Calibration:	1413
Filter / Filter Size:	—	Other:	

SAMPLING MEASUREMENTS

Time (0753)	Cum. Vol. (gal. or (L))	Purge Rate (gal. or (L/m))	Temp. (oC)	pH	Spec. Cond. (mmhos/cm)	D.O	Redox (mV)	Turbidity & Color	Water Depth (ft BMP)
0802	—	.2	22.7	6.82	1960	0.79	-27	11	10.27
0808		1	23.1	6.84	1940	0.52	-26	7.6	10.28
0814		↓	23.2	6.84	1940	0.53	-26	8.2	10.28

Water Level (ft. BMP) at End of Purge: Sample Intake Depth (ft. BMP):

SAMPLE INVENTORY

Bottles Collected				Filtration		Remarks
Time	Volume	Composition (G, P)	No.	(Y / N)	Preservation	(quality control sample, other)
0825	250mL	P	1	N	—	GEN CHEM
	500mL	P	1	N	HNO_3	METALS
	1L	P	2	N	HNO_3	—
↓	40mL	G	3	N	—	—

Comments:

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GROUNDWATER SAMPLING RECORD

PAGE 1 of 1

Project Number: 191222G2-D Project Name: LUMINANT - MCSES - AI Date: 5-15-19

Sample Number: BMW-24
Sampling Location (well ID, etc.): BMW-24
Sampled by: JTB
Measuring Point (MP) of Well: TOC/PVC
Screened Interval (ft. BGL): —
Filter Pack Interval (ft. BGL): —

Starting Water Level (ft. BMP): 9.83
Casing Stickup (ft.): —
Starting Water Level (ft. BGL): 9.83
Total Depth (ft. BGL): —
Casing Diameter (in ID): 2.0
Casing Volume (gal.): —

QUALITY ASSURANCE

METHODS (describe):
Cleaning Equipment: alconox & DI rinse
Purging: peristaltic / bladder Sampling: same
Disposal of Discharged Water: on site

INSTRUMENTS (Indicate make, model, I.d.)

Water Level: KECK
pH Meter: HORIBA
Conductivity Meter: HORIBA
Filter / Filter Size: —
Thermometer: HORIBA
Field Calibration: 7-4
Field Calibration: 1413
Other:

SAMPLING MEASUREMENTS

0709 Time	Cum. Vol. (gal. or L)	Purge Rate (gal. or L/m)	Temp. (oC)	pH	Spec. Cond. (mmhos/cm)	D.O.	Redox (mV)	Turbidity & Color	Water Depth (ft BMP)
0713	—	.2	21.7	6.74	2320	0.61	-17	6.6	10.16
0718		↓	22.1	6.77	2210	0.60	-16	7.8	10.17
0723			22.2	6.78	2210	0.60	-16	7.7	10.17

Water Level (ft. BMP) at End of Purge: 10.17
Sample Intake Depth (ft. BMP):

SAMPLE INVENTORY

Bottles Collected				Filtration		Remarks
Time	Volume	Composition (G, P)	No.	(Y / N)	Preservation	(quality control sample, other)
0725	250mL	P	1	N	—	GEN CHEM
↓	500mL	P	1	N	HNO_3	METALS
	1L	P	2	N	HNO_3	—
↓	40mL	G	3	N	—	—

Comments:

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Groundwater Sample Collection

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GOLDER

Project/Phase	19122434-D	**Equipment Decon**	☒ Dedicated equipment ☐ Decon between locations	**Depth to Water**	9.50 ft. BMP
Site Location	A-1			**Casing Stickup**	___ ft.
Date	6-13-19	**Reference Point**	☒ Top of casing	**Depth to Water**	___ ft. BGL
MW ID	BMW-25	**Location**	☐ Other ___	**Total MW Depth**	___ ft. BGL
Sample ID	BMW-25	**Water Quality**		**MW Diameter**	2 inches
Pump	☒ Waterra ☐ Submersible	**Meter Model**	1-0210A 0.5U	**MW Volume**	___ gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	___	**Pump Intake Depth**	___ ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate (L/min)	Cumulative Purge Volume (L)	Depth to Water (ft)	Temp (°C) ☐ NM	pH ☐ NM	Conductivity (µS/m or mS/cm) ☐ not measured	Dissolved Oxygen (mg/L) ☐ not measured	Redox Potential (mV) ☐ not measured	Turbidity (NTU) ☐ NM
0900	0.1	1.0		21.96	6.74	3.56	10.93	330	10.6
0910		2.0		21.42	6.96	3.62	9.38	316	10.9
0915		2.5		20.21	7.00	2.48	9.27	317	14.2
0920		3.0		21.36	7.01	2.21	9.19	312	16.9
0925		3.5		21.42	7.02	2.13	9.19	309	8.4
0930		4.0		21.93	7.01	2.16	9.21	309	7.0
Purging was completed based on:	☐ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)								

Bottles Collected				Filtration	Preserved	Notes and Observations
Time	Volume	Composition (G / P)	No.	(10µm / 45µm)	(type)	(quality control sample, other)
0930				☐ filtered ☒ unfiltered		
"				☐ filtered ☒ unfiltered		

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☐ 10 Low Flow Groundwater Sample Collection.

Field Team Leader Alex Bartlo (name) _____ (signature)

Groundwater Sample Collection

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GOLDER

Project/Phase	19122484-D	**Equipment Decon**	☐ Dedicated equipment	**Depth to Water**	29.80 ft. BMP
Site Location	A-1		☐ Decon between locations	**Casing Stickup**	___ ft.
Date	6-13-19	**Reference Point**	~~☐ Top~~ of casing	**Depth to Water**	___ ft. BGL
MW ID	BMW-29	**Location**	☐ Other ___	**Total MW Depth**	___ ft. BGL
Sample ID	BMW-29	**Water Quality**		**MW Diameter**	2 inches
Pump	~~☐ Waterra~~ ☐ Submersible	**Meter Model**	Ladder Pump	**MW Volume**	___ gallons
	☐ Peristaltic ☐ Bladder	**Unit Number**	Horiba U-50	**Pump Intake Depth**	___ ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate (L/min)	Cumulative Purge Volume (L)	Depth to Water (ft)	Temp (°C) ☐ NM	pH ☐ NM	Conductivity (µS/m or mS/cm) ☐ not measured	Dissolved Oxygen (mg/L) ☐ not measured	Redox Potential (mV) ☐ not measured	Turbidity (NTU) ☐ NM
1000	0.1	1.0		22.94	6.36	1.98	10.36	246	131.2
1010		2.0		23.36	6.41	2.02	10.41	256	84.0
1015		2.5		24.04	7.30	2.01	10.74	274	62.8
1020		3.0		24.13	7.10	2.00	9.96	281	71.9
1025		3.5		24.24	7.11	2.00	9.34	295	62.1
1030		4.0		24.19	7.19	2.00	9.24	299	92.4
Purging was completed based on:	☐ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)								

Bottles Collected				Filtration (10µm / 45µm)	Preserved (type)	Notes and Observations (quality control sample, other)
Time	Volume	Composition (G / P)	No.			
1030				☐ filtered ☐ unfiltered		
				☐ filtered ☐ unfiltered		

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☐ 10 Low Flow Groundwater Sample Collection.

Field Team Leader Alex Borzello (name) Alex Borzello (signature)

Groundwater Sample Collection

Page ___ of ___

GOLDER

Project/Phase	19122434-D	Equipment Decon	☐ Dedicated equipment ☐ Decon between locations	Depth to Water	31.54 ft. BMP
Site Location	A-1			Casing Stickup	ft.
Date	6-13-19	Reference Point	☒ Top of casing	Depth to Water	ft. BGL
MW ID	BMW-30	Location	☐ Other	Total MW Depth	ft. BGL
Sample ID	BMW-30	Water Quality		MW Diameter	2 inches
Pump	☒ Waterra ☐ Submersible ☐ Peristaltic ☒ Bladder	Meter Model	Bladder Pump	MW Volume	gallons
		Unit Number	Horiba U50	Pump Intake Depth	ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate (L/min)	Cumulative Purge Volume (L)	Depth to Water (ft)	Temp (°C) ☐ NM	pH ☐ NM	Conductivity (µS/m or mS/cm) ☐ not measured	Dissolved Oxygen (mg/L) ☐ not measured	Redox Potential (mV) ☐ not measured	Turbidity (NTU) ☐ NM
1220	0.1	1.0		24.26	6.94	1.01	9.36	146	101
1230		2.0		24.52	6.92	0.92	8.41	202	97
1235		2.5		24.76	7.08	1.30	6.24	219	88
1240		3.0		24.69	7.09	1.21	7.69	258	100
1245		3.5		24.52	7.09	1.13	7.38	292	90
1250		4.0		24.61	7.09	1.15	7.94	303	82

Purging was completed based on: ☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)

Bottles Collected				Filtration (10µm / 45µm)	Preserved (type)	Notes and Observations (quality control sample, other)
Time	Volume	Composition (G / P)	No.			
1250				☐ filtered ☒ unfiltered		
				☐ filtered ☒ unfiltered		

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☐ 10 Low Flow Groundwater Sample Collection.

Field Team Leader Alex Gonzalez (name) Alex Gonzalez (signature)

Groundwater Sample Collection

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GOLDER

Project/Phase	19122434-D	Equipment Decon	☒ Dedicated equipment ☐ Decon between locations	Depth to Water	9.26 ft. BMP
Site Location	A-1			Casing Stickup	ft.
Date	6-13-19	Reference Point	☒ Top of casing	Depth to Water	ft. BGL
MW ID	BMW-31	Location	☐ Other	Total MW Depth	ft. BGL
Sample ID	BMW-31	Water Quality		MW Diameter	inches
Pump	☒ Waterra ☐ Submersible ☒ Peristaltic ☐ Bladder	Meter Model	Horiba	MW Volume	gallons
		Unit Number		Pump Intake Depth	ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate (L/min)	Cumulative Purge Volume (L)	Depth to Water (ft)	Temp (°C) ☐ NM	pH ☐ NM	Conductivity (µS/m or mS/cm) ☐ not measured	Dissolved Oxygen (mg/L) ☐ not measured	Redox Potential (mV) ☐ not measured	Turbidity (NTU) ☐ NM
1400	0.1	1.0		24.90	6.90	2.16	8.36	209	126
1410		2.0		23.26	7.01	2.01	9.31	213	131
1415		2.5		24.01	7.04	2.00	9.24	224	145
1420		3.0		24.21	7.06	1.97	9.30	239	111
1425		3.5		24.86	7.01	1.82	9.21	250	130
1430		4.0		24.52	7.01	1.80	9.14	254	124
Purging was completed based on:	☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)								

Bottles Collected				Filtration (10µm / 45µm)	Preserved (type)	Notes and Observations (quality control sample, other)
Time	Volume	Composition (G / P)	No.			
1430				☐ filtered ☒ unfiltered		
1C				☐ filtered ☒ unfiltered		

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☐ 10 Low Flow Groundwater Sample Collection.

Field Team Leader Alex Bonzalo (name) Alex Bonzalo (signature)

Groundwater Sample Collection

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GOLDER

Project/Phase	19122434-D	**Equipment Decon**	☒ Dedicated equipment ☐ Decon between locations	**Depth to Water**	12.53 ft. BMP
Site Location	A-1			**Casing Stickup**	3.00 ft.
Date	6-13-19	**Reference Point**	☒ Top of casing	**Depth to Water**	9.53 ft. BGL
MW ID	BMW-32	**Location**	☐ Other ___	**Total MW Depth**	40.00 ft. BGL
Sample ID	BMW-32	**Water Quality**		**MW Diameter**	2 inches
Pump	☒ Waterra ☐ Submersible	**Meter Model**	Horiba U 50	**MW Volume**	14 gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**		**Pump Intake Depth**	30.00 ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate (L/min)	Cumulative Purge Volume (L)	Depth to Water (ft)	Temp (°C) ☐ NM	pH ☐ NM	Conductivity (µS/m or mS/cm) ☐ not measured	Dissolved Oxygen (mg/L) ☐ not measured	Redox Potential (mV) ☐ not measured	Turbidity (NTU) ☐ NM
0700	0.1	1.0		20.58	6.59	2.32	9.98	167	15.8
0710		2.0		21.45	6.48	2.27	9.35	142	13.5
0715		2.5		20.09	6.52	2.26	9.03	134	13.4
0720		3.0		20.12	6.54	2.26	9.03	124	13.0
0725		3.5		20.01	6.56	2.26	9.01	116	14.2
0730		4.0		20.46	6.56	2.29	9.00	114	12.1
Purging was completed based on:	☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)								

Bottles Collected				Filtration	Preserved	Notes and Observations
Time	Volume	Composition (G / P)	No.	(10µm / 45µm)	(type)	(quality control sample, other)
0730				☐ filtered ☐ unfiltered		
0730				☐ filtered ☐ unfiltered		

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☐ 10 Low Flow Groundwater Sample Collection.

Field Team Leader Alex Barzola (name) Alex Barzola (signature)

Groundwater Sample Collection

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GOLDER

Project/Phase	19122434-D	**Equipment Decon**	☐ Dedicated equipment	**Depth to Water**	26.01 ft. BMP
Site Location	A-1		☐ Decon between locations	**Casing Stickup**	2.85 ft.
Date	6-13-19	**Reference Point**	☒ Top of casing	**Depth to Water**	ft. BGL
MW ID	BMW-33	**Location**	☐ Other	**Total MW Depth**	48.00 ft. BGL
Sample ID	BMW-33	**Water Quality**		**MW Diameter**	2 inches
Pump	☒ Waterra ☐ Submersible	**Meter Model**	Horiba U 50	**MW Volume**	gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**		**Pump Intake Depth**	ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate (L/min)	Cumulative Purge Volume (L)	Depth to Water (ft)	Temp (°C) ☐ NM	pH ☐ NM	Conductivity (µS/m or mS/cm) ☐ not measured	Dissolved Oxygen (mg/L) ☐ not measured	Redox Potential (mV) ☐ not measured	Turbidity (NTU) ☐ NM
0745	0.1	1.0		23.79	7.02	1.48	8.42	240	7.1
0755		2.0		23.32	6.91	1.49	8.52	228	1.6
0800		2.5		23.63	6.82	1.47	8.51	227	2.7
0805		3.0		23.41	6.80	1.36	8.36	226	2.1
0810		3.5		23.64	6.80	1.40	8.21	226	1.9
0815		4.0		23.31	6.75	1.42	8.17	226	1.7
Purging was completed based on:	☐ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)								

Bottles Collected				Filtration (10µm / 45µm)	Preserved (type)	Notes and Observations (quality control sample, other)
Time	Volume	Composition (G / P)	No.			
0815				☐ filtered ☒ unfiltered		
0815				☐ filtered ☒ unfiltered		

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☐ 10 Low Flow Groundwater Sample Collection.

Field Team Leader Alex Bonzalo (name) Alex Bonzalo (signature)

Groundwater Sample Collection

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GOLDER

Project/Phase	19122434-D	Equipment Decon	☒ Dedicated equipment ☐ Decon between locations	Depth to Water	9.49 ft. BMP
Site Location	A-1			Casing Stickup	ft.
Date	6-13-19	Reference Point	☒ Top of casing	Depth to Water	ft. BGL
MW ID	MW PDP 2019-1	Location	☐ Other	Total MW Depth	ft. BGL
Sample ID	MW-PDP-2019-1	Water Quality		MW Diameter	inches
Pump	☒ Waterra ☐ Submersible ☒ Peristaltic ☐ Bladder	Meter Model	Horiba U-50	MW Volume	gallons
		Unit Number		Pump Intake Depth	ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate (L/min)	Cumulative Purge Volume (L)	Depth to Water (ft)	Temp (°C) ☐ NM	pH ☐ NM	Conductivity (µS/m or mS/cm) ☐ not measured	Dissolved Oxygen (mg/L) ☐ not measured	Redox Potential (mV) ☐ not measured	Turbidity (NTU) ☐ NM
1530	0.1	1.0		22.14	6.84	2.01	12.42	92	214
1540		2.0		22.04	7.36	1.36	12.36	109	105
1545		2.5		22.12	7.41	1.42	11.92	142	90
1550		3.0		22.16	7.02	1.01	10.34	109	69
1600		3.5		22.36	7.09	102	10.19	174	13
1605		4.0		22.41	7.10	1.00	10.61	202	15
Purging was completed based on:	☐ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)								

Bottles Collected				Filtration (10µm / 45µm)	Preserved (type)	Notes and Observations (quality control sample, other)
Time	Volume	Composition (G / P)	No.			
1605				☐ filtered ☒ unfiltered		
				☐ filtered ☒ unfiltered		

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☐ 10 Low Flow Groundwater Sample Collection.

Field Team Leader Alex Bonzalo (name) Alex Bonzalo (signature)

GROUNDWATER SAMPLING RECORD

PAGE 1 of 1

Project Number: 191222b2-D Project Name: LUMINANT - HARDA LANDFILL Date: 7-9-19

Sampling Location (well ID, etc.): AIV-1B-OB-95 Starting Water Level (ft. BMP): 23.12

Sample Number: AIV-1B-OB-95 Casing Stickup (ft.): —

Sampled by: JTB WL (ft. BMP): _____ (ft. BGL): _____

Measuring Point (MP) of Well: (TOC) - Steel or (PVC) TD (ft. BMP): _____ (ft. BGL): _____

Screened Interval (ft. BGL): — Ft. water: _____ Casing Dia. (In ID): _____

Filter Pack Interval (ft. BGL): — 1X Casing Vol (gal.): _____ 3X (gal): _____

QUALITY ASSURANCE

Gallons/Foot: 2": 0.16 4": 0.65 5.25": 1.12 6": 1.47 6.25": 1.59

METHODS (describe): Low Flow - Dedicated Tubing/Equipment

Cleaning Equipment: DI/Alconox Rinse

Purge: (Peristaltic Pump) / SS Pump / Bailer Sampling: (Peristaltic Pump) / SS Pump / Bailer

Disposal of Discharged Water:

INSTRUMENTS (Indicate make, model, I.d.)

Water Level: SOLINST Other:

Multi Meter: HORIBA

Field Calibration: AUTO CAL

Filter / Filter Size:

SAMPLING MEASUREMENTS

Begin Purge: 1109

Time	DTW (ft BTOC)	Cum. Vol. (gal. or (L))	Purge Rate (gal. or (L/m))	Temp. (oC)	DO (mg/L)	Spec. Cond. (µs/cm)	pH	ORP (mV)	Turbidity (NTU)	Color & Sediment
1118	23.31	—	.1	20.6	0.62	1920	6.71	-23	5.7	neutral
1124	23.34		.1	20.7	0.51	1930	6.68	-26	6.7	"
1129	23.35		"	20.7	0.52	1930	6.67	-26	6.2	"

WL (ft. BMP) at End of Purge: Sample Intake Depth (ft. BMP):

SAMPLE INVENTORY

Bottles Collected					Filtration	Preservation	Remarks
Time		Volume	Composition (G, P)	No.	(Y / N)	(type)	(quality control sample, other)
1135		500mL	P	1	N		
1135		250mL	P	1	N		

Comments:

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Round Rock, Texas 78664
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GROUNDWATER SAMPLING RECORD

PAGE 1 of 1

Project Number: 19122262-D Project Name: LUMINANT - AI AREA LANDFILL Date: 7-9-19

Sampling Location (well ID, etc.): BMW-25 Starting Water Level (ft. BMP): 9.34

Sample Number: BMW-25 Casing Stickup (ft.): _____

Sampled by: JTB WL (ft. BMP): _____ (ft. BGL): _____

Measuring Point (MP) of Well: (TOC) - Steel or (PVC) TD (ft. BMP): _____ (ft. BGL): _____

Screened Interval (ft. BGL): — Ft. water: _____ Casing Dia. (In ID): _____

Filter Pack Interval (ft. BGL): — 1X Casing Vol (gal.): _____ 3X (gal): _____

QUALITY ASSURANCE

Gallons/Foot: 2": 0.16 4": 0.65 5.25": 1.12 6": 1.47 6.25": 1.59

METHODS (describe): Low Flow - Dedicated Tubing/Equipment

Cleaning Equipment: DI/Alconox Rinse

Purge: (Peristaltic Pump) / SS Pump / Bailer Sampling: (Peristaltic Pump) / SS Pump / Bailer

Disposal of Discharged Water:

INSTRUMENTS (Indicate make, model, I.d.)

Water Level: SOLINST Other:

Multi Meter: HORIBA

Field Calibration: AUTO CAL

Filter / Filter Size:

SAMPLING MEASUREMENTS

Begin Purge:

1229 Time	DTW (ft BTOC)	Cum. Vol. (gal. or (L))	Purge Rate (gal. or (L/m))	Temp. (oC)	DO (mg/L)	Spec. Cond. (µs/cm)	pH	ORP (mV)	Turbidity (NTU)	Color & Sediment
1238	9.62	—	1	21.7	1.42	2030	6.82	27	7.4	mental
1244	9.64			21.5	1.17	2020	6.83	32	6.4	
1251	9.64			21.5	1.18	2030	6.82	29	7.1	

WL (ft. BMP) at End of Purge: Sample Intake Depth (ft. BMP):

SAMPLE INVENTORY

Bottles Collected					Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time		Volume	Composition (G, P)	No.			
1255		500mL	P	1	N		
1295		250mL	P	1	N		

Comments:

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GROUNDWATER SAMPLING RECORD

PAGE 1 of 1

Project Number: 19122262-D Project Name: LUMINANT- AI AREA LANDFILL Date: 7-9-19

Sampling Location (well ID, etc.): BMW-29 Starting Water Level (ft. BMP): 29.62

Sample Number: BMW-29 Casing Stickup (ft.): _____

Sampled by: JTB WL (ft. BMP): _____ (ft. BGL): _____

Measuring Point (MP) of Well: (TOC) - Steel or (PVC) TD (ft. BMP): _____ (ft. BGL): _____

Screened Interval (ft. BGL): - Ft. water: _____ Casing Dia. (In ID): _____

Filter Pack Interval (ft. BGL): - 1X Casing Vol (gal.): _____ 3X (gal): _____

QUALITY ASSURANCE

Gallons/Foot: 2": 0.16 4": 0.65 5.25": 1.12 6": 1.47 6.25": 1.59

METHODS (describe): Low Flow - Dedicated Tubing/Equipment

Cleaning Equipment: DI/Alconox Rinse

Purge: Peristaltic Pump / SS Pump / Bailer Bladder pump Sampling: Peristaltic Pump / SS Pump / Bailer bladder pump

Disposal of Discharged Water:

INSTRUMENTS (Indicate make, model, I.d.)

Water Level: SOLINST Other:

Multi Meter: HORIBA

Field Calibration: AUTOCAL

Filter / Filter Size:

SAMPLING MEASUREMENTS

Begin Purge:

0919 Time	DTW (ft BTOC)	Cum. Vol. (gal. or (L))	Purge Rate (gal. or (L /m))	Temp. (oC)	DO (mg/L)	Spec. Cond. (µs/cm)	pH	ORP (mV)	Turbidity (NTU)	Color & Sediment
0928	29.91	-	.1	22.6	2.16	1930	6.86	-17	16	mentual
0936	29.93		↓	22.7	1.76	1960	6.84	-13	7.3	
0940	29.92		↓	22.7	1.77	1960	6.83	-13	7.4	

WL (ft. BMP) at End of Purge: Sample Intake Depth (ft. BMP):

SAMPLE INVENTORY

Bottles Collected					Filtration	Preservation	Remarks
Time		Volume	Composition (G, P)	No.	(Y / N)	(type)	(quality control sample, other)
0945		500mL	P	1	N		
0945		250mL	P	1	N		

Comments:

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GROUNDWATER SAMPLING RECORD

PAGE 1 of 1

Project Number: 191222 62-D Project Name: LUMINANT - A1AREA LANDFILL Date: 7-9-19

Sampling Location (well ID, etc.): BMW-32

Sample Number: BMW-32

Sampled by: JTB

Measuring Point (MP) of Well: (TOC) - Steel or (PVC)

Screened Interval (ft. BGL): —

Filter Pack Interval (ft. BGL): —

Starting Water Level (ft. BMP): 12.39

Casing Stickup (ft.):

WL (ft. BMP): _____ (ft. BGL): _____

TD (ft. BMP): _____ (ft. BGL): _____

Ft. water: _____ Casing Dia. (In ID): _____

1X Casing Vol (gal.): _____ 3X (gal): _____

QUALITY ASSURANCE

Gallons/Foot: 2": 0.16 4": 0.65 5.25": 1.12 6": 1.47 6.25": 1.59

METHODS (describe): Low Flow - Dedicated Tubing/Equipment

Cleaning Equipment: DI/Alconox Rinse

Purge: (Peristaltic Pump) / SS Pump / Bailer Sampling: (Peristaltic Pump) / SS Pump / Bailer

Disposal of Discharged Water:

INSTRUMENTS (Indicate make, model, I.d.)

Water Level: SOLINST Other:

Multi Meter: HORIBA

Field Calibration: AUTO CAL

Filter / Filter Size:

SAMPLING MEASUREMENTS

Begin Purge:

1346 Time	DTW (ft BTOC)	Cum. Vol. (gal. or (L))	Purge Rate (gal. or (L/m))	Temp. (oC)	DO (mg/L)	Spec. Cond. (µs/cm)	pH	ORP (mV)	Turbidity (NTU)	Color & Sediment
1356	12.61	—	.1	21.3	1.62	2160	6.67	-7	6.7	neutral
1402	12.62		↓	21.4	1.32	2130	6.61	-11	7.2	↓
1413	12.62		↓	21.3	1.31	2130	6.62	-12	5.9	↓

WL (ft. BMP) at End of Purge: Sample Intake Depth (ft. BMP):

SAMPLE INVENTORY

Bottles Collected					Filtration	Preservation	Remarks
Time		Volume	Composition (G, P)	No.	(Y / N)	(type)	(quality control sample, other)
1420		500mL	P	1	N		
1420		250mL	P	1	N		

Comments:

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APPENDIX B

Tier II and Tier III Monitored Natural Attenuation Evaluation

REPORT

MARTIN LAKE A1 LANDFILL TIER II AND III MNA EVALUATION

Submitted to:

Luminant Generation Company LLC

6555 Sierra Drive
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Submitted by:

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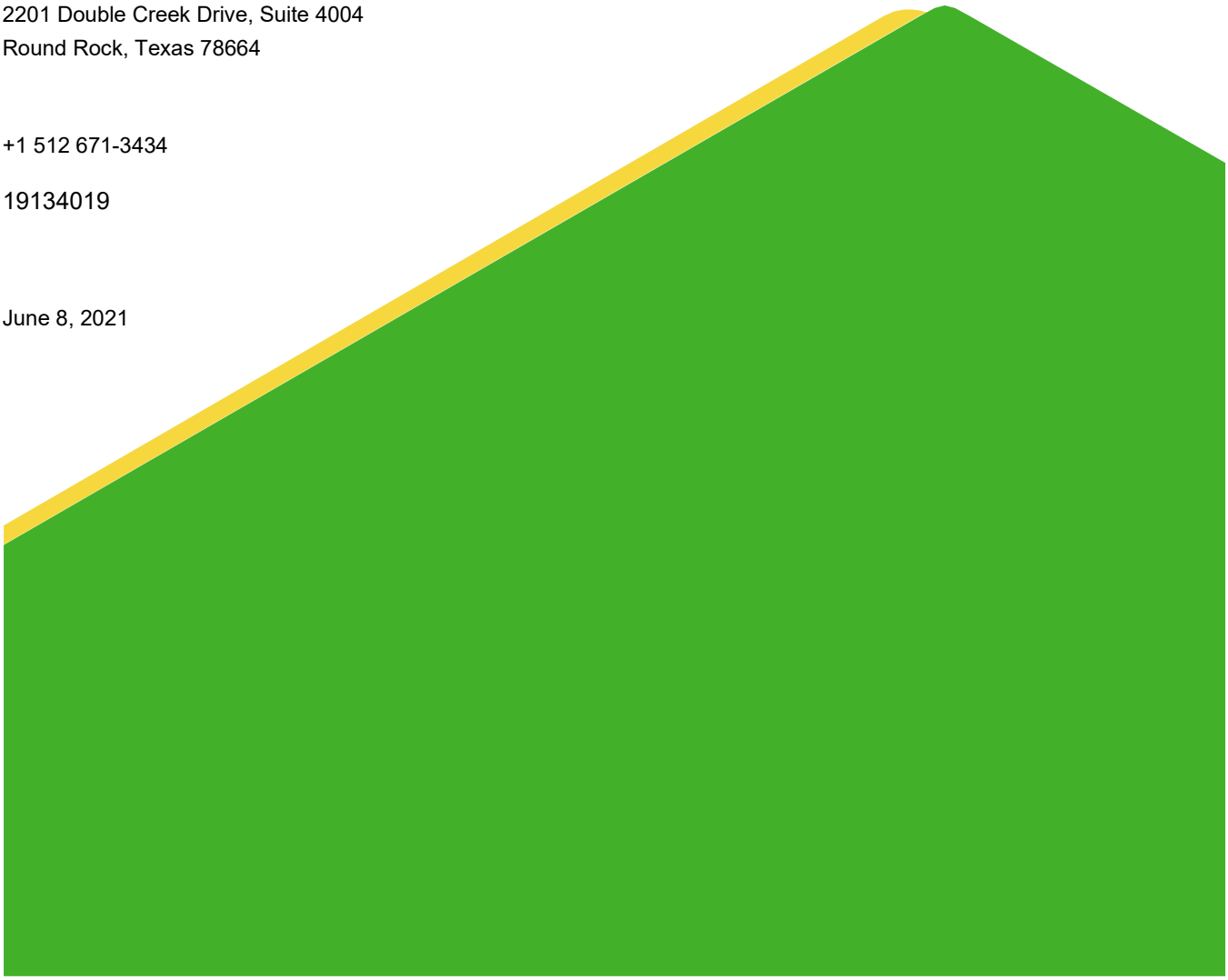
19134019

June 8, 2021



Distribution List

Renee Collins, Luminant

David Mitchell, Luminant

Eric Chavers, Luminant

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APPENDICES

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APPENDIX B
Groundwater Modeling Notes

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Geochemical Modeling Saturation Indices

1.0 OVERVIEW

Luminant Generation Company LLC (Luminant) operates the A1 Area Landfill located at the Beckville Lignite Mine, approximately 2.5 miles southeast of the Martin Lake Steam Electric Station (MLSES) in Panola County, Texas. Luminant manages Coal Combustion Residuals (CCR) generated from the MLSES in the A1 Area Landfill per the applicable requirements of 40 Code of Federal Regulations (CFR) Part 257 Subpart D as amended (CCR Final Rule). A map of the A1 Area Landfill is provided on Exhibit 1.

In September 2019, pursuant to 40 CFR §257.96(a), Golder Associates Inc. (Golder) completed an assessment of corrective measures (ACM) for the A1 Area Landfill (Golder 2019a). The ACM identified monitored natural attenuation (MNA) as a potential groundwater response technology for arsenic, barium, cobalt, and lithium reported at Statistically Significant Levels (SSLs) above the groundwater protection standards (GWPSs) established for the A1 Area Landfill. To supplement the findings of the ACM, Golder was retained by Luminant to further evaluate the overall feasibility of MNA as a groundwater remedial alternative for the A1 Area Landfill in accordance with 40 CFR §257.97. Golder based the MNA feasibility evaluation on United States Environmental Protection Agency (USEPA) guidance for using MNA as a remedial strategy (USEPA 2007a, b) and best practices in the Interstate Technology Regulatory Council (ITRC) document: "A Decision Framework for Applying Monitored Natural Attenuation Processes to Metals and Radionuclides in Groundwater" (ITRC 2010).

USEPA guidance recommends that the overall feasibility of MNA as a groundwater response technology be evaluated based on the following multi-tier approach (USEPA 2007a, b):

1) Demonstrate active constituent removal from groundwater and dissolved plume stability (Tier I).

2) Determine the mechanisms and rates of the operative attenuation processes (Tier II).

3) Determine the long-term capacity for attenuation and the stability of immobilized constituents (Tier III).

A Tier I MNA Evaluation for the A1 Area Landfill was completed in December 2019 (Golder 2019b). The Tier I Evaluation concluded that sufficient evidence was present to satisfy the Tier I criteria for successful MNA implementation to address arsenic, barium, cobalt, and lithium groundwater SSLs. Further geochemical evaluation (i.e., Tier II and Tier III Evaluation) of MNA was recommended in the Tier I report. This memorandum describes the findings of the Tier II and Tier III MNA Evaluation for the A1 Area Landfill.

The results of the Tier II and III Evaluation presented in this document will be used to further assess the performance and reliability of MNA as a potential remedial alternative as required by 40 CFR §257.97. Following completion of this multi-tier evaluation, the fourth and final tier of an MNA program, which involves the design of a performance monitoring program and the development of a contingency plan, will be completed.

2.0 TIER II AND TIER III EVALUATION APPROACH

In 2019, Golder collected samples of overburden, groundwater, and landfill porewater as part of a Nature and Extent Evaluation and Tier I Evaluation in accordance with the CCR Final Rule. Groundwater data collection and analysis at the A1 Area Landfill continued throughout and after the completion of the Tier I Evaluation, and the water quality results are used in the Tier II and III Site Evaluation presented herein. The additional groundwater data collection consisted of three sampling events (September 2019, May 2020, and September 2020). Data from those events are included in Appendix A. The overall quality of groundwater and trends for constituents with SSLs were described in detail in the Tier I report (Golder 2019b). No substantial changes in groundwater quality have occurred that would change the findings of the Tier I Evaluation.

The Tier II and III Evaluation expands upon the Tier I findings as follows:

- **Plume Stability:** Based on the water quality monitoring data presented in this assessment, groundwater concentrations of arsenic, barium, cobalt, and lithium outside of the CCR unit are relatively stable or decreasing (Figure 1a, b, c, d). It should be noted that arsenic, barium, and lithium are unlikely to originate from the CCR unit due to the complete absence or low concentrations of these constituents detected in porewater. It is also considered likely that cobalt in groundwater does not originate from the CCR unit as its concentration was much lower in porewater than in some groundwater samples from the CCR monitoring well network.

- **Magnitude of Exceedances**: Occasional exceedances of the arsenic, barium, and lithium GWPS in some wells do not amount to levels that would be considered an SSL per the CCR Rule (Golder 2019a). Arsenic, barium, and lithium are currently not at an SSL in groundwater based on a 95% confidence interval at any CCR monitoring well (Golder 2019a).

  The highest level of cobalt in groundwater (since monitoring began) at the A1 Area Landfill was observed in well BMW-27 (0.255 mg/L on June 29, 2017). During the next sampling round, cobalt in groundwater from BMW-27 was below the detection limit (<0.003 mg/L). Thus, while cobalt exceedances occur periodically, the substantial range in cobalt concentrations points to variability possibly related to flow conditions and/or natural geochemical characteristics rather than a continuous source of cobalt. The only SSL at the A1 Area Landfill as of February 2021 is for cobalt at BMW-20.

- **Porewater:** Historical records are not available for ash additions or porewater concentrations over the lifespan of the CCR unit. However, based on 2019 porewater data, arsenic is not present in the CCR unit at levels above its detection limit. Barium and lithium were observed in porewater at concentrations well below their respective GWPS. This indicates that porewater from the CCR unit is not likely to be a current source for these metals. Cobalt in porewater was measured at a concentration of 0.0388 mg/L in May 2019, well below the level that is observed in groundwater when a periodic exceedance occurs in BMW-19, BMW-20, or BMW-27. This indicates that porewater is not likely to be a source for the SSL of cobalt in groundwater at BMW-20.

- **Groundwater Chemistry:** The groundwater monitoring results and the findings of the geochemical modeling support the potential for natural attenuation of arsenic, barium, cobalt, and lithium. Equilibrium of groundwater with the mineral phase ferrihydrite was indicated in all groundwater samples. Modeling results are consistent with the findings from the sequential extraction analysis, which demonstrate carbonate, amorphous, organic, and metal hydroxide phases sequester arsenic, barium, cobalt, and some lithium in overburden at the A1 Area Landfill. Further, differences in relative abundance of the major ions in groundwater indicate that porewater is geochemically distinct from groundwater. Detailed findings are presented in the Golder Tier I Evaluation (Golder 2019b).

- **Confirmation of Attenuation/Immobilization:** Based on both mineralogical and chemical analysis, it is evident that attenuation of arsenic, barium, cobalt, and lithium by aquifer materials is occurring. Iron, capable of forming (hydr)oxide or amorphous phases that facilitate metals attenuation (Dzombak and Morel 1990), was identified in all overburden samples, consistent with the inferred presence of ferrihydrite based on the geochemical modeling. The ubiquitous presence of aluminum, in the form of aluminum oxides and clay minerals, provides an additional well-studied attenuation reservoir (Karamalidis and Dzombak 2011;

Prodromou 2016; Uddin 2017). Thus, overburden samples from the A1 Area Landfill demonstrate sequestration of constituents of interest is occurring.

The Tier II and III Evaluation presented in this document builds upon the results of the Tier I Evaluation by undertaking the following:

- Evaluation of temporal and geographical trends in groundwater quality data to estimate site-wide attenuation rates.
- Geochemical modeling to determine the aqueous speciation of arsenic, barium, cobalt, and lithium, and evaluate saturation indices of minerals relevant to their attenuation.
- Determination of the capacity of different mechanisms to attenuate arsenic, barium, cobalt, and lithium, including adsorption, precipitation and co-precipitation, and physical attenuation (dilution/dispersion).
- Geochemical modeling to assess the stability and reversibility of attenuation due to adsorption.

Additionally, the results from the following analyses described in the Tier I Evaluation for aquifer solids are utilized as part of the Tier II and III Evaluation:

- Mineralogical analysis of aquifer solids to identify and quantify the major mineral components.
- Chemical analysis and sequential extraction procedure (SEP) of aquifer solids to quantify the total metal content and identify the environmentally available fractions of metals.

The approach to and results of the Tier II and Tier III Evaluation are presented in the next sections to establish a basis for the likely success of MNA at the A1 Area Landfill.

3.0 MODELING APPROACH

3.1 General Approach

3.1.1 Estimation of Attenuation Rates

To evaluate the attenuation of arsenic, barium, cobalt, and lithium in groundwater at the A1 Area Landfill and to assess the rate of attenuation, the point decay method (Newell et al. 2009) was applied. The point decay method is used to determine the rate at which a constituent's concentrations are increasing or decreasing in groundwater at a single well between sampling events. This method can thus be used to predict when the constituent's concentrations will fall back below regulatory limits.

Equation 1 describes first-order decay for a constituent:

$$Ln(C_t) = kt + Ln(C_0) \quad \text{(Equation 1)}$$

where C_0 is the initial constituent concentration, C_t is the constituent concentration at time t, t is the amount of time in years that has passed since the initial measurement, and k is the first-order decay rate constant.

Equation 2 shows Equation 1 reorganized to solve for the decay rate constant:

$$k = (Ln(C_t) - Ln(C_0))/t \quad \text{(Equation 2)}$$

Groundwater quality data from the upgradient and downgradient wells collected from October 2015 to September 2020 were used to determine the mean first-order decay rate for each constituent of interest. Due to variable

detection limits, results that were reported as below detection were not used in the point decay analysis. Equation 1 and the mean first-order decay rate were used to calculate the number of years required for arsenic, barium, cobalt, and lithium concentrations greater than their respective GWPS to decrease below those thresholds.

3.1.2 Geochemical Speciation Modeling

Baseline geochemical modeling was conducted to evaluate general groundwater and porewater quality; determine the potential for precipitation of sorbent media; evaluate the potential for mineral precipitation or adsorption in the aquifer; and determine the speciation of arsenic, barium, cobalt, and lithium. The geochemical computer code developed by the United States Geological Survey (USGS), PHREEQC, was used for these simulations (Parkhurst and Appelo 2013). PHREEQC version 3.4 is a general-purpose geochemical modeling code used to simulate reactions in water and between water and solid mineral phases (e.g., rocks and sediments). Reactions include aqueous equilibria, mineral dissolution and precipitation, ion exchange, surface complexation, solid solutions, gas-water equilibrium, and kinetic biogeochemical reactions. The widely-accepted thermodynamic database Minteq.v4, 2017 edition, was used as a basis for the thermodynamic constants required for modeling (Allison et al. 1991).

3.1.3 Groundwater Modeling

Golder developed a three-dimensional numerical groundwater model based on the MODFLOW groundwater-flow source code created by the USGS (McDonald and Harbaugh 1988) using Visual MODFLOW (Version 4.6). The groundwater model simulates steady-state groundwater flow conditions in the A1 Area Landfill. The results of the groundwater model were incorporated into the reactive transport geochemical model discussed in Section 3.1.4. The groundwater model was developed based on:

- Natural hydrologic boundaries wherever possible.
- Ground surface topography and landfill geometry.
- Geologic layers with representative structural properties based on boring logs.
- Hydraulic properties of geologic layers based on historical aquifer tests conducted at the site.
- Historical groundwater elevation measurements.

Details on key parameters used to develop the groundwater model are presented in Appendix B.

3.1.4 Reactive Transport Modeling

Additional geochemical modeling was performed to assess viable attenuation mechanisms and predict the quantity and stability of the attenuated constituents of interest. To do so, Golder used PHAST, a three-dimensional reactive transport modeling computer program developed by the USGS that simulates multicomponent reactive solute transport in a three-dimensional saturated groundwater flow system (Parkhurst et al. 2010). PHAST is a versatile groundwater flow and solute-transport simulator with capabilities to model a wide range of equilibrium and kinetic geochemical reactions. The flow and transport calculations are based on a modified version of HST3D that is restricted to constant fluid density and constant temperature. PHAST can be used to simulate both confined and unconfined flow using both a steady state and transient flow solution. The geochemical reactions are simulated with the geochemical model PHREEQC-RM (based on PHREEQC version 3.4), which is embedded in PHAST, resulting in a full three-dimensional reactive transport model. In the application used here, parameters from the site groundwater flow model developed in MODFLOW (i.e. hydraulic

conductivities of layers, model layering, model architecture, water balance, groundwater velocities, and fluid head calculations) were directly used as initial and target model values to ensure seamless model coordination with MODFLOW, without the need to rebuild a groundwater flow model independently in another software package capable of simulating geochemical reactions.

3.1.5 Source Control Modeling

Source control may be achieved through construction of a low permeability cap on the surface of the landfill to close the CCR material in-place. Potential final cap options for the A1 Area Landfill include either:

- Compacted Clay Cap. This cap option utilizes a low permeability compacted clay liner (infiltration layer) covered by a vegetative soil layer and permanent vegetation.
- Geomembrane Cap. This cap option utilizes a low/high density polyethylene (LLDPE/HDPE) geomembrane liner covered by a vegetative soil layer and permanent vegetation.

Both capping alternatives result in a k (conductivity) value of 10^{-7} cm/sec and a porewater flux rate from the landfill of approximately zero.

Future source control (i.e. future reduction in leakage through the A1 Area Landfill) was modeled in PHAST using the same parameters and site layout from the three-dimensional numerical groundwater flow model. Calibration of the geochemical parameters is discussed in Section 3.2. Following model calibration, the predictive modeling simulated the capping of the A1 Area Landfill based on the aforementioned k value of 10^{-7} cm/sec and a porewater flux rate from the landfill of zero, modeled to start at year 2021 (it should be noted the actual timing of the landfill closure has not been determined). The hydraulic head of the A1 Area Landfill was decreased to match the hydraulic head of surrounding cells outside the CCR Units, simulating the drying of the ash as the cap is installed. The PHAST model was then run in a predictive mode for 50 years to assess potential future constituent migration, natural attenuation, and groundwater conditions.

3.1.6 Mineral Precipitation and Co-precipitation

The potential for mineral precipitation was assessed in PHAST by PHREEQC using a saturation index (SI) calculated according to Equation 3.

$$SI = \log (IAP/Ksp) \qquad \text{(Equation 3)}$$

The saturation index is the ratio of the ion activity product (IAP) of a mineral to the solubility product (Ksp). An SI value greater than zero indicates that the solution is supersaturated with respect to a particular mineral phase and, therefore, precipitation of this mineral may occur. An evaluation of precipitation kinetics is then required to determine whether the supersaturated mineral will indeed form. An SI value less than zero indicates the solution is undersaturated with respect to a particular mineral phase. An SI value close to zero indicates equilibrium conditions exist between the mineral and the solution. For the purpose of this evaluation, SI values between -0.5 and 0.5 were considered to represent 'equilibrium' to account for the uncertainties inherent in the analytical methods and geochemical modeling.

Co-precipitation was evaluated based on published literature and known association between minerals and the constituents of interest. For example, cobalt is known to co-precipitate with iron oxyhydroxides as well as adsorb to Hfo (Nordstrom and Alpers 1999). Therefore, minerals identified by PHAST/PHREEQC to be at equilibrium and supersaturated (SI > -0.5) were evaluated for their potential to host arsenic, barium, cobalt, and lithium.

3.1.7 Adsorption Capacity and Attenuation

Adsorption is an important mechanism by which constituents in groundwater can be attenuated. The adsorptive partitioning between dissolved and solid phases was simulated during baseline modeling using PHREEQC and for predictive modeling using PHAST with a two-layer surface complexation model (SCM). The SCM approach is described in Davis and Kent (1990), with additional parameterization based on Dzombak and Morel (1990) and Karamalidis and Dzombak (2011) utilizing iron (hydrous ferric oxide [Hfo]) as ferrihydrite [$Fe(OH)_{3(am)}$], and aluminum (hydrous aluminum oxide [Hao]) as gibbsite [$Al(OH)_{3(am)}$], as adsorbing surfaces.

The amount of Hfo and Hao available at the site for attenuation was based on the iron and aluminum concentrations measured in the amorphous and metal hydroxide phase of the SEP as described in the Tier I Evaluation (Golder 2019b). The minimum, mean, and maximum iron and aluminum concentrations in aquifer solids samples were used in the adsorption models to capture the range of expected site concentrations. The Hfo and Hao surface properties (i.e. surface area, site density, and types of surface sites) from Dzombak and Morel (1990) and Karamalidis and Dzombak (2011) were used to quantify the iron and aluminum adsorption sites per mole of mineral.

The calculation methodology of Appelo and Postma (2010) was used to determine the specific quantity of sites on each mineral surface type as a function of the amount of mineral available to participate in these reactions. The methodology assumes the number of surface sites (sites) equals the product of the moles of iron [Fe] and the moles of sites per mole of iron ([sites]/[Fe]= 0.2 moles of sites per mole of iron). To determine the amount of ferrihydrite available for sorption, the Appelo and Postma methodology further assumes the mass of ferrihydrite (M_{HFO}) in grams (g) available equals the product of the [Fe] and the molecular weight of ferrihydrite (MW_{HFO} = 88.85 g/mole). The same approach was used to calculate the number of sites from gibbsite, assuming the [sites]/[Al] is 0.41 moles of sites per mole of aluminum and the molecular weight of gibbsite is 78.003 g/mole. The range of Hfo and Hao in soils at the A1 Area Landfill with associated calculations is presented in Table 1.

The thermodynamic database Minteq V.4, described in Section 3.1.1, was modified for adsorption modeling because new and updated thermodynamic data have been released in the scientific literature. These new data are important to include as they allow further refinement of potential reactions, or for correction of previous data that may have been less accurate or more broadly defined. For the geochemical modeling of the A1 Area Landfill, numerous updates to the database were made, including the addition of data relating to partitioning coefficients for metals on gibbsite, developed by Karamalidis and Dzombak (2011). The database does not contain coefficients for partitioning of lithium onto ferrihydrite or gibbsite. Thus, the potential for lithium adsorption could not be assessed and modeling of lithium attenuation primarily focused on physical processes.

Table 1: Calculations of ferrihydrite and gibbsite surface parameters for predictive modeling

Parameter	Units	Ferrihydrite			Gibbsite		
		Minimum	Mean	Maximum	Minimum	Mean	Maximum
Geometric Mean of Aquifer Solids Composition	mg/kg X	1190	4094	12500	1135	1661	2770
	mmol X	21.31	73.31	223.83	42.07	61.56	102.66
	mol X	2.13E-02	7.33E-02	2.24E-01	4.21E-02	6.16E-02	1.03E-01
Surface Site Concentration	mol weak sites / mol X	0.2	0.2	0.2	0.41	0.41	0.41
	mol strong sites / mol X	0.005	0.005	0.005	---		
Surface Sites	mol weak	4.3E-03	1.5E-02	4.5E-02	1.7E-02	2.5E-02	4.2E-02
	mol strong	1.1E-04	3.7E-04	1.1E-03	---		
Mass of Ferrihydrite or Gibbsite	grams	1.89	6.51	19.89	3.74	5.47	9.12

Notes:
X = Fe or Al depending on the mineral
Gibbsite only has one site 'type'

3.2 Model Calibration

Calibration of the unconfined flow reactive transport model involved adjusting the flux from the A1 Area Landfill, the concentration of the constituents of interest (arsenic, barium, cobalt, and lithium), and the starting date for ash placement in the landfill. This calibration process simulated the gradual addition of ash to the landfill and was generally based on records of landfill construction and certification (PBW 2017). The lithium flux from the landfill was used as a near-conservative tracer to set the initial date of CCR placement, calibrate the flux, and to validate the flow solution used in the reactive transport modeling was similar to that used for groundwater modeling efforts. The preliminary hydraulic head for PHAST targeted the steady-state solution imported from MODFLOW and achieved a coefficient of determination (R^2) value of 0.9945 based on 150 sample point locations (Figure 2).

A hypothetical source solution was developed to represent the initial water quality at the A1 Area Landfill. Arsenic, barium, cobalt, and lithium concentrations in the hypothetical source solution were increased relative to actual reported concentrations to achieve reasonable calibration with measured values in downgradient wells. Arsenic was not measured above detection limits in porewater sample during the May 2019 sampling event, but the concentration was artificially increased to 0.030 mg/L. Barium, cobalt, and lithium were measured at 0.0191, 0.0388, and 0.0161 mg/L in porewater in 2019, respectively, but for modeling purposes were increased to 1.80, 0.060, and 0.200 mg/L to achieve calibration.

To achieve calibration for the aquifer solids, the surface site densities for Hfo and Hao were adjusted for non-conservative parameters (arsenic, barium, and cobalt) within the range of the measured minimum and maximum aluminum and iron concentrations in overburden. Background water quality was based on water quality results from background monitoring well BMW-11-AR and was set to equilibrium with adsorptive surfaces. Calibration results for arsenic, cobalt, and lithium demonstrated good agreement in downgradient monitoring wells (Table 2), despite likely historical variability in source composition and ash placement in the A1 Area Landfill. For barium, good agreement was achieved for the majority of monitoring wells. Compositional heterogeneity in terms of

aquifer characteristics is likely to be present along the groundwater flow pathway but is not captured within the model. Use of the minimum surface site concentrations of Hfo and Hao calculated in Table 1 showed the best agreement with the non-conservative constituent target concentrations presented in Table 2.

Table 2: Calibration of parameters in PHAST for predictive modeling as compared to the target values measured in 2020 in downgradient wells

Downgradient Monitoring Well	Units	Arsenic		Barium		Cobalt		Lithium	
		Target Value	Modeled	Target Value	Modeled	Target Value	Modeled	Target Value	Modeled
BMW-18	mg/L	0.002	0.002	0.032	0.039	0.003	0.003	0.019	0.020
BMW-19	mg/L	0.002	0.001	0.014	0.400	0.019	0.018	0.074	0.140
BMW-20	mg/L	0.008	0.006	0.029	0.039	0.063	0.040	0.005	0.008
BMW-21	mg/L	0.008	0.008	0.042	0.042	0.003	0.003	0.066	0.064
BMW-22	mg/L	0.002	0.003	0.060	0.060	0.003	0.003	0.084	0.086
BMW-23	mg/L	0.002	0.002	0.038	0.040	0.003	0.003	0.086	0.048
BMW-24	mg/L	0.002	0.002	1.85	1.74	0.003	0.003	0.006	0.020
BMW-26	mg/L	0.005	0.002	0.031	0.049	0.003	0.004	0.107	0.087
BMW-28	mg/L	0.002	0.002	0.015	1.80	0.003	0.006	0.095	0.200

The Peclet and Courant numbers included in the reactive transport modeling were used to evaluate model validity and control numerical dispersion. These values are calculated based on the cell size, time step, dispersivity, and average velocity of groundwater in the model. Equation 4 was used to control numerical dispersion using an upstream-in-space and backwards-in-time differencing solution based on a derivation of the Peclet and Courant numbers:

$$\frac{\Delta X}{2} + \frac{V_x \Delta t}{2} \ll \alpha \qquad \text{(Equation 4)}$$

Where:

ΔX= Cell size (100ft)

V_x= Average Velocity (139 feet/year)

Δt = Timestep (0.5 year)

α= Longitudinal dispersivity (100 ft)

3.3 Long-Term Stability of Attenuated Constituents

The long-term stability of constituent attenuation and potential for re-mobilization was evaluated using the results of a 50-year simulation period. Specifically, the responses of the constituents of interest to modeled changes in pH and redox of groundwater at downgradient wells were evaluated. Variations in pH and redox are the most likely changes in groundwater chemistry that will occur in an aquifer over time, affecting the stability of the non-conservative constituents of interest (ITRC 2010). For example, if the pH or redox should decrease substantially over time, causing the dissolution of ferrihydrite, re-mobilization of adsorbed cobalt would be likely. In contrast, if pH were to increase substantially (>8), cobalt precipitation as cobalt hydroxide may enhance the long-term stability of cobalt attenuation, likely maintaining low levels of cobalt in groundwater (Nordstrom and Alpers 1999; Smith 1999). The long-term stability and reversibility of attenuation were also evaluated for scenarios involving complete source control (i.e. the capping of the landfill, reducing any flux from the landfill).

3.4 Data Handling and Geochemical Modeling Assumptions

Assumptions related to data handling practices and geochemical modeling were as follows:

- **Groundwater continuity:** Groundwater and porewater quality data from a sampling event conducted from May 2019 to September 2020 were evaluated. This sampling event was selected because all wells related to the A1 Area Landfill were sampled and analyzed for the full suite of parameters described in the Tier I Evaluation (Golder 2019b); the resulting data are assumed to provide a comprehensive overview of Site conditions. Temporal trend analysis of pH, arsenic, barium, cobalt, and lithium in groundwater made use of all available sampling events from a well (up to 15 samples from some wells), dating back to October 2015.
- **Background groundwater chemistry:** Groundwater samples collected from BMW-11AR were assumed to represent natural background conditions for the purpose of geochemical and predictive modeling.
- **Porewater chemistry:** The porewater sample collected from the A1 Area Landfill CCR unit was assumed to be representative of porewater found in the CCR unit.
- **Redox values:** Oxidation-reduction potential (ORP) values measured in the field were converted to redox potential (Eh) by adding 200 millivolts (mV) to the field-measured values as per YSI (2015).
- **Non-detect values:** Constituents with concentrations less than their respective method detection limits were assumed to have a concentration equal to the reporting limit in model simulations.
- **Total recoverable concentrations:** Total recoverable fraction results were used for geochemical modeling.
- **Charge balance:** Groundwater compositions with charge balance errors less than 10% were considered valid. Compositions with charge balance errors greater than 10% were included in the assessment but would be considered less reliable.

4.0 MODELING RESULTS

4.1 Hydrogeology

The A1 Area Landfill is constructed within and surrounded by spoil material that was excavated during lignite mining operations at the Beckville Lignite Mine. Available lithologic descriptions of the spoil material indicate that

it primarily consists of a heterogenous mixture of clay and sand with trace imbedded fragments of lignite. Native material encountered below the spoil zone is comprised of lignite or native, silty clay.

The A1 Area Landfill groundwater monitoring wells are all completed within the spoil zone. The groundwater model consisted of one layer representing the spoil overburden and the landfill. The model incorporated site-specific characteristics such as ground surface topography, groundwater elevation measurements, average depth of the spoil zone (from monitoring well boring logs), geometry of the landfill, and hydraulic characteristics based on aquifer tests conducted as part of the CCR groundwater monitoring system certification (PBW 2017). Groundwater potentiometric heads in the model were calibrated based on groundwater elevations and inferred flow conditions observed at the site; specifically, to conditions observed during the September 2019 CCR groundwater monitoring event. Consistent with observations during the September 2019 and other groundwater monitoring events, groundwater was modeled to generally flow from the north to the west, south, and east sides of the landfill, with an average groundwater flow velocity of approximately 0.38 feet per day, or 139 feet per year. Additional groundwater model details are provided in Appendix B.

4.2 Capacity of Attenuation Mechanisms

4.2.1 Adsorption to Iron and Aluminum Oxyhydroxides

The Hfo and Hao surface area and sorption site calculations for the minimum, mean, and maximum iron and aluminum concentrations in aquifer solids are presented in Table 1. Adsorption modeling in PHAST revealed adequate capacity to attenuate arsenic, barium, and cobalt based on current levels measured in downgradient monitoring wells. The term “adequate”, as used in this document, refers to the capacity needed to attenuate constituents in groundwater to a level that meets the site-specific GWPS (ITRC 2010). Lithium attenuation by Hfo and Hao was not modeled due to a lack of adsorption constants and the general understanding that lithium behavior in groundwater is near-conservative (e.g., Hem 1992). Figures 3, 4, and 5 show the modeled concentrations over time for arsenic, barium, and cobalt , respectively, for the nine downgradient compliance monitoring wells accounting for adsorption to iron and aluminum oxyhydroxides and dilution/dispersion.

Modeled attenuation of arsenic onto aquifer solids (1.2 to 2.0 mg/kg using minimum surface site densities (Hfo and Hao) showed the best agreement with the range of arsenic concentrations (1.38 to 2.27 mg/kg), measured in SEP steps 3 and 4 (Golder 2019b). Barium and cobalt attenuation measured by SEP was highly variable, ranging from 9.4 to 47 mg/kg and 0.7 to 18.8 mg/kg, respectively, and therefore was not used to evaluate modeled surface attenuation. As can be seen in Figures 3 through 5, the combination of attenuation by aluminum and iron oxyhydroxides and dilution/dispersion results in concentrations of arsenic, barium, and cobalt below the GWPS at 50 years from the closure. Further, the non-detect concentrations of arsenic in porewater as well as the fact that barium concentrations in porewater are below the GWPS further support the conclusion that adequate attenuation capacity exists downgradient of the CCR Units.

Modeling of mineral precipitation also identified consistent equilibrium of groundwater with ferrihydrite in all downgradient wells from May 2019 and May 2020 (events where iron was measured in groundwater). Thus, if the concentrations of arsenic and barium in porewater at the A1 Area Landfill remain below the GWPS (or below detection limits, as was the case for arsenic), the downgradient capacity to attenuate these constituents by iron and/or aluminum oxyhydroxides will not be exceeded under the current and expected future groundwater pH and redox conditions (Figures 7 and 8).

4.2.2 Co-precipitation

In addition to adsorption, co-precipitation, or the direct incorporation of trace metals such as cobalt into precipitated iron oxide-oxyhydroxides, has been well studied (e.g., Butt et al. 2000; Dzombak and Morel 1990; Smith 1999). For the aquifer solids analyzed by sequential extraction described in the Tier I Evaluation (Golder 2019b), all samples reported slightly higher concentrations of cobalt in the combined amorphous and metal hydroxide phases than indicated by the adsorption modeling. This suggests that cobalt may also be attenuated during the formation of ferrihydrite as opposed to following its formation (Butt et al. 2000; Tebo et al. 2004). Some cobalt was also identified by SEP to be associated with carbonate minerals, likely due to co-precipitation as well. Co-precipitation is not considered a relevant attenuation mechanism for lithium.

4.2.3 Physical Attenuation

Figure 6 presents the predicted concentrations over time for lithium at downgradient monitoring wells, accounting for the physical attenuation (i.e. dilution and dispersion) downgradient of the CCR Units. To achieve optimal calibration for lithium in the PHAST model, a simulated initial lithium source value of 0.200 mg/L was needed, resulting in calculated dilution/dispersion at downgradient wells ranging from 0 (BMW-28) to 25 (BMW-20). Thus, at current porewater concentrations, dilution/dispersion alone should be adequate to reduce lithium concentrations to below the GWPS across the A1 Area Landfill, with source control (Table 2).

4.2.4 Attenuation Rates

The results of the point decay analysis for groundwater at background and downgradient wells between October 2015 and September 2020 (the CCR groundwater monitoring period) are provided in Table 3, as average site attenuation rates. This evaluation reveals that barium and lithium concentrations in **downgradient** wells have decreased (negative point decay constants) over time. In the case of arsenic, a positive decay constant was calculated in downgradient wells, albeit representing a much smaller increase than in upgradient or background wells. Cobalt also demonstrated an increasing concentration trend. However, for both arsenic and cobalt, these point decay trends do not account for any source control actions.

The average downgradient decay rates can be used to estimate the number of years it would take for elevated groundwater concentrations to decrease to the GWPS based on current trends, without the implementation of mitigation options. Using the maximum concentration of lithium reported at a downgradient monitoring well in 2020 (BMW-27) which did not amount to an SSL, decay calculations indicate that it will take <2.5 years to attenuate lithium to concentrations below the GWPS based on current trends. Of note, arsenic and barium concentrations in monitoring wells have already achieved compliance since their maximum measured 2020 values are lower than their respective GWPS. Based on the average point decay method, which assumes no changes to current conditions (i.e. no source control or re-lining, maximum cobalt concentrations reported from downgradient monitoring wells in 2020 suggest that cobalt concentrations will not attenuate to values below the GWPS. Despite this, it is considered unlikely that cobalt concentrations will continue to exceed the GWPS since predictive modeling in PHAST indicates that cobalt concentrations will reach the GWPS after source control at the A1 Area Landfill is complete.

Table 3: Average Point Decay Trend Constants for Arsenic, Barium, Cobalt, and Lithium at the A1 Area Landfill

Constituents	Background Wells (yr^{-1})	Downgradient Wells (yr^{-1})	GWPS (mg/L)	Maximum Measured 2020 Value (mg/L)	Time to Achieve Compliance (years)
Arsenic	0.60	0.19	0.0164	0.0126	Compliant
Barium	0.13	-0.14	2	0.24	Compliant
Cobalt	-0.82	0.12	0.0124	0.0912	Exceeded [1]
Lithium	-1.13	-0.13	0.103	0.110	<2.5

[1] This calculation only considers current trends and conditions and does not account for source control.

Predictive modeling in PHAST used a more conservative approach to estimating time to compliance by taking into account source control and increased source concentrations needed to achieve model calibration as previously described (Table 2). Based on this approach, considering source control, the estimated time to attenuation to a concentration below the GWPS increased to 50 years for cobalt and lithium, while durations for arsenic and barium were similar to those from the point decay method. This is due to the elevated hypothetical source values for cobalt and lithium (0.060 and 0.200 mg/L) required to achieve model calibration. The simulated source values used were 1.55 times (cobalt) and over 12 times (lithium) higher than actual measured porewater values. Therefore, PHAST modeling presents the most conservative approach to determining the rate of attenuation. The actual time in which significant attenuation can likely be achieved falls between the two approaches used (i.e. the point decay method and the PHAST method).

4.3 Long-Term Stability of Attenuated Constituents

The expected trends over time for pH and Eh are presented in Figures 7 and 8, respectively. Variations in pH and Eh are arguably the most important factors, other than physical attenuation, controlling the long-term stability of the constituents of interest.

Predictive modeling in PHAST indicates that pH and Eh in the A1 Area Landfill will remain stable. The pH, initially ranging from approximately 6.6 to 6.9 is simulated to remain constant (<0.1 change in pH from year 0 to year 50). The Eh, initially ranging from approximately -80 to 0 mV, will also remain stable, with a slight increase in the overall range over time (from approximately -80 to 10 mV). At these predicted pH and Eh ranges, ferrihydrite, the mineral phase primarily responsible for attenuation of cobalt, is modeled to remain stable across the A1 Area Landfill.

The long-term stability of arsenic, barium, cobalt, and lithium can be summarized as follows:

- **Arsenic:** For the range of pH and Eh values predicted at the site in the 50 years after closure and source control, arsenic levels are predicted to remain stable (Figure 3). It is not anticipated that attenuated arsenic will re-mobilize and exceed the GWPS in the future once compliance is achieved. For the anticipated pH range of the A1 Area Landfill, Stenge and Peterson (1989) list a partitioning coefficient of 5.86 to 19.4 L/kg for arsenic while Hfo and Hao will remain stable. Thus, with source control and stable pH and Eh, long-term stability of arsenic is expected.

- **Barium:** For the range of pH and Eh values predicted at the site in the 50 years after closure and source control, barium levels are predicted to remain stable or show a decreasing trend (Figure 4). It is not anticipated that attenuated barium will re-mobilize and exceed the GWPS in the future once compliance is achieved. For the anticipated pH range of the A1 Area Landfill, Stenge and Peterson (1989) list a partitioning coefficient of 530 to 16,000 L/kg for barium while Hfo and Hao will remain stable. Thus, with source control and stable pH and Eh, long-term stability of barium is expected.

- **Cobalt:** Attenuated cobalt should remain stable or decrease based on the range of pH and Eh values predicted at the site in the 50 years after closure and source control (Figure 5). It is not anticipated that attenuated cobalt will mobilize and exceed the GWPS in the future once compliance is achieved. For the anticipated pH range of the A1 Area Landfill, Stenge and Peterson (1989) list a partitioning coefficient of 1.9 to 200 L/kg for cobalt while Hfo and Hao will remain stable. Additionally, the stability of ferrihydrite will also ensure any co-precipitated cobalt will remain sequestered. Thus, with source control and stable pH and Eh, long-term stability of cobalt is anticipated.

- **Lithium:** Lithium long-term stability is primarily controlled by physical attenuation. Currently, lithium concentrations in groundwater and porewater at the A1 Area Landfill are near or below the GWPS. Therefore, with the addition of source control, it is not anticipated that the long-term stability of lithium will be a concern at the A1 Area Landfill.

5.0 TIER II EVALUATION

The purpose of the Tier II Evaluation is to “Identify mechanisms and rates of the operative attenuation process” (USEPA 2007a). Based on this definition, the following modeling results and observations support MNA as a viable corrective measure for the A1 Area Landfill CCR Units:

- **Adsorption Capacity Modeling:** PHAST modeling results show that adsorption is likely attenuating arsenic, barium and cobalt downgradient of the CCR Unit. This is concluded based on equilibration of site-specific groundwater compositions with the range of Hfo and Hao concentrations observed in SEP results of A1 Area Landfill aquifer solids. Predictive modeling (Figures 3 through 8) also demonstrates the future aquifer’s capacity to adsorb constituents from the CCR Units is significant and adequate when source control has been implemented. In addition to metal oxyhydroxides, clay minerals and/or particulate organics can also act as a substrate for attenuation (Prodromou 2016; Uddin 2017), but this mechanism was not included in the current evaluation.

  The presence of arsenic, barium, cobalt, and to a small degree lithium, in the amorphous and metal oxyhydroxide fractions of soils indicates that adsorption is occurring across the monitored area downgradient of the CCR Unit.

- **Co-precipitation:** In addition to adsorption, co-precipitation or the direct incorporation of trace metals into precipitated iron oxide-oxyhydroxides is a well-documented process. For the aquifer solids analyzed by sequential extraction (Golder 2019b), all samples reported higher concentrations of cobalt in the amorphous and metal hydroxide phases than indicated by adsorption modeling. Cobalt was also identified by SEP to be associated with carbonate minerals in one sample, likely the result of co-precipitation. Co-precipitation is not considered a relevant attenuation mechanism for lithium.

- **Estimated A1 Area Landfill Attenuation Rates:** The groundwater concentration of lithium is decreasing in downgradient monitoring wells over time, resulting in negative calculated point decay rates. Using the mean

decay rate, maximum concentrations of lithium observed in downgradient monitoring wells in 2020 would take approximately <2.5 years to attenuate below the GWPS. Arsenic and barium concentrations in downgradient monitoring wells are already below the GWPS based upon the most recent September 2020 sampling event. Cobalt is expected to attenuate below the GWPS after capping of the A1 Area Landfill.

- **Dilution/Dispersion (Physical Attenuation) Modeling:** Lithium levels at downgradient monitoring wells can be used to estimate the degree of dilution/dispersion occurring downgradient of the CCR Units. Using a source value for lithium of 0.200 mg/L in the PHAST model, a minimum and maximum downgradient physical attenuation factor of 0 to 12 was determined. Thus, at current porewater concentrations (which are lower than the GWPS), even with no dilution/dispersion, lithium levels would remain below the GWPS across the A1 Area Landfill.

Based on these findings, arsenic, barium, cobalt, and lithium are considered to be candidates for an MNA remedy application and deemed to meet the criteria for Tier II MNA in accordance with USEPA guidance (USEPA 2007a and 2007b).

6.0 TIER III EVALUATION

According to USEPA (USEPA 2007a), the purpose of the Tier III Evaluation is to eliminate sites for an MNA remedy where (1) “Capacity of the aquifer is insufficient to attenuate the COC mass to regulatory standards” and/or (2) “Stability of the immobilized COC is insufficient to prevent remobilization due to future changes in groundwater chemistry”. Based on this definition, the following observations support MNA as a viable corrective measure for the A1 Area Landfill:

- **Adsorption Capacity Modeling:** Predictive modeling has demonstrated that porewater concentrations of arsenic, barium, cobalt, and lithium could increase to 0.030, 1.80, 0.060, and 0.200 mg/L, respectively, and levels at downgradient monitoring wells would attenuate to below their respective GWPS in a reasonable time frame. The time frame is defined here as ‘reasonable” when it is comparable to time frames associated with other active remediation options described in an assessment of corrective measures (Golder 2019a; ITRC 2010). However, arsenic concentrations in porewater samples from the CCR Units were never above detection (<0.002 mg/L) while barium and lithium levels in porewater were below the GWPS (0.019 mg/L and 0.0161 mg/L, respectively). Therefore, based on the current concentrations in the CCR Units, the current concentrations observed in downgradient monitoring wells, and the anticipated source control activities, it is concluded that the combined long-term attenuation from sorption, dilution, and dispersion is sufficient to attenuate the arsenic, barium, cobalt, and lithium mass in the CCR Units to concentrations below the GWPS. In addition to aluminum and iron oxyhydroxides, arsenic, barium, and cobalt (as well as lithium to a minor extent) are known to be attenuated by other sorbents (e.g., manganese (hydr)oxides, clay minerals, and particulate organic matter) not included in the modeling, providing additional sorption capacity at the A1 Area Landfill.

- **Stability of Constituents:** Reactive transport modeling indicates that the pH and Eh (i.e. the factors controlling adsorption, which is the primary attenuation mechanism) will remain stable over time. As such, both the sorption effectiveness as well as the stability of the ferrihydrite adsorptive surfaces will remain constant. The stability of gibbsite, another adsorptive surface considered in the modeling, is less dependent on pH and Eh and will remain constant within the expected range of groundwater conditions. The total aluminum and iron contents in aquifer solids, based on the Tier I Evaluation (Golder 2019b), range from 30,000 to 73,000 mg/kg and 6,000 to 26,000 mg/kg, respectively (by SEP Total), indicating a significant

reservoir potentially available for attenuation, and a reservoir that is resilient to changes in pH and Eh. It should be noted that there is no historical basis to expect large future deviations in groundwater pH and/or redox conditions.

7.0 CONCLUSION

This report presents the results of a Tier II and III Evaluation conducted to determine the feasibility of using MNA as a remedial strategy for arsenic, barium, cobalt, and lithium at the A1 Area Landfill CCR Unit. This evaluation has been completed in accordance with guidance and best practices promulgated by the USEPA (USEPA 2007a and 2007b) and the ITRC (ITRC 2010). Based on the results of this evaluation, the following is concluded regarding the constituents of interest:

- Arsenic: Physical and chemical attenuation of arsenic is occurring. Arsenic levels in groundwater are stable, and the aquifer has adequate capacity to attenuate arsenic in a reasonable timeframe. Modeling indicates that arsenic attenuation will be efficient and stable in the long term. Arsenic in CCR unit porewater has never been measured above detection limits. Therefore, arsenic is considered a candidate for MNA at the A1 Area Landfill.
- Barium: Physical and chemical attenuation of barium is occurring. Barium levels in groundwater are stable, and the aquifer has adequate capacity to attenuate barium in a reasonable timeframe. Modeling indicates that barium attenuation will be efficient and stable in the long term. Barium in porewater of the CCR Units is currently below the GWPS. Therefore, barium is considered a candidate for MNA at the A1 Area Landfill.
- Cobalt: Physical and chemical attenuation of cobalt is occurring. Cobalt levels are stable, and the aquifer has adequate capacity to attenuate cobalt in a reasonable timeframe. Modeling indicates that cobalt attenuation will be efficient and stable in the long term. Cobalt in porewater is well below the level that is observed in groundwater when a periodic exceedance occurs. Therefore, cobalt is considered a candidate for MNA at the A1 Area Landfill.
- Lithium: Physical attenuation of lithium is occurring. Lithium levels in groundwater are stable, and the aquifer has adequate capacity to attenuate arsenic in a reasonable timeframe. Modeling indicates that lithium attenuation will be efficient and stable in the long term. Lithium in CCR unit porewater has never been measured above the GWPS. Therefore, lithium is considered a candidate for MNA at the A1 Area Landfill.

It is recommended that a Tier IV Evaluation be completed to design a long-term MNA monitoring plan in the event that MNA is selected as the final remedy for arsenic, barium, cobalt, and lithium at the A1 Area Landfill.

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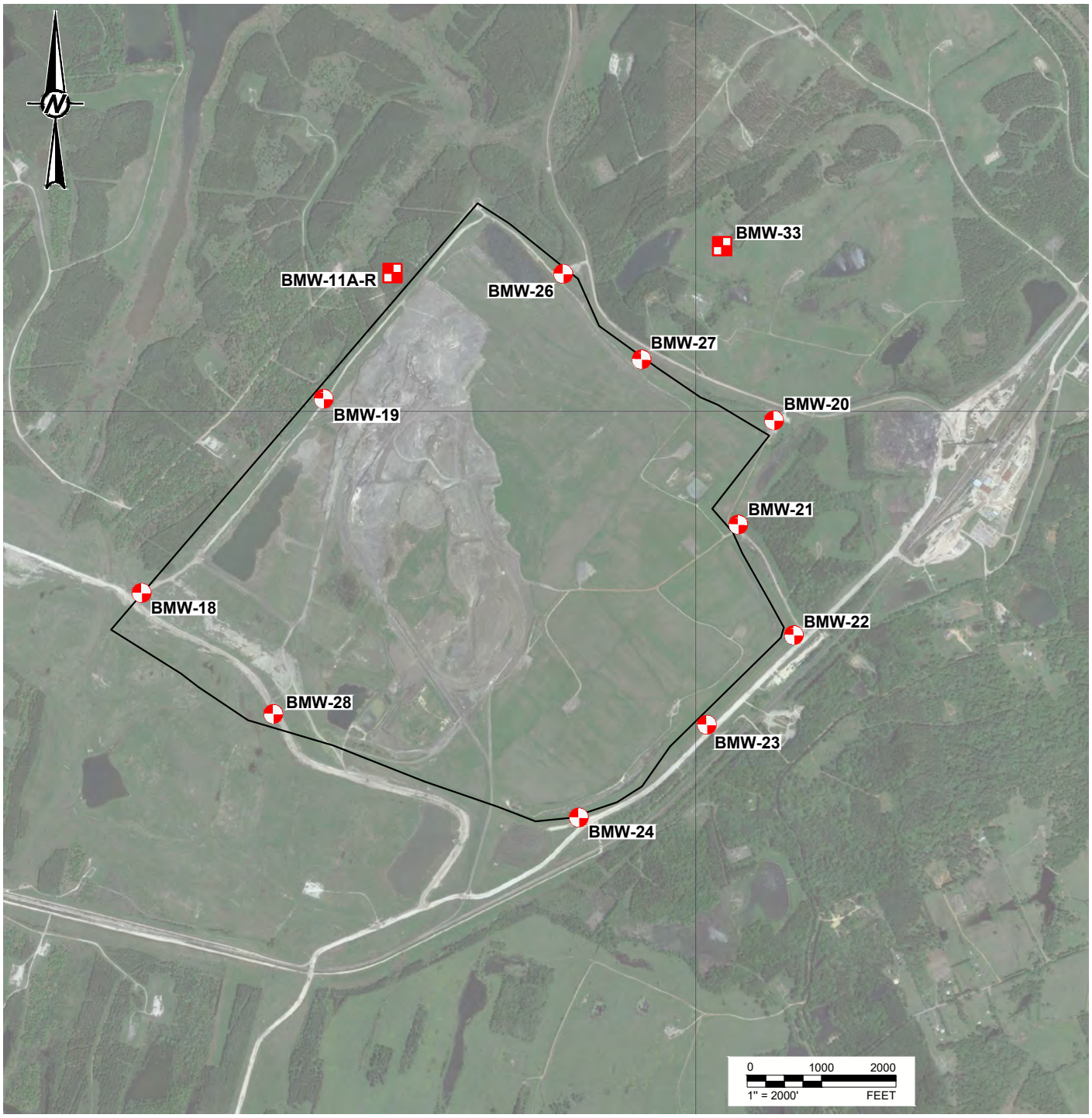
Figures



LEGEND

- DOWNGRADIENT CCR MONITORING WELL
- UPGRADIENT CCR MONITORING WELL

CLIENT
LUMINANT
MARTIN LAKE SES A1 LANDFILL AREA

PROJECT
TIER II AND TIER III MNA GEOCHEMICAL EVALUATION

TITLE
DETAILED SITE PLAN - A1 AREA LANDFILL

CONSULTANT
GOLDER

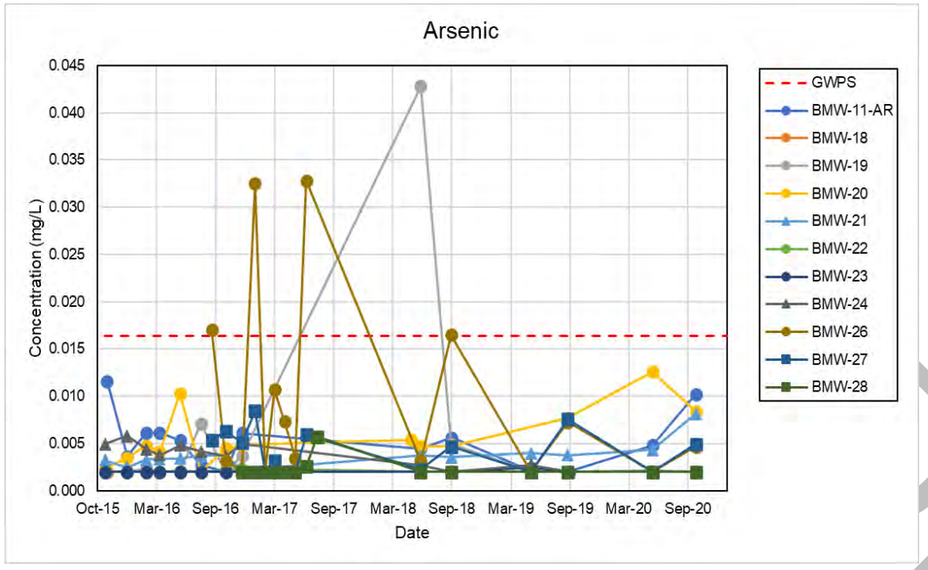
YYYY-MM-DD	2021-01-11
DESIGNED	AJD
PREPARED	AJD
REVIEWED	WFV
APPROVED	WFV

PROJECT NO.	CONTROL	REV.	EXHIBIT
19134019		0	1

REFERENCE(S)
BASE MAP TAKEN FROM GOOGLE EARTH IMAGERY DATED 4/6/17.

Last Edited By: adiamond Date: 2021-01-11 Time:10:21:51 AM | Printed By: adiamond Date: 2021-01-11 Time:10:23:01 AM
Path: \\texarkanadata\Projects - Round Rock_2019\19122262 - Luminant\D - MLSES\2020 CCR GWMR\ | File Name: FIG 1 - Detailed Site Plan (A1 Area Landfill).dwg
IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI A
0 1 in

(a)



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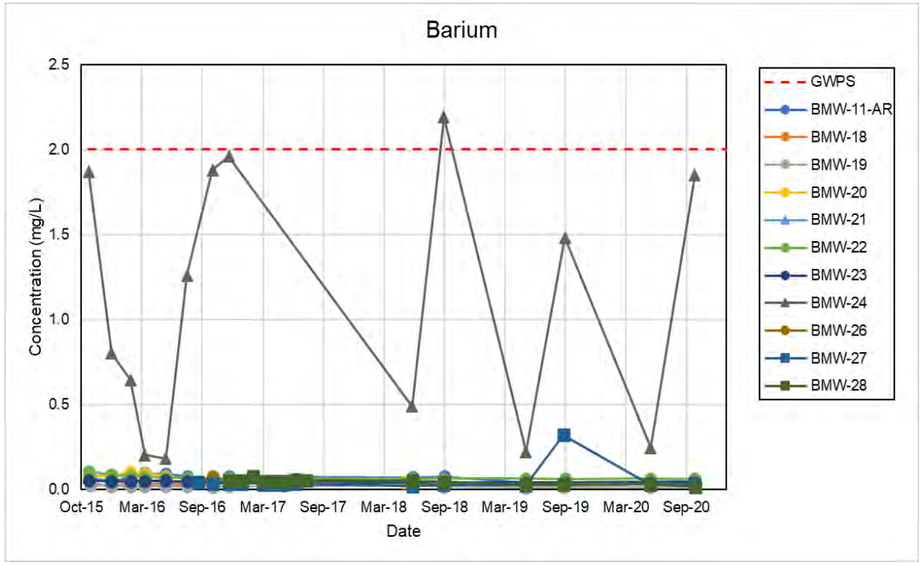

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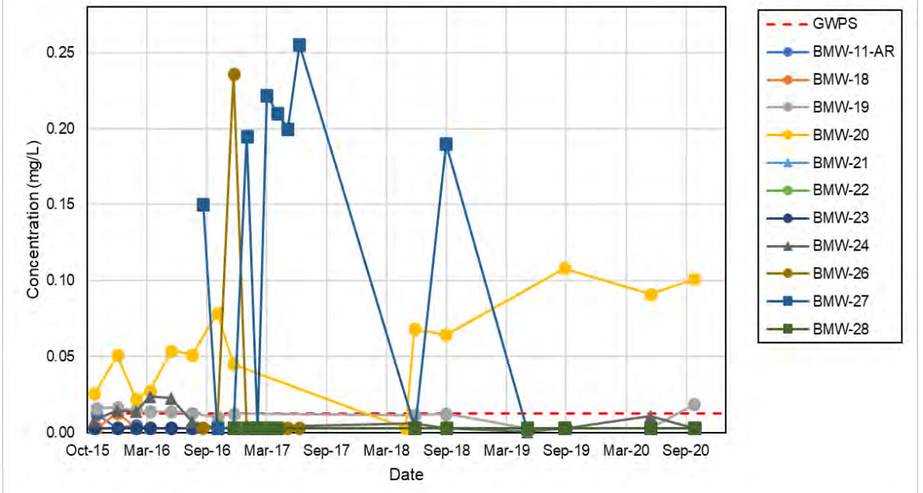

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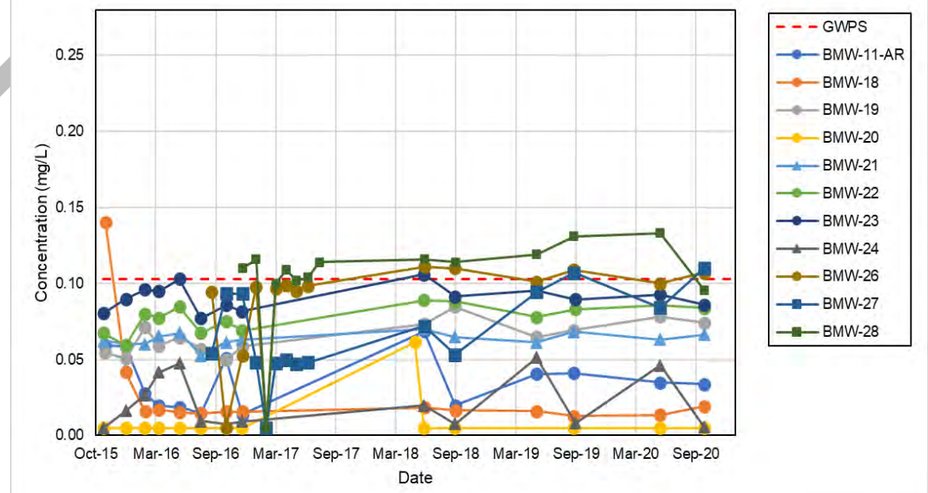


CLIENT
LUMINANT
MARTIN LAKE SES
A1 LANDFILL AREA

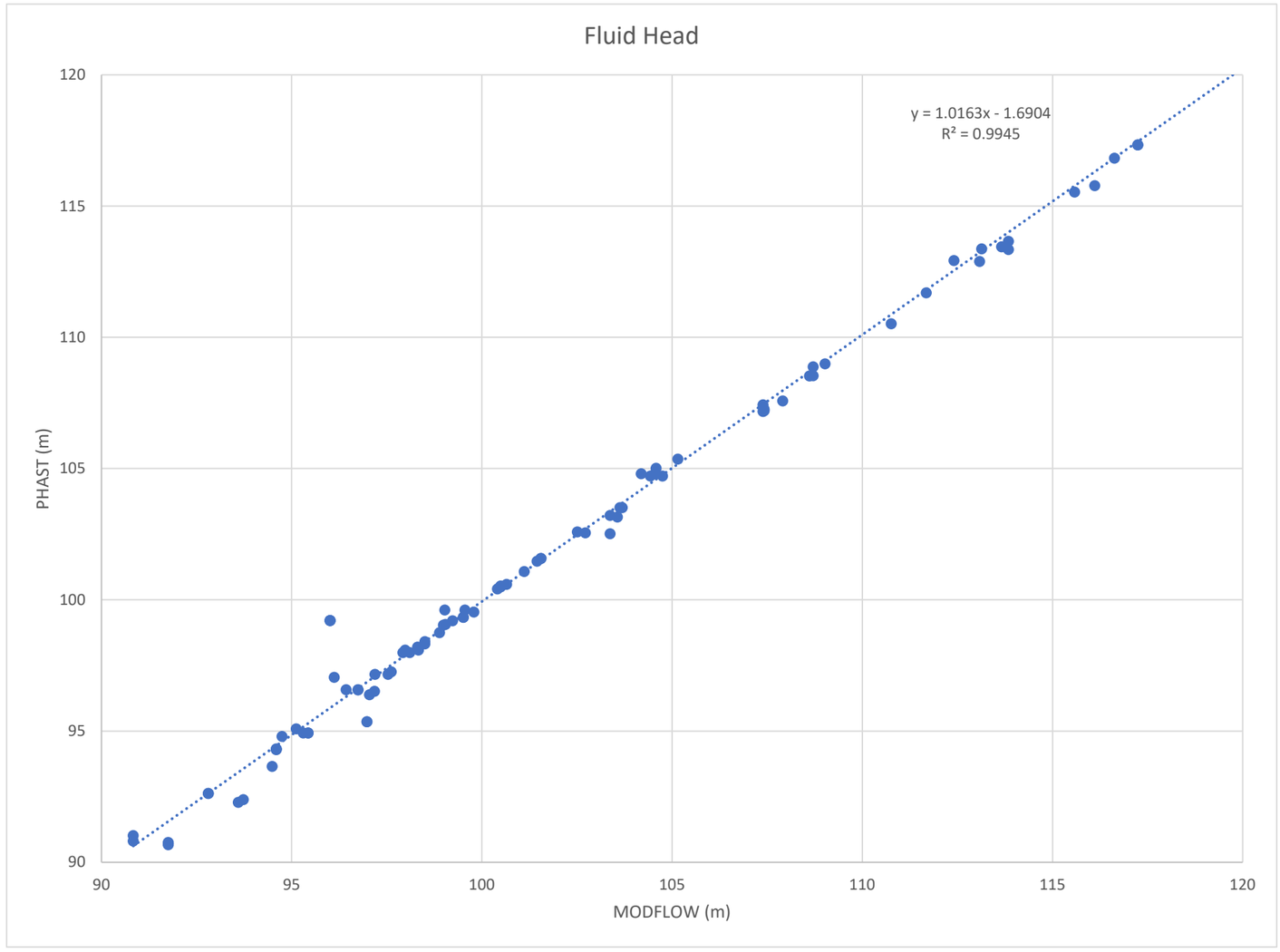
CONSULTANT

GOLDER

PROJECT
TIER II AND TIER III MNA GEOCHEMICAL EVALUATION

TITLE
CONSTITUENT TRENDS

PROJECT NO.	PHASE	REV.	FIGURE
19134019	3000		1



CLIENT
LUMINANT
MARTIN LAKE SES
A1 LANDFILL AREA

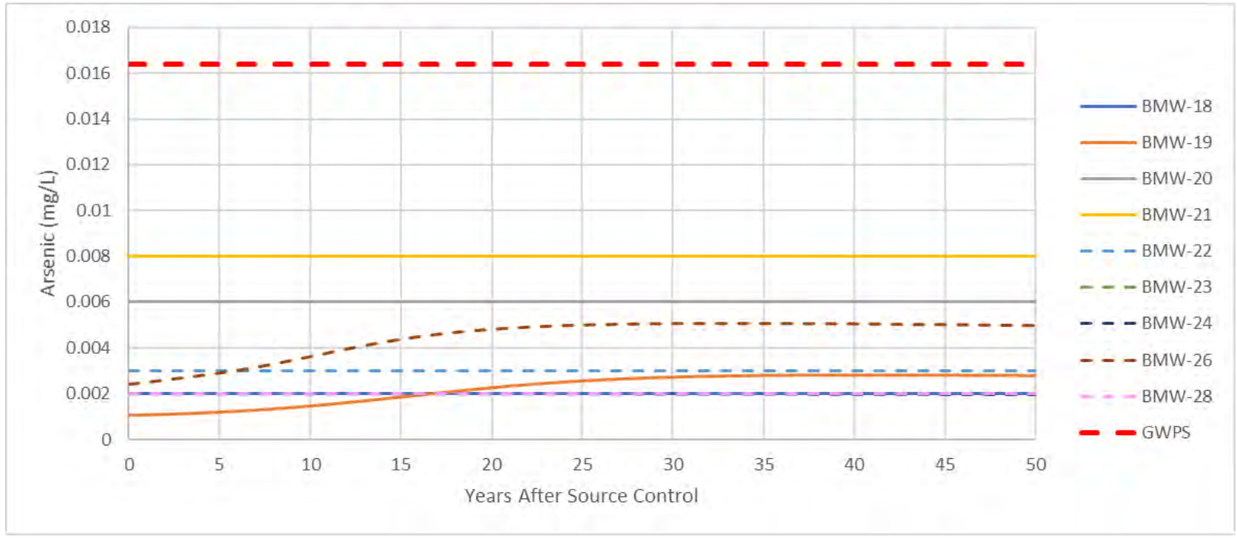
CONSULTANT
GOLDER

PROJECT
TIER II AND TIER III MNA GEOCHEMICAL EVALUATION

TITLE
PHAST FLUID HEAD CALIBRATION

PROJECT NO.	PHASE	REV.	FIGURE
19134019	3000	A	2

(3)



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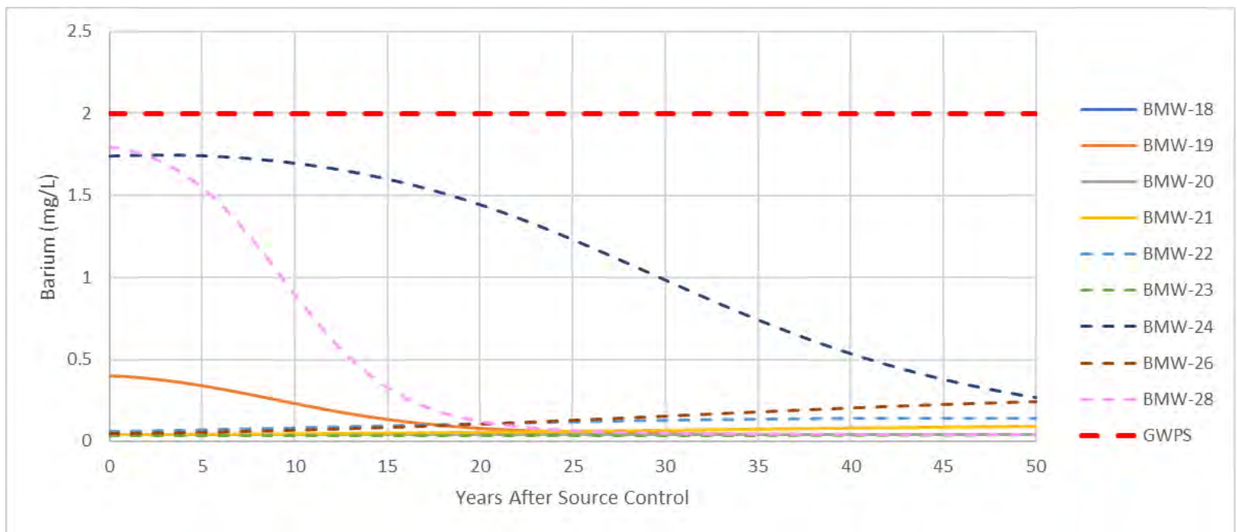


CLIENT
LUMINANT
MARTIN LAKE SES
A1 LANDFILL AREA

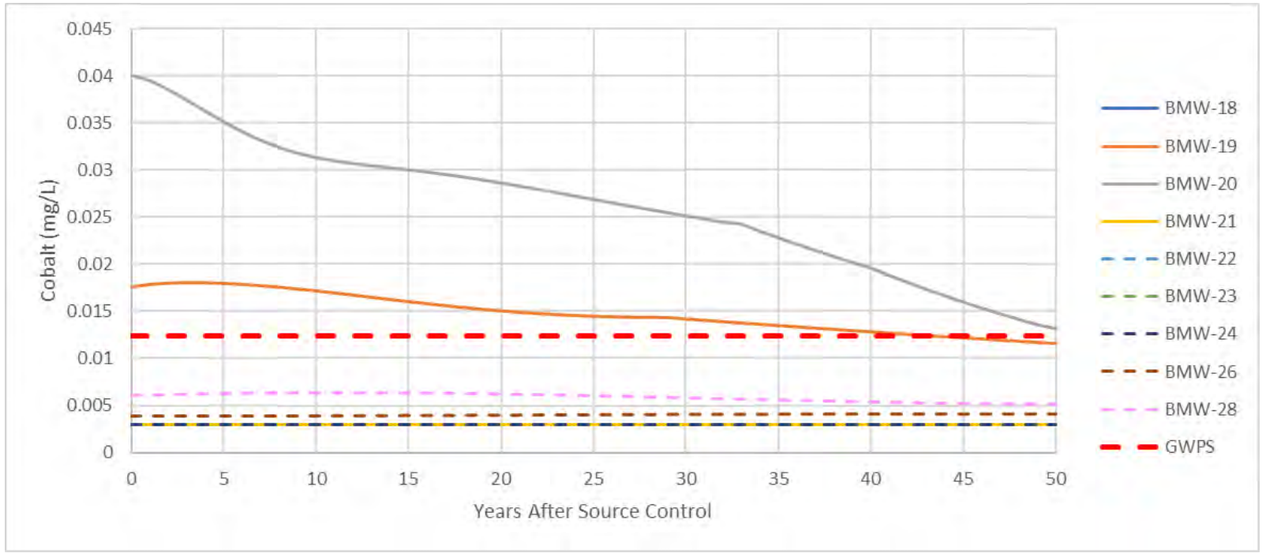
CONSULTANT
GOLDER

PROJECT
TIER II AND TIER III MNA GEOCHEMICAL EVALUATION

TITLE
GEOCHEMICAL MODELING RESULTS FOR (3) ARSENIC AND (4) BARIUM

PROJECT NO.	PHASE	REV.	FIGURE
19134019	3000	A	3&4

(5)



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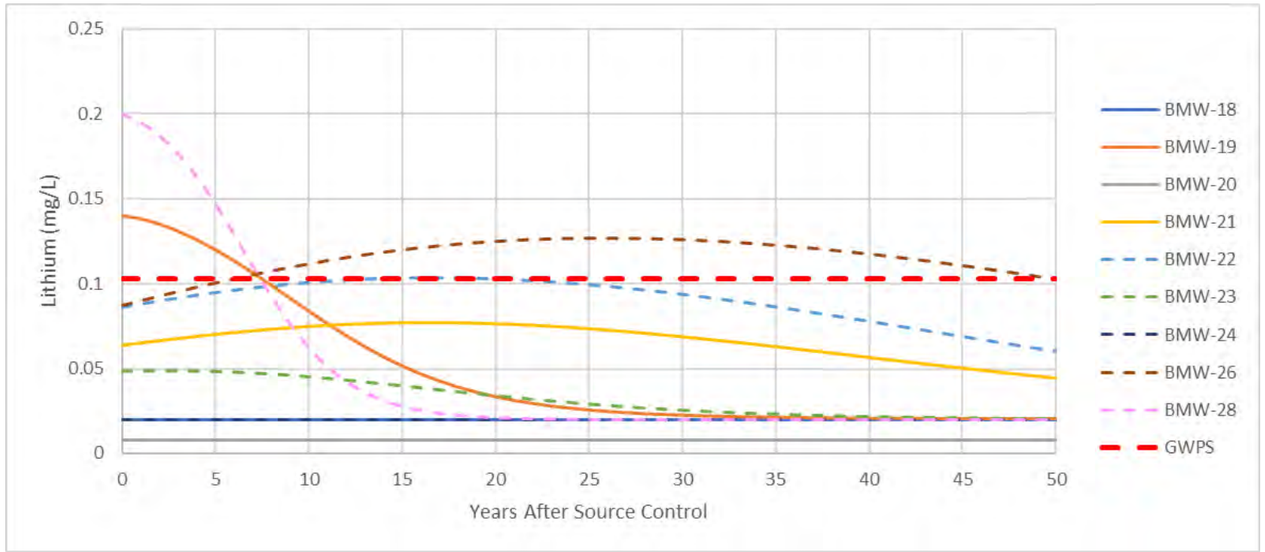


CLIENT
LUMINANT
MARTIN LAKE SES
A1 LANDFILL AREA

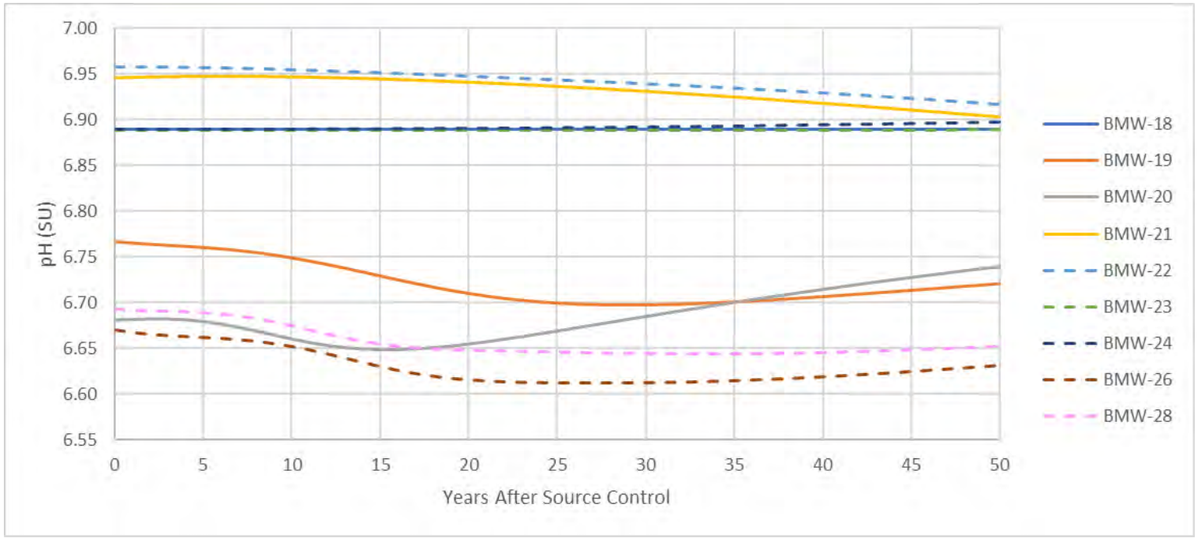
CONSULTANT
GOLDER

PROJECT
TIER II AND TIER III MNA GEOCHEMICAL EVALUATION

TITLE
GEOCHEMICAL MODELING RESULTS FOR (5) COBALT AND (6) LITHIUM

PROJECT NO.	PHASE	REV.	FIGURE
19134019	3000	A	**5&6**

(7)



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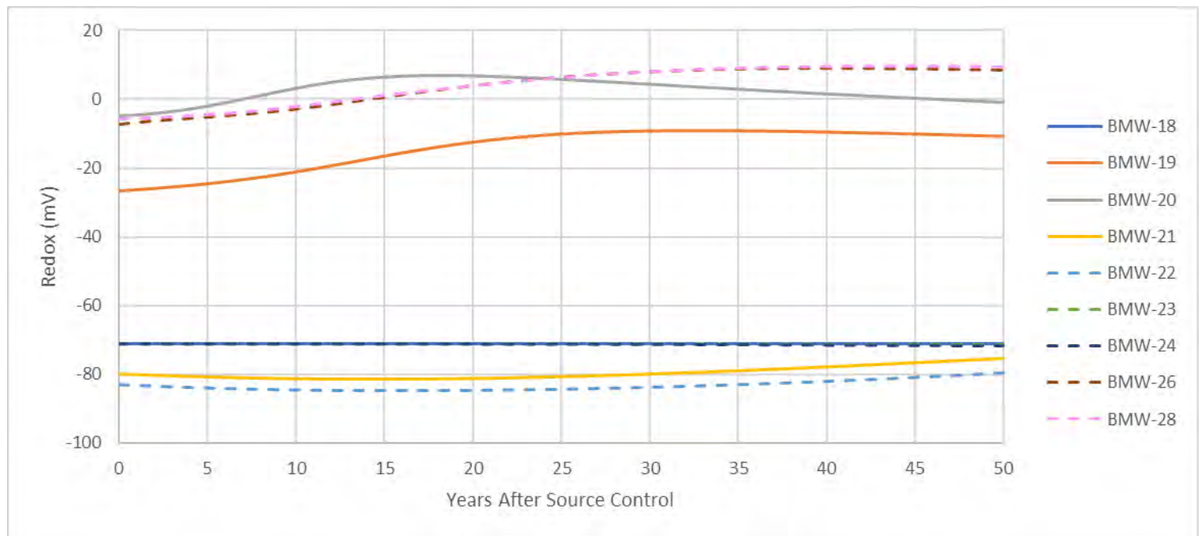

CLIENT
LUMINANT
MARTIN LAKE SES
A1 LANDFILL AREA

CONSULTANT
GOLDER

PROJECT
TIER II AND TIER III MNA GEOCHEMICAL EVALUATION

TITLE
GEOCHEMICAL MODELING RESULTS FOR (7) pH AND (8) REDOX

PROJECT NO.	PHASE	REV.	FIGURE
19134019	3000	A	7&8

APPENDIX A

Laboratory Analytical Reports

October 10, 2019

Will Vienne
Golder
2201 Double Creek Dr #4004
Round Rock, Texas 78664
TEL: (512) 671-3434
FAX (512) 671-3446

Order No.: 1909049

RE: Luminant-A1 Area Landfill MLSES

Dear Will Vienne:

DHL Analytical, Inc. received 8 sample(s) on 9/6/2019 for the analyses presented in the following report.

There were no problems with the analyses and all data met requirements of NELAP except where noted in the Case Narrative. All non-NELAP methods will be identified accordingly in the case narrative and all estimated uncertainties of test results are within method or EPA specifications.

If you have any questions regarding these tests results, please feel free to call. Thank you for using DHL Analytical.

Sincerely,

John DuPont
General Manager

This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211-19-24

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MQLSummaryReport 1909049 40

Subcontract Report 1909049 41

DHL ANALYTICAL
2300 Double Creek Dr. ■ Round Rock, TX 78664
Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

№ 85533

CHAIN-OF-CUSTODY

CLIENT: GOLDER
ADDRESS: 2201 DOUBLE CREEK DR #4004 ROUND ROCK, TX 78664
PHONE: 512-671-3134 FAX/E-MAIL:
DATA REPORTED TO: WILL VIENNE
ADDITIONAL REPORT COPIES TO:

DATE: 9-4-19 PAGE 1 OF 1
PO #: 19122262-D DHL WORK ORDER #: 1908 1909049
PROJECT LOCATION OR NAME: LUMINANT - A1 AREA LANDFILL
CLENT PROJECT #: 19122262-D COLLECTOR: J. BRAUTON

Authorize 5% surcharge for TRRP Report? ☐ Yes ☐ No

S=SOIL P=PAINT
W=WATER SL=SLUDGE
A=AIR O=OTHER
L=LIQUID SO=SOLID
SE=SEDIMENT

PRESERVATION: HCl | HNO_3 | H_2SO_4 ☐ NaOH ☐ | ICE | UNPRESERVED

ANALYSES: BTEX ☐ MTBE ☐ [METHOD 8021] | TPH 1005 ☐ TPH 1006 ☐ HOLD 1006 ☐ | GRO [METHOD 8015] ☐ DRO [METHOD 8105] ☐ | VOC 8260 ☐ VOC 624 ☐ VOC 8260/5035 ☐ | SVOC 8270 ☐ PAH 8270 ☐ HOLD PAH ☐ SVOC 625 ☐ | 8270 PEST ☐ 625 PEST/PCB ☐ 608 PCB ☐ | 8270 O-P PEST ☐ 8082 PCB ☐ 8270 PCB ☐ | 8321 HERB ☐ T PHOS, AMMONIA ☐ | METALS 6020 ☐ METALS 200.8 ☐ DISS. METALS ☐ _____ ☐ | RCRA ☐ TX11 ☐ | PH ☐ HEX CHROM ☐ ALKALINITY ☐ COD ☐ | CHLORIDE ☐ ANIONS _____ ☐ | TCLP-SVOC ☐ VOC ☐ PEST ☐ HERB ☐ | TCLP-METALS ☐ RCRA 8 ☐ TX-11 ☐ Pb ☐ | RCI ☐ FLASHPOINT ☐ DGAS ☐ % MOISTURE ☐ CYANIDE ☐ | TDS ☐ TSS ☐ APPENDIX III & IV

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	HCl	HNO_3	H_2SO_4 ☐ NaOH ☐	ICE	UNPRESERVED	FIELD NOTES
BMW-21	01	9-4-19	0800	W	P	4		X		X	X	
BMW-20	02		0850	W	P	4		X		X	X	
BMW-27	03		0940	W	P	4		X		X	X	
BMW-26	04		1030	W	P	4		X		X	X	
BMW-11AR	05		1130	W	P	4		X		X	X	
BMW-19	06		1220	W	P	4		X		X	X	
BMW-18	07		1320	W	P	4		X		X	X	
BMW-29	08		1420	W	P	4		X		X	X	

RELINQUISHED BY: (Signature) DATE/TIME 9-5-19 RECEIVED BY: (Signature) FEDEX
RELINQUISHED BY: (Signature) FEDEX DATE/TIME 9-10-19 0950 RECEIVED BY: (Signature) JadeWiner
RELINQUISHED BY: (Signature) DATE/TIME RECEIVED BY: (Signature)

☐ DHL DISPOSAL @ $5.00 each ☐ Return

TURN AROUND TIME
RUSH ☐ CALL FIRST
1 DAY ☐ CALL FIRST
2 DAY ☐
NORMAL ☒
OTHER ☐ _____

LABORATORY USE ONLY:
RECEIVING TEMP: 3.7/3.0°C THERM #: 18
CUSTODY SEALS: ☐ BROKEN ☐ INTACT ☒ NOT USED
CARRIER: ☐ LONE STAR ☒ FEDEX ☐ UPS ☐ OTHER
☐ COURIER DELIVERY
☐ HAND DELIVERED

DHL COC Rev 1 | FEB 2010

Eric Lau

From: John DuPont
Sent: Tuesday, May 28, 2019 11:35 AM
To: Eric Lau
Subject: FW: CCR Analysis

Appendix III Parameters:
Metals (Ca and B)
Anions (Cl, F, and SO4)
TDS

Appendix IV Parameters:

Metals (As, Ba, Be, Cd, Co, Cr, Hg, Li, Mo, Pb, Sb, Se, and Tl)
Ra-226
Ra-228

From: Vienne, Will [mailto:William_Vienne@golder.com]
Sent: Tuesday, April 09, 2019 12:48 PM
To: John DuPont <dupont@dhlanalytical.com>
Subject: CCR Analysis

Eric Lau

From: Vienne, Will <William_Vienne@golder.com>
Sent: Tuesday, September 10, 2019 2:25 PM
To: Eric Lau
Cc: John DuPont
Subject: RE: Luminant CCR Bottle Order

Follow Up Flag: Follow up
Flag Status: Completed

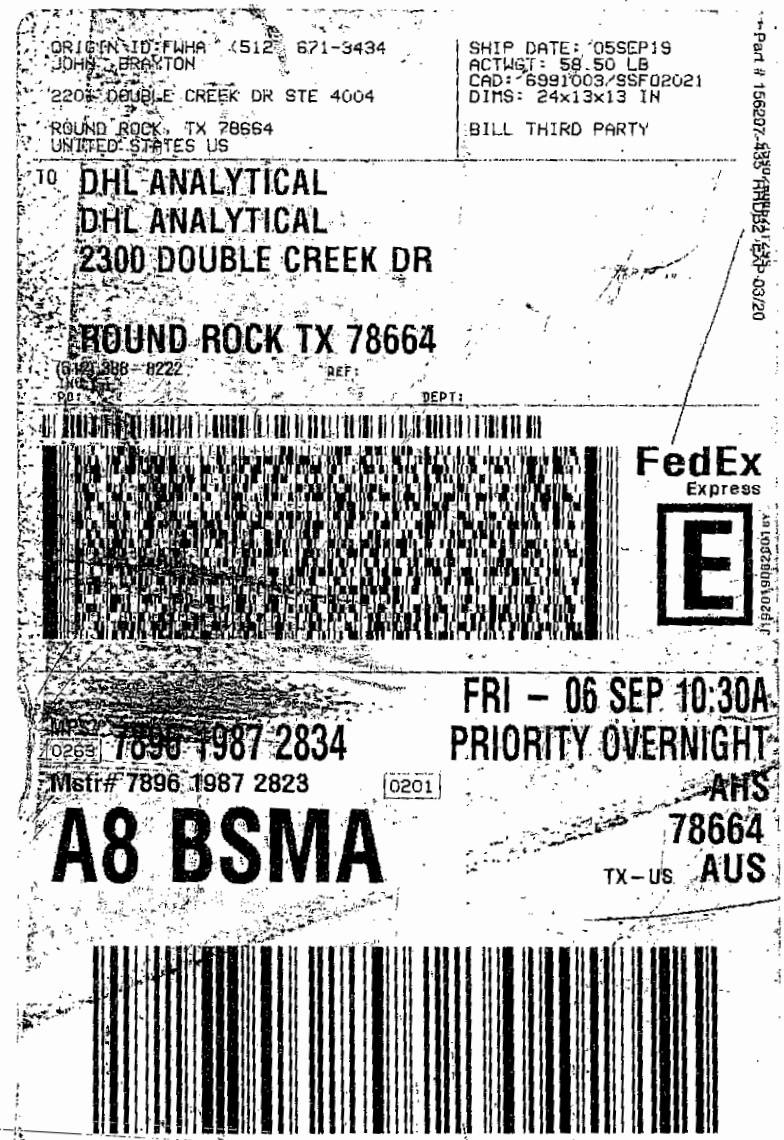
Eric and John,

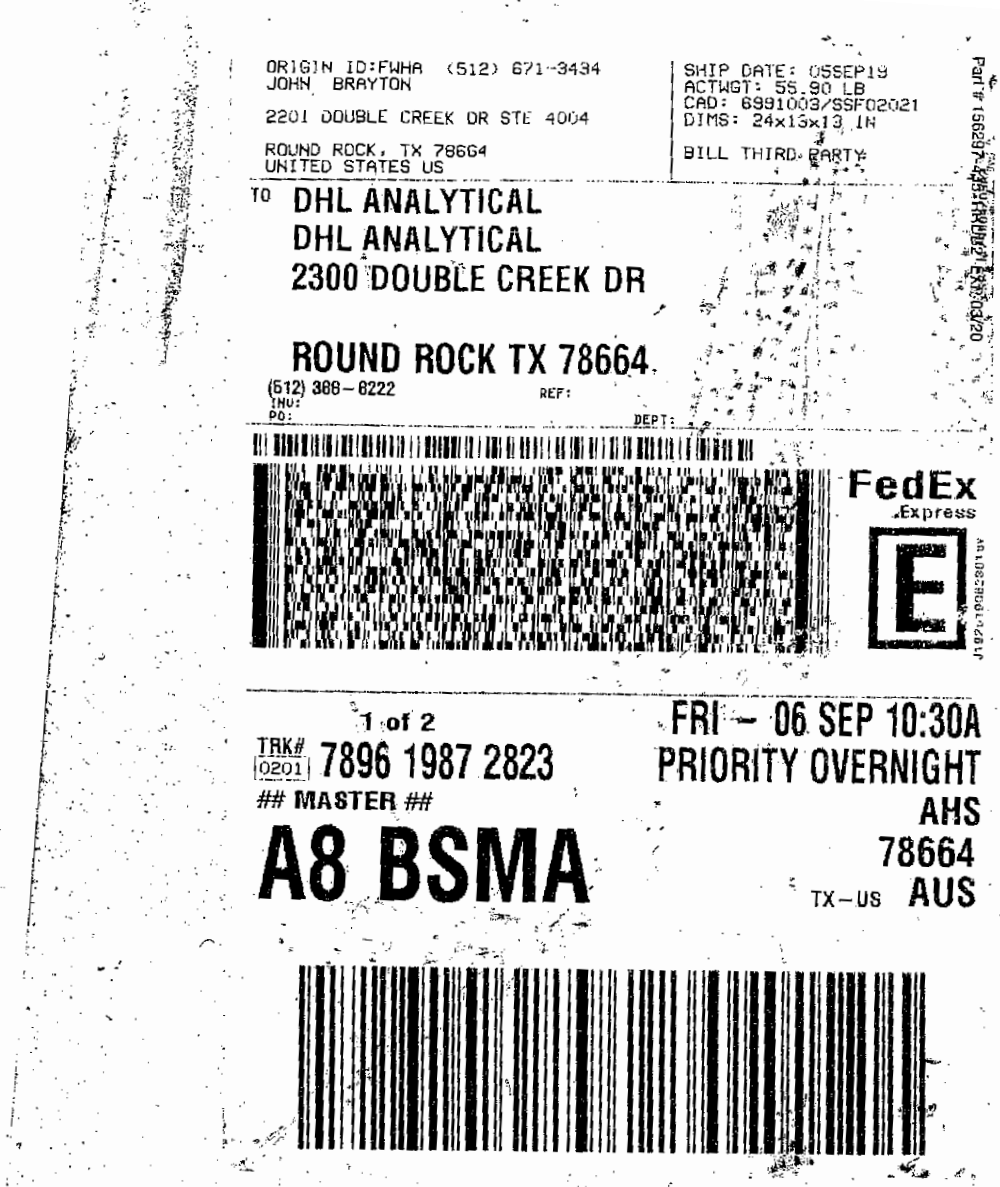
We don't have to analyze for all of the Appendix IV parameters during the current sampling period for the sites listed below. Here is a list of the analytes that **shouldn't** be reported for each site:

- Martin Lake A1 Area Landfill: Sb, Be, Cd, Cr, Pb, Hg, Se, and Tl

William Vienne
Senior Hydrogeologist

GOLDER
Golder Associates Inc.
2201 Double Creek Dr, Suite 4004, Round Rock, Texas, USA 78664
T: +1 512 671-3434 | **C:** +1 512 466-9074 | **golder.com**
LinkedIn | Facebook | Twitter


ORIGIN ID:FWHA (512) 671-3434
JOHN BRAXTON
2200 DOUBLE CREEK DR STE 4004
ROUND ROCK, TX 78664
UNITED STATES US
SHIP DATE: 05SEP19
ACTWGT: 58.50 LB
CAD: 6991003/SSF02021
DIMS: 24x13x13 IN
BILL THIRD PARTY
TO DHL ANALYTICAL
DHL ANALYTICAL
2300 DOUBLE CREEK DR
ROUND ROCK TX 78664
(512) 388-8222
REF:
DEPT:
FedEx
Express
FRI - 06 SEP 10:30A
PRIORITY OVERNIGHT
MPS# 7896 1987 2834
Mstr# 7896 1987 2823
0263
0201
A8 BSMA
AHS
78664
TX-US AUS



ORIGIN ID:FWHA (512) 671-3434
JOHN BRAYTON

2201 DOUBLE CREEK DR STE 4004

ROUND ROCK, TX 78664
UNITED STATES US

SHIP DATE: 05SEP19
ACTWGT: 55.90 LB
CAD: 6991003/SSF02021
DIMS: 24x13x13 IN

BILL THIRD PARTY

Part # 156297-435-ROUND EXP 03/20

TO DHL ANALYTICAL
DHL ANALYTICAL
2300 DOUBLE CREEK DR

ROUND ROCK TX 78664

(512) 388-8222 REF:
INV:
PO: DEPT:

FedEx Express

1 of 2

TRK# 0201 7896 1987 2823

MASTER

A8 BSMA

FRI - 06 SEP 10:30A
PRIORITY OVERNIGHT
AHS
78664
TX-US AUS

Sample Receipt Checklist

Client Name Golder | Date Received: 9/6/2019

Work Order Number 1909049 | Received by JW

Checklist completed by: Signature | 9/6/2019 Date | Reviewed by Initials | 9/6/2019 Date

Carrier name FedEx 1day

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	3.7 °C
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH<2 acceptable upon receipt?	Yes ☑	No ☐	NA ☐ LOT # 13171
	Adjusted? no		Checked by EL
Water - ph>9 (S) or ph>10 (CN) acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted?		Checked by

Any No response must be detailed in the comments section below.

Client contacted | Date contacted: | Person contacted

Contacted by: | Regarding:

Comments:

Corrective Action

Laboratory Name: DHL Analytical, Inc.

Laboratory Review Checklist: Reportable Data

Project Name: Luminant-A1 Area Landfill MLSES	**LRC Date:** 10/10/19
Reviewer Name: Carlos Castro	**Laboratory Work Order:** 1909049
Prep Batch Number(s): See Prep Dates Report	**Run Batch:** See Analytical Dates Report

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
		Chain-of-Custody (C-O-C)					
R1	OI	**1)** Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	**X**				**R1-01**
		2) Were all departures from standard conditions described in an exception report?			**X**		
R2	OI	**Sample and Quality Control (QC) Identification**					
		1) Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	**X**				
		2) Are all laboratory ID numbers cross-referenced to the corresponding QC data?	**X**				
R3	OI	**Test Reports**					
		1) Were all samples prepared and analyzed within holding times?	**X**				
		2) Other than those results < MQL, were all other raw values bracketed by calibration standards?	**X**				
		3) Were calculations checked by a peer or supervisor?	**X**				
		4) Were all analyte identifications checked by a peer or supervisor?	**X**				
		5) Were sample detection limits reported for all analytes not detected?	**X**				
		6) Were all results for soil and sediment samples reported on a dry weight basis?			**X**		
		7) Were % moisture (or solids) reported for all soil and sediment samples?			**X**		
		8) Were bulk soils/solids samples for volatile analysis extracted with methanol per EPA Method 5035?			**X**		
		9) If required for the project, TICs reported?			**X**		
R4	O	**Surrogate Recovery Data**					
		1) Were surrogates added prior to extraction?			**X**		
		2) Were surrogate percent recoveries in all samples within the laboratory QC limits?			**X**		
R5	OI	**Test Reports/Summary Forms for Blank Samples**					
		1) Were appropriate type(s) of blanks analyzed?	**X**				
		2) Were blanks analyzed at the appropriate frequency?	**X**				
		3) Where method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	**X**				
		4) Were blank concentrations < MDL?	**X**				
		5) For analyte(s) detected in a blank sample, was the concentration, unadjusted for sample specific factors, in all associated field samples, **greater** than 10 times the concentration in the blank sample?			**X**		
R6	OI	**Laboratory Control Samples (LCS):**					
		1) Were all COCs included in the LCS?	**X**				
		2) Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	**X**				
		3) Were LCSs analyzed at the required frequency?	**X**				
		4) Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	**X**				
		5) Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	**X**				
		6) Was the LCSD RPD within QC limits (if applicable)?	**X**				
R7	OI	**Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Data**					
		1) Were the project/method specified analytes included in the MS and MSD?	**X**				
		2) Were MS/MSD analyzed at the appropriate frequency?	**X**				
		3) Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?		**X**			**R7-03**
		4) Were MS/MSD RPDs within laboratory QC limits?	**X**				
R8	OI	**Analytical Duplicate Data**					
		1) Were appropriate analytical duplicates analyzed for each matrix?	**X**				
		2) Were analytical duplicates analyzed at the appropriate frequency?	**X**				
		3) Were RPDs or relative standard deviations within the laboratory QC limits?	**X**				
R9	OI	**Method Quantitation Limits (MQLs):**					
		1) Are the MQLs for each method analyte included in the laboratory data package?	**X**				
		2) Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	**X**				
		3) Are unadjusted MQLs and DCSs included in the laboratory data package?	**X**				
R10	OI	**Other Problems/Anomalies**					
		1) Are all known problems/anomalies/special conditions noted in this LRC and ER?	**X**				
		2) Was applicable and available technology used to lower the SDL to minimize the matrix interference affects on the sample results?	**X**				
		3) Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices and methods associated with this laboratory data package?	**X**				

Laboratory Name: DHL Analytical, Inc.

Laboratory Review Checklist (continued): Supporting Data

Project Name: Luminant-A1 Area Landfill MLSES	**LRC Date:** 10/10/19
Reviewer Name: Carlos Castro	**Laboratory Work Order:** 1909049
Prep Batch Number(s): See Prep Dates Report	**Run Batch:** See Analytical Dates Report

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
S1	OI	**Initial Calibration (ICAL)**					
		1) Were response factors and/or relative response factors for each analyte within QC limits?	**X**				
		2) Were percent RSDs or correlation coefficient criteria met?	**X**				
		3) Was the number of standards recommended in the method used for all analytes?	**X**				
		4) Were all points generated between the lowest and highest standard used to calculate the curve?	**X**				
		5) Are ICAL data available for all instruments used?	**X**				
		6) Has the initial calibration curve been verified using an appropriate second source standard?	**X**				
S2	OI	**Initial and Continuing calibration Verification (ICCV and CCV) and Continuing Calibration blank (CCB):**					
		1) Was the CCV analyzed at the method-required frequency?	**X**				
		2) Were percent differences for each analyte within the method-required QC limits?		**X**			**S2-02**
		3) Was the ICAL curve verified for each analyte?	**X**				
		4) Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	**X**				
S3	O	**Mass Spectral Tuning:**					
		1) Was the appropriate compound for the method used for tuning?	**X**				
		2) Were ion abundance data within the method-required QC limits?	**X**				
S4	O	**Internal Standards (IS):**					
		1) Were IS area counts and retention times within the method-required QC limits?	**X**				
S5	OI	**Raw Data (NELAC Section 5.5.10)**					
		1) Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	**X**				
		2) Were data associated with manual integrations flagged on the raw data?	**X**				
S6	O	**Dual Column Confirmation**					
		1) Did dual column confirmation results meet the method-required QC?			**X**		
S7	O	**Tentatively Identified Compounds (TICs):**					
		1) If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			**X**		
S8	I	**Interference Check Sample (ICS) Results:**					
		1) Were percent recoveries within method QC limits?	**X**				
S9	I	**Serial Dilutions, Post Digestion Spikes, and Method of Standard Additions**					
		1) Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	**X**				
S10	OI	**Method Detection Limit (MDL) Studies**					
		1) Was a MDL study performed for each reported analyte?	**X**				
		2) Is the MDL either adjusted or supported by the analysis of DCSs?	**X**				
S11	OI	**Proficiency Test Reports:**					
		1) Was the lab's performance acceptable on the applicable proficiency tests or evaluation studies?	**X**				
S12	OI	**Standards Documentation**					
		1) Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	**X**				
S13	OI	**Compound/Analyte Identification Procedures**					
		1) Are the procedures for compound/analyte identification documented?	**X**				
S14	OI	**Demonstration of Analyst Competency (DOC)**					
		1) Was DOC conducted consistent with NELAC Chapter 5 – Appendix C?	**X**				
		2) Is documentation of the analyst's competency up-to-date and on file?	**X**				
S15	OI	**Verification/Validation Documentation for Methods** (NELAC Chapter 5)					
		1) Are all the methods used to generate the data documented, verified, and validated, where applicable?	**X**				
S16	OI	**Laboratory Standard Operating Procedures (SOPs):**					
		1) Are laboratory SOPs current and on file for each method performed?	**X**				

1 Items identified by the letter "R" should be included in the laboratory data package submitted to the TCEQ in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.

2 O = organic analyses; I = inorganic analyses (and general chemistry, when applicable).

3 NA = Not applicable.

4 NR = Not Reviewed.

5 ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Data Package Signature Page – RG-366/TRRP-13

This data package consists of:

This signature page, the laboratory review checklist, and the following reportable data:

R1 Field chain-of-custody documentation;
R2 Sample identification cross-reference;
R3 Test reports (analytical data sheets) for each environmental sample that includes:
  a) Items consistent with NELAC Chapter 5,
  b) dilution factors,
  c) preparation methods,
  d) cleanup methods, and
  e) if required for the project, tentatively identified compounds (TICs).
R4 Surrogate recovery data including:
  a) Calculated recovery (%R), and
  b) The laboratory's surrogate QC limits.
R5 Test reports/summary forms for blank samples;
R6 Test reports/summary forms for laboratory control samples (LCSs) including:
  a) LCS spiking amounts,
  b) Calculated %R for each analyte, and
  c) The laboratory's LCS QC limits.
R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
  a) Samples associated with the MS/MSD clearly identified,
  b) MS/MSD spiking amounts,
  c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
  d) Calculated %Rs and relative percent differences (RPDs), and
  e) The laboratory's MS/MSD QC limits
R8 Laboratory analytical duplicate (if applicable) recovery and precision:
  a) The amount of analyte measured in the duplicate,
  b) The calculated RPD, and
  c) The laboratory's QC limits for analytical duplicates.
R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix;
R10 Other problems or anomalies.

The Exception Report for each "No" or "Not Reviewed (NR)" item in the Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory is not accredited under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature below, I affirm to the best of my knowledge that all problems/anomalies observed by the laboratory have been identified in the Laboratory Review Checklist, and no information or data affecting the quality of the data has been knowingly withheld.

This laboratory was last inspected by TCEQ on February 25-28 2019. Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Name: John DuPont
Official Title: General Manager

Signature

10/10/1□

Date

Name: Dr. Derhsing Luu
Official Title: Technical Director

DHL Analytical, Inc. **Date:** *10-Oct-19*

CLIENT: Golder
Project: Luminant-A1 Area Landfill MLSES
Lab Order: 1909049

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Method SW6020A - Metals Analysis
Method E300 - Anions Analysis
Method M2540C - TDS Analysis
Sub-contract - Radium-228 and Radium-226 analyses by methods E904 and SM 7500 Ra B M. Analyzed at Pace Analytical.

Exception Report R1-01

The samples were received and log-in performed on 9/6/19. A total of 8 samples were received. The samples arrived in good condition and were properly packaged.

Exception Report R7-03

For Metals analysis performed on 9/13/19 and 9/16/19 the matrix spike and matrix spike duplicate recoveries were out of control limits for Boron and/or Calcium. These are flagged accordingly in the QC summary report. The sample selected for the matrix spike and matrix spike duplicate was from this work order. The LCS was within control limits for these analytes. No further corrective actions were taken.

For Anions analysis performed on 9/10/19 the matrix spike and matrix spike duplicate recoveries were slightly below control limits for Chloride. These are flagged accordingly. The sample selected for the matrix spike and matrix spike duplicate was from this work order. The LCS was within control limits for this analyte. No further corrective actions were taken.

Exception Report S2-02

For Metals analysis performed on 9/13/19 LCVL4-190913 and LCVL5-190913 were above control limits for Calcium. These are flagged accordingly in the QC summary report. The associated CCVs were within control limits for this analyte. No further corrective actions were taken.

DHL Analytical, Inc.

Date: *10-Oct-19*

CLIENT: Golder
Project: Luminant-A1 Area Landfill MLSES
Lab Order: 1909049

Work Order Sample Summary

Lab Smp ID	Client Sample ID	Tag Number	Date Collected	Date Recved
1909049-01	BMW-21		09/04/19 08:00 AM	9/6/2019
1909049-02	BMW-20		09/04/19 08:50 AM	9/6/2019
1909049-03	BMW-27		09/04/19 09:40 AM	9/6/2019
1909049-04	BMW-26		09/04/19 10:30 AM	9/6/2019
1909049-05	BMW-11AR		09/04/19 11:30 AM	9/6/2019
1909049-06	BMW-19		09/04/19 12:20 PM	9/6/2019
1909049-07	BMW-18		09/04/19 01:20 PM	9/6/2019
1909049-08	BMW-28		09/04/19 02:20 PM	9/6/2019

Lab Order: 1909049
Client: Golder
Project: Luminant-A1 Area Landfill MLSE

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1909049-01A	BMW-21	09/04/19 08:00 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/10/19 08:34 AM	92722
	BMW-21	09/04/19 08:00 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/10/19 08:34 AM	92722
1909049-01B	BMW-21	09/04/19 08:00 AM	Aqueous	E300	Anion Preparation	09/10/19 08:47 AM	92717
	BMW-21	09/04/19 08:00 AM	Aqueous	E300	Anion Preparation	09/10/19 08:47 AM	92717
	BMW-21	09/04/19 08:00 AM	Aqueous	M2540C	TDS Preparation	09/09/19 11:00 AM	92719
1909049-02A	BMW-20	09/04/19 08:50 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/10/19 08:34 AM	92722
	BMW-20	09/04/19 08:50 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/10/19 08:34 AM	92722
	BMW-20	09/04/19 08:50 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/10/19 08:34 AM	92722
1909049-02B	BMW-20	09/04/19 08:50 AM	Aqueous	E300	Anion Preparation	09/10/19 08:47 AM	92717
	BMW-20	09/04/19 08:50 AM	Aqueous	E300	Anion Preparation	09/10/19 08:47 AM	92717
	BMW-20	09/04/19 08:50 AM	Aqueous	M2540C	TDS Preparation	09/09/19 11:00 AM	92719
1909049-03A	BMW-27	09/04/19 09:40 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/10/19 08:34 AM	92722
	BMW-27	09/04/19 09:40 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/10/19 08:34 AM	92722
	BMW-27	09/04/19 09:40 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/10/19 08:34 AM	92722
1909049-03B	BMW-27	09/04/19 09:40 AM	Aqueous	E300	Anion Preparation	09/10/19 08:47 AM	92717
	BMW-27	09/04/19 09:40 AM	Aqueous	E300	Anion Preparation	09/10/19 08:47 AM	92717
	BMW-27	09/04/19 09:40 AM	Aqueous	M2540C	TDS Preparation	09/09/19 11:00 AM	92719
1909049-04A	BMW-26	09/04/19 10:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/10/19 08:34 AM	92722
	BMW-26	09/04/19 10:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/10/19 08:34 AM	92722
	BMW-26	09/04/19 10:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/10/19 08:34 AM	92722
1909049-04B	BMW-26	09/04/19 10:30 AM	Aqueous	E300	Anion Preparation	09/10/19 08:47 AM	92717
	BMW-26	09/04/19 10:30 AM	Aqueous	E300	Anion Preparation	09/10/19 08:47 AM	92717
	BMW-26	09/04/19 10:30 AM	Aqueous	M2540C	TDS Preparation	09/09/19 11:00 AM	92719
1909049-05A	BMW-11AR	09/04/19 11:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/10/19 08:34 AM	92722
	BMW-11AR	09/04/19 11:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/10/19 08:34 AM	92722
	BMW-11AR	09/04/19 11:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/10/19 08:34 AM	92722
1909049-05B	BMW-11AR	09/04/19 11:30 AM	Aqueous	E300	Anion Preparation	09/10/19 08:47 AM	92717
	BMW-11AR	09/04/19 11:30 AM	Aqueous	E300	Anion Preparation	09/10/19 08:47 AM	92717

Lab Order: 1909049
Client: Golder
Project: Luminant-A1 Area Landfill MLSE

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1909049-05B	BMW-11AR	09/04/19 11:30 AM	Aqueous	M2540C	TDS Preparation	09/09/19 11:00 AM	92719
1909049-06A	BMW-19	09/04/19 12:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/10/19 08:34 AM	92722
	BMW-19	09/04/19 12:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/10/19 08:34 AM	92722
	BMW-19	09/04/19 12:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/10/19 08:34 AM	92722
1909049-06B	BMW-19	09/04/19 12:20 PM	Aqueous	E300	Anion Preparation	09/10/19 08:47 AM	92717
	BMW-19	09/04/19 12:20 PM	Aqueous	E300	Anion Preparation	09/10/19 08:47 AM	92717
	BMW-19	09/04/19 12:20 PM	Aqueous	M2540C	TDS Preparation	09/09/19 11:00 AM	92719
1909049-07A	BMW-18	09/04/19 01:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/10/19 08:34 AM	92722
	BMW-18	09/04/19 01:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/10/19 08:34 AM	92722
1909049-07B	BMW-18	09/04/19 01:20 PM	Aqueous	E300	Anion Preparation	09/10/19 08:47 AM	92717
	BMW-18	09/04/19 01:20 PM	Aqueous	M2540C	TDS Preparation	09/09/19 11:00 AM	92719
1909049-08A	BMW-28	09/04/19 02:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/10/19 08:34 AM	92722
	BMW-28	09/04/19 02:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/10/19 08:34 AM	92722
	BMW-28	09/04/19 02:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/10/19 08:34 AM	92722
1909049-08B	BMW-28	09/04/19 02:20 PM	Aqueous	E300	Anion Preparation	09/10/19 08:47 AM	92717
	BMW-28	09/04/19 02:20 PM	Aqueous	E300	Anion Preparation	09/10/19 08:47 AM	92717
	BMW-28	09/04/19 02:20 PM	Aqueous	E300	Anion Preparation	09/10/19 08:47 AM	92717
	BMW-28	09/04/19 02:20 PM	Aqueous	M2540C	TDS Preparation	09/09/19 11:00 AM	92719

Lab Order: 1909049
Client: Golder
Project: Luminant-A1 Area Landfill MLSE

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1909049-01A	BMW-21	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92722	1	09/13/19 04:50 PM	ICP-MS5_190913B
	BMW-21	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92722	10	09/16/19 12:28 PM	ICP-MS4_190916A
1909049-01B	BMW-21	Aqueous	E300	Anions by IC method - Water	92717	10	09/10/19 11:30 AM	IC2_190910A
	BMW-21	Aqueous	E300	Anions by IC method - Water	92717	1	09/10/19 01:38 PM	IC2_190910A
	BMW-21	Aqueous	M2540C	Total Dissolved Solids	92719	1	09/09/19 03:45 PM	WC_190909C
1909049-02A	BMW-20	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92722	10	09/16/19 12:30 PM	ICP-MS4_190916A
	BMW-20	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92722	1	09/16/19 12:32 PM	ICP-MS4_190916A
	BMW-20	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92722	1	09/13/19 04:52 PM	ICP-MS5_190913B
1909049-02B	BMW-20	Aqueous	E300	Anions by IC method - Water	92717	10	09/10/19 12:18 PM	IC2_190910A
	BMW-20	Aqueous	E300	Anions by IC method - Water	92717	1	09/10/19 01:54 PM	IC2_190910A
	BMW-20	Aqueous	M2540C	Total Dissolved Solids	92719	1	09/09/19 03:45 PM	WC_190909C
1909049-03A	BMW-27	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92722	1	09/13/19 04:54 PM	ICP-MS5_190913B
	BMW-27	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92722	50	09/16/19 12:34 PM	ICP-MS4_190916A
	BMW-27	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92722	1	09/16/19 12:36 PM	ICP-MS4_190916A
1909049-03B	BMW-27	Aqueous	E300	Anions by IC method - Water	92717	10	09/10/19 12:34 PM	IC2_190910A
	BMW-27	Aqueous	E300	Anions by IC method - Water	92717	1	09/10/19 03:30 PM	IC2_190910A
	BMW-27	Aqueous	M2540C	Total Dissolved Solids	92719	1	09/09/19 03:45 PM	WC_190909C
1909049-04A	BMW-26	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92722	50	09/16/19 12:38 PM	ICP-MS4_190916A
	BMW-26	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92722	1	09/16/19 12:40 PM	ICP-MS4_190916A
	BMW-26	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92722	1	09/13/19 04:56 PM	ICP-MS5_190913B
1909049-04B	BMW-26	Aqueous	E300	Anions by IC method - Water	92717	10	09/10/19 12:50 PM	IC2_190910A
	BMW-26	Aqueous	E300	Anions by IC method - Water	92717	1	09/10/19 03:46 PM	IC2_190910A
	BMW-26	Aqueous	M2540C	Total Dissolved Solids	92719	1	09/09/19 03:45 PM	WC_190909C
1909049-05A	BMW-11AR	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92722	1	09/16/19 01:13 PM	ICP-MS4_190916A
	BMW-11AR	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92722	1	09/13/19 04:45 PM	ICP-MS5_190913B
	BMW-11AR	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92722	10	09/16/19 12:24 PM	ICP-MS4_190916A
1909049-05B	BMW-11AR	Aqueous	E300	Anions by IC method - Water	92717	10	09/10/19 01:06 PM	IC2_190910A
	BMW-11AR	Aqueous	E300	Anions by IC method - Water	92717	1	09/10/19 04:02 PM	IC2_190910A

Lab Order: 1909049
Client: Golder
Project: Luminant-A1 Area Landfill MLSE

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1909049-05B	BMW-11AR	Aqueous	M2540C	Total Dissolved Solids	92719	1	09/09/19 03:45 PM	WC_190909C
1909049-06A	BMW-19	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92722	50	09/16/19 12:42 PM	ICP-MS4_190916A
	BMW-19	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92722	1	09/16/19 12:44 PM	ICP-MS4_190916A
	BMW-19	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92722	1	09/13/19 04:59 PM	ICP-MS5_190913B
1909049-06B	BMW-19	Aqueous	E300	Anions by IC method - Water	92717	1	09/10/19 04:18 PM	IC2_190910A
	BMW-19	Aqueous	E300	Anions by IC method - Water	92717	100	09/10/19 10:58 AM	IC2_190910A
	BMW-19	Aqueous	M2540C	Total Dissolved Solids	92719	1	09/09/19 03:45 PM	WC_190909C
1909049-07A	BMW-18	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92722	1	09/13/19 05:01 PM	ICP-MS5_190913B
	BMW-18	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92722	1	09/16/19 01:23 PM	ICP-MS4_190916A
1909049-07B	BMW-18	Aqueous	E300	Anions by IC method - Water	92717	1	09/10/19 04:34 PM	IC2_190910A
	BMW-18	Aqueous	M2540C	Total Dissolved Solids	92719	1	09/09/19 03:45 PM	WC_190909C
1909049-08A	BMW-28	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92722	50	09/16/19 01:25 PM	ICP-MS4_190916A
	BMW-28	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92722	10	09/16/19 01:27 PM	ICP-MS4_190916A
	BMW-28	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92722	1	09/13/19 05:03 PM	ICP-MS5_190913B
1909049-08B	BMW-28	Aqueous	E300	Anions by IC method - Water	92717	100	09/10/19 11:14 AM	IC2_190910A
	BMW-28	Aqueous	E300	Anions by IC method - Water	92717	10	09/10/19 01:22 PM	IC2_190910A
	BMW-28	Aqueous	E300	Anions by IC method - Water	92717	1	09/10/19 04:50 PM	IC2_190910A
	BMW-28	Aqueous	M2540C	Total Dissolved Solids	92719	1	09/09/19 03:45 PM	WC_190909C

DHL Analytical, Inc.

Date: *10-Oct-19*

CLIENT:	Golder	**Client Sample ID:**	BMW-21
Project:	Luminant-A1 Area Landfill MLSES	**Lab ID:**	1909049-01
Project No:	19122262-D	**Collection Date:**	09/04/19 08:00 AM
Lab Order:	1909049	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Arsenic	0.00378	0.00200	0.00500	J	mg/L	1	09/13/19 04:50 PM
Barium	0.0409	0.00300	0.0100		mg/L	1	09/13/19 04:50 PM
Boron	1.10	0.100	0.300		mg/L	10	09/16/19 12:28 PM
Calcium	152	1.00	3.00		mg/L	10	09/16/19 12:28 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	09/13/19 04:50 PM
Lithium	0.0683	0.00500	0.0100		mg/L	1	09/13/19 04:50 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	09/13/19 04:50 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	426	3.00	10.0		mg/L	10	09/10/19 11:30 AM
Fluoride	<0.100	0.100	0.400		mg/L	1	09/10/19 01:38 PM
Sulfate	477	10.0	30.0		mg/L	10	09/10/19 11:30 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	2090	50.0	50.0		mg/L	1	09/09/19 03:45 PM

Qualifiers:

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See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *10-Oct-19*

CLIENT:	Golder	**Client Sample ID:**	BMW-20
Project:	Luminant-A1 Area Landfill MLSES	**Lab ID:**	1909049-02
Project No:	19122262-D	**Collection Date:**	09/04/19 08:50 AM
Lab Order:	1909049	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Arsenic	0.00768	0.00200	0.00500		mg/L	1	09/13/19 04:52 PM
Barium	0.0261	0.00300	0.0100		mg/L	1	09/13/19 04:52 PM
Boron	0.101	0.0100	0.0300		mg/L	1	09/16/19 12:32 PM
Calcium	136	1.00	3.00		mg/L	10	09/16/19 12:30 PM
Cobalt	0.108	0.00300	0.00500		mg/L	1	09/13/19 04:52 PM
Lithium	<0.00500	0.00500	0.0100		mg/L	1	09/13/19 04:52 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	09/13/19 04:52 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	50.7	3.00	10.0		mg/L	10	09/10/19 12:18 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	09/10/19 01:54 PM
Sulfate	1160	10.0	30.0		mg/L	10	09/10/19 12:18 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	1830	50.0	50.0		mg/L	1	09/09/19 03:45 PM

Qualifiers:

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DF- Dilution Factor
N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *10-Oct-19*

CLIENT:	Golder	**Client Sample ID:**	BMW-27
Project:	Luminant-A1 Area Landfill MLSES	**Lab ID:**	1909049-03
Project No:	19122262-D	**Collection Date:**	09/04/19 09:40 AM
Lab Order:	1909049	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Arsenic	0.00759	0.00200	0.00500		mg/L	1	09/13/19 04:54 PM
Barium	0.0320	0.00300	0.0100		mg/L	1	09/13/19 04:54 PM
Boron	0.463	0.0100	0.0300		mg/L	1	09/16/19 12:36 PM
Calcium	257	5.00	15.0		mg/L	50	09/16/19 12:34 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	09/13/19 04:54 PM
Lithium	0.107	0.00500	0.0100		mg/L	1	09/13/19 04:54 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	09/13/19 04:54 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	141	3.00	10.0		mg/L	10	09/10/19 12:34 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	09/10/19 03:30 PM
Sulfate	755	10.0	30.0		mg/L	10	09/10/19 12:34 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	2130	50.0	50.0		mg/L	1	09/09/19 03:45 PM

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- DF- Dilution Factor
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- See Final Page of Report for MQLs and MDLs
- S - Spike Recovery outside control limits
- C - Sample Result or QC discussed in Case Narrative
- RL - Reporting Limit (MQL adjusted for moisture and sample size)
- SDL - Sample Detection Limit
- E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *10-Oct-19*

CLIENT:	Golder	**Client Sample ID:**	BMW-26
Project:	Luminant-A1 Area Landfill MLSES	**Lab ID:**	1909049-04
Project No:	19122262-D	**Collection Date:**	09/04/19 10:30 AM
Lab Order:	1909049	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Arsenic	0.00725	0.00200	0.00500		mg/L	1	09/13/19 04:56 PM
Barium	0.0317	0.00300	0.0100		mg/L	1	09/13/19 04:56 PM
Boron	0.473	0.0100	0.0300		mg/L	1	09/16/19 12:40 PM
Calcium	262	5.00	15.0		mg/L	50	09/16/19 12:38 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	09/13/19 04:56 PM
Lithium	0.109	0.00500	0.0100		mg/L	1	09/13/19 04:56 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	09/13/19 04:56 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	140	3.00	10.0		mg/L	10	09/10/19 12:50 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	09/10/19 03:46 PM
Sulfate	753	10.0	30.0		mg/L	10	09/10/19 12:50 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	2170	50.0	50.0		mg/L	1	09/09/19 03:45 PM

Qualifiers:

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See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *10-Oct-19*

CLIENT:	Golder	**Client Sample ID:**	BMW-11AR
Project:	Luminant-A1 Area Landfill MLSES	**Lab ID:**	1909049-05
Project No:	19122262-D	**Collection Date:**	09/04/19 11:30 AM
Lab Order:	1909049	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	09/13/19 04:45 PM
Barium	0.0393	0.00300	0.0100		mg/L	1	09/13/19 04:45 PM
Boron	0.368	0.0100	0.0300		mg/L	1	09/16/19 01:13 PM
Calcium	149	1.00	3.00		mg/L	10	09/16/19 12:24 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	09/13/19 04:45 PM
Lithium	0.0411	0.00500	0.0100		mg/L	1	09/13/19 04:45 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	09/13/19 04:45 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	6.41	0.300	1.00		mg/L	1	09/10/19 04:02 PM
Fluoride	0.170	0.100	0.400	J	mg/L	1	09/10/19 04:02 PM
Sulfate	356	10.0	30.0		mg/L	10	09/10/19 01:06 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	1090	50.0	50.0		mg/L	1	09/09/19 03:45 PM

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- C - Sample Result or QC discussed in Case Narrative
- RL - Reporting Limit (MQL adjusted for moisture and sample size)
- SDL - Sample Detection Limit
- E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *10-Oct-19*

CLIENT:	Golder	**Client Sample ID:**	BMW-19
Project:	Luminant-A1 Area Landfill MLSES	**Lab ID:**	1909049-06
Project No:	19122262-D	**Collection Date:**	09/04/19 12:20 PM
Lab Order:	1909049	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	09/13/19 04:59 PM
Barium	0.0117	0.00300	0.0100		mg/L	1	09/13/19 04:59 PM
Boron	0.430	0.0100	0.0300		mg/L	1	09/16/19 12:44 PM
Calcium	434	5.00	15.0		mg/L	50	09/16/19 12:42 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	09/13/19 04:59 PM
Lithium	0.0694	0.00500	0.0100		mg/L	1	09/13/19 04:59 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	09/13/19 04:59 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	5.93	0.300	1.00		mg/L	1	09/10/19 04:18 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	09/10/19 04:18 PM
Sulfate	2010	100	300		mg/L	100	09/10/19 10:58 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	3320	50.0	50.0		mg/L	1	09/09/19 03:45 PM

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- RL - Reporting Limit (MQL adjusted for moisture and sample size)
- SDL - Sample Detection Limit
- E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *10-Oct-19*

CLIENT:	Golder	**Client Sample ID:**	BMW-18
Project:	Luminant-A1 Area Landfill MLSES	**Lab ID:**	1909049-07
Project No:	19122262-D	**Collection Date:**	09/04/19 01:20 PM
Lab Order:	1909049	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	09/13/19 05:01 PM
Barium	0.0337	0.00300	0.0100		mg/L	1	09/13/19 05:01 PM
Boron	0.435	0.0100	0.0300		mg/L	1	09/16/19 01:23 PM
Calcium	7.72	0.100	0.300		mg/L	1	09/13/19 05:01 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	09/13/19 05:01 PM
Lithium	0.0128	0.00500	0.0100		mg/L	1	09/13/19 05:01 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	09/13/19 05:01 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	19.2	0.300	1.00		mg/L	1	09/10/19 04:34 PM
Fluoride	0.203	0.100	0.400	J	mg/L	1	09/10/19 04:34 PM
Sulfate	91.8	1.00	3.00		mg/L	1	09/10/19 04:34 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	478	10.0	10.0		mg/L	1	09/09/19 03:45 PM

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- SDL - Sample Detection Limit
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DHL Analytical, Inc.

Date: *10-Oct-19*

CLIENT:	Golder	**Client Sample ID:**	BMW-28
Project:	Luminant-A1 Area Landfill MLSES	**Lab ID:**	1909049-08
Project No:	19122262-D	**Collection Date:**	09/04/19 02:20 PM
Lab Order:	1909049	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	09/13/19 05:03 PM
Barium	0.0270	0.00300	0.0100		mg/L	1	09/13/19 05:03 PM
Boron	1.22	0.100	0.300		mg/L	10	09/16/19 01:27 PM
Calcium	277	5.00	15.0		mg/L	50	09/16/19 01:25 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	09/13/19 05:03 PM
Lithium	0.131	0.00500	0.0100		mg/L	1	09/13/19 05:03 PM
Molybdenum	0.00961	0.00200	0.00500		mg/L	1	09/13/19 05:03 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	137	3.00	10.0		mg/L	10	09/10/19 01:22 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	09/10/19 04:50 PM
Sulfate	1720	100	300		mg/L	100	09/10/19 11:14 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	3470	50.0	50.0		mg/L	1	09/09/19 03:45 PM

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SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

CLIENT: Golder
Work Order: 1909049
Project: Luminant-A1 Area Landfill MLSES

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190621B

Sample ID	**DCS2-91398**	Batch ID:	**91398**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**DCS2**	Run ID:	**ICP-MS4_190621B**	Analysis Date:	**6/21/2019 1:24:00 PM**	Prep Date:	**6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.321	0.300	0.300	0	107	70	130	0	0	

Sample ID	**DCS4-91398**	Batch ID:	**91398**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**DCS4**	Run ID:	**ICP-MS4_190621B**	Analysis Date:	**6/21/2019 1:30:00 PM**	Prep Date:	**6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0311	0.0300	0.0300	0	104	70	130	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909049
Project: Luminant-A1 Area Landfill MLSES

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190916A

The QC data in batch 92722 applies to the following samples: 1909049-01A, 1909049-02A, 1909049-03A, 1909049-04A, 1909049-05A, 1909049-06A, 1909049-07A, 1909049-08A

Sample ID **MB-92722** Batch ID: **92722** TestNo: **SW6020A** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_190916A** Analysis Date: **9/16/2019 12:16:00 PM** Prep Date: **9/10/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	<0.0100	0.0300								

Sample ID **LCS-92722** Batch ID: **92722** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_190916A** Analysis Date: **9/16/2019 12:18:00 PM** Prep Date: **9/10/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.209	0.0300	0.200	0	105	80	120			

Sample ID **LCSD-92722** Batch ID: **92722** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_190916A** Analysis Date: **9/16/2019 12:20:00 PM** Prep Date: **9/10/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.209	0.0300	0.200	0	105	80	120	0.016	15	

Sample ID **1909049-05A SD** Batch ID: **92722** TestNo: **SW6020A** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS4_190916A** Analysis Date: **9/16/2019 12:26:00 PM** Prep Date: **9/10/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	150	15.0	0	149				0.934	10	

Sample ID **1909049-05A PDS** Batch ID: **92722** TestNo: **SW6020A** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS4_190916A** Analysis Date: **9/16/2019 12:46:00 PM** Prep Date: **9/10/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	205	3.00	50.0	149	113	80	120			

Sample ID **1909049-05A MS** Batch ID: **92722** TestNo: **SW6020A** Units: **mg/L**
SampType: **MS** Run ID: **ICP-MS4_190916A** Analysis Date: **9/16/2019 12:48:00 PM** Prep Date: **9/10/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.612	0.300	0.200	0.369	122	80	120			S

Sample ID **1909049-05A MSD** Batch ID: **92722** TestNo: **SW6020A** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS4_190916A** Analysis Date: **9/16/2019 12:50:00 PM** Prep Date: **9/10/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.604	0.300	0.200	0.369	118	80	120	1.33	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909049
Project: Luminant-A1 Area Landfill MLSES

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190916A

Sample ID **1909049-05A SD**	Batch ID: **92722**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS4_190916A**	Analysis Date: **9/16/2019 1:19:00 PM**	Prep Date: **9/10/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.395	0.150	0	0.368				7.05	10	

Sample ID **1909049-05A PDS**	Batch ID: **92722**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_190916A**	Analysis Date: **9/16/2019 1:21:00 PM**	Prep Date: **9/10/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.533	0.0300	0.200	0.368	82.2	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909049
Project: Luminant-A1 Area Landfill MLSES

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190916A

Sample ID **ICV-190916**	Batch ID: **R106389**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_190916A**	Analysis Date: **9/16/2019 10:41:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.107	0.0300	0.100	0	107	90	110			
Calcium	2.60	0.300	2.50	0	104	90	110			

Sample ID **LCVL-190916**	Batch ID: **R106389**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_190916A**	Analysis Date: **9/16/2019 10:53:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0203	0.0300	0.0200	0	101	70	130			
Calcium	0.101	0.300	0.100	0	101	70	130			

Sample ID **CCV2-190916**	Batch ID: **R106389**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_190916A**	Analysis Date: **9/16/2019 11:58:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.205	0.0300	0.200	0	103	90	110			
Calcium	4.96	0.300	5.00	0	99.2	90	110			

Sample ID **LCVL2-190916**	Batch ID: **R106389**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_190916A**	Analysis Date: **9/16/2019 12:05:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0229	0.0300	0.0200	0	114	70	130			
Calcium	0.112	0.300	0.100	0	112	70	130			

Sample ID **CCV3-190916**	Batch ID: **R106389**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_190916A**	Analysis Date: **9/16/2019 12:52:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.215	0.0300	0.200	0	108	90	110			
Calcium	4.91	0.300	5.00	0	98.3	90	110			

Sample ID **LCVL3-190916**	Batch ID: **R106389**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_190916A**	Analysis Date: **9/16/2019 1:07:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0229	0.0300	0.0200	0	115	70	130			
Calcium	0.105	0.300	0.100	0	105	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909049
Project: Luminant-A1 Area Landfill MLSES

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190916A

Sample ID **CCV4-190916**	Batch ID: **R106389**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_190916A**	Analysis Date: **9/16/2019 1:29:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.216	0.0300	0.200	0	108	90	110			
Calcium	4.92	0.300	5.00	0	98.5	90	110			

Sample ID **LCVL4-190916**	Batch ID: **R106389**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_190916A**	Analysis Date: **9/16/2019 1:37:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0225	0.0300	0.0200	0	113	70	130			
Calcium	0.102	0.300	0.100	0	102	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909049
Project: Luminant-A1 Area Landfill MLSES

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190621A

Sample ID **DCS2-91398**	Batch ID: **91398**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **DCS2**	Run ID: **ICP-MS5_190621A**	Analysis Date: **6/21/2019 11:14:00 AM**	Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.305	0.300	0.300	0	102	70	130	0	0	

Sample ID **DCS3-91398**	Batch ID: **91398**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **DCS3**	Run ID: **ICP-MS5_190621A**	Analysis Date: **6/21/2019 11:16:00 AM**	Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.00512	0.00500	0.00500	0	102	70	130	0	0	
Barium	0.00506	0.0100	0.00500	0	101	70	130	0	0	
Cobalt	0.00516	0.00500	0.00500	0	103	70	130	0	0	
Lithium	0.00535	0.0100	0.00500	0	107	70	130	0	0	
Molybdenum	0.00526	0.00500	0.00500	0	105	70	130	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909049
Project: Luminant-A1 Area Landfill MLSES

ANALYTICAL QC SUMMARY REPORT

RunID: **ICP-MS5_190913B**

The QC data in batch 92722 applies to the following samples: 1909049-01A, 1909049-02A, 1909049-03A, 1909049-04A, 1909049-05A, 1909049-06A, 1909049-07A, 1909049-08A

Sample ID **MB-92722** Batch ID: **92722** TestNo: **SW6020A** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS5_190913B** Analysis Date: **9/13/2019 4:36:00 PM** Prep Date: **9/10/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	<0.00200	0.00500								
Barium	<0.00300	0.0100								
Calcium	<0.100	0.300								
Cobalt	<0.00300	0.00500								
Lithium	<0.00500	0.0100								
Molybdenum	<0.00200	0.00500								

Sample ID **LCS-92722** Batch ID: **92722** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS5_190913B** Analysis Date: **9/13/2019 4:39:00 PM** Prep Date: **9/10/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.203	0.00500	0.200	0	101	80	120			
Barium	0.201	0.0100	0.200	0	101	80	120			
Calcium	4.93	0.300	5.00	0	98.6	80	120			
Cobalt	0.196	0.00500	0.200	0	98.2	80	120			
Lithium	0.207	0.0100	0.200	0	103	80	120			
Molybdenum	0.198	0.00500	0.200	0	99.0	80	120			

Sample ID **LCSD-92722** Batch ID: **92722** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS5_190913B** Analysis Date: **9/13/2019 4:41:00 PM** Prep Date: **9/10/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.202	0.00500	0.200	0	101	80	120	0.457	15	
Barium	0.204	0.0100	0.200	0	102	80	120	1.23	15	
Calcium	5.05	0.300	5.00	0	101	80	120	2.30	15	
Cobalt	0.196	0.00500	0.200	0	97.9	80	120	0.333	15	
Lithium	0.205	0.0100	0.200	0	103	80	120	0.770	15	
Molybdenum	0.197	0.00500	0.200	0	98.4	80	120	0.610	15	

Sample ID **1909049-05A SD** Batch ID: **92722** TestNo: **SW6020A** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS5_190913B** Analysis Date: **9/13/2019 4:48:00 PM** Prep Date: **9/10/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	<0.0100	0.0250	0	0				0	10	
Barium	0.0380	0.0500	0	0.0393				3.21	10	
Cobalt	<0.0150	0.0250	0	0				0	10	
Lithium	0.0414	0.0500	0	0.0412				0.683	10	
Molybdenum	<0.0100	0.0250	0	0				0	10	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909049
Project: Luminant-A1 Area Landfill MLSES

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190913B

Sample ID **1909049-05A PDS**	Batch ID: **92722**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS5_190913B**	Analysis Date: **9/13/2019 5:10:00 PM**	Prep Date: **9/10/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.191	0.00500	0.200	0	95.3	80	120			
Barium	0.233	0.0100	0.200	0.0393	96.9	80	120			
Cobalt	0.183	0.00500	0.200	0	91.7	80	120			
Lithium	0.231	0.0100	0.200	0.0411	94.8	80	120			
Molybdenum	0.192	0.00500	0.200	0	96.0	80	120			

Sample ID **1909049-05A MS**	Batch ID: **92722**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS5_190913B**	Analysis Date: **9/13/2019 5:12:00 PM**	Prep Date: **9/10/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.198	0.00500	0.200	0	98.9	80	120			
Barium	0.243	0.0100	0.200	0.0393	102	80	120			
Calcium	152	0.300	5.00	149	67.1	80	120			S
Cobalt	0.188	0.00500	0.200	0	93.8	80	120			
Lithium	0.243	0.0100	0.200	0.0411	101	80	120			
Molybdenum	0.203	0.00500	0.200	0	102	80	120			

Sample ID **1909049-05A MSD**	Batch ID: **92722**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS5_190913B**	Analysis Date: **9/13/2019 5:14:00 PM**	Prep Date: **9/10/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.199	0.00500	0.200	0	99.4	80	120	0.480	15	
Barium	0.246	0.0100	0.200	0.0393	103	80	120	1.33	15	
Calcium	153	0.300	5.00	149	72.5	80	120	0.178	15	S
Cobalt	0.189	0.00500	0.200	0	94.7	80	120	0.908	15	
Lithium	0.245	0.0100	0.200	0.0411	102	80	120	0.781	15	
Molybdenum	0.205	0.00500	0.200	0	103	80	120	0.928	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909049
Project: Luminant-A1 Area Landfill MLSES

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190913B

Sample ID **ICV-190913B** Batch ID: **R106381** TestNo: **SW6020A** Units: **mg/L**
SampType: **ICV** Run ID: **ICP-MS5_190913B** Analysis Date: **9/13/2019 2:08:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.0987	0.00500	0.100	0	98.7	90	110			
Barium	0.0997	0.0100	0.100	0	99.7	90	110			
Calcium	2.63	0.300	2.50	0	105	90	110			
Cobalt	0.0963	0.00500	0.100	0	96.3	90	110			
Lithium	0.0988	0.0100	0.100	0	98.8	90	110			
Molybdenum	0.0946	0.00500	0.100	0	94.6	90	110			

Sample ID **LCVL-190913B** Batch ID: **R106381** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS5_190913B** Analysis Date: **9/13/2019 2:18:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.00498	0.00500	0.00500	0	99.7	70	130			
Barium	0.00529	0.0100	0.00500	0	106	70	130			
Calcium	0.102	0.300	0.100	0	102	70	130			
Cobalt	0.00474	0.00500	0.00500	0	94.7	70	130			
Lithium	0.00986	0.0100	0.0100	0	98.6	70	130			
Molybdenum	0.00505	0.00500	0.00500	0	101	70	130			

Sample ID **CCV4-190913** Batch ID: **R106381** TestNo: **SW6020A** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS5_190913B** Analysis Date: **9/13/2019 4:27:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.202	0.00500	0.200	0	101	90	110			
Barium	0.199	0.0100	0.200	0	99.3	90	110			
Calcium	5.10	0.300	5.00	0	102	90	110			
Cobalt	0.195	0.00500	0.200	0	97.6	90	110			
Lithium	0.192	0.0100	0.200	0	96.0	90	110			
Molybdenum	0.200	0.00500	0.200	0	99.9	90	110			

Sample ID **LCVL4-190913** Batch ID: **R106381** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS5_190913B** Analysis Date: **9/13/2019 4:32:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.00515	0.00500	0.00500	0	103	70	130			
Barium	0.00509	0.0100	0.00500	0	102	70	130			
Calcium	0.151	0.300	0.100	0	151	70	130			S
Cobalt	0.00500	0.00500	0.00500	0	100	70	130			
Lithium	0.00996	0.0100	0.0100	0	99.6	70	130			
Molybdenum	0.00500	0.00500	0.00500	0	100	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank
J	Analyte detected between MDL and RL
ND	Not Detected at the Method Detection Limit
RL	Reporting Limit
J	Analyte detected between SDL and RL
DF	Dilution Factor
MDL	Method Detection Limit
R	RPD outside accepted control limits
S	Spike Recovery outside control limits
N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909049
Project: Luminant-A1 Area Landfill MLSES

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190913B

Sample ID **CCV5-190913**	Batch ID: **R106381**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_190913B**	Analysis Date: **9/13/2019 5:16:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.202	0.00500	0.200	0	101	90	110			
Barium	0.200	0.0100	0.200	0	99.9	90	110			
Calcium	5.17	0.300	5.00	0	103	90	110			
Cobalt	0.197	0.00500	0.200	0	98.7	90	110			
Lithium	0.197	0.0100	0.200	0	98.6	90	110			
Molybdenum	0.202	0.00500	0.200	0	101	90	110			

Sample ID **LCVL5-190913**	Batch ID: **R106381**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_190913B**	Analysis Date: **9/13/2019 5:21:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.00512	0.00500	0.00500	0	102	70	130			
Barium	0.00506	0.0100	0.00500	0	101	70	130			
Calcium	0.153	0.300	0.100	0	153	70	130			S
Cobalt	0.00496	0.00500	0.00500	0	99.2	70	130			
Lithium	0.0101	0.0100	0.0100	0	101	70	130			
Molybdenum	0.00525	0.00500	0.00500	0	105	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909049
Project: Luminant-A1 Area Landfill MLSES

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_190828A

Sample ID **DCS2-92594**	Batch ID: **92594**	TestNo: **E300**		Units: **mg/L**	
SampType: **DCS2**	Run ID: **IC2_190828A**	Analysis Date: **8/28/2019 2:22:32 PM**		Prep Date: **8/28/2019**	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	0.544	1.00	0.5000	0	109	65	135	0	0	
Fluoride	0.255	0.400	0.2000	0	128	65	135	0	0	
Sulfate	1.72	3.00	1.500	0	115	65	135	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909049
Project: Luminant-A1 Area Landfill MLSES

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_190910A

The QC data in batch 92717 applies to the following samples: 1909049-01B, 1909049-02B, 1909049-03B, 1909049-04B, 1909049-05B, 1909049-06B, 1909049-07B, 1909049-08B

Sample ID	**MB-92717**	Batch ID:	**92717**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**IC2_190910A**	Analysis Date:	**9/10/2019 10:03:43 AM**	Prep Date:	**9/10/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00								
Fluoride	<0.100	0.400								
Sulfate	<1.00	3.00								

Sample ID	**LCS-92717**	Batch ID:	**92717**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**IC2_190910A**	Analysis Date:	**9/10/2019 10:19:43 AM**	Prep Date:	**9/10/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.4	1.00	10.00	0	104	90	110			
Fluoride	4.04	0.400	4.000	0	101	90	110			
Sulfate	31.5	3.00	30.00	0	105	90	110			

Sample ID	**LCSD-92717**	Batch ID:	**92717**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**LCSD**	Run ID:	**IC2_190910A**	Analysis Date:	**9/10/2019 10:35:43 AM**	Prep Date:	**9/10/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.5	1.00	10.00	0	105	90	110	0.791	20	
Fluoride	4.08	0.400	4.000	0	102	90	110	0.927	20	
Sulfate	31.8	3.00	30.00	0	106	90	110	0.825	20	

Sample ID	**1909049-01BMS**	Batch ID:	**92717**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**MS**	Run ID:	**IC2_190910A**	Analysis Date:	**9/10/2019 11:46:48 AM**	Prep Date:	**9/10/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	595	10.0	200.0	426.4	84.2	90	110			S
Fluoride	209	4.00	200.0	0	105	90	110			
Sulfate	680	30.0	200.0	477.3	101	90	110			

Sample ID	**1909049-01BMSD**	Batch ID:	**92717**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**MSD**	Run ID:	**IC2_190910A**	Analysis Date:	**9/10/2019 12:02:48 PM**	Prep Date:	**9/10/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	593	10.0	200.0	426.4	83.3	90	110	0.294	20	S
Fluoride	207	4.00	200.0	0	103	90	110	1.05	20	
Sulfate	677	30.0	200.0	477.3	99.9	90	110	0.355	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909049
Project: Luminant-A1 Area Landfill MLSES

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_190910A

Sample ID **ICV-190910**	Batch ID: **R106325**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC2_190910A**	Analysis Date: **9/10/2019 9:31:43 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	26.7	1.00	25.00	0	107	90	110			
Fluoride	10.6	0.400	10.00	0	106	90	110			
Sulfate	81.3	3.00	75.00	0	108	90	110			

Sample ID **CCV1-190910**	Batch ID: **R106325**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_190910A**	Analysis Date: **9/10/2019 2:58:48 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.6	1.00	10.00	0	106	90	110			
Fluoride	4.14	0.400	4.000	0	103	90	110			
Sulfate	32.3	3.00	30.00	0	108	90	110			

Sample ID **CCV2-190910**	Batch ID: **R106325**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_190910A**	Analysis Date: **9/10/2019 5:54:48 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.7	1.00	10.00	0	107	90	110			
Fluoride	4.20	0.400	4.000	0	105	90	110			
Sulfate	32.9	3.00	30.00	0	110	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909049
Project: Luminant-A1 Area Landfill MLSES

ANALYTICAL QC SUMMARY REPORT

RunID: WC_190909C

The QC data in batch 92719 applies to the following samples: 1909049-01B, 1909049-02B, 1909049-03B, 1909049-04B, 1909049-05B, 1909049-06B, 1909049-07B, 1909049-08B

Sample ID	**MB-92719**	Batch ID:	**92719**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**WC_190909C**	Analysis Date:	**9/9/2019 3:45:00 PM**	Prep Date:	**9/9/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	<10.0	10.0								

Sample ID	**LCS-92719**	Batch ID:	**92719**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**WC_190909C**	Analysis Date:	**9/9/2019 3:45:00 PM**	Prep Date:	**9/9/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	759	10.0	745.6	0	102	90	113			

Sample ID	**1909049-01B-DUP**	Batch ID:	**92719**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**DUP**	Run ID:	**WC_190909C**	Analysis Date:	**9/9/2019 3:45:00 PM**	Prep Date:	**9/9/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	2050	50.0	0	2085				1.94	5	

Sample ID	**1909049-02B-DUP**	Batch ID:	**92719**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**DUP**	Run ID:	**WC_190909C**	Analysis Date:	**9/9/2019 3:45:00 PM**	Prep Date:	**9/9/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	1800	50.0	0	1825				1.38	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909049
Project: Luminant-A1 Area Landfill MLSES

MQL SUMMARY REPORT

TestNo: E300	**MDL**	**MQL**
Analyte	**mg/L**	**mg/L**
Chloride	0.300	1.00
Fluoride	0.100	0.400
Sulfate	1.00	3.00

TestNo: SW6020A	**MDL**	**MQL**
Analyte	**mg/L**	**mg/L**
Arsenic	0.00200	0.00500
Barium	0.00300	0.0100
Boron	0.0100	0.0300
Calcium	0.100	0.300
Cobalt	0.00300	0.00500
Lithium	0.00500	0.0100
Molybdenum	0.00200	0.00500

TestNo: M2540C	**MDL**	**MQL**
Analyte	**mg/L**	**mg/L**
Total Dissolved Solids (Residue, Filt	10.0	10.0

Qualifiers: MQL -Method Quantitation Limit as defined by TRRP
MDL -Method Detection Limit as defined by TRRP

Pace Analytical®
National Center for Testing & Innovation

ANALYTICAL REPORT

October 09, 2019

DHL Analytical, Inc.

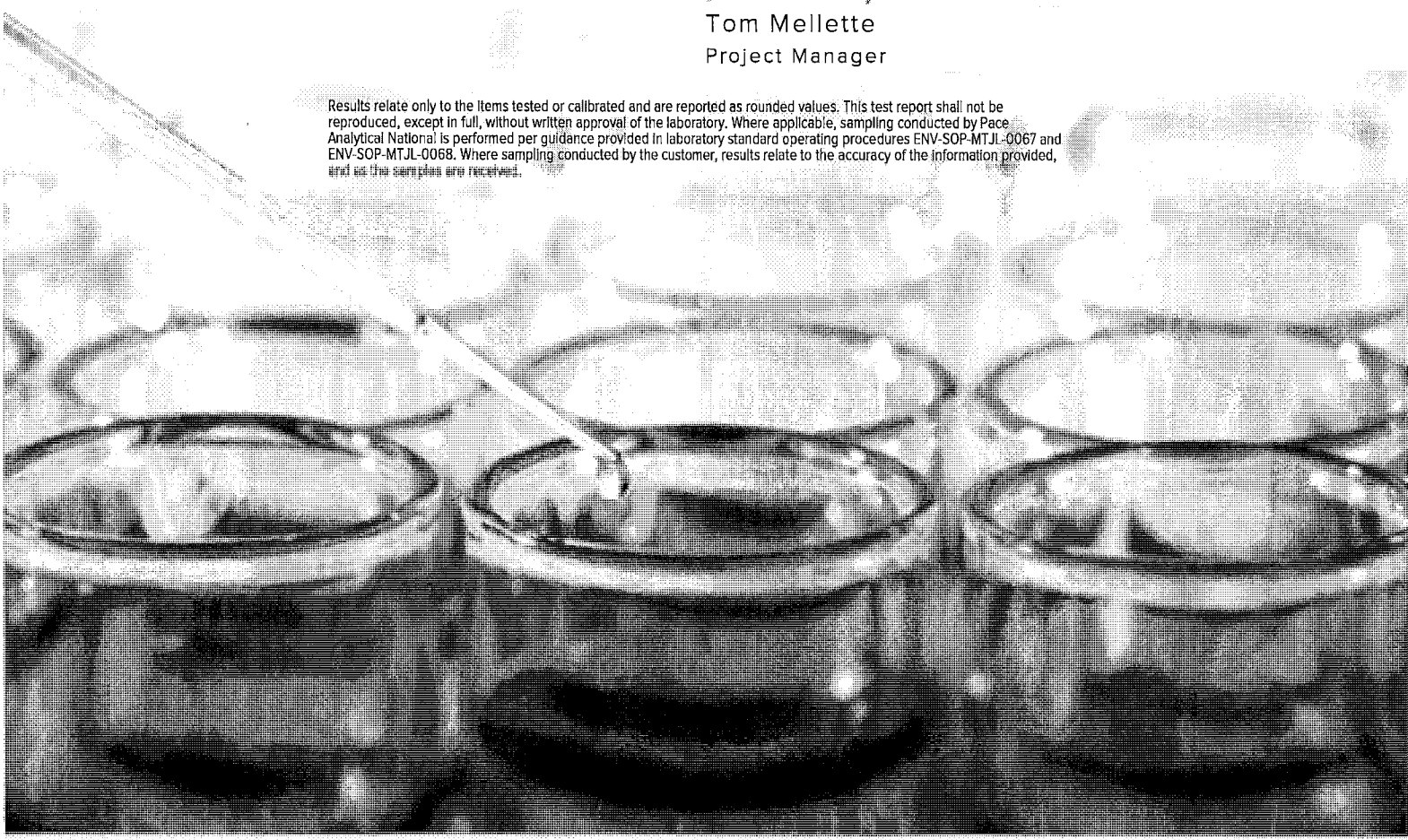
Sample Delivery Group:	L1138079
Samples Received:	09/11/2019
Project Number:	1909049
Description:	

Report To: John DuPont
2300 Double Creek Drive
Round Rock, TX 78664

Entire Report Reviewed By:

Tom Mellette
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.



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BMW-21 L1138079-01 Non-Potable Water

Collected by | Collected date/time 09/04/19 08:00 | Received date/time 09/11/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1350897	1	09/24/19 11:29	10/04/19 09:20	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1353283	1	10/01/19 10:00	10/04/19 09:20	JMR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1353283	1	10/01/19 10:00	10/02/19 08:21	RGT	Mt. Juliet, TN

BMW-20 L1138079-02 Non-Potable Water

Collected by | Collected date/time 09/04/19 08:50 | Received date/time 09/11/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1350897	1	09/24/19 11:29	10/04/19 09:20	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1353283	1	10/01/19 10:00	10/04/19 09:20	JMR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1353283	1	10/01/19 10:00	10/02/19 08:21	RGT	Mt. Juliet, TN

BMW-27 L1138079-03 Non-Potable Water

Collected by | Collected date/time 09/04/19 09:40 | Received date/time 09/11/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1350897	1	09/24/19 11:30	10/04/19 09:20	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1353283	1	10/01/19 10:00	10/04/19 09:20	JMR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1353283	1	10/01/19 10:00	10/02/19 08:21	RGT	Mt. Juliet, TN

BMW-26 L1138079-04 Non-Potable Water

Collected by | Collected date/time 09/04/19 10:30 | Received date/time 09/11/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1350897	1	09/24/19 11:30	10/04/19 09:20	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1353283	1	10/01/19 10:00	10/04/19 09:20	JMR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1353283	1	10/01/19 10:00	10/02/19 08:21	RGT	Mt. Juliet, TN

BMW-11AR L1138079-05 Non-Potable Water

Collected by | Collected date/time 09/04/19 11:30 | Received date/time 09/11/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1350897	1	09/24/19 11:30	10/04/19 09:20	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1353283	1	10/01/19 10:00	10/04/19 09:20	JMR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1353283	1	10/01/19 10:00	10/02/19 08:21	RGT	Mt. Juliet, TN

BMW-19 L1138079-06 Non-Potable Water

Collected by | Collected date/time 09/04/19 12:20 | Received date/time 09/11/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1350897	1	09/24/19 11:30	10/04/19 09:20	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1353283	1	10/01/19 10:00	10/04/19 09:20	JMR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1353283	1	10/01/19 10:00	10/02/19 08:21	RGT	Mt. Juliet, TN

BMW-18 L1138079-07 Non-Potable Water

			Collected by	Collected date/time	Received date/time	
				09/04/19 13:20	09/11/19 08:45	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1350897	1	09/24/19 11:30	10/04/19 09:20	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1353283	1	09/27/19 10:22	10/04/19 09:20	JMR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1353283	1	09/27/19 10:22	09/30/19 13:01	RGT	Mt. Juliet, TN

BMW-28 L1138079-08 Non-Potable Water

			Collected by	Collected date/time	Received date/time	
				09/04/19 14:20	09/11/19 08:45	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1350897	1	09/24/19 11:30	10/04/19 09:20	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1353283	1	09/27/19 10:22	10/04/19 09:20	JMR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1353283	1	09/27/19 10:22	09/30/19 13:01	RGT	Mt. Juliet, TN

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Tom Mellette
Project Manager

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
RADIUM-228	1.51		0.445	0.783	10/04/2019 09:20	WG1350897
(T) Barium	*90.6*			*62.0-143*	*10/04/2019 09:20*	WG1350897
(T) Yttrium	*113*			*79.0-136*	*10/04/2019 09:20*	WG1350897

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
Combined Radium	2.01		0.746	1.07	10/04/2019 09:20	WG1353283

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
RADIUM-226	0.506		0.301	0.285	10/02/2019 08:21	WG1353283
(T) Barium-133	*97.8*			*30.0-143*	*10/02/2019 08:21*	WG1353283

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	1.62		0.444	0.661	10/04/2019 09:20	WG1350897
(T) Barium	*98.7*			*62.0-143*	*10/04/2019 09:20*	WG1350897
(T) Yttrium	*104*			*79.0-136*	*10/04/2019 09:20*	WG1350897

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	1.72		0.590	0.88	10/04/2019 09:20	WG1353283

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.0996		0.146	0.219	10/02/2019 08:21	WG1353283
(T) Barium-133	*95.6*			*30.0-143*	*10/02/2019 08:21*	WG1353283

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	1.68		0.484	0.74	10/04/2019 09:20	WG1350897
(T) Barium	*113*			*62.0-143*	*10/04/2019 09:20*	WG1350897
(T) Yttrium	*119*			*79.0-136*	*10/04/2019 09:20*	WG1350897

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	1.75		0.626	0.98	10/04/2019 09:20	WG1353283

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.0726		0.142	0.24	10/02/2019 08:21	WG1353283
(T) Barium-133	*103*			*30.0-143*	*10/02/2019 08:21*	WG1353283

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
RADIUM-228	1.53		0.405	0.641	10/04/2019 09:20	WG1350897
(T) Barium	*108*			*62.0-143*	*10/04/2019 09:20*	WG1350897
(T) Yttrium	*106*			*79.0-136*	*10/04/2019 09:20*	WG1350897

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
Combined Radium	1.66		0.591	0.918	10/04/2019 09:20	WG1353283

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
RADIUM-226	0.126		0.186	0.277	10/02/2019 08:21	WG1353283
(T) Barium-133	*108*			*30.0-143*	*10/02/2019 08:21*	WG1353283

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	0.317		0.486	0.817	10/04/2019 09:20	WG1350897
(T) Barium	*87.6*			*62.0-143*	*10/04/2019 09:20*	WG1350897
(T) Yttrium	*106*			*79.0-136*	*10/04/2019 09:20*	WG1350897

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	0.699		0.750	1.1	10/04/2019 09:20	WG1353283

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.382		0.264	0.281	10/02/2019 08:21	WG1353283
(T) Barium-133	*105*			*30.0-143*	*10/02/2019 08:21*	WG1353283

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
RADIUM-228	0.563		0.418	0.604	10/04/2019 09:20	WG1350897
(T) Barium	*106*			*62.0-143*	*10/04/2019 09:20*	WG1350897
(T) Yttrium	*106*			*79.0-136*	*10/04/2019 09:20*	WG1350897

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
Combined Radium	0.563		0.530	0.871	10/04/2019 09:20	WG1353283

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
RADIUM-226	-0.00769		0.112	0.267	10/02/2019 08:21	WG1353283
(T) Barium-133	*110*			*30.0-143*	*10/02/2019 08:21*	WG1353283

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
RADIUM-228	1.48		0.412	0.681	10/04/2019 09:20	WG1350897
(T) Barium	*91.4*			*62.0-143*	*10/04/2019 09:20*	WG1350897
(T) Yttrium	*106*			*79.0-136*	*10/04/2019 09:20*	WG1350897

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
Combined Radium	1.79		0.631	0.861	10/04/2019 09:20	WG1353283

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
RADIUM-226	0.304		0.219	0.18	09/30/2019 13:01	WG1353283
(T) Barium-133	*81.4*			*30.0-143*	*09/30/2019 13:01*	WG1353283

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
RADIUM-228	3.20		0.493	0.699	10/04/2019 09:20	WG1350897
(T) Barium	*114*			*62.0-143*	*10/04/2019 09:20*	WG1350897
(T) Yttrium	*113*			*79.0-136*	*10/04/2019 09:20*	WG1350897

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
Combined Radium	3.21		0.720	1.24	10/04/2019 09:20	WG1353283

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
RADIUM-226	0.0173		0.227	0.537	09/30/2019 13:01	WG1353283
(T) Barium-133	*39.0*			*30.0-143*	*09/30/2019 13:01*	WG1353283

Method Blank (MB)

(MB) R3459265-1 10/04/19 09:20

Analyte	MB Result pCi/l	MB Qualifier	MB MDA pCi/l
Radium-228	0.617		0.417
(T) Barium	*109*		
(T) Yttrium	*109*		

Laboratory Control Sample (LCS)

(LCS) R3459265-2 10/04/19 09:20

Analyte	Spike Amount pCi/l	LCS Result pCi/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Radium-228	5.00	5.52	110	80.0-120	
(T) Barium			*104*		
(T) Yttrium			*112*		

Method Blank (MB)

(MB) R3457442-1 09/30/19 13:01

Analyte	MB Result pCi/l	MB Qualifier	MB MDA pCi/l
Radium-226	-0.0206		0.0781
(T) Barium-133	*88.6*		

L1138079-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1138079-02 10/02/19 08:21 • (DUP) R3457442-5 10/02/19 08:21

Analyte	Original Result pCi/l	DUP Result pCi/l	Dilution	DUP RPD %	DUP RER	DUP Qualifier	DUP RPD Limits %	DUP RER Limit
Radium-226	0.0996	0.134	1	29.6	0.159		20	3
(T) Barium-133	*95.6*	*102*						

Laboratory Control Sample (LCS)

(LCS) R3457442-2 09/30/19 13:01

Analyte	Spike Amount pCi/l	LCS Result pCi/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Radium-226	5.02	4.79	95.3	80.0-120	
(T) Barium-133			*89.6*		

L1138079-07 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1138079-07 09/30/19 13:01 • (MS) R3457442-3 09/30/19 13:01 • (MSD) R3457442-4 09/30/19 13:01

Analyte	Spike Amount pCi/l	Original Result pCi/l	MS Result pCi/l	MSD Result pCi/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	MS RER	RPD Limits %
Radium-226	20.1	0.304	18.7	18.3	91.4	89.3	1	75.0-125			2.33		20
(T) Barium-133		*81.4*			*84.7*	*79.6*							

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDA	Minimum Detectable Activity.
Rec.	Recovery.
RER	Replicate Error Ratio.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(T)	Tracer - A radioisotope of known concentration added to a solution of chemically equivalent radioisotopes at a known concentration to assist in monitoring the yield of the chemical separation.
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
	The remainder of this page intentionally left blank, there are no qualifiers applied to this SDG.

Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.

DHL Analytical, Inc.
2300 Double Creek Drive
Round Rock, TX 78664
TEL: (512) 388-8222 FAX: (512) 388-8229

CHAIN-OF-CUSTODY RECORD

Work Order: 1902949

H079

1138019

06-Sep-19

Subcontractor:
Pace Analytical
12065 Lebanon Rd
Mt. Juliet, TN 37122

TEL: (615) 773-5923
FAX:
Acct #: DHLRRTX

Sample Id	Matrix	DHL#	Date Collected	Bottle Type	Ra 228 E904.0	Ra 226 M7500 Ra B M	Requested Tests				
BMW-21	Aqueous	-01C	09/04/19 08:00 AM	1LHDPEHNO3	1						-01
BMW-21	Aqueous	-01D	09/04/19 08:00 AM	1LHDPEHNO3		1					
BMW-20	Aqueous	-02C	09/04/19 08:50 AM	1LHDPEHNO3	1						02
BMW-20	Aqueous	-02D	09/04/19 08:50 AM	1LHDPEHNO3		1					
BMW-27	Aqueous	-03C	09/04/19 09:40 AM	1LHDPEHNO3	1						03
BMW-27	Aqueous	-03D	09/04/19 09:40 AM	1LHDPEHNO3		1					
BMW-26	Aqueous	-04C	09/04/19 10:30 AM	1LHDPEHNO3	1						04
BMW-26	Aqueous	-04D	09/04/19 10:30 AM	1LHDPEHNO3		1					
BMW-11AR	Aqueous	-05C	09/04/19 11:30 AM	1LHDPEHNO3	1						05
BMW-11AR	Aqueous	-05D	09/04/19 11:30 AM	1LHDPEHNO3		1					
BMW-19	Aqueous	-06C	09/04/19 12:20 PM	1LHDPEHNO3	1						06
BMW-19	Aqueous	-06D	09/04/19 12:20 PM	1LHDPEHNO3		1					
BMW-18	Aqueous	-07C	09/04/19 01:20 PM	1LHDPEHNO3	1						07
BMW-18	Aqueous	-07D	09/04/19 01:20 PM	1LHDPEHNO3		1					
BMW-28	Aqueous	-08C	09/04/19 02:20 PM	1LHDPEHNO3	1						08
BMW-28	Aqueous	-08D	09/04/19 02:20 PM	1LHDPEHNO3		1					

General Comments:
Please analyze these samples with Normal Turnaround Time.
Report RA-226, Ra-228 & Combined per Specs.
Quality Control Package Needed Standard - NELAC Rad Test compliant
Email to cac@dhlanalytical.com & dupont@dhlanalytical.com

	Date/Time		Date/Time
Relinquished by:	9/9/19 1700	Received by:	9-11-19 10:00
Relinquished by:		Received by:	

Pace Analytical National Center for Testing & Innovation
Cooler Receipt Form

Client: DHLRRTX	1138019	
Cooler Received/Opened On: 9/11/19 Temperature:	4.2	
Received By: Lexxi Romero		
Signature:		

Receipt Check List	NP	Yes	No
COC Seal Present / Intact?	✓		
COC Signed / Accurate?		✓	
Bottles arrive intact?		✓	
Correct bottles used?		✓	
Sufficient volume sent?		✓	
If Applicable			
VOA Zero headspace?			
Preservation Correct / Checked?		✓	

October 14, 2019

Will Vienne
Golder
2201 Double Creek Dr #4004
Round Rock, Texas 78664
TEL: (512) 671-3434
FAX (512) 671-3446

Order No.: 1909083

RE: Luminant-A1 Area Landfill MLSES

Dear Will Vienne:

DHL Analytical, Inc. received 10 sample(s) on 9/11/2019 for the analyses presented in the following report.

There were no problems with the analyses and all data met requirements of NELAP except where noted in the Case Narrative. All non-NELAP methods will be identified accordingly in the case narrative and all estimated uncertainties of test results are within method or EPA specifications.

If you have any questions regarding these tests results, please feel free to call. Thank you for using DHL Analytical.

Sincerely,

John DuPont
General Manager

This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211-19-24

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Subcontract Report 1909083 43

DHL ANALYTICAL

2300 Double Creek Dr. ■ Round Rock, TX 78664
Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: *www.dhlanalytical.com*
E-Mail: *login@dhlanalytical.com*

№ 85534

CHAIN-OF-CUSTODY

CLIENT: GOLDER
ADDRESS: 2201 DOUBLE CREEK DR ROUND ROCK, TX 78664
PHONE: 512-671-3434 FAX/E-MAIL:
DATA REPORTED TO: WILL VIENNE
ADDITIONAL REPORT COPIES TO:

DATE: 9-10-19 PAGE 1 OF 1
PO #: 1912262-D DHL WORK ORDER #: 1909083
PROJECT LOCATION OR NAME:
CLENT PROJECT #: 1912262-D COLLECTOR: J. BRAYTON

Authorize 5% surcharge for TRRP Report? ☐ Yes ☐ No

S=SOIL W=WATER A=AIR L=LIQUID SE=SEDIMENT P=PAINT SL=SLUDGE O=OTHER SO=SOLID

PRESERVATION: HCl | HNO_3 | H_2SO_4 ☐ NaOH ☐ | ICE | UNPRESERVED

ANALYSES: BTEX ☐ MTBE ☐ [METHOD 8021] | TPH 1005 ☐ TPH 1006 ☐ HOLD 1006 ☐ | GRO [METHOD 8015] ☐ DRO [METHOD 8105] ☐ | VOC 8260 ☐ VOC 624 ☐ VOC 8260/5035 ☐ | SVOC 8270 ☐ PAH 8270 ☐ HOLD PAH ☐ SVOC 625 ☐ | 8270 PEST ☐ 625 PEST/PCB ☐ 608 PCB ☐ 8082 PCB ☐ 8270 PCB ☐ | 8270 O-P PEST ☐ 8321 HERB ☐ TPHOS, AMMONIA ☐ | METALS 6020 ☐ METALS 200.8 ☐ DISS. METALS ☐ ____ ☐ | RCRA ☐ TX11 ☐ ____ | PH ☐ HEX CHROM ☐ ALKALINITY ☐ COD ☐ | CHLORIDE ☐ ANIONS ____ ☐ | TCLP-SVOC ☐ VOC ☐ PEST ☐ HERB ☐ | TCLP-METALS ☐ RCRA 8 ☐ TX-11 ☐ Pb ☐ | RCI ☐ FLASHPOINT ☐ DGAS ☐ | TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐ | APPENDIX III & IV LITHIUM COBALT BARIUM

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	HCl	HNO_3	H_2SO_4 ☐ NaOH ☐	ICE	UNPRESERVED	FIELD NOTES
BMW-24	01	9-9-19	0945	W	P	4		X		X	X	
BMW-23	02		0840	W	P	4		X		X	X	
BMW-22	03		0930	W	P	4		X		X	X	
BMW-29	04		1025	W	P	1		X		X		
BMW-25	05		1140	W	P	1		X		X		
BMW-32	06		1250	W	P	1		X		X		
BMW-33	07		1405	W	P	4		X		X	X	
DUP-01	08		1405	W	P	4		X		X	X	
A1-2-DB	09		1505	W	P	1		X		X		
BMW-30	10	↓	1615	W	P	1		X		X		

RELINQUISHED BY: (Signature) DATE/TIME 9-10-19 1730 RECEIVED BY: (Signature) Fed Ex
RELINQUISHED BY: (Signature) Fed Ex DATE/TIME 9/11/19 0920 RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature) DATE/TIME RECEIVED BY: (Signature)

☐ DHL DISPOSAL @ $5.00 each ☐ Return

TURN AROUND TIME
RUSH ☐ CALL FIRST
1 DAY ☐ CALL FIRST
2 DAY ☐
NORMAL ☒
OTHER ☐ _____

LABORATORY USE ONLY:
RECEIVING TEMP: 2.1, 3.4 °C THERM #: 78
CUSTODY SEALS: ☐ BROKEN ☐ INTACT ☒ NOT USED
CARRIER: ☐ LONE STAR ☒ FEDEX ☐ UPS ☐ OTHER
☐ COURIER DELIVERY
☐ HAND DELIVERED

DHL COC Rev 1 | FEB 2010

Eric Lau

From: John DuPont
Sent: Tuesday, May 28, 2019 11:35 AM
To: Eric Lau
Subject: FW: CCR Analysis

Appendix III Parameters:
Metals (Ca and B)
Anions (Cl, F, and SO4)
TDS

Appendix IV Parameters:

Metals (As, Ba, Be, Cd, Co, Cr, Hg, Li, Mo, Pb, Sb, Se, and Tl)
Ra-226
Ra-228

From: Vienne, Will [mailto:William_Vienne@golder.com]
Sent: Tuesday, April 09, 2019 12:48 PM
To: John DuPont <dupont@dhlanalytical.com>
Subject: CCR Analysis

Eric Lau

From: Vienne, Will <William_Vienne@golder.com>
Sent: Tuesday, September 10, 2019 2:25 PM
To: Eric Lau
Cc: John DuPont
Subject: RE: Luminant CCR Bottle Order

Follow Up Flag: Follow up
Flag Status: Completed

Eric and John,

We don't have to analyze for all of the Appendix IV parameters during the current sampling period for the sites listed below. Here is a list of the analytes that **shouldn't** be reported for each site:

- Martin Lake A1 Area Landfill: Sb, Be, Cd, Cr, Pb, Hg, Se, and Tl

Sorry for extra work caused by this update. Let me know if you have questions.

William Vienne
Senior Hydrogeologist

Golder Associates Inc.
2201 Double Creek Dr, Suite 4004, Round Rock, Texas, USA 78664
T: +1 512 671-3434 | **C:** +1 512 466-9074 | **golder.com**
LinkedIn | Facebook | Twitter

Formerly Pastor, Behling & Wheeler, LLC
PBW has joined Golder, a leading global engineering and consulting firm. Both companies have a strong reputation for developing practical solutions to complex challenges. Our combined resources allow us to offer greater expertise to our clients globally.

Work Safe, Home Safe

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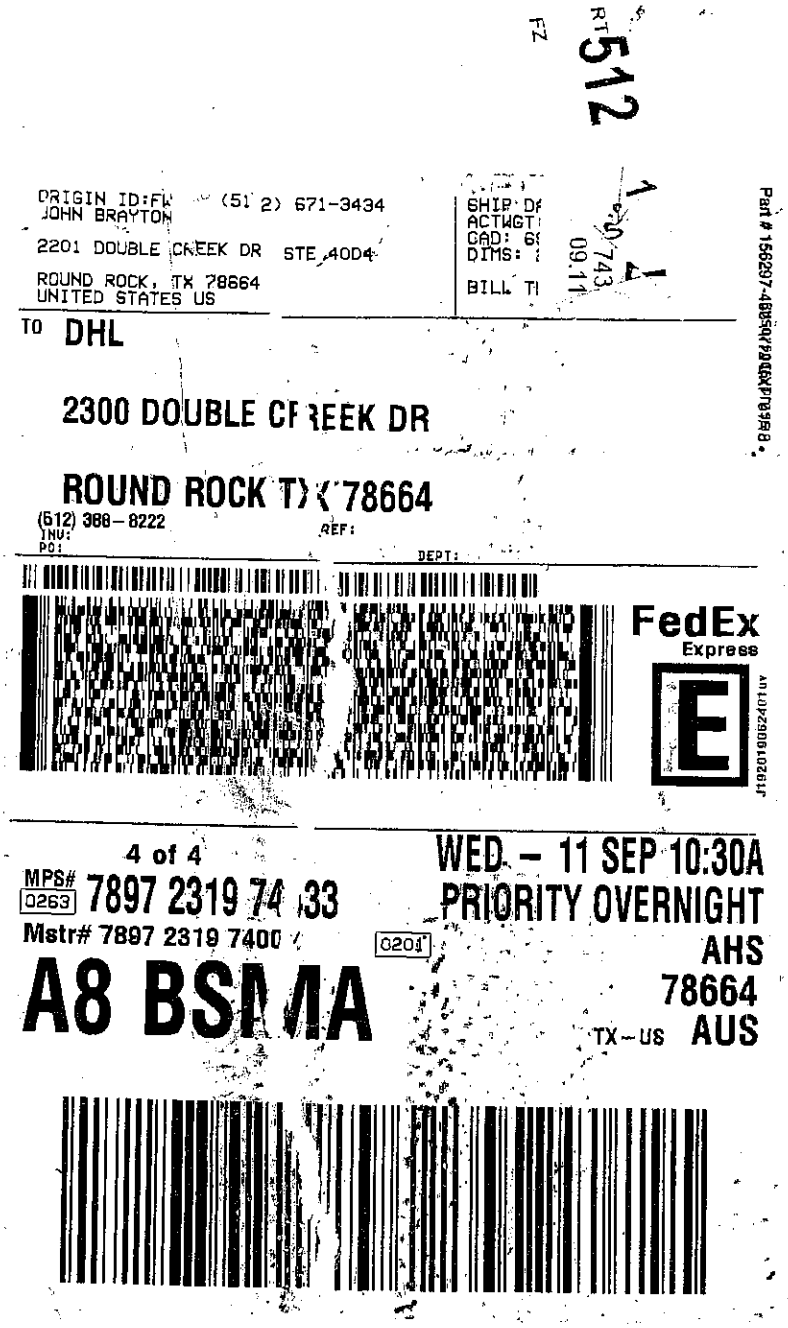
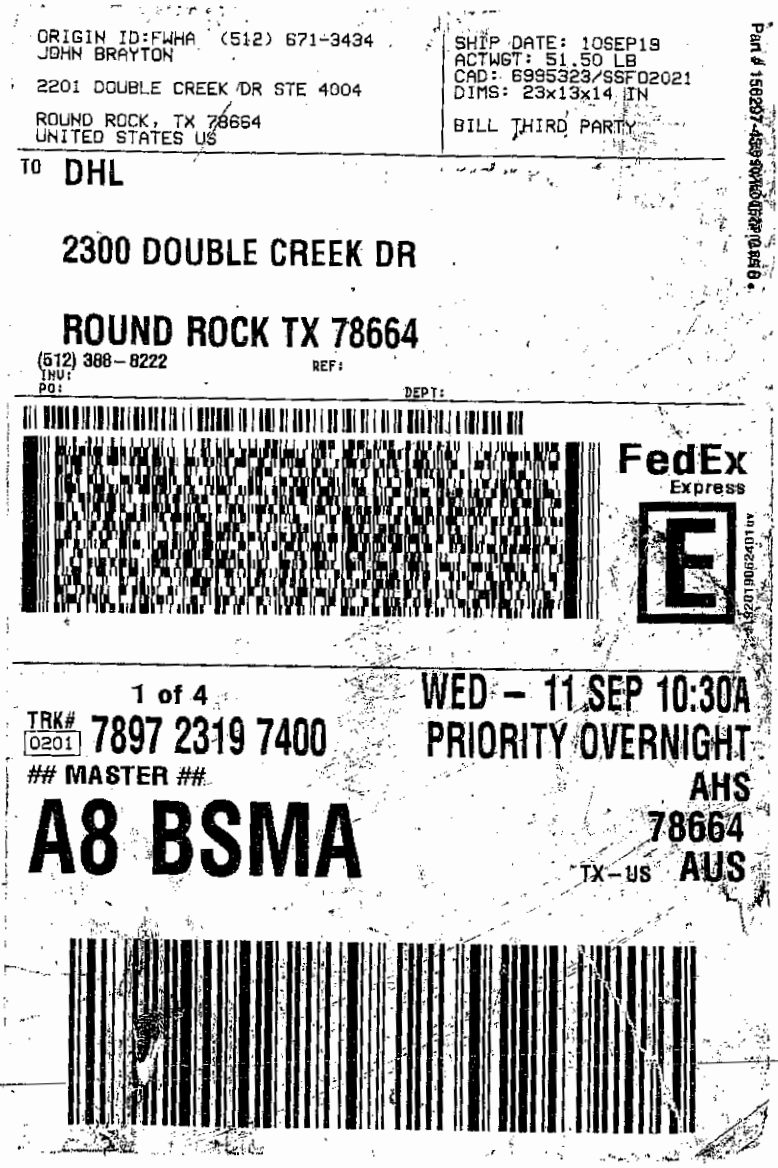
Please consider the environment before printing this email.

From: Eric Lau <login@dhlanalytical.com>
Sent: Wednesday, August 28, 2019 11:10 AM
To: Vienne, Will <William_Vienne@golder.com>
Cc: John DuPont <dupont@dhlanalytical.com>
Subject: RE: Luminant CCR Bottle Order

EXTERNAL EMAIL


ORIGIN ID:FW (512) 671-3434
JOHN BRAYTON
2201 DOUBLE CREEK DR STE 400D4
ROUND ROCK, TX 78664
UNITED STATES US
SHIP DA
ACTWGT:
CAD: 6
DIMS:
BILL TI
TO DHL
2300 DOUBLE CREEK DR
ROUND ROCK TX 78664
(512) 388-8222
INV:
PO:
REF:
DEPT:
FedEx
Express
4 of 4
MPS# 7897 2319 74 33
Mstr# 7897 2319 7400
0263
0201
WED - 11 SEP 10:30A
PRIORITY OVERNIGHT
AHS
78664
TX-US AUS
A8 BSMA


ORIGIN ID:FWHA (512) 671-3434
JOHN BRAYTON
2201 DOUBLE CREEK DR STE 4004
ROUND ROCK, TX 78664
UNITED STATES US
SHIP DATE: 10SEP19
ACTWGT: 51.50 LB
CAD: 6995323/SSFO2021
DIMS: 23x13x14 IN
BILL THIRD PARTY
TO DHL
2300 DOUBLE CREEK DR
ROUND ROCK TX 78664
(512) 388-8222
REF:
INV:
PO:
DEPT:
FedEx
Express
1 of 4
TRK# 0201 7897 2319 7400
MASTER
A8 BSMA
WED - 11 SEP 10:30A
PRIORITY OVERNIGHT
AHS
78664
TX-US AUS

DHL Analytical, Inc.

Sample Receipt Checklist

Client Name Golder | Date Received: 9/11/2019

Work Order Number 1909083 | Received by EL

Checklist completed by: Signature | 9/11/2019 Date | Reviewed by Initials | 9/11/2019 Date

Carrier name FedEx 1day

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	2.1 °C
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH<2 acceptable upon receipt?	Yes ☑	No ☐	NA ☐ LOT # 13171
	Adjusted? No		Checked by EL
Water - ph>9 (S) or ph>10 (CN) acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted?		Checked by

Any No response must be detailed in the comments section below.

Client contacted | Date contacted: | Person contacted

Contacted by: | Regarding:

Comments:

Corrective Action

Page 1 of 1

Laboratory Name: DHL Analytical, Inc.

Laboratory Review Checklist: Reportable Data

Project Name: Luminant-A1 Area Landfill MLSES	**LRC Date:** 10/14/19
Reviewer Name: Carlos Castro	**Laboratory Work Order:** 1909083
Prep Batch Number(s): See Prep Dates Report	**Run Batch:** See Analytical Dates Report

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
		Chain-of-Custody (C-O-C)					
R1	OI	**1)** Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	**X**				**R1-01**
		2) Were all departures from standard conditions described in an exception report?			**X**		
R2	OI	**Sample and Quality Control (QC) Identification**					
		1) Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	**X**				
		2) Are all laboratory ID numbers cross-referenced to the corresponding QC data?	**X**				
R3	OI	**Test Reports**					
		1) Were all samples prepared and analyzed within holding times?	**X**				
		2) Other than those results < MQL, were all other raw values bracketed by calibration standards?	**X**				
		3) Were calculations checked by a peer or supervisor?	**X**				
		4) Were all analyte identifications checked by a peer or supervisor?	**X**				
		5) Were sample detection limits reported for all analytes not detected?	**X**				
		6) Were all results for soil and sediment samples reported on a dry weight basis?			**X**		
		7) Were % moisture (or solids) reported for all soil and sediment samples?			**X**		
		8) Were bulk soils/solids samples for volatile analysis extracted with methanol per EPA Method 5035?			**X**		
		9) If required for the project, TICs reported?			**X**		
R4	O	**Surrogate Recovery Data**					
		1) Were surrogates added prior to extraction?			**X**		
		2) Were surrogate percent recoveries in all samples within the laboratory QC limits?			**X**		
R5	OI	**Test Reports/Summary Forms for Blank Samples**					
		1) Were appropriate type(s) of blanks analyzed?	**X**				
		2) Were blanks analyzed at the appropriate frequency?	**X**				
		3) Where method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	**X**				
		4) Were blank concentrations < MDL?	**X**				
		5) For analyte(s) detected in a blank sample, was the concentration, unadjusted for sample specific factors, in all associated field samples, **greater** than 10 times the concentration in the blank sample?			**X**		
R6	OI	**Laboratory Control Samples (LCS):**					
		1) Were all COCs included in the LCS?	**X**				
		2) Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	**X**				
		3) Were LCSs analyzed at the required frequency?	**X**				
		4) Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	**X**				
		5) Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	**X**				
		6) Was the LCSD RPD within QC limits (if applicable)?	**X**				
R7	OI	**Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Data**					
		1) Were the project/method specified analytes included in the MS and MSD?	**X**				
		2) Were MS/MSD analyzed at the appropriate frequency?	**X**				
		3) Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?		**X**			**R7-03**
		4) Were MS/MSD RPDs within laboratory QC limits?	**X**				
R8	OI	**Analytical Duplicate Data**					
		1) Were appropriate analytical duplicates analyzed for each matrix?	**X**				
		2) Were analytical duplicates analyzed at the appropriate frequency?	**X**				
		3) Were RPDs or relative standard deviations within the laboratory QC limits?	**X**				
R9	OI	**Method Quantitation Limits (MQLs):**					
		1) Are the MQLs for each method analyte included in the laboratory data package?	**X**				
		2) Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	**X**				
		3) Are unadjusted MQLs and DCSs included in the laboratory data package?	**X**				
R10	OI	**Other Problems/Anomalies**					
		1) Are all known problems/anomalies/special conditions noted in this LRC and ER?	**X**				
		2) Was applicable and available technology used to lower the SDL to minimize the matrix interference affects on the sample results?	**X**				
		3) Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices and methods associated with this laboratory data package?	**X**				

Laboratory Name: DHL Analytical, Inc.

Laboratory Review Checklist (continued): Supporting Data

Project Name: Luminant-A1 Area Landfill MLSES	**LRC Date:** 10/14/19
Reviewer Name: Carlos Castro	**Laboratory Work Order:** 1909083
Prep Batch Number(s): See Prep Dates Report	**Run Batch:** See Analytical Dates Report

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
S1	OI	**Initial Calibration (ICAL)**					
		1) Were response factors and/or relative response factors for each analyte within QC limits?	**X**				
		2) Were percent RSDs or correlation coefficient criteria met?	**X**				
		3) Was the number of standards recommended in the method used for all analytes?	**X**				
		4) Were all points generated between the lowest and highest standard used to calculate the curve?	**X**				
		5) Are ICAL data available for all instruments used?	**X**				
		6) Has the initial calibration curve been verified using an appropriate second source standard?	**X**				
S2	OI	**Initial and Continuing calibration Verification (ICCV and CCV) and Continuing Calibration blank (CCB):**					
		1) Was the CCV analyzed at the method-required frequency?	**X**				
		2) Were percent differences for each analyte within the method-required QC limits?		**X**			**S2-02**
		3) Was the ICAL curve verified for each analyte?	**X**				
		4) Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	**X**				
S3	O	**Mass Spectral Tuning:**					
		1) Was the appropriate compound for the method used for tuning?	**X**				
		2) Were ion abundance data within the method-required QC limits?	**X**				
S4	O	**Internal Standards (IS):**					
		1) Were IS area counts and retention times within the method-required QC limits?	**X**				
S5	OI	**Raw Data (NELAC Section 5.5.10)**					
		1) Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	**X**				
		2) Were data associated with manual integrations flagged on the raw data?	**X**				
S6	O	**Dual Column Confirmation**					
		1) Did dual column confirmation results meet the method-required QC?			**X**		
S7	O	**Tentatively Identified Compounds (TICs):**					
		1) If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			**X**		
S8	I	**Interference Check Sample (ICS) Results:**					
		1) Were percent recoveries within method QC limits?	**X**				
S9	I	**Serial Dilutions, Post Digestion Spikes, and Method of Standard Additions**					
		1) Were percent differences, recoveries, and the linearity within the QC limits specified in the method?		**X**			**S9-01**
S10	OI	**Method Detection Limit (MDL) Studies**					
		1) Was a MDL study performed for each reported analyte?	**X**				
		2) Is the MDL either adjusted or supported by the analysis of DCSs?	**X**				
S11	OI	**Proficiency Test Reports:**					
		1) Was the lab's performance acceptable on the applicable proficiency tests or evaluation studies?	**X**				
S12	OI	**Standards Documentation**					
		1) Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	**X**				
S13	OI	**Compound/Analyte Identification Procedures**					
		1) Are the procedures for compound/analyte identification documented?	**X**				
S14	OI	**Demonstration of Analyst Competency (DOC)**					
		1) Was DOC conducted consistent with NELAC Chapter 5 – Appendix C?	**X**				
		2) Is documentation of the analyst's competency up-to-date and on file?	**X**				
S15	OI	**Verification/Validation Documentation for Methods** (NELAC Chapter 5)					
		1) Are all the methods used to generate the data documented, verified, and validated, where applicable?	**X**				
S16	OI	**Laboratory Standard Operating Procedures (SOPs):**					
		1) Are laboratory SOPs current and on file for each method performed?	**X**				

1 Items identified by the letter "R" should be included in the laboratory data package submitted to the TCEQ in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.

2 O = organic analyses; I = inorganic analyses (and general chemistry, when applicable).

3 NA = Not applicable.

4 NR = Not Reviewed.

5 ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Data Package Signature Page – RG-366/TRRP-13

This data package consists of:

This signature page, the laboratory review checklist, and the following reportable data:

R1 Field chain-of-custody documentation;
R2 Sample identification cross-reference;
R3 Test reports (analytical data sheets) for each environmental sample that includes:
  a) Items consistent with NELAC Chapter 5,
  b) dilution factors,
  c) preparation methods,
  d) cleanup methods, and
  e) if required for the project, tentatively identified compounds (TICs).
R4 Surrogate recovery data including:
  a) Calculated recovery (%R), and
  b) The laboratory's surrogate QC limits.
R5 Test reports/summary forms for blank samples;
R6 Test reports/summary forms for laboratory control samples (LCSs) including:
  a) LCS spiking amounts,
  b) Calculated %R for each analyte, and
  c) The laboratory's LCS QC limits.
R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
  a) Samples associated with the MS/MSD clearly identified,
  b) MS/MSD spiking amounts,
  c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
  d) Calculated %Rs and relative percent differences (RPDs), and
  e) The laboratory's MS/MSD QC limits
R8 Laboratory analytical duplicate (if applicable) recovery and precision:
  a) The amount of analyte measured in the duplicate,
  b) The calculated RPD, and
  c) The laboratory's QC limits for analytical duplicates.
R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix;
R10 Other problems or anomalies.

The Exception Report for each "No" or "Not Reviewed (NR)" item in the Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory is not accredited under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature below, I affirm to the best of my knowledge that all problems/anomalies observed by the laboratory have been identified in the Laboratory Review Checklist, and no information or data affecting the quality of the data has been knowingly withheld.

This laboratory was last inspected by TCEQ on February 25-28 2019. Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Name: John DuPont
Official Title: General Manager

Signature

10/1□/1□
Date

Name: Dr. Derhsing Luu
Official Title: Technical Director

DHL Analytical, Inc. **Date:** *14-Oct-19*

CLIENT: Golder
Project: Luminant-A1 Area Landfill MLSES
Lab Order: 1909083

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Method SW6020A - Metals Analysis
Method E300 - Anions Analysis
Method M2540C - TDS Analysis
Sub-contract - Radium-228 and Radium-226 analyses by methods E904 and SM 7500 Ra B M. Analyzed at Pace Analytical.

Exception Report R1-01

The samples were received and log-in performed on 9/11/19. A total of 10 samples were received. The samples arrived in good condition and were properly packaged.

Exception Report R7-03

For Metals analysis performed on 9/13/19 the matrix spike and matrix spike duplicate recoveries were out of control limits for Boron and Calcium. These are flagged accordingly in the QC summary report. The sample selected for the matrix spike and matrix spike duplicate was not from this work order. The LCS was within control limits for these analytes. No further corrective actions were taken.

Exception Report S2-02

For Metals analysis performed on 9/13/19 CCV1-190913 and LCVL1-190913 were above control limits for Boron. These are flagged accordingly in the QC summary report. The associated samples were QC samples. No further corrective actions were taken.

Exception Report S9-01

For Metals analysis performed on 9/13/19 the PDS recovery was slightly below control limits for Cobalt and Lithium. These are flagged accordingly in the QC summary report. The serial dilution was within control limits for these analytes. No further corrective actions were taken.

DHL Analytical, Inc.

Date: *14-Oct-19*

CLIENT: Golder
Project: Luminant-A1 Area Landfill MLSES
Lab Order: 1909083

Work Order Sample Summary

Lab Smp ID	Client Sample ID	Tag Number	Date Collected	Date Recved
1909083-01	BMW-24		09/09/19 07:45 AM	9/11/2019
1909083-02	BMW-23		09/09/19 08:40 AM	9/11/2019
1909083-03	BMW-22		09/09/19 09:30 AM	9/11/2019
1909083-04	BMW-29		09/09/19 10:25 AM	9/11/2019
1909083-05	BMW-25		09/09/19 11:40 AM	9/11/2019
1909083-06	BMW-32		09/09/19 12:50 PM	9/11/2019
1909083-07	BMW-33		09/09/19 02:05 PM	9/11/2019
1909083-08	DUP-01		09/09/19 02:05 PM	9/11/2019
1909083-09	A1-2-DB		09/09/19 03:05 PM	9/11/2019
1909083-10	BMW-30		09/09/19 04:15 PM	9/11/2019

Lab Order: 1909083
Client: Golder
Project: Luminant-A1 Area Landfill MLSE

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1909083-01A	BMW-24	09/09/19 07:45 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/12/19 08:43 AM	92756
	BMW-24	09/09/19 07:45 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/12/19 08:43 AM	92756
	BMW-24	09/09/19 07:45 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/12/19 08:43 AM	92756
1909083-01B	BMW-24	09/09/19 07:45 AM	Aqueous	E300	Anion Preparation	09/12/19 09:15 AM	92760
	BMW-24	09/09/19 07:45 AM	Aqueous	E300	Anion Preparation	09/12/19 09:15 AM	92760
	BMW-24	09/09/19 07:45 AM	Aqueous	E300	Anion Preparation	09/12/19 09:15 AM	92760
	BMW-24	09/09/19 07:45 AM	Aqueous	M2540C	TDS Preparation	09/12/19 09:03 AM	92759
1909083-02A	BMW-23	09/09/19 08:40 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/12/19 08:43 AM	92756
	BMW-23	09/09/19 08:40 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/12/19 08:43 AM	92756
1909083-02B	BMW-23	09/09/19 08:40 AM	Aqueous	E300	Anion Preparation	09/12/19 09:15 AM	92760
	BMW-23	09/09/19 08:40 AM	Aqueous	E300	Anion Preparation	09/12/19 09:15 AM	92760
	BMW-23	09/09/19 08:40 AM	Aqueous	M2540C	TDS Preparation	09/12/19 09:03 AM	92759
1909083-03A	BMW-22	09/09/19 09:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/12/19 08:43 AM	92756
	BMW-22	09/09/19 09:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/12/19 08:43 AM	92756
1909083-03B	BMW-22	09/09/19 09:30 AM	Aqueous	E300	Anion Preparation	09/12/19 09:15 AM	92760
	BMW-22	09/09/19 09:30 AM	Aqueous	E300	Anion Preparation	09/12/19 09:15 AM	92760
	BMW-22	09/09/19 09:30 AM	Aqueous	M2540C	TDS Preparation	09/12/19 09:03 AM	92759
1909083-04A	BMW-29	09/09/19 10:25 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/12/19 08:43 AM	92756
1909083-05A	BMW-25	09/09/19 11:40 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/12/19 08:43 AM	92756
1909083-06A	BMW-32	09/09/19 12:50 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/12/19 08:43 AM	92756
1909083-07A	BMW-33	09/09/19 02:05 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/12/19 08:43 AM	92756
	BMW-33	09/09/19 02:05 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/12/19 08:43 AM	92756
	BMW-33	09/09/19 02:05 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/12/19 08:43 AM	92756
1909083-07B	BMW-33	09/09/19 02:05 PM	Aqueous	E300	Anion Preparation	09/12/19 09:15 AM	92760
	BMW-33	09/09/19 02:05 PM	Aqueous	E300	Anion Preparation	09/12/19 09:15 AM	92760
	BMW-33	09/09/19 02:05 PM	Aqueous	M2540C	TDS Preparation	09/12/19 09:03 AM	92759
1909083-08A	DUP-01	09/09/19 02:05 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/12/19 08:43 AM	92756
	DUP-01	09/09/19 02:05 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/12/19 08:43 AM	92756

Lab Order: 1909083
Client: Golder
Project: Luminant-A1 Area Landfill MLSE

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1909083-08A	DUP-01	09/09/19 02:05 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/12/19 08:43 AM	92756
1909083-08B	DUP-01	09/09/19 02:05 PM	Aqueous	E300	Anion Preparation	09/12/19 09:15 AM	92760
	DUP-01	09/09/19 02:05 PM	Aqueous	E300	Anion Preparation	09/12/19 09:15 AM	92760
	DUP-01	09/09/19 02:05 PM	Aqueous	M2540C	TDS Preparation	09/12/19 09:03 AM	92759
1909083-09A	A1-2-DB	09/09/19 03:05 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/12/19 08:43 AM	92756
1909083-10A	BMW-30	09/09/19 04:15 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/12/19 08:43 AM	92756

Lab Order: 1909083
Client: Golder
Project: Luminant-A1 Area Landfill MLSE

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1909083-01A	BMW-24	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92756	1	09/16/19 11:44 AM	ICP-MS4_190916A
	BMW-24	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92756	1	09/13/19 02:25 PM	ICP-MS5_190913B
	BMW-24	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92756	10	09/16/19 11:42 AM	ICP-MS4_190916A
1909083-01B	BMW-24	Aqueous	E300	Anions by IC method - Water	92760	10	09/12/19 03:21 PM	IC2_190912A
	BMW-24	Aqueous	E300	Anions by IC method - Water	92760	100	09/12/19 05:29 PM	IC2_190912A
	BMW-24	Aqueous	E300	Anions by IC method - Water	92760	1	09/12/19 10:49 PM	IC2_190912A
	BMW-24	Aqueous	M2540C	Total Dissolved Solids	92759	1	09/12/19 04:30 PM	WC_190912B
1909083-02A	BMW-23	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92756	10	09/16/19 11:46 AM	ICP-MS4_190916A
	BMW-23	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92756	1	09/13/19 02:29 PM	ICP-MS5_190913B
1909083-02B	BMW-23	Aqueous	E300	Anions by IC method - Water	92760	1	09/12/19 11:05 PM	IC2_190912A
	BMW-23	Aqueous	E300	Anions by IC method - Water	92760	10	09/12/19 03:37 PM	IC2_190912A
	BMW-23	Aqueous	M2540C	Total Dissolved Solids	92759	1	09/12/19 04:30 PM	WC_190912B
1909083-03A	BMW-22	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92756	20	09/16/19 11:48 AM	ICP-MS4_190916A
	BMW-22	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92756	1	09/13/19 02:34 PM	ICP-MS5_190913B
1909083-03B	BMW-22	Aqueous	E300	Anions by IC method - Water	92760	10	09/12/19 03:53 PM	IC2_190912A
	BMW-22	Aqueous	E300	Anions by IC method - Water	92760	1	09/12/19 11:21 PM	IC2_190912A
	BMW-22	Aqueous	M2540C	Total Dissolved Solids	92759	1	09/12/19 04:30 PM	WC_190912B
1909083-04A	BMW-29	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92756	1	09/13/19 02:38 PM	ICP-MS5_190913B
1909083-05A	BMW-25	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92756	1	09/13/19 02:43 PM	ICP-MS5_190913B
1909083-06A	BMW-32	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92756	1	09/13/19 02:47 PM	ICP-MS5_190913B
1909083-07A	BMW-33	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92756	10	09/16/19 11:50 AM	ICP-MS4_190916A
	BMW-33	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92756	1	09/16/19 11:52 AM	ICP-MS4_190916A
	BMW-33	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92756	1	09/13/19 02:51 PM	ICP-MS5_190913B
1909083-07B	BMW-33	Aqueous	E300	Anions by IC method - Water	92760	1	09/13/19 12:57 AM	IC2_190912A
	BMW-33	Aqueous	E300	Anions by IC method - Water	92760	10	09/12/19 04:09 PM	IC2_190912A
	BMW-33	Aqueous	M2540C	Total Dissolved Solids	92759	1	09/12/19 04:30 PM	WC_190912B
1909083-08A	DUP-01	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92756	1	09/16/19 11:56 AM	ICP-MS4_190916A
	DUP-01	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92756	1	09/13/19 02:56 PM	ICP-MS5_190913B

Lab Order: 1909083
Client: Golder
Project: Luminant-A1 Area Landfill MLSE

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1909083-08A	DUP-01	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92756	10	09/16/19 11:54 AM	ICP-MS4_190916A
1909083-08B	DUP-01	Aqueous	E300	Anions by IC method - Water	92760	10	09/12/19 04:25 PM	IC2_190912A
	DUP-01	Aqueous	E300	Anions by IC method - Water	92760	1	09/13/19 01:13 AM	IC2_190912A
	DUP-01	Aqueous	M2540C	Total Dissolved Solids	92759	1	09/12/19 04:30 PM	WC_190912B
1909083-09A	A1-2-DB	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92756	1	09/13/19 03:00 PM	ICP-MS5_190913B
1909083-10A	BMW-30	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	92756	1	09/13/19 03:05 PM	ICP-MS5_190913B

DHL Analytical, Inc.

Date: *14-Oct-19*

CLIENT:	Golder	**Client Sample ID:**	BMW-24
Project:	Luminant-A1 Area Landfill MLSES	**Lab ID:**	1909083-01
Project No:	19122262-D	**Collection Date:**	09/09/19 07:45 AM
Lab Order:	1909083	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	09/13/19 02:25 PM
Barium	1.48	0.00300	0.0100		mg/L	1	09/13/19 02:25 PM
Boron	0.247	0.0100	0.0300		mg/L	1	09/16/19 11:44 AM
Calcium	56.4	1.00	3.00		mg/L	10	09/16/19 11:42 AM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	09/13/19 02:25 PM
Lithium	0.00826	0.00500	0.0100	J	mg/L	1	09/13/19 02:25 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	09/13/19 02:25 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	501	30.0	100		mg/L	100	09/12/19 05:29 PM
Fluoride	0.534	0.100	0.400		mg/L	1	09/12/19 10:49 PM
Sulfate	16.4	1.00	3.00		mg/L	1	09/12/19 10:49 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	985	50.0	50.0		mg/L	1	09/12/19 04:30 PM

Qualifiers:

ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *14-Oct-19*

CLIENT:	Golder	**Client Sample ID:**	BMW-23
Project:	Luminant-A1 Area Landfill MLSES	**Lab ID:**	1909083-02
Project No:	19122262-D	**Collection Date:**	09/09/19 08:40 AM
Lab Order:	1909083	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	09/13/19 02:29 PM
Barium	0.0382	0.00300	0.0100		mg/L	1	09/13/19 02:29 PM
Boron	1.47	0.100	0.300		mg/L	10	09/16/19 11:46 AM
Calcium	98.9	1.00	3.00		mg/L	10	09/16/19 11:46 AM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	09/13/19 02:29 PM
Lithium	0.0896	0.00500	0.0100		mg/L	1	09/13/19 02:29 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	09/13/19 02:29 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	257	3.00	10.0		mg/L	10	09/12/19 03:37 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	09/12/19 11:05 PM
Sulfate	503	10.0	30.0		mg/L	10	09/12/19 03:37 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	1680	50.0	50.0		mg/L	1	09/12/19 04:30 PM

Qualifiers:

- ND - Not Detected at the SDL
- J - Analyte detected between SDL and RL
- B - Analyte detected in the associated Method Blank
- DF- Dilution Factor
- N - Parameter not NELAP certified
- See Final Page of Report for MQLs and MDLs
- S - Spike Recovery outside control limits
- C - Sample Result or QC discussed in Case Narrative
- RL - Reporting Limit (MQL adjusted for moisture and sample size)
- SDL - Sample Detection Limit
- E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *14-Oct-19*

CLIENT:	Golder	**Client Sample ID:**	BMW-22
Project:	Luminant-A1 Area Landfill MLSES	**Lab ID:**	1909083-03
Project No:	19122262-D	**Collection Date:**	09/09/19 09:30 AM
Lab Order:	1909083	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	09/13/19 02:34 PM
Barium	0.0599	0.00300	0.0100		mg/L	1	09/13/19 02:34 PM
Boron	3.65	0.200	0.600		mg/L	20	09/16/19 11:48 AM
Calcium	208	2.00	6.00		mg/L	20	09/16/19 11:48 AM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	09/13/19 02:34 PM
Lithium	0.0829	0.00500	0.0100		mg/L	1	09/13/19 02:34 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	09/13/19 02:34 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	307	3.00	10.0		mg/L	10	09/12/19 03:53 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	09/12/19 11:21 PM
Sulfate	960	10.0	30.0		mg/L	10	09/12/19 03:53 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	2420	50.0	50.0		mg/L	1	09/12/19 04:30 PM

Qualifiers:

- ND - Not Detected at the SDL
- J - Analyte detected between SDL and RL
- B - Analyte detected in the associated Method Blank
- DF- Dilution Factor
- N - Parameter not NELAP certified
- See Final Page of Report for MQLs and MDLs
- S - Spike Recovery outside control limits
- C - Sample Result or QC discussed in Case Narrative
- RL - Reporting Limit (MQL adjusted for moisture and sample size)
- SDL - Sample Detection Limit
- E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *14-Oct-19*

CLIENT:	Golder	**Client Sample ID:**	BMW-29
Project:	Luminant-A1 Area Landfill MLSES	**Lab ID:**	1909083-04
Project No:	19122262-D	**Collection Date:**	09/09/19 10:25 AM
Lab Order:	1909083	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Lithium	0.107	0.00500	0.0100		mg/L	1	09/13/19 02:38 PM

Qualifiers:

- ND - Not Detected at the SDL
- J - Analyte detected between SDL and RL
- B - Analyte detected in the associated Method Blank
- DF- Dilution Factor
- N - Parameter not NELAP certified
- See Final Page of Report for MQLs and MDLs
- S - Spike Recovery outside control limits
- C - Sample Result or QC discussed in Case Narrative
- RL - Reporting Limit (MQL adjusted for moisture and sample size)
- SDL - Sample Detection Limit
- E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *14-Oct-19*

CLIENT:	Golder	**Client Sample ID:**	BMW-25
Project:	Luminant-A1 Area Landfill MLSES	**Lab ID:**	1909083-05
Project No:	19122262-D	**Collection Date:**	09/09/19 11:40 AM
Lab Order:	1909083	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Cobalt	0.00717	0.00300	0.00500		mg/L	1	09/13/19 02:43 PM

Qualifiers:

- ND - Not Detected at the SDL
- J - Analyte detected between SDL and RL
- B - Analyte detected in the associated Method Blank
- DF- Dilution Factor
- N - Parameter not NELAP certified
- See Final Page of Report for MQLs and MDLs
- S - Spike Recovery outside control limits
- C - Sample Result or QC discussed in Case Narrative
- RL - Reporting Limit (MQL adjusted for moisture and sample size)
- SDL - Sample Detection Limit
- E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *14-Oct-19*

CLIENT:	Golder	**Client Sample ID:**	BMW-32
Project:	Luminant-A1 Area Landfill MLSES	**Lab ID:**	1909083-06
Project No:	19122262-D	**Collection Date:**	09/09/19 12:50 PM
Lab Order:	1909083	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Cobalt	0.00690	0.00300	0.00500		mg/L	1	09/13/19 02:47 PM
Lithium	0.115	0.00500	0.0100		mg/L	1	09/13/19 02:47 PM

Qualifiers:

- ND - Not Detected at the SDL
- J - Analyte detected between SDL and RL
- B - Analyte detected in the associated Method Blank
- DF- Dilution Factor
- N - Parameter not NELAP certified
- See Final Page of Report for MQLs and MDLs
- S - Spike Recovery outside control limits
- C - Sample Result or QC discussed in Case Narrative
- RL - Reporting Limit (MQL adjusted for moisture and sample size)
- SDL - Sample Detection Limit
- E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *14-Oct-19*

CLIENT:	Golder	**Client Sample ID:**	BMW-33
Project:	Luminant-A1 Area Landfill MLSES	**Lab ID:**	1909083-07
Project No:	19122262-D	**Collection Date:**	09/09/19 02:05 PM
Lab Order:	1909083	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	09/13/19 02:51 PM
Barium	0.285	0.00300	0.0100		mg/L	1	09/13/19 02:51 PM
Boron	0.269	0.0100	0.0300		mg/L	1	09/16/19 11:52 AM
Calcium	95.8	1.00	3.00		mg/L	10	09/16/19 11:50 AM
Cobalt	0.0122	0.00300	0.00500		mg/L	1	09/13/19 02:51 PM
Lithium	0.0177	0.00500	0.0100		mg/L	1	09/13/19 02:51 PM
Molybdenum	0.00325	0.00200	0.00500	J	mg/L	1	09/13/19 02:51 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	79.5	3.00	10.0		mg/L	10	09/12/19 04:09 PM
Fluoride	0.145	0.100	0.400	J	mg/L	1	09/13/19 12:57 AM
Sulfate	232	10.0	30.0		mg/L	10	09/12/19 04:09 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	1040	50.0	50.0		mg/L	1	09/12/19 04:30 PM

Qualifiers:

ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *14-Oct-19*

CLIENT:	Golder	**Client Sample ID:**	DUP-01
Project:	Luminant-A1 Area Landfill MLSES	**Lab ID:**	1909083-08
Project No:	19122262-D	**Collection Date:**	09/09/19 02:05 PM
Lab Order:	1909083	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	09/13/19 02:56 PM
Barium	0.282	0.00300	0.0100		mg/L	1	09/13/19 02:56 PM
Boron	0.261	0.0100	0.0300		mg/L	1	09/16/19 11:56 AM
Calcium	97.2	1.00	3.00		mg/L	10	09/16/19 11:54 AM
Cobalt	0.0116	0.00300	0.00500		mg/L	1	09/13/19 02:56 PM
Lithium	0.0173	0.00500	0.0100		mg/L	1	09/13/19 02:56 PM
Molybdenum	0.00330	0.00200	0.00500	J	mg/L	1	09/13/19 02:56 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	80.2	3.00	10.0		mg/L	10	09/12/19 04:25 PM
Fluoride	0.147	0.100	0.400	J	mg/L	1	09/13/19 01:13 AM
Sulfate	231	10.0	30.0		mg/L	10	09/12/19 04:25 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	1070	50.0	50.0		mg/L	1	09/12/19 04:30 PM

Qualifiers:

- ND - Not Detected at the SDL
- J - Analyte detected between SDL and RL
- B - Analyte detected in the associated Method Blank
- DF- Dilution Factor
- N - Parameter not NELAP certified
- See Final Page of Report for MQLs and MDLs
- S - Spike Recovery outside control limits
- C - Sample Result or QC discussed in Case Narrative
- RL - Reporting Limit (MQL adjusted for moisture and sample size)
- SDL - Sample Detection Limit
- E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *14-Oct-19*

CLIENT:	Golder	**Client Sample ID:**	A1-2-DB
Project:	Luminant-A1 Area Landfill MLSES	**Lab ID:**	1909083-09
Project No:	19122262-D	**Collection Date:**	09/09/19 03:05 PM
Lab Order:	1909083	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	09/13/19 03:00 PM
Lithium	<0.00500	0.00500	0.0100		mg/L	1	09/13/19 03:00 PM

Qualifiers:

- ND - Not Detected at the SDL
- J - Analyte detected between SDL and RL
- B - Analyte detected in the associated Method Blank
- DF- Dilution Factor
- N - Parameter not NELAP certified
- See Final Page of Report for MQLs and MDLs
- S - Spike Recovery outside control limits
- C - Sample Result or QC discussed in Case Narrative
- RL - Reporting Limit (MQL adjusted for moisture and sample size)
- SDL - Sample Detection Limit
- E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *14-Oct-19*

CLIENT:	Golder	**Client Sample ID:**	BMW-30
Project:	Luminant-A1 Area Landfill MLSES	**Lab ID:**	1909083-10
Project No:	19122262-D	**Collection Date:**	09/09/19 04:15 PM
Lab Order:	1909083	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Barium	0.0636	0.00300	0.0100		mg/L	1	09/13/19 03:05 PM
Lithium	0.0539	0.00500	0.0100		mg/L	1	09/13/19 03:05 PM

Qualifiers:

- ND - Not Detected at the SDL
- J - Analyte detected between SDL and RL
- B - Analyte detected in the associated Method Blank
- DF- Dilution Factor
- N - Parameter not NELAP certified
- See Final Page of Report for MQLs and MDLs
- S - Spike Recovery outside control limits
- C - Sample Result or QC discussed in Case Narrative
- RL - Reporting Limit (MQL adjusted for moisture and sample size)
- SDL - Sample Detection Limit
- E - TPH pattern not Gas or Diesel Range Pattern

CLIENT: Golder
Work Order: 1909083
Project: Luminant-A1 Area Landfill MLSES

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190621B

Sample ID **DCS2-91398**	Batch ID: **91398**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **DCS2**	Run ID: **ICP-MS4_190621B**	Analysis Date: **6/21/2019 1:24:00 PM**	Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.321	0.300	0.300	0	107	70	130	0	0	

Sample ID **DCS4-91398**	Batch ID: **91398**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **DCS4**	Run ID: **ICP-MS4_190621B**	Analysis Date: **6/21/2019 1:30:00 PM**	Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0311	0.0300	0.0300	0	104	70	130	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909083
Project: Luminant-A1 Area Landfill MLSES

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190916A

The QC data in batch 92756 applies to the following samples: 1909083-01A, 1909083-02A, 1909083-03A, 1909083-04A, 1909083-05A, 1909083-06A, 1909083-07A, 1909083-08A, 1909083-09A, 1909083-10A

Sample ID **1909082-01A SD** Batch ID: **92756** TestNo: **SW6020A** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS4_190916A** Analysis Date: **9/16/2019 11:02:00 AM** Prep Date: **9/12/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	21.6	15.0	0	19.7				9.03	10	
Calcium	247	150	0	234				5.51	10	

Sample ID **1909082-01A PDS** Batch ID: **92756** TestNo: **SW6020A** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS4_190916A** Analysis Date: **9/16/2019 11:24:00 AM** Prep Date: **9/12/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	39.6	3.00	20.0	19.7	99.5	80	120			
Calcium	717	30.0	500	234	96.7	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909083
Project: Luminant-A1 Area Landfill MLSES

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190916A

Sample ID **ICV-190916**	Batch ID: **R106389**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_190916A**	Analysis Date: **9/16/2019 10:41:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.107	0.0300	0.100	0	107	90	110			
Calcium	2.60	0.300	2.50	0	104	90	110			

Sample ID **LCVL-190916**	Batch ID: **R106389**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_190916A**	Analysis Date: **9/16/2019 10:53:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0203	0.0300	0.0200	0	101	70	130			
Calcium	0.101	0.300	0.100	0	101	70	130			

Sample ID **CCV1-190916**	Batch ID: **R106389**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_190916A**	Analysis Date: **9/16/2019 11:26:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.212	0.0300	0.200	0	106	90	110			
Calcium	4.88	0.300	5.00	0	97.5	90	110			

Sample ID **LCVL1-190916**	Batch ID: **R106389**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_190916A**	Analysis Date: **9/16/2019 11:32:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0243	0.0300	0.0200	0	121	70	130			
Calcium	0.104	0.300	0.100	0	104	70	130			

Sample ID **CCV2-190916**	Batch ID: **R106389**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_190916A**	Analysis Date: **9/16/2019 11:58:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.205	0.0300	0.200	0	103	90	110			
Calcium	4.96	0.300	5.00	0	99.2	90	110			

Sample ID **LCVL2-190916**	Batch ID: **R106389**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_190916A**	Analysis Date: **9/16/2019 12:05:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0229	0.0300	0.0200	0	114	70	130			
Calcium	0.112	0.300	0.100	0	112	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909083
Project: Luminant-A1 Area Landfill MLSES

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190621A

Sample ID **DCS2-91398**	Batch ID: **91398**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **DCS2**	Run ID: **ICP-MS5_190621A**	Analysis Date: **6/21/2019 11:14:00 AM**	Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.305	0.300	0.300	0	102	70	130	0	0	

Sample ID **DCS3-91398**	Batch ID: **91398**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **DCS3**	Run ID: **ICP-MS5_190621A**	Analysis Date: **6/21/2019 11:16:00 AM**	Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.00512	0.00500	0.00500	0	102	70	130	0	0	
Barium	0.00506	0.0100	0.00500	0	101	70	130	0	0	
Cobalt	0.00516	0.00500	0.00500	0	103	70	130	0	0	
Lithium	0.00535	0.0100	0.00500	0	107	70	130	0	0	
Molybdenum	0.00526	0.00500	0.00500	0	105	70	130	0	0	

Sample ID **DCS4-91398**	Batch ID: **91398**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **DCS4**	Run ID: **ICP-MS5_190621A**	Analysis Date: **6/21/2019 11:19:00 AM**	Prep Date: **6/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0344	0.0300	0.0300	0	115	70	130	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909083
Project: Luminant-A1 Area Landfill MLSES

ANALYTICAL QC SUMMARY REPORT

RunID: **ICP-MS5_190913A**

The QC data in batch 92756 applies to the following samples: 1909083-01A, 1909083-02A, 1909083-03A, 1909083-04A, 1909083-05A, 1909083-06A, 1909083-07A, 1909083-08A, 1909083-09A, 1909083-10A

Sample ID **MB-92756** Batch ID: **92756** TestNo: **SW6020A** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS5_190913A** Analysis Date: **9/13/2019 10:57:00 AM** Prep Date: **9/12/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	<0.00200	0.00500								
Barium	<0.00300	0.0100								
Boron	<0.0100	0.0300								
Calcium	<0.100	0.300								
Cobalt	<0.00300	0.00500								
Lithium	<0.00500	0.0100								
Molybdenum	<0.00200	0.00500								

Sample ID **LCS-92756** Batch ID: **92756** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS5_190913A** Analysis Date: **9/13/2019 10:59:00 AM** Prep Date: **9/12/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.205	0.00500	0.200	0	102	80	120			
Barium	0.203	0.0100	0.200	0	102	80	120			
Boron	0.197	0.0300	0.200	0	98.5	80	120			
Calcium	4.91	0.300	5.00	0	98.2	80	120			
Cobalt	0.199	0.00500	0.200	0	99.5	80	120			
Lithium	0.207	0.0100	0.200	0	103	80	120			
Molybdenum	0.202	0.00500	0.200	0	101	80	120			

Sample ID **LCSD-92756** Batch ID: **92756** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS5_190913A** Analysis Date: **9/13/2019 11:01:00 AM** Prep Date: **9/12/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.204	0.00500	0.200	0	102	80	120	0.307	15	
Barium	0.201	0.0100	0.200	0	101	80	120	0.787	15	
Boron	0.216	0.0300	0.200	0	108	80	120	9.37	15	
Calcium	5.07	0.300	5.00	0	101	80	120	3.19	15	
Cobalt	0.199	0.00500	0.200	0	99.3	80	120	0.260	15	
Lithium	0.203	0.0100	0.200	0	102	80	120	1.76	15	
Molybdenum	0.200	0.00500	0.200	0	100	80	120	0.874	15	

Sample ID **1909082-01A SD** Batch ID: **92756** TestNo: **SW6020A** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS5_190913A** Analysis Date: **9/13/2019 11:19:00 AM** Prep Date: **9/12/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	<0.0100	0.0250	0	0.00845				0	10	
Barium	0.0150	0.0500	0	0.0158				4.67	10	
Cobalt	0.418	0.0250	0	0.410				1.91	10	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909083
Project: Luminant-A1 Area Landfill MLSES

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190913A

Sample ID **1909082-01A SD**	Batch ID: **92756**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS5_190913A**	Analysis Date: **9/13/2019 11:19:00 AM**	Prep Date: **9/12/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lithium	0.226	0.0500	0	0.225				0.494	10	
Molybdenum	<0.0100	0.0250	0	0				0	10	

Sample ID **1909082-01A PDS**	Batch ID: **92756**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS5_190913A**	Analysis Date: **9/13/2019 12:01:00 PM**	Prep Date: **9/12/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.195	0.00500	0.200	0.00845	93.3	80	120			
Barium	0.209	0.0100	0.200	0.0158	96.8	80	120			
Cobalt	0.556	0.00500	0.200	0.410	73.0	80	120			S
Lithium	0.383	0.0100	0.200	0.225	79.0	80	120			S
Molybdenum	0.192	0.00500	0.200	0	95.9	80	120			

Sample ID **1909082-01A MS**	Batch ID: **92756**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS5_190913A**	Analysis Date: **9/13/2019 12:12:00 PM**	Prep Date: **9/12/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.202	0.00500	0.200	0.00845	96.6	80	120			
Barium	0.218	0.0100	0.200	0.0158	101	80	120			
Boron	19.1	0.0300	0.200	18.5	310	80	120			S
Calcium	255	0.300	5.00	244	219	80	120			S
Cobalt	0.586	0.00500	0.200	0.410	88.2	80	120			
Lithium	0.400	0.0100	0.200	0.225	87.3	80	120			
Molybdenum	0.202	0.00500	0.200	0	101	80	120			

Sample ID **1909082-01A MSD**	Batch ID: **92756**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS5_190913A**	Analysis Date: **9/13/2019 12:23:00 PM**	Prep Date: **9/12/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.202	0.00500	0.200	0.00845	96.6	80	120	0.055	15	
Barium	0.215	0.0100	0.200	0.0158	99.8	80	120	1.05	15	
Boron	18.1	0.0300	0.200	18.5	-185	80	120	5.31	15	S
Calcium	250	0.300	5.00	244	124	80	120	1.88	15	S
Cobalt	0.580	0.00500	0.200	0.410	84.9	80	120	1.12	15	
Lithium	0.396	0.0100	0.200	0.225	85.2	80	120	1.04	15	
Molybdenum	0.201	0.00500	0.200	0	100	80	120	0.867	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909083
Project: Luminant-A1 Area Landfill MLSES

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190913A

Sample ID **ICV-190913**	Batch ID: **R106370**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS5_190913A**	Analysis Date: **9/13/2019 10:43:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.0988	0.00500	0.100	0	98.8	90	110			
Barium	0.0979	0.0100	0.100	0	97.9	90	110			
Boron	0.0982	0.0300	0.100	0	98.2	90	110			
Calcium	2.64	0.300	2.50	0	106	90	110			
Cobalt	0.0966	0.00500	0.100	0	96.6	90	110			
Lithium	0.100	0.0100	0.100	0	100	90	110			
Molybdenum	0.0968	0.00500	0.100	0	96.8	90	110			

Sample ID **LCVL-190913**	Batch ID: **R106370**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_190913A**	Analysis Date: **9/13/2019 10:50:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.00515	0.00500	0.00500	0	103	70	130			
Barium	0.00522	0.0100	0.00500	0	104	70	130			
Boron	0.0234	0.0300	0.0200	0	117	70	130			
Calcium	0.0978	0.300	0.100	0	97.8	70	130			
Cobalt	0.00486	0.00500	0.00500	0	97.3	70	130			
Lithium	0.0100	0.0100	0.0100	0	100	70	130			
Molybdenum	0.00516	0.00500	0.00500	0	103	70	130			

Sample ID **CCV1-190913**	Batch ID: **R106370**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_190913A**	Analysis Date: **9/13/2019 12:39:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.199	0.00500	0.200	0	99.6	90	110			
Barium	0.197	0.0100	0.200	0	98.3	90	110			
Boron	0.482	0.0300	0.200	0	241	90	110			S
Calcium	5.11	0.300	5.00	0	102	90	110			
Cobalt	0.194	0.00500	0.200	0	96.8	90	110			
Lithium	0.181	0.0100	0.200	0	90.4	90	110			
Molybdenum	0.202	0.00500	0.200	0	101	90	110			

Sample ID **LCVL1-190913**	Batch ID: **R106370**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_190913A**	Analysis Date: **9/13/2019 12:58:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.00486	0.00500	0.00500	0	97.2	70	130			
Barium	0.00513	0.0100	0.00500	0	103	70	130			
Boron	0.0693	0.0300	0.0200	0	347	70	130			S
Calcium	0.122	0.300	0.100	0	122	70	130			
Cobalt	0.00496	0.00500	0.00500	0	99.3	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909083
Project: Luminant-A1 Area Landfill MLSES

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190913A

Sample ID **LCVL1-190913** Batch ID: **R106370** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS5_190913A** Analysis Date: **9/13/2019 12:58:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lithium	0.00909	0.0100	0.0100	0	90.9	70	130			
Molybdenum	0.00521	0.00500	0.00500	0	104	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank
J	Analyte detected between MDL and RL
ND	Not Detected at the Method Detection Limit
RL	Reporting Limit
J	Analyte detected between SDL and RL
DF	Dilution Factor
MDL	Method Detection Limit
R	RPD outside accepted control limits
S	Spike Recovery outside control limits
N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909083
Project: Luminant-A1 Area Landfill MLSES

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190913B

Sample ID **ICV-190913B**	Batch ID: **R106381**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS5_190913B**	Analysis Date: **9/13/2019 2:08:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.0987	0.00500	0.100	0	98.7	90	110			
Barium	0.0997	0.0100	0.100	0	99.7	90	110			
Cobalt	0.0963	0.00500	0.100	0	96.3	90	110			
Lithium	0.0988	0.0100	0.100	0	98.8	90	110			
Molybdenum	0.0946	0.00500	0.100	0	94.6	90	110			

Sample ID **LCVL-190913B**	Batch ID: **R106381**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_190913B**	Analysis Date: **9/13/2019 2:18:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.00498	0.00500	0.00500	0	99.7	70	130			
Barium	0.00529	0.0100	0.00500	0	106	70	130			
Cobalt	0.00474	0.00500	0.00500	0	94.7	70	130			
Lithium	0.00986	0.0100	0.0100	0	98.6	70	130			
Molybdenum	0.00505	0.00500	0.00500	0	101	70	130			

Sample ID **CCV2-190913**	Batch ID: **R106381**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_190913B**	Analysis Date: **9/13/2019 3:09:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.200	0.00500	0.200	0	100	90	110			
Barium	0.199	0.0100	0.200	0	99.5	90	110			
Cobalt	0.194	0.00500	0.200	0	97.2	90	110			
Lithium	0.191	0.0100	0.200	0	95.7	90	110			
Molybdenum	0.197	0.00500	0.200	0	98.7	90	110			

Sample ID **LCVL2-190913**	Batch ID: **R106381**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_190913B**	Analysis Date: **9/13/2019 3:22:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.00476	0.00500	0.00500	0	95.3	70	130			
Barium	0.00488	0.0100	0.00500	0	97.5	70	130			
Cobalt	0.00484	0.00500	0.00500	0	96.9	70	130			
Lithium	0.00976	0.0100	0.0100	0	97.6	70	130			
Molybdenum	0.00499	0.00500	0.00500	0	99.9	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909083
Project: Luminant-A1 Area Landfill MLSES

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_190828A

Sample ID **DCS2-92594**	Batch ID: **92594**	TestNo: **E300**		Units: **mg/L**	
SampType: **DCS2**	Run ID: **IC2_190828A**	Analysis Date: **8/28/2019 2:22:32 PM**		Prep Date: **8/28/2019**	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	0.544	1.00	0.5000	0	109	65	135	0	0	
Fluoride	0.255	0.400	0.2000	0	128	65	135	0	0	
Sulfate	1.72	3.00	1.500	0	115	65	135	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909083
Project: Luminant-A1 Area Landfill MLSES

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_190912A

The QC data in batch 92760 applies to the following samples: 1909083-01B, 1909083-02B, 1909083-03B, 1909083-07B, 1909083-08B

Sample ID	**MB-92760**	Batch ID:	**92760**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**IC2_190912A**	Analysis Date:	**9/12/2019 10:30:26 AM**	Prep Date:	**9/12/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00								
Fluoride	<0.100	0.400								
Sulfate	<1.00	3.00								

Sample ID	**LCS-92760**	Batch ID:	**92760**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**IC2_190912A**	Analysis Date:	**9/12/2019 10:46:26 AM**	Prep Date:	**9/12/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.5	1.00	10.00	0	105	90	110			
Fluoride	4.13	0.400	4.000	0	103	90	110			
Sulfate	32.1	3.00	30.00	0	107	90	110			

Sample ID	**LCSD-92760**	Batch ID:	**92760**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**LCSD**	Run ID:	**IC2_190912A**	Analysis Date:	**9/12/2019 11:02:26 AM**	Prep Date:	**9/12/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.7	1.00	10.00	0	107	90	110	1.32	20	
Fluoride	4.16	0.400	4.000	0	104	90	110	0.666	20	
Sulfate	32.4	3.00	30.00	0	108	90	110	0.971	20	

Sample ID	**1909082-01BMS**	Batch ID:	**92760**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**MS**	Run ID:	**IC2_190912A**	Analysis Date:	**9/12/2019 6:01:22 PM**	Prep Date:	**9/12/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	2380	100	2000	227.4	108	90	110			
Fluoride	2150	40.0	2000	0	107	90	110			
Sulfate	4790	300	2000	2640	107	90	110			

Sample ID	**1909082-01BMSD**	Batch ID:	**92760**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**MSD**	Run ID:	**IC2_190912A**	Analysis Date:	**9/12/2019 6:17:22 PM**	Prep Date:	**9/12/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	2390	100	2000	227.4	108	90	110	0.079	20	
Fluoride	2150	40.0	2000	0	107	90	110	0.148	20	
Sulfate	4800	300	2000	2640	108	90	110	0.337	20	

Sample ID	**1909082-02BMS**	Batch ID:	**92760**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**MS**	Run ID:	**IC2_190912A**	Analysis Date:	**9/12/2019 6:49:22 PM**	Prep Date:	**9/12/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909083
Project: Luminant-A1 Area Landfill MLSES

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_190912A

Sample ID **1909082-02BMS**	Batch ID: **92760**	TestNo: **E300**	Units: **mg/L**
SampType: **MS**	Run ID: **IC2_190912A**	Analysis Date: **9/12/2019 6:49:22 PM**	Prep Date: **9/12/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	339	10.0	200.0	127.5	106	90	110			
Fluoride	214	4.00	200.0	1.098	106	90	110			
Sulfate	582	30.0	200.0	364.7	109	90	110			

Sample ID **1909082-02BMSD**	Batch ID: **92760**	TestNo: **E300**	Units: **mg/L**
SampType: **MSD**	Run ID: **IC2_190912A**	Analysis Date: **9/12/2019 7:05:22 PM**	Prep Date: **9/12/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	341	10.0	200.0	127.5	107	90	110	0.453	20	
Fluoride	215	4.00	200.0	1.098	107	90	110	0.718	20	
Sulfate	585	30.0	200.0	364.7	110	90	110	0.453	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909083
Project: Luminant-A1 Area Landfill MLSES

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_190912A

Sample ID **ICV-190912**	Batch ID: **R106363**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC2_190912A**	Analysis Date: **9/12/2019 9:58:26 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	26.9	1.00	25.00	0	108	90	110			
Fluoride	10.6	0.400	10.00	0	106	90	110			
Sulfate	81.9	3.00	75.00	0	109	90	110			

Sample ID **CCV1-190912**	Batch ID: **R106363**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_190912A**	Analysis Date: **9/12/2019 2:49:19 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.7	1.00	10.00	0	107	90	110			
Fluoride	4.22	0.400	4.000	0	105	90	110			
Sulfate	32.4	3.00	30.00	0	108	90	110			

Sample ID **CCV2-190912**	Batch ID: **R106363**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_190912A**	Analysis Date: **9/12/2019 8:25:22 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.8	1.00	10.00	0	108	90	110			
Fluoride	4.27	0.400	4.000	0	107	90	110			
Sulfate	32.2	3.00	30.00	0	107	90	110			

Sample ID **CCV3-190912**	Batch ID: **R106363**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_190912A**	Analysis Date: **9/13/2019 12:25:22 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	4.31	0.400	4.000	0	108	90	110			
Sulfate	32.5	3.00	30.00	0	108	90	110			

Sample ID **CCV4-190912**	Batch ID: **R106363**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_190912A**	Analysis Date: **9/13/2019 2:33:22 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	4.30	0.400	4.000	0	108	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1909083
Project: Luminant-A1 Area Landfill MLSES

ANALYTICAL QC SUMMARY REPORT

RunID: WC_190912B

The QC data in batch 92759 applies to the following samples: 1909083-01B, 1909083-02B, 1909083-03B, 1909083-07B, 1909083-08B

Sample ID	**MB-92759**	Batch ID:	**92759**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**WC_190912B**	Analysis Date:	**9/12/2019 4:30:00 PM**	Prep Date:	**9/12/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	<10.0	10.0								

Sample ID	**LCS-92759**	Batch ID:	**92759**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**WC_190912B**	Analysis Date:	**9/12/2019 4:30:00 PM**	Prep Date:	**9/12/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	762	10.0	745.6	0	102	90	113			

Sample ID	**1909082-01B-DUP**	Batch ID:	**92759**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**DUP**	Run ID:	**WC_190912B**	Analysis Date:	**9/12/2019 4:30:00 PM**	Prep Date:	**9/12/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	4190	50.0	0	4220				0.713	5	

Sample ID	**1909082-04B-DUP**	Batch ID:	**92759**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**DUP**	Run ID:	**WC_190912B**	Analysis Date:	**9/12/2019 4:30:00 PM**	Prep Date:	**9/12/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	1560	50.0	0	1600				2.53	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *14-Oct-19*

CLIENT: Golder
Work Order: 1909083
Project: Luminant-A1 Area Landfill MLSES

MQL SUMMARY REPORT

TestNo: E300	**MDL**	**MQL**
Analyte	**mg/L**	**mg/L**
Chloride	0.300	1.00
Fluoride	0.100	0.400
Sulfate	1.00	3.00

TestNo: SW6020A	**MDL**	**MQL**
Analyte	**mg/L**	**mg/L**
Arsenic	0.00200	0.00500
Barium	0.00300	0.0100
Boron	0.0100	0.0300
Calcium	0.100	0.300
Cobalt	0.00300	0.00500
Lithium	0.00500	0.0100
Molybdenum	0.00200	0.00500

TestNo: M2540C	**MDL**	**MQL**
Analyte	**mg/L**	**mg/L**
Total Dissolved Solids (Residue, Filt	10.0	10.0

Qualifiers: MQL -Method Quantitation Limit as defined by TRRP
MDL -Method Detection Limit as defined by TRRP

Pace Analytical®
National Center for Testing & Innovation

ANALYTICAL REPORT

October 11, 2019

DHL Analytical, Inc.

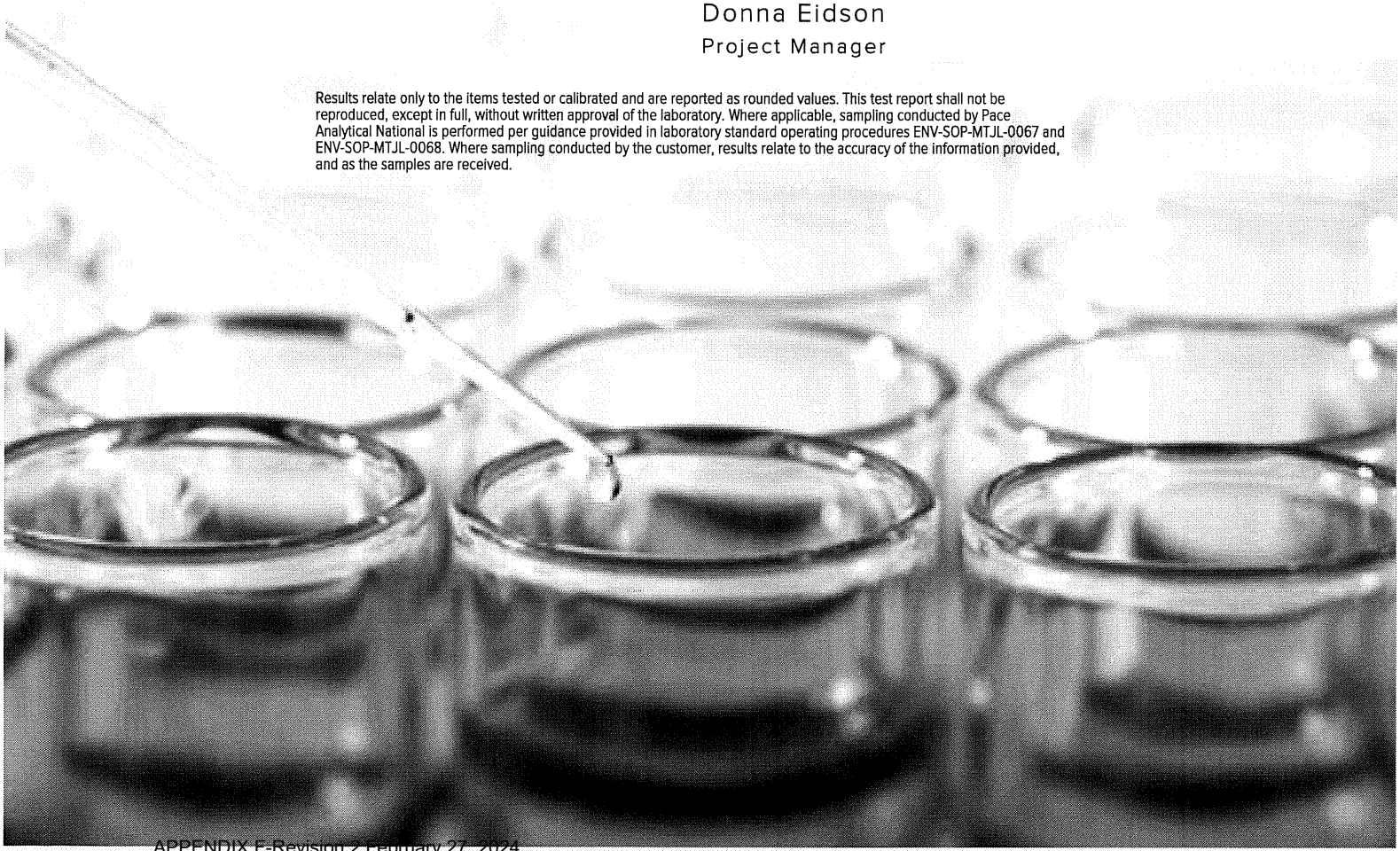
Sample Delivery Group:	L1140296
Samples Received:	09/17/2019
Project Number:	1909083
Description:	

Report To: John DuPont
2300 Double Creek Drive
Round Rock, TX 78664

Entire Report Reviewed By:

Donna Eidson
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.



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BMW-24 L1140296-01 Non-Potable Water

Collected by | Collected date/time 09/09/19 07:45 | Received date/time 09/17/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1351650	1	09/25/19 08:47	09/30/19 14:55	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1357396	1	10/04/19 10:50	10/07/19 13:02	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1357396	1	10/04/19 10:50	10/07/19 13:02	RGT	Mt. Juliet, TN

BMW-23 L1140296-02 Non-Potable Water

Collected by | Collected date/time 09/09/19 08:40 | Received date/time 09/17/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1351650	1	09/25/19 08:47	09/30/19 14:55	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1357396	1	10/04/19 10:50	10/07/19 17:26	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1357396	1	10/04/19 10:50	10/07/19 17:26	RGT	Mt. Juliet, TN

BMW-22 L1140296-03 Non-Potable Water

Collected by | Collected date/time 09/09/19 09:30 | Received date/time 09/17/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1351650	1	09/25/19 08:47	09/30/19 14:55	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1357396	1	10/04/19 10:50	10/07/19 17:26	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1357396	1	10/04/19 10:50	10/07/19 17:26	RGT	Mt. Juliet, TN

BMW-33 L1140296-04 Non-Potable Water

Collected by | Collected date/time 09/09/19 14:05 | Received date/time 09/17/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1351650	1	09/25/19 08:47	09/30/19 14:55	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1357396	1	10/04/19 10:50	10/07/19 17:26	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1357396	1	10/04/19 10:50	10/07/19 17:26	RGT	Mt. Juliet, TN

DUP-01 L1140296-05 Non-Potable Water

Collected by | Collected date/time 09/09/19 14:05 | Received date/time 09/17/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1351650	1	09/25/19 08:47	09/30/19 14:55	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1357396	1	10/04/19 10:50	10/07/19 17:26	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1357396	1	10/04/19 10:50	10/07/19 17:26	RGT	Mt. Juliet, TN

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Donna Eidson
Project Manager

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	1.41		0.467	0.812	09/30/2019 14:55	WG1351650
(T) Barium	*111*			*62.0-143*	*09/30/2019 14:55*	WG1351650
(T) Yttrium	*104*			*79.0-136*	*09/30/2019 14:55*	WG1351650

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	2.00		0.786	1.11	10/07/2019 13:02	WG1357396

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.584		0.319	0.302	10/07/2019 13:02	WG1357396
(T) Barium-133	*90.7*			*30.0-143*	*10/07/2019 13:02*	WG1357396

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	2.40		0.440	0.73	09/30/2019 14:55	WG1351650
(T) Barium	*88.3*			*62.0-143*	*09/30/2019 14:55*	WG1351650
(T) Yttrium	*113*			*79.0-136*	*09/30/2019 14:55*	WG1351650

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	2.98		0.742	0.949	10/07/2019 17:26	WG1357396

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.583		0.302	0.219	10/07/2019 17:26	WG1357396
(T) Barium-133	*92.9*			*30.0-143*	*10/07/2019 17:26*	WG1357396

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	1.85		0.438	0.615	09/30/2019 14:55	WG1351650
(T) Barium	*102*			*62.0-143*	*09/30/2019 14:55*	WG1351650
(T) Yttrium	*109*			*79.0-136*	*09/30/2019 14:55*	WG1351650

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	2.81		0.773	0.806	10/07/2019 17:26	WG1357396

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.954		0.335	0.191	10/07/2019 17:26	WG1357396
(T) Barium-133	*98.8*			*30.0-143*	*10/07/2019 17:26*	WG1357396

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	-0.0903		0.483	0.809	09/30/2019 14:55	WG1351650
(T) Barium	*90.8*			*62.0-143*	*09/30/2019 14:55*	WG1351650
(T) Yttrium	*106*			*79.0-136*	*09/30/2019 14:55*	WG1351650

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	0.738		0.834	1.15	10/07/2019 17:26	WG1357396

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.738		0.351	0.34	10/07/2019 17:26	WG1357396
(T) Barium-133	*87.4*			*30.0-143*	*10/07/2019 17:26*	WG1357396

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	0.545		0.409	0.763	09/30/2019 14:55	WG1351650
(T) Barium	*94.7*			*62.0-143*	*09/30/2019 14:55*	WG1351650
(T) Yttrium	*104*			*79.0-136*	*09/30/2019 14:55*	WG1351650

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	1.06		0.688	0.972	10/07/2019 17:26	WG1357396

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.519		0.279	0.209	10/07/2019 17:26	WG1357396
(T) Barium-133	*96.1*			*30.0-143*	*10/07/2019 17:26*	WG1357396

Method Blank (MB)

(MB) R3456756-1 09/30/19 10:45

Analyte	MB Result pCi/l	MB Qualifier	MB MDA pCi/l
Radium-228	0.453		0.427
(T) Barium	*110*		
(T) Yttrium	*105*		

L1140736-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1140736-01 09/30/19 14:55 • (DUP) R3456756-5 09/30/19 10:45

Analyte	Original Result pCi/l	DUP Result pCi/l	Dilution	DUP RPD %	DUP RER	DUP Qualifier	DUP RPD Limits %	DUP RER Limit
Radium-228	-0.325	0.203	1	200	0.695		20	3
(T) Barium	*108*	*113*						
(T) Yttrium	*107*	*108*						

Laboratory Control Sample (LCS)

(LCS) R3456756-2 09/30/19 10:45

Analyte	Spike Amount pCi/l	LCS Result pCi/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Radium-228	5.00	5.83	117	80.0-120	
(T) Barium			*114*		
(T) Yttrium			*104*		

L1140088-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1140088-01 09/30/19 14:55 • (MS) R3456756-3 09/30/19 10:45 • (MSD) R3456756-4 09/30/19 10:45

Analyte	Spike Amount pCi/l	Original Result pCi/l	MS Result pCi/l	MSD Result pCi/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	MS RER	RPD Limits %
Radium-228	10.0	0.556	10.5	12.4	98.9	118	1	70.0-130			16.8		20
(T) Barium		*91.4*			*103*	*110*							
(T) Yttrium		*107*			*108*	*101*							

Method Blank (MB)

(MB) R3458990-1 10/07/19 12:41

Analyte	MB Result	MB Qualifier	MB MDA
	pCi/l		pCi/l
Radium-226	0.0292		0.0567
(T) Barium-133	*99.8*		

L1138569-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1138569-03 10/07/19 12:41 • (DUP) R3458990-5 10/07/19 12:41

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP RER	DUP Qualifier	DUP RPD Limits	DUP RER Limit
	pCi/l	pCi/l		%			%	
Radium-226	0.331	0.262	1	23.4	0.205		20	3
(T) Barium-133	*93.6*	*93.7*						

Laboratory Control Sample (LCS)

(LCS) R3458990-2 10/07/19 12:41

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	pCi/l	pCi/l	%	%	
Radium-226	5.02	5.44	108	80.0-120	
(T) Barium-133			*99.5*		

L1138569-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1138569-01 10/07/19 12:41 • (MS) R3458990-3 10/07/19 12:41 • (MSD) R3458990-4 10/07/19 12:41

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	MS RER	RPD Limits
	pCi/l	pCi/l	pCi/l	pCi/l	%	%		%			%		%
Radium-226	20.1	0.0903	20.4	20.5	101	101	1	75.0-125			0.686		20
(T) Barium-133		*105*			*104*	*94.2*							

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDA	Minimum Detectable Activity.
Rec.	Recovery.
RER	Replicate Error Ratio.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(T)	Tracer - A radioisotope of known concentration added to a solution of chemically equivalent radioisotopes at a known concentration to assist in monitoring the yield of the chemical separation.
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description

The remainder of this page intentionally left blank, there are no qualifiers applied to this SDG.

ACCREDITATIONS & LOCATIONS

Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.
* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.

Pace Analytical National Center for Testing & Innovation
Cooler Receipt Form

Client: DHLRTX	SDG#:	1140296
Cooler Received/Opened On: 9/17/19	Temperature:	Amb
Received By: Hailey Melson		
Signature: Hailey M		

Receipt Check List	NP	Yes	No
COC Seal Present / Intact?			
COC Signed / Accurate?		✓	
Bottles arrive intact?		✓	
Correct bottles used?		✓	
Sufficient volume sent?		✓	
If Applicable VOA Zero headspace?		✓	
Preservation Correct / Checked?			

CHAIN-OF-CUSTODY RECORD

DHL Analytical, Inc.
2300 Double Creek Drive
Round Rock, TX 78664
TEL: (512) 388-8222 FAX: (512) 388-8229

H015

Work Order: 1909083

1140296

Subcontractor:
Pace Analytical
12065 Lebanon Rd
Mt. Juliet, TN 37122

TEL: (615) 773-5923
FAX:
Acct #: DHLRRTX

11-Sep-19

Sample Id	Matrix	DHL#	Date Collected	Bottle Type	Ra-228 E904.0	Ra-226 M7500 Ra B M	Requested Tests				
BMW-24	Aqueous	-01C	09/09/19 07:45 AM	1LHDPEHNO3	1						-01
BMW-24	Aqueous	-01D	09/09/19 07:45 AM	1LHDPEHNO3		1					
BMW-23	Aqueous	-02C	09/09/19 08:40 AM	1LHDPEHNO3	1						02
BMW-23	Aqueous	-02D	09/09/19 08:40 AM	1LHDPEHNO3		1					
BMW-22	Aqueous	-03C	09/09/19 09:30 AM	1LHDPEHNO3	1						03
BMW-22	Aqueous	-03D	09/09/19 09:30 AM	1LHDPEHNO3		1					
BMW-33	Aqueous	-07C	09/09/19 02:05 PM	1LHDPEHNO3	1						04
BMW-33	Aqueous	-07D	09/09/19 02:05 PM	1LHDPEHNO3		1					
DUP-01	Aqueous	-08C	09/09/19 02:05 PM	1LHDPEHNO3	1						05
DUP-01	Aqueous	-08D	09/09/19 02:05 PM	1LHDPEHNO3		1					

General Comments: Please analyze these samples with Normal Turnaround Time.
Report RA-226, Ra-228 & Combined per Specs.
Quality Control Package Needed: Standard - NELAC Rad Test compliant
Email to cac@dhlanalytical.com & duponi@dhlanalytical.com

	Date/Time		Date/Time
Relinquished by:		Received by: Harley Mu	9/17/19 10:00
Relinquished by:		Received by:	

June 22, 2020

Will Vienne
Golder
2201 Double Creek Dr #4004
Round Rock, Texas 78664
TEL: (512) 671-3434
FAX (512) 671-3446

Order No.: 2005169

RE: A1 Area Landfill-CCR&MNA

Dear Will Vienne:

DHL Analytical, Inc. received 1 sample(s) on 5/21/2020 for the analyses presented in the following report.

There were no problems with the analyses and all data met requirements of NELAP except where noted in the Case Narrative. All non-NELAP methods will be identified accordingly in the case narrative and all estimated uncertainties of test results are within method or EPA specifications.

If you have any questions regarding these tests results, please feel free to call. Thank you for using DHL Analytical.

Sincerely,

John DuPont
General Manager

This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211-20-25

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DHL ANALYTICAL
2300 Double Creek Dr. ■ Round Rock, TX 78664
Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

№ 68311

CHAIN-OF-CUSTODY

CLIENT: GOLDER ASSOCIATES
ADDRESS: 2201 DOUBLE CREEK DR ROUND ROCK, TX 78664
PHONE: 512 671-3434 FAX/E-MAIL:
DATA REPORTED TO: WILL VIENNE
ADDITIONAL REPORT COPIES TO:

DATE: 5-20-20 PAGE 1 OF 1
PO #: DHL WORK ORDER #:
PROJECT LOCATION OR NAME: A1 AREA LANDFILL - CCR & MNA
CLENT PROJECT #: 19122262 COLLECTOR: J. BRAYTON

Authorize 5% surcharge for TRRP Report? ❑ Yes ❑ No

S=SOIL W=WATER A=AIR L=LIQUID SE=SEDIMENT
P=PAINT SL=SLUDGE O=OTHER SO=SOLID

PRESERVATION

ANALYSES: BTEX ❑ MTBE ❑ [METHOD 8021] | TPH 1005 ❑ TPH 1006 ❑ HOLD 1006 ❑ | GRO [METHOD 8015] ❑ DRO [METHOD 8105] ❑ | VOC 8260 ❑ VOC 624 ❑ VOC 8260/5035 ❑ | SVOC 8270 ❑ PAH 8270 ❑ HOLD PAH ❑ SVOC 625 ❑ | 8270 PEST ❑ 625 PEST/PCB ❑ 608 PCB ❑ 8270 PCB ❑ | 8270 O-P PEST ❑ 8082 PCB ❑ 8270 PCB ❑ | 8321 HERB ❑ T PHOS, AMMONIA ❑ | METALS 6020 ❑ METALS 200.8 ❑ DISS. METALS ❑ | RCRA ❑ TX11 ❑ | PH ❑ HEX CHROM ❑ ALKALINITY ❑ COD ❑ | CHLORIDE ❑ ANIONS ❑ | TCLP-SVOC ❑ VOC ❑ PEST ❑ HERB ❑ | TCLP-METALS ❑ RCRA 8 ❑ TX-11 ❑ Pb ❑ | RCI ❑ FLASHPOINT ❑ DGAS ❑ | TDS ❑ TSS ❑ % MOISTURE ❑ CYANIDE ❑ | APPENDIX III & IV | NO3+ Ppy, Na, Mn, K, Phosphorus | Perkins Fe | Ferric Fe

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	HCl	HNO_3	H_2SO_4 ❑ NaOH ❑	ICE	UNPRESERVED	FIELD NOTES
DISCHARGE SAMPLE		5-20-20	1530	W	P/G	9		X		X		

RELINQUISHED BY: (Signature) DATE/TIME 5-20-20 1830 RECEIVED BY: (Signature) FedEx
RELINQUISHED BY: (Signature) DATE/TIME 5.21.2020 0901 RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature) DATE/TIME RECEIVED BY: (Signature)

❑ DHL DISPOSAL @ $5.00 each ❑ Return

TURN AROUND TIME
RUSH ❑ CALL FIRST
1 DAY ❑ CALL FIRST
2 DAY ❑
NORMAL ☒
OTHER ❑

LABORATORY USE ONLY:
RECEIVING TEMP: 3.4/4.3/4.2/4.0 THERM #: 78
CUSTODY SEALS: ❑ BROKEN ☒ INTACT ❑ NOT USED
CARRIER: ❑ LONE STAR ☒ FEDEX ❑ UPS ❑ OTHER
❑ COURIER DELIVERY
❑ HAND DELIVERED

Eric Lau

From: John DuPont
Sent: Tuesday, May 28, 2019 11:35 AM
To: Eric Lau
Subject: FW: CCR Analysis

Appendix III Parameters:
Metals (Ca and B)
Anions (Cl, F, and SO4)
TDS

Appendix IV Parameters:

Metals (As, Ba, Be, Cd, Co, Cr, Hg, Li, Mo, Pb, Sb, Se, and Tl)
Ra-226
Ra-228

From: Vienne, Will [mailto:William_Vienne@golder.com]
Sent: Tuesday, April 09, 2019 12:48 PM
To: John DuPont <dupont@dhlanalytical.com>
Subject: CCR Analysis

DHL Analytical, Inc.

Sample Receipt Checklist

Client Name **Golder** Date Received: **5/21/2020**

Work Order Number **2005169** Received by: **JH**

Checklist completed by: [signature] 5/21/2020 Reviewed by [initials] 5/21/2020

Signature | Date | Initials | Date

Carrier name: FedEx 1day

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	3.4 °C/4.3/4.2/4.0
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH<2 acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted?		Checked by
Water - ph>9 (S) or ph>10 (CN) acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted?		Checked by

Any No response must be detailed in the comments section below.

Client contacted: _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments:

Corrective Action:

Laboratory Name: DHL Analytical, Inc.

Laboratory Review Checklist: Reportable Data

Project Name: A1 Area Landfill-CCR&MNA	**LRC Date:** 6/22/20
Reviewer Name: Carlos Castro	**Laboratory Work Order:** 2005169
Prep Batch Number(s): See Prep Dates Report	**Run Batch:** See Analytical Dates Report

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
		Chain-of-Custody (C-O-C)					
R1	OI	**1)** Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	**X**				**R1-01**
		2) Were all departures from standard conditions described in an exception report?			**X**		
R2	OI	**Sample and Quality Control (QC) Identification**					
		1) Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	**X**				
		2) Are all laboratory ID numbers cross-referenced to the corresponding QC data?	**X**				
R3	OI	**Test Reports**					
		1) Were all samples prepared and analyzed within holding times?	**X**				
		2) Other than those results < MQL, were all other raw values bracketed by calibration standards?	**X**				
		3) Were calculations checked by a peer or supervisor?	**X**				
		4) Were all analyte identifications checked by a peer or supervisor?	**X**				
		5) Were sample detection limits reported for all analytes not detected?	**X**				
		6) Were all results for soil and sediment samples reported on a dry weight basis?			**X**		
		7) Were % moisture (or solids) reported for all soil and sediment samples?			**X**		
		8) Were bulk soils/solids samples for volatile analysis extracted with methanol per EPA Method 5035?			**X**		
		9) If required for the project, TICs reported?			**X**		
R4	O	**Surrogate Recovery Data**					
		1) Were surrogates added prior to extraction?			**X**		
		2) Were surrogate percent recoveries in all samples within the laboratory QC limits?			**X**		
R5	OI	**Test Reports/Summary Forms for Blank Samples**					
		1) Were appropriate type(s) of blanks analyzed?	**X**				
		2) Were blanks analyzed at the appropriate frequency?	**X**				
		3) Where method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	**X**				
		4) Were blank concentrations < MDL?	**X**				
		5) For analyte(s) detected in a blank sample, was the concentration, unadjusted for sample specific factors, in all associated field samples, **greater** than 10 times the concentration in the blank sample?			**X**		
R6	OI	**Laboratory Control Samples (LCS):**					
		1) Were all COCs included in the LCS?	**X**				
		2) Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	**X**				
		3) Were LCSs analyzed at the required frequency?	**X**				
		4) Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	**X**				
		5) Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	**X**				
		6) Was the LCSD RPD within QC limits (if applicable)?	**X**				
R7	OI	**Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Data**					
		1) Were the project/method specified analytes included in the MS and MSD?	**X**				
		2) Were MS/MSD analyzed at the appropriate frequency?	**X**				
		3) Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?		**X**			**R7-03**
		4) Were MS/MSD RPDs within laboratory QC limits?	**X**				
R8	OI	**Analytical Duplicate Data**					
		1) Were appropriate analytical duplicates analyzed for each matrix?	**X**				
		2) Were analytical duplicates analyzed at the appropriate frequency?	**X**				
		3) Were RPDs or relative standard deviations within the laboratory QC limits?	**X**				
R9	OI	**Method Quantitation Limits (MQLs):**					
		1) Are the MQLs for each method analyte included in the laboratory data package?	**X**				
		2) Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	**X**				
		3) Are unadjusted MQLs and DCSs included in the laboratory data package?	**X**				
R10	OI	**Other Problems/Anomalies**					
		1) Are all known problems/anomalies/special conditions noted in this LRC and ER?	**X**				
		2) Was applicable and available technology used to lower the SDL to minimize the matrix interference affects on the sample results?	**X**				
		3) Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices and methods associated with this laboratory data package?	**X**				

Laboratory Name: DHL Analytical, Inc.

Laboratory Review Checklist (continued): Supporting Data

Project Name: A1 Area Landfill-CCR&MNA	**LRC Date:** 6/22/20
Reviewer Name: Carlos Castro	**Laboratory Work Order:** 2005169
Prep Batch Number(s): See Prep Dates Report	**Run Batch:** See Analytical Dates Report

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
S1	OI	**Initial Calibration (ICAL)**					
		1) Were response factors and/or relative response factors for each analyte within QC limits?	X				
		2) Were percent RSDs or correlation coefficient criteria met?	X				
		3) Was the number of standards recommended in the method used for all analytes?	X				
		4) Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		5) Are ICAL data available for all instruments used?	X				
		6) Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	**Initial and Continuing calibration Verification (ICCV and CCV) and Continuing Calibration blank (CCB):**					
		1) Was the CCV analyzed at the method-required frequency?	X				
		2) Were percent differences for each analyte within the method-required QC limits?	X				
		3) Was the ICAL curve verified for each analyte?	X				
		4) Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	X				
S3	O	**Mass Spectral Tuning:**					
		1) Was the appropriate compound for the method used for tuning?	X				
		2) Were ion abundance data within the method-required QC limits?	X				
S4	O	**Internal Standards (IS):**					
		1) Were IS area counts and retention times within the method-required QC limits?	X				
S5	OI	**Raw Data (NELAC Section 5.5.10)**					
		1) Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		2) Were data associated with manual integrations flagged on the raw data?	X				
S6	O	**Dual Column Confirmation**					
		1) Did dual column confirmation results meet the method-required QC?			X		
S7	O	**Tentatively Identified Compounds (TICs):**					
		1) If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) Results:**					
		1) Were percent recoveries within method QC limits?	X				
S9	I	**Serial Dilutions, Post Digestion Spikes, and Method of Standard Additions**					
		1) Were percent differences, recoveries, and the linearity within the QC limits specified in the method?		X			**S9-01**
S10	OI	**Method Detection Limit (MDL) Studies**					
		1) Was a MDL study performed for each reported analyte?	X				
		2) Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	**Proficiency Test Reports:**					
		1) Was the lab's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	**Standards Documentation**					
		1) Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound/Analyte Identification Procedures**					
		1) Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of Analyst Competency (DOC)**					
		1) Was DOC conducted consistent with NELAC Chapter 5 – Appendix C?	X				
		2) Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/Validation Documentation for Methods** (NELAC Chapter 5)					
		1) Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	**Laboratory Standard Operating Procedures (SOPs):**					
		1) Are laboratory SOPs current and on file for each method performed?	X				

1 Items identified by the letter "R" should be included in the laboratory data package submitted to the TCEQ in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.

2 O = organic analyses; I = inorganic analyses (and general chemistry, when applicable).

3 NA = Not applicable.

4 NR = Not Reviewed.

5 ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Data Package Signature Page – RG-366/TRRP-13

This data package consists of:

This signature page, the laboratory review checklist, and the following reportable data:

R1 Field chain-of-custody documentation;
R2 Sample identification cross-reference;
R3 Test reports (analytical data sheets) for each environmental sample that includes:
  a) Items consistent with NELAC Chapter 5,
  b) dilution factors,
  c) preparation methods,
  d) cleanup methods, and
  e) if required for the project, tentatively identified compounds (TICs).
R4 Surrogate recovery data including:
  a) Calculated recovery (%R), and
  b) The laboratory's surrogate QC limits.
R5 Test reports/summary forms for blank samples;
R6 Test reports/summary forms for laboratory control samples (LCSs) including:
  a) LCS spiking amounts,
  b) Calculated %R for each analyte, and
  c) The laboratory's LCS QC limits.
R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
  a) Samples associated with the MS/MSD clearly identified,
  b) MS/MSD spiking amounts,
  c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
  d) Calculated %Rs and relative percent differences (RPDs), and
  e) The laboratory's MS/MSD QC limits
R8 Laboratory analytical duplicate (if applicable) recovery and precision:
  a) The amount of analyte measured in the duplicate,
  b) The calculated RPD, and
  c) The laboratory's QC limits for analytical duplicates.
R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix;
R10 Other problems or anomalies.

The Exception Report for each "No" or "Not Reviewed (NR)" item in the Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory is not accredited under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature below, I affirm to the best of my knowledge that all problems/anomalies observed by the laboratory have been identified in the Laboratory Review Checklist, and no information or data affecting the quality of the data has been knowingly withheld.

This laboratory was last inspected by TCEQ on February 25-28 2019. Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Name: John DuPont
Official Title: General Manager

Signature

0□/22/20
Date

Name: Dr. Derhsing Luu
Official Title: Technical Director

DHL Analytical, Inc. **Date:** *22-Jun-20*

CLIENT: Golder
Project: A1 Area Landfill-CCR&MNA
Lab Order: 2005169

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Method SW6020B - Metals Analysis
Method SW7470A - Mercury Analysis
Method E300 - Anions Analysis
Method M2320 B - Alkalinity Analysis
Method M4500-P E - Orthophosphate Analysis
Method M2540C - TDS Analysis
Method M3500-Fe D - Ferrous Iron Analysis (this parameter is not NELAP certified)
Method M3500-Fe D - Ferric Iron (calculation) (this calculation is not NELAP certified)
Sub-contract - Radium-228 and Radium-226 analyses by methods E904 and SM 7500 Ra B M. Analyzed at Pace Analytical.

Exception Report R1-01

The sample was received and log-in performed on 5/21/20. A total of 1 sample was received. The sample arrived in good condition and was properly packaged.

Exception Report R7-03

For Metals analysis performed on 5/27/20 the matrix spike and matrix spike duplicate recoveries were below control limits for Sodium. These are flagged accordingly in the QC summary report. The sample selected for the matrix spike and matrix spike duplicate was not from this work order. The LCS was within control limits for this analyte. No further corrective actions were taken.

Exception Report S9-01

For Metals analysis performed on 5/27/20 the PDS recovery was □□□□□ control limits for Sodium. This is flagged accordingly in the QC summary report. The serial dilution was within control limits for this analyte. No further corrective actions were taken.

DHL Analytical, Inc.

Date: *22-Jun-20*

CLIENT: Golder
Project: A1 Area Landfill-CCR&MNA
Lab Order: 2005169

Work Order Sample Summary

Lab Smp ID	Client Sample ID	Tag Number	Date Collected	Date Recved
2005169-01	Discharge Sample		05/20/20 03:30 PM	5/21/2020

Lab Order: 2005169
Client: Golder
Project: A1 Area Landfill-CCR&MNA

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
2005169-01A	Discharge Sample	05/20/20 03:30 PM	Aqueous	M3500-Fe	Ferrous Iron Prep Water	05/22/20 03:45 PM	96483
2005169-01B	Discharge Sample	05/20/20 03:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/26/20 07:51 AM	96489
	Discharge Sample	05/20/20 03:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/26/20 07:51 AM	96489
	Discharge Sample	05/20/20 03:30 PM	Aqueous	SW7470A	Mercury Aq Prep	05/29/20 09:52 AM	96560
2005169-01C	Discharge Sample	05/20/20 03:30 PM	Aqueous	M2320 B	Alkalinity Preparation	05/22/20 09:11 AM	96471
	Discharge Sample	05/20/20 03:30 PM	Aqueous	E300	Anion Preparation	05/21/20 09:05 AM	96435
	Discharge Sample	05/20/20 03:30 PM	Aqueous	E300	Anion Preparation	05/21/20 09:05 AM	96435
	Discharge Sample	05/20/20 03:30 PM	Aqueous	M4500-P E	Orthophosphate Prep	05/21/20 02:34 PM	96457
	Discharge Sample	05/20/20 03:30 PM	Aqueous	M2540C	TDS Preparation	05/21/20 11:48 AM	96451

Lab Order: 2005169
Client: Golder
Project: A1 Area Landfill-CCR&MNA

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
2005169-01A	Discharge Sample	Aqueous	M3500-Fe D	Ferric Iron (Calculated)	96483	1	05/22/20 03:50 PM	UV/VIS_2_200522D
	Discharge Sample	Aqueous	M3500-Fe D	Ferrous Iron	96483	1	05/22/20 04:42 PM	UV/VIS_2_200522C
2005169-01B	Discharge Sample	Aqueous	SW7470A	Mercury Total: Aqueous	96560	1	05/31/20 03:30 PM	CETAC2_HG_200531A
	Discharge Sample	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	96489	20	05/28/20 11:32 AM	ICP-MS5_200528A
	Discharge Sample	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	96489	1	05/27/20 01:19 PM	ICP-MS4_200527A
2005169-01C	Discharge Sample	Aqueous	M2320 B	Alkalinity	96471	1	05/22/20 02:32 PM	TITRATOR_200522A
	Discharge Sample	Aqueous	E300	Anions by IC method - Water	96435	50	05/21/20 05:19 PM	IC2_200521A
	Discharge Sample	Aqueous	E300	Anions by IC method - Water	96435	1	05/21/20 01:53 PM	IC2_200521A
	Discharge Sample	Aqueous	M4500-P E	Orthophosphate	96457	1	05/21/20 03:24 PM	UV/VIS_2_200521C
	Discharge Sample	Aqueous	M2540C	Total Dissolved Solids	96451	1	05/21/20 04:50 PM	WC_200521B

DHL Analytical, Inc.

Date: *22-Jun-20*

CLIENT:	Golder	**Client Sample ID:**	Discharge Sample
Project:	A1 Area Landfill-CCR&MNA	**Lab ID:**	2005169-01
Project No:	19122262-D2020	**Collection Date:**	05/20/20 03:30 PM
Lab Order:	2005169	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	05/27/20 01:19 PM
Arsenic	0.00217	0.00200	0.00500	J	mg/L	1	05/27/20 01:19 PM
Barium	0.0830	0.00300	0.0100		mg/L	1	05/27/20 01:19 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	05/27/20 01:19 PM
Boron	15.3	0.200	0.600		mg/L	20	05/28/20 11:32 AM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	05/27/20 01:19 PM
Calcium	330	2.00	6.00		mg/L	20	05/28/20 11:32 AM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	05/27/20 01:19 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	05/27/20 01:19 PM
Iron	0.0844	0.0300	0.100	J	mg/L	1	05/27/20 01:19 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	05/27/20 01:19 PM
Lithium	0.00659	0.00500	0.0100	J	mg/L	1	05/27/20 01:19 PM
Magnesium	19.1	2.00	6.00		mg/L	20	05/28/20 11:32 AM
Molybdenum	1.04	0.00200	0.00500		mg/L	1	05/27/20 01:19 PM
Potassium	28.4	2.00	6.00		mg/L	20	05/28/20 11:32 AM
Selenium	0.0193	0.00200	0.00500		mg/L	1	05/27/20 01:19 PM
Sodium	299	2.00	6.00		mg/L	20	05/28/20 11:32 AM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	05/27/20 01:19 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	05/31/20 03:30 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	389	15.0	50.0		mg/L	50	05/21/20 05:19 PM
Fluoride	0.245	0.100	0.400	J	mg/L	1	05/21/20 01:53 PM
Nitrate-N	<0.100	0.100	0.500		mg/L	1	05/21/20 01:53 PM
Sulfate	929	50.0	150		mg/L	50	05/21/20 05:19 PM
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	75.8	10.0	20.0		mg/L @ pH 4.45	1	05/22/20 02:32 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.45	1	05/22/20 02:32 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.45	1	05/22/20 02:32 PM
Alkalinity, Total (As CaCO3)	75.8	20.0	20.0		mg/L @ pH 4.45	1	05/22/20 02:32 PM
FERRIC IRON (CALCULATED)		**M3500-FE D**					Analyst: **CAC**
Iron, Ferric	0.0844	0.0500	0.100	JN	mg/L	1	05/22/20 03:50 PM
FERROUS IRON		**M3500-FE D**					Analyst: **BTJ**
Iron, Ferrous	<0.0500	0.0500	0.100	N	mg/L	1	05/22/20 04:42 PM

Qualifiers:

ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *22-Jun-20*

CLIENT:	Golder	**Client Sample ID:**	Discharge Sample
Project:	A1 Area Landfill-CCR&MNA	**Lab ID:**	2005169-01
Project No:	19122262-D2020	**Collection Date:**	05/20/20 03:30 PM
Lab Order:	2005169	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ORTHOPHOSPHATE		**M4500-P E**					Analyst: **BTJ**
Phosphorus, Total Orthophosphate (As P)	<0.0300	0.0300	0.100		mg/L	1	05/21/20 03:24 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	2140	50.0	50.0		mg/L	1	05/21/20 04:50 PM

Qualifiers:

- ND - Not Detected at the SDL
- J - Analyte detected between SDL and RL
- B - Analyte detected in the associated Method Blank
- DF- Dilution Factor
- N - Parameter not NELAP certified
- See Final Page of Report for MQLs and MDLs
- S - Spike Recovery outside control limits
- C - Sample Result or QC discussed in Case Narrative
- RL - Reporting Limit (MQL adjusted for moisture and sample size)
- SDL - Sample Detection Limit
- E - TPH pattern not Gas or Diesel Range Pattern

CLIENT: Golder
Work Order: 2005169
Project: A1 Area Landfill-CCR&MNA

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_200304C

Sample ID: **DCS-95289**	Batch ID: **95289**	TestNo: **SW7470A**	Units: **mg/L**		
SampType: **DCS**	Run ID: **CETAC2_HG_200304C**	Analysis Date: **3/4/2020 12:11:09 PM**	Prep Date: **3/4/2020**		

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.000175	0.000200	0.000200	0	87.5	82	119	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005169
Project: A1 Area Landfill-CCR&MNA

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_200531A

The QC data in batch 96560 applies to the following samples: 2005169-01B

Sample ID: **MB-96560**	Batch ID: **96560**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **MBLK**	Run ID: **CETAC2_HG_200531A**	Analysis Date: **5/31/2020 3:05:30 PM**	Prep Date: **5/29/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.0000800	0.000200								

Sample ID: **LCS-96560**	Batch ID: **96560**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **LCS**	Run ID: **CETAC2_HG_200531A**	Analysis Date: **5/31/2020 3:07:46 PM**	Prep Date: **5/29/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00173	0.000200	0.00200	0	86.5	85	115			

Sample ID: **LCSD-96560**	Batch ID: **96560**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **LCSD**	Run ID: **CETAC2_HG_200531A**	Analysis Date: **5/31/2020 3:10:02 PM**	Prep Date: **5/29/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00173	0.000200	0.00200	0	86.5	85	115	0	15	

Sample ID: **2005182-12A MS**	Batch ID: **96560**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **MS**	Run ID: **CETAC2_HG_200531A**	Analysis Date: **5/31/2020 4:02:16 PM**	Prep Date: **5/29/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00177	0.000200	0.00200	0	88.5	80	120			

Sample ID: **2005182-12A MSD**	Batch ID: **96560**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **MSD**	Run ID: **CETAC2_HG_200531A**	Analysis Date: **5/31/2020 4:04:32 PM**	Prep Date: **5/29/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00167	0.000200	0.00200	0	83.5	80	120	5.81	15	

Sample ID: **2005182-12A SD**	Batch ID: **96560**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **SD**	Run ID: **CETAC2_HG_200531A**	Analysis Date: **5/31/2020 4:06:49 PM**	Prep Date: **5/29/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.000400	0.00100	0	0				0	10	

Sample ID: **2005182-12A PDS**	Batch ID: **96560**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **PDS**	Run ID: **CETAC2_HG_200531A**	Analysis Date: **5/31/2020 4:09:05 PM**	Prep Date: **5/29/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00224	0.000200	0.00250	0	89.6	85	115			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005169
Project: A1 Area Landfill-CCR&MNA

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_200531A

Sample ID: **ICV-200531**	Batch ID: **R110721**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **ICV**	Run ID: **CETAC2_HG_200531A**	Analysis Date: **5/31/2020 1:44:04 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00373	0.000200	0.00400	0	93.2	90	110			

Sample ID: **CCV3-200531**	Batch ID: **R110721**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_200531A**	Analysis Date: **5/31/2020 3:00:56 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00196	0.000200	0.00200	0	98.0	90	110			

Sample ID: **CCV4-200531**	Batch ID: **R110721**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_200531A**	Analysis Date: **5/31/2020 3:34:59 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00205	0.000200	0.00200	0	103	90	110			

Sample ID: **CCV5-200531**	Batch ID: **R110721**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_200531A**	Analysis Date: **5/31/2020 4:11:23 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00195	0.000200	0.00200	0	97.5	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005169
Project: A1 Area Landfill-CCR&MNA

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_200415A

Sample ID: **DCS1-95814** Batch ID: **95814** TestNo: **SW6020B** Units: **mg/L**
SampType: **DCS** Run ID: **ICP-MS4_200415A** Analysis Date: **4/15/2020 2:59:00 PM** Prep Date: **4/7/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.000868	0.00250	0.00100	0	86.8	70	130	0	0	
Beryllium	0.000462	0.00100	0.000500	0	92.4	70	130	0	0	
Cadmium	0.000452	0.00100	0.000500	0	90.4	70	130	0	0	
Lead	0.000467	0.00100	0.000500	0	93.4	70	130	0	0	
Thallium	0.000455	0.00150	0.000500	0	91.0	70	130	0	0	

Sample ID: **DCS2-95814** Batch ID: **95814** TestNo: **SW6020B** Units: **mg/L**
SampType: **DCS2** Run ID: **ICP-MS4_200415A** Analysis Date: **4/15/2020 3:02:00 PM** Prep Date: **4/7/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.296	0.300	0.300	0	98.6	70	130	0	0	
Iron	0.0613	0.100	0.0500	0	123	70	130	0	0	
Magnesium	0.305	0.300	0.300	0	102	70	130	0	0	
Potassium	0.296	0.300	0.300	0	98.7	70	130	0	0	
Sodium	0.292	0.300	0.300	0	97.3	70	130	0	0	

Sample ID: **DCS3-95814** Batch ID: **95814** TestNo: **SW6020B** Units: **mg/L**
SampType: **DCS3** Run ID: **ICP-MS4_200415A** Analysis Date: **4/15/2020 3:05:00 PM** Prep Date: **4/7/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.00520	0.00500	0.00500	0	104	70	130	0	0	
Barium	0.00532	0.0100	0.00500	0	106	70	130	0	0	
Chromium	0.00563	0.00500	0.00500	0	113	70	130	0	0	
Cobalt	0.00530	0.00500	0.00500	0	106	70	130	0	0	
Lithium	0.00507	0.0100	0.00500	0	101	70	130	0	0	
Molybdenum	0.00539	0.00500	0.00500	0	108	70	130	0	0	
Selenium	0.00530	0.00500	0.00500	0	106	70	130	0	0	

Sample ID: **DCS4-95814** Batch ID: **95814** TestNo: **SW6020B** Units: **mg/L**
SampType: **DCS4** Run ID: **ICP-MS4_200415A** Analysis Date: **4/15/2020 3:08:00 PM** Prep Date: **4/7/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0264	0.0300	0.0300	0	88.2	70	130	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005169
Project: A1 Area Landfill-CCR&MNA

ANALYTICAL QC SUMMARY REPORT

RunID: **ICP-MS4_200527A**

The QC data in batch 96489 applies to the following samples: 2005169-01B

Sample ID: **MB-96489** Batch ID: **96489** TestNo: **SW6020B** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_200527A** Analysis Date: **5/27/2020 1:01:00 PM** Prep Date: **5/26/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.000800	0.00250								
Arsenic	<0.00200	0.00500								
Barium	<0.00300	0.0100								
Beryllium	<0.000300	0.00100								
Boron	<0.0100	0.0300								
Cadmium	<0.000300	0.00100								
Calcium	<0.100	0.300								
Chromium	<0.00200	0.00500								
Cobalt	<0.00300	0.00500								
Iron	<0.0300	0.100								
Lead	<0.000300	0.00100								
Lithium	<0.00500	0.0100								
Magnesium	<0.100	0.300								
Molybdenum	<0.00200	0.00500								
Potassium	<0.100	0.300								
Selenium	<0.00200	0.00500								
Sodium	<0.100	0.300								
Thallium	<0.000500	0.00150								

Sample ID: **LCS-96489** Batch ID: **96489** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_200527A** Analysis Date: **5/27/2020 1:03:00 PM** Prep Date: **5/26/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.201	0.00250	0.200	0	101	80	120			
Arsenic	0.209	0.00500	0.200	0	105	80	120			
Barium	0.201	0.0100	0.200	0	100	80	120			
Beryllium	0.204	0.00100	0.200	0	102	80	120			
Boron	0.208	0.0300	0.200	0	104	80	120			
Cadmium	0.203	0.00100	0.200	0	102	80	120			
Calcium	4.78	0.300	5.00	0	95.7	80	120			
Chromium	0.207	0.00500	0.200	0	103	80	120			
Cobalt	0.206	0.00500	0.200	0	103	80	120			
Iron	5.07	0.100	5.00	0	101	80	120			
Lead	0.202	0.00100	0.200	0	101	80	120			
Lithium	0.201	0.0100	0.200	0	100	80	120			
Magnesium	5.22	0.300	5.00	0	104	80	120			
Molybdenum	0.201	0.00500	0.200	0	101	80	120			
Potassium	5.23	0.300	5.00	0	105	80	120			
Selenium	0.212	0.00500	0.200	0	106	80	120			
Sodium	5.19	0.300	5.00	0	104	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005169
Project: A1 Area Landfill-CCR&MNA

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_200527A

Sample ID: **LCS-96489** Batch ID: **96489** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_200527A** Analysis Date: **5/27/2020 1:03:00 PM** Prep Date: **5/26/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Thallium	0.204	0.00150	0.200	0	102	80	120			

Sample ID: **LCSD-96489** Batch ID: **96489** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_200527A** Analysis Date: **5/27/2020 1:05:00 PM** Prep Date: **5/26/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.199	0.00250	0.200	0	99.7	80	120	0.837	15	
Arsenic	0.203	0.00500	0.200	0	101	80	120	3.30	15	
Barium	0.199	0.0100	0.200	0	99.6	80	120	0.685	15	
Beryllium	0.201	0.00100	0.200	0	101	80	120	1.55	15	
Boron	0.190	0.0300	0.200	0	95.2	80	120	8.80	15	
Cadmium	0.202	0.00100	0.200	0	101	80	120	0.610	15	
Calcium	4.73	0.300	5.00	0	94.6	80	120	1.11	15	
Chromium	0.201	0.00500	0.200	0	100	80	120	2.87	15	
Cobalt	0.200	0.00500	0.200	0	100	80	120	2.54	15	
Iron	4.93	0.100	5.00	0	98.6	80	120	2.81	15	
Lead	0.203	0.00100	0.200	0	102	80	120	0.679	15	
Lithium	0.192	0.0100	0.200	0	95.8	80	120	4.64	15	
Magnesium	5.05	0.300	5.00	0	101	80	120	3.41	15	
Molybdenum	0.200	0.00500	0.200	0	99.8	80	120	0.845	15	
Potassium	5.05	0.300	5.00	0	101	80	120	3.41	15	
Selenium	0.201	0.00500	0.200	0	101	80	120	5.18	15	
Sodium	5.05	0.300	5.00	0	101	80	120	2.70	15	
Thallium	0.210	0.00150	0.200	0	105	80	120	2.78	15	

Sample ID: **2005182-03A SD** Batch ID: **96489** TestNo: **SW6020B** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS4_200527A** Analysis Date: **5/27/2020 1:15:00 PM** Prep Date: **5/26/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.00400	0.0125	0	0.00114				0	20	
Arsenic	0.0286	0.0250	0	0.0285				0.444	20	
Barium	0.0161	0.0500	0	0.0171				5.87	20	
Beryllium	<0.00150	0.00500	0	0				0	20	
Boron	0.255	0.150	0	0.234				8.55	20	
Cadmium	<0.00150	0.00500	0	0				0	20	
Calcium	5.34	1.50	0	5.40				1.11	20	
Chromium	<0.0100	0.0250	0	0				0	20	
Cobalt	<0.0150	0.0250	0	0				0	20	
Iron	0.583	0.500	0	0.574				1.44	20	
Lead	<0.00150	0.00500	0	0				0	20	
Lithium	<0.0250	0.0500	0	0				0	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005169
Project: A1 Area Landfill-CCR&MNA

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_200527A

Sample ID: **2005182-03A SD**	Batch ID: **96489**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS4_200527A**	Analysis Date: **5/27/2020 1:15:00 PM**	Prep Date: **5/26/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Magnesium	0.871	1.50	0	0.862				1.04	20	
Molybdenum	0.215	0.0250	0	0.220				2.13	20	
Potassium	7.96	1.50	0	7.99				0.405	20	
Selenium	<0.0100	0.0250	0	0				0	20	
Sodium	96.7	1.50	0	96.2				0.539	20	
Thallium	<0.00250	0.00750	0	0				0	20	

Sample ID: **2005182-03A PDS**	Batch ID: **96489**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_200527A**	Analysis Date: **5/27/2020 1:39:00 PM**	Prep Date: **5/26/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.203	0.00250	0.200	0.00114	101	75	125			
Arsenic	0.230	0.00500	0.200	0.0285	101	75	125			
Barium	0.221	0.0100	0.200	0.0171	102	75	125			
Beryllium	0.194	0.00100	0.200	0	97.0	75	125			
Boron	0.426	0.0300	0.200	0.234	95.9	75	125			
Cadmium	0.200	0.00100	0.200	0	100	75	125			
Calcium	9.80	0.300	5.00	5.40	88.1	75	125			
Chromium	0.206	0.00500	0.200	0	103	75	125			
Cobalt	0.203	0.00500	0.200	0	102	75	125			
Iron	5.46	0.100	5.00	0.574	97.7	75	125			
Lead	0.206	0.00100	0.200	0	103	75	125			
Lithium	0.186	0.0100	0.200	0	92.8	75	125			
Magnesium	5.64	0.300	5.00	0.862	95.6	75	125			
Molybdenum	0.400	0.00500	0.200	0.220	90.0	75	125			
Potassium	12.5	0.300	5.00	7.99	90.7	75	125			
Selenium	0.202	0.00500	0.200	0	101	75	125			
Sodium	92.7	0.300	5.00	96.2	-70.5	75	125			S
Thallium	0.209	0.00150	0.200	0	104	75	125			

Sample ID: **2005182-03A MS**	Batch ID: **96489**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS4_200527A**	Analysis Date: **5/27/2020 1:41:00 PM**	Prep Date: **5/26/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.202	0.00250	0.200	0.00114	100	75	125			
Arsenic	0.232	0.00500	0.200	0.0285	102	75	125			
Barium	0.218	0.0100	0.200	0.0171	100	75	125			
Beryllium	0.194	0.00100	0.200	0	97.1	75	125			
Boron	0.443	0.0300	0.200	0.234	104	75	125			
Cadmium	0.201	0.00100	0.200	0	100	75	125			
Calcium	9.99	0.300	5.00	5.40	91.8	75	125			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005169
Project: A1 Area Landfill-CCR&MNA

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_200527A

Sample ID: **2005182-03A MS**	Batch ID: **96489**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS4_200527A**	Analysis Date: **5/27/2020 1:41:00 PM**	Prep Date: **5/26/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chromium	0.202	0.00500	0.200	0	101	75	125			
Cobalt	0.199	0.00500	0.200	0	99.7	75	125			
Iron	5.45	0.100	5.00	0.574	97.5	75	125			
Lead	0.205	0.00100	0.200	0	103	75	125			
Lithium	0.185	0.0100	0.200	0	92.3	75	125			
Magnesium	5.85	0.300	5.00	0.862	99.7	75	125			
Molybdenum	0.412	0.00500	0.200	0.220	95.7	75	125			
Potassium	13.0	0.300	5.00	7.99	100	75	125			
Selenium	0.188	0.00500	0.200	0	94.1	75	125			
Sodium	97.7	0.300	5.00	96.2	30.4	75	125			S
Thallium	0.208	0.00150	0.200	0	104	75	125			

Sample ID: **2005182-03A MSD**	Batch ID: **96489**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS4_200527A**	Analysis Date: **5/27/2020 1:43:00 PM**	Prep Date: **5/26/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.204	0.00250	0.200	0.00114	102	75	125	1.06	15	
Arsenic	0.234	0.00500	0.200	0.0285	103	75	125	0.775	15	
Barium	0.220	0.0100	0.200	0.0171	102	75	125	1.14	15	
Beryllium	0.194	0.00100	0.200	0	96.8	75	125	0.279	15	
Boron	0.446	0.0300	0.200	0.234	106	75	125	0.778	15	
Cadmium	0.198	0.00100	0.200	0	99.0	75	125	1.31	15	
Calcium	10.1	0.300	5.00	5.40	93.4	75	125	0.775	15	
Chromium	0.199	0.00500	0.200	0	99.5	75	125	1.61	15	
Cobalt	0.200	0.00500	0.200	0	100	75	125	0.356	15	
Iron	5.42	0.100	5.00	0.574	97.0	75	125	0.499	15	
Lead	0.206	0.00100	0.200	0	103	75	125	0.092	15	
Lithium	0.189	0.0100	0.200	0	94.7	75	125	2.57	15	
Magnesium	5.85	0.300	5.00	0.862	99.9	75	125	0.136	15	
Molybdenum	0.418	0.00500	0.200	0.220	98.9	75	125	1.52	15	
Potassium	12.9	0.300	5.00	7.99	99.2	75	125	0.303	15	
Selenium	0.190	0.00500	0.200	0	94.8	75	125	0.733	15	
Sodium	97.6	0.300	5.00	96.2	29.4	75	125	0.053	15	S
Thallium	0.208	0.00150	0.200	0	104	75	125	0.222	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005169
Project: A1 Area Landfill-CCR&MNA

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_200527A

Sample ID: **ICV-200527**	Batch ID: **R110665**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_200527A**	Analysis Date: **5/27/2020 12:08:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.102	0.00250	0.100	0	102	90	110			
Arsenic	0.105	0.00500	0.100	0	105	90	110			
Barium	0.102	0.0100	0.100	0	102	90	110			
Beryllium	0.103	0.00100	0.100	0	103	90	110			
Boron	0.0995	0.0300	0.100	0	99.5	90	110			
Cadmium	0.103	0.00100	0.100	0	103	90	110			
Calcium	2.48	0.300	2.50	0	99.4	90	110			
Chromium	0.107	0.00500	0.100	0	107	90	110			
Cobalt	0.107	0.00500	0.100	0	107	90	110			
Iron	2.55	0.100	2.50	0	102	90	110			
Lead	0.104	0.00100	0.100	0	104	90	110			
Lithium	0.101	0.0100	0.100	0	101	90	110			
Magnesium	2.61	0.300	2.50	0	104	90	110			
Molybdenum	0.101	0.00500	0.100	0	101	90	110			
Potassium	2.66	0.300	2.50	0	106	90	110			
Selenium	0.104	0.00500	0.100	0	104	90	110			
Sodium	2.68	0.300	2.50	0	107	90	110			
Thallium	0.104	0.00150	0.100	0	104	90	110			

Sample ID: **LCVL-200527**	Batch ID: **R110665**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_200527A**	Analysis Date: **5/27/2020 12:17:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00204	0.00250	0.00200	0	102	80	120			
Arsenic	0.00510	0.00500	0.00500	0	102	80	120			
Barium	0.00529	0.0100	0.00500	0	106	80	120			
Beryllium	0.00110	0.00100	0.00100	0	110	80	120			
Boron	0.0200	0.0300	0.0200	0	99.9	80	120			
Cadmium	0.00102	0.00100	0.00100	0	102	80	120			
Calcium	0.0931	0.300	0.100	0	93.1	80	120			
Chromium	0.00516	0.00500	0.00500	0	103	80	120			
Cobalt	0.00517	0.00500	0.00500	0	103	80	120			
Iron	0.103	0.100	0.100	0	103	80	120			
Lead	0.000992	0.00100	0.00100	0	99.2	80	120			
Lithium	0.0105	0.0100	0.0100	0	105	80	120			
Magnesium	0.105	0.300	0.100	0	105	80	120			
Molybdenum	0.00526	0.00500	0.00500	0	105	80	120			
Potassium	0.103	0.300	0.100	0	103	80	120			
Selenium	0.00533	0.00500	0.00500	0	107	80	120			
Sodium	0.106	0.300	0.100	0	106	80	120			
Thallium	0.000963	0.00150	0.00100	0	96.3	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005169
Project: A1 Area Landfill-CCR&MNA

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_200527A

Sample ID: **CCV2-200527**	Batch ID: **R110665**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_200527A**	Analysis Date: **5/27/2020 12:57:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.198	0.00250	0.200	0	98.8	90	110			
Arsenic	0.205	0.00500	0.200	0	102	90	110			
Barium	0.200	0.0100	0.200	0	100	90	110			
Beryllium	0.206	0.00100	0.200	0	103	90	110			
Boron	0.216	0.0300	0.200	0	108	90	110			
Cadmium	0.202	0.00100	0.200	0	101	90	110			
Calcium	4.75	0.300	5.00	0	95.1	90	110			
Chromium	0.204	0.00500	0.200	0	102	90	110			
Cobalt	0.202	0.00500	0.200	0	101	90	110			
Iron	5.07	0.100	5.00	0	101	90	110			
Lead	0.200	0.00100	0.200	0	100	90	110			
Lithium	0.206	0.0100	0.200	0	103	90	110			
Magnesium	5.11	0.300	5.00	0	102	90	110			
Molybdenum	0.201	0.00500	0.200	0	101	90	110			
Potassium	5.11	0.300	5.00	0	102	90	110			
Selenium	0.207	0.00500	0.200	0	103	90	110			
Sodium	5.06	0.300	5.00	0	101	90	110			
Thallium	0.203	0.00150	0.200	0	102	90	110			

Sample ID: **CCV3-200527**	Batch ID: **R110665**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_200527A**	Analysis Date: **5/27/2020 2:09:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.196	0.00250	0.200	0	98.0	90	110			
Arsenic	0.205	0.00500	0.200	0	102	90	110			
Barium	0.198	0.0100	0.200	0	99.1	90	110			
Beryllium	0.200	0.00100	0.200	0	99.8	90	110			
Boron	0.216	0.0300	0.200	0	108	90	110			
Cadmium	0.201	0.00100	0.200	0	101	90	110			
Calcium	4.74	0.300	5.00	0	94.8	90	110			
Chromium	0.203	0.00500	0.200	0	102	90	110			
Cobalt	0.202	0.00500	0.200	0	101	90	110			
Iron	5.00	0.100	5.00	0	100	90	110			
Lead	0.200	0.00100	0.200	0	99.8	90	110			
Lithium	0.198	0.0100	0.200	0	98.8	90	110			
Magnesium	5.10	0.300	5.00	0	102	90	110			
Molybdenum	0.200	0.00500	0.200	0	100	90	110			
Potassium	5.13	0.300	5.00	0	103	90	110			
Selenium	0.205	0.00500	0.200	0	102	90	110			
Sodium	5.09	0.300	5.00	0	102	90	110			
Thallium	0.202	0.00150	0.200	0	101	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005169
Project: A1 Area Landfill-CCR&MNA

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_200408C

Sample ID: **DCS2-95814**	Batch ID: **95814**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS2**	Run ID: **ICP-MS5_200408C**	Analysis Date: **4/8/2020 11:19:00 AM**	Prep Date: **4/7/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.310	0.300	0.300	0	103	70	130	0	0	
Magnesium	0.298	0.300	0.300	0	99.3	70	130	0	0	
Potassium	0.285	0.300	0.300	0	95.1	70	130	0	0	
Sodium	0.295	0.300	0.300	0	98.4	70	130	0	0	

Sample ID: **DCS4-95814**	Batch ID: **95814**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS4**	Run ID: **ICP-MS5_200408C**	Analysis Date: **4/8/2020 11:28:00 AM**	Prep Date: **4/7/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0286	0.0300	0.0300	0	95.2	70	130	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005169
Project: A1 Area Landfill-CCR&MNA

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_200528A

Sample ID: **ICV-200528**	Batch ID: **R110690**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS5_200528A**	Analysis Date: **5/28/2020 11:00:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.104	0.0300	0.100	0	104	90	110			
Calcium	2.59	0.300	2.50	0	104	90	110			
Magnesium	2.50	0.300	2.50	0	99.8	90	110			
Potassium	2.52	0.300	2.50	0	101	90	110			
Sodium	2.63	0.300	2.50	0	105	90	110			

Sample ID: **LCVL-200528**	Batch ID: **R110690**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_200528A**	Analysis Date: **5/28/2020 11:07:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0226	0.0300	0.0200	0	113	80	120			
Calcium	0.107	0.300	0.100	0	107	80	120			
Magnesium	0.101	0.300	0.100	0	101	80	120			
Potassium	0.0947	0.300	0.100	0	94.7	80	120			
Sodium	0.103	0.300	0.100	0	103	80	120			

Sample ID: **CCV1-200528**	Batch ID: **R110690**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_200528A**	Analysis Date: **5/28/2020 11:56:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.201	0.0300	0.200	0	101	90	110			
Calcium	5.03	0.300	5.00	0	101	90	110			
Magnesium	5.00	0.300	5.00	0	100	90	110			
Potassium	4.94	0.300	5.00	0	98.8	90	110			
Sodium	5.09	0.300	5.00	0	102	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005169
Project: A1 Area Landfill-CCR&MNA

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_200519B

Sample ID: **DCS2-96406** Batch ID: **96406** TestNo: **E300** Units: **mg/L**
SampType: **DCS2** Run ID: **IC2_200519B** Analysis Date: **5/19/2020 11:56:12 AM** Prep Date: **5/19/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	0.440	1.00	0.5000	0	88.1	70	130	0	0	
Fluoride	0.176	0.400	0.2000	0	87.8	70	130	0	0	
Nitrate-N	0.254	0.0500	0.2500	0	102	70	130	0	0	
Sulfate	1.69	3.00	1.500	0	113	70	130	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005169
Project: A1 Area Landfill-CCR&MNA

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_200521A

The QC data in batch 96435 applies to the following samples: 2005169-01C

Sample ID: **MB-96435** Batch ID: **96435** TestNo: **E300** Units: **mg/L**
SampType: **MBLK** Run ID: **IC2_200521A** Analysis Date: **5/21/2020 10:30:59 AM** Prep Date: **5/21/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00								
Fluoride	<0.100	0.400								
Nitrate-N	<0.100	0.500								
Sulfate	<1.00	3.00								

Sample ID: **LCS-96435** Batch ID: **96435** TestNo: **E300** Units: **mg/L**
SampType: **LCS** Run ID: **IC2_200521A** Analysis Date: **5/21/2020 10:46:59 AM** Prep Date: **5/21/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.75	1.00	10.00	0	97.5	90	110			
Fluoride	3.63	0.400	4.000	0	90.8	90	110			
Nitrate-N	4.84	0.500	5.000	0	96.8	90	110			
Sulfate	29.3	3.00	30.00	0	97.6	90	110			

Sample ID: **LCSD-96435** Batch ID: **96435** TestNo: **E300** Units: **mg/L**
SampType: **LCSD** Run ID: **IC2_200521A** Analysis Date: **5/21/2020 11:02:59 AM** Prep Date: **5/21/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.75	1.00	10.00	0	97.5	90	110	0.001	20	
Fluoride	3.63	0.400	4.000	0	90.8	90	110	0.005	20	
Nitrate-N	4.84	0.500	5.000	0	96.8	90	110	0.031	20	
Sulfate	29.4	3.00	30.00	0	98.1	90	110	0.443	20	

Sample ID: **2005160-01BMS** Batch ID: **96435** TestNo: **E300** Units: **mg/L**
SampType: **MS** Run ID: **IC2_200521A** Analysis Date: **5/21/2020 3:55:49 PM** Prep Date: **5/21/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	2180	100	2000	143.5	102	90	110			
Fluoride	2040	40.0	2000	0	102	90	110			
Nitrate-N	437	50.0	451.6	0	96.8	90	110			
Sulfate	3090	300	2000	1155	96.8	90	110			

Sample ID: **2005160-01BMSD** Batch ID: **96435** TestNo: **E300** Units: **mg/L**
SampType: **MSD** Run ID: **IC2_200521A** Analysis Date: **5/21/2020 4:11:49 PM** Prep Date: **5/21/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	2190	100	2000	143.5	102	90	110	0.314	20	
Fluoride	2050	40.0	2000	0	102	90	110	0.462	20	
Nitrate-N	439	50.0	451.6	0	97.1	90	110	0.307	20	
Sulfate	3090	300	2000	1155	96.7	90	110	0.054	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005169
Project: A1 Area Landfill-CCR&MNA

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_200521A

Sample ID: **ICV-200521**	Batch ID: **R110597**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC2_200521A**	Analysis Date: **5/21/2020 9:58:59 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	24.8	1.00	25.00	0	99.4	90	110			
Fluoride	9.57	0.400	10.00	0	95.7	90	110			
Nitrate-N	12.5	0.500	12.50	0	100	90	110			
Sulfate	76.1	3.00	75.00	0	101	90	110			

Sample ID: **CCV1-200521**	Batch ID: **R110597**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_200521A**	Analysis Date: **5/21/2020 3:07:49 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.88	1.00	10.00	0	98.8	90	110			
Fluoride	3.80	0.400	4.000	0	94.9	90	110			
Nitrate-N	4.91	0.500	5.000	0	98.3	90	110			
Sulfate	29.8	3.00	30.00	0	99.4	90	110			

Sample ID: **CCV2-200521**	Batch ID: **R110597**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_200521A**	Analysis Date: **5/21/2020 6:23:20 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.90	1.00	10.00	0	99.0	90	110			
Fluoride	3.76	0.400	4.000	0	93.9	90	110			
Nitrate-N	4.90	0.500	5.000	0	98.0	90	110			
Sulfate	29.6	3.00	30.00	0	98.7	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005169
Project: A1 Area Landfill-CCR&MNA

ANALYTICAL QC SUMMARY REPORT

RunID: **TITRATOR_200522A**

The QC data in batch 96471 applies to the following samples: 2005169-01C

Sample ID: **MB-96471** Batch ID: **96471** TestNo: **M2320 B** Units: **mg/L @ pH 4.44**
SampType: **MBLK** Run ID: **TITRATOR_200522A** Analysis Date: **5/22/2020 9:50:00 AM** Prep Date: **5/22/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	<10.0	20.0								
Alkalinity, Carbonate (As CaCO3)	<10.0	20.0								
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0								
Alkalinity, Total (As CaCO3)	<20.0	20.0								

Sample ID: **LCS-96471** Batch ID: **96471** TestNo: **M2320 B** Units: **mg/L @ pH 4.14**
SampType: **LCS** Run ID: **TITRATOR_200522A** Analysis Date: **5/22/2020 9:54:00 AM** Prep Date: **5/22/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)	54.2	20.0	50.00	0	108	74	129			

Sample ID: **LCSD-96471** Batch ID: **96471** TestNo: **M2320 B** Units: **mg/L @ pH 4.24**
SampType: **LCSD** Run ID: **TITRATOR_200522A** Analysis Date: **5/22/2020 9:58:00 AM** Prep Date: **5/22/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)	53.0	20.0	50.00	0	106	74	129	2.39	20	

Sample ID: **2005139-01C-DUP** Batch ID: **96471** TestNo: **M2320 B** Units: **mg/L @ pH 4.53**
SampType: **DUP** Run ID: **TITRATOR_200522A** Analysis Date: **5/22/2020 11:15:00 AM** Prep Date: **5/22/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	316	20.0	0	328.5				3.88	20	
Alkalinity, Carbonate (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Total (As CaCO3)	316	20.0	0	328.5				3.88	20	

Sample ID: **2005141-01D-DUP** Batch ID: **96471** TestNo: **M2320 B** Units: **mg/L @ pH 4.53**
SampType: **DUP** Run ID: **TITRATOR_200522A** Analysis Date: **5/22/2020 2:00:00 PM** Prep Date: **5/22/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	133	20.0	0	129.0				3.28	20	
Alkalinity, Carbonate (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Total (As CaCO3)	133	20.0	0	129.0				3.28	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005169
Project: A1 Area Landfill-CCR&MNA

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_200522A

Sample ID: **ICV-200522**	Batch ID: **R110638**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.24**
SampType: **ICV**	Run ID: **TITRATOR_200522A**	Analysis Date: **5/22/2020 9:46:00 AM**	Prep Date: **5/22/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	9.76	20.0	0							
Alkalinity, Carbonate (As CaCO3)	88.8	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	98.6	20.0	100.0	0	98.6	98	102			

Sample ID: **CCV1-200522**	Batch ID: **R110638**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.41**
SampType: **CCV**	Run ID: **TITRATOR_200522A**	Analysis Date: **5/22/2020 2:05:00 PM**	Prep Date: **5/22/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	33.0	20.0	0							
Alkalinity, Carbonate (As CaCO3)	66.4	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	99.4	20.0	100.0	0	99.4	90	110			

Sample ID: **CCV2-200522**	Batch ID: **R110638**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.27**
SampType: **CCV**	Run ID: **TITRATOR_200522A**	Analysis Date: **5/22/2020 3:34:00 PM**	Prep Date: **5/22/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	7.36	20.0	0							
Alkalinity, Carbonate (As CaCO3)	93.3	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	101	20.0	100.0	0	101	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005169
Project: A1 Area Landfill-CCR&MNA

ANALYTICAL QC SUMMARY REPORT

RunID: UV/VIS_2_200323B

Sample ID: **DCS-95613**	Batch ID: **95613**	TestNo: **M3500-Fe D**	Units: **mg/L**		
SampType: **DCS**	Run ID: **UV/VIS_2_200323B**	Analysis Date: **3/23/2020 1:30:00 PM**	Prep Date: **3/23/2020**		

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	0.0580	0.100	0.05000	0	116	65	135	0	0	N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005169
Project: A1 Area Landfill-CCR&MNA

ANALYTICAL QC SUMMARY REPORT

RunID: **UV/VIS_2_200507C**

Sample ID: **DCS-96253**	Batch ID: **96253**	TestNo: **M4500-P E**	Units: **mg/L**		
SampType: **DCS**	Run ID: **UV/VIS_2_200507C**	Analysis Date: **5/7/2020 2:22:00 PM**	Prep Date: **5/7/2020**		

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Total Orthophosphate (As	0.0480	0.100	0.05000	0	96.0	50	200	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005169
Project: A1 Area Landfill-CCR&MNA

ANALYTICAL QC SUMMARY REPORT

RunID: **UV/VIS_2_200521C**

The QC data in batch 96457 applies to the following samples: 2005169-01C

Sample ID: **MB-96457**	Batch ID: **96457**			TestNo: **M4500-P E**				Units: **mg/L**			
SampType: **MBLK**	Run ID: **UV/VIS_2_200521C**			Analysis Date: **5/21/2020 3:22:00 PM**				Prep Date: **5/21/2020**			
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Phosphorus, Total Orthophosphate (As	<0.0300	0.100									
Sample ID: **LCS-96457**	Batch ID: **96457**			TestNo: **M4500-P E**				Units: **mg/L**			
SampType: **LCS**	Run ID: **UV/VIS_2_200521C**			Analysis Date: **5/21/2020 3:23:00 PM**				Prep Date: **5/21/2020**			
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Phosphorus, Total Orthophosphate (As	0.523	0.100	0.5000	0	105	80	120				
Sample ID: **LCSD-96457**	Batch ID: **96457**			TestNo: **M4500-P E**				Units: **mg/L**			
SampType: **LCSD**	Run ID: **UV/VIS_2_200521C**			Analysis Date: **5/21/2020 3:23:00 PM**				Prep Date: **5/21/2020**			
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Phosphorus, Total Orthophosphate (As	0.524	0.100	0.5000	0	105	80	120	0.191	15		
Sample ID: **2005169-01CMS**	Batch ID: **96457**			TestNo: **M4500-P E**				Units: **mg/L**			
SampType: **MS**	Run ID: **UV/VIS_2_200521C**			Analysis Date: **5/21/2020 3:25:00 PM**				Prep Date: **5/21/2020**			
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Phosphorus, Total Orthophosphate (As	0.523	0.100	0.5000	0	105	80	120				
Sample ID: **2005169-01CMSD**	Batch ID: **96457**			TestNo: **M4500-P E**				Units: **mg/L**			
SampType: **MSD**	Run ID: **UV/VIS_2_200521C**			Analysis Date: **5/21/2020 3:25:00 PM**				Prep Date: **5/21/2020**			
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Phosphorus, Total Orthophosphate (As	0.510	0.100	0.5000	0	102	80	120	2.52	15		

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005169
Project: A1 Area Landfill-CCR&MNA

ANALYTICAL QC SUMMARY REPORT

RunID: UV/VIS_2_200521C

Sample ID: **ICV-200521**	Batch ID: **R110609**	TestNo: **M4500-P E**				Units: **mg/L**	
SampType: **ICV**	Run ID: **UV/VIS_2_200521C**	Analysis Date: **5/21/2020 3:22:00 PM**				Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Total Orthophosphate (As	0.202	0.100	0.2000	0	101	85	115			

Sample ID: **CCV1-200521**	Batch ID: **R110609**	TestNo: **M4500-P E**				Units: **mg/L**	
SampType: **CCV**	Run ID: **UV/VIS_2_200521C**	Analysis Date: **5/21/2020 3:28:00 PM**				Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Total Orthophosphate (As	0.514	0.100	0.5000	0	103	85	115			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005169
Project: A1 Area Landfill-CCR&MNA

ANALYTICAL QC SUMMARY REPORT

RunID: **UV/VIS_2_200522C**

The QC data in batch 96483 applies to the following samples: 2005169-01A

Sample ID: **MB-96483**	Batch ID: **96483**	TestNo: **M3500-Fe D**	Units: **mg/L**
SampType: **MBLK**	Run ID: **UV/VIS_2_200522C**	Analysis Date: **5/22/2020 4:39:00 PM**	Prep Date: **5/22/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	<0.0500	0.100								N

Sample ID: **LCS-96483**	Batch ID: **96483**	TestNo: **M3500-Fe D**	Units: **mg/L**
SampType: **LCS**	Run ID: **UV/VIS_2_200522C**	Analysis Date: **5/22/2020 4:40:00 PM**	Prep Date: **5/22/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	0.0973	0.100	0.1000	0	97.3	85	115			N

Sample ID: **LCSD-96483**	Batch ID: **96483**	TestNo: **M3500-Fe D**	Units: **mg/L**
SampType: **LCSD**	Run ID: **UV/VIS_2_200522C**	Analysis Date: **5/22/2020 4:41:00 PM**	Prep Date: **5/22/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	0.102	0.100	0.1000	0	102	85	115	5.07	15	N

Sample ID: **2005173-06AMS**	Batch ID: **96483**	TestNo: **M3500-Fe D**	Units: **mg/L**
SampType: **MS**	Run ID: **UV/VIS_2_200522C**	Analysis Date: **5/22/2020 4:54:00 PM**	Prep Date: **5/22/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	0.103	0.100	0.1000	0	103	85	115			N

Sample ID: **2005173-06AMSD**	Batch ID: **96483**	TestNo: **M3500-Fe D**	Units: **mg/L**
SampType: **MSD**	Run ID: **UV/VIS_2_200522C**	Analysis Date: **5/22/2020 4:54:00 PM**	Prep Date: **5/22/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	0.109	0.100	0.1000	0	109	85	115	4.88	15	N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005169
Project: A1 Area Landfill-CCR&MNA

ANALYTICAL QC SUMMARY REPORT

RunID: UV/VIS_2_200522C

Sample ID: **ICV-200522**	Batch ID: **R110699**	TestNo: **M3500-Fe D**	Units: **mg/L**
SampType: **ICV**	Run ID: **UV/VIS_2_200522C**	Analysis Date: **5/22/2020 4:38:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	0.0997	0.100	0.1000	0	99.7	85	115			N

Sample ID: **CCV1-200522**	Batch ID: **R110699**	TestNo: **M3500-Fe D**	Units: **mg/L**
SampType: **CCV**	Run ID: **UV/VIS_2_200522C**	Analysis Date: **5/22/2020 4:46:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	0.212	0.100	0.2000	0	106	85	115			N

Sample ID: **CCV2-200522**	Batch ID: **R110699**	TestNo: **M3500-Fe D**	Units: **mg/L**
SampType: **CCV**	Run ID: **UV/VIS_2_200522C**	Analysis Date: **5/22/2020 4:51:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	0.208	0.100	0.2000	0	104	85	115			N

Sample ID: **CCV3-200522**	Batch ID: **R110699**	TestNo: **M3500-Fe D**	Units: **mg/L**
SampType: **CCV**	Run ID: **UV/VIS_2_200522C**	Analysis Date: **5/22/2020 5:07:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	0.216	0.100	0.2000	0	108	85	115			N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005169
Project: A1 Area Landfill-CCR&MNA

ANALYTICAL QC SUMMARY REPORT

RunID: WC_200521B

The QC data in batch 96451 applies to the following samples: 2005169-01C

Sample ID: **MB-96451**	Batch ID: **96451**	TestNo: **M2540C**	Units: **mg/L**
SampType: **MBLK**	Run ID: **WC_200521B**	Analysis Date: **5/21/2020 4:50:00 PM**	Prep Date: **5/21/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	<10.0	10.0								

Sample ID: **LCS-96451**	Batch ID: **96451**	TestNo: **M2540C**	Units: **mg/L**
SampType: **LCS**	Run ID: **WC_200521B**	Analysis Date: **5/21/2020 4:50:00 PM**	Prep Date: **5/21/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	756	10.0	745.6	0	101	90	113			

Sample ID: **2005144-02D-DUP**	Batch ID: **96451**	TestNo: **M2540C**	Units: **mg/L**
SampType: **DUP**	Run ID: **WC_200521B**	Analysis Date: **5/21/2020 4:50:00 PM**	Prep Date: **5/21/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	3510	50.0	0	3565				1.55	5	

Sample ID: **2005145-01D-DUP**	Batch ID: **96451**	TestNo: **M2540C**	Units: **mg/L**
SampType: **DUP**	Run ID: **WC_200521B**	Analysis Date: **5/21/2020 4:50:00 PM**	Prep Date: **5/21/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	3240	50.0	0	3230				0.309	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005169
Project: A1 Area Landfill-CCR&MNA

MQL SUMMARY REPORT

TestNo: E300	MDL	MQL
Analyte	**mg/L**	**mg/L**
Chloride	0.300	1.00
Fluoride	0.100	0.400
Nitrate-N	0.100	0.500
Sulfate	1.00	3.00

TestNo: SW6020B	MDL	MQL
Analyte	**mg/L**	**mg/L**
Antimony	0.000800	0.00250
Arsenic	0.00200	0.00500
Barium	0.00300	0.0100
Beryllium	0.000300	0.00100
Boron	0.0100	0.0300
Cadmium	0.000300	0.00100
Calcium	0.100	0.300
Chromium	0.00200	0.00500
Cobalt	0.00300	0.00500
Iron	0.0300	0.100
Lead	0.000300	0.00100
Lithium	0.00500	0.0100
Magnesium	0.100	0.300
Molybdenum	0.00200	0.00500
Potassium	0.100	0.300
Selenium	0.00200	0.00500
Sodium	0.100	0.300
Thallium	0.000500	0.00150

TestNo: M2320 B	MDL	MQL
Analyte	**ıg/L @ pH 4.4**	**g/L @ pH 4.4**
Alkalinity, Bicarbonate (As CaCO3)	10.0	20.0
Alkalinity, Carbonate (As CaCO3)	10.0	20.0
Alkalinity, Hydroxide (As CaCO3)	10.0	20.0
Alkalinity, Total (As CaCO3)	20.0	20.0

TestNo: M3500-Fe D	MDL	MQL
Analyte	**mg/L**	**mg/L**
Iron, Ferrous	0.0500	0.100

TestNo: SW7470A	MDL	MQL
Analyte	**mg/L**	**mg/L**
Mercury	0.0000800	0.000200

TestNo: M4500-P E	MDL	MQL
Analyte	**mg/L**	**mg/L**
Phosphorus, Total Orthophosphate	0.0300	0.100

TestNo: M2540C	MDL	MQL
Analyte	**mg/L**	**mg/L**
Total Dissolved Solids (Residue, Filt	10.0	10.0

Qualifiers: MQL -Method Quantitation Limit as defined by TRRP
MDL -Method Detection Limit as defined by TRRP

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National Center for Testing & Innovation

ANALYTICAL REPORT

June 19, 2020

DHL Analytical, Inc.

Sample Delivery Group:	L1222915
Samples Received:	05/28/2020
Project Number:	2005169
Description:	

Report To: John DuPont
2300 Double Creek Drive
Round Rock, TX 78664

Entire Report Reviewed By:

Donna Eidson
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.

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	Collected by	Collected date/time	Received date/time
DISCHARGE SAMPLE L1222915-01 Non-Potable Water		05/20/20 15:30	05/28/20 10:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1484279	1	06/02/20 13:54	06/16/20 14:10	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1489235	1	06/11/20 14:06	06/16/20 14:10	JMR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1489235	1	06/11/20 14:06	06/12/20 15:10	RGT	Mt. Juliet, TN

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Donna Eidson
Project Manager

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	-0.0813		0.614	1.01	06/16/2020 14:10	WG1484279
(T) Barium	*99.9*			*62.0-143*	*06/16/2020 14:10*	WG1484279
(T) Yttrium	*112*			*79.0-136*	*06/16/2020 14:10*	WG1484279

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	0.156		0.801	1.27	06/16/2020 14:10	WG1489235

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.156		0.187	0.258	06/12/2020 15:10	WG1489235
(T) Barium-133	*103*			*30.0-143*	*06/12/2020 15:10*	WG1489235

Method Blank (MB)

(MB) R3540497-1 06/16/20 09:40

Analyte	MB Result	MB Qualifier	MB MDA
	pCi/l		pCi/l
Radium-228	0.442		0.422
(T) Barium	*97.2*		
(T) Yttrium	*105*		

L1222881-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1222881-01 06/16/20 09:40 • (DUP) R3540497-5 06/16/20 09:40

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP RER	DUP Qualifier	DUP RPD Limits	DUP RER Limit
	pCi/l	pCi/l		%			%	
Radium-228	0.394	0.886	1	76.9	0.543		20	3
(T) Barium	*82.7*	*86.8*						
(T) Yttrium	*97.9*	*104*						

Laboratory Control Sample (LCS)

(LCS) R3540497-2 06/16/20 09:40

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	pCi/l	pCi/l	%	%	
Radium-228	5.00	4.72	94.4	80.0-120	
(T) Barium			*83.3*		
(T) Yttrium			*97.0*		

Method Blank (MB)

(MB) R3539344-1 06/12/20 15:10

Analyte	MB Result	MB Qualifier	MB MDA
	pCi/l		pCi/l
Radium-226	-0.00387		0.0511
(T) Barium-133	*85.9*		

L1221829-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1221829-01 06/12/20 15:15 • (DUP) R3539344-5 06/12/20 15:10

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP RER	DUP Qualifier	DUP RPD Limits	DUP RER Limit
	pCi/l	pCi/l		%			%	
Radium-226	-0.0278	-0.0200	1	0.000	0.0975		20	3
(T) Barium-133	*111*	*100*						

Laboratory Control Sample (LCS)

(LCS) R3539344-2 06/12/20 15:10

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	pCi/l	pCi/l	%	%	
Radium-226	5.02	5.10	102	80.0-120	
(T) Barium-133			*94.7*		

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDA	Minimum Detectable Activity.
Rec.	Recovery.
RER	Replicate Error Ratio.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(T)	Tracer - A radioisotope of known concentration added to a solution of chemically equivalent radioisotopes at a known concentration to assist in monitoring the yield of the chemical separation.
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description

The remainder of this page intentionally left blank, there are no qualifiers applied to this SDG.

Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.
* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

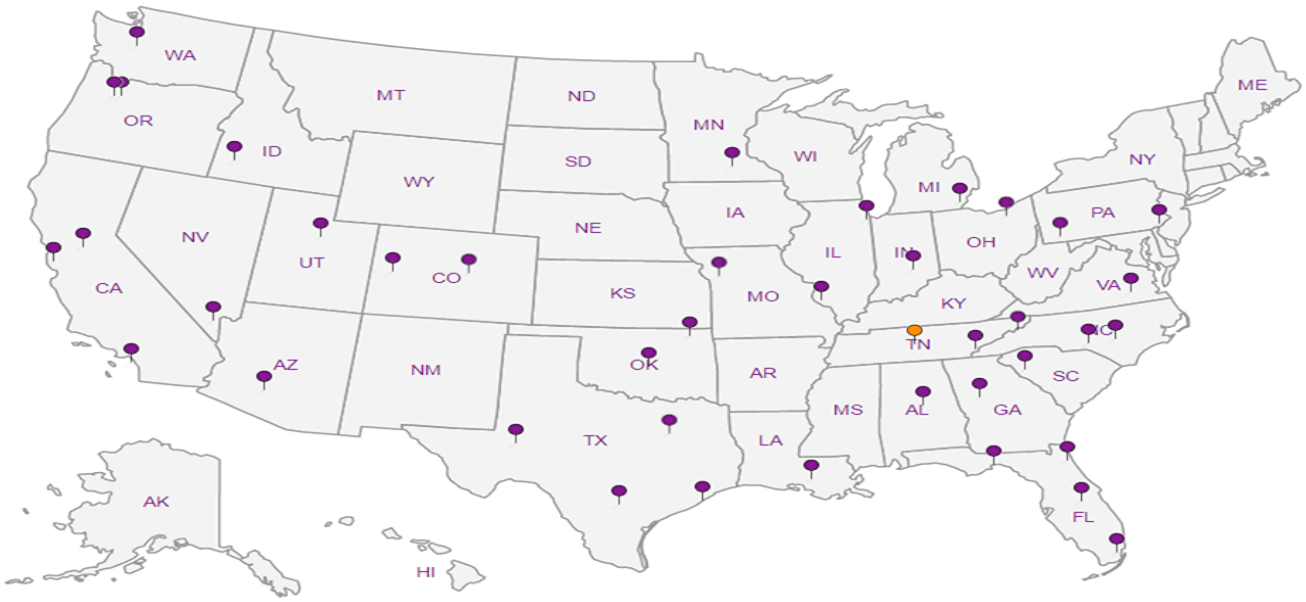
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



DHL Analytical, Inc.
2300 Double Creek Drive
Round Rock, TX 78664
TEL: *(512) 388-8222* FAX: *(512) 388-8229*

CHAIN-OF-CUSTODY RECORD

G166

Work Order: 2005169

Subcontractor:
Pace Analytical
12065 Lebanon Rd
Mt. Juliet, TN 37122

TEL: (615) 773-5923
FAX:
Acct #: DHLRRTX

1222915

22-May-20

Sample ID	Matrix	DHL#	Date Collected	Bottle Type	Requested Tests					
					Ra-228	Ra-226				
					E904.0	M7500 Ra B M				
Discharge Sample	Aqueous	01D	05/20/20 03:30 PM	1LHDPEHNO3		1				-e1
Discharge Sample	Aqueous	01E	05/20/20 03:30 PM	1LHDPEHNO3	1					

Amb

General Comments:

Please analyze these samples with a Standard Turnaround Time.
Quality Control Package Needed: TRRP - SEND PDF & Excel EDD Please
EMAIL report to both cac@dhlanalytical.com & dupont@dhlanalytical.com
Call John DuPont if you have questions.

		Date/Time		Date/Time
Relinquished by:			**Received by:**	Carol Kemp 5/18/20 10:15
Relinquished by:			**Received by:**	

Pace Analytical National Center for Testing & Innovation
Cooler Receipt Form

Client: DHLRRTX	1222915	
Cooler Received/Opened On: 5/28/20 Temperature:	Amb	
Received By: Carol Kemp		
Signature: Carol Kemp		

Receipt Check List	NP	Yes	No
COC Seal Present / Intact?	✓		
COC Signed / Accurate?		✓	
Bottles arrive intact?		✓	
Correct bottles used?		✓	
Sufficient volume sent?		✓	
If Applicable			
VOA Zero headspace?			
Preservation Correct / Checked?		✓	

June 24, 2020

Will Vienne
Golder
2201 Double Creek Dr #4004
Round Rock, Texas 78664
TEL: (512) 671-3434
FAX (512) 671-3446

Order No.: 2005170

RE: A1 Area Landfill-CCR

Dear Will Vienne:

DHL Analytical, Inc. received 8 sample(s) on 5/21/2020 for the analyses presented in the following report.

There were no problems with the analyses and all data met requirements of NELAP except where noted in the Case Narrative. All non-NELAP methods will be identified accordingly in the case narrative and all estimated uncertainties of test results are within method or EPA specifications.

If you have any questions regarding these tests results, please feel free to call. Thank you for using DHL Analytical.

Sincerely,

John DuPont
General Manager

This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211-20-25

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DHL ANALYTICAL
2300 Double Creek Dr. ■ Round Rock, TX 78664
Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

Nº 68312
CHAIN-OF-CUSTODY

CLIENT: GOLDER ASSOCIATES
ADDRESS: 2201 DOUBLE CREEK DR ROUND ROCK, TX 78664
PHONE: 612-671-3434 FAX/E-MAIL:
DATA REPORTED TO: WILL VIENNE
ADDITIONAL REPORT COPIES TO:

DATE: 5-20-20 PAGE 1 OF 1
PO #: 19122262 DHL WORK ORDER #: 2005170
PROJECT LOCATION OR NAME: AI AREA LANDFILL - CCR
CLENT PROJECT #: 19122262 COLLECTOR: J. BRAYTON

Authorize 5% surcharge for TRRP Report? ❑ Yes ❑ No

S=SOIL P=PAINT
W=WATER SL=SLUDGE
A=AIR O=OTHER
L=LIQUID SO=SOLID
SE=SEDIMENT

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	PRESERVATION HCl	HNO_3	H_2SO_4 ❑ NaOH ❑	ICE	UNPRESERVED	ANALYSES: APPENDIX III & IV	FIELD NOTES
BMW-24	01	5-20-20	1025	W	P	4		X		X		X	
BMW-23	02		1115	W	P	4		X		X		X	
BMW-20	03		1210	W	P	4		X		X		X	
BMW-21	04		1300	W	P	4		X		X		X	
BMW-26	05		1405	W	P	4		X		X		X	
BMW-27	06		1500	W	P	4		X		X		X	
BMW-19	07		1620	W	P	4		X		X		X	
BMW-22	08		1720	W	P	4		X		X		X	

RELINQUISHED BY: (Signature) DATE/TIME 5-20-20 1830 RECEIVED BY: (Signature) FedEX
RELINQUISHED BY: (Signature) DATE/TIME 5.21.20 0901 RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature) DATE/TIME RECEIVED BY: (Signature)

TURN AROUND TIME
RUSH ❑ CALL FIRST
1 DAY ❑ CALL FIRST
2 DAY ❑
NORMAL ☒
OTHER ❑

LABORATORY USE ONLY:
RECEIVING TEMP: 3.4, 4.3, 4.2, 4.0 THERM #: 78
CUSTODY SEALS: ❑ BROKEN ☒ INTACT ❑ NOT USED
CARRIER: ❑ LONE STAR ☒ FEDEX ❑ UPS ❑ OTHER
❑ COURIER DELIVERY
❑ HAND DELIVERED

❑ DHL DISPOSAL @ $5.00 each ❑ Return

Eric Lau

From: John DuPont
Sent: Tuesday, May 28, 2019 11:35 AM
To: Eric Lau
Subject: FW: CCR Analysis

Appendix III Parameters:
Metals (Ca and B)
Anions (Cl, F, and SO4)
TDS

Appendix IV Parameters:

Metals (As, Ba, Be, Cd, Co, Cr, Hg, Li, Mo, Pb, Sb, Se, and Tl)
Ra-226
Ra-228

From: Vienne, Will [mailto:William_Vienne@golder.com]
Sent: Tuesday, April 09, 2019 12:48 PM
To: John DuPont <dupont@dhlanalytical.com>
Subject: CCR Analysis

3.4

501

CUSTODY SEAL

DATE 5-20-20

SIGNATURE

DHL ANALYTICAL

ORIGIN ID:GGGA (512) 671-3434
J. BRAYTON
GOLDER
2201 DOUBLE CREEK DR STE 4004

ROUND ROCK, TX 78664
UNITED STATES US

SHIP DATE: 20MAY20
ACTWGT: 44.05 LB
CAD: 6994167/SSFE2110
DIMS: 25x14x14 IN

BILL THIRD PARTY

Part # 156297-435 RRDB2 EXP 01/21

TO DHL ANALYTICAL
DHL ANALYTICAL
2300 DOUBLE CREEK DR

ROUND ROCK TX 78664
(512) 388-8222 REF:
INV:
PO: DEPT:

FedEx Express

2 of 4
MPS# 0263 3930 6200 6610
Mstr# 3930 6200 6609 0201

THU - 21 MAY 10:30A
PRIORITY OVERNIGHT
AHS
78664
TX-US AUS

A8 BSMA

4.3

512

CUSTODY SEAL

DATE 5-20-20

SIGNATURE

DHL ANALYTICAL

ORIGIN ID:GGGA (512) 671-3404
J. BRAYTON
GOLDER
2201 DOUBLE CREEK DR STE 404
ROUND ROCK, TX 78664
UNITED STATES US

SHIP DATE: 20MAY20
ACTWGT: 53.60 LB
CAD: 6984167/SSFE2710
DIMS: 21x14x14 I
BILL THIRD PARTY

TO DHL ANALYTICAL
DHL ANALYTICAL
2300 DOUBLE CREEK DR

ROUND ROCK TX 78664
(512) 388-8222 REF:
INV:
PO: DEPT:

FedEx Express

3 of 4
MPS# 0263 3930 6200 6620
Mstr# 3930 6200 6609

THU - 21 MAY 10:30A
PRIORITY OVERNIGHT
AHS
78664
TX-US AUS

A8 BSMA

4.2

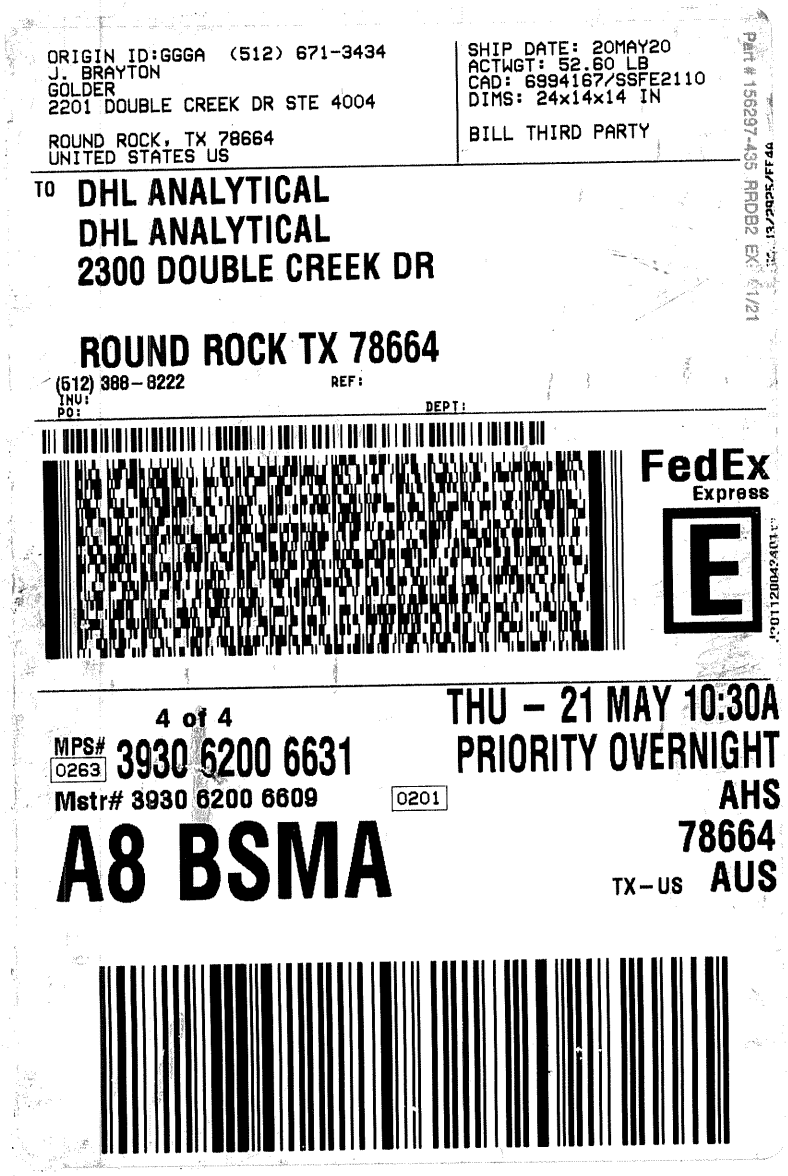
562

CUSTODY SEAL

DATE 5-20-20

SIGNATURE

DHL ANALYTICAL



ORIGIN ID:GGGA (512) 671-3434
J. BRAYTON
GOLDER
2201 DOUBLE CREEK DR STE 4004

ROUND ROCK, TX 78664
UNITED STATES US

SHIP DATE: 20MAY20
ACTWGT: 52.60 LB
CAD: 6994167/SSFE2110
DIMS: 24x14x14 IN

BILL THIRD PARTY

TO DHL ANALYTICAL
DHL ANALYTICAL
2300 DOUBLE CREEK DR

ROUND ROCK TX 78664
(512) 388-8222 REF:
INV:
PO: DEPT:

FedEx Express

4 of 4
MPS# 0263 3930 6200 6631
Mstr# 3930 6200 6609 0201

THU - 21 MAY 10:30A
PRIORITY OVERNIGHT
AHS
78664
TX-US AUS

A8 BSMA

4.0

692

CUSTODY SEAL

DATE 5-20-20

SIGNATURE

DHL ANALYTICAL

DHL Analytical, Inc.

Sample Receipt Checklist

Client Name **Golder**

Date Received: **5/21/2020**

Work Order Number **2005170**

Received by: **JH**

Checklist completed by: [signature] 5/21/2020
Signature | Date

Reviewed by [initials] 5/21/2020
Initials | Date

Carrier name: FedEx 1day

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	3.4 °C/4.3/4.2/4.0
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH<2 acceptable upon receipt?	Yes ☑	No ☐	NA ☐ LOT # 13171
	Adjusted? no		Checked by EL
Water - ph>9 (S) or ph>10 (CN) acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted?		Checked by

Any No response must be detailed in the comments section below.

Client contacted: _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments:

Corrective Action:

Laboratory Name: DHL Analytical, Inc.

Laboratory Review Checklist: Reportable Data

Project Name: A1 Area Landfill-CCR	**LRC Date:** 6/24/20
Reviewer Name: Carlos Castro	**Laboratory Work Order:** 2005170
Prep Batch Number(s): See Prep Dates Report	**Run Batch:** See Analytical Dates Report

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
		Chain-of-Custody (C-O-C)					
R1	OI	**1)** Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				**R1-01**
		2) Were all departures from standard conditions described in an exception report?			X		
R2	OI	**Sample and Quality Control (QC) Identification**					
		1) Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		2) Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	OI	**Test Reports**					
		1) Were all samples prepared and analyzed within holding times?	X				
		2) Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
		3) Were calculations checked by a peer or supervisor?	X				
		4) Were all analyte identifications checked by a peer or supervisor?	X				
		5) Were sample detection limits reported for all analytes not detected?	X				
		6) Were all results for soil and sediment samples reported on a dry weight basis?			X		
		7) Were % moisture (or solids) reported for all soil and sediment samples?			X		
		8) Were bulk soils/solids samples for volatile analysis extracted with methanol per EPA Method 5035?			X		
		9) If required for the project, TICs reported?			X		
R4	O	**Surrogate Recovery Data**					
		1) Were surrogates added prior to extraction?			X		
		2) Were surrogate percent recoveries in all samples within the laboratory QC limits?			X		
R5	OI	**Test Reports/Summary Forms for Blank Samples**					
		1) Were appropriate type(s) of blanks analyzed?	X				
		2) Were blanks analyzed at the appropriate frequency?	X				
		3) Where method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		4) Were blank concentrations < MDL?	X				
		5) For analyte(s) detected in a blank sample, was the concentration, unadjusted for sample specific factors, in all associated field samples, **greater** than 10 times the concentration in the blank sample?			X		
R6	OI	**Laboratory Control Samples (LCS):**					
		1) Were all COCs included in the LCS?	X				
		2) Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		3) Were LCSs analyzed at the required frequency?	X				
		4) Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		5) Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		6) Was the LCSD RPD within QC limits (if applicable)?	X				
R7	OI	**Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Data**					
		1) Were the project/method specified analytes included in the MS and MSD?	X				
		2) Were MS/MSD analyzed at the appropriate frequency?	X				
		3) Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?		X			**R7-03**
		4) Were MS/MSD RPDs within laboratory QC limits?	X				
R8	OI	**Analytical Duplicate Data**					
		1) Were appropriate analytical duplicates analyzed for each matrix?	X				
		2) Were analytical duplicates analyzed at the appropriate frequency?	X				
		3) Were RPDs or relative standard deviations within the laboratory QC limits?	X				
R9	OI	**Method Quantitation Limits (MQLs):**					
		1) Are the MQLs for each method analyte included in the laboratory data package?	X				
		2) Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
		3) Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
R10	OI	**Other Problems/Anomalies**					
		1) Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				
		2) Was applicable and available technology used to lower the SDL to minimize the matrix interference affects on the sample results?	X				
		3) Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices and methods associated with this laboratory data package?	X				

Laboratory Name: DHL Analytical, Inc.

Laboratory Review Checklist (continued): Supporting Data

Project Name: A1 Area Landfill-CCR	**LRC Date:** 6/24/20
Reviewer Name: Carlos Castro	**Laboratory Work Order:** 2005170
Prep Batch Number(s): See Prep Dates Report	**Run Batch:** See Analytical Dates Report

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
S1	OI	**Initial Calibration (ICAL)**					
		1) Were response factors and/or relative response factors for each analyte within QC limits?	X				
		2) Were percent RSDs or correlation coefficient criteria met?	X				
		3) Was the number of standards recommended in the method used for all analytes?	X				
		4) Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		5) Are ICAL data available for all instruments used?	X				
		6) Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	**Initial and Continuing calibration Verification (ICCV and CCV) and Continuing Calibration blank (CCB):**					
		1) Was the CCV analyzed at the method-required frequency?	X				
		2) Were percent differences for each analyte within the method-required QC limits?	X				
		3) Was the ICAL curve verified for each analyte?	X				
		4) Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	X				
S3	O	**Mass Spectral Tuning:**					
		1) Was the appropriate compound for the method used for tuning?	X				
		2) Were ion abundance data within the method-required QC limits?	X				
S4	O	**Internal Standards (IS):**					
		1) Were IS area counts and retention times within the method-required QC limits?	X				
S5	OI	**Raw Data (NELAC Section 5.5.10)**					
		1) Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		2) Were data associated with manual integrations flagged on the raw data?	X				
S6	O	**Dual Column Confirmation**					
		1) Did dual column confirmation results meet the method-required QC?			X		
S7	O	**Tentatively Identified Compounds (TICs):**					
		1) If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) Results:**					
		1) Were percent recoveries within method QC limits?	X				
S9	I	**Serial Dilutions, Post Digestion Spikes, and Method of Standard Additions**					
		1) Were percent differences, recoveries, and the linearity within the QC limits specified in the method?		X			**S9-01**
S10	OI	**Method Detection Limit (MDL) Studies**					
		1) Was a MDL study performed for each reported analyte?	X				
		2) Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	**Proficiency Test Reports:**					
		1) Was the lab's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	**Standards Documentation**					
		1) Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound/Analyte Identification Procedures**					
		1) Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of Analyst Competency (DOC)**					
		1) Was DOC conducted consistent with NELAC Chapter 5 – Appendix C?	X				
		2) Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/Validation Documentation for Methods** (NELAC Chapter 5)					
		1) Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	**Laboratory Standard Operating Procedures (SOPs):**					
		1) Are laboratory SOPs current and on file for each method performed?	X				

1 Items identified by the letter "R" should be included in the laboratory data package submitted to the TCEQ in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.

2 O = organic analyses; I = inorganic analyses (and general chemistry, when applicable).

3 NA = Not applicable.

4 NR = Not Reviewed.

5 ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Data Package Signature Page – RG-366/TRRP-13

This data package consists of:

This signature page, the laboratory review checklist, and the following reportable data:

R1 Field chain-of-custody documentation;
R2 Sample identification cross-reference;
R3 Test reports (analytical data sheets) for each environmental sample that includes:
  a) Items consistent with NELAC Chapter 5,
  b) dilution factors,
  c) preparation methods,
  d) cleanup methods, and
  e) if required for the project, tentatively identified compounds (TICs).
R4 Surrogate recovery data including:
  a) Calculated recovery (%R), and
  b) The laboratory's surrogate QC limits.
R5 Test reports/summary forms for blank samples;
R6 Test reports/summary forms for laboratory control samples (LCSs) including:
  a) LCS spiking amounts,
  b) Calculated %R for each analyte, and
  c) The laboratory's LCS QC limits.
R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
  a) Samples associated with the MS/MSD clearly identified,
  b) MS/MSD spiking amounts,
  c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
  d) Calculated %Rs and relative percent differences (RPDs), and
  e) The laboratory's MS/MSD QC limits
R8 Laboratory analytical duplicate (if applicable) recovery and precision:
  a) The amount of analyte measured in the duplicate,
  b) The calculated RPD, and
  c) The laboratory's QC limits for analytical duplicates.
R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix;
R10 Other problems or anomalies.

The Exception Report for each "No" or "Not Reviewed (NR)" item in the Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory is not accredited under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature below, I affirm to the best of my knowledge that all problems/anomalies observed by the laboratory have been identified in the Laboratory Review Checklist, and no information or data affecting the quality of the data has been knowingly withheld.

This laboratory was last inspected by TCEQ on February 25-28 2019. Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Name: John DuPont
Official Title: General Manager

Signature

0□/2□/20

Date

Name: Dr. Derhsing Luu
Official Title: Technical Director

DHL Analytical, Inc. **Date:** *24-Jun-20*

CLIENT: Golder
Project: A1 Area Landfill-CCR
Lab Order: 2005170

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Method SW6020B - Metals Analysis
Method SW7470A - Mercury Analysis
Method E300 - Anions Analysis
Method M2540C - TDS Analysis
Sub-contract - Radium-228 and Radium-226 analyses by methods E904 and SM 7500 Ra B M. Analyzed at Pace Analytical.

Exception Report R1-01

The samples were received and log-in performed on 5/21/20. A total of 8 samples were received. The samples arrived in good condition and were properly packaged.

Exception Report R7-03

For Metals analysis performed on 5/28/20 and 5/29/20 (batch 96513) the matrix spike and matrix spike duplicate recoveries were out of control limits for Boron or Calcium. These are flagged accordingly in the QC summary report. The sample selected for the matrix spike and matrix spike duplicate was not from this work order. The LCS was within control limits for these analytes. No further corrective actions were taken.

Exception Report S9-01

For Metals analysis performed on 5/28/20 (batch 96513) the PDS recovery was out of control limits for Calcium. This is flagged accordingly in the QC summary report. The serial dilution was within control limits for this analyte. No further corrective actions were taken.

DHL Analytical, Inc.

Date: *24-Jun-20*

CLIENT: Golder
Project: A1 Area Landfill-CCR
Lab Order: 2005170

Work Order Sample Summary

Lab Smp ID	Client Sample ID	Tag Number	Date Collected	Date Recved
2005170-01	BMW-24		05/20/20 10:25 AM	5/21/2020
2005170-02	BMW-23		05/20/20 11:15 AM	5/21/2020
2005170-03	BMW-20		05/20/20 12:10 PM	5/21/2020
2005170-04	BMW-21		05/20/20 01:00 PM	5/21/2020
2005170-05	BMW-26		05/20/20 02:05 PM	5/21/2020
2005170-06	BMW-27		05/20/20 03:00 PM	5/21/2020
2005170-07	BMW-19		05/20/20 04:20 PM	5/21/2020
2005170-08	BMW-22		05/20/20 05:20 PM	5/21/2020

Lab Order: 2005170
Client: Golder
Project: A1 Area Landfill-CCR

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
2005170-01A	BMW-24	05/20/20 10:25 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/26/20 07:51 AM	96489
	BMW-24	05/20/20 10:25 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/26/20 07:51 AM	96489
	BMW-24	05/20/20 10:25 AM	Aqueous	SW7470A	Mercury Aq Prep	05/30/20 01:00 PM	96569
2005170-01B	BMW-24	05/20/20 10:25 AM	Aqueous	E300	Anion Preparation	05/26/20 09:22 AM	96496
	BMW-24	05/20/20 10:25 AM	Aqueous	E300	Anion Preparation	05/26/20 09:22 AM	96496
	BMW-24	05/20/20 10:25 AM	Aqueous	M2540C	TDS Preparation	05/21/20 11:48 AM	96451
2005170-02A	BMW-23	05/20/20 11:15 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/26/20 07:51 AM	96489
	BMW-23	05/20/20 11:15 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/26/20 07:51 AM	96489
	BMW-23	05/20/20 11:15 AM	Aqueous	SW7470A	Mercury Aq Prep	05/30/20 01:00 PM	96569
2005170-02B	BMW-23	05/20/20 11:15 AM	Aqueous	E300	Anion Preparation	05/26/20 09:22 AM	96496
	BMW-23	05/20/20 11:15 AM	Aqueous	E300	Anion Preparation	05/26/20 09:22 AM	96496
	BMW-23	05/20/20 11:15 AM	Aqueous	M2540C	TDS Preparation	05/21/20 11:48 AM	96451
2005170-03A	BMW-20	05/20/20 12:10 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/26/20 07:51 AM	96489
	BMW-20	05/20/20 12:10 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/26/20 07:51 AM	96489
	BMW-20	05/20/20 12:10 PM	Aqueous	SW7470A	Mercury Aq Prep	05/30/20 01:00 PM	96569
2005170-03B	BMW-20	05/20/20 12:10 PM	Aqueous	E300	Anion Preparation	05/26/20 09:22 AM	96496
	BMW-20	05/20/20 12:10 PM	Aqueous	E300	Anion Preparation	05/26/20 09:22 AM	96496
	BMW-20	05/20/20 12:10 PM	Aqueous	M2540C	TDS Preparation	05/21/20 11:48 AM	96451
2005170-04A	BMW-21	05/20/20 01:00 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/26/20 07:51 AM	96489
	BMW-21	05/20/20 01:00 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/26/20 07:51 AM	96489
	BMW-21	05/20/20 01:00 PM	Aqueous	SW7470A	Mercury Aq Prep	05/30/20 01:00 PM	96569
2005170-04B	BMW-21	05/20/20 01:00 PM	Aqueous	E300	Anion Preparation	05/26/20 09:22 AM	96496
	BMW-21	05/20/20 01:00 PM	Aqueous	E300	Anion Preparation	05/26/20 09:22 AM	96496
	BMW-21	05/20/20 01:00 PM	Aqueous	M2540C	TDS Preparation	05/21/20 11:48 AM	96451
2005170-05A	BMW-26	05/20/20 02:05 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/26/20 07:51 AM	96489
	BMW-26	05/20/20 02:05 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/26/20 07:51 AM	96489
	BMW-26	05/20/20 02:05 PM	Aqueous	SW7470A	Mercury Aq Prep	05/30/20 01:00 PM	96569
2005170-05B	BMW-26	05/20/20 02:05 PM	Aqueous	E300	Anion Preparation	05/26/20 09:22 AM	96496

Lab Order: 2005170
Client: Golder
Project: A1 Area Landfill-CCR

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
2005170-05B	BMW-26	05/20/20 02:05 PM	Aqueous	E300	Anion Preparation	05/26/20 09:22 AM	96496
	BMW-26	05/20/20 02:05 PM	Aqueous	M2540C	TDS Preparation	05/21/20 11:48 AM	96451
2005170-06A	BMW-27	05/20/20 03:00 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/26/20 07:51 AM	96489
	BMW-27	05/20/20 03:00 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/26/20 07:51 AM	96489
	BMW-27	05/20/20 03:00 PM	Aqueous	SW7470A	Mercury Aq Prep	05/30/20 01:00 PM	96569
2005170-06B	BMW-27	05/20/20 03:00 PM	Aqueous	E300	Anion Preparation	05/26/20 09:22 AM	96496
	BMW-27	05/20/20 03:00 PM	Aqueous	E300	Anion Preparation	05/26/20 09:22 AM	96496
	BMW-27	05/20/20 03:00 PM	Aqueous	M2540C	TDS Preparation	05/21/20 11:48 AM	96451
2005170-07A	BMW-19	05/20/20 04:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/27/20 08:18 AM	96513
	BMW-19	05/20/20 04:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/27/20 08:18 AM	96513
	BMW-19	05/20/20 04:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/27/20 08:18 AM	96513
	BMW-19	05/20/20 04:20 PM	Aqueous	SW7470A	Mercury Aq Prep	05/30/20 01:00 PM	96569
2005170-07B	BMW-19	05/20/20 04:20 PM	Aqueous	E300	Anion Preparation	05/26/20 09:22 AM	96496
	BMW-19	05/20/20 04:20 PM	Aqueous	E300	Anion Preparation	05/26/20 09:22 AM	96496
	BMW-19	05/20/20 04:20 PM	Aqueous	E300	Anion Preparation	05/26/20 09:22 AM	96496
	BMW-19	05/20/20 04:20 PM	Aqueous	M2540C	TDS Preparation	05/21/20 11:48 AM	96451
2005170-08A	BMW-22	05/20/20 05:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/27/20 08:18 AM	96513
	BMW-22	05/20/20 05:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/27/20 08:18 AM	96513
	BMW-22	05/20/20 05:20 PM	Aqueous	SW7470A	Mercury Aq Prep	05/30/20 01:00 PM	96569
2005170-08B	BMW-22	05/20/20 05:20 PM	Aqueous	E300	Anion Preparation	05/26/20 09:22 AM	96496
	BMW-22	05/20/20 05:20 PM	Aqueous	E300	Anion Preparation	05/26/20 09:22 AM	96496
	BMW-22	05/20/20 05:20 PM	Aqueous	M2540C	TDS Preparation	05/21/20 11:48 AM	96451

Lab Order: 2005170
Client: Golder
Project: A1 Area Landfill-CCR

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
2005170-01A	BMW-24	Aqueous	SW7470A	Mercury Total: Aqueous	96569	1	05/31/20 05:33 PM	CETAC2_HG_200531A
	BMW-24	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	96489	1	05/27/20 01:21 PM	ICP-MS4_200527A
	BMW-24	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	96489	10	05/28/20 11:34 AM	ICP-MS5_200528A
2005170-01B	BMW-24	Aqueous	E300	Anions by IC method - Water	96496	10	05/26/20 06:42 PM	IC2_200526B
	BMW-24	Aqueous	E300	Anions by IC method - Water	96496	1	05/27/20 03:14 AM	IC2_200526B
	BMW-24	Aqueous	M2540C	Total Dissolved Solids	96451	1	05/21/20 04:50 PM	WC_200521B
2005170-02A	BMW-23	Aqueous	SW7470A	Mercury Total: Aqueous	96569	1	05/31/20 05:35 PM	CETAC2_HG_200531A
	BMW-23	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	96489	1	05/27/20 01:23 PM	ICP-MS4_200527A
	BMW-23	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	96489	10	05/28/20 11:36 AM	ICP-MS5_200528A
2005170-02B	BMW-23	Aqueous	E300	Anions by IC method - Water	96496	10	05/26/20 06:58 PM	IC2_200526B
	BMW-23	Aqueous	E300	Anions by IC method - Water	96496	1	05/27/20 03:30 AM	IC2_200526B
	BMW-23	Aqueous	M2540C	Total Dissolved Solids	96451	1	05/21/20 04:50 PM	WC_200521B
2005170-03A	BMW-20	Aqueous	SW7470A	Mercury Total: Aqueous	96569	1	05/31/20 05:37 PM	CETAC2_HG_200531A
	BMW-20	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	96489	10	05/28/20 11:39 AM	ICP-MS5_200528A
	BMW-20	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	96489	1	05/27/20 01:25 PM	ICP-MS4_200527A
2005170-03B	BMW-20	Aqueous	E300	Anions by IC method - Water	96496	10	05/26/20 07:14 PM	IC2_200526B
	BMW-20	Aqueous	E300	Anions by IC method - Water	96496	1	05/27/20 03:46 AM	IC2_200526B
	BMW-20	Aqueous	M2540C	Total Dissolved Solids	96451	1	05/21/20 04:50 PM	WC_200521B
2005170-04A	BMW-21	Aqueous	SW7470A	Mercury Total: Aqueous	96569	1	05/31/20 05:40 PM	CETAC2_HG_200531A
	BMW-21	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	96489	1	05/27/20 01:27 PM	ICP-MS4_200527A
	BMW-21	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	96489	10	05/28/20 11:41 AM	ICP-MS5_200528A
2005170-04B	BMW-21	Aqueous	E300	Anions by IC method - Water	96496	10	05/26/20 07:30 PM	IC2_200526B
	BMW-21	Aqueous	E300	Anions by IC method - Water	96496	1	05/27/20 04:02 AM	IC2_200526B
	BMW-21	Aqueous	M2540C	Total Dissolved Solids	96451	1	05/21/20 04:50 PM	WC_200521B
2005170-05A	BMW-26	Aqueous	SW7470A	Mercury Total: Aqueous	96569	1	05/31/20 05:42 PM	CETAC2_HG_200531A
	BMW-26	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	96489	20	05/28/20 11:43 AM	ICP-MS5_200528A

Lab Order: 2005170
Client: Golder
Project: A1 Area Landfill-CCR

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
2005170-05A	BMW-26	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	96489	1	05/27/20 01:29 PM	ICP-MS4_200527A
2005170-05B	BMW-26	Aqueous	E300	Anions by IC method - Water	96496	10	05/26/20 07:46 PM	IC2_200526B
	BMW-26	Aqueous	E300	Anions by IC method - Water	96496	1	05/27/20 04:18 AM	IC2_200526B
	BMW-26	Aqueous	M2540C	Total Dissolved Solids	96451	1	05/21/20 04:50 PM	WC_200521B
2005170-06A	BMW-27	Aqueous	SW7470A	Mercury Total: Aqueous	96569	1	05/31/20 05:44 PM	CETAC2_HG_200531A
	BMW-27	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	96489	1	05/27/20 01:31 PM	ICP-MS4_200527A
	BMW-27	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	96489	10	05/28/20 11:45 AM	ICP-MS5_200528A
2005170-06B	BMW-27	Aqueous	E300	Anions by IC method - Water	96496	10	05/26/20 08:02 PM	IC2_200526B
	BMW-27	Aqueous	E300	Anions by IC method - Water	96496	1	05/27/20 04:34 AM	IC2_200526B
	BMW-27	Aqueous	M2540C	Total Dissolved Solids	96451	1	05/21/20 04:50 PM	WC_200521B
2005170-07A	BMW-19	Aqueous	SW7470A	Mercury Total: Aqueous	96569	1	05/31/20 05:46 PM	CETAC2_HG_200531A
	BMW-19	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	96513	1	05/28/20 12:52 PM	ICP-MS5_200528A
	BMW-19	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	96513	50	05/29/20 01:02 PM	ICP-MS4_200529A
	BMW-19	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	96513	1	05/29/20 01:04 PM	ICP-MS4_200529A
2005170-07B	BMW-19	Aqueous	E300	Anions by IC method - Water	96496	100	05/26/20 06:10 PM	IC2_200526B
	BMW-19	Aqueous	E300	Anions by IC method - Water	96496	10	05/26/20 08:18 PM	IC2_200526B
	BMW-19	Aqueous	E300	Anions by IC method - Water	96496	1	05/27/20 04:50 AM	IC2_200526B
	BMW-19	Aqueous	M2540C	Total Dissolved Solids	96451	1	05/21/20 04:50 PM	WC_200521B
2005170-08A	BMW-22	Aqueous	SW7470A	Mercury Total: Aqueous	96569	1	05/31/20 05:49 PM	CETAC2_HG_200531A
	BMW-22	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	96513	20	05/29/20 01:06 PM	ICP-MS4_200529A
	BMW-22	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	96513	1	05/28/20 12:54 PM	ICP-MS5_200528A
2005170-08B	BMW-22	Aqueous	E300	Anions by IC method - Water	96496	10	05/26/20 08:34 PM	IC2_200526B
	BMW-22	Aqueous	E300	Anions by IC method - Water	96496	1	05/27/20 05:06 AM	IC2_200526B
	BMW-22	Aqueous	M2540C	Total Dissolved Solids	96451	1	05/21/20 04:50 PM	WC_200521B

DHL Analytical, Inc.

Date: *24-Jun-20*

CLIENT:	Golder	**Client Sample ID:**	BMW-24
Project:	A1 Area Landfill-CCR	**Lab ID:**	2005170-01
Project No:	19122262-D2020	**Collection Date:**	05/20/20 10:25 AM
Lab Order:	2005170	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	05/27/20 01:21 PM
Arsenic	0.00207	0.00200	0.00500	J	mg/L	1	05/27/20 01:21 PM
Barium	0.244	0.00300	0.0100		mg/L	1	05/27/20 01:21 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	05/27/20 01:21 PM
Boron	0.758	0.0100	0.0300		mg/L	1	05/27/20 01:21 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	05/27/20 01:21 PM
Calcium	67.8	1.00	3.00		mg/L	10	05/28/20 11:34 AM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	05/27/20 01:21 PM
Cobalt	0.0109	0.00300	0.00500		mg/L	1	05/27/20 01:21 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	05/27/20 01:21 PM
Lithium	0.0460	0.00500	0.0100		mg/L	1	05/27/20 01:21 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	05/27/20 01:21 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	05/27/20 01:21 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	05/27/20 01:21 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	05/31/20 05:33 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	175	3.00	10.0		mg/L	10	05/26/20 06:42 PM
Fluoride	0.129	0.100	0.400	J	mg/L	1	05/27/20 03:14 AM
Sulfate	254	10.0	30.0		mg/L	10	05/26/20 06:42 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	907	10.0	10.0		mg/L	1	05/21/20 04:50 PM

Qualifiers:

ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *24-Jun-20*

CLIENT:	Golder	**Client Sample ID:**	BMW-23
Project:	A1 Area Landfill-CCR	**Lab ID:**	2005170-02
Project No:	19122262-D2020	**Collection Date:**	05/20/20 11:15 AM
Lab Order:	2005170	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	05/27/20 01:23 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	05/27/20 01:23 PM
Barium	0.0390	0.00300	0.0100		mg/L	1	05/27/20 01:23 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	05/27/20 01:23 PM
Boron	1.63	0.0100	0.0300		mg/L	1	05/27/20 01:23 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	05/27/20 01:23 PM
Calcium	105	1.00	3.00		mg/L	10	05/28/20 11:36 AM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	05/27/20 01:23 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	05/27/20 01:23 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	05/27/20 01:23 PM
Lithium	0.0927	0.00500	0.0100		mg/L	1	05/27/20 01:23 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	05/27/20 01:23 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	05/27/20 01:23 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	05/27/20 01:23 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	05/31/20 05:35 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	256	3.00	10.0		mg/L	10	05/26/20 06:58 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	05/27/20 03:30 AM
Sulfate	494	10.0	30.0		mg/L	10	05/26/20 06:58 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	1580	50.0	50.0		mg/L	1	05/21/20 04:50 PM

Qualifiers:

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J - Analyte detected between SDL and RL
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S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *24-Jun-20*

CLIENT:	Golder	**Client Sample ID:**	BMW-20
Project:	A1 Area Landfill-CCR	**Lab ID:**	2005170-03
Project No:	19122262-D2020	**Collection Date:**	05/20/20 12:10 PM
Lab Order:	2005170	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	05/27/20 01:25 PM
Arsenic	0.0126	0.00200	0.00500		mg/L	1	05/27/20 01:25 PM
Barium	0.0494	0.00300	0.0100		mg/L	1	05/27/20 01:25 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	05/27/20 01:25 PM
Boron	0.179	0.0100	0.0300		mg/L	1	05/27/20 01:25 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	05/27/20 01:25 PM
Calcium	162	1.00	3.00		mg/L	10	05/28/20 11:39 AM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	05/27/20 01:25 PM
Cobalt	0.0912	0.00300	0.00500		mg/L	1	05/27/20 01:25 PM
Lead	0.000956	0.000300	0.00100	J	mg/L	1	05/27/20 01:25 PM
Lithium	<0.00500	0.00500	0.0100		mg/L	1	05/27/20 01:25 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	05/27/20 01:25 PM
Selenium	0.00440	0.00200	0.00500	J	mg/L	1	05/27/20 01:25 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	05/27/20 01:25 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	05/31/20 05:37 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	35.8	0.300	1.00		mg/L	1	05/27/20 03:46 AM
Fluoride	<0.100	0.100	0.400		mg/L	1	05/27/20 03:46 AM
Sulfate	797	10.0	30.0		mg/L	10	05/26/20 07:14 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	1450	50.0	50.0		mg/L	1	05/21/20 04:50 PM

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C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *24-Jun-20*

CLIENT:	Golder	**Client Sample ID:**	BMW-21
Project:	A1 Area Landfill-CCR	**Lab ID:**	2005170-04
Project No:	19122262-D2020	**Collection Date:**	05/20/20 01:00 PM
Lab Order:	2005170	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	05/27/20 01:27 PM
Arsenic	0.00434	0.00200	0.00500	J	mg/L	1	05/27/20 01:27 PM
Barium	0.0421	0.00300	0.0100		mg/L	1	05/27/20 01:27 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	05/27/20 01:27 PM
Boron	1.07	0.0100	0.0300		mg/L	1	05/27/20 01:27 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	05/27/20 01:27 PM
Calcium	166	1.00	3.00		mg/L	10	05/28/20 11:41 AM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	05/27/20 01:27 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	05/27/20 01:27 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	05/27/20 01:27 PM
Lithium	0.0632	0.00500	0.0100		mg/L	1	05/27/20 01:27 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	05/27/20 01:27 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	05/27/20 01:27 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	05/27/20 01:27 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	05/31/20 05:40 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	416	3.00	10.0		mg/L	10	05/26/20 07:30 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	05/27/20 04:02 AM
Sulfate	457	10.0	30.0		mg/L	10	05/26/20 07:30 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	1910	50.0	50.0		mg/L	1	05/21/20 04:50 PM

Qualifiers:

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RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *24-Jun-20*

CLIENT:	Golder	**Client Sample ID:**	BMW-26
Project:	A1 Area Landfill-CCR	**Lab ID:**	2005170-05
Project No:	19122262-D2020	**Collection Date:**	05/20/20 02:05 PM
Lab Order:	2005170	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	05/27/20 01:29 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	05/27/20 01:29 PM
Barium	0.0293	0.00300	0.0100		mg/L	1	05/27/20 01:29 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	05/27/20 01:29 PM
Boron	0.547	0.0100	0.0300		mg/L	1	05/27/20 01:29 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	05/27/20 01:29 PM
Calcium	252	2.00	6.00		mg/L	20	05/28/20 11:43 AM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	05/27/20 01:29 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	05/27/20 01:29 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	05/27/20 01:29 PM
Lithium	0.0999	0.00500	0.0100		mg/L	1	05/27/20 01:29 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	05/27/20 01:29 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	05/27/20 01:29 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	05/27/20 01:29 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	05/31/20 05:42 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	131	3.00	10.0		mg/L	10	05/26/20 07:46 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	05/27/20 04:18 AM
Sulfate	701	10.0	30.0		mg/L	10	05/26/20 07:46 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	1980	50.0	50.0		mg/L	1	05/21/20 04:50 PM

Qualifiers:

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RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *24-Jun-20*

CLIENT:	Golder	**Client Sample ID:**	BMW-27
Project:	A1 Area Landfill-CCR	**Lab ID:**	2005170-06
Project No:	19122262-D2020	**Collection Date:**	05/20/20 03:00 PM
Lab Order:	2005170	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	05/27/20 01:31 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	05/27/20 01:31 PM
Barium	0.0250	0.00300	0.0100		mg/L	1	05/27/20 01:31 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	05/27/20 01:31 PM
Boron	0.460	0.0100	0.0300		mg/L	1	05/27/20 01:31 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	05/27/20 01:31 PM
Calcium	213	1.00	3.00		mg/L	10	05/28/20 11:45 AM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	05/27/20 01:31 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	05/27/20 01:31 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	05/27/20 01:31 PM
Lithium	0.0840	0.00500	0.0100		mg/L	1	05/27/20 01:31 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	05/27/20 01:31 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	05/27/20 01:31 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	05/27/20 01:31 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	05/31/20 05:44 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	108	3.00	10.0		mg/L	10	05/26/20 08:02 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	05/27/20 04:34 AM
Sulfate	579	10.0	30.0		mg/L	10	05/26/20 08:02 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	1670	50.0	50.0		mg/L	1	05/21/20 04:50 PM

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E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *24-Jun-20*

CLIENT:	Golder	**Client Sample ID:**	BMW-19
Project:	A1 Area Landfill-CCR	**Lab ID:**	2005170-07
Project No:	19122262-D2020	**Collection Date:**	05/20/20 04:20 PM
Lab Order:	2005170	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	05/28/20 12:52 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	05/28/20 12:52 PM
Barium	0.0109	0.00300	0.0100		mg/L	1	05/28/20 12:52 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	05/28/20 12:52 PM
Boron	0.487	0.0100	0.0300		mg/L	1	05/29/20 01:04 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	05/28/20 12:52 PM
Calcium	445	5.00	15.0		mg/L	50	05/29/20 01:02 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	05/28/20 12:52 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	05/28/20 12:52 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	05/28/20 12:52 PM
Lithium	0.0783	0.00500	0.0100		mg/L	1	05/28/20 12:52 PM
Molybdenum	0.00231	0.00200	0.00500	J	mg/L	1	05/28/20 12:52 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	05/28/20 12:52 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	05/28/20 12:52 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	05/31/20 05:46 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	5.54	0.300	1.00		mg/L	1	05/27/20 04:50 AM
Fluoride	<0.100	0.100	0.400		mg/L	1	05/27/20 04:50 AM
Sulfate	2020	100	300		mg/L	100	05/26/20 06:10 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	3470	50.0	50.0		mg/L	1	05/21/20 04:50 PM

Qualifiers:

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- B - Analyte detected in the associated Method Blank
- DF- Dilution Factor
- N - Parameter not NELAP certified
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- C - Sample Result or QC discussed in Case Narrative
- RL - Reporting Limit (MQL adjusted for moisture and sample size)
- SDL - Sample Detection Limit
- E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *24-Jun-20*

CLIENT:	Golder	**Client Sample ID:**	BMW-22
Project:	A1 Area Landfill-CCR	**Lab ID:**	2005170-08
Project No:	19122262-D2020	**Collection Date:**	05/20/20 05:20 PM
Lab Order:	2005170	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	05/28/20 12:54 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	05/28/20 12:54 PM
Barium	0.0621	0.00300	0.0100		mg/L	1	05/28/20 12:54 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	05/28/20 12:54 PM
Boron	3.67	0.200	0.600		mg/L	20	05/29/20 01:06 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	05/28/20 12:54 PM
Calcium	205	2.00	6.00		mg/L	20	05/29/20 01:06 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	05/28/20 12:54 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	05/28/20 12:54 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	05/28/20 12:54 PM
Lithium	0.0855	0.00500	0.0100		mg/L	1	05/28/20 12:54 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	05/28/20 12:54 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	05/28/20 12:54 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	05/28/20 12:54 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	05/31/20 05:49 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	290	3.00	10.0		mg/L	10	05/26/20 08:34 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	05/27/20 05:06 AM
Sulfate	906	10.0	30.0		mg/L	10	05/26/20 08:34 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	2230	50.0	50.0		mg/L	1	05/21/20 04:50 PM

Qualifiers:

ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

CLIENT: Golder
Work Order: 2005170
Project: A1 Area Landfill-CCR

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_200304C

Sample ID: **DCS-95289**	Batch ID: **95289**	TestNo: **SW7470A**	Units: **mg/L**		
SampType: **DCS**	Run ID: **CETAC2_HG_200304C**	Analysis Date: **3/4/2020 12:11:09 PM**	Prep Date: **3/4/2020**		

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.000175	0.000200	0.000200	0	87.5	82	119	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005170
Project: A1 Area Landfill-CCR

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_200531A

The QC data in batch 96569 applies to the following samples: 2005170-01A, 2005170-02A, 2005170-03A, 2005170-04A, 2005170-05A, 2005170-06A, 2005170-07A, 2005170-08A

Sample ID: **MB-96569**	Batch ID: **96569**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **MBLK**	Run ID: **CETAC2_HG_200531A**	Analysis Date: **5/31/2020 5:26:25 PM**	Prep Date: **5/30/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.0000800	0.000200								

Sample ID: **LCS-96569**	Batch ID: **96569**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **LCS**	Run ID: **CETAC2_HG_200531A**	Analysis Date: **5/31/2020 5:28:41 PM**	Prep Date: **5/30/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00187	0.000200	0.00200	0	93.5	85	115			

Sample ID: **LCSD-96569**	Batch ID: **96569**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **LCSD**	Run ID: **CETAC2_HG_200531A**	Analysis Date: **5/31/2020 5:30:57 PM**	Prep Date: **5/30/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00190	0.000200	0.00200	0	95.0	85	115	1.59	15	

Sample ID: **2005182-12B MS**	Batch ID: **96569**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **MS**	Run ID: **CETAC2_HG_200531A**	Analysis Date: **5/31/2020 5:53:36 PM**	Prep Date: **5/30/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00173	0.000200	0.00200	0	86.5	80	120			

Sample ID: **2005182-12B MSD**	Batch ID: **96569**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **MSD**	Run ID: **CETAC2_HG_200531A**	Analysis Date: **5/31/2020 5:55:51 PM**	Prep Date: **5/30/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00178	0.000200	0.00200	0	89.0	80	120	2.85	15	

Sample ID: **2005182-12B SD**	Batch ID: **96569**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **SD**	Run ID: **CETAC2_HG_200531A**	Analysis Date: **5/31/2020 5:58:08 PM**	Prep Date: **5/30/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.000400	0.00100	0	0				0	10	

Sample ID: **2005182-12B PDS**	Batch ID: **96569**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **PDS**	Run ID: **CETAC2_HG_200531A**	Analysis Date: **5/31/2020 6:00:24 PM**	Prep Date: **5/30/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00218	0.000200	0.00250	0	87.2	85	115			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005170
Project: A1 Area Landfill-CCR

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_200531A

Sample ID: **ICV-200531**	Batch ID: **R110721**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **ICV**	Run ID: **CETAC2_HG_200531A**	Analysis Date: **5/31/2020 1:44:04 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00373	0.000200	0.00400	0	93.2	90	110			

Sample ID: **CCV7-200531**	Batch ID: **R110721**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_200531A**	Analysis Date: **5/31/2020 5:21:51 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00201	0.000200	0.00200	0	101	90	110			

Sample ID: **CCV8-200531**	Batch ID: **R110721**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_200531A**	Analysis Date: **5/31/2020 6:04:58 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00200	0.000200	0.00200	0	100	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005170
Project: A1 Area Landfill-CCR

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_200415A

Sample ID: **DCS1-95814**	Batch ID: **95814**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS**	Run ID: **ICP-MS4_200415A**	Analysis Date: **4/15/2020 2:59:00 PM**	Prep Date: **4/7/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.000868	0.00250	0.00100	0	86.8	70	130	0	0	
Beryllium	0.000462	0.00100	0.000500	0	92.4	70	130	0	0	
Cadmium	0.000452	0.00100	0.000500	0	90.4	70	130	0	0	
Lead	0.000467	0.00100	0.000500	0	93.4	70	130	0	0	
Thallium	0.000455	0.00150	0.000500	0	91.0	70	130	0	0	

Sample ID: **DCS2-95814**	Batch ID: **95814**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS2**	Run ID: **ICP-MS4_200415A**	Analysis Date: **4/15/2020 3:02:00 PM**	Prep Date: **4/7/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.296	0.300	0.300	0	98.6	70	130	0	0	

Sample ID: **DCS3-95814**	Batch ID: **95814**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS3**	Run ID: **ICP-MS4_200415A**	Analysis Date: **4/15/2020 3:05:00 PM**	Prep Date: **4/7/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.00520	0.00500	0.00500	0	104	70	130	0	0	
Barium	0.00532	0.0100	0.00500	0	106	70	130	0	0	
Chromium	0.00563	0.00500	0.00500	0	113	70	130	0	0	
Cobalt	0.00530	0.00500	0.00500	0	106	70	130	0	0	
Lithium	0.00507	0.0100	0.00500	0	101	70	130	0	0	
Molybdenum	0.00539	0.00500	0.00500	0	108	70	130	0	0	
Selenium	0.00530	0.00500	0.00500	0	106	70	130	0	0	

Sample ID: **DCS4-95814**	Batch ID: **95814**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS4**	Run ID: **ICP-MS4_200415A**	Analysis Date: **4/15/2020 3:08:00 PM**	Prep Date: **4/7/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0264	0.0300	0.0300	0	88.2	70	130	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005170
Project: A1 Area Landfill-CCR

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_200527A

The QC data in batch 96489 applies to the following samples: 2005170-01A, 2005170-02A, 2005170-03A, 2005170-04A, 2005170-05A, 2005170-06A

Sample ID: **MB-96489** Batch ID: **96489** TestNo: **SW6020B** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_200527A** Analysis Date: **5/27/2020 1:01:00 PM** Prep Date: **5/26/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.000800	0.00250								
Arsenic	<0.00200	0.00500								
Barium	<0.00300	0.0100								
Beryllium	<0.000300	0.00100								
Boron	<0.0100	0.0300								
Cadmium	<0.000300	0.00100								
Calcium	<0.100	0.300								
Chromium	<0.00200	0.00500								
Cobalt	<0.00300	0.00500								
Lead	<0.000300	0.00100								
Lithium	<0.00500	0.0100								
Molybdenum	<0.00200	0.00500								
Selenium	<0.00200	0.00500								
Thallium	<0.000500	0.00150								

Sample ID: **LCS-96489** Batch ID: **96489** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_200527A** Analysis Date: **5/27/2020 1:03:00 PM** Prep Date: **5/26/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.201	0.00250	0.200	0	101	80	120			
Arsenic	0.209	0.00500	0.200	0	105	80	120			
Barium	0.201	0.0100	0.200	0	100	80	120			
Beryllium	0.204	0.00100	0.200	0	102	80	120			
Boron	0.208	0.0300	0.200	0	104	80	120			
Cadmium	0.203	0.00100	0.200	0	102	80	120			
Calcium	4.78	0.300	5.00	0	95.7	80	120			
Chromium	0.207	0.00500	0.200	0	103	80	120			
Cobalt	0.206	0.00500	0.200	0	103	80	120			
Lead	0.202	0.00100	0.200	0	101	80	120			
Lithium	0.201	0.0100	0.200	0	100	80	120			
Molybdenum	0.201	0.00500	0.200	0	101	80	120			
Selenium	0.212	0.00500	0.200	0	106	80	120			
Thallium	0.204	0.00150	0.200	0	102	80	120			

Sample ID: **LCSD-96489** Batch ID: **96489** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_200527A** Analysis Date: **5/27/2020 1:05:00 PM** Prep Date: **5/26/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.199	0.00250	0.200	0	99.7	80	120	0.837	15	
Arsenic	0.203	0.00500	0.200	0	101	80	120	3.30	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005170
Project: A1 Area Landfill-CCR

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_200527A

Sample ID: **LCSD-96489** Batch ID: **96489** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_200527A** Analysis Date: **5/27/2020 1:05:00 PM** Prep Date: **5/26/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.199	0.0100	0.200	0	99.6	80	120	0.685	15	
Beryllium	0.201	0.00100	0.200	0	101	80	120	1.55	15	
Boron	0.190	0.0300	0.200	0	95.2	80	120	8.80	15	
Cadmium	0.202	0.00100	0.200	0	101	80	120	0.610	15	
Calcium	4.73	0.300	5.00	0	94.6	80	120	1.11	15	
Chromium	0.201	0.00500	0.200	0	100	80	120	2.87	15	
Cobalt	0.200	0.00500	0.200	0	100	80	120	2.54	15	
Lead	0.203	0.00100	0.200	0	102	80	120	0.679	15	
Lithium	0.192	0.0100	0.200	0	95.8	80	120	4.64	15	
Molybdenum	0.200	0.00500	0.200	0	99.8	80	120	0.845	15	
Selenium	0.201	0.00500	0.200	0	101	80	120	5.18	15	
Thallium	0.210	0.00150	0.200	0	105	80	120	2.78	15	

Sample ID: **2005182-03A SD** Batch ID: **96489** TestNo: **SW6020B** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS4_200527A** Analysis Date: **5/27/2020 1:15:00 PM** Prep Date: **5/26/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.00400	0.0125	0	0.00114				0	20	
Arsenic	0.0286	0.0250	0	0.0285				0.444	20	
Barium	0.0161	0.0500	0	0.0171				5.87	20	
Beryllium	<0.00150	0.00500	0	0				0	20	
Boron	0.255	0.150	0	0.234				8.55	20	
Cadmium	<0.00150	0.00500	0	0				0	20	
Calcium	5.34	1.50	0	5.40				1.11	20	
Chromium	<0.0100	0.0250	0	0				0	20	
Cobalt	<0.0150	0.0250	0	0				0	20	
Lead	<0.00150	0.00500	0	0				0	20	
Lithium	<0.0250	0.0500	0	0				0	20	
Molybdenum	0.215	0.0250	0	0.220				2.13	20	
Selenium	<0.0100	0.0250	0	0				0	20	
Thallium	<0.00250	0.00750	0	0				0	20	

Sample ID: **2005182-03A PDS** Batch ID: **96489** TestNo: **SW6020B** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS4_200527A** Analysis Date: **5/27/2020 1:39:00 PM** Prep Date: **5/26/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.203	0.00250	0.200	0.00114	101	75	125			
Arsenic	0.230	0.00500	0.200	0.0285	101	75	125			
Barium	0.221	0.0100	0.200	0.0171	102	75	125			
Beryllium	0.194	0.00100	0.200	0	97.0	75	125			
Boron	0.426	0.0300	0.200	0.234	95.9	75	125			

Qualifiers:

B	Analyte detected in the associated Method Blank
J	Analyte detected between MDL and RL
ND	Not Detected at the Method Detection Limit
RL	Reporting Limit
J	Analyte detected between SDL and RL
DF	Dilution Factor
MDL	Method Detection Limit
R	RPD outside accepted control limits
S	Spike Recovery outside control limits
N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005170
Project: A1 Area Landfill-CCR

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_200527A

Sample ID: **2005182-03A PDS** Batch ID: **96489** TestNo: **SW6020B** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS4_200527A** Analysis Date: **5/27/2020 1:39:00 PM** Prep Date: **5/26/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cadmium	0.200	0.00100	0.200	0	100	75	125			
Calcium	9.80	0.300	5.00	5.40	88.1	75	125			
Chromium	0.206	0.00500	0.200	0	103	75	125			
Cobalt	0.203	0.00500	0.200	0	102	75	125			
Lead	0.206	0.00100	0.200	0	103	75	125			
Lithium	0.186	0.0100	0.200	0	92.8	75	125			
Molybdenum	0.400	0.00500	0.200	0.220	90.0	75	125			
Selenium	0.202	0.00500	0.200	0	101	75	125			
Thallium	0.209	0.00150	0.200	0	104	75	125			

Sample ID: **2005182-03A MS** Batch ID: **96489** TestNo: **SW6020B** Units: **mg/L**
SampType: **MS** Run ID: **ICP-MS4_200527A** Analysis Date: **5/27/2020 1:41:00 PM** Prep Date: **5/26/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.202	0.00250	0.200	0.00114	100	75	125			
Arsenic	0.232	0.00500	0.200	0.0285	102	75	125			
Barium	0.218	0.0100	0.200	0.0171	100	75	125			
Beryllium	0.194	0.00100	0.200	0	97.1	75	125			
Boron	0.443	0.0300	0.200	0.234	104	75	125			
Cadmium	0.201	0.00100	0.200	0	100	75	125			
Calcium	9.99	0.300	5.00	5.40	91.8	75	125			
Chromium	0.202	0.00500	0.200	0	101	75	125			
Cobalt	0.199	0.00500	0.200	0	99.7	75	125			
Lead	0.205	0.00100	0.200	0	103	75	125			
Lithium	0.185	0.0100	0.200	0	92.3	75	125			
Molybdenum	0.412	0.00500	0.200	0.220	95.7	75	125			
Selenium	0.188	0.00500	0.200	0	94.1	75	125			
Thallium	0.208	0.00150	0.200	0	104	75	125			

Sample ID: **2005182-03A MSD** Batch ID: **96489** TestNo: **SW6020B** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS4_200527A** Analysis Date: **5/27/2020 1:43:00 PM** Prep Date: **5/26/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.204	0.00250	0.200	0.00114	102	75	125	1.06	15	
Arsenic	0.234	0.00500	0.200	0.0285	103	75	125	0.775	15	
Barium	0.220	0.0100	0.200	0.0171	102	75	125	1.14	15	
Beryllium	0.194	0.00100	0.200	0	96.8	75	125	0.279	15	
Boron	0.446	0.0300	0.200	0.234	106	75	125	0.778	15	
Cadmium	0.198	0.00100	0.200	0	99.0	75	125	1.31	15	
Calcium	10.1	0.300	5.00	5.40	93.4	75	125	0.775	15	
Chromium	0.199	0.00500	0.200	0	99.5	75	125	1.61	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005170
Project: A1 Area Landfill-CCR

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_200527A

Sample ID: **2005182-03A MSD** Batch ID: **96489** TestNo: **SW6020B** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS4_200527A** Analysis Date: **5/27/2020 1:43:00 PM** Prep Date: **5/26/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cobalt	0.200	0.00500	0.200	0	100	75	125	0.356	15	
Lead	0.206	0.00100	0.200	0	103	75	125	0.092	15	
Lithium	0.189	0.0100	0.200	0	94.7	75	125	2.57	15	
Molybdenum	0.418	0.00500	0.200	0.220	98.9	75	125	1.52	15	
Selenium	0.190	0.00500	0.200	0	94.8	75	125	0.733	15	
Thallium	0.208	0.00150	0.200	0	104	75	125	0.222	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005170
Project: A1 Area Landfill-CCR

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_200527A

Sample ID: **ICV-200527**	Batch ID: **R110665**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_200527A**	Analysis Date: **5/27/2020 12:08:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.102	0.00250	0.100	0	102	90	110			
Arsenic	0.105	0.00500	0.100	0	105	90	110			
Barium	0.102	0.0100	0.100	0	102	90	110			
Beryllium	0.103	0.00100	0.100	0	103	90	110			
Boron	0.0995	0.0300	0.100	0	99.5	90	110			
Cadmium	0.103	0.00100	0.100	0	103	90	110			
Calcium	2.48	0.300	2.50	0	99.4	90	110			
Chromium	0.107	0.00500	0.100	0	107	90	110			
Cobalt	0.107	0.00500	0.100	0	107	90	110			
Lead	0.104	0.00100	0.100	0	104	90	110			
Lithium	0.101	0.0100	0.100	0	101	90	110			
Molybdenum	0.101	0.00500	0.100	0	101	90	110			
Selenium	0.104	0.00500	0.100	0	104	90	110			
Thallium	0.104	0.00150	0.100	0	104	90	110			

Sample ID: **LCVL-200527**	Batch ID: **R110665**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_200527A**	Analysis Date: **5/27/2020 12:17:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00204	0.00250	0.00200	0	102	80	120			
Arsenic	0.00510	0.00500	0.00500	0	102	80	120			
Barium	0.00529	0.0100	0.00500	0	106	80	120			
Beryllium	0.00110	0.00100	0.00100	0	110	80	120			
Boron	0.0200	0.0300	0.0200	0	99.9	80	120			
Cadmium	0.00102	0.00100	0.00100	0	102	80	120			
Calcium	0.0931	0.300	0.100	0	93.1	80	120			
Chromium	0.00516	0.00500	0.00500	0	103	80	120			
Cobalt	0.00517	0.00500	0.00500	0	103	80	120			
Lead	0.000992	0.00100	0.00100	0	99.2	80	120			
Lithium	0.0105	0.0100	0.0100	0	105	80	120			
Molybdenum	0.00526	0.00500	0.00500	0	105	80	120			
Selenium	0.00533	0.00500	0.00500	0	107	80	120			
Thallium	0.000963	0.00150	0.00100	0	96.3	80	120			

Sample ID: **CCV2-200527**	Batch ID: **R110665**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_200527A**	Analysis Date: **5/27/2020 12:57:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.198	0.00250	0.200	0	98.8	90	110			
Arsenic	0.205	0.00500	0.200	0	102	90	110			
Barium	0.200	0.0100	0.200	0	100	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005170
Project: A1 Area Landfill-CCR

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_200527A

Sample ID: **CCV2-200527** Batch ID: **R110665** TestNo: **SW6020B** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_200527A** Analysis Date: **5/27/2020 12:57:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.206	0.00100	0.200	0	103	90	110			
Boron	0.216	0.0300	0.200	0	108	90	110			
Cadmium	0.202	0.00100	0.200	0	101	90	110			
Calcium	4.75	0.300	5.00	0	95.1	90	110			
Chromium	0.204	0.00500	0.200	0	102	90	110			
Cobalt	0.202	0.00500	0.200	0	101	90	110			
Lead	0.200	0.00100	0.200	0	100	90	110			
Lithium	0.206	0.0100	0.200	0	103	90	110			
Molybdenum	0.201	0.00500	0.200	0	101	90	110			
Selenium	0.207	0.00500	0.200	0	103	90	110			
Thallium	0.203	0.00150	0.200	0	102	90	110			

Sample ID: **CCV3-200527** Batch ID: **R110665** TestNo: **SW6020B** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_200527A** Analysis Date: **5/27/2020 2:09:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.196	0.00250	0.200	0	98.0	90	110			
Arsenic	0.205	0.00500	0.200	0	102	90	110			
Barium	0.198	0.0100	0.200	0	99.1	90	110			
Beryllium	0.200	0.00100	0.200	0	99.8	90	110			
Boron	0.216	0.0300	0.200	0	108	90	110			
Cadmium	0.201	0.00100	0.200	0	101	90	110			
Calcium	4.74	0.300	5.00	0	94.8	90	110			
Chromium	0.203	0.00500	0.200	0	102	90	110			
Cobalt	0.202	0.00500	0.200	0	101	90	110			
Lead	0.200	0.00100	0.200	0	99.8	90	110			
Lithium	0.198	0.0100	0.200	0	98.8	90	110			
Molybdenum	0.200	0.00500	0.200	0	100	90	110			
Selenium	0.205	0.00500	0.200	0	102	90	110			
Thallium	0.202	0.00150	0.200	0	101	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005170
Project: A1 Area Landfill-CCR

ANALYTICAL QC SUMMARY REPORT

RunID: **ICP-MS4_200529A**

The QC data in batch 96513 applies to the following samples: 2005170-07A, 2005170-08A

Sample ID: **MB-96513**	Batch ID: **96513**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MBLK**	Run ID: **ICP-MS4_200529A**	Analysis Date: **5/29/2020 12:50:00 PM**	Prep Date: **5/27/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	<0.0100	0.0300								

Sample ID: **LCS-96513**	Batch ID: **96513**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCS**	Run ID: **ICP-MS4_200529A**	Analysis Date: **5/29/2020 12:52:00 PM**	Prep Date: **5/27/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.202	0.0300	0.200	0	101	80	120			

Sample ID: **LCSD-96513**	Batch ID: **96513**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCSD**	Run ID: **ICP-MS4_200529A**	Analysis Date: **5/29/2020 12:54:00 PM**	Prep Date: **5/27/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.204	0.0300	0.200	0	102	80	120	1.11	15	

Sample ID: **2005196-06B SD**	Batch ID: **96513**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS4_200529A**	Analysis Date: **5/29/2020 1:00:00 PM**	Prep Date: **5/27/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	<2.50	7.50	0	1.41				0	20	

Sample ID: **2005196-06B PDS**	Batch ID: **96513**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_200529A**	Analysis Date: **5/29/2020 1:20:00 PM**	Prep Date: **5/27/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	12.2	1.50	10.0	1.41	108	75	125			

Sample ID: **2005196-06B MS**	Batch ID: **96513**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS4_200529A**	Analysis Date: **5/29/2020 1:22:00 PM**	Prep Date: **5/27/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	1.90	1.50	0.200	1.41	247	75	125			S

Sample ID: **2005196-06B MSD**	Batch ID: **96513**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS4_200529A**	Analysis Date: **5/29/2020 1:24:00 PM**	Prep Date: **5/27/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	1.65	1.50	0.200	1.41	124	75	125	13.9	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005170
Project: A1 Area Landfill-CCR

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_200529A

Sample ID: **ICV-200529**	Batch ID: **R110716**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_200529A**	Analysis Date: **5/29/2020 11:56:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.106	0.0300	0.100	0	106	90	110			
Calcium	2.51	0.300	2.50	0	100	90	110			

Sample ID: **LCVL-200529**	Batch ID: **R110716**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_200529A**	Analysis Date: **5/29/2020 12:09:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0202	0.0300	0.0200	0	101	80	120			
Calcium	0.0988	0.300	0.100	0	98.8	80	120			

Sample ID: **CCV1-200529**	Batch ID: **R110716**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_200529A**	Analysis Date: **5/29/2020 1:36:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.216	0.0300	0.200	0	108	90	110			
Calcium	4.60	0.300	5.00	0	92.0	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005170
Project: A1 Area Landfill-CCR

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_200408C

Sample ID: **DCS1-95814**	Batch ID: **95814**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS**	Run ID: **ICP-MS5_200408C**	Analysis Date: **4/8/2020 11:16:00 AM**	Prep Date: **4/7/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.000932	0.00250	0.00100	0	93.2	70	130	0	0	
Beryllium	0.000472	0.00100	0.000500	0	94.4	70	130	0	0	
Cadmium	0.000492	0.00100	0.000500	0	98.4	70	130	0	0	
Lead	0.000496	0.00100	0.000500	0	99.2	70	130	0	0	
Thallium	0.000468	0.00150	0.000500	0	93.6	70	130	0	0	

Sample ID: **DCS2-95814**	Batch ID: **95814**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS2**	Run ID: **ICP-MS5_200408C**	Analysis Date: **4/8/2020 11:19:00 AM**	Prep Date: **4/7/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.310	0.300	0.300	0	103	70	130	0	0	

Sample ID: **DCS3-95814**	Batch ID: **95814**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS3**	Run ID: **ICP-MS5_200408C**	Analysis Date: **4/8/2020 11:21:00 AM**	Prep Date: **4/7/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.00466	0.00500	0.00500	0	93.2	70	130	0	0	
Barium	0.00478	0.0100	0.00500	0	95.6	70	130	0	0	
Chromium	0.00600	0.00500	0.00500	0	120	70	130	0	0	
Cobalt	0.00473	0.00500	0.00500	0	94.6	70	130	0	0	
Lithium	0.00473	0.0100	0.00500	0	94.6	70	130	0	0	
Molybdenum	0.00466	0.00500	0.00500	0	93.2	70	130	0	0	
Selenium	0.00517	0.00500	0.00500	0	103	70	130	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005170
Project: A1 Area Landfill-CCR

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_200528A

The QC data in batch 96513 applies to the following samples: 2005170-07A, 2005170-08A

Sample ID: **MB-96513** Batch ID: **96513** TestNo: **SW6020B** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS5_200528A** Analysis Date: **5/28/2020 12:39:00 PM** Prep Date: **5/27/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.000800	0.00250								
Arsenic	<0.00200	0.00500								
Barium	<0.00300	0.0100								
Beryllium	<0.000300	0.00100								
Cadmium	<0.000300	0.00100								
Calcium	<0.100	0.300								
Chromium	<0.00200	0.00500								
Cobalt	<0.00300	0.00500								
Lead	<0.000300	0.00100								
Lithium	<0.00500	0.0100								
Molybdenum	<0.00200	0.00500								
Selenium	<0.00200	0.00500								
Thallium	<0.000500	0.00150								

Sample ID: **LCS-96513** Batch ID: **96513** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS5_200528A** Analysis Date: **5/28/2020 12:41:00 PM** Prep Date: **5/27/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.198	0.00250	0.200	0	99.2	80	120			
Arsenic	0.208	0.00500	0.200	0	104	80	120			
Barium	0.201	0.0100	0.200	0	100	80	120			
Beryllium	0.201	0.00100	0.200	0	101	80	120			
Cadmium	0.204	0.00100	0.200	0	102	80	120			
Calcium	5.04	0.300	5.00	0	101	80	120			
Chromium	0.202	0.00500	0.200	0	101	80	120			
Cobalt	0.208	0.00500	0.200	0	104	80	120			
Lead	0.200	0.00100	0.200	0	100	80	120			
Lithium	0.203	0.0100	0.200	0	102	80	120			
Molybdenum	0.197	0.00500	0.200	0	98.7	80	120			
Selenium	0.212	0.00500	0.200	0	106	80	120			
Thallium	0.209	0.00150	0.200	0	104	80	120			

Sample ID: **LCSD-96513** Batch ID: **96513** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS5_200528A** Analysis Date: **5/28/2020 12:43:00 PM** Prep Date: **5/27/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.200	0.00250	0.200	0	100	80	120	0.944	15	
Arsenic	0.205	0.00500	0.200	0	103	80	120	1.23	15	
Barium	0.202	0.0100	0.200	0	101	80	120	0.602	15	
Beryllium	0.202	0.00100	0.200	0	101	80	120	0.251	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005170
Project: A1 Area Landfill-CCR

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_200528A

Sample ID: **LCSD-96513** Batch ID: **96513** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS5_200528A** Analysis Date: **5/28/2020 12:43:00 PM** Prep Date: **5/27/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cadmium	0.205	0.00100	0.200	0	102	80	120	0.248	15	
Calcium	4.99	0.300	5.00	0	99.7	80	120	1.14	15	
Chromium	0.203	0.00500	0.200	0	102	80	120	0.622	15	
Cobalt	0.207	0.00500	0.200	0	103	80	120	0.666	15	
Lead	0.200	0.00100	0.200	0	100	80	120	0.055	15	
Lithium	0.205	0.0100	0.200	0	103	80	120	0.915	15	
Molybdenum	0.199	0.00500	0.200	0	99.5	80	120	0.772	15	
Selenium	0.210	0.00500	0.200	0	105	80	120	0.934	15	
Thallium	0.209	0.00150	0.200	0	104	80	120	0.064	15	

Sample ID: **2005196-06B SD** Batch ID: **96513** TestNo: **SW6020B** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS5_200528A** Analysis Date: **5/28/2020 12:50:00 PM** Prep Date: **5/27/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.00400	0.0125	0	0				0	20	
Arsenic	<0.0100	0.0250	0	0				0	20	
Barium	0.0401	0.0500	0	0.0405				1.19	20	
Beryllium	<0.00150	0.00500	0	0				0	20	
Cadmium	<0.00150	0.00500	0	0				0	20	
Calcium	172	1.50	0	171				0.754	20	
Chromium	<0.0100	0.0250	0	0				0	20	
Cobalt	<0.0150	0.0250	0	0				0	20	
Lead	<0.00150	0.00500	0	0				0	20	
Lithium	0.114	0.0500	0	0.112				1.67	20	
Molybdenum	<0.0100	0.0250	0	0				0	20	
Selenium	<0.0100	0.0250	0	0				0	20	
Thallium	<0.00250	0.00750	0	0				0	20	

Sample ID: **2005196-06B PDS** Batch ID: **96513** TestNo: **SW6020B** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS5_200528A** Analysis Date: **5/28/2020 1:16:00 PM** Prep Date: **5/27/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.196	0.00250	0.200	0	97.8	75	125			
Arsenic	0.196	0.00500	0.200	0	98.0	75	125			
Barium	0.243	0.0100	0.200	0.0405	101	75	125			
Beryllium	0.199	0.00100	0.200	0	99.5	75	125			
Cadmium	0.198	0.00100	0.200	0	98.8	75	125			
Calcium	166	0.300	5.00	171	-97.0	75	125			S
Chromium	0.205	0.00500	0.200	0	102	75	125			
Cobalt	0.199	0.00500	0.200	0	99.4	75	125			
Lead	0.206	0.00100	0.200	0	103	75	125			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005170
Project: A1 Area Landfill-CCR

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_200528A

Sample ID: **2005196-06B PDS** Batch ID: **96513** TestNo: **SW6020B** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS5_200528A** Analysis Date: **5/28/2020 1:16:00 PM** Prep Date: **5/27/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lithium	0.311	0.0100	0.200	0.112	99.4	75	125			
Molybdenum	0.203	0.00500	0.200	0	102	75	125			
Selenium	0.186	0.00500	0.200	0	93.1	75	125			
Thallium	0.206	0.00150	0.200	0	103	75	125			

Sample ID: **2005196-06B MS** Batch ID: **96513** TestNo: **SW6020B** Units: **mg/L**
SampType: **MS** Run ID: **ICP-MS5_200528A** Analysis Date: **5/28/2020 1:18:00 PM** Prep Date: **5/27/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.201	0.00250	0.200	0	101	75	125			
Arsenic	0.198	0.00500	0.200	0	98.9	75	125			
Barium	0.239	0.0100	0.200	0.0405	99.3	75	125			
Beryllium	0.201	0.00100	0.200	0	100	75	125			
Cadmium	0.194	0.00100	0.200	0	97.2	75	125			
Calcium	175	0.300	5.00	171	92.0	75	125			
Chromium	0.197	0.00500	0.200	0	98.5	75	125			
Cobalt	0.196	0.00500	0.200	0	97.8	75	125			
Lead	0.203	0.00100	0.200	0	101	75	125			
Lithium	0.318	0.0100	0.200	0.112	103	75	125			
Molybdenum	0.206	0.00500	0.200	0	103	75	125			
Selenium	0.190	0.00500	0.200	0	95.2	75	125			
Thallium	0.200	0.00150	0.200	0	100	75	125			

Sample ID: **2005196-06B MSD** Batch ID: **96513** TestNo: **SW6020B** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS5_200528A** Analysis Date: **5/28/2020 1:20:00 PM** Prep Date: **5/27/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.200	0.00250	0.200	0	99.9	75	125	0.662	15	
Arsenic	0.199	0.00500	0.200	0	99.3	75	125	0.440	15	
Barium	0.239	0.0100	0.200	0.0405	99.4	75	125	0.102	15	
Beryllium	0.199	0.00100	0.200	0	99.7	75	125	0.744	15	
Cadmium	0.194	0.00100	0.200	0	97.0	75	125	0.218	15	
Calcium	174	0.300	5.00	171	69.1	75	125	0.656	15	S
Chromium	0.197	0.00500	0.200	0	98.6	75	125	0.143	15	
Cobalt	0.196	0.00500	0.200	0	98.2	75	125	0.398	15	
Lead	0.203	0.00100	0.200	0	102	75	125	0.138	15	
Lithium	0.317	0.0100	0.200	0.112	102	75	125	0.526	15	
Molybdenum	0.205	0.00500	0.200	0	103	75	125	0.587	15	
Selenium	0.186	0.00500	0.200	0	93.1	75	125	2.23	15	
Thallium	0.209	0.00150	0.200	0	105	75	125	4.45	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005170
Project: A1 Area Landfill-CCR

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_200528A

Sample ID: **ICV-200528**	Batch ID: **R110690**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS5_200528A**	Analysis Date: **5/28/2020 11:00:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.102	0.00250	0.100	0	102	90	110			
Arsenic	0.101	0.00500	0.100	0	101	90	110			
Barium	0.103	0.0100	0.100	0	103	90	110			
Beryllium	0.102	0.00100	0.100	0	102	90	110			
Cadmium	0.105	0.00100	0.100	0	105	90	110			
Calcium	2.59	0.300	2.50	0	104	90	110			
Chromium	0.105	0.00500	0.100	0	105	90	110			
Cobalt	0.104	0.00500	0.100	0	104	90	110			
Lead	0.102	0.00100	0.100	0	102	90	110			
Lithium	0.104	0.0100	0.100	0	104	90	110			
Molybdenum	0.0978	0.00500	0.100	0	97.8	90	110			
Selenium	0.104	0.00500	0.100	0	104	90	110			
Thallium	0.0989	0.00150	0.100	0	98.9	90	110			

Sample ID: **LCVL-200528**	Batch ID: **R110690**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_200528A**	Analysis Date: **5/28/2020 11:07:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00191	0.00250	0.00200	0	95.6	80	120			
Arsenic	0.00513	0.00500	0.00500	0	103	80	120			
Barium	0.00520	0.0100	0.00500	0	104	80	120			
Beryllium	0.000995	0.00100	0.00100	0	99.5	80	120			
Cadmium	0.000998	0.00100	0.00100	0	99.8	80	120			
Calcium	0.107	0.300	0.100	0	107	80	120			
Chromium	0.00525	0.00500	0.00500	0	105	80	120			
Cobalt	0.00519	0.00500	0.00500	0	104	80	120			
Lead	0.00101	0.00100	0.00100	0	101	80	120			
Lithium	0.0102	0.0100	0.0100	0	102	80	120			
Molybdenum	0.00512	0.00500	0.00500	0	102	80	120			
Selenium	0.00570	0.00500	0.00500	0	114	80	120			
Thallium	0.000978	0.00150	0.00100	0	97.8	80	120			

Sample ID: **CCV1-200528**	Batch ID: **R110690**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_200528A**	Analysis Date: **5/28/2020 11:56:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	5.03	0.300	5.00	0	101	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005170
Project: A1 Area Landfill-CCR

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_200528A

Sample ID: **CCV2-200528**	Batch ID: **R110690**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_200528A**	Analysis Date: **5/28/2020 12:23:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.206	0.00250	0.200	0	103	90	110			
Arsenic	0.209	0.00500	0.200	0	105	90	110			
Barium	0.210	0.0100	0.200	0	105	90	110			
Beryllium	0.209	0.00100	0.200	0	104	90	110			
Cadmium	0.215	0.00100	0.200	0	107	90	110			
Calcium	5.06	0.300	5.00	0	101	90	110			
Chromium	0.205	0.00500	0.200	0	103	90	110			
Cobalt	0.211	0.00500	0.200	0	106	90	110			
Lead	0.201	0.00100	0.200	0	100	90	110			
Lithium	0.212	0.0100	0.200	0	106	90	110			
Molybdenum	0.208	0.00500	0.200	0	104	90	110			
Selenium	0.213	0.00500	0.200	0	106	90	110			
Thallium	0.210	0.00150	0.200	0	105	90	110			

Sample ID: **CCV3-200528**	Batch ID: **R110690**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_200528A**	Analysis Date: **5/28/2020 1:31:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.200	0.00250	0.200	0	100	90	110			
Arsenic	0.209	0.00500	0.200	0	105	90	110			
Barium	0.203	0.0100	0.200	0	101	90	110			
Beryllium	0.204	0.00100	0.200	0	102	90	110			
Cadmium	0.207	0.00100	0.200	0	103	90	110			
Calcium	5.06	0.300	5.00	0	101	90	110			
Chromium	0.204	0.00500	0.200	0	102	90	110			
Cobalt	0.212	0.00500	0.200	0	106	90	110			
Lead	0.201	0.00100	0.200	0	100	90	110			
Lithium	0.205	0.0100	0.200	0	103	90	110			
Molybdenum	0.204	0.00500	0.200	0	102	90	110			
Selenium	0.214	0.00500	0.200	0	107	90	110			
Thallium	0.212	0.00150	0.200	0	106	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005170
Project: A1 Area Landfill-CCR

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_200519B

Sample ID: **DCS2-96406** Batch ID: **96406** TestNo: **E300** Units: **mg/L**
SampType: **DCS2** Run ID: **IC2_200519B** Analysis Date: **5/19/2020 11:56:12 AM** Prep Date: **5/19/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	0.440	1.00	0.5000	0	88.1	70	130	0	0	
Fluoride	0.176	0.400	0.2000	0	87.8	70	130	0	0	
Sulfate	1.69	3.00	1.500	0	113	70	130	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005170
Project: A1 Area Landfill-CCR

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_200526B

The QC data in batch 96496 applies to the following samples: 2005170-01B, 2005170-02B, 2005170-03B, 2005170-04B, 2005170-05B, 2005170-06B, 2005170-07B, 2005170-08B

Sample ID: **MB-96496** Batch ID: **96496** TestNo: **E300** Units: **mg/L**
SampType: **MBLK** Run ID: **IC2_200526B** Analysis Date: **5/26/2020 11:00:09 AM** Prep Date: **5/26/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00								
Fluoride	<0.100	0.400								
Sulfate	<1.00	3.00								

Sample ID: **LCS-96496** Batch ID: **96496** TestNo: **E300** Units: **mg/L**
SampType: **LCS** Run ID: **IC2_200526B** Analysis Date: **5/26/2020 11:16:09 AM** Prep Date: **5/26/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.56	1.00	10.00	0	95.6	90	110			
Fluoride	3.65	0.400	4.000	0	91.3	90	110			
Sulfate	29.0	3.00	30.00	0	96.5	90	110			

Sample ID: **LCSD-96496** Batch ID: **96496** TestNo: **E300** Units: **mg/L**
SampType: **LCSD** Run ID: **IC2_200526B** Analysis Date: **5/26/2020 11:32:09 AM** Prep Date: **5/26/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.58	1.00	10.00	0	95.8	90	110	0.143	20	
Fluoride	3.65	0.400	4.000	0	91.3	90	110	0.026	20	
Sulfate	29.0	3.00	30.00	0	96.6	90	110	0.048	20	

Sample ID: **2005191-01CMS** Batch ID: **96496** TestNo: **E300** Units: **mg/L**
SampType: **MS** Run ID: **IC2_200526B** Analysis Date: **5/27/2020 12:18:11 AM** Prep Date: **5/26/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	20.1	1.00	20.00	1.583	92.7	90	110			
Fluoride	20.0	0.400	20.00	0.1673	99.3	90	110			
Sulfate	19.5	3.00	20.00	1.523	89.7	90	110			

Sample ID: **2005191-01CMSD** Batch ID: **96496** TestNo: **E300** Units: **mg/L**
SampType: **MSD** Run ID: **IC2_200526B** Analysis Date: **5/27/2020 12:34:11 AM** Prep Date: **5/26/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	20.3	1.00	20.00	1.583	93.4	90	110	0.762	20	
Fluoride	20.2	0.400	20.00	0.1673	100	90	110	1.02	20	
Sulfate	19.6	3.00	20.00	1.523	90.3	90	110	0.562	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005170
Project: A1 Area Landfill-CCR

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_200526B

Sample ID: **2005191-02CMS**	Batch ID: **96496**	TestNo: **E300**	Units: **mg/L**
SampType: **MS**	Run ID: **IC2_200526B**	Analysis Date: **5/27/2020 1:06:11 AM**	Prep Date: **5/26/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	22.5	1.00	20.00	2.981	97.5	90	110			
Fluoride	20.2	0.400	20.00	0	101	90	110			
Sulfate	19.3	3.00	20.00	0	96.3	90	110			

Sample ID: **2005191-02CMSD**	Batch ID: **96496**	TestNo: **E300**	Units: **mg/L**
SampType: **MSD**	Run ID: **IC2_200526B**	Analysis Date: **5/27/2020 1:22:11 AM**	Prep Date: **5/26/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	22.4	1.00	20.00	2.981	97.3	90	110	0.204	20	
Fluoride	20.2	0.400	20.00	0	101	90	110	0.224	20	
Sulfate	19.2	3.00	20.00	0	96.2	90	110	0.074	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005170
Project: A1 Area Landfill-CCR

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_200526B

Sample ID: **ICV-200526**	Batch ID: **R110647**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC2_200526B**	Analysis Date: **5/26/2020 10:28:09 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	24.5	1.00	25.00	0	97.9	90	110			
Fluoride	9.54	0.400	10.00	0	95.4	90	110			
Sulfate	75.5	3.00	75.00	0	101	90	110			

Sample ID: **CCV1-200526**	Batch ID: **R110647**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_200526B**	Analysis Date: **5/26/2020 5:38:12 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.1	1.00	10.00	0	101	90	110			
Fluoride	3.83	0.400	4.000	0	95.9	90	110			
Sulfate	29.8	3.00	30.00	0	99.3	90	110			

Sample ID: **CCV2-200526**	Batch ID: **R110647**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_200526B**	Analysis Date: **5/26/2020 9:38:11 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.77	1.00	10.00	0	97.7	90	110			
Fluoride	3.72	0.400	4.000	0	93.1	90	110			
Sulfate	29.3	3.00	30.00	0	97.5	90	110			

Sample ID: **CCV3-200526**	Batch ID: **R110647**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_200526B**	Analysis Date: **5/27/2020 2:42:11 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.87	1.00	10.00	0	98.7	90	110			
Fluoride	3.80	0.400	4.000	0	95.1	90	110			
Sulfate	29.5	3.00	30.00	0	98.3	90	110			

Sample ID: **CCV4-200526**	Batch ID: **R110647**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_200526B**	Analysis Date: **5/27/2020 6:10:11 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.92	1.00	10.00	0	99.2	90	110			
Fluoride	3.77	0.400	4.000	0	94.3	90	110			
Sulfate	29.7	3.00	30.00	0	98.9	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005170
Project: A1 Area Landfill-CCR

ANALYTICAL QC SUMMARY REPORT

RunID: WC_200521B

The QC data in batch 96451 applies to the following samples: 2005170-01B, 2005170-02B, 2005170-03B, 2005170-04B, 2005170-05B, 2005170-06B, 2005170-07B, 2005170-08B

Sample ID: **MB-96451**	Batch ID: **96451**	TestNo: **M2540C**	Units: **mg/L**
SampType: **MBLK**	Run ID: **WC_200521B**	Analysis Date: **5/21/2020 4:50:00 PM**	Prep Date: **5/21/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	<10.0	10.0								

Sample ID: **LCS-96451**	Batch ID: **96451**	TestNo: **M2540C**	Units: **mg/L**
SampType: **LCS**	Run ID: **WC_200521B**	Analysis Date: **5/21/2020 4:50:00 PM**	Prep Date: **5/21/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	756	10.0	745.6	0	101	90	113			

Sample ID: **2005144-02D-DUP**	Batch ID: **96451**	TestNo: **M2540C**	Units: **mg/L**
SampType: **DUP**	Run ID: **WC_200521B**	Analysis Date: **5/21/2020 4:50:00 PM**	Prep Date: **5/21/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	3510	50.0	0	3565				1.55	5	

Sample ID: **2005145-01D-DUP**	Batch ID: **96451**	TestNo: **M2540C**	Units: **mg/L**
SampType: **DUP**	Run ID: **WC_200521B**	Analysis Date: **5/21/2020 4:50:00 PM**	Prep Date: **5/21/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	3240	50.0	0	3230				0.309	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *24-Jun-20*

CLIENT: Golder
Work Order: 2005170
Project: A1 Area Landfill-CCR

MQL SUMMARY REPORT

TestNo: E300	**MDL**	**MQL**
Analyte	**mg/L**	**mg/L**
Chloride	0.300	1.00
Fluoride	0.100	0.400
Sulfate	1.00	3.00

TestNo: SW6020B	**MDL**	**MQL**
Analyte	**mg/L**	**mg/L**
Antimony	0.000800	0.00250
Arsenic	0.00200	0.00500
Barium	0.00300	0.0100
Beryllium	0.000300	0.00100
Boron	0.0100	0.0300
Cadmium	0.000300	0.00100
Calcium	0.100	0.300
Chromium	0.00200	0.00500
Cobalt	0.00300	0.00500
Lead	0.000300	0.00100
Lithium	0.00500	0.0100
Molybdenum	0.00200	0.00500
Selenium	0.00200	0.00500
Thallium	0.000500	0.00150

TestNo: SW7470A	**MDL**	**MQL**
Analyte	**mg/L**	**mg/L**
Mercury	0.0000800	0.000200

TestNo: M2540C	**MDL**	**MQL**
Analyte	**mg/L**	**mg/L**
Total Dissolved Solids (Residue, Filt	10.0	10.0

Qualifiers: MQL -Method Quantitation Limit as defined by TRRP
MDL -Method Detection Limit as defined by TRRP

Pace Analytical®
National Center for Testing & Innovation

ANALYTICAL REPORT

June 24, 2020

DHL Analytical, Inc.

Sample Delivery Group:	L1222911
Samples Received:	05/28/2020
Project Number:	2005170
Description:	

Report To: John DuPont
2300 Double Creek Drive
Round Rock, TX 78664

Entire Report Reviewed By:

Jason Romer
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.

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BMW-24 L1222911-01 Non-Potable Water

Collected by	Collected date/time	Received date/time
	05/20/20 10:25	05/28/20 10:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1484279	1	06/02/20 13:54	06/16/20 14:10	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1492712	1	06/15/20 14:42	06/16/20 14:41	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1492712	1	06/15/20 14:42	06/16/20 14:41	RGT	Mt. Juliet, TN

BMW-23 L1222911-02 Non-Potable Water

Collected by	Collected date/time	Received date/time
	05/20/20 11:15	05/28/20 10:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1484279	1	06/02/20 13:54	06/16/20 14:10	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1492712	1	06/15/20 14:42	06/16/20 14:41	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1492712	1	06/15/20 14:42	06/16/20 14:41	RGT	Mt. Juliet, TN

BMW-20 L1222911-03 Non-Potable Water

Collected by	Collected date/time	Received date/time
	05/20/20 12:10	05/28/20 10:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1484279	1	06/02/20 13:54	06/16/20 14:10	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1492712	1	06/15/20 14:42	06/16/20 14:41	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1492712	1	06/15/20 14:42	06/16/20 14:41	RGT	Mt. Juliet, TN

BMW-21 L1222911-04 Non-Potable Water

Collected by	Collected date/time	Received date/time
	05/20/20 13:00	05/28/20 10:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1484279	1	06/02/20 13:54	06/16/20 14:10	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1492712	1	06/15/20 14:42	06/16/20 14:41	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1492712	1	06/15/20 14:42	06/16/20 14:41	RGT	Mt. Juliet, TN

BMW-26 L1222911-05 Non-Potable Water

Collected by	Collected date/time	Received date/time
	05/20/20 14:05	05/28/20 10:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1484279	1	06/02/20 13:54	06/16/20 14:10	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1492712	1	06/15/20 14:42	06/16/20 14:41	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1492712	1	06/15/20 14:42	06/16/20 14:41	RGT	Mt. Juliet, TN

BMW-27 L1222911-06 Non-Potable Water

Collected by	Collected date/time	Received date/time
	05/20/20 15:00	05/28/20 10:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1484279	1	06/02/20 13:54	06/16/20 14:10	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1492712	1	06/15/20 14:42	06/16/20 14:41	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1492712	1	06/15/20 14:42	06/16/20 14:41	RGT	Mt. Juliet, TN

BMW-19 L1222911-07 Non-Potable Water

			Collected by	Collected date/time	Received date/time
				05/20/20 16:20	05/28/20 10:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1484279	1	06/02/20 13:54	06/16/20 14:10	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1492712	1	06/15/20 14:42	06/16/20 14:41	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1492712	1	06/15/20 14:42	06/16/20 14:41	RGT	Mt. Juliet, TN

BMW-22 L1222911-08 Non-Potable Water

			Collected by	Collected date/time	Received date/time
				05/20/20 17:20	05/28/20 10:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1484279	1	06/02/20 13:54	06/16/20 14:10	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1492712	1	06/15/20 14:42	06/16/20 18:47	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1492712	1	06/15/20 14:42	06/16/20 18:47	RGT	Mt. Juliet, TN

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Jason Romer
Project Manager

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	2.45		0.625	1.1	06/16/2020 14:10	WG1484279
(T) Barium	*80.4*			*62.0-143*	*06/16/2020 14:10*	WG1484279
(T) Yttrium	*103*			*79.0-136*	*06/16/2020 14:10*	WG1484279

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	2.99		0.935	1.35	06/16/2020 14:41	WG1492712

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.532		0.310	0.249	06/16/2020 14:41	WG1492712
(T) Barium-133	*91.0*			*30.0-143*	*06/16/2020 14:41*	WG1492712

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	2.27		0.644	1.08	06/16/2020 14:10	WG1484279
(T) Barium	*88.7*			*62.0-143*	*06/16/2020 14:10*	WG1484279
(T) Yttrium	*95.5*			*79.0-136*	*06/16/2020 14:10*	WG1484279

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	2.93		0.992	1.36	06/16/2020 14:41	WG1492712

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.669		0.348	0.276	06/16/2020 14:41	WG1492712
(T) Barium-133	*93.3*			*30.0-143*	*06/16/2020 14:41*	WG1492712

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	2.15		0.639	1.13	06/16/2020 14:10	WG1484279
(T) Barium	*86.7*			*62.0-143*	*06/16/2020 14:10*	WG1484279
(T) Yttrium	*104*			*79.0-136*	*06/16/2020 14:10*	WG1484279

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	2.65		0.913	1.35	06/16/2020 14:41	WG1492712

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.500		0.274	0.219	06/16/2020 14:41	WG1492712
(T) Barium-133	*102*			*30.0-143*	*06/16/2020 14:41*	WG1492712

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	1.76		0.560	0.984	06/16/2020 14:10	WG1484279
(T) Barium	*91.2*			*62.0-143*	*06/16/2020 14:10*	WG1484279
(T) Yttrium	*107*			*79.0-136*	*06/16/2020 14:10*	WG1484279

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	2.32		0.888	1.25	06/16/2020 14:41	WG1492712

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.562		0.328	0.263	06/16/2020 14:41	WG1492712
(T) Barium-133	*91.2*			*30.0-143*	*06/16/2020 14:41*	WG1492712

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	0.696		0.587	0.846	06/16/2020 14:10	WG1484279
(T) Barium	*102*			*62.0-143*	*06/16/2020 14:10*	WG1484279
(T) Yttrium	*103*			*79.0-136*	*06/16/2020 14:10*	WG1484279

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	0.853		0.789	1.13	06/16/2020 14:41	WG1492712

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.158		0.202	0.288	06/16/2020 14:41	WG1492712
(T) Barium-133	*99.8*			*30.0-143*	*06/16/2020 14:41*	WG1492712

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	0.255		0.589	0.856	06/16/2020 14:10	WG1484279
(T) Barium	*99.9*			*62.0-143*	*06/16/2020 14:10*	WG1484279
(T) Yttrium	*109*			*79.0-136*	*06/16/2020 14:10*	WG1484279

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	0.520		0.803	1.09	06/16/2020 14:41	WG1492712

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.265		0.214	0.229	06/16/2020 14:41	WG1492712
(T) Barium-133	*101*			*30.0-143*	*06/16/2020 14:41*	WG1492712

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	0.127		0.512	0.749	06/16/2020 14:10	WG1484279
(T) Barium	*107*			*62.0-143*	*06/16/2020 14:10*	WG1484279
(T) Yttrium	*104*			*79.0-136*	*06/16/2020 14:10*	WG1484279

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	0.192		0.640	0.964	06/16/2020 14:41	WG1492712

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.0651		0.128	0.215	06/16/2020 14:41	WG1492712
(T) Barium-133	*101*			*30.0-143*	*06/16/2020 14:41*	WG1492712

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	2.67		0.562	0.865	06/16/2020 14:10	WG1484279
(T) Barium	*91.3*			*62.0-143*	*06/16/2020 14:10*	WG1484279
(T) Yttrium	*104*			*79.0-136*	*06/16/2020 14:10*	WG1484279

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	3.58		0.954	1.16	06/16/2020 18:47	WG1492712

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.909		0.392	0.293	06/16/2020 18:47	WG1492712
(T) Barium-133	*93.6*			*30.0-143*	*06/16/2020 18:47*	WG1492712

Method Blank (MB)

(MB) R3540497-1 06/16/20 09:40

Analyte	MB Result	MB Qualifier	MB MDA
	pCi/l		pCi/l
Radium-228	0.442		0.422
(T) Barium	*97.2*		
(T) Yttrium	*105*		

L1222881-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1222881-01 06/16/20 09:40 • (DUP) R3540497-5 06/16/20 09:40

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP RER	DUP Qualifier	DUP RPD Limits	DUP RER Limit
	pCi/l	pCi/l		%			%	
Radium-228	0.394	0.886	1	76.9	0.543		20	3
(T) Barium	*82.7*	*86.8*						
(T) Yttrium	*97.9*	*104*						

Laboratory Control Sample (LCS)

(LCS) R3540497-2 06/16/20 09:40

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	pCi/l	pCi/l	%	%	
Radium-228	5.00	4.72	94.4	80.0-120	
(T) Barium			*83.3*		
(T) Yttrium			*97.0*		

L1221007-29 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1221007-29 06/16/20 09:40 • (MS) R3540497-3 06/16/20 09:40 • (MSD) R3540497-4 06/16/20 09:40

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	MS RER	RPD Limits
	pCi/l	pCi/l	pCi/l	pCi/l	%	%		%			%		%
Radium-228	10.0	0.167	9.78	9.56	96.1	93.9	1	70.0-130			2.21		20
(T) Barium		*98.7*			*90.3*	*96.7*							
(T) Yttrium		*99.4*			*99.2*	*98.4*							

Method Blank (MB)

(MB) R3541294-1 06/16/20 14:55

Analyte	MB Result pCi/l	MB Qualifier	MB MDA pCi/l
Radium-226	0.0134		0.0555
(T) Barium-133	*87.1*		

L1222911-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1222911-04 06/16/20 14:41 • (DUP) R3541294-5 06/16/20 14:55

Analyte	Original Result pCi/l	DUP Result pCi/l	Dilution	DUP RPD %	DUP RER	DUP Qualifier	DUP RPD Limits %	DUP RER Limit
Radium-226	0.562	0.340	1	49.4	0.521		20	3
(T) Barium-133	*91.2*	*94.7*						

Laboratory Control Sample (LCS)

(LCS) R3541294-2 06/16/20 14:55

Analyte	Spike Amount pCi/l	LCS Result pCi/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Radium-226	5.02	5.23	104	80.0-120	
(T) Barium-133			*86.4*		

L1221461-09 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1221461-09 06/16/20 14:41 • (MS) R3541294-3 06/16/20 14:55 • (MSD) R3541294-4 06/16/20 14:55

Analyte	Spike Amount pCi/l	Original Result pCi/l	MS Result pCi/l	MSD Result pCi/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	MS RER	RPD Limits %
Radium-226	20.1	0.0610	22.2	21.4	110	106	1	75.0-125			3.85		20
(T) Barium-133		*86.6*			*90.5*	*92.2*							

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDA	Minimum Detectable Activity.
Rec.	Recovery.
RER	Replicate Error Ratio.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(T)	Tracer - A radioisotope of known concentration added to a solution of chemically equivalent radioisotopes at a known concentration to assist in monitoring the yield of the chemical separation.
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description

The remainder of this page intentionally left blank, there are no qualifiers applied to this SDG.

Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.
* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

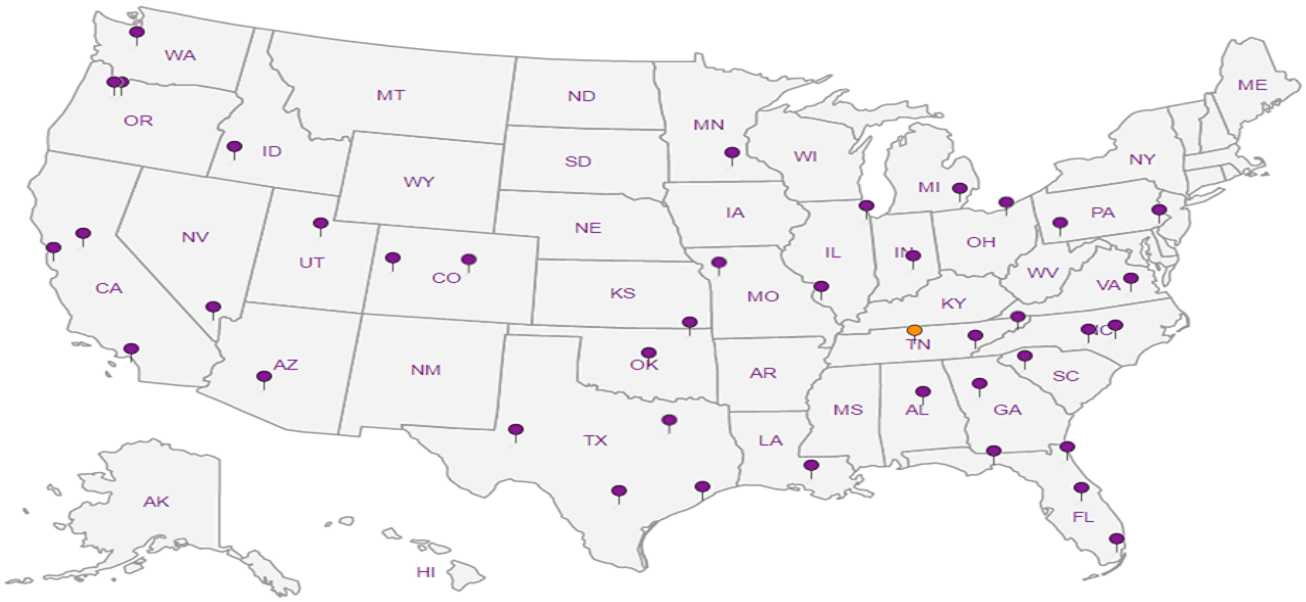
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



DHL Analytical, Inc.
2300 Double Creek Drive
Round Rock, TX 78664
TEL: *(512) 388-8222* FAX: *(512) 388-8229*

CHAIN-OF-CUSTODY RECORD

G165

Work Order: 2005170

122294

Subcontractor:
Pace Analytical
12065 Lebanon Rd
Mt. Juliet, TN 37122

TEL: (615) 773-5923
FAX:
Acct #: DHLRRTX

21-May-20

Sample ID	Matrix	DHL#	Date Collected	Bottle Type	Requested Tests					
					Ra-228	Ra-226				
					E904.0	M7500 Ra B M				
BMW-24	Aqueous	01C	05/20/20 10:25 AM	1LHDPEHNO3	1					01
BMW-24	Aqueous	01D	05/20/20 10:25 AM	1LHDPEHNO3		1				
BMW-23	Aqueous	02C	05/20/20 11:15 AM	1LHDPEHNO3	1					02
BMW-23	Aqueous	02D	05/20/20 11:15 AM	1LHDPEHNO3		1				
BMW-20	Aqueous	03C	05/20/20 12:10 PM	1LHDPEHNO3	1					03
BMW-20	Aqueous	03D	05/20/20 12:10 PM	1LHDPEHNO3		1				
BMW-21	Aqueous	04C	05/20/20 01:00 PM	1LHDPEHNO3	1					04
BMW-21	Aqueous	04D	05/20/20 01:00 PM	1LHDPEHNO3		1				
BMW-26	Aqueous	05C	05/20/20 02:05 PM	1LHDPEHNO3	1					05
BMW-26	Aqueous	05D	05/20/20 02:05 PM	1LHDPEHNO3		1				
BMW-27	Aqueous	06C	05/20/20 03:00 PM	1LHDPEHNO3	1					06
BMW-27	Aqueous	06D	05/20/20 03:00 PM	1LHDPEHNO3		1				
BMW-19	Aqueous	07C	05/20/20 04:20 PM	1LHDPEHNO3	1					07
BMW-19	Aqueous	07D	05/20/20 04:20 PM	1LHDPEHNO3		1				
BMW-22	Aqueous	08C	05/20/20 05:20 PM	1LHDPEHNO3	1					08
BMW-22	Aqueous	08D	05/20/20 05:20 PM	1LHDPEHNO3		1				

General Comments:

Please analyze these samples with Normal Turnaround Time.
Report RA-226, Ra-228 & Combined per Specs.
Quality Control Package Needed: Standard - NELAC Rad Test compliant
Email to cac@dhlanalytical.com & dupont@dhlanalytical.com

Amb

	Date/Time		Date/Time
Relinquished by:	5/26/20 1700	Received by: Carol Kemp	5/28/20 10:15
Relinquished by:		Received by:	

Pace Analytical National Center for Testing & Innovation
Cooler Receipt Form

Client: DHLRRTX	1722911	
Cooler Received/Opened On: 5/28/20 Temperature:	Amb	
Received By: Carol Kemp		
Signature: Carol Kemp		

Receipt Check List	NP	Yes	No
COC Seal Present / Intact?	✓		
COC Signed / Accurate?		✓	
Bottles arrive intact?		✓	
Correct bottles used?		✓	
Sufficient volume sent?		✓	
If Applicable			
VOA Zero headspace?			
Preservation Correct / Checked?		✓	

June 02, 2020

Will Vienne
Golder
2201 Double Creek Dr #4004
Round Rock, Texas 78664
TEL: (512) 671-3434
FAX: (512) 671-3446

Order No.: 2005173

RE: A1 Area Landfill-MNA

Dear Will Vienne:

DHL Analytical, Inc. received 8 sample(s) on 5/21/2020 for the analyses presented in the following report.

There were no problems with the analyses and all data met requirements of NELAP except where noted in the Case Narrative. All non-NELAP methods will be identified accordingly in the case narrative and all estimated uncertainties of test results are within method or EPA specifications.

If you have any questions regarding these tests results, please feel free to call. Thank you for using DHL Analytical.

Sincerely,

John DuPont
General Manager

This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211-20-25

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DHL ANALYTICAL
2300 Double Creek Dr. ■ Round Rock, TX 78664
Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

Nº 68313
CHAIN-OF-CUSTODY

CLIENT: GOUDER ASSOCIATES
ADDRESS: 2201 DOUBLE CREEK ROUND ROCK, TX 78664
PHONE: 512-671-3434 FAX/E-MAIL:
DATA REPORTED TO: WILL VIENNE
ADDITIONAL REPORT COPIES TO:

DATE: 5-20-20 PAGE 1 OF 1
PO #: 19134019 DHL WORK ORDER #: 2005173
PROJECT LOCATION OR NAME: AI AREA LANDFILL - MNA
CLENT PROJECT #: 19134019 COLLECTOR: J. BRAYTON

Authorize 5% surcharge for TRRP Report? ❑ Yes ❑ No

S=SOIL W=WATER A=AIR L=LIQUID SE=SEDIMENT P=PAINT SL=SLUDGE O=OTHER SO=SOLID

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	PRESERVATION: HCl	HNO_3	H_2SO_4 ❑ NaOH ❑	ICE	UNPRESERVED	ANALYSES: BTEX ❑ MTBE ❑ [METHOD 8021]	TPH 1005 ❑ TPH 1006 ❑ HOLD 1006 ❑	GRO [METHOD 8015] ❑ DRO [METHOD 8105] ❑	VOC 8260 ❑ VOC 624 ❑ VOC 8260/5035 ❑	SVOC 8270 ❑ PAH 8270 ❑ HOLD PAH ❑ SVOC 625 ❑	8270 PEST ❑ 625 PEST/PCB ❑ 608 PCB ❑	8270 O-P PEST ❑ 8082 PCB ❑ 8270 PCB ❑	8321 HERB ❑ T PHOS, AMMONIA ❑	METALS 6020 ❑ METALS 200.8 ❑ DISS. METALS ❑	RCRA ❑ TX11 ❑	PH ❑ HEX CHROM ❑ ALKALINITY X COD ❑	CHLORIDE ❑ ANIONS ❑	TCLP-SVOC ❑ VOC ❑ PEST ❑ HERB ❑	TCLP-METALS ❑ RCRA 8 ❑ TX-11 ❑ Pb ❑	RCI ❑ FLASHPOINT ❑ DGAS ❑	TDS ❑ TSS ❑ % MOISTURE ❑ CYANIDE ❑	NO_3 + PO_4 + Na + Mg + K	Ferrous Fe + Ferric Fe	FIELD NOTES
BMW-24	01	5-20-20	1025	W		S		X		X												X					X	X	
BMW-23	02		1115	W		S		X		X												X					X	X	
BMW-20	03		1210	W		S		X		X												X					X	X	
BMW-21	04		1300	W		S		X		X												X					X	X	
BMW-26	05		1405	W		S		X		X												X					X	X	
BMW-27	06		1500	W		S		X		X												X					X	X	
BMW-19	07		1620	W		S		X		X												X					X	X	
BMW-22	08		1720	W		S		X		X												X					X	X	

RELINQUISHED BY: (Signature) DATE/TIME 5-20-20 1830 RECEIVED BY: (Signature) FedEx
RELINQUISHED BY: (Signature) FedEx DATE/TIME 5.21.20 0901 RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature) DATE/TIME RECEIVED BY: (Signature)

❑ DHL DISPOSAL @ $5.00 each ❑ Return

TURN AROUND TIME
RUSH ❑ CALL FIRST
1 DAY ❑ CALL FIRST
2 DAY ❑
NORMAL ☑
OTHER ❑

LABORATORY USE ONLY:
RECEIVING TEMP: 3.4/4.3/4.2/4.0 THERM #: 78
CUSTODY SEALS: ❑ BROKEN ☒ INTACT ❑ NOT USED
CARRIER: ❑ LONE STAR ☒ FEDEX ❑ UPS ❑ OTHER
❑ COURIER DELIVERY
❑ HAND DELIVERED

3.4

501

CUSTODY SEAL

DATE 5-20-20

SIGNATURE

DHL ANALYTICAL

ORIGIN ID:GGGA (512) 671-3434
J. BRAYTON
GOLDER
2201 DOUBLE CREEK DR STE 4004

ROUND ROCK, TX 78664
UNITED STATES US

SHIP DATE: 20MAY20
ACTWGT: 44.05 LB
CAD: 6994167/SSFE2110
DIMS: 25x14x14 IN

BILL THIRD PARTY

Part # 156297-435 RRDB2 EXP 01/21

TO DHL ANALYTICAL
DHL ANALYTICAL
2300 DOUBLE CREEK DR

ROUND ROCK TX 78664
(512) 388-8222 REF:
INV:
PO: DEPT:

FedEx Express

2 of 4
MPS# 0263 3930 6200 6610
Mstr# 3930 6200 6609 0201

THU - 21 MAY 10:30A
PRIORITY OVERNIGHT
AHS
78664
TX-US AUS

A8 BSMA

4.3

512

CUSTODY SEAL

DATE 5-20-20

SIGNATURE

DHL ANALYTICAL

ORIGIN ID:GGGA (512) 671-3404
J. BRAYTON
GOLDER
2201 DOUBLE CREEK DR STE 404
ROUND ROCK, TX 78664
UNITED STATES US

SHIP DATE: 20MAY20
ACTWGT: 53.60 LB
CAD: 6984167/SSFE2710
DIMS: 21x14x14 I

BILL THIRD PARTY

TO DHL ANALYTICAL
DHL ANALYTICAL
2300 DOUBLE CREEK DR

ROUND ROCK TX 78664
(512) 388-8222 REF:
INV:
PO: DEPT:

FedEx Express

3 of 4
MPS# 0263 3930 6200 6620
Mstr# 3930 6200 6609

THU - 21 MAY 10:30A
PRIORITY OVERNIGHT
0201
AHS
78664
TX-US AUS

A8 BSMA

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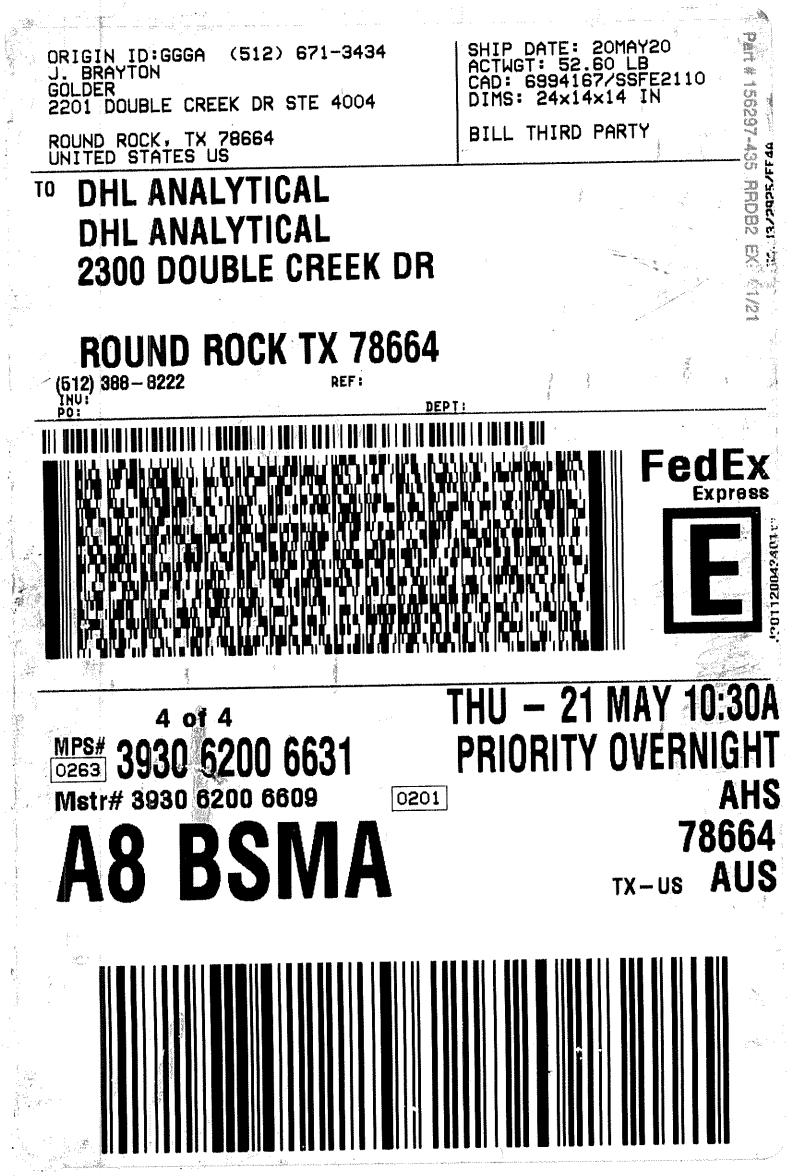
562

CUSTODY SEAL

DATE 5-20-20

SIGNATURE

DHL ANALYTICAL



ORIGIN ID:GGGA (512) 671-3434
J. BRAYTON
GOLDER
2201 DOUBLE CREEK DR STE 4004

ROUND ROCK, TX 78664
UNITED STATES US

SHIP DATE: 20MAY20
ACTWGT: 52.60 LB
CAD: 6994167/SSFE2110
DIMS: 24x14x14 IN

BILL THIRD PARTY

TO DHL ANALYTICAL
DHL ANALYTICAL
2300 DOUBLE CREEK DR

ROUND ROCK TX 78664
(512) 388-8222 REF:
INV:
PO: DEPT:

FedEx Express

4 of 4
MPS# 0263 3930 6200 6631
Mstr# 3930 6200 6609 0201

THU - 21 MAY 10:30A
PRIORITY OVERNIGHT
AHS
78664
TX-US AUS

A8 BSMA

4.0

692

CUSTODY SEAL

DATE 5-20-20

SIGNATURE

DHL ANALYTICAL

DHL Analytical, Inc.

Sample Receipt Checklist

Client Name **Golder** Date Received: **5/21/2020**

Work Order Number **2005173** Received by: **JH**

Checklist completed by: _____ 5/21/2020 Reviewed by DL 5/21/2020
Signature | Date | Initials | Date

Carrier name: FedEx 1day

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	**3.4** °C
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH<2 acceptable upon receipt?	Yes ☑	No ☐	NA ☐ LOT # 13171
	Adjusted? No		Checked by EL
Water - ph>9 (S) or ph>10 (CN) acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted? _____		Checked by _____

Any No response must be detailed in the comments section below.

Client contacted: _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments:

Corrective Action:

Laboratory Name: DHL Analytical, Inc.

Laboratory Review Checklist: Reportable Data

Project Name: A1 Area Landfill-MNA	**LRC Date:** 6/2/2020
Reviewer Name: Angie O'Donnell	**Laboratory Work Order: 2005173**
Prep Batch Number(s): See Prep Dates Report	**Run Batch:** See Analytical Dates Report

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
		Chain-of-Custody (C-O-C)					
R1	OI	**1)** Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	**X**				**R1-01**
		2) Were all departures from standard conditions described in an exception report?			**X**		
R2	OI	**Sample and Quality Control (QC) Identification**					
		1) Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	**X**				
		2) Are all laboratory ID numbers cross-referenced to the corresponding QC data?	**X**				
R3	OI	**Test Reports**					
		1) Were all samples prepared and analyzed within holding times?	**X**				
		2) Other than those results < MQL, were all other raw values bracketed by calibration standards?	**X**				
		3) Were calculations checked by a peer or supervisor?	**X**				
		4) Were all analyte identifications checked by a peer or supervisor?	**X**				
		5) Were sample detection limits reported for all analytes not detected?	**X**				
		6) Were all results for soil and sediment samples reported on a dry weight basis?			**X**		
		7) Were % moisture (or solids) reported for all soil and sediment samples?			**X**		
		8) Were bulk soils/solids samples for volatile analysis extracted with methanol per EPA Method 5035?			**X**		
		9) If required for the project, TICs reported?			**X**		
R4	O	**Surrogate Recovery Data**					
		1) Were surrogates added prior to extraction?			**X**		
		2) Were surrogate percent recoveries in all samples within the laboratory QC limits?			**X**		
R5	OI	**Test Reports/Summary Forms for Blank Samples**					
		1) Were appropriate type(s) of blanks analyzed?	**X**				
		2) Were blanks analyzed at the appropriate frequency?	**X**				
		3) Where method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	**X**				
		4) Were blank concentrations < MDL?	**X**				
		5) For analyte(s) detected in a blank sample, was the concentration, unadjusted for sample specific factors, in all associated field samples, **greater** than 10 times the concentration in the blank sample?			**X**		
R6	OI	**Laboratory Control Samples (LCS):**					
		1) Were all COCs included in the LCS?	**X**				
		2) Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	**X**				
		3) Were LCSs analyzed at the required frequency?	**X**				
		4) Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	**X**				
		5) Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	**X**				
		6) Was the LCSD RPD within QC limits (if applicable)?	**X**				
R7	OI	**Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Data**					
		1) Were the project/method specified analytes included in the MS and MSD?	**X**				
		2) Were MS/MSD analyzed at the appropriate frequency?	**X**				
		3) Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?		**X**			**R7-03**
		4) Were MS/MSD RPDs within laboratory QC limits?	**X**				
R8	OI	**Analytical Duplicate Data**					
		1) Were appropriate analytical duplicates analyzed for each matrix?	**X**				
		2) Were analytical duplicates analyzed at the appropriate frequency?	**X**				
		3) Were RPDs or relative standard deviations within the laboratory QC limits?	**X**				
R9	OI	**Method Quantitation Limits (MQLs):**					
		1) Are the MQLs for each method analyte included in the laboratory data package?	**X**				
		2) Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	**X**				
		3) Are unadjusted MQLs and DCSs included in the laboratory data package?	**X**				
R10	OI	**Other Problems/Anomalies**					
		1) Are all known problems/anomalies/special conditions noted in this LRC and ER?	**X**				**R10-01**
		2) Was applicable and available technology used to lower the SDL to minimize the matrix interference affects on the sample results?	**X**				
		3) Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices and methods associated with this laboratory data package?	**X**				

Laboratory Name: DHL Analytical, Inc.

Laboratory Review Checklist (continued): Supporting Data

Project Name: A1 Area Landfill-MNA	**LRC Date:** 6/2/2020
Reviewer Name: Angie O'Donnell	**Laboratory Work Order: 2005173**
Prep Batch Number(s): See Prep Dates Report	**Run Batch:** See Analytical Dates Report

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
S1	OI	**Initial Calibration (ICAL)**					
		1) Were response factors and/or relative response factors for each analyte within QC limits?	X				
		2) Were percent RSDs or correlation coefficient criteria met?	X				
		3) Was the number of standards recommended in the method used for all analytes?	X				
		4) Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		5) Are ICAL data available for all instruments used?	X				
		6) Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	**Initial and Continuing calibration Verification (ICCV and CCV) and Continuing Calibration blank (CCB):**					
		1) Was the CCV analyzed at the method-required frequency?	X				
		2) Were percent differences for each analyte within the method-required QC limits?	X				
		3) Was the ICAL curve verified for each analyte?	X				
		4) Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	X				
S3	O	**Mass Spectral Tuning:**					
		1) Was the appropriate compound for the method used for tuning?	X				
		2) Were ion abundance data within the method-required QC limits?	X				
S4	O	**Internal Standards (IS):**					
		1) Were IS area counts and retention times within the method-required QC limits?	X				
S5	OI	**Raw Data (NELAC Section 5.5.10)**					
		1) Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		2) Were data associated with manual integrations flagged on the raw data?	X				
S6	O	**Dual Column Confirmation**					
		1) Did dual column confirmation results meet the method-required QC?			X		
S7	O	**Tentatively Identified Compounds (TICs):**					
		1) If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) Results:**					
		1) Were percent recoveries within method QC limits?	X				
S9	I	**Serial Dilutions, Post Digestion Spikes, and Method of Standard Additions**					
		1) Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	X				
S10	OI	**Method Detection Limit (MDL) Studies**					
		1) Was a MDL study performed for each reported analyte?	X				
		2) Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	**Proficiency Test Reports:**					
		1) Was the lab's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	**Standards Documentation**					
		1) Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound/Analyte Identification Procedures**					
		1) Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of Analyst Competency (DOC)**					
		1) Was DOC conducted consistent with NELAC Chapter 5 – Appendix C?	X				
		2) Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/Validation Documentation for Methods** (NELAC Chapter 5)					
		1) Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	**Laboratory Standard Operating Procedures (SOPs):**					
		1) Are laboratory SOPs current and on file for each method performed?	X				

1 Items identified by the letter "R" should be included in the laboratory data package submitted to the TCEQ in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.

2 O = organic analyses; I = inorganic analyses (and general chemistry, when applicable).

3 NA = Not applicable.

4 NR = Not Reviewed.

5 ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Data Package Signature Page – RG-366/TRRP-13

This data package consists of:

This signature page, the laboratory review checklist, and the following reportable data:

R1 Field chain-of-custody documentation;
R2 Sample identification cross-reference;
R3 Test reports (analytical data sheets) for each environmental sample that includes:
  a) Items consistent with NELAC Chapter 5,
  b) dilution factors,
  c) preparation methods,
  d) cleanup methods, and
  e) if required for the project, tentatively identified compounds (TICs).
R4 Surrogate recovery data including:
  a) Calculated recovery (%R), and
  b) The laboratory's surrogate QC limits.
R5 Test reports/summary forms for blank samples;
R6 Test reports/summary forms for laboratory control samples (LCSs) including:
  a) LCS spiking amounts,
  b) Calculated %R for each analyte, and
  c) The laboratory's LCS QC limits.
R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
  a) Samples associated with the MS/MSD clearly identified,
  b) MS/MSD spiking amounts,
  c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
  d) Calculated %Rs and relative percent differences (RPDs), and
  e) The laboratory's MS/MSD QC limits
R8 Laboratory analytical duplicate (if applicable) recovery and precision:
  a) The amount of analyte measured in the duplicate,
  b) The calculated RPD, and
  c) The laboratory's QC limits for analytical duplicates.
R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix;
R10 Other problems or anomalies.

The Exception Report for each "No" or "Not Reviewed (NR)" item in the Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory is not accredited under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature below, I affirm to the best of my knowledge that all problems/anomalies observed by the laboratory have been identified in the Laboratory Review Checklist, and no information or data affecting the quality of the data has been knowingly withheld.

This laboratory was last inspected by TCEQ on February 25-28, 2019. Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Name: John DuPont
Official Title: General Manager

Signature

0□/0□/20
Date

Name: Dr. Derhsing Luu
Official Title: Technical Director

DHL Analytical, Inc. **Date:** *03-Jun-20*

CLIENT: Golder
Project: A1 Area Landfill-MNA
Lab Order: 2005173

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Method SW6020B - Metals Analysis
Method E300 - Anions Analysis
Method M2320 B - Alkalinity Analysis
Method M3500-FE D - Ferrous Iron Analysis (This parameter is not NELAP Certified)
Method M3500-FE D - Ferric Iron Analysis (The calculation is not NELAP Certified)
Method M4500-P E - Orthophosphate Analysis

Exception Report R1-01

The samples were received and log-in performed on 5/21/2020. A total of 8 samples were received and analyzed. The samples arrived in good condition and were properly packaged.

Exception Report R7-03

For Metals Analysis, the recoveries of up to two analytes for the Matrix Spike and Matrix Spike Duplicate (2005196-06 MS/MSD) were above the method control limits. These are flagged accordingly in the QC Summary Report. These analytes were within method control limits in the associated LCS. No further corrective action was taken.

Exception Report R10-01

The Ferric Iron is calculated as the Total Iron minus the Ferrous Iron.

DHL Analytical, Inc.

Date: *02-Jun-20*

CLIENT: Golder
Project: A1 Area Landfill-MNA
Lab Order: 2005173

Work Order Sample Summary

Lab Smp ID	Client Sample ID	Tag Number	Date Collected	Date Recved
2005173-01	BMW-24		05/20/20 10:25 AM	5/21/2020
2005173-02	BMW-23		05/20/20 11:15 AM	5/21/2020
2005173-03	BMW-20		05/20/20 12:10 PM	5/21/2020
2005173-04	BMW-21		05/20/20 01:00 PM	5/21/2020
2005173-05	BMW-26		05/20/20 02:05 PM	5/21/2020
2005173-06	BMW-27		05/20/20 03:00 PM	5/21/2020
2005173-07	BMW-19		05/20/20 04:20 PM	5/21/2020
2005173-08	BMW-22		05/20/20 05:20 PM	5/21/2020

Lab Order: 2005173
Client: Golder
Project: A1 Area Landfill-MNA

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
2005173-01A	BMW-24	05/20/20 10:25 AM	Aqueous	M3500-Fe	Ferrous Iron Prep Water	05/22/20 03:45 PM	96483
	BMW-24	05/20/20 10:25 AM	Aqueous	M3500-Fe	Ferrous Iron Prep Water	05/22/20 03:45 PM	96483
2005173-01B	BMW-24	05/20/20 10:25 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/27/20 08:18 AM	96513
	BMW-24	05/20/20 10:25 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/27/20 08:18 AM	96513
2005173-01C	BMW-24	05/20/20 10:25 AM	Aqueous	M2320 B	Alkalinity Preparation	06/01/20 11:05 AM	96589
	BMW-24	05/20/20 10:25 AM	Aqueous	E300	Anion Preparation	05/21/20 09:05 AM	96436
	BMW-24	05/20/20 10:25 AM	Aqueous	M4500-P E	Orthophosphate Prep	05/21/20 02:34 PM	96457
2005173-02A	BMW-23	05/20/20 11:15 AM	Aqueous	M3500-Fe	Ferrous Iron Prep Water	05/22/20 03:45 PM	96483
	BMW-23	05/20/20 11:15 AM	Aqueous	M3500-Fe	Ferrous Iron Prep Water	05/22/20 03:45 PM	96483
2005173-02B	BMW-23	05/20/20 11:15 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/27/20 08:18 AM	96513
	BMW-23	05/20/20 11:15 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/27/20 08:18 AM	96513
2005173-02C	BMW-23	05/20/20 11:15 AM	Aqueous	M2320 B	Alkalinity Preparation	06/01/20 11:05 AM	96589
	BMW-23	05/20/20 11:15 AM	Aqueous	E300	Anion Preparation	05/21/20 09:05 AM	96436
	BMW-23	05/20/20 11:15 AM	Aqueous	M4500-P E	Orthophosphate Prep	05/21/20 02:34 PM	96457
2005173-03A	BMW-20	05/20/20 12:10 PM	Aqueous	M3500-Fe	Ferrous Iron Prep Water	05/22/20 03:45 PM	96483
	BMW-20	05/20/20 12:10 PM	Aqueous	M3500-Fe	Ferrous Iron Prep Water	05/22/20 03:45 PM	96483
2005173-03B	BMW-20	05/20/20 12:10 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/27/20 08:18 AM	96513
	BMW-20	05/20/20 12:10 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/27/20 08:18 AM	96513
2005173-03C	BMW-20	05/20/20 12:10 PM	Aqueous	M2320 B	Alkalinity Preparation	06/01/20 11:05 AM	96589
	BMW-20	05/20/20 12:10 PM	Aqueous	E300	Anion Preparation	05/21/20 09:05 AM	96436
	BMW-20	05/20/20 12:10 PM	Aqueous	M4500-P E	Orthophosphate Prep	05/21/20 02:34 PM	96457
2005173-04A	BMW-21	05/20/20 01:00 PM	Aqueous	M3500-Fe	Ferrous Iron Prep Water	05/22/20 03:45 PM	96483
2005173-04B	BMW-21	05/20/20 01:00 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/27/20 08:18 AM	96513
	BMW-21	05/20/20 01:00 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/27/20 08:18 AM	96513
2005173-04C	BMW-21	05/20/20 01:00 PM	Aqueous	M2320 B	Alkalinity Preparation	06/01/20 11:05 AM	96589
	BMW-21	05/20/20 01:00 PM	Aqueous	E300	Anion Preparation	05/21/20 09:05 AM	96436
	BMW-21	05/20/20 01:00 PM	Aqueous	M4500-P E	Orthophosphate Prep	05/21/20 02:34 PM	96457
2005173-05A	BMW-26	05/20/20 02:05 PM	Aqueous	M3500-Fe	Ferrous Iron Prep Water	05/22/20 03:45 PM	96483

Lab Order: 2005173
Client: Golder
Project: A1 Area Landfill-MNA

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
2005173-05B	BMW-26	05/20/20 02:05 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/27/20 08:18 AM	96513
	BMW-26	05/20/20 02:05 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/27/20 08:18 AM	96513
2005173-05C	BMW-26	05/20/20 02:05 PM	Aqueous	M2320 B	Alkalinity Preparation	06/01/20 11:05 AM	96589
	BMW-26	05/20/20 02:05 PM	Aqueous	E300	Anion Preparation	05/21/20 09:05 AM	96436
	BMW-26	05/20/20 02:05 PM	Aqueous	M4500-P E	Orthophosphate Prep	05/21/20 02:34 PM	96457
2005173-06A	BMW-27	05/20/20 03:00 PM	Aqueous	M3500-Fe	Ferrous Iron Prep Water	05/22/20 03:45 PM	96483
2005173-06B	BMW-27	05/20/20 03:00 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/27/20 08:18 AM	96513
	BMW-27	05/20/20 03:00 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/27/20 08:18 AM	96513
2005173-06C	BMW-27	05/20/20 03:00 PM	Aqueous	M2320 B	Alkalinity Preparation	06/01/20 11:05 AM	96589
	BMW-27	05/20/20 03:00 PM	Aqueous	E300	Anion Preparation	05/21/20 09:05 AM	96436
	BMW-27	05/20/20 03:00 PM	Aqueous	M4500-P E	Orthophosphate Prep	05/21/20 02:34 PM	96457
2005173-07A	BMW-19	05/20/20 04:20 PM	Aqueous	M3500-Fe	Ferrous Iron Prep Water	05/22/20 03:45 PM	96483
2005173-07B	BMW-19	05/20/20 04:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/27/20 08:18 AM	96513
	BMW-19	05/20/20 04:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/27/20 08:18 AM	96513
2005173-07C	BMW-19	05/20/20 04:20 PM	Aqueous	M2320 B	Alkalinity Preparation	06/01/20 11:05 AM	96589
	BMW-19	05/20/20 04:20 PM	Aqueous	E300	Anion Preparation	05/21/20 09:05 AM	96436
	BMW-19	05/20/20 04:20 PM	Aqueous	M4500-P E	Orthophosphate Prep	05/21/20 02:34 PM	96457
2005173-08A	BMW-22	05/20/20 05:20 PM	Aqueous	M3500-Fe	Ferrous Iron Prep Water	05/22/20 03:45 PM	96483
	BMW-22	05/20/20 05:20 PM	Aqueous	M3500-Fe	Ferrous Iron Prep Water	05/22/20 03:45 PM	96483
2005173-08B	BMW-22	05/20/20 05:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/27/20 08:18 AM	96513
	BMW-22	05/20/20 05:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/27/20 08:18 AM	96513
2005173-08C	BMW-22	05/20/20 05:20 PM	Aqueous	M2320 B	Alkalinity Preparation	06/01/20 11:05 AM	96589
	BMW-22	05/20/20 05:20 PM	Aqueous	E300	Anion Preparation	05/21/20 09:05 AM	96436
	BMW-22	05/20/20 05:20 PM	Aqueous	M4500-P E	Orthophosphate Prep	05/21/20 02:34 PM	96457

Lab Order: 2005173
Client: Golder
Project: A1 Area Landfill-MNA

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
2005173-01A	BMW-24	Aqueous	M3500-Fe D	Ferric Iron (Calculated)	R110770	1	06/02/20	UV/VIS_2_200602A
	BMW-24	Aqueous	M3500-Fe D	Ferrous Iron	96483	1	05/22/20 04:42 PM	UV/VIS_2_200522C
	BMW-24	Aqueous	M3500-Fe D	Ferrous Iron	96483	50	05/22/20 04:59 PM	UV/VIS_2_200522C
2005173-01B	BMW-24	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	96513	10	05/29/20 01:08 PM	ICP-MS4_200529A
	BMW-24	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	96513	1	05/28/20 12:56 PM	ICP-MS5_200528A
2005173-01C	BMW-24	Aqueous	M2320 B	Alkalinity	96589	1	06/01/20 01:33 PM	TITRATOR_200601B
	BMW-24	Aqueous	E300	Anions by IC method - Water	96436	1	05/21/20 03:00 PM	IC4_200521A
	BMW-24	Aqueous	M4500-P E	Orthophosphate	96457	1	05/21/20 03:25 PM	UV/VIS_2_200521C
2005173-02A	BMW-23	Aqueous	M3500-Fe D	Ferric Iron (Calculated)	R110770	1	06/02/20	UV/VIS_2_200602A
	BMW-23	Aqueous	M3500-Fe D	Ferrous Iron	96483	1	05/22/20 04:43 PM	UV/VIS_2_200522C
	BMW-23	Aqueous	M3500-Fe D	Ferrous Iron	96483	50	05/22/20 04:59 PM	UV/VIS_2_200522C
2005173-02B	BMW-23	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	96513	50	05/29/20 01:10 PM	ICP-MS4_200529A
	BMW-23	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	96513	1	05/28/20 12:58 PM	ICP-MS5_200528A
2005173-02C	BMW-23	Aqueous	M2320 B	Alkalinity	96589	1	06/01/20 02:11 PM	TITRATOR_200601B
	BMW-23	Aqueous	E300	Anions by IC method - Water	96436	1	05/21/20 03:16 PM	IC4_200521A
	BMW-23	Aqueous	M4500-P E	Orthophosphate	96457	1	05/21/20 03:26 PM	UV/VIS_2_200521C
2005173-03A	BMW-20	Aqueous	M3500-Fe D	Ferric Iron (Calculated)	R110770	1	06/02/20	UV/VIS_2_200602A
	BMW-20	Aqueous	M3500-Fe D	Ferrous Iron	96483	1	05/22/20 04:43 PM	UV/VIS_2_200522C
	BMW-20	Aqueous	M3500-Fe D	Ferrous Iron	96483	200	05/22/20 05:07 PM	UV/VIS_2_200522C
2005173-03B	BMW-20	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	96513	20	05/29/20 01:12 PM	ICP-MS4_200529A
	BMW-20	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	96513	1	05/28/20 01:00 PM	ICP-MS5_200528A
2005173-03C	BMW-20	Aqueous	M2320 B	Alkalinity	96589	1	06/01/20 02:28 PM	TITRATOR_200601B
	BMW-20	Aqueous	E300	Anions by IC method - Water	96436	1	05/21/20 03:32 PM	IC4_200521A
	BMW-20	Aqueous	M4500-P E	Orthophosphate	96457	1	05/21/20 03:26 PM	UV/VIS_2_200521C
2005173-04A	BMW-21	Aqueous	M3500-Fe D	Ferric Iron (Calculated)	R110770	1	06/02/20	UV/VIS_2_200602A
	BMW-21	Aqueous	M3500-Fe D	Ferrous Iron	96483	1	05/22/20 04:44 PM	UV/VIS_2_200522C
2005173-04B	BMW-21	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	96513	50	05/29/20 01:14 PM	ICP-MS4_200529A
	BMW-21	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	96513	1	05/28/20 01:03 PM	ICP-MS5_200528A

Lab Order: 2005173
Client: Golder
Project: A1 Area Landfill-MNA

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
2005173-04C	BMW-21	Aqueous	M2320 B	Alkalinity	96589	1	06/01/20 02:59 PM	TITRATOR_200601B
	BMW-21	Aqueous	E300	Anions by IC method - Water	96436	1	05/21/20 03:48 PM	IC4_200521A
	BMW-21	Aqueous	M4500-P E	Orthophosphate	96457	1	05/21/20 03:26 PM	UV/VIS_2_200521C
2005173-05A	BMW-26	Aqueous	M3500-Fe D	Ferric Iron (Calculated)	R110770	1	06/02/20	UV/VIS_2_200602A
	BMW-26	Aqueous	M3500-Fe D	Ferrous Iron	96483	1	05/22/20 04:44 PM	UV/VIS_2_200522C
2005173-05B	BMW-26	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	96513	20	05/29/20 01:16 PM	ICP-MS4_200529A
	BMW-26	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	96513	1	05/28/20 01:05 PM	ICP-MS5_200528A
2005173-05C	BMW-26	Aqueous	M2320 B	Alkalinity	96589	1	06/01/20 03:33 PM	TITRATOR_200601B
	BMW-26	Aqueous	E300	Anions by IC method - Water	96436	1	05/21/20 04:04 PM	IC4_200521A
	BMW-26	Aqueous	M4500-P E	Orthophosphate	96457	1	05/21/20 03:27 PM	UV/VIS_2_200521C
2005173-06A	BMW-27	Aqueous	M3500-Fe D	Ferric Iron (Calculated)	R110770	1	06/02/20	UV/VIS_2_200602A
	BMW-27	Aqueous	M3500-Fe D	Ferrous Iron	96483	1	05/22/20 04:44 PM	UV/VIS_2_200522C
2005173-06B	BMW-27	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	96513	20	05/29/20 02:50 PM	ICP-MS4_200529A
	BMW-27	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	96513	1	05/28/20 01:07 PM	ICP-MS5_200528A
2005173-06C	BMW-27	Aqueous	M2320 B	Alkalinity	96589	1	06/01/20 04:04 PM	TITRATOR_200601B
	BMW-27	Aqueous	E300	Anions by IC method - Water	96436	1	05/21/20 04:20 PM	IC4_200521A
	BMW-27	Aqueous	M4500-P E	Orthophosphate	96457	1	05/21/20 03:27 PM	UV/VIS_2_200521C
2005173-07A	BMW-19	Aqueous	M3500-Fe D	Ferric Iron (Calculated)	R110770	1	06/02/20	UV/VIS_2_200602A
	BMW-19	Aqueous	M3500-Fe D	Ferrous Iron	96483	1	05/22/20 04:44 PM	UV/VIS_2_200522C
2005173-07B	BMW-19	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	96513	20	05/29/20 01:48 PM	ICP-MS4_200529A
	BMW-19	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	96513	1	05/28/20 01:09 PM	ICP-MS5_200528A
2005173-07C	BMW-19	Aqueous	M2320 B	Alkalinity	96589	1	06/01/20 04:24 PM	TITRATOR_200601B
	BMW-19	Aqueous	E300	Anions by IC method - Water	96436	1	05/21/20 04:36 PM	IC4_200521A
	BMW-19	Aqueous	M4500-P E	Orthophosphate	96457	1	05/21/20 03:27 PM	UV/VIS_2_200521C
2005173-08A	BMW-22	Aqueous	M3500-Fe D	Ferric Iron (Calculated)	R110770	1	06/02/20	UV/VIS_2_200602A
	BMW-22	Aqueous	M3500-Fe D	Ferrous Iron	96483	1	05/22/20 04:45 PM	UV/VIS_2_200522C
	BMW-22	Aqueous	M3500-Fe D	Ferrous Iron	96483	20	05/22/20 05:05 PM	UV/VIS_2_200522C
2005173-08B	BMW-22	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	96513	20	05/29/20 01:50 PM	ICP-MS4_200529A

Lab Order: 2005173
Client: Golder
Project: A1 Area Landfill-MNA

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
2005173-08B	BMW-22	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	96513	1	05/28/20 01:36 PM	ICP-MS5_200528A
2005173-08C	BMW-22	Aqueous	M2320 B	Alkalinity	96589	1	06/01/20 04:45 PM	TITRATOR_200601B
	BMW-22	Aqueous	E300	Anions by IC method - Water	96436	1	05/21/20 04:52 PM	IC4_200521A
	BMW-22	Aqueous	M4500-P E	Orthophosphate	96457	1	05/21/20 03:28 PM	UV/VIS_2_200521C

DHL Analytical, Inc.

Date: *02-Jun-20*

CLIENT:	Golder	**Client Sample ID:**	BMW-24
Project:	A1 Area Landfill-MNA	**Lab ID:**	2005173-01
Project No:	19134019-3000	**Collection Date:**	05/20/20 10:25 AM
Lab Order:	2005173	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **RO**
Iron	25.4	0.300	1.00		mg/L	10	05/29/20 01:08 PM
Magnesium	62.4	1.00	3.00		mg/L	10	05/29/20 01:08 PM
Potassium	2.89	0.100	0.300		mg/L	1	05/28/20 12:56 PM
Sodium	131	1.00	3.00		mg/L	10	05/29/20 01:08 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Nitrate-N	<0.100	0.100	0.500		mg/L	1	05/21/20 03:00 PM
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	196	10.0	20.0		mg/L @ pH 4.52	1	06/01/20 01:33 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.52	1	06/01/20 01:33 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.52	1	06/01/20 01:33 PM
Alkalinity, Total (As CaCO3)	196	20.0	20.0		mg/L @ pH 4.52	1	06/01/20 01:33 PM
FERRIC IRON (CALCULATED)		**M3500-FE D**					Analyst: **AO**
Iron, Ferric	12.4	0.0500	0.100	N	mg/L	1	06/02/20
FERROUS IRON		**M3500-FE D**					Analyst: **BTJ**
Iron, Ferrous	13.0	2.50	5.00	N	mg/L	50	05/22/20 04:59 PM
ORTHOPHOSPHATE		**M4500-P E**					Analyst: **BTJ**
Phosphorus, Total Orthophosphate (As P)	<0.0300	0.0300	0.100		mg/L	1	05/21/20 03:25 PM

Qualifiers:

ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *02-Jun-20*

CLIENT:	Golder	**Client Sample ID:**	BMW-23
Project:	A1 Area Landfill-MNA	**Lab ID:**	2005173-02
Project No:	19134019-3000	**Collection Date:**	05/20/20 11:15 AM
Lab Order:	2005173	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **RO**
Iron	8.94	0.0300	0.100		mg/L	1	05/28/20 12:58 PM
Magnesium	94.9	5.00	15.0		mg/L	50	05/29/20 01:10 PM
Potassium	4.31	0.100	0.300		mg/L	1	05/28/20 12:58 PM
Sodium	312	5.00	15.0		mg/L	50	05/29/20 01:10 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Nitrate-N	<0.100	0.100	0.500		mg/L	1	05/21/20 03:16 PM
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	501	10.0	20.0		mg/L @ pH 4.53	1	06/01/20 02:11 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	06/01/20 02:11 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	06/01/20 02:11 PM
Alkalinity, Total (As CaCO3)	501	20.0	20.0		mg/L @ pH 4.53	1	06/01/20 02:11 PM
FERRIC IRON (CALCULATED)		**M3500-FE D**					Analyst: **AO**
Iron, Ferric	3.05	0.0500	0.100	N	mg/L	1	06/02/20
FERROUS IRON		**M3500-FE D**					Analyst: **BTJ**
Iron, Ferrous	5.89	2.50	5.00	N	mg/L	50	05/22/20 04:59 PM
ORTHOPHOSPHATE		**M4500-P E**					Analyst: **BTJ**
Phosphorus, Total Orthophosphate (As P)	<0.0300	0.0300	0.100		mg/L	1	05/21/20 03:26 PM

Qualifiers:

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- See Final Page of Report for MQLs and MDLs
- S - Spike Recovery outside control limits
- C - Sample Result or QC discussed in Case Narrative
- RL - Reporting Limit (MQL adjusted for moisture and sample size)
- SDL - Sample Detection Limit
- E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *02-Jun-20*

CLIENT:	Golder	**Client Sample ID:**	BMW-20
Project:	A1 Area Landfill-MNA	**Lab ID:**	2005173-03
Project No:	19134019-3000	**Collection Date:**	05/20/20 12:10 PM
Lab Order:	2005173	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **RO**
Iron	81.4	0.600	2.00		mg/L	20	05/29/20 01:12 PM
Magnesium	123	2.00	6.00		mg/L	20	05/29/20 01:12 PM
Potassium	7.83	0.100	0.300		mg/L	1	05/28/20 01:00 PM
Sodium	61.2	2.00	6.00		mg/L	20	05/29/20 01:12 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Nitrate-N	<0.100	0.100	0.500		mg/L	1	05/21/20 03:32 PM
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	234	10.0	20.0		mg/L @ pH 4.53	1	06/01/20 02:28 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	06/01/20 02:28 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	06/01/20 02:28 PM
Alkalinity, Total (As CaCO3)	234	20.0	20.0		mg/L @ pH 4.53	1	06/01/20 02:28 PM
FERRIC IRON (CALCULATED)		**M3500-FE D**					Analyst: **AO**
Iron, Ferric	19.9	0.0500	0.100	N	mg/L	1	06/02/20
FERROUS IRON		**M3500-FE D**					Analyst: **BTJ**
Iron, Ferrous	61.5	10.0	20.0	N	mg/L	200	05/22/20 05:07 PM
ORTHOPHOSPHATE		**M4500-P E**					Analyst: **BTJ**
Phosphorus, Total Orthophosphate (As P)	<0.0300	0.0300	0.100		mg/L	1	05/21/20 03:26 PM

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- See Final Page of Report for MQLs and MDLs
- S - Spike Recovery outside control limits
- C - Sample Result or QC discussed in Case Narrative
- RL - Reporting Limit (MQL adjusted for moisture and sample size)
- SDL - Sample Detection Limit
- E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *02-Jun-20*

CLIENT:	Golder	**Client Sample ID:**	BMW-21
Project:	A1 Area Landfill-MNA	**Lab ID:**	2005173-04
Project No:	19134019-3000	**Collection Date:**	05/20/20 01:00 PM
Lab Order:	2005173	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **RO**
Iron	1.01	0.0300	0.100		mg/L	1	05/28/20 01:03 PM
Magnesium	139	5.00	15.0		mg/L	50	05/29/20 01:14 PM
Potassium	5.09	0.100	0.300		mg/L	1	05/28/20 01:03 PM
Sodium	380	5.00	15.0		mg/L	50	05/29/20 01:14 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Nitrate-N	<0.100	0.100	0.500		mg/L	1	05/21/20 03:48 PM
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	761	10.0	20.0		mg/L @ pH 4.54	1	06/01/20 02:59 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	06/01/20 02:59 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	06/01/20 02:59 PM
Alkalinity, Total (As CaCO3)	761	20.0	20.0		mg/L @ pH 4.54	1	06/01/20 02:59 PM
FERRIC IRON (CALCULATED)		**M3500-FE D**					Analyst: **AO**
Iron, Ferric	1.01	0.0500	0.100	N	mg/L	1	06/02/20
FERROUS IRON		**M3500-FE D**					Analyst: **BTJ**
Iron, Ferrous	<0.0500	0.0500	0.100	N	mg/L	1	05/22/20 04:44 PM
ORTHOPHOSPHATE		**M4500-P E**					Analyst: **BTJ**
Phosphorus, Total Orthophosphate (As P)	0.0300	0.0300	0.100	J	mg/L	1	05/21/20 03:26 PM

Qualifiers:

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- DF- Dilution Factor
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- See Final Page of Report for MQLs and MDLs
- S - Spike Recovery outside control limits
- C - Sample Result or QC discussed in Case Narrative
- RL - Reporting Limit (MQL adjusted for moisture and sample size)
- SDL - Sample Detection Limit
- E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *02-Jun-20*

CLIENT:	Golder	**Client Sample ID:**	BMW-26
Project:	A1 Area Landfill-MNA	**Lab ID:**	2005173-05
Project No:	19134019-3000	**Collection Date:**	05/20/20 02:05 PM
Lab Order:	2005173	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **RO**
Iron	0.110	0.0300	0.100		mg/L	1	05/28/20 01:05 PM
Magnesium	133	2.00	6.00		mg/L	20	05/29/20 01:16 PM
Potassium	12.9	0.100	0.300		mg/L	1	05/28/20 01:05 PM
Sodium	268	2.00	6.00		mg/L	20	05/29/20 01:16 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Nitrate-N	<0.100	0.100	0.500		mg/L	1	05/21/20 04:04 PM
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	852	10.0	20.0		mg/L @ pH 4.54	1	06/01/20 03:33 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	06/01/20 03:33 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	06/01/20 03:33 PM
Alkalinity, Total (As CaCO3)	852	20.0	20.0		mg/L @ pH 4.54	1	06/01/20 03:33 PM
FERRIC IRON (CALCULATED)		**M3500-FE D**					Analyst: **AO**
Iron, Ferric	0.110	0.0500	0.100	N	mg/L	1	06/02/20
FERROUS IRON		**M3500-FE D**					Analyst: **BTJ**
Iron, Ferrous	<0.0500	0.0500	0.100	N	mg/L	1	05/22/20 04:44 PM
ORTHOPHOSPHATE		**M4500-P E**					Analyst: **BTJ**
Phosphorus, Total Orthophosphate (As P)	<0.0300	0.0300	0.100		mg/L	1	05/21/20 03:27 PM

Qualifiers:

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See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *02-Jun-20*

CLIENT:	Golder	**Client Sample ID:**	BMW-27
Project:	A1 Area Landfill-MNA	**Lab ID:**	2005173-06
Project No:	19134019-3000	**Collection Date:**	05/20/20 03:00 PM
Lab Order:	2005173	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **RO**
Iron	0.139	0.0300	0.100		mg/L	1	05/28/20 01:07 PM
Magnesium	116	2.00	6.00		mg/L	20	05/29/20 02:50 PM
Potassium	11.2	0.100	0.300		mg/L	1	05/28/20 01:07 PM
Sodium	236	2.00	6.00		mg/L	20	05/29/20 02:50 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Nitrate-N	<0.100	0.100	0.500		mg/L	1	05/21/20 04:20 PM
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	750	10.0	20.0		mg/L @ pH 4.54	1	06/01/20 04:04 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	06/01/20 04:04 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	06/01/20 04:04 PM
Alkalinity, Total (As CaCO3)	750	20.0	20.0		mg/L @ pH 4.54	1	06/01/20 04:04 PM
FERRIC IRON (CALCULATED)		**M3500-FE D**					Analyst: **AO**
Iron, Ferric	0.139	0.0500	0.100	N	mg/L	1	06/02/20
FERROUS IRON		**M3500-FE D**					Analyst: **BTJ**
Iron, Ferrous	<0.0500	0.0500	0.100	N	mg/L	1	05/22/20 04:44 PM
ORTHOPHOSPHATE		**M4500-P E**					Analyst: **BTJ**
Phosphorus, Total Orthophosphate (As P)	0.0340	0.0300	0.100	J	mg/L	1	05/21/20 03:27 PM

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- S - Spike Recovery outside control limits
- C - Sample Result or QC discussed in Case Narrative
- RL - Reporting Limit (MQL adjusted for moisture and sample size)
- SDL - Sample Detection Limit
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DHL Analytical, Inc.

Date: *02-Jun-20*

CLIENT:	Golder	**Client Sample ID:**	BMW-19
Project:	A1 Area Landfill-MNA	**Lab ID:**	2005173-07
Project No:	19134019-3000	**Collection Date:**	05/20/20 04:20 PM
Lab Order:	2005173	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **RO**
Iron	1.09	0.0300	0.100		mg/L	1	05/28/20 01:09 PM
Magnesium	230	2.00	6.00		mg/L	20	05/29/20 01:48 PM
Potassium	11.6	0.100	0.300		mg/L	1	05/28/20 01:09 PM
Sodium	189	2.00	6.00		mg/L	20	05/29/20 01:48 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Nitrate-N	1.47	0.100	0.500		mg/L	1	05/21/20 04:36 PM
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	468	10.0	20.0		mg/L @ pH 4.54	1	06/01/20 04:24 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	06/01/20 04:24 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	06/01/20 04:24 PM
Alkalinity, Total (As CaCO3)	468	20.0	20.0		mg/L @ pH 4.54	1	06/01/20 04:24 PM
FERRIC IRON (CALCULATED)		**M3500-FE D**					Analyst: **AO**
Iron, Ferric	1.09	0.0500	0.100	N	mg/L	1	06/02/20
FERROUS IRON		**M3500-FE D**					Analyst: **BTJ**
Iron, Ferrous	<0.0500	0.0500	0.100	N	mg/L	1	05/22/20 04:44 PM
ORTHOPHOSPHATE		**M4500-P E**					Analyst: **BTJ**
Phosphorus, Total Orthophosphate (As P)	<0.0300	0.0300	0.100		mg/L	1	05/21/20 03:27 PM

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RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
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DHL Analytical, Inc.

Date: *02-Jun-20*

CLIENT:	Golder	**Client Sample ID:**	BMW-22
Project:	A1 Area Landfill-MNA	**Lab ID:**	2005173-08
Project No:	19134019-3000	**Collection Date:**	05/20/20 05:20 PM
Lab Order:	2005173	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **RO**
Iron	9.58	0.0300	0.100		mg/L	1	05/28/20 01:36 PM
Magnesium	153	2.00	6.00		mg/L	20	05/29/20 01:50 PM
Potassium	5.98	0.100	0.300		mg/L	1	05/28/20 01:36 PM
Sodium	266	2.00	6.00		mg/L	20	05/29/20 01:50 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Nitrate-N	<0.100	0.100	0.500		mg/L	1	05/21/20 04:52 PM
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	455	10.0	20.0		mg/L @ pH 4.54	1	06/01/20 04:45 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	06/01/20 04:45 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	06/01/20 04:45 PM
Alkalinity, Total (As CaCO3)	455	20.0	20.0		mg/L @ pH 4.54	1	06/01/20 04:45 PM
FERRIC IRON (CALCULATED)		**M3500-FE D**					Analyst: **AO**
Iron, Ferric	4.80	0.0500	0.100	N	mg/L	1	06/02/20
FERROUS IRON		**M3500-FE D**					Analyst: **BTJ**
Iron, Ferrous	4.78	1.00	2.00	N	mg/L	20	05/22/20 05:05 PM
ORTHOPHOSPHATE		**M4500-P E**					Analyst: **BTJ**
Phosphorus, Total Orthophosphate (As P)	<0.0300	0.0300	0.100		mg/L	1	05/21/20 03:28 PM

Qualifiers:

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CLIENT: Golder
Work Order: 2005173
Project: A1 Area Landfill-MNA

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_200415A

Sample ID: **DCS2-95814** Batch ID: **95814** TestNo: **SW6020B** Units: **mg/L**
SampType: **DCS2** Run ID: **ICP-MS4_200415A** Analysis Date: **4/15/2020 3:02:00 PM** Prep Date: **4/7/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron	0.0613	0.100	0.0500	0	123	70	130	0	0	
Magnesium	0.305	0.300	0.300	0	102	70	130	0	0	
Sodium	0.292	0.300	0.300	0	97.3	70	130	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005173
Project: A1 Area Landfill-MNA

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_200529A

The QC data in batch 96513 applies to the following samples: 2005173-01B, 2005173-02B, 2005173-03B, 2005173-04B, 2005173-05B, 2005173-06B, 2005173-07B, 2005173-08B

Sample ID: **2005196-06B SD** Batch ID: **96513** TestNo: **SW6020B** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS4_200529A** Analysis Date: **5/29/2020 1:00:00 PM** Prep Date: **5/27/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Magnesium	84.5	75.0	0	82.8				2.01	20	
Sodium	362	75.0	0	359				0.873	20	

Sample ID: **2005196-06B PDS** Batch ID: **96513** TestNo: **SW6020B** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS4_200529A** Analysis Date: **5/29/2020 1:20:00 PM** Prep Date: **5/27/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Magnesium	353	15.0	250	82.8	108	75	125			
Sodium	665	15.0	250	359	123	75	125			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005173
Project: A1 Area Landfill-MNA

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_200529A

Sample ID: **ICV-200529**	Batch ID: **R110716**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_200529A**	Analysis Date: **5/29/2020 11:56:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron	2.54	0.100	2.50	0	102	90	110			
Magnesium	2.59	0.300	2.50	0	104	90	110			
Sodium	2.65	0.300	2.50	0	106	90	110			

Sample ID: **LCVL-200529**	Batch ID: **R110716**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_200529A**	Analysis Date: **5/29/2020 12:09:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron	0.102	0.100	0.100	0	102	80	120			
Magnesium	0.105	0.300	0.100	0	105	80	120			
Sodium	0.100	0.300	0.100	0	100	80	120			

Sample ID: **CCV1-200529**	Batch ID: **R110716**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_200529A**	Analysis Date: **5/29/2020 1:36:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron	4.99	0.100	5.00	0	99.7	90	110			
Magnesium	5.00	0.300	5.00	0	100	90	110			
Sodium	4.96	0.300	5.00	0	99.2	90	110			

Sample ID: **CCV2-200529**	Batch ID: **R110716**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_200529A**	Analysis Date: **5/29/2020 2:12:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron	4.98	0.100	5.00	0	99.5	90	110			
Magnesium	5.07	0.300	5.00	0	101	90	110			
Sodium	4.98	0.300	5.00	0	99.7	90	110			

Sample ID: **CCV3-200529**	Batch ID: **R110716**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_200529A**	Analysis Date: **5/29/2020 3:04:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Magnesium	5.01	0.300	5.00	0	100	90	110			
Sodium	4.96	0.300	5.00	0	99.1	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005173
Project: A1 Area Landfill-MNA

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_200408C

Sample ID: **DCS2-95814** Batch ID: **95814** TestNo: **SW6020B** Units: **mg/L**
SampType: **DCS2** Run ID: **ICP-MS5_200408C** Analysis Date: **4/8/2020 11:19:00 AM** Prep Date: **4/7/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron	0.0591	0.100	0.0500	0	118	70	130	0	0	
Magnesium	0.298	0.300	0.300	0	99.3	70	130	0	0	
Potassium	0.285	0.300	0.300	0	95.1	70	130	0	0	
Sodium	0.295	0.300	0.300	0	98.4	70	130	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005173
Project: A1 Area Landfill-MNA

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_200528A

The QC data in batch 96513 applies to the following samples: 2005173-01B, 2005173-02B, 2005173-03B, 2005173-04B, 2005173-05B, 2005173-06B, 2005173-07B, 2005173-08B

Sample ID: **MB-96513** Batch ID: **96513** TestNo: **SW6020B** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS5_200528A** Analysis Date: **5/28/2020 12:39:00 PM** Prep Date: **5/27/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron	<0.0300	0.100								
Magnesium	<0.100	0.300								
Potassium	<0.100	0.300								
Sodium	<0.100	0.300								

Sample ID: **LCS-96513** Batch ID: **96513** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS5_200528A** Analysis Date: **5/28/2020 12:41:00 PM** Prep Date: **5/27/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron	5.07	0.100	5.00	0	101	80	120			
Magnesium	5.02	0.300	5.00	0	100	80	120			
Potassium	4.96	0.300	5.00	0	99.2	80	120			
Sodium	5.11	0.300	5.00	0	102	80	120			

Sample ID: **LCSD-96513** Batch ID: **96513** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS5_200528A** Analysis Date: **5/28/2020 12:43:00 PM** Prep Date: **5/27/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron	5.09	0.100	5.00	0	102	80	120	0.378	15	
Magnesium	5.04	0.300	5.00	0	101	80	120	0.402	15	
Potassium	4.97	0.300	5.00	0	99.5	80	120	0.324	15	
Sodium	5.12	0.300	5.00	0	102	80	120	0.255	15	

Sample ID: **2005196-06B SD** Batch ID: **96513** TestNo: **SW6020B** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS5_200528A** Analysis Date: **5/28/2020 12:50:00 PM** Prep Date: **5/27/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron	<0.150	0.500	0	0.0808				0	20	
Potassium	14.7	1.50	0	14.6				0.916	20	

Sample ID: **2005196-06B PDS** Batch ID: **96513** TestNo: **SW6020B** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS5_200528A** Analysis Date: **5/28/2020 1:16:00 PM** Prep Date: **5/27/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron	5.00	0.100	5.00	0.0808	98.5	75	125			
Potassium	19.4	0.300	5.00	14.6	96.6	75	125			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005173
Project: A1 Area Landfill-MNA

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_200528A

Sample ID: **2005196-06B MS**	Batch ID: **96513**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS5_200528A**	Analysis Date: **5/28/2020 1:18:00 PM**	Prep Date: **5/27/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron	4.96	0.100	5.00	0.0808	97.5	75	125			
Magnesium	90.2	0.300	5.00	83.6	132	75	125			S
Potassium	20.3	0.300	5.00	14.6	114	75	125			
Sodium	383	0.300	5.00	366	334	75	125			S

Sample ID: **2005196-06B MSD**	Batch ID: **96513**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS5_200528A**	Analysis Date: **5/28/2020 1:20:00 PM**	Prep Date: **5/27/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron	4.93	0.100	5.00	0.0808	97.0	75	125	0.549	15	
Magnesium	89.8	0.300	5.00	83.6	123	75	125	0.502	15	
Potassium	20.4	0.300	5.00	14.6	116	75	125	0.393	15	
Sodium	380	0.300	5.00	366	279	75	125	0.719	15	S

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005173
Project: A1 Area Landfill-MNA

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_200528A

Sample ID: **ICV-200528**	Batch ID: **R110690**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS5_200528A**	Analysis Date: **5/28/2020 11:00:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron	2.54	0.100	2.50	0	102	90	110			
Magnesium	2.50	0.300	2.50	0	99.8	90	110			
Potassium	2.52	0.300	2.50	0	101	90	110			
Sodium	2.63	0.300	2.50	0	105	90	110			

Sample ID: **LCVL-200528**	Batch ID: **R110690**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_200528A**	Analysis Date: **5/28/2020 11:07:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron	0.101	0.100	0.100	0	101	80	120			
Magnesium	0.101	0.300	0.100	0	101	80	120			
Potassium	0.0947	0.300	0.100	0	94.7	80	120			
Sodium	0.103	0.300	0.100	0	103	80	120			

Sample ID: **CCV2-200528**	Batch ID: **R110690**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_200528A**	Analysis Date: **5/28/2020 12:23:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron	5.15	0.100	5.00	0	103	90	110			
Magnesium	5.04	0.300	5.00	0	101	90	110			
Potassium	4.94	0.300	5.00	0	98.9	90	110			
Sodium	5.12	0.300	5.00	0	102	90	110			

Sample ID: **CCV3-200528**	Batch ID: **R110690**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_200528A**	Analysis Date: **5/28/2020 1:31:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron	5.07	0.100	5.00	0	101	90	110			
Magnesium	5.08	0.300	5.00	0	102	90	110			
Potassium	5.03	0.300	5.00	0	101	90	110			
Sodium	5.33	0.300	5.00	0	107	90	110			

Sample ID: **CCV4-200528**	Batch ID: **R110690**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_200528A**	Analysis Date: **5/28/2020 2:07:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron	5.06	0.100	5.00	0	101	90	110			
Potassium	5.02	0.300	5.00	0	100	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005173
Project: A1 Area Landfill-MNA

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_200430A

Sample ID: **DCS2-96153**	Batch ID: **96153**	TestNo: **E300**		Units: **mg/L**	
SampType: **DCS2**	Run ID: **IC4_200430A**	Analysis Date: **4/30/2020 11:31:49 AM**		Prep Date: **4/30/2020**	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Nitrate-N	0.243	0.0500	0.2500	0	97.0	70	130	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005173
Project: A1 Area Landfill-MNA

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_200521A

The QC data in batch 96436 applies to the following samples: 2005173-01C, 2005173-02C, 2005173-03C, 2005173-04C, 2005173-05C, 2005173-06C, 2005173-07C, 2005173-08C

Sample ID: **MB-96436**	Batch ID: **96436**	TestNo: **E300**	Units: **mg/L**
SampType: **MBLK**	Run ID: **IC4_200521A**	Analysis Date: **5/21/2020 10:30:34 AM**	Prep Date: **5/21/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Nitrate-N	<0.100	0.500								

Sample ID: **LCS-96436**	Batch ID: **96436**	TestNo: **E300**	Units: **mg/L**
SampType: **LCS**	Run ID: **IC4_200521A**	Analysis Date: **5/21/2020 10:46:34 AM**	Prep Date: **5/21/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Nitrate-N	4.98	0.500	5.000	0	99.7	90	110			

Sample ID: **LCSD-96436**	Batch ID: **96436**	TestNo: **E300**	Units: **mg/L**
SampType: **LCSD**	Run ID: **IC4_200521A**	Analysis Date: **5/21/2020 11:02:34 AM**	Prep Date: **5/21/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Nitrate-N	4.95	0.500	5.000	0	99.1	90	110	0.578	20	

Sample ID: **2005172-01BMS**	Batch ID: **96436**	TestNo: **E300**	Units: **mg/L**
SampType: **MS**	Run ID: **IC4_200521A**	Analysis Date: **5/21/2020 2:28:21 PM**	Prep Date: **5/21/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Nitrate-N	43.9	5.00	45.16	0	97.2	90	110			

Sample ID: **2005172-01BMSD**	Batch ID: **96436**	TestNo: **E300**	Units: **mg/L**
SampType: **MSD**	Run ID: **IC4_200521A**	Analysis Date: **5/21/2020 2:44:21 PM**	Prep Date: **5/21/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Nitrate-N	43.6	5.00	45.16	0	96.6	90	110	0.689	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005173
Project: A1 Area Landfill-MNA

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_200521A

Sample ID: **ICV-200521**	Batch ID: **R110595**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC4_200521A**	Analysis Date: **5/21/2020 9:58:34 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Nitrate-N	12.0	0.500	12.50	0	96.2	90	110			

Sample ID: **CCV1-200521**	Batch ID: **R110595**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC4_200521A**	Analysis Date: **5/21/2020 6:12:21 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Nitrate-N	4.96	0.500	5.000	0	99.2	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005173
Project: A1 Area Landfill-MNA

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_200601B

The QC data in batch 96589 applies to the following samples: 2005173-01C, 2005173-02C, 2005173-03C, 2005173-04C, 2005173-05C, 2005173-06C, 2005173-07C, 2005173-08C

Sample ID: **MB-96589** Batch ID: **96589** TestNo: **M2320 B** Units: **mg/L @ pH 4.4**
SampType: **MBLK** Run ID: **TITRATOR_200601B** Analysis Date: **6/1/2020 11:49:00 AM** Prep Date: **6/1/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	<10.0	20.0								
Alkalinity, Carbonate (As CaCO3)	<10.0	20.0								
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0								
Alkalinity, Total (As CaCO3)	<20.0	20.0								

Sample ID: **LCS-96589** Batch ID: **96589** TestNo: **M2320 B** Units: **mg/L @ pH 4.11**
SampType: **LCS** Run ID: **TITRATOR_200601B** Analysis Date: **6/1/2020 11:53:00 AM** Prep Date: **6/1/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)	54.9	20.0	50.00	0	110	74	129			

Sample ID: **2005173-01C-DUP** Batch ID: **96589** TestNo: **M2320 B** Units: **mg/L @ pH 4.53**
SampType: **DUP** Run ID: **TITRATOR_200601B** Analysis Date: **6/1/2020 1:47:00 PM** Prep Date: **6/1/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	190	20.0	0	196.4				3.05	20	
Alkalinity, Carbonate (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Total (As CaCO3)	190	20.0	0	196.4				3.05	20	

Sample ID: **2005196-01C-DUP** Batch ID: **96589** TestNo: **M2320 B** Units: **mg/L @ pH 4.5**
SampType: **DUP** Run ID: **TITRATOR_200601B** Analysis Date: **6/1/2020 5:39:00 PM** Prep Date: **6/1/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	129	20.0	0	130.5				1.16	20	
Alkalinity, Carbonate (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Total (As CaCO3)	129	20.0	0	130.5				1.16	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005173
Project: A1 Area Landfill-MNA

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_200601B

Sample ID: **ICV-200601**	Batch ID: **R110749**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.33**
SampType: **ICV**	Run ID: **TITRATOR_200601B**	Analysis Date: **6/1/2020 11:47:00 AM**	Prep Date: **6/1/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	8.32	20.0	0							
Alkalinity, Carbonate (As CaCO3)	93.3	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	102	20.0	100.0	0	102	98	102			

Sample ID: **CCV1-200601**	Batch ID: **R110749**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.37**
SampType: **CCV**	Run ID: **TITRATOR_200601B**	Analysis Date: **6/1/2020 5:25:00 PM**	Prep Date: **6/1/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	43.4	20.0	0							
Alkalinity, Carbonate (As CaCO3)	56.3	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	99.7	20.0	100.0	0	99.7	90	110			

Sample ID: **CCV2-200601**	Batch ID: **R110749**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.3**
SampType: **CCV**	Run ID: **TITRATOR_200601B**	Analysis Date: **6/1/2020 8:30:00 PM**	Prep Date: **6/1/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	43.5	20.0	0							
Alkalinity, Carbonate (As CaCO3)	55.5	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	99.0	20.0	100.0	0	99.0	90	110			

Sample ID: **CCV3-200601**	Batch ID: **R110749**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.36**
SampType: **CCV**	Run ID: **TITRATOR_200601B**	Analysis Date: **6/1/2020 8:48:00 PM**	Prep Date: **6/1/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	37.8	20.0	0							
Alkalinity, Carbonate (As CaCO3)	61.6	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	99.4	20.0	100.0	0	99.4	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005173
Project: A1 Area Landfill-MNA

ANALYTICAL QC SUMMARY REPORT

RunID: UV/VIS_2_200323B

Sample ID: **DCS-95613** Batch ID: **95613** TestNo: **M3500-Fe D** Units: **mg/L**
SampType: **DCS** Run ID: **UV/VIS_2_200323B** Analysis Date: **3/23/2020 1:30:00 PM** Prep Date: **3/23/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	0.0580	0.100	0.05000	0	116	65	135	0	0	N

Qualifiers:

B	Analyte detected in the associated Method Blank
J	Analyte detected between MDL and RL
ND	Not Detected at the Method Detection Limit
RL	Reporting Limit
J	Analyte detected between SDL and RL
DF	Dilution Factor
MDL	Method Detection Limit
R	RPD outside accepted control limits
S	Spike Recovery outside control limits
N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005173
Project: A1 Area Landfill-MNA

ANALYTICAL QC SUMMARY REPORT

RunID: **UV/VIS_2_200507C**

Sample ID: **DCS-96253**	Batch ID: **96253**	TestNo: **M4500-P E**	Units: **mg/L**		
SampType: **DCS**	Run ID: **UV/VIS_2_200507C**	Analysis Date: **5/7/2020 2:22:00 PM**	Prep Date: **5/7/2020**		

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Total Orthophosphate (As	0.0480	0.100	0.05000	0	96.0	50	200	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005173
Project: A1 Area Landfill-MNA

ANALYTICAL QC SUMMARY REPORT

RunID: UV/VIS_2_200521C

The QC data in batch 96457 applies to the following samples: 2005173-01C, 2005173-02C, 2005173-03C, 2005173-04C, 2005173-05C, 2005173-06C, 2005173-07C, 2005173-08C

Sample ID: **MB-96457**	Batch ID: **96457**	TestNo: **M4500-P E**	Units: **mg/L**
SampType: **MBLK**	Run ID: **UV/VIS_2_200521C**	Analysis Date: **5/21/2020 3:22:00 PM**	Prep Date: **5/21/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Total Orthophosphate (As	<0.0300	0.100								

Sample ID: **LCS-96457**	Batch ID: **96457**	TestNo: **M4500-P E**	Units: **mg/L**
SampType: **LCS**	Run ID: **UV/VIS_2_200521C**	Analysis Date: **5/21/2020 3:23:00 PM**	Prep Date: **5/21/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Total Orthophosphate (As	0.523	0.100	0.5000	0	105	80	120			

Sample ID: **LCSD-96457**	Batch ID: **96457**	TestNo: **M4500-P E**	Units: **mg/L**
SampType: **LCSD**	Run ID: **UV/VIS_2_200521C**	Analysis Date: **5/21/2020 3:23:00 PM**	Prep Date: **5/21/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Total Orthophosphate (As	0.524	0.100	0.5000	0	105	80	120	0.191	15	

Sample ID: **2005169-01CMS**	Batch ID: **96457**	TestNo: **M4500-P E**	Units: **mg/L**
SampType: **MS**	Run ID: **UV/VIS_2_200521C**	Analysis Date: **5/21/2020 3:25:00 PM**	Prep Date: **5/21/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Total Orthophosphate (As	0.523	0.100	0.5000	0	105	80	120			

Sample ID: **2005169-01CMSD**	Batch ID: **96457**	TestNo: **M4500-P E**	Units: **mg/L**
SampType: **MSD**	Run ID: **UV/VIS_2_200521C**	Analysis Date: **5/21/2020 3:25:00 PM**	Prep Date: **5/21/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Total Orthophosphate (As	0.510	0.100	0.5000	0	102	80	120	2.52	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005173
Project: A1 Area Landfill-MNA

ANALYTICAL QC SUMMARY REPORT

RunID: **UV/VIS_2_200521C**

Sample ID: **ICV-200521**	Batch ID: **R110609**	TestNo: **M4500-P E**				Units: **mg/L**	
SampType: **ICV**	Run ID: **UV/VIS_2_200521C**	Analysis Date: **5/21/2020 3:22:00 PM**				Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Total Orthophosphate (As	0.202	0.100	0.2000	0	101	85	115			

Sample ID: **CCV1-200521**	Batch ID: **R110609**	TestNo: **M4500-P E**				Units: **mg/L**	
SampType: **CCV**	Run ID: **UV/VIS_2_200521C**	Analysis Date: **5/21/2020 3:28:00 PM**				Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Total Orthophosphate (As	0.514	0.100	0.5000	0	103	85	115			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005173
Project: A1 Area Landfill-MNA

ANALYTICAL QC SUMMARY REPORT

RunID: UV/VIS_2_200522C

The QC data in batch 96483 applies to the following samples: 2005173-01A, 2005173-02A, 2005173-03A, 2005173-04A, 2005173-05A, 2005173-06A, 2005173-07A, 2005173-08A

Sample ID: **MB-96483**	Batch ID: **96483**	TestNo: **M3500-Fe D**	Units: **mg/L**
SampType: **MBLK**	Run ID: **UV/VIS_2_200522C**	Analysis Date: **5/22/2020 4:39:00 PM**	Prep Date: **5/22/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	<0.0500	0.100								N

Sample ID: **LCS-96483**	Batch ID: **96483**	TestNo: **M3500-Fe D**	Units: **mg/L**
SampType: **LCS**	Run ID: **UV/VIS_2_200522C**	Analysis Date: **5/22/2020 4:40:00 PM**	Prep Date: **5/22/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	0.0973	0.100	0.1000	0	97.3	85	115			N

Sample ID: **LCSD-96483**	Batch ID: **96483**	TestNo: **M3500-Fe D**	Units: **mg/L**
SampType: **LCSD**	Run ID: **UV/VIS_2_200522C**	Analysis Date: **5/22/2020 4:41:00 PM**	Prep Date: **5/22/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	0.102	0.100	0.1000	0	102	85	115	5.07	15	N

Sample ID: **2005173-06AMS**	Batch ID: **96483**	TestNo: **M3500-Fe D**	Units: **mg/L**
SampType: **MS**	Run ID: **UV/VIS_2_200522C**	Analysis Date: **5/22/2020 4:54:00 PM**	Prep Date: **5/22/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	0.103	0.100	0.1000	0	103	85	115			N

Sample ID: **2005173-06AMSD**	Batch ID: **96483**	TestNo: **M3500-Fe D**	Units: **mg/L**
SampType: **MSD**	Run ID: **UV/VIS_2_200522C**	Analysis Date: **5/22/2020 4:54:00 PM**	Prep Date: **5/22/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	0.109	0.100	0.1000	0	109	85	115	4.88	15	N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005173
Project: A1 Area Landfill-MNA

ANALYTICAL QC SUMMARY REPORT

RunID: **UV/VIS_2_200522C**

Sample ID: **ICV-200522**	Batch ID: **R110699**	TestNo: **M3500-Fe D**	Units: **mg/L**
SampType: **ICV**	Run ID: **UV/VIS_2_200522C**	Analysis Date: **5/22/2020 4:38:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	0.0997	0.100	0.1000	0	99.7	85	115			N

Sample ID: **CCV1-200522**	Batch ID: **R110699**	TestNo: **M3500-Fe D**	Units: **mg/L**
SampType: **CCV**	Run ID: **UV/VIS_2_200522C**	Analysis Date: **5/22/2020 4:46:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	0.212	0.100	0.2000	0	106	85	115			N

Sample ID: **CCV2-200522**	Batch ID: **R110699**	TestNo: **M3500-Fe D**	Units: **mg/L**
SampType: **CCV**	Run ID: **UV/VIS_2_200522C**	Analysis Date: **5/22/2020 4:51:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	0.208	0.100	0.2000	0	104	85	115			N

Sample ID: **CCV3-200522**	Batch ID: **R110699**	TestNo: **M3500-Fe D**	Units: **mg/L**
SampType: **CCV**	Run ID: **UV/VIS_2_200522C**	Analysis Date: **5/22/2020 5:07:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	0.216	0.100	0.2000	0	108	85	115			N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *02-Jun-20*

CLIENT: Golder
Work Order: 2005173
Project: A1 Area Landfill-MNA

MQL SUMMARY REPORT

TestNo: E300	**MDL**	**MQL**
Analyte	**mg/L**	**mg/L**
Nitrate-N	0.100	0.500

TestNo: SW6020B	**MDL**	**MQL**
Analyte	**mg/L**	**mg/L**
Iron	0.0300	0.100
Magnesium	0.100	0.300
Potassium	0.100	0.300
Sodium	0.100	0.300

TestNo: M2320 B	**MDL**	**MQL**
Analyte	**ng/L @ pH 4.**	**ng/L @ pH 4.**
Alkalinity, Bicarbonate (As CaCO3)	10.0	20.0
Alkalinity, Carbonate (As CaCO3)	10.0	20.0
Alkalinity, Hydroxide (As CaCO3)	10.0	20.0
Alkalinity, Total (As CaCO3)	20.0	20.0

TestNo: M3500-Fe D	**MDL**	**MQL**
Analyte	**mg/L**	**mg/L**
Iron, Ferrous	0.0500	0.100

TestNo: M4500-P E	**MDL**	**MQL**
Analyte	**mg/L**	**mg/L**
Phosphorus, Total Orthophosphate (	0.0300	0.100

Qualifiers: MQL -Method Quantitation Limit as defined by TRRP
MDL -Method Detection Limit as defined by TRRP

July 10, 2020

Will Vienne
Golder
2201 Double Creek Dr #4004
Round Rock, Texas 78664
TEL: (512) 671-3434
FAX: (512) 671-3446

Order No.: 2005196

RE: A1 Area Landfill-MNA

Dear Will Vienne:

DHL Analytical, Inc. received 10 sample(s) on 5/22/2020 for the analyses presented in the following report.

Revision Number 1 for Work Order 2005196: This revision consists of changing the target analyte list per the client's request. Please replace the original Data Report with this revision.

There were no problems with the analyses and all data met requirements of NELAP except where noted in the Case Narrative. All non-NELAP methods will be identified accordingly in the case narrative and all estimated uncertainties of test results are within method or EPA specifications.

If you have any questions regarding these tests results, please feel free to call. Thank you for using DHL Analytical.

Sincerely,

John DuPont
General Manager

This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211-20-25

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DHL ANALYTICAL
2300 Double Creek Dr. ■ Round Rock, TX 78664
Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

№ 68561

CHAIN-OF-CUSTODY

CLIENT: GOLDER ASSOCIATES
ADDRESS: 2201 DOUBLE CREEK DR ROUND ROCK, TX 78664
PHONE: 512-671-3434 FAX/E-MAIL:
DATA REPORTED TO: WILL VIENNE
ADDITIONAL REPORT COPIES TO:

DATE: 5-21-20 PAGE 1 OF 1
PO #: DHL WORK ORDER #: 2005146
PROJECT LOCATION OR NAME: A1 AREA LANDFILL - MNA
CLENT PROJECT #: 19134019 COLLECTOR: J. BRAYTON

Authorize 5% surcharge for TRRP Report? ❑ Yes ❑ No

S=SOIL W=WATER A=AIR L=LIQUID SE=SEDIMENT P=PAINT SL=SLUDGE O=OTHER SO=SOLID

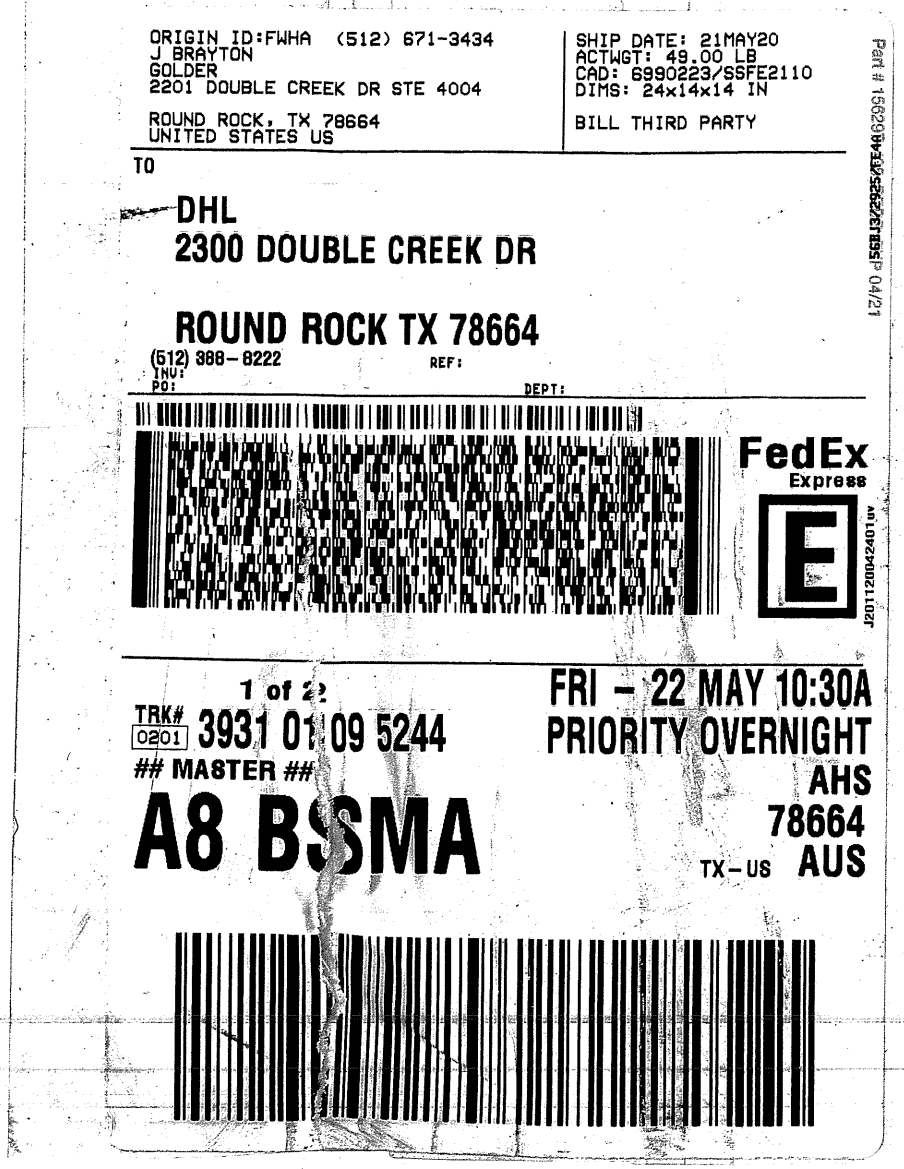
Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	PRESERVATION HCl	HNO3	H2SO4 ❑ NaOH ❑	ICE	UNPRESERVED	ANALYSES: BTEX ❑ MTBE ❑ (METHOD 8021) / TPH 1005 ❑ TPH 1006 ❑ HOLD 1006 ❑ / GRO (METHOD 8015) ❑ DRO (METHOD 8105) ❑ / VOC 8260 ❑ VOC 624 ❑ VOC 8260/5035 ❑ / SVOC 8270 ❑ PAH 8270 ❑ HOLD PAH ❑ SVOC 625 ❑ / 8270 PEST ❑ 625 PEST/PCB ❑ 608 PCB ❑ / 8270 O-P PEST ❑ 8082 PCB ❑ 8270 PCB ❑ / 8321 HERB ❑ T PHOS, AMMONIA ❑ / METALS 6020 ❑ METALS 200.8 ❑ DISS. METALS ❑ / RCRA ❑ TX11 ❑ / PH ❑ HEX CHROM ❑ ALKALINITY ❑ COD ❑ / CHLORIDE ❑ ANIONS ❑ / TCLP-SVOC ❑ VOC ❑ PEST ❑ HERB ❑ / TCLP-METALS ❑ RCRA 8 ❑ TX-11 ❑ Pb ❑ / RCI ❑ FLASHPOINT ❑ DGAS ❑ / TDS ❑ TSS ❑ % MOISTURE ❑ CYANIDE ❑ / CL, F, SO4, NO3, PO4, Na, Mg, K / FERROUS Fe, FERRIC Fe	FIELD NOTES
A1-2-OB	01	5-21-20	0735	W		5		X		X		X	
BMW-33	02		0840			5		X		X		X	
BMW-32	03		0930			5		X		X		X	
BMW-11AR	04		1025			5		X		X		X	
BMW-18	05		1120			5		X		X		X	
BMW-29	06		1215			5		X		X		X	
BMW-25	07		1305			5		X		X		X	
BMW-28	08		1415			5		X		X		X	
BMW-30	09		1510			5		X		X		X	
BMW-31	10		1605			5		X		X		X	

RELINQUISHED BY: (Signature) DATE/TIME 5-21-20 1800 RECEIVED BY: (Signature) FedEx
RELINQUISHED BY: (Signature) FedEx DATE/TIME 5-22-20 0935 RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature) DATE/TIME RECEIVED BY: (Signature)

❑ DHL DISPOSAL @ $5.00 each ❑ Return

TURN AROUND TIME
RUSH ❑ CALL FIRST
1 DAY ❑ CALL FIRST
2 DAY ❑
NORMAL ☑
OTHER ❑

LABORATORY USE ONLY:
RECEIVING TEMP: 1.5/2.4 THERM #: 78
CUSTODY SEALS: ❑ BROKEN ☒ INTACT ❑ NOT USED
CARRIER: ❑ LONE STAR ☒ FEDEX ❑ UPS ❑ OTHER
❑ COURIER DELIVERY
❑ HAND DELIVERED



ORIGIN ID:FWHA (512) 671-3434
J BRAYTON
GOLDER
2201 DOUBLE CREEK DR STE 4004

ROUND ROCK, TX 78664
UNITED STATES US

SHIP DATE: 21MAY20
ACTWGT: 49.00 LB
CAD: 6990223/SSFE2110
DIMS: 24x14x14 IN

BILL THIRD PARTY

Part # 156290-[illegible] P 04/21

TO

DHL
2300 DOUBLE CREEK DR

ROUND ROCK TX 78664
(512) 388-8222 REF:
INV:
PO: DEPT:

FedEx Express

E

J201120042401uv

1 of 2

TRK# 0201 3931 01 09 5244

MASTER

A8 BSMA

FRI - 22 MAY 10:30A
PRIORITY OVERNIGHT
AHS
78664
TX-US AUS

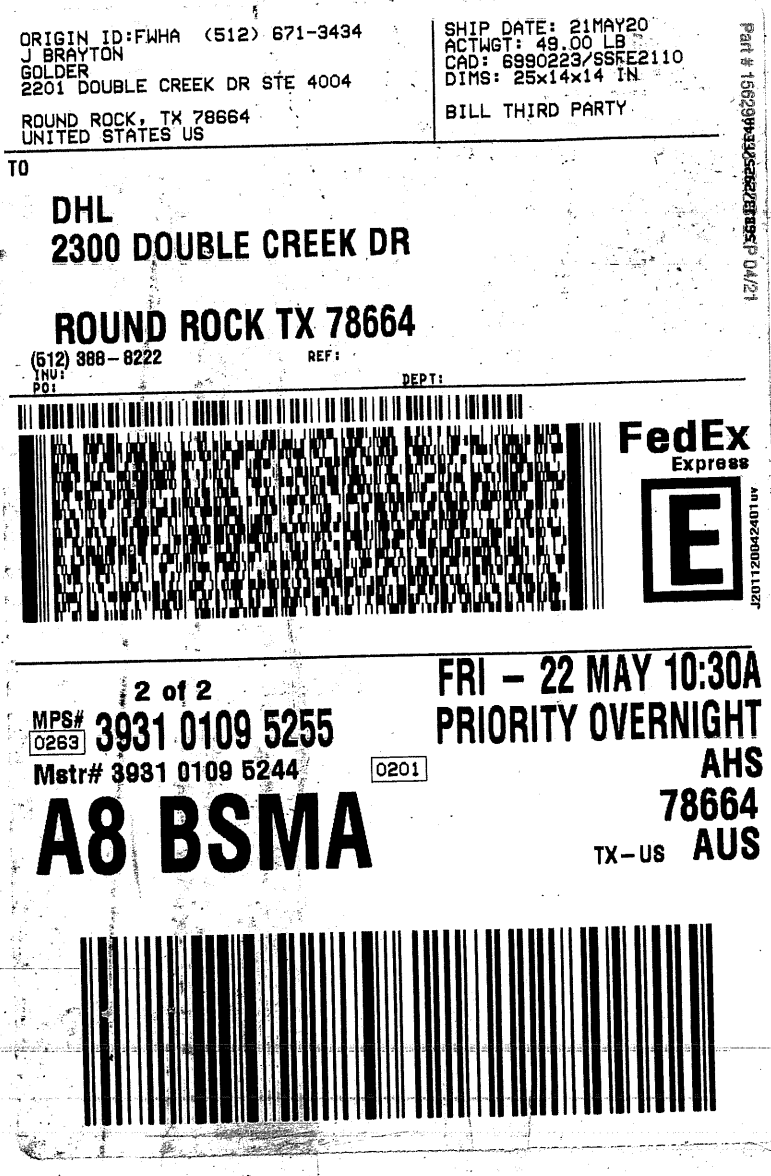
1.5

CUSTODY SEAL

DATE 5-21-20

SIGNATURE John Bran

DHL ANALYTICAL



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J BRAYTON
GOLDER
2201 DOUBLE CREEK DR STE 4004

ROUND ROCK, TX 78664
UNITED STATES US

SHIP DATE: 21MAY20
ACTWGT: 49.00 LB
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DIMS: 25x14x14 IN

BILL THIRD PARTY

Part # 156299[illegible] P 04/21

TO

DHL
2300 DOUBLE CREEK DR

ROUND ROCK TX 78664

(512) 388-8222 REF:
INV:
PO: DEPT:

FedEx Express

E

J201120042401uv

2 of 2

MPS# 0263 3931 0109 5255
Mstr# 3931 0109 5244 0201

A8 BSMA

FRI - 22 MAY 10:30A
PRIORITY OVERNIGHT
AHS
78664
TX-US AUS

2-4

CUSTODY SEAL

DATE 5-21-20

SIGNATURE [signature]

DHL ANALYTICAL

older

ake PDP

DHL Analytical, Inc.

Sample Receipt Checklist

Client Name **Golder** Date Received: **5/22/2020**

Work Order Number **2005196** Received by: **JH**

Checklist completed by: _____ 5/22/2020 Reviewed by JD 5/22/2020
Signature | Date | Initials | Date

Carrier name: FedEx 1day

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	**1.5** °C
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH<2 acceptable upon receipt?	Yes ☑	No ☐	NA ☐ LOT # 13171
	Adjusted? No		Checked by EL
Water - ph>9 (S) or ph>10 (CN) acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted? _____		Checked by _____

Any No response must be detailed in the comments section below.

Client contacted: _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments:

Corrective Action:

Laboratory Name: DHL Analytical, Inc.

Laboratory Review Checklist: Reportable Data

Project Name: A1 Area Landfill-MNA	**LRC Date:** 7/10/2020
Reviewer Name: Angie O'Donnell	**Laboratory Work Order: 2005196**
Prep Batch Number(s): See Prep Dates Report	**Run Batch:** See Analytical Dates Report

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
		Chain-of-Custody (C-O-C)					
R1	OI	**1)** Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	**X**				**R1-01**
		2) Were all departures from standard conditions described in an exception report?			**X**		
R2	OI	**Sample and Quality Control (QC) Identification**					
		1) Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	**X**				
		2) Are all laboratory ID numbers cross-referenced to the corresponding QC data?	**X**				
R3	OI	**Test Reports**					
		1) Were all samples prepared and analyzed within holding times?	**X**				
		2) Other than those results < MQL, were all other raw values bracketed by calibration standards?	**X**				
		3) Were calculations checked by a peer or supervisor?	**X**				
		4) Were all analyte identifications checked by a peer or supervisor?	**X**				
		5) Were sample detection limits reported for all analytes not detected?	**X**				
		6) Were all results for soil and sediment samples reported on a dry weight basis?			**X**		
		7) Were % moisture (or solids) reported for all soil and sediment samples?			**X**		
		8) Were bulk soils/solids samples for volatile analysis extracted with methanol per EPA Method 5035?			**X**		
		9) If required for the project, TICs reported?			**X**		
R4	O	**Surrogate Recovery Data**					
		1) Were surrogates added prior to extraction?			**X**		
		2) Were surrogate percent recoveries in all samples within the laboratory QC limits?			**X**		
R5	OI	**Test Reports/Summary Forms for Blank Samples**					
		1) Were appropriate type(s) of blanks analyzed?	**X**				
		2) Were blanks analyzed at the appropriate frequency?	**X**				
		3) Where method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	**X**				
		4) Were blank concentrations < MDL?	**X**				
		5) For analyte(s) detected in a blank sample, was the concentration, unadjusted for sample specific factors, in all associated field samples, **greater** than 10 times the concentration in the blank sample?			**X**		
R6	OI	**Laboratory Control Samples (LCS):**					
		1) Were all COCs included in the LCS?	**X**				
		2) Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	**X**				
		3) Were LCSs analyzed at the required frequency?	**X**				
		4) Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	**X**				
		5) Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	**X**				
		6) Was the LCSD RPD within QC limits (if applicable)?	**X**				
R7	OI	**Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Data**					
		1) Were the project/method specified analytes included in the MS and MSD?	**X**				
		2) Were MS/MSD analyzed at the appropriate frequency?	**X**				
		3) Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?		**X**			**R7-03**
		4) Were MS/MSD RPDs within laboratory QC limits?	**X**				
R8	OI	**Analytical Duplicate Data**					
		1) Were appropriate analytical duplicates analyzed for each matrix?	**X**				
		2) Were analytical duplicates analyzed at the appropriate frequency?	**X**				
		3) Were RPDs or relative standard deviations within the laboratory QC limits?	**X**				
R9	OI	**Method Quantitation Limits (MQLs):**					
		1) Are the MQLs for each method analyte included in the laboratory data package?	**X**				
		2) Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	**X**				
		3) Are unadjusted MQLs and DCSs included in the laboratory data package?	**X**				
R10	OI	**Other Problems/Anomalies**					
		1) Are all known problems/anomalies/special conditions noted in this LRC and ER?	**X**				**R10-01**
		2) Was applicable and available technology used to lower the SDL to minimize the matrix interference affects on the sample results?	**X**				
		3) Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices and methods associated with this laboratory data package?	**X**				

Laboratory Name: DHL Analytical, Inc.

Laboratory Review Checklist (continued): Supporting Data

Project Name: A1 Area Landfill-MNA	**LRC Date:** 7/10/2020
Reviewer Name: Angie O'Donnell	**Laboratory Work Order: 2005196**
Prep Batch Number(s): See Prep Dates Report	**Run Batch:** See Analytical Dates Report

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
S1	OI	**Initial Calibration (ICAL)**					
		1) Were response factors and/or relative response factors for each analyte within QC limits?	X				
		2) Were percent RSDs or correlation coefficient criteria met?	X				
		3) Was the number of standards recommended in the method used for all analytes?	X				
		4) Were all points generated between the lowest and highest standard used to calculate the curve?		X			**S1-04**
		5) Are ICAL data available for all instruments used?	X				
		6) Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	**Initial and Continuing calibration Verification (ICCV and CCV) and Continuing Calibration blank (CCB):**					
		1) Was the CCV analyzed at the method-required frequency?	X				
		2) Were percent differences for each analyte within the method-required QC limits?	X				
		3) Was the ICAL curve verified for each analyte?	X				
		4) Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	X				
S3	O	**Mass Spectral Tuning:**					
		1) Was the appropriate compound for the method used for tuning?	X				
		2) Were ion abundance data within the method-required QC limits?	X				
S4	O	**Internal Standards (IS):**					
		1) Were IS area counts and retention times within the method-required QC limits?	X				
S5	OI	**Raw Data (NELAC Section 5.5.10)**					
		1) Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		2) Were data associated with manual integrations flagged on the raw data?	X				
S6	O	**Dual Column Confirmation**					
		1) Did dual column confirmation results meet the method-required QC?			X		
S7	O	**Tentatively Identified Compounds (TICs):**					
		1) If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) Results:**					
		1) Were percent recoveries within method QC limits?	X				
S9	I	**Serial Dilutions, Post Digestion Spikes, and Method of Standard Additions**					
		1) Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	X				
S10	OI	**Method Detection Limit (MDL) Studies**					
		1) Was a MDL study performed for each reported analyte?	X				
		2) Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	**Proficiency Test Reports:**					
		1) Was the lab's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	**Standards Documentation**					
		1) Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound/Analyte Identification Procedures**					
		1) Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of Analyst Competency (DOC)**					
		1) Was DOC conducted consistent with NELAC Chapter 5 – Appendix C?	X				
		2) Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/Validation Documentation for Methods** (NELAC Chapter 5)					
		1) Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	**Laboratory Standard Operating Procedures (SOPs):**					
		1) Are laboratory SOPs current and on file for each method performed?	X				

1 Items identified by the letter "R" should be included in the laboratory data package submitted to the TCEQ in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.

2 O = organic analyses; I = inorganic analyses (and general chemistry, when applicable).

3 NA = Not applicable.

4 NR = Not Reviewed.

5 ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Data Package Signature Page – RG-366/TRRP-13

This data package consists of:

This signature page, the laboratory review checklist, and the following reportable data:

R1 Field chain-of-custody documentation;
R2 Sample identification cross-reference;
R3 Test reports (analytical data sheets) for each environmental sample that includes:
  a) Items consistent with NELAC Chapter 5,
  b) dilution factors,
  c) preparation methods,
  d) cleanup methods, and
  e) if required for the project, tentatively identified compounds (TICs).
R4 Surrogate recovery data including:
  a) Calculated recovery (%R), and
  b) The laboratory's surrogate QC limits.
R5 Test reports/summary forms for blank samples;
R6 Test reports/summary forms for laboratory control samples (LCSs) including:
  a) LCS spiking amounts,
  b) Calculated %R for each analyte, and
  c) The laboratory's LCS QC limits.
R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
  a) Samples associated with the MS/MSD clearly identified,
  b) MS/MSD spiking amounts,
  c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
  d) Calculated %Rs and relative percent differences (RPDs), and
  e) The laboratory's MS/MSD QC limits
R8 Laboratory analytical duplicate (if applicable) recovery and precision:
  a) The amount of analyte measured in the duplicate,
  b) The calculated RPD, and
  c) The laboratory's QC limits for analytical duplicates.
R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix;
R10 Other problems or anomalies.

The Exception Report for each "No" or "Not Reviewed (NR)" item in the Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory is not accredited under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature below, I affirm to the best of my knowledge that all problems/anomalies observed by the laboratory have been identified in the Laboratory Review Checklist, and no information or data affecting the quality of the data has been knowingly withheld.

This laboratory was last inspected by TCEQ on February 25-28, 2019. Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Name: John DuPont
Official Title: General Manager

Signature

0□/10/20
Date

Name: Dr. Derhsing Luu
Official Title: Technical Director

DHL Analytical, Inc. **Date:** *10-Jul-20*

CLIENT: Golder
Project: A1 Area Landfill-MNA
Lab Order: 2005196

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Method SW6020B - Metals Analysis
Method E300 - Anions Analysis
Method M2320 B - Alkalinity Analysis
Method M3500-FE D - Ferrous Iron Analysis (This parameter is not NELAP Certified)
Method M3500-FE D - Ferric Iron Analysis (The calculation is not NELAP Certified)
Method M4500-P E - Orthophosphate Analysis

Exception Report R1-01

The samples were received and log-in performed on 5/22/2020. A total of 10 samples were received and analyzed. The samples arrived in good condition and were properly packaged.

Exception Report R7-03

For Metals Analysis, the recoveries of up to two analytes for the Matrix Spike and Matrix Spike Duplicate (2005196-06 MS/MSD) were above the method control limits. These are flagged accordingly in the QC Summary Report. These analytes were within method control limits in the associated LCS. No further corrective action was taken.

Exception Report R10-01

The Ferric Iron is calculated as the Total Iron minus the Ferrous Iron.

Exception Report S1-04

For Metals Analysis, Calcium was reported above the upper calibration range for Sample A1-2-OB, due to late change to the target analyte list. [illegible] No further corrective action was taken.

DHL Analytical, Inc.

Date: *03-Jun-20*

CLIENT: Golder
Project: A1 Area Landfill-MNA
Lab Order: 2005196

Work Order Sample Summary

Lab Smp ID	Client Sample ID	Tag Number	Date Collected	Date Recved
2005196-01	A1-2-OB		05/21/20 07:35 AM	5/22/2020
2005196-02	BMW-33		05/21/20 08:40 AM	5/22/2020
2005196-03	BMW-32		05/21/20 09:30 AM	5/22/2020
2005196-04	BMW-11AR		05/21/20 10:25 AM	5/22/2020
2005196-05	BMW-18		05/21/20 11:20 AM	5/22/2020
2005196-06	BMW-29		05/21/20 12:15 PM	5/22/2020
2005196-07	BMW-25		05/21/20 01:05 PM	5/22/2020
2005196-08	BMW-28		05/21/20 02:15 PM	5/22/2020
2005196-09	BMW-30		05/21/20 03:10 PM	5/22/2020
2005196-10	BMW-31		05/21/20 04:05 PM	5/22/2020

Lab Order: 2005196
Client: Golder
Project: A1 Area Landfill-MNA

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
2005196-01A	A1-2-OB	05/21/20 07:35 AM	Aqueous	M3500-Fe	Ferrous Iron Prep Water	05/22/20 03:45 PM	96483
2005196-01B	A1-2-OB	05/21/20 07:35 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/27/20 08:18 AM	96513
2005196-01C	A1-2-OB	05/21/20 07:35 AM	Aqueous	M2320 B	Alkalinity Preparation	06/01/20 11:05 AM	96589
	A1-2-OB	05/21/20 07:35 AM	Aqueous	E300	Anion Preparation	05/22/20 09:15 AM	96472
	A1-2-OB	05/21/20 07:35 AM	Aqueous	E300	Anion Preparation	05/22/20 09:15 AM	96472
	A1-2-OB	05/21/20 07:35 AM	Aqueous	M4500-P E	Orthophosphate Prep	05/22/20 01:06 PM	96479
2005196-02A	BMW-33	05/21/20 08:40 AM	Aqueous	M3500-Fe	Ferrous Iron Prep Water	05/22/20 03:45 PM	96483
2005196-02B	BMW-33	05/21/20 08:40 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/27/20 08:18 AM	96513
	BMW-33	05/21/20 08:40 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/27/20 08:18 AM	96513
2005196-02C	BMW-33	05/21/20 08:40 AM	Aqueous	M2320 B	Alkalinity Preparation	06/01/20 11:05 AM	96589
	BMW-33	05/21/20 08:40 AM	Aqueous	E300	Anion Preparation	05/22/20 09:15 AM	96472
	BMW-33	05/21/20 08:40 AM	Aqueous	M4500-P E	Orthophosphate Prep	05/22/20 01:06 PM	96479
2005196-03A	BMW-32	05/21/20 09:30 AM	Aqueous	M3500-Fe	Ferrous Iron Prep Water	05/22/20 03:45 PM	96483
	BMW-32	05/21/20 09:30 AM	Aqueous	M3500-Fe	Ferrous Iron Prep Water	05/22/20 03:45 PM	96483
2005196-03B	BMW-32	05/21/20 09:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/27/20 08:18 AM	96513
	BMW-32	05/21/20 09:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/27/20 08:18 AM	96513
2005196-03C	BMW-32	05/21/20 09:30 AM	Aqueous	M2320 B	Alkalinity Preparation	06/01/20 11:05 AM	96589
	BMW-32	05/21/20 09:30 AM	Aqueous	E300	Anion Preparation	05/22/20 09:15 AM	96472
	BMW-32	05/21/20 09:30 AM	Aqueous	E300	Anion Preparation	05/22/20 09:15 AM	96472
	BMW-32	05/21/20 09:30 AM	Aqueous	M4500-P E	Orthophosphate Prep	05/22/20 01:06 PM	96479
2005196-04A	BMW-11AR	05/21/20 10:25 AM	Aqueous	M3500-Fe	Ferrous Iron Prep Water	05/22/20 03:45 PM	96483
2005196-04B	BMW-11AR	05/21/20 10:25 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/27/20 08:18 AM	96513
	BMW-11AR	05/21/20 10:25 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/27/20 08:18 AM	96513
2005196-04C	BMW-11AR	05/21/20 10:25 AM	Aqueous	M2320 B	Alkalinity Preparation	06/01/20 11:05 AM	96589
	BMW-11AR	05/21/20 10:25 AM	Aqueous	E300	Anion Preparation	05/22/20 09:15 AM	96472
	BMW-11AR	05/21/20 10:25 AM	Aqueous	M4500-P E	Orthophosphate Prep	05/22/20 01:06 PM	96479
2005196-05A	BMW-18	05/21/20 11:20 AM	Aqueous	M3500-Fe	Ferrous Iron Prep Water	05/22/20 03:45 PM	96483
2005196-05B	BMW-18	05/21/20 11:20 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/27/20 08:18 AM	96513

Lab Order: 2005196
Client: Golder
Project: A1 Area Landfill-MNA

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
2005196-05B	BMW-18	05/21/20 11:20 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/27/20 08:18 AM	96513
2005196-05C	BMW-18	05/21/20 11:20 AM	Aqueous	M2320 B	Alkalinity Preparation	06/01/20 11:05 AM	96589
	BMW-18	05/21/20 11:20 AM	Aqueous	E300	Anion Preparation	05/22/20 09:15 AM	96472
	BMW-18	05/21/20 11:20 AM	Aqueous	M4500-P E	Orthophosphate Prep	05/22/20 01:06 PM	96479
2005196-06A	BMW-29	05/21/20 12:15 PM	Aqueous	M3500-Fe	Ferrous Iron Prep Water	05/22/20 03:45 PM	96483
2005196-06B	BMW-29	05/21/20 12:15 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/27/20 08:18 AM	96513
	BMW-29	05/21/20 12:15 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/27/20 08:18 AM	96513
2005196-06C	BMW-29	05/21/20 12:15 PM	Aqueous	M2320 B	Alkalinity Preparation	06/01/20 11:05 AM	96589
	BMW-29	05/21/20 12:15 PM	Aqueous	E300	Anion Preparation	05/22/20 09:15 AM	96472
	BMW-29	05/21/20 12:15 PM	Aqueous	E300	Anion Preparation	05/22/20 09:15 AM	96472
	BMW-29	05/21/20 12:15 PM	Aqueous	M4500-P E	Orthophosphate Prep	05/22/20 01:06 PM	96479
2005196-07A	BMW-25	05/21/20 01:05 PM	Aqueous	M3500-Fe	Ferrous Iron Prep Water	05/22/20 03:45 PM	96483
2005196-07B	BMW-25	05/21/20 01:05 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/27/20 08:18 AM	96513
	BMW-25	05/21/20 01:05 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/27/20 08:18 AM	96513
2005196-07C	BMW-25	05/21/20 01:05 PM	Aqueous	M2320 B	Alkalinity Preparation	06/01/20 11:05 AM	96589
	BMW-25	05/21/20 01:05 PM	Aqueous	E300	Anion Preparation	05/22/20 09:15 AM	96472
	BMW-25	05/21/20 01:05 PM	Aqueous	E300	Anion Preparation	05/22/20 09:15 AM	96472
	BMW-25	05/21/20 01:05 PM	Aqueous	M4500-P E	Orthophosphate Prep	05/22/20 01:06 PM	96479
2005196-08A	BMW-28	05/21/20 02:15 PM	Aqueous	M3500-Fe	Ferrous Iron Prep Water	05/22/20 03:45 PM	96483
2005196-08B	BMW-28	05/21/20 02:15 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/27/20 08:18 AM	96513
	BMW-28	05/21/20 02:15 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/27/20 08:18 AM	96513
2005196-08C	BMW-28	05/21/20 02:15 PM	Aqueous	M2320 B	Alkalinity Preparation	06/01/20 11:05 AM	96589
	BMW-28	05/21/20 02:15 PM	Aqueous	E300	Anion Preparation	05/22/20 09:15 AM	96472
	BMW-28	05/21/20 02:15 PM	Aqueous	M4500-P E	Orthophosphate Prep	05/22/20 01:06 PM	96479
2005196-09A	BMW-30	05/21/20 03:10 PM	Aqueous	M3500-Fe	Ferrous Iron Prep Water	05/22/20 03:45 PM	96483
2005196-09B	BMW-30	05/21/20 03:10 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/27/20 08:18 AM	96513
	BMW-30	05/21/20 03:10 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/27/20 08:18 AM	96513
2005196-09C	BMW-30	05/21/20 03:10 PM	Aqueous	M2320 B	Alkalinity Preparation	06/01/20 11:05 AM	96589

Lab Order: 2005196
Client: Golder
Project: A1 Area Landfill-MNA

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
2005196-09C	BMW-30	05/21/20 03:10 PM	Aqueous	E300	Anion Preparation	05/22/20 09:15 AM	96472
	BMW-30	05/21/20 03:10 PM	Aqueous	E300	Anion Preparation	05/22/20 09:15 AM	96472
	BMW-30	05/21/20 03:10 PM	Aqueous	M4500-P E	Orthophosphate Prep	05/22/20 01:06 PM	96479
2005196-10A	BMW-31	05/21/20 04:05 PM	Aqueous	M3500-Fe	Ferrous Iron Prep Water	05/22/20 03:45 PM	96483
2005196-10B	BMW-31	05/21/20 04:05 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/27/20 08:18 AM	96513
	BMW-31	05/21/20 04:05 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/27/20 08:18 AM	96513
2005196-10C	BMW-31	05/21/20 04:05 PM	Aqueous	M2320 B	Alkalinity Preparation	06/01/20 11:05 AM	96589
	BMW-31	05/21/20 04:05 PM	Aqueous	E300	Anion Preparation	05/22/20 09:15 AM	96472
	BMW-31	05/21/20 04:05 PM	Aqueous	E300	Anion Preparation	05/22/20 09:15 AM	96472
	BMW-31	05/21/20 04:05 PM	Aqueous	M4500-P E	Orthophosphate Prep	05/22/20 01:06 PM	96479

Lab Order: 2005196
Client: Golder
Project: A1 Area Landfill-MNA

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
2005196-01A	A1-2-OB	Aqueous	M3500-Fe D	Ferric Iron (Calculated)	R110770	1	06/02/20	UV/VIS_2_200602A
	A1-2-OB	Aqueous	M3500-Fe D	Ferrous Iron	96483	1	05/22/20 04:45 PM	UV/VIS_2_200522C
2005196-01B	A1-2-OB	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	96513	1	05/28/20 01:38 PM	ICP-MS5_200528A
2005196-01C	A1-2-OB	Aqueous	M2320 B	Alkalinity	96589	1	06/01/20 05:32 PM	TITRATOR_200601B
	A1-2-OB	Aqueous	E300	Anions by IC method - Water	96472	1	05/22/20 12:32 PM	IC2_200522A
	A1-2-OB	Aqueous	E300	Anions by IC method - Water	96472	10	05/22/20 04:48 PM	IC2_200522A
	A1-2-OB	Aqueous	M4500-P E	Orthophosphate	96479	1	05/22/20 01:51 PM	UV/VIS_2_200522A
2005196-02A	BMW-33	Aqueous	M3500-Fe D	Ferric Iron (Calculated)	R110770	1	06/02/20	UV/VIS_2_200602A
	BMW-33	Aqueous	M3500-Fe D	Ferrous Iron	96483	1	05/22/20 04:47 PM	UV/VIS_2_200522C
2005196-02B	BMW-33	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	96513	10	05/29/20 01:52 PM	ICP-MS4_200529A
	BMW-33	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	96513	1	05/28/20 01:41 PM	ICP-MS5_200528A
2005196-02C	BMW-33	Aqueous	M2320 B	Alkalinity	96589	1	06/01/20 06:02 PM	TITRATOR_200601B
	BMW-33	Aqueous	E300	Anions by IC method - Water	96472	1	05/22/20 12:48 PM	IC2_200522A
	BMW-33	Aqueous	M4500-P E	Orthophosphate	96479	1	05/22/20 01:52 PM	UV/VIS_2_200522A
2005196-03A	BMW-32	Aqueous	M3500-Fe D	Ferric Iron (Calculated)	R110770	1	06/02/20	UV/VIS_2_200602A
	BMW-32	Aqueous	M3500-Fe D	Ferrous Iron	96483	1	05/22/20 04:47 PM	UV/VIS_2_200522C
	BMW-32	Aqueous	M3500-Fe D	Ferrous Iron	96483	50	05/22/20 05:00 PM	UV/VIS_2_200522C
2005196-03B	BMW-32	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	96513	1	05/28/20 01:43 PM	ICP-MS5_200528A
	BMW-32	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	96513	10	05/29/20 01:54 PM	ICP-MS4_200529A
2005196-03C	BMW-32	Aqueous	M2320 B	Alkalinity	96589	1	06/01/20 06:19 PM	TITRATOR_200601B
	BMW-32	Aqueous	E300	Anions by IC method - Water	96472	1	05/22/20 01:04 PM	IC2_200522A
	BMW-32	Aqueous	E300	Anions by IC method - Water	96472	10	05/22/20 05:36 PM	IC2_200522A
	BMW-32	Aqueous	M4500-P E	Orthophosphate	96479	1	05/22/20 01:53 PM	UV/VIS_2_200522A
2005196-04A	BMW-11AR	Aqueous	M3500-Fe D	Ferric Iron (Calculated)	R110770	1	06/02/20	UV/VIS_2_200602A
	BMW-11AR	Aqueous	M3500-Fe D	Ferrous Iron	96483	1	05/22/20 04:48 PM	UV/VIS_2_200522C
2005196-04B	BMW-11AR	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	96513	10	05/29/20 01:56 PM	ICP-MS4_200529A
	BMW-11AR	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	96513	1	05/28/20 01:45 PM	ICP-MS5_200528A
2005196-04C	BMW-11AR	Aqueous	M2320 B	Alkalinity	96589	1	06/01/20 06:40 PM	TITRATOR_200601B

Lab Order: 2005196
Client: Golder
Project: A1 Area Landfill-MNA

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
2005196-04C	BMW-11AR	Aqueous	E300	Anions by IC method - Water	96472	1	05/22/20 01:20 PM	IC2_200522A
	BMW-11AR	Aqueous	M4500-P E	Orthophosphate	96479	1	05/22/20 01:53 PM	UV/VIS_2_200522A
2005196-05A	BMW-18	Aqueous	M3500-Fe D	Ferric Iron (Calculated)	R110770	1	06/02/20	UV/VIS_2_200602A
	BMW-18	Aqueous	M3500-Fe D	Ferrous Iron	96483	1	05/22/20 04:48 PM	UV/VIS_2_200522C
2005196-05B	BMW-18	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	96513	10	05/29/20 01:58 PM	ICP-MS4_200529A
	BMW-18	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	96513	1	05/28/20 01:47 PM	ICP-MS5_200528A
2005196-05C	BMW-18	Aqueous	M2320 B	Alkalinity	96589	1	06/01/20 06:50 PM	TITRATOR_200601B
	BMW-18	Aqueous	E300	Anions by IC method - Water	96472	1	05/22/20 01:36 PM	IC2_200522A
	BMW-18	Aqueous	M4500-P E	Orthophosphate	96479	1	05/22/20 01:53 PM	UV/VIS_2_200522A
2005196-06A	BMW-29	Aqueous	M3500-Fe D	Ferric Iron (Calculated)	R110770	1	06/02/20	UV/VIS_2_200602A
	BMW-29	Aqueous	M3500-Fe D	Ferrous Iron	96483	1	05/22/20 04:49 PM	UV/VIS_2_200522C
2005196-06B	BMW-29	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	96513	50	05/29/20 12:58 PM	ICP-MS4_200529A
	BMW-29	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	96513	1	05/28/20 12:48 PM	ICP-MS5_200528A
2005196-06C	BMW-29	Aqueous	M2320 B	Alkalinity	96589	1	06/01/20 07:18 PM	TITRATOR_200601B
	BMW-29	Aqueous	E300	Anions by IC method - Water	96472	1	05/22/20 01:52 PM	IC2_200522A
	BMW-29	Aqueous	E300	Anions by IC method - Water	96472	10	05/22/20 05:52 PM	IC2_200522A
	BMW-29	Aqueous	M4500-P E	Orthophosphate	96479	1	05/22/20 01:53 PM	UV/VIS_2_200522A
2005196-07A	BMW-25	Aqueous	M3500-Fe D	Ferric Iron (Calculated)	R110770	1	06/02/20	UV/VIS_2_200602A
	BMW-25	Aqueous	M3500-Fe D	Ferrous Iron	96483	1	05/22/20 04:49 PM	UV/VIS_2_200522C
2005196-07B	BMW-25	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	96513	20	05/29/20 02:00 PM	ICP-MS4_200529A
	BMW-25	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	96513	1	05/28/20 01:49 PM	ICP-MS5_200528A
2005196-07C	BMW-25	Aqueous	M2320 B	Alkalinity	96589	1	06/01/20 07:43 PM	TITRATOR_200601B
	BMW-25	Aqueous	E300	Anions by IC method - Water	96472	1	05/22/20 02:08 PM	IC2_200522A
	BMW-25	Aqueous	E300	Anions by IC method - Water	96472	10	05/22/20 06:08 PM	IC2_200522A
	BMW-25	Aqueous	M4500-P E	Orthophosphate	96479	1	05/22/20 01:54 PM	UV/VIS_2_200522A
2005196-08A	BMW-28	Aqueous	M3500-Fe D	Ferric Iron (Calculated)	R110770	1	06/02/20	UV/VIS_2_200602A
	BMW-28	Aqueous	M3500-Fe D	Ferrous Iron	96483	1	05/22/20 04:50 PM	UV/VIS_2_200522C
2005196-08B	BMW-28	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	96513	1	05/28/20 01:51 PM	ICP-MS5_200528A

Lab Order: 2005196
Client: Golder
Project: A1 Area Landfill-MNA

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
2005196-08B	BMW-28	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	96513	50	05/29/20 02:02 PM	ICP-MS4_200529A
2005196-08C	BMW-28	Aqueous	M2320 B	Alkalinity	96589	1	06/01/20 08:11 PM	TITRATOR_200601B
	BMW-28	Aqueous	E300	Anions by IC method - Water	96472	1	05/22/20 02:24 PM	IC2_200522A
	BMW-28	Aqueous	M4500-P E	Orthophosphate	96479	1	05/22/20 01:54 PM	UV/VIS_2_200522A
2005196-09A	BMW-30	Aqueous	M3500-Fe D	Ferric Iron (Calculated)	R110770	1	06/02/20	UV/VIS_2_200602A
	BMW-30	Aqueous	M3500-Fe D	Ferrous Iron	96483	1	05/22/20 04:50 PM	UV/VIS_2_200522C
2005196-09B	BMW-30	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	96513	10	05/29/20 02:04 PM	ICP-MS4_200529A
	BMW-30	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	96513	1	05/28/20 01:54 PM	ICP-MS5_200528A
2005196-09C	BMW-30	Aqueous	M2320 B	Alkalinity	96589	1	06/01/20 08:25 PM	TITRATOR_200601B
	BMW-30	Aqueous	E300	Anions by IC method - Water	96472	1	05/22/20 02:40 PM	IC2_200522A
	BMW-30	Aqueous	E300	Anions by IC method - Water	96472	10	05/22/20 06:24 PM	IC2_200522A
	BMW-30	Aqueous	M4500-P E	Orthophosphate	96479	1	05/22/20 01:55 PM	UV/VIS_2_200522A
2005196-10A	BMW-31	Aqueous	M3500-Fe D	Ferric Iron (Calculated)	R110770	1	06/02/20	UV/VIS_2_200602A
	BMW-31	Aqueous	M3500-Fe D	Ferrous Iron	96483	1	05/22/20 04:50 PM	UV/VIS_2_200522C
2005196-10B	BMW-31	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	96513	10	05/29/20 02:06 PM	ICP-MS4_200529A
	BMW-31	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	96513	1	05/28/20 01:56 PM	ICP-MS5_200528A
2005196-10C	BMW-31	Aqueous	M2320 B	Alkalinity	96589	1	06/01/20 08:43 PM	TITRATOR_200601B
	BMW-31	Aqueous	E300	Anions by IC method - Water	96472	1	05/22/20 02:56 PM	IC2_200522A
	BMW-31	Aqueous	E300	Anions by IC method - Water	96472	10	05/22/20 06:40 PM	IC2_200522A
	BMW-31	Aqueous	M4500-P E	Orthophosphate	96479	1	05/22/20 01:56 PM	UV/VIS_2_200522A

DHL Analytical, Inc.

Date: *10-Jul-20*

CLIENT:	Golder	**Client Sample ID:**	A1-2-OB
Project:	A1 Area Landfill-MNA	**Lab ID:**	2005196-01
Project No:	19134019-3000	**Collection Date:**	05/21/20 07:35 AM
Lab Order:	2005196	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **RO**
Calcium	50.8	0.100	0.300	C	mg/L	1	05/28/20 01:38 PM
Iron	0.0871	0.0300	0.100	J	mg/L	1	05/28/20 01:38 PM
Magnesium	5.50	0.100	0.300		mg/L	1	05/28/20 01:38 PM
Potassium	3.96	0.100	0.300		mg/L	1	05/28/20 01:38 PM
Sodium	20.7	0.100	0.300		mg/L	1	05/28/20 01:38 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	18.8	0.300	1.00		mg/L	1	05/22/20 12:32 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	05/22/20 12:32 PM
Nitrate-N	0.826	0.100	0.500		mg/L	1	05/22/20 12:32 PM
Sulfate	29.4	1.00	3.00		mg/L	1	05/22/20 12:32 PM
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	130	10.0	20.0		mg/L @ pH 4.5	1	06/01/20 05:32 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.5	1	06/01/20 05:32 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.5	1	06/01/20 05:32 PM
Alkalinity, Total (As CaCO3)	130	20.0	20.0		mg/L @ pH 4.5	1	06/01/20 05:32 PM
FERRIC IRON (CALCULATED)		**M3500-FE D**					Analyst: **AO**
Iron, Ferric	0.0871	0.0500	0.100	JN	mg/L	1	06/02/20
FERROUS IRON		**M3500-FE D**					Analyst: **BTJ**
Iron, Ferrous	<0.0500	0.0500	0.100	N	mg/L	1	05/22/20 04:45 PM
ORTHOPHOSPHATE		**M4500-P E**					Analyst: **BTJ**
Phosphorus, Total Orthophosphate (As P)	0.121	0.0300	0.100		mg/L	1	05/22/20 01:51 PM

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SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *10-Jul-20*

CLIENT:	Golder	**Client Sample ID:**	BMW-33
Project:	A1 Area Landfill-MNA	**Lab ID:**	2005196-02
Project No:	19134019-3000	**Collection Date:**	05/21/20 08:40 AM
Lab Order:	2005196	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **RO**
Calcium	107	1.00	3.00		mg/L	10	05/29/20 01:52 PM
Iron	0.262	0.0300	0.100		mg/L	1	05/28/20 01:41 PM
Magnesium	63.8	1.00	3.00		mg/L	10	05/29/20 01:52 PM
Potassium	6.55	0.100	0.300		mg/L	1	05/28/20 01:41 PM
Sodium	156	1.00	3.00		mg/L	10	05/29/20 01:52 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Nitrate-N	0.325	0.100	0.500	J	mg/L	1	05/22/20 12:48 PM
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	562	10.0	20.0		mg/L @ pH 4.53	1	06/01/20 06:02 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	06/01/20 06:02 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	06/01/20 06:02 PM
Alkalinity, Total (As CaCO3)	562	20.0	20.0		mg/L @ pH 4.53	1	06/01/20 06:02 PM
FERRIC IRON (CALCULATED)		**M3500-FE D**					Analyst: **AO**
Iron, Ferric	0.262	0.0500	0.100	N	mg/L	1	06/02/20
FERROUS IRON		**M3500-FE D**					Analyst: **BTJ**
Iron, Ferrous	<0.0500	0.0500	0.100	N	mg/L	1	05/22/20 04:47 PM
ORTHOPHOSPHATE		**M4500-P E**					Analyst: **BTJ**
Phosphorus, Total Orthophosphate (As P)	<0.0300	0.0300	0.100		mg/L	1	05/22/20 01:52 PM

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- RL - Reporting Limit (MQL adjusted for moisture and sample size)
- SDL - Sample Detection Limit
- E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *10-Jul-20*

CLIENT:	Golder	**Client Sample ID:**	BMW-32
Project:	A1 Area Landfill-MNA	**Lab ID:**	2005196-03
Project No:	19134019-3000	**Collection Date:**	05/21/20 09:30 AM
Lab Order:	2005196	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **RO**
Calcium	118	1.00	3.00		mg/L	10	05/29/20 01:54 PM
Iron	31.5	0.300	1.00		mg/L	10	05/29/20 01:54 PM
Magnesium	92.4	1.00	3.00		mg/L	10	05/29/20 01:54 PM
Potassium	4.40	0.100	0.300		mg/L	1	05/28/20 01:43 PM
Sodium	189	1.00	3.00		mg/L	10	05/29/20 01:54 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	288	3.00	10.0		mg/L	10	05/22/20 05:36 PM
Fluoride	0.557	0.100	0.400		mg/L	1	05/22/20 01:04 PM
Nitrate-N	<0.100	0.100	0.500		mg/L	1	05/22/20 01:04 PM
Sulfate	333	10.0	30.0		mg/L	10	05/22/20 05:36 PM
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	337	10.0	20.0		mg/L @ pH 4.53	1	06/01/20 06:19 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	06/01/20 06:19 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	06/01/20 06:19 PM
Alkalinity, Total (As CaCO3)	337	20.0	20.0		mg/L @ pH 4.53	1	06/01/20 06:19 PM
FERRIC IRON (CALCULATED)		**M3500-FE D**					Analyst: **AO**
Iron, Ferric	21.2	0.0500	0.100	N	mg/L	1	06/02/20
FERROUS IRON		**M3500-FE D**					Analyst: **BTJ**
Iron, Ferrous	10.3	2.50	5.00	N	mg/L	50	05/22/20 05:00 PM
ORTHOPHOSPHATE		**M4500-P E**					Analyst: **BTJ**
Phosphorus, Total Orthophosphate (As P)	0.0370	0.0300	0.100	J	mg/L	1	05/22/20 01:53 PM

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DHL Analytical, Inc.

Date: *10-Jul-20*

CLIENT:	Golder	**Client Sample ID:**	BMW-11AR
Project:	A1 Area Landfill-MNA	**Lab ID:**	2005196-04
Project No:	19134019-3000	**Collection Date:**	05/21/20 10:25 AM
Lab Order:	2005196	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **RO**
Calcium	85.8	1.00	3.00		mg/L	10	05/29/20 01:56 PM
Iron	0.491	0.0300	0.100		mg/L	1	05/28/20 01:45 PM
Magnesium	18.0	0.100	0.300		mg/L	1	05/28/20 01:45 PM
Potassium	21.7	0.100	0.300		mg/L	1	05/28/20 01:45 PM
Sodium	27.2	1.00	3.00		mg/L	10	05/29/20 01:56 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Nitrate-N	<0.100	0.100	0.500		mg/L	1	05/22/20 01:20 PM
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	472	10.0	20.0		mg/L @ pH 4.54	1	06/01/20 06:40 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	06/01/20 06:40 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	06/01/20 06:40 PM
Alkalinity, Total (As CaCO3)	472	20.0	20.0		mg/L @ pH 4.54	1	06/01/20 06:40 PM
FERRIC IRON (CALCULATED)		**M3500-FE D**					Analyst: **AO**
Iron, Ferric	0.250	0.0500	0.100	N	mg/L	1	06/02/20
FERROUS IRON		**M3500-FE D**					Analyst: **BTJ**
Iron, Ferrous	0.241	0.0500	0.100	N	mg/L	1	05/22/20 04:48 PM
ORTHOPHOSPHATE		**M4500-P E**					Analyst: **BTJ**
Phosphorus, Total Orthophosphate (As P)	<0.0300	0.0300	0.100		mg/L	1	05/22/20 01:53 PM

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DHL Analytical, Inc.

Date: *10-Jul-20*

CLIENT:	Golder	**Client Sample ID:**	BMW-18
Project:	A1 Area Landfill-MNA	**Lab ID:**	2005196-05
Project No:	19134019-3000	**Collection Date:**	05/21/20 11:20 AM
Lab Order:	2005196	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **RO**
Calcium	10.0	1.00	3.00		mg/L	10	05/29/20 01:58 PM
Iron	0.165	0.0300	0.100		mg/L	1	05/28/20 01:47 PM
Magnesium	2.31	0.100	0.300		mg/L	1	05/28/20 01:47 PM
Potassium	2.35	0.100	0.300		mg/L	1	05/28/20 01:47 PM
Sodium	178	1.00	3.00		mg/L	10	05/29/20 01:58 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Nitrate-N	0.616	0.100	0.500		mg/L	1	05/22/20 01:36 PM
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	270	10.0	20.0		mg/L @ pH 4.53	1	06/01/20 06:50 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	06/01/20 06:50 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	06/01/20 06:50 PM
Alkalinity, Total (As CaCO3)	270	20.0	20.0		mg/L @ pH 4.53	1	06/01/20 06:50 PM
FERRIC IRON (CALCULATED)		**M3500-FE D**					Analyst: **AO**
Iron, Ferric	0.165	0.0500	0.100	N	mg/L	1	06/02/20
FERROUS IRON		**M3500-FE D**					Analyst: **BTJ**
Iron, Ferrous	<0.0500	0.0500	0.100	N	mg/L	1	05/22/20 04:48 PM
ORTHOPHOSPHATE		**M4500-P E**					Analyst: **BTJ**
Phosphorus, Total Orthophosphate (As P)	0.134	0.0300	0.100		mg/L	1	05/22/20 01:53 PM

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DHL Analytical, Inc.

Date: *10-Jul-20*

CLIENT:	Golder	**Client Sample ID:**	BMW-29
Project:	A1 Area Landfill-MNA	**Lab ID:**	2005196-06
Project No:	19134019-3000	**Collection Date:**	05/21/20 12:15 PM
Lab Order:	2005196	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **RO**
Calcium	164	5.00	15.0		mg/L	50	05/29/20 12:58 PM
Iron	0.0808	0.0300	0.100	J	mg/L	1	05/28/20 12:48 PM
Magnesium	82.8	5.00	15.0		mg/L	50	05/29/20 12:58 PM
Potassium	14.6	0.100	0.300		mg/L	1	05/28/20 12:48 PM
Sodium	359	5.00	15.0		mg/L	50	05/29/20 12:58 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	14.4	0.300	1.00		mg/L	1	05/22/20 01:52 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	05/22/20 01:52 PM
Nitrate-N	2.02	0.100	0.500		mg/L	1	05/22/20 01:52 PM
Sulfate	820	10.0	30.0		mg/L	10	05/22/20 05:52 PM
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	693	10.0	20.0		mg/L @ pH 4.54	1	06/01/20 07:18 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	06/01/20 07:18 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	06/01/20 07:18 PM
Alkalinity, Total (As CaCO3)	693	20.0	20.0		mg/L @ pH 4.54	1	06/01/20 07:18 PM
FERRIC IRON (CALCULATED)		**M3500-FE D**					Analyst: **AO**
Iron, Ferric	0.0808	0.0500	0.100	JN	mg/L	1	06/02/20
FERROUS IRON		**M3500-FE D**					Analyst: **BTJ**
Iron, Ferrous	<0.0500	0.0500	0.100	N	mg/L	1	05/22/20 04:49 PM
ORTHOPHOSPHATE		**M4500-P E**					Analyst: **BTJ**
Phosphorus, Total Orthophosphate (As P)	0.0540	0.0300	0.100	J	mg/L	1	05/22/20 01:53 PM

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DHL Analytical, Inc.

Date: *10-Jul-20*

CLIENT:	Golder	**Client Sample ID:**	BMW-25
Project:	A1 Area Landfill-MNA	**Lab ID:**	2005196-07
Project No:	19134019-3000	**Collection Date:**	05/21/20 01:05 PM
Lab Order:	2005196	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **RO**
Calcium	127	2.00	6.00		mg/L	20	05/29/20 02:00 PM
Iron	0.164	0.0300	0.100		mg/L	1	05/28/20 01:49 PM
Magnesium	64.2	2.00	6.00		mg/L	20	05/29/20 02:00 PM
Potassium	11.8	0.100	0.300		mg/L	1	05/28/20 01:49 PM
Sodium	281	2.00	6.00		mg/L	20	05/29/20 02:00 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	14.0	0.300	1.00		mg/L	1	05/22/20 02:08 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	05/22/20 02:08 PM
Nitrate-N	1.73	0.100	0.500		mg/L	1	05/22/20 02:08 PM
Sulfate	704	10.0	30.0		mg/L	10	05/22/20 06:08 PM
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	604	10.0	20.0		mg/L @ pH 4.54	1	06/01/20 07:43 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	06/01/20 07:43 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	06/01/20 07:43 PM
Alkalinity, Total (As CaCO3)	604	20.0	20.0		mg/L @ pH 4.54	1	06/01/20 07:43 PM
FERRIC IRON (CALCULATED)		**M3500-FE D**					Analyst: **AO**
Iron, Ferric	0.164	0.0500	0.100	N	mg/L	1	06/02/20
FERROUS IRON		**M3500-FE D**					Analyst: **BTJ**
Iron, Ferrous	<0.0500	0.0500	0.100	N	mg/L	1	05/22/20 04:49 PM
ORTHOPHOSPHATE		**M4500-P E**					Analyst: **BTJ**
Phosphorus, Total Orthophosphate (As P)	<0.0300	0.0300	0.100		mg/L	1	05/22/20 01:54 PM

Qualifiers:

ND - Not Detected at the SDL
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DF- Dilution Factor
N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *10-Jul-20*

CLIENT:	Golder	**Client Sample ID:**	BMW-28
Project:	A1 Area Landfill-MNA	**Lab ID:**	2005196-08
Project No:	19134019-3000	**Collection Date:**	05/21/20 02:15 PM
Lab Order:	2005196	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **RO**
Calcium	264	5.00	15.0		mg/L	50	05/29/20 02:02 PM
Iron	0.170	0.0300	0.100		mg/L	1	05/28/20 01:51 PM
Magnesium	173	5.00	15.0		mg/L	50	05/29/20 02:02 PM
Potassium	18.6	0.100	0.300		mg/L	1	05/28/20 01:51 PM
Sodium	535	5.00	15.0		mg/L	50	05/29/20 02:02 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Nitrate-N	1.04	0.100	0.500		mg/L	1	05/22/20 02:24 PM
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	723	10.0	20.0		mg/L @ pH 4.54	1	06/01/20 08:11 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	06/01/20 08:11 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	06/01/20 08:11 PM
Alkalinity, Total (As CaCO3)	723	20.0	20.0		mg/L @ pH 4.54	1	06/01/20 08:11 PM
FERRIC IRON (CALCULATED)		**M3500-FE D**					Analyst: **AO**
Iron, Ferric	0.170	0.0500	0.100	N	mg/L	1	06/02/20
FERROUS IRON		**M3500-FE D**					Analyst: **BTJ**
Iron, Ferrous	<0.0500	0.0500	0.100	N	mg/L	1	05/22/20 04:50 PM
ORTHOPHOSPHATE		**M4500-P E**					Analyst: **BTJ**
Phosphorus, Total Orthophosphate (As P)	<0.0300	0.0300	0.100		mg/L	1	05/22/20 01:54 PM

Qualifiers:

ND - Not Detected at the SDL
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See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *10-Jul-20*

CLIENT:	Golder	**Client Sample ID:**	BMW-30
Project:	A1 Area Landfill-MNA	**Lab ID:**	2005196-09
Project No:	19134019-3000	**Collection Date:**	05/21/20 03:10 PM
Lab Order:	2005196	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **RO**
Calcium	112	1.00	3.00		mg/L	10	05/29/20 02:04 PM
Iron	0.303	0.0300	0.100		mg/L	1	05/28/20 01:54 PM
Magnesium	50.5	1.00	3.00		mg/L	10	05/29/20 02:04 PM
Potassium	21.3	0.100	0.300		mg/L	1	05/28/20 01:54 PM
Sodium	132	1.00	3.00		mg/L	10	05/29/20 02:04 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	26.7	0.300	1.00		mg/L	1	05/22/20 02:40 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	05/22/20 02:40 PM
Nitrate-N	0.464	0.100	0.500	J	mg/L	1	05/22/20 02:40 PM
Sulfate	485	10.0	30.0		mg/L	10	05/22/20 06:24 PM
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	317	10.0	20.0		mg/L @ pH 4.52	1	06/01/20 08:25 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.52	1	06/01/20 08:25 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.52	1	06/01/20 08:25 PM
Alkalinity, Total (As CaCO3)	317	20.0	20.0		mg/L @ pH 4.52	1	06/01/20 08:25 PM
FERRIC IRON (CALCULATED)		**M3500-FE D**					Analyst: **AO**
Iron, Ferric	0.303	0.0500	0.100	N	mg/L	1	06/02/20
FERROUS IRON		**M3500-FE D**					Analyst: **BTJ**
Iron, Ferrous	<0.0500	0.0500	0.100	N	mg/L	1	05/22/20 04:50 PM
ORTHOPHOSPHATE		**M4500-P E**					Analyst: **BTJ**
Phosphorus, Total Orthophosphate (As P)	<0.0300	0.0300	0.100		mg/L	1	05/22/20 01:55 PM

Qualifiers:

ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
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See Final Page of Report for MQLs and MDLs
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RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
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DHL Analytical, Inc.

Date: *10-Jul-20*

CLIENT:	Golder	**Client Sample ID:**	BMW-31
Project:	A1 Area Landfill-MNA	**Lab ID:**	2005196-10
Project No:	19134019-3000	**Collection Date:**	05/21/20 04:05 PM
Lab Order:	2005196	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **RO**
Calcium	94.5	1.00	3.00		mg/L	10	05/29/20 02:06 PM
Iron	0.185	0.0300	0.100		mg/L	1	05/28/20 01:56 PM
Magnesium	44.2	1.00	3.00		mg/L	10	05/29/20 02:06 PM
Potassium	12.7	0.100	0.300		mg/L	1	05/28/20 01:56 PM
Sodium	116	1.00	3.00		mg/L	10	05/29/20 02:06 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	21.2	0.300	1.00		mg/L	1	05/22/20 02:56 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	05/22/20 02:56 PM
Nitrate-N	0.599	0.100	0.500		mg/L	1	05/22/20 02:56 PM
Sulfate	368	10.0	30.0		mg/L	10	05/22/20 06:40 PM
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	263	10.0	20.0		mg/L @ pH 4.54	1	06/01/20 08:43 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	06/01/20 08:43 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	06/01/20 08:43 PM
Alkalinity, Total (As CaCO3)	263	20.0	20.0		mg/L @ pH 4.54	1	06/01/20 08:43 PM
FERRIC IRON (CALCULATED)		**M3500-FE D**					Analyst: **AO**
Iron, Ferric	0.185	0.0500	0.100	N	mg/L	1	06/02/20
FERROUS IRON		**M3500-FE D**					Analyst: **BTJ**
Iron, Ferrous	<0.0500	0.0500	0.100	N	mg/L	1	05/22/20 04:50 PM
ORTHOPHOSPHATE		**M4500-P E**					Analyst: **BTJ**
Phosphorus, Total Orthophosphate (As P)	<0.0300	0.0300	0.100		mg/L	1	05/22/20 01:56 PM

Qualifiers:

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DF- Dilution Factor
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See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

CLIENT: Golder
Work Order: 2005196
Project: A1 Area Landfill-MNA

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_200415A

Sample ID: **DCS2-95814** Batch ID: **95814** TestNo: **SW6020B** Units: **mg/L**
SampType: **DCS2** Run ID: **ICP-MS4_200415A** Analysis Date: **4/15/2020 3:02:00 PM** Prep Date: **4/7/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.296	0.300	0.300	0	98.6	70	130	0	0	
Iron	0.0613	0.100	0.0500	0	123	70	130	0	0	
Magnesium	0.305	0.300	0.300	0	102	70	130	0	0	
Sodium	0.292	0.300	0.300	0	97.3	70	130	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005196
Project: A1 Area Landfill-MNA

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_200529A

The QC data in batch 96513 applies to the following samples: 2005196-01B, 2005196-02B, 2005196-03B, 2005196-04B, 2005196-05B, 2005196-06B, 2005196-07B, 2005196-08B, 2005196-09B, 2005196-10B

Sample ID: **2005196-06B SD** Batch ID: **96513** TestNo: **SW6020B** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS4_200529A** Analysis Date: **5/29/2020 1:00:00 PM** Prep Date: **5/27/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	164	75.0	0	164				0.190	20	
Magnesium	84.5	75.0	0	82.8				2.01	20	
Sodium	362	75.0	0	359				0.873	20	

Sample ID: **2005196-06B PDS** Batch ID: **96513** TestNo: **SW6020B** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS4_200529A** Analysis Date: **5/29/2020 1:20:00 PM** Prep Date: **5/27/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	431	15.0	250	164	107	75	125			
Magnesium	353	15.0	250	82.8	108	75	125			
Sodium	665	15.0	250	359	123	75	125			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005196
Project: A1 Area Landfill-MNA

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_200529A

Sample ID: **ICV-200529**	Batch ID: **R110716**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_200529A**	Analysis Date: **5/29/2020 11:56:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	2.51	0.300	2.50	0	100	90	110			
Iron	2.54	0.100	2.50	0	102	90	110			
Magnesium	2.59	0.300	2.50	0	104	90	110			
Sodium	2.65	0.300	2.50	0	106	90	110			

Sample ID: **LCVL-200529**	Batch ID: **R110716**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_200529A**	Analysis Date: **5/29/2020 12:09:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.0988	0.300	0.100	0	98.8	80	120			
Iron	0.102	0.100	0.100	0	102	80	120			
Magnesium	0.105	0.300	0.100	0	105	80	120			
Sodium	0.100	0.300	0.100	0	100	80	120			

Sample ID: **CCV1-200529**	Batch ID: **R110716**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_200529A**	Analysis Date: **5/29/2020 1:36:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.60	0.300	5.00	0	92.0	90	110			
Iron	4.99	0.100	5.00	0	99.7	90	110			
Magnesium	5.00	0.300	5.00	0	100	90	110			
Sodium	4.96	0.300	5.00	0	99.2	90	110			

Sample ID: **CCV2-200529**	Batch ID: **R110716**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_200529A**	Analysis Date: **5/29/2020 2:12:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.78	0.300	5.00	0	95.6	90	110			
Iron	4.98	0.100	5.00	0	99.5	90	110			
Magnesium	5.07	0.300	5.00	0	101	90	110			
Sodium	4.98	0.300	5.00	0	99.7	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005196
Project: A1 Area Landfill-MNA

ANALYTICAL QC SUMMARY REPORT

RunID: **ICP-MS5_200408C**

Sample ID: **DCS2-95814** Batch ID: **95814** TestNo: **SW6020B** Units: **mg/L**
SampType: **DCS2** Run ID: **ICP-MS5_200408C** Analysis Date: **4/8/2020 11:19:00 AM** Prep Date: **4/7/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.310	0.300	0.300	0	103	70	130	0	0	
Iron	0.0591	0.100	0.0500	0	118	70	130	0	0	
Magnesium	0.298	0.300	0.300	0	99.3	70	130	0	0	
Potassium	0.285	0.300	0.300	0	95.1	70	130	0	0	
Sodium	0.295	0.300	0.300	0	98.4	70	130	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005196
Project: A1 Area Landfill-MNA

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_200528A

The QC data in batch 96513 applies to the following samples: 2005196-01B, 2005196-02B, 2005196-03B, 2005196-04B, 2005196-05B, 2005196-06B, 2005196-07B, 2005196-08B, 2005196-09B, 2005196-10B

Sample ID: **MB-96513** Batch ID: **96513** TestNo: **SW6020B** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS5_200528A** Analysis Date: **5/28/2020 12:39:00 PM** Prep Date: **5/27/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	<0.100	0.300								
Iron	<0.0300	0.100								
Magnesium	<0.100	0.300								
Potassium	<0.100	0.300								
Sodium	<0.100	0.300								

Sample ID: **LCS-96513** Batch ID: **96513** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS5_200528A** Analysis Date: **5/28/2020 12:41:00 PM** Prep Date: **5/27/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	5.04	0.300	5.00	0	101	80	120			
Iron	5.07	0.100	5.00	0	101	80	120			
Magnesium	5.02	0.300	5.00	0	100	80	120			
Potassium	4.96	0.300	5.00	0	99.2	80	120			
Sodium	5.11	0.300	5.00	0	102	80	120			

Sample ID: **LCSD-96513** Batch ID: **96513** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS5_200528A** Analysis Date: **5/28/2020 12:43:00 PM** Prep Date: **5/27/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.99	0.300	5.00	0	99.7	80	120	1.14	15	
Iron	5.09	0.100	5.00	0	102	80	120	0.378	15	
Magnesium	5.04	0.300	5.00	0	101	80	120	0.402	15	
Potassium	4.97	0.300	5.00	0	99.5	80	120	0.324	15	
Sodium	5.12	0.300	5.00	0	102	80	120	0.255	15	

Sample ID: **2005196-06B SD** Batch ID: **96513** TestNo: **SW6020B** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS5_200528A** Analysis Date: **5/28/2020 12:50:00 PM** Prep Date: **5/27/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron	<0.150	0.500	0	0.0808				0	20	
Potassium	14.7	1.50	0	14.6				0.916	20	

Sample ID: **2005196-06B PDS** Batch ID: **96513** TestNo: **SW6020B** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS5_200528A** Analysis Date: **5/28/2020 1:16:00 PM** Prep Date: **5/27/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron	5.00	0.100	5.00	0.0808	98.5	75	125			
Potassium	19.4	0.300	5.00	14.6	96.6	75	125			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005196
Project: A1 Area Landfill-MNA

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_200528A

Sample ID: **2005196-06B MS**	Batch ID: **96513**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS5_200528A**	Analysis Date: **5/28/2020 1:18:00 PM**	Prep Date: **5/27/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	175	0.300	5.00	171	92.0	75	125			
Iron	4.96	0.100	5.00	0.0808	97.5	75	125			
Magnesium	90.2	0.300	5.00	83.6	132	75	125			S
Potassium	20.3	0.300	5.00	14.6	114	75	125			
Sodium	383	0.300	5.00	366	334	75	125			S

Sample ID: **2005196-06B MSD**	Batch ID: **96513**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS5_200528A**	Analysis Date: **5/28/2020 1:20:00 PM**	Prep Date: **5/27/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	174	0.300	5.00	171	69.1	75	125	0.656	15	S
Iron	4.93	0.100	5.00	0.0808	97.0	75	125	0.549	15	
Magnesium	89.8	0.300	5.00	83.6	123	75	125	0.502	15	
Potassium	20.4	0.300	5.00	14.6	116	75	125	0.393	15	
Sodium	380	0.300	5.00	366	279	75	125	0.719	15	S

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

Sample ID: **ICV-200528**	Batch ID: **R110690**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS5_200528A**	Analysis Date: **5/28/2020 11:00:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	2.59	0.300	2.50	0	104	90	110			
Iron	2.54	0.100	2.50	0	102	90	110			
Magnesium	2.50	0.300	2.50	0	99.8	90	110			
Potassium	2.52	0.300	2.50	0	101	90	110			
Sodium	2.63	0.300	2.50	0	105	90	110			

Sample ID: **LCVL-200528**	Batch ID: **R110690**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_200528A**	Analysis Date: **5/28/2020 11:07:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.107	0.300	0.100	0	107	80	120			
Iron	0.101	0.100	0.100	0	101	80	120			
Magnesium	0.101	0.300	0.100	0	101	80	120			
Potassium	0.0947	0.300	0.100	0	94.7	80	120			
Sodium	0.103	0.300	0.100	0	103	80	120			

Sample ID: **CCV2-200528**	Batch ID: **R110690**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_200528A**	Analysis Date: **5/28/2020 12:23:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	5.06	0.300	5.00	0	101	90	110			
Iron	5.15	0.100	5.00	0	103	90	110			
Magnesium	5.04	0.300	5.00	0	101	90	110			
Potassium	4.94	0.300	5.00	0	98.9	90	110			
Sodium	5.12	0.300	5.00	0	102	90	110			

Sample ID: **CCV3-200528**	Batch ID: **R110690**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_200528A**	Analysis Date: **5/28/2020 1:31:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	5.06	0.300	5.00	0	101	90	110			
Iron	5.07	0.100	5.00	0	101	90	110			
Magnesium	5.08	0.300	5.00	0	102	90	110			
Potassium	5.03	0.300	5.00	0	101	90	110			
Sodium	5.33	0.300	5.00	0	107	90	110			

Sample ID: **CCV4-200528**	Batch ID: **R110690**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_200528A**	Analysis Date: **5/28/2020 2:07:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	5.01	0.300	5.00	0	100	90	110			

CLIENT: Golder
Work Order: 2005196
Project: A1 Area Landfill-MNA

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_200528A

Sample ID: **CCV4-200528**	Batch ID: **R110690**	TestNo: **SW6020B**		Units: **mg/L**	
SampType: **CCV**	Run ID: **ICP-MS5_200528A**	Analysis Date: **5/28/2020 2:07:00 PM**		Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron	5.06	0.100	5.00	0	101	90	110			
Magnesium	5.10	0.300	5.00	0	102	90	110			
Potassium	5.02	0.300	5.00	0	100	90	110			
Sodium	5.38	0.300	5.00	0	108	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005196
Project: A1 Area Landfill-MNA

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_200519B

Sample ID: **DCS2-96406** Batch ID: **96406** TestNo: **E300** Units: **mg/L**
SampType: **DCS2** Run ID: **IC2_200519B** Analysis Date: **5/19/2020 11:56:12 AM** Prep Date: **5/19/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	0.440	1.00	0.5000	0	88.1	70	130	0	0	
Fluoride	0.176	0.400	0.2000	0	87.8	70	130	0	0	
Nitrate-N	0.254	0.0500	0.2500	0	102	70	130	0	0	
Sulfate	1.69	3.00	1.500	0	113	70	130	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005196
Project: A1 Area Landfill-MNA

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_200522A

The QC data in batch 96472 applies to the following samples: 2005196-01C, 2005196-02C, 2005196-03C, 2005196-04C, 2005196-05C, 2005196-06C, 2005196-07C, 2005196-08C, 2005196-09C, 2005196-10C

Sample ID: **MB-96472** Batch ID: **96472** TestNo: **E300** Units: **mg/L**
SampType: **MBLK** Run ID: **IC2_200522A** Analysis Date: **5/22/2020 11:09:08 AM** Prep Date: **5/22/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00								
Fluoride	<0.100	0.400								
Nitrate-N	<0.100	0.500								
Sulfate	<1.00	3.00								

Sample ID: **LCS-96472** Batch ID: **96472** TestNo: **E300** Units: **mg/L**
SampType: **LCS** Run ID: **IC2_200522A** Analysis Date: **5/22/2020 11:25:08 AM** Prep Date: **5/22/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.83	1.00	10.00	0	98.3	90	110			
Fluoride	3.78	0.400	4.000	0	94.4	90	110			
Nitrate-N	4.88	0.500	5.000	0	97.6	90	110			
Sulfate	29.6	3.00	30.00	0	98.7	90	110			

Sample ID: **LCSD-96472** Batch ID: **96472** TestNo: **E300** Units: **mg/L**
SampType: **LCSD** Run ID: **IC2_200522A** Analysis Date: **5/22/2020 11:41:08 AM** Prep Date: **5/22/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.80	1.00	10.00	0	98.0	90	110	0.340	20	
Fluoride	3.78	0.400	4.000	0	94.4	90	110	0.049	20	
Nitrate-N	4.86	0.500	5.000	0	97.2	90	110	0.434	20	
Sulfate	29.5	3.00	30.00	0	98.2	90	110	0.454	20	

Sample ID: **2005196-01CMS** Batch ID: **96472** TestNo: **E300** Units: **mg/L**
SampType: **MS** Run ID: **IC2_200522A** Analysis Date: **5/22/2020 5:04:16 PM** Prep Date: **5/22/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	217	10.0	200.0	18.04	99.6	90	110			
Fluoride	204	4.00	200.0	0	102	90	110			
Nitrate-N	43.7	5.00	45.16	0	96.7	90	110			
Sulfate	217	30.0	200.0	29.20	94.1	90	110			

Sample ID: **2005196-01CMSD** Batch ID: **96472** TestNo: **E300** Units: **mg/L**
SampType: **MSD** Run ID: **IC2_200522A** Analysis Date: **5/22/2020 5:20:16 PM** Prep Date: **5/22/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	217	10.0	200.0	18.04	99.5	90	110	0.065	20	
Fluoride	204	4.00	200.0	0	102	90	110	0.178	20	
Nitrate-N	43.6	5.00	45.16	0	96.6	90	110	0.117	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005196
Project: A1 Area Landfill-MNA

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_200522A

Sample ID: **2005196-01CMSD** Batch ID: **96472** TestNo: **E300** Units: **mg/L**
SampType: **MSD** Run ID: **IC2_200522A** Analysis Date: **5/22/2020 5:20:16 PM** Prep Date: **5/22/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	217	30.0	200.0	29.20	93.8	90	110	0.291	20	

Qualifiers:

B	Analyte detected in the associated Method Blank
J	Analyte detected between MDL and RL
ND	Not Detected at the Method Detection Limit
RL	Reporting Limit
J	Analyte detected between SDL and RL
DF	Dilution Factor
MDL	Method Detection Limit
R	RPD outside accepted control limits
S	Spike Recovery outside control limits
N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005196
Project: A1 Area Landfill-MNA

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_200522A

Sample ID: **ICV-200522**	Batch ID: **R110625**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC2_200522A**	Analysis Date: **5/22/2020 10:13:35 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	25.2	1.00	25.00	0	101	90	110			
Fluoride	9.88	0.400	10.00	0	98.8	90	110			
Nitrate-N	12.7	0.500	12.50	0	102	90	110			
Sulfate	77.2	3.00	75.00	0	103	90	110			

Sample ID: **CCV1-200522**	Batch ID: **R110625**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_200522A**	Analysis Date: **5/22/2020 4:16:16 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.94	1.00	10.00	0	99.4	90	110			
Fluoride	3.84	0.400	4.000	0	95.9	90	110			
Nitrate-N	4.91	0.500	5.000	0	98.2	90	110			
Sulfate	30.3	3.00	30.00	0	101	90	110			

Sample ID: **CCV2-200522**	Batch ID: **R110625**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_200522A**	Analysis Date: **5/22/2020 7:44:16 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.85	1.00	10.00	0	98.5	90	110			
Fluoride	3.82	0.400	4.000	0	95.5	90	110			
Nitrate-N	4.89	0.500	5.000	0	97.8	90	110			
Sulfate	29.6	3.00	30.00	0	98.7	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005196
Project: A1 Area Landfill-MNA

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_200601B

The QC data in batch 96589 applies to the following samples: 2005196-01C, 2005196-02C, 2005196-03C, 2005196-04C, 2005196-05C, 2005196-06C, 2005196-07C, 2005196-08C, 2005196-09C, 2005196-10C

Sample ID: **MB-96589** Batch ID: **96589** TestNo: **M2320 B** Units: **mg/L @ pH 4.4**
SampType: **MBLK** Run ID: **TITRATOR_200601B** Analysis Date: **6/1/2020 11:49:00 AM** Prep Date: **6/1/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	<10.0	20.0								
Alkalinity, Carbonate (As CaCO3)	<10.0	20.0								
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0								
Alkalinity, Total (As CaCO3)	<20.0	20.0								

Sample ID: **LCS-96589** Batch ID: **96589** TestNo: **M2320 B** Units: **mg/L @ pH 4.11**
SampType: **LCS** Run ID: **TITRATOR_200601B** Analysis Date: **6/1/2020 11:53:00 AM** Prep Date: **6/1/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)	54.9	20.0	50.00	0	110	74	129			

Sample ID: **2005173-01C-DUP** Batch ID: **96589** TestNo: **M2320 B** Units: **mg/L @ pH 4.53**
SampType: **DUP** Run ID: **TITRATOR_200601B** Analysis Date: **6/1/2020 1:47:00 PM** Prep Date: **6/1/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	190	20.0	0	196.4				3.05	20	
Alkalinity, Carbonate (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Total (As CaCO3)	190	20.0	0	196.4				3.05	20	

Sample ID: **2005196-01C-DUP** Batch ID: **96589** TestNo: **M2320 B** Units: **mg/L @ pH 4.5**
SampType: **DUP** Run ID: **TITRATOR_200601B** Analysis Date: **6/1/2020 5:39:00 PM** Prep Date: **6/1/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	129	20.0	0	130.5				1.16	20	
Alkalinity, Carbonate (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Total (As CaCO3)	129	20.0	0	130.5				1.16	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005196
Project: A1 Area Landfill-MNA

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_200601B

Sample ID: **ICV-200601**	Batch ID: **R110749**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.33**
SampType: **ICV**	Run ID: **TITRATOR_200601B**	Analysis Date: **6/1/2020 11:47:00 AM**	Prep Date: **6/1/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	8.32	20.0	0							
Alkalinity, Carbonate (As CaCO3)	93.3	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	102	20.0	100.0	0	102	98	102			

Sample ID: **CCV1-200601**	Batch ID: **R110749**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.37**
SampType: **CCV**	Run ID: **TITRATOR_200601B**	Analysis Date: **6/1/2020 5:25:00 PM**	Prep Date: **6/1/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	43.4	20.0	0							
Alkalinity, Carbonate (As CaCO3)	56.3	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	99.7	20.0	100.0	0	99.7	90	110			

Sample ID: **CCV2-200601**	Batch ID: **R110749**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.3**
SampType: **CCV**	Run ID: **TITRATOR_200601B**	Analysis Date: **6/1/2020 8:30:00 PM**	Prep Date: **6/1/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	43.5	20.0	0							
Alkalinity, Carbonate (As CaCO3)	55.5	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	99.0	20.0	100.0	0	99.0	90	110			

Sample ID: **CCV3-200601**	Batch ID: **R110749**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.36**
SampType: **CCV**	Run ID: **TITRATOR_200601B**	Analysis Date: **6/1/2020 8:48:00 PM**	Prep Date: **6/1/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	37.8	20.0	0							
Alkalinity, Carbonate (As CaCO3)	61.6	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	99.4	20.0	100.0	0	99.4	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005196
Project: A1 Area Landfill-MNA

ANALYTICAL QC SUMMARY REPORT

RunID: UV/VIS_2_200323B

Sample ID: **DCS-95613** Batch ID: **95613** TestNo: **M3500-Fe D** Units: **mg/L**
SampType: **DCS** Run ID: **UV/VIS_2_200323B** Analysis Date: **3/23/2020 1:30:00 PM** Prep Date: **3/23/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	0.0580	0.100	0.05000	0	116	65	135	0	0	N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005196
Project: A1 Area Landfill-MNA

ANALYTICAL QC SUMMARY REPORT

RunID: **UV/VIS_2_200507C**

Sample ID: **DCS-96253**	Batch ID: **96253**	TestNo: **M4500-P E**	Units: **mg/L**		
SampType: **DCS**	Run ID: **UV/VIS_2_200507C**	Analysis Date: **5/7/2020 2:22:00 PM**	Prep Date: **5/7/2020**		

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Total Orthophosphate (As	0.0480	0.100	0.05000	0	96.0	50	200	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005196
Project: A1 Area Landfill-MNA

ANALYTICAL QC SUMMARY REPORT

RunID: UV/VIS_2_200522A

The QC data in batch 96479 applies to the following samples: 2005196-01C, 2005196-02C, 2005196-03C, 2005196-04C, 2005196-05C, 2005196-06C, 2005196-07C, 2005196-08C, 2005196-09C, 2005196-10C

Sample ID: **MB-96479**	Batch ID: **96479**	TestNo: **M4500-P E**	Units: **mg/L**
SampType: **MBLK**	Run ID: **UV/VIS_2_200522A**	Analysis Date: **5/22/2020 1:50:00 PM**	Prep Date: **5/22/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Total Orthophosphate (As	<0.0300	0.100								

Sample ID: **LCS-96479**	Batch ID: **96479**	TestNo: **M4500-P E**	Units: **mg/L**
SampType: **LCS**	Run ID: **UV/VIS_2_200522A**	Analysis Date: **5/22/2020 1:50:00 PM**	Prep Date: **5/22/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Total Orthophosphate (As	0.513	0.100	0.5000	0	103	80	120			

Sample ID: **LCSD-96479**	Batch ID: **96479**	TestNo: **M4500-P E**	Units: **mg/L**
SampType: **LCSD**	Run ID: **UV/VIS_2_200522A**	Analysis Date: **5/22/2020 1:51:00 PM**	Prep Date: **5/22/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Total Orthophosphate (As	0.512	0.100	0.5000	0	102	80	120	0.195	15	

Sample ID: **2005196-01CMS**	Batch ID: **96479**	TestNo: **M4500-P E**	Units: **mg/L**
SampType: **MS**	Run ID: **UV/VIS_2_200522A**	Analysis Date: **5/22/2020 1:52:00 PM**	Prep Date: **5/22/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Total Orthophosphate (As	0.625	0.100	0.5000	0.1210	101	80	120			

Sample ID: **2005196-01CMSD**	Batch ID: **96479**	TestNo: **M4500-P E**	Units: **mg/L**
SampType: **MSD**	Run ID: **UV/VIS_2_200522A**	Analysis Date: **5/22/2020 1:52:00 PM**	Prep Date: **5/22/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Total Orthophosphate (As	0.622	0.100	0.5000	0.1210	100	80	120	0.481	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005196
Project: A1 Area Landfill-MNA

ANALYTICAL QC SUMMARY REPORT

RunID: UV/VIS_2_200522A

Sample ID: **ICV-200522**	Batch ID: **R110612**	TestNo: **M4500-P E**	Units: **mg/L**
SampType: **ICV**	Run ID: **UV/VIS_2_200522A**	Analysis Date: **5/22/2020 1:49:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Total Orthophosphate (As	0.203	0.100	0.2000	0	102	85	115			

Sample ID: **CCV1-200522**	Batch ID: **R110612**	TestNo: **M4500-P E**	Units: **mg/L**
SampType: **CCV**	Run ID: **UV/VIS_2_200522A**	Analysis Date: **5/22/2020 1:55:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Total Orthophosphate (As	0.505	0.100	0.5000	0	101	85	115			

Sample ID: **CCV2-200522**	Batch ID: **R110612**	TestNo: **M4500-P E**	Units: **mg/L**
SampType: **CCV**	Run ID: **UV/VIS_2_200522A**	Analysis Date: **5/22/2020 1:56:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Total Orthophosphate (As	0.490	0.100	0.5000	0	98.0	85	115			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005196
Project: A1 Area Landfill-MNA

ANALYTICAL QC SUMMARY REPORT

RunID: UV/VIS_2_200522C

The QC data in batch 96483 applies to the following samples: 2005196-01A, 2005196-02A, 2005196-03A, 2005196-04A, 2005196-05A, 2005196-06A, 2005196-07A, 2005196-08A, 2005196-09A, 2005196-10A

Sample ID: **MB-96483** Batch ID: **96483** TestNo: **M3500-Fe D** Units: **mg/L**
SampType: **MBLK** Run ID: **UV/VIS_2_200522C** Analysis Date: **5/22/2020 4:39:00 PM** Prep Date: **5/22/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	<0.0500	0.100								N

Sample ID: **LCS-96483** Batch ID: **96483** TestNo: **M3500-Fe D** Units: **mg/L**
SampType: **LCS** Run ID: **UV/VIS_2_200522C** Analysis Date: **5/22/2020 4:40:00 PM** Prep Date: **5/22/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	0.0973	0.100	0.1000	0	97.3	85	115			N

Sample ID: **LCSD-96483** Batch ID: **96483** TestNo: **M3500-Fe D** Units: **mg/L**
SampType: **LCSD** Run ID: **UV/VIS_2_200522C** Analysis Date: **5/22/2020 4:41:00 PM** Prep Date: **5/22/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	0.102	0.100	0.1000	0	102	85	115	5.07	15	N

Sample ID: **2005173-06AMS** Batch ID: **96483** TestNo: **M3500-Fe D** Units: **mg/L**
SampType: **MS** Run ID: **UV/VIS_2_200522C** Analysis Date: **5/22/2020 4:54:00 PM** Prep Date: **5/22/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	0.103	0.100	0.1000	0	103	85	115			N

Sample ID: **2005173-06AMSD** Batch ID: **96483** TestNo: **M3500-Fe D** Units: **mg/L**
SampType: **MSD** Run ID: **UV/VIS_2_200522C** Analysis Date: **5/22/2020 4:54:00 PM** Prep Date: **5/22/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	0.109	0.100	0.1000	0	109	85	115	4.88	15	N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005196
Project: A1 Area Landfill-MNA

ANALYTICAL QC SUMMARY REPORT

RunID: **UV/VIS_2_200522C**

Sample ID: **ICV-200522**	Batch ID: **R110699**	TestNo: **M3500-Fe D**	Units: **mg/L**
SampType: **ICV**	Run ID: **UV/VIS_2_200522C**	Analysis Date: **5/22/2020 4:38:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	0.0997	0.100	0.1000	0	99.7	85	115			N

Sample ID: **CCV1-200522**	Batch ID: **R110699**	TestNo: **M3500-Fe D**	Units: **mg/L**
SampType: **CCV**	Run ID: **UV/VIS_2_200522C**	Analysis Date: **5/22/2020 4:46:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	0.212	0.100	0.2000	0	106	85	115			N

Sample ID: **CCV2-200522**	Batch ID: **R110699**	TestNo: **M3500-Fe D**	Units: **mg/L**
SampType: **CCV**	Run ID: **UV/VIS_2_200522C**	Analysis Date: **5/22/2020 4:51:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	0.208	0.100	0.2000	0	104	85	115			N

Sample ID: **CCV3-200522**	Batch ID: **R110699**	TestNo: **M3500-Fe D**	Units: **mg/L**
SampType: **CCV**	Run ID: **UV/VIS_2_200522C**	Analysis Date: **5/22/2020 5:07:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	0.216	0.100	0.2000	0	108	85	115			N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005196
Project: A1 Area Landfill-MNA

MQL SUMMARY REPORT

TestNo: E300	**MDL**	**MQL**
Analyte	**mg/L**	**mg/L**
Chloride	0.300	1.00
Fluoride	0.100	0.400
Nitrate-N	0.100	0.500
Sulfate	1.00	3.00

TestNo: SW6020B	**MDL**	**MQL**
Analyte	**mg/L**	**mg/L**
Calcium	0.100	0.300
Iron	0.0300	0.100
Magnesium	0.100	0.300
Potassium	0.100	0.300
Sodium	0.100	0.300

TestNo: M2320 B	**MDL**	**MQL**
Analyte	**ng/L @ pH 4.**	**ng/L @ pH 4.**
Alkalinity, Bicarbonate (As CaCO3)	10.0	20.0
Alkalinity, Carbonate (As CaCO3)	10.0	20.0
Alkalinity, Hydroxide (As CaCO3)	10.0	20.0
Alkalinity, Total (As CaCO3)	20.0	20.0

TestNo: M3500-Fe D	**MDL**	**MQL**
Analyte	**mg/L**	**mg/L**
Iron, Ferrous	0.0500	0.100

TestNo: M4500-P E	**MDL**	**MQL**
Analyte	**mg/L**	**mg/L**
Phosphorus, Total Orthophosphate (	0.0300	0.100

Qualifiers: MQL -Method Quantitation Limit as defined by TRRP
MDL -Method Detection Limit as defined by TRRP

October 27, 2020

Will Vienne
Golder
2201 Double Creek Dr #4004
Round Rock, Texas 78664
TEL: (512) 671-3434
FAX (512) 671-3446

Order No.: 2010012

RE: A1 Area Landfill-CCR

Dear Will Vienne:

DHL Analytical, Inc. received 14 sample(s) on 10/2/2020 for the analyses presented in the following report.

There were no problems with the analyses and all data met requirements of NELAP except where noted in the Case Narrative. All non-NELAP methods will be identified accordingly in the case narrative and all estimated uncertainties of test results are within method or EPA specifications.

If you have any questions regarding these tests results, please feel free to call. Thank you for using DHL Analytical.

Sincerely,

John DuPont
General Manager

This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211-20-25

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DHL ANALYTICAL
2300 Double Creek Dr. ■ Round Rock, TX 78664
Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

№ 69190

CHAIN-OF-CUSTODY

CLIENT: GOLDER
ADDRESS: 2201 DOUBLE CREEK DR ROUND ROCK, TX 78664
PHONE: 512-671-3434 FAX/E-MAIL:
DATA REPORTED TO: WILL VIENNE
ADDITIONAL REPORT COPIES TO:

DATE: 10-1-20 PAGE 1 OF 1
PO #: 19122262 DHL WORK ORDER #: 2010012
PROJECT LOCATION OR NAME:
CLENT PROJECT #: 19122262-D2020 COLLECTOR: J. BRAYTON

Authorize 5% surcharge for TRRP Report? ❑ Yes ❑ No

S=SOIL W=WATER A=AIR L=LIQUID SE=SEDIMENT
P=PAINT SL=SLUDGE O=OTHER SO=SOLID

PRESERVATION: HCl | HNO_3 | H_2SO_4 ❑ NaOH ❑ | ICE | UNPRESERVED

ANALYSES: BTEX ❑ MTBE ❑ [METHOD 8021] | TPH 1005 ❑ TPH 1006 ❑ HOLD 1006 ❑ | GRO [METHOD 8015] ❑ DRO [METHOD 8105] ❑ | VOC 8260 ❑ VOC 624 ❑ VOC 8260/5035 ❑ | SVOC 8270 ❑ PAH 8270 ❑ HOLD PAH ❑ SVOC 625 ❑ | 8270 PEST ❑ 625 PEST/PCB ❑ 608 PCB ❑ | 8270 O-P PEST ❑ 8082 PCB ❑ 8270 PCB ❑ | 8321 HERB ❑ T PHOS, AMMONIA ❑ | METALS 6020 ❑ METALS 200.8 ❑ DISS. METALS ❑ | RCRA ❑ TX11 ❑ | PH ❑ HEX CHROM ❑ ALKALINITY ❑ COD ❑ | CHLORIDE ❑ ANIONS | TCLP-SVOC ❑ VOC ❑ PEST ❑ HERB ❑ | TCLP-METALS ❑ RCRA 8 ❑ TX-11 ❑ Pb ❑ | RCI ❑ FLASHPOINT ❑ DGAS ❑ | TDS ❑ TSS ❑ % MOISTURE ❑ CYANIDE ❑ | APPENDIX III & IV COBALT ONLY | FIELD NOTES

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	HCl	HNO_3	H_2SO_4 ❑ NaOH ❑	ICE	UNPRESERVED	APPENDIX III & IV COBALT ONLY	FIELD NOTES
BMW-22	01	9-29-20	0935	W	P	4		X		X	X	X	ND - Sb, Hg, Mo, Tl
BMW-20	02		1030	W	P	4		X		X	X	X	
BMW-21	03		1115	W	P	4		X		X	X	X	
BMW-27	04		1220	W	P	4		X		X	X	X	
BMW-26	05		1325	W	P	4		X		X	X	X	
BMW-24	06		1450	W	P	4		X		X	X	X	
BMW-23	07		1540	W	P	4		X		X	X	X	
BMW-11AR	08		1645	W	P	4		X		X	X	X	
BMW-19	09		1755	W	P	4		X		X	X	X	
BMW-18	10	9-30-20	0755	W	P	4		X		X	X	X	
BMW-28	11		0900	W	P	4		X		X	X	X	
BMW-33	12		1015	W	P	4		X		X	X	X	
DUP-01	13		1015	W	P	4		X		X	X	X	
BMW-32	14		1130	W	P	1	JB	X		X		X	

RELINQUISHED BY: (Signature) DATE/TIME 10-1-20 1630 RECEIVED BY: (Signature) FedEx
RELINQUISHED BY: (Signature) FedEx DATE/TIME 10/2/20 0956 RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature) DATE/TIME RECEIVED BY: (Signature)

❑ DHL DISPOSAL @ $5.00 each ❑ Return

TURN AROUND TIME
RUSH ❑ CALL FIRST
1 DAY ❑ CALL FIRST
2 DAY ❑
NORMAL ☒
OTHER ❑

LABORATORY USE ONLY:
RECEIVING TEMP: 0.2°C / 0.5°C / 1.6°C THERM #: 78
CUSTODY SEALS: ❑ BROKEN ❑ INTACT ☒ NOT USED
CARRIER: ❑ LONE STAR ☒ FEDEX ❑ UPS ❑ OTHER
❑ COURIER DELIVERY
❑ HAND DELIVERED

Eric Lau

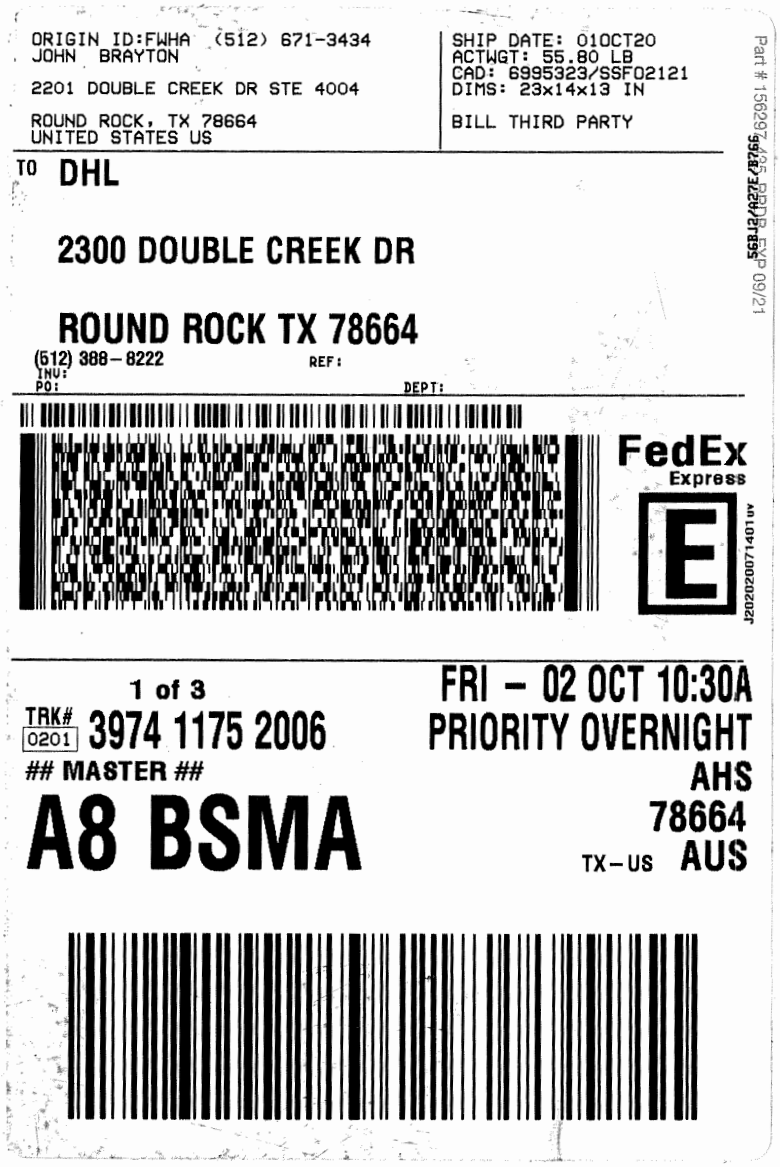
From: John DuPont
Sent: Tuesday, May 28, 2019 11:35 AM
To: Eric Lau
Subject: FW: CCR Analysis

Appendix III Parameters:
Metals (Ca and B)
Anions (Cl, F, and SO4)
TDS

Appendix IV Parameters:

Metals (As, Ba, Be, Cd, Co, Cr, Hg, Li, Mo, Pb, Sb, Se, and Tl)
Ra-226
Ra-228

From: Vienne, Will [mailto:William_Vienne@golder.com]
Sent: Tuesday, April 09, 2019 12:48 PM
To: John DuPont <dupont@dhlanalytical.com>
Subject: CCR Analysis


ORIGIN ID:FWHA (512) 671-3434
JOHN BRAYTON
2201 DOUBLE CREEK DR STE 4004
ROUND ROCK, TX 78664
UNITED STATES US
SHIP DATE: 01OCT20
ACTWGT: 55.80 LB
CAD: 6995323/SSFO2121
DIMS: 23x14x13 IN
BILL THIRD PARTY
TO DHL
2300 DOUBLE CREEK DR
ROUND ROCK TX 78664
(512) 388-8222
INV:
PO:
REF:
DEPT:
FedEx
Express
1 of 3
TRK# 0201 3974 1175 2006
MASTER
A8 BSMA
FRI - 02 OCT 10:30A
PRIORITY OVERNIGHT
AHS
78664
TX-US AUS

ORIGIN ID:FWHA (512) 671-3434
JOHN BRAYTON
2201 DOUBLE CREEK DR STE 4004
ROUND ROCK, TX 78664
UNITED STATES US
SHIP DATE: 01OCT20
ACTWGT: 55.80 LB
CAD: 6995323/SSF02121
DIMS: 23x14x13 IN
BILL THIRD PARTY
TO DHL
2300 DOUBLE CREEK DR
ROUND ROCK TX 78664
(512) 388-8222
REF:
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PO:
DEPT:
FedEx
Express
2 of 3
MPS# 0263 3974 1175 2017
Mstr# 3974 1175 2006
0201
A8 BSMA
FRI - 02 OCT 10:30A
PRIORITY OVERNIGHT
AHS
78664
TX-US AUS

ORIGIN ID:FWHA (512) 671-3434
JOHN BRAYTON
2201 DOUBLE CREEK DR STE 4004
ROUND ROCK, TX 78664
UNITED STATES US
SHIP DATE: 01OCT20
ACTWGT: 62.85 LB
CAD: 6995323/SSF02121
DIMS: 23x14x13 IN
BILL THIRD PARTY
TO DHL
2300 DOUBLE CREEK DR
ROUND ROCK TX 78664
(512) 388-8222
REF:
INV:
PO:
DEPT:
FedEx
Express
3 of 3
MPS# 0263 3974 1175 2028
Mstr# 3974 1175 2006
0201
A8 BSMA
FRI - 02 OCT 10:30A
PRIORITY OVERNIGHT
AHS
78664
TX-US AUS

DHL Analytical, Inc.

Sample Receipt Checklist

Client Name **Golder** Date Received: **10/2/2020**

Work Order Number **2010012** Received by: **RA**

Checklist completed by: _____ 10/2/2020 Reviewed by DG 10/2/2020
Signature | Date | Initials | Date

Carrier name: FedEx 1day

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	0.2 °C /0.5/1.6 °C
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH<2 acceptable upon receipt?	Yes ☑	No ☐	NA ☐ LOT # 13171
	Adjusted? no		Checked by EL
Water - ph>9 (S) or ph>10 (CN) acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted?		Checked by

Any No response must be detailed in the comments section below.

Client contacted: _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments: _____

Corrective Action: _____

Laboratory Name: DHL Analytical, Inc.

Laboratory Review Checklist: Reportable Data

Project Name: A1 Area Landfill-CCR	**LRC Date:** 10/27/20
Reviewer Name: Carlos Castro	**Laboratory Work Order:** 2010012
Prep Batch Number(s): See Prep Dates Report	**Run Batch:** See Analytical Dates Report

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
		Chain-of-Custody (C-O-C)					
R1	OI	**1)** Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				**R1-01**
		2) Were all departures from standard conditions described in an exception report?			X		
R2	OI	**Sample and Quality Control (QC) Identification**					
		1) Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		2) Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	OI	**Test Reports**					
		1) Were all samples prepared and analyzed within holding times?	X				
		2) Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
		3) Were calculations checked by a peer or supervisor?	X				
		4) Were all analyte identifications checked by a peer or supervisor?	X				
		5) Were sample detection limits reported for all analytes not detected?	X				
		6) Were all results for soil and sediment samples reported on a dry weight basis?			X		
		7) Were % moisture (or solids) reported for all soil and sediment samples?			X		
		8) Were bulk soils/solids samples for volatile analysis extracted with methanol per EPA Method 5035?			X		
		9) If required for the project, TICs reported?			X		
R4	O	**Surrogate Recovery Data**					
		1) Were surrogates added prior to extraction?			X		
		2) Were surrogate percent recoveries in all samples within the laboratory QC limits?			X		
R5	OI	**Test Reports/Summary Forms for Blank Samples**					
		1) Were appropriate type(s) of blanks analyzed?	X				
		2) Were blanks analyzed at the appropriate frequency?	X				
		3) Where method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		4) Were blank concentrations < MDL?	X				
		5) For analyte(s) detected in a blank sample, was the concentration, unadjusted for sample specific factors, in all associated field samples, **greater** than 10 times the concentration in the blank sample?			X		
R6	OI	**Laboratory Control Samples (LCS):**					
		1) Were all COCs included in the LCS?	X				
		2) Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		3) Were LCSs analyzed at the required frequency?	X				
		4) Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		5) Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		6) Was the LCSD RPD within QC limits (if applicable)?	X				
R7	OI	**Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Data**					
		1) Were the project/method specified analytes included in the MS and MSD?	X				
		2) Were MS/MSD analyzed at the appropriate frequency?	X				
		3) Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?		X			**R7-03**
		4) Were MS/MSD RPDs within laboratory QC limits?	X				
R8	OI	**Analytical Duplicate Data**					
		1) Were appropriate analytical duplicates analyzed for each matrix?	X				
		2) Were analytical duplicates analyzed at the appropriate frequency?	X				
		3) Were RPDs or relative standard deviations within the laboratory QC limits?	X				
R9	OI	**Method Quantitation Limits (MQLs):**					
		1) Are the MQLs for each method analyte included in the laboratory data package?	X				
		2) Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
		3) Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
R10	OI	**Other Problems/Anomalies**					
		1) Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				
		2) Was applicable and available technology used to lower the SDL to minimize the matrix interference affects on the sample results?	X				
		3) Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices and methods associated with this laboratory data package?	X				

Laboratory Name: DHL Analytical, Inc.

Laboratory Review Checklist (continued): Supporting Data

Project Name: A1 Area Landfill-CCR	**LRC Date:** 10/27/20
Reviewer Name: Carlos Castro	**Laboratory Work Order:** 2010012
Prep Batch Number(s): See Prep Dates Report	**Run Batch:** See Analytical Dates Report

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
S1	OI	**Initial Calibration (ICAL)**					
		1) Were response factors and/or relative response factors for each analyte within QC limits?	X				
		2) Were percent RSDs or correlation coefficient criteria met?	X				
		3) Was the number of standards recommended in the method used for all analytes?	X				
		4) Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		5) Are ICAL data available for all instruments used?	X				
		6) Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	**Initial and Continuing calibration Verification (ICCV and CCV) and Continuing Calibration blank (CCB):**					
		1) Was the CCV analyzed at the method-required frequency?	X				
		2) Were percent differences for each analyte within the method-required QC limits?	X				
		3) Was the ICAL curve verified for each analyte?	X				
		4) Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	X				
S3	O	**Mass Spectral Tuning:**					
		1) Was the appropriate compound for the method used for tuning?	X				
		2) Were ion abundance data within the method-required QC limits?	X				
S4	O	**Internal Standards (IS):**					
		1) Were IS area counts and retention times within the method-required QC limits?	X				
S5	OI	**Raw Data (NELAC Section 5.5.10)**					
		1) Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		2) Were data associated with manual integrations flagged on the raw data?	X				
S6	O	**Dual Column Confirmation**					
		1) Did dual column confirmation results meet the method-required QC?			X		
S7	O	**Tentatively Identified Compounds (TICs):**					
		1) If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) Results:**					
		1) Were percent recoveries within method QC limits?	X				
S9	I	**Serial Dilutions, Post Digestion Spikes, and Method of Standard Additions**					
		1) Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	X				
S10	OI	**Method Detection Limit (MDL) Studies**					
		1) Was a MDL study performed for each reported analyte?	X				
		2) Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	**Proficiency Test Reports:**					
		1) Was the lab's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	**Standards Documentation**					
		1) Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound/Analyte Identification Procedures**					
		1) Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of Analyst Competency (DOC)**					
		1) Was DOC conducted consistent with NELAC Chapter 5 – Appendix C?	X				
		2) Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/Validation Documentation for Methods** (NELAC Chapter 5)					
		1) Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	**Laboratory Standard Operating Procedures (SOPs):**					
		1) Are laboratory SOPs current and on file for each method performed?	X				

1 Items identified by the letter "R" should be included in the laboratory data package submitted to the TCEQ in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.

2 O = organic analyses; I = inorganic analyses (and general chemistry, when applicable).

3 NA = Not applicable.

4 NR = Not Reviewed.

5 ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Data Package Signature Page – RG-366/TRRP-13

This data package consists of:

This signature page, the laboratory review checklist, and the following reportable data:

R1 Field chain-of-custody documentation;
R2 Sample identification cross-reference;
R3 Test reports (analytical data sheets) for each environmental sample that includes:
  a) Items consistent with NELAC Chapter 5,
  b) dilution factors,
  c) preparation methods,
  d) cleanup methods, and
  e) if required for the project, tentatively identified compounds (TICs).
R4 Surrogate recovery data including:
  a) Calculated recovery (%R), and
  b) The laboratory's surrogate QC limits.
R5 Test reports/summary forms for blank samples;
R6 Test reports/summary forms for laboratory control samples (LCSs) including:
  a) LCS spiking amounts,
  b) Calculated %R for each analyte, and
  c) The laboratory's LCS QC limits.
R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
  a) Samples associated with the MS/MSD clearly identified,
  b) MS/MSD spiking amounts,
  c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
  d) Calculated %Rs and relative percent differences (RPDs), and
  e) The laboratory's MS/MSD QC limits
R8 Laboratory analytical duplicate (if applicable) recovery and precision:
  a) The amount of analyte measured in the duplicate,
  b) The calculated RPD, and
  c) The laboratory's QC limits for analytical duplicates.
R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix;
R10 Other problems or anomalies.

The Exception Report for each "No" or "Not Reviewed (NR)" item in the Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory is not accredited under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature below, I affirm to the best of my knowledge that all problems/anomalies observed by the laboratory have been identified in the Laboratory Review Checklist, and no information or data affecting the quality of the data has been knowingly withheld.

This laboratory was last inspected by TCEQ on February 25-28 2019. Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Name: John DuPont
Official Title: General Manager

Signature

10/2□/20
Date

Name: Dr. Derhsing Luu
Official Title: Technical Director

DHL Analytical, Inc. **Date:** *27-Oct-20*

CLIENT: Golder
Project: A1 Area Landfill-CCR
Lab Order: 2010012

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Method SW6020B - Metals Analysis
Method E300 - Anions Analysis
Method M2540C - TDS Analysis
Sub-contract - Radium-228 and Radium-226 analyses by methods E904 and SM 7500 Ra B M. Analyzed at Pace Analytical.

Exception Report R1-01

The samples were received and log-in performed on 10/2/20. A total of 14 samples were received. The samples arrived in good condition and were properly packaged.

Exception Report R7-03

For Metals analysis performed on 10/6/20 the matrix spike and matrix spike duplicate recoveries were below control limits for Boron and/or Calcium. These are flagged accordingly in the QC summary report. The sample selected for the matrix spike and matrix spike duplicate was from this work order. The LCS was within control limits for these analytes. No further corrective actions were taken.

DHL Analytical, Inc.

Date: *27-Oct-20*

CLIENT: Golder
Project: A1 Area Landfill-CCR
Lab Order: 2010012

Work Order Sample Summary

Lab Smp ID	Client Sample ID	Tag Number	Date Collected	Date Recved
2010012-01	BMW-22		09/29/20 09:35 AM	10/2/2020
2010012-02	BMW-20		09/29/20 10:30 AM	10/2/2020
2010012-03	BMW-21		09/29/20 11:15 AM	10/2/2020
2010012-04	BMW-27		09/29/20 12:20 PM	10/2/2020
2010012-05	BMW-26		09/29/20 01:25 PM	10/2/2020
2010012-06	BMW-24		09/29/20 02:50 PM	10/2/2020
2010012-07	BMW-23		09/29/20 03:40 PM	10/2/2020
2010012-08	BMW-11AR		09/29/20 04:45 PM	10/2/2020
2010012-09	BMW-19		09/29/20 05:55 PM	10/2/2020
2010012-10	BMW-18		09/30/20 07:55 AM	10/2/2020
2010012-11	BMW-28		09/30/20 09:00 AM	10/2/2020
2010012-12	BMW-33		09/30/20 10:15 AM	10/2/2020
2010012-13	DUP-01		09/30/20 10:15 AM	10/2/2020
2010012-14	BMW-32		09/30/20 11:30 AM	10/2/2020

Lab Order: 2010012
Client: Golder
Project: A1 Area Landfill-CCR

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
2010012-01A	BMW-22	09/29/20 09:35 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/05/20 09:27 AM	98090
	BMW-22	09/29/20 09:35 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/05/20 09:27 AM	98090
2010012-01B	BMW-22	09/29/20 09:35 AM	Aqueous	E300	Anion Preparation	10/07/20 10:43 AM	98126
	BMW-22	09/29/20 09:35 AM	Aqueous	E300	Anion Preparation	10/07/20 10:43 AM	98126
	BMW-22	09/29/20 09:35 AM	Aqueous	M2540C	TDS Preparation	10/02/20 09:03 AM	98074
2010012-02A	BMW-20	09/29/20 10:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/05/20 09:27 AM	98090
	BMW-20	09/29/20 10:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/05/20 09:27 AM	98090
	BMW-20	09/29/20 10:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/05/20 09:27 AM	98090
2010012-02B	BMW-20	09/29/20 10:30 AM	Aqueous	E300	Anion Preparation	10/07/20 10:43 AM	98126
	BMW-20	09/29/20 10:30 AM	Aqueous	E300	Anion Preparation	10/07/20 10:43 AM	98126
	BMW-20	09/29/20 10:30 AM	Aqueous	M2540C	TDS Preparation	10/02/20 09:03 AM	98074
2010012-03A	BMW-21	09/29/20 11:15 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/05/20 09:27 AM	98090
	BMW-21	09/29/20 11:15 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/05/20 09:27 AM	98090
2010012-03B	BMW-21	09/29/20 11:15 AM	Aqueous	E300	Anion Preparation	10/07/20 10:43 AM	98126
	BMW-21	09/29/20 11:15 AM	Aqueous	E300	Anion Preparation	10/07/20 10:43 AM	98126
	BMW-21	09/29/20 11:15 AM	Aqueous	M2540C	TDS Preparation	10/02/20 09:03 AM	98074
2010012-04A	BMW-27	09/29/20 12:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/05/20 09:27 AM	98090
	BMW-27	09/29/20 12:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/05/20 09:27 AM	98090
	BMW-27	09/29/20 12:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/05/20 09:27 AM	98090
2010012-04B	BMW-27	09/29/20 12:20 PM	Aqueous	E300	Anion Preparation	10/07/20 10:43 AM	98126
	BMW-27	09/29/20 12:20 PM	Aqueous	E300	Anion Preparation	10/07/20 10:43 AM	98126
	BMW-27	09/29/20 12:20 PM	Aqueous	M2540C	TDS Preparation	10/02/20 09:03 AM	98074
2010012-05A	BMW-26	09/29/20 01:25 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/05/20 09:27 AM	98090
	BMW-26	09/29/20 01:25 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/05/20 09:27 AM	98090
	BMW-26	09/29/20 01:25 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/05/20 09:27 AM	98090
2010012-05B	BMW-26	09/29/20 01:25 PM	Aqueous	E300	Anion Preparation	10/07/20 10:43 AM	98126
	BMW-26	09/29/20 01:25 PM	Aqueous	E300	Anion Preparation	10/07/20 10:43 AM	98126
	BMW-26	09/29/20 01:25 PM	Aqueous	M2540C	TDS Preparation	10/02/20 09:03 AM	98074

Lab Order: 2010012
Client: Golder
Project: A1 Area Landfill-CCR

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
2010012-06A	BMW-24	09/29/20 02:50 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/05/20 09:27 AM	98090
	BMW-24	09/29/20 02:50 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/05/20 09:27 AM	98090
	BMW-24	09/29/20 02:50 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/05/20 09:27 AM	98090
2010012-06B	BMW-24	09/29/20 02:50 PM	Aqueous	E300	Anion Preparation	10/07/20 10:43 AM	98126
	BMW-24	09/29/20 02:50 PM	Aqueous	E300	Anion Preparation	10/07/20 10:43 AM	98126
	BMW-24	09/29/20 02:50 PM	Aqueous	M2540C	TDS Preparation	10/02/20 09:03 AM	98074
2010012-07A	BMW-23	09/29/20 03:40 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/05/20 09:27 AM	98090
	BMW-23	09/29/20 03:40 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/05/20 09:27 AM	98090
2010012-07B	BMW-23	09/29/20 03:40 PM	Aqueous	E300	Anion Preparation	10/07/20 10:43 AM	98126
	BMW-23	09/29/20 03:40 PM	Aqueous	E300	Anion Preparation	10/07/20 10:43 AM	98126
	BMW-23	09/29/20 03:40 PM	Aqueous	M2540C	TDS Preparation	10/02/20 09:03 AM	98074
2010012-08A	BMW-11AR	09/29/20 04:45 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/05/20 09:27 AM	98090
	BMW-11AR	09/29/20 04:45 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/05/20 09:27 AM	98090
	BMW-11AR	09/29/20 04:45 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/05/20 09:27 AM	98090
2010012-08B	BMW-11AR	09/29/20 04:45 PM	Aqueous	E300	Anion Preparation	10/07/20 10:43 AM	98126
	BMW-11AR	09/29/20 04:45 PM	Aqueous	E300	Anion Preparation	10/07/20 10:43 AM	98126
	BMW-11AR	09/29/20 04:45 PM	Aqueous	M2540C	TDS Preparation	10/02/20 09:03 AM	98074
2010012-09A	BMW-19	09/29/20 05:55 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/05/20 09:27 AM	98090
	BMW-19	09/29/20 05:55 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/05/20 09:27 AM	98090
	BMW-19	09/29/20 05:55 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/05/20 09:27 AM	98090
2010012-09B	BMW-19	09/29/20 05:55 PM	Aqueous	E300	Anion Preparation	10/07/20 10:43 AM	98126
	BMW-19	09/29/20 05:55 PM	Aqueous	E300	Anion Preparation	10/07/20 10:43 AM	98126
	BMW-19	09/29/20 05:55 PM	Aqueous	M2540C	TDS Preparation	10/02/20 09:03 AM	98074
2010012-10A	BMW-18	09/30/20 07:55 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/05/20 09:27 AM	98090
	BMW-18	09/30/20 07:55 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/05/20 09:27 AM	98090
2010012-10B	BMW-18	09/30/20 07:55 AM	Aqueous	E300	Anion Preparation	10/07/20 10:43 AM	98126
	BMW-18	09/30/20 07:55 AM	Aqueous	M2540C	TDS Preparation	10/05/20 12:10 PM	98098
2010012-11A	BMW-28	09/30/20 09:00 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/05/20 09:27 AM	98090

Lab Order: 2010012
Client: Golder
Project: A1 Area Landfill-CCR

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
2010012-11A	BMW-28	09/30/20 09:00 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/05/20 09:27 AM	98090
	BMW-28	09/30/20 09:00 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/05/20 09:27 AM	98090
2010012-11B	BMW-28	09/30/20 09:00 AM	Aqueous	E300	Anion Preparation	10/07/20 10:43 AM	98126
	BMW-28	09/30/20 09:00 AM	Aqueous	E300	Anion Preparation	10/07/20 10:43 AM	98126
	BMW-28	09/30/20 09:00 AM	Aqueous	E300	Anion Preparation	10/07/20 10:43 AM	98126
	BMW-28	09/30/20 09:00 AM	Aqueous	M2540C	TDS Preparation	10/05/20 12:10 PM	98098
2010012-12A	BMW-33	09/30/20 10:15 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/05/20 09:27 AM	98090
	BMW-33	09/30/20 10:15 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/05/20 09:27 AM	98090
	BMW-33	09/30/20 10:15 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/05/20 09:27 AM	98090
2010012-12B	BMW-33	09/30/20 10:15 AM	Aqueous	E300	Anion Preparation	10/07/20 10:43 AM	98126
	BMW-33	09/30/20 10:15 AM	Aqueous	E300	Anion Preparation	10/07/20 10:43 AM	98126
	BMW-33	09/30/20 10:15 AM	Aqueous	M2540C	TDS Preparation	10/05/20 12:10 PM	98098
2010012-13A	DUP-01	09/30/20 10:15 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/05/20 09:27 AM	98090
	DUP-01	09/30/20 10:15 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/05/20 09:27 AM	98090
	DUP-01	09/30/20 10:15 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/05/20 09:27 AM	98090
2010012-13B	DUP-01	09/30/20 10:15 AM	Aqueous	E300	Anion Preparation	10/07/20 10:43 AM	98126
	DUP-01	09/30/20 10:15 AM	Aqueous	E300	Anion Preparation	10/07/20 10:43 AM	98126
	DUP-01	09/30/20 10:15 AM	Aqueous	M2540C	TDS Preparation	10/05/20 12:10 PM	98098
2010012-14A	BMW-32	09/30/20 11:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/05/20 09:27 AM	98090

Lab Order: 2010012
Client: Golder
Project: A1 Area Landfill-CCR

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
2010012-01A	BMW-22	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	98090	1	10/06/20 10:57 AM	ICP-MS5_201006A
	BMW-22	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	98090	20	10/06/20 11:50 AM	ICP-MS4_201006A
2010012-01B	BMW-22	Aqueous	E300	Anions by IC method - Water	98126	10	10/07/20 06:21 PM	IC2_201007A
	BMW-22	Aqueous	E300	Anions by IC method - Water	98126	1	10/07/20 10:53 PM	IC2_201007A
	BMW-22	Aqueous	M2540C	Total Dissolved Solids	98074	1	10/02/20 04:10 PM	WC_201002B
2010012-02A	BMW-20	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	98090	20	10/06/20 11:52 AM	ICP-MS4_201006A
	BMW-20	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	98090	1	10/06/20 12:47 PM	ICP-MS4_201006A
	BMW-20	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	98090	1	10/06/20 10:59 AM	ICP-MS5_201006A
2010012-02B	BMW-20	Aqueous	E300	Anions by IC method - Water	98126	10	10/07/20 06:37 PM	IC2_201007A
	BMW-20	Aqueous	E300	Anions by IC method - Water	98126	1	10/07/20 11:09 PM	IC2_201007A
	BMW-20	Aqueous	M2540C	Total Dissolved Solids	98074	1	10/02/20 04:10 PM	WC_201002B
2010012-03A	BMW-21	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	98090	10	10/06/20 11:54 AM	ICP-MS4_201006A
	BMW-21	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	98090	1	10/06/20 11:01 AM	ICP-MS5_201006A
2010012-03B	BMW-21	Aqueous	E300	Anions by IC method - Water	98126	10	10/07/20 06:53 PM	IC2_201007A
	BMW-21	Aqueous	E300	Anions by IC method - Water	98126	1	10/08/20 12:45 AM	IC2_201007A
	BMW-21	Aqueous	M2540C	Total Dissolved Solids	98074	1	10/02/20 04:10 PM	WC_201002B
2010012-04A	BMW-27	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	98090	1	10/06/20 11:03 AM	ICP-MS5_201006A
	BMW-27	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	98090	2	10/06/20 12:49 PM	ICP-MS4_201006A
	BMW-27	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	98090	20	10/06/20 11:56 AM	ICP-MS4_201006A
2010012-04B	BMW-27	Aqueous	E300	Anions by IC method - Water	98126	1	10/08/20 01:01 AM	IC2_201007A
	BMW-27	Aqueous	E300	Anions by IC method - Water	98126	10	10/07/20 07:09 PM	IC2_201007A
	BMW-27	Aqueous	M2540C	Total Dissolved Solids	98074	1	10/02/20 04:10 PM	WC_201002B
2010012-05A	BMW-26	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	98090	20	10/06/20 11:46 AM	ICP-MS4_201006A
	BMW-26	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	98090	5	10/06/20 12:38 PM	ICP-MS4_201006A
	BMW-26	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	98090	1	10/06/20 10:52 AM	ICP-MS5_201006A
2010012-05B	BMW-26	Aqueous	E300	Anions by IC method - Water	98126	1	10/08/20 01:17 AM	IC2_201007A
	BMW-26	Aqueous	E300	Anions by IC method - Water	98126	10	10/07/20 08:45 PM	IC2_201007A
	BMW-26	Aqueous	M2540C	Total Dissolved Solids	98074	1	10/02/20 04:10 PM	WC_201002B

Lab Order: 2010012
Client: Golder
Project: A1 Area Landfill-CCR

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
2010012-06A	BMW-24	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	98090	1	10/06/20 12:51 PM	ICP-MS4_201006A
	BMW-24	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	98090	1	10/06/20 11:06 AM	ICP-MS5_201006A
	BMW-24	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	98090	10	10/06/20 11:58 AM	ICP-MS4_201006A
2010012-06B	BMW-24	Aqueous	E300	Anions by IC method - Water	98126	10	10/07/20 09:01 PM	IC2_201007A
	BMW-24	Aqueous	E300	Anions by IC method - Water	98126	1	10/08/20 01:33 AM	IC2_201007A
	BMW-24	Aqueous	M2540C	Total Dissolved Solids	98074	1	10/02/20 04:10 PM	WC_201002B
2010012-07A	BMW-23	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	98090	10	10/06/20 12:00 PM	ICP-MS4_201006A
	BMW-23	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	98090	1	10/06/20 11:08 AM	ICP-MS5_201006A
2010012-07B	BMW-23	Aqueous	E300	Anions by IC method - Water	98126	1	10/08/20 01:49 AM	IC2_201007A
	BMW-23	Aqueous	E300	Anions by IC method - Water	98126	10	10/07/20 09:17 PM	IC2_201007A
	BMW-23	Aqueous	M2540C	Total Dissolved Solids	98074	1	10/02/20 04:10 PM	WC_201002B
2010012-08A	BMW-11AR	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	98090	10	10/06/20 12:02 PM	ICP-MS4_201006A
	BMW-11AR	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	98090	1	10/06/20 12:53 PM	ICP-MS4_201006A
	BMW-11AR	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	98090	1	10/06/20 11:10 AM	ICP-MS5_201006A
2010012-08B	BMW-11AR	Aqueous	E300	Anions by IC method - Water	98126	10	10/07/20 09:33 PM	IC2_201007A
	BMW-11AR	Aqueous	E300	Anions by IC method - Water	98126	1	10/08/20 02:05 AM	IC2_201007A
	BMW-11AR	Aqueous	M2540C	Total Dissolved Solids	98074	1	10/02/20 04:10 PM	WC_201002B
2010012-09A	BMW-19	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	98090	50	10/06/20 12:04 PM	ICP-MS4_201006A
	BMW-19	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	98090	2	10/06/20 12:55 PM	ICP-MS4_201006A
	BMW-19	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	98090	1	10/06/20 11:12 AM	ICP-MS5_201006A
2010012-09B	BMW-19	Aqueous	E300	Anions by IC method - Water	98126	100	10/07/20 04:29 PM	IC2_201007A
	BMW-19	Aqueous	E300	Anions by IC method - Water	98126	1	10/08/20 02:21 AM	IC2_201007A
	BMW-19	Aqueous	M2540C	Total Dissolved Solids	98074	1	10/02/20 04:10 PM	WC_201002B
2010012-10A	BMW-18	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	98090	2	10/06/20 12:06 PM	ICP-MS4_201006A
	BMW-18	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	98090	1	10/06/20 11:14 AM	ICP-MS5_201006A
2010012-10B	BMW-18	Aqueous	E300	Anions by IC method - Water	98126	1	10/08/20 02:37 AM	IC2_201007A
	BMW-18	Aqueous	M2540C	Total Dissolved Solids	98098	1	10/05/20 04:45 PM	WC_201005B
2010012-11A	BMW-28	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	98090	10	10/06/20 12:17 PM	ICP-MS4_201006A

Lab Order: 2010012
Client: Golder
Project: A1 Area Landfill-CCR

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
2010012-11A	BMW-28	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	98090	1	10/06/20 11:32 AM	ICP-MS5_201006A
	BMW-28	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	98090	2	10/06/20 12:57 PM	ICP-MS4_201006A
2010012-11B	BMW-28	Aqueous	E300	Anions by IC method - Water	98126	100	10/07/20 05:17 PM	IC2_201007A
	BMW-28	Aqueous	E300	Anions by IC method - Water	98126	10	10/07/20 09:49 PM	IC2_201007A
	BMW-28	Aqueous	E300	Anions by IC method - Water	98126	1	10/08/20 05:01 AM	IC2_201007A
	BMW-28	Aqueous	M2540C	Total Dissolved Solids	98098	1	10/05/20 04:45 PM	WC_201005B
2010012-12A	BMW-33	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	98090	1	10/06/20 11:35 AM	ICP-MS5_201006A
	BMW-33	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	98090	10	10/06/20 12:19 PM	ICP-MS4_201006A
	BMW-33	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	98090	1	10/06/20 12:59 PM	ICP-MS4_201006A
2010012-12B	BMW-33	Aqueous	E300	Anions by IC method - Water	98126	10	10/07/20 10:05 PM	IC2_201007A
	BMW-33	Aqueous	E300	Anions by IC method - Water	98126	1	10/08/20 02:53 AM	IC2_201007A
	BMW-33	Aqueous	M2540C	Total Dissolved Solids	98098	1	10/05/20 04:45 PM	WC_201005B
2010012-13A	DUP-01	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	98090	10	10/06/20 12:21 PM	ICP-MS4_201006A
	DUP-01	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	98090	1	10/06/20 01:00 PM	ICP-MS4_201006A
	DUP-01	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	98090	1	10/06/20 11:37 AM	ICP-MS5_201006A
2010012-13B	DUP-01	Aqueous	E300	Anions by IC method - Water	98126	10	10/07/20 10:21 PM	IC2_201007A
	DUP-01	Aqueous	E300	Anions by IC method - Water	98126	1	10/08/20 03:09 AM	IC2_201007A
	DUP-01	Aqueous	M2540C	Total Dissolved Solids	98098	1	10/05/20 04:45 PM	WC_201005B
2010012-14A	BMW-32	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	98090	1	10/06/20 11:39 AM	ICP-MS5_201006A

DHL Analytical, Inc.

Date: *27-Oct-20*

CLIENT:	Golder	**Client Sample ID:**	BMW-22
Project:	A1 Area Landfill-CCR	**Lab ID:**	2010012-01
Project No:	19122262-D2020	**Collection Date:**	09/29/20 09:35 AM
Lab Order:	2010012	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	10/06/20 10:57 AM
Barium	0.0598	0.00300	0.0100		mg/L	1	10/06/20 10:57 AM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	10/06/20 10:57 AM
Boron	3.49	0.200	0.600		mg/L	20	10/06/20 11:50 AM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	10/06/20 10:57 AM
Calcium	223	2.00	6.00		mg/L	20	10/06/20 11:50 AM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	10/06/20 10:57 AM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	10/06/20 10:57 AM
Lead	<0.000300	0.000300	0.00100		mg/L	1	10/06/20 10:57 AM
Lithium	0.0837	0.00500	0.0100		mg/L	1	10/06/20 10:57 AM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	10/06/20 10:57 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **BM**
Chloride	281	3.00	10.0		mg/L	10	10/07/20 06:21 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	10/07/20 10:53 PM
Sulfate	855	10.0	30.0		mg/L	10	10/07/20 06:21 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	2280	50.0	50.0		mg/L	1	10/02/20 04:10 PM

Qualifiers:

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- DF- Dilution Factor
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- See Final Page of Report for MQLs and MDLs
- S - Spike Recovery outside control limits
- C - Sample Result or QC discussed in Case Narrative
- RL - Reporting Limit (MQL adjusted for moisture and sample size)
- SDL - Sample Detection Limit
- E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *27-Oct-20*

CLIENT:	Golder	**Client Sample ID:**	BMW-20
Project:	A1 Area Landfill-CCR	**Lab ID:**	2010012-02
Project No:	19122262-D2020	**Collection Date:**	09/29/20 10:30 AM
Lab Order:	2010012	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Arsenic	0.00837	0.00200	0.00500		mg/L	1	10/06/20 10:59 AM
Barium	0.0292	0.00300	0.0100		mg/L	1	10/06/20 10:59 AM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	10/06/20 10:59 AM
Boron	0.111	0.0100	0.0300		mg/L	1	10/06/20 12:47 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	10/06/20 10:59 AM
Calcium	143	2.00	6.00		mg/L	20	10/06/20 11:52 AM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	10/06/20 10:59 AM
Cobalt	0.101	0.00300	0.00500		mg/L	1	10/06/20 10:59 AM
Lead	0.00159	0.000300	0.00100		mg/L	1	10/06/20 10:59 AM
Lithium	<0.00500	0.00500	0.0100		mg/L	1	10/06/20 10:59 AM
Selenium	0.00204	0.00200	0.00500	J	mg/L	1	10/06/20 10:59 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **BM**
Chloride	46.3	0.300	1.00		mg/L	1	10/07/20 11:09 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	10/07/20 11:09 PM
Sulfate	966	10.0	30.0		mg/L	10	10/07/20 06:37 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	1540	50.0	50.0		mg/L	1	10/02/20 04:10 PM

Qualifiers:

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- See Final Page of Report for MQLs and MDLs
- S - Spike Recovery outside control limits
- C - Sample Result or QC discussed in Case Narrative
- RL - Reporting Limit (MQL adjusted for moisture and sample size)
- SDL - Sample Detection Limit
- E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *27-Oct-20*

CLIENT:	Golder	**Client Sample ID:**	BMW-21
Project:	A1 Area Landfill-CCR	**Lab ID:**	2010012-03
Project No:	19122262-D2020	**Collection Date:**	09/29/20 11:15 AM
Lab Order:	2010012	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Arsenic	0.00814	0.00200	0.00500		mg/L	1	10/06/20 11:01 AM
Barium	0.0420	0.00300	0.0100		mg/L	1	10/06/20 11:01 AM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	10/06/20 11:01 AM
Boron	1.00	0.100	0.300		mg/L	10	10/06/20 11:54 AM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	10/06/20 11:01 AM
Calcium	161	1.00	3.00		mg/L	10	10/06/20 11:54 AM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	10/06/20 11:01 AM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	10/06/20 11:01 AM
Lead	<0.000300	0.000300	0.00100		mg/L	1	10/06/20 11:01 AM
Lithium	0.0663	0.00500	0.0100		mg/L	1	10/06/20 11:01 AM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	10/06/20 11:01 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **BM**
Chloride	415	3.00	10.0		mg/L	10	10/07/20 06:53 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	10/08/20 12:45 AM
Sulfate	444	10.0	30.0		mg/L	10	10/07/20 06:53 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	2030	50.0	50.0		mg/L	1	10/02/20 04:10 PM

Qualifiers:

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- DF- Dilution Factor
- N - Parameter not NELAP certified
- See Final Page of Report for MQLs and MDLs
- S - Spike Recovery outside control limits
- C - Sample Result or QC discussed in Case Narrative
- RL - Reporting Limit (MQL adjusted for moisture and sample size)
- SDL - Sample Detection Limit
- E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *27-Oct-20*

CLIENT:	Golder	**Client Sample ID:**	BMW-27
Project:	A1 Area Landfill-CCR	**Lab ID:**	2010012-04
Project No:	19122262-D2020	**Collection Date:**	09/29/20 12:20 PM
Lab Order:	2010012	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Arsenic	0.00494	0.00200	0.00500	J	mg/L	1	10/06/20 11:03 AM
Barium	0.0313	0.00300	0.0100		mg/L	1	10/06/20 11:03 AM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	10/06/20 11:03 AM
Boron	0.464	0.0200	0.0600		mg/L	2	10/06/20 12:49 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	10/06/20 11:03 AM
Calcium	268	2.00	6.00		mg/L	20	10/06/20 11:56 AM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	10/06/20 11:03 AM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	10/06/20 11:03 AM
Lead	<0.000300	0.000300	0.00100		mg/L	1	10/06/20 11:03 AM
Lithium	0.110	0.00500	0.0100		mg/L	1	10/06/20 11:03 AM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	10/06/20 11:03 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **BM**
Chloride	134	3.00	10.0		mg/L	10	10/07/20 07:09 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	10/08/20 01:01 AM
Sulfate	704	10.0	30.0		mg/L	10	10/07/20 07:09 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	2130	50.0	50.0		mg/L	1	10/02/20 04:10 PM

Qualifiers:

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- DF- Dilution Factor
- N - Parameter not NELAP certified
- See Final Page of Report for MQLs and MDLs
- S - Spike Recovery outside control limits
- C - Sample Result or QC discussed in Case Narrative
- RL - Reporting Limit (MQL adjusted for moisture and sample size)
- SDL - Sample Detection Limit
- E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *27-Oct-20*

CLIENT:	Golder	**Client Sample ID:**	BMW-26
Project:	A1 Area Landfill-CCR	**Lab ID:**	2010012-05
Project No:	19122262-D2020	**Collection Date:**	09/29/20 01:25 PM
Lab Order:	2010012	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Arsenic	0.00466	0.00200	0.00500	J	mg/L	1	10/06/20 10:52 AM
Barium	0.0314	0.00300	0.0100		mg/L	1	10/06/20 10:52 AM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	10/06/20 10:52 AM
Boron	0.522	0.0500	0.150		mg/L	5	10/06/20 12:38 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	10/06/20 10:52 AM
Calcium	265	2.00	6.00		mg/L	20	10/06/20 11:46 AM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	10/06/20 10:52 AM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	10/06/20 10:52 AM
Lead	<0.000300	0.000300	0.00100		mg/L	1	10/06/20 10:52 AM
Lithium	0.107	0.00500	0.0100		mg/L	1	10/06/20 10:52 AM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	10/06/20 10:52 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **BM**
Chloride	130	3.00	10.0		mg/L	10	10/07/20 08:45 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	10/08/20 01:17 AM
Sulfate	703	10.0	30.0		mg/L	10	10/07/20 08:45 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	2140	50.0	50.0		mg/L	1	10/02/20 04:10 PM

Qualifiers:

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- B - Analyte detected in the associated Method Blank
- DF- Dilution Factor
- N - Parameter not NELAP certified
- See Final Page of Report for MQLs and MDLs
- S - Spike Recovery outside control limits
- C - Sample Result or QC discussed in Case Narrative
- RL - Reporting Limit (MQL adjusted for moisture and sample size)
- SDL - Sample Detection Limit
- E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *27-Oct-20*

CLIENT:	Golder	**Client Sample ID:**	BMW-24
Project:	A1 Area Landfill-CCR	**Lab ID:**	2010012-06
Project No:	19122262-D2020	**Collection Date:**	09/29/20 02:50 PM
Lab Order:	2010012	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	10/06/20 11:06 AM
Barium	1.85	0.00300	0.0100		mg/L	1	10/06/20 11:06 AM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	10/06/20 11:06 AM
Boron	0.205	0.0100	0.0300		mg/L	1	10/06/20 12:51 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	10/06/20 11:06 AM
Calcium	58.8	1.00	3.00		mg/L	10	10/06/20 11:58 AM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	10/06/20 11:06 AM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	10/06/20 11:06 AM
Lead	<0.000300	0.000300	0.00100		mg/L	1	10/06/20 11:06 AM
Lithium	0.00563	0.00500	0.0100	J	mg/L	1	10/06/20 11:06 AM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	10/06/20 11:06 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **BM**
Chloride	482	3.00	10.0		mg/L	10	10/07/20 09:01 PM
Fluoride	0.725	0.100	0.400		mg/L	1	10/08/20 01:33 AM
Sulfate	4.48	1.00	3.00		mg/L	1	10/08/20 01:33 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	1000	50.0	50.0		mg/L	1	10/02/20 04:10 PM

Qualifiers:

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- B - Analyte detected in the associated Method Blank
- DF- Dilution Factor
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- See Final Page of Report for MQLs and MDLs
- S - Spike Recovery outside control limits
- C - Sample Result or QC discussed in Case Narrative
- RL - Reporting Limit (MQL adjusted for moisture and sample size)
- SDL - Sample Detection Limit
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DHL Analytical, Inc.

Date: *27-Oct-20*

CLIENT:	Golder	**Client Sample ID:**	BMW-23
Project:	A1 Area Landfill-CCR	**Lab ID:**	2010012-07
Project No:	19122262-D2020	**Collection Date:**	09/29/20 03:40 PM
Lab Order:	2010012	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	10/06/20 11:08 AM
Barium	0.0383	0.00300	0.0100		mg/L	1	10/06/20 11:08 AM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	10/06/20 11:08 AM
Boron	1.42	0.100	0.300		mg/L	10	10/06/20 12:00 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	10/06/20 11:08 AM
Calcium	102	1.00	3.00		mg/L	10	10/06/20 12:00 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	10/06/20 11:08 AM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	10/06/20 11:08 AM
Lead	<0.000300	0.000300	0.00100		mg/L	1	10/06/20 11:08 AM
Lithium	0.0861	0.00500	0.0100		mg/L	1	10/06/20 11:08 AM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	10/06/20 11:08 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **BM**
Chloride	238	3.00	10.0		mg/L	10	10/07/20 09:17 PM
Fluoride	0.302	0.100	0.400	J	mg/L	1	10/08/20 01:49 AM
Sulfate	443	10.0	30.0		mg/L	10	10/07/20 09:17 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	1590	50.0	50.0		mg/L	1	10/02/20 04:10 PM

Qualifiers:

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- B - Analyte detected in the associated Method Blank
- DF- Dilution Factor
- N - Parameter not NELAP certified
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- S - Spike Recovery outside control limits
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- RL - Reporting Limit (MQL adjusted for moisture and sample size)
- SDL - Sample Detection Limit
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DHL Analytical, Inc.

Date: *27-Oct-20*

CLIENT:	Golder	**Client Sample ID:**	BMW-11AR
Project:	A1 Area Landfill-CCR	**Lab ID:**	2010012-08
Project No:	19122262-D2020	**Collection Date:**	09/29/20 04:45 PM
Lab Order:	2010012	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Arsenic	0.0102	0.00200	0.00500		mg/L	1	10/06/20 11:10 AM
Barium	0.0517	0.00300	0.0100		mg/L	1	10/06/20 11:10 AM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	10/06/20 11:10 AM
Boron	0.349	0.0100	0.0300		mg/L	1	10/06/20 12:53 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	10/06/20 11:10 AM
Calcium	148	1.00	3.00		mg/L	10	10/06/20 12:02 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	10/06/20 11:10 AM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	10/06/20 11:10 AM
Lead	<0.000300	0.000300	0.00100		mg/L	1	10/06/20 11:10 AM
Lithium	0.0337	0.00500	0.0100		mg/L	1	10/06/20 11:10 AM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	10/06/20 11:10 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **BM**
Chloride	6.37	0.300	1.00		mg/L	1	10/08/20 02:05 AM
Fluoride	0.408	0.100	0.400		mg/L	1	10/08/20 02:05 AM
Sulfate	275	10.0	30.0		mg/L	10	10/07/20 09:33 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	1240	10.0	10.0		mg/L	1	10/02/20 04:10 PM

Qualifiers:

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- See Final Page of Report for MQLs and MDLs
- S - Spike Recovery outside control limits
- C - Sample Result or QC discussed in Case Narrative
- RL - Reporting Limit (MQL adjusted for moisture and sample size)
- SDL - Sample Detection Limit
- E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *27-Oct-20*

CLIENT:	Golder	**Client Sample ID:**	BMW-19
Project:	A1 Area Landfill-CCR	**Lab ID:**	2010012-09
Project No:	19122262-D2020	**Collection Date:**	09/29/20 05:55 PM
Lab Order:	2010012	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	10/06/20 11:12 AM
Barium	0.0137	0.00300	0.0100		mg/L	1	10/06/20 11:12 AM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	10/06/20 11:12 AM
Boron	0.460	0.0200	0.0600		mg/L	2	10/06/20 12:55 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	10/06/20 11:12 AM
Calcium	484	5.00	15.0		mg/L	50	10/06/20 12:04 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	10/06/20 11:12 AM
Cobalt	0.0187	0.00300	0.00500		mg/L	1	10/06/20 11:12 AM
Lead	<0.000300	0.000300	0.00100		mg/L	1	10/06/20 11:12 AM
Lithium	0.0742	0.00500	0.0100		mg/L	1	10/06/20 11:12 AM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	10/06/20 11:12 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **BM**
Chloride	5.39	0.300	1.00		mg/L	1	10/08/20 02:21 AM
Fluoride	<0.100	0.100	0.400		mg/L	1	10/08/20 02:21 AM
Sulfate	1790	100	300		mg/L	100	10/07/20 04:29 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	3480	50.0	50.0		mg/L	1	10/02/20 04:10 PM

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- DF- Dilution Factor
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- See Final Page of Report for MQLs and MDLs
- S - Spike Recovery outside control limits
- C - Sample Result or QC discussed in Case Narrative
- RL - Reporting Limit (MQL adjusted for moisture and sample size)
- SDL - Sample Detection Limit
- E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *27-Oct-20*

CLIENT:	Golder	**Client Sample ID:**	BMW-18
Project:	A1 Area Landfill-CCR	**Lab ID:**	2010012-10
Project No:	19122262-D2020	**Collection Date:**	09/30/20 07:55 AM
Lab Order:	2010012	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	10/06/20 11:14 AM
Barium	0.0315	0.00300	0.0100		mg/L	1	10/06/20 11:14 AM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	10/06/20 11:14 AM
Boron	0.447	0.0200	0.0600		mg/L	2	10/06/20 12:06 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	10/06/20 11:14 AM
Calcium	6.62	0.100	0.300		mg/L	1	10/06/20 11:14 AM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	10/06/20 11:14 AM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	10/06/20 11:14 AM
Lead	<0.000300	0.000300	0.00100		mg/L	1	10/06/20 11:14 AM
Lithium	0.0193	0.00500	0.0100		mg/L	1	10/06/20 11:14 AM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	10/06/20 11:14 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **BM**
Chloride	19.0	0.300	1.00		mg/L	1	10/08/20 02:37 AM
Fluoride	0.387	0.100	0.400	J	mg/L	1	10/08/20 02:37 AM
Sulfate	81.1	1.00	3.00		mg/L	1	10/08/20 02:37 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	469	10.0	10.0		mg/L	1	10/05/20 04:45 PM

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- S - Spike Recovery outside control limits
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- RL - Reporting Limit (MQL adjusted for moisture and sample size)
- SDL - Sample Detection Limit
- E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *27-Oct-20*

CLIENT:	Golder	**Client Sample ID:**	BMW-28
Project:	A1 Area Landfill-CCR	**Lab ID:**	2010012-11
Project No:	19122262-D2020	**Collection Date:**	09/30/20 09:00 AM
Lab Order:	2010012	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	10/06/20 11:32 AM
Barium	0.0150	0.00300	0.0100		mg/L	1	10/06/20 11:32 AM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	10/06/20 11:32 AM
Boron	0.612	0.0200	0.0600		mg/L	2	10/06/20 12:57 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	10/06/20 11:32 AM
Calcium	149	1.00	3.00		mg/L	10	10/06/20 12:17 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	10/06/20 11:32 AM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	10/06/20 11:32 AM
Lead	<0.000300	0.000300	0.00100		mg/L	1	10/06/20 11:32 AM
Lithium	0.0953	0.00500	0.0100		mg/L	1	10/06/20 11:32 AM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	10/06/20 11:32 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **BM**
Chloride	51.1	3.00	10.0		mg/L	10	10/07/20 09:49 PM
Fluoride	0.229	0.100	0.400	J	mg/L	1	10/08/20 05:01 AM
Sulfate	1030	10.0	30.0		mg/L	10	10/07/20 09:49 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	2100	50.0	50.0		mg/L	1	10/05/20 04:45 PM

Qualifiers:

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See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *27-Oct-20*

CLIENT:	Golder	**Client Sample ID:**	BMW-33
Project:	A1 Area Landfill-CCR	**Lab ID:**	2010012-12
Project No:	19122262-D2020	**Collection Date:**	09/30/20 10:15 AM
Lab Order:	2010012	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	10/06/20 11:35 AM
Barium	0.166	0.00300	0.0100		mg/L	1	10/06/20 11:35 AM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	10/06/20 11:35 AM
Boron	0.228	0.0100	0.0300		mg/L	1	10/06/20 12:59 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	10/06/20 11:35 AM
Calcium	131	1.00	3.00		mg/L	10	10/06/20 12:19 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	10/06/20 11:35 AM
Cobalt	0.00826	0.00300	0.00500		mg/L	1	10/06/20 11:35 AM
Lead	<0.000300	0.000300	0.00100		mg/L	1	10/06/20 11:35 AM
Lithium	0.0135	0.00500	0.0100		mg/L	1	10/06/20 11:35 AM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	10/06/20 11:35 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **BM**
Chloride	60.9	3.00	10.0		mg/L	10	10/07/20 10:05 PM
Fluoride	0.410	0.100	0.400		mg/L	1	10/08/20 02:53 AM
Sulfate	184	10.0	30.0		mg/L	10	10/07/20 10:05 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	1000	50.0	50.0		mg/L	1	10/05/20 04:45 PM

Qualifiers:

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See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *27-Oct-20*

CLIENT:	Golder	**Client Sample ID:**	DUP-01
Project:	A1 Area Landfill-CCR	**Lab ID:**	2010012-13
Project No:	19122262-D2020	**Collection Date:**	09/30/20 10:15 AM
Lab Order:	2010012	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Arsenic	0.00424	0.00200	0.00500	J	mg/L	1	10/06/20 11:37 AM
Barium	0.159	0.00300	0.0100		mg/L	1	10/06/20 11:37 AM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	10/06/20 11:37 AM
Boron	0.218	0.0100	0.0300		mg/L	1	10/06/20 01:00 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	10/06/20 11:37 AM
Calcium	135	1.00	3.00		mg/L	10	10/06/20 12:21 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	10/06/20 11:37 AM
Cobalt	0.00941	0.00300	0.00500		mg/L	1	10/06/20 11:37 AM
Lead	<0.000300	0.000300	0.00100		mg/L	1	10/06/20 11:37 AM
Lithium	0.0124	0.00500	0.0100		mg/L	1	10/06/20 11:37 AM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	10/06/20 11:37 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **BM**
Chloride	65.4	3.00	10.0		mg/L	10	10/07/20 10:21 PM
Fluoride	0.894	0.100	0.400		mg/L	1	10/08/20 03:09 AM
Sulfate	179	10.0	30.0		mg/L	10	10/07/20 10:21 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	1020	50.0	50.0		mg/L	1	10/05/20 04:45 PM

Qualifiers:

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- DF- Dilution Factor
- N - Parameter not NELAP certified
- See Final Page of Report for MQLs and MDLs
- S - Spike Recovery outside control limits
- C - Sample Result or QC discussed in Case Narrative
- RL - Reporting Limit (MQL adjusted for moisture and sample size)
- SDL - Sample Detection Limit
- E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *27-Oct-20*

CLIENT:	Golder	**Client Sample ID:**	BMW-32
Project:	A1 Area Landfill-CCR	**Lab ID:**	2010012-14
Project No:	19122262-D2020	**Collection Date:**	09/30/20 11:30 AM
Lab Order:	2010012	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Cobalt	0.00408	0.00300	0.00500	J	mg/L	1	10/06/20 11:39 AM

Qualifiers:

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- B - Analyte detected in the associated Method Blank
- DF- Dilution Factor
- N - Parameter not NELAP certified
- See Final Page of Report for MQLs and MDLs
- S - Spike Recovery outside control limits
- C - Sample Result or QC discussed in Case Narrative
- RL - Reporting Limit (MQL adjusted for moisture and sample size)
- SDL - Sample Detection Limit
- E - TPH pattern not Gas or Diesel Range Pattern

CLIENT: Golder
Work Order: 2010012
Project: A1 Area Landfill-CCR

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_200803A

Sample ID: **DCS2-97152**	Batch ID: **97152**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS2**	Run ID: **ICP-MS4_200803A**	Analysis Date: **8/3/2020 12:37:00 PM**	Prep Date: **7/16/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.342	0.300	0.300	0	114	70	130	0	0	

Sample ID: **DCS4-97152**	Batch ID: **97152**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS4**	Run ID: **ICP-MS4_200803A**	Analysis Date: **8/3/2020 12:43:00 PM**	Prep Date: **7/16/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0277	0.0300	0.0300	0	92.4	70	130	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2010012
Project: A1 Area Landfill-CCR

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_201006A

The QC data in batch 98090 applies to the following samples: 2010012-01A, 2010012-02A, 2010012-03A, 2010012-04A, 2010012-05A, 2010012-06A, 2010012-07A, 2010012-08A, 2010012-09A, 2010012-10A, 2010012-11A, 2010012-12A, 2010012-13A, 2010012-14A

Sample ID: **MB-98090** Batch ID: **98090** TestNo: **SW6020B** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_201006A** Analysis Date: **10/6/2020 11:38:00 AM** Prep Date: **10/5/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	<0.0100	0.0300								

Sample ID: **LCS-98090** Batch ID: **98090** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_201006A** Analysis Date: **10/6/2020 11:40:00 AM** Prep Date: **10/5/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.201	0.0300	0.200	0	101	80	120			

Sample ID: **LCSD-98090** Batch ID: **98090** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_201006A** Analysis Date: **10/6/2020 11:42:00 AM** Prep Date: **10/5/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.197	0.0300	0.200	0	98.6	80	120	2.07	15	

Sample ID: **2010012-05A SD** Batch ID: **98090** TestNo: **SW6020B** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS4_201006A** Analysis Date: **10/6/2020 11:48:00 AM** Prep Date: **10/5/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	261	30.0	0	265				1.28	20	

Sample ID: **2010012-05A PDS** Batch ID: **98090** TestNo: **SW6020B** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS4_201006A** Analysis Date: **10/6/2020 12:08:00 PM** Prep Date: **10/5/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	362	6.00	100	265	97.9	75	125			

Sample ID: **2010012-05A SD** Batch ID: **98090** TestNo: **SW6020B** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS4_201006A** Analysis Date: **10/6/2020 12:45:00 PM** Prep Date: **10/5/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.562	0.750	0	0.522				7.41	20	

Sample ID: **2010012-05A PDS** Batch ID: **98090** TestNo: **SW6020B** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS4_201006A** Analysis Date: **10/6/2020 1:04:00 PM** Prep Date: **10/5/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	1.58	0.150	1.00	0.522	106	75	125			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2010012
Project: A1 Area Landfill-CCR

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_201006A

Sample ID: **2010012-05A MS**	Batch ID: **98090**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS4_201006A**	Analysis Date: **10/6/2020 1:07:00 PM**	Prep Date: **10/5/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.666	0.150	0.200	0.522	72.0	75	125			S

Sample ID: **2010012-05A MSD**	Batch ID: **98090**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS4_201006A**	Analysis Date: **10/6/2020 1:09:00 PM**	Prep Date: **10/5/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.682	0.150	0.200	0.522	80.2	75	125	2.42	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2010012
Project: A1 Area Landfill-CCR

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_201006A

Sample ID: **ICV-201006**	Batch ID: **R112525**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_201006A**	Analysis Date: **10/6/2020 10:53:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0916	0.0300	0.100	0	91.6	90	110			
Calcium	2.58	0.300	2.50	0	103	90	110			

Sample ID: **LCVL-201006**	Batch ID: **R112525**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_201006A**	Analysis Date: **10/6/2020 11:03:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0221	0.0300	0.0200	0	111	80	120			
Calcium	0.101	0.300	0.100	0	101	80	120			

Sample ID: **CCV1-201006**	Batch ID: **R112525**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_201006A**	Analysis Date: **10/6/2020 12:12:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.202	0.0300	0.200	0	101	90	110			
Calcium	5.06	0.300	5.00	0	101	90	110			

Sample ID: **CCV2-201006**	Batch ID: **R112525**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_201006A**	Analysis Date: **10/6/2020 12:34:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.203	0.0300	0.200	0	101	90	110			
Calcium	5.28	0.300	5.00	0	106	90	110			

Sample ID: **CCV3-201006**	Batch ID: **R112525**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_201006A**	Analysis Date: **10/6/2020 1:11:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.194	0.0300	0.200	0	97.1	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2010012
Project: A1 Area Landfill-CCR

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_200717A

Sample ID: **DCS1-97152** Batch ID: **97152** TestNo: **SW6020B** Units: **mg/L**
SampType: **DCS** Run ID: **ICP-MS5_200717A** Analysis Date: **7/17/2020 12:22:00 PM** Prep Date: **7/16/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.000512	0.00100	0.000500	0	102	70	130	0	0	
Cadmium	0.000506	0.00100	0.000500	0	101	70	130	0	0	
Lead	0.000499	0.00100	0.000500	0	99.8	70	130	0	0	

Sample ID: **DCS2-97152** Batch ID: **97152** TestNo: **SW6020B** Units: **mg/L**
SampType: **DCS2** Run ID: **ICP-MS5_200717A** Analysis Date: **7/17/2020 12:24:00 PM** Prep Date: **7/16/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.316	0.300	0.300	0	105	70	130	0	0	

Sample ID: **DCS3-97152** Batch ID: **97152** TestNo: **SW6020B** Units: **mg/L**
SampType: **DCS3** Run ID: **ICP-MS5_200717A** Analysis Date: **7/17/2020 12:26:00 PM** Prep Date: **7/16/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.00466	0.00500	0.00500	0	93.2	70	130	0	0	
Barium	0.00484	0.0100	0.00500	0	96.8	70	130	0	0	
Chromium	0.00496	0.00500	0.00500	0	99.2	70	130	0	0	
Cobalt	0.00479	0.00500	0.00500	0	95.8	70	130	0	0	
Lithium	0.00505	0.0100	0.00500	0	101	70	130	0	0	
Selenium	0.00485	0.00500	0.00500	0	97.0	70	130	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2010012
Project: A1 Area Landfill-CCR

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_201006A

The QC data in batch 98090 applies to the following samples: 2010012-01A, 2010012-02A, 2010012-03A, 2010012-04A, 2010012-05A, 2010012-06A, 2010012-07A, 2010012-08A, 2010012-09A, 2010012-10A, 2010012-11A, 2010012-12A, 2010012-13A, 2010012-14A

Sample ID: **MB-98090** Batch ID: **98090** TestNo: **SW6020B** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS5_201006A** Analysis Date: **10/6/2020 10:44:00 AM** Prep Date: **10/5/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	<0.00200	0.00500								
Barium	<0.00300	0.0100								
Beryllium	<0.000300	0.00100								
Cadmium	<0.000300	0.00100								
Calcium	<0.100	0.300								
Chromium	<0.00200	0.00500								
Cobalt	<0.00300	0.00500								
Lead	<0.000300	0.00100								
Lithium	<0.00500	0.0100								
Selenium	<0.00200	0.00500								

Sample ID: **LCS-98090** Batch ID: **98090** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS5_201006A** Analysis Date: **10/6/2020 10:46:00 AM** Prep Date: **10/5/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.197	0.00500	0.200	0	98.4	80	120			
Barium	0.198	0.0100	0.200	0	99.0	80	120			
Beryllium	0.196	0.00100	0.200	0	98.1	80	120			
Cadmium	0.195	0.00100	0.200	0	97.3	80	120			
Calcium	5.01	0.300	5.00	0	100	80	120			
Chromium	0.194	0.00500	0.200	0	96.8	80	120			
Cobalt	0.195	0.00500	0.200	0	97.6	80	120			
Lead	0.194	0.00100	0.200	0	97.0	80	120			
Lithium	0.199	0.0100	0.200	0	99.6	80	120			
Selenium	0.198	0.00500	0.200	0	99.1	80	120			

Sample ID: **LCSD-98090** Batch ID: **98090** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS5_201006A** Analysis Date: **10/6/2020 10:48:00 AM** Prep Date: **10/5/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.197	0.00500	0.200	0	98.3	80	120	0.164	15	
Barium	0.199	0.0100	0.200	0	99.7	80	120	0.747	15	
Beryllium	0.197	0.00100	0.200	0	98.4	80	120	0.363	15	
Cadmium	0.195	0.00100	0.200	0	97.7	80	120	0.404	15	
Calcium	4.93	0.300	5.00	0	98.6	80	120	1.65	15	
Chromium	0.194	0.00500	0.200	0	96.9	80	120	0.154	15	
Cobalt	0.193	0.00500	0.200	0	96.5	80	120	1.07	15	
Lead	0.194	0.00100	0.200	0	96.8	80	120	0.201	15	
Lithium	0.203	0.0100	0.200	0	101	80	120	1.77	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2010012
Project: A1 Area Landfill-CCR

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_201006A

Sample ID: **LCSD-98090**	Batch ID: **98090**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCSD**	Run ID: **ICP-MS5_201006A**	Analysis Date: **10/6/2020 10:48:00 AM**	Prep Date: **10/5/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.198	0.00500	0.200	0	99.0	80	120	0.135	15	

Sample ID: **2010012-05A SD**	Batch ID: **98090**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS5_201006A**	Analysis Date: **10/6/2020 10:55:00 AM**	Prep Date: **10/5/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	<0.0100	0.0250	0	0.00466				0	20	
Barium	0.0318	0.0500	0	0.0314				1.37	20	
Beryllium	<0.00150	0.00500	0	0				0	20	
Cadmium	<0.00150	0.00500	0	0				0	20	
Chromium	<0.0100	0.0250	0	0				0	20	
Cobalt	<0.0150	0.0250	0	0				0	20	
Lead	<0.00150	0.00500	0	0				0	20	
Lithium	0.109	0.0500	0	0.107				1.84	20	
Selenium	<0.0100	0.0250	0	0				0	20	

Sample ID: **2010012-05A PDS**	Batch ID: **98090**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS5_201006A**	Analysis Date: **10/6/2020 11:17:00 AM**	Prep Date: **10/5/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.197	0.00500	0.200	0.00466	96.0	75	125			
Barium	0.240	0.0100	0.200	0.0314	104	75	125			
Beryllium	0.198	0.00100	0.200	0	99.2	75	125			
Cadmium	0.197	0.00100	0.200	0	98.3	75	125			
Chromium	0.202	0.00500	0.200	0	101	75	125			
Cobalt	0.191	0.00500	0.200	0	95.6	75	125			
Lead	0.206	0.00100	0.200	0	103	75	125			
Lithium	0.307	0.0100	0.200	0.107	100	75	125			
Selenium	0.184	0.00500	0.200	0	91.9	75	125			

Sample ID: **2010012-05A MS**	Batch ID: **98090**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS5_201006A**	Analysis Date: **10/6/2020 11:22:00 AM**	Prep Date: **10/5/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.193	0.00500	0.200	0.00466	93.9	75	125			
Barium	0.230	0.0100	0.200	0.0314	99.1	75	125			
Beryllium	0.195	0.00100	0.200	0	97.5	75	125			
Cadmium	0.187	0.00100	0.200	0	93.5	75	125			
Calcium	256	0.300	5.00	253	41.9	75	125			S
Chromium	0.190	0.00500	0.200	0	95.1	75	125			
Cobalt	0.181	0.00500	0.200	0	90.3	75	125			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2010012
Project: A1 Area Landfill-CCR

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_201006A

Sample ID: **2010012-05A MS**	Batch ID: **98090**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS5_201006A**	Analysis Date: **10/6/2020 11:22:00 AM**	Prep Date: **10/5/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.195	0.00100	0.200	0	97.7	75	125			
Lithium	0.309	0.0100	0.200	0.107	101	75	125			
Selenium	0.174	0.00500	0.200	0	86.9	75	125			

Sample ID: **2010012-05A MSD**	Batch ID: **98090**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS5_201006A**	Analysis Date: **10/6/2020 11:24:00 AM**	Prep Date: **10/5/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.193	0.00500	0.200	0.00466	94.4	75	125	0.424	15	
Barium	0.233	0.0100	0.200	0.0314	101	75	125	1.52	15	
Beryllium	0.196	0.00100	0.200	0	97.8	75	125	0.316	15	
Cadmium	0.188	0.00100	0.200	0	94.1	75	125	0.638	15	
Calcium	255	0.300	5.00	253	39.9	75	125	0.039	15	S
Chromium	0.189	0.00500	0.200	0	94.5	75	125	0.652	15	
Cobalt	0.183	0.00500	0.200	0	91.4	75	125	1.17	15	
Lead	0.196	0.00100	0.200	0	97.8	75	125	0.115	15	
Lithium	0.308	0.0100	0.200	0.107	101	75	125	0.325	15	
Selenium	0.175	0.00500	0.200	0	87.3	75	125	0.414	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2010012
Project: A1 Area Landfill-CCR

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_201006A

Sample ID: **ICV-201006** Batch ID: **R112544** TestNo: **SW6020B** Units: **mg/L**
SampType: **ICV** Run ID: **ICP-MS5_201006A** Analysis Date: **10/6/2020 10:25:00 AM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.0973	0.00500	0.100	0	97.3	90	110			
Barium	0.0984	0.0100	0.100	0	98.4	90	110			
Beryllium	0.0966	0.00100	0.100	0	96.6	90	110			
Cadmium	0.0995	0.00100	0.100	0	99.5	90	110			
Calcium	2.48	0.300	2.50	0	99.2	90	110			
Chromium	0.0998	0.00500	0.100	0	99.8	90	110			
Cobalt	0.0979	0.00500	0.100	0	97.9	90	110			
Lead	0.0976	0.00100	0.100	0	97.6	90	110			
Lithium	0.0964	0.0100	0.100	0	96.4	90	110			
Selenium	0.0972	0.00500	0.100	0	97.2	90	110			

Sample ID: **LCVL-201006** Batch ID: **R112544** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS5_201006A** Analysis Date: **10/6/2020 10:36:00 AM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.00479	0.00500	0.00500	0	95.9	80	120			
Barium	0.00534	0.0100	0.00500	0	107	80	120			
Beryllium	0.00103	0.00100	0.00100	0	103	80	120			
Cadmium	0.000990	0.00100	0.00100	0	99.0	80	120			
Calcium	0.0942	0.300	0.100	0	94.2	80	120			
Chromium	0.00480	0.00500	0.00500	0	95.9	80	120			
Cobalt	0.00500	0.00500	0.00500	0	100	80	120			
Lead	0.000818	0.00100	0.00100	0	81.8	80	120			
Lithium	0.00990	0.0100	0.0100	0	99.0	80	120			
Selenium	0.00554	0.00500	0.00500	0	111	80	120			

Sample ID: **CCV1-201006** Batch ID: **R112544** TestNo: **SW6020B** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS5_201006A** Analysis Date: **10/6/2020 11:26:00 AM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.202	0.00500	0.200	0	101	90	110			
Barium	0.200	0.0100	0.200	0	99.8	90	110			
Beryllium	0.202	0.00100	0.200	0	101	90	110			
Cadmium	0.198	0.00100	0.200	0	98.9	90	110			
Calcium	4.97	0.300	5.00	0	99.5	90	110			
Chromium	0.198	0.00500	0.200	0	98.8	90	110			
Cobalt	0.201	0.00500	0.200	0	100	90	110			
Lead	0.196	0.00100	0.200	0	97.9	90	110			
Lithium	0.205	0.0100	0.200	0	103	90	110			
Selenium	0.203	0.00500	0.200	0	102	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2010012
Project: A1 Area Landfill-CCR

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_201006A

Sample ID: **CCV2-201006** Batch ID: **R112544** TestNo: **SW6020B** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS5_201006A** Analysis Date: **10/6/2020 11:53:00 AM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.200	0.00500	0.200	0	99.9	90	110			
Barium	0.202	0.0100	0.200	0	101	90	110			
Beryllium	0.199	0.00100	0.200	0	99.5	90	110			
Cadmium	0.197	0.00100	0.200	0	98.3	90	110			
Calcium	4.93	0.300	5.00	0	98.6	90	110			
Chromium	0.194	0.00500	0.200	0	97.2	90	110			
Cobalt	0.196	0.00500	0.200	0	98.2	90	110			
Lead	0.194	0.00100	0.200	0	96.9	90	110			
Lithium	0.204	0.0100	0.200	0	102	90	110			
Selenium	0.200	0.00500	0.200	0	100	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2010012
Project: A1 Area Landfill-CCR

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_200923A

Sample ID: **DCS2-97986** Batch ID: **97986** TestNo: **E300** Units: **mg/L**
SampType: **DCS2** Run ID: **IC2_200923A** Analysis Date: **9/23/2020 11:59:34 AM** Prep Date: **9/23/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	0.529	1.00	0.5000	0	106	70	130	0	0	
Fluoride	0.219	0.400	0.2000	0	109	70	130	0	0	
Sulfate	1.52	3.00	1.500	0	101	70	130	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2010012
Project: A1 Area Landfill-CCR

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_201007A

The QC data in batch 98126 applies to the following samples: 2010012-01B, 2010012-02B, 2010012-03B, 2010012-04B, 2010012-05B, 2010012-06B, 2010012-07B, 2010012-08B, 2010012-09B, 2010012-10B, 2010012-11B, 2010012-12B, 2010012-13B

Sample ID: **MB-98126** Batch ID: **98126** TestNo: **E300** Units: **mg/L**
SampType: **MBLK** Run ID: **IC2_201007A** Analysis Date: **10/7/2020 12:41:05 PM** Prep Date: **10/7/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00								
Fluoride	<0.100	0.400								
Sulfate	<1.00	3.00								

Sample ID: **LCS-98126** Batch ID: **98126** TestNo: **E300** Units: **mg/L**
SampType: **LCS** Run ID: **IC2_201007A** Analysis Date: **10/7/2020 12:57:05 PM** Prep Date: **10/7/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.73	1.00	10.00	0	97.3	90	110			
Fluoride	3.89	0.400	4.000	0	97.2	90	110			
Sulfate	28.5	3.00	30.00	0	95.1	90	110			

Sample ID: **LCSD-98126** Batch ID: **98126** TestNo: **E300** Units: **mg/L**
SampType: **LCSD** Run ID: **IC2_201007A** Analysis Date: **10/7/2020 1:13:05 PM** Prep Date: **10/7/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.72	1.00	10.00	0	97.2	90	110	0.123	20	
Fluoride	3.88	0.400	4.000	0	97.0	90	110	0.126	20	
Sulfate	28.7	3.00	30.00	0	95.6	90	110	0.449	20	

Sample ID: **2010035-01CMS** Batch ID: **98126** TestNo: **E300** Units: **mg/L**
SampType: **MS** Run ID: **IC2_201007A** Analysis Date: **10/7/2020 3:57:29 PM** Prep Date: **10/7/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	33700	1000	20000	14670	95.3	90	110			
Fluoride	19700	400	20000	0	98.4	90	110			
Sulfate	20800	3000	20000	2399	92.1	90	110			

Sample ID: **2010035-01CMSD** Batch ID: **98126** TestNo: **E300** Units: **mg/L**
SampType: **MSD** Run ID: **IC2_201007A** Analysis Date: **10/7/2020 4:13:29 PM** Prep Date: **10/7/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	33600	1000	20000	14670	94.6	90	110	0.373	20	
Fluoride	19700	400	20000	0	98.7	90	110	0.305	20	
Sulfate	20700	3000	20000	2399	91.7	90	110	0.393	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2010012
Project: A1 Area Landfill-CCR

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_201007A

Sample ID: **2010012-09BMS**	Batch ID: **98126**	TestNo: **E300**	Units: **mg/L**
SampType: **MS**	Run ID: **IC2_201007A**	Analysis Date: **10/7/2020 4:45:29 PM**	Prep Date: **10/7/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	1970	100	2000	0	98.5	90	110			
Fluoride	1960	40.0	2000	0	97.8	90	110			
Sulfate	3680	300	2000	1788	94.8	90	110			

Sample ID: **2010012-09BMSD**	Batch ID: **98126**	TestNo: **E300**	Units: **mg/L**
SampType: **MSD**	Run ID: **IC2_201007A**	Analysis Date: **10/7/2020 5:01:29 PM**	Prep Date: **10/7/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	1980	100	2000	0	99.1	90	110	0.605	20	
Fluoride	1970	40.0	2000	0	98.5	90	110	0.754	20	
Sulfate	3690	300	2000	1788	95.1	90	110	0.198	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2010012
Project: A1 Area Landfill-CCR

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_201007A

Sample ID: **ICV-201007**	Batch ID: **R112565**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC2_201007A**	Analysis Date: **10/7/2020 12:09:05 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	24.9	1.00	25.00	0	99.8	90	110			
Fluoride	9.97	0.400	10.00	0	99.7	90	110			
Sulfate	74.4	3.00	75.00	0	99.2	90	110			

Sample ID: **CCV1-201007**	Batch ID: **R112565**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_201007A**	Analysis Date: **10/7/2020 8:13:29 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.74	1.00	10.00	0	97.4	90	110			
Fluoride	4.00	0.400	4.000	0	100	90	110			
Sulfate	28.7	3.00	30.00	0	95.8	90	110			

Sample ID: **CCV2-201007**	Batch ID: **R112565**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_201007A**	Analysis Date: **10/8/2020 12:13:29 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.80	1.00	10.00	0	98.0	90	110			
Fluoride	4.02	0.400	4.000	0	101	90	110			
Sulfate	28.9	3.00	30.00	0	96.2	90	110			

Sample ID: **CCV3-201007**	Batch ID: **R112565**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_201007A**	Analysis Date: **10/8/2020 4:13:29 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.82	1.00	10.00	0	98.2	90	110			
Fluoride	3.99	0.400	4.000	0	99.7	90	110			
Sulfate	28.9	3.00	30.00	0	96.4	90	110			

Sample ID: **CCV4-201007**	Batch ID: **R112565**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_201007A**	Analysis Date: **10/8/2020 6:05:29 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	4.09	0.400	4.000	0	102	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2010012
Project: A1 Area Landfill-CCR

ANALYTICAL QC SUMMARY REPORT

RunID: WC_201002B

The QC data in batch 98074 applies to the following samples: 2010012-01B, 2010012-02B, 2010012-03B, 2010012-04B, 2010012-05B, 2010012-06B, 2010012-07B, 2010012-08B, 2010012-09B

Sample ID: **MB-98074** Batch ID: **98074** TestNo: **M2540C** Units: **mg/L**
SampType: **MBLK** Run ID: **WC_201002B** Analysis Date: **10/2/2020 4:10:00 PM** Prep Date: **10/2/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	<10.0	10.0								

Sample ID: **LCS-98074** Batch ID: **98074** TestNo: **M2540C** Units: **mg/L**
SampType: **LCS** Run ID: **WC_201002B** Analysis Date: **10/2/2020 4:10:00 PM** Prep Date: **10/2/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	714	10.0	745.6	0	95.8	90	113			

Sample ID: **2010006-05C-DUP** Batch ID: **98074** TestNo: **M2540C** Units: **mg/L**
SampType: **DUP** Run ID: **WC_201002B** Analysis Date: **10/2/2020 4:10:00 PM** Prep Date: **10/2/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	21800	1000	0	22600				3.60	5	

Sample ID: **2010006-06C-DUP** Batch ID: **98074** TestNo: **M2540C** Units: **mg/L**
SampType: **DUP** Run ID: **WC_201002B** Analysis Date: **10/2/2020 4:10:00 PM** Prep Date: **10/2/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	33600	1000	0	33500				0.298	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2010012
Project: A1 Area Landfill-CCR

ANALYTICAL QC SUMMARY REPORT

RunID: WC_201005B

The QC data in batch 98098 applies to the following samples: 2010012-10B, 2010012-11B, 2010012-12B, 2010012-13B

Sample ID: **MB-98098**	Batch ID: **98098**	TestNo: **M2540C**	Units: **mg/L**
SampType: **MBLK**	Run ID: **WC_201005B**	Analysis Date: **10/5/2020 4:45:00 PM**	Prep Date: **10/5/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	<10.0	10.0								

Sample ID: **LCS-98098**	Batch ID: **98098**	TestNo: **M2540C**	Units: **mg/L**
SampType: **LCS**	Run ID: **WC_201005B**	Analysis Date: **10/5/2020 4:45:00 PM**	Prep Date: **10/5/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	740	10.0	745.6	0	99.2	90	113			

Sample ID: **2010016-01C-DUP**	Batch ID: **98098**	TestNo: **M2540C**	Units: **mg/L**
SampType: **DUP**	Run ID: **WC_201005B**	Analysis Date: **10/5/2020 4:45:00 PM**	Prep Date: **10/5/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	29100	1000	0	30000				3.05	5	

Sample ID: **2010016-02C-DUP**	Batch ID: **98098**	TestNo: **M2540C**	Units: **mg/L**
SampType: **DUP**	Run ID: **WC_201005B**	Analysis Date: **10/5/2020 4:45:00 PM**	Prep Date: **10/5/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	7200	200	0	7200				0.000	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *27-Oct-20*

CLIENT: Golder
Work Order: 2010012
Project: A1 Area Landfill-CCR

MQL SUMMARY REPORT

TestNo: E300	**MDL**	**MQL**
Analyte	**mg/L**	**mg/L**
Chloride	0.300	1.00
Fluoride	0.100	0.400
Sulfate	1.00	3.00

TestNo: SW6020B	**MDL**	**MQL**
Analyte	**mg/L**	**mg/L**
Arsenic	0.00200	0.00500
Barium	0.00300	0.0100
Beryllium	0.000300	0.00100
Boron	0.0100	0.0300
Cadmium	0.000300	0.00100
Calcium	0.100	0.300
Chromium	0.00200	0.00500
Cobalt	0.00300	0.00500
Lead	0.000300	0.00100
Lithium	0.00500	0.0100
Selenium	0.00200	0.00500

TestNo: M2540C	**MDL**	**MQL**
Analyte	**mg/L**	**mg/L**
Total Dissolved Solids (Residue, Filt	10.0	10.0

Qualifiers: MQL -Method Quantitation Limit as defined by TRRP
MDL -Method Detection Limit as defined by TRRP

Pace Analytical®
National Center for Testing & Innovation

ANALYTICAL REPORT

October 26, 2020

DHL Analytical, Inc.

Sample Delivery Group:	L1270011
Samples Received:	10/06/2020
Project Number:	2010012
Description:	

Report To: John DuPont
2300 Double Creek Drive
Round Rock, TX 78664

Entire Report Reviewed By:

Donna Eidson
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.

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BMW-22 L1270011-01 Non-Potable Water

Collected by | Collected date/time 09/29/20 09:35 | Received date/time 10/06/20 10:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1555292	1	10/12/20 15:20	10/20/20 10:15	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1560269	1	10/16/20 09:02	10/20/20 10:15	JMR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1560269	1	10/16/20 09:02	10/16/20 22:58	RGT	Mt. Juliet, TN

BMW-20 L1270011-02 Non-Potable Water

Collected by | Collected date/time 09/29/20 10:30 | Received date/time 10/06/20 10:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1555292	1	10/12/20 15:20	10/20/20 10:15	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1560269	1	10/16/20 09:02	10/20/20 10:15	JMR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1560269	1	10/16/20 09:02	10/16/20 22:58	RGT	Mt. Juliet, TN

BMW-21 L1270011-03 Non-Potable Water

Collected by | Collected date/time 09/29/20 11:15 | Received date/time 10/06/20 10:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1555292	1	10/12/20 15:20	10/20/20 10:15	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1560269	1	10/16/20 09:02	10/20/20 10:15	JMR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1560269	1	10/16/20 09:02	10/16/20 22:58	RGT	Mt. Juliet, TN

BMW-27 L1270011-04 Non-Potable Water

Collected by | Collected date/time 09/29/20 12:20 | Received date/time 10/06/20 10:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1555292	1	10/12/20 15:20	10/20/20 10:15	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1560269	1	10/16/20 09:02	10/20/20 10:15	JMR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1560269	1	10/16/20 09:02	10/16/20 22:58	RGT	Mt. Juliet, TN

BMW-26 L1270011-05 Non-Potable Water

Collected by | Collected date/time 09/29/20 13:25 | Received date/time 10/06/20 10:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1555292	1	10/12/20 15:20	10/20/20 10:15	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1560269	1	10/16/20 09:02	10/20/20 10:15	JMR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1560269	1	10/16/20 09:02	10/16/20 22:58	RGT	Mt. Juliet, TN

BMW-24 L1270011-06 Non-Potable Water

Collected by | Collected date/time 09/29/20 14:50 | Received date/time 10/06/20 10:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1555292	1	10/12/20 15:20	10/20/20 10:15	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1560269	1	10/16/20 09:02	10/20/20 10:15	JMR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1560269	1	10/16/20 09:02	10/16/20 22:58	RGT	Mt. Juliet, TN

BMW-23 L1270011-07 Non-Potable Water

Collected by | Collected date/time 09/29/20 15:40 | Received date/time 10/06/20 10:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1555292	1	10/12/20 15:20	10/20/20 10:15	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1560269	1	10/16/20 09:02	10/20/20 10:15	JMR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1560269	1	10/16/20 09:02	10/16/20 22:58	RGT	Mt. Juliet, TN

BMW-11AR L1270011-08 Non-Potable Water

Collected by | Collected date/time 09/29/20 16:45 | Received date/time 10/06/20 10:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1555292	1	10/12/20 15:20	10/20/20 10:15	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1560269	1	10/16/20 09:02	10/20/20 10:15	JMR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1560269	1	10/16/20 09:02	10/16/20 22:58	RGT	Mt. Juliet, TN

BMW-19 L1270011-09 Non-Potable Water

Collected by | Collected date/time 09/29/20 17:55 | Received date/time 10/06/20 10:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1555292	1	10/12/20 15:20	10/20/20 10:15	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1560269	1	10/16/20 09:02	10/20/20 10:15	JMR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1560269	1	10/16/20 09:02	10/16/20 22:58	RGT	Mt. Juliet, TN

BMW-18 L1270011-10 Non-Potable Water

Collected by | Collected date/time 09/30/20 07:55 | Received date/time 10/06/20 10:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1555292	1	10/12/20 15:20	10/20/20 10:15	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1560269	1	10/16/20 09:02	10/20/20 10:15	JMR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1560269	1	10/16/20 09:02	10/16/20 22:58	RGT	Mt. Juliet, TN

BMW-28 L1270011-11 Non-Potable Water

Collected by | Collected date/time 09/30/20 09:00 | Received date/time 10/06/20 10:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1555292	1	10/12/20 15:20	10/20/20 10:15	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1560269	1	10/16/20 09:02	10/20/20 10:15	JMR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1560269	1	10/16/20 09:02	10/16/20 22:58	RGT	Mt. Juliet, TN

BMW-33 L1270011-12 Non-Potable Water

Collected by | Collected date/time 09/30/20 10:15 | Received date/time 10/06/20 10:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1555292	1	10/12/20 15:20	10/20/20 10:15	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1560269	1	10/16/20 09:02	10/20/20 10:15	JMR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1560269	1	10/16/20 09:02	10/16/20 22:58	RGT	Mt. Juliet, TN

	Collected by	Collected date/time	Received date/time
DUP-01 L1270011-13 Non-Potable Water		09/30/20 10:15	10/06/20 10:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1555292	1	10/12/20 15:20	10/20/20 10:15	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1560269	1	10/16/20 09:02	10/20/20 10:15	JMR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1560269	1	10/16/20 09:02	10/16/20 22:58	RGT	Mt. Juliet, TN

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Donna Eidson
Project Manager

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	3.13		0.558	0.932	10/20/2020 10:15	WG1555292
(T) Barium	*91.0*			*62.0-143*	*10/20/2020 10:15*	WG1555292
(T) Yttrium	*97.1*			*79.0-136*	*10/20/2020 10:15*	WG1555292

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	3.75		0.881	1.19	10/20/2020 10:15	WG1560269

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.621		0.323	0.256	10/16/2020 22:58	WG1560269
(T) Barium-133	*95.0*			*30.0-143*	*10/16/2020 22:58*	WG1560269

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	1.15		0.548	0.968	10/20/2020 10:15	WG1555292
(T) Barium	*90.3*			*62.0-143*	*10/20/2020 10:15*	WG1555292
(T) Yttrium	*98.4*			*79.0-136*	*10/20/2020 10:15*	WG1555292

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	1.32		0.700	1.14	10/20/2020 10:15	WG1560269

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.163	J	0.152	0.175	10/16/2020 22:58	WG1560269
(T) Barium-133	*99.9*			*30.0-143*	*10/16/2020 22:58*	WG1560269

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	1.48		0.472	0.82	10/20/2020 10:15	WG1555292
(T) Barium	*92.8*			*62.0-143*	*10/20/2020 10:15*	WG1555292
(T) Yttrium	*98.7*			*79.0-136*	*10/20/2020 10:15*	WG1555292

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	2.18		0.805	1.13	10/20/2020 10:15	WG1560269

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.699		0.333	0.307	10/16/2020 22:58	WG1560269
(T) Barium-133	*90.3*			*30.0-143*	*10/16/2020 22:58*	WG1560269

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	-0.339	U	0.591	1.09	10/20/2020 10:15	WG1555292
(T) Barium	*109*			*62.0-143*	*10/20/2020 10:15*	WG1555292
(T) Yttrium	*99.4*			*79.0-136*	*10/20/2020 10:15*	WG1555292

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	0.147	U	0.794	1.39	10/20/2020 10:15	WG1560269

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.147	J	0.203	0.297	10/16/2020 22:58	WG1560269
(T) Barium-133	*88.7*			*30.0-143*	*10/16/2020 22:58*	WG1560269

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	0.161	U	0.590	1.07	10/20/2020 10:15	WG1555292
(T) Barium	*106*			*62.0-143*	*10/20/2020 10:15*	WG1555292
(T) Yttrium	*101*			*79.0-136*	*10/20/2020 10:15*	WG1555292

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	0.395	U	0.848	1.42	10/20/2020 10:15	WG1560269

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.234	J	0.258	0.348	10/16/2020 22:58	WG1560269
(T) Barium-133	*98.7*			*30.0-143*	*10/16/2020 22:58*	WG1560269

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	0.892	J	0.678	1.21	10/20/2020 10:15	WG1555292
(T) Barium	*99.8*			*62.0-143*	*10/20/2020 10:15*	WG1555292
(T) Yttrium	*98.1*			*79.0-136*	*10/20/2020 10:15*	WG1555292

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	2.14		1.11	1.39	10/20/2020 10:15	WG1560269

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	1.24		0.435	0.18	10/16/2020 22:58	WG1560269
(T) Barium-133	*89.2*			*30.0-143*	*10/16/2020 22:58*	WG1560269

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	0.000	U	0.598	1.09	10/20/2020 10:15	WG1555292
(T) Barium	*96.3*			*62.0-143*	*10/20/2020 10:15*	WG1555292
(T) Yttrium	*102*			*79.0-136*	*10/20/2020 10:15*	WG1555292

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	0.687	J	0.922	1.31	10/20/2020 10:15	WG1560269

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.687		0.324	0.216	10/16/2020 22:58	WG1560269
(T) Barium-133	*89.2*			*30.0-143*	*10/16/2020 22:58*	WG1560269

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	1.59		0.569	0.993	10/20/2020 10:15	WG1555292
(T) Barium	*90.8*			*62.0-143*	*10/20/2020 10:15*	WG1555292
(T) Yttrium	*107*			*79.0-136*	*10/20/2020 10:15*	WG1555292

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	1.80		0.754	1.19	10/20/2020 10:15	WG1560269

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.209		0.185	0.197	10/16/2020 22:58	WG1560269
(T) Barium-133	*94.6*			*30.0-143*	*10/16/2020 22:58*	WG1560269

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	1.02	J	0.602	1.07	10/20/2020 10:15	WG1555292
(T) Barium	*106*			*62.0-143*	*10/20/2020 10:15*	WG1555292
(T) Yttrium	*102*			*79.0-136*	*10/20/2020 10:15*	WG1555292

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	1.02	J	0.707	1.38	10/20/2020 10:15	WG1560269

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	-0.0717	U	0.105	0.312	10/16/2020 22:58	WG1560269
(T) Barium-133	*99.4*			*30.0-143*	*10/16/2020 22:58*	WG1560269

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	-0.338	U	0.500	0.927	10/20/2020 10:15	WG1555292
(T) Barium	*99.9*			*62.0-143*	*10/20/2020 10:15*	WG1555292
(T) Yttrium	*104*			*79.0-136*	*10/20/2020 10:15*	WG1555292

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	0.0836	U	0.664	1.2	10/20/2020 10:15	WG1560269

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.0836	U	0.164	0.276	10/16/2020 22:58	WG1560269
(T) Barium-133	*94.6*			*30.0-143*	*10/16/2020 22:58*	WG1560269

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	2.53		0.568	0.964	10/20/2020 10:15	WG1555292
(T) Barium	*93.4*			*62.0-143*	*10/20/2020 10:15*	WG1555292
(T) Yttrium	*111*			*79.0-136*	*10/20/2020 10:15*	WG1555292

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	2.76		0.790	1.24	10/20/2020 10:15	WG1560269

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.229	J	0.222	0.275	10/16/2020 22:58	WG1560269
(T) Barium-133	*104*			*30.0-143*	*10/16/2020 22:58*	WG1560269

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	0.419	U	0.556	0.999	10/20/2020 10:15	WG1555292
(T) Barium	*93.8*			*62.0-143*	*10/20/2020 10:15*	WG1555292
(T) Yttrium	*104*			*79.0-136*	*10/20/2020 10:15*	WG1555292

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	0.656	J	0.793	1.31	10/20/2020 10:15	WG1560269

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.237	J	0.237	0.308	10/16/2020 22:58	WG1560269
(T) Barium-133	*102*			*30.0-143*	*10/16/2020 22:58*	WG1560269

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	1.82		0.501	0.86	10/20/2020 10:15	WG1555292
(T) Barium	*96.4*			*62.0-143*	*10/20/2020 10:15*	WG1555292
(T) Yttrium	*98.4*			*79.0-136*	*10/20/2020 10:15*	WG1555292

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	2.35		0.815	1.13	10/20/2020 10:15	WG1560269

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.537		0.314	0.273	10/16/2020 22:58	WG1560269
(T) Barium-133	*102*			*30.0-143*	*10/16/2020 22:58*	WG1560269

Method Blank (MB)

(MB) R3584340-1 10/19/20 10:10

Analyte	MB Result pCi/l	MB Qualifier	MB MDA pCi/l
Radium-228	-0.149	U	0.546
(T) Barium	*96.9*		
(T) Yttrium	*99.0*		

L1266027-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1266027-01 10/19/20 10:10 • (DUP) R3584340-5 10/19/20 10:10

Analyte	Original Result pCi/l	DUP Result pCi/l	Dilution	DUP RPD %	DUP RER	DUP Qualifier	DUP RPD Limits %	DUP RER Limit
Radium-228	0.0892	-0.0640	1	200	0.231	U	20	3
(T) Barium	*92.9*	*94.7*						
(T) Yttrium	*103*	*103*						

Laboratory Control Sample (LCS)

(LCS) R3584340-2 10/19/20 10:10

Analyte	Spike Amount pCi/l	LCS Result pCi/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Radium-228	5.00	5.09	102	80.0-120	
(T) Barium			*95.7*		
(T) Yttrium			*101*		

L1268048-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1268048-01 10/19/20 10:10 • (MS) R3584340-3 10/19/20 10:10 • (MSD) R3584340-4 10/19/20 10:10

Analyte	Spike Amount pCi/l	Original Result pCi/l	MS Result pCi/l	MSD Result pCi/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	MS RER	RPD Limits %
Radium-228	10.0	0.587	11.3	9.86	107	92.7	1	70.0-130			13.5		20
(T) Barium		*95.1*			*91.6*	*96.2*							
(T) Yttrium		*108*			*101*	*103*							

Method Blank (MB)

(MB) R3583496-1 10/16/20 22:58

Analyte	MB Result pCi/l	MB Qualifier	MB MDA pCi/l
Radium-226	0.00898	U	0.0593
(T) Barium-133	*95.9*		

L1270011-13 Original Sample (OS) • Duplicate (DUP)

(OS) L1270011-13 10/16/20 22:58 • (DUP) R3583496-5 10/16/20 22:58

Analyte	Original Result pCi/l	DUP Result pCi/l	Dilution	DUP RPD %	DUP RER	DUP Qualifier	DUP RPD Limits %	DUP RER Limit
Radium-226	0.537	0.301	1	56.4	0.596		20	3
(T) Barium-133	*102*	*95.4*						

Laboratory Control Sample (LCS)

(LCS) R3583496-2 10/16/20 22:58

Analyte	Spike Amount pCi/l	LCS Result pCi/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Radium-226	5.02	5.36	107	80.0-120	
(T) Barium-133			*98.4*		

L1270011-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1270011-04 10/16/20 22:58 • (MS) R3583496-3 10/16/20 22:58 • (MSD) R3583496-4 10/16/20 22:58

Analyte	Spike Amount pCi/l	Original Result pCi/l	MS Result pCi/l	MSD Result pCi/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	MS RER	RPD Limits %
Radium-226	20.1	0.147	20.4	19.9	101	98.3	1	75.0-125			2.48		20
(T) Barium-133		*88.7*			*96.0*	*99.6*							

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDA	Minimum Detectable Activity.
Rec.	Recovery.
RER	Replicate Error Ratio.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(T)	Tracer - A radioisotope of known concentration added to a solution of chemically equivalent radioisotopes at a known concentration to assist in monitoring the yield of the chemical separation.
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
J	The identification of the analyte is acceptable; the reported value is an estimate.
U	Below Detectable Limits: Indicates that the analyte was not detected.

Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.
* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

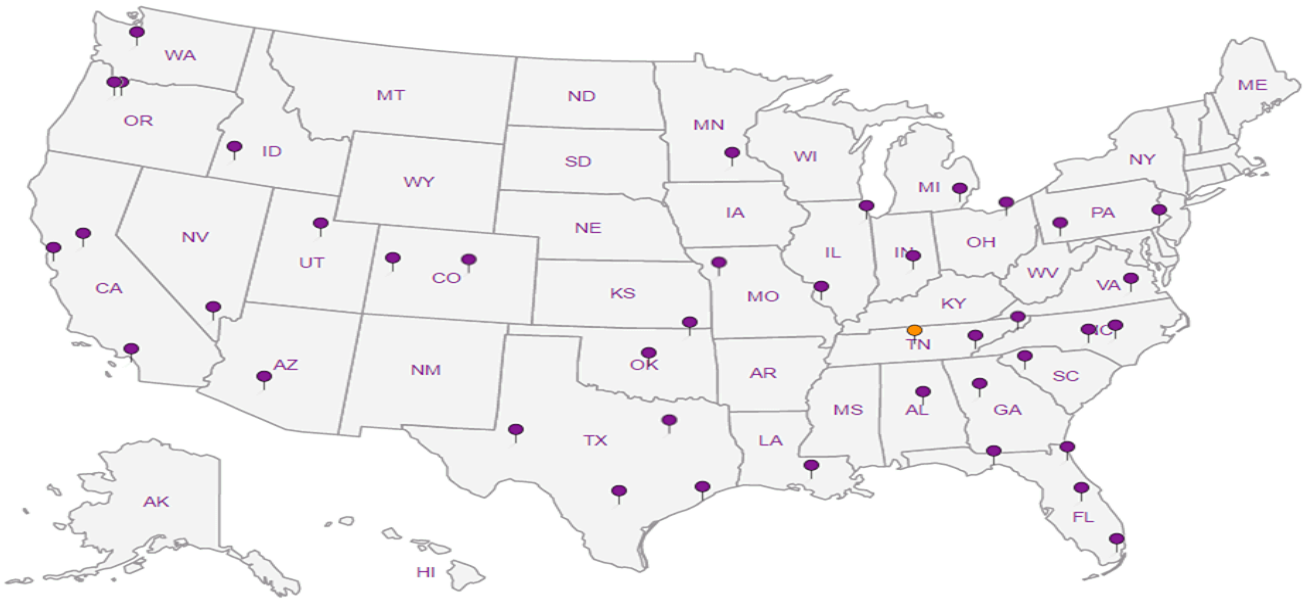
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



DHL Analytical, Inc.
2300 Double Creek Drive
Round Rock, TX 78664
TEL: (512) 388-8222 FAX: (512) 388-8229

Work Order: 2010012

CHAIN-OF-CUSTODY RECORD

WS 1270011

G035

Subcontractor:
Pace Analytical
12065 Lebanon Rd
Mt. Juliet, TN 37122

TEL: (615) 773-5923
FAX:
Acct #: DHLRRTX

Sample Receipt Checklist

COC Seal Present/Intact:	Y N	If Applicable	
COC Signed/Accurate:	Y N	VOA Zero Headspace:	Y N
Bottles arrive intact:	Y N	Pres.Correct/Check:	Y N
Correct bottles used:	Y N		
Sufficient volume sent:	Y N		
RAD Screen <0.5 mR/hr:	Y N		

02-Oct-20

Sample ID	Matrix	DHL#	Date Collected	Bottle Type	Requested Tests					
					Ra-228	Ra-226				
					E904.0	M7500 Ra B M				
BMW-22	Aqueous	01C	09/29/20 09:35 AM	1LHDPEHNO3	1					-01
BMW-22	Aqueous	01D	09/29/20 09:35 AM	1LHDPEHNO3		1				1
BMW-20	Aqueous	02C	09/29/20 10:30 AM	1LHDPEHNO3	1					02
BMW-20	Aqueous	02D	09/29/20 10:30 AM	1LHDPEHNO3		1				1
BMW-21	Aqueous	03C	09/29/20 11:15 AM	1LHDPEHNO3	1					03
BMW-21	Aqueous	03D	09/29/20 11:15 AM	1LHDPEHNO3		1				1
BMW-27	Aqueous	04C	09/29/20 12:20 PM	1LHDPEHNO3	1					04
BMW-27	Aqueous	04D	09/29/20 12:20 PM	1LHDPEHNO3		1				1
BMW-26	Aqueous	05C	09/29/20 01:25 PM	1LHDPEHNO3	1					05
BMW-26	Aqueous	05D	09/29/20 01:25 PM	1LHDPEHNO3		1				1
BMW-24	Aqueous	06C	09/29/20 02:50 PM	1LHDPEHNO3	1					06
BMW-24	Aqueous	06D	09/29/20 02:50 PM	1LHDPEHNO3		1				1
BMW-23	Aqueous	07C	09/29/20 03:40 PM	1LHDPEHNO3	1					07
BMW-23	Aqueous	07D	09/29/20 03:40 PM	1LHDPEHNO3		1				1
BMW-11AR	Aqueous	08C	09/29/20 04:45 PM	1LHDPEHNO3	1					08
BMW-11AR	Aqueous	08D	09/29/20 04:45 PM	1LHDPEHNO3		1				1
BMW-19	Aqueous	09C	09/29/20 05:55 PM	1LHDPEHNO3	1					09

General Comments:

Please analyze these samples with Normal Turnaround Time.
Report RA-226, Ra-228 & Combined per Specs.
Quality Control Package Needed: Standard - NELAC Rad Test compliant
Email to cac@dhlanalytical.com & dupont@dhlanalytical.com

		Date/Time			Date/Time
Relinquished by:	Ec	10/2/20 1700	Received by:	Carol Kemp CK	10/6/20 10:30
Relinquished by:			Received by:		

12 70041

DHL Analytical, Inc.
2300 Double Creek Drive
Round Rock, TX 78664
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CHAIN-OF-CUSTODY RECORD

Work Order: 2010012

Subcontractor:

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12065 Lebanon Rd
Mt. Juliet, TN 37122

TEL: (615) 773-5923
FAX:
Acct #: DHLRRTX

02-Oct-20

Sample ID	Matrix	DHL#	Date Collected	Bottle Type	Requested Tests					
					Ra-228 E904.0	Ra-226 M7500 Ra B M				
BMW-19	Aqueous	09D	09/29/20 05:55 PM	1LHDPEHNO3		1				09
BMW-18	Aqueous	10C	09/30/20 07:55 AM	1LHDPEHNO3	1					10
BMW-18	Aqueous	10D	09/30/20 07:55 AM	1LHDPEHNO3		1				1
BMW-28	Aqueous	11C	09/30/20 09:00 AM	1LHDPEHNO3	1					11
BMW-28	Aqueous	11D	09/30/20 09:00 AM	1LHDPEHNO3		1				1
BMW-33	Aqueous	12C	09/30/20 10:15 AM	1LHDPEHNO3	1					12
BMW-33	Aqueous	12D	09/30/20 10:15 AM	1LHDPEHNO3		1				1
DUP-01	Aqueous	13C	09/30/20 10:15 AM	1LHDPEHNO3	1					13
DUP-01	Aqueous	13D	09/30/20 10:15 AM	1LHDPEHNO3		1				1

General Comments:

Please analyze these samples with Normal Turnaround Time.
Report RA-226, Ra-228 & Combined per Specs.
Quality Control Package Needed: Standard - NELAC Rad Test compliant
Email to cac@dhlanalytical.com & dupont@dhlanalytical.com

		Date/Time			Date/Time
Relinquished by:	E—	10/2/20 1700	**Received by:**	Carol Kemp	10/6/20 10:30
Relinquished by:			**Received by:**		

APPENDIX B

Groundwater Modeling Notes

A1 AREA LANDFILL GROUNDWATER MODEL NOTES

By: William Vienne, Golder

Date: July 2020

Objective: Create a groundwater model using Visual Modflow to setup steady-state hydrogeological conditions for use in PHREEQC geochemical model.

Units

length:	feet	pumping rate:	gal/min
time:	day	recharge:	in/year
concentration:	mg/L	mass:	kg
conductivity:	cm/s		

Default Parameters

Kx:	3.05E-4 cm/s	(From slug test data in PBW (2017)	Sy:	0.22	(assumed based on typical sand value)
Ky:	3.05E-4 cm/s		eff. Porosity:	0.25	(assumed based on typical sand value)
Kz:	3.05E-5 cm/s		tot. porosity:	0.40	(assumed based on typical sand value)
Ss:	2.3E-4 ft^{-1}	(assumed based on typical sand value)	SS simulation time :	1 day	
			No recharge or evapotranspiration		

Base Map

Base map: May 2019 groundwater potentiometric surface map

Two-point georefence:

Georeference Points	Georeferenced Coordinates	Coordinate System
BMW-29	E3194121/N6785743	Texas State Plane, North Central Zone, NAD 83
BMW-33	E3202513/N6790816	

Model Setup

Grid

Model origin:	0, 0	
Model max:	14000, 14000	
Columns	Rows	
70	70	(200-ft grid cells)

Layers

A1 Area Landfill is completed in and surrounded by previously mined spoil, modeled as a 1-layer model that assumes the landfill and surrounding mine spoil have similar hydraulic properties.

Layer 1: Landfill and adjacent mine spoil

- Landfill extent based on aerial photo showing landfill boundary. Landfill depth of 350 ft amsl approximated from base elevations shown on Expansion Area construction drawings (used in geochem model).
- Base of layer set to 285 feet amsl (average base of spoil in monitoring well borings).
- Generated ground surface elevation grid using well ground surface elevations and planned max landfill cap elevation of 505 feet in center of landfill. Imported excel file with model coordinates and elevations. Used Natural Neighbor function for interpolation.
- K of landfill and mine spoil surrounding landfill set to default values based on slug tests: Kxy =3.05E-4 cm/s; Kz = 3.05E-5 cm/s

Boundary Conditions

- Constant head boundaries created gw gradient similar to that shown on May 2019 pot map, with groundwater generally flowing from the north toward the west, south, and east sides of the landfill. Used linear gradient boundaries.

Calibration

Model vs.Observed Head in CCR wells (Septemeber 2019):

Residual Mean: -1.117 ft
Standard Error of the Estimate: 3.454 ft
Correlation Coefficient: 0.812

Deliverables for PHREEQC Model

1. VMOD head files (x, y, z, and head)
2. Surface elevation grid
3. Shapefile showing landfill outline

References

Pastor, Behling & Wheeler, LLC (PBW), 2017. Coal Combustion Residual Rule Groundwater Monitoring System Certification, Martin Lake Steam Electric Station – A1 Area.

APPENDIX C

Geochemical Modeling Saturation Indices

APPENDIX C
GEOCHEMICAL MODELING
RELEVANT MINERAL PHASES - Saturation Indices
MARTIN LAKE A1 AREA LANDFILL

MINERAL PHASES - Saturation Indices		BMW-11AR	BMW-18	BMW-19	BMW-20	BMW-21	BMW-22	BMW-23	BMW-24	BMW-25	BMW-26	BMW-27	BMW-28	BMW-29	BMW-30	BMW-31	BMW-32	BMW-33	S-1
Ferrihydrite	$Fe(OH)_3$	**2.78**	**2.59**	**3.24**	**4.59**	**3.34**	**3.85**	**3.60**	**4.31**	**2.49**	**2.29**	**2.19**	**2.55**	**2.30**	**2.89**	**2.63**	**4.68**	**2.67**	**3.82**
Siderite	$FeCO_3$	-1.07	-1.87	-2.27	**0.81**	-1.74	**-0.20**	**-0.03**	**0.13**	-1.89	-1.82	-2.04	-1.95	-1.74	-1.94	-2.03	**0.33**	-1.81	-0.62
Melanterite	FeSO4:7H2O	-6.23	-7.29	-6.72	-3.73	-7.12	-4.89	-4.92	-4.67	-6.84	-6.97	-7.00	-6.76	-6.85	-6.88	-6.94	-4.79	-7.17	-4.48
Gypsum	$CaSO_4:2H_2O$	-1.13	-2.45	**-0.15**	-0.73	-1.00	-0.66	-1.08	-1.39	-0.87	-0.68	-0.78	**-0.41**	-0.75	-0.97	-1.10	-1.15	-1.28	**-0.14**
Calcite	$CaCO_3$	**-0.10**	-1.16	**0.17**	**-0.31**	**0.25**	**-0.10**	**-0.33**	-0.72	**-0.04**	**0.35**	**0.05**	**0.26**	**0.23**	**-0.15**	**-0.32**	**-0.16**	**-0.06**	**-0.40**
Magnesite	$MgCO_3$	-1.51	-2.55	-0.84	-1.17	-0.57	-0.96	-1.12	-1.51	-1.07	-0.66	-0.96	-0.65	-0.80	-1.24	-1.40	-1.02	-1.02	-1.78
Barite	$BaSO_4$	**0.50**	**-0.01**	**0.30**	**0.75**	**0.35**	**0.82**	**0.45**	**1.09**		**0.36**	**0.26**	**0.65**		**0.76**			**1.07**	**0.45**
Witherite	$BaCO_3$	-3.75	-4.01	-4.67	-4.12	-3.69	-3.92	-4.09	-3.53		-3.90	-4.21	-3.97		-3.71			-2.99	-5.10
Fluorite	CaF_2	-3.22		-3.02	-3.20	-3.24	-3.19	-3.34	-3.15	-3.25	-3.07	-3.10	-3.19	-3.19	-3.20	-3.22	-1.75		-1.56
CoCO3	$CoCO_3$	-3.34	-3.45	-3.80	-2.32	-3.36	-3.74	-3.69	-3.27		-3.43	-3.65	-3.52				-3.18	-2.82	-3.33
Carbon Dioxide	$pCO_{2(g)}$ (b)	-1.17	-1.38	-1.09	-1.43	-0.99	-1.03	-0.91	-1.39	-0.99	-0.84	-0.68	-1.01	-1.07	-1.40	-1.41	-1.32	-0.98	-1.39

Notes:

Saturation indices >-0.5 identified by red bold type and grey shading

(b) pCO2(g) values presented at 10^value atm

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APPENDIX C

Tier IV Monitored Natural Attenuation Performance Monitoring Plan

REPORT

Tier IV MNA Performance Monitoring Plan

Martin Lake Steam Electric Station - A1 Area Landfill
Panola County, Texas

Submitted to:

Luminant Generation Company LLC

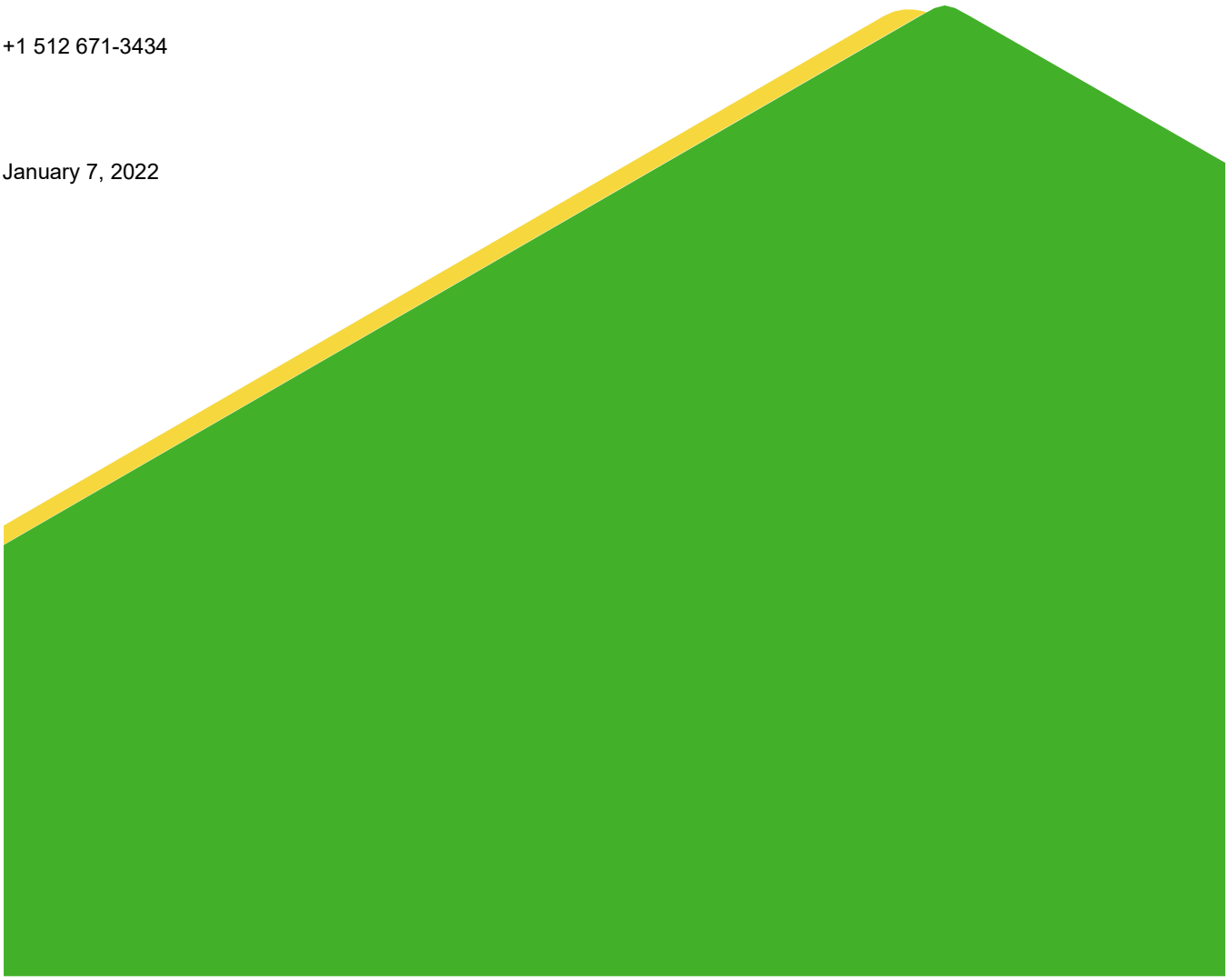
Submitted by:

Golder Associates Inc.

2201 Double Creek Dr, Suite 4004, Round Rock, Texas, USA 78664

+1 512 671-3434

January 7, 2022



Distribution List

Renee Collins, Luminant

David Mitchell, Luminant

Eric Chavers, Luminant

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Figure 1 Detailed Site Plan

1.0 INTRODUCTION

On behalf of Luminant Generation Company LLC (Luminant), Golder Associates, Inc. (Golder), Member of WSP, has prepared this Tier IV Monitored Natural Attenuation (MNA) Performance Monitoring Plan for the A1 Area Landfill located at the Beckville Lignite Mine in Panola County, Texas (hereafter, the "Site"). Luminant manages coal combustion residuals (CCR) generated from the Martin Lake Steam Electric Station (MLSES) in the A1 Area Landfill per the applicable requirements of 40 Code of Federal Regulations (CFR) Part 257 Subpart D as amended (CCR Final Rule).

The initial assessment monitoring event was performed at the Site in 2018 in accordance with §257.95(a) and §257.95(d). The Appendix IV data collected during the assessment monitoring period through September 2018 identified statistically significant levels (SSLs) above groundwater protective standards (GWPSs) for arsenic, barium, cobalt, and lithium. Based on the statistical analysis of Appendix IV groundwater data collected through 2021, which was performed in compliance with the United States Environmental Protection Agency (USEPA) Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities-Unified Guidance (USEPA 2009), arsenic, barium, cobalt, and lithium are the Appendix IV constituents that have been detected in groundwater at the Site at SSLs above GWPSs. In response to the SSLs identified in 2018, an Assessment of Corrective Measures (ACM) Report was completed for the A1 Area Landfill in September 2019 as required by 40 CFR § 257.96 (Golder 2019a). Although cobalt is the only Appendix IV constituent currently identified at SSLs above GWPSs (in wells BMW-20 and BMW-27), the ACM evaluated arsenic, barium, cobalt, and lithium based on the SSLs initially identified in 2018.

As documented in the Remedy Selection Report for the A1 Area Landfill (Golder 2021a), MNA in conjunction with source control measures was selected as the remedy to address arsenic, barium, cobalt, and lithium SSLs at the Site. MNA refers to the reliance on natural attenuation processes (within the context of a carefully controlled and monitored approach) to achieve site-specific groundwater remediation objectives. MNA relies on a range of natural processes, including sorption, (co)precipitation, radioactive decay, dispersion, dilution, and abiotic degradation/transformation to achieve remediation objectives. A Tier I MNA evaluation report was completed in December 2019 (Golder 2019b) and a Tier II/III MNA evaluation report was completed in June 2021 (Golder 2021b). Based on the results of these MNA evaluations, the following was concluded regarding arsenic, barium, cobalt, and lithium:

- Physical and chemical attenuation of arsenic, barium, cobalt, and lithium is occurring at the Site. Concentrations of these constituents in groundwater are stable or decreasing and the aquifer has adequate capacity to attenuate these constituents in a reasonable timeframe. Geochemical modeling indicates that attenuation will be efficient and stable in the long term. Therefore, MNA with source control measures is considered an effective corrective measure for the Site.

The purpose of this Tier IV MNA Performance and Monitoring Plan is to describe the groundwater monitoring network, sampling and analysis methods, procedures for assessing long-term MNA effectiveness, and reporting for the MNA monitoring program.

2.0 SITE SETTING

The A1 Area Landfill is located at the Beckville Lignite Mine, approximately 2.5 miles southeast of the MLSES in Panola County, Texas (**Figure 1**). The A1 Area Landfill is an above grade landfill that is considered an existing CCR Landfill under the CCR Rule. CCR is transported to the landfill in rail cars, off loaded and placed within the

active areas at the landfill. The MLSES is expected to remain in operation for the foreseeable future, depending on future power demands.

2.1 Site Hydrogeology and CCR Monitoring Well Network

The Site lies in the outcrop area of the Eocene-aged Wilcox Group (Barnes 1970). The Wilcox Group in the vicinity of the Site consists mostly of unconsolidated to moderately consolidated clay and silt, with various amounts of interbedded sand and lignite. The Wilcox Group is overlain by sands of the Carrizo Formation at higher elevations in the area; however, the Carrizo Formation is not present at the Site. The A1 Area Landfill is located within reclaimed areas of the former Beckville Lignite Mine (a subsection of the Martin Lake Lignite Mine). The inferred direction of groundwater flow is to the east-southeast and west from the A1 Area Landfill, with a lesser flow component to the south (PBW, 2017).

The CCR groundwater monitoring well network at the A1 Area Landfill was established in 2015 and consists of monitoring wells BMW-11A-R, BMW-18, BMW-19, BMW-20, BMW-21, BMW-22, BMW-23, BMW-24, BMW-26, BMW-27, BMW-28, and BMW-33. The uppermost groundwater-bearing unit (GWBU) occurs under unconfined conditions within the previously mined spoil zone above native Wilcox material.

3.0 CCR GROUNDWATER SAMPLING AND ANALYSIS PROGRAM

The CCR Rule establishes groundwater sampling and analysis criteria that are designed to create consistency and ensure that monitoring results provide accurate representations of groundwater quality at the CCR groundwater monitoring wells. The groundwater monitoring program at the A1 Area Landfill consists of a combination of detection monitoring of Appendix III constituents in accordance with 40 CFR §257.94 and assessment monitoring of Appendix IV constituents in accordance with 40 CFR §257.95. The current CCR groundwater monitoring program includes the sampling and analysis of arsenic, barium, cobalt, and lithium (Appendix IV constituents) and satisfies the sampling and analysis requirements of the MNA monitoring program.

4.0 MNA MONITORING PROGRAM

Routine groundwater monitoring is required to verify that the MNA component of the selected Site remedy is achieving the site-specific groundwater remediation objectives. The MNA monitoring well network will include all of the CCR monitoring wells listed in Section 2.1 and shown on **Figure 1**. The assessment monitoring program groundwater samples, which are collected semi-annually, will be used to assess the effectiveness of the MNA remedy in addressing SSLs at the Site.

4.1 MNA Groundwater Sampling Procedures

This section describes groundwater sampling and analysis procedures to comply with the requirements of 40 CFR §257.90 - §257.95 of the CCR Rule and to additionally satisfy requirements of the MNA monitoring program.

4.1.1 General Groundwater Sampling Procedures

Prior to collecting groundwater samples, each well is inspected for signs of damage to the well protective casing and well pad. Each field instrument is calibrated according to the manufacturer's instructions prior to use. Special care should be exercised to prevent contamination of the groundwater and extracted samples during the sampling activities. The primary way in which such contamination can occur is contact with improperly cleaned equipment. To prevent such contamination, all non-dedicated sampling equipment is thoroughly cleaned before and between uses at different sampling locations.

4.1.2 Groundwater Level Measurements

Groundwater levels are measured prior to purging the wells. Using a pre-cleaned water level meter, the groundwater surface is measured from the casing datum to the nearest 0.01-foot. Total depth measurements are also collected periodically to assess potential occlusion of the well screens.

4.1.3 Well Purging and Sampling

Well purging and sampling are conducted using either a submersible pump, peristaltic pump, or other similar device in accordance with standard low-flow sampling procedures. The sampler withdraws water in a manner that minimizes stress (drawdown) to the system to the extent practicable. When the pump intake is located within the screened interval, the water pumped is drawn in directly from the formation with little mixing of casing water or disturbance to the sampling zone. Thus, sample results are more representative of the constituents present in the groundwater than when pumping at higher rates.

Purging rates during sample collection are generally performed at 0.5 liters per minute (L/min) or less. Field parameters (pH, temperature, conductivity, turbidity, dissolved oxygen (DO), and oxidation-reduction potential (ORP)) are measured to evaluate when the well is adequately purged. pH, DO, and ORP are also considered key MNA parameters important for evaluating geochemical conditions in the GWBU. Turbidity in the samples should be minimized as much as possible by using minimal pumping rates, dedicated equipment whenever possible, and positioning the intake for the sample tubing or submersible pump off of the bottom of the well.

At least three field measurements should be taken during the course of purging the well. If the parameters have not stabilized at that time, field measurements and purging will continue until two consecutive readings have stabilized to within the following limits:

- Temperature: +/-1° C
- pH: +/-0.1 pH units
- Conductivity: +/-10%
- Turbidity: +/- 10%
- Dissolved oxygen: +/- 10%
- Oxidation-reduction potential: +/- 10%

Sample extraction is accomplished by using the pump that was previously used to purge the well. The sample bottle is filled directly from the pump line. The pumping rate and parameter measurements are recorded on groundwater sampling forms in the field. If a well goes dry during purging, sampling is performed after the well has sufficiently recharged to allow sample collection. Groundwater samples are not filtered in the field prior to collection in accordance with Section 257.93(i) of the CCR Rule.

4.1.4 Chain-of-Custody Control

Samples are collected in laboratory-supplied containers and chain-of-custody procedures are followed to establish a written record concerning sample movement between the sampling site and the testing laboratory. Each shipping container has a chain-of-custody form completed by the sampling personnel packing the samples. The chain-of-custody form for each container is completed and sealed in the shipping container.

4.2 MNA Analytical Procedures

The laboratory analytical methods are appropriate and commonly utilized U.S. Environmental Protection Agency (EPA) methodologies, or other similar standard methodologies. Typical methodologies used to analyze the MNA constituents are presented below:

- Arsenic, barium, cobalt, and lithium by EPA Method SW6010/6020 (evaluated during each MNA sampling event).
- General geochemical parameters (evaluated periodically):
  - Major cations: calcium, magnesium, potassium, and sodium by EPA Method SW6010/6020;
  - Major anions: chloride and sulfate by Standard Method E300; and
  - Alkalinity (bicarbonate, carbonate, hydroxide, and total) by Standard Method M2320.

4.3 MNA Data Assessment

The MNA monitoring program is a long-term performance monitoring program designed to confirm concentration reductions and document trends due to attenuation mechanisms. The MNA program will assess the effectiveness of the remedy by:

- Evaluating whether arsenic, barium, cobalt, and lithium concentrations are present in groundwater at SSLs above the GWPSs;
- Evaluating long-term trends in arsenic, barium, cobalt, and lithium concentrations in CCR wells where SSLs have been identified to demonstrate that the groundwater plume is stable or decreasing and not expanding; and
- Evaluating geochemical parameters measured in the field (e.g., pH, DO, and ORP) during each sampling event and collecting periodic general geochemistry sample data to assess changes to the general geochemical conditions of the aquifer.

Per 40 CFR §257.98(c), the selected remedy will be considered complete when: (1) The owner or operator of the CCR unit demonstrates compliance with the GWPS established under 40 CFR § 257.95(h) has been achieved at all points within the plume of contamination that lie beyond the groundwater monitoring well system established under 40 CFR § 257.91, (2) Compliance with the GWPS established under 40 CFR § 257.95(h) has been achieved by demonstrating that concentrations of constituents listed in appendix IV to this part have not exceeded the GWPSs for a period of three consecutive years using the statistical procedures and performance standards in 40 CFR § 257.93(f) and (g), and (3) All actions required to complete the remedy have been satisfied.

4.4 Reporting

A summary of the MNA data assessment will be included in the *Annual Groundwater Monitoring and Corrective Action Report* each year. The report will: 1) confirm whether the groundwater plume is stable, shrinking, or expanding; 2) contain data summaries including Appendix III and Appendix IV constituent concentrations and geochemical data summaries, and 3) evaluate the general effectiveness of attenuation processes with trend analysis and other statistical evaluations of the data, as appropriate.

5.0 REFERENCES

Barnes, Virgil E., 1970. Geologic Atlas of Texas, Waco Sheet. Texas Bureau of Economic Geology.

Golder, 2019a. CCR Assessment of Corrective Measures, A1 Area Landfill, Panola County, Texas. September.

Golder. 2019b. Tier I MNA Evaluation, Martin Lake Steam Electric Station – Martin Lake Steam Electric Station – A1 Area Landfill, Panola County, Texas. December.

Golder, 2021a. Remedy Selection Report, A1 Area Landfill, Panola County, Texas. September.

Golder. 2021b. Tier II and III MNA Evaluation, Martin Lake Steam Electric Station – Martin Lake Steam Electric Station – A1 Area Landfill, Panola County, Texas. June.

Pastor, Behling & Wheeler, LLC (PBW), 2017. Coal Combustion Residual Rule Groundwater Monitoring System Certification, Martin Lake Steam Electric Station, A1 Area Landfill, Panola County, Texas. October.

USEPA, 2009. Unified Guidance Document: Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, EPA 530-R-09-007, March 2009.

Signature Page

Golder Associates Inc.

Roberta Russell
Senior Geologist

William Vienne
Senior Consulting Hydrogeologist

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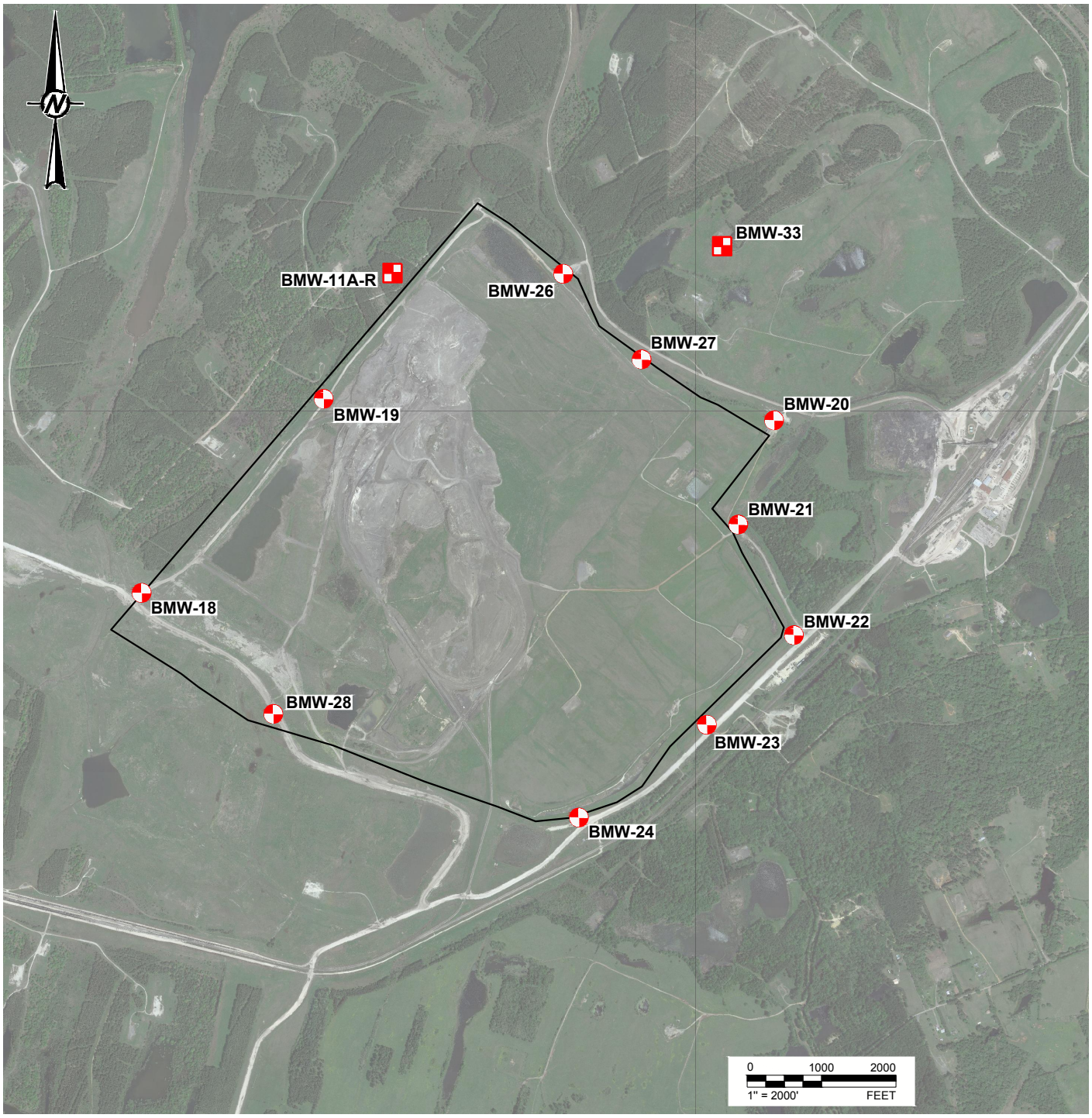
https://golderassociates.sharepoint.com/sites/127388/project files/5 technical work/3000-a1 area landfill/tier iv and remedy selection/tier iv mon plan/a1 lf tier iv mon plan.docx



LEGEND

- DOWNGRADIENT CCR MONITORING WELL
- UPGRADIENT CCR MONITORING WELL

REFERENCE(S)

BASE MAP TAKEN FROM GOOGLE EARTH IMAGERY DATED 4/6/17.

CLIENT
LUMINANT

PROJECT
MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

TITLE
DETAILED SITE PLAN - A1 AREA LANDFILL

CONSULTANT
GOLDER

YYYY-MM-DD	2021-01-11
DESIGNED	AJD
PREPARED	AJD
REVIEWED	WFV
APPROVED	WFV

PROJECT NO.	CONTROL	REV.	FIGURE
19134019		0	1

Last Edited By: adiamond Date: 2021-01-11 Time:10:21:51 AM | Printed By: adiamond Date: 2021-01-11 Time:10:23:01 AM
Path: \\texarkanadata\Projects - Round Rock_2019\19122262 - Luminant\D - MLSES\2020 CCR GWMR\ | File Name: FIG 1 - Detailed Site Plan (A1 Area Landfill).dwg
IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI A

golder.com

Remedy Selection Report

Martin Lake Steam Electric Station - Ash Pond Area

Rusk County, Texas

Submitted to:

Luminant Generation Company LLC

Submitted by:

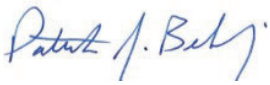
Golder Associates Inc.
2201 Double Creek Dr, Suite 4004, Round Rock, Texas, USA 78664

+1 512 671-3434

January 18, 2022

PROFESSIONAL CERTIFICATION

This document and all attachments were prepared by Golder Associates Inc. under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I hereby certify that this Remedy Selection Report meets the requirements of 40 C.F.R. § 257.97 and 30 TAC §352.971.



Patrick J. Behling, P.E.

Principal Engineer

Golder Associates Inc.

Distribution List

Renee Collins, Luminant

David Mitchell, Luminant

Eric Chavers, Luminant

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Figure 1 Detailed Site Plan

APPENDICES

Appendix A Tier I Monitored Natural Attenuation Evaluation

Appendix B Tier II and Tier III Monitored Natural Attenuation Evaluation

Appendix C Tier IV Monitored Natural Attenuation Performance Monitoring Plan

1.0 INTRODUCTION

On behalf of Luminant Generation Company LLC (Luminant), Golder Associates Inc. (Golder), Member of WSP, has prepared this Remedy Selection Report for the West Ash Pond (WAP), East Ash Pond (EAP), and New Scrubber Pond (NSP) (collectively referred to as the "Ash Pond Area") located at the Martin Lake Steam Electric Station (MLSES) in Rusk County, Texas (hereafter, the "Site") (**Figure 1)**. Luminant manages coal combustion residuals (CCR) generated from the MLSES in the Ash Pond Area per the applicable requirements of 40 C.F.R. Part 257, Subpart D as amended (CCR Final Rule) and 30 TAC Chapter 352 (Texas CCR Rule). The United States Environmental Protection Agency (USEPA) published its final approval of the Texas CCR rule on June 28, 2021. *See* 86 Fed. Reg. 33,892 (June 28, 2021). The Texas CCR Rule became effective on July 28, 2021, and it adopts and incorporates by reference the requirements for remedy selection located at § 257.97.

Statistically significant levels (SSLs) of beryllium, cobalt, and lithium above groundwater protection standards (GWPSs) were detected in the uppermost groundwater-bearing unit (GWBU) hydraulically downgradient of the Ash Pond Area during 2018 assessment monitoring. SSLs of lithium were not observed in subsequent semi-annual assessment monitoring events completed from 2019 to 2021; therefore, lithium is not currently considered a constituent with SSLs. SSLs of beryllium and cobalt were observed in subsequent semi-annual assessment monitoring events completed from 2019 to 2021 and are currently considered constituents with SSLs.

In response to the SSLs identified in 2018, an Assessment of Corrective Measures (ACM) Report was completed for the Ash Pond Area in September 2019 as required by § 257.96 (Golder 2019a). The ACM demonstrated that groundwater concentrations of beryllium, cobalt, and lithium were stable or decreasing at all CCR monitoring wells and that the extent of beryllium, cobalt, and lithium SSLs was delineated on-site (i.e., no offsite migration was indicated). The ACM evaluated various source control and groundwater response technologies to address the beryllium, cobalt, and lithium SSLs.

The purpose of this remedy selection report is to describe the selected remedy, describe how the selected remedy meets the requirements of §257.97, and provide a schedule for implementing and completing remedial activities.

2.0 SITE SETTING

The MLSES is located approximately 5 miles southeast of Tatum, Rusk County, Texas. The Ash Pond Area is located immediately east of the MLSES power units and adjacent to the Martin Lake Reservoir (**Figure 1**).

2.1 Site Hydrogeology and CCR Monitoring Well Network

The Site lies in the outcrop area of the Eocene-aged Wilcox Group (Barnes 1965). The Wilcox Group in the vicinity of the Site consists mostly of unconsolidated to moderately consolidated clay and silt, with various amounts of interbedded sand and lignite. The Wilcox Group is overlain by sands of the Carrizo Formation at higher elevations in the area; however, the Carrizo Formation is not present at the Site.

The CCR groundwater monitoring well network at the Ash Pond Area was established in 2015 using monitoring wells H-26, H-27, H-28, H-29, H-31, H-32, AND H-33 (**Figure 1**). Soil borings completed at the Site indicate the geology near the CCR units generally consists of an upper zone composed of an approximately 30- to 40-foot thick low- to medium-plasticity, lean clay unit with minor clayey sand. The upper zone is underlain by an intermediate zone composed of poorly-graded fine sand and silty sand that is generally about 5 to 20 feet thick. The intermediate zone is underlain by a laterally-continuous, silty to sandy confining clay unit. The uppermost aquifer occurs in the intermediate sand and silty sand unit (PBW 2017). The CCR monitoring wells are completed

in the intermediate zone. Groundwater elevations are generally highest near the western side of the Ash Pond Area with an inferred groundwater flow direction to the east toward Martin Lake Reservoir.

Golder performed a survey of water supply wells located in the vicinity of the Ash Pond Area in May 2019 as part of a Texas Commission on Environmental Quality (TCEQ) Texas Risk Reduction Program (TRRP) assessment of the Site. A Drinking Water Survey Report (Golder 2019b) documenting the water well survey activities and findings was approved by the TCEQ in a letter dated August 12, 2019. No imminent threats to water wells or potentially affected drinking water wells were identified at the Site.

3.0 SOURCE CONTROL MEASURES

The EAP, WAP, and NSP are considered unlined surface impoundments under §257.71(a)(1)(ii) of the CCR Rule (BM 2016). As a result, the EAP, WAP, and NSP are being retrofitted with new composite liner systems that comply with the requirements of the CCR Rule to improve the level of source control in the impoundments. In accordance with §257.102(k)(5), a notification of intent to retrofit the Ash Pond Area liner systems was posted on June 29, 2020. Design of the Ash Pond Area liner system retrofit has been completed and construction is underway. The EAP and WAP were retrofitted in 2020 and 2021, respectively, with a new composite liner system meeting the requirements of § 257.70(b). The liner system in the NSP will be similarly retrofitted in 2022.

4.0 POTENTIAL GROUNDWATER CORRECTIVE MEASURES

The ACM Report (Golder 2019a), which assessed potential corrective measures, was prepared to comply with the requirements of § 257.96. Per the applicable screening criteria described in §257.96(c), potential corrective measures were evaluated based on their overall performance, reliability, ease of implementation, potential impacts of the remedy, time to begin and complete the remedy, and institutional requirements. The source control measures discussed in Section 3 are considered a component of each of the corrective measures that were evaluated. Possible corrective measures for groundwater included the following options to address groundwater impacts:

- Monitored Natural Attenuation (MNA);
- Groundwater Extraction and Treatment;
- Vertical Hydraulic Barrier;
- Permeable Reactive Barrier;
- In-Situ Chemical Treatment; and
- Phytoremediation.

MNA was identified as the most applicable groundwater remedy for further evaluation.

5.0 CCR RULE REMEDY OBJECTIVES

In accordance with §257.97(a), based on the results of the ACM, as soon as feasible a remedy should be selected for the CCR units. Specifically, under § 257.97(b) the remedy must (1) protect human health and the environment; (2) attain the groundwater protection standard as specified pursuant to § 257.95(h); (3) control the sources of releases so as to reduce or eliminate, to the maximum extent feasible, further releases of constituents in appendix IV into the environment; (4) remove from the environment as much of the contaminated material that was released from the CCR unit as is feasible, taking into account factors such as avoiding inappropriate

disturbance of sensitive ecosystems; and (5) comply with any relevant standards for management of wastes as specified in § 257.98(d). The CCR Rule also specifies decision criteria to be considered by the owner or operator in selecting the most appropriate remedy. Under § 257.97(c), these criteria include: (1) Long- and short-term effectiveness and protectiveness of the potential remedy(s), along with the degree of certainty that the remedy will prove successful; (2) effectiveness of remedy in controlling the source to reduce further releases; (3) ease or difficulty of implementation; and (4) community concerns.

6.0 REMEDY SELECTION

MNA with source control measures has been selected as the remedy to address the Appendix IV constituents observed at SSLs at the Site. This remedy was selected over the other potential corrective measure alternatives based on its overall high performance, high reliability, ease of implementation, low potential for negative impacts, and minimal institutional requirements.

MNA refers to the reliance on natural attenuation processes (within the context of a carefully controlled and monitored approach) to achieve site-specific groundwater remediation objectives. MNA relies on a range of natural processes, including sorption, (co)precipitation, radioactive decay, dispersion, dilution, and abiotic degradation/transformation to achieve remediation objectives. A Site-specific feasibility study to evaluate MNA as a potential groundwater remedy for the Appendix IV constituents observed at SSLs was performed in accordance with guidance and best practices promulgated by the USEPA (USEPA 2007a and 2007b) and Interstate Technology and Regulatory Council (ITRC 2010). The overall feasibility of MNA as a groundwater response technology was evaluated based on the following multi-tiered approach:

1) Demonstrate active constituent removal from groundwater and dissolved plume stability (Tier I);

2) Determine the mechanisms and rates of the operative attenuation processes (Tier II);

3) Determine the long-term capacity for attenuation and the stability of immobilized constituents (Tier III); and

4) Prepare a long-term MNA performance monitoring plan (Tier IV).

A Tier I MNA evaluation report was completed in December 2019 (Golder 2019c) and a Tier II/III MNA evaluation report was completed in June 2021 (Golder 2021b). Based on the results of these MNA evaluations, the following was concluded regarding the Appendix IV constituents identified at SSLs:

- Physical and chemical attenuation of beryllium, cobalt, and lithium is occurring at the Site. Concentrations of these constituents in groundwater are stable and the aquifer has adequate capacity to attenuate these constituents in a reasonable timeframe. Geochemical modeling indicates that attenuation will be efficient and stable in the long term. Therefore, MNA with source control measures is considered an effective corrective measure for the Ash Pond Area.

Copies of the Tier I and Tier II/III MNA evaluation reports are provided in **Appendix A and B**, respectively.

The selected remedy will attain the objectives stated in §257.97 as outlined below:

(1) Long and short term effectiveness, and degree of certainty of success:

The Tier I through Tier III MNA studies completed for the Site demonstrate that physical and chemical attenuation of Appendix IV constituents identified at SSLs is occurring, that concentrations are stable, and that the aquifer has adequate capacity to attenuate these constituents in a reasonable timeframe.

(i) *Magnitude of reduction of existing risks*:

Source control measures are likely effective at preventing future releases, and MNA feasibility data indicate that conditions are suitable for the ongoing reduction of constituents identified at SSLs in groundwater to concentrations below GWPSs.

(ii) *Magnitude of residual risks in terms of likelihood of further releases due to CCR remaining following implementation of a remedy*:

Source control measures reduce the risk of future impacts by preventing the transport of CCR constituents to groundwater at concentrations above GWPSs.

(iii) *The type and degree of long-term management required, including monitoring, operation, and maintenance*:

Long-term assessment of the condition of the monitoring network will be required. Maintenance of the monitoring network is anticipated to be low.

(iv) *Short-term risks that might be posed to the community or the environment during implementation of such a remedy, including potential threats to human health and the environment associated with excavation, transportation, and redisposal of contaminant*:

The remedy presents minimal risk of exposure. Results from the ACM nature and extent investigation indicate that Appendix IV constituents at SSLs are contained within the plant property boundary and are not affecting the adjacent Martin Lake Reservoir. The Drinking Water Survey Report (Golder, 2019b) completed at the Site indicated the CCR units pose no imminent threats to water wells or potentially affected drinking water wells.

(v) *Time until full protection is achieved*:

The selected remedy will require a substantial period of time to achieve GWPSs (estimated at 17 to 50 years); however, this is a reasonable timeframe when compared to other potential corrective measures that were evaluated, which would not significantly decrease the time until full protection would be achieved.

(vi) *Potential for exposure of humans and environmental receptors to remaining wastes, considering the potential threat to human health and the environment associated with excavation, transportation, re-disposal, or containment*:

The selected remedy presents a low risk of exposure. Access to the CCR units and surrounding land are controlled by Luminant. Potential exposure to CCR will be prevented through source control measures and Site access restrictions.

(vii) *Long-term reliability of the engineering and institutional controls*:

Restriction of access and exposure are currently implemented and will continue at the Site.

(viii) *Potential need for replacement of the remedy*:

Although unlikely, monitoring wells may need to be replaced over the remediation period. Monitoring well replacement will be documented in the Annual Groundwater Monitoring and Corrective Action Report following well replacement activities.

(2) Effectiveness of remedy in controlling the source to reduce further releases:

Source control measures are being implemented as discussed in Section 3. Source control will reduce infiltration of surface water from the CCR impoundments to the GWBU, preventing potential releases to the GWBU.

(i) *The extent to which containment practices will reduce further releases*:

Source control measures are likely effective at preventing future releases, and MNA feasibility data indicate that conditions are suitable for the ongoing reduction of Appendix IV constituents identified at SSLs in groundwater.

(ii) *The extent to which treatment technologies may be used*:

MNA feasibility data indicate that conditions are suitable for the ongoing reduction of Appendix IV constituents identified at SSLs in groundwater. Additional treatment technologies are not proposed.

(3) Ease or difficulty of implementation:

MNA is relatively easily implemented. The existing monitoring well network can be used for the monitoring component of the remedy. Source control measures described in Section 3 involve significant cost; however, these measures are being implemented to bring the CCR units into compliance with §257.71(a)(1)(ii). The source control measures will provide long-term stability to groundwater conditions and ensure long-term effectiveness of MNA.

(i) *Degree of difficulty associated with constructing the technology*:

The current monitoring well network will be used to evaluate the effectiveness of the remedy. If required, additional monitoring wells can be installed relatively easily.

(ii) *Expected operational reliability of the technologies*:

There are no anticipated problems with the monitoring network or source control measures.

(iii) *Need to coordinate with and obtain necessary approvals and permits from other agencies*:

The monitoring well network is already in place at the Site. There is no anticipated need to coordinate with and obtain approvals and permits from other agencies.

(iv) *Availability of necessary equipment and specialists*:

Consulting and engineering firms are established that can implement the remedy. Drilling companies and drilling equipment are available in the event that additional wells need to be installed.

(v) *Available capacity and location of needed treatment, storage, and disposal services*:

Adequate treatment, storage, and disposal services are available at the plant or at offsite waste management facilities.

(4) Community concerns:

A public meeting was held on November 13, 2019 at the Henderson Chamber of Commerce in Henderson, Texas to discuss the results of the ACM in accordance with § 257.96(e). No comments were received from the public. As indicated in Section 2.1, there are no nearby water supply wells completed within the GWBU below or downgradient of the CCR units. The ACM (Golder 2019a) demonstrated that groundwater concentrations of Appendix IV constituents identified at SSLs are stable or decreasing at all CCR monitoring wells and the extent of these constituents at SSLs was delineated on-site (i.e., no offsite migration was indicated).

7.0 SCHEDULE

A project schedule for the implementation of the remedy has been developed that considers the factors outlined in § 257.97(d), including the nature and extent of the release, the reasonable probability of the remedy achieving compliance, the availability of disposal capacity and treatment, potential risks, and the resource value of the aquifer. The remedy schedule is being implemented as soon as feasible and will not cause changes or impacts to the aquifer resource value. Below are key milestones in the implementation of the selected remedial activities:

Source Control Implementation	Anticipated Source Control Completion	MNA Sampling and Analysis Activities	Remedy Performance Review
June 2020	2022	Ongoing	Annual – Commencing 2023

The MNA monitoring well network and MNA sampling and analysis procedures will be the same as those used in the current assessment monitoring program. As such, groundwater monitoring activities to satisfy MNA monitoring requirements are ongoing. The MNA groundwater monitoring program and source control measures that constitute the selected remedy have therefore been initiated and the requirement of § 257.98(a) for initiating remedial activities within 90 days of selecting a remedy has been met.

As detailed in the Tier II/III MNA Evaluation Report (Golder 2021b), beryllium, cobalt, and lithium concentrations are stable and the aquifer has adequate capacity to attenuate these constituents. The results of a point decay analysis for groundwater at background and downgradient wells indicates that beryllium, cobalt, and lithium will take approximately 17 years, 2 years, and <1 year, respectively, to attenuate to concentrations below their respective GWPSs.

Predictive modeling in PHAST (Parkhurst et al. 2010) was used in the Tier II/III MNA Evaluation Report as a more conservative approach to estimating time to compliance by taking into account source control and increased source concentrations needed to achieve model calibration. Based on this approach, estimated times to attenuate to concentrations below GWPSs increased to approximately 30 years, 50 years, and 50 years for beryllium, cobalt, and lithium, respectively. This increase in the time to compliance estimate is due to the elevated source values used to achieve model calibration, which were significantly higher than actual measured porewater concentrations from the CCR units. PHAST modeling presents the most conservative approach to determining the rate of attenuation. The actual time to achieve compliance likely falls between the estimates calculated using the point decay method and the PHAST method.

Routine groundwater monitoring as part of an MNA program is required to verify that MNA is occurring. A Tier IV MNA Performance Monitoring Plan (Golder 2021c) has been prepared to describe the monitoring network, sampling and analysis methods, procedures for assessing MNA effectiveness, and reporting for an MNA program. A copy of the Tier IV MNA Performance Monitoring Plan is provided in **Appendix C**. An assessment of MNA effectiveness will be presented in the Annual Groundwater Monitoring and Corrective Action Report for the Site, anticipated to commence in 2023.

8.0 REFERENCES

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FIGURES

LEGEND

- DOWNGRADIENT CCR MONITORING WELL
- UPGRADIENT CCR MONITORING WELL

REFERENCE(S)

BASE MAP TAKEN FROM GOOGLE EARTH IMAGERY DATED 2019.

CLIENT
LUMINANT

PROJECT
MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

TITLE
DETAILED SITE PLAN - ASH POND AREA

CONSULTANT
GOLDER

YYYY-MM-DD	2020-01-23
DESIGNED	AJD
PREPARED	AJD
REVIEWED	WFV
APPROVED	WFV

PROJECT NO. 19134019 | REV. 0 | FIGURE 1

Last Edited By: adiamond Date: 2020-01-23 Time:9:52:24 AM | Printed By: adiamond Date: 2020-01-23 Time:9:52:58 AM
Path: \\texarkanadata\Projects - Round Rock_2019\19122262 - Luminant\C - MLSES-Ash Pond Area\ | File Name: FIG 1 - Detailed Site Plan (Ash Pond Area).dwg
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APPENDIX A

Tier I Monitored Natural Attenuation Evaluation

GOLDER

DATE December 13, 2019 **Project No.** 19122434

TO Kim Mireles, Sr. Director - Environmental Services
Luminant Generation Company LLC

CC David Mitchell - Luminant Generation Company LLC

FROM Patrick Behling - Golder Associates, Inc. **EMAIL Patrick_Behling@Golder.com**

MARTIN LAKE ASH POND AREA MONITORED NATURAL ATTENUATION EVALUATION

1.0 OVERVIEW

Groundwater and solid materials were evaluated to determine the feasibility of Monitored Natural Attenuation (MNA) as part of the Assessment of Corrective Measures (ACM) on behalf of Luminant Generation Company LLC (Luminant) for the West Ash Pond (WAP), East Ash Pond (EAP), and New Scrubber Pond (NSP) (collectively referred to as the "Ash Pond Area") located at the Martin Lake Steam Electric Station (MLSES) in Rusk County, Texas (hereafter, the "Site"). The structure of this feasibility evaluation closely follows the United States Environmental Protection Agency (USEPA) guidance on using MNA as a remedial strategy (USEPA 2007a and 2007b) and considers best practices from the Interstate Technology Regulatory Council (ITRC) document: "A Decision Framework for Applying Monitored Natural Attenuation Processes to Metals and Radionuclides in Groundwater" (ITRC 2010).

Based on the evaluation presented in this document, beryllium, cobalt, and lithium are candidates for MNA at the MLSES Ash Pond Area site per 40 Code of Federal Regulations (CFR) Part 257 as amended (CCR Final Rule). All three constituents are subject to attenuation controls on their concentrations in downgradient groundwater and meet the initial screening criteria as part of this attenuation assessment. Further geochemical evaluation (i.e. Tier II) of MNA with institutional controls is, therefore, recommended.

2.0 APPROACH

To assess the feasibility of MNA at the MLSES Ash Pond Area at the Tier 1 MNA screening level, samples of overburden and groundwater, lake water (Martin Lake), and pond water were collected in June 2019 and analyzed to provide a geochemical dataset that was used for a supplemental assessment in addition to previously-reported groundwater data (Golder 2019). Golder performed the supplemental assessment activities in accordance with the MLSES Groundwater Monitoring Program. The supplemental assessment activities included:

- Groundwater characterization to identify temporal and geographical trends, where present.
- Geochemical modeling to identify the major chemical species and evaluate saturation indices of minerals relevant to attenuation of beryllium, cobalt, and lithium.

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- Mineralogical analysis of overburden to identify and quantify the major mineral components.
- Chemical analysis of overburden to quantify the total metal content and identify the environmentally-available fraction of metals.

Based on the results generated by this supplemental assessment, a screening-level attenuation evaluation was completed to determine the overall feasibility of MNA at the MLSES Ash Pond Area.

2.1 Groundwater, Pond Water, and Lake Water Sampling and Analysis

2.1.1 Sample Collection

Golder personnel collected water samples from the background wells, downgradient or “monitoring” wells, the EAP, and Martin Lake Reservoir as presented in Table 1. The nature and extent of the plume were delineated in accordance with 40 CFR §257.95(g) utilizing samples from Martin Lake Reservoir, which is located downgradient from the Ash Pond Area (Golder 2019).

2.1.2 Geochemical Analysis

Geochemical analysis of groundwater, lake water, and pond water samples included the evaluation of field parameters and the concentrations of total metals and major cations and anions. The rationale and methods used were as follows:

Field Parameters: Parameters measured in the field included pH, dissolved oxygen, oxidation reduction potential (ORP), conductivity, and temperature. These parameters were used to determine general geochemical conditions in the groundwater and support geochemical modeling.

Metals: Analysis of Appendix III and IV metals concentrations was conducted to understand the geochemical composition of groundwater, lake water, and pond water. Metals analysis allows for the delineation of a potential plume, evaluation of mineral saturation indices, development of partitioning coefficients (in conjunction with solid material analyses), and evaluation of background contributions from natural sources or anthropogenic sources.

Major Cations and Anions: Geochemical modeling of mineral solubility, metals attenuation, and background contributions requires analysis of major cations and anions because they affect and participate in sorption and mineral dissolution or precipitation reactions.

The groundwater and pond water samples were analyzed using the following methods:

- pH following SW846 9040C “pH Electrometric Measurement” (USEPA 2004)
- Total dissolved solids standard method (SM) 2540C “Total Dissolved Solids Dried at 180°C” (USEPA 1993a)
- Total hardness following SM 2340B (USEPA 1997)
- Chloride and fluoride following USEPA SW846 9056A “Determination of Inorganic Anions by Ion Chromatography”, Revision 1 (USEPA 2007c)
- Nitrate and nitrite following EPA 353.2 “Determination of Nitrate-Nitrite Nitrogen by Automated Colorimetry, Revision 2.0” (USEPA 1993b)
- Alkalinity following SM 2320B “Alkalinity by Titration” (USEPA 2005a)

- Phosphorous following SM 4500-P E “Phosphorous by Ascorbic Acid Method” (USEPA 2005b)
- Total Target Analyte List (TAL) metals following USEPA SW846 6010C “Inductively Coupled Plasma-Atomic Emission Spectrometry”, Revision 3, SW846 6020B “Inductively Coupled Plasma-Mass Spectrometry”, Revision 2, and SW846 6020A “Inductively Coupled Plasma-Mass Spectrometry”, Revision 1 (USEPA 1998)

2.1.3 Geochemical Modeling Approach

Geochemical modeling was conducted to evaluate general groundwater, lake water, and pond water quality, determine the potential for precipitation of sorbent media, evaluate the potential for mineral precipitation or adsorption in the aquifer, and determine the speciation of metals of interest. The geochemical computer code developed by the United States Geological Survey (USGS), PHREEQC, was used for these simulations (Parkhurst and Appelo 2013). PHREEQC version 3.4 is a general-purpose geochemical modeling code used to simulate reactions in water and between water and solid mineral phases (e.g., rocks and sediments). Reactions include aqueous equilibria, mineral dissolution and precipitation, ion exchange, surface complexation, solid solutions, gas-water equilibrium, and kinetic biogeochemical reactions. The widely-accepted thermodynamic database Minteq.v4, 2017 edition, was used as a basis for the thermodynamic constants required for modeling.

The Geochemist’s Workbench version 12 (Bethke 2015) was used to generate graphical representations of geochemical modeling outputs in the form of predominance, or Pourbaix diagrams (also known as Eh-pH diagrams) for the species of interest (i.e. beryllium, cobalt, and lithium) and trilinear plots (also known as Piper plots) displaying the relative abundance of major ions. The Minteq.v4 database was used as the basis for the Pourbaix diagrams.

The potential for mineral precipitation was assessed in PHREEQC using a saturation index (SI) calculated according to Equation 1.

$$SI = \log (IAP/Ksp) \qquad \text{(Equation 1)}$$

The saturation index is the ratio of the ion activity product (IAP) of a mineral to the solubility product (Ksp). An SI value greater than zero indicates that the water is supersaturated with respect to a particular mineral phase and, therefore, precipitation of the mineral may occur. An evaluation of precipitation kinetics is then required to determine whether the supersaturated mineral will indeed form. An SI value less than zero indicates the water is undersaturated with respect to a particular mineral phase. An SI value close to zero indicates equilibrium conditions exist between the mineral and the solution. SI values between -0.5 and 0.5 are referred to as ‘at equilibrium’ in this report.

2.1.4 Data Handling and Geochemical Modeling Assumptions

Assumptions related to data handling and geochemical modeling assumptions were as follows:

- **Groundwater continuity:** Groundwater, lake water, and pond water quality data from a single sampling event conducted on May 14, 2019 were evaluated. This sampling event was selected because all wells related to the Site and lake water and pond water were sampled and analyzed for the full suite of parameters described in Section 2.1.2 and the resulting data are assumed to provide a comprehensive overview of Site conditions. Temporal trend analysis of pH, beryllium, cobalt, and lithium in groundwater made use of all available sampling events from a well (up to 11 samples from some wells), dating back to October 2015.

- **Pond and lake water chemistry:** The pond and lake water samples collected from the East CCR unit pond and adjacent lake were assumed to be representative of both ash ponds and lake water.
- **Redox values:** ORP values measured in the field were converted to reduction potential (Eh) by adding 200 millivolts (mV) to the field-measured values as per YSI (2015).
- **Non-detect values:** Constituents with concentrations less than their respective method detection limits were assumed to have a concentration equal to the reporting limit in model simulations.
- **Total recoverable concentrations:** Total recoverable fraction results were used for geochemical modeling.
- **Charge balance:** Groundwater compositions with charge balance errors less than 10% were considered valid. Compositions with charge balance errors greater than 10% were included in the assessment but would be considered less reliable.

2.2 Overburden Sampling and Analysis

2.2.1 Sample Collection

A drilling contractor collected continuous cores from three assessment locations downgradient of the monitoring well network. The assessment locations (AP-2019-1, AP-2019-2, and AP-2019-3) are between the CCR monitoring well network and Martin Lake (Golder 2019). Golder staff collected overburden samples from drill cores that are representative of the saturated uppermost aquifer downgradient of the ash ponds, which is underlain by a silty to sandy confining clay unit. These samples were submitted to the laboratory for analysis under chain-of-custody procedures. The unique descriptions used to identify the samples included the overburden boring name and depth of the sample below ground surface (bgs). Sample locations and depths are described in Table 2. Boring logs are provided in Appendix A.

2.2.2 Overburden Analysis

Multiple geochemical analytical methods were used to assess the mineralogical and chemical composition of the overburden material samples. The selected geochemical test methods included:

- **Mineralogical composition**: The purpose of the mineralogical analysis was to identify and quantify the crystalline mineral phases in each sample. This information is required for geochemical modeling as the release or attenuation of constituents of interest is influenced by the mineral phase(s) present in the aquifer (Hem 1985). The mineralogical testing laboratory (SGS Minerals Services) performed the mineralogical analysis using quantitative (Rietveld) X-ray diffraction (XRD) (ME-LR-MIN-MET-MN-DO5) and a Bruker AXS D8 Advance Diffractometer.
- **Total metals:** This test was used to quantify the chemical composition of overburden materials. The total mass of metals, in combination with the results of sequential extraction testing, can be used to determine the provenance of metals and verify sequential extraction results. The laboratory analyzed a target analyte list of metals following the methods USEPA SW846 6010C “Inductively Coupled Plasma-Atomic Emission Spectrometry”, Revision 3 (November 2000).
- **Sequential extraction (SEP):** This test consists of a seven-step metals extraction from solids as per Tessier et al. (1979) to identify the provenance of constituents of interest (i.e. the operationally-defined

fraction that contains the metal)[1] and determine their potential environmental mobility. For instance, metals bound in the carbonate fraction, or that are exchangeable, are much more likely to become mobile due to changes in groundwater conditions than metals bound within a sulfide or silicate fraction. The total concentration of a metal measured from all seven steps can be compared to the concentration determined from the total metal analysis for compositional accountability. The laboratory analyzed the metals content of the extracted samples using the method USEPA SW846 6020B "Inductively Coupled Plasma-Mass Spectrometry", Revision 2 (July 2014).

3.0 GROUNDWATER, POND WATER AND LAKE WATER CHARACTERIZATION

Groundwater quality data from background wells H-26, H-27, H-33, monitoring wells H-28, H-29, H-31, H-32, and pond and lake water samples were used for this evaluation. The water quality monitoring data are presented in Appendices B and C and can be summarized as follows:

General Chemistry Parameters

- pH: The pH of groundwater samples collected from CCR monitoring well network ranged from 6.0 to 6.8 in May 2019. Historically, the pH in the CCR monitoring well network has ranged from 5.8 to 7.0. Isolated values as low as 3.6 and as high as 11.2 have been recorded in some wells; however, these conditions do not persist, and pH returns to circumneutral values by the next sampling round. The pH of Martin Lake was 6.8 and ash pond water had a pH of 6.5 in May 2019.
- ORP (Redox): Field-measured redox values, corrected to Eh (+200mV), ranged from +113 to +174 mV in the groundwater samples in the CCR monitoring well network. The redox of the ash pond and lake water was not measured during sampling.
- Total Dissolved Solids (TDS): Groundwater TDS concentrations were variable in May 2019 in the CCR monitoring well network. The lowest TDS concentration in groundwater (453 mg/L) occurred in CCR monitoring well H-26 (upgradient) and the highest TDS value (4,230 mg/L) was observed at CCR monitoring well H-31 (downgradient). The TDS concentration measured in Martin Lake was 119 mg/L and the TDS of the ash pond water was 5,380 mg/L.
- Major ion chemistry: A Piper plot was generated for groundwater, lake water, and ash pond water samples to facilitate the identification of water types and source contributions (Figure 1a). Three distinct groupings of samples are apparent based on their major ion proportions. Upgradient wells H-26 and H-33 show close

[1] Sequential extraction of metals from overburden samples consisted of seven discrete steps for this investigation:

Step 1 - Exchangeable Fraction: This extraction includes trace elements that are reversibly adsorbed to overburden minerals, amorphous solids, and/or organic material by electrostatic forces.

Step 2 - Carbonate Fraction: This extraction targets trace elements that are adsorbed or otherwise bound to carbonate minerals.

Step 3 – Non-Crystalline Materials Fraction: This extraction targets trace elements that are complexed by amorphous minerals (e.g., iron).

Step 4 - Metal Hydroxide Fraction: Trace elements bound to hydroxides of iron, manganese, and/or aluminum.

Step 5 - Organic Fraction: This extraction targets trace elements strongly bound via chemisorption to organic material.

Step 6 - Acid/Sulfide Fraction: The extraction is used to identify trace elements precipitated as sulfide minerals.

Step 7 - Residual Fraction: Trace elements remaining in the overburden after the previous extractions will be distributed between silicates, phosphates, and refractory oxides.

similarity with the water sample from Martin Lake, indicating potential influences of Martin Lake on the groundwater in these locations. Groundwater composition in upgradient well H-27, in contrast, is more closely related to that of the downgradient wells. Ash pond water is geochemically distinct from any other sample. Based on the molar ratios of calcium, sodium, and sulfate (Figure 1b), all groundwater samples (background and downgradient) and the lake water sample generally plot as one group, while ash pond water again is geochemically distinct from the other samples, and dominated by sulfate and magnesium.

- Iron: Oxidized iron (ferric iron - Fe+3) concentrations were variable, ranging from non-detect (<0.05 mg/L) to 8.81 mg/L in May 2019 (Appendix B). Reduced iron (ferrous iron - Fe+2) concentrations were non-detect (<0.05 mg/L) in the groundwater at all CCR monitoring wells except H-31 and H-32. The highest concentration of ferrous iron in groundwater was 49.5 mg/L observed in monitoring well H-31, over 40 times higher than any other monitoring well. This value corresponded to the highest measured beryllium, cobalt, and lithium concentrations in groundwater. Ferric iron in water from Martin Lake was measured at 0.365 mg/L while ferrous iron was non-detect (<0.05 mg/L). Iron was not detected in either valence state in ash pond water.

- Nutrients: Nitrate (nitrate as N) was present in groundwater at variable levels, ranging from non-detect (< 0.1 mg/L as N) to 272 mg/L as N at H-32 in May 2019 (Appendix B). Nitrate in CCR monitoring well H-32 at 272 mg/L as N, was orders of magnitude higher than in other monitoring wells, in which nitrate ranged from non-detect (<0.1 mg/L as N) to 0.658 mg/L as N. Nitrate was not detected in lake water, but was measured at 11.1 mg/L in ash pond water. Phosphate concentrations in groundwater ranged from near non-detect (0.03 mg/L as P) to 0.126 mg/L as P in CCR monitoring wells. Phosphate was not detected in lake or ash pond water in May 2019. No spatial trend was apparent in the nitrate or phosphate distribution in groundwater.

Constituents with SSL Notification:

- Beryllium: Beryllium concentrations in groundwater samples historically have exceeded the GWPS (0.004 mg/L) in CCR monitoring wells H-28, H-29, H-31, and H-32 on at least one occasion since October 2015 (Figure 2a). However, due to the variability of beryllium concentrations in groundwater at these wells, only H-31 currently has beryllium at an SSL. As of May 2019, beryllium concentrations in H-31 and H-32 were above the GWPS, at 0.00713 mg/L and 0.00928 mg/L, respectively. The highest beryllium concentration in groundwater was measured in H-31 in December 2016 (0.0197 mg/l). Beryllium was not detected in the Martin Lake water sample nor in water of the ash pond (<0.0003 mg/L). Beryllium is likely present in groundwater as the divalent cation Be^{+2} based on the pH and Eh of groundwater (Figure 3a).

- Cobalt: Cobalt concentrations in groundwater samples historically have exceeded the GWPS (0.0564 mg/L) in all CCR monitoring wells except H-27 on at least one occasion since October 2015 (Figure 2b). All CCR network monitoring wells have also reported groundwater cobalt concentrations below the GWPS on at least one occasion since October 2015, indicating variability in cobalt. In May 2019, all wells except H-27 reported cobalt concentrations in groundwater above the GWPS. Cobalt was not detected in water from Martin Lake or in ash pond water in May 2019 (<0.003 mg/L). Cobalt is likely present in groundwater as the divalent cation Co^{+2} based on the pH and Eh of groundwater (Figure 3b).

- Lithium: Lithium concentrations in groundwater have exceeded the GWPS (0.177 mg/L) since October 2015 in four wells: H-27 (upgradient), H-28, H-31, and H-33 (Figure 2c). In May 2019, only the sample from CCR

monitoring well H-31 exceeded the GWPS for lithium. Based on an evaluation of the 95% confidence intervals, the GWPS exceedances for lithium at H-27. H-28. H-31, and H-33 are not at an SSL above the GWPS. Water from Martin Lake did not contain lithium above its detection limit (<0.005 mg/L) in May 2019. Ash pond water contained lithium, measured at 0.119 mg/L in May 2019, which is both below the GWPS and lower than in groundwater at background/upgradient wells H-26 and H-33. Lithium is likely present in groundwater as the monovalent cation Li^+ based on the pH and Eh of groundwater (Figure 3c).

In summary, the groundwater data at the Ash Pond Area show that concentrations of parameters of interest in groundwater are decreasing or stable. The absence of beryllium and cobalt in ash pond water and low levels of lithium (below that of two background wells) demonstrates that the ash ponds are unlikely to be the source for any GWPS exceedances. As indicated by major ion compositions (Figures 1a and b), ash pond water is substantially different than downgradient groundwater, suggesting an absence of direct interaction between pond water and groundwater.

3.1 Geochemical Modeling Results

The results of speciation modeling of groundwater from background and CCR monitoring wells, and lake and ash pond water are provided in Table 3. Mineral saturation plays an important role in attenuation of metals, either directly by their removal through mineral precipitation, or indirectly by providing a sorptive surface. The results can be summarized as follows:

- **Iron-bearing minerals:** Ferrihydrite [$Fe(OH)_3$] was indicated to be at equilibrium or oversaturated in all groundwater, lake water, and ash pond water samples, indicating a strong potential for ongoing precipitation of solid phase iron oxides. Thus, throughout the Ash Pond Area, the prevalence of iron oxides is assumed.
- **Other minerals:** All groundwater samples were in equilibrium with respect to barite [$BaSO_4$]. Gypsum [$CaSO_4{:}2H_2O$] was in equilibrium with groundwater at well H-31 and pond water.

In summary, barite and ferrihydrite contribute to controlling groundwater composition at some or all of the monitoring wells. In the case of ferrihydrite, the dissolved concentrations of certain COIs can be reduced through the ability of this mineral to act as a substrate for adsorption in addition to precipitation/co-precipitation.

4.0 COMPOSITIONAL ANALYSIS OF OVERBURDEN

4.1 Mineralogical Composition

Quantitative X-ray diffraction (XRD) with Rietveld refinement was used to identify and quantify minerals in three overburden samples collected during the drilling activities - one sample from each of the soil borings completed in June 2019 (AP-2019-1, AP-2019-2, and AP-2019-3). These samples were obtained to better understand the mineralogical composition of the aquifer system and identify any minerals that would potentially influence attenuation of constituents of interest. In contrast, the presence of certain minerals could also indicate a potential for naturally-occurring release of metals into groundwater, for instance due to oxidation of sulfide minerals.

The mineralogical analyses identified two different materials at the different sampling depths. The shallow core (AP-2019-3 18’ to 19’ below ground surface) consisted almost exclusively of quartz (99.2%) with minor albite (0.8%). The two deeper core samples (AP-2019-1 and AP-2019-2) also predominately contained quartz (60.8 to 66.0 %) but the silicate minerals albite, chlorite, K-feldspar, muscovite and illite were reported as well. Although clay-specific XRD analysis was not conducted, the clay minerals vermiculite, kaolinite and montmorillonite were

tentatively identified in addition to the illite. Therefore, the presence of clays at the Ash Pond Area below the shallow quartz sand unit can be inferred. Analytical reports for the XRD samples are provided in Appendix B.

4.2 Chemical Composition and Sequential Extraction

Chemical analysis and sequential extractions were used to determine the chemical composition of the overburden and the distribution of constituents of interest over various operationally-defined fractions comprising the overburden. This testing was completed per Table 1 on overburden from three borehole locations, (reported in Table 4).

A description of the individual fractions determined by sequential extraction is presented in Footnote 1, Section 2.2.2. Metals extracted in steps 1 through 5 are considered environmentally available, whereas metals extracted in steps 6 and 7 are present in refractory fractions and are not expected to be released under conditions typically encountered in aquifers (Tessier et al. 1979). Total metal quantities from the sequential extraction are expressed as “SEP Total” in Table 5. The sum of the sequential extraction steps is also presented for comparison but does not represent an analytically-determined value.

The results from the chemical analysis and sequential extraction can be summarized as follows:

General Chemistry Parameters

- Aluminum: Aluminum is not a constituent of interest (COI) at the site but it has been well studied as a sorbing medium in soils (e.g., Karamalidis and Dzombak 2011). Total aluminum in soils ranged from 14,244 to 33,160 mg/kg, and the environmentally-available fraction ranged from 1,044 (AP-2019-3) to 1,989 mg/kg (AP-2019-2; Figure 4). Aluminum in the soil at the site is, therefore, largely (~84% to 87%) present in the residual, or silicate-bound fraction. This fraction is likely at least partially represented by hydrous aluminum phyllosilicate minerals or clays intermixed in the silica sand matrix, in agreement with the mineralogical results presented in Section 4.1. Clays can represent an important sorptive reservoir for numerous trace metals and metalloids, including those of concern at this site (Uddin 2017).
- Iron: While not a COI, iron and its minerals commonly represent one of most abundant reservoirs for metal/metalloid attenuation in soils (Dzombak and Morel 1990; Smith 1999). Iron was present in all three core samples analyzed, varying from 5,192 (AP-2019-3) to 13,933 mg/kg (AP-2019-2). In all samples, the non-environmentally available (sulfide and residual) fractions accounted for the largest proportion of total iron (54% to 64%) and, as such, most of the iron is not environmentally available (Figure 5). The remainder of the iron in the samples is present across the exchangeable (except AP-2019-1), carbonate (only in AP-2019-2), amorphous metal, and metal hydroxide phases. These phases, part of the labile fraction in steps 1 through 5, can generally be considered representative of the amount of iron in soil that may be available as a sorbing medium and can, therefore, be important for potential attenuation of beryllium and cobalt.

Constituents Identified with an SSL Notification

- Beryllium: Total beryllium in soil ranged from 0.23 to 0.68 mg/kg, of which 16% to 75% of the beryllium was present in the environmentally-available fraction (Figure 6). The non-environmentally available fraction of beryllium (25% to 84% of total) is considered indicative of naturally occurring beryllium in soil at the Ash Pond Area. All of the environmentally-available beryllium resorted in the amorphous metal and metal hydroxide fractions, suggesting potential attenuation of beryllium from groundwater (Smith 1999).

- Cobalt: Total cobalt in soil ranged from 1.68 to 6.29 mg/kg while the environmentally-available fraction ranged from 1.4 mg/kg in AP-2019-3 to 4.39 mg/kg in AP-2019-2, representing from 58% to 83% of total cobalt (Figure 7). The majority of the environmentally-available cobalt was present in the metal hydroxide fractions in soils samples AP-2019-1 and AP-2019-2, while the exchangeable fraction hosted the largest proportion of cobalt in soils sample AP-2019-3. Soil sample AP-2019-2 contained cobalt in every fraction of the sequential extraction test, also indicating potential attenuation of cobalt from groundwater and the presence of cobalt in primary soil phases.
- Lithium: Total lithium in soil ranged from 7.15 to 17.3 mg/kg, of which between only 7% (AP-2019-3) and 24% (AP-2019-2) was present in the environmentally-available fraction (Figure 8). Lithium that was environmentally available (0.53 to 4.2 mg/kg) was all contained in the metal hydroxide fraction. This indicates the likelihood of the presence of naturally-occurring lithium at the site that is contained within non-environmentally available fractions while attenuation of lithium by metal hydroxide minerals also appears to be taking place.

Based on the above results, attenuation of all three COIs is likely occurring in various soil fractions. The most pronounced attenuation is associated with amorphous metals and metal hydroxides. Clays also present a viable attenuation fraction in the soil matrix.

5.0 ATTENUATION EVALUATION

The potential for natural attenuation of beryllium, cobalt, and lithium was evaluated at a screening level, in accordance with recommended practices and guidance promulgated by the US EPA and the ITRC (EPA 2007a; EPA 2007b; ITRC 2010). According to EPA (2007a), the purpose of the evaluation conducted during this screening phase is to “Demonstrate that the groundwater plume is not expanding and that sorption of the contaminant onto aquifer solids is occurring where immobilization is the predominant attenuation process.” Based on this definition, the following observations support MNA as a viable corrective measure for the MLSES Ash Pond Area:

- **Plume Stability:** Based on the water quality monitoring data presented in this assessment, groundwater concentrations of beryllium, cobalt, and lithium outside of the ash ponds appear to be relatively stable or decreasing (accounting for outliers). Beryllium and cobalt are unlikely to originate from the ash ponds due to their absence in pond water. It is also considered likely that lithium in groundwater does not originate from the ash ponds as its concentration was much lower in pond water than in groundwater from background monitoring wells at the Ash Pond Area.
- **Magnitude of Exceedances**: Occasional exceedances of the lithium GWPS in some wells do not amount to levels that would be considered an SSL per the CCR Rule (Cite ACM report). The highest level of beryllium in groundwater (since monitoring began) at the Ash Pond Area was observed at well H-31 (on December 11, 2016). During the previous sampling round, beryllium was measured in groundwater at 0.00167 mg/L, below the GWPS of 0.004 mg/L. Groundwater at well H-31 was also again below the GWPS for beryllium two events after the highest measured value, indicating variability in beryllium levels. The cobalt GWPS exceedances in H-28, H-29, H-31, and H-32 fluctuate substantially over time. For example, cobalt in groundwater at well H-31 during the most recent sampling event (May 14, 2019) was the second highest cobalt measured since October 2015 in any well at the MLSES Ash Pond Area. However, during the

previous sampling (September 7, 2018) cobalt in groundwater was reported at the detection limit (0.0035 mg/L). Thus, while cobalt exceedances occur periodically, the substantial variability in cobalt concentrations points to variability possibly related to flow conditions and/or natural geochemical variation rather than a continuous source of cobalt.

- **Ash Pond Water:** Historical records are not available for ash additions or pond water concentrations over the lifespan of the ash ponds. However, based on recent pond water data, beryllium and cobalt are not present in the ash ponds at levels above their respective detection limits. This indicates that the ash ponds are not likely to be a current source for these metals. Lithium in the ash ponds was measured at a concentration of 0.119 mg/L in May 2019, well below the level measured in background groundwater (0.177 mg/L). This indicates the ash ponds are likely not a source for the SSLs beryllium and cobalt in groundwater (lithium is currently not at an SSL in groundwater based on a 95% confidence interval).
- **Groundwater Chemistry:** The groundwater monitoring results and the findings of the geochemical modeling support the potential for natural attenuation of beryllium, cobalt, and lithium. Equilibrium of groundwater with the mineral phase ferrihydrite was indicated in all groundwater samples. Modeling results are consistent with the findings from the sequential extraction analysis, which demonstrate carbonate, amorphous, organic, and metal hydroxide phases sequester beryllium, cobalt, and lithium in overburden at the MLSES Ash Pond Area. Further, differences in relative abundance of the major ions in groundwater indicate that ash pond water is geochemically distinct from both groundwater at the Ash Pond Area and Martin Lake.
- **Confirmation of Attenuation/Immobilization:** Based on both mineralogical and chemical analysis, it is evident that attenuation of beryllium, cobalt, and lithium by aquifer materials is occurring. Iron, capable of forming (hydr)oxide or amorphous phases that facilitate metals attenuation (Dzombak and Morel 1990), was identified in all overburden samples (in agreement with modeling indicating ferrihydrite precipitation). The ubiquitous presence of aluminum, in the form of aluminum oxides and clay minerals, provides an additional well-studied attenuation reservoir (Karamalidis and Dzombak 2011; Prodromou 2016; Uddin 2017). Thus, overburden samples from the Ash Pond Area site demonstrate sequestration of COIs is occurring.

Based on these findings, beryllium, cobalt, and lithium appear to be candidates for an MNA remedy application and meet the criteria for Tier I MNA in accordance with USEPA guidance (USEPA 2007a and 2007b). As such, the feasibility of MNA at the Ash Pond Area should be further evaluated with a Tier II MNA evaluation.

6.0 CONCLUSION

The above serves as the Tier I evaluation of MNA feasibility at the MLSES Site for beryllium, cobalt, and lithium with respect to the Ash Pond Area. This document and evaluation have been completed in accordance with guidance and best practices promulgated by the USEPA (USEPA 2007a and 2007b) and the ITRC (ITRC 2010). Based on the findings of this evaluation, the Ash Pond Area at the MLSES is a viable candidate for MNA as a corrective measure.

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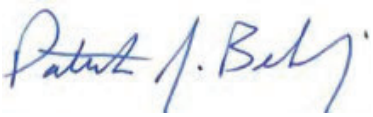

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Tables

Table 1: Overview of the wells used in the MNA assessment.

Background Wells	Monitoring Wells	Lake Water	Pond Water
H-26, H-27, H-33	H-28, H-29, H-31, H-32	Lake-Sample	Pond-Water

Table 2: Summary of overburden samples collected

Sample Location	Sample Description
Assessment boring AP-2019-1 (30'-31')	Sand (SW), light brown to gray with orange staining, very-fine grained to fine grained, wet at 30 feet bgs, moist or dry above
Assessment boring AP-2019-2 (35'-36')	Sand (SW), gray, very fine-grained to fine-grained, wet at 35 feet bgs, moist or dry above
Assessment boring AP-2019-3 (18'-19')	Sand (SP), orange and gray, very fine-grained to fine-grained, wet at 18 feet bgs, moist or dry above

Table 3: Geochemical Modeling Results

MINERAL PHASES - Saturation Indices		H-26	H-27	H-28	H-29	H-31	H-32
Otavite	$CdCO_3$	-2.91	-3.63	-3.74	-3.49	-4.54	-4.72
Ferrihydrite	$Fe(OH)_3$	**4.27**	**2.10**	**1.67**	**1.72**	**1.56**	**2.30**
Siderite	$FeCO_3$	-2.15	-2.86	-3.85	-3.62	-0.79	-2.66
Melanterite	$FeSO_4$ $7H_2O$	-7.37	-6.87	-6.71	-6.75	-3.66	-5.62
Anglesite	$PbSO_4$	-4.66	-4.36	-3.79	-3.87	-4.04	-4.07
Gypsum	$CaSO_4$:$2H_2O$	-1.59	-1.22	-0.84	-0.90	**-0.35**	-1.48
Jarosite-H	$(H_3O)Fe_3(SO_4)_2(OH)_6$	**0.54**	-4.52	-3.40	-4.19	-3.55	-1.04
Jarosite-K	$KFe_3(SO_4)_2(OH)_6$	**6.63**	**0.93**	**1.38**	**0.80**	**1.81**	**3.56**
Jarosite-Na	$NaFe_3(SO_4)_2(OH)_6$	**4.01**	-0.85	**0.00**	-0.58	**0.45**	**1.93**
Calcite	$CaCO_3$	-0.51	-1.33	-2.10	-1.88	-1.61	-2.64
Magnesite	$MgCO_3$	-2.22	-2.18	-2.92	-2.70	-2.47	-3.76
Barite	$BaSO_4$	**0.66**	**0.28**	**0.35**	**0.28**	**0.60**	**0.01**
Witherite	$BaCO_3$	-3.55	-5.12	-6.20	-6.00	-5.96	-6.44
Fluorite	CaF_2	-2.78	-3.00	-3.37	-3.32	-1.31	-1.41
CoCO3	$CoCO_3$	-2.28	-4.35	-3.53	-3.31	-3.15	-3.70
Cerrusite	$PbCO_3$	-2.07	-2.96	-3.55	-3.36	-3.79	-3.74
Carbon Dioxide	pCO2(g) [(b)]	-1.59	-2.05	-2.00	-2.20	-1.91	-1.67

Notes:

[(a)] Saturation indices between -0.5 and 0.5 or >0.5 identified by bold type and grey shading

[(b)] pCO2(g) values presented at 10^value atm

Table 3: Geochemical Modeling Results

MINERAL PHASES - Saturation Indices		H-33	Pond Sample	Lake Sample
Otavite	$CdCO_3$	-2.88	-4.21	-3.25
Ferrihydrite	$Fe(OH)_3$	**4.22**	**1.68**	**2.86**
Siderite	$FeCO_3$	-2.11	-3.40	-2.51
Melanterite	$FeSO_4\ 7H_2O$	-7.31	-6.74	-7.49
Anglesite	$PbSO_4$	-4.73	-4.15	-5.08
Gypsum	$CaSO_4{:}2H_2O$	-1.62	**-0.26**	-2.56
Jarosite-H	$(H_3O)Fe_3(SO_4)_2(OH)_6$	**0.64**	-3.44	-3.99
Jarosite-K	$KFe_3(SO_4)_2(OH)_6$	**6.71**	**2.60**	**1.42**
Jarosite-Na	$NaFe_3(SO_4)_2(OH)_6$	**4.10**	**0.06**	-1.31
Calcite	$CaCO_3$	-0.56	-1.07	-1.71
Magnesite	$MgCO_3$	-2.14	-1.59	-2.78
Barite	$BaSO_4$	**0.64**	**1.07**	**-0.04**
Witherite	$BaCO_3$	-3.59	-5.03	-4.48
Fluorite	CaF_2	-2.74	**1.34**	-3.46
CoCO3	$CoCO_3$	-2.33	-4.90	-4.03
Cerrusite	$PbCO_3$	-2.18	-3.48	-2.73
Carbon Dioxide	pCO2(g) [(b)]	-1.50	-1.60	-1.97

Notes:

[(a)] Saturation indices between -0.5 and 0.5 or >0.5 identified by bold type and grey shading

[(b)] pCO2(g) values presented at 10^value atm

Table 4. Summary of Rietveld Quantitative Analysis X-Ray Diffraction Results

Mineral/Compound	1 AP-2019-1 (30-31")	2 AP-2019-2 (35-36")	3 AP-2019-3 (18-19")
	(wt %)	(wt %)	(wt %)
Quartz	60.8	66.0	99.2
Albite	22.3	16.2	0.8
K-Feldspar	1.3	1.4	--
Chlorite	1.3	2.7	--
Muscovite	1.4	3.2	--
*Vermiculite	0.9	0.7	--
*Kaolinite	3.0	3.4	--
Illite	8.3	6.1	--
*Montmorillonite	0.7	0.4	--
TOTAL	100	100	100

Zero values indicate that the mineral was included in the refinement, but the calculated concentration is below a measurable value.

Dashes indicate that the mineral was not identified by the analyst and not included in the refinement calculation for the sample.

** Tentative identification of clays only, further clay XRD analysis will be required for positive identification*

Mineral/Compound	Formula
Quartz	SiO_2
Albite	$NaAlSi_3O_8$
K-Feldspar	$KAlSi_3O_8$
Chlorite	$(Mg_3,Fe_2)Al(AlSi_3)O_{10}(OH)_8$
Muscovite	$KAl_2(AlSi_3O_{10})(OH)_2$
Vermiculite	$(Mg,Fe,Al)_2(Al,Si)_4O_{10}(OH)_2 \cdot 4(H_2O)$
Kaolinite	$Al_2Si_2O_5(OH)_4$
Illite	$(K,H_3O)(Al,Mg,Fe)_2(Si,Al)_4O_{10}[(OH)_2,(H_2O)]$
Montmorillonite	$Na_{0.2}Ca_{0.1}Al_{1.5}Mg_{0.5}Si_4O_{10}(OH)_2 \cdot 4(H_2O)$

Table 5. Sequential Extraction and Total Metals From Overburden

Sample Location		AP-2019-1	AP-2019-2	AP-2019-3
Sample Depth (feet bgs)		30'-31'	35'-36'	18'-19'
Sample Date		6/3/2019	6/3/2019	6/3/2019
Analyte	SEP Step	mg/kg	mg/kg	mg/kg
Aluminum	SEP Step 1	<53 U	19 J	14 J
Aluminum	SEP Step 2	9.7 J *	18 J *	<38 * U
Aluminum	SEP Step 3	88	97	30
Aluminum	SEP Step 4	1700	1800	880
Aluminum	SEP Step 5	62 J *	55 J *	120 J *
Aluminum	SEP Step 6	2300	2000	1200
Aluminum	SEP Step 7	29000	26000	12000
Aluminum	SEP Sum	33000	30000	14000
Aluminum	SEP Total	60000	62000	20000
Antimony	SEP Step 1	<16 U	<15 U	<15 U
Antimony	SEP Step 2	<12 U	<11 U	<11 U
Antimony	SEP Step 3	<3.9 U	<3.8 U	<3.8 U
Antimony	SEP Step 4	<3.9 U	<3.8 U	<3.8 U
Antimony	SEP Step 5	<59 U	<57 U	<56 U
Antimony	SEP Step 6	<3.9 U	<3.8 U	<3.8 U
Antimony	SEP Step 7	<3.9 U	<3.8 U	<3.8 U
Antimony	SEP Sum	<3.0 U	<3.0 U	<3.0 U
Antimony	SEP Total	<3.9 U	<3.8 U	<3.8 U
Arsenic	SEP Step 1	<2.6 U	<2.5 U	<2.5 U
Arsenic	SEP Step 2	<2.0 U	<1.9 U	<1.9 U
Arsenic	SEP Step 3	1.8	0.97	<0.63 U
Arsenic	SEP Step 4	2.8 B	0.78 B	0.63 B
Arsenic	SEP Step 5	<9.9 U	<9.6 U	<9.4 U
Arsenic	SEP Step 6	0.94	0.74	0.24 J
Arsenic	SEP Step 7	1.2	0.71	0.79 J
Arsenic	SEP Sum	6.9	3.2	1.7
Arsenic	SEP Total	6.8	3.0	2.9 J
Barium	SEP Step 1	0.88 J	0.88 J	<13 U
Barium	SEP Step 2	0.76 J *	0.67 J *	<9.4 * U
Barium	SEP Step 3	4.3 B	4.1 B	2.3 J B
Barium	SEP Step 4	16	23	6.9
Barium	SEP Step 5	7.0 J *	11 J *	<47 * U
Barium	SEP Step 6	18	16	2.1 J
Barium	SEP Step 7	390	330	180
Barium	SEP Sum	440	390	190
Barium	SEP Total	680	560	240
Beryllium	SEP Step 1	<1.3 U	<1.3 U	<1.3 U
Beryllium	SEP Step 2	<0.99 * U	<0.96 * U	<0.94 * U
Beryllium	SEP Step 3	0.067 J	0.028 J	0.025 J
Beryllium	SEP Step 4	0.13 J	0.078 J	0.069 J
Beryllium	SEP Step 5	<4.9 * U	<4.8 * U	<4.7 * U
Beryllium	SEP Step 6	0.067 J	0.061 J	0.026 J

Table 5. Sequential Extraction and Total Metals From Overburden

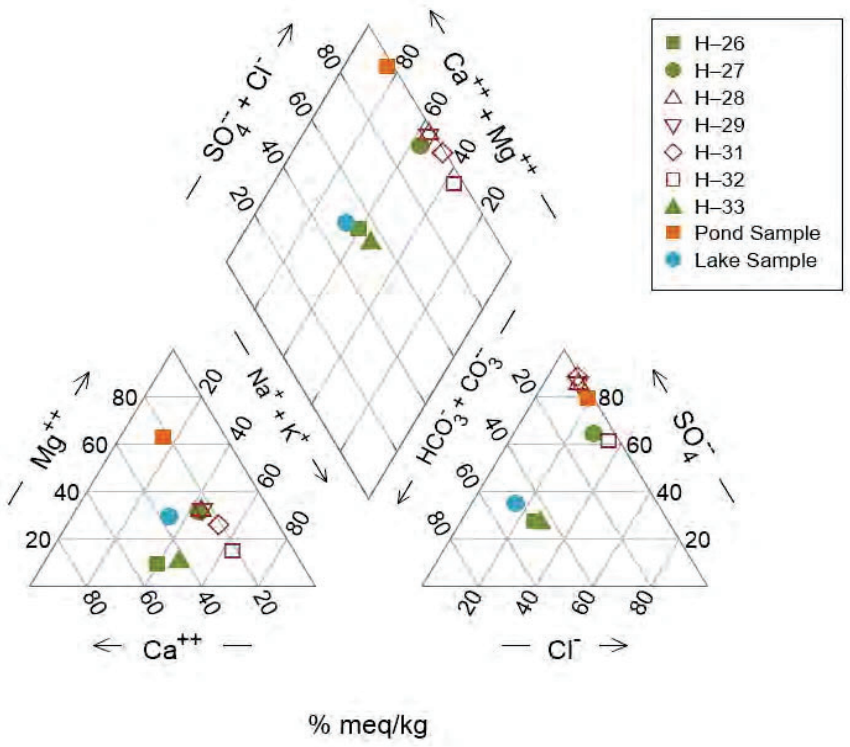
Sample Location		AP-2019-1	AP-2019-2	AP-2019-3
Sample Depth (feet bgs)		30'-31'	35'-36'	18'-19'
Sample Date		6/3/2019	6/3/2019	6/3/2019
Analyte	SEP Step	mg/kg	mg/kg	mg/kg
Beryllium	SEP Step 7	0.56	0.51	0.11 J
Beryllium	SEP Sum	0.83	0.68	0.23 J
Beryllium	SEP Total	0.89	0.72	0.42
Boron	Total 3050B	<25 U	<24 U	<24 U
Chromium	Total 3050B	13 F1	12	4.4
Cobalt	SEP Step 1	0.54 J	1.6 J	0.87 J
Cobalt	SEP Step 2	<9.9 U	0.27 J	<9.4 U
Cobalt	SEP Step 3	0.34 J	0.17 J	<3.1 U
Cobalt	SEP Step 4	1.5 J	1.5 J	0.53 J
Cobalt	SEP Step 5	<49 * U	0.85 J *	<47 * U
Cobalt	SEP Step 6	0.90 J	0.80 J	0.28 J
Cobalt	SEP Step 7	0.79 J	1.1 J	<6.3 U
Cobalt	SEP Sum	4.0	6.3	1.7 J
Cobalt	SEP Total	3.8 J	6.2 J	3.3 J
Hg	Total Hg	0.081 J	0.12 J	<0.13 U
Iron	SEP Step 1	<26 U	23 J	15 J
Iron	SEP Step 2	<20 * U	110 *	<19 * U
Iron	SEP Step 3	580	1100	57
Iron	SEP Step 4	3900	3800	2300
Iron	SEP Step 5	<99 * U	<96 * U	<94 * U
Iron	SEP Step 6	2500	3300	820
Iron	SEP Step 7	5200	5600	2000
Iron	SEP Sum	12000	14000	5200
Iron	SEP Total	11000	13000	8000
Lead	Total 3050B	6.4	6.2	3.9
Lithium	SEP Step 1	<13 U	<13 U	<13 U
Lithium	SEP Step 2	<9.9 U	<9.6 U	<9.4 U
Lithium	SEP Step 3	<3.3 U	<3.2 U	<3.1 U
Lithium	SEP Step 4	3.0 J	4.2	0.53 J
Lithium	SEP Step 5	<49 U	<48 U	<47 U
Lithium	SEP Step 6	2.1 J	2.1 J	0.62 J
Lithium	SEP Step 7	9.6	11	6.0
Lithium	SEP Sum	15	18	7.2
Lithium	SEP Total	18	26	9.6
Manganese	SEP Step 1	3.1 J	33	1.2 J
Manganese	SEP Step 2	<3.0 U	4.2	<2.8 U
Manganese	SEP Step 3	2.4 B	1.5 B	0.11 J B
Manganese	SEP Step 4	18	31	4.2
Manganese	SEP Step 5	<15 * U	3.9 J *	<14 * U
Manganese	SEP Step 6	16	19	2.9
Manganese	SEP Step 7	26	34	26
Manganese	SEP Sum	66	130	35
Manganese	SEP Total	66	150	47

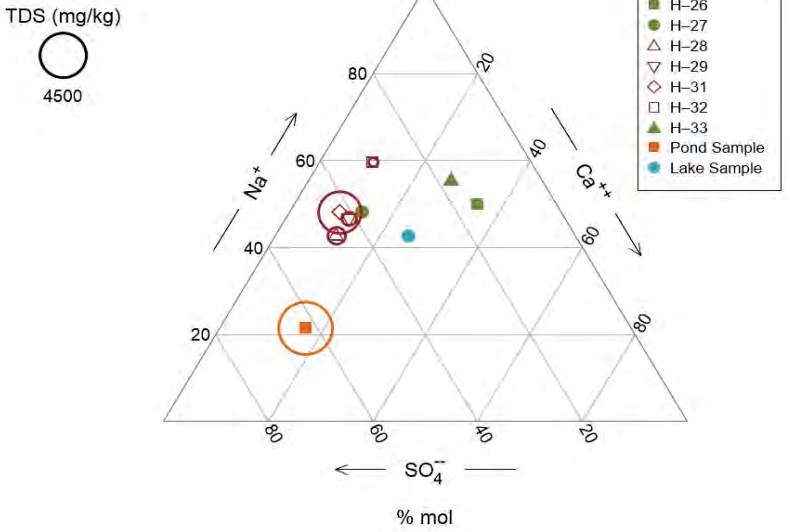
Table 5. Sequential Extraction and Total Metals From Overburden

Sample Location		AP-2019-1	AP-2019-2	AP-2019-3
Sample Depth (feet bgs)		30'-31'	35'-36'	18'-19'
Sample Date		6/3/2019	6/3/2019	6/3/2019
Analyte	SEP Step	mg/kg	mg/kg	mg/kg
Molybdenum	SEP Step 1	<11 U	<10 U	<10 U
Molybdenum	SEP Step 2	<7.9 U	<7.6 U	<7.5 U
Molybdenum	SEP Step 3	<2.6 U	<2.5 U	<2.5 U
Molybdenum	SEP Step 4	<2.6 U	<2.5 U	<2.5 U
Molybdenum	SEP Step 5	<39 U	<38 U	<38 U
Molybdenum	SEP Step 6	<2.6 U	<2.5 U	<2.5 U
Molybdenum	SEP Step 7	0.19 J	0.17 J	0.12 J
Molybdenum	SEP Sum	0.19 J	0.17 J	0.12 J
Molybdenum	SEP Total	0.40 J	0.41 J	0.28 J
Selenium	SEP Step 1	<2.6 U	<2.5 U	<2.5 U
Selenium	SEP Step 2	0.76 J B	0.90 J B	0.68 J B
Selenium	SEP Step 3	0.22 J B	<0.64 U	0.23 J B
Selenium	SEP Step 4	<0.66 * U	<0.64 * U	0.65 B *
Selenium	SEP Step 5	<9.9 U	<9.6 U	<9.4 U
Selenium	SEP Step 6	<0.66 U	<0.64 U	<0.63 U
Selenium	SEP Step 7	<0.66 U	<0.64 U	<1.3 U
Selenium	SEP Sum	0.98	0.90	1.6
Selenium	SEP Total	<0.66 U	<0.64 U	<3.1 U
Thallium	SEP Step 1	<9.2 U	<8.9 U	<8.8 U
Thallium	SEP Step 2	<6.9 U	<6.7 U	<6.6 U
Thallium	SEP Step 3	<2.3 U	<2.2 U	<2.2 U
Thallium	SEP Step 4	<2.3 U	<2.2 U	<2.2 U
Thallium	SEP Step 5	<35 * U	<33 * U	<33 * U
Thallium	SEP Step 6	<2.3 U	<2.2 U	<2.2 U
Thallium	SEP Step 7	0.48 J	0.70 J	<4.4 U
Thallium	SEP Sum	0.48 J	0.70 J	<1.8 U
Thallium	SEP Total	<4.6 U	<11 U	<11 U

Figures

(a)





CLIENT
LUMINANT
MARTIN LAKE SES
ASH POND AREA

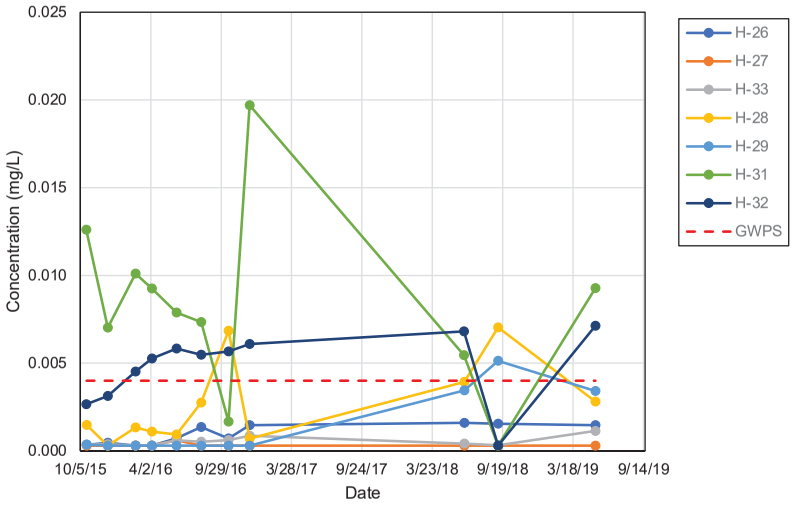
CONSULTANT
GOLDER

PROJECT
ASSESSMENT OF CORRECTIVE MEASURES
GEOCHEMICAL ASSESSMENT

TITLE
MAJOR GROUNDWATER CEHMISTRY (A) AND SELECT RELATIVE ION ABUNDANCE (B)

PROJECT NO.	PHASE	REV.	FIGURE
19122434	01	A	1a-b

(a)



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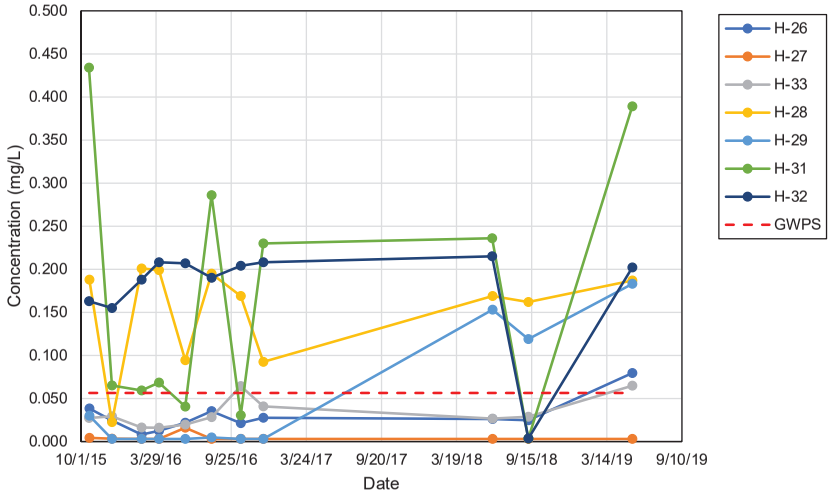

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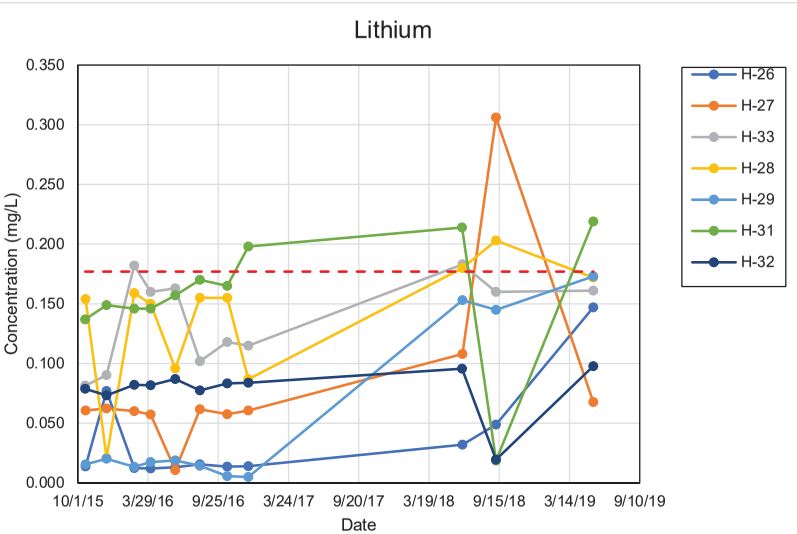

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MARTIN LAKE SES
ASH POND AREA

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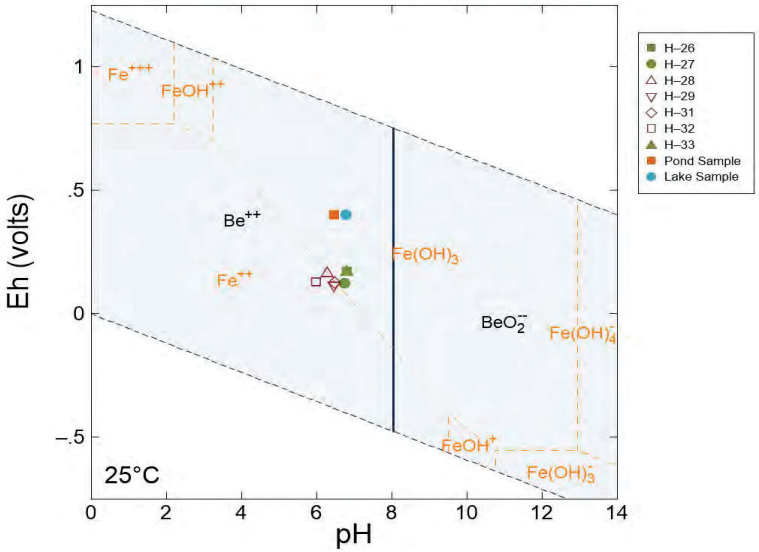
GOLDER

PROJECT
ASSESSMENT OF CORRECTIVE MEASURES
GEOCHEMICAL ASSESSMENT

TITLE
HISTORICAL TRENDS OF BERYLLIUM (A), COBALT (B), AND LITHIUM (C), IN GROUNDWATER

PROJECT NO.	PHASE	REV.	FIGURE
19122434	01	A	2a-c

(a)



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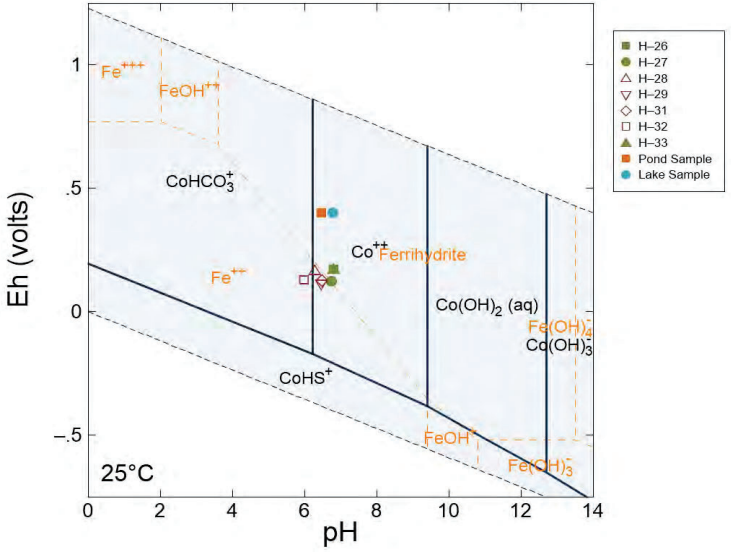

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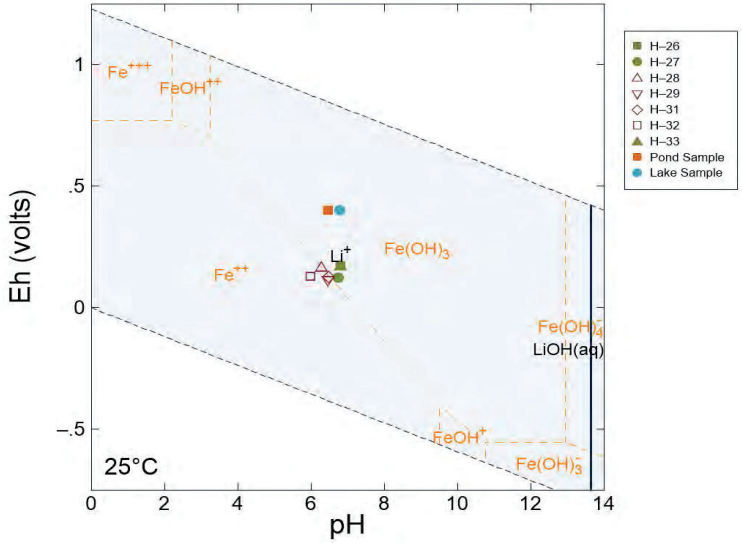

CLIENT
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ASH POND AREA

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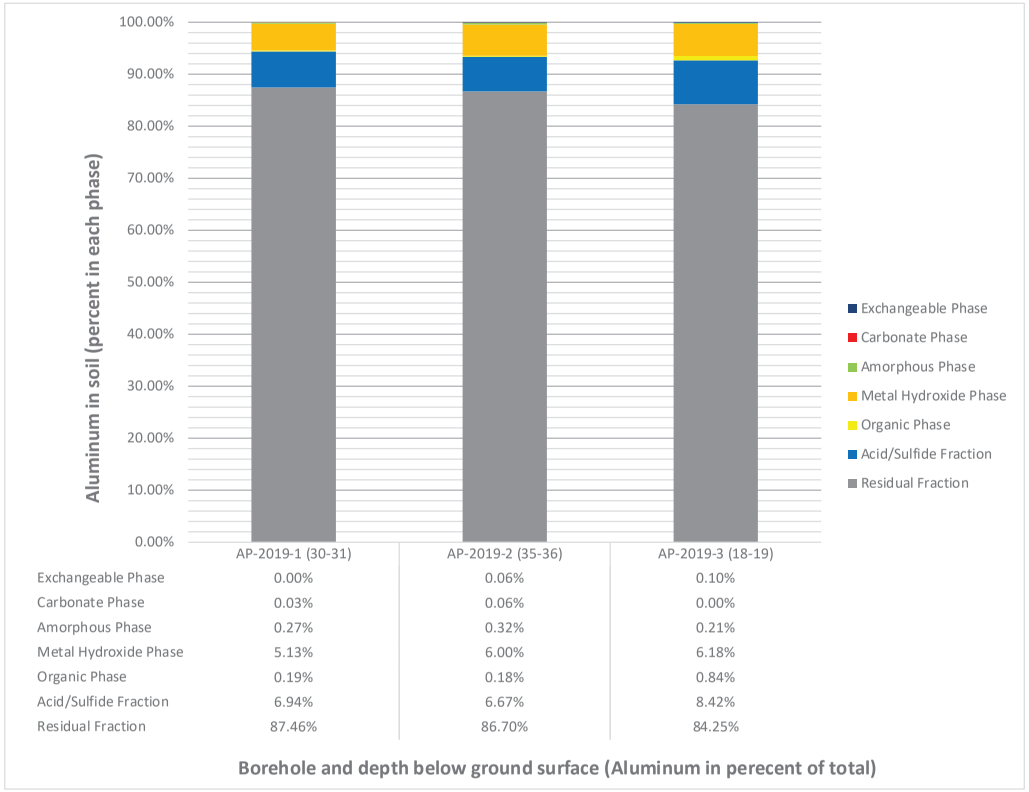
PROJECT
ASSESSMENT OF CORRECTIVE MEASURES
GEOCHEMICAL ASSESSMENT

TITLE
SPECIATION OF BERYLLIUM (A), COBALT (B),
AND LITHIUM (C), IN GROUNDWATER

PROJECT NO.	PHASE	REV.	FIGURE
164817101	01	A	3a-c



	AP-2019-1 (30-31)	AP-2019-2 (35-36)	AP-2019-3 (18-19)
Exchangeable Phase	0.00%	0.06%	0.10%
Carbonate Phase	0.03%	0.06%	0.00%
Amorphous Phase	0.27%	0.32%	0.21%
Metal Hydroxide Phase	5.13%	6.00%	6.18%
Organic Phase	0.19%	0.18%	0.84%
Acid/Sulfide Fraction	6.94%	6.67%	8.42%
Residual Fraction	87.46%	86.70%	84.25%

Borehole and depth below ground surface (Aluminum in perecent of total)

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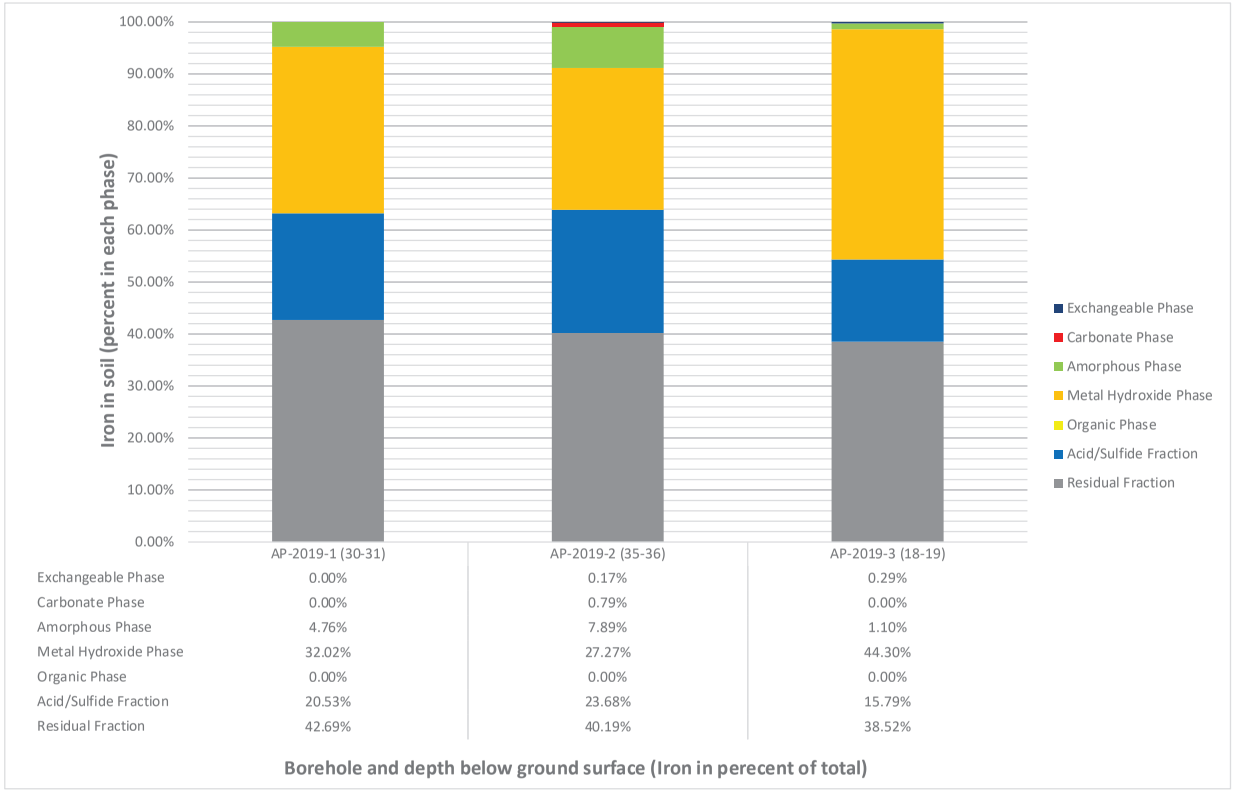
ASSESSMENT OF CORRECTIVE MEASURES
GEOCHEMICAL ASSESSMENT

TITLE
SEQUENTIAL EXTRACTION OF ALUMINUM

PROJECT NO.	PHASE	REV.	FIGURE
19122434	01	A	4



	AP-2019-1 (30-31)	AP-2019-2 (35-36)	AP-2019-3 (18-19)
Exchangeable Phase	0.00%	0.17%	0.29%
Carbonate Phase	0.00%	0.79%	0.00%
Amorphous Phase	4.76%	7.89%	1.10%
Metal Hydroxide Phase	32.02%	27.27%	44.30%
Organic Phase	0.00%	0.00%	0.00%
Acid/Sulfide Fraction	20.53%	23.68%	15.79%
Residual Fraction	42.69%	40.19%	38.52%

Borehole and depth below ground surface (Iron in perecent of total)

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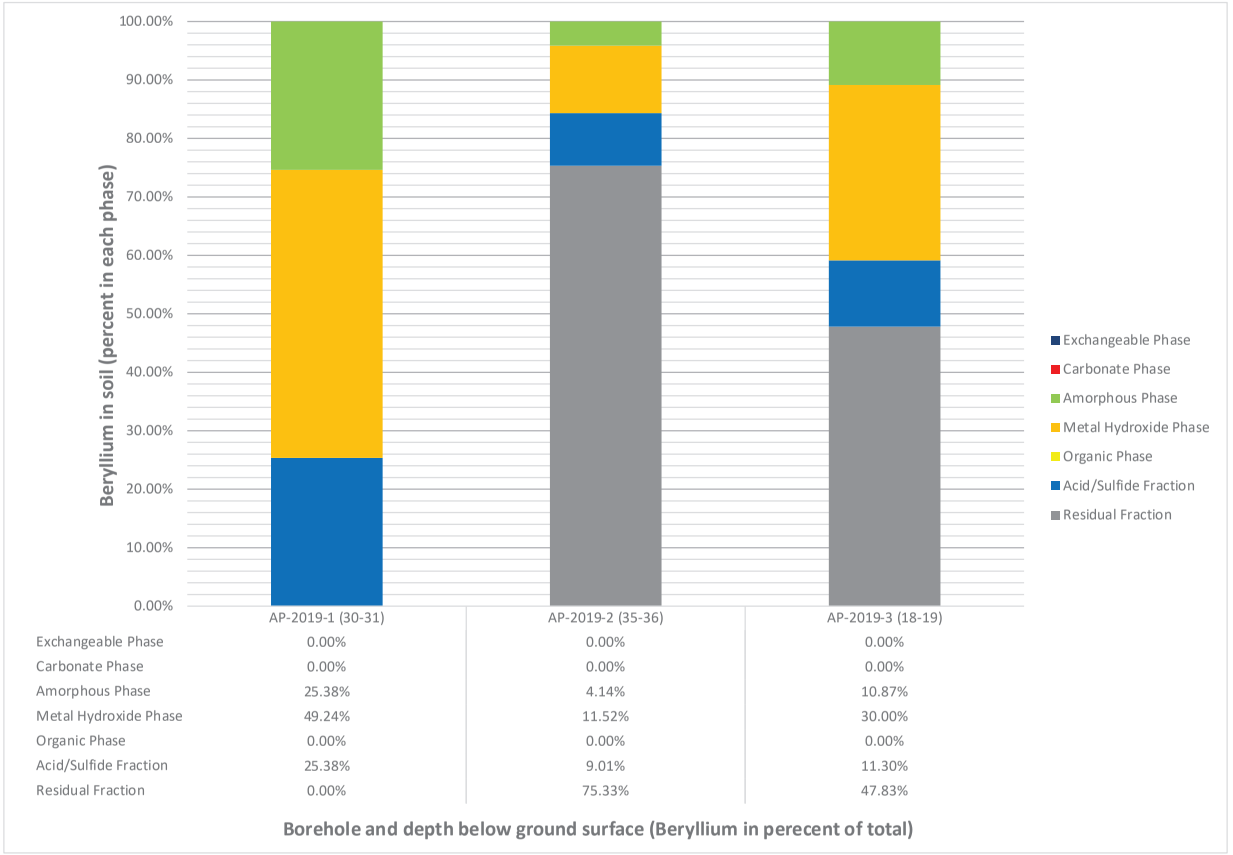
GEOCHEMICAL ASSESSMENT

TITLE
SEQUENTIAL EXTRACTION

PROJECT NO.	PHASE	REV.	FIGURE
19122434	01	A	5



	AP-2019-1 (30-31)	AP-2019-2 (35-36)	AP-2019-3 (18-19)
Exchangeable Phase	0.00%	0.00%	0.00%
Carbonate Phase	0.00%	0.00%	0.00%
Amorphous Phase	25.38%	4.14%	10.87%
Metal Hydroxide Phase	49.24%	11.52%	30.00%
Organic Phase	0.00%	0.00%	0.00%
Acid/Sulfide Fraction	25.38%	9.01%	11.30%
Residual Fraction	0.00%	75.33%	47.83%

Borehole and depth below ground surface (Beryllium in perecent of total)

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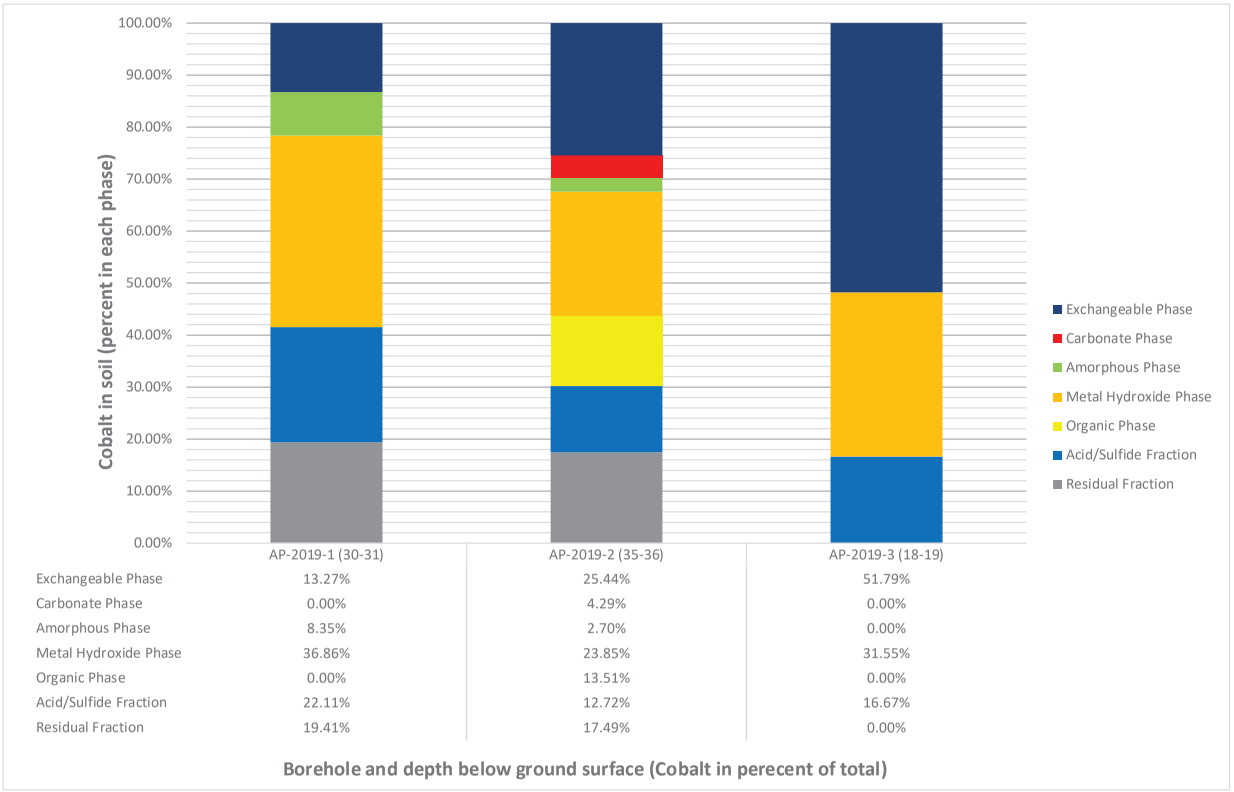
ASSESSMENT OF CORRECTIVE MEASURES
GEOCHEMICAL ASSESSMENT

TITLE
SEQUENTIAL EXTRACTION

PROJECT NO.	PHASE	REV.	FIGURE
19122434	01	A	6



	AP-2019-1 (30-31)	AP-2019-2 (35-36)	AP-2019-3 (18-19)
Exchangeable Phase	13.27%	25.44%	51.79%
Carbonate Phase	0.00%	4.29%	0.00%
Amorphous Phase	8.35%	2.70%	0.00%
Metal Hydroxide Phase	36.86%	23.85%	31.55%
Organic Phase	0.00%	13.51%	0.00%
Acid/Sulfide Fraction	22.11%	12.72%	16.67%
Residual Fraction	19.41%	17.49%	0.00%

Borehole and depth below ground surface (Cobalt in perecent of total)

CLIENT
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ASH POND AREA

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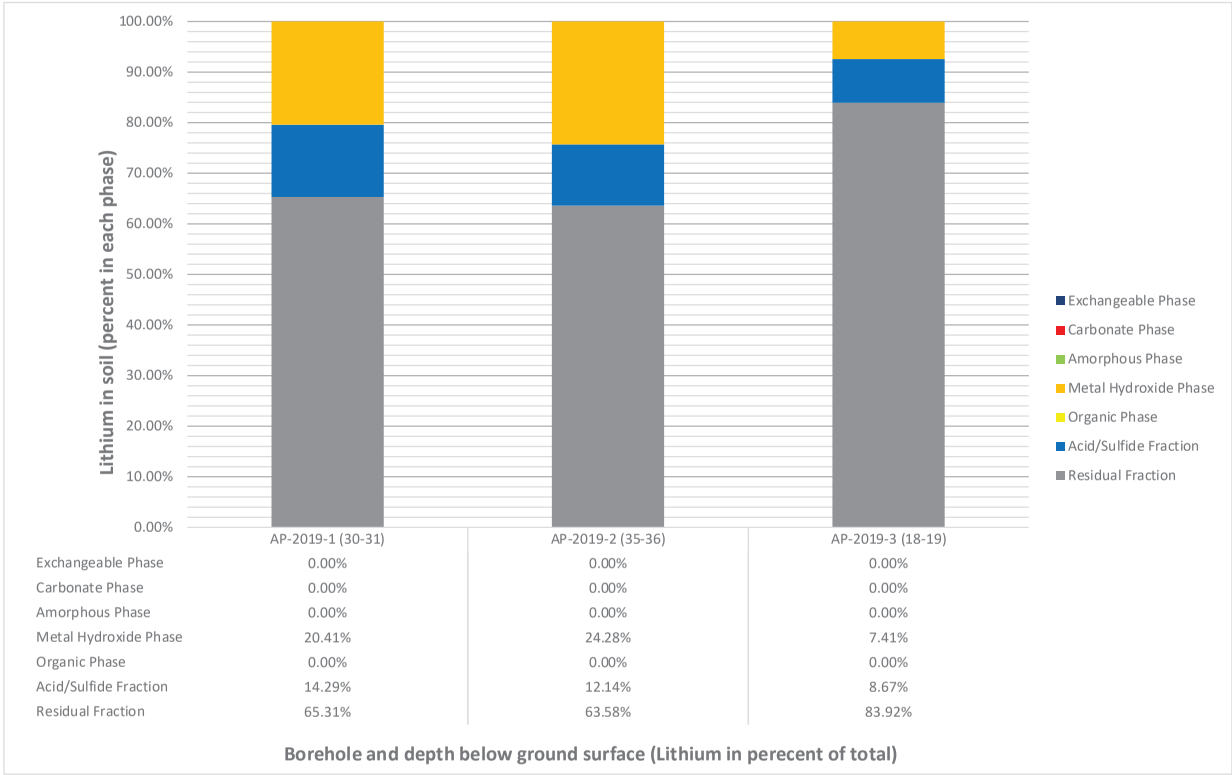
ASSESSMENT OF CORRECTIVE MEASURES
GEOCHEMICAL ASSESSMENT

TITLE
SEQUENTIAL EXTRACTION

PROJECT NO.	PHASE	REV.	FIGURE
19122434	01	A	7



	AP-2019-1 (30-31)	AP-2019-2 (35-36)	AP-2019-3 (18-19)
Exchangeable Phase	0.00%	0.00%	0.00%
Carbonate Phase	0.00%	0.00%	0.00%
Amorphous Phase	0.00%	0.00%	0.00%
Metal Hydroxide Phase	20.41%	24.28%	7.41%
Organic Phase	0.00%	0.00%	0.00%
Acid/Sulfide Fraction	14.29%	12.14%	8.67%
Residual Fraction	65.31%	63.58%	83.92%

Borehole and depth below ground surface (Lithium in perecent of total)

CLIENT
LUMINANT
MARTIN LAKE SES
ASH POND AREA

CONSULTANT
GOLDER

PROJECT
ASSESSMENT OF CORRECTIVE MEASURES
GEOCHEMICAL ASSESSMENT

TITLE
SEQUENTIAL EXTRACTION

PROJECT NO.	PHASE	REV.	FIGURE
19122434	01	A	8

APPENDIX A

BORING LOGS

Luminant

Log of Boring: AP-2019-1

Big Brown Steam Electric Station
Franklin, TX

Golder Project No. 19122434E

Completion Date:	6/3/2019	Drilling Method:	Sonic
Drilling Company:	Walker-Hill Environmental	Borehole Diameter (in.):	6
Driller:	Rodney Labrosse	Total Depth (ft):	40
Driller's License:	60059	TOC Elevation (ft. AMSL):	
Logged By:	Kelsey Worley	Northing:	3570888
Sampling Method:	4"x10' Core barrel	Easting:	352661.3

Depth (ft)	Recovery (ft/ft)	USCS	Lithologic Description
0			(0 - 1) Silty CLAY, brown, roots present, low plasticity, slightly moist
5	10.0/10.0	CL	(1 - 8) Silty CLAY, brown to orange, moist, moderate plasticity, soft to hard
10		SC	(8 - 12.5) Clayey SAND, orange and brown, moist, soft, clay content increases with depth, moderate plasticity
15	10.0/10.0	CH	(12.5 - 22) CLAY, gray to light brown, blocky, moist, firm to stiff, low plasticity
20			
25	10.0/10.0	SW	(22 - 34) SAND, light brown to gray and orange, moist, very fine to fine grained, subrounded, soft to firm, iron staining 22'-23.5', color change to light gray and light brown at 24', saturated at 30'
30			
35	10.0/10.0	SC	(34 - 40) Clayey SAND, gray and tan, becomes gray to dark gray at 35.5', stiff, moist, variations in clay content and firmness with depth
40			

Notes:
1. This log should not be used separately from the report to which it is attached.

GOLDER
2201 Double Creek Dr., Suite 4004
Round Rock, Texas 78664
O·512.671.3434 F·512.671.3446

Luminant

Log of Boring: AP-2019-2

Big Brown Steam Electric Station
Franklin, TX

Golder Project No. 19122434E

Completion Date:	6/3/2019	Drilling Method:	Sonic
Drilling Company:	Walker-Hill Environmental	Borehole Diameter (in.):	6
Driller:	Rodney Labrosse	Total Depth (ft):	40
Driller's License:	60059	TOC Elevation (ft. AMSL):	
Logged By:	Kelsey Worley	Northing:	3570800
Sampling Method:	4"x10' Core barrel	Easting:	352739.4

Depth (ft)	Recovery (ft/ft)	USCS	Lithologic Description
0			
5	10.0/10.0	CL	(0 - 6) Silty CLAY, brown to gray, soft to firm, damp, low plasticity
10			(6 - 11) Sandy CLAY, red and orange with gray, clay ribbons, damp, soft to firm, weak cementation, moderate plasticity
15	10.0/10.0	SC	(11 - 20) Clayey Silty SAND, tan with red and gray, clay ribbons, moist, firm, weak cementation, moderate plasticity
20		SW	(20 - 22) SAND, light brown, moist to wet, fine grained, subrounded, soft
25	10.0/10.0	SC	(22 - 34) Clayey SAND, gray and tan, becomes gray to dark, gray at 26', stiff, moist, brown clay ribbons from 27'-29.5'
30			
35	10.0/10.0	SW	(34 - 40) SAND, gray, very fine to fine grained, wet, subrounded, soft to firm, saturated 35'-38', black organics at 38.8'-40.0'
40			

Notes:
1. This log should not be used separately from the report to which it is attached.

GOLDER
2201 Double Creek Dr., Suite 4004
Round Rock, Texas 78664
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Luminant

Log of Boring: AP-2019-3

Big Brown Steam Electric Station
Franklin, TX

Golder Project No. 19122434E

Completion Date:	6/3/2019	Drilling Method:	Sonic
Drilling Company:	Walker-Hill Environmental	Borehole Diameter (in.):	6
Driller:	Rodney Labrosse	Total Depth (ft):	30
Driller's License:	60059	TOC Elevation (ft. AMSL):	
Logged By:	Kelsey Worley	Northing:	352739.4
Sampling Method:	4"x10' Core barrel	Easting:	3570800

Depth (ft)	Recovery (ft/ft)	USCS	Lithologic Description
0			
		SM	(0 - 6) Silty SAND, light brown, firm, moderate cementation, roots present 0'-1.5'
5	10.0/10.0		
			(6 - 11) Clayey SAND, orange to brown, moist, soft to firm, no plasticity, weak cementation, gray sand lense, fine grained, at 11', fine to very fine grained
10		SC	
			(11 - 18) Clayey SAND, wet, gray and tan to orange, soft to firm, sand content increases with depth
15	10.0/10.0		
20		SP	(18 - 25) SAND, orange and gray, saturated, fine grained, soft, no cementation
25	10.0/10.0		
		CL	(25 - 30) Silty CLAY, dark gray, dry, hard, moderate sand content, weak cementation
30			

Notes:
1. This log should not be used separately from the report to which it is attached.

GOLDER
2201 Double Creek Dr., Suite 4004
Round Rock, Texas 78664
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APPENDIX B

LABORATORY ANALYTICAL REPORTS

June 14, 2019

Will Vienne
Golder
2201 Double Creek Dr #4004
Round Rock, Texas 78664
TEL: (512) 671-3434
FAX (512) 671-3446

Order No.: 1905168

RE: Luminant-MLSES Ash Ponds

Dear Will Vienne:

DHL Analytical, Inc. received 7 sample(s) on 5/15/2019 for the analyses presented in the following report.

There were no problems with the analyses and all data met requirements of NELAP except where noted in the Case Narrative. All non-NELAP methods will be identified accordingly in the case narrative and all estimated uncertainties of test results are within method or EPA specifications.

If you have any questions regarding these tests results, please feel free to call. Thank you for using DHL Analytical.

Sincerely,

John DuPont
General Manager

This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211-19-24

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DHL ANALYTICAL
2300 Double Creek Dr. ■ Round Rock, TX 78664
Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

nelap

№ 86479

CHAIN-OF-CUSTODY

CLIENT: GOLDER
ADDRESS: 2201 DOUBLE CREEK DR, ROUND ROCK, TX 78664
PHONE: 512-671-3434 FAX/E-MAIL: 512-671-3446
DATA REPORTED TO: WILL VIENNE
ADDITIONAL REPORT COPIES TO:

DATE: 5-14-19 PAGE 1 OF 1
PO #: DHL WORK ORDER #: 1905168
PROJECT LOCATION OR NAME: LUMINANT- MLSES ASH PONDS
CLENT PROJECT #: 19122262-C COLLECTOR: J. BRAYTON

Authorize 5% surcharge for TRRP Report? ☐ Yes ☐ No

S=SOIL P=PAINT
W=WATER SL=SLUDGE
A=AIR O=OTHER
L=LIQUID SO=SOLID
SE=SEDIMENT

ANALYSES: BTEX ☐ MTBE ☐ [METHOD 8021] / TPH 1005 ☐ TPH 1006 ☐ HOLD 1006 ☐ / GRO [METHOD 8015] ☐ DRO [METHOD 8105] ☐ / VOC 8260 ☐ VOC 624 ☐ VOC 8260/5035 ☐ / SVOC 8270 ☐ PAH 8270 ☐ HOLD PAH ☐ SVOC 625 ☐ / 8270 PEST ☐ 625 PEST/PCB ☐ 608 PCB ☐ / 8270 O-P PEST ☐ 8082 PCB ☐ 8270 PCB ☐ / 8321 HERB ☐ T PHOS, AMMONIA ☐ / METALS 6020 ☐ METALS 200.8 ☐ DISS. METALS ☐ / RCRA ☐ TX11 ☐ / PH ☐ HEX CHROM ☐ ALKALINITY ☐ COD ☐ / CHLORIDE ☐ ANIONS ☐ / TCLP-SVOC ☐ VOC ☐ PEST ☐ HERB ☐ / TCLP-METALS ☐ RCRA 8 ☐ TX-11 ☐ Pb ☐ / RCI ☐ FLASHPOINT ☐ DGAS ☐ / TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐ / APPENDIX III & IV / ALK, NO3, PO4, Na, Mn, K / FERROUS & FERRIC IRON

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	HCl	HNO_3	H_2SO_4 ☐ NaOH ☐	ICE	UNPRESERVED	APPENDIX III & IV	ALK, NO3, PO4, Na, Mn, K	FERROUS & FERRIC IRON	FIELD NOTES
H-31	01	5-14-19	0740	W		7				X		X	X	X	
H-32	02		0825	W		7				X		X	X	X	
H-27	03		0940	W		7				X		X	X	X	
H-29	04		1125	W		7				X		X	X	X	
H-28	05		1230	W		7				X		X	X	X	
H-26	06		1425	W		7				X		X	X	X	
H-33	07		1530	W		7				X		X	X	X	

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
[signature]	5-14-19	Fed Ex
Fed Ex	5/15/19 0943	[signature]

☐ DHL DISPOSAL @ $5.00 each ☐ Return

TURN AROUND TIME
RUSH ☐ CALL FIRST
1 DAY ☐ CALL FIRST
2 DAY ☐
NORMAL ☒
OTHER ☐

LABORATORY USE ONLY:
RECEIVING TEMP: 4.5°C/3.0°C THERM #: 78
CUSTODY SEALS: ☐ BROKEN ☐ INTACT ☒ NOT USED
CARRIER: ☐ LONE STAR ☒ FEDEX ☐ UPS ☐ OTHER
☐ COURIER DELIVERY
☐ HAND DELIVERED

DHL COC Rev 1 | FEB 2010

APPENDIX E-Revision 2 February 27, 2024

Eric Lau

From: John DuPont
Sent: Tuesday, May 28, 2019 11:35 AM
To: Eric Lau
Subject: FW: CCR Analysis

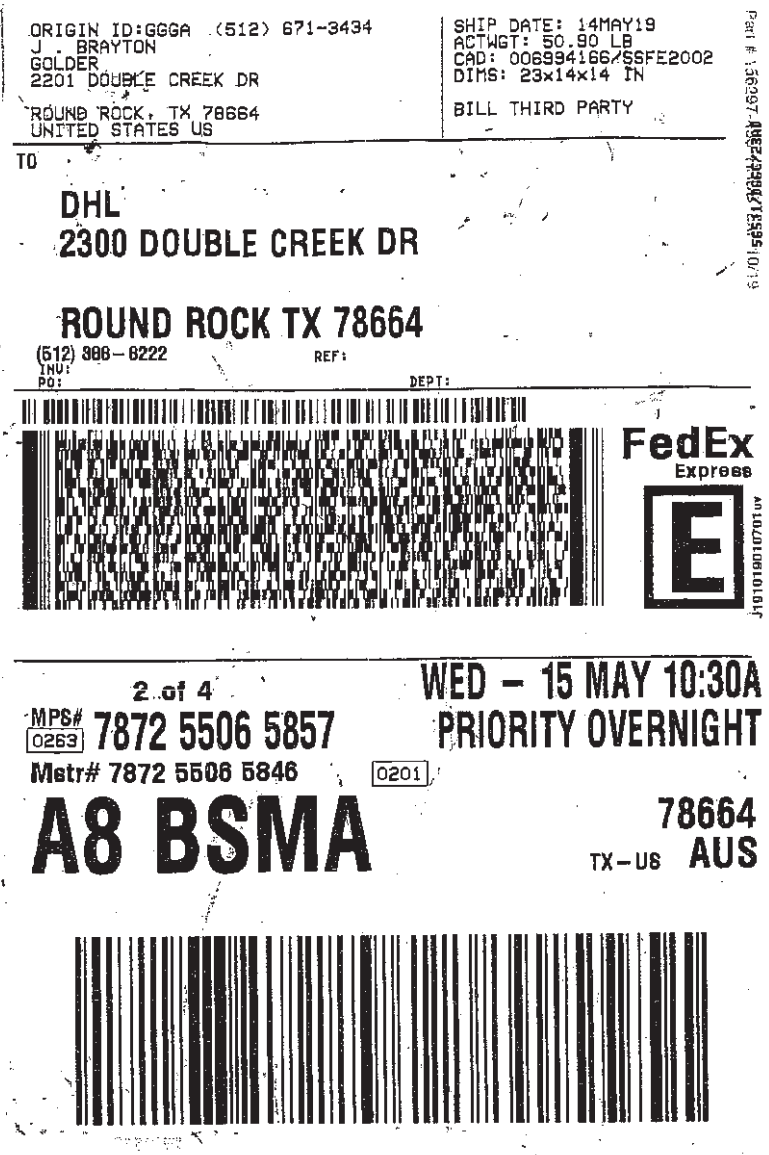
Appendix III Parameters:
Metals (Ca and B)
Anions (Cl, F, and SO4)
TDS

Appendix IV Parameters:

Metals (As, Ba, Be, Cd, Co, Cr, Hg, Li, Mo, Pb, Sb, Se, and Tl)
Ra-226
Ra-228

From: Vienne, Will [mailto:William_Vienne@golder.com]
Sent: Tuesday, April 09, 2019 12:48 PM
To: John DuPont <dupont@dhlanalytical.com>
Subject: CCR Analysis

ORIGIN ID:GGGA (512) 671-3436
J . BRAYTON
GOLDER
2201 DOUBLE CREEK DR
ROUND ROCK, TX 78664
UNITED STATES US
SHIP DATE: 14MAY19
ACTWGT: 48.70 LB
CAD: 006894186/SSFE2002
DIMS: 23x13x13 IN
BILL THIRD PARTY
TO
DHL
2300 DOUBLE CREEK DR
ROUND ROCK TX 78664
(512) 388-8222
REF:
INV:
PO:
DEPT:
FedEx
Express
4 of 4
MPS# 0263 7872 5506 5879
Mstr# 7872 5506 5846
0201
WED - 15 MAY 10:30A
PRIORITY OVERNIGHT
A8 BSMA
78664
TX-US AUS



ORIGIN ID:GGGA (512) 671-3434
J . BRAYTON
GOLDER
2201 DOUBLE CREEK DR

ROUND ROCK, TX 78664
UNITED STATES US

SHIP DATE: 14MAY19
ACTWGT: 50.90 LB
CAD: 0068994166/SSFE2002
DIMS: 23x14x14 IN

BILL THIRD PARTY

TO

DHL
2300 DOUBLE CREEK DR

ROUND ROCK TX 78664
(512) 388-6222 REF:
INV:
PO: DEPT:

FedEx
Express

2 of 4
MPS# 0263 7872 5506 5857
Mstr# 7872 5506 5846 0201

WED - 15 MAY 10:30A
PRIORITY OVERNIGHT

A8 BSMA

78664
TX-US AUS

DHL Analytical, Inc.

Sample Receipt Checklist

Client Name Golder

Date Received: 5/15/2019

Work Order Number 1905168

Received by EL

Checklist completed by: _____ 5/15/2019
Signature Date

Reviewed by (DL) 5/15/2019
Initials Date

Carrier name FedEx 1day

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	4.5 °C
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH<2 acceptable upon receipt?	Yes ☑	No ☐	NA ☐ LOT # 11837
	Adjusted? no		Checked by EL
Water - ph>9 (S) or ph>10 (CN) acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted?		Checked by

Any No response must be detailed in the comments section below.

Client contacted _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments: _____

Corrective Action _____

DHL Analytical, Inc. **Date:** *14-Jun-19*

CLIENT: Golder
Project: Luminant-MLSES Ash Ponds
Lab Order: 1905168

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Method SW6020A - Metals Analysis
Method SW7470A - Mercury Analysis
Method E300 - Anions Analysis
Method M2320 B - Alkalinity Analysis
Method M3500-Fe D - Ferrous Iron Analysis (this parameter is not NELAP certified)
Method M3500-Fe D - Ferric Iron (calculation) (this calculation is not NELAP certified).
Method M4500-P E - Orthophosphate Analysis
Method M2540C - TDS Analysis
Sub-contract - Radium-228 and Radium-226 analyses by methods E904 and SM 7500 Ra B M. Analyzed at Pace Analytical.

LOG IN

The samples were received and log-in performed on 5/15/19. A total of 7 samples were received. The samples arrived in good condition and were properly packaged.

METALS ANALYSIS

For Metals analysis performed on 5/20/19 and 5/21/19 the matrix spike and matrix spike duplicate recoveries were out of control limits for a total of four analytes. These are flagged accordingly in the QC summary report. The sample selected for the matrix spike and matrix spike duplicate was not from this work order. The LCS was within control limits for these analytes. No further corrective actions were taken.

For Metals analysis peformed on 5/20/19 LCVL6-190520 was slightly above control limits for Sodium. This is flagged accordingly. The associated CCV6-190520 was within control limits for this analyte. No further corrective actions were taken.

ANIONS ANALYSIS

For Anions analysis performed on 5/15/19 (batch 90908) the matrix spike and matrix spike duplicate recoveries (1905167-02 MS/MSD) were out of control limits for Chloride and Sulfate. This was due to matrix effect. These are flagged accordingly in the QC summary report. The sample selected for the matrix spike and matrix spike duplicate was not from this work order. The LCS was within control limits for these analytes. No further corrective actions were taken.

FERRIC IRON (CALCULATION)

For Ferric Iron calculation the Ferrous Iron result was slightly higher than the total Iron result for sample H-31. This is within the acceptable variation limits. No further corrective actions were taken.

DHL Analytical, Inc.

Date: *14-Jun-19*

CLIENT: Golder
Project: Luminant-MLSES Ash Ponds
Lab Order: 1905168

Work Order Sample Summary

Lab Smp ID	Client Sample ID	Tag Number	Date Collected	Date Recved
1905168-01	H-31		05/14/19 07:40 AM	5/15/2019
1905168-02	H-32		05/14/19 08:25 AM	5/15/2019
1905168-03	H-27		05/14/19 09:40 AM	5/15/2019
1905168-04	H-29		05/14/19 11:25 AM	5/15/2019
1905168-05	H-28		05/14/19 12:30 PM	5/15/2019
1905168-06	H-26		05/14/19 02:25 PM	5/15/2019
1905168-07	H-33		05/14/19 03:30 PM	5/15/2019

DHL Analytical, Inc.

14-Jun-19

Lab Order: 1905168
Client: Golder
Project: Luminant-MLSES Ash Ponds

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1905168-01A	H-31	05/14/19 07:40 AM	Aqueous	M3500-Fe	Ferrous Iron Prep Water	05/20/19 02:56 PM	91002
	H-31	05/14/19 07:40 AM	Aqueous	M3500-Fe	Ferrous Iron Prep Water	05/20/19 02:56 PM	91002
1905168-01B	H-31	05/14/19 07:40 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/17/19 08:40 AM	90959
	H-31	05/14/19 07:40 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/17/19 08:40 AM	90959
	H-31	05/14/19 07:40 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/17/19 08:40 AM	90959
	H-31	05/14/19 07:40 AM	Aqueous	SW7470A	Mercury Aq Prep	05/21/19 09:56 AM	91017
	H-31	05/14/19 07:40 AM	Aqueous	SW7470A	Mercury Aq Prep	05/21/19 09:56 AM	91017
1905168-01C	H-31	05/14/19 07:40 AM	Aqueous	M2320 B	Alkalinity Preparation	05/16/19 10:12 AM	90940
	H-31	05/14/19 07:40 AM	Aqueous	E300	Anion Preparation	05/15/19 09:07 AM	90908
	H-31	05/14/19 07:40 AM	Aqueous	E300	Anion Preparation	05/15/19 09:07 AM	90908
	H-31	05/14/19 07:40 AM	Aqueous	E300	Anion Preparation	05/16/19 09:16 AM	90935
	H-31	05/14/19 07:40 AM	Aqueous	M4500-P E	Orthophosphate Prep	05/15/19 12:12 PM	90921
	H-31	05/14/19 07:40 AM	Aqueous	M2540C	TDS Preparation	05/16/19 03:23 PM	90953
1905168-02A	H-32	05/14/19 08:25 AM	Aqueous	M3500-Fe	Ferrous Iron Prep Water	05/20/19 02:56 PM	91002
	H-32	05/14/19 08:25 AM	Aqueous	M3500-Fe	Ferrous Iron Prep Water	05/20/19 02:56 PM	91002
1905168-02B	H-32	05/14/19 08:25 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/17/19 08:40 AM	90959
	H-32	05/14/19 08:25 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/17/19 08:40 AM	90959
	H-32	05/14/19 08:25 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/17/19 08:40 AM	90959
	H-32	05/14/19 08:25 AM	Aqueous	SW7470A	Mercury Aq Prep	05/21/19 09:56 AM	91017
1905168-02C	H-32	05/14/19 08:25 AM	Aqueous	M2320 B	Alkalinity Preparation	05/16/19 10:12 AM	90940
	H-32	05/14/19 08:25 AM	Aqueous	E300	Anion Preparation	05/15/19 09:07 AM	90908
	H-32	05/14/19 08:25 AM	Aqueous	E300	Anion Preparation	05/15/19 09:07 AM	90908
	H-32	05/14/19 08:25 AM	Aqueous	M4500-P E	Orthophosphate Prep	05/15/19 12:12 PM	90921
	H-32	05/14/19 08:25 AM	Aqueous	M2540C	TDS Preparation	05/16/19 03:23 PM	90953
1905168-03A	H-27	05/14/19 09:40 AM	Aqueous	M3500-Fe	Ferrous Iron Prep Water	05/20/19 02:56 PM	91002
1905168-03B	H-27	05/14/19 09:40 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/17/19 08:40 AM	90959
	H-27	05/14/19 09:40 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/17/19 08:40 AM	90959
	H-27	05/14/19 09:40 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/17/19 08:40 AM	90959

DHL Analytical, Inc. *14-Jun-19*

Lab Order: 1905168
Client: Golder
Project: Luminant-MLSES Ash Ponds

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1905168-03B	H-27	05/14/19 09:40 AM	Aqueous	SW7470A	Mercury Aq Prep	05/21/19 09:56 AM	91017
1905168-03C	H-27	05/14/19 09:40 AM	Aqueous	M2320 B	Alkalinity Preparation	05/16/19 10:12 AM	90940
	H-27	05/14/19 09:40 AM	Aqueous	E300	Anion Preparation	05/15/19 09:07 AM	90908
	H-27	05/14/19 09:40 AM	Aqueous	E300	Anion Preparation	05/15/19 09:07 AM	90908
	H-27	05/14/19 09:40 AM	Aqueous	M4500-P E	Orthophosphate Prep	05/15/19 12:12 PM	90921
	H-27	05/14/19 09:40 AM	Aqueous	M2540C	TDS Preparation	05/16/19 03:23 PM	90953
1905168-04A	H-29	05/14/19 11:25 AM	Aqueous	M3500-Fe	Ferrous Iron Prep Water	05/20/19 02:56 PM	91002
1905168-04B	H-29	05/14/19 11:25 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/17/19 08:40 AM	90959
	H-29	05/14/19 11:25 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/17/19 08:40 AM	90959
	H-29	05/14/19 11:25 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/17/19 08:40 AM	90959
	H-29	05/14/19 11:25 AM	Aqueous	SW7470A	Mercury Aq Prep	05/21/19 09:56 AM	91017
1905168-04C	H-29	05/14/19 11:25 AM	Aqueous	M2320 B	Alkalinity Preparation	05/16/19 10:12 AM	90940
	H-29	05/14/19 11:25 AM	Aqueous	E300	Anion Preparation	05/15/19 09:07 AM	90908
	H-29	05/14/19 11:25 AM	Aqueous	E300	Anion Preparation	05/15/19 09:07 AM	90908
	H-29	05/14/19 11:25 AM	Aqueous	M4500-P E	Orthophosphate Prep	05/15/19 12:12 PM	90921
	H-29	05/14/19 11:25 AM	Aqueous	M2540C	TDS Preparation	05/16/19 03:23 PM	90953
1905168-05A	H-28	05/14/19 12:30 PM	Aqueous	M3500-Fe	Ferrous Iron Prep Water	05/20/19 02:56 PM	91002
1905168-05B	H-28	05/14/19 12:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/17/19 08:40 AM	90959
	H-28	05/14/19 12:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/17/19 08:40 AM	90959
	H-28	05/14/19 12:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/17/19 08:40 AM	90959
	H-28	05/14/19 12:30 PM	Aqueous	SW7470A	Mercury Aq Prep	05/21/19 09:56 AM	91017
1905168-05C	H-28	05/14/19 12:30 PM	Aqueous	M2320 B	Alkalinity Preparation	05/16/19 10:12 AM	90940
	H-28	05/14/19 12:30 PM	Aqueous	E300	Anion Preparation	05/15/19 09:07 AM	90908
	H-28	05/14/19 12:30 PM	Aqueous	E300	Anion Preparation	05/15/19 09:07 AM	90908
	H-28	05/14/19 12:30 PM	Aqueous	M4500-P E	Orthophosphate Prep	05/15/19 12:12 PM	90921
	H-28	05/14/19 12:30 PM	Aqueous	M2540C	TDS Preparation	05/16/19 03:23 PM	90953
1905168-06A	H-26	05/14/19 02:25 PM	Aqueous	M3500-Fe	Ferrous Iron Prep Water	05/20/19 02:56 PM	91002
1905168-06B	H-26	05/14/19 02:25 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/17/19 08:40 AM	90959

DHL Analytical, Inc. *14-Jun-19*

Lab Order: 1905168
Client: Golder
Project: Luminant-MLSES Ash Ponds

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1905168-06B	H-26	05/14/19 02:25 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/17/19 08:40 AM	90959
	H-26	05/14/19 02:25 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/17/19 08:40 AM	90959
	H-26	05/14/19 02:25 PM	Aqueous	SW7470A	Mercury Aq Prep	05/21/19 09:56 AM	91017
1905168-06C	H-26	05/14/19 02:25 PM	Aqueous	M2320 B	Alkalinity Preparation	05/16/19 10:12 AM	90940
	H-26	05/14/19 02:25 PM	Aqueous	E300	Anion Preparation	05/15/19 09:07 AM	90908
	H-26	05/14/19 02:25 PM	Aqueous	E300	Anion Preparation	05/15/19 09:07 AM	90908
	H-26	05/14/19 02:25 PM	Aqueous	M4500-P E	Orthophosphate Prep	05/15/19 12:12 PM	90921
	H-26	05/14/19 02:25 PM	Aqueous	M2540C	TDS Preparation	05/16/19 03:23 PM	90953
1905168-07A	H-33	05/14/19 03:30 PM	Aqueous	M3500-Fe	Ferrous Iron Prep Water	05/20/19 02:56 PM	91002
1905168-07B	H-33	05/14/19 03:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/17/19 08:40 AM	90959
	H-33	05/14/19 03:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/17/19 08:40 AM	90959
	H-33	05/14/19 03:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/17/19 08:40 AM	90959
	H-33	05/14/19 03:30 PM	Aqueous	SW7470A	Mercury Aq Prep	05/21/19 09:56 AM	91017
1905168-07C	H-33	05/14/19 03:30 PM	Aqueous	M2320 B	Alkalinity Preparation	05/16/19 10:12 AM	90940
	H-33	05/14/19 03:30 PM	Aqueous	E300	Anion Preparation	05/15/19 09:07 AM	90908
	H-33	05/14/19 03:30 PM	Aqueous	E300	Anion Preparation	05/15/19 09:07 AM	90908
	H-33	05/14/19 03:30 PM	Aqueous	M4500-P E	Orthophosphate Prep	05/15/19 12:12 PM	90921
	H-33	05/14/19 03:30 PM	Aqueous	M2540C	TDS Preparation	05/16/19 03:23 PM	90953

DHL Analytical, Inc.

14-Jun-19

Lab Order: 1905168
Client: Golder
Project: Luminant-MLSES Ash Ponds

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1905168-01A	H-31	Aqueous	M3500-Fe D	Ferric Iron (Calculated)	91002	1	05/24/19	UV/VIS_2_190524A
	H-31	Aqueous	M3500-Fe D	Ferrous Iron	91002	1	05/20/19 03:55 PM	UV/VIS_2_190520A
	H-31	Aqueous	M3500-Fe D	Ferrous Iron	91002	100	05/20/19 04:11 PM	UV/VIS_2_190520A
1905168-01B	H-31	Aqueous	SW7470A	Mercury Total: Aqueous	91017	1	05/22/19 10:16 AM	CETAC2_HG_190522A
	H-31	Aqueous	SW7470A	Mercury Total: Aqueous	91017	5	05/22/19 11:21 AM	CETAC2_HG_190522A
	H-31	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	90959	1	05/20/19 03:43 PM	ICP-MS4_190520B
	H-31	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	90959	50	05/21/19 12:54 PM	ICP-MS5_190521A
	H-31	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	90959	1	05/21/19 02:51 PM	ICP-MS5_190521A
1905168-01C	H-31	Aqueous	M2320 B	Alkalinity	90940	1	05/16/19 04:13 PM	TITRATOR_190516A
	H-31	Aqueous	E300	Anions by IC method - Water	90908	10	05/15/19 02:27 PM	IC2_190515A
	H-31	Aqueous	E300	Anions by IC method - Water	90908	1	05/15/19 05:55 PM	IC2_190515A
	H-31	Aqueous	E300	Anions by IC method - Water	90935	100	05/16/19 05:42 PM	IC4_190516A
	H-31	Aqueous	M4500-P E	Orthophosphate	90921	1	05/15/19 02:47 PM	UV/VIS_2_190515B
	H-31	Aqueous	M2540C	Total Dissolved Solids	90953	1	05/17/19 11:40 AM	WC_190517D
1905168-02A	H-32	Aqueous	M3500-Fe D	Ferric Iron (Calculated)	91002	1	05/24/19	UV/VIS_2_190524A
	H-32	Aqueous	M3500-Fe D	Ferrous Iron	91002	1	05/20/19 03:55 PM	UV/VIS_2_190520A
	H-32	Aqueous	M3500-Fe D	Ferrous Iron	91002	5	05/20/19 04:11 PM	UV/VIS_2_190520A
1905168-02B	H-32	Aqueous	SW7470A	Mercury Total: Aqueous	91017	1	05/22/19 10:27 AM	CETAC2_HG_190522A
	H-32	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	90959	1	05/21/19 02:53 PM	ICP-MS5_190521A
	H-32	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	90959	10	05/21/19 12:56 PM	ICP-MS5_190521A
	H-32	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	90959	1	05/20/19 03:45 PM	ICP-MS4_190520B
1905168-02C	H-32	Aqueous	M2320 B	Alkalinity	90940	1	05/16/19 04:15 PM	TITRATOR_190516A
	H-32	Aqueous	E300	Anions by IC method - Water	90908	10	05/15/19 02:43 PM	IC2_190515A
	H-32	Aqueous	E300	Anions by IC method - Water	90908	1	05/15/19 06:11 PM	IC2_190515A
	H-32	Aqueous	M4500-P E	Orthophosphate	90921	1	05/15/19 12:49 PM	UV/VIS_2_190515B
	H-32	Aqueous	M2540C	Total Dissolved Solids	90953	1	05/17/19 11:40 AM	WC_190517D

DHL Analytical, Inc. *14-Jun-19*

Lab Order: 1905168
Client: Golder
Project: Luminant-MLSES Ash Ponds

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1905168-03A	H-27	Aqueous	M3500-Fe D	Ferric Iron (Calculated)	91002	1	05/24/19	UV/VIS_2_190524A
	H-27	Aqueous	M3500-Fe D	Ferrous Iron	91002	1	05/20/19 03:56 PM	UV/VIS_2_190520A
1905168-03B	H-27	Aqueous	SW7470A	Mercury Total: Aqueous	91017	1	05/22/19 10:29 AM	CETAC2_HG_190522A
	H-27	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	90959	1	05/20/19 03:47 PM	ICP-MS4_190520B
	H-27	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	90959	10	05/21/19 12:59 PM	ICP-MS5_190521A
	H-27	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	90959	1	05/21/19 02:14 PM	ICP-MS5_190521A
1905168-03C	H-27	Aqueous	M2320 B	Alkalinity	90940	1	05/16/19 04:20 PM	TITRATOR_190516A
	H-27	Aqueous	E300	Anions by IC method - Water	90908	10	05/15/19 02:59 PM	IC2_190515A
	H-27	Aqueous	E300	Anions by IC method - Water	90908	1	05/15/19 06:27 PM	IC2_190515A
	H-27	Aqueous	M4500-P E	Orthophosphate	90921	1	05/15/19 12:49 PM	UV/VIS_2_190515B
	H-27	Aqueous	M2540C	Total Dissolved Solids	90953	1	05/17/19 11:40 AM	WC_190517D
1905168-04A	H-29	Aqueous	M3500-Fe D	Ferric Iron (Calculated)	91002	1	05/24/19	UV/VIS_2_190524A
	H-29	Aqueous	M3500-Fe D	Ferrous Iron	91002	1	05/20/19 03:56 PM	UV/VIS_2_190520A
1905168-04B	H-29	Aqueous	SW7470A	Mercury Total: Aqueous	91017	1	05/22/19 10:31 AM	CETAC2_HG_190522A
	H-29	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	90959	1	05/20/19 03:49 PM	ICP-MS4_190520B
	H-29	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	90959	1	05/21/19 02:55 PM	ICP-MS5_190521A
	H-29	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	90959	20	05/21/19 01:01 PM	ICP-MS5_190521A
1905168-04C	H-29	Aqueous	M2320 B	Alkalinity	90940	1	05/16/19 04:23 PM	TITRATOR_190516A
	H-29	Aqueous	E300	Anions by IC method - Water	90908	10	05/15/19 03:15 PM	IC2_190515A
	H-29	Aqueous	E300	Anions by IC method - Water	90908	1	05/15/19 06:43 PM	IC2_190515A
	H-29	Aqueous	M4500-P E	Orthophosphate	90921	1	05/15/19 12:49 PM	UV/VIS_2_190515B
	H-29	Aqueous	M2540C	Total Dissolved Solids	90953	1	05/17/19 11:40 AM	WC_190517D
1905168-05A	H-28	Aqueous	M3500-Fe D	Ferric Iron (Calculated)	91002	1	05/24/19	UV/VIS_2_190524A
	H-28	Aqueous	M3500-Fe D	Ferrous Iron	91002	1	05/20/19 03:57 PM	UV/VIS_2_190520A
1905168-05B	H-28	Aqueous	SW7470A	Mercury Total: Aqueous	91017	1	05/22/19 10:34 AM	CETAC2_HG_190522A
	H-28	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	90959	20	05/21/19 01:03 PM	ICP-MS5_190521A

DHL Analytical, Inc. *14-Jun-19*

Lab Order: 1905168
Client: Golder
Project: Luminant-MLSES Ash Ponds

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1905168-05B	H-28	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	90959	1	05/21/19 02:57 PM	ICP-MS5_190521A
	H-28	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	90959	1	05/20/19 03:51 PM	ICP-MS4_190520B
1905168-05C	H-28	Aqueous	M2320 B	Alkalinity	90940	1	05/16/19 04:27 PM	TITRATOR_190516A
	H-28	Aqueous	E300	Anions by IC method - Water	90908	10	05/15/19 03:31 PM	IC2_190515A
	H-28	Aqueous	E300	Anions by IC method - Water	90908	1	05/15/19 06:59 PM	IC2_190515A
	H-28	Aqueous	M4500-P E	Orthophosphate	90921	1	05/15/19 12:50 PM	UV/VIS_2_190515B
	H-28	Aqueous	M2540C	Total Dissolved Solids	90953	1	05/17/19 11:40 AM	WC_190517D
1905168-06A	H-26	Aqueous	M3500-Fe D	Ferric Iron (Calculated)	91002	1	05/24/19	UV/VIS_2_190524A
	H-26	Aqueous	M3500-Fe D	Ferrous Iron	91002	1	05/20/19 03:57 PM	UV/VIS_2_190520A
1905168-06B	H-26	Aqueous	SW7470A	Mercury Total: Aqueous	91017	1	05/22/19 10:36 AM	CETAC2_HG_190522A
	H-26	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	90959	1	05/20/19 03:53 PM	ICP-MS4_190520B
	H-26	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	90959	10	05/21/19 01:05 PM	ICP-MS5_190521A
	H-26	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	90959	1	05/21/19 02:16 PM	ICP-MS5_190521A
1905168-06C	H-26	Aqueous	M2320 B	Alkalinity	90940	1	05/16/19 04:42 PM	TITRATOR_190516A
	H-26	Aqueous	E300	Anions by IC method - Water	90908	10	05/15/19 03:47 PM	IC2_190515A
	H-26	Aqueous	E300	Anions by IC method - Water	90908	1	05/15/19 07:15 PM	IC2_190515A
	H-26	Aqueous	M4500-P E	Orthophosphate	90921	1	05/15/19 12:50 PM	UV/VIS_2_190515B
	H-26	Aqueous	M2540C	Total Dissolved Solids	90953	1	05/17/19 11:40 AM	WC_190517D
1905168-07A	H-33	Aqueous	M3500-Fe D	Ferric Iron (Calculated)	91002	1	05/24/19	UV/VIS_2_190524A
	H-33	Aqueous	M3500-Fe D	Ferrous Iron	91002	1	05/20/19 03:58 PM	UV/VIS_2_190520A
1905168-07B	H-33	Aqueous	SW7470A	Mercury Total: Aqueous	91017	1	05/22/19 10:38 AM	CETAC2_HG_190522A
	H-33	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	90959	1	05/20/19 03:54 PM	ICP-MS4_190520B
	H-33	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	90959	10	05/21/19 01:08 PM	ICP-MS5_190521A
	H-33	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	90959	1	05/21/19 02:19 PM	ICP-MS5_190521A
1905168-07C	H-33	Aqueous	M2320 B	Alkalinity	90940	1	05/16/19 04:49 PM	TITRATOR_190516A
	H-33	Aqueous	E300	Anions by IC method - Water	90908	10	05/15/19 04:03 PM	IC2_190515A
	H-33	Aqueous	E300	Anions by IC method - Water	90908	1	05/15/19 07:31 PM	IC2_190515A

DHL Analytical, Inc. *14-Jun-19*

Lab Order: 1905168
Client: Golder
Project: Luminant-MLSES Ash Ponds

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1905168-07C	H-33	Aqueous	M4500-P E	Orthophosphate	90921	1	05/15/19 12:50 PM	UV/VIS_2_190515B
	H-33	Aqueous	M2540C	Total Dissolved Solids	90953	1	05/17/19 11:40 AM	WC_190517D

DHL Analytical, Inc.

Date: *14-Jun-19*

CLIENT:	Golder	**Client Sample ID:**	H-31
Project:	Luminant-MLSES Ash Ponds	**Lab ID:**	1905168-01
Project No:	19122262-C	**Collection Date:**	05/14/19 07:40 AM
Lab Order:	1905168	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	05/20/19 03:43 PM
Arsenic	0.00675	0.00200	0.00500		mg/L	1	05/20/19 03:43 PM
Barium	0.0163	0.00300	0.0100		mg/L	1	05/20/19 03:43 PM
Beryllium	0.00928	0.000300	0.00100		mg/L	1	05/20/19 03:43 PM
Boron	20.0	0.500	1.50		mg/L	50	05/21/19 12:54 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	05/20/19 03:43 PM
Calcium	234	5.00	15.0		mg/L	50	05/21/19 12:54 PM
Chromium	0.00315	0.00200	0.00500	J	mg/L	1	05/20/19 03:43 PM
Cobalt	0.389	0.00300	0.00500		mg/L	1	05/20/19 03:43 PM
Iron	48.7	1.50	5.00		mg/L	50	05/21/19 12:54 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	05/20/19 03:43 PM
Lithium	0.219	0.00500	0.0100		mg/L	1	05/20/19 03:43 PM
Magnesium	170	5.00	15.0		mg/L	50	05/21/19 12:54 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	05/21/19 02:51 PM
Potassium	6.18	0.100	0.300		mg/L	1	05/20/19 03:43 PM
Selenium	0.0261	0.00200	0.00500		mg/L	1	05/20/19 03:43 PM
Sodium	672	5.00	15.0		mg/L	50	05/21/19 12:54 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	05/20/19 03:43 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.000400	0.000400	0.00100		mg/L	5	05/22/19 11:21 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **JL**
Chloride	225	3.00	10.0		mg/L	10	05/15/19 02:27 PM
Fluoride	0.960	0.100	0.400		mg/L	1	05/15/19 05:55 PM
Nitrate-N	<0.100	0.100	0.500		mg/L	1	05/15/19 05:55 PM
Sulfate	2470	100	300		mg/L	100	05/16/19 05:42 PM
ALKALINITY		**M2320 B**					Analyst: **CC**
Alkalinity, Bicarbonate (As CaCO3)	33.9	10.0	20.0		mg/L @ pH 4.52	1	05/16/19 04:13 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.52	1	05/16/19 04:13 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.52	1	05/16/19 04:13 PM
Alkalinity, Total (As CaCO3)	33.9	20.0	20.0		mg/L @ pH 4.52	1	05/16/19 04:13 PM
FERRIC IRON (CALCULATED)		**M3500-FE D**					Analyst: **CAC**
Iron, Ferric	<0.0500	0.0500	0.100	N	mg/L	1	05/24/19
FERROUS IRON		**M3500-FE D**					Analyst: **BTJ**
Iron, Ferrous	49.5	5.00	10.0	N	mg/L	100	05/20/19 04:11 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
S	Spike Recovery outside control limits	N	Parameter not NELAP certified

CLIENT:	Golder	**Client Sample ID:**	H-31
Project:	Luminant-MLSES Ash Ponds	**Lab ID:**	1905168-01
Project No:	19122262-C	**Collection Date:**	05/14/19 07:40 AM
Lab Order:	1905168	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
ORTHOPHOSPHATE		**M4500-P E**					Analyst: **CC**
Phosphorus, Total Orthophosphate (As P)	0.0770	0.0300	0.100	J	mg/L	1	05/15/19 02:47 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	4230	50.0	50.0		mg/L	1	05/17/19 11:40 AM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
	DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit
	ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
	S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *14-Jun-19*

CLIENT:	Golder	**Client Sample ID:**	H-32
Project:	Luminant-MLSES Ash Ponds	**Lab ID:**	1905168-02
Project No:	19122262-C	**Collection Date:**	05/14/19 08:25 AM
Lab Order:	1905168	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	05/20/19 03:45 PM
Arsenic	0.00202	0.00200	0.00500	J	mg/L	1	05/20/19 03:45 PM
Barium	0.0162	0.00300	0.0100		mg/L	1	05/20/19 03:45 PM
Beryllium	0.00713	0.000300	0.00100		mg/L	1	05/20/19 03:45 PM
Boron	2.08	0.100	0.300		mg/L	10	05/21/19 12:56 PM
Cadmium	0.000366	0.000300	0.00100	J	mg/L	1	05/20/19 03:45 PM
Calcium	45.2	1.00	3.00		mg/L	10	05/21/19 12:56 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	05/20/19 03:45 PM
Cobalt	0.202	0.00300	0.00500		mg/L	1	05/20/19 03:45 PM
Iron	1.81	0.0300	0.100		mg/L	1	05/20/19 03:45 PM
Lead	0.000574	0.000300	0.00100	J	mg/L	1	05/20/19 03:45 PM
Lithium	0.0978	0.00500	0.0100		mg/L	1	05/20/19 03:45 PM
Magnesium	18.5	0.100	0.300		mg/L	1	05/20/19 03:45 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	05/21/19 02:53 PM
Potassium	2.57	0.100	0.300		mg/L	1	05/20/19 03:45 PM
Selenium	0.00675	0.00200	0.00500		mg/L	1	05/20/19 03:45 PM
Sodium	151	1.00	3.00		mg/L	10	05/21/19 12:56 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	05/20/19 03:45 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	05/22/19 10:27 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **JL**
Chloride	135	3.00	10.0		mg/L	10	05/15/19 02:43 PM
Fluoride	1.15	0.100	0.400		mg/L	1	05/15/19 06:11 PM
Nitrate-N	273	1.00	5.00		mg/L	10	05/15/19 02:43 PM
Sulfate	320	10.0	30.0		mg/L	10	05/15/19 02:43 PM
ALKALINITY		**M2320 B**					Analyst: **CC**
Alkalinity, Bicarbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 1.76	1	05/16/19 04:15 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 1.76	1	05/16/19 04:15 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 1.76	1	05/16/19 04:15 PM
Alkalinity, Total (As CaCO3)	<20.0	20.0	20.0		mg/L @ pH 1.76	1	05/16/19 04:15 PM
FERRIC IRON (CALCULATED)		**M3500-FE D**					Analyst: **CAC**
Iron, Ferric	0.640	0.0500	0.100	N	mg/L	1	05/24/19
FERROUS IRON		**M3500-FE D**					Analyst: **BTJ**
Iron, Ferrous	1.17	0.250	0.500	N	mg/L	5	05/20/19 04:11 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *14-Jun-19*

CLIENT:	Golder	**Client Sample ID:**	H-32
Project:	Luminant-MLSES Ash Ponds	**Lab ID:**	1905168-02
Project No:	19122262-C	**Collection Date:**	05/14/19 08:25 AM
Lab Order:	1905168	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
ORTHOPHOSPHATE		**M4500-P E**					Analyst: **CC**
Phosphorus, Total Orthophosphate (As P)	0.0600	0.0300	0.100	J	mg/L	1	05/15/19 12:49 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	910	50.0	50.0		mg/L	1	05/17/19 11:40 AM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
	DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit
	ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
	S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *14-Jun-19*

CLIENT:	Golder	**Client Sample ID:**	H-27
Project:	Luminant-MLSES Ash Ponds	**Lab ID:**	1905168-03
Project No:	19122262-C	**Collection Date:**	05/14/19 09:40 AM
Lab Order:	1905168	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	05/20/19 03:47 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	05/20/19 03:47 PM
Barium	0.0208	0.00300	0.0100		mg/L	1	05/20/19 03:47 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	05/20/19 03:47 PM
Boron	0.350	0.0100	0.0300		mg/L	1	05/21/19 02:14 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	05/20/19 03:47 PM
Calcium	61.8	1.00	3.00		mg/L	10	05/21/19 12:59 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	05/20/19 03:47 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	05/20/19 03:47 PM
Iron	0.0711	0.0300	0.100	J	mg/L	1	05/20/19 03:47 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	05/20/19 03:47 PM
Lithium	0.0678	0.00500	0.0100		mg/L	1	05/20/19 03:47 PM
Magnesium	47.3	1.00	3.00		mg/L	10	05/21/19 12:59 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	05/21/19 02:14 PM
Potassium	3.01	0.100	0.300		mg/L	1	05/20/19 03:47 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	05/20/19 03:47 PM
Sodium	123	1.00	3.00		mg/L	10	05/21/19 12:59 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	05/20/19 03:47 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	05/22/19 10:29 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **JL**
Chloride	132	3.00	10.0		mg/L	10	05/15/19 02:59 PM
Fluoride	0.159	0.100	0.400	J	mg/L	1	05/15/19 06:27 PM
Nitrate-N	0.658	0.100	0.500		mg/L	1	05/15/19 06:27 PM
Sulfate	406	10.0	30.0		mg/L	10	05/15/19 02:59 PM
ALKALINITY		**M2320 B**					Analyst: **CC**
Alkalinity, Bicarbonate (As CaCO3)	49.0	10.0	20.0		mg/L @ pH 4.5	1	05/16/19 04:20 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.5	1	05/16/19 04:20 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.5	1	05/16/19 04:20 PM
Alkalinity, Total (As CaCO3)	49.0	20.0	20.0		mg/L @ pH 4.5	1	05/16/19 04:20 PM
FERRIC IRON (CALCULATED)		**M3500-FE D**					Analyst: **CAC**
Iron, Ferric	0.0711	0.0500	0.100	JN	mg/L	1	05/24/19
FERROUS IRON		**M3500-FE D**					Analyst: **BTJ**
Iron, Ferrous	<0.0500	0.0500	0.100	N	mg/L	1	05/20/19 03:56 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *14-Jun-19*

CLIENT:	Golder	**Client Sample ID:**	H-27
Project:	Luminant-MLSES Ash Ponds	**Lab ID:**	1905168-03
Project No:	19122262-C	**Collection Date:**	05/14/19 09:40 AM
Lab Order:	1905168	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
ORTHOPHOSPHATE		**M4500-P E**					Analyst: **CC**
Phosphorus, Total Orthophosphate (As P)	0.126	0.0300	0.100		mg/L	1	05/15/19 12:49 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	897	10.0	10.0		mg/L	1	05/17/19 11:40 AM

Qualifiers:				
	*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
	DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit
	ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
	S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *14-Jun-19*

CLIENT:	Golder	**Client Sample ID:**	H-29
Project:	Luminant-MLSES Ash Ponds	**Lab ID:**	1905168-04
Project No:	19122262-C	**Collection Date:**	05/14/19 11:25 AM
Lab Order:	1905168	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	05/20/19 03:49 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	05/20/19 03:49 PM
Barium	0.0138	0.00300	0.0100		mg/L	1	05/20/19 03:49 PM
Beryllium	0.00341	0.000300	0.00100		mg/L	1	05/20/19 03:49 PM
Boron	8.12	0.200	0.600		mg/L	20	05/21/19 01:01 PM
Cadmium	0.00219	0.000300	0.00100		mg/L	1	05/20/19 03:49 PM
Calcium	95.9	2.00	6.00		mg/L	20	05/21/19 01:01 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	05/20/19 03:49 PM
Cobalt	0.183	0.00300	0.00500		mg/L	1	05/20/19 03:49 PM
Iron	0.0521	0.0300	0.100	J	mg/L	1	05/20/19 03:49 PM
Lead	0.000543	0.000300	0.00100	J	mg/L	1	05/20/19 03:49 PM
Lithium	0.173	0.00500	0.0100		mg/L	1	05/20/19 03:49 PM
Magnesium	80.5	2.00	6.00		mg/L	20	05/21/19 01:01 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	05/21/19 02:55 PM
Potassium	2.01	0.100	0.300		mg/L	1	05/20/19 03:49 PM
Selenium	0.00616	0.00200	0.00500		mg/L	1	05/20/19 03:49 PM
Sodium	211	2.00	6.00		mg/L	20	05/21/19 01:01 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	05/20/19 03:49 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	05/22/19 10:31 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **JL**
Chloride	81.8	3.00	10.0		mg/L	10	05/15/19 03:15 PM
Fluoride	0.104	0.100	0.400	J	mg/L	1	05/15/19 06:43 PM
Nitrate-N	0.121	0.100	0.500	J	mg/L	1	05/15/19 06:43 PM
Sulfate	780	10.0	30.0		mg/L	10	05/15/19 03:15 PM
ALKALINITY		**M2320 B**					Analyst: **CC**
Alkalinity, Bicarbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.5	1	05/16/19 04:23 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.5	1	05/16/19 04:23 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.5	1	05/16/19 04:23 PM
Alkalinity, Total (As CaCO3)	<20.0	20.0	20.0		mg/L @ pH 4.5	1	05/16/19 04:23 PM
FERRIC IRON (CALCULATED)		**M3500-FE D**					Analyst: **CAC**
Iron, Ferric	0.0521	0.0500	0.100	JN	mg/L	1	05/24/19
FERROUS IRON		**M3500-FE D**					Analyst: **BTJ**
Iron, Ferrous	<0.0500	0.0500	0.100	N	mg/L	1	05/20/19 03:56 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
S	Spike Recovery outside control limits	N	Parameter not NELAP certified

CLIENT:	Golder	**Client Sample ID:**	H-29
Project:	Luminant-MLSES Ash Ponds	**Lab ID:**	1905168-04
Project No:	19122262-C	**Collection Date:**	05/14/19 11:25 AM
Lab Order:	1905168	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
ORTHOPHOSPHATE		**M4500-P E**					Analyst: **CC**
Phosphorus, Total Orthophosphate (As P)	0.0570	0.0300	0.100	J	mg/L	1	05/15/19 12:49 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	1400	50.0	50.0		mg/L	1	05/17/19 11:40 AM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
	DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit
	ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
	S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *14-Jun-19*

CLIENT:	Golder	**Client Sample ID:**	H-28
Project:	Luminant-MLSES Ash Ponds	**Lab ID:**	1905168-05
Project No:	19122262-C	**Collection Date:**	05/14/19 12:30 PM
Lab Order:	1905168	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	05/20/19 03:51 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	05/20/19 03:51 PM
Barium	0.0141	0.00300	0.0100		mg/L	1	05/20/19 03:51 PM
Beryllium	0.00281	0.000300	0.00100		mg/L	1	05/20/19 03:51 PM
Boron	8.51	0.200	0.600		mg/L	20	05/21/19 01:03 PM
Cadmium	0.00212	0.000300	0.00100		mg/L	1	05/20/19 03:51 PM
Calcium	99.7	2.00	6.00		mg/L	20	05/21/19 01:03 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	05/20/19 03:51 PM
Cobalt	0.187	0.00300	0.00500		mg/L	1	05/20/19 03:51 PM
Iron	0.0715	0.0300	0.100	J	mg/L	1	05/20/19 03:51 PM
Lead	0.000595	0.000300	0.00100	J	mg/L	1	05/20/19 03:51 PM
Lithium	0.172	0.00500	0.0100		mg/L	1	05/20/19 03:51 PM
Magnesium	81.4	2.00	6.00		mg/L	20	05/21/19 01:03 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	05/21/19 02:57 PM
Potassium	2.06	0.100	0.300		mg/L	1	05/20/19 03:51 PM
Selenium	0.00619	0.00200	0.00500		mg/L	1	05/20/19 03:51 PM
Sodium	210	2.00	6.00		mg/L	20	05/21/19 01:03 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	05/20/19 03:51 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	05/22/19 10:34 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **JL**
Chloride	98.9	3.00	10.0		mg/L	10	05/15/19 03:31 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	05/15/19 06:59 PM
Nitrate-N	<0.100	0.100	0.500		mg/L	1	05/15/19 06:59 PM
Sulfate	935	10.0	30.0		mg/L	10	05/15/19 03:31 PM
ALKALINITY		**M2320 B**					Analyst: **CC**
Alkalinity, Bicarbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.5	1	05/16/19 04:27 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.5	1	05/16/19 04:27 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.5	1	05/16/19 04:27 PM
Alkalinity, Total (As CaCO3)	<20.0	20.0	20.0		mg/L @ pH 4.5	1	05/16/19 04:27 PM
FERRIC IRON (CALCULATED)		**M3500-FE D**					Analyst: **CAC**
Iron, Ferric	0.0715	0.0500	0.100	JN	mg/L	1	05/24/19
FERROUS IRON		**M3500-FE D**					Analyst: **BTJ**
Iron, Ferrous	<0.0500	0.0500	0.100	N	mg/L	1	05/20/19 03:57 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
S	Spike Recovery outside control limits	N	Parameter not NELAP certified

CLIENT:	Golder	**Client Sample ID:**	H-28
Project:	Luminant-MLSES Ash Ponds	**Lab ID:**	1905168-05
Project No:	19122262-C	**Collection Date:**	05/14/19 12:30 PM
Lab Order:	1905168	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
ORTHOPHOSPHATE		**M4500-P E**					Analyst: **CC**
Phosphorus, Total Orthophosphate (As P)	0.0460	0.0300	0.100	J	mg/L	1	05/15/19 12:50 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	1680	50.0	50.0		mg/L	1	05/17/19 11:40 AM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
	DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit
	ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
	S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *14-Jun-19*

CLIENT:	Golder	**Client Sample ID:**	H-26
Project:	Luminant-MLSES Ash Ponds	**Lab ID:**	1905168-06
Project No:	19122262-C	**Collection Date:**	05/14/19 02:25 PM
Lab Order:	1905168	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	05/20/19 03:53 PM
Arsenic	0.00410	0.00200	0.00500	J	mg/L	1	05/20/19 03:53 PM
Barium	0.190	0.00300	0.0100		mg/L	1	05/20/19 03:53 PM
Beryllium	0.00147	0.000300	0.00100		mg/L	1	05/20/19 03:53 PM
Boron	0.0507	0.0100	0.0300		mg/L	1	05/21/19 02:16 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	05/20/19 03:53 PM
Calcium	85.2	1.00	3.00		mg/L	10	05/21/19 01:05 PM
Chromium	0.0406	0.00200	0.00500		mg/L	1	05/20/19 03:53 PM
Cobalt	0.0795	0.00300	0.00500		mg/L	1	05/20/19 03:53 PM
Iron	8.81	0.0300	0.100		mg/L	1	05/20/19 03:53 PM
Lead	0.000972	0.000300	0.00100	J	mg/L	1	05/20/19 03:53 PM
Lithium	0.147	0.00500	0.0100		mg/L	1	05/20/19 03:53 PM
Magnesium	9.31	0.100	0.300		mg/L	1	05/20/19 03:53 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	05/21/19 02:16 PM
Potassium	11.6	0.100	0.300		mg/L	1	05/20/19 03:53 PM
Selenium	0.00222	0.00200	0.00500	J	mg/L	1	05/20/19 03:53 PM
Sodium	69.5	1.00	3.00		mg/L	10	05/21/19 01:05 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	05/20/19 03:53 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	05/22/19 10:36 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **JL**
Chloride	61.7	3.00	10.0		mg/L	10	05/15/19 03:47 PM
Fluoride	0.140	0.100	0.400	J	mg/L	1	05/15/19 07:15 PM
Nitrate-N	0.239	0.100	0.500	J	mg/L	1	05/15/19 07:15 PM
Sulfate	88.2	1.00	3.00		mg/L	1	05/15/19 07:15 PM
ALKALINITY		**M2320 B**					Analyst: **CC**
Alkalinity, Bicarbonate (As CaCO3)	157	10.0	20.0		mg/L @ pH 4.51	1	05/16/19 04:42 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.51	1	05/16/19 04:42 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.51	1	05/16/19 04:42 PM
Alkalinity, Total (As CaCO3)	157	20.0	20.0		mg/L @ pH 4.51	1	05/16/19 04:42 PM
FERRIC IRON (CALCULATED)		**M3500-FE D**					Analyst: **CAC**
Iron, Ferric	8.81	0.0500	0.100	N	mg/L	1	05/24/19
FERROUS IRON		**M3500-FE D**					Analyst: **BTJ**
Iron, Ferrous	<0.0500	0.0500	0.100	N	mg/L	1	05/20/19 03:57 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
S	Spike Recovery outside control limits	N	Parameter not NELAP certified

CLIENT:	Golder	**Client Sample ID:**	H-26
Project:	Luminant-MLSES Ash Ponds	**Lab ID:**	1905168-06
Project No:	19122262-C	**Collection Date:**	05/14/19 02:25 PM
Lab Order:	1905168	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
ORTHOPHOSPHATE		**M4500-P E**					Analyst: **CC**
Phosphorus, Total Orthophosphate (As P)	0.0310	0.0300	0.100	J	mg/L	1	05/15/19 12:50 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	453	10.0	10.0		mg/L	1	05/17/19 11:40 AM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
	DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit
	ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
	S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *14-Jun-19*

CLIENT:	Golder	**Client Sample ID:**	H-33
Project:	Luminant-MLSES Ash Ponds	**Lab ID:**	1905168-07
Project No:	19122262-C	**Collection Date:**	05/14/19 03:30 PM
Lab Order:	1905168	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	05/20/19 03:54 PM
Arsenic	0.00355	0.00200	0.00500	J	mg/L	1	05/20/19 03:54 PM
Barium	0.158	0.00300	0.0100		mg/L	1	05/20/19 03:54 PM
Beryllium	0.00114	0.000300	0.00100		mg/L	1	05/20/19 03:54 PM
Boron	0.0592	0.0100	0.0300		mg/L	1	05/21/19 02:19 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	05/20/19 03:54 PM
Calcium	68.6	1.00	3.00		mg/L	10	05/21/19 01:08 PM
Chromium	0.0342	0.00200	0.00500		mg/L	1	05/20/19 03:54 PM
Cobalt	0.0648	0.00300	0.00500		mg/L	1	05/20/19 03:54 PM
Iron	7.61	0.0300	0.100		mg/L	1	05/20/19 03:54 PM
Lead	0.000772	0.000300	0.00100	J	mg/L	1	05/20/19 03:54 PM
Lithium	0.161	0.00500	0.0100		mg/L	1	05/20/19 03:54 PM
Magnesium	10.6	0.100	0.300		mg/L	1	05/20/19 03:54 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	05/21/19 02:19 PM
Potassium	13.2	0.100	0.300		mg/L	1	05/20/19 03:54 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	05/20/19 03:54 PM
Sodium	79.5	1.00	3.00		mg/L	10	05/21/19 01:08 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	05/20/19 03:54 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	05/22/19 10:38 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **JL**
Chloride	80.4	3.00	10.0		mg/L	10	05/15/19 04:03 PM
Fluoride	0.166	0.100	0.400	J	mg/L	1	05/15/19 07:31 PM
Nitrate-N	0.287	0.100	0.500	J	mg/L	1	05/15/19 07:31 PM
Sulfate	104	10.0	30.0		mg/L	10	05/15/19 04:03 PM
ALKALINITY		**M2320 B**					Analyst: **CC**
Alkalinity, Bicarbonate (As CaCO3)	181	10.0	20.0		mg/L @ pH 4.51	1	05/16/19 04:49 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.51	1	05/16/19 04:49 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.51	1	05/16/19 04:49 PM
Alkalinity, Total (As CaCO3)	181	20.0	20.0		mg/L @ pH 4.51	1	05/16/19 04:49 PM
FERRIC IRON (CALCULATED)		**M3500-FE D**					Analyst: **CAC**
Iron, Ferric	7.61	0.0500	0.100	N	mg/L	1	05/24/19
FERROUS IRON		**M3500-FE D**					Analyst: **BTJ**
Iron, Ferrous	<0.0500	0.0500	0.100	N	mg/L	1	05/20/19 03:58 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *14-Jun-19*

CLIENT:	Golder	**Client Sample ID:**	H-33
Project:	Luminant-MLSES Ash Ponds	**Lab ID:**	1905168-07
Project No:	19122262-C	**Collection Date:**	05/14/19 03:30 PM
Lab Order:	1905168	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
ORTHOPHOSPHATE		**M4500-P E**					Analyst: **CC**
Phosphorus, Total Orthophosphate (As P)	0.123	0.0300	0.100		mg/L	1	05/15/19 12:50 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	559	10.0	10.0		mg/L	1	05/17/19 11:40 AM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
	DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit
	ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
	S	Spike Recovery outside control limits	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905168
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_190522A

The QC data in batch 91017 applies to the following samples: 1905168-01B, 1905168-02B, 1905168-03B, 1905168-04B, 1905168-05B, 1905168-06B, 1905168-07B

Sample ID	**MB-91017**	Batch ID:	**91017**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**CETAC2_HG_190522A**	Analysis Date:	**5/22/2019 10:02:31 AM**	Prep Date:	**5/21/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.0000800	0.000200								

Sample ID	**LCS-91017**	Batch ID:	**91017**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**CETAC2_HG_190522A**	Analysis Date:	**5/22/2019 10:04:46 AM**	Prep Date:	**5/21/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00187	0.000200	0.00200	0	93.5	85	115			

Sample ID	**LCSD-91017**	Batch ID:	**91017**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**LCSD**	Run ID:	**CETAC2_HG_190522A**	Analysis Date:	**5/22/2019 10:07:02 AM**	Prep Date:	**5/21/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00186	0.000200	0.00200	0	93.0	85	115	0.536	15	

Sample ID	**1905168-01B MS**	Batch ID:	**91017**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**MS**	Run ID:	**CETAC2_HG_190522A**	Analysis Date:	**5/22/2019 11:23:23 AM**	Prep Date:	**5/21/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00196	0.00100	0.00200	0	97.8	80	120			

Sample ID	**1905168-01B MSD**	Batch ID:	**91017**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**MSD**	Run ID:	**CETAC2_HG_190522A**	Analysis Date:	**5/22/2019 11:25:39 AM**	Prep Date:	**5/21/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00194	0.00100	0.00200	0	97.0	80	120	0.770	15	

Sample ID	**1905168-01B SD**	Batch ID:	**91017**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**SD**	Run ID:	**CETAC2_HG_190522A**	Analysis Date:	**5/22/2019 11:27:56 AM**	Prep Date:	**5/21/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.00200	0.00500	0	0				0	10	

Sample ID	**1905168-01B PDS**	Batch ID:	**91017**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**PDS**	Run ID:	**CETAC2_HG_190522A**	Analysis Date:	**5/22/2019 11:30:13 AM**	Prep Date:	**5/21/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0122	0.00100	0.0125	0	97.6	85	115			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905168
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_190522A

Sample ID **ICV-190522**	Batch ID: **R104223**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **ICV**	Run ID: **CETAC2_HG_190522A**	Analysis Date: **5/22/2019 9:57:56 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00383	0.000200	0.00400	0	95.8	90	110			

Sample ID **CCV1-190522**	Batch ID: **R104223**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_190522A**	Analysis Date: **5/22/2019 10:41:04 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00202	0.000200	0.00200	0	101	90	110			

Sample ID **CCV2-190522**	Batch ID: **R104223**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_190522A**	Analysis Date: **5/22/2019 11:08:23 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00203	0.000200	0.00200	0	102	90	110			

Sample ID **CCV3-190522**	Batch ID: **R104223**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_190522A**	Analysis Date: **5/22/2019 2:51:11 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00203	0.000200	0.00200	0	102	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905168
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190520B

The QC data in batch 90959 applies to the following samples: 1905168-01B, 1905168-02B, 1905168-03B, 1905168-04B, 1905168-05B, 1905168-06B, 1905168-07B

Sample ID **MB-90959** Batch ID: **90959** TestNo: **SW6020A** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_190520B** Analysis Date: **5/20/2019 3:23:00 PM** Prep Date: **5/17/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.000800	0.00250								
Arsenic	<0.00200	0.00500								
Barium	<0.00300	0.0100								
Beryllium	<0.000300	0.00100								
Cadmium	<0.000300	0.00100								
Calcium	<0.100	0.300								
Chromium	<0.00200	0.00500								
Cobalt	<0.00300	0.00500								
Iron	<0.0300	0.100								
Lead	<0.000300	0.00100								
Lithium	<0.00500	0.0100								
Magnesium	<0.100	0.300								
Potassium	<0.100	0.300								
Selenium	<0.00200	0.00500								
Sodium	<0.100	0.300								
Thallium	<0.000500	0.00150								

Sample ID **LCS-90959** Batch ID: **90959** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_190520B** Analysis Date: **5/20/2019 3:27:00 PM** Prep Date: **5/17/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.190	0.00250	0.200	0	94.8	80	120			
Arsenic	0.204	0.00500	0.200	0	102	80	120			
Barium	0.190	0.0100	0.200	0	94.9	80	120			
Beryllium	0.211	0.00100	0.200	0	105	80	120			
Cadmium	0.192	0.00100	0.200	0	95.8	80	120			
Calcium	4.65	0.300	5.00	0	93.1	80	120			
Chromium	0.195	0.00500	0.200	0	97.7	80	120			
Cobalt	0.203	0.00500	0.200	0	101	80	120			
Iron	5.14	0.100	5.00	0	103	80	120			
Lead	0.187	0.00100	0.200	0	93.6	80	120			
Lithium	0.217	0.0100	0.200	0	108	80	120			
Magnesium	5.03	0.300	5.00	0	101	80	120			
Potassium	5.02	0.300	5.00	0	100	80	120			
Selenium	0.204	0.00500	0.200	0	102	80	120			
Sodium	5.07	0.300	5.00	0	101	80	120			
Thallium	0.199	0.00150	0.200	0	99.7	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905168
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190520B

Sample ID **LCSD-90959**	Batch ID: **90959**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCSD**	Run ID: **ICP-MS4_190520B**	Analysis Date: **5/20/2019 3:29:00 PM**	Prep Date: **5/17/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.195	0.00250	0.200	0	97.7	80	120	2.98	15	
Arsenic	0.201	0.00500	0.200	0	100	80	120	1.34	15	
Barium	0.194	0.0100	0.200	0	97.2	80	120	2.37	15	
Beryllium	0.210	0.00100	0.200	0	105	80	120	0.345	15	
Cadmium	0.198	0.00100	0.200	0	98.8	80	120	3.14	15	
Calcium	4.68	0.300	5.00	0	93.5	80	120	0.492	15	
Chromium	0.198	0.00500	0.200	0	99.1	80	120	1.40	15	
Cobalt	0.200	0.00500	0.200	0	100	80	120	1.46	15	
Iron	5.15	0.100	5.00	0	103	80	120	0.209	15	
Lead	0.190	0.00100	0.200	0	95.0	80	120	1.54	15	
Lithium	0.211	0.0100	0.200	0	106	80	120	2.37	15	
Magnesium	5.15	0.300	5.00	0	103	80	120	2.30	15	
Potassium	5.07	0.300	5.00	0	101	80	120	1.08	15	
Selenium	0.200	0.00500	0.200	0	99.9	80	120	1.96	15	
Sodium	5.10	0.300	5.00	0	102	80	120	0.502	15	
Thallium	0.200	0.00150	0.200	0	100	80	120	0.279	15	

Sample ID **1905178-02C SD**	Batch ID: **90959**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS4_190520B**	Analysis Date: **5/20/2019 3:37:00 PM**	Prep Date: **5/17/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.00400	0.0125	0	0				0	10	
Arsenic	0.0115	0.0250	0	0.0113				1.19	10	
Barium	0.0249	0.0500	0	0.0269				7.62	10	
Beryllium	<0.00150	0.00500	0	0				0	10	
Cadmium	<0.00150	0.00500	0	0				0	10	
Chromium	0.0104	0.0250	0	0.0104				0.596	10	
Cobalt	<0.0150	0.0250	0	0				0	10	
Iron	0.313	0.500	0	0.303				3.55	10	
Lead	<0.00150	0.00500	0	0				0	10	
Lithium	0.0378	0.0500	0	0.0361				4.57	10	
Potassium	1.53	1.50	0	1.52				0.244	10	
Selenium	<0.0100	0.0250	0	0				0	10	
Thallium	<0.00250	0.00750	0	0				0	10	

Sample ID **1905178-02C PDS**	Batch ID: **90959**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS4_190520B**	Analysis Date: **5/20/2019 3:56:00 PM**	Prep Date: **5/17/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.193	0.00250	0.200	0	96.4	80	120			
Arsenic	0.209	0.00500	0.200	0.0113	98.9	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905168
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190520B

Sample ID	1905178-02C PDS	Batch ID:	90959	TestNo:	SW6020A	Units:	mg/L
SampType:	PDS	Run ID:	ICP-MS4_190520B	Analysis Date:	5/20/2019 3:56:00 PM	Prep Date:	5/17/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.214	0.0100	0.200	0.0269	93.7	80	120			
Beryllium	0.184	0.00100	0.200	0	91.9	80	120			
Cadmium	0.184	0.00100	0.200	0	91.8	80	120			
Chromium	0.198	0.00500	0.200	0.0104	93.6	80	120			
Cobalt	0.193	0.00500	0.200	0	96.5	80	120			
Iron	5.19	0.100	5.00	0.303	97.7	80	120			
Lead	0.185	0.00100	0.200	0	92.4	80	120			
Lithium	0.224	0.0100	0.200	0.0361	93.9	80	120			
Potassium	6.27	0.300	5.00	1.52	94.9	80	120			
Selenium	0.195	0.00500	0.200	0	97.6	80	120			
Thallium	0.203	0.00150	0.200	0	101	80	120			

Sample ID	1905178-02C MS	Batch ID:	90959	TestNo:	SW6020A	Units:	mg/L
SampType:	MS	Run ID:	ICP-MS4_190520B	Analysis Date:	5/20/2019 3:58:00 PM	Prep Date:	5/17/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.197	0.00250	0.200	0	98.3	80	120			
Arsenic	0.217	0.00500	0.200	0.0113	103	80	120			
Barium	0.223	0.0100	0.200	0.0269	97.8	80	120			
Beryllium	0.187	0.00100	0.200	0	93.6	80	120			
Cadmium	0.185	0.00100	0.200	0	92.5	80	120			
Calcium	65.6	0.300	5.00	62.5	62.2	80	120			S
Chromium	0.198	0.00500	0.200	0.0104	93.7	80	120			
Cobalt	0.196	0.00500	0.200	0	98.1	80	120			
Iron	5.25	0.100	5.00	0.303	98.9	80	120			
Lead	0.188	0.00100	0.200	0	93.9	80	120			
Lithium	0.221	0.0100	0.200	0.0361	92.5	80	120			
Magnesium	65.8	0.300	5.00	63.5	45.8	80	120			S
Potassium	6.56	0.300	5.00	1.52	101	80	120			
Selenium	0.204	0.00500	0.200	0	102	80	120			
Sodium	223	0.300	5.00	229	-120	80	120			S
Thallium	0.201	0.00150	0.200	0	100	80	120			

Sample ID	1905178-02C MSD	Batch ID:	90959	TestNo:	SW6020A	Units:	mg/L
SampType:	MSD	Run ID:	ICP-MS4_190520B	Analysis Date:	5/20/2019 4:00:00 PM	Prep Date:	5/17/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.199	0.00250	0.200	0	99.4	80	120	1.06	15	
Arsenic	0.214	0.00500	0.200	0.0113	101	80	120	1.22	15	
Barium	0.228	0.0100	0.200	0.0269	100	80	120	2.27	15	
Beryllium	0.186	0.00100	0.200	0	92.8	80	120	0.831	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905168
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190520B

Sample ID **1905178-02C MSD**	Batch ID: **90959**	TestNo: **SW6020A**	Units: **mg/L**		
SampType: **MSD**	Run ID: **ICP-MS4_190520B**	Analysis Date: **5/20/2019 4:00:00 PM**	Prep Date: **5/17/2019**		

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cadmium	0.188	0.00100	0.200	0	94.1	80	120	1.65	15	
Calcium	65.6	0.300	5.00	62.5	61.4	80	120	0.058	15	S
Chromium	0.197	0.00500	0.200	0.0104	93.2	80	120	0.455	15	
Cobalt	0.195	0.00500	0.200	0	97.6	80	120	0.571	15	
Iron	5.20	0.100	5.00	0.303	97.9	80	120	0.922	15	
Lead	0.186	0.00100	0.200	0	93.1	80	120	0.842	15	
Lithium	0.227	0.0100	0.200	0.0361	95.5	80	120	2.65	15	
Magnesium	66.6	0.300	5.00	63.5	62.8	80	120	1.28	15	S
Potassium	6.53	0.300	5.00	1.52	100	80	120	0.365	15	
Selenium	0.201	0.00500	0.200	0	101	80	120	1.07	15	
Sodium	224	0.300	5.00	229	-105	80	120	0.347	15	S
Thallium	0.205	0.00150	0.200	0	103	80	120	2.13	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905168
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190520B

Sample ID **ICV-190520**	Batch ID: **R104182**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_190520B**	Analysis Date: **5/20/2019 11:23:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.0968	0.00250	0.100	0	96.8	90	110			
Arsenic	0.0991	0.00500	0.100	0	99.1	90	110			
Barium	0.0948	0.0100	0.100	0	94.8	90	110			
Beryllium	0.102	0.00100	0.100	0	102	90	110			
Cadmium	0.0974	0.00100	0.100	0	97.4	90	110			
Calcium	2.44	0.300	2.50	0	97.7	90	110			
Chromium	0.102	0.00500	0.100	0	102	90	110			
Cobalt	0.101	0.00500	0.100	0	101	90	110			
Iron	2.61	0.100	2.50	0	104	90	110			
Lead	0.0932	0.00100	0.100	0	93.2	90	110			
Lithium	0.106	0.0100	0.100	0	106	90	110			
Magnesium	2.50	0.300	2.50	0	100	90	110			
Potassium	2.53	0.300	2.50	0	101	90	110			
Selenium	0.0979	0.00500	0.100	0	97.9	90	110			
Sodium	2.59	0.300	2.50	0	104	90	110			
Thallium	0.0911	0.00150	0.100	0	91.1	90	110			

Sample ID **LCVL-190520**	Batch ID: **R104182**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_190520B**	Analysis Date: **5/20/2019 11:29:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00176	0.00250	0.00200	0	87.9	70	130			
Arsenic	0.00489	0.00500	0.00500	0	97.7	70	130			
Barium	0.00432	0.0100	0.00500	0	86.5	70	130			
Beryllium	0.000893	0.00100	0.00100	0	89.3	70	130			
Cadmium	0.000871	0.00100	0.00100	0	87.1	70	130			
Calcium	0.0919	0.300	0.100	0	91.9	70	130			
Chromium	0.00481	0.00500	0.00500	0	96.1	70	130			
Cobalt	0.00485	0.00500	0.00500	0	97.0	70	130			
Iron	0.107	0.100	0.100	0	107	70	130			
Lead	0.000831	0.00100	0.00100	0	83.1	70	130			
Lithium	0.0104	0.0100	0.0100	0	104	70	130			
Magnesium	0.0970	0.300	0.100	0	97.0	70	130			
Potassium	0.0964	0.300	0.100	0	96.4	70	130			
Selenium	0.00489	0.00500	0.00500	0	97.8	70	130			
Sodium	0.0958	0.300	0.100	0	95.8	70	130			
Thallium	0.000816	0.00150	0.00100	0	81.6	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905168
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190520B

Sample ID **CCV5-190520**	Batch ID: **R104182**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_190520B**	Analysis Date: **5/20/2019 2:53:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.195	0.00250	0.200	0	97.6	90	110			
Arsenic	0.203	0.00500	0.200	0	102	90	110			
Barium	0.193	0.0100	0.200	0	96.5	90	110			
Beryllium	0.202	0.00100	0.200	0	101	90	110			
Cadmium	0.197	0.00100	0.200	0	98.4	90	110			
Calcium	4.64	0.300	5.00	0	92.9	90	110			
Chromium	0.195	0.00500	0.200	0	97.5	90	110			
Cobalt	0.201	0.00500	0.200	0	100	90	110			
Iron	5.06	0.100	5.00	0	101	90	110			
Lead	0.192	0.00100	0.200	0	96.1	90	110			
Lithium	0.206	0.0100	0.200	0	103	90	110			
Magnesium	5.06	0.300	5.00	0	101	90	110			
Potassium	5.03	0.300	5.00	0	101	90	110			
Selenium	0.205	0.00500	0.200	0	102	90	110			
Sodium	5.17	0.300	5.00	0	103	90	110			
Thallium	0.199	0.00150	0.200	0	99.7	90	110			

Sample ID **LCVL5-190520**	Batch ID: **R104182**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_190520B**	Analysis Date: **5/20/2019 3:01:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00174	0.00250	0.00200	0	87.2	70	130			
Arsenic	0.00487	0.00500	0.00500	0	97.5	70	130			
Barium	0.00423	0.0100	0.00500	0	84.6	70	130			
Beryllium	0.00110	0.00100	0.00100	0	110	70	130			
Cadmium	0.000921	0.00100	0.00100	0	92.1	70	130			
Calcium	0.0952	0.300	0.100	0	95.2	70	130			
Chromium	0.00485	0.00500	0.00500	0	97.1	70	130			
Cobalt	0.00489	0.00500	0.00500	0	97.9	70	130			
Iron	0.108	0.100	0.100	0	108	70	130			
Lead	0.000805	0.00100	0.00100	0	80.5	70	130			
Lithium	0.0108	0.0100	0.0100	0	108	70	130			
Magnesium	0.0983	0.300	0.100	0	98.3	70	130			
Potassium	0.0975	0.300	0.100	0	97.5	70	130			
Selenium	0.00517	0.00500	0.00500	0	103	70	130			
Sodium	0.102	0.300	0.100	0	102	70	130			
Thallium	0.000787	0.00150	0.00100	0	78.7	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905168
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190520B

Sample ID **CCV6-190520**	Batch ID: **R104182**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_190520B**	Analysis Date: **5/20/2019 4:02:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.194	0.00250	0.200	0	96.9	90	110			
Arsenic	0.205	0.00500	0.200	0	102	90	110			
Barium	0.192	0.0100	0.200	0	96.2	90	110			
Beryllium	0.199	0.00100	0.200	0	99.7	90	110			
Cadmium	0.193	0.00100	0.200	0	96.3	90	110			
Calcium	4.67	0.300	5.00	0	93.4	90	110			
Chromium	0.194	0.00500	0.200	0	96.8	90	110			
Cobalt	0.203	0.00500	0.200	0	101	90	110			
Iron	5.07	0.100	5.00	0	101	90	110			
Lead	0.195	0.00100	0.200	0	97.6	90	110			
Lithium	0.204	0.0100	0.200	0	102	90	110			
Magnesium	5.01	0.300	5.00	0	100	90	110			
Potassium	4.98	0.300	5.00	0	99.6	90	110			
Selenium	0.205	0.00500	0.200	0	103	90	110			
Sodium	5.14	0.300	5.00	0	103	90	110			
Thallium	0.205	0.00150	0.200	0	102	90	110			

Sample ID **LCVL6-190520**	Batch ID: **R104182**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_190520B**	Analysis Date: **5/20/2019 4:06:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00178	0.00250	0.00200	0	89.2	70	130			
Arsenic	0.00492	0.00500	0.00500	0	98.4	70	130			
Barium	0.00435	0.0100	0.00500	0	87.0	70	130			
Beryllium	0.00105	0.00100	0.00100	0	105	70	130			
Cadmium	0.000933	0.00100	0.00100	0	93.3	70	130			
Calcium	0.0988	0.300	0.100	0	98.8	70	130			
Chromium	0.00475	0.00500	0.00500	0	95.0	70	130			
Cobalt	0.00485	0.00500	0.00500	0	97.1	70	130			
Iron	0.107	0.100	0.100	0	107	70	130			
Lead	0.000828	0.00100	0.00100	0	82.8	70	130			
Lithium	0.0104	0.0100	0.0100	0	104	70	130			
Magnesium	0.0986	0.300	0.100	0	98.6	70	130			
Potassium	0.0940	0.300	0.100	0	94.0	70	130			
Selenium	0.00483	0.00500	0.00500	0	96.6	70	130			
Sodium	0.131	0.300	0.100	0	131	70	130			S
Thallium	0.000822	0.00150	0.00100	0	82.2	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905168
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190521A

The QC data in batch 90959 applies to the following samples: 1905168-01B, 1905168-02B, 1905168-03B, 1905168-04B, 1905168-05B, 1905168-06B, 1905168-07B

Sample ID **MB-90959** Batch ID: **90959** TestNo: **SW6020A** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS5_190521A** Analysis Date: **5/21/2019 12:36:00 PM** Prep Date: **5/17/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	<0.0100	0.0300								
Molybdenum	<0.00200	0.00500								

Sample ID **LCS-90959** Batch ID: **90959** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS5_190521A** Analysis Date: **5/21/2019 12:38:00 PM** Prep Date: **5/17/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.201	0.0300	0.200	0	101	80	120			
Molybdenum	0.195	0.00500	0.200	0	97.3	80	120			

Sample ID **LCSD-90959** Batch ID: **90959** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS5_190521A** Analysis Date: **5/21/2019 12:41:00 PM** Prep Date: **5/17/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.208	0.0300	0.200	0	104	80	120	3.23	15	
Molybdenum	0.192	0.00500	0.200	0	96.2	80	120	1.18	15	

Sample ID **1905178-02C SD** Batch ID: **90959** TestNo: **SW6020A** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS5_190521A** Analysis Date: **5/21/2019 12:47:00 PM** Prep Date: **5/17/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	<1.00	3.00	0	0.525				0	10	
Calcium	70.4	30.0	0	68.2				3.15	10	
Magnesium	63.5	30.0	0	63.5				0.085	10	
Molybdenum	<0.200	0.500	0	0				0	10	
Sodium	227	30.0	0	233				2.75	10	

Sample ID **1905178-02C PDS** Batch ID: **90959** TestNo: **SW6020A** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS5_190521A** Analysis Date: **5/21/2019 1:14:00 PM** Prep Date: **5/17/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	4.53	0.600	4.00	0.525	100	80	120			
Calcium	170	6.00	100	68.2	102	80	120			
Magnesium	161	6.00	100	63.5	97.1	80	120			
Molybdenum	3.64	0.100	4.00	0	90.9	80	120			
Sodium	331	6.00	100	233	98.2	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank
J	Analyte detected between MDL and RL
ND	Not Detected at the Method Detection Limit
RL	Reporting Limit
J	Analyte detected between SDL and RL
DF	Dilution Factor
MDL	Method Detection Limit
R	RPD outside accepted control limits
S	Spike Recovery outside control limits
N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905168
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190521A

Sample ID **1905178-02C MS**	Batch ID: **90959**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS5_190521A**	Analysis Date: **5/21/2019 1:17:00 PM**	Prep Date: **5/17/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.866	0.600	0.200	0.525	170	80	120			S
Molybdenum	0.192	0.100	0.200	0	96.0	80	120			

Sample ID **1905178-02C MSD**	Batch ID: **90959**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS5_190521A**	Analysis Date: **5/21/2019 1:19:00 PM**	Prep Date: **5/17/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.750	0.600	0.200	0.525	112	80	120	14.3	15	
Molybdenum	0.189	0.100	0.200	0	94.3	80	120	1.76	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905168
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190521A

Sample ID **ICV-190521**	Batch ID: **R104204**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS5_190521A**	Analysis Date: **5/21/2019 12:10:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.103	0.0300	0.100	0	103	90	110			
Calcium	2.52	0.300	2.50	0	101	90	110			
Iron	2.60	0.100	2.50	0	104	90	110			
Magnesium	2.49	0.300	2.50	0	99.7	90	110			
Molybdenum	0.0930	0.00500	0.100	0	93.0	90	110			
Sodium	2.56	0.300	2.50	0	103	90	110			

Sample ID **LCVL-190521**	Batch ID: **R104204**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_190521A**	Analysis Date: **5/21/2019 12:15:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0223	0.0300	0.0200	0	111	70	130			
Calcium	0.104	0.300	0.100	0	104	70	130			
Iron	0.0979	0.100	0.100	0	97.9	70	130			
Magnesium	0.0983	0.300	0.100	0	98.3	70	130			
Molybdenum	0.00464	0.00500	0.00500	0	92.8	70	130			
Sodium	0.0960	0.300	0.100	0	96.0	70	130			

Sample ID **CCV1-190521**	Batch ID: **R104204**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_190521A**	Analysis Date: **5/21/2019 1:26:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.196	0.0300	0.200	0	98.1	90	110			
Calcium	4.90	0.300	5.00	0	98.0	90	110			
Iron	5.04	0.100	5.00	0	101	90	110			
Magnesium	4.94	0.300	5.00	0	98.8	90	110			
Molybdenum	0.193	0.00500	0.200	0	96.3	90	110			
Sodium	4.93	0.300	5.00	0	98.6	90	110			

Sample ID **LCVL1-190521**	Batch ID: **R104204**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_190521A**	Analysis Date: **5/21/2019 1:30:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0245	0.0300	0.0200	0	123	70	130			
Calcium	0.0976	0.300	0.100	0	97.6	70	130			
Iron	0.0980	0.100	0.100	0	98.0	70	130			
Magnesium	0.0940	0.300	0.100	0	94.0	70	130			
Molybdenum	0.00478	0.00500	0.00500	0	95.6	70	130			
Sodium	0.0986	0.300	0.100	0	98.6	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

Sample ID **CCV2-190521**	Batch ID: **R104204**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_190521A**	Analysis Date: **5/21/2019 2:05:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.208	0.0300	0.200	0	104	90	110			
Molybdenum	0.201	0.00500	0.200	0	101	90	110			

Sample ID **LCVL2-190521**	Batch ID: **R104204**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_190521A**	Analysis Date: **5/21/2019 2:09:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0258	0.0300	0.0200	0	129	70	130			
Molybdenum	0.00474	0.00500	0.00500	0	94.7	70	130			

Sample ID **CCV3-190521**	Batch ID: **R104204**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_190521A**	Analysis Date: **5/21/2019 2:34:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.199	0.0300	0.200	0	99.5	90	110			
Molybdenum	0.199	0.00500	0.200	0	99.7	90	110			

Sample ID **LCVL3-190521**	Batch ID: **R104204**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_190521A**	Analysis Date: **5/21/2019 2:46:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0227	0.0300	0.0200	0	113	70	130			
Molybdenum	0.00484	0.00500	0.00500	0	96.8	70	130			

Sample ID **CCV4-190521**	Batch ID: **R104204**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_190521A**	Analysis Date: **5/21/2019 3:00:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Molybdenum	0.199	0.00500	0.200	0	99.7	90	110			

Sample ID **LCVL4-190521**	Batch ID: **R104204**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_190521A**	Analysis Date: **5/21/2019 3:05:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Molybdenum	0.00483	0.00500	0.00500	0	96.6	70	130			

CLIENT: Golder
Work Order: 1905168
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_190515A

The QC data in batch 90908 applies to the following samples: 1905168-01C, 1905168-02C, 1905168-03C, 1905168-04C, 1905168-05C, 1905168-06C, 1905168-07C

Sample ID **MB-90908** Batch ID: **90908** TestNo: **E300** Units: **mg/L**
SampType: **MBLK** Run ID: **IC2_190515A** Analysis Date: **5/15/2019 10:10:50 AM** Prep Date: **5/15/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00								
Fluoride	<0.100	0.400								
Nitrate-N	<0.100	0.500								
Sulfate	<1.00	3.00								

Sample ID **LCS-90908** Batch ID: **90908** TestNo: **E300** Units: **mg/L**
SampType: **LCS** Run ID: **IC2_190515A** Analysis Date: **5/15/2019 10:26:50 AM** Prep Date: **5/15/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.1	1.00	10.00	0	101	90	110			
Fluoride	4.00	0.400	4.000	0	99.9	90	110			
Nitrate-N	5.09	0.500	5.000	0	102	90	110			
Sulfate	30.4	3.00	30.00	0	101	90	110			

Sample ID **LCSD-90908** Batch ID: **90908** TestNo: **E300** Units: **mg/L**
SampType: **LCSD** Run ID: **IC2_190515A** Analysis Date: **5/15/2019 10:42:50 AM** Prep Date: **5/15/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.2	1.00	10.00	0	102	90	110	0.674	20	
Fluoride	4.05	0.400	4.000	0	101	90	110	1.26	20	
Nitrate-N	5.08	0.500	5.000	0	102	90	110	0.146	20	
Sulfate	30.9	3.00	30.00	0	103	90	110	1.55	20	

Sample ID **1905167-01CMS** Batch ID: **90908** TestNo: **E300** Units: **mg/L**
SampType: **MS** Run ID: **IC2_190515A** Analysis Date: **5/15/2019 1:07:36 PM** Prep Date: **5/15/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	222	10.0	200.0	12.69	105	90	110			
Fluoride	211	4.00	200.0	0	106	90	110			
Nitrate-N	45.6	5.00	45.16	0	101	90	110			
Sulfate	239	30.0	200.0	41.32	98.7	90	110			

Sample ID **1905167-01CMSD** Batch ID: **90908** TestNo: **E300** Units: **mg/L**
SampType: **MSD** Run ID: **IC2_190515A** Analysis Date: **5/15/2019 1:23:36 PM** Prep Date: **5/15/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	221	10.0	200.0	12.69	104	90	110	0.308	20	
Fluoride	210	4.00	200.0	0	105	90	110	0.286	20	
Nitrate-N	45.8	5.00	45.16	0	101	90	110	0.495	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905168
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_190515A

Sample ID **1905167-01CMSD**	Batch ID: **90908**	TestNo: **E300**	Units: **mg/L**
SampType: **MSD**	Run ID: **IC2_190515A**	Analysis Date: **5/15/2019 1:23:36 PM**	Prep Date: **5/15/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	237	30.0	200.0	41.32	97.7	90	110	0.821	20	

Sample ID **1905167-02CMS**	Batch ID: **90908**	TestNo: **E300**	Units: **mg/L**
SampType: **MS**	Run ID: **IC2_190515A**	Analysis Date: **5/15/2019 1:55:36 PM**	Prep Date: **5/15/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	686	10.0	200.0	528.8	78.8	90	110			S
Fluoride	229	4.00	200.0	24.26	102	90	110			
Nitrate-N	56.2	5.00	45.16	10.55	101	90	110			
Sulfate	2520	30.0	200.0	0	1260	90	110			S

Sample ID **1905167-02CMSD**	Batch ID: **90908**	TestNo: **E300**	Units: **mg/L**
SampType: **MSD**	Run ID: **IC2_190515A**	Analysis Date: **5/15/2019 2:11:36 PM**	Prep Date: **5/15/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	688	10.0	200.0	528.8	79.8	90	110	0.292	20	S
Fluoride	229	4.00	200.0	24.26	102	90	110	0.251	20	
Nitrate-N	57.3	5.00	45.16	10.55	103	90	110	1.85	20	
Sulfate	<10.0	30.0	200.0	0	0	90	110	0	20	S

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905168
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_190515A

Sample ID **ICV-190515**	Batch ID: **R104097**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC2_190515A**	Analysis Date: **5/15/2019 9:38:50 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	25.8	1.00	25.00	0	103	90	110			
Fluoride	10.3	0.400	10.00	0	103	90	110			
Nitrate-N	13.0	0.500	12.50	0	104	90	110			
Sulfate	77.8	3.00	75.00	0	104	90	110			

Sample ID **CCV1-190515**	Batch ID: **R104097**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_190515A**	Analysis Date: **5/15/2019 4:51:36 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.4	1.00	10.00	0	104	90	110			
Fluoride	4.15	0.400	4.000	0	104	90	110			
Nitrate-N	5.13	0.500	5.000	0	103	90	110			
Sulfate	30.8	3.00	30.00	0	103	90	110			

Sample ID **CCV2-190515**	Batch ID: **R104097**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_190515A**	Analysis Date: **5/15/2019 8:35:35 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.6	1.00	10.00	0	106	90	110			
Fluoride	4.20	0.400	4.000	0	105	90	110			
Nitrate-N	5.20	0.500	5.000	0	104	90	110			
Sulfate	31.5	3.00	30.00	0	105	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905168
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_190516A

The QC data in batch 90935 applies to the following samples: 1905168-01C

Sample ID	MB-90935	Batch ID:	90935	TestNo:	E300	Units:	mg/L
SampType:	MBLK	Run ID:	IC4_190516A	Analysis Date:	5/16/2019 10:26:21 AM	Prep Date:	5/16/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	<1.00	3.00								

Sample ID	LCS-90935	Batch ID:	90935	TestNo:	E300	Units:	mg/L
SampType:	LCS	Run ID:	IC4_190516A	Analysis Date:	5/16/2019 10:42:21 AM	Prep Date:	5/16/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	29.5	3.00	30.00	0	98.3	90	110			

Sample ID	LCSD-90935	Batch ID:	90935	TestNo:	E300	Units:	mg/L
SampType:	LCSD	Run ID:	IC4_190516A	Analysis Date:	5/16/2019 10:58:21 AM	Prep Date:	5/16/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	29.8	3.00	30.00	0	99.2	90	110	0.935	20	

Sample ID	1905167-02CMS	Batch ID:	90935	TestNo:	E300	Units:	mg/L
SampType:	MS	Run ID:	IC4_190516A	Analysis Date:	5/16/2019 5:10:27 PM	Prep Date:	5/16/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	4830	300	2000	2897	96.9	90	110			

Sample ID	1905167-02CMSD	Batch ID:	90935	TestNo:	E300	Units:	mg/L
SampType:	MSD	Run ID:	IC4_190516A	Analysis Date:	5/16/2019 5:26:27 PM	Prep Date:	5/16/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	4880	300	2000	2897	99.1	90	110	0.920	20	

Sample ID	1905168-01CMS	Batch ID:	90935	TestNo:	E300	Units:	mg/L
SampType:	MS	Run ID:	IC4_190516A	Analysis Date:	5/16/2019 5:58:26 PM	Prep Date:	5/16/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	4380	300	2000	2468	95.6	90	110			

Sample ID	1905168-01CMSD	Batch ID:	90935	TestNo:	E300	Units:	mg/L
SampType:	MSD	Run ID:	IC4_190516A	Analysis Date:	5/16/2019 6:14:27 PM	Prep Date:	5/16/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	4390	300	2000	2468	96.2	90	110	0.273	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905168
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_190516A

Sample ID **ICV-190516**	Batch ID: **R104119**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC4_190516A**	Analysis Date: **5/16/2019 9:54:21 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	74.5	3.00	75.00	0	99.4	90	110			

Sample ID **CCV1-190516**	Batch ID: **R104119**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC4_190516A**	Analysis Date: **5/16/2019 9:10:26 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	30.2	3.00	30.00	0	101	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905168
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_190516A

The QC data in batch 90940 applies to the following samples: 1905168-01C, 1905168-02C, 1905168-03C, 1905168-04C, 1905168-05C, 1905168-06C, 1905168-07C

Sample ID **MB-90940** Batch ID: **90940** TestNo: **M2320 B** Units: **mg/L @ pH 4.47**
SampType: **MBLK** Run ID: **TITRATOR_190516A** Analysis Date: **5/16/2019 2:00:00 PM** Prep Date: **5/16/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	<10.0	20.0								
Alkalinity, Carbonate (As CaCO3)	<10.0	20.0								
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0								
Alkalinity, Total (As CaCO3)	<20.0	20.0								

Sample ID **LCS-90940** Batch ID: **90940** TestNo: **M2320 B** Units: **mg/L @ pH 4.08**
SampType: **LCS** Run ID: **TITRATOR_190516A** Analysis Date: **5/16/2019 2:04:00 PM** Prep Date: **5/16/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)	52.3	20.0	50.00	0	105	74	129			

Sample ID **1905134-01C DUP** Batch ID: **90940** TestNo: **M2320 B** Units: **mg/L @ pH 4.52**
SampType: **DUP** Run ID: **TITRATOR_190516A** Analysis Date: **5/16/2019 2:15:00 PM** Prep Date: **5/16/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	205	20.0	0	205.8				0.536	20	
Alkalinity, Carbonate (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Total (As CaCO3)	205	20.0	0	205.8				0.536	20	

Sample ID **1905168-05C DUP** Batch ID: **90940** TestNo: **M2320 B** Units: **mg/L @ pH 4.51**
SampType: **DUP** Run ID: **TITRATOR_190516A** Analysis Date: **5/16/2019 4:30:00 PM** Prep Date: **5/16/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Carbonate (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Total (As CaCO3)	<20.0	20.0	0	0				0	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905168
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_190516A

Sample ID **ICV-190516**	Batch ID: **R104124**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.34**
SampType: **ICV**	Run ID: **TITRATOR_190516A**	Analysis Date: **5/16/2019 1:58:00 PM**	Prep Date: **5/16/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	8.64	20.0	0							
Alkalinity, Carbonate (As CaCO3)	89.3	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	97.9	20.0	100.0	0	97.9	98	102			

Sample ID **CCV1-190516**	Batch ID: **R104124**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.25**
SampType: **CCV**	Run ID: **TITRATOR_190516A**	Analysis Date: **5/16/2019 3:39:00 PM**	Prep Date: **5/16/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	21.7	20.0	0							
Alkalinity, Carbonate (As CaCO3)	76.8	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	98.5	20.0	100.0	0	98.5	90	110			

Sample ID **CCV2-190516**	Batch ID: **R104124**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.21**
SampType: **CCV**	Run ID: **TITRATOR_190516A**	Analysis Date: **5/16/2019 4:35:00 PM**	Prep Date: **5/16/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	17.7	20.0	0							
Alkalinity, Carbonate (As CaCO3)	81.3	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	99.0	20.0	100.0	0	99.0	90	110			

Sample ID **CCV3-190516**	Batch ID: **R104124**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.39**
SampType: **CCV**	Run ID: **TITRATOR_190516A**	Analysis Date: **5/16/2019 4:54:00 PM**	Prep Date: **5/16/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	20.3	20.0	0							
Alkalinity, Carbonate (As CaCO3)	77.1	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	97.4	20.0	100.0	0	97.4	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905168
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: UV/VIS_2_190515B

The QC data in batch 90921 applies to the following samples: 1905168-01C, 1905168-02C, 1905168-03C, 1905168-04C, 1905168-05C, 1905168-06C, 1905168-07C

Sample ID	**MB-90921**	Batch ID:	**90921**	TestNo:	**M4500-P E**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**UV/VIS_2_190515B**	Analysis Date:	**5/15/2019 12:42:00 PM**	Prep Date:	**5/15/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Total Orthophosphate (As	<0.0300	0.100								

Sample ID	**LCS-90921**	Batch ID:	**90921**	TestNo:	**M4500-P E**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**UV/VIS_2_190515B**	Analysis Date:	**5/15/2019 12:43:00 PM**	Prep Date:	**5/15/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Total Orthophosphate (As	0.513	0.100	0.5000	0	103	80	120			

Sample ID	**LCSD-90921**	Batch ID:	**90921**	TestNo:	**M4500-P E**	Units:	**mg/L**
SampType:	**LCSD**	Run ID:	**UV/VIS_2_190515B**	Analysis Date:	**5/15/2019 12:43:00 PM**	Prep Date:	**5/15/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Total Orthophosphate (As	0.504	0.100	0.5000	0	101	80	120	1.77	15	

Sample ID	**1905168-01CMS**	Batch ID:	**90921**	TestNo:	**M4500-P E**	Units:	**mg/L**
SampType:	**MS**	Run ID:	**UV/VIS_2_190515B**	Analysis Date:	**5/15/2019 12:45:00 PM**	Prep Date:	**5/15/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Total Orthophosphate (As	0.587	0.100	0.5000	0.07700	102	80	120			

Sample ID	**1905168-01CMSD**	Batch ID:	**90921**	TestNo:	**M4500-P E**	Units:	**mg/L**
SampType:	**MSD**	Run ID:	**UV/VIS_2_190515B**	Analysis Date:	**5/15/2019 12:45:00 PM**	Prep Date:	**5/15/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Total Orthophosphate (As	0.525	0.100	0.5000	0.07700	89.6	80	120	11.2	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905168
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: UV/VIS_2_190515B

Sample ID **ICV-190515**	Batch ID: **R104071**	TestNo: **M4500-P E**	Units: **mg/L**
SampType: **ICV**	Run ID: **UV/VIS_2_190515B**	Analysis Date: **5/15/2019 12:41:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Total Orthophosphate (As	0.204	0.100	0.2000	0	102	85	115			

Sample ID **CCV1-190515**	Batch ID: **R104071**	TestNo: **M4500-P E**	Units: **mg/L**
SampType: **CCV**	Run ID: **UV/VIS_2_190515B**	Analysis Date: **5/15/2019 12:51:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Total Orthophosphate (As	0.509	0.100	0.5000	0	102	85	115			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905168
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: UV/VIS_2_190520A

The QC data in batch 91002 applies to the following samples: 1905168-01A, 1905168-02A, 1905168-03A, 1905168-04A, 1905168-05A, 1905168-06A, 1905168-07A

Sample ID	**MB-91002**	Batch ID:	**91002**	TestNo:	**M3500-Fe D**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**UV/VIS_2_190520A**	Analysis Date:	**5/20/2019 3:53:00 PM**	Prep Date:	**5/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	<0.0500	0.100								N

Sample ID	**LCS-91002**	Batch ID:	**91002**	TestNo:	**M3500-Fe D**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**UV/VIS_2_190520A**	Analysis Date:	**5/20/2019 3:53:00 PM**	Prep Date:	**5/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	0.0888	0.100	0.1000	0	88.8	85	115			N

Sample ID	**LCSD-91002**	Batch ID:	**91002**	TestNo:	**M3500-Fe D**	Units:	**mg/L**
SampType:	**LCSD**	Run ID:	**UV/VIS_2_190520A**	Analysis Date:	**5/20/2019 3:53:00 PM**	Prep Date:	**5/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	0.0879	0.100	0.1000	0	87.9	85	115	1.05	15	N

Sample ID	**1905185-11AMS**	Batch ID:	**91002**	TestNo:	**M3500-Fe D**	Units:	**mg/L**
SampType:	**MS**	Run ID:	**UV/VIS_2_190520A**	Analysis Date:	**5/20/2019 4:03:00 PM**	Prep Date:	**5/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	0.0860	0.100	0.1000	0	86.0	85	115			N

Sample ID	**1905185-11AMSD**	Batch ID:	**91002**	TestNo:	**M3500-Fe D**	Units:	**mg/L**
SampType:	**MSD**	Run ID:	**UV/VIS_2_190520A**	Analysis Date:	**5/20/2019 4:03:00 PM**	Prep Date:	**5/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	0.0861	0.100	0.1000	0	86.1	85	115	0.116	15	N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905168
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: UV/VIS_2_190520A

Sample ID **ICV-190520**	Batch ID: **R104177**	TestNo: **M3500-Fe D**	Units: **mg/L**
SampType: **ICV**	Run ID: **UV/VIS_2_190520A**	Analysis Date: **5/20/2019 3:52:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	0.0875	0.100	0.1000	0	87.5	85	115			N

Sample ID **CCV1-190520**	Batch ID: **R104177**	TestNo: **M3500-Fe D**	Units: **mg/L**
SampType: **CCV**	Run ID: **UV/VIS_2_190520A**	Analysis Date: **5/20/2019 3:59:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	0.197	0.100	0.2000	0	98.4	85	115			N

Sample ID **CCV2-190520**	Batch ID: **R104177**	TestNo: **M3500-Fe D**	Units: **mg/L**
SampType: **CCV**	Run ID: **UV/VIS_2_190520A**	Analysis Date: **5/20/2019 4:12:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	0.183	0.100	0.2000	0	91.7	85	115			N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905168
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: WC_190517D

The QC data in batch 90953 applies to the following samples: 1905168-01C, 1905168-02C, 1905168-03C, 1905168-04C, 1905168-05C, 1905168-06C, 1905168-07C

Sample ID **MB-90953** Batch ID: **90953** TestNo: **M2540C** Units: **mg/L**
SampType: **MBLK** Run ID: **WC_190517D** Analysis Date: **5/17/2019 11:40:00 AM** Prep Date: **5/16/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	<10.0	10.0								

Sample ID **LCS-90953** Batch ID: **90953** TestNo: **M2540C** Units: **mg/L**
SampType: **LCS** Run ID: **WC_190517D** Analysis Date: **5/17/2019 11:40:00 AM** Prep Date: **5/16/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	745	10.0	745.6	0	99.9	90	113			

Sample ID **1905167-02C-DUP** Batch ID: **90953** TestNo: **M2540C** Units: **mg/L**
SampType: **DUP** Run ID: **WC_190517D** Analysis Date: **5/17/2019 11:40:00 AM** Prep Date: **5/16/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	5340	50.0	0	5375				0.747	5	

Sample ID **1905168-02C-DUP** Batch ID: **90953** TestNo: **M2540C** Units: **mg/L**
SampType: **DUP** Run ID: **WC_190517D** Analysis Date: **5/17/2019 11:40:00 AM** Prep Date: **5/16/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	940	50.0	0	910.0				3.24	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

Pace Analytical®
National Center for Testing & Innovation

ANALYTICAL REPORT

June 10, 2019

DHL Analytical, Inc.

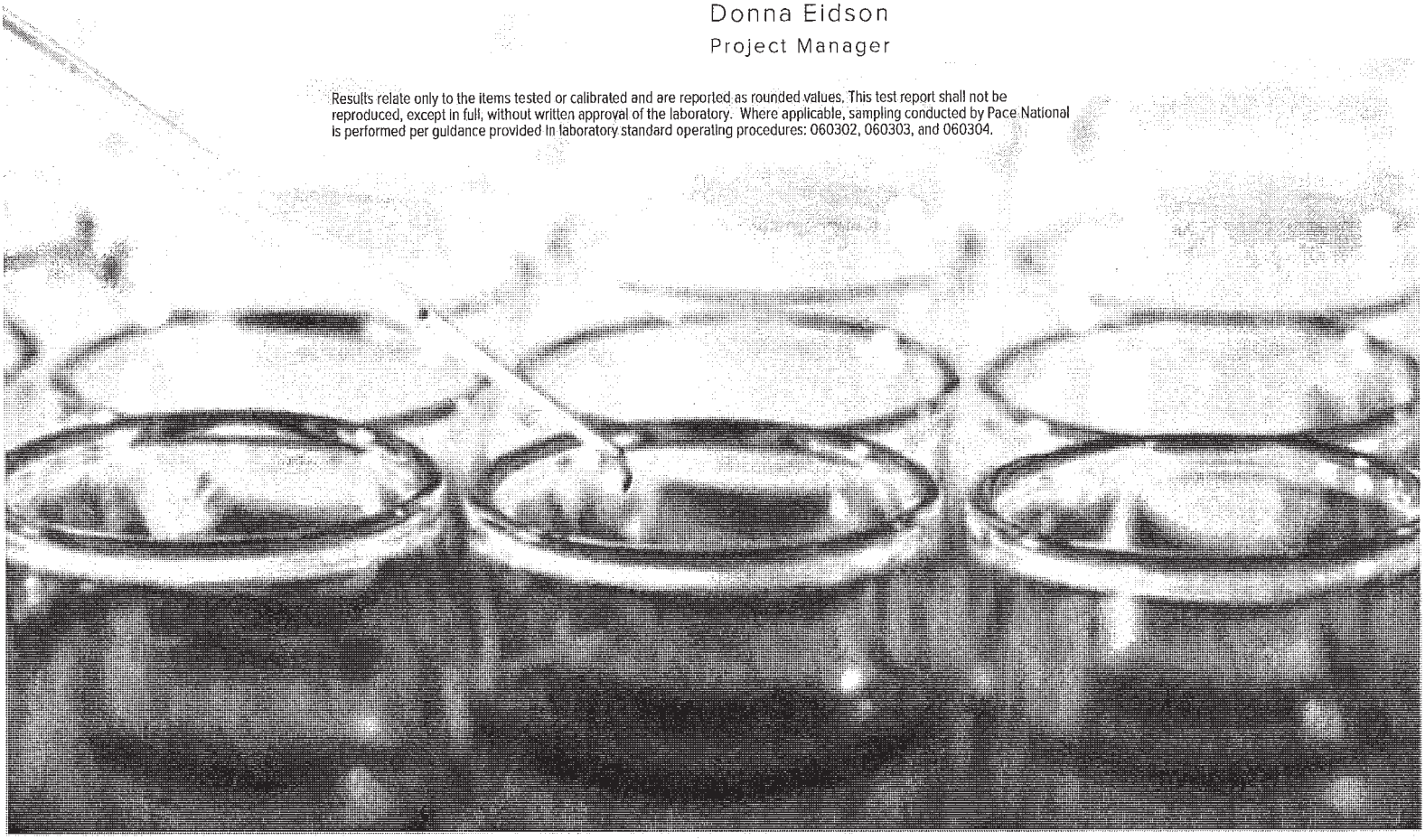
Sample Delivery Group:	L1100989
Samples Received:	05/21/2019
Project Number:	1905168
Description:	

Report To: John DuPont
2300 Double Creek Drive
Round Rock, TX 78664

Entire Report Reviewed By:

Donna Eidson
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace National is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.



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H-31 L1100989-01 Non-Potable Water

Collected by | Collected date/time 05/14/19 07:40 | Received date/time 05/21/19 10:10

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1285651	1	05/24/19 09:05	05/31/19 11:10	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1287234	1	05/29/19 08:27	06/03/19 17:48	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1287234	1	05/29/19 08:27	06/03/19 17:48	RGT	Mt. Juliet, TN

H-32 L1100989-02 Non-Potable Water

Collected by | Collected date/time 05/14/19 08:25 | Received date/time 05/21/19 10:10

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1285651	1	05/24/19 09:05	05/31/19 11:10	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1287234	1	05/29/19 08:27	06/03/19 17:48	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1287234	1	05/29/19 08:27	06/03/19 17:48	RGT	Mt. Juliet, TN

H-27 L1100989-03 Non-Potable Water

Collected by | Collected date/time 05/14/19 09:40 | Received date/time 05/21/19 10:10

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1285651	1	05/24/19 09:05	05/31/19 11:10	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1287234	1	05/29/19 08:27	06/03/19 17:48	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1287234	1	05/29/19 08:27	06/03/19 17:48	RGT	Mt. Juliet, TN

H-29 L1100989-04 Non-Potable Water

Collected by | Collected date/time 05/14/19 11:25 | Received date/time 05/21/19 10:10

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1285651	1	05/24/19 09:05	05/31/19 11:10	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1287234	1	05/29/19 08:27	06/03/19 17:48	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1287234	1	05/29/19 08:27	06/03/19 17:48	RGT	Mt. Juliet, TN

H-28 L1100989-05 Non-Potable Water

Collected by | Collected date/time 05/14/19 12:30 | Received date/time 05/21/19 10:10

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1285651	1	05/24/19 09:05	05/31/19 11:10	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1287234	1	05/29/19 08:27	06/03/19 17:48	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1287234	1	05/29/19 08:27	06/03/19 17:48	RGT	Mt. Juliet, TN

H-26 L1100989-06 Non-Potable Water

Collected by | Collected date/time 05/14/19 14:25 | Received date/time 05/21/19 10:10

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1285651	1	05/24/19 09:05	05/31/19 11:10	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1287234	1	05/29/19 08:27	06/03/19 17:48	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1287234	1	05/29/19 08:27	06/03/19 17:48	RGT	Mt. Juliet, TN

H-33 L1100989-07 Non-Potable Water			Collected by	Collected date/time 05/14/19 15:30	Received date/time 05/21/19 10:10	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1285651	1	05/24/19 09:05	05/31/19 11:10	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1287234	1	05/29/19 08:27	06/03/19 17:48	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1287234	1	05/29/19 08:27	06/03/19 17:48	RGT	Mt. Juliet, TN

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Donna Eidson
Project Manager

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	0.531		0.515	0.789	05/31/2019 11:10	WG1285651
(T) Barium	*120*			*62.0-143*	*05/31/2019 11:10*	WG1285651
(T) Yttrium	*93.0*			*79.0-136*	*05/31/2019 11:10*	WG1285651

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	3.15		1.09	0.978	06/03/2019 17:48	WG1287234

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	2.62		0.578	0.189	06/03/2019 17:48	WG1287234
(T) Barium-133	*104*			*30.0-143*	*06/03/2019 17:48*	WG1287234

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	0.147		0.380	0.546	05/31/2019 11:10	WG1285651
(T) Barium	*100*			*62.0-143*	*05/31/2019 11:10*	WG1285651
(T) Yttrium	*109*			*79.0-136*	*05/31/2019 11:10*	WG1285651

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	0.450		0.625	0.833	06/03/2019 17:48	WG1287234

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.303		0.245	0.287	06/03/2019 17:48	WG1287234
(T) Barium-133	*105*			*30.0-143*	*06/03/2019 17:48*	WG1287234

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	0.928		0.365	0.563	05/31/2019 11:10	WG1285651
(T) Barium	*96.7*			*62.0-143*	*05/31/2019 11:10*	WG1285651
(T) Yttrium	*98.1*			*79.0-136*	*05/31/2019 11:10*	WG1285651

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	2.03		0.814	0.854	06/03/2019 17:48	WG1287234

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	1.10		0.449	0.291	06/03/2019 17:48	WG1287234
(T) Barium-133	*85.4*			*30.0-143*	*06/03/2019 17:48*	WG1287234

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	0.352		0.428	0.707	05/31/2019 11:10	WG1285651
(T) Barium	*116*			*62.0-143*	*05/31/2019 11:10*	WG1285651
(T) Yttrium	*96.5*			*79.0-136*	*05/31/2019 11:10*	WG1285651

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	0.474		0.641	1.05	06/03/2019 17:48	WG1287234

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.122		0.213	0.339	06/03/2019 17:48	WG1287234
(T) Barium-133	*72.2*			*30.0-143*	*06/03/2019 17:48*	WG1287234

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
RADIUM-228	0.615		0.370	0.575	05/31/2019 11:10	WG1285651
(T) Barium	*106*			*62.0-143*	*05/31/2019 11:10*	WG1285651
(T) Yttrium	*95.5*			*79.0-136*	*05/31/2019 11:10*	WG1285651

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
Combined Radium	1.06		0.634	0.777	06/03/2019 17:48	WG1287234

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+/-	pCi/l	date / time	
RADIUM-226	0.444		0.264	0.202	06/03/2019 17:48	WG1287234
(T) Barium-133	*90.7*			*30.0-143*	*06/03/2019 17:48*	WG1287234

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	0.598		0.330	0.545	05/31/2019 11:10	WG1285651
(T) Barium	*98.4*			*62.0-143*	*05/31/2019 11:10*	WG1285651
(T) Yttrium	*113*			*79.0-136*	*05/31/2019 11:10*	WG1285651

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	2.03		0.761	0.783	06/03/2019 17:48	WG1287234

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	1.43		0.431	0.238	06/03/2019 17:48	WG1287234
(T) Barium-133	*103*			*30.0-143*	*06/03/2019 17:48*	WG1287234

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	1.35		0.414	0.627	05/31/2019 11:10	WG1285651
(T) Barium	*97.4*			*62.0-143*	*05/31/2019 11:10*	WG1285651
(T) Yttrium	*96.3*			*79.0-136*	*05/31/2019 11:10*	WG1285651

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	2.20		0.764	0.846	06/03/2019 17:48	WG1287234

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.850		0.350	0.219	06/03/2019 17:48	WG1287234
(T) Barium-133	*102*			*30.0-143*	*06/03/2019 17:48*	WG1287234

Method Blank (MB)

(MB) R3417363-1 05/30/19 12:10

Analyte	MB Result pCi/l	MB Qualifier	MB MDA pCi/l
Radium-228	-0.0581		0.396
(T) Barium	*105*		
(T) Yttrium	*110*		

L1100977-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1100977-01 05/30/19 12:10 • (DUP) R3417363-5 05/30/19 12:10

Analyte	Original Result pCi/l	DUP Result pCi/l	Dilution	DUP RPD %	DUP RER	DUP Qualifier	DUP RPD Limits %	DUP RER Limit
Radium-228	-0.0695	0.650	1	200	0.741		20	3
(T) Barium	*109*	*111*						
(T) Yttrium	*113*	*107*						

Laboratory Control Sample (LCS)

(LCS) R3417363-2 05/30/19 12:10

Analyte	Spike Amount pCi/l	LCS Result pCi/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Radium-228	5.00	5.29	106	80.0-120	
(T) Barium			*104*		
(T) Yttrium			*114*		

L1100989-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1100989-01 05/31/19 11:10 • (MS) R3417363-3 05/30/19 12:10 • (MSD) R3417363-4 05/30/19 12:10

Analyte	Spike Amount pCi/l	Original Result pCi/l	MS Result pCi/l	MSD Result pCi/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	MS RER	RPD Limits %
Radium-228	20.0	0.531	20.9	19.5	102	94.8	1	70.0-130			7.08		20
(T) Barium		*120*			*102*	*115*							
(T) Yttrium		*93.0*			*117*	*114*							

Method Blank (MB)

(MB) R3419580-1 06/03/19 17:43

	MB Result	MB Qualifier	MB MDA
Analyte	pCi/l		pCi/l
Radium-226	0.00994		0.0573
(T) Barium-133	*67.4*		

L1103100-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1103100-01 06/03/19 17:43 • (DUP) R3419580-7 06/03/19 17:43

	Original Result	DUP Result	Dilution	DUP RPD	DUP RER	DUP Qualifier	DUP RPD Limits	DUP RER Limit
Analyte	pCi/l	pCi/l		%			%	
Radium-226	0.267	1.33	1	133	2.21		20	3
(T) Barium-133	*110*	*102*						

Laboratory Control Sample (LCS)

(LCS) R3419580-2 06/03/19 17:43

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	pCi/l	pCi/l	%	%	
Radium-226	5.02	5.10	102	80.0-120	
(T) Barium-133			*56.0*		

L1101875-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1101875-03 06/03/19 17:43 • (MS) R3419580-3 06/03/19 17:43 • (MSD) R3419580-6 06/03/19 17:43

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	MS RER	RPD Limits
Analyte	pCi/l	pCi/l	pCi/l	pCi/l	%	%		%			%		%
Radium-226	20.1	0.637	17.9	20.3	86.0	97.8	1	75.0-125			12.4		20
(T) Barium-133		*83.3*			*53.7*	*71.3*							

L1101881-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1101881-03 06/03/19 17:43 • (MS) R3419580-4 06/03/19 17:43 • (MSD) R3419580-5 06/03/19 17:43

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	MS RER	RPD Limits
Analyte	pCi/l	pCi/l	pCi/l	pCi/l	%	%		%			%		%
Radium-226	20.1	0.522	21.1	19.2	102	93.1	1	75.0-125			9.23		20
(T) Barium-133		*105*			*89.6*	*99.7*							

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Abbreviations and Definitions

MDA	Minimum Detectable Activity.
Rec.	Recovery.
RER	Replicate Error Ratio.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(T)	Tracer - A radioisotope of known concentration added to a solution of chemically equivalent radioisotopes at a known concentration to assist in monitoring the yield of the chemical separation.
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
	The remainder of this page intentionally left blank, there are no qualifiers applied to this SDG.

ACCREDITATIONS & LOCATIONS

ONE LAB. NATIONWIDE.

Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

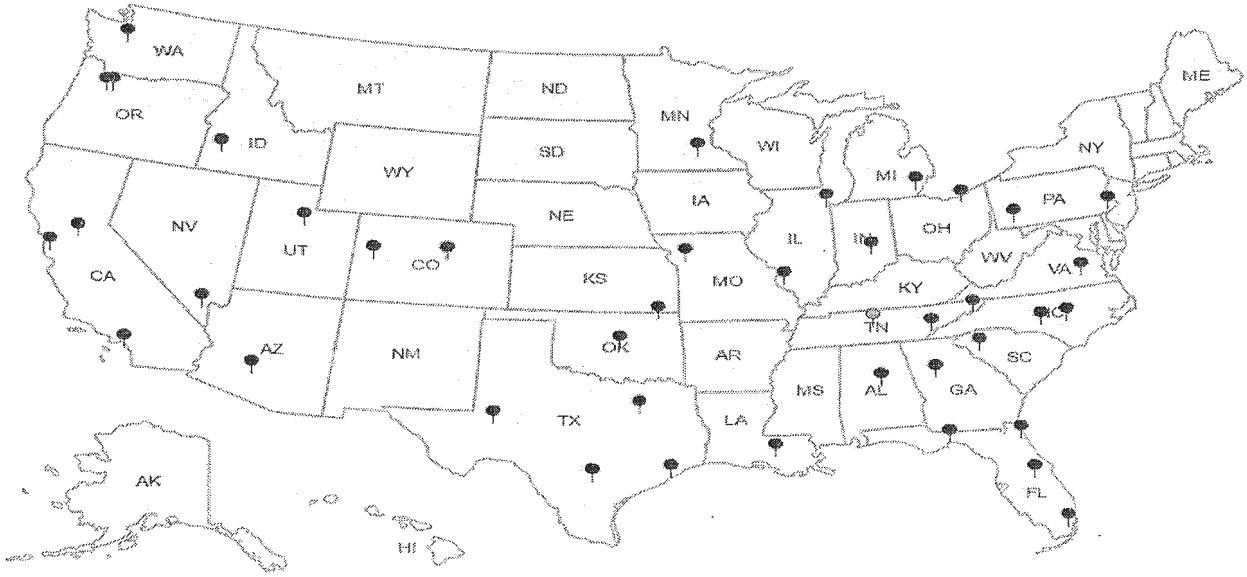
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



Pace Analytical National Center for Testing & Innovation
Cooler Receipt Form

Client: DHLRTX	SDG#:	1100989
Cooler Received/Opened On: 5/21/19	Temperature:	Amb
Received By: Brock Fariss		
Signature: Fariss		

Receipt Check List	NP	Yes	No
COC Seal Present / Intact?	✓		
COC Signed / Accurate?		✓	
Bottles arrive intact?		✓	
Correct bottles used?		✓	
Sufficient volume sent?		✓	
If Applicable			
VOA Zero headspace?			
Preservation Correct / Checked?		✓	

Kelsey Stephenson

Pace Analytical®
National Center for Testing & Innovation

Login #: L1100989	Client:DHLRRTX	Date:05/21	Evaluated by:Kelsey S

Non-Conformance (check applicable items)

	Sample Integrity		Chain of Custody Clarification		
	Parameter(s) past holding time		Login Clarification Needed		**If Broken Container:**
	Temperature not in range		Chain of custody is incomplete		Insufficient packing material around container
	Improper container type		Please specify Metals requested.		Insufficient packing material inside cooler
x	pH not in range.		Please specify TCLP requested.		Improper handling by carrier (FedEx / UPS / Courie
	Insufficient sample volume.		Received additional samples not listed on coc.		Sample was frozen
	Sample is biphasic.		Sample ids on containers do not match ids on coc		Container lid not intact
	Vials received with headspace.		Trip Blank not received.		**If no Chain of Custody:**
	Broken container		Client did not "X" analysis.		Received by:
	Broken container:		Chain of Custody is missing		Date/Time:
	Sufficient sample remains				Temp./Cont. Rec./pH:
					Carrier:
					Tracking#

Login Comments: 1 of 2 H-32 was received with a pH of 6. pH adj in login 1511 5/21

Client informed by:		Call		Email		Voice Mail		Date:	Time:
TSR Initials:	Client Contact:								

Login Instructions:

Noted 5/21/19 1547

1100989

CHAIN-OF-CUSTODY RECORD

DHL Analytical, Inc.
2300 Double Creek Drive
Round Rock, TX 78664
TEL: *(512) 388-8222* FAX: *(512) 388-8229*

H007

Work Order: 1905168

Subcontractor:
Pace Analytical
12065 Lebanon Rd
Mt. Juliet, TN 37122

TEL: (615) 773-5923
FAX:
Acct #: DHLRRTX

15-May-19

Sample Id	Matrix	DHL#	Date Collected	Bottle Type	Ra-228 E904.0	Ra-226 M7500 Ra B M	Requested Tests				
H-31	Aqueous	-01D	05/14/19 07:40 AM	1LHDPEHNO3		1					01
H-31	Aqueous	-01E	05/14/19 07:40 AM	1LHDPEHNO3	1						1
H-32	Aqueous	-02D	05/14/19 08:25 AM	1LHDPEHNO3		1					02
H-32	Aqueous	-02E	05/14/19 08:25 AM	1LHDPEHNO3	1						1
H-27	Aqueous	-03D	05/14/19 09:40 AM	1LHDPEHNO3		1					03
H-27	Aqueous	-03E	05/14/19 09:40 AM	1LHDPEHNO3	1						1
H-29	Aqueous	-04D	05/14/19 11:25 AM	1LHDPEHNO3		1					04
H-29	Aqueous	-04E	05/14/19 11:25 AM	1LHDPEHNO3	1						1
H-28	Aqueous	-05D	05/14/19 12:30 PM	1LHDPEHNO3		1					05
H-28	Aqueous	-05E	05/14/19 12:30 PM	1LHDPEHNO3	1						1
H-26	Aqueous	-06D	05/14/19 02:25 PM	1LHDPEHNO3		1					06
H-26	Aqueous	-06E	05/14/19 02:25 PM	1LHDPEHNO3	1						1
H-33	Aqueous	-07D	05/14/19 03:30 PM	1LHDPEHNO3		1					07
H-33	Aqueous	-07E	05/14/19 03:30 PM	1LHDPEHNO3	1						

General Comments:
Please analyze these samples with Normal Tumaround Time.
Report RA-226, Ra-228 & Combined per Specs.
Quality Control Package Needed: Standard - NELAC Rad Test compliant
Email to cac@dhlanalytical.com & dupont@dhlanalytical.com

UPS
Rec: 14

Relinquished by: _____ Date/Time: 5/17/19 1700
Received by: _____
Relinquished by: _____
Received by: _____ Date/Time: 5/21/19 1010

RAD SCREEN: <0.5 mR/hr
pH adj @ 1511

May 30, 2019

Will Vienne
Golder
2201 Double Creek Dr #4004
Round Rock, Texas 78664
TEL: (512) 671-3434
FAX (512) 671-3446

Order No.: 1905167

RE: Luminant-MLSES Ash Ponds

Dear Will Vienne:

DHL Analytical, Inc. received 2 sample(s) on 5/15/2019 for the analyses presented in the following report.

There were no problems with the analyses and all data met requirements of NELAP except where noted in the Case Narrative. All non-NELAP methods will be identified accordingly in the case narrative and all estimated uncertainties of test results are within method or EPA specifications.

If you have any questions regarding these tests results, please feel free to call. Thank you for using DHL Analytical.

Sincerely,

John DuPont
General Manager

This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211-19-24

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AnalyticalQCSummaryReport 1905167 ..... **16**

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DHL ANALYTICAL
2300 Double Creek Dr. ■ Round Rock, TX 78664
Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

CHAIN-OF-CUSTODY

№ 86480

CLIENT: GOLDER
ADDRESS: 2201 DOUBLE CREEK DR, ROUND ROCK, TX 78664
PHONE: 512-671-3434 FAX/E-MAIL: 512-671-3446
DATA REPORTED TO: WILL VIENNE
ADDITIONAL REPORT COPIES TO:

DATE: 5-14-19 PAGE 1 OF 1
PO #: DHL WORK ORDER #: 1905167
PROJECT LOCATION OR NAME: LUMINANT - MLSES ASH PONDS
CLENT PROJECT #: 19122262-C COLLECTOR: J. BRAFFORD

Authorize 5% surcharge for TRRP Report? ❑ Yes ❑ No

S=SOIL W=WATER A=AIR L=LIQUID SE=SEDIMENT P=PAINT SL=SLUDGE O=OTHER SO=SOLID

PRESERVATION: HCl | HNO_3 | H_2SO_4 ❑ NaOH ❑ | ICE | UNPRESERVED

ANALYSES: BTEX ❑ MTBE ❑ [METHOD 8021] | TPH 1005 ❑ TPH 1006 ❑ HOLD 1006 ❑ | GRO (METHOD 8015) ❑ DRO (METHOD 8105) ❑ | VOC 8260 ❑ VOC 624 ❑ VOC 8260/5035 ❑ | SVOC 8270 ❑ PAH 8270 ❑ HOLD PAH ❑ SVOC 625 ❑ | 8270 PEST ❑ 625 PEST/PCB ❑ 608 PCB ❑ 8270 PCB ❑ | 8270 O-P PEST ❑ 8082 PCB ❑ T PHOS, AMMONIA ❑ | 8321 HERB ❑ T PHOS ❑ METALS 2008 ❑ DISS. METALS ❑ | METALS 6020 ❑ METALS 2008 ❑ DISS. METALS ❑ | RCRA ❑ TX11 ❑ _____ ❑ | PH ❑ HEX CHROM ❑ ALKALINITY ❑ COD ❑ | CHLORIDE ❑ ANIONS _____ ❑ | TCLP-SVOC ❑ VOC ❑ PEST ❑ HERB ❑ | TCLP-METALS ❑ RCRA ❑ TX-11 ❑ Pb ❑ | RCI ❑ FLASHPOINT ❑ DGAS ❑ | TDS ❑ TSS ❑ % MOISTURE ❑ CYANIDE ❑ | APPENDIX III ETV ALK, NO3, PO4, Na, Mg, K FERROUS & FERRIC IRON

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	HCl	HNO_3	H_2SO_4 ❑ NaOH ❑	ICE	UNPRESERVED	FIELD NOTES
LAKE SAMPLE	01	5-14-19	1005	W		3	~~X~~	X		X		
POND SAMPLE	02	5-14-19	1020	W		3	~~X~~	X		X		

RELINQUISHED BY: (Signature) DATE/TIME 5-14-19 1800 RECEIVED BY: (Signature) FedEx
RELINQUISHED BY: (Signature) FedEx DATE/TIME 5/15/19 0943 RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature) DATE/TIME RECEIVED BY: (Signature)

❑ DHL DISPOSAL @ $5.00 each ❑ Return

3

TURN AROUND TIME
RUSH ❑ CALL FIRST
1 DAY ❑ CALL FIRST
2 DAY ❑
NORMAL ☒
OTHER ❑ _____

LABORATORY USE ONLY:
RECEIVING TEMP: 4.5 °C THERM #: 78
CUSTODY SEALS: ❑ BROKEN ❑ INTACT ☒ NOT USED
CARRIER: ❑ LONE STAR ☒ FEDEX ❑ UPS ❑ OTHER
❑ COURIER DELIVERY
❑ HAND DELIVERED

DHL COC Rev 1 | FEB 2010

APPROVED Revision 2 January 27, 2024

Eric Lau

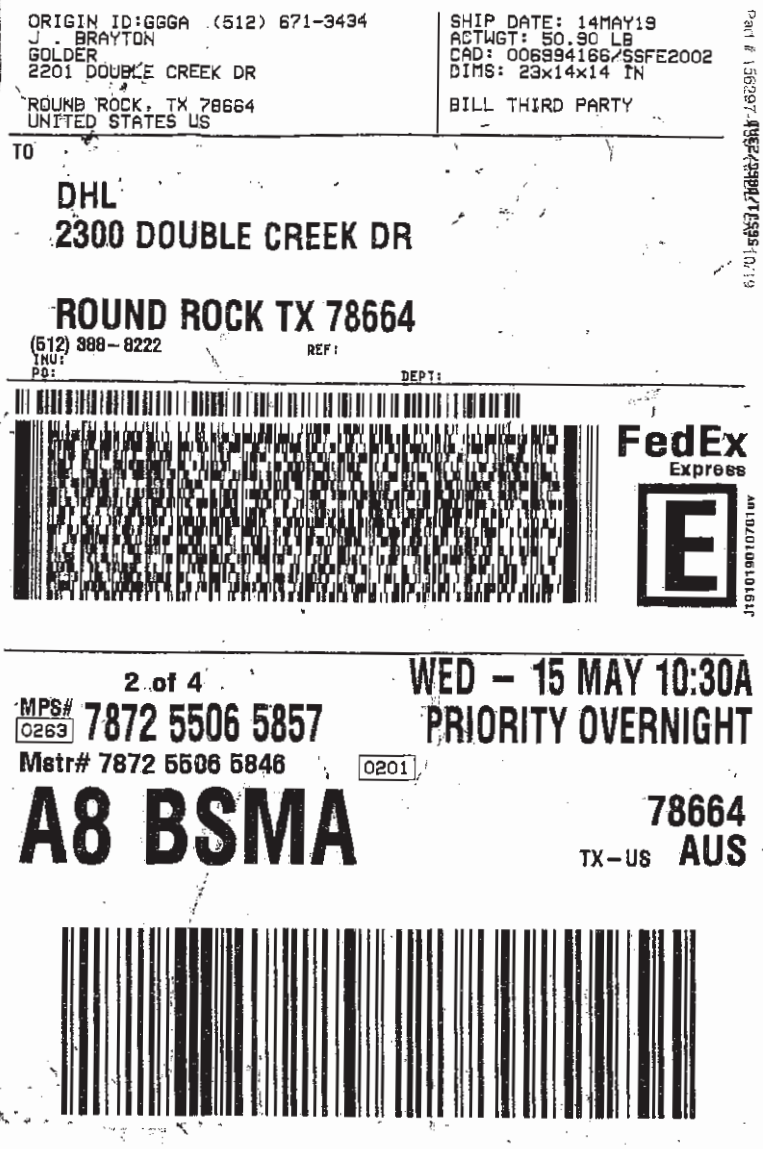
From: John DuPont
Sent: Tuesday, May 28, 2019 11:35 AM
To: Eric Lau
Subject: FW: CCR Analysis

Appendix III Parameters:
Metals (Ca and B)
Anions (Cl, F, and SO4)
TDS

Appendix IV Parameters:

Metals (As, Ba, Be, Cd, Co, Cr, Hg, Li, Mo, Pb, Sb, Se, and Tl)
Ra-226
Ra-228

From: Vienne, Will [mailto:William_Vienne@golder.com]
Sent: Tuesday, April 09, 2019 12:48 PM
To: John DuPont <dupont@dhlanalytical.com>
Subject: CCR Analysis



ORIGIN ID:GGGA (512) 671-3434
J . BRAYTON
GOLDER
2201 DOUBLE CREEK DR

ROUND ROCK, TX 78664
UNITED STATES US

SHIP DATE: 14MAY19
ACTWGT: 50.90 LB
CAD: 006994166/SSFE2002
DIMS: 23x14x14 IN

BILL THIRD PARTY

TO

DHL
2300 DOUBLE CREEK DR

ROUND ROCK TX 78664
(512) 388-8222 REF:
INV:
PO: DEPT:

FedEx
Express

2 of 4
MPS# 0263 7872 5506 5857
Mstr# 7872 5506 5846

WED - 15 MAY 10:30A
PRIORITY OVERNIGHT

0201

A8 BSMA

78664
TX-US AUS

DHL Analytical, Inc.

Sample Receipt Checklist

Client Name Golder | Date Received: 5/15/2019

Work Order Number 1905167 | Received by EL

Checklist completed by: _____ (Signature) 5/15/2019 (Date) | Reviewed by DL (Initials) 5/15/2019 (Date)

Carrier name FedEx 1day

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	4.5 °C
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH<2 acceptable upon receipt?	Yes ☑	No ☐	NA ☐ LOT # 11837
	Adjusted? no		Checked by EL
Water - ph>9 (S) or ph>10 (CN) acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted? _____		Checked by _____

Any No response must be detailed in the comments section below.

Client contacted _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments: _____

Corrective Action _____

DHL Analytical, Inc. **Date:** *30-May-19*

CLIENT: Golder
Project: Luminant-MLSES Ash Ponds
Lab Order: 1905167

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Method SW6020A - Metals Analysis
Method SW7470A - Mercury Analysis
Method E300 - Anions Analysis
Method M2320 B - Alkalinity Analysis
Method M3500-Fe D - Ferrous Iron Analysis (this parameter is not NELAP certified)
Method M3500-Fe D - Ferric Iron (calculation) (this calculation is not NELAP certified).
Method M4500-P E - Orthophosphate Analysis
Method M2540C - TDS Analysis
Sub-contract - Radium-228 and Radium-226 analyses by methods E904 and SM 7500 Ra B M. Analyzed at Pace Analytical.

LOG IN

The samples were received and log-in performed on 5/15/19. A total of 2 samples were received. The samples arrived in good condition and were properly packaged.

METALS ANALYSIS

For Metals analysis performed on 5/21/19 the matrix spike and matrix spike duplicate recoveries were below control limits for Calcium and Sodium. These are flagged accordingly in the QC summary report. The sample selected for the matrix spike and matrix spike duplicate was not from this work order. The LCS was within control limits for these analytes. No further corrective actions were taken.

For Metals analysis performed on 5/21/19 the RPD for the serial dilution was slightly above control limits for Potassium. This is flagged accordingly. The PDS was within control limits for this analyte. No further corrective actions were taken.

For Metals analysis performed on 5/21/19 the PDS recovery was out of control limits for three analytes. These are flagged accordingly. The serial dilution was within control limits for these analytes. No further corrective actions were taken.

For Metals analysis peformed on 5/21/19 three LCVLs were out of control limits for Potassium and/or Sodium. These are flagged accordingly. The associated CCVs were within control limits for these analytes. No further corrective actions were taken.

ANIONS ANALYSIS

CLIENT:	Golder
Project:	Luminant-MLSES Ash Ponds
Lab Order:	1905167

CASE NARRATIVE

For Anions analysis performed on 5/15/19 (batch 90908) the matrix spike and matrix spike duplicate recoveries (1905167-02 MS/MSD) were out of control limits for Chloride and Sulfate. These are flagged accordingly in the QC summary report. The sample selected for the matrix spike and matrix spike duplicate was from this work order. The LCS was within control limits for these analytes. No further corrective actions were taken.

DHL Analytical, Inc.

Date: *30-May-19*

CLIENT: Golder
Project: Luminant-MLSES Ash Ponds
Lab Order: 1905167

Work Order Sample Summary

Lab Smp ID	Client Sample ID	Tag Number	Date Collected	Date Recved
1905167-01	Lake Sample		05/14/19 10:05 AM	5/15/2019
1905167-02	Pond Sample		05/14/19 10:20 AM	5/15/2019

DHL Analytical, Inc.

30-May-19

Lab Order: 1905167
Client: Golder
Project: Luminant-MLSES Ash Ponds

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1905167-01A	Lake Sample	05/14/19 10:05 AM	Aqueous	M3500-Fe	Ferrous Iron Prep Water	05/20/19 02:56 PM	91002
1905167-01B	Lake Sample	05/14/19 10:05 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/20/19 09:34 AM	90990
	Lake Sample	05/14/19 10:05 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/20/19 09:34 AM	90990
	Lake Sample	05/14/19 10:05 AM	Aqueous	SW7470A	Mercury Aq Prep	05/21/19 09:56 AM	91017
1905167-01C	Lake Sample	05/14/19 10:05 AM	Aqueous	M2320 B	Alkalinity Preparation	05/16/19 10:12 AM	90940
	Lake Sample	05/14/19 10:05 AM	Aqueous	E300	Anion Preparation	05/15/19 09:07 AM	90908
	Lake Sample	05/14/19 10:05 AM	Aqueous	E300	Anion Preparation	05/15/19 09:07 AM	90908
	Lake Sample	05/14/19 10:05 AM	Aqueous	M4500-P E	Orthophosphate Prep	05/15/19 12:12 PM	90921
	Lake Sample	05/14/19 10:05 AM	Aqueous	M2540C	TDS Preparation	05/16/19 03:23 PM	90953
1905167-02A	Pond Sample	05/14/19 10:20 AM	Aqueous	M3500-Fe	Ferrous Iron Prep Water	05/20/19 02:56 PM	91002
1905167-02B	Pond Sample	05/14/19 10:20 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/20/19 09:34 AM	90990
	Pond Sample	05/14/19 10:20 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/20/19 09:34 AM	90990
	Pond Sample	05/14/19 10:20 AM	Aqueous	SW7470A	Mercury Aq Prep	05/21/19 09:56 AM	91017
1905167-02C	Pond Sample	05/14/19 10:20 AM	Aqueous	M2320 B	Alkalinity Preparation	05/16/19 10:12 AM	90940
	Pond Sample	05/14/19 10:20 AM	Aqueous	E300	Anion Preparation	05/15/19 09:07 AM	90908
	Pond Sample	05/14/19 10:20 AM	Aqueous	E300	Anion Preparation	05/15/19 09:07 AM	90908
	Pond Sample	05/14/19 10:20 AM	Aqueous	E300	Anion Preparation	05/16/19 09:16 AM	90935
	Pond Sample	05/14/19 10:20 AM	Aqueous	M4500-P E	Orthophosphate Prep	05/15/19 12:12 PM	90921
	Pond Sample	05/14/19 10:20 AM	Aqueous	M2540C	TDS Preparation	05/16/19 03:23 PM	90953

DHL Analytical, Inc.

30-May-19

Lab Order: 1905167
Client: Golder
Project: Luminant-MLSES Ash Ponds

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1905167-01A	Lake Sample	Aqueous	M3500-Fe D	Ferric Iron (Calculated)	91002	1	05/24/19	UV/VIS_2_190524A
	Lake Sample	Aqueous	M3500-Fe D	Ferrous Iron	91002	1	05/20/19 03:54 PM	UV/VIS_2_190520A
1905167-01B	Lake Sample	Aqueous	SW7470A	Mercury Total: Aqueous	91017	1	05/22/19 10:11 AM	CETAC2_HG_190522A
	Lake Sample	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	90990	1	05/22/19 12:01 PM	ICP-MS4_190522B
	Lake Sample	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	90990	1	05/21/19 03:24 PM	ICP-MS5_190521A
1905167-01C	Lake Sample	Aqueous	M2320 B	Alkalinity	90940	1	05/16/19 04:05 PM	TITRATOR_190516A
	Lake Sample	Aqueous	E300	Anions by IC method - Water	90908	10	05/15/19 12:51 PM	IC2_190515A
	Lake Sample	Aqueous	E300	Anions by IC method - Water	90908	1	05/15/19 05:23 PM	IC2_190515A
	Lake Sample	Aqueous	M4500-P E	Orthophosphate	90921	1	05/15/19 02:47 PM	UV/VIS_2_190515B
	Lake Sample	Aqueous	M2540C	Total Dissolved Solids	90953	1	05/17/19 11:40 AM	WC_190517D
1905167-02A	Pond Sample	Aqueous	M3500-Fe D	Ferric Iron (Calculated)	91002	1	05/24/19	UV/VIS_2_190524A
	Pond Sample	Aqueous	M3500-Fe D	Ferrous Iron	91002	1	05/20/19 03:54 PM	UV/VIS_2_190520A
1905167-02B	Pond Sample	Aqueous	SW7470A	Mercury Total: Aqueous	91017	1	05/22/19 10:13 AM	CETAC2_HG_190522A
	Pond Sample	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	90990	100	05/22/19 12:03 PM	ICP-MS4_190522B
	Pond Sample	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	90990	1	05/21/19 03:26 PM	ICP-MS5_190521A
1905167-02C	Pond Sample	Aqueous	M2320 B	Alkalinity	90940	1	05/16/19 04:08 PM	TITRATOR_190516A
	Pond Sample	Aqueous	E300	Anions by IC method - Water	90908	10	05/15/19 01:39 PM	IC2_190515A
	Pond Sample	Aqueous	E300	Anions by IC method - Water	90908	1	05/15/19 05:39 PM	IC2_190515A
	Pond Sample	Aqueous	E300	Anions by IC method - Water	90935	100	05/16/19 04:54 PM	IC4_190516A
	Pond Sample	Aqueous	M4500-P E	Orthophosphate	90921	1	05/15/19 02:47 PM	UV/VIS_2_190515B
	Pond Sample	Aqueous	M2540C	Total Dissolved Solids	90953	1	05/17/19 11:40 AM	WC_190517D

DHL Analytical, Inc.

Date: *30-May-19*

CLIENT:	Golder	**Client Sample ID:**	Lake Sample
Project:	Luminant-MLSES Ash Ponds	**Lab ID:**	1905167-01
Project No:	19122262-C	**Collection Date:**	05/14/19 10:05 AM
Lab Order:	1905167	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	05/21/19 03:24 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	05/21/19 03:24 PM
Barium	0.0535	0.00300	0.0100		mg/L	1	05/21/19 03:24 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	05/21/19 03:24 PM
Boron	0.0632	0.0100	0.0300		mg/L	1	05/22/19 12:01 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	05/21/19 03:24 PM
Calcium	12.5	0.100	0.300		mg/L	1	05/21/19 03:24 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	05/21/19 03:24 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	05/21/19 03:24 PM
Iron	0.365	0.0300	0.100		mg/L	1	05/21/19 03:24 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	05/21/19 03:24 PM
Lithium	<0.00500	0.00500	0.0100		mg/L	1	05/21/19 03:24 PM
Magnesium	6.09	0.100	0.300		mg/L	1	05/21/19 03:24 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	05/21/19 03:24 PM
Potassium	2.56	0.100	0.300		mg/L	1	05/21/19 03:24 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	05/21/19 03:24 PM
Sodium	11.9	0.100	0.300		mg/L	1	05/21/19 03:24 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	05/21/19 03:24 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	05/22/19 10:11 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **JL**
Chloride	12.2	0.300	1.00		mg/L	1	05/15/19 05:23 PM
Fluoride	0.140	0.100	0.400	J	mg/L	1	05/15/19 05:23 PM
Nitrate-N	<0.100	0.100	0.500		mg/L	1	05/15/19 05:23 PM
Sulfate	37.3	1.00	3.00		mg/L	1	05/15/19 05:23 PM
ALKALINITY		**M2320 B**					Analyst: **CC**
Alkalinity, Bicarbonate (As CaCO3)	55.4	10.0	20.0		mg/L @ pH 4.5	1	05/16/19 04:05 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.5	1	05/16/19 04:05 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.5	1	05/16/19 04:05 PM
Alkalinity, Total (As CaCO3)	55.4	20.0	20.0		mg/L @ pH 4.5	1	05/16/19 04:05 PM
FERRIC IRON (CALCULATED)		**M3500-FE D**					Analyst: **CAC**
Iron, Ferric	0.365	0.0500	0.100	N	mg/L	1	05/24/19
FERROUS IRON		**M3500-FE D**					Analyst: **BTJ**
Iron, Ferrous	<0.0500	0.0500	0.100	N	mg/L	1	05/20/19 03:54 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *30-May-19*

CLIENT:	Golder	**Client Sample ID:**	Lake Sample
Project:	Luminant-MLSES Ash Ponds	**Lab ID:**	1905167-01
Project No:	19122262-C	**Collection Date:**	05/14/19 10:05 AM
Lab Order:	1905167	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
ORTHOPHOSPHATE		**M4500-P E**					Analyst: **CC**
Phosphorus, Total Orthophosphate (As P)	<0.0300	0.0300	0.100		mg/L	1	05/15/19 02:47 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	119	10.0	10.0		mg/L	1	05/17/19 11:40 AM

Qualifiers:				
	*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
	DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit
	ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
	S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *30-May-19*

CLIENT:	Golder	**Client Sample ID:**	Pond Sample
Project:	Luminant-MLSES Ash Ponds	**Lab ID:**	1905167-02
Project No:	19122262-C	**Collection Date:**	05/14/19 10:20 AM
Lab Order:	1905167	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Antimony	0.00199	0.000800	0.00250	J	mg/L	1	05/21/19 03:26 PM
Arsenic	0.00305	0.00200	0.00500	J	mg/L	1	05/21/19 03:26 PM
Barium	0.0589	0.00300	0.0100		mg/L	1	05/21/19 03:26 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	05/21/19 03:26 PM
Boron	28.2	1.00	3.00		mg/L	100	05/22/19 12:03 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	05/21/19 03:26 PM
Calcium	319	10.0	30.0		mg/L	100	05/22/19 12:03 PM
Chromium	0.00336	0.00200	0.00500	J	mg/L	1	05/21/19 03:26 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	05/21/19 03:26 PM
Iron	<0.0300	0.0300	0.100		mg/L	1	05/21/19 03:26 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	05/21/19 03:26 PM
Lithium	0.119	0.00500	0.0100		mg/L	1	05/21/19 03:26 PM
Magnesium	553	10.0	30.0		mg/L	100	05/22/19 12:03 PM
Molybdenum	0.0550	0.00200	0.00500		mg/L	1	05/21/19 03:26 PM
Potassium	34.6	10.0	30.0		mg/L	100	05/22/19 12:03 PM
Selenium	2.96	0.200	0.500		mg/L	100	05/22/19 12:03 PM
Sodium	240	10.0	30.0		mg/L	100	05/22/19 12:03 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	05/21/19 03:26 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	0.000119	0.0000800	0.000200	J	mg/L	1	05/22/19 10:13 AM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **JL**
Chloride	513	30.0	100		mg/L	100	05/16/19 04:54 PM
Fluoride	24.3	1.00	4.00		mg/L	10	05/15/19 01:39 PM
Nitrate-N	11.1	0.100	0.500		mg/L	1	05/15/19 05:39 PM
Sulfate	2900	100	300		mg/L	100	05/16/19 04:54 PM
ALKALINITY		**M2320 B**					Analyst: **CC**
Alkalinity, Bicarbonate (As CaCO3)	79.1	10.0	20.0		mg/L @ pH 4.52	1	05/16/19 04:08 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.52	1	05/16/19 04:08 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.52	1	05/16/19 04:08 PM
Alkalinity, Total (As CaCO3)	79.1	20.0	20.0		mg/L @ pH 4.52	1	05/16/19 04:08 PM
FERRIC IRON (CALCULATED)		**M3500-FE D**					Analyst: **CAC**
Iron, Ferric	<0.0500	0.0500	0.100	N	mg/L	1	05/24/19
FERROUS IRON		**M3500-FE D**					Analyst: **BTJ**
Iron, Ferrous	<0.0500	0.0500	0.100	N	mg/L	1	05/20/19 03:54 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *30-May-19*

CLIENT:	Golder	**Client Sample ID:**	Pond Sample
Project:	Luminant-MLSES Ash Ponds	**Lab ID:**	1905167-02
Project No:	19122262-C	**Collection Date:**	05/14/19 10:20 AM
Lab Order:	1905167	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
ORTHOPHOSPHATE		**M4500-P E**					Analyst: **CC**
Phosphorus, Total Orthophosphate (As P)	<0.0300	0.0300	0.100		mg/L	1	05/15/19 02:47 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	5380	50.0	50.0		mg/L	1	05/17/19 11:40 AM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
	DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit
	ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
	S	Spike Recovery outside control limits	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905167
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: **CETAC2_HG_190522A**

The QC data in batch 91017 applies to the following samples: 1905167-01B, 1905167-02B

Sample ID	**MB-91017**	Batch ID:	**91017**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**CETAC2_HG_190522A**	Analysis Date:	**5/22/2019 10:02:31 AM**	Prep Date:	**5/21/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.0000800	0.000200								

Sample ID	**LCS-91017**	Batch ID:	**91017**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**CETAC2_HG_190522A**	Analysis Date:	**5/22/2019 10:04:46 AM**	Prep Date:	**5/21/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00187	0.000200	0.00200	0	93.5	85	115			

Sample ID	**LCSD-91017**	Batch ID:	**91017**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**LCSD**	Run ID:	**CETAC2_HG_190522A**	Analysis Date:	**5/22/2019 10:07:02 AM**	Prep Date:	**5/21/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00186	0.000200	0.00200	0	93.0	85	115	0.536	15	

Sample ID	**1905168-01B MS**	Batch ID:	**91017**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**MS**	Run ID:	**CETAC2_HG_190522A**	Analysis Date:	**5/22/2019 11:23:23 AM**	Prep Date:	**5/21/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00196	0.00100	0.00200	0	97.8	80	120			

Sample ID	**1905168-01B MSD**	Batch ID:	**91017**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**MSD**	Run ID:	**CETAC2_HG_190522A**	Analysis Date:	**5/22/2019 11:25:39 AM**	Prep Date:	**5/21/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00194	0.00100	0.00200	0	97.0	80	120	0.770	15	

Sample ID	**1905168-01B SD**	Batch ID:	**91017**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**SD**	Run ID:	**CETAC2_HG_190522A**	Analysis Date:	**5/22/2019 11:27:56 AM**	Prep Date:	**5/21/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.00200	0.00500	0	0				0	10	

Sample ID	**1905168-01B PDS**	Batch ID:	**91017**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**PDS**	Run ID:	**CETAC2_HG_190522A**	Analysis Date:	**5/22/2019 11:30:13 AM**	Prep Date:	**5/21/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0122	0.00100	0.0125	0	97.6	85	115			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905167
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_190522A

Sample ID	**ICV-190522**	Batch ID:	**R104223**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**ICV**	Run ID:	**CETAC2_HG_190522A**	Analysis Date:	**5/22/2019 9:57:56 AM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00383	0.000200	0.00400	0	95.8	90	110			

Sample ID	**CCV1-190522**	Batch ID:	**R104223**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**CETAC2_HG_190522A**	Analysis Date:	**5/22/2019 10:41:04 AM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00202	0.000200	0.00200	0	101	90	110			

Sample ID	**CCV2-190522**	Batch ID:	**R104223**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**CETAC2_HG_190522A**	Analysis Date:	**5/22/2019 11:08:23 AM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00203	0.000200	0.00200	0	102	90	110			

Sample ID	**CCV3-190522**	Batch ID:	**R104223**	TestNo:	**SW7470A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**CETAC2_HG_190522A**	Analysis Date:	**5/22/2019 2:51:11 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00203	0.000200	0.00200	0	102	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905167
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190522B

The QC data in batch 90990 applies to the following samples: 1905167-01B, 1905167-02B

Sample ID	MB-90990	Batch ID:	90990	TestNo:	SW6020A	Units:	mg/L
SampType:	MBLK	Run ID:	ICP-MS4_190522B	Analysis Date:	5/22/2019 11:49:00 AM	Prep Date:	5/20/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	<0.0100	0.0300								

Sample ID	LCS-90990	Batch ID:	90990	TestNo:	SW6020A	Units:	mg/L
SampType:	LCS	Run ID:	ICP-MS4_190522B	Analysis Date:	5/22/2019 11:51:00 AM	Prep Date:	5/20/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.203	0.0300	0.200	0	102	80	120			

Sample ID	LCSD-90990	Batch ID:	90990	TestNo:	SW6020A	Units:	mg/L
SampType:	LCSD	Run ID:	ICP-MS4_190522B	Analysis Date:	5/22/2019 11:53:00 AM	Prep Date:	5/20/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.202	0.0300	0.200	0	101	80	120	0.579	15	

Sample ID	1905218-06A SD	Batch ID:	90990	TestNo:	SW6020A	Units:	mg/L
SampType:	SD	Run ID:	ICP-MS4_190522B	Analysis Date:	5/22/2019 11:59:00 AM	Prep Date:	5/20/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.103	0.150	0	0.0953				7.85	10	

Sample ID	1905218-06A PDS	Batch ID:	90990	TestNo:	SW6020A	Units:	mg/L
SampType:	PDS	Run ID:	ICP-MS4_190522B	Analysis Date:	5/22/2019 12:23:00 PM	Prep Date:	5/20/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.277	0.0300	0.200	0.0953	91.1	80	120			

Sample ID	1905218-06A MS	Batch ID:	90990	TestNo:	SW6020A	Units:	mg/L
SampType:	MS	Run ID:	ICP-MS4_190522B	Analysis Date:	5/22/2019 12:25:00 PM	Prep Date:	5/20/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.288	0.0300	0.200	0.0953	96.1	80	120			

Sample ID	1905218-06A MSD	Batch ID:	90990	TestNo:	SW6020A	Units:	mg/L
SampType:	MSD	Run ID:	ICP-MS4_190522B	Analysis Date:	5/22/2019 12:27:00 PM	Prep Date:	5/20/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.282	0.0300	0.200	0.0953	93.3	80	120	2.01	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905167
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_190522B

Sample ID	ICV-190522	Batch ID:	R104220	TestNo:	SW6020A	Units:	mg/L
SampType:	ICV	Run ID:	ICP-MS4_190522B	Analysis Date:	5/22/2019 11:38:00 AM	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.104	0.0300	0.100	0	104	90	110			
Calcium	2.35	0.300	2.50	0	94.2	90	110			
Magnesium	2.45	0.300	2.50	0	98.2	90	110			
Potassium	2.52	0.300	2.50	0	101	90	110			
Selenium	0.102	0.00500	0.100	0	102	90	110			
Sodium	2.53	0.300	2.50	0	101	90	110			

Sample ID	LCVL-190522	Batch ID:	R104220	TestNo:	SW6020A	Units:	mg/L
SampType:	LCVL	Run ID:	ICP-MS4_190522B	Analysis Date:	5/22/2019 11:43:00 AM	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0197	0.0300	0.0200	0	98.5	70	130			
Calcium	0.0981	0.300	0.100	0	98.1	70	130			
Magnesium	0.0967	0.300	0.100	0	96.7	70	130			
Potassium	0.0964	0.300	0.100	0	96.4	70	130			
Selenium	0.00494	0.00500	0.00500	0	98.8	70	130			
Sodium	0.0966	0.300	0.100	0	96.6	70	130			

Sample ID	CCV1-190522	Batch ID:	R104220	TestNo:	SW6020A	Units:	mg/L
SampType:	CCV	Run ID:	ICP-MS4_190522B	Analysis Date:	5/22/2019 12:33:00 PM	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.210	0.0300	0.200	0	105	90	110			
Calcium	4.65	0.300	5.00	0	92.9	90	110			
Magnesium	5.05	0.300	5.00	0	101	90	110			
Potassium	5.15	0.300	5.00	0	103	90	110			
Selenium	0.215	0.00500	0.200	0	107	90	110			
Sodium	5.08	0.300	5.00	0	102	90	110			

Sample ID	LCVL1-190522	Batch ID:	R104220	TestNo:	SW6020A	Units:	mg/L
SampType:	LCVL	Run ID:	ICP-MS4_190522B	Analysis Date:	5/22/2019 12:38:00 PM	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0203	0.0300	0.0200	0	102	70	130			
Calcium	0.0876	0.300	0.100	0	87.6	70	130			
Magnesium	0.0970	0.300	0.100	0	97.0	70	130			
Potassium	0.0932	0.300	0.100	0	93.2	70	130			
Selenium	0.00547	0.00500	0.00500	0	109	70	130			
Sodium	0.102	0.300	0.100	0	102	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905167
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190521A

The QC data in batch 90990 applies to the following samples: 1905167-01B, 1905167-02B

Sample ID	**MB-90990**	Batch ID:	**90990**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**ICP-MS5_190521A**	Analysis Date:	**5/21/2019 3:11:00 PM**	Prep Date:	**5/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.000800	0.00250								
Arsenic	<0.00200	0.00500								
Barium	<0.00300	0.0100								
Beryllium	<0.000300	0.00100								
Cadmium	<0.000300	0.00100								
Calcium	<0.100	0.300								
Chromium	<0.00200	0.00500								
Cobalt	<0.00300	0.00500								
Iron	<0.0300	0.100								
Lead	<0.000300	0.00100								
Lithium	<0.00500	0.0100								
Magnesium	<0.100	0.300								
Molybdenum	<0.00200	0.00500								
Potassium	<0.100	0.300								
Selenium	<0.00200	0.00500								
Sodium	<0.100	0.300								
Thallium	<0.000500	0.00150								

Sample ID	**LCS-90990**	Batch ID:	**90990**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**ICP-MS5_190521A**	Analysis Date:	**5/21/2019 3:13:00 PM**	Prep Date:	**5/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.209	0.00250	0.200	0	104	80	120			
Arsenic	0.208	0.00500	0.200	0	104	80	120			
Barium	0.208	0.0100	0.200	0	104	80	120			
Beryllium	0.200	0.00100	0.200	0	99.8	80	120			
Cadmium	0.211	0.00100	0.200	0	105	80	120			
Calcium	5.18	0.300	5.00	0	104	80	120			
Chromium	0.209	0.00500	0.200	0	105	80	120			
Cobalt	0.216	0.00500	0.200	0	108	80	120			
Iron	5.40	0.100	5.00	0	108	80	120			
Lead	0.203	0.00100	0.200	0	101	80	120			
Lithium	0.214	0.0100	0.200	0	107	80	120			
Magnesium	5.35	0.300	5.00	0	107	80	120			
Molybdenum	0.204	0.00500	0.200	0	102	80	120			
Potassium	4.99	0.300	5.00	0	99.9	80	120			
Selenium	0.208	0.00500	0.200	0	104	80	120			
Sodium	5.38	0.300	5.00	0	108	80	120			
Thallium	0.200	0.00150	0.200	0	100	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905167
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190521A

Sample ID **LCSD-90990**	Batch ID: **90990**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCSD**	Run ID: **ICP-MS5_190521A**	Analysis Date: **5/21/2019 3:15:00 PM**	Prep Date: **5/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.209	0.00250	0.200	0	105	80	120	0.307	15	
Arsenic	0.207	0.00500	0.200	0	104	80	120	0.318	15	
Barium	0.207	0.0100	0.200	0	103	80	120	0.392	15	
Beryllium	0.198	0.00100	0.200	0	99.0	80	120	0.810	15	
Cadmium	0.211	0.00100	0.200	0	105	80	120	0.119	15	
Calcium	5.16	0.300	5.00	0	103	80	120	0.293	15	
Chromium	0.209	0.00500	0.200	0	105	80	120	0.129	15	
Cobalt	0.215	0.00500	0.200	0	108	80	120	0.352	15	
Iron	5.41	0.100	5.00	0	108	80	120	0.077	15	
Lead	0.204	0.00100	0.200	0	102	80	120	0.722	15	
Lithium	0.211	0.0100	0.200	0	105	80	120	1.44	15	
Magnesium	5.37	0.300	5.00	0	107	80	120	0.251	15	
Molybdenum	0.202	0.00500	0.200	0	101	80	120	0.822	15	
Potassium	5.00	0.300	5.00	0	100	80	120	0.175	15	
Selenium	0.208	0.00500	0.200	0	104	80	120	0.274	15	
Sodium	5.38	0.300	5.00	0	108	80	120	0.080	15	
Thallium	0.202	0.00150	0.200	0	101	80	120	0.737	15	

Sample ID **1905218-06A SD**	Batch ID: **90990**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS5_190521A**	Analysis Date: **5/21/2019 3:22:00 PM**	Prep Date: **5/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.00400	0.0125	0	0				0	10	
Arsenic	<0.0100	0.0250	0	0				0	10	
Barium	0.0519	0.0500	0	0.0510				1.62	10	
Beryllium	<0.00150	0.00500	0	0				0	10	
Cadmium	<0.00150	0.00500	0	0				0	10	
Calcium	23.9	1.50	0	23.8				0.464	10	
Chromium	<0.0100	0.0250	0	0				0	10	
Cobalt	<0.0150	0.0250	0	0				0	10	
Iron	0.185	0.500	0	0.186				0.629	10	
Lead	<0.00150	0.00500	0	0				0	10	
Lithium	0.0477	0.0500	0	0.0462				3.27	10	
Magnesium	12.2	1.50	0	12.2				0.282	10	
Molybdenum	<0.0100	0.0250	0	0				0	10	
Potassium	1.83	1.50	0	2.08				12.6	10	R
Selenium	<0.0100	0.0250	0	0				0	10	
Sodium	53.2	1.50	0	51.9				2.54	10	
Thallium	<0.00250	0.00750	0	0				0	10	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905167
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190521A

Sample ID **1905218-06A PDS**	Batch ID: **90990**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS5_190521A**	Analysis Date: **5/21/2019 3:44:00 PM**	Prep Date: **5/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.192	0.00250	0.200	0	96.2	80	120			
Arsenic	0.183	0.00500	0.200	0	91.7	80	120			
Barium	0.237	0.0100	0.200	0.0510	92.9	80	120			
Beryllium	0.179	0.00100	0.200	0	89.3	80	120			
Cadmium	0.194	0.00100	0.200	0	97.0	80	120			
Calcium	26.2	0.300	5.00	23.8	48.1	80	120			S
Chromium	0.198	0.00500	0.200	0	98.8	80	120			
Cobalt	0.191	0.00500	0.200	0	95.6	80	120			
Iron	5.16	0.100	5.00	0.186	99.5	80	120			
Lead	0.190	0.00100	0.200	0	94.8	80	120			
Lithium	0.238	0.0100	0.200	0.0462	96.1	80	120			
Magnesium	15.8	0.300	5.00	12.2	72.5	80	120			S
Molybdenum	0.179	0.00500	0.200	0	89.4	80	120			
Potassium	6.49	0.300	5.00	2.08	88.3	80	120			
Selenium	0.178	0.00500	0.200	0	89.1	80	120			
Sodium	51.5	0.300	5.00	51.9	-7.46	80	120			S
Thallium	0.189	0.00150	0.200	0	94.5	80	120			

Sample ID **1905218-06A MS**	Batch ID: **90990**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS5_190521A**	Analysis Date: **5/21/2019 3:46:00 PM**	Prep Date: **5/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.196	0.00250	0.200	0	98.1	80	120			
Arsenic	0.189	0.00500	0.200	0	94.4	80	120			
Barium	0.244	0.0100	0.200	0.0510	96.3	80	120			
Beryllium	0.183	0.00100	0.200	0	91.6	80	120			
Cadmium	0.196	0.00100	0.200	0	98.0	80	120			
Calcium	27.3	0.300	5.00	23.8	69.1	80	120			S
Chromium	0.197	0.00500	0.200	0	98.5	80	120			
Cobalt	0.194	0.00500	0.200	0	96.9	80	120			
Iron	5.24	0.100	5.00	0.186	101	80	120			
Lead	0.193	0.00100	0.200	0	96.5	80	120			
Lithium	0.241	0.0100	0.200	0.0462	97.6	80	120			
Magnesium	16.6	0.300	5.00	12.2	89.7	80	120			
Molybdenum	0.189	0.00500	0.200	0	94.4	80	120			
Potassium	6.74	0.300	5.00	2.08	93.2	80	120			
Selenium	0.183	0.00500	0.200	0	91.3	80	120			
Sodium	53.9	0.300	5.00	51.9	39.6	80	120			S
Thallium	0.192	0.00150	0.200	0	95.8	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905167
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190521A

Sample ID **1905218-06A MSD** Batch ID: **90990** TestNo: **SW6020A** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS5_190521A** Analysis Date: **5/21/2019 3:49:00 PM** Prep Date: **5/20/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.199	0.00250	0.200	0	99.3	80	120	1.17	15	
Arsenic	0.189	0.00500	0.200	0	94.3	80	120	0.111	15	
Barium	0.246	0.0100	0.200	0.0510	97.3	80	120	0.778	15	
Beryllium	0.181	0.00100	0.200	0	90.4	80	120	1.36	15	
Cadmium	0.197	0.00100	0.200	0	98.7	80	120	0.775	15	
Calcium	27.4	0.300	5.00	23.8	72.7	80	120	0.665	15	S
Chromium	0.198	0.00500	0.200	0	99.1	80	120	0.607	15	
Cobalt	0.196	0.00500	0.200	0	97.8	80	120	0.893	15	
Iron	5.30	0.100	5.00	0.186	102	80	120	1.09	15	
Lead	0.192	0.00100	0.200	0	96.1	80	120	0.414	15	
Lithium	0.238	0.0100	0.200	0.0462	96.0	80	120	1.33	15	
Magnesium	16.8	0.300	5.00	12.2	92.6	80	120	0.883	15	
Molybdenum	0.191	0.00500	0.200	0	95.7	80	120	1.34	15	
Potassium	6.80	0.300	5.00	2.08	94.5	80	120	0.968	15	
Selenium	0.183	0.00500	0.200	0	91.7	80	120	0.351	15	
Sodium	54.6	0.300	5.00	51.9	54.2	80	120	1.35	15	S
Thallium	0.192	0.00150	0.200	0	96.0	80	120	0.248	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905167
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190521A

Sample ID **ICV-190521**	Batch ID: **R104204**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS5_190521A**	Analysis Date: **5/21/2019 12:10:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.102	0.00250	0.100	0	102	90	110			
Arsenic	0.103	0.00500	0.100	0	103	90	110			
Barium	0.0990	0.0100	0.100	0	99.0	90	110			
Beryllium	0.0972	0.00100	0.100	0	97.2	90	110			
Cadmium	0.102	0.00100	0.100	0	102	90	110			
Calcium	2.52	0.300	2.50	0	101	90	110			
Chromium	0.103	0.00500	0.100	0	103	90	110			
Cobalt	0.108	0.00500	0.100	0	108	90	110			
Iron	2.60	0.100	2.50	0	104	90	110			
Lead	0.0982	0.00100	0.100	0	98.2	90	110			
Lithium	0.103	0.0100	0.100	0	103	90	110			
Magnesium	2.49	0.300	2.50	0	99.7	90	110			
Molybdenum	0.0930	0.00500	0.100	0	93.0	90	110			
Potassium	2.38	0.300	2.50	0	95.3	90	110			
Selenium	0.104	0.00500	0.100	0	104	90	110			
Sodium	2.56	0.300	2.50	0	103	90	110			
Thallium	0.0977	0.00150	0.100	0	97.7	90	110			

Sample ID **LCVL-190521**	Batch ID: **R104204**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_190521A**	Analysis Date: **5/21/2019 12:15:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00183	0.00250	0.00200	0	91.4	70	130			
Arsenic	0.00504	0.00500	0.00500	0	101	70	130			
Barium	0.00459	0.0100	0.00500	0	91.8	70	130			
Beryllium	0.000968	0.00100	0.00100	0	96.8	70	130			
Cadmium	0.00106	0.00100	0.00100	0	106	70	130			
Calcium	0.104	0.300	0.100	0	104	70	130			
Chromium	0.00482	0.00500	0.00500	0	96.4	70	130			
Cobalt	0.00494	0.00500	0.00500	0	98.7	70	130			
Iron	0.0979	0.100	0.100	0	97.9	70	130			
Lead	0.000882	0.00100	0.00100	0	88.2	70	130			
Lithium	0.00996	0.0100	0.0100	0	99.6	70	130			
Magnesium	0.0983	0.300	0.100	0	98.3	70	130			
Molybdenum	0.00464	0.00500	0.00500	0	92.8	70	130			
Potassium	0.0691	0.300	0.100	0	69.1	70	130			S
Selenium	0.00633	0.00500	0.00500	0	127	70	130			
Sodium	0.0960	0.300	0.100	0	96.0	70	130			
Thallium	0.000944	0.00150	0.00100	0	94.4	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905167
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190521A

Sample ID **CCV4-190521**	Batch ID: **R104204**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_190521A**	Analysis Date: **5/21/2019 3:00:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.203	0.00250	0.200	0	101	90	110			
Arsenic	0.203	0.00500	0.200	0	102	90	110			
Barium	0.202	0.0100	0.200	0	101	90	110			
Beryllium	0.192	0.00100	0.200	0	95.9	90	110			
Cadmium	0.204	0.00100	0.200	0	102	90	110			
Calcium	4.96	0.300	5.00	0	99.3	90	110			
Chromium	0.203	0.00500	0.200	0	101	90	110			
Cobalt	0.213	0.00500	0.200	0	106	90	110			
Iron	5.15	0.100	5.00	0	103	90	110			
Lead	0.198	0.00100	0.200	0	98.8	90	110			
Lithium	0.205	0.0100	0.200	0	103	90	110			
Magnesium	5.15	0.300	5.00	0	103	90	110			
Molybdenum	0.199	0.00500	0.200	0	99.7	90	110			
Potassium	4.83	0.300	5.00	0	96.6	90	110			
Selenium	0.200	0.00500	0.200	0	100	90	110			
Sodium	5.26	0.300	5.00	0	105	90	110			
Thallium	0.197	0.00150	0.200	0	98.4	90	110			

Sample ID **LCVL4-190521**	Batch ID: **R104204**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_190521A**	Analysis Date: **5/21/2019 3:05:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00207	0.00250	0.00200	0	104	70	130			
Arsenic	0.00491	0.00500	0.00500	0	98.1	70	130			
Barium	0.00487	0.0100	0.00500	0	97.5	70	130			
Beryllium	0.000934	0.00100	0.00100	0	93.4	70	130			
Cadmium	0.00104	0.00100	0.00100	0	104	70	130			
Calcium	0.0913	0.300	0.100	0	91.3	70	130			
Chromium	0.00486	0.00500	0.00500	0	97.1	70	130			
Cobalt	0.00525	0.00500	0.00500	0	105	70	130			
Iron	0.101	0.100	0.100	0	101	70	130			
Lead	0.000868	0.00100	0.00100	0	86.8	70	130			
Lithium	0.0102	0.0100	0.0100	0	102	70	130			
Magnesium	0.104	0.300	0.100	0	104	70	130			
Molybdenum	0.00483	0.00500	0.00500	0	96.6	70	130			
Potassium	0.0524	0.300	0.100	0	52.4	70	130			S
Selenium	0.00506	0.00500	0.00500	0	101	70	130			
Sodium	0.144	0.300	0.100	0	144	70	130			S
Thallium	0.000962	0.00150	0.00100	0	96.2	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905167
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_190521A

Sample ID **CCV5-190521**	Batch ID: **R104204**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_190521A**	Analysis Date: **5/21/2019 3:51:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.197	0.00250	0.200	0	98.5	90	110			
Arsenic	0.199	0.00500	0.200	0	99.7	90	110			
Barium	0.194	0.0100	0.200	0	96.8	90	110			
Beryllium	0.181	0.00100	0.200	0	90.6	90	110			
Cadmium	0.197	0.00100	0.200	0	98.4	90	110			
Calcium	4.83	0.300	5.00	0	96.7	90	110			
Chromium	0.199	0.00500	0.200	0	99.4	90	110			
Cobalt	0.207	0.00500	0.200	0	104	90	110			
Iron	5.09	0.100	5.00	0	102	90	110			
Lead	0.192	0.00100	0.200	0	96.2	90	110			
Lithium	0.198	0.0100	0.200	0	99.0	90	110			
Magnesium	5.01	0.300	5.00	0	100	90	110			
Molybdenum	0.192	0.00500	0.200	0	95.8	90	110			
Potassium	4.71	0.300	5.00	0	94.2	90	110			
Selenium	0.200	0.00500	0.200	0	99.8	90	110			
Sodium	5.09	0.300	5.00	0	102	90	110			
Thallium	0.192	0.00150	0.200	0	95.8	90	110			

Sample ID **LCVL5-190521**	Batch ID: **R104204**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_190521A**	Analysis Date: **5/21/2019 3:55:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00208	0.00250	0.00200	0	104	70	130			
Arsenic	0.00481	0.00500	0.00500	0	96.1	70	130			
Barium	0.00469	0.0100	0.00500	0	93.8	70	130			
Beryllium	0.000861	0.00100	0.00100	0	86.1	70	130			
Cadmium	0.000998	0.00100	0.00100	0	99.8	70	130			
Calcium	0.102	0.300	0.100	0	102	70	130			
Chromium	0.00463	0.00500	0.00500	0	92.5	70	130			
Cobalt	0.00508	0.00500	0.00500	0	102	70	130			
Iron	0.0987	0.100	0.100	0	98.7	70	130			
Lead	0.000837	0.00100	0.00100	0	83.7	70	130			
Lithium	0.00978	0.0100	0.0100	0	97.8	70	130			
Magnesium	0.0989	0.300	0.100	0	98.9	70	130			
Molybdenum	0.00479	0.00500	0.00500	0	95.8	70	130			
Potassium	0.0352	0.300	0.100	0	35.2	70	130			S
Selenium	0.00485	0.00500	0.00500	0	97.0	70	130			
Sodium	0.135	0.300	0.100	0	135	70	130			S
Thallium	0.000929	0.00150	0.00100	0	92.9	70	130			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905167
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_190515A

The QC data in batch 90908 applies to the following samples: 1905167-01C, 1905167-02C

Sample ID	MB-90908	Batch ID:	90908	TestNo:	E300	Units:	mg/L
SampType:	MBLK	Run ID:	IC2_190515A	Analysis Date:	5/15/2019 10:10:50 AM	Prep Date:	5/15/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00								
Fluoride	<0.100	0.400								
Nitrate-N	<0.100	0.500								
Sulfate	<1.00	3.00								

Sample ID	LCS-90908	Batch ID:	90908	TestNo:	E300	Units:	mg/L
SampType:	LCS	Run ID:	IC2_190515A	Analysis Date:	5/15/2019 10:26:50 AM	Prep Date:	5/15/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.1	1.00	10.00	0	101	90	110			
Fluoride	4.00	0.400	4.000	0	99.9	90	110			
Nitrate-N	5.09	0.500	5.000	0	102	90	110			
Sulfate	30.4	3.00	30.00	0	101	90	110			

Sample ID	LCSD-90908	Batch ID:	90908	TestNo:	E300	Units:	mg/L
SampType:	LCSD	Run ID:	IC2_190515A	Analysis Date:	5/15/2019 10:42:50 AM	Prep Date:	5/15/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.2	1.00	10.00	0	102	90	110	0.674	20	
Fluoride	4.05	0.400	4.000	0	101	90	110	1.26	20	
Nitrate-N	5.08	0.500	5.000	0	102	90	110	0.146	20	
Sulfate	30.9	3.00	30.00	0	103	90	110	1.55	20	

Sample ID	1905167-01CMS	Batch ID:	90908	TestNo:	E300	Units:	mg/L
SampType:	MS	Run ID:	IC2_190515A	Analysis Date:	5/15/2019 1:07:36 PM	Prep Date:	5/15/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	222	10.0	200.0	12.69	105	90	110			
Fluoride	211	4.00	200.0	0	106	90	110			
Nitrate-N	45.6	5.00	45.16	0	101	90	110			
Sulfate	239	30.0	200.0	41.32	98.7	90	110			

Sample ID	1905167-01CMSD	Batch ID:	90908	TestNo:	E300	Units:	mg/L
SampType:	MSD	Run ID:	IC2_190515A	Analysis Date:	5/15/2019 1:23:36 PM	Prep Date:	5/15/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	221	10.0	200.0	12.69	104	90	110	0.308	20	
Fluoride	210	4.00	200.0	0	105	90	110	0.286	20	
Nitrate-N	45.8	5.00	45.16	0	101	90	110	0.495	20	
Sulfate	237	30.0	200.0	41.32	97.7	90	110	0.821	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905167
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_190515A

Sample ID **1905167-02CMS**	Batch ID: **90908**	TestNo: **E300**	Units: **mg/L**
SampType: **MS**	Run ID: **IC2_190515A**	Analysis Date: **5/15/2019 1:55:36 PM**	Prep Date: **5/15/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	686	10.0	200.0	528.8	78.8	90	110			S
Fluoride	229	4.00	200.0	24.26	102	90	110			
Nitrate-N	56.2	5.00	45.16	10.55	101	90	110			
Sulfate	2520	30.0	200.0	0	1260	90	110			S

Sample ID **1905167-02CMSD**	Batch ID: **90908**	TestNo: **E300**	Units: **mg/L**
SampType: **MSD**	Run ID: **IC2_190515A**	Analysis Date: **5/15/2019 2:11:36 PM**	Prep Date: **5/15/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	688	10.0	200.0	528.8	79.8	90	110	0.292	20	S
Fluoride	229	4.00	200.0	24.26	102	90	110	0.251	20	
Nitrate-N	57.3	5.00	45.16	10.55	103	90	110	1.85	20	
Sulfate	<10.0	30.0	200.0	0	0	90	110	0	20	S

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905167
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_190515A

Sample ID **ICV-190515**	Batch ID: **R104097**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC2_190515A**	Analysis Date: **5/15/2019 9:38:50 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	25.8	1.00	25.00	0	103	90	110			
Fluoride	10.3	0.400	10.00	0	103	90	110			
Nitrate-N	13.0	0.500	12.50	0	104	90	110			
Sulfate	77.8	3.00	75.00	0	104	90	110			

Sample ID **CCV1-190515**	Batch ID: **R104097**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_190515A**	Analysis Date: **5/15/2019 4:51:36 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.4	1.00	10.00	0	104	90	110			
Fluoride	4.15	0.400	4.000	0	104	90	110			
Nitrate-N	5.13	0.500	5.000	0	103	90	110			
Sulfate	30.8	3.00	30.00	0	103	90	110			

Sample ID **CCV2-190515**	Batch ID: **R104097**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_190515A**	Analysis Date: **5/15/2019 8:35:35 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.6	1.00	10.00	0	106	90	110			
Fluoride	4.20	0.400	4.000	0	105	90	110			
Nitrate-N	5.20	0.500	5.000	0	104	90	110			
Sulfate	31.5	3.00	30.00	0	105	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905167
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_190516A

The QC data in batch 90935 applies to the following samples: 1905167-02C

Sample ID	MB-90935	Batch ID:	90935	TestNo:	E300	Units:	mg/L
SampType:	MBLK	Run ID:	IC4_190516A	Analysis Date:	5/16/2019 10:26:21 AM	Prep Date:	5/16/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00								
Sulfate	<1.00	3.00								

Sample ID	LCS-90935	Batch ID:	90935	TestNo:	E300	Units:	mg/L
SampType:	LCS	Run ID:	IC4_190516A	Analysis Date:	5/16/2019 10:42:21 AM	Prep Date:	5/16/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.61	1.00	10.00	0	96.1	90	110			
Sulfate	29.5	3.00	30.00	0	98.3	90	110			

Sample ID	LCSD-90935	Batch ID:	90935	TestNo:	E300	Units:	mg/L
SampType:	LCSD	Run ID:	IC4_190516A	Analysis Date:	5/16/2019 10:58:21 AM	Prep Date:	5/16/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.68	1.00	10.00	0	96.8	90	110	0.745	20	
Sulfate	29.8	3.00	30.00	0	99.2	90	110	0.935	20	

Sample ID	1905167-02CMS	Batch ID:	90935	TestNo:	E300	Units:	mg/L
SampType:	MS	Run ID:	IC4_190516A	Analysis Date:	5/16/2019 5:10:27 PM	Prep Date:	5/16/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	2490	100	2000	512.8	98.6	90	110			
Sulfate	4830	300	2000	2897	96.9	90	110			

Sample ID	1905167-02CMSD	Batch ID:	90935	TestNo:	E300	Units:	mg/L
SampType:	MSD	Run ID:	IC4_190516A	Analysis Date:	5/16/2019 5:26:27 PM	Prep Date:	5/16/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	2500	100	2000	512.8	99.4	90	110	0.622	20	
Sulfate	4880	300	2000	2897	99.1	90	110	0.920	20	

Sample ID	1905168-01CMS	Batch ID:	90935	TestNo:	E300	Units:	mg/L
SampType:	MS	Run ID:	IC4_190516A	Analysis Date:	5/16/2019 5:58:26 PM	Prep Date:	5/16/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	2170	100	2000	212.8	98.1	90	110			
Sulfate	4380	300	2000	2468	95.6	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905167
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_190516A

Sample ID **1905168-01CMSD**	Batch ID: **90935**	TestNo: **E300**		Units: **mg/L**	
SampType: **MSD**	Run ID: **IC4_190516A**	Analysis Date: **5/16/2019 6:14:27 PM**		Prep Date: **5/16/2019**	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	2170	100	2000	212.8	97.8	90	110	0.235	20	
Sulfate	4390	300	2000	2468	96.2	90	110	0.273	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905167
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_190516A

Sample ID	ICV-190516	Batch ID:	R104119	TestNo:	E300	Units:	mg/L
SampType:	ICV	Run ID:	IC4_190516A	Analysis Date:	5/16/2019 9:54:21 AM	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	24.7	1.00	25.00	0	99.0	90	110			
Sulfate	74.5	3.00	75.00	0	99.4	90	110			

Sample ID	CCV1-190516	Batch ID:	R104119	TestNo:	E300	Units:	mg/L
SampType:	CCV	Run ID:	IC4_190516A	Analysis Date:	5/16/2019 9:10:26 PM	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.75	1.00	10.00	0	97.5	90	110			
Sulfate	30.2	3.00	30.00	0	101	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905167
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_190516A

The QC data in batch 90940 applies to the following samples: 1905167-01C, 1905167-02C

Sample ID	MB-90940	Batch ID:	90940	TestNo:	M2320 B	Units:	mg/L @ pH 4.47
SampType:	MBLK	Run ID:	TITRATOR_190516A	Analysis Date:	5/16/2019 2:00:00 PM	Prep Date:	5/16/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	<10.0	20.0								
Alkalinity, Carbonate (As CaCO3)	<10.0	20.0								
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0								
Alkalinity, Total (As CaCO3)	<20.0	20.0								

Sample ID	LCS-90940	Batch ID:	90940	TestNo:	M2320 B	Units:	mg/L @ pH 4.08
SampType:	LCS	Run ID:	TITRATOR_190516A	Analysis Date:	5/16/2019 2:04:00 PM	Prep Date:	5/16/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)	52.3	20.0	50.00	0	105	74	129			

Sample ID	1905134-01C DUP	Batch ID:	90940	TestNo:	M2320 B	Units:	mg/L @ pH 4.52
SampType:	DUP	Run ID:	TITRATOR_190516A	Analysis Date:	5/16/2019 2:15:00 PM	Prep Date:	5/16/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	205	20.0	0	205.8				0.536	20	
Alkalinity, Carbonate (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Total (As CaCO3)	205	20.0	0	205.8				0.536	20	

Sample ID	1905168-05C DUP	Batch ID:	90940	TestNo:	M2320 B	Units:	mg/L @ pH 4.51
SampType:	DUP	Run ID:	TITRATOR_190516A	Analysis Date:	5/16/2019 4:30:00 PM	Prep Date:	5/16/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Carbonate (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Total (As CaCO3)	<20.0	20.0	0	0				0	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905167
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_190516A

Sample ID **ICV-190516**	Batch ID: **R104124**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.34**
SampType: **ICV**	Run ID: **TITRATOR_190516A**	Analysis Date: **5/16/2019 1:58:00 PM**	Prep Date: **5/16/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	8.64	20.0	0							
Alkalinity, Carbonate (As CaCO3)	89.3	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	97.9	20.0	100.0	0	97.9	98	102			

Sample ID **CCV1-190516**	Batch ID: **R104124**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.25**
SampType: **CCV**	Run ID: **TITRATOR_190516A**	Analysis Date: **5/16/2019 3:39:00 PM**	Prep Date: **5/16/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	21.7	20.0	0							
Alkalinity, Carbonate (As CaCO3)	76.8	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	98.5	20.0	100.0	0	98.5	90	110			

Sample ID **CCV2-190516**	Batch ID: **R104124**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.21**
SampType: **CCV**	Run ID: **TITRATOR_190516A**	Analysis Date: **5/16/2019 4:35:00 PM**	Prep Date: **5/16/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	17.7	20.0	0							
Alkalinity, Carbonate (As CaCO3)	81.3	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	99.0	20.0	100.0	0	99.0	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank
J	Analyte detected between MDL and RL
ND	Not Detected at the Method Detection Limit
RL	Reporting Limit
J	Analyte detected between SDL and RL
DF	Dilution Factor
MDL	Method Detection Limit
R	RPD outside accepted control limits
S	Spike Recovery outside control limits
N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905167
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: UV/VIS_2_190515B

The QC data in batch 90921 applies to the following samples: 1905167-01C, 1905167-02C

Sample ID	MB-90921	Batch ID:	90921	TestNo:	M4500-P E	Units:	mg/L
SampType:	MBLK	Run ID:	UV/VIS_2_190515B	Analysis Date:	5/15/2019 12:42:00 PM	Prep Date:	5/15/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Total Orthophosphate (As	<0.0300	0.100								

Sample ID	LCS-90921	Batch ID:	90921	TestNo:	M4500-P E	Units:	mg/L
SampType:	LCS	Run ID:	UV/VIS_2_190515B	Analysis Date:	5/15/2019 12:43:00 PM	Prep Date:	5/15/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Total Orthophosphate (As	0.513	0.100	0.5000	0	103	80	120			

Sample ID	LCSD-90921	Batch ID:	90921	TestNo:	M4500-P E	Units:	mg/L
SampType:	LCSD	Run ID:	UV/VIS_2_190515B	Analysis Date:	5/15/2019 12:43:00 PM	Prep Date:	5/15/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Total Orthophosphate (As	0.504	0.100	0.5000	0	101	80	120	1.77	15	

Sample ID	1905168-01CMS	Batch ID:	90921	TestNo:	M4500-P E	Units:	mg/L
SampType:	MS	Run ID:	UV/VIS_2_190515B	Analysis Date:	5/15/2019 12:45:00 PM	Prep Date:	5/15/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Total Orthophosphate (As	0.587	0.100	0.5000	0.07700	102	80	120			

Sample ID	1905168-01CMSD	Batch ID:	90921	TestNo:	M4500-P E	Units:	mg/L
SampType:	MSD	Run ID:	UV/VIS_2_190515B	Analysis Date:	5/15/2019 12:45:00 PM	Prep Date:	5/15/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Total Orthophosphate (As	0.525	0.100	0.5000	0.07700	89.6	80	120	11.2	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905167
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: UV/VIS_2_190515B

Sample ID **ICV-190515**	Batch ID: **R104071**	TestNo: **M4500-P E**	Units: **mg/L**
SampType: **ICV**	Run ID: **UV/VIS_2_190515B**	Analysis Date: **5/15/2019 12:41:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Total Orthophosphate (As	0.204	0.100	0.2000	0	102	85	115			

Sample ID **CCV1-190515**	Batch ID: **R104071**	TestNo: **M4500-P E**	Units: **mg/L**
SampType: **CCV**	Run ID: **UV/VIS_2_190515B**	Analysis Date: **5/15/2019 12:51:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Total Orthophosphate (As	0.509	0.100	0.5000	0	102	85	115			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905167
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: UV/VIS_2_190520A

The QC data in batch 91002 applies to the following samples: 1905167-01A, 1905167-02A

Sample ID	MB-91002	Batch ID:	91002	TestNo:	M3500-Fe D	Units:	mg/L
SampType:	MBLK	Run ID:	UV/VIS_2_190520A	Analysis Date:	5/20/2019 3:53:00 PM	Prep Date:	5/20/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	<0.0500	0.100								N

Sample ID	LCS-91002	Batch ID:	91002	TestNo:	M3500-Fe D	Units:	mg/L
SampType:	LCS	Run ID:	UV/VIS_2_190520A	Analysis Date:	5/20/2019 3:53:00 PM	Prep Date:	5/20/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	0.0888	0.100	0.1000	0	88.8	85	115			N

Sample ID	LCSD-91002	Batch ID:	91002	TestNo:	M3500-Fe D	Units:	mg/L
SampType:	LCSD	Run ID:	UV/VIS_2_190520A	Analysis Date:	5/20/2019 3:53:00 PM	Prep Date:	5/20/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	0.0879	0.100	0.1000	0	87.9	85	115	1.05	15	N

Sample ID	1905185-11AMS	Batch ID:	91002	TestNo:	M3500-Fe D	Units:	mg/L
SampType:	MS	Run ID:	UV/VIS_2_190520A	Analysis Date:	5/20/2019 4:03:00 PM	Prep Date:	5/20/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	0.0860	0.100	0.1000	0	86.0	85	115			N

Sample ID	1905185-11AMSD	Batch ID:	91002	TestNo:	M3500-Fe D	Units:	mg/L
SampType:	MSD	Run ID:	UV/VIS_2_190520A	Analysis Date:	5/20/2019 4:03:00 PM	Prep Date:	5/20/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	0.0861	0.100	0.1000	0	86.1	85	115	0.116	15	N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905167
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: UV/VIS_2_190520A

Sample ID **ICV-190520**	Batch ID: **R104177**	TestNo: **M3500-Fe D**	Units: **mg/L**
SampType: **ICV**	Run ID: **UV/VIS_2_190520A**	Analysis Date: **5/20/2019 3:52:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	0.0875	0.100	0.1000	0	87.5	85	115			N

Sample ID **CCV1-190520**	Batch ID: **R104177**	TestNo: **M3500-Fe D**	Units: **mg/L**
SampType: **CCV**	Run ID: **UV/VIS_2_190520A**	Analysis Date: **5/20/2019 3:59:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	0.197	0.100	0.2000	0	98.4	85	115			N

Sample ID **CCV2-190520**	Batch ID: **R104177**	TestNo: **M3500-Fe D**	Units: **mg/L**
SampType: **CCV**	Run ID: **UV/VIS_2_190520A**	Analysis Date: **5/20/2019 4:12:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	0.183	0.100	0.2000	0	91.7	85	115			N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 1905167
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: WC_190517D

The QC data in batch 90953 applies to the following samples: 1905167-01C, 1905167-02C

Sample ID	MB-90953	Batch ID:	90953	TestNo:	M2540C	Units:	mg/L
SampType:	MBLK	Run ID:	WC_190517D	Analysis Date:	5/17/2019 11:40:00 AM	Prep Date:	5/16/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	<10.0	10.0								

Sample ID	LCS-90953	Batch ID:	90953	TestNo:	M2540C	Units:	mg/L
SampType:	LCS	Run ID:	WC_190517D	Analysis Date:	5/17/2019 11:40:00 AM	Prep Date:	5/16/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	745	10.0	745.6	0	99.9	90	113			

Sample ID	1905167-02C-DUP	Batch ID:	90953	TestNo:	M2540C	Units:	mg/L
SampType:	DUP	Run ID:	WC_190517D	Analysis Date:	5/17/2019 11:40:00 AM	Prep Date:	5/16/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	5340	50.0	0	5375				0.747	5	

Sample ID	1905168-02C-DUP	Batch ID:	90953	TestNo:	M2540C	Units:	mg/L
SampType:	DUP	Run ID:	WC_190517D	Analysis Date:	5/17/2019 11:40:00 AM	Prep Date:	5/16/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	940	50.0	0	910.0				3.24	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

Pace Analytical®
National Center for Testing & Innovation

ANALYTICAL REPORT

May 29, 2019

DHL Analytical, Inc.

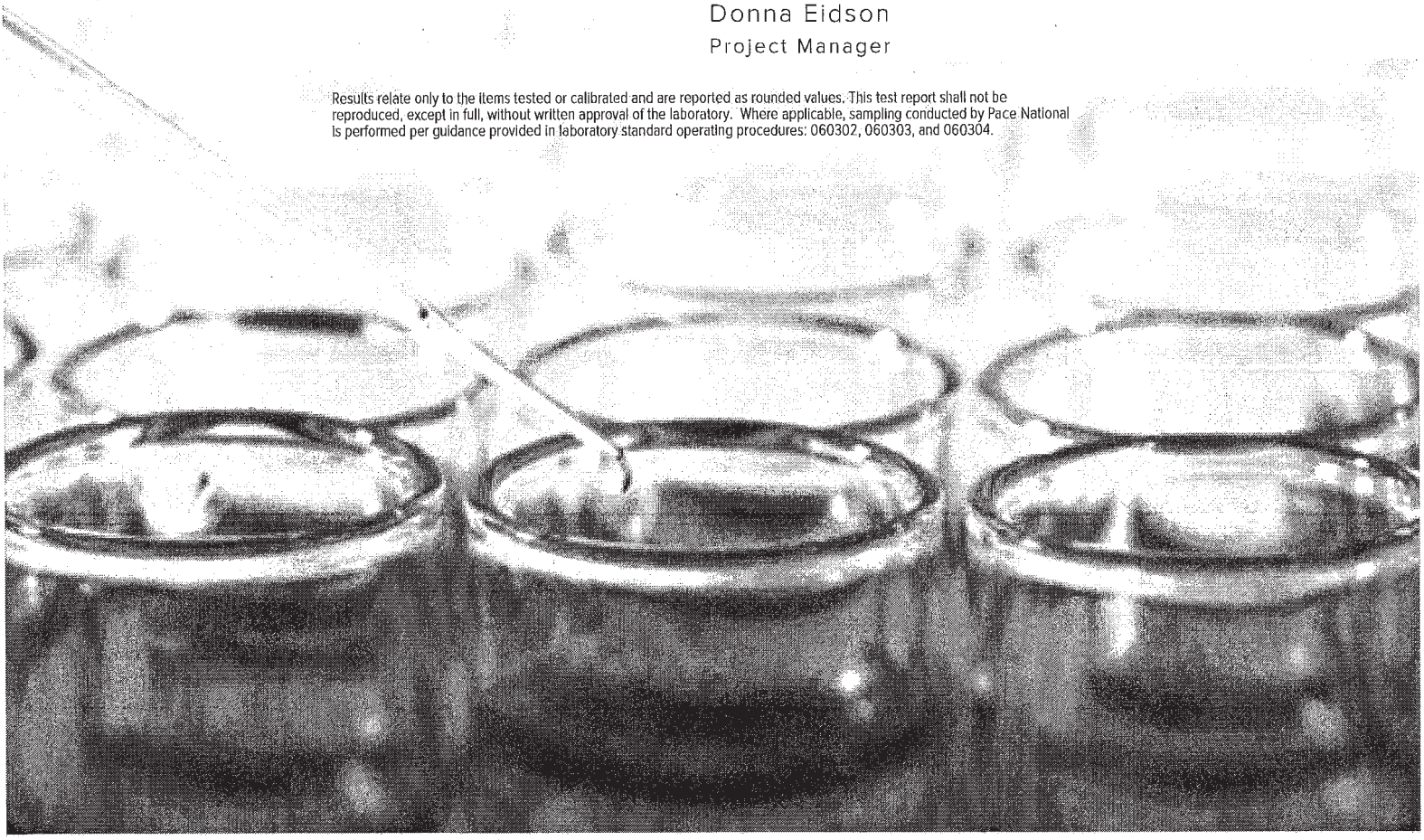
Sample Delivery Group:	L1100947
Samples Received:	05/21/2019
Project Number:	1905167
Description:	

Report To: John DuPont
2300 Double Creek Drive
Round Rock, TX 78664

Entire Report Reviewed By: Donna Eidson

Donna Eidson
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace National is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.



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LAKE SAMPLE L1100947-01 Non-Potable Water

			Collected by	Collected date/time	Received date/time
				05/14/19 10:05	05/21/19 10:10

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1284744	1	05/22/19 08:25	05/28/19 10:55	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1284773	1	05/23/19 15:02	05/28/19 10:55	RRE	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1284773	1	05/23/19 15:02	05/24/19 17:05	RRE	Mt. Juliet, TN

LAKE SAMPLE L1100947-02 Non-Potable Water

			Collected by	Collected date/time	Received date/time
				05/14/19 10:20	05/21/19 10:10

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1284744	1	05/22/19 08:25	05/28/19 10:55	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1284773	1	05/23/19 15:02	05/28/19 10:55	RRE	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1284773	1	05/23/19 15:02	05/24/19 17:05	RRE	Mt. Juliet, TN

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Donna Eidson
Project Manager

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	0.369		0.449	0.769	05/28/2019 10:55	WG1284744
(T) Barium	*102*			*62.0-143*	*05/28/2019 10:55*	WG1284744
(T) Yttrium	*118*			*79.0-136*	*05/28/2019 10:55*	WG1284744

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	0.772		0.734	1.08	05/28/2019 10:55	WG1284773

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.403		0.285	0.311	05/24/2019 17:05	WG1284773
(T) Barium-133	*92.1*			*30.0-143*	*05/24/2019 17:05*	WG1284773

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	-0.0402		0.349	0.599	05/28/2019 10:55	WG1284744
(T) Barium	*113*			*62.0-143*	*05/28/2019 10:55*	WG1284744
(T) Yttrium	*114*			*79.0-136*	*05/28/2019 10:55*	WG1284744

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	0.853		0.752	0.895	05/28/2019 10:55	WG1284773

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty +/-	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.853		0.403	0.296	05/24/2019 17:05	WG1284773
(T) Barium-133	*83.8*			*30.0-143*	*05/24/2019 17:05*	WG1284773

Method Blank (MB)

(MB) R3415641-1 05/28/19 10:55

Analyte	MB Result pCi/l	MB Qualifier	MB MDA pCi/l
Radium-228	-0.164		0.413
(T) Barium	*108*		
(T) Yttrium	*115*		

L1100192-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1100192-01 05/28/19 10:55 • (DUP) R3415641-5 05/28/19 10:55

Analyte	Original Result pCi/l	DUP Result pCi/l	Dilution	DUP RPD %	DUP RER	DUP Qualifier	DUP RPD Limits %	DUP RER Limit
Radium-228	0.157	-0.0367	1	200	0.366		20	3
(T) Barium	*91.7*	*102*						
(T) Yttrium	*110*	*107*						

Laboratory Control Sample (LCS)

(LCS) R3415641-2 05/28/19 10:55

Analyte	Spike Amount pCi/l	LCS Result pCi/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Radium-228	5.00	4.47	89.4	80.0-120	
(T) Barium			*103*		
(T) Yttrium			*107*		

L1100922-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1100922-01 05/28/19 10:55 • (MS) R3415641-3 05/28/19 10:55 • (MSD) R3415641-4 05/28/19 10:55

Analyte	Spike Amount pCi/l	Original Result pCi/l	MS Result pCi/l	MSD Result pCi/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	MS RER	RPD Limits %
Radium-228	7.14	-0.136	7.62	7.50	107	105	1	70.0-130			1.50		20
(T) Barium		*111*			*107*	*110*							
(T) Yttrium		*114*			*107*	*110*							

APPENDIX F-Revision 2 February 27, 2024

Method Blank (MB)

(MB) R3415635-1 05/24/19 17:04

	MB Result	MB Qualifier	MB MDA
Analyte	pCi/l		pCi/l
Radium-226	0.459		0.209
(T) Barium-133	*84.6*		

L1100844-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1100844-01 05/24/19 17:04 • (DUP) R3415635-5 05/24/19 17:04

	Original Result	DUP Result	Dilution	DUP RPD	DUP RER	DUP Qualifier	DUP RPD Limits	DUP RER Limit
Analyte	pCi/l	pCi/l		%			%	
Radium-226	0.495	0.573	1	14.6	0.182		20	3
(T) Barium-133	*90.4*	*88.8*						

Laboratory Control Sample (LCS)

(LCS) R3415635-2 05/24/19 17:04

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	pCi/l	pCi/l	%	%	
Radium-226	20.1	19.1	95.0	80.0-120	
(T) Barium-133			*79.1*		

L1100433-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1100433-01 05/24/19 17:04 • (MS) R3415635-3 05/24/19 17:04 • (MSD) R3415635-4 05/24/19 17:04

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	MS RER	RPD Limits
Analyte	pCi/l	pCi/l	pCi/l	pCi/l	%	%		%			%		%
Radium-226	20.1	1.16	19.9	20.9	93.2	98.0	1	75.0-125			4.71		20
(T) Barium-133		*83.2*			*81.1*	*84.7*							

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Abbreviations and Definitions

MDA	Minimum Detectable Activity.
Rec.	Recovery.
RER	Replicate Error Ratio.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(T)	Tracer - A radioisotope of known concentration added to a solution of chemically equivalent radioisotopes at a known concentration to assist in monitoring the yield of the chemical separation.
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
	The remainder of this page intentionally left blank, there are no qualifiers applied to this SDG.

ACCREDITATIONS & LOCATIONS

ONE LAB. NATIONWIDE.

Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.
* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

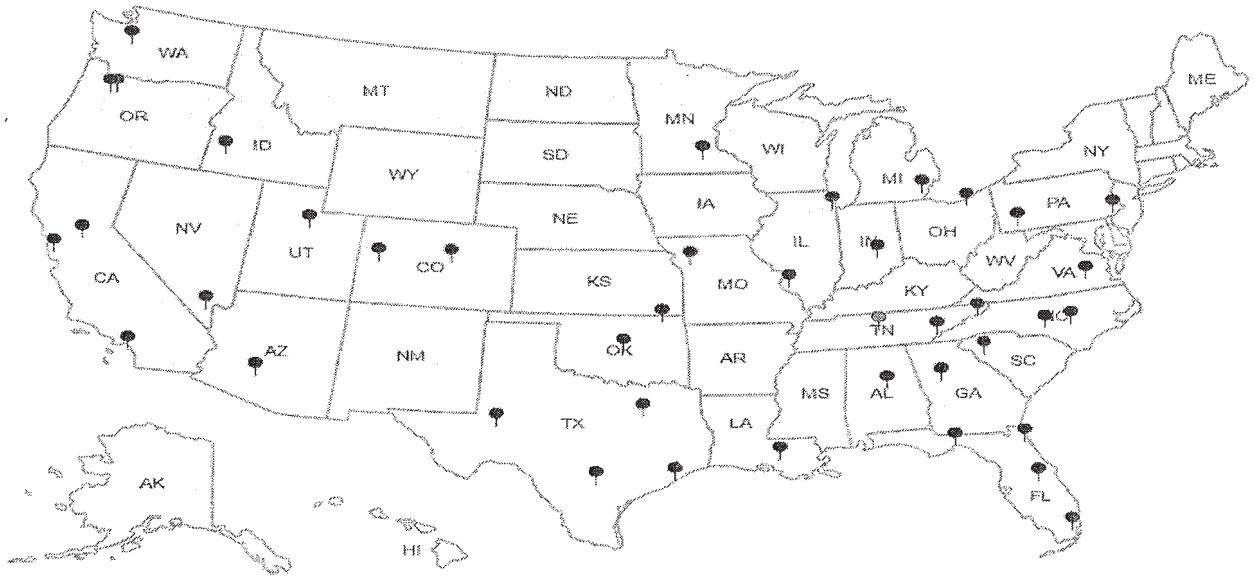
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



Pace Analytical National Center for Testing & Innovation
Cooler Receipt Form

Client: DHLRTX	SDG#:	1100947
Cooler Received/Opened On: 5/21/19	Temperature:	Amb
Received By: Brock Fariss		
Signature: BF Fariss		

Receipt Check List	NP	Yes	No
COC Seal Present / Intact?	✓		
COC Signed / Accurate?		✓	
Bottles arrive intact?		✓	
Correct bottles used?		✓	
Sufficient volume sent?		✓	
If Applicable			
VOA Zero headspace?			
Preservation Correct / Checked?		✓	

1100947

CHAIN-OF-CUSTODY RECORD

H004

DHL Analytical, Inc.
2300 Double Creek Drive
Round Rock, TX 78664
TEL: *(512) 388-8222* FAX: *(512) 388-8229*

Work Order: 1905167

Subcontractor:
Pace Analytical
12065 Lebanon Rd
Mt. Juliet, TN 37122

TEL: (615) 773-5923
FAX:
Acct #: DHLRRTX

15-May-19

Sample Id	Matrix	DHL#	Date Collected	Bottle Type	Ra-228 E904.0	Ra-226 M7500 Ra B M	Requested Tests				
Lake Sample	Aqueous	-01D	05/14/19 10:05 AM	1LHDPEHNO3		1					-01
Lake Sample	Aqueous	-01E	05/14/19 10:05 AM	1LHDPEHNO3	1						01
Pond Sample	Aqueous	-02D	05/14/19 10:20 AM	1LHDPEHNO3		1					02
Pond Sample	Aqueous	-02E	05/14/19 10:20 AM	1LHDPEHNO3	1						02

General Comments:
Please analyze these samples with Normal Turnaround Time.
Report RA-226, Ra-228 & Combined per Specs.
Quality Control Package Needed: Standard - NELAC Rad Test compliant
Email to cac@dhlanalytical.com & dupont@dhlanalytical.com

	Date/Time		Date/Time
Relinquished by:	5/17/19 1700	Received by:	5/21/19 1010
Relinquished by:		Received by:	

AWW

VPS
Rec: 4

< 5 mR/hr

Quantitative X-Ray Diffraction by Rietveld Refinement

Report Prepared for:	*Golder Associates - Will Vienne*
Project Number/ LIMS No.	*17431-01 / MI7012-JUN19*
Batch:	*Martin Lake Ash Ponds*
Sample Receipt:	*June 13, 2019*
Sample Analysis:	*June 28, 2019*
Reporting Date:	*July 19, 2019*
Instrument:	Panalytical X'pert Pro Diffractometer
Test Conditions:	Co radiation, 40 kV, 45 mA Regular Scanning: Step: 0.033°, Step time:0.15s, 2θ range: 6-70°
Interpretations :	HighScore Plus software using Crystallography Open Database (COD) and Joint Committee on Powder Diffraction Standards -International Center for Diffraction Data (JCPDS-ICDD).
Detection Limit :	0.5-2%. Strongly dependent on crystallinity.

Contents:

1) Method Summary
2) Summary of Mineral Assemblages
3) Quantitative XRD Results
4) XRD Pattern(s)

Ben Eaton
Junior Mineralogist

Lain Glossop H.B.Sc
Senior Mineralogist

SGS Minerals
a division of SGS Canada Inc.
3260 Production Way, Burnaby, British Columbia, Canada V5A 4W4
Tel: (604) 638-2349 Fax: (604) 444-5486 www.sgs.com www.sgs.com/met
Member of the SGS Group (SGS SA)

Method Summary

Mineral Identification and Interpretation:

Mineral identification and interpretation involve matching the diffraction pattern of a test sample material to patterns of single-phase reference materials. The reference patterns from the Crystallography Open Database (COD) and the Joint Committee on Powder Diffraction Standards - International Center for Diffraction Data (JCPDS-ICDD).

Interpretations do not reflect the presence of non-crystalline and/or amorphous compounds, except when internal standards have been added by request. Mineral proportions may be strongly influenced by crystallinity, crystal structure and preferred orientations. Mineral or compound identification and quantitative analysis results should be accompanied by supporting chemical assay data or other additional tests.

Quantitative Rietveld Analysis:

Panalytical HighScore Plus software was used to perform the quantitative Rietveld Analysis. This software uses a graphics based profile analysis program built around a non-linear least squares fitting system, to quantitatively determine the amount of different phases present in a multicomponent sample. Whole pattern analyses are predicated by the fact that the X-ray diffraction pattern is a total sum of both instrumental and specimen factors. Unlike other peak intensity-based methods, the Rietveld method uses a least squares approach to refine a theoretical line profile (shown as a blue pattern in the analyses plots) until it matches the obtained experimental patterns (shown as the coloured pattern in the analyses plots).

Rietveld refinement is completed with a set of minerals specifically identified for the sample. Zero values indicate that the mineral was included in the refinement calculations, but the calculated concentration was less than 0.5 wt%. Minerals not identified by the analyst are not included in refinement calculations for specific samples and are indicated with a dash.

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WARNING: The sample(s) to which the findings recorded herein (the "Findings") relate was(were) drawn and / or provided by the Client or by a third party acting at the Client's direction. The Findings constitute no warranty of the sample's representativeness of any goods and strictly relate to the sample(s). The Company accepts no liability with regard to the origin or source from which the sample(s) is/are said to be extracted.

SGS Minerals
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3260 Production Way, Burnaby, British Columbia, Canada V5A 4W4
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Member of the SGS Group (SGS SA)

Summary of Rietveld Quantitative Analysis X-ray Diffraction Results

Quantitative X-ray Diffraction Results

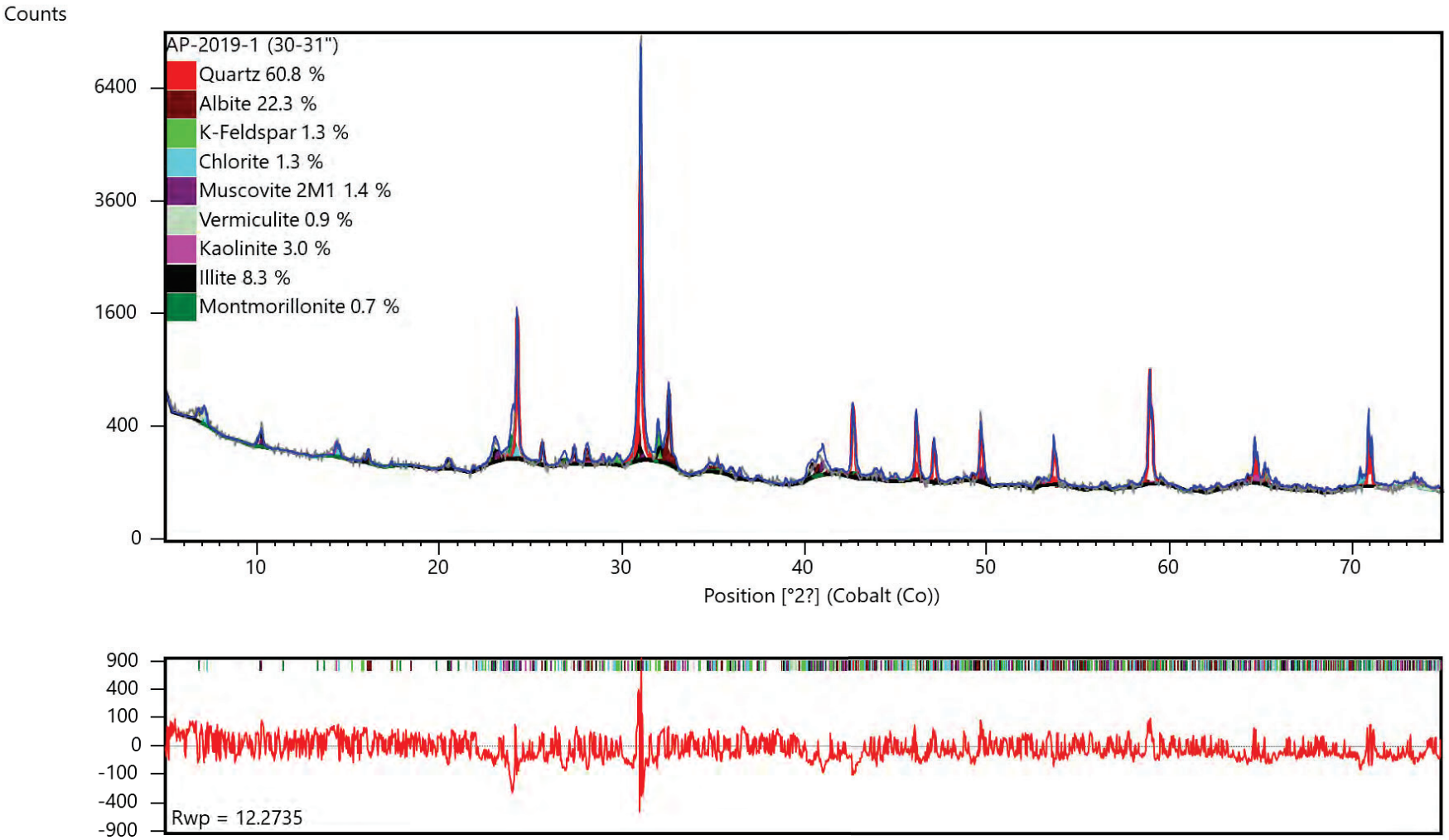
Mineral/Compound	1 AP-2019-1 (30-31")	2 AP-2019-2 (35-36")	3 AP-2019-3 (18-19")
	(wt %)	(wt %)	(wt %)
Quartz	60.8	66.0	99.2
Albite	22.3	16.2	0.8
K-Feldspar	1.3	1.4	--
Chlorite	1.3	2.7	--
Muscovite	1.4	3.2	--
*Vermiculite	0.9	0.7	--
*Kaolinite	3.0	3.4	--
Illite	8.3	6.1	--
*Montmorillonite	0.7	0.4	--
TOTAL	100	100	100

Zero values indicate that the mineral was included in the refinement, but the calculated concentration is below a measurable value.

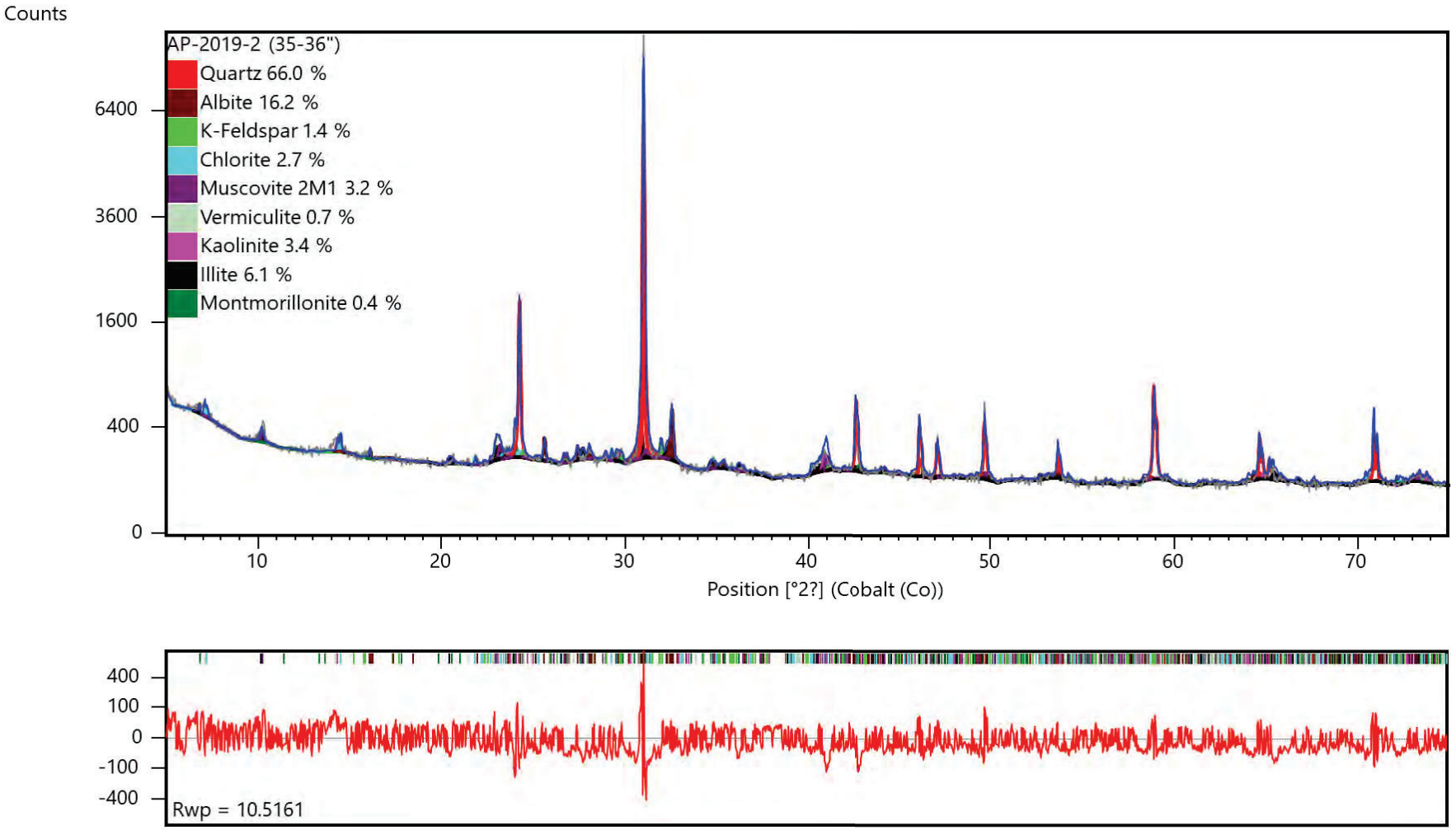
Dashes indicate that the mineral was not identified by the analyst and not included in the refinement calculation for the sample.

** Tentative identification of clays only, further clay XRD analysis will be required for positive identification*

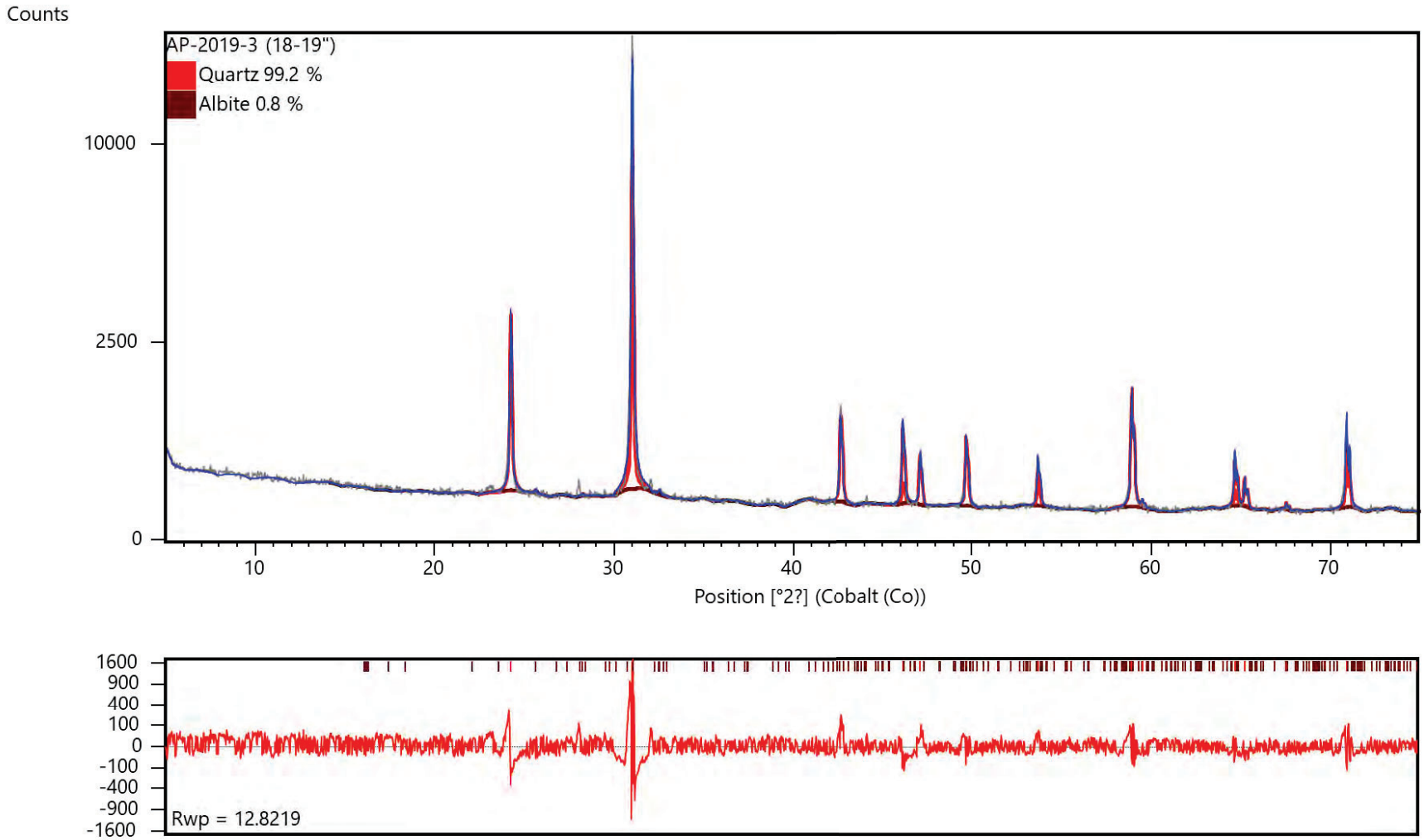
Mineral/Compound	Formula
Quartz	SiO_2
Albite	$NaAlSi_3O_8$
K-Feldspar	$KAlSi_3O_8$
Chlorite	$(Mg_3,Fe_2)Al(AlSi_3)O_{10}(OH)_8$
Muscovite	$KAl_2(AlSi_3O_{10})(OH)_2$
Vermiculite	$(Mg,Fe,Al)_2(Al,Si)_4O_{10}(OH)_2 \cdot 4(H_2O)$
Kaolinite	$Al_2Si_2O_5(OH)_4$
Illite	$(K,H_3O)(Al,Mg,Fe)_2(Si,Al)_4O_{10}[(OH)_2,(H_2O)]$
Montmorillonite	$Na_{0.2}Ca_{0.1}Al_{1.5}Mg_{0.5}Si_4O_{10}(OH)_2 \cdot 4(H_2O)$



X-ray diffractogram. The upper pattern is the measured diffractogram, the blue curve is the calculated pattern from the Rietveld Refinement and the lower red curve is the difference plot.



X-ray diffractogram. The upper pattern is the measured diffractogram, the blue curve is the calculated pattern from the Rietveld Refinement and the lower red curve is the difference plot.



X-ray diffractogram. The upper pattern is the measured diffractogram, the blue curve is the calculated pattern from the Rietveld Refinement and the lower red curve is the difference plot.

eurofins | Environment Testing TestAmerica

ANALYTICAL REPORT

Eurofins TestAmerica, Knoxville
5815 Middlebrook Pike
Knoxville, TN 37921
Tel: (865)291-3000

Laboratory Job ID: 140-15490-1
Client Project/Site: Martin Lake Ash Ponds - SEP + Totals

For:
Golder Associates Inc.
2201 Double Creek Dr
Suite 4004
Round Rock, Texas 78664

Attn: Will Vienne

Terry Walker Wasmund

Authorized for release by:
7/18/2019 5:51:37 PM

Terry Walker Wasmund, Project Manager II
(865)291-3000
terry.wasmund@testamericainc.com

LINKS

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www.testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: Golder Associates Inc.
Job ID: 140-15490-1
Project/Site: Martin Lake Ash Ponds - SEP + Totals

Qualifiers

Metals

Qualifier	Qualifier Description
*	LCS or LCSD is outside acceptance limits.
*	RPD of the LCS and LCSD exceeds the control limits
B	Compound was found in the blank and sample.
F1	MS and/or MSD Recovery is outside acceptance limits.
F5	Duplicate RPD exceeds limit, and one or both sample results are less than 5 times RL. The data are considered valid because the absolute difference is less than the RL.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job ID: 140-15490-1

Laboratory: Eurofins TestAmerica, Knoxville

Narrative

Job Narrative
140-15490-1

Receipt
The samples were received on 6/5/2019 at 9:20 AM. The samples arrived in good condition, properly preserved, and on ice. The temperature of the cooler at receipt was 1.2º C.

Metals
7 Step Sequential Extraction Procedure

These soil samples were prepared and analyzed using Eurofins TestAmerica Knoxville standard operating procedure KNOX-MT-0008, "7 Step Sequential Extraction Procedure". SW-846 Method 6010B as incorporated in Eurofins TestAmerica Knoxville standard operating procedure KNOX-MT-0007 was used to perform the final instrument analyses.

An aliquot of each sample was sequentially extracted using the steps listed below:

- ***Step 1 - Exchangeable Fraction:*** A 5 gram aliquot of sample was extracted with 25 mL of 1M magnesium sulfate (MgSO4), centrifuged and filtered. 5 mL of the resulting leachate was digested using method 3010A and analyzed by method 6010B. Results are reported in mg/kg on a dry weight basis.
- ***Step 2 - Carbonate Fraction:*** The sample residue from step 1 was extracted with 25 mL of 1M sodium acetate/acetic acid (NaOAc/HOAc) at pH 5, centrifuged and filtered. 5 mL of the resulting leachate was digested using method 3010A and analyzed by method 6010B. Results are reported in mg/kg on a dry weight basis.
- ***Step 3 - Non-crystalline Materials Fraction:*** The sample residue from step 2 was extracted with 25 mL of 0.2M ammonium oxalate (pH 3), centrifuged and filtered. 5 mL of the resulting leachate was digested using method 3010A and analyzed by method 6010B. Results are reported in mg/kg on a dry weight basis.
- ***Step 4 - Metal Hydroxide Fraction***: The sample residue from step 3 was extracted with 25 mL of 1M hydroxylamine hydrochloride solution in 25% v/v acetic acid, centrifuged and filtered. 5 mL of the resulting leachate was digested using method 3010A and analyzed by method 6010B. Results are reported in mg/kg on a dry weight basis.
- ***Step 5 - Organic-bound Fraction:*** The sample residue from step 4 was extracted three times with 25 mL of 5% sodium hypochlorite (NaClO) at pH 9.5, centrifuged and filtered. The resulting leachates were combined and 5 mL were digested using method 3010A and analyzed by method 6010B. Results are reported in mg/kg on a dry weight basis.
- ***Step 6 - Acid/Sulfide Fraction:*** The sample residue from step 5 was extracted with 25 mL of a 3:1:2 v/v solution of HCl-HNO3-H2O, centrifuged and filtered. 5 mL of the resulting leachate was diluted to 50 mL with reagent water and analyzed by method 6010B. Results are reported in mg/kg on a dry weight basis.
- ***Step 7 - Residual Fraction:*** A 1.0 g aliquot of the sample residue from step 6 was digested using HF, HNO3, HCl and H3BO3. The digestate was analyzed by ICP using method 6010B. Results are reported in mg/kg on a dry weight basis.

In addition, a 1.0 g aliquot of the original sample was digested using HF, HNO3, HCl and H3BO3. The digestate was analyzed by ICP using method 6010B. Total metal results are reported in mg/kg on a dry weight basis.

Results were calculated using the following equation:

Result, µg/g or mg/Kg, dry weight = (C × V × V1 × D) / (W × S × V2)

Where:
C = Concentration from instrument readout, µg/mL
V = Final volume of digestate, mL
D = Instrument dilution factor
V1 = Total volume of leachate, mL
V2 = Volume of leachate digested, mL
W = Wet weight of sample, g
S = Percent solids/100

A method blank, laboratory control sample and laboratory control sample duplicate were prepared and analyzed with each SEP step in order to provide information about both the presence of elements of interest in the extraction solutions, and the recovery of elements of

Job ID: 140-15490-1 (Continued)

Laboratory: Eurofins TestAmerica, Knoxville (Continued)

interest from the extraction solutions. Results outside of laboratory QC limits do not reflect out of control performance, but rather the effect of the extraction solution upon the analyte.

A laboratory sample duplicate was prepared and analyzed with each batch of samples in order to provide information regarding the reproducibility of the procedure.

SEP Report Notes
The final report lists the results for each step, the result for the total digestion of the sample, and a sum of the results of steps 1 through 7 by element.

Magnesium was not reported for step 1 because the extraction solution for this step (magnesium sulfate) contains high levels of magnesium. Sodium was not reported for steps 2 and 5 since the extraction solutions for these steps contain high levels of sodium. The sum of steps 1 through 7 is much higher than the total result for sodium and magnesium due to the magnesium and sodium introduced by the extraction solutions.

The step 1 digestates were reanalyzed for vanadium at a 1/10 dilution due to positive interelement interferences resulting from the high magnesium results. The reporting limits were adjusted accordingly.

The digestates for steps 1, 2 and 5 were analyzed at a dilution due to instrument problems caused by the high solids content of the digestates. The reporting limits were adjusted accordingly.

The serial dilution performed for samples (140-15490-A-1-A SD ^5) and (140-15490-A-1-AD SD ^50) associated with batch 140-31713 was outside control limits.

Samples AP-2019-1 (30-31) (140-15490-1), AP-2019-2 (35-36) (140-15490-2), AP-2019-3 (18-19) (140-15490-3), (140-15490-A-1-AE DU) and (140-15490-A-1-B DU) were diluted due to the presence of Silicon or Titanium which interferes with Arsenic, Cobalt, Selenium and Thallium. Elevated reporting limits (RLs) are provided.

Samples AP-2019-1 (30-31) (140-15490-1), AP-2019-2 (35-36) (140-15490-2), AP-2019-3 (18-19) (140-15490-3), (140-15490-A-1-AE DU) and (140-15490-A-1-B DU) were diluted for Aluminum and Barium due to the nature of the sample matrix. Elevated reporting limits (RLs) are provided.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

General Chemistry - % Moisture
The samples were analyzed for percent moisture using SOP number KNOX-WC-0012 (based on Modified MCAWW 160.3 and SM2540B and on the percent moisture determinations described in methods 3540C and 3550B).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Comments
No additional comments.

Detection Summary

Client: Golder Associates Inc.
Job ID: 140-15490-1
Project/Site: Martin Lake Ash Ponds - SEP + Totals

Client Sample ID: AP-2019-1 (30-31)
Lab Sample ID: 140-15490-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.88	J	13	0.63	mg/Kg	4	☼	6010B SEP	Step 1
Cobalt	0.54	J	13	0.24	mg/Kg	4	☼	6010B SEP	Step 1
Manganese	3.1	J	3.9	0.16	mg/Kg	4	☼	6010B SEP	Step 1
Aluminum	9.7	J *	39	6.3	mg/Kg	3	☼	6010B SEP	Step 2
Barium	0.76	J *	9.9	0.47	mg/Kg	3	☼	6010B SEP	Step 2
Selenium	0.76	J B	2.0	0.67	mg/Kg	3	☼	6010B SEP	Step 2
Aluminum	88		13	2.8	mg/Kg	1	☼	6010B SEP	Step 3
Arsenic	1.8		0.66	0.17	mg/Kg	1	☼	6010B SEP	Step 3
Barium	4.3	B	3.3	0.16	mg/Kg	1	☼	6010B SEP	Step 3
Beryllium	0.067	J	0.33	0.020	mg/Kg	1	☼	6010B SEP	Step 3
Cobalt	0.34	J	3.3	0.059	mg/Kg	1	☼	6010B SEP	Step 3
Iron	580		6.6	3.8	mg/Kg	1	☼	6010B SEP	Step 3
Manganese	2.4	B	0.99	0.036	mg/Kg	1	☼	6010B SEP	Step 3
Selenium	0.22	J B	0.66	0.22	mg/Kg	1	☼	6010B SEP	Step 3
Aluminum	1700		13	2.1	mg/Kg	1	☼	6010B SEP	Step 4
Arsenic	2.8	B	0.66	0.29	mg/Kg	1	☼	6010B SEP	Step 4
Barium	16		3.3	0.16	mg/Kg	1	☼	6010B SEP	Step 4
Beryllium	0.13	J	0.33	0.021	mg/Kg	1	☼	6010B SEP	Step 4
Cobalt	1.5	J	3.3	0.070	mg/Kg	1	☼	6010B SEP	Step 4
Iron	3900		6.6	3.8	mg/Kg	1	☼	6010B SEP	Step 4
Li	3.0	J	3.3	0.20	mg/Kg	1	☼	6010B SEP	Step 4
Manganese	18		0.99	0.17	mg/Kg	1	☼	6010B SEP	Step 4
Aluminum	62	J *	200	31	mg/Kg	5	☼	6010B SEP	Step 5
Barium	7.0	J *	49	2.4	mg/Kg	5	☼	6010B SEP	Step 5
Aluminum	2300		13	2.1	mg/Kg	1	☼	6010B SEP	Step 6
Arsenic	0.94		0.66	0.20	mg/Kg	1	☼	6010B SEP	Step 6
Barium	18		3.3	0.16	mg/Kg	1	☼	6010B SEP	Step 6
Beryllium	0.067	J	0.33	0.016	mg/Kg	1	☼	6010B SEP	Step 6
Cobalt	0.90	J	3.3	0.061	mg/Kg	1	☼	6010B SEP	Step 6
Iron	2500		6.6	3.8	mg/Kg	1	☼	6010B SEP	Step 6
Li	2.1	J	3.3	0.20	mg/Kg	1	☼	6010B SEP	Step 6
Manganese	16		0.99	0.33	mg/Kg	1	☼	6010B SEP	Step 6
Aluminum	29000		130	21	mg/Kg	10	☼	6010B SEP	Step 7
Arsenic	1.2		0.66	0.17	mg/Kg	1	☼	6010B SEP	Step 7
Barium	390		33	1.6	mg/Kg	10	☼	6010B SEP	Step 7
Beryllium	0.56		0.33	0.0099	mg/Kg	1	☼	6010B SEP	Step 7
Cobalt	0.79	J	6.6	0.39	mg/Kg	2	☼	6010B SEP	Step 7
Iron	5200		6.6	5.4	mg/Kg	1	☼	6010B SEP	Step 7
Li	9.6		3.3	0.20	mg/Kg	1	☼	6010B SEP	Step 7
Manganese	26		0.99	0.068	mg/Kg	1	☼	6010B SEP	Step 7
Mo	0.19	J	2.6	0.11	mg/Kg	1	☼	6010B SEP	Step 7
Thallium	0.48	J	4.6	0.47	mg/Kg	2	☼	6010B SEP	Step 7
Aluminum	33000		10	1.6	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Arsenic	6.9		0.50	0.13	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Barium	440		2.5	0.12	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Beryllium	0.83		0.25	0.0075	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Cobalt	4.0		2.5	0.023	mg/Kg	1		6010B SEP	Sum of Steps 1-7

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: Golder Associates Inc.
Job ID: 140-15490-1
Project/Site: Martin Lake Ash Ponds - SEP + Totals

Client Sample ID: AP-2019-1 (30-31) (Continued)
Lab Sample ID: 140-15490-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Iron	12000		5.0	4.1	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Li	15		2.5	0.15	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Manganese	66		0.75	0.052	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Mo	0.19	J	2.0	0.082	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Selenium	0.98		0.50	0.17	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Thallium	0.48	J	1.8	0.18	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Chromium	13	F1	1.8	0.27	mg/Kg	1	☼	6010B	Total/NA
Lead	6.4		1.8	0.34	mg/Kg	1	☼	6010B	Total/NA
Aluminum	60000		130	21	mg/Kg	10	☼	6010B	Total/NA
Arsenic	6.8		0.66	0.17	mg/Kg	1	☼	6010B	Total/NA
Barium	680		33	1.6	mg/Kg	10	☼	6010B	Total/NA
Beryllium	0.89		0.33	0.0099	mg/Kg	1	☼	6010B	Total/NA
Cobalt	3.8	J	6.6	0.39	mg/Kg	2	☼	6010B	Total/NA
Iron	11000		6.6	5.4	mg/Kg	1	☼	6010B	Total/NA
Lithium	18		3.3	0.20	mg/Kg	1	☼	6010B	Total/NA
Manganese	66		0.99	0.068	mg/Kg	1	☼	6010B	Total/NA
Molybdenum	0.40	J	2.6	0.11	mg/Kg	1	☼	6010B	Total/NA
Hg	0.081	J	0.13	0.053	mg/Kg	1	☼	7470A	Total/NA

Client Sample ID: AP-2019-2 (35-36)
Lab Sample ID: 140-15490-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Aluminum	19	J	51	8.2	mg/Kg	4	☼	6010B SEP	Step 1
Barium	0.88	J	13	0.61	mg/Kg	4	☼	6010B SEP	Step 1
Cobalt	1.6	J	13	0.23	mg/Kg	4	☼	6010B SEP	Step 1
Iron	23	J	25	15	mg/Kg	4	☼	6010B SEP	Step 1
Manganese	33		3.8	0.16	mg/Kg	4	☼	6010B SEP	Step 1
Aluminum	18	J *	38	6.1	mg/Kg	3	☼	6010B SEP	Step 2
Barium	0.67	J *	9.6	0.46	mg/Kg	3	☼	6010B SEP	Step 2
Cobalt	0.27	J	9.6	0.24	mg/Kg	3	☼	6010B SEP	Step 2
Iron	110	*	19	11	mg/Kg	3	☼	6010B SEP	Step 2
Manganese	4.2		2.9	1.1	mg/Kg	3	☼	6010B SEP	Step 2
Selenium	0.90	J B	1.9	0.65	mg/Kg	3	☼	6010B SEP	Step 2
Aluminum	97		13	2.7	mg/Kg	1	☼	6010B SEP	Step 3
Arsenic	0.97		0.64	0.17	mg/Kg	1	☼	6010B SEP	Step 3
Barium	4.1	B	3.2	0.15	mg/Kg	1	☼	6010B SEP	Step 3
Beryllium	0.028	J	0.32	0.019	mg/Kg	1	☼	6010B SEP	Step 3
Cobalt	0.17	J	3.2	0.057	mg/Kg	1	☼	6010B SEP	Step 3
Iron	1100		6.4	3.7	mg/Kg	1	☼	6010B SEP	Step 3
Manganese	1.5	B	0.96	0.034	mg/Kg	1	☼	6010B SEP	Step 3
Aluminum	1800		13	2.0	mg/Kg	1	☼	6010B SEP	Step 4
Arsenic	0.78	B	0.64	0.28	mg/Kg	1	☼	6010B SEP	Step 4
Barium	23		3.2	0.15	mg/Kg	1	☼	6010B SEP	Step 4
Beryllium	0.078	J	0.32	0.020	mg/Kg	1	☼	6010B SEP	Step 4
Cobalt	1.5	J	3.2	0.068	mg/Kg	1	☼	6010B SEP	Step 4
Iron	3800		6.4	3.7	mg/Kg	1	☼	6010B SEP	Step 4
Li	4.2		3.2	0.19	mg/Kg	1	☼	6010B SEP	Step 4

This Detection Summary does not include radiochemical test results.

Client Sample ID: AP-2019-2 (35-36) (Continued)
Lab Sample ID: 140-15490-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Manganese	31		0.96	0.17	mg/Kg	1	☼	6010B SEP	Step 4
Aluminum	55	J *	190	30	mg/Kg	5	☼	6010B SEP	Step 5
Barium	11	J *	48	2.3	mg/Kg	5	☼	6010B SEP	Step 5
Cobalt	0.85	J *	48	0.76	mg/Kg	5	☼	6010B SEP	Step 5
Manganese	3.9	J *	14	2.4	mg/Kg	5	☼	6010B SEP	Step 5
Aluminum	2000		13	2.0	mg/Kg	1	☼	6010B SEP	Step 6
Arsenic	0.74		0.64	0.19	mg/Kg	1	☼	6010B SEP	Step 6
Barium	16		3.2	0.15	mg/Kg	1	☼	6010B SEP	Step 6
Beryllium	0.061	J	0.32	0.015	mg/Kg	1	☼	6010B SEP	Step 6
Cobalt	0.80	J	3.2	0.059	mg/Kg	1	☼	6010B SEP	Step 6
Iron	3300		6.4	3.7	mg/Kg	1	☼	6010B SEP	Step 6
Li	2.1	J	3.2	0.19	mg/Kg	1	☼	6010B SEP	Step 6
Manganese	19		0.96	0.32	mg/Kg	1	☼	6010B SEP	Step 6
Aluminum	26000		130	20	mg/Kg	10	☼	6010B SEP	Step 7
Arsenic	0.71		0.64	0.17	mg/Kg	1	☼	6010B SEP	Step 7
Barium	330		32	1.5	mg/Kg	10	☼	6010B SEP	Step 7
Beryllium	0.51		0.32	0.0096	mg/Kg	1	☼	6010B SEP	Step 7
Cobalt	1.1	J	6.4	0.38	mg/Kg	2	☼	6010B SEP	Step 7
Iron	5600		6.4	5.2	mg/Kg	1	☼	6010B SEP	Step 7
Li	11		3.2	0.19	mg/Kg	1	☼	6010B SEP	Step 7
Manganese	34		0.96	0.066	mg/Kg	1	☼	6010B SEP	Step 7
Mo	0.17	J	2.5	0.10	mg/Kg	1	☼	6010B SEP	Step 7
Thallium	0.70	J	4.5	0.46	mg/Kg	2	☼	6010B SEP	Step 7
Aluminum	30000		10	1.6	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Arsenic	3.2		0.50	0.13	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Barium	390		2.5	0.12	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Beryllium	0.68		0.25	0.0075	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Cobalt	6.3		2.5	0.023	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Iron	14000		5.0	4.1	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Li	18		2.5	0.15	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Manganese	130		0.75	0.052	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Mo	0.17	J	2.0	0.082	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Selenium	0.90		0.50	0.17	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Thallium	0.70	J	1.8	0.18	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Chromium	12		1.8	0.27	mg/Kg	1	☼	6010B	Total/NA
Lead	6.2		1.8	0.34	mg/Kg	1	☼	6010B	Total/NA
Aluminum	62000		130	20	mg/Kg	10	☼	6010B	Total/NA
Arsenic	3.0		0.64	0.17	mg/Kg	1	☼	6010B	Total/NA
Barium	560		32	1.5	mg/Kg	10	☼	6010B	Total/NA
Beryllium	0.72		0.32	0.0096	mg/Kg	1	☼	6010B	Total/NA
Cobalt	6.2	J	16	0.96	mg/Kg	5	☼	6010B	Total/NA
Iron	13000		6.4	5.2	mg/Kg	1	☼	6010B	Total/NA
Lithium	26		3.2	0.19	mg/Kg	1	☼	6010B	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: AP-2019-2 (35-36) (Continued)
Lab Sample ID: 140-15490-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Manganese	150		0.96	0.066	mg/Kg	1	☼	6010B	Total/NA
Molybdenum	0.41	J	2.5	0.10	mg/Kg	1	☼	6010B	Total/NA
Hg	0.12	J	0.13	0.051	mg/Kg	1	☼	7470A	Total/NA

Client Sample ID: AP-2019-3 (18-19)
Lab Sample ID: 140-15490-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Aluminum	14	J	50	8.0	mg/Kg	4	☼	6010B SEP	Step 1
Cobalt	0.87	J	13	0.23	mg/Kg	4	☼	6010B SEP	Step 1
Iron	15	J	25	15	mg/Kg	4	☼	6010B SEP	Step 1
Manganese	1.2	J	3.8	0.16	mg/Kg	4	☼	6010B SEP	Step 1
Selenium	0.68	J B	1.9	0.64	mg/Kg	3	☼	6010B SEP	Step 2
Aluminum	30		13	2.6	mg/Kg	1	☼	6010B SEP	Step 3
Barium	2.3	J B	3.1	0.15	mg/Kg	1	☼	6010B SEP	Step 3
Beryllium	0.025	J	0.31	0.019	mg/Kg	1	☼	6010B SEP	Step 3
Iron	57		6.3	3.6	mg/Kg	1	☼	6010B SEP	Step 3
Manganese	0.11	J B	0.94	0.034	mg/Kg	1	☼	6010B SEP	Step 3
Selenium	0.23	J B	0.63	0.21	mg/Kg	1	☼	6010B SEP	Step 3
Aluminum	880		13	2.0	mg/Kg	1	☼	6010B SEP	Step 4
Arsenic	0.63	B	0.63	0.28	mg/Kg	1	☼	6010B SEP	Step 4
Barium	6.9		3.1	0.15	mg/Kg	1	☼	6010B SEP	Step 4
Beryllium	0.069	J	0.31	0.020	mg/Kg	1	☼	6010B SEP	Step 4
Cobalt	0.53	J	3.1	0.066	mg/Kg	1	☼	6010B SEP	Step 4
Iron	2300		6.3	3.6	mg/Kg	1	☼	6010B SEP	Step 4
Li	0.53	J	3.1	0.19	mg/Kg	1	☼	6010B SEP	Step 4
Manganese	4.2		0.94	0.16	mg/Kg	1	☼	6010B SEP	Step 4
Selenium	0.65	B *	0.63	0.59	mg/Kg	1	☼	6010B SEP	Step 4
Aluminum	120	J *	190	29	mg/Kg	5	☼	6010B SEP	Step 5
Aluminum	1200		13	2.0	mg/Kg	1	☼	6010B SEP	Step 6
Arsenic	0.24	J	0.63	0.19	mg/Kg	1	☼	6010B SEP	Step 6
Barium	2.1	J	3.1	0.15	mg/Kg	1	☼	6010B SEP	Step 6
Beryllium	0.026	J	0.31	0.015	mg/Kg	1	☼	6010B SEP	Step 6
Cobalt	0.28	J	3.1	0.058	mg/Kg	1	☼	6010B SEP	Step 6
Iron	820		6.3	3.6	mg/Kg	1	☼	6010B SEP	Step 6
Li	0.62	J	3.1	0.19	mg/Kg	1	☼	6010B SEP	Step 6
Manganese	2.9		0.94	0.31	mg/Kg	1	☼	6010B SEP	Step 6
Aluminum	12000		130	20	mg/Kg	10	☼	6010B SEP	Step 7
Arsenic	0.79	J	1.3	0.33	mg/Kg	2	☼	6010B SEP	Step 7
Barium	180		31	1.5	mg/Kg	10	☼	6010B SEP	Step 7
Beryllium	0.11	J	0.31	0.0094	mg/Kg	1	☼	6010B SEP	Step 7
Iron	2000		6.3	5.1	mg/Kg	1	☼	6010B SEP	Step 7
Li	6.0		3.1	0.19	mg/Kg	1	☼	6010B SEP	Step 7
Manganese	26		0.94	0.065	mg/Kg	1	☼	6010B SEP	Step 7
Mo	0.12	J	2.5	0.10	mg/Kg	1	☼	6010B SEP	Step 7
Aluminum	14000		10	1.6	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Arsenic	1.7		0.50	0.13	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Barium	190		2.5	0.12	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Beryllium	0.23	J	0.25	0.0075	mg/Kg	1		6010B SEP	Sum of Steps 1-7

This Detection Summary does not include radiochemical test results.

Client Sample ID: AP-2019-3 (18-19) (Continued)
Lab Sample ID: 140-15490-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Cobalt	1.7	J	2.5	0.023	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Iron	5200		5.0	4.1	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Li	7.2		2.5	0.15	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Manganese	35		0.75	0.052	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Mo	0.12	J	2.0	0.082	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Selenium	1.6		0.50	0.17	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Chromium	4.4		1.8	0.26	mg/Kg	1	☼	6010B	Total/NA
Lead	3.9		1.8	0.33	mg/Kg	1	☼	6010B	Total/NA
Aluminum	20000		130	20	mg/Kg	10	☼	6010B	Total/NA
Arsenic	2.9	J	3.1	0.81	mg/Kg	5	☼	6010B	Total/NA
Barium	240		31	1.5	mg/Kg	10	☼	6010B	Total/NA
Beryllium	0.42		0.31	0.0094	mg/Kg	1	☼	6010B	Total/NA
Cobalt	3.3	J	16	0.94	mg/Kg	5	☼	6010B	Total/NA
Iron	8000		6.3	5.1	mg/Kg	1	☼	6010B	Total/NA
Lithium	9.6		3.1	0.19	mg/Kg	1	☼	6010B	Total/NA
Manganese	47		0.94	0.065	mg/Kg	1	☼	6010B	Total/NA
Molybdenum	0.28	J	2.5	0.10	mg/Kg	1	☼	6010B	Total/NA

This Detection Summary does not include radiochemical test results.

Client: Golder Associates Inc.
Job ID: 140-15490-1
Project/Site: Martin Lake Ash Ponds - SEP + Totals

Client Sample ID: AP-2019-1 (30-31)
Lab Sample ID: 140-15490-1
Date Collected: 06/03/19 11:36
Matrix: Solid
Date Received: 06/05/19 09:20
Percent Solids: 76.0

Method: 6010B SEP - SEP Metals (ICP) - Step 1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		53	8.4	mg/Kg	☼	06/29/19 08:00	07/11/19 12:49	4
Antimony	ND		16	1.5	mg/Kg	☼	06/29/19 08:00	07/11/19 12:49	4
Arsenic	ND		2.6	0.68	mg/Kg	☼	06/29/19 08:00	07/11/19 12:49	4
Barium	**0.88**	**J**	13	0.63	mg/Kg	☼	06/29/19 08:00	07/11/19 12:49	4
Beryllium	ND		1.3	0.41	mg/Kg	☼	06/29/19 08:00	07/11/19 12:49	4
Cobalt	**0.54**	**J**	13	0.24	mg/Kg	☼	06/29/19 08:00	07/11/19 12:49	4
Iron	ND		26	15	mg/Kg	☼	06/29/19 08:00	07/11/19 12:49	4
Li	ND		13	0.79	mg/Kg	☼	06/29/19 08:00	07/11/19 12:49	4
Manganese	**3.1**	**J**	3.9	0.16	mg/Kg	☼	06/29/19 08:00	07/11/19 12:49	4
Mo	ND		11	0.43	mg/Kg	☼	06/29/19 08:00	07/11/19 12:49	4
Selenium	ND		2.6	0.89	mg/Kg	☼	06/29/19 08:00	07/11/19 12:49	4
Thallium	ND		9.2	1.1	mg/Kg	☼	06/29/19 08:00	07/11/19 12:49	4

Method: 6010B SEP - SEP Metals (ICP) - Step 2

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**9.7**	**J ***	39	6.3	mg/Kg	☼	06/30/19 08:00	07/11/19 14:21	3
Antimony	ND		12	1.1	mg/Kg	☼	06/30/19 08:00	07/11/19 14:21	3
Arsenic	ND		2.0	0.51	mg/Kg	☼	06/30/19 08:00	07/11/19 14:21	3
Barium	**0.76**	**J ***	9.9	0.47	mg/Kg	☼	06/30/19 08:00	07/11/19 14:21	3
Beryllium	ND	*	0.99	0.063	mg/Kg	☼	06/30/19 08:00	07/11/19 14:21	3
Cobalt	ND		9.9	0.25	mg/Kg	☼	06/30/19 08:00	07/11/19 14:21	3
Iron	ND	*	20	11	mg/Kg	☼	06/30/19 08:00	07/11/19 14:21	3
Li	ND		9.9	0.59	mg/Kg	☼	06/30/19 08:00	07/11/19 14:21	3
Manganese	ND		3.0	1.1	mg/Kg	☼	06/30/19 08:00	07/11/19 14:21	3
Mo	ND		7.9	0.32	mg/Kg	☼	06/30/19 08:00	07/11/19 14:21	3
Selenium	**0.76**	**J B**	2.0	0.67	mg/Kg	☼	06/30/19 08:00	07/11/19 14:21	3
Thallium	ND		6.9	0.83	mg/Kg	☼	06/30/19 08:00	07/11/19 14:21	3

Method: 6010B SEP - SEP Metals (ICP) - Step 3

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**88**		13	2.8	mg/Kg	☼	07/02/19 08:00	07/11/19 16:06	1
Antimony	ND		3.9	0.37	mg/Kg	☼	07/02/19 08:00	07/11/19 16:06	1
Arsenic	**1.8**		0.66	0.17	mg/Kg	☼	07/02/19 08:00	07/11/19 16:06	1
Barium	**4.3**	**B**	3.3	0.16	mg/Kg	☼	07/02/19 08:00	07/11/19 16:06	1
Beryllium	**0.067**	**J**	0.33	0.020	mg/Kg	☼	07/02/19 08:00	07/11/19 16:06	1
Cobalt	**0.34**	**J**	3.3	0.059	mg/Kg	☼	07/02/19 08:00	07/11/19 16:06	1
Iron	**580**		6.6	3.8	mg/Kg	☼	07/02/19 08:00	07/11/19 16:06	1
Li	ND		3.3	0.20	mg/Kg	☼	07/02/19 08:00	07/11/19 16:06	1
Manganese	**2.4**	**B**	0.99	0.036	mg/Kg	☼	07/02/19 08:00	07/11/19 16:06	1
Mo	ND		2.6	0.11	mg/Kg	☼	07/02/19 08:00	07/11/19 16:06	1
Selenium	**0.22**	**J B**	0.66	0.22	mg/Kg	☼	07/02/19 08:00	07/11/19 16:06	1
Thallium	ND		2.3	0.28	mg/Kg	☼	07/02/19 08:00	07/11/19 16:06	1

Method: 6010B SEP - SEP Metals (ICP) - Step 4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**1700**		13	2.1	mg/Kg	☼	07/03/19 08:00	07/11/19 17:49	1
Antimony	ND		3.9	0.59	mg/Kg	☼	07/03/19 08:00	07/11/19 17:49	1
Arsenic	**2.8**	**B**	0.66	0.29	mg/Kg	☼	07/03/19 08:00	07/11/19 17:49	1
Barium	**16**		3.3	0.16	mg/Kg	☼	07/03/19 08:00	07/11/19 17:49	1
Beryllium	**0.13**	**J**	0.33	0.021	mg/Kg	☼	07/03/19 08:00	07/11/19 17:49	1

Client Sample ID: AP-2019-1 (30-31)
Date Collected: 06/03/19 11:36
Date Received: 06/05/19 09:20

Lab Sample ID: 140-15490-1
Matrix: Solid
Percent Solids: 76.0

Method: 6010B SEP - SEP Metals (ICP) - Step 4 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cobalt	**1.5**	**J**	3.3	0.070	mg/Kg	☼	07/03/19 08:00	07/11/19 17:49	1
Iron	**3900**		6.6	3.8	mg/Kg	☼	07/03/19 08:00	07/11/19 17:49	1
Li	**3.0**	**J**	3.3	0.20	mg/Kg	☼	07/03/19 08:00	07/11/19 17:49	1
Manganese	**18**		0.99	0.17	mg/Kg	☼	07/03/19 08:00	07/11/19 17:49	1
Mo	ND		2.6	0.11	mg/Kg	☼	07/03/19 08:00	07/11/19 17:49	1
Selenium	ND	*	0.66	0.62	mg/Kg	☼	07/03/19 08:00	07/11/19 17:49	1
Thallium	ND		2.3	0.38	mg/Kg	☼	07/03/19 08:00	07/11/19 17:49	1

Method: 6010B SEP - SEP Metals (ICP) - Step 5

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**62**	**J ***	200	31	mg/Kg	☼	07/10/19 08:00	07/12/19 11:54	5
Antimony	ND		59	5.5	mg/Kg	☼	07/10/19 08:00	07/12/19 11:54	5
Arsenic	ND		9.9	2.5	mg/Kg	☼	07/10/19 08:00	07/12/19 11:54	5
Barium	**7.0**	**J ***	49	2.4	mg/Kg	☼	07/10/19 08:00	07/12/19 11:54	5
Beryllium	ND	*	4.9	0.41	mg/Kg	☼	07/10/19 08:00	07/12/19 11:54	5
Cobalt	ND	*	49	0.79	mg/Kg	☼	07/10/19 08:00	07/12/19 11:54	5
Iron	ND	*	99	58	mg/Kg	☼	07/10/19 08:00	07/12/19 11:54	5
Li	ND		49	2.9	mg/Kg	☼	07/10/19 08:00	07/12/19 11:54	5
Manganese	ND	*	15	2.4	mg/Kg	☼	07/10/19 08:00	07/12/19 11:54	5
Mo	ND		39	1.6	mg/Kg	☼	07/10/19 08:00	07/12/19 11:54	5
Selenium	ND		9.9	3.4	mg/Kg	☼	07/10/19 08:00	07/12/19 11:54	5
Thallium	ND	*	35	4.6	mg/Kg	☼	07/10/19 08:00	07/12/19 11:54	5

Method: 6010B SEP - SEP Metals (ICP) - Step 6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**2300**		13	2.1	mg/Kg	☼	07/10/19 08:00	07/12/19 13:29	1
Antimony	ND		3.9	0.37	mg/Kg	☼	07/10/19 08:00	07/12/19 13:29	1
Arsenic	**0.94**		0.66	0.20	mg/Kg	☼	07/10/19 08:00	07/12/19 13:29	1
Barium	**18**		3.3	0.16	mg/Kg	☼	07/10/19 08:00	07/12/19 13:29	1
Beryllium	**0.067**	**J**	0.33	0.016	mg/Kg	☼	07/10/19 08:00	07/12/19 13:29	1
Cobalt	**0.90**	**J**	3.3	0.061	mg/Kg	☼	07/10/19 08:00	07/12/19 13:29	1
Iron	**2500**		6.6	3.8	mg/Kg	☼	07/10/19 08:00	07/12/19 13:29	1
Li	**2.1**	**J**	3.3	0.20	mg/Kg	☼	07/10/19 08:00	07/12/19 13:29	1
Manganese	**16**		0.99	0.33	mg/Kg	☼	07/10/19 08:00	07/12/19 13:29	1
Mo	ND		2.6	0.13	mg/Kg	☼	07/10/19 08:00	07/12/19 13:29	1
Selenium	ND		0.66	0.22	mg/Kg	☼	07/10/19 08:00	07/12/19 13:29	1
Thallium	ND		2.3	0.28	mg/Kg	☼	07/10/19 08:00	07/12/19 13:29	1

Method: 6010B SEP - SEP Metals (ICP) - Step 7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**29000**		130	21	mg/Kg	☼	07/12/19 09:08	07/15/19 13:08	10
Antimony	ND		3.9	0.18	mg/Kg	☼	07/12/19 09:08	07/15/19 11:39	1
Arsenic	**1.2**		0.66	0.17	mg/Kg	☼	07/12/19 09:08	07/15/19 11:39	1
Barium	**390**		33	1.6	mg/Kg	☼	07/12/19 09:08	07/15/19 13:08	10
Beryllium	**0.56**		0.33	0.0099	mg/Kg	☼	07/12/19 09:08	07/15/19 11:39	1
Cobalt	**0.79**	**J**	6.6	0.39	mg/Kg	☼	07/12/19 09:08	07/15/19 17:11	2
Iron	**5200**		6.6	5.4	mg/Kg	☼	07/12/19 09:08	07/15/19 11:39	1
Li	**9.6**		3.3	0.20	mg/Kg	☼	07/12/19 09:08	07/15/19 11:39	1
Manganese	**26**		0.99	0.068	mg/Kg	☼	07/12/19 09:08	07/15/19 11:39	1
Mo	**0.19**	**J**	2.6	0.11	mg/Kg	☼	07/12/19 09:08	07/15/19 11:39	1

Client Sample ID: AP-2019-1 (30-31)
Date Collected: 06/03/19 11:36
Date Received: 06/05/19 09:20

Lab Sample ID: 140-15490-1
Matrix: Solid
Percent Solids: 76.0

Method: 6010B SEP - SEP Metals (ICP) - Step 7 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Selenium	ND		0.66	0.22	mg/Kg	☼	07/12/19 09:08	07/15/19 11:39	1
Thallium	**0.48**	**J**	4.6	0.47	mg/Kg	☼	07/12/19 09:08	07/15/19 17:11	2

Method: 6010B SEP - SEP Metals (ICP) - Sum of Steps 1-7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**33000**		10	1.6	mg/Kg			07/16/19 17:31	1
Antimony	ND		3.0	0.14	mg/Kg			07/16/19 17:31	1
Arsenic	**6.9**		0.50	0.13	mg/Kg			07/16/19 17:31	1
Barium	**440**		2.5	0.12	mg/Kg			07/16/19 17:31	1
Beryllium	**0.83**		0.25	0.0075	mg/Kg			07/16/19 17:31	1
Cobalt	**4.0**		2.5	0.023	mg/Kg			07/16/19 17:31	1
Iron	**12000**		5.0	4.1	mg/Kg			07/16/19 17:31	1
Li	**15**		2.5	0.15	mg/Kg			07/16/19 17:31	1
Manganese	**66**		0.75	0.052	mg/Kg			07/16/19 17:31	1
Mo	**0.19**	**J**	2.0	0.082	mg/Kg			07/16/19 17:31	1
Selenium	**0.98**		0.50	0.17	mg/Kg			07/16/19 17:31	1
Thallium	**0.48**	**J**	1.8	0.18	mg/Kg			07/16/19 17:31	1

Method: 6010B - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		25	12	mg/Kg	☼	06/26/19 08:00	07/10/19 12:59	1
Chromium	**13**	**F1**	1.8	0.27	mg/Kg	☼	06/26/19 08:00	07/10/19 12:59	1
Lead	**6.4**		1.8	0.34	mg/Kg	☼	06/26/19 08:00	07/10/19 12:59	1

Method: 6010B - SEP Metals (ICP) - Total

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**60000**		130	21	mg/Kg	☼	06/11/19 08:00	07/15/19 15:45	10
Antimony	ND		3.9	0.18	mg/Kg	☼	06/11/19 08:00	07/15/19 14:24	1
Arsenic	**6.8**		0.66	0.17	mg/Kg	☼	06/11/19 08:00	07/15/19 14:24	1
Barium	**680**		33	1.6	mg/Kg	☼	06/11/19 08:00	07/15/19 15:45	10
Beryllium	**0.89**		0.33	0.0099	mg/Kg	☼	06/11/19 08:00	07/15/19 14:24	1
Cobalt	**3.8**	**J**	6.6	0.39	mg/Kg	☼	06/11/19 08:00	07/15/19 18:28	2
Iron	**11000**		6.6	5.4	mg/Kg	☼	06/11/19 08:00	07/15/19 14:24	1
Lithium	**18**		3.3	0.20	mg/Kg	☼	06/11/19 08:00	07/15/19 14:24	1
Manganese	**66**		0.99	0.068	mg/Kg	☼	06/11/19 08:00	07/15/19 14:24	1
Molybdenum	**0.40**	**J**	2.6	0.11	mg/Kg	☼	06/11/19 08:00	07/15/19 14:24	1
Selenium	ND		0.66	0.22	mg/Kg	☼	06/11/19 08:00	07/15/19 14:24	1
Thallium	ND		4.6	0.47	mg/Kg	☼	06/11/19 08:00	07/15/19 18:28	2

Method: 7470A - SEP Mercury (CVAA) - Total

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	**0.081**	**J**	0.13	0.053	mg/Kg	☼	06/11/19 08:00	06/16/19 14:04	1

Client Sample ID: AP-2019-2 (35-36)
Date Collected: 06/03/19 13:20
Date Received: 06/05/19 09:20

Lab Sample ID: 140-15490-2
Matrix: Solid
Percent Solids: 78.5

Method: 6010B SEP - SEP Metals (ICP) - Step 1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**19**	**J**	51	8.2	mg/Kg	☼	06/29/19 08:00	07/11/19 12:59	4
Antimony	ND		15	1.4	mg/Kg	☼	06/29/19 08:00	07/11/19 12:59	4
Arsenic	ND		2.5	0.66	mg/Kg	☼	06/29/19 08:00	07/11/19 12:59	4
Barium	**0.88**	**J**	13	0.61	mg/Kg	☼	06/29/19 08:00	07/11/19 12:59	4
Beryllium	ND		1.3	0.39	mg/Kg	☼	06/29/19 08:00	07/11/19 12:59	4
Cobalt	**1.6**	**J**	13	0.23	mg/Kg	☼	06/29/19 08:00	07/11/19 12:59	4
Iron	**23**	**J**	25	15	mg/Kg	☼	06/29/19 08:00	07/11/19 12:59	4
Li	ND		13	0.76	mg/Kg	☼	06/29/19 08:00	07/11/19 12:59	4
Manganese	**33**		3.8	0.16	mg/Kg	☼	06/29/19 08:00	07/11/19 12:59	4
Mo	ND		10	0.42	mg/Kg	☼	06/29/19 08:00	07/11/19 12:59	4
Selenium	ND		2.5	0.87	mg/Kg	☼	06/29/19 08:00	07/11/19 12:59	4
Thallium	ND		8.9	1.1	mg/Kg	☼	06/29/19 08:00	07/11/19 12:59	4

Method: 6010B SEP - SEP Metals (ICP) - Step 2

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**18**	**J ***	38	6.1	mg/Kg	☼	06/30/19 08:00	07/11/19 14:42	3
Antimony	ND		11	1.1	mg/Kg	☼	06/30/19 08:00	07/11/19 14:42	3
Arsenic	ND		1.9	0.50	mg/Kg	☼	06/30/19 08:00	07/11/19 14:42	3
Barium	**0.67**	**J ***	9.6	0.46	mg/Kg	☼	06/30/19 08:00	07/11/19 14:42	3
Beryllium	ND	*	0.96	0.061	mg/Kg	☼	06/30/19 08:00	07/11/19 14:42	3
Cobalt	**0.27**	**J**	9.6	0.24	mg/Kg	☼	06/30/19 08:00	07/11/19 14:42	3
Iron	**110**	*****	19	11	mg/Kg	☼	06/30/19 08:00	07/11/19 14:42	3
Li	ND		9.6	0.57	mg/Kg	☼	06/30/19 08:00	07/11/19 14:42	3
Manganese	**4.2**		2.9	1.1	mg/Kg	☼	06/30/19 08:00	07/11/19 14:42	3
Mo	ND		7.6	0.31	mg/Kg	☼	06/30/19 08:00	07/11/19 14:42	3
Selenium	**0.90**	**J B**	1.9	0.65	mg/Kg	☼	06/30/19 08:00	07/11/19 14:42	3
Thallium	ND		6.7	0.80	mg/Kg	☼	06/30/19 08:00	07/11/19 14:42	3

Method: 6010B SEP - SEP Metals (ICP) - Step 3

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**97**		13	2.7	mg/Kg	☼	07/02/19 08:00	07/11/19 16:16	1
Antimony	ND		3.8	0.36	mg/Kg	☼	07/02/19 08:00	07/11/19 16:16	1
Arsenic	**0.97**		0.64	0.17	mg/Kg	☼	07/02/19 08:00	07/11/19 16:16	1
Barium	**4.1**	**B**	3.2	0.15	mg/Kg	☼	07/02/19 08:00	07/11/19 16:16	1
Beryllium	**0.028**	**J**	0.32	0.019	mg/Kg	☼	07/02/19 08:00	07/11/19 16:16	1
Cobalt	**0.17**	**J**	3.2	0.057	mg/Kg	☼	07/02/19 08:00	07/11/19 16:16	1
Iron	**1100**		6.4	3.7	mg/Kg	☼	07/02/19 08:00	07/11/19 16:16	1
Li	ND		3.2	0.19	mg/Kg	☼	07/02/19 08:00	07/11/19 16:16	1
Manganese	**1.5**	**B**	0.96	0.034	mg/Kg	☼	07/02/19 08:00	07/11/19 16:16	1
Mo	ND		2.5	0.10	mg/Kg	☼	07/02/19 08:00	07/11/19 16:16	1
Selenium	ND		0.64	0.22	mg/Kg	☼	07/02/19 08:00	07/11/19 16:16	1
Thallium	ND		2.2	0.27	mg/Kg	☼	07/02/19 08:00	07/11/19 16:16	1

Method: 6010B SEP - SEP Metals (ICP) - Step 4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**1800**		13	2.0	mg/Kg	☼	07/03/19 08:00	07/11/19 17:59	1
Antimony	ND		3.8	0.57	mg/Kg	☼	07/03/19 08:00	07/11/19 17:59	1
Arsenic	**0.78**	**B**	0.64	0.28	mg/Kg	☼	07/03/19 08:00	07/11/19 17:59	1
Barium	**23**		3.2	0.15	mg/Kg	☼	07/03/19 08:00	07/11/19 17:59	1
Beryllium	**0.078**	**J**	0.32	0.020	mg/Kg	☼	07/03/19 08:00	07/11/19 17:59	1

Client Sample ID: AP-2019-2 (35-36)
Date Collected: 06/03/19 13:20
Date Received: 06/05/19 09:20

Lab Sample ID: 140-15490-2
Matrix: Solid
Percent Solids: 78.5

Method: 6010B SEP - SEP Metals (ICP) - Step 4 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cobalt	**1.5**	**J**	3.2	0.068	mg/Kg	☼	07/03/19 08:00	07/11/19 17:59	1
Iron	**3800**		6.4	3.7	mg/Kg	☼	07/03/19 08:00	07/11/19 17:59	1
Li	**4.2**		3.2	0.19	mg/Kg	☼	07/03/19 08:00	07/11/19 17:59	1
Manganese	**31**		0.96	0.17	mg/Kg	☼	07/03/19 08:00	07/11/19 17:59	1
Mo	ND		2.5	0.10	mg/Kg	☼	07/03/19 08:00	07/11/19 17:59	1
Selenium	ND	*	0.64	0.60	mg/Kg	☼	07/03/19 08:00	07/11/19 17:59	1
Thallium	ND		2.2	0.37	mg/Kg	☼	07/03/19 08:00	07/11/19 17:59	1

Method: 6010B SEP - SEP Metals (ICP) - Step 5

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**55**	**J ***	190	30	mg/Kg	☼	07/10/19 08:00	07/12/19 12:05	5
Antimony	ND		57	5.4	mg/Kg	☼	07/10/19 08:00	07/12/19 12:05	5
Arsenic	ND		9.6	2.4	mg/Kg	☼	07/10/19 08:00	07/12/19 12:05	5
Barium	**11**	**J ***	48	2.3	mg/Kg	☼	07/10/19 08:00	07/12/19 12:05	5
Beryllium	ND	*	4.8	0.40	mg/Kg	☼	07/10/19 08:00	07/12/19 12:05	5
Cobalt	**0.85**	**J ***	48	0.76	mg/Kg	☼	07/10/19 08:00	07/12/19 12:05	5
Iron	ND	*	96	56	mg/Kg	☼	07/10/19 08:00	07/12/19 12:05	5
Li	ND		48	2.8	mg/Kg	☼	07/10/19 08:00	07/12/19 12:05	5
Manganese	**3.9**	**J ***	14	2.4	mg/Kg	☼	07/10/19 08:00	07/12/19 12:05	5
Mo	ND		38	1.6	mg/Kg	☼	07/10/19 08:00	07/12/19 12:05	5
Selenium	ND		9.6	3.3	mg/Kg	☼	07/10/19 08:00	07/12/19 12:05	5
Thallium	ND	*	33	4.5	mg/Kg	☼	07/10/19 08:00	07/12/19 12:05	5

Method: 6010B SEP - SEP Metals (ICP) - Step 6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**2000**		13	2.0	mg/Kg	☼	07/10/19 08:00	07/12/19 13:49	1
Antimony	ND		3.8	0.36	mg/Kg	☼	07/10/19 08:00	07/12/19 13:49	1
Arsenic	**0.74**		0.64	0.19	mg/Kg	☼	07/10/19 08:00	07/12/19 13:49	1
Barium	**16**		3.2	0.15	mg/Kg	☼	07/10/19 08:00	07/12/19 13:49	1
Beryllium	**0.061**	**J**	0.32	0.015	mg/Kg	☼	07/10/19 08:00	07/12/19 13:49	1
Cobalt	**0.80**	**J**	3.2	0.059	mg/Kg	☼	07/10/19 08:00	07/12/19 13:49	1
Iron	**3300**		6.4	3.7	mg/Kg	☼	07/10/19 08:00	07/12/19 13:49	1
Li	**2.1**	**J**	3.2	0.19	mg/Kg	☼	07/10/19 08:00	07/12/19 13:49	1
Manganese	**19**		0.96	0.32	mg/Kg	☼	07/10/19 08:00	07/12/19 13:49	1
Mo	ND		2.5	0.13	mg/Kg	☼	07/10/19 08:00	07/12/19 13:49	1
Selenium	ND		0.64	0.22	mg/Kg	☼	07/10/19 08:00	07/12/19 13:49	1
Thallium	ND		2.2	0.27	mg/Kg	☼	07/10/19 08:00	07/12/19 13:49	1

Method: 6010B SEP - SEP Metals (ICP) - Step 7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**26000**		130	20	mg/Kg	☼	07/12/19 09:08	07/15/19 13:19	10
Antimony	ND		3.8	0.18	mg/Kg	☼	07/12/19 09:08	07/15/19 12:05	1
Arsenic	**0.71**		0.64	0.17	mg/Kg	☼	07/12/19 09:08	07/15/19 12:05	1
Barium	**330**		32	1.5	mg/Kg	☼	07/12/19 09:08	07/15/19 13:19	10
Beryllium	**0.51**		0.32	0.0096	mg/Kg	☼	07/12/19 09:08	07/15/19 12:05	1
Cobalt	**1.1**	**J**	6.4	0.38	mg/Kg	☼	07/12/19 09:08	07/15/19 17:21	2
Iron	**5600**		6.4	5.2	mg/Kg	☼	07/12/19 09:08	07/15/19 12:05	1
Li	**11**		3.2	0.19	mg/Kg	☼	07/12/19 09:08	07/15/19 12:05	1
Manganese	**34**		0.96	0.066	mg/Kg	☼	07/12/19 09:08	07/15/19 12:05	1
Mo	**0.17**	**J**	2.5	0.10	mg/Kg	☼	07/12/19 09:08	07/15/19 12:05	1

Client Sample ID: AP-2019-2 (35-36)
Date Collected: 06/03/19 13:20
Date Received: 06/05/19 09:20

Lab Sample ID: 140-15490-2
Matrix: Solid
Percent Solids: 78.5

Method: 6010B SEP - SEP Metals (ICP) - Step 7 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Selenium	ND		0.64	0.22	mg/Kg	☼	07/12/19 09:08	07/15/19 12:05	1
Thallium	**0.70**	**J**	4.5	0.46	mg/Kg	☼	07/12/19 09:08	07/15/19 17:21	2

Method: 6010B SEP - SEP Metals (ICP) - Sum of Steps 1-7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**30000**		10	1.6	mg/Kg			07/16/19 17:31	1
Antimony	ND		3.0	0.14	mg/Kg			07/16/19 17:31	1
Arsenic	**3.2**		0.50	0.13	mg/Kg			07/16/19 17:31	1
Barium	**390**		2.5	0.12	mg/Kg			07/16/19 17:31	1
Beryllium	**0.68**		0.25	0.0075	mg/Kg			07/16/19 17:31	1
Cobalt	**6.3**		2.5	0.023	mg/Kg			07/16/19 17:31	1
Iron	**14000**		5.0	4.1	mg/Kg			07/16/19 17:31	1
Li	**18**		2.5	0.15	mg/Kg			07/16/19 17:31	1
Manganese	**130**		0.75	0.052	mg/Kg			07/16/19 17:31	1
Mo	**0.17**	**J**	2.0	0.082	mg/Kg			07/16/19 17:31	1
Selenium	**0.90**		0.50	0.17	mg/Kg			07/16/19 17:31	1
Thallium	**0.70**	**J**	1.8	0.18	mg/Kg			07/16/19 17:31	1

Method: 6010B - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		24	12	mg/Kg	☼	06/26/19 08:00	07/10/19 13:13	1
Chromium	**12**		1.8	0.27	mg/Kg	☼	06/26/19 08:00	07/10/19 13:13	1
Lead	**6.2**		1.8	0.34	mg/Kg	☼	06/26/19 08:00	07/10/19 13:13	1

Method: 6010B - SEP Metals (ICP) - Total

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**62000**		130	20	mg/Kg	☼	06/11/19 08:00	07/15/19 16:10	10
Antimony	ND		3.8	0.18	mg/Kg	☼	06/11/19 08:00	07/15/19 14:36	1
Arsenic	**3.0**		0.64	0.17	mg/Kg	☼	06/11/19 08:00	07/15/19 14:36	1
Barium	**560**		32	1.5	mg/Kg	☼	06/11/19 08:00	07/15/19 16:10	10
Beryllium	**0.72**		0.32	0.0096	mg/Kg	☼	06/11/19 08:00	07/15/19 14:36	1
Cobalt	**6.2**	**J**	16	0.96	mg/Kg	☼	06/11/19 08:00	07/15/19 18:38	5
Iron	**13000**		6.4	5.2	mg/Kg	☼	06/11/19 08:00	07/15/19 14:36	1
Lithium	**26**		3.2	0.19	mg/Kg	☼	06/11/19 08:00	07/15/19 14:36	1
Manganese	**150**		0.96	0.066	mg/Kg	☼	06/11/19 08:00	07/15/19 14:36	1
Molybdenum	**0.41**	**J**	2.5	0.10	mg/Kg	☼	06/11/19 08:00	07/15/19 14:36	1
Selenium	ND		0.64	0.22	mg/Kg	☼	06/11/19 08:00	07/15/19 14:36	1
Thallium	ND		11	1.1	mg/Kg	☼	06/11/19 08:00	07/15/19 18:38	5

Method: 7470A - SEP Mercury (CVAA) - Total

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	**0.12**	**J**	0.13	0.051	mg/Kg	☼	06/11/19 08:00	06/16/19 14:09	1

Client Sample ID: AP-2019-3 (18-19)
Date Collected: 06/03/19 15:20
Date Received: 06/05/19 09:20

Lab Sample ID: 140-15490-3
Matrix: Solid
Percent Solids: 80.0

Method: 6010B SEP - SEP Metals (ICP) - Step 1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**14**	**J**	50	8.0	mg/Kg	☼	06/29/19 08:00	07/11/19 13:04	4
Antimony	ND		15	1.4	mg/Kg	☼	06/29/19 08:00	07/11/19 13:04	4
Arsenic	ND		2.5	0.65	mg/Kg	☼	06/29/19 08:00	07/11/19 13:04	4
Barium	ND		13	0.60	mg/Kg	☼	06/29/19 08:00	07/11/19 13:04	4
Beryllium	ND		1.3	0.39	mg/Kg	☼	06/29/19 08:00	07/11/19 13:04	4
Cobalt	**0.87**	**J**	13	0.23	mg/Kg	☼	06/29/19 08:00	07/11/19 13:04	4
Iron	**15**	**J**	25	15	mg/Kg	☼	06/29/19 08:00	07/11/19 13:04	4
Li	ND		13	0.75	mg/Kg	☼	06/29/19 08:00	07/11/19 13:04	4
Manganese	**1.2**	**J**	3.8	0.16	mg/Kg	☼	06/29/19 08:00	07/11/19 13:04	4
Mo	ND		10	0.41	mg/Kg	☼	06/29/19 08:00	07/11/19 13:04	4
Selenium	ND		2.5	0.85	mg/Kg	☼	06/29/19 08:00	07/11/19 13:04	4
Thallium	ND		8.8	1.1	mg/Kg	☼	06/29/19 08:00	07/11/19 13:04	4

Method: 6010B SEP - SEP Metals (ICP) - Step 2

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND	*	38	6.0	mg/Kg	☼	06/30/19 08:00	07/11/19 14:47	3
Antimony	ND		11	1.1	mg/Kg	☼	06/30/19 08:00	07/11/19 14:47	3
Arsenic	ND		1.9	0.49	mg/Kg	☼	06/30/19 08:00	07/11/19 14:47	3
Barium	ND	*	9.4	0.45	mg/Kg	☼	06/30/19 08:00	07/11/19 14:47	3
Beryllium	ND	*	0.94	0.060	mg/Kg	☼	06/30/19 08:00	07/11/19 14:47	3
Cobalt	ND		9.4	0.24	mg/Kg	☼	06/30/19 08:00	07/11/19 14:47	3
Iron	ND	*	19	11	mg/Kg	☼	06/30/19 08:00	07/11/19 14:47	3
Li	ND		9.4	0.56	mg/Kg	☼	06/30/19 08:00	07/11/19 14:47	3
Manganese	ND		2.8	1.1	mg/Kg	☼	06/30/19 08:00	07/11/19 14:47	3
Mo	ND		7.5	0.31	mg/Kg	☼	06/30/19 08:00	07/11/19 14:47	3
Selenium	**0.68**	**J B**	1.9	0.64	mg/Kg	☼	06/30/19 08:00	07/11/19 14:47	3
Thallium	ND		6.6	0.79	mg/Kg	☼	06/30/19 08:00	07/11/19 14:47	3

Method: 6010B SEP - SEP Metals (ICP) - Step 3

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**30**		13	2.6	mg/Kg	☼	07/02/19 08:00	07/11/19 16:21	1
Antimony	ND		3.8	0.35	mg/Kg	☼	07/02/19 08:00	07/11/19 16:21	1
Arsenic	ND		0.63	0.16	mg/Kg	☼	07/02/19 08:00	07/11/19 16:21	1
Barium	**2.3**	**J B**	3.1	0.15	mg/Kg	☼	07/02/19 08:00	07/11/19 16:21	1
Beryllium	**0.025**	**J**	0.31	0.019	mg/Kg	☼	07/02/19 08:00	07/11/19 16:21	1
Cobalt	ND		3.1	0.056	mg/Kg	☼	07/02/19 08:00	07/11/19 16:21	1
Iron	**57**		6.3	3.6	mg/Kg	☼	07/02/19 08:00	07/11/19 16:21	1
Li	ND		3.1	0.19	mg/Kg	☼	07/02/19 08:00	07/11/19 16:21	1
Manganese	**0.11**	**J B**	0.94	0.034	mg/Kg	☼	07/02/19 08:00	07/11/19 16:21	1
Mo	ND		2.5	0.10	mg/Kg	☼	07/02/19 08:00	07/11/19 16:21	1
Selenium	**0.23**	**J B**	0.63	0.21	mg/Kg	☼	07/02/19 08:00	07/11/19 16:21	1
Thallium	ND		2.2	0.26	mg/Kg	☼	07/02/19 08:00	07/11/19 16:21	1

Method: 6010B SEP - SEP Metals (ICP) - Step 4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**880**		13	2.0	mg/Kg	☼	07/03/19 08:00	07/11/19 18:04	1
Antimony	ND		3.8	0.56	mg/Kg	☼	07/03/19 08:00	07/11/19 18:04	1
Arsenic	**0.63**	**B**	0.63	0.28	mg/Kg	☼	07/03/19 08:00	07/11/19 18:04	1
Barium	**6.9**		3.1	0.15	mg/Kg	☼	07/03/19 08:00	07/11/19 18:04	1
Beryllium	**0.069**	**J**	0.31	0.020	mg/Kg	☼	07/03/19 08:00	07/11/19 18:04	1

Client Sample ID: AP-2019-3 (18-19)
Date Collected: 06/03/19 15:20
Date Received: 06/05/19 09:20

Lab Sample ID: 140-15490-3
Matrix: Solid
Percent Solids: 80.0

Method: 6010B SEP - SEP Metals (ICP) - Step 4 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cobalt	0.53	J	3.1	0.066	mg/Kg	☼	07/03/19 08:00	07/11/19 18:04	1
Iron	2300		6.3	3.6	mg/Kg	☼	07/03/19 08:00	07/11/19 18:04	1
Li	0.53	J	3.1	0.19	mg/Kg	☼	07/03/19 08:00	07/11/19 18:04	1
Manganese	4.2		0.94	0.16	mg/Kg	☼	07/03/19 08:00	07/11/19 18:04	1
Mo	ND		2.5	0.10	mg/Kg	☼	07/03/19 08:00	07/11/19 18:04	1
Selenium	0.65	B *	0.63	0.59	mg/Kg	☼	07/03/19 08:00	07/11/19 18:04	1
Thallium	ND		2.2	0.36	mg/Kg	☼	07/03/19 08:00	07/11/19 18:04	1

Method: 6010B SEP - SEP Metals (ICP) - Step 5

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	120	J *	190	29	mg/Kg	☼	07/10/19 08:00	07/12/19 12:10	5
Antimony	ND		56	5.3	mg/Kg	☼	07/10/19 08:00	07/12/19 12:10	5
Arsenic	ND		9.4	2.4	mg/Kg	☼	07/10/19 08:00	07/12/19 12:10	5
Barium	ND	*	47	2.3	mg/Kg	☼	07/10/19 08:00	07/12/19 12:10	5
Beryllium	ND	*	4.7	0.39	mg/Kg	☼	07/10/19 08:00	07/12/19 12:10	5
Cobalt	ND	*	47	0.75	mg/Kg	☼	07/10/19 08:00	07/12/19 12:10	5
Iron	ND	*	94	55	mg/Kg	☼	07/10/19 08:00	07/12/19 12:10	5
Li	ND		47	2.8	mg/Kg	☼	07/10/19 08:00	07/12/19 12:10	5
Manganese	ND	*	14	2.3	mg/Kg	☼	07/10/19 08:00	07/12/19 12:10	5
Mo	ND		38	1.6	mg/Kg	☼	07/10/19 08:00	07/12/19 12:10	5
Selenium	ND		9.4	3.3	mg/Kg	☼	07/10/19 08:00	07/12/19 12:10	5
Thallium	ND	*	33	4.4	mg/Kg	☼	07/10/19 08:00	07/12/19 12:10	5

Method: 6010B SEP - SEP Metals (ICP) - Step 6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	1200		13	2.0	mg/Kg	☼	07/10/19 08:00	07/12/19 13:55	1
Antimony	ND		3.8	0.35	mg/Kg	☼	07/10/19 08:00	07/12/19 13:55	1
Arsenic	0.24	J	0.63	0.19	mg/Kg	☼	07/10/19 08:00	07/12/19 13:55	1
Barium	2.1	J	3.1	0.15	mg/Kg	☼	07/10/19 08:00	07/12/19 13:55	1
Beryllium	0.026	J	0.31	0.015	mg/Kg	☼	07/10/19 08:00	07/12/19 13:55	1
Cobalt	0.28	J	3.1	0.058	mg/Kg	☼	07/10/19 08:00	07/12/19 13:55	1
Iron	820		6.3	3.6	mg/Kg	☼	07/10/19 08:00	07/12/19 13:55	1
Li	0.62	J	3.1	0.19	mg/Kg	☼	07/10/19 08:00	07/12/19 13:55	1
Manganese	2.9		0.94	0.31	mg/Kg	☼	07/10/19 08:00	07/12/19 13:55	1
Mo	ND		2.5	0.12	mg/Kg	☼	07/10/19 08:00	07/12/19 13:55	1
Selenium	ND		0.63	0.21	mg/Kg	☼	07/10/19 08:00	07/12/19 13:55	1
Thallium	ND		2.2	0.26	mg/Kg	☼	07/10/19 08:00	07/12/19 13:55	1

Method: 6010B SEP - SEP Metals (ICP) - Step 7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	12000		130	20	mg/Kg	☼	07/12/19 09:08	07/15/19 13:24	10
Antimony	ND		3.8	0.18	mg/Kg	☼	07/12/19 09:08	07/15/19 12:11	1
Arsenic	0.79	J	1.3	0.33	mg/Kg	☼	07/12/19 09:08	07/15/19 17:27	2
Barium	180		31	1.5	mg/Kg	☼	07/12/19 09:08	07/15/19 13:24	10
Beryllium	0.11	J	0.31	0.0094	mg/Kg	☼	07/12/19 09:08	07/15/19 12:11	1
Cobalt	ND		6.3	0.38	mg/Kg	☼	07/12/19 09:08	07/15/19 17:27	2
Iron	2000		6.3	5.1	mg/Kg	☼	07/12/19 09:08	07/15/19 12:11	1
Li	6.0		3.1	0.19	mg/Kg	☼	07/12/19 09:08	07/15/19 12:11	1
Manganese	26		0.94	0.065	mg/Kg	☼	07/12/19 09:08	07/15/19 12:11	1
Mo	0.12	J	2.5	0.10	mg/Kg	☼	07/12/19 09:08	07/15/19 12:11	1

Client Sample ID: AP-2019-3 (18-19)
Lab Sample ID: 140-15490-3
Date Collected: 06/03/19 15:20
Matrix: Solid
Date Received: 06/05/19 09:20
Percent Solids: 80.0

Method: 6010B SEP - SEP Metals (ICP) - Step 7 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Selenium	ND		1.3	0.43	mg/Kg	☼	07/12/19 09:08	07/15/19 17:27	2
Thallium	ND		4.4	0.45	mg/Kg	☼	07/12/19 09:08	07/15/19 17:27	2

Method: 6010B SEP - SEP Metals (ICP) - Sum of Steps 1-7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**14000**		10	1.6	mg/Kg			07/16/19 17:31	1
Antimony	ND		3.0	0.14	mg/Kg			07/16/19 17:31	1
Arsenic	**1.7**		0.50	0.13	mg/Kg			07/16/19 17:31	1
Barium	**190**		2.5	0.12	mg/Kg			07/16/19 17:31	1
Beryllium	**0.23**	**J**	0.25	0.0075	mg/Kg			07/16/19 17:31	1
Cobalt	**1.7**	**J**	2.5	0.023	mg/Kg			07/16/19 17:31	1
Iron	**5200**		5.0	4.1	mg/Kg			07/16/19 17:31	1
Li	**7.2**		2.5	0.15	mg/Kg			07/16/19 17:31	1
Manganese	**35**		0.75	0.052	mg/Kg			07/16/19 17:31	1
Mo	**0.12**	**J**	2.0	0.082	mg/Kg			07/16/19 17:31	1
Selenium	**1.6**		0.50	0.17	mg/Kg			07/16/19 17:31	1
Thallium	ND		1.8	0.18	mg/Kg			07/16/19 17:31	1

Method: 6010B - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		24	12	mg/Kg	☼	06/26/19 08:00	07/10/19 13:18	1
Chromium	**4.4**		1.8	0.26	mg/Kg	☼	06/26/19 08:00	07/10/19 13:18	1
Lead	**3.9**		1.8	0.33	mg/Kg	☼	06/26/19 08:00	07/10/19 13:18	1

Method: 6010B - SEP Metals (ICP) - Total

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**20000**		130	20	mg/Kg	☼	06/11/19 08:00	07/15/19 16:15	10
Antimony	ND		3.8	0.18	mg/Kg	☼	06/11/19 08:00	07/15/19 14:41	1
Arsenic	**2.9**	**J**	3.1	0.81	mg/Kg	☼	06/11/19 08:00	07/15/19 18:43	5
Barium	**240**		31	1.5	mg/Kg	☼	06/11/19 08:00	07/15/19 16:15	10
Beryllium	**0.42**		0.31	0.0094	mg/Kg	☼	06/11/19 08:00	07/15/19 14:41	1
Cobalt	**3.3**	**J**	16	0.94	mg/Kg	☼	06/11/19 08:00	07/15/19 18:43	5
Iron	**8000**		6.3	5.1	mg/Kg	☼	06/11/19 08:00	07/15/19 14:41	1
Lithium	**9.6**		3.1	0.19	mg/Kg	☼	06/11/19 08:00	07/15/19 14:41	1
Manganese	**47**		0.94	0.065	mg/Kg	☼	06/11/19 08:00	07/15/19 14:41	1
Molybdenum	**0.28**	**J**	2.5	0.10	mg/Kg	☼	06/11/19 08:00	07/15/19 14:41	1
Selenium	ND		3.1	1.1	mg/Kg	☼	06/11/19 08:00	07/15/19 18:43	5
Thallium	ND		11	1.1	mg/Kg	☼	06/11/19 08:00	07/15/19 18:43	5

Method: 7470A - SEP Mercury (CVAA) - Total

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	ND		0.13	0.050	mg/Kg	☼	06/11/19 08:00	06/16/19 14:17	1

Default Detection Limits

Client: Golder Associates Inc.
Job ID: 140-15490-1
Project/Site: Martin Lake Ash Ponds - SEP + Totals

Method: 6010B SEP - SEP Metals (ICP) - Step 1

Prep: 3010A

SEP: Exchangeable

Analyte	RL	MDL	Units
Aluminum	10	1.6	mg/Kg
Antimony	3.0	0.28	mg/Kg
Arsenic	0.50	0.13	mg/Kg
Barium	2.5	0.12	mg/Kg
Beryllium	0.25	0.077	mg/Kg
Cobalt	2.5	0.045	mg/Kg
Iron	5.0	2.9	mg/Kg
Li	2.5	0.15	mg/Kg
Manganese	0.75	0.031	mg/Kg
Mo	2.0	0.082	mg/Kg
Selenium	0.50	0.17	mg/Kg
Thallium	1.8	0.21	mg/Kg

Method: 6010B SEP - SEP Metals (ICP) - Step 2

Prep: 3010A

SEP: Carbonate

Analyte	RL	MDL	Units
Aluminum	10	1.6	mg/Kg
Antimony	3.0	0.28	mg/Kg
Arsenic	0.50	0.13	mg/Kg
Barium	2.5	0.12	mg/Kg
Beryllium	0.25	0.016	mg/Kg
Cobalt	2.5	0.063	mg/Kg
Iron	5.0	2.9	mg/Kg
Li	2.5	0.15	mg/Kg
Manganese	0.75	0.28	mg/Kg
Mo	2.0	0.082	mg/Kg
Selenium	0.50	0.17	mg/Kg
Thallium	1.8	0.21	mg/Kg

Method: 6010B SEP - SEP Metals (ICP) - Step 3

Prep: 3010A

SEP: Non-Crystalline

Analyte	RL	MDL	Units
Aluminum	10	2.1	mg/Kg
Antimony	3.0	0.28	mg/Kg
Arsenic	0.50	0.13	mg/Kg
Barium	2.5	0.12	mg/Kg
Beryllium	0.25	0.015	mg/Kg
Cobalt	2.5	0.045	mg/Kg
Iron	5.0	2.9	mg/Kg
Li	2.5	0.15	mg/Kg
Manganese	0.75	0.027	mg/Kg
Mo	2.0	0.082	mg/Kg
Selenium	0.50	0.17	mg/Kg
Thallium	1.8	0.21	mg/Kg

Method: 6010B SEP - SEP Metals (ICP) - Step 4

Prep: 3010A

SEP: Metal Hydroxide

Default Detection Limits

Client: Golder Associates Inc.
Job ID: 140-15490-1
Project/Site: Martin Lake Ash Ponds - SEP + Totals

Method: 6010B SEP - SEP Metals (ICP) - Step 4

Prep: 3010A

SEP: Metal Hydroxide

Analyte	RL	MDL	Units
Aluminum	10	1.6	mg/Kg
Antimony	3.0	0.45	mg/Kg
Arsenic	0.50	0.22	mg/Kg
Barium	2.5	0.12	mg/Kg
Beryllium	0.25	0.016	mg/Kg
Cobalt	2.5	0.053	mg/Kg
Iron	5.0	2.9	mg/Kg
Li	2.5	0.15	mg/Kg
Manganese	0.75	0.13	mg/Kg
Mo	2.0	0.082	mg/Kg
Selenium	0.50	0.47	mg/Kg
Thallium	1.8	0.29	mg/Kg

Method: 6010B SEP - SEP Metals (ICP) - Step 5

Prep: 3010A

SEP: Organic-Bound

Analyte	RL	MDL	Units
Aluminum	30	4.7	mg/Kg
Antimony	9.0	0.84	mg/Kg
Arsenic	1.5	0.38	mg/Kg
Barium	7.5	0.36	mg/Kg
Beryllium	0.75	0.063	mg/Kg
Cobalt	7.5	0.12	mg/Kg
Iron	15	8.8	mg/Kg
Li	7.5	0.44	mg/Kg
Manganese	2.3	0.37	mg/Kg
Mo	6.0	0.25	mg/Kg
Selenium	1.5	0.52	mg/Kg
Thallium	5.3	0.70	mg/Kg

Method: 6010B SEP - SEP Metals (ICP) - Step 6

SEP: Acid/Sulfide

Analyte	RL	MDL	Units
Aluminum	10	1.6	mg/Kg
Antimony	3.0	0.28	mg/Kg
Arsenic	0.50	0.15	mg/Kg
Barium	2.5	0.12	mg/Kg
Beryllium	0.25	0.012	mg/Kg
Cobalt	2.5	0.046	mg/Kg
Iron	5.0	2.9	mg/Kg
Li	2.5	0.15	mg/Kg
Manganese	0.75	0.25	mg/Kg
Mo	2.0	0.099	mg/Kg
Selenium	0.50	0.17	mg/Kg
Thallium	1.8	0.21	mg/Kg

Method: 6010B SEP - SEP Metals (ICP) - Step 7

Prep: Residual

Analyte	RL	MDL	Units
Aluminum	10	1.6	mg/Kg

Method: 6010B SEP - SEP Metals (ICP) - Step 7 (Continued)

Prep: Residual

Analyte	RL	MDL	Units
Antimony	3.0	0.14	mg/Kg
Arsenic	0.50	0.13	mg/Kg
Barium	2.5	0.12	mg/Kg
Beryllium	0.25	0.0075	mg/Kg
Cobalt	2.5	0.15	mg/Kg
Iron	5.0	4.1	mg/Kg
Li	2.5	0.15	mg/Kg
Manganese	0.75	0.052	mg/Kg
Mo	2.0	0.082	mg/Kg
Selenium	0.50	0.17	mg/Kg
Thallium	1.8	0.18	mg/Kg

Method: 6010B SEP - SEP Metals (ICP) - Sum of Steps 1-7

Analyte	RL	MDL	Units
Aluminum	10	1.6	mg/Kg
Antimony	3.0	0.14	mg/Kg
Arsenic	0.50	0.13	mg/Kg
Barium	2.5	0.12	mg/Kg
Beryllium	0.25	0.0075	mg/Kg
Cobalt	2.5	0.023	mg/Kg
Iron	5.0	4.1	mg/Kg
Li	2.5	0.15	mg/Kg
Manganese	0.75	0.052	mg/Kg
Mo	2.0	0.082	mg/Kg
Selenium	0.50	0.17	mg/Kg
Thallium	1.8	0.18	mg/Kg

Method: 6010B - Metals (ICP)

Prep: 3050B

Analyte	RL	MDL	Units
Boron	20	10	mg/Kg
Chromium	1.5	0.22	mg/Kg
Lead	1.5	0.28	mg/Kg

Method: 6010B - SEP Metals (ICP) - Total

Prep: Total

Analyte	RL	MDL	Units
Aluminum	10	1.6	mg/Kg
Antimony	3.0	0.14	mg/Kg
Arsenic	0.50	0.13	mg/Kg
Barium	2.5	0.12	mg/Kg
Beryllium	0.25	0.0075	mg/Kg
Cobalt	2.5	0.15	mg/Kg
Iron	5.0	4.1	mg/Kg
Lithium	2.5	0.15	mg/Kg
Manganese	0.75	0.052	mg/Kg
Molybdenum	2.0	0.082	mg/Kg
Selenium	0.50	0.17	mg/Kg
Thallium	1.8	0.18	mg/Kg

Method: 7470A - SEP Mercury (CVAA) - Total

Default Detection Limits

Client: Golder Associates Inc.
Job ID: 140-15490-1
Project/Site: Martin Lake Ash Ponds - SEP + Totals

Method: 7470A - SEP Mercury (CVAA) - Total

Prep: Total

Analyte	RL	MDL	Units
Hg	0.10	0.040	mg/Kg

Method: 6010B - Metals (ICP)

Lab Sample ID: MB 140-31128/14-A
Matrix: Solid
Analysis Batch: 31553

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 31128

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		20	10	mg/Kg		06/26/19 08:00	07/10/19 11:42	1
Chromium	ND		1.5	0.22	mg/Kg		06/26/19 08:00	07/10/19 11:42	1
Lead	ND		1.5	0.28	mg/Kg		06/26/19 08:00	07/10/19 11:42	1

Lab Sample ID: LCS 140-31128/15-A
Matrix: Solid
Analysis Batch: 31553

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 31128

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	100	101		mg/Kg		101	80 - 120
Chromium	20.0	20.3		mg/Kg		101	90 - 110
Lead	10.0	10.1		mg/Kg		101	90 - 110

Lab Sample ID: 140-15490-1 MS
Matrix: Solid
Analysis Batch: 31553

Client Sample ID: AP-2019-1 (30-31)
Prep Type: Total/NA
Prep Batch: 31128

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	ND		124	124		mg/Kg	☼	100	75 - 125
Chromium	13	F1	24.8	45.6	F1	mg/Kg	☼	131	75 - 125
Lead	6.4		12.4	17.4		mg/Kg	☼	89	75 - 125

Lab Sample ID: 140-15490-1 MSD
Matrix: Solid
Analysis Batch: 31553

Client Sample ID: AP-2019-1 (30-31)
Prep Type: Total/NA
Prep Batch: 31128

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Boron	ND		122	123		mg/Kg	☼	101	75 - 125	0	20
Chromium	13	F1	24.4	45.6	F1	mg/Kg	☼	133	75 - 125	0	20
Lead	6.4		12.2	17.5		mg/Kg	☼	91	75 - 125	0	20

Method: 6010B - SEP Metals (ICP) - Total

Lab Sample ID: MB 140-30683/13-A
Matrix: Solid
Analysis Batch: 31713

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 30683

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		10	1.6	mg/Kg		06/11/19 08:00	07/15/19 11:13	1
Antimony	ND		3.0	0.14	mg/Kg		06/11/19 08:00	07/15/19 11:13	1
Arsenic	ND		0.50	0.13	mg/Kg		06/11/19 08:00	07/15/19 11:13	1
Barium	ND		2.5	0.12	mg/Kg		06/11/19 08:00	07/15/19 11:13	1
Beryllium	ND		0.25	0.0075	mg/Kg		06/11/19 08:00	07/15/19 11:13	1
Cobalt	ND		2.5	0.15	mg/Kg		06/11/19 08:00	07/15/19 11:13	1
Iron	ND		5.0	4.1	mg/Kg		06/11/19 08:00	07/15/19 11:13	1
Lithium	ND		2.5	0.15	mg/Kg		06/11/19 08:00	07/15/19 11:13	1
Manganese	ND		0.75	0.052	mg/Kg		06/11/19 08:00	07/15/19 11:13	1
Molybdenum	ND		2.0	0.082	mg/Kg		06/11/19 08:00	07/15/19 11:13	1
Selenium	ND		0.50	0.17	mg/Kg		06/11/19 08:00	07/15/19 11:13	1
Thallium	ND		1.8	0.18	mg/Kg		06/11/19 08:00	07/15/19 11:13	1

Method: 6010B - SEP Metals (ICP) - Total

Lab Sample ID: LCS 140-30683/14-A
Matrix: Solid
Analysis Batch: 31713

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 30683

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aluminum	100	97.6		mg/Kg		98	75 - 125
Antimony	25.0	25.9		mg/Kg		103	75 - 125
Arsenic	5.00	5.29		mg/Kg		106	75 - 125
Barium	5.00	4.99		mg/Kg		100	75 - 125
Beryllium	2.50	2.51		mg/Kg		100	75 - 125
Cobalt	5.00	5.20		mg/Kg		104	75 - 125
Iron	50.0	51.1		mg/Kg		102	75 - 125
Lithium	5.00	5.12		mg/Kg		102	75 - 125
Manganese	5.00	5.21		mg/Kg		104	75 - 125
Molybdenum	25.0	26.6		mg/Kg		106	75 - 125
Selenium	7.50	7.55		mg/Kg		101	75 - 125
Thallium	20.0	21.2		mg/Kg		106	75 - 125

Lab Sample ID: LCSD 140-30683/15-A
Matrix: Solid
Analysis Batch: 31713

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 30683

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Aluminum	100	97.0		mg/Kg		97	75 - 125	1	30
Antimony	25.0	25.9		mg/Kg		104	75 - 125	0	30
Arsenic	5.00	5.24		mg/Kg		105	75 - 125	1	30
Barium	5.00	4.95		mg/Kg		99	75 - 125	1	30
Beryllium	2.50	2.48		mg/Kg		99	75 - 125	1	30
Cobalt	5.00	5.16		mg/Kg		103	75 - 125	1	30
Iron	50.0	50.4		mg/Kg		101	75 - 125	1	30
Lithium	5.00	5.04		mg/Kg		101	75 - 125	2	30
Manganese	5.00	5.16		mg/Kg		103	75 - 125	1	30
Molybdenum	25.0	26.5		mg/Kg		106	75 - 125	0	30
Selenium	7.50	7.47		mg/Kg		100	75 - 125	1	30
Thallium	20.0	21.2		mg/Kg		106	75 - 125	0	30

Lab Sample ID: 140-15490-1 DU
Matrix: Solid
Analysis Batch: 31713

Client Sample ID: AP-2019-1 (30-31)
Prep Type: Total/NA
Prep Batch: 30683

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Antimony	ND		ND		mg/Kg	☼	NC	30
Arsenic	6.8		7.11		mg/Kg	☼	5	30
Beryllium	0.89		0.959		mg/Kg	☼	7	30
Iron	11000		12200		mg/Kg	☼	7	30
Lithium	18		19.7		mg/Kg	☼	7	30
Manganese	66		71.7		mg/Kg	☼	8	30
Molybdenum	0.40	J	0.434	J	mg/Kg	☼	7	30
Selenium	ND		ND		mg/Kg	☼	NC	30

Method: 6010B - SEP Metals (ICP) - Total (Continued)

Lab Sample ID: 140-15490-1 DU
Matrix: Solid
Analysis Batch: 31713

Client Sample ID: AP-2019-1 (30-31)
Prep Type: Total/NA
Prep Batch: 30683

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Aluminum	60000		64600		mg/Kg	☼	7	30
Barium	680		733		mg/Kg	☼	7	30

Lab Sample ID: 140-15490-1 DU
Matrix: Solid
Analysis Batch: 31713

Client Sample ID: AP-2019-1 (30-31)
Prep Type: Total/NA
Prep Batch: 30683

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Cobalt	3.8	J	4.35	J	mg/Kg	☼	13	30
Thallium	ND		0.657	J	mg/Kg	☼	NC	30

Method: 6010B SEP - SEP Metals (ICP)

Lab Sample ID: MB 140-31148/13-B ^4
Matrix: Solid
Analysis Batch: 31604

Client Sample ID: Method Blank
Prep Type: Step 1
Prep Batch: 31252

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		40	6.4	mg/Kg		06/29/19 08:00	07/11/19 12:33	4
Antimony	ND		12	1.1	mg/Kg		06/29/19 08:00	07/11/19 12:33	4
Arsenic	ND		2.0	0.52	mg/Kg		06/29/19 08:00	07/11/19 12:33	4
Barium	ND		10	0.48	mg/Kg		06/29/19 08:00	07/11/19 12:33	4
Beryllium	ND		1.0	0.31	mg/Kg		06/29/19 08:00	07/11/19 12:33	4
Cobalt	ND		10	0.18	mg/Kg		06/29/19 08:00	07/11/19 12:33	4
Iron	ND		20	12	mg/Kg		06/29/19 08:00	07/11/19 12:33	4
Li	ND		10	0.60	mg/Kg		06/29/19 08:00	07/11/19 12:33	4
Manganese	ND		3.0	0.12	mg/Kg		06/29/19 08:00	07/11/19 12:33	4
Mo	ND		8.0	0.33	mg/Kg		06/29/19 08:00	07/11/19 12:33	4
Selenium	ND		2.0	0.68	mg/Kg		06/29/19 08:00	07/11/19 12:33	4
Thallium	ND		7.0	0.84	mg/Kg		06/29/19 08:00	07/11/19 12:33	4

Lab Sample ID: LCS 140-31148/14-B ^5
Matrix: Solid
Analysis Batch: 31604

Client Sample ID: Lab Control Sample
Prep Type: Step 1
Prep Batch: 31252

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aluminum	100	97.0		mg/Kg		97	75 - 125
Antimony	25.0	24.5		mg/Kg		98	75 - 125
Arsenic	5.00	4.89		mg/Kg		98	75 - 125
Barium	5.00	4.35	J	mg/Kg		87	75 - 125
Beryllium	2.50	2.58		mg/Kg		103	75 - 125
Cobalt	5.00	4.93	J	mg/Kg		99	75 - 125
Iron	50.0	49.6		mg/Kg		99	75 - 125
Li	5.00	4.72	J	mg/Kg		94	75 - 125
Manganese	5.00	5.09		mg/Kg		102	75 - 125
Mo	25.0	25.0		mg/Kg		100	75 - 125
Selenium	7.50	7.82		mg/Kg		104	75 - 125
Thallium	20.0	19.7		mg/Kg		98	75 - 125

Method: 6010B SEP - SEP Metals (ICP) (Continued)

Lab Sample ID: LCSD 140-31148/15-B ^5
Matrix: Solid
Analysis Batch: 31604

Client Sample ID: Lab Control Sample Dup
Prep Type: Step 1
Prep Batch: 31252

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Aluminum			100	99.5		mg/Kg		100	75 - 125	3	30
Antimony			25.0	24.7		mg/Kg		99	75 - 125	1	30
Arsenic			5.00	4.78		mg/Kg		96	75 - 125	2	30
Barium			5.00	4.30	J	mg/Kg		86	75 - 125	1	30
Beryllium			2.50	2.59		mg/Kg		104	75 - 125	0	30
Cobalt			5.00	4.89	J	mg/Kg		98	75 - 125	1	30
Iron			50.0	49.5		mg/Kg		99	75 - 125	0	30
Li			5.00	4.84	J	mg/Kg		97	75 - 125	3	30
Manganese			5.00	5.06		mg/Kg		101	75 - 125	1	30
Mo			25.0	25.1		mg/Kg		100	75 - 125	0	30
Selenium			7.50	8.06		mg/Kg		108	75 - 125	3	30
Thallium			20.0	20.1		mg/Kg		101	75 - 125	2	30

Lab Sample ID: 140-15490-1 DU
Matrix: Solid
Analysis Batch: 31604

Client Sample ID: AP-2019-1 (30-31)
Prep Type: Step 1
Prep Batch: 31252

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Aluminum	ND			ND		mg/Kg	☼			NC	30
Antimony	ND			ND		mg/Kg	☼			NC	30
Arsenic	ND			ND		mg/Kg	☼			NC	30
Barium	0.88	J		0.934	J	mg/Kg	☼			5	30
Beryllium	ND			ND		mg/Kg	☼			NC	30
Cobalt	0.54	J		0.626	J	mg/Kg	☼			15	30
Iron	ND			ND		mg/Kg	☼			NC	30
Li	ND			ND		mg/Kg	☼			NC	30
Manganese	3.1	J		3.66	J	mg/Kg	☼			16	30
Mo	ND			ND		mg/Kg	☼			NC	30
Selenium	ND			ND		mg/Kg	☼			NC	30
Thallium	ND			ND		mg/Kg	☼			NC	30

Lab Sample ID: MB 140-31253/13-B ^3
Matrix: Solid
Analysis Batch: 31604

Client Sample ID: Method Blank
Prep Type: Step 2
Prep Batch: 31256

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		30	4.8	mg/Kg		06/30/19 08:00	07/11/19 14:06	3
Antimony	ND		9.0	0.84	mg/Kg		06/30/19 08:00	07/11/19 14:06	3
Arsenic	ND		1.5	0.39	mg/Kg		06/30/19 08:00	07/11/19 14:06	3
Barium	ND		7.5	0.36	mg/Kg		06/30/19 08:00	07/11/19 14:06	3
Beryllium	ND		0.75	0.048	mg/Kg		06/30/19 08:00	07/11/19 14:06	3
Cobalt	ND		7.5	0.19	mg/Kg		06/30/19 08:00	07/11/19 14:06	3
Iron	ND		15	8.7	mg/Kg		06/30/19 08:00	07/11/19 14:06	3
Li	ND		7.5	0.45	mg/Kg		06/30/19 08:00	07/11/19 14:06	3
Manganese	ND		2.3	0.84	mg/Kg		06/30/19 08:00	07/11/19 14:06	3
Mo	ND		6.0	0.25	mg/Kg		06/30/19 08:00	07/11/19 14:06	3
Selenium	0.587	J	1.5	0.51	mg/Kg		06/30/19 08:00	07/11/19 14:06	3
Thallium	ND		5.3	0.63	mg/Kg		06/30/19 08:00	07/11/19 14:06	3

Method: 6010B SEP - SEP Metals (ICP) (Continued)

Lab Sample ID: LCS 140-31253/14-B ^5
Matrix: Solid
Analysis Batch: 31604

Client Sample ID: Lab Control Sample
Prep Type: Step 2
Prep Batch: 31256

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aluminum	100	ND	*	mg/Kg		1	75 - 125
Antimony	25.0	21.1		mg/Kg		84	75 - 125
Arsenic	5.00	3.95		mg/Kg		79	75 - 125
Barium	5.00	2.28	J *	mg/Kg		46	75 - 125
Beryllium	2.50	1.35	*	mg/Kg		54	75 - 125
Cobalt	5.00	4.62	J	mg/Kg		92	75 - 125
Iron	50.0	ND	*	mg/Kg		2	75 - 125
Li	5.00	4.14	J	mg/Kg		83	75 - 125
Manganese	5.00	4.79		mg/Kg		96	75 - 125
Mo	25.0	20.7		mg/Kg		83	75 - 125
Selenium	7.50	7.34		mg/Kg		98	75 - 125
Thallium	20.0	18.4		mg/Kg		92	75 - 125

Lab Sample ID: LCSD 140-31253/15-B ^5
Matrix: Solid
Analysis Batch: 31604

Client Sample ID: Lab Control Sample Dup
Prep Type: Step 2
Prep Batch: 31256

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Aluminum	100	ND	*	mg/Kg		-0.3	75 - 125	289	30
Antimony	25.0	21.4		mg/Kg		86	75 - 125	1	30
Arsenic	5.00	4.00		mg/Kg		80	75 - 125	1	30
Barium	5.00	2.28	J *	mg/Kg		46	75 - 125	0	30
Beryllium	2.50	1.32	*	mg/Kg		53	75 - 125	2	30
Cobalt	5.00	4.62	J	mg/Kg		92	75 - 125	0	30
Iron	50.0	ND	*	mg/Kg		3	75 - 125	28	30
Li	5.00	4.15	J	mg/Kg		83	75 - 125	0	30
Manganese	5.00	4.76		mg/Kg		95	75 - 125	1	30
Mo	25.0	20.9		mg/Kg		84	75 - 125	1	30
Selenium	7.50	6.68		mg/Kg		89	75 - 125	10	30
Thallium	20.0	18.6		mg/Kg		93	75 - 125	1	30

Lab Sample ID: 140-15490-1 DU
Matrix: Solid
Analysis Batch: 31604

Client Sample ID: AP-2019-1 (30-31)
Prep Type: Step 2
Prep Batch: 31256

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Aluminum	9.7	J *	11.8	J *	mg/Kg	☼	19	30
Antimony	ND		ND		mg/Kg	☼	NC	30
Arsenic	ND		ND		mg/Kg	☼	NC	30
Barium	0.76	J *	0.792	J *	mg/Kg	☼	4	30
Beryllium	ND	*	ND	*	mg/Kg	☼	NC	30
Cobalt	ND		ND		mg/Kg	☼	NC	30
Iron	ND	*	ND	*	mg/Kg	☼	NC	30
Li	ND		ND		mg/Kg	☼	NC	30
Manganese	ND		ND		mg/Kg	☼	NC	30
Mo	ND		ND		mg/Kg	☼	NC	30
Selenium	0.76	J B	0.794	J	mg/Kg	☼	4	30
Thallium	ND		ND		mg/Kg	☼	NC	30

Method: 6010B SEP - SEP Metals (ICP) (Continued)

Lab Sample ID: MB 140-31257/13-B
Matrix: Solid
Analysis Batch: 31604

Client Sample ID: Method Blank
Prep Type: Step 3
Prep Batch: 31338

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		10	2.1	mg/Kg		07/02/19 08:00	07/11/19 15:50	1
Antimony	ND		3.0	0.28	mg/Kg		07/02/19 08:00	07/11/19 15:50	1
Arsenic	ND		0.50	0.13	mg/Kg		07/02/19 08:00	07/11/19 15:50	1
Barium	0.151	J	2.5	0.12	mg/Kg		07/02/19 08:00	07/11/19 15:50	1
Beryllium	ND		0.25	0.015	mg/Kg		07/02/19 08:00	07/11/19 15:50	1
Cobalt	ND		2.5	0.045	mg/Kg		07/02/19 08:00	07/11/19 15:50	1
Iron	ND		5.0	2.9	mg/Kg		07/02/19 08:00	07/11/19 15:50	1
Li	ND		2.5	0.15	mg/Kg		07/02/19 08:00	07/11/19 15:50	1
Manganese	0.0515	J	0.75	0.027	mg/Kg		07/02/19 08:00	07/11/19 15:50	1
Mo	ND		2.0	0.082	mg/Kg		07/02/19 08:00	07/11/19 15:50	1
Selenium	0.197	J	0.50	0.17	mg/Kg		07/02/19 08:00	07/11/19 15:50	1
Thallium	ND		1.8	0.21	mg/Kg		07/02/19 08:00	07/11/19 15:50	1

Lab Sample ID: LCS 140-31257/14-B
Matrix: Solid
Analysis Batch: 31604

Client Sample ID: Lab Control Sample
Prep Type: Step 3
Prep Batch: 31338

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aluminum	100	95.8		mg/Kg		96	75 - 125
Antimony	25.0	24.3		mg/Kg		97	75 - 125
Arsenic	5.00	4.90		mg/Kg		98	75 - 125
Barium	5.00	4.34		mg/Kg		87	75 - 125
Beryllium	2.50	2.56		mg/Kg		102	75 - 125
Cobalt	5.00	4.90		mg/Kg		98	75 - 125
Iron	50.0	54.0		mg/Kg		108	75 - 125
Li	5.00	4.87		mg/Kg		97	75 - 125
Manganese	5.00	5.03		mg/Kg		101	75 - 125
Mo	25.0	24.8		mg/Kg		99	75 - 125
Selenium	7.50	7.37		mg/Kg		98	75 - 125
Thallium	20.0	20.2		mg/Kg		101	75 - 125

Lab Sample ID: LCSD 140-31257/15-B
Matrix: Solid
Analysis Batch: 31604

Client Sample ID: Lab Control Sample Dup
Prep Type: Step 3
Prep Batch: 31338

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Aluminum	100	98.1		mg/Kg		98	75 - 125	2	30
Antimony	25.0	24.6		mg/Kg		98	75 - 125	1	30
Arsenic	5.00	5.06		mg/Kg		101	75 - 125	3	30
Barium	5.00	4.49		mg/Kg		90	75 - 125	3	30
Beryllium	2.50	2.61		mg/Kg		104	75 - 125	2	30
Cobalt	5.00	4.97		mg/Kg		99	75 - 125	1	30
Iron	50.0	51.0		mg/Kg		102	75 - 125	6	30
Li	5.00	4.95		mg/Kg		99	75 - 125	2	30
Manganese	5.00	5.06		mg/Kg		101	75 - 125	1	30
Mo	25.0	24.9		mg/Kg		100	75 - 125	0	30
Selenium	7.50	7.63		mg/Kg		102	75 - 125	3	30
Thallium	20.0	20.5		mg/Kg		103	75 - 125	2	30

Method: 6010B SEP - SEP Metals (ICP) (Continued)

Lab Sample ID: 140-15490-1 DU
Matrix: Solid
Analysis Batch: 31604

Client Sample ID: AP-2019-1 (30-31)
Prep Type: Step 3
Prep Batch: 31338

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Aluminum	88		90.2		mg/Kg	☼	3	30
Antimony	ND		ND		mg/Kg	☼	NC	30
Arsenic	1.8		1.75		mg/Kg	☼	5	30
Barium	4.3	B	4.58		mg/Kg	☼	7	30
Beryllium	0.067	J	0.0665	J	mg/Kg	☼	1	30
Cobalt	0.34	J	0.478	J F5	mg/Kg	☼	32	30
Iron	580		553		mg/Kg	☼	4	30
Li	ND		ND		mg/Kg	☼	NC	30
Manganese	2.4	B	2.99		mg/Kg	☼	20	30
Mo	ND		ND		mg/Kg	☼	NC	30
Selenium	0.22	J B	0.249	J	mg/Kg	☼	14	30
Thallium	ND		ND		mg/Kg	☼	NC	30

Lab Sample ID: MB 140-31341/13-B
Matrix: Solid
Analysis Batch: 31604

Client Sample ID: Method Blank
Prep Type: Step 4
Prep Batch: 31360

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		10	1.6	mg/Kg		07/03/19 08:00	07/11/19 17:24	1
Antimony	ND		3.0	0.45	mg/Kg		07/03/19 08:00	07/11/19 17:24	1
Arsenic	0.260	J	0.50	0.22	mg/Kg		07/03/19 08:00	07/11/19 17:24	1
Barium	ND		2.5	0.12	mg/Kg		07/03/19 08:00	07/11/19 17:24	1
Beryllium	ND		0.25	0.016	mg/Kg		07/03/19 08:00	07/11/19 17:24	1
Cobalt	ND		2.5	0.053	mg/Kg		07/03/19 08:00	07/11/19 17:24	1
Iron	ND		5.0	2.9	mg/Kg		07/03/19 08:00	07/11/19 17:24	1
Li	ND		2.5	0.15	mg/Kg		07/03/19 08:00	07/11/19 17:24	1
Manganese	ND		0.75	0.13	mg/Kg		07/03/19 08:00	07/11/19 17:24	1
Mo	ND		2.0	0.082	mg/Kg		07/03/19 08:00	07/11/19 17:24	1
Selenium	0.561		0.50	0.47	mg/Kg		07/03/19 08:00	07/11/19 17:24	1
Thallium	ND		1.8	0.29	mg/Kg		07/03/19 08:00	07/11/19 17:24	1

Lab Sample ID: LCS 140-31341/14-B
Matrix: Solid
Analysis Batch: 31604

Client Sample ID: Lab Control Sample
Prep Type: Step 4
Prep Batch: 31360

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aluminum	100	98.4		mg/Kg		98	75 - 125
Antimony	25.0	25.6		mg/Kg		102	75 - 125
Arsenic	5.00	5.48		mg/Kg		110	75 - 125
Barium	5.00	4.90		mg/Kg		98	75 - 125
Beryllium	2.50	2.66		mg/Kg		106	75 - 125
Cobalt	5.00	4.92		mg/Kg		98	75 - 125
Iron	50.0	50.0		mg/Kg		100	75 - 125
Li	5.00	4.92		mg/Kg		98	75 - 125
Manganese	5.00	4.98		mg/Kg		100	75 - 125
Mo	25.0	25.7		mg/Kg		103	75 - 125
Selenium	7.50	0.762	*	mg/Kg		10	75 - 125
Thallium	20.0	17.2		mg/Kg		86	75 - 125

Method: 6010B SEP - SEP Metals (ICP) (Continued)

Lab Sample ID: LCSD 140-31341/15-B
Matrix: Solid
Analysis Batch: 31604

Client Sample ID: Lab Control Sample Dup
Prep Type: Step 4
Prep Batch: 31360

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Aluminum			100	101		mg/Kg		101	75 - 125	3	30
Antimony			25.0	25.9		mg/Kg		103	75 - 125	1	30
Arsenic			5.00	5.55		mg/Kg		111	75 - 125	1	30
Barium			5.00	5.04		mg/Kg		101	75 - 125	3	30
Beryllium			2.50	2.74		mg/Kg		109	75 - 125	3	30
Cobalt			5.00	5.07		mg/Kg		101	75 - 125	3	30
Iron			50.0	51.5		mg/Kg		103	75 - 125	3	30
Li			5.00	5.09		mg/Kg		102	75 - 125	3	30
Manganese			5.00	5.13		mg/Kg		103	75 - 125	3	30
Mo			25.0	25.9		mg/Kg		104	75 - 125	1	30
Selenium			7.50	0.631	*	mg/Kg		8	75 - 125	19	30
Thallium			20.0	17.9		mg/Kg		89	75 - 125	4	30

Lab Sample ID: 140-15490-1 DU
Matrix: Solid
Analysis Batch: 31604

Client Sample ID: AP-2019-1 (30-31)
Prep Type: Step 4
Prep Batch: 31360

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Aluminum	1700			1740		mg/Kg	☼			0.1	30
Antimony	ND			ND		mg/Kg	☼			NC	30
Arsenic	2.8	B		2.56		mg/Kg	☼			10	30
Barium	16			18.8		mg/Kg	☼			15	30
Beryllium	0.13	J		0.135	J	mg/Kg	☼			1	30
Cobalt	1.5	J		1.59	J	mg/Kg	☼			8	30
Iron	3900			3860		mg/Kg	☼			2	30
Li	3.0	J		3.10	J	mg/Kg	☼			2	30
Manganese	18			18.2		mg/Kg	☼			0.4	30
Mo	ND			ND		mg/Kg	☼			NC	30
Selenium	ND	*		0.624	J *	mg/Kg	☼			NC	30
Thallium	ND			ND		mg/Kg	☼			NC	30

Lab Sample ID: MB 140-31436/13-B ^5
Matrix: Solid
Analysis Batch: 31651

Client Sample ID: Method Blank
Prep Type: Step 5
Prep Batch: 31500

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		150	24	mg/Kg		07/10/19 08:00	07/12/19 11:39	5
Antimony	ND		45	4.2	mg/Kg		07/10/19 08:00	07/12/19 11:39	5
Arsenic	ND		7.5	1.9	mg/Kg		07/10/19 08:00	07/12/19 11:39	5
Barium	ND		38	1.8	mg/Kg		07/10/19 08:00	07/12/19 11:39	5
Beryllium	ND		3.8	0.32	mg/Kg		07/10/19 08:00	07/12/19 11:39	5
Cobalt	ND		38	0.60	mg/Kg		07/10/19 08:00	07/12/19 11:39	5
Iron	ND		75	44	mg/Kg		07/10/19 08:00	07/12/19 11:39	5
Li	ND		38	2.2	mg/Kg		07/10/19 08:00	07/12/19 11:39	5
Manganese	ND		11	1.9	mg/Kg		07/10/19 08:00	07/12/19 11:39	5
Mo	ND		30	1.3	mg/Kg		07/10/19 08:00	07/12/19 11:39	5
Selenium	ND		7.5	2.6	mg/Kg		07/10/19 08:00	07/12/19 11:39	5
Thallium	ND		26	3.5	mg/Kg		07/10/19 08:00	07/12/19 11:39	5

Method: 6010B SEP - SEP Metals (ICP) (Continued)

Lab Sample ID: LCS 140-31436/14-B ^5
Matrix: Solid
Analysis Batch: 31651

Client Sample ID: Lab Control Sample
Prep Type: Step 5
Prep Batch: 31500

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aluminum	300	ND	*	mg/Kg		6	75 - 125
Antimony	75.0	81.2		mg/Kg		108	75 - 125
Arsenic	15.0	12.3		mg/Kg		82	75 - 125
Barium	15.0	7.80	J *	mg/Kg		52	75 - 125
Beryllium	7.50	4.23	*	mg/Kg		56	75 - 125
Cobalt	15.0	4.86	J *	mg/Kg		32	75 - 125
Iron	150	ND	*	mg/Kg		2	75 - 125
Li	15.0	16.4	J	mg/Kg		109	75 - 125
Manganese	15.0	4.82	J *	mg/Kg		32	75 - 125
Mo	75.0	64.7		mg/Kg		86	75 - 125
Selenium	22.5	24.8		mg/Kg		110	75 - 125
Thallium	60.0	ND	*	mg/Kg		2	75 - 125

Lab Sample ID: LCSD 140-31436/15-B ^5
Matrix: Solid
Analysis Batch: 31651

Client Sample ID: Lab Control Sample Dup
Prep Type: Step 5
Prep Batch: 31500

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Aluminum	300	ND	*	mg/Kg		7	75 - 125	14	30
Antimony	75.0	82.5		mg/Kg		110	75 - 125	2	30
Arsenic	15.0	12.5		mg/Kg		83	75 - 125	2	30
Barium	15.0	7.73	J *	mg/Kg		52	75 - 125	1	30
Beryllium	7.50	4.34	*	mg/Kg		58	75 - 125	2	30
Cobalt	15.0	5.05	J *	mg/Kg		34	75 - 125	4	30
Iron	150	ND	*	mg/Kg		3	75 - 125	55	30
Li	15.0	16.1	J	mg/Kg		107	75 - 125	2	30
Manganese	15.0	4.97	J *	mg/Kg		33	75 - 125	3	30
Mo	75.0	64.0		mg/Kg		85	75 - 125	1	30
Selenium	22.5	26.2		mg/Kg		116	75 - 125	6	30
Thallium	60.0	ND	*	mg/Kg		0.9	75 - 125	60	30

Lab Sample ID: 140-15490-1 DU
Matrix: Solid
Analysis Batch: 31651

Client Sample ID: AP-2019-1 (30-31)
Prep Type: Step 5
Prep Batch: 31500

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Aluminum	62	J *	54.9	J *	mg/Kg	☼	12	30
Antimony	ND		ND		mg/Kg	☼	NC	30
Arsenic	ND		ND		mg/Kg	☼	NC	30
Barium	7.0	J *	8.10	J *	mg/Kg	☼	15	30
Beryllium	ND	*	ND	*	mg/Kg	☼	NC	30
Cobalt	ND	*	ND	*	mg/Kg	☼	NC	30
Iron	ND	*	ND	*	mg/Kg	☼	NC	30
Li	ND		ND		mg/Kg	☼	NC	30
Manganese	ND	*	ND	*	mg/Kg	☼	NC	30
Mo	ND		ND		mg/Kg	☼	NC	30
Selenium	ND		ND		mg/Kg	☼	NC	30
Thallium	ND	*	ND	*	mg/Kg	☼	NC	30

Method: 6010B SEP - SEP Metals (ICP) (Continued)

Lab Sample ID: MB 140-31502/13-A
Matrix: Solid
Analysis Batch: 31651

Client Sample ID: Method Blank
Prep Type: Step 6
Prep Batch: 31502

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		10	1.6	mg/Kg		07/10/19 08:00	07/12/19 13:14	1
Antimony	ND		3.0	0.28	mg/Kg		07/10/19 08:00	07/12/19 13:14	1
Arsenic	ND		0.50	0.15	mg/Kg		07/10/19 08:00	07/12/19 13:14	1
Barium	ND		2.5	0.12	mg/Kg		07/10/19 08:00	07/12/19 13:14	1
Beryllium	ND		0.25	0.012	mg/Kg		07/10/19 08:00	07/12/19 13:14	1
Cobalt	ND		2.5	0.046	mg/Kg		07/10/19 08:00	07/12/19 13:14	1
Iron	ND		5.0	2.9	mg/Kg		07/10/19 08:00	07/12/19 13:14	1
Li	ND		2.5	0.15	mg/Kg		07/10/19 08:00	07/12/19 13:14	1
Manganese	ND		0.75	0.25	mg/Kg		07/10/19 08:00	07/12/19 13:14	1
Mo	ND		2.0	0.099	mg/Kg		07/10/19 08:00	07/12/19 13:14	1
Selenium	ND		0.50	0.17	mg/Kg		07/10/19 08:00	07/12/19 13:14	1
Thallium	ND		1.8	0.21	mg/Kg		07/10/19 08:00	07/12/19 13:14	1

Lab Sample ID: LCS 140-31502/14-A
Matrix: Solid
Analysis Batch: 31651

Client Sample ID: Lab Control Sample
Prep Type: Step 6
Prep Batch: 31502

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aluminum	100	95.4		mg/Kg		95	75 - 125
Antimony	25.0	24.8		mg/Kg		99	75 - 125
Arsenic	5.00	4.94		mg/Kg		99	75 - 125
Barium	5.00	4.58		mg/Kg		92	75 - 125
Beryllium	2.50	2.57		mg/Kg		103	75 - 125
Cobalt	5.00	4.78		mg/Kg		96	75 - 125
Iron	50.0	47.4		mg/Kg		95	75 - 125
Li	5.00	4.71		mg/Kg		94	75 - 125
Manganese	5.00	4.83		mg/Kg		97	75 - 125
Mo	25.0	24.7		mg/Kg		99	75 - 125
Selenium	7.50	7.32		mg/Kg		98	75 - 125
Thallium	20.0	19.8		mg/Kg		99	75 - 125

Lab Sample ID: LCSD 140-31502/15-A
Matrix: Solid
Analysis Batch: 31651

Client Sample ID: Lab Control Sample Dup
Prep Type: Step 6
Prep Batch: 31502

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Aluminum	100	98.8		mg/Kg		99	75 - 125	4	30
Antimony	25.0	25.5		mg/Kg		102	75 - 125	3	30
Arsenic	5.00	5.16		mg/Kg		103	75 - 125	4	30
Barium	5.00	4.77		mg/Kg		95	75 - 125	4	30
Beryllium	2.50	2.67		mg/Kg		107	75 - 125	4	30
Cobalt	5.00	4.97		mg/Kg		99	75 - 125	4	30
Iron	50.0	49.5		mg/Kg		99	75 - 125	4	30
Li	5.00	4.90		mg/Kg		98	75 - 125	4	30
Manganese	5.00	5.02		mg/Kg		100	75 - 125	4	30
Mo	25.0	25.2		mg/Kg		101	75 - 125	2	30
Selenium	7.50	7.50		mg/Kg		100	75 - 125	2	30
Thallium	20.0	20.6		mg/Kg		103	75 - 125	4	30

Method: 6010B SEP - SEP Metals (ICP) (Continued)

Lab Sample ID: 140-15490-1 DU
Matrix: Solid
Analysis Batch: 31651

Client Sample ID: AP-2019-1 (30-31)
Prep Type: Step 6
Prep Batch: 31502

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Aluminum	2300		2370		mg/Kg	☼	2	30
Antimony	ND		ND		mg/Kg	☼	NC	30
Arsenic	0.94		0.869		mg/Kg	☼	8	30
Barium	18		18.6		mg/Kg	☼	6	30
Beryllium	0.067	J	0.0691	J	mg/Kg	☼	3	30
Cobalt	0.90	J	0.940	J	mg/Kg	☼	5	30
Iron	2500		2510		mg/Kg	☼	0.4	30
Li	2.1	J	2.17	J	mg/Kg	☼	3	30
Manganese	16		16.1		mg/Kg	☼	0.6	30
Mo	ND		ND		mg/Kg	☼	NC	30
Selenium	ND		ND		mg/Kg	☼	NC	30
Thallium	ND		ND		mg/Kg	☼	NC	30

Lab Sample ID: MB 140-31615/13-A
Matrix: Solid
Analysis Batch: 31713

Client Sample ID: Method Blank
Prep Type: Step 7
Prep Batch: 31615

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		10	1.6	mg/Kg		07/12/19 09:08	07/15/19 10:58	1
Antimony	ND		3.0	0.14	mg/Kg		07/12/19 09:08	07/15/19 10:58	1
Arsenic	ND		0.50	0.13	mg/Kg		07/12/19 09:08	07/15/19 10:58	1
Barium	ND		2.5	0.12	mg/Kg		07/12/19 09:08	07/15/19 10:58	1
Beryllium	ND		0.25	0.0075	mg/Kg		07/12/19 09:08	07/15/19 10:58	1
Cobalt	ND		2.5	0.15	mg/Kg		07/12/19 09:08	07/15/19 10:58	1
Iron	ND		5.0	4.1	mg/Kg		07/12/19 09:08	07/15/19 10:58	1
Li	ND		2.5	0.15	mg/Kg		07/12/19 09:08	07/15/19 10:58	1
Manganese	ND		0.75	0.052	mg/Kg		07/12/19 09:08	07/15/19 10:58	1
Mo	ND		2.0	0.082	mg/Kg		07/12/19 09:08	07/15/19 10:58	1
Selenium	ND		0.50	0.17	mg/Kg		07/12/19 09:08	07/15/19 10:58	1
Thallium	ND		1.8	0.18	mg/Kg		07/12/19 09:08	07/15/19 10:58	1

Lab Sample ID: LCS 140-31615/14-A
Matrix: Solid
Analysis Batch: 31713

Client Sample ID: Lab Control Sample
Prep Type: Step 7
Prep Batch: 31615

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aluminum	100	96.8		mg/Kg		97	75 - 125
Antimony	25.0	25.7		mg/Kg		103	75 - 125
Arsenic	5.00	5.23		mg/Kg		105	75 - 125
Barium	5.00	4.99		mg/Kg		100	75 - 125
Beryllium	2.50	2.52		mg/Kg		101	75 - 125
Cobalt	5.00	5.20		mg/Kg		104	75 - 125
Iron	50.0	51.7		mg/Kg		103	75 - 125
Li	5.00	5.15		mg/Kg		103	75 - 125
Manganese	5.00	5.21		mg/Kg		104	75 - 125
Mo	25.0	26.5		mg/Kg		106	75 - 125
Selenium	7.50	7.52		mg/Kg		100	75 - 125
Thallium	20.0	21.2		mg/Kg		106	75 - 125

Method: 6010B SEP - SEP Metals (ICP) (Continued)

Lab Sample ID: LCSD 140-31615/15-A
Client Sample ID: Lab Control Sample Dup
Matrix: Solid
Prep Type: Step 7
Analysis Batch: 31713
Prep Batch: 31615

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Aluminum			100	98.0		mg/Kg		98	75 - 125	1	30
Antimony			25.0	25.8		mg/Kg		103	75 - 125	0	30
Arsenic			5.00	5.30		mg/Kg		106	75 - 125	1	30
Barium			5.00	4.99		mg/Kg		100	75 - 125	0	30
Beryllium			2.50	2.50		mg/Kg		100	75 - 125	1	30
Cobalt			5.00	5.21		mg/Kg		104	75 - 125	0	30
Iron			50.0	51.5		mg/Kg		103	75 - 125	0	30
Li			5.00	5.18		mg/Kg		104	75 - 125	1	30
Manganese			5.00	5.21		mg/Kg		104	75 - 125	0	30
Mo			25.0	26.7		mg/Kg		107	75 - 125	1	30
Selenium			7.50	7.55		mg/Kg		101	75 - 125	0	30
Thallium			20.0	21.3		mg/Kg		107	75 - 125	1	30

Lab Sample ID: 140-15490-1 DU
Client Sample ID: AP-2019-1 (30-31)
Matrix: Solid
Prep Type: Step 7
Analysis Batch: 31713
Prep Batch: 31615

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Antimony	ND			ND		mg/Kg	☼			NC	30
Arsenic	1.2			1.16		mg/Kg	☼			6	30
Beryllium	0.56			0.602		mg/Kg	☼			7	30
Iron	5200			5740		mg/Kg	☼			11	30
Li	9.6			10.9		mg/Kg	☼			13	30
Manganese	26			29.0		mg/Kg	☼			9	30
Mo	0.19	J		0.209	J	mg/Kg	☼			10	30
Selenium	ND			ND		mg/Kg	☼			NC	30

Lab Sample ID: 140-15490-1 DU
Client Sample ID: AP-2019-1 (30-31)
Matrix: Solid
Prep Type: Step 7
Analysis Batch: 31713
Prep Batch: 31615

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Aluminum	29000			35900		mg/Kg	☼			23	30
Barium	390			447		mg/Kg	☼			14	30

Lab Sample ID: 140-15490-1 DU
Client Sample ID: AP-2019-1 (30-31)
Matrix: Solid
Prep Type: Step 7
Analysis Batch: 31713
Prep Batch: 31615

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Cobalt	0.79	J		0.899	J	mg/Kg	☼			12	30
Thallium	0.48	J		ND		mg/Kg	☼			NC	30

Client: Golder Associates Inc.
Job ID: 140-15490-1
Project/Site: Martin Lake Ash Ponds - SEP + Totals

Method: 7470A - SEP Mercury (CVAA) - Total

Lab Sample ID: MB 140-30683/13-B
Matrix: Solid
Analysis Batch: 30868

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 30683

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hg	ND		0.10	0.040	mg/Kg		06/11/19 08:00	06/16/19 13:56	1

Lab Sample ID: LCS 140-30683/14-B
Matrix: Solid
Analysis Batch: 30868

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 30683

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Hg			2.50	2.70		mg/Kg		108	75 - 125		

Lab Sample ID: LCSD 140-30683/15-B
Matrix: Solid
Analysis Batch: 30868

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 30683

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Hg			2.50	2.71		mg/Kg		108	75 - 125	0	30

Lab Sample ID: 140-15490-1 DU
Matrix: Solid
Analysis Batch: 30868

Client Sample ID: AP-2019-1 (30-31)
Prep Type: Total/NA
Prep Batch: 30683

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Hg	0.081	J		0.102	J	mg/Kg	☼			23	30

Metals

Prep Batch: 30683

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15490-1	AP-2019-1 (30-31)	Total/NA	Solid	Total	
140-15490-2	AP-2019-2 (35-36)	Total/NA	Solid	Total	
140-15490-3	AP-2019-3 (18-19)	Total/NA	Solid	Total	
MB 140-30683/13-A	Method Blank	Total/NA	Solid	Total	
MB 140-30683/13-B	Method Blank	Total/NA	Solid	Total	
LCS 140-30683/14-A	Lab Control Sample	Total/NA	Solid	Total	
LCS 140-30683/14-B	Lab Control Sample	Total/NA	Solid	Total	
LCSD 140-30683/15-A	Lab Control Sample Dup	Total/NA	Solid	Total	
LCSD 140-30683/15-B	Lab Control Sample Dup	Total/NA	Solid	Total	
140-15490-1 DU	AP-2019-1 (30-31)	Total/NA	Solid	Total	

Prep Batch: 30859

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15490-1	AP-2019-1 (30-31)	Total/NA	Solid	7470A	30683
140-15490-2	AP-2019-2 (35-36)	Total/NA	Solid	7470A	30683
140-15490-3	AP-2019-3 (18-19)	Total/NA	Solid	7470A	30683
MB 140-30683/13-B	Method Blank	Total/NA	Solid	7470A	30683
LCS 140-30683/14-B	Lab Control Sample	Total/NA	Solid	7470A	30683
LCSD 140-30683/15-B	Lab Control Sample Dup	Total/NA	Solid	7470A	30683
140-15490-1 DU	AP-2019-1 (30-31)	Total/NA	Solid	7470A	30683

Analysis Batch: 30868

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15490-1	AP-2019-1 (30-31)	Total/NA	Solid	7470A	30859
140-15490-2	AP-2019-2 (35-36)	Total/NA	Solid	7470A	30859
140-15490-3	AP-2019-3 (18-19)	Total/NA	Solid	7470A	30859
MB 140-30683/13-B	Method Blank	Total/NA	Solid	7470A	30859
LCS 140-30683/14-B	Lab Control Sample	Total/NA	Solid	7470A	30859
LCSD 140-30683/15-B	Lab Control Sample Dup	Total/NA	Solid	7470A	30859
140-15490-1 DU	AP-2019-1 (30-31)	Total/NA	Solid	7470A	30859

Prep Batch: 31128

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15490-1	AP-2019-1 (30-31)	Total/NA	Solid	3050B	
140-15490-2	AP-2019-2 (35-36)	Total/NA	Solid	3050B	
140-15490-3	AP-2019-3 (18-19)	Total/NA	Solid	3050B	
MB 140-31128/14-A	Method Blank	Total/NA	Solid	3050B	
LCS 140-31128/15-A	Lab Control Sample	Total/NA	Solid	3050B	
140-15490-1 MS	AP-2019-1 (30-31)	Total/NA	Solid	3050B	
140-15490-1 MSD	AP-2019-1 (30-31)	Total/NA	Solid	3050B	

SEP Batch: 31148

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15490-1	AP-2019-1 (30-31)	Step 1	Solid	Exchangeable	
140-15490-2	AP-2019-2 (35-36)	Step 1	Solid	Exchangeable	
140-15490-3	AP-2019-3 (18-19)	Step 1	Solid	Exchangeable	
MB 140-31148/13-B ^4	Method Blank	Step 1	Solid	Exchangeable	
LCS 140-31148/14-B ^5	Lab Control Sample	Step 1	Solid	Exchangeable	
LCSD 140-31148/15-B ^5	Lab Control Sample Dup	Step 1	Solid	Exchangeable	
140-15490-1 DU	AP-2019-1 (30-31)	Step 1	Solid	Exchangeable	

Metals

Prep Batch: 31252

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15490-1	AP-2019-1 (30-31)	Step 1	Solid	3010A	31148
140-15490-2	AP-2019-2 (35-36)	Step 1	Solid	3010A	31148
140-15490-3	AP-2019-3 (18-19)	Step 1	Solid	3010A	31148
MB 140-31148/13-B ^4	Method Blank	Step 1	Solid	3010A	31148
LCS 140-31148/14-B ^5	Lab Control Sample	Step 1	Solid	3010A	31148
LCSD 140-31148/15-B ^5	Lab Control Sample Dup	Step 1	Solid	3010A	31148
140-15490-1 DU	AP-2019-1 (30-31)	Step 1	Solid	3010A	31148

SEP Batch: 31253

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15490-1	AP-2019-1 (30-31)	Step 2	Solid	Carbonate	
140-15490-2	AP-2019-2 (35-36)	Step 2	Solid	Carbonate	
140-15490-3	AP-2019-3 (18-19)	Step 2	Solid	Carbonate	
MB 140-31253/13-B ^3	Method Blank	Step 2	Solid	Carbonate	
LCS 140-31253/14-B ^5	Lab Control Sample	Step 2	Solid	Carbonate	
LCSD 140-31253/15-B ^5	Lab Control Sample Dup	Step 2	Solid	Carbonate	
140-15490-1 DU	AP-2019-1 (30-31)	Step 2	Solid	Carbonate	

Prep Batch: 31256

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15490-1	AP-2019-1 (30-31)	Step 2	Solid	3010A	31253
140-15490-2	AP-2019-2 (35-36)	Step 2	Solid	3010A	31253
140-15490-3	AP-2019-3 (18-19)	Step 2	Solid	3010A	31253
MB 140-31253/13-B ^3	Method Blank	Step 2	Solid	3010A	31253
LCS 140-31253/14-B ^5	Lab Control Sample	Step 2	Solid	3010A	31253
LCSD 140-31253/15-B ^5	Lab Control Sample Dup	Step 2	Solid	3010A	31253
140-15490-1 DU	AP-2019-1 (30-31)	Step 2	Solid	3010A	31253

SEP Batch: 31257

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15490-1	AP-2019-1 (30-31)	Step 3	Solid	Non-Crystalline	
140-15490-2	AP-2019-2 (35-36)	Step 3	Solid	Non-Crystalline	
140-15490-3	AP-2019-3 (18-19)	Step 3	Solid	Non-Crystalline	
MB 140-31257/13-B	Method Blank	Step 3	Solid	Non-Crystalline	
LCS 140-31257/14-B	Lab Control Sample	Step 3	Solid	Non-Crystalline	
LCSD 140-31257/15-B	Lab Control Sample Dup	Step 3	Solid	Non-Crystalline	
140-15490-1 DU	AP-2019-1 (30-31)	Step 3	Solid	Non-Crystalline	

Prep Batch: 31338

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15490-1	AP-2019-1 (30-31)	Step 3	Solid	3010A	31257
140-15490-2	AP-2019-2 (35-36)	Step 3	Solid	3010A	31257
140-15490-3	AP-2019-3 (18-19)	Step 3	Solid	3010A	31257
MB 140-31257/13-B	Method Blank	Step 3	Solid	3010A	31257
LCS 140-31257/14-B	Lab Control Sample	Step 3	Solid	3010A	31257
LCSD 140-31257/15-B	Lab Control Sample Dup	Step 3	Solid	3010A	31257
140-15490-1 DU	AP-2019-1 (30-31)	Step 3	Solid	3010A	31257

SEP Batch: 31341

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15490-1	AP-2019-1 (30-31)	Step 4	Solid	Metal Hydroxide	

Metals (Continued)

SEP Batch: 31341 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15490-2	AP-2019-2 (35-36)	Step 4	Solid	Metal Hydroxide	
140-15490-3	AP-2019-3 (18-19)	Step 4	Solid	Metal Hydroxide	
MB 140-31341/13-B	Method Blank	Step 4	Solid	Metal Hydroxide	
LCS 140-31341/14-B	Lab Control Sample	Step 4	Solid	Metal Hydroxide	
LCSD 140-31341/15-B	Lab Control Sample Dup	Step 4	Solid	Metal Hydroxide	
140-15490-1 DU	AP-2019-1 (30-31)	Step 4	Solid	Metal Hydroxide	

Prep Batch: 31360

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15490-1	AP-2019-1 (30-31)	Step 4	Solid	3010A	31341
140-15490-2	AP-2019-2 (35-36)	Step 4	Solid	3010A	31341
140-15490-3	AP-2019-3 (18-19)	Step 4	Solid	3010A	31341
MB 140-31341/13-B	Method Blank	Step 4	Solid	3010A	31341
LCS 140-31341/14-B	Lab Control Sample	Step 4	Solid	3010A	31341
LCSD 140-31341/15-B	Lab Control Sample Dup	Step 4	Solid	3010A	31341
140-15490-1 DU	AP-2019-1 (30-31)	Step 4	Solid	3010A	31341

SEP Batch: 31436

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15490-1	AP-2019-1 (30-31)	Step 5	Solid	Organic-Bound	
140-15490-2	AP-2019-2 (35-36)	Step 5	Solid	Organic-Bound	
140-15490-3	AP-2019-3 (18-19)	Step 5	Solid	Organic-Bound	
MB 140-31436/13-B ^5	Method Blank	Step 5	Solid	Organic-Bound	
LCS 140-31436/14-B ^5	Lab Control Sample	Step 5	Solid	Organic-Bound	
LCSD 140-31436/15-B ^5	Lab Control Sample Dup	Step 5	Solid	Organic-Bound	
140-15490-1 DU	AP-2019-1 (30-31)	Step 5	Solid	Organic-Bound	

Prep Batch: 31500

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15490-1	AP-2019-1 (30-31)	Step 5	Solid	3010A	31436
140-15490-2	AP-2019-2 (35-36)	Step 5	Solid	3010A	31436
140-15490-3	AP-2019-3 (18-19)	Step 5	Solid	3010A	31436
MB 140-31436/13-B ^5	Method Blank	Step 5	Solid	3010A	31436
LCS 140-31436/14-B ^5	Lab Control Sample	Step 5	Solid	3010A	31436
LCSD 140-31436/15-B ^5	Lab Control Sample Dup	Step 5	Solid	3010A	31436
140-15490-1 DU	AP-2019-1 (30-31)	Step 5	Solid	3010A	31436

SEP Batch: 31502

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15490-1	AP-2019-1 (30-31)	Step 6	Solid	Acid/Sulfide	
140-15490-2	AP-2019-2 (35-36)	Step 6	Solid	Acid/Sulfide	
140-15490-3	AP-2019-3 (18-19)	Step 6	Solid	Acid/Sulfide	
MB 140-31502/13-A	Method Blank	Step 6	Solid	Acid/Sulfide	
LCS 140-31502/14-A	Lab Control Sample	Step 6	Solid	Acid/Sulfide	
LCSD 140-31502/15-A	Lab Control Sample Dup	Step 6	Solid	Acid/Sulfide	
140-15490-1 DU	AP-2019-1 (30-31)	Step 6	Solid	Acid/Sulfide	

Analysis Batch: 31553

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15490-1	AP-2019-1 (30-31)	Total/NA	Solid	6010B	31128
140-15490-2	AP-2019-2 (35-36)	Total/NA	Solid	6010B	31128

Metals (Continued)

Analysis Batch: 31553 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15490-3	AP-2019-3 (18-19)	Total/NA	Solid	6010B	31128
MB 140-31128/14-A	Method Blank	Total/NA	Solid	6010B	31128
LCS 140-31128/15-A	Lab Control Sample	Total/NA	Solid	6010B	31128
140-15490-1 MS	AP-2019-1 (30-31)	Total/NA	Solid	6010B	31128
140-15490-1 MSD	AP-2019-1 (30-31)	Total/NA	Solid	6010B	31128

Analysis Batch: 31604

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15490-1	AP-2019-1 (30-31)	Step 1	Solid	6010B SEP	31252
140-15490-1	AP-2019-1 (30-31)	Step 2	Solid	6010B SEP	31256
140-15490-1	AP-2019-1 (30-31)	Step 3	Solid	6010B SEP	31338
140-15490-1	AP-2019-1 (30-31)	Step 4	Solid	6010B SEP	31360
140-15490-2	AP-2019-2 (35-36)	Step 1	Solid	6010B SEP	31252
140-15490-2	AP-2019-2 (35-36)	Step 2	Solid	6010B SEP	31256
140-15490-2	AP-2019-2 (35-36)	Step 3	Solid	6010B SEP	31338
140-15490-2	AP-2019-2 (35-36)	Step 4	Solid	6010B SEP	31360
140-15490-3	AP-2019-3 (18-19)	Step 1	Solid	6010B SEP	31252
140-15490-3	AP-2019-3 (18-19)	Step 2	Solid	6010B SEP	31256
140-15490-3	AP-2019-3 (18-19)	Step 3	Solid	6010B SEP	31338
140-15490-3	AP-2019-3 (18-19)	Step 4	Solid	6010B SEP	31360
MB 140-31148/13-B ^4	Method Blank	Step 1	Solid	6010B SEP	31252
MB 140-31253/13-B ^3	Method Blank	Step 2	Solid	6010B SEP	31256
MB 140-31257/13-B	Method Blank	Step 3	Solid	6010B SEP	31338
MB 140-31341/13-B	Method Blank	Step 4	Solid	6010B SEP	31360
LCS 140-31148/14-B ^5	Lab Control Sample	Step 1	Solid	6010B SEP	31252
LCS 140-31253/14-B ^5	Lab Control Sample	Step 2	Solid	6010B SEP	31256
LCS 140-31257/14-B	Lab Control Sample	Step 3	Solid	6010B SEP	31338
LCS 140-31341/14-B	Lab Control Sample	Step 4	Solid	6010B SEP	31360
LCSD 140-31148/15-B ^5	Lab Control Sample Dup	Step 1	Solid	6010B SEP	31252
LCSD 140-31253/15-B ^5	Lab Control Sample Dup	Step 2	Solid	6010B SEP	31256
LCSD 140-31257/15-B	Lab Control Sample Dup	Step 3	Solid	6010B SEP	31338
LCSD 140-31341/15-B	Lab Control Sample Dup	Step 4	Solid	6010B SEP	31360
140-15490-1 DU	AP-2019-1 (30-31)	Step 1	Solid	6010B SEP	31252
140-15490-1 DU	AP-2019-1 (30-31)	Step 2	Solid	6010B SEP	31256
140-15490-1 DU	AP-2019-1 (30-31)	Step 3	Solid	6010B SEP	31338
140-15490-1 DU	AP-2019-1 (30-31)	Step 4	Solid	6010B SEP	31360

Prep Batch: 31615

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15490-1	AP-2019-1 (30-31)	Step 7	Solid	Residual	
140-15490-2	AP-2019-2 (35-36)	Step 7	Solid	Residual	
140-15490-3	AP-2019-3 (18-19)	Step 7	Solid	Residual	
MB 140-31615/13-A	Method Blank	Step 7	Solid	Residual	
LCS 140-31615/14-A	Lab Control Sample	Step 7	Solid	Residual	
LCSD 140-31615/15-A	Lab Control Sample Dup	Step 7	Solid	Residual	
140-15490-1 DU	AP-2019-1 (30-31)	Step 7	Solid	Residual	

Analysis Batch: 31651

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15490-1	AP-2019-1 (30-31)	Step 5	Solid	6010B SEP	31500
140-15490-1	AP-2019-1 (30-31)	Step 6	Solid	6010B SEP	31502

Metals (Continued)

Analysis Batch: 31651 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15490-2	AP-2019-2 (35-36)	Step 5	Solid	6010B SEP	31500
140-15490-2	AP-2019-2 (35-36)	Step 6	Solid	6010B SEP	31502
140-15490-3	AP-2019-3 (18-19)	Step 5	Solid	6010B SEP	31500
140-15490-3	AP-2019-3 (18-19)	Step 6	Solid	6010B SEP	31502
MB 140-31436/13-B ^5	Method Blank	Step 5	Solid	6010B SEP	31500
MB 140-31502/13-A	Method Blank	Step 6	Solid	6010B SEP	31502
LCS 140-31436/14-B ^5	Lab Control Sample	Step 5	Solid	6010B SEP	31500
LCS 140-31502/14-A	Lab Control Sample	Step 6	Solid	6010B SEP	31502
LCSD 140-31436/15-B ^5	Lab Control Sample Dup	Step 5	Solid	6010B SEP	31500
LCSD 140-31502/15-A	Lab Control Sample Dup	Step 6	Solid	6010B SEP	31502
140-15490-1 DU	AP-2019-1 (30-31)	Step 5	Solid	6010B SEP	31500
140-15490-1 DU	AP-2019-1 (30-31)	Step 6	Solid	6010B SEP	31502

Analysis Batch: 31713

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15490-1	AP-2019-1 (30-31)	Step 7	Solid	6010B SEP	31615
140-15490-1	AP-2019-1 (30-31)	Step 7	Solid	6010B SEP	31615
140-15490-1	AP-2019-1 (30-31)	Step 7	Solid	6010B SEP	31615
140-15490-1	AP-2019-1 (30-31)	Total/NA	Solid	6010B	30683
140-15490-1	AP-2019-1 (30-31)	Total/NA	Solid	6010B	30683
140-15490-1	AP-2019-1 (30-31)	Total/NA	Solid	6010B	30683
140-15490-2	AP-2019-2 (35-36)	Step 7	Solid	6010B SEP	31615
140-15490-2	AP-2019-2 (35-36)	Step 7	Solid	6010B SEP	31615
140-15490-2	AP-2019-2 (35-36)	Step 7	Solid	6010B SEP	31615
140-15490-2	AP-2019-2 (35-36)	Total/NA	Solid	6010B	30683
140-15490-2	AP-2019-2 (35-36)	Total/NA	Solid	6010B	30683
140-15490-2	AP-2019-2 (35-36)	Total/NA	Solid	6010B	30683
140-15490-3	AP-2019-3 (18-19)	Step 7	Solid	6010B SEP	31615
140-15490-3	AP-2019-3 (18-19)	Step 7	Solid	6010B SEP	31615
140-15490-3	AP-2019-3 (18-19)	Step 7	Solid	6010B SEP	31615
140-15490-3	AP-2019-3 (18-19)	Total/NA	Solid	6010B	30683
140-15490-3	AP-2019-3 (18-19)	Total/NA	Solid	6010B	30683
140-15490-3	AP-2019-3 (18-19)	Total/NA	Solid	6010B	30683
MB 140-30683/13-A	Method Blank	Total/NA	Solid	6010B	30683
MB 140-31615/13-A	Method Blank	Step 7	Solid	6010B SEP	31615
LCS 140-30683/14-A	Lab Control Sample	Total/NA	Solid	6010B	30683
LCS 140-31615/14-A	Lab Control Sample	Step 7	Solid	6010B SEP	31615
LCSD 140-30683/15-A	Lab Control Sample Dup	Total/NA	Solid	6010B	30683
LCSD 140-31615/15-A	Lab Control Sample Dup	Step 7	Solid	6010B SEP	31615
140-15490-1 DU	AP-2019-1 (30-31)	Step 7	Solid	6010B SEP	31615
140-15490-1 DU	AP-2019-1 (30-31)	Step 7	Solid	6010B SEP	31615
140-15490-1 DU	AP-2019-1 (30-31)	Step 7	Solid	6010B SEP	31615
140-15490-1 DU	AP-2019-1 (30-31)	Total/NA	Solid	6010B	30683
140-15490-1 DU	AP-2019-1 (30-31)	Total/NA	Solid	6010B	30683
140-15490-1 DU	AP-2019-1 (30-31)	Total/NA	Solid	6010B	30683

Analysis Batch: 31744

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15490-1	AP-2019-1 (30-31)	Sum of Steps 1-7	Solid	6010B SEP	
140-15490-2	AP-2019-2 (35-36)	Sum of Steps 1-7	Solid	6010B SEP	
140-15490-3	AP-2019-3 (18-19)	Sum of Steps 1-7	Solid	6010B SEP	

QC Association Summary

Client: Golder Associates Inc.
Job ID: 140-15490-1
Project/Site: Martin Lake Ash Ponds - SEP + Totals

General Chemistry

Analysis Batch: 30602

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-15490-1	AP-2019-1 (30-31)	Total/NA	Solid	Moisture	
140-15490-2	AP-2019-2 (35-36)	Total/NA	Solid	Moisture	
140-15490-3	AP-2019-3 (18-19)	Total/NA	Solid	Moisture	
140-15490-1 DU	AP-2019-1 (30-31)	Total/NA	Solid	Moisture	

Client Sample ID: AP-2019-1 (30-31)
Lab Sample ID: 140-15490-1

Date Collected: 06/03/19 11:36
Matrix: Solid
Date Received: 06/05/19 09:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Sum of Steps 1-7	Analysis	6010B SEP		1			31744	07/16/19 17:31	CLJ	TAL KNX
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Moisture		1			30602	06/06/19 14:52	BKD	TAL KNX
	Instrument ID: W3									

Client Sample ID: AP-2019-1 (30-31)
Lab Sample ID: 140-15490-1

Date Collected: 06/03/19 11:36
Matrix: Solid
Date Received: 06/05/19 09:20
Percent Solids: 76.0

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			0.536 g	50 mL	31128	06/26/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			31553	07/10/19 12:59	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	30683	06/11/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			31713	07/15/19 14:24	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	30683	06/11/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		10			31713	07/15/19 15:45	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	30683	06/11/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		2			31713	07/15/19 18:28	KNC	TAL KNX
	Instrument ID: DUO									
Step 1	SEP	Exchangeable			5.000 g	25 mL	31148	06/26/19 09:47	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	31252	06/29/19 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		4			31604	07/11/19 12:49	KNC	TAL KNX
	Instrument ID: DUO									
Step 2	SEP	Carbonate			5.000 g	25 mL	31253	06/29/19 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	31256	06/30/19 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		3			31604	07/11/19 14:21	KNC	TAL KNX
	Instrument ID: DUO									
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	31257	06/30/19 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	31338	07/02/19 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			31604	07/11/19 16:06	KNC	TAL KNX
	Instrument ID: DUO									
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	31341	07/02/19 09:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	31360	07/03/19 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			31604	07/11/19 17:49	KNC	TAL KNX
	Instrument ID: DUO									
Step 5	SEP	Organic-Bound			5.000 g	75 mL	31436	07/08/19 07:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	31500	07/10/19 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			31651	07/12/19 11:54	KNC	TAL KNX
	Instrument ID: DUO									
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	31502	07/10/19 08:00	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			31651	07/12/19 13:29	KNC	TAL KNX
	Instrument ID: DUO									

Lab Chronicle

Client: Golder Associates Inc.
Job ID: 140-15490-1
Project/Site: Martin Lake Ash Ponds - SEP + Totals

Client Sample ID: AP-2019-1 (30-31)
Lab Sample ID: 140-15490-1
Date Collected: 06/03/19 11:36
Matrix: Solid
Date Received: 06/05/19 09:20
Percent Solids: 76.0

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 7	Prep	Residual			1.000 g	50 mL	31615	07/12/19 09:08	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			31713	07/15/19 11:39	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	31615	07/12/19 09:08	KNC	TAL KNX
Step 7	Analysis	6010B SEP		10			31713	07/15/19 13:08	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	31615	07/12/19 09:08	KNC	TAL KNX
Step 7	Analysis	6010B SEP		2			31713	07/15/19 17:11	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	30683	06/11/19 08:00	KNC	TAL KNX
Total/NA	Prep	7470A			5.0 mL	50.0 mL	30859	06/16/19 08:00	DKW	TAL KNX
Total/NA	Analysis	7470A		1			30868	06/16/19 14:04	DKW	TAL KNX
	Instrument ID: HG									

Client Sample ID: AP-2019-2 (35-36)
Lab Sample ID: 140-15490-2
Date Collected: 06/03/19 13:20
Matrix: Solid
Date Received: 06/05/19 09:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Sum of Steps 1-7	Analysis	6010B SEP		1			31744	07/16/19 17:31	CLJ	TAL KNX
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Moisture		1			30602	06/06/19 14:52	BKD	TAL KNX
	Instrument ID: W3									

Client Sample ID: AP-2019-2 (35-36)
Lab Sample ID: 140-15490-2
Date Collected: 06/03/19 13:20
Matrix: Solid
Date Received: 06/05/19 09:20
Percent Solids: 78.5

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			0.527 g	50 mL	31128	06/26/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			31553	07/10/19 13:13	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	30683	06/11/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			31713	07/15/19 14:36	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	30683	06/11/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		10			31713	07/15/19 16:10	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	30683	06/11/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		5			31713	07/15/19 18:38	KNC	TAL KNX
	Instrument ID: DUO									
Step 1	SEP	Exchangeable			5.000 g	25 mL	31148	06/26/19 09:47	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	31252	06/29/19 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		4			31604	07/11/19 12:59	KNC	TAL KNX
	Instrument ID: DUO									

Lab Chronicle

Client: Golder Associates Inc.
Project/Site: Martin Lake Ash Ponds - SEP + Totals

Job ID: 140-15490-1

Client Sample ID: AP-2019-2 (35-36)

Date Collected: 06/03/19 13:20
Date Received: 06/05/19 09:20

Lab Sample ID: 140-15490-2

Matrix: Solid
Percent Solids: 78.5

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 2	SEP	Carbonate			5.000 g	25 mL	31253	06/29/19 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	31256	06/30/19 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		3			31604	07/11/19 14:42	KNC	TAL KNX
	Instrument ID:	DUO								
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	31257	06/30/19 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	31338	07/02/19 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			31604	07/11/19 16:16	KNC	TAL KNX
	Instrument ID:	DUO								
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	31341	07/02/19 09:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	31360	07/03/19 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			31604	07/11/19 17:59	KNC	TAL KNX
	Instrument ID:	DUO								
Step 5	SEP	Organic-Bound			5.000 g	75 mL	31436	07/08/19 07:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	31500	07/10/19 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			31651	07/12/19 12:05	KNC	TAL KNX
	Instrument ID:	DUO								
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	31502	07/10/19 08:00	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			31651	07/12/19 13:49	KNC	TAL KNX
	Instrument ID:	DUO								
Step 7	Prep	Residual			1.000 g	50 mL	31615	07/12/19 09:08	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			31713	07/15/19 12:05	KNC	TAL KNX
	Instrument ID:	DUO								
Step 7	Prep	Residual			1.000 g	50 mL	31615	07/12/19 09:08	KNC	TAL KNX
Step 7	Analysis	6010B SEP		10			31713	07/15/19 13:19	KNC	TAL KNX
	Instrument ID:	DUO								
Step 7	Prep	Residual			1.000 g	50 mL	31615	07/12/19 09:08	KNC	TAL KNX
Step 7	Analysis	6010B SEP		2			31713	07/15/19 17:21	KNC	TAL KNX
	Instrument ID:	DUO								
Total/NA	Prep	Total			1.000 g	50 mL	30683	06/11/19 08:00	KNC	TAL KNX
Total/NA	Prep	7470A			5.0 mL	50.0 mL	30859	06/16/19 08:00	DKW	TAL KNX
Total/NA	Analysis	7470A		1			30868	06/16/19 14:09	DKW	TAL KNX
	Instrument ID:	HG								

Client Sample ID: AP-2019-3 (18-19)

Date Collected: 06/03/19 15:20
Date Received: 06/05/19 09:20

Lab Sample ID: 140-15490-3

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Sum of Steps 1-7	Analysis	6010B SEP		1			31744	07/16/19 17:31	CLJ	TAL KNX
	Instrument ID:	NOEQUIP								
Total/NA	Analysis	Moisture		1			30602	06/06/19 14:52	BKD	TAL KNX
	Instrument ID:	W3								

Client: Golder Associates Inc.
Job ID: 140-15490-1
Project/Site: Martin Lake Ash Ponds - SEP + Totals

Client Sample ID: AP-2019-3 (18-19)
Lab Sample ID: 140-15490-3
Date Collected: 06/03/19 15:20
Matrix: Solid
Date Received: 06/05/19 09:20
Percent Solids: 80.0

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			0.527 g	50 mL	31128	06/26/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			31553	07/10/19 13:18	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	30683	06/11/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			31713	07/15/19 14:41	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	30683	06/11/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		10			31713	07/15/19 16:15	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	30683	06/11/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		5			31713	07/15/19 18:43	KNC	TAL KNX
	Instrument ID: DUO									
Step 1	SEP	Exchangeable			5.000 g	25 mL	31148	06/26/19 09:47	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	31252	06/29/19 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		4			31604	07/11/19 13:04	KNC	TAL KNX
	Instrument ID: DUO									
Step 2	SEP	Carbonate			5.000 g	25 mL	31253	06/29/19 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	31256	06/30/19 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		3			31604	07/11/19 14:47	KNC	TAL KNX
	Instrument ID: DUO									
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	31257	06/30/19 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	31338	07/02/19 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			31604	07/11/19 16:21	KNC	TAL KNX
	Instrument ID: DUO									
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	31341	07/02/19 09:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	31360	07/03/19 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			31604	07/11/19 18:04	KNC	TAL KNX
	Instrument ID: DUO									
Step 5	SEP	Organic-Bound			5.000 g	75 mL	31436	07/08/19 07:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	31500	07/10/19 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			31651	07/12/19 12:10	KNC	TAL KNX
	Instrument ID: DUO									
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	31502	07/10/19 08:00	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			31651	07/12/19 13:55	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	31615	07/12/19 09:08	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			31713	07/15/19 12:11	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	31615	07/12/19 09:08	KNC	TAL KNX
Step 7	Analysis	6010B SEP		10			31713	07/15/19 13:24	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	31615	07/12/19 09:08	KNC	TAL KNX
Step 7	Analysis	6010B SEP		2			31713	07/15/19 17:27	KNC	TAL KNX
	Instrument ID: DUO									

Lab Chronicle

Client: Golder Associates Inc.
Job ID: 140-15490-1
Project/Site: Martin Lake Ash Ponds - SEP + Totals

Client Sample ID: AP-2019-3 (18-19)
Lab Sample ID: 140-15490-3
Date Collected: 06/03/19 15:20
Matrix: Solid
Date Received: 06/05/19 09:20
Percent Solids: 80.0

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	30683	06/11/19 08:00	KNC	TAL KNX
Total/NA	Prep	7470A			5.0 mL	50.0 mL	30859	06/16/19 08:00	DKW	TAL KNX
Total/NA	Analysis	7470A		1			30868	06/16/19 14:17	DKW	TAL KNX
	Instrument ID: HG									

Client Sample ID: Method Blank
Lab Sample ID: MB 140-30683/13-A
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	30683	06/11/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			31713	07/15/19 11:13	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Method Blank
Lab Sample ID: MB 140-30683/13-B
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	30683	06/11/19 08:00	KNC	TAL KNX
Total/NA	Prep	7470A			5.0 mL	50.0 mL	30859	06/16/19 08:00	DKW	TAL KNX
Total/NA	Analysis	7470A		1			30868	06/16/19 13:56	DKW	TAL KNX
	Instrument ID: HG									

Client Sample ID: Method Blank
Lab Sample ID: MB 140-31128/14-A
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			0.500 g	50 mL	31128	06/26/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			31553	07/10/19 11:42	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Method Blank
Lab Sample ID: MB 140-31148/13-B ^4
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 1	SEP	Exchangeable			5.000 g	25 mL	31148	06/26/19 09:47	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	31252	06/29/19 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		4			31604	07/11/19 12:33	KNC	TAL KNX
	Instrument ID: DUO									

Lab Chronicle

Client: Golder Associates Inc.
Job ID: 140-15490-1
Project/Site: Martin Lake Ash Ponds - SEP + Totals

Client Sample ID: Method Blank
Lab Sample ID: MB 140-31253/13-B ^3
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 2	SEP	Carbonate			5.000 g	25 mL	31253	06/29/19 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	31256	06/30/19 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		3			31604	07/11/19 14:06	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Method Blank
Lab Sample ID: MB 140-31257/13-B
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	31257	06/30/19 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	31338	07/02/19 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			31604	07/11/19 15:50	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Method Blank
Lab Sample ID: MB 140-31341/13-B
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	31341	07/02/19 09:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	31360	07/03/19 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			31604	07/11/19 17:24	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Method Blank
Lab Sample ID: MB 140-31436/13-B ^5
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 5	SEP	Organic-Bound			5.000 g	75 mL	31436	07/08/19 07:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	31500	07/10/19 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			31651	07/12/19 11:39	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Method Blank
Lab Sample ID: MB 140-31502/13-A
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	31502	07/10/19 08:00	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			31651	07/12/19 13:14	KNC	TAL KNX
	Instrument ID: DUO									

Lab Chronicle

Client: Golder Associates Inc.
Job ID: 140-15490-1
Project/Site: Martin Lake Ash Ponds - SEP + Totals

Client Sample ID: Method Blank
Lab Sample ID: MB 140-31615/13-A
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 7	Prep	Residual			1.000 g	50 mL	31615	07/12/19 09:08	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			31713	07/15/19 10:58	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-30683/14-A
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	30683	06/11/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			31713	07/15/19 11:19	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-30683/14-B
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	30683	06/11/19 08:00	KNC	TAL KNX
Total/NA	Prep	7470A			5.0 mL	50.0 mL	30859	06/16/19 08:00	DKW	TAL KNX
Total/NA	Analysis	7470A		1			30868	06/16/19 13:59	DKW	TAL KNX
	Instrument ID: HG									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-31128/15-A
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			0.500 g	50 mL	31128	06/26/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			31553	07/10/19 11:47	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-31148/14-B ^5
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 1	SEP	Exchangeable			5.000 g	25 mL	31148	06/26/19 09:47	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	31252	06/29/19 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		5			31604	07/11/19 12:38	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-31253/14-B ^5
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 2	SEP	Carbonate			5.000 g	25 mL	31253	06/29/19 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	31256	06/30/19 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		5			31604	07/11/19 14:11	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-31257/14-B
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	31257	06/30/19 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	31338	07/02/19 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			31604	07/11/19 15:56	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-31341/14-B
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	31341	07/02/19 09:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	31360	07/03/19 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			31604	07/11/19 17:29	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-31436/14-B ^5
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 5	SEP	Organic-Bound			5.000 g	75 mL	31436	07/08/19 07:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	31500	07/10/19 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			31651	07/12/19 11:44	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-31502/14-A
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	31502	07/10/19 08:00	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			31651	07/12/19 13:19	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-31615/14-A
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 7	Prep	Residual			1.000 g	50 mL	31615	07/12/19 09:08	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			31713	07/15/19 11:03	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample Dup
Lab Sample ID: LCSD 140-30683/15-A
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	30683	06/11/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			31713	07/15/19 11:24	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample Dup
Lab Sample ID: LCSD 140-30683/15-B
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	30683	06/11/19 08:00	KNC	TAL KNX
Total/NA	Prep	7470A			5.0 mL	50.0 mL	30859	06/16/19 08:00	DKW	TAL KNX
Total/NA	Analysis	7470A		1			30868	06/16/19 14:02	DKW	TAL KNX
	Instrument ID: HG									

Client Sample ID: Lab Control Sample Dup
Lab Sample ID: LCSD 140-31148/15-B ^5
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 1	SEP	Exchangeable			5.000 g	25 mL	31148	06/26/19 09:47	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	31252	06/29/19 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		5			31604	07/11/19 12:43	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample Dup
Lab Sample ID: LCSD 140-31253/15-B ^5
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 2	SEP	Carbonate			5.000 g	25 mL	31253	06/29/19 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	31256	06/30/19 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		5			31604	07/11/19 14:16	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample Dup
Lab Sample ID: LCSD 140-31257/15-B
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	31257	06/30/19 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	31338	07/02/19 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			31604	07/11/19 16:01	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample Dup
Lab Sample ID: LCSD 140-31341/15-B
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	31341	07/02/19 09:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	31360	07/03/19 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			31604	07/11/19 17:44	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample Dup
Lab Sample ID: LCSD 140-31436/15-B ^5
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 5	SEP	Organic-Bound			5.000 g	75 mL	31436	07/08/19 07:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	31500	07/10/19 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			31651	07/12/19 11:49	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample Dup
Lab Sample ID: LCSD 140-31502/15-A
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	31502	07/10/19 08:00	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			31651	07/12/19 13:24	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample Dup
Lab Sample ID: LCSD 140-31615/15-A
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 7	Prep	Residual			1.000 g	50 mL	31615	07/12/19 09:08	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			31713	07/15/19 11:08	KNC	TAL KNX
	Instrument ID: DUO									

Lab Chronicle

Client: Golder Associates Inc.
Job ID: 140-15490-1
Project/Site: Martin Lake Ash Ponds - SEP + Totals

Client Sample ID: AP-2019-1 (30-31)
Date Collected: 06/03/19 11:36
Date Received: 06/05/19 09:20

Lab Sample ID: 140-15490-1 MS
Matrix: Solid
Percent Solids: 76.0

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			0.530 g	50 mL	31128	06/26/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			31553	07/10/19 13:04	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: AP-2019-1 (30-31)
Date Collected: 06/03/19 11:36
Date Received: 06/05/19 09:20

Lab Sample ID: 140-15490-1 MSD
Matrix: Solid
Percent Solids: 76.0

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			0.539 g	50 mL	31128	06/26/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			31553	07/10/19 13:08	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: AP-2019-1 (30-31)
Date Collected: 06/03/19 11:36
Date Received: 06/05/19 09:20

Lab Sample ID: 140-15490-1 DU
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1			30602	06/06/19 14:52	BKD	TAL KNX
	Instrument ID: W3									

Client Sample ID: AP-2019-1 (30-31)
Date Collected: 06/03/19 11:36
Date Received: 06/05/19 09:20

Lab Sample ID: 140-15490-1 DU
Matrix: Solid
Percent Solids: 76.0

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	30683	06/11/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			31713	07/15/19 14:30	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	30683	06/11/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		10			31713	07/15/19 15:50	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	30683	06/11/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		2			31713	07/15/19 18:33	KNC	TAL KNX
	Instrument ID: DUO									
Step 1	SEP	Exchangeable			5.000 g	25 mL	31148	06/26/19 09:47	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	31252	06/29/19 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		4			31604	07/11/19 12:54	KNC	TAL KNX
	Instrument ID: DUO									
Step 2	SEP	Carbonate			5.000 g	25 mL	31253	06/29/19 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	31256	06/30/19 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		3			31604	07/11/19 14:37	KNC	TAL KNX
	Instrument ID: DUO									

Lab Chronicle

Client: Golder Associates Inc.
Job ID: 140-15490-1
Project/Site: Martin Lake Ash Ponds - SEP + Totals

Client Sample ID: AP-2019-1 (30-31)
Date Collected: 06/03/19 11:36
Date Received: 06/05/19 09:20

Lab Sample ID: 140-15490-1 DU
Matrix: Solid
Percent Solids: 76.0

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	31257	06/30/19 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	31338	07/02/19 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			31604	07/11/19 16:11	KNC	TAL KNX
	Instrument ID: DUO									
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	31341	07/02/19 09:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	31360	07/03/19 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			31604	07/11/19 17:54	KNC	TAL KNX
	Instrument ID: DUO									
Step 5	SEP	Organic-Bound			5.000 g	75 mL	31436	07/08/19 07:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	31500	07/10/19 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			31651	07/12/19 12:00	KNC	TAL KNX
	Instrument ID: DUO									
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	31502	07/10/19 08:00	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			31651	07/12/19 13:44	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	31615	07/12/19 09:08	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			31713	07/15/19 12:00	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	31615	07/12/19 09:08	KNC	TAL KNX
Step 7	Analysis	6010B SEP		10			31713	07/15/19 13:14	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	31615	07/12/19 09:08	KNC	TAL KNX
Step 7	Analysis	6010B SEP		2			31713	07/15/19 17:16	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	30683	06/11/19 08:00	KNC	TAL KNX
Total/NA	Prep	7470A			5.0 mL	50.0 mL	30859	06/16/19 08:00	DKW	TAL KNX
Total/NA	Analysis	7470A		1			30868	06/16/19 14:06	DKW	TAL KNX
	Instrument ID: HG									

Laboratory References:
TAL KNX = Eurofins TestAmerica, Knoxville, 5815 Middlebrook Pike, Knoxville, TN 37921, TEL (865)291-3000

Method Summary

Client: Golder Associates Inc.
Job ID: 140-15490-1
Project/Site: Martin Lake Ash Ponds - SEP + Totals

Method	Method Description	Protocol	Laboratory
6010B	Metals (ICP)	SW846	TAL KNX
6010B	SEP Metals (ICP) - Total	SW846	TAL KNX
6010B SEP	SEP Metals (ICP)	SW846	TAL KNX
7470A	SEP Mercury (CVAA) - Total	SW846	TAL KNX
Moisture	Percent Moisture	EPA	TAL KNX
3010A	Preparation, Total Metals	SW846	TAL KNX
3050B	Preparation, Metals	SW846	TAL KNX
7470A	Preparation, Mercury	SW846	TAL KNX
Acid/Sulfide	Sequential Extraction Procedure, Acid/Sulfide Fraction	TAL-KNOX	TAL KNX
Carbonate	Sequential Extraction Procedure, Carbonate Fraction	TAL-KNOX	TAL KNX
Exchangeable	Sequential Extraction Procedure, Exchangeable Fraction	TAL-KNOX	TAL KNX
Metal Hydroxide	Sequential Extraction Procedure, Metal Hydroxide Fraction	TAL-KNOX	TAL KNX
Non-Crystalline	Sequential Extraction Procedure, Non-crystalline Materials	TAL-KNOX	TAL KNX
Organic-Bound	Sequential Extraction Procedure, Organic Bound Fraction	TAL-KNOX	TAL KNX
Residual	Sequential Extraction Procedure, Residual Fraction	TAL-KNOX	TAL KNX
Total	Preparation, Total Material	TAL-KNOX	TAL KNX

Protocol References:

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

TAL-KNOX = TestAmerica Laboratories, Knoxville, Facility Standard Operating Procedure.

Laboratory References:

TAL KNX = Eurofins TestAmerica, Knoxville, 5815 Middlebrook Pike, Knoxville, TN 37921, TEL (865)291-3000

Sample Summary

Client: Golder Associates Inc.
Job ID: 140-15490-1
Project/Site: Martin Lake Ash Ponds - SEP + Totals

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
140-15490-1	AP-2019-1 (30-31)	Solid	06/03/19 11:36	06/05/19 09:20	
140-15490-2	AP-2019-2 (35-36)	Solid	06/03/19 13:20	06/05/19 09:20	
140-15490-3	AP-2019-3 (18-19)	Solid	06/03/19 15:20	06/05/19 09:20	

APPENDIX F-Revision 2 February 27, 2024

Eurofins TestAmerica, Knoxville
5815 Middlebrook Pike
Knoxville, TN 37921
Phone (865) 291-3000 Fax (865) 584-4315

Chain of Custody Record

eurofins | Environment Testing TestAmerica

Client Information	Sampler: Kelsey Worley	Lab PM: Walker Wasmund, Terry	Carrier Tracking No(s):	COC No: 140-6683-2229.1
Client Contact: Will Vienne	Phone: 281-750-2734	E-Mail: terry.wasmund@testamericainc.com		Page: Page 1 of 1
Company: Golder Associates Inc.				Job #:
Address: 2201 Double Creek Dr Suite 4004	Due Date Requested:			
City: Round Rock	TAT Requested (days): Standard			
State, Zip: TX, 78664				
Phone: 512-671-3434(Tel)	PO #: 19122434-C			
Email: William_Vienne@golder.com	WO #: 1922434-C			
Project Name: Martin Lake Ash Ponds - SEP + Totals	Project #: 14005268			
Site:	SSOW#:			

Analysis Requested

140-15490 Chain of Custody

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	6010B_SEP - 7-Step SEP (12 Metals)	6010B - Total B, Cr, Pb	Total Number of containers	Special Instructions/Note:
			Preservation Code:				N	I		
AP-2019-1 (30-31)	06/03/19	1136	C	S			X	X		On Ice
AP-2019-2 (35-36)	06/03/19	1320	C	S			X	X		" "
AP-2019-3 (18-19)	06/03/19	1520	C	S			X	X		" "

BT: 1.2°C CT: 1.2°C, 1 cooler
Fedex ✓, Custody seal intact
trK# 7876 7328 2042
KW 6/5/19

Possible Hazard Identification
☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Kelsey Worley	06/04/19 1245	Golder	[signature]	6/5/19 0920	TA-Knox

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.: | Cooler Temperature(s) °C and Other Remarks:

Ver. 01/16/2019

Loc: 140
15490

TESTAMERICA KNOXVILLE SAMPLE RECEIPT/CONDITION UPON RECEIPT ANOMALY CHECKLIST

Log In Number:

Review Items	Yes	No	NA	If No, what was the problem?
1. Are the shipping containers intact?	/			☐ **Containers, Broken**
2. Were ambient air containers received intact?			/	☐ Checked in lab
3. The coolers/containers custody seal if present, is it intact?	/			☐ Yes ☐ NA
4. Is the cooler temperature within limits? (> freezing temp. of water to 6 °C, VOST: 10°C) Thermometer ID : 5C6 Correction factor: +0.0	/			☐ **Cooler Out of Temp, Client Contacted, Proceed/Cancel** ☐ **Cooler Out of Temp, Same Day Receipt**
5. Were all of the sample containers received intact?	/			☐ **Containers, Broken**
6. Were samples received in appropriate containers?	/			☐ **Containers, Improper; Client Contacted; Proceed/Cancel**
7. Do sample container labels match COC? (IDs, Dates, Times)	/			☐ **COC & Samples Do Not Match** ☐ **COC Incorrect/Incomplete** ☐ **COC Not Received**
8. Were all of the samples listed on the COC received?	/			☐ **Sample Received, Not on COC** ☐ **Sample on COC, Not Received**
9. Is the date/time of sample collection noted?	/			☐ **COC; No Date/Time; Client Contacted**
10. Was the sampler identified on the COC?	/			☐ **Sampler Not Listed on COC**
11. Is the client and project name/# identified?	/			☐ **COC Incorrect/Incomplete**
12. Are tests/parameters listed for each sample?	/			☐ **COC No tests on COC**
13. Is the matrix of the samples noted?	/			☐ **COC Incorrect/Incomplete**
14. Was COC relinquished? (Signed/Dated/Timed)	/			☐ **COC Incorrect/Incomplete**
15. Were samples received within holding time?	/			☐ **Holding Time - Receipt**
16. Were samples received with correct chemical preservative (excluding Encore)?			/	☐ **pH Adjusted, pH Included (See box 16A)** ☐ **Incorrect Preservative**
17. Were VOA samples received without headspace?			/	☐ **Headspace (VOA only)**
18. Did you check for residual chlorine, if necessary? (e.g. 1613B, 1668) Chlorine test strip lot number:			/	☐ **Residual Chlorine**
19. For 1613B water samples is pH<9?			/	☐ If no, notify lab to adjust
20. For rad samples was sample activity info. Provided?			/	☐ Project missing info

Comments/Actions Taken

Labeling Verified by: **Date:**

pH test strip lot number:

Box 16A: pH Preservation	Box 18A: Residual Chlorine
Preservative:	
Lot Number:	
Exp Date:	
Analyst:	
Date:	
Time:	

Project #: 1400526B PM Instructions:

Sample Receiving Associate: Date: 6/5/19

QA026R31.doc, 112618

APPENDIX C

GROUNDWATER SAMPLING RECORDS

RECORD OF WATER LEVEL READINGS

GOLDER

Project Name: LUMINANT - MLSES - PONDS Location: TATUM, TX Project No.: 19122262-C

Borehole No.	Date	Time	Measuring Device / Serial No.	Measurement Point (M.P)	Water Level Below M.P.	Correction To Survey Mark	Survey Mark Elevation	Water Level Elevation	By	Comments
H-31	5-14-19	0704	SOLINST	TOC	22.73				JTB	
H-32	5-14-19	0759	SOLINST	TOC	23.16				JTB	
H-27	5-14-19	0903	SOLINST	TOC	22.02				JTB	
H-29	5-14-19	1050	SOLINST	TOC	22.61				JTB	
H-28	5-14-19	1155	SOLINST	TOC	7.12				JTB	
H-26	5-14-19	1350	SOLINST	TOC	13.21				JTB	
H-33	5-14-19	1449	SOLINST	TOC	13.42				JTB	

Sheet 1 of 1

GROUNDWATER SAMPLING RECORD

PAGE 1 of 1

Project Number: 19122262-C Project Name: LUMINANT- MLSES Date: 5-14-19

Sample Number: H-26

Sampling Location (well ID, etc.): H-26

Sampled by: JTB

Measuring Point (MP) of Well: TOC/PVC

Screened Interval (ft. BGL): —

Filter Pack Interval (ft. BGL): —

Starting Water Level (ft. BMP): 13.21

Casing Stickup (ft.): -

Starting Water Level (ft. BGL): 13.21

Total Depth (ft. BGL): -

Casing Diameter (in ID): 2.0

Casing Volume (gal.): —

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: alconox & DI rinse

Purging: peristaltic / bladder Sampling: Same

Disposal of Discharged Water: on site

INSTRUMENTS (Indicate make, model, I.d.)

Water Level: KECK Thermometer: HORIBA

pH Meter: HORIBA Field Calibration: 7-4

Conductivity Meter: HORIBA Field Calibration: 1413

Filter / Filter Size: Other:

SAMPLING MEASUREMENTS

1352 Time	Cum. Vol. (gal. or L)	Purge Rate (gal. or L /m)	Temp. (oC)	pH	Spec. Cond. (mmhos/cm)	D.O	Redox (mV)	Turbidity & Color	Water Depth (ft BMP)
1401	—	.2	23.1	6.81	1730	0.86	-29	8.1	13.44
1406		1	22.7	6.82	1760	0.63	-31	7.1	13.46
1413		↓	22.8	6.83	1760	0.64	-31	7.7	13.47

Water Level (ft. BMP) at End of Purge: 13.47 Sample Intake Depth (ft. BMP):

SAMPLE INVENTORY

Bottles Collected				Filtration		Remarks
Time	Volume	Composition (G, P)	No.	(Y / N)	Preservation	(quality control sample, other)
1425	250mL	P	1	N	—	GEN CHEM
1425	500mL	P	1	N	HNO_3	METALS

Comments:

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GROUNDWATER SAMPLING RECORD

PAGE 1 of 1

Project Number: 191222G2-C Project Name: LUMINANT - MCSES Date: 5-14-19

Sample Number: A-27

Sampling Location (well ID, etc.): A-27

Sampled by: JTB

Measuring Point (MP) of Well: TOC/PVC

Screened Interval (ft. BGL): —

Filter Pack Interval (ft. BGL): —

Starting Water Level (ft. BMP): 22.02

Casing Stickup (ft.): —

Starting Water Level (ft. BGL): 22.02

Total Depth (ft. BGL): —

Casing Diameter (in ID): 2.0

Casing Volume (gal.): —

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: alconox & DI rinse

Purging: peristaltic / bladder Sampling: Same

Disposal of Discharged Water: on site

INSTRUMENTS (Indicate make, model, I.d.)

Water Level: KECK Thermometer: HORIBA

pH Meter: HORIBA Field Calibration: 7-4

Conductivity Meter: HORIBA Field Calibration: 1413

Filter / Filter Size: Other:

SAMPLING MEASUREMENTS

0906 Time	Cum. Vol. (gal. or L)	Purge Rate (gal. or L /m)	Temp. (oC)	pH	Spec. Cond. (mmhos/cm)	D.O	Redox (mV)	Turbidity & Color	Water Depth (ft BMP)
0916	—	.2	22.1	6.74	1610	0.49	-79	7.7	22.23
0921		↓	22.4	6.77	1640	0.51	-81	7.9	22.24
0927		↓	22.4	6.78	1630	0.52	-82	7.9	22.23

Water Level (ft. BMP) at End of Purge: 22.23 Sample Intake Depth (ft. BMP):

SAMPLE INVENTORY

Bottles Collected				Filtration		Remarks
Time	Volume	Composition (G, P)	No.	(Y / N)	Preservation	(quality control sample, other)
0940	250mL	P	1	N	—	GEN CHEM
0940	500mL	P	1	N	HNO_3	METALS

Comments:

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GROUNDWATER SAMPLING RECORD

PAGE 1 of 1

Project Number: 191222G2-C Project Name: LUMINANT- MCSES Date: 5-14-19

Sample Number: H-28

Sampling Location (well ID, etc.): H-28

Sampled by: JTB

Measuring Point (MP) of Well: TOC/PVC

Screened Interval (ft. BGL): —

Filter Pack Interval (ft. BGL): —

Starting Water Level (ft. BMP): 7.12

Casing Stickup (ft.): —

Starting Water Level (ft. BGL): 7.12

Total Depth (ft. BGL): —

Casing Diameter (In ID): 2.0

Casing Volume (gal.): —

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: alconox & DI rinse

Purging: peristaltic / bladder Sampling: Same

Disposal of Discharged Water: on site

INSTRUMENTS (Indicate make, model, I.d.)

Water Level: KECK Thermometer: HORIBA

pH Meter: HORIBA Field Calibration: 7-4

Conductivity Meter: HORIBA Field Calibration: 1413

Filter / Filter Size: Other:

SAMPLING MEASUREMENTS

Time (1157)	Cum. Vol (gal. or L)	Purge Rate (gal. or L /m)	Temp (oC)	pH	Spec. Cond. (mmhos/cm)	D.O	Redox (mV)	Turbidity & Color	Water Depth (ft BMP)
1201	—	.2	22.6	6.29	1580	0.39	-34	3.8	7.29
1211		1	22.9	6.31	1520	0.31	-39	4.6	7.31
1218		↓	22.9	6.32	1510	0.32	-39	4.8	7.32

Water Level (ft. BMP) at End of Purge: 7.32 Sample Intake Depth (ft. BMP):

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
1230	250mL	P	1	N	—	GEN CHEM
1230	500mL	P	1	N	HNO_3	METALS

Comments:

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GROUNDWATER SAMPLING RECORD

PAGE 1 of 1

Project Number: 19122262-C Project Name: LUMINANT - MCSES Date: 5-14-19

Sample Number: H-29

Sampling Location (well ID, etc.): H-29

Sampled by: JTB

Measuring Point (MP) of Well: TOC/PVC

Screened Interval (ft. BGL): —

Filter Pack Interval (ft. BGL): —

Starting Water Level (ft. BMP): 22.61

Casing Stickup (ft.): —

Starting Water Level (ft. BGL): 22.61

Total Depth (ft. BGL): —

Casing Diameter (in ID): 2.0

Casing Volume (gal.): —

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: alconox & DI rinse

Purging: peristaltic / bladder Sampling: Same

Disposal of Discharged Water: on site

INSTRUMENTS (Indicate make, model, I.d.)

Water Level: KECK Thermometer: HORIBA

pH Meter: HORIBA Field Calibration: 7-4

Conductivity Meter: HORIBA Field Calibration: 1413

Filter / Filter Size: Other:

SAMPLING MEASUREMENTS

Time (1053)	Cum. Vol. (gal. or L)	Purge Rate (gal. or L /m)	Temp. (oC)	pH	Spec. Cond. (mmhos/cm)	D.O	Redox (mV)	Turbidity & Color	Water Depth (ft BMP)
1102	—	.2	21.9	6.46	1710	0.71	-86	7.2	22.88
1107		1	22.6	6.51	1730	0.62	-87	6.2	22.89
1114		↓	22.7	6.52	1730	0.63	-87	6.1	22.89

Water Level (ft. BMP) at End of Purge: 22.89 Sample Intake Depth (ft. BMP):

SAMPLE INVENTORY

Bottles Collected				Filtration		Remarks
Time	Volume	Composition (G, P)	No.	(Y / N)	Preservation	(quality control sample, other)
1125	250mL	P	1	N	—	GEN CHEM
1125	500mL	P	1	N	HNO_3	METALS

Comments:

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GROUNDWATER SAMPLING RECORD

PAGE 1 of 1

Project Number: 1912262-C Project Name: LUMINANT - MLSES Date: 5-14-19

Sample Number:	H-31	Starting Water Level (ft. BMP):	22.73
Sampling Location (well ID, etc.):	H-31	Casing Stickup (ft.):	-
Sampled by:	JJB	Starting Water Level (ft. BGL):	22.73
Measuring Point (MP) of Well:	TOC/PVC	Total Depth (ft. BGL):	-
Screened Interval (ft. BGL):	-	Casing Diameter (in ID):	2.0
Filter Pack Interval (ft. BGL):	-	Casing Volume (gal.):	-

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: alconox & DI rinse

Purging: peristaltic / bladder Sampling: same

Disposal of Discharged Water: on site

INSTRUMENTS (Indicate make, model, I.d.)

Water Level:	KECK	Thermometer:	HORIBA
pH Meter:	HORIBA	Field Calibration:	7-4
Conductivity Meter:	HORIBA	Field Calibration:	1413
Filter / Filter Size:		Other:	

SAMPLING MEASUREMENTS

0707 Time	Cum. Vol. (gal. or L)	Purge Rate (gal. or L/m)	Temp. (oC)	pH	Spec. Cond. (mmhos/cm)	D.O	Redox (mV)	Turbidity & Color	Water Depth (ft BMP)
0717	-	.2	22.6	6.49	1670	0.79	-76	4.6	22.92
0722		1	22.5	6.41	1630	0.61	-77	5.8	22.93
0726		↓	22.4	6.42	1620	0.60	-77	5.6	22.93

Water Level (ft. BMP) at End of Purge: 22.93 Sample Intake Depth (ft. BMP):

SAMPLE INVENTORY

Bottles Collected				Filtration		Remarks
Time	Volume	Composition (G, P)	No.	(Y / N)	Preservation	(quality control sample, other)
0740	250mL	P	1	N	-	GEN CHEM
0740	500mL	P	1	N	HNO_3	METALS

Comments:

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GROUNDWATER SAMPLING RECORD

PAGE 1 of 1

Project Number: 19122262-C Project Name: LUMINANT - MLSES Date: 5-14-19

Sample Number: H-32	Starting Water Level (ft. BMP): 23.16
Sampling Location (well ID, etc.): H-32	Casing Stickup (ft.): —
Sampled by: JTB	Starting Water Level (ft. BGL): 23.16
Measuring Point (MP) of Well: TOC/PVC	Total Depth (ft. BGL): —
Screened Interval (ft. BGL): —	Casing Diameter (In ID): 2.0
Filter Pack Interval (ft. BGL): —	Casing Volume (gal.): —

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: alconox & DI rinse

Purging: peristaltic / bladder Sampling: same

Disposal of Discharged Water: on site

INSTRUMENTS (Indicate make, model, I.d.)

Water Level: KECK	Thermometer: HORIBA
pH Meter: HORIBA	Field Calibration: 7-4
Conductivity Meter: HORIBA	Field Calibration: 1413
Filter / Filter Size:	Other:

SAMPLING MEASUREMENTS

0757 Time	Cum. Vol. (gal. or L)	Purge Rate (gal. or L /m)	Temp. (oC)	pH	Spec. Cond. (mmhos/cm)	D.O	Redox (mV)	Turbidity & Color	Water Depth (ft BMP)
0807	—	.2	22.4	5.99	1510	0.41	-71	4.8	23.34
0812		1	22.7	6.01	1540	0.31	-76	9.2	23.35
0818		1	22.6	6.02	1540	0.32	-77	8.7	23.35

Water Level (ft. BMP) at End of Purge: 23.35 Sample Intake Depth (ft. BMP):

SAMPLE INVENTORY

Bottles Collected				Filtration		Remarks
Time	Volume	Composition (G, P)	No.	(Y / N)	Preservation	(quality control sample, other)
0825	250mL	P	1	N	—	GEN CHEM
0825	500mL	P	1	N	HNO_3	METALS

Comments:

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GROUNDWATER SAMPLING RECORD

PAGE 1 of 1

Project Number: 19122262-C Project Name: LUMINANT - MCSES Date: 5-14-19

Sample Number: H-33
Sampling Location (well ID, etc.): H-33
Sampled by: JJB
Measuring Point (MP) of Well: TOC/PVC
Screened Interval (ft. BGL): —
Filter Pack Interval (ft. BGL): —

Starting Water Level (ft. BMP): 13.42
Casing Stickup (ft.): —
Starting Water Level (ft. BGL): 13.42
Total Depth (ft. BGL): —
Casing Diameter (in ID): 2.0
Casing Volume (gal.): —

QUALITY ASSURANCE

METHODS (describe):
Cleaning Equipment: alconox & DI rinse
Purging: peristaltic / bladder Sampling: same
Disposal of Discharged Water: on site

INSTRUMENTS (Indicate make, model, I.d.)
Water Level: KECK Thermometer: HORIBA
pH Meter: HORIBA Field Calibration: 7-4
Conductivity Meter: HORIBA Field Calibration: 1413
Filter / Filter Size: Other:

SAMPLING MEASUREMENTS

1451 Time	Cum. Vol. (gal. or L)	Purge Rate (gal. or L /m)	Temp. (oC)	pH	Spec. Cond. (mmhos/cm)	D.O.	Redox (mV)	Turbidity & Color	Water Depth (ft BMP)
1501	—	.2	23.4	6.81	1620	0.77	-29	5.9	13.67
1506		↓	23.6	6.82	1640	0.63	-26	7.8	13.66
1512			23.6	6.81	1650	0.62	-26	7.4	13.66

Water Level (ft. BMP) at End of Purge: 13.66 Sample Intake Depth (ft. BMP):

SAMPLE INVENTORY

Bottles Collected				Filtration	Preservation	Remarks
Time	Volume	Composition (G, P)	No.	(Y / N)		(quality control sample, other)
1530	250mL	P	1	N	—	GEN CHEM
1530	500mL	P	1	N	HNO_3	METALS

Comments:

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APPENDIX B

Tier II and Tier III Monitored Natural Attenuation Evaluation

GOLDER

REPORT

MARTIN LAKE ASH POND AREA TIER II AND III MNA EVALUATION

Submitted to:

Luminant Generation Company LLC

6555 Sierra Drive
Irving, Texas 75039

Submitted by:

Golder Associates Inc.
2201 Double Creek Drive, Suite 4004
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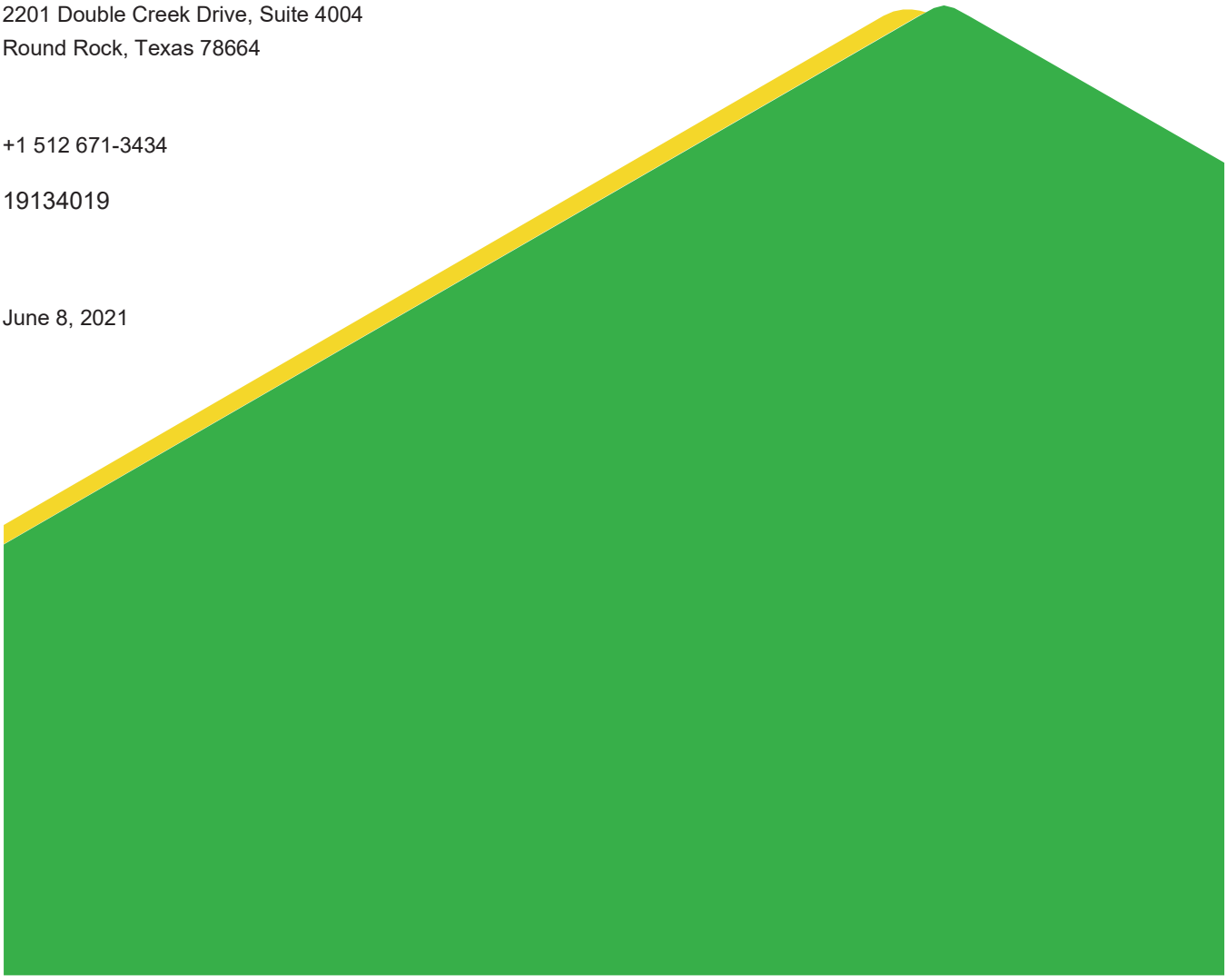
19134019

June 8, 2021



Distribution List

Renee Collins, Luminant

David Mitchell, Luminant

Eric Chavers, Luminant

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APPENDICES

APPENDIX A
Laboratory Analytical Reports

APPENDIX B
Groundwater Modeling

APPENDIX C
Geochemical Modeling Saturation Indices

1.0 OVERVIEW

Luminant Generation Company LLC (Luminant) operates the West Ash Pond (WAP), East Ash Pond (EAP), and New Scrubber Pond (NSP) (collectively referred to as the "Ash Pond Area") located at the Martin Lake Steam Electric Station (MLSES) in Rusk County, Texas. Luminant manages Coal Combustion Residuals (CCR) generated from the MLSES in the Ash Pond Area in accordance with the applicable requirements of 40 Code of Federal Regulations (CFR) Part 257 Subpart D as amended (CCR Final Rule). A map of the Ash Pond Area is provided on Exhibit 1.

In September 2019, pursuant to 40 CFR §257.96(a), Golder Associates Inc. (Golder) completed an assessment of corrective measures (ACM) for the Ash Pond Area (Golder 2019a). The ACM identified MNA as a potential groundwater response technology for beryllium, cobalt, and lithium detected at Statistically Significant Levels (SSLs) above the groundwater protection standards (GWPSs) established for the Ash Pond Area. To supplement the findings of the ACM, Golder was retained by Luminant to further evaluate the overall feasibility of MNA as a groundwater remedial alternative for the Ash Pond Area in accordance with 40 CFR §257.97. Golder based the MNA feasibility evaluation on United States Environmental Protection Agency (USEPA) guidance for using MNA as a remedial strategy (USEPA 2007a and 2007b) and best practices in the Interstate Technology Regulatory Council (ITRC) document: "A Decision Framework for Applying Monitored Natural Attenuation Processes to Metals and Radionuclides in Groundwater" (ITRC 2010).

USEPA guidance recommends that the overall feasibility of MNA as a groundwater response technology be evaluated based on the following multi-tier approach (USEPA 2007a, b):

1) Demonstrate active constituent removal from groundwater and dissolved plume stability (Tier I).

2) Determine the mechanisms and rates of the operative attenuation processes (Tier II).

3) Determine the long-term capacity for attenuation and the stability of immobilized constituents (Tier III).

A Tier I MNA Evaluation for the Ash Pond Area was completed in December 2019 (Golder 2019b). The Tier I Evaluation concluded that sufficient evidence was present to satisfy the Tier I criteria for successful MNA implementation to address beryllium, cobalt, and lithium groundwater SSLs. Further geochemical evaluation (i.e., Tier II and Tier III Evaluation) of MNA was recommended in the Tier I report. This memorandum presents the findings of the Tier II and Tier III MNA Evaluation for the Ash Pond Area.

The results of the Tier II and III evaluation presented in this document will be used to further assess the performance and reliability of MNA as a potential remedial alternative as required by 40 CFR §257.97. Following completion of this multi-tier evaluation, the fourth and final tier of an MNA program, which involves the design of a performance monitoring program and the development of a contingency plan, will be completed.

2.0 TIER II AND TIER III EVALUATION APPROACH

A Tier II and III evaluation is used to determine the mechanism(s), rates, and stability of constituent attenuation with respect to the MNA criteria (USEPA 2007a, b). In 2019, Golder collected samples of groundwater, lake water (Martin Lake), and CCR impoundment pond water as part of a Nature and Extent evaluation and Tier I evaluation in accordance with the CCR Final Rule. Ash Pond Area groundwater collection and analysis continued throughout and after the completion of the Tier I evaluation, and the water quality results are used in the Tier II and III site evaluation. The additional groundwater collection consisted of three sampling events (September 2019, May 2020, and October 2020). Data from those events are presented in Appendix A. The overall quality of

groundwater and trends for constituents with SSLs were described in detail in the Tier I report (Golder 2019a). No substantial changes in groundwater quality have occurred that would change the findings of the Tier I evaluation.

The Tier II and III evaluation expands upon the following updated Tier I findings related to groundwater, as follows:

- **Plume Stability:** Based on the water quality monitoring data, groundwater concentrations of beryllium, cobalt, and lithium outside of the ash ponds appear to be stable or decreasing, accounting for statistically determined outliers (Figure 1a, b, c). Beryllium and cobalt are unlikely to originate from the ash ponds due to their absence in pond water. It is also considered unlikely that lithium in groundwater originates from the ash ponds as its concentration was much lower in pond water than in groundwater from background monitoring wells at the Ash Pond Area.
- **Magnitude of Exceedances**: Occasional exceedances of the lithium Groundwater Protection Standard (GWPS) in some wells do not amount to levels that would be considered an SSL per the CCR Final Rule (Golder 2019b). The highest level of beryllium in groundwater (since monitoring began) at the Ash Pond Area was observed at downgradient well H-31 (in September 2019 and May 2020). However, results from the subsequent sampling event (October 6, 2020) indicate the beryllium concentration decreased substantially, from >0.030 mg/L to 0.0092 mg/L, which is consistent with historical beryllium concentrations at well H-31. The cobalt GWPS exceedances in downgradient wells H-28, H-29, H-31, and H-32 fluctuate over time, but generally have presented a stable trend at all four wells. The observed variability in cobalt concentrations may be related to changes in flow conditions and/or natural geochemical variation rather than a continuous source of cobalt.
- **Ash Pond Water:** Historical records are not available for ash additions or pond water concentrations over the lifespan of the Ash Ponds. However, based on recent pond water data, beryllium and cobalt are not present in the Ash Ponds at levels above their respective detection limits. Lithium in the Ash Ponds was measured at concentrations of 0.119 mg/L in May 2019 and 0.124 mg/L in May 2020, which are below the GWPS of 0.177 mg/L. This indicates the Ash Ponds are unlikely to cause the SSLs of beryllium and cobalt as well as the occasional GWPS exceedances of lithium (lithium is currently not at SSLs based on a 95% confidence interval statistical evaluation). Instead, an alternative source for these constituents may be present in the MLSES Ash Pond area.
- **Groundwater Chemistry:** The groundwater monitoring results and the findings of the geochemical modeling support the potential for natural attenuation of beryllium, cobalt and, to some degree, lithium. Equilibrium of groundwater with the mineral phase ferrihydrite [$Fe(OH)_{3(am)}$], an effective sorbent for trace metals, was indicated in all groundwater samples. Modeling results are consistent with the findings from the sequential extraction analysis presented in the Tier 1 evaluation, which demonstrate carbonate, amorphous, organic, and metal hydroxide phases sequester beryllium, cobalt, and some lithium in overburden at the MLSES Ash Pond Area. Further, differences in relative abundance of the major ions in groundwater indicate that Ash Pond water is geochemically distinct from both groundwater at the Ash Pond Area and Martin Lake. Detailed findings are presented in the Tier I evaluation (Golder 2019b).
- **Confirmation of Attenuation/Immobilization:** Based on both mineralogical and chemical analysis, it is evident that attenuation of beryllium, cobalt, and lithium by aquifer materials is occurring. Iron, capable of forming (hydr)oxide or amorphous phases that facilitate metals attenuation (Dzombak and Morel 1990), was identified in all aquifer solids samples (in agreement with modeling indicating ferrihydrite precipitation). The

ubiquitous presence of aluminum, in the form of aluminum oxides and clay minerals, provides an additional well-studied attenuation reservoir (Karamalidis and Dzombak 2011; Prodromou 2016; Uddin 2017). Thus, aquifer solids samples from the Ash Pond Area demonstrate sequestration of beryllium, cobalt, and to a lesser extent, lithium is occurring.

The Tier II and III evaluation presented in this document builds upon the results of the Tier I evaluation by undertaking the following:

- Characterization of temporal and geographical trends, where present, to estimate site-wide attenuation rates using temporal and spatial trends in groundwater quality data.
- Geochemical modeling to determine the aqueous speciation of beryllium, cobalt, and lithium, and evaluate saturation indices of minerals relevant to their attenuation.
- Determination of the capacity of different mechanisms to attenuate beryllium, cobalt, and lithium, including adsorption, precipitation and co-precipitation, and physical attenuation (dilution/dispersion).
- Geochemical modeling to assess the stability and reversibility of attenuation due to adsorption.

Additionally, the results from the following analyses described in the Tier I evaluation for aquifer solids are utilized as part of the Tier II and III evaluation:

- Mineralogical analysis of aquifer solids to identify and quantify the major mineral components.
- Chemical analysis and sequential extraction procedure (SEP) of aquifer solids to quantify the total metal content and identify the environmentally available fractions of metals.

The approach to and results of the Tier II and Tier III evaluation are presented in the next sections to establish a basis for the likely success of MNA at the MLSES Ash Pond Area.

3.0 MODELING APPROACH

3.1 General Approach

3.1.1 Estimation of Attenuation Rates

To evaluate the attenuation of beryllium, cobalt, and lithium in groundwater at the Ash Pond Area and to assess the rate of attenuation, the point decay method (Newell et al. 2009) was applied. The point decay method is used to determine the rate at which a constituent's concentrations are increasing or decreasing in groundwater at a single well between sampling events. This method can thus be used to predict when the constituent's concentrations will fall back below regulatory limits.

Equation 1 describes first-order decay for a constituent:

$$Ln(C_t) = kt + Ln(C_0) \quad \text{(Equation 1)}$$

where C_0 is the initial constituent concentration, C_t is the constituent concentration at time t, t is the amount of time in years that has passed since the initial measurement, and k is the first-order decay rate constant. Equation 2 shows Equation 1 reorganized to solve for the decay rate constant:

$$k = (Ln(C_t) - Ln(C_0))/t \quad \text{(Equation 2)}$$

Groundwater quality data from the upgradient and downgradient wells collected from October 2015 to October 2020 were used to determine the mean first-order decay rate for each constituent of interest. Due to variable detection limits, results that were reported as below detection were not used in the point decay analysis. Equation 1 and the mean first-order decay rate were used to calculate the number of years required for beryllium, cobalt, and lithium concentrations greater than their respective GWPS to decrease below those thresholds.

3.1.2 Geochemical Speciation Modeling

Baseline geochemical modeling was conducted to evaluate general groundwater, lake water, and pond water quality; determine the potential for precipitation of sorbent media; evaluate the potential for mineral precipitation or adsorption in the aquifer; and determine the speciation of beryllium, cobalt and lithium. The geochemical computer code developed by the United States Geological Survey (USGS), PHREEQC, was used for these simulations (Parkhurst and Appelo 2013). PHREEQC version 3.4 is a general-purpose geochemical modeling code used to simulate reactions in water and between water and solid mineral phases (e.g., rocks and sediments). Reactions include aqueous equilibria, mineral dissolution and precipitation, ion exchange, surface complexation, solid solutions, gas-water equilibrium, and kinetic biogeochemical reactions. The widely-accepted thermodynamic database Minteq.v4, 2017 edition, was used as a basis for the thermodynamic constants required for modeling (Allison et al. 1991).

The Geochemist's Workbench version 12 (Bethke 2015) was used to generate graphical representations of geochemical modeling outputs in the form of predominance, or Pourbaix diagrams (also known as Eh-pH diagrams) for the species of interest (i.e. beryllium, cobalt, and lithium) and trilinear plots (also known as Piper plots) displaying the relative abundance of major ions. The Minteq.v4 database was used as the basis for the Pourbaix diagrams.

3.1.3 Groundwater Modeling

Golder developed a three-dimensional numerical groundwater model based on the MODFLOW groundwater-flow source code created by the USGS (McDonald and Harbaugh 1988) using Visual MODFLOW (Version 4.6). The groundwater model simulates steady-state groundwater flow conditions in the Ash Pond Area. The results of the groundwater model were incorporated into the reactive transport geochemical model discussed in Section 3.1.3. The groundwater model was developed based on:

- Natural hydrologic boundaries wherever possible.
- Ground surface topography, lake bathymetry, and pond geometries.
- Geologic layers with representative structural properties based on boring logs.
- Hydraulic properties of geologic layers based on historical aquifer tests conducted at the site.
- Historical groundwater elevation measurements.

Details on key parameters used to develop the groundwater model are presented in Appendix B.

3.1.4 Predictive Geochemical Modeling

Additional geochemical modeling was performed to assess viable attenuation mechanisms and predict the quantity and stability of the attenuated constituents of interest. To do so, Golder used PHAST, a three-dimensional reactive transport modeling computer program developed by the USGS that simulates

multicomponent reactive solute transport in a three-dimensional saturated groundwater flow system (Parkhurst et al. 2010). PHAST is a versatile groundwater flow and solute-transport simulator with capabilities to model a wide range of equilibrium and kinetic geochemical reactions. The flow and transport calculations are based on a modified version of HST3D that is restricted to constant fluid density and constant temperature. PHAST can be used to simulate both confined and unconfined flow using both a steady state and transient flow solution. The geochemical reactions are simulated with the geochemical model PHREEQC-RM (based on PHREEQC version 3.4), which is embedded in PHAST, resulting in a full three-dimensional reactive transport model. In the application used here, parameters from the site groundwater flow model developed in MODFLOW (i.e. hydraulic conductivities of layers, model layering, model architecture, water balance, groundwater velocities, and fluid head calculations) were directly used as initial and target model values to ensure seamless model coordination with MODFLOW, without the need to rebuild a groundwater flow model independently in another software package capable of simulating geochemical reactions.

3.1.5 Source Control Modeling

The WAP, EAP and NSP were historically considered unlined surface impoundments under §257.71(a)(1)(ii) of the CCR Rule; however, the ponds were constructed with the following liner systems:

- The WAP is constructed with a liner consisting of an 18-inch compacted clay liner, overlain by two 60-mil High-density Polyethylene (HDPE) geomembrane liners with a geonet drainage layer between the geomembranes. A 4-inch concrete revetment mat is installed on top of the upper geomembrane liner.
- The EAP is constructed with a liner consisting of an 18-inch compacted clay liner, overlain by a geotextile, overlain by two 60-mil HDPE geomembrane liners with a geonet drainage layer between the geomembranes. A 4-inch concrete revetment mat is installed on top of the upper geomembrane liner.
- The NSP is constructed with liner consisting of two 60-mil HDPE geomembrane liners with a geonet drainage layer between the geomembranes, overlain by a 4-inch concrete revetment mat.

To satisfy the requirements of §257.71(a)(1)(ii) of the CCR Rule, the WAP, EAP and NSP are being or have been relined as follows:

- The existing liner system will remain in place.
- A 6-inch soil levelling layer will be placed on top of the revetment mat.
- A geosynthetic clay liner (GCL) will be placed on top of the soil leveling layer.
- A 60-mil HDPE geomembrane will be placed on top of the GCL.

The EAP was relined in 2020 as described above. It is anticipated that relining of the WAP will be completed in 2021 and NSP completed in 2022. The new WAP, EAP and NSP liner systems are assumed to achieve a k (conductivity) of 10^{-9} cm/sec and a porewater flux rate from the WAP, EAP, and NSP of zero at year 2021.

Source control (i.e. reduction in leakage through the WAP, EAP and NSP) was modeled in PHAST using the same parameters and site layout from the three-dimensional numerical groundwater flow model. Calibration of the geochemical parameters is discussed in Section 3.2. Following model calibration, the predictive modeling simulated the re-lining of the WAP, EAP, and NSP based on the aforementioned liner with a k (conductivity) value of 10^{-9} cm/sec and a porewater flux rate from the WAP, EAP, and NSP of zero at year 2021. The hydraulic head of the WAP, EAP, and NSP was decreased to match the hydraulic head of surrounding cells outside the CCR

Units, simulating the drying of the ash as the new liners are installed. The PHAST model was then run forward for 50 years to assess potential future constituent migration, natural attenuation, and groundwater conditions.

3.1.6 Mineral Precipitation and Co-precipitation

The potential for mineral precipitation was assessed in PHAST by PHREEQC using a saturation index (SI) calculated according to Equation 3.

$$SI = \log (IAP/Ksp) \qquad \text{(Equation 3)}$$

The saturation index is the ratio of the ion activity product (IAP) of a mineral to the solubility product (Ksp). An SI value greater than zero indicates that the solution is supersaturated with respect to a particular mineral phase and, therefore, precipitation of this mineral may occur. An evaluation of precipitation kinetics is then required to determine whether the supersaturated mineral will indeed form. An SI value less than zero indicates the solution is undersaturated with respect to a particular mineral phase. An SI value close to zero indicates equilibrium conditions exist between the mineral and the solution. For the purpose of this evaluation, SI values between -0.5 and 0.5 were considered to represent 'equilibrium' to account for the uncertainties inherent in the analytical methods and geochemical modeling.

Co-precipitation was evaluated based on published literature and known association between minerals and the constituents of interest. For example, cobalt is known to co-precipitate with iron oxyhydroxides as well as adsorb to Hfo (Nordstrom and Alpers 1999). Therefore, minerals identified by PHAST/PHREEQC to be at equilibrium (SI > -0.5) were evaluated for their potential to host beryllium, cobalt, and lithium.

3.1.7 Adsorption Capacity and Attenuation

Adsorption is an important mechanism by which constituents in groundwater can be attenuated. The adsorptive partitioning between dissolved and solid phases was simulated during baseline modeling using PHREEQC and for predictive modeling using PHAST with a two-layer surface complexation model (SCM). The SCM approach is described in Davis and Kent (1990), with additional parameterization based on Dzombak and Morel (1990) and Karamalidis and Dzombak (2011) utilizing iron (hydrous ferric oxide [Hfo]) as ferrihydrite [$Fe(OH)_{3(am)}$], and aluminum (hydrous aluminum oxide [Hao]) as gibbsite [$Al(OH)_{3(am)}$], as adsorbing surfaces.

The amount of Hfo and Hao available at the site for attenuation was based on the amorphous and metal hydroxide phase iron and aluminum concentrations measured in the SEP as described in the Tier I evaluation (Golder 2019b). The minimum, mean, and maximum iron and aluminum concentrations in aquifer solids samples were used in the adsorption models to capture the range of expected site concentrations. The Hfo and Hao surface properties (i.e. surface area, site density, and types of surface sites) from Dzombak and Morel (1990) and Karamalidis and Dzombak (2011) were used to quantify the iron and aluminum adsorption sites per mole of mineral.

The calculation methodology of Appelo and Postma (2010) was used to determine the specific quantity of sites on each mineral surface type as a function of the amount of mineral available to participate in these reactions. The methodology assumes the number of surface sites (sites) equals the product of the moles of iron ([Fe]) and the moles of sites per mole of iron ([sites]/[Fe]= 0.2 moles of sites per mole of iron). To determine the amount of ferrihydrite available for sorption, the Appelo and Postma methodology further assumes the mass of ferrihydrite (M_{HFO}) in grams (g) available equals the product of the [Fe] and the molecular weight of ferrihydrite (MW_{HFO} = 88.85 g/mole). The same approach was used to calculate the number of sites from gibbsite, assuming the

[sites]/[Al] is 0.41 moles of sites per mole of aluminum and the molecular weight of gibbsite is 78.003 g/mole. The range of Hfo and Hao present in soils at the Ash Pond Area with associated calculations is presented in Table 1.

The thermodynamic database Minteq V.4, described in Section 3.1.1, was modified for adsorption modeling because new and updated thermodynamic data have been released in the scientific literature. These new data are important to include as they allow further refinement of potential reactions, or for correction of previous data that may have been less accurate or more broadly defined. For the geochemical modeling of the Ash Pond Area, numerous updates to the database were made, including the addition of data relating to partitioning coefficients for metals on gibbsite, developed by Karamalidis and Dzombak (2011). The database does not contain partitioning coefficients for ferrihydrite or gibbsite for lithium. Thus, the potential for lithium adsorption could not be assessed and modeling of lithium attenuation primarily focused on physical processes.

Table 1: Calculations of ferrihydrite and gibbsite surface parameters for predictive modeling

Parameter	Units	Ferrihydrite			Gibbsite		
		Minimum	Mean	Maximum	Minimum	Mean	Maximum
Geometric Mean of Aquifer Solids Composition	mg/kg X	2357	3900	4900	880	1700	1800
	mmol X	42.21	69.84	87.74	32.61	63.00	66.71
	mol X	4.22E-02	6.98E-02	8.77E-02	3.26E-02	6.30E-02	6.67E-02
Surface Site Concentration	mol weak sites / mol X	0.2	0.2	0.2	0.41	0.41	0.41
	mol strong sites / mol X	0.005	0.005	0.005	---		
Surface Sites	mol weak	8.4E-03	1.4E-02	1.8E-02	1.3E-02	2.6E-02	2.7E-02
	mol strong	2.1E-04	3.5E-04	4.4E-04	---		
Mass of Ferrihydrite or Gibbsite	grams	3.75	6.20	7.80	2.90	5.60	5.93

Notes:
X = Fe or Al depending on the mineral
Gibbsite only has one site 'type'

3.2 Model Calibration

Calibration of the unconfined flow reactive transport model involved adjusting the flux from the WAP, EAP, and NSP, the concentration of the constituents of interest (beryllium, cobalt, and lithium), and the starting date for ash placement in each impoundment. This calibration process simulated the gradual addition of ash to the impoundments and was generally based on records of impoundment construction and certification (PBW 2017). The lithium flux from the impoundments was used as a near-conservative tracer to set the initial date of establishment, calibrate the flux, and to validate the flow solution used in the reactive transport modeling was similar to that used for groundwater modeling efforts. The preliminary hydraulic head for PHAST targeted the steady-state solution imported from MODFLOW and achieved a coefficient of determination (R^2) value of 0.9995 based on 150 sample point locations (Figure 2).

A hypothetical source solution was developed to represent the water quality in the CCR Units (WAP, EAP, and NSP). Beryllium, cobalt, and lithium concentrations in the hypothetical source solution were increased relative to actual reported concentrations to achieve reasonable calibration with measured values in downgradient wells.

Beryllium and cobalt were not measured above their respective detection limits in pond water samples during the May 2019 and 2020 sampling events (Appendix A), but their concentrations were artificially increased to 0.070 and 3.0 mg/L, respectively in the hypothetical source solution. Lithium was measured at 0.119 to 0.124 mg/L in pond water, but for modeling purposes was increased to 1.4 mg/L to achieve calibration.

The surface site densities for Hfo and Hao were adjusted for non-conservative parameters (beryllium and cobalt) within the range of the measured minimum and maximum aluminum and iron concentrations in aquifer solids for calibration. Background water quality was based on water quality results from background monitoring well H-33 and was set to equilibrium with adsorptive surfaces. Calibration results for beryllium, cobalt, and lithium demonstrated good agreement in downgradient monitoring wells (Table 2); however, historical variability in source concentrations and volumes of ash additions to the WAP, EAP, and NSP has likely occurred. In addition, compositional heterogeneity in terms of aquifer characteristics is also likely to be present along the groundwater flow pathway but is not captured within the model. However, overall, use of the minimum surface site concentrations of Hfo and Hao calculated in Table 1 showed the best agreement with the non-conservative constituent target concentrations presented in Table 2.

Table 2: Calibration of parameters in PHAST for predictive modeling as compared to the target values measured in 2020 in downgradient wells

Downgradient Monitoring Well	Units	Beryllium		Cobalt		Lithium	
		Target Value	Modeled	Target Value	Modeled	Target Value	Modeled
H-28	mg/L	0.0051	0.0043	0.145	0.165	0.173	0.170
H-29	mg/L	0.0013	0.0046	0.377	0.408	0.164	0.158
H-31	mg/L	0.0092	0.0207	0.208	0.132	0.120	0.122
H-32	mg/L	0.0061	0.0021	0.178	0.037	0.095	0.095

The Peclet and Courant numbers included in the reactive transport modeling were used to evaluate model validity and control numerical dispersion. These values are calculated based on the cell size, time step, dispersivity, and average velocity of groundwater in the model. Equation 4 was used to control numerical dispersion using an upstream-in-space and backwards-in-time differencing solution based on a derivation of the Peclet and Courant numbers:

$$\frac{\Delta X}{2} + \frac{V_x \Delta t}{2} \ll \alpha \qquad \text{(Equation 4)}$$

Where:

ΔX= Cell size (50 ft)

V_x= Average Velocity (4 feet/year)

Δt = Timestep (0.25 years)

α= Longitudinal dispersivity (30 ft)

3.3 Long-Term Stability of Attenuated Constituents

The long-term stability of constituent attenuation and potential for re-mobilization was evaluated using the results of 50-year predictive modeling. Specifically, the responses of the constituents of interest to modeled changes in pH and redox of groundwater at downgradient wells were evaluated. Variations in pH and redox are the most likely changes in groundwater chemistry that will occur in an aquifer over time, affecting the stability of the non-conservative constituents of interest (ITRC 2010). For example, if the pH or redox should decrease substantially over time, causing the dissolution of ferrihydrite, re-mobilization of adsorbed beryllium and cobalt would be likely. In contrast, if pH were to increase substantially (>8), cobalt precipitation as cobalt hydroxide will enhance the long-term stability of cobalt attenuation, likely maintaining low levels of cobalt in groundwater (Nordstrom and Alpers 1999; Smith 1999). The long-term stability and reversibility of attenuation were also evaluated for scenarios involving complete source control (i.e. the lining of the ash ponds), reducing any flux from the WAP, EAP, and NSP.

3.4 Data Handling and Geochemical Modeling Assumptions

Assumptions related to data handling practices and geochemical modeling were as follows:

- **Groundwater continuity:** Groundwater, lake water, and pond water quality data from sampling events conducted May 2019 to October 2020 were evaluated. These sampling events were selected because all wells related to the Ash Pond Area and lake water and pond water were sampled and analyzed for the full suite of parameters described in the Tier I evaluation during these sampling events, and the resulting data are assumed to provide a comprehensive overview of Ash Pond Area conditions. Trend analysis of pH, beryllium, cobalt, and lithium in groundwater made use of all available sampling events from each well (up to 14 samples from some wells), dating back to October 2015.
- **Background groundwater chemistry:** Groundwater samples collected from H-33 were assumed to represent natural background conditions for the purpose of geochemical and predictive modeling.
- **Pond and lake water chemistry:** The pond and lake water samples collected from the East CCR unit pond and adjacent lake were assumed to be representative of the ash ponds and Martin Lake, respectively.
- **Redox values:** Oxidation-reduction potential (ORP) values measured in the field were converted to redox potential (Eh) by adding 200 millivolts (mV) to the field-measured values as per YSI (2015).
- **Non-detect values:** Constituents with concentrations less than their respective method detection limits were assumed to have a concentration equal to the reporting limit in model simulations.
- **Total recoverable concentrations:** Total recoverable fraction results were used for geochemical modeling.
- **Charge balance:** Groundwater compositions with charge balance errors less than 10% were considered valid. Compositions with charge balance errors greater than 10% were included in the assessment but would be considered less reliable.

4.0 MODELING RESULTS

4.1 Hydrogeology

The geology of the Ash Pond Area consists of an upper zone of partially saturated sandy silt and clay that is generally 30 to 40 feet thick, and a lower zone of saturated fine sand and silty sand that is generally 5 to 20 feet thick (PBW 2017). The lower zone of fine sand and silty sand represents the uppermost aquifer at the site. The

groundwater model consisted of two-layers representing the two geological zones identified at the site. The model incorporated site-specific characteristics such as ground surface topography, groundwater elevation measurements, geometries and water elevations of the Ash Ponds and Martin Lake, and hydraulic characteristics of the site geologic units based on historical aquifer tests conducted as part of an Affected Property Assessment of the Ash Pond Area under the regulatory authority of the Texas Commission on Environmental Quality (TCEQ) (PBW 2011). Groundwater potentiometric heads in the model were calibrated based on groundwater elevations and inferred flow conditions observed at the site; specifically, to conditions observed during the September 2019 CCR groundwater monitoring event. Consistent with observations during the September 2019 and other groundwater monitoring events, groundwater was modeled to generally flow from west to east toward Martin Lake, with an average groundwater flow velocity in the uppermost aquifer of approximately 4 feet per year. Additional groundwater model details are provided in Appendix B.

4.2 Capacity of Attenuation Mechanisms

4.2.1 Adsorption to Iron and Aluminum Oxyhydroxides

The Hfo and Hao surface area and sorption site calculations for the minimum, mean, and maximum iron and aluminum concentrations in aquifer solids are presented in Table 2. Adsorption modeling in PHAST revealed adequate capacity to attenuate both beryllium and cobalt based on current levels measured in downgradient monitoring wells. The term “adequate”, as used in this document, refers to the capacity needed to attenuate constituents in groundwater to a level that meets the site-specific GWPS (ITRC 2010). Lithium attenuation by Hfo and Hao was not modeled due to a lack of adsorption constants and the general understanding that lithium behavior in groundwater is near-conservative (e.g., Hem 1992). Figures 3 and 4 show the modeled concentrations over time for beryllium and cobalt, respectively, for the four downgradient monitoring wells.

Modeled attenuation of beryllium and cobalt onto aquifer solids (0.05 to 0.3 mg/kg and 0.5 to 2.3 mg/kg, respectively), using minimum surface site densities (Hfo and Hao), showed the best agreement with the range of beryllium and cobalt concentrations (0.1 to 0.2 mg/kg and 0.5 to 1.8 mg/kg, respectively), measured in SEP steps 3 and 4 (Golder 2019b). The lack of beryllium and cobalt in pond porewater further supports adequate attenuation capacity exists downgradient of the CCR Units. Modeling of mineral precipitation also identified consistent equilibrium of groundwater with ferrihydrite in all downgradient wells from May 2019 and May 2020 (events where iron was measured in groundwater; Appendix A). Thus, if the concentrations of beryllium and cobalt in porewater in the CCR Units remain below the GWPS (or below detection limits, as was the case during the most recent sampling), then the downgradient capacity to attenuate these constituents by iron and/or aluminum oxyhydroxides will not be exceeded.

4.2.2 Co-precipitation

In addition to adsorption, co-precipitation, or the direct incorporation of trace metals such as beryllium or cobalt into precipitated iron oxide-oxyhydroxides, has been well studied in literature (e.g., Butt et al. 2000; Dzombak and Morel 1990; Smith 1999). For the aquifer solids analyzed by sequential extraction described in the Tier I evaluation (Golder 2019b), all samples reported higher concentrations of cobalt in the combined amorphous and metal hydroxide phases than indicated by the adsorption modeling. This suggests that cobalt may also be attenuated during the formation of ferrihydrite as opposed to following its formation (Butt et al. 2000; Tebo et al. 2004). Some cobalt was also identified by SEP to be associated with carbonate minerals, also likely due to co-precipitation.

Beryllium was also found to be associated with amorphous and metal hydroxide phases, but to a lesser degree. This suggests that beryllium may also be attenuated during the formation of ferrihydrite. Co-precipitation is not considered a relevant attenuation mechanism for lithium.

4.2.3 Physical Attenuation

Figure 5 presents the predicted concentrations over time for lithium at downgradient monitoring wells, accounting for the dilution and dispersion downgradient of the CCR Units. The highest concentration of lithium in porewater was measured at 0.124 mg/L in May 2020, which was below the established GWPS of 0.177 mg/L for the Ash Pond Area. To achieve optimal calibration for lithium in the PHAST model, a simulated lithium source value of 1.4 mg/L (Table 2) was needed, resulting in a calculated range of downgradient physical attenuation factors between 5.6 and 74.8 which occurred at well H-31 (measured concentrations ranging from 0.0187 to 0.249 mg/L). Thus, at current porewater concentrations, at just the minimum dilution factor of 5.6, physical attenuation alone should be adequate to reduce lithium concentrations to below the GWPS across the Ash Pond Area, with source control (Table 2).

4.2.4 Attenuation Rates

The results of the point decay analysis for groundwater at background and downgradient wells between October 2015 and October 2020 (the CCR groundwater monitoring period) are provided in Table 3, as average site attenuation rates. This evaluation reveals that, despite concentrations generally increasing or remaining near-constant in **background** wells over time (as indicated by positive point decay constants), beryllium, cobalt, and lithium concentrations in **downgradient** wells have decreased (negative point decay constants) over that same monitoring period. The average downgradient decay rates can be used to estimate the number of years it would take for elevated groundwater concentrations to decrease to the GWPS based on current trends. Use of maximum concentrations of beryllium, cobalt and molybdenum reported from downgradient monitoring wells in 2020 indicates that it will take 17 years, 2 years, and <1 year, respectively, to attenuate to concentrations below their respective GWPS based on these decay rates. Of note, lithium is not currently categorized as an SSL at any well even though monitoring well H-31 exceeded its GWPS in May 2020 before decreasing to below the GWPS by October 2020.

Table 3: Average Point Decay Trend Constants for Beryllium, Cobalt, and Lithium at the Ash Pond Area

Constituents	Background Wells (yr^{-1})	Downgradient Wells (yr^{-1})	GWPS (mg/L)	Maximum Measured 2020 Values (mg/L)	Time to Achieve Compliance (years)
Beryllium	0.77	-0.12	0.004	0.0331	17
Cobalt	0.04	-0.87	0.0564	0.449	2
Lithium	-0.03	-0.38	0.177	0.249	<1

Predictive modeling in PHAST used a more conservative approach to estimating time to compliance by taking into account source control and increased source concentrations needed to achieve model calibration as previously described (Table 2). Based on this approach, estimated times to attenuation to concentration below GWPS increased to 30, 50, and 50 years for beryllium, cobalt, and lithium, respectively. This is due to the elevated source values for cobalt and lithium (3.0 and 1.4 mg/L) required to achieve model calibration. The simulated source values used were 1,000 times (cobalt) and nearly 10 times (lithium) higher than actual measured

porewater values. Therefore, PHAST modeling presents the most conservative approach to determining the rate of attenuation. The actual time in which significant attenuation can likely be achieved falls between the two approaches used (i.e. the point decay method and the PHAST method).

4.3 Long-Term Stability of Attenuated Constituents

The expected trends over time for pH and Eh are presented in Figures 6 and 7, respectively. Variations in pH and Eh are arguably the most important factors, other than physical attenuation, controlling the long-term stability of beryllium and cobalt. Predictive modeling in PHAST suggests that pH and Eh in the Ash Pond Area will remain stable. The pH, initially ranging from approximately 6.5 to 6.7 is simulated to gradually stabilize at 6.6, whereas Eh, initially ranging from approximately 495 to 505 mV, will only decrease slightly to 490 mV. At these predicted pH and Eh ranges, ferrihydrite, the primarily mechanism for attenuation of beryllium and cobalt, is modeled to remain stable across the Ash Pond Area.

The long-term stability of beryllium, cobalt, and lithium can be summarized as follows:

- **Beryllium:** For the range of pH and Eh values predicted at the site in the 50 years after closure and source control, beryllium levels are predicted to remain stable or show a decreasing trend (Figure 3). It is not anticipated that attenuated beryllium will re-mobilize and exceed the GWPS in the future once compliance is achieved. For the anticipated pH range of the Ash Pond Area, Stenge and Peterson (1989) list a partitioning coefficient of 70 to 80,000 L/kg for beryllium while Hfo and Hao will remain stable. Thus, with source control and stable pH and Eh, long-term stability of beryllium is expected.
- **Cobalt:** Attenuated cobalt should remain stable based on the range of pH and Eh values predicted at the site in the 50 years after closure and source control (Figure 4). It is not anticipated that attenuated cobalt will mobilize and exceed the GWPS in the future once compliance is achieved. For the anticipated pH range of the Ash Pond Area, Stenge and Peterson (1989) list a partitioning coefficient of 1.9 to 200 L/kg for cobalt while Hfo and Hao will remain stable. Additionally, the stability of ferrihydrite will also ensure any co-precipitated cobalt will remain sequestered. Thus, with source control and stable pH and Eh, long-term stability of cobalt is anticipated.
- **Lithium:** Lithium long-term stability is primarily controlled by physical attenuation. Currently, lithium is not reported at an SSL at the Ash Pond Area and porewater lithium is below the GWPS. Therefore, with the addition of source control, it is not anticipated that the long-term stability of lithium will be a concern at the Ash Pond Area.

5.0 TIER II EVALUATION

The purpose of the Tier II evaluation is to “Identify mechanisms and rates of the operative attenuation process” (USEPA 2007a). Based on this definition, the following modeling results and observations support MNA as a viable corrective measure for the Ash Pond Area CCR Units:

- **Adsorption Capacity Modeling:** PHAST modeling results show that adsorption is likely attenuating beryllium and cobalt downgradient of the CCR Unit. This is concluded based on equilibration of site-specific groundwater compositions with the range of Hfo and Hao concentrations observed in SEP results of Ash Pond Area aquifer solids. Predictive modeling (Figures 3, 4, and 5) also demonstrates the aquifer’s capacity to adsorb constituents from the CCR Units at much higher levels than have been measured to date. In addition to metal oxyhydroxides, clay minerals and/or particulate organics can also act as a substrate for attenuation (Prodromou 2016; Uddin 2017), but this mechanism was not included in the current evaluation.

The model findings are supported by the results of the sequential extraction testing. The presence of beryllium, cobalt, and to a minor degree lithium, in the amorphous and metal oxyhydroxide fractions of soils indicates that adsorption is occurring across the monitored area downgradient of the CCR Unit.

- **Co-precipitation:** In addition to adsorption, co-precipitation or the direct incorporation of trace metals into precipitated iron oxide-oxyhydroxides is a well-documented process. For the aquifer solids analyzed by sequential extraction (Golder 2019b), all samples reported higher concentrations of cobalt in the amorphous and metal hydroxide phases than indicated by adsorption modeling. Beryllium was also found to be associated with amorphous and metal hydroxide phases, but to a lesser degree. This suggests that beryllium and cobalt may also be attenuated during the formation of ferrihydrite. Cobalt was also identified by SEP to be associated with carbonate minerals in one sample, likely the result of co-precipitation. Co-precipitation is not considered a relevant attenuation mechanism for lithium.
- **Estimated Ash Pond Area Attenuation Rates:** Groundwater concentrations of beryllium, cobalt, and lithium are decreasing in downgradient monitoring wells over time, resulting in negative calculated point decay rates. Using the mean decay rate, maximum concentrations of beryllium, cobalt, and lithium observed in downgradient monitoring wells in 2020 would take approximately 17 years, 2 years, and <1 year, respectively, to attenuate to below their respective GWPS. Lithium concentrations in downgradient monitoring wells are already below the GWPS upon the most recent October 2020 sampling event.
- **Dilution and Dispersion Modeling:** Lithium levels at downgradient monitoring wells can be used to estimate the degree of dilution and dispersion occurring downgradient of the CCR Units. Using a source value for lithium of 1.4 mg/L in the PHAST model, a minimum and maximum downgradient physical attenuation factor of 5.6 and 74.8, respectively, were determined. Thus, at current porewater concentrations, at just the minimum dilution factor of 5.6, physical attenuation alone would be adequate to reduce beryllium, cobalt, and lithium levels to below their respective GWPS across the Ash Pond Area.

Based on these findings, beryllium, cobalt, and lithium are considered to be candidates for an MNA remedy application and deemed to meet the criteria for Tier II MNA in accordance with USEPA guidance (USEPA 2007a and 2007b).

6.0 TIER III EVALUATION

According to USEPA (USEPA 2007a), the purpose of the Tier III evaluation is to eliminate sites for an MNA remedy where (1) “Capacity of the aquifer is insufficient to attenuate the COC mass to regulatory standards” and/or (2) “Stability of the immobilized COC is insufficient to prevent remobilization due to future changes in groundwater chemistry”. Based on this definition, the following observations support MNA as a viable corrective measure for the Ash Pond Area:

- **Adsorption Capacity Modeling:** Predictive modeling has demonstrated that porewater concentrations of beryllium, cobalt, and lithium could increase to 0.070, 3.0, and 1.4 mg/L, respectively, and levels at downgradient monitoring wells would attenuate to below their respective GWPS in a reasonable time frame. The time frame is defined here as ‘reasonable” when it is comparable to time frames associated with other active remediation options described in an assessment of corrective measures (Golder 2019a; ITRC 2010). However, beryllium and cobalt concentrations in pond water samples from the CCR Units across two sampling events were never above detection (<0.0003 and < 0.003 mg/L, respectively) while lithium levels were below its GWPS (0.177 mg/L). Therefore, based on the current concentrations in the CCR Units, the current concentrations observed in downgradient monitoring wells, and the anticipated source control

activities, it is concluded that the combined long-term attenuation from sorption, dilution, and dispersion is sufficient to attenuate the beryllium, cobalt, and lithium mass in the CCR Units to concentrations below the GWPS. In addition to aluminum and iron oxyhydroxides, beryllium and cobalt (as well as lithium to a minor extent) are known to be attenuated by other sorbents (e.g., manganese (hydr)oxides, clay minerals, and particulate organic matter) not included in the modeling, providing additional sorption capacity at the Ash Pond Area.

- **Stability of Constituents:** Stability modeling indicates that the pH and Eh (i.e. the factors controlling adsorption, which is the primary attenuation mechanism) will remain stable over time. As such, both the sorption effectiveness as well as the stability of the ferrihydrite adsorptive surfaces will remain constant. The stability of gibbsite, another adsorptive surface considered in the modeling, is less dependent on pH and Eh and will remain stable even if unexpected fluctuations in pH and Eh occur. The total aluminum and iron contents in aquifer solids, based on the Tier I evaluation (Golder 2019b), range from 20,000 to 62,000 mg/kg and 8,000 to 13,000 mg/kg, respectively, indicating a significant reservoir potentially available for attenuation, and a reservoir that is resilient to changes in pH and Eh. It should be noted that there is no historical basis to expect large future deviations in groundwater pH and/or redox conditions.

7.0 CONCLUSION

This report presents the results of a Tier II and III evaluation conducted to determine the feasibility of using MNA as a remedial strategy for beryllium, cobalt, and lithium at the Martin Lake Ash Pond Area CCR Units. This evaluation has been completed in accordance with guidance and best practices promulgated by the USEPA (USEPA 2007a and 2007b) and the ITRC (ITRC 2010). Based on the results of this evaluation, the following is concluded regarding the constituents of interest:

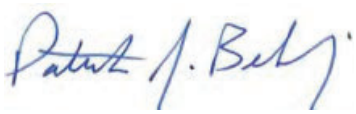
- Beryllium: Physical and chemical attenuation of beryllium is occurring. Beryllium levels in groundwater are stable, and the aquifer has adequate capacity to attenuate beryllium in a reasonable timeframe. Modeling indicates that beryllium attenuation will be efficient and stable in the long term. Beryllium in CCR unit porewater has never been measured above detection limits. Therefore, beryllium is considered a candidate for MNA at the Martin Lake Ash Pond Area.
- Cobalt: Physical and chemical attenuation of cobalt is occurring. Cobalt levels are stable, and the aquifer has adequate capacity to attenuate cobalt in a reasonable timeframe. Modeling indicates that cobalt attenuation will be efficient and stable in the long term. Cobalt in CCR unit porewater has never been measured above detection limits. Therefore, cobalt is considered a candidate for MNA at the Martin Lake Ash Pond Area.
- Lithium: Physical attenuation of lithium is occurring, levels are stable, and the aquifer has adequate capacity to attenuate lithium. Lithium in porewater of the CCR Units is currently below the GWPS. Therefore, lithium is considered a candidate for MNA at the Martin Lake Ash Pond Area.

It is recommended that a Tier IV evaluation be completed to design a long-term MNA monitoring plan in the event that MNA is selected as the final remedy for beryllium, cobalt, and lithium at the Martin Lake Ash Pond Area.

Signature Page

Golder Associates Inc.

PJ Nolan, PhD
Senior Project Geochemist



Patrick J. Behling, PE
Principal Engineer

William F. Vienne
Senior Hydrogeologist

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https://golderassociates.sharepoint.com/sites/127388/project files/5 technical work/2000-martin lake ash ponds/tier ii report/final/final revised june 2021/19134019-r-reva-martin lake ash pond area_mna eval_06032021.docx

8.0 REFERENCES

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Figures

LEGEND

- DOWNGRADIENT CCR MONITORING WELL
- UPGRADIENT CCR MONITORING WELL

REFERENCE(S)

BASE MAP TAKEN FROM GOOGLE EARTH IMAGERY DATED 2019.

CLIENT
LUMINANT
MARTIN LAKE SES ASH POND AREA

PROJECT
TIER II AND TIER III MNA GEOCHEMICAL EVALUATION

TITLE
DETAILED SITE PLAN - ASH POND AREA

CONSULTANT
GOLDER

YYYY-MM-DD	2020-01-23
DESIGNED	AJD
PREPARED	AJD
REVIEWED	WFV
APPROVED	WFV

PROJECT NO.	REV.	EXHIBIT
19134019	0	1

Last Edited By: adiamond Date: 2020-01-23 Time:9:52:24 AM | Printed By: adiamond Date: 2020-01-23 Time:9:52:58 AM
Path: \\texarkanadata\Projects - Round Rock_2019\19122262 - Luminant\C - MLSES-Ash Pond Area\ | File Name: FIG 1 - Detailed Site Plan (Ash Pond Area).dwg
IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI A
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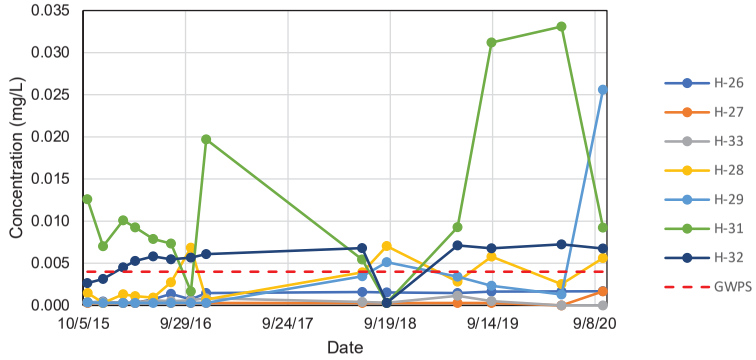

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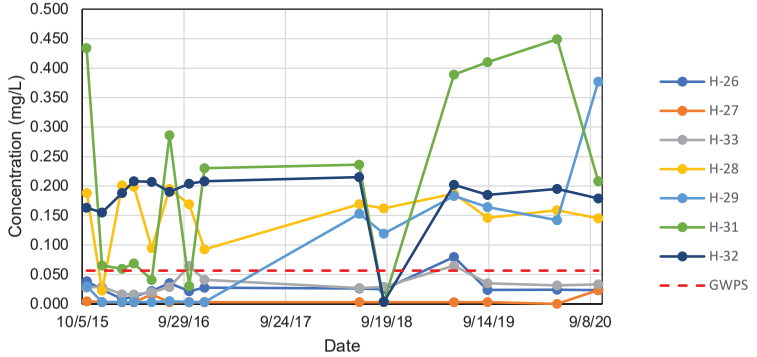

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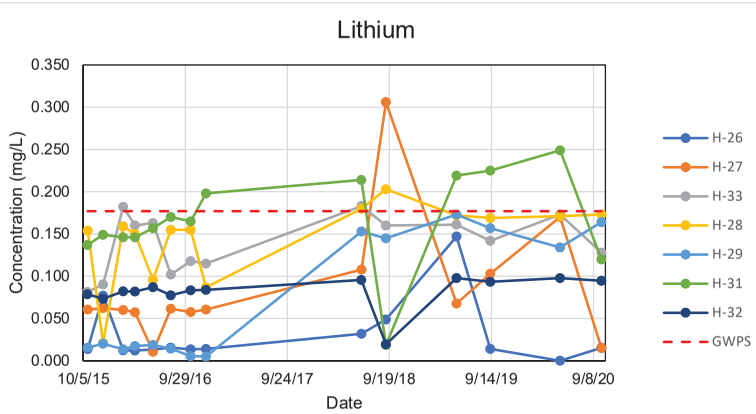

CLIENT
LUMINANT
MARTIN LAKE SES
ASH POND AREA

CONSULTANT
GOLDER

PROJECT
TIER II AND TIER III MNA GEOCHEMICAL EVALUATION

TITLE
CONSTITUENT TRENDS

PROJECT NO.	PHASE	REV.	FIGURE
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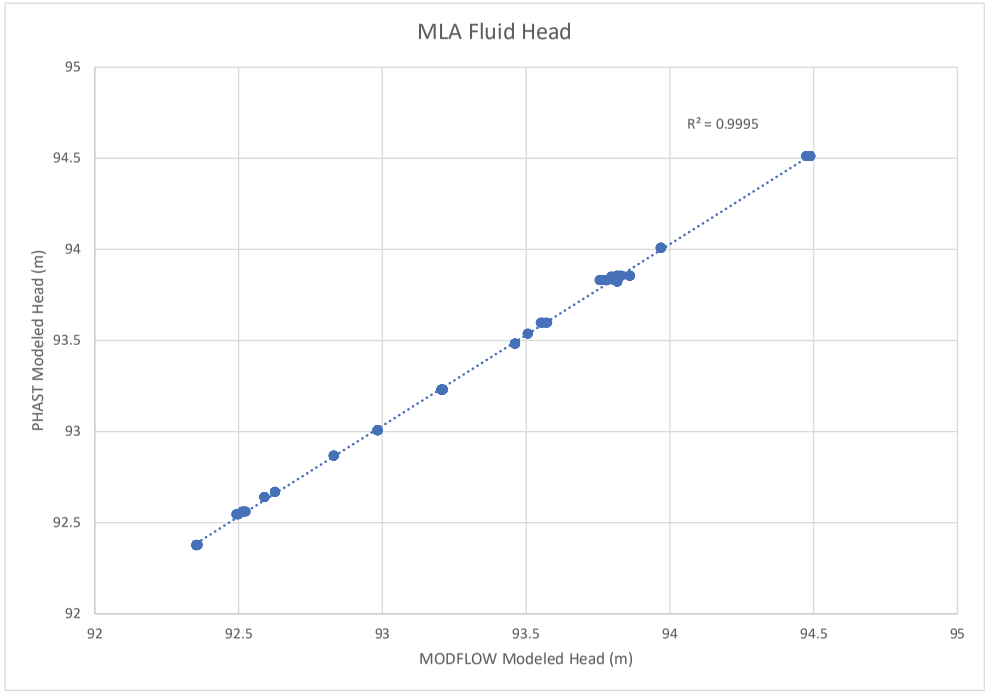

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LUMINANT
MARTIN LAKE SES
ASH POND AREA

CONSULTANT
GOLDER

PROJECT
TIER II AND TIER III MNA GEOCHEMICAL EVALUATION

TITLE
PHAST FLUID HEAD CALIBRATION

PROJECT NO.	PHASE	REV.	FIGURE
19134019	2000	A	2

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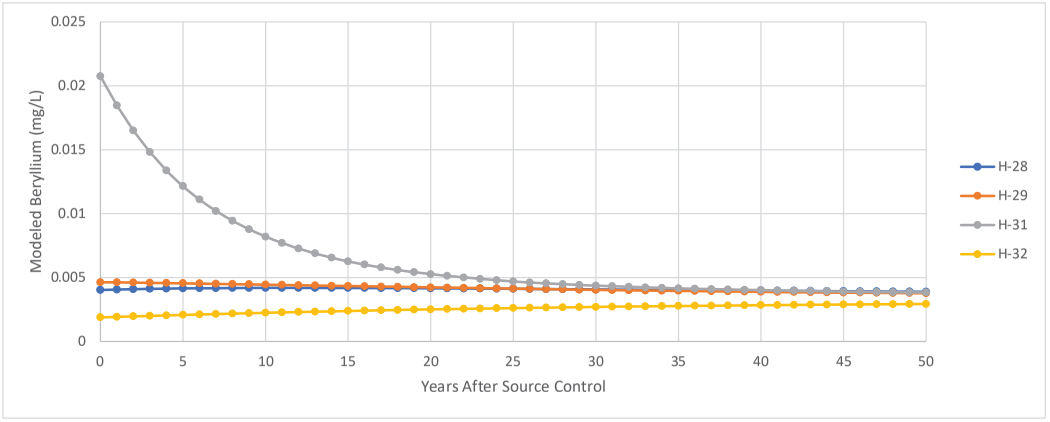

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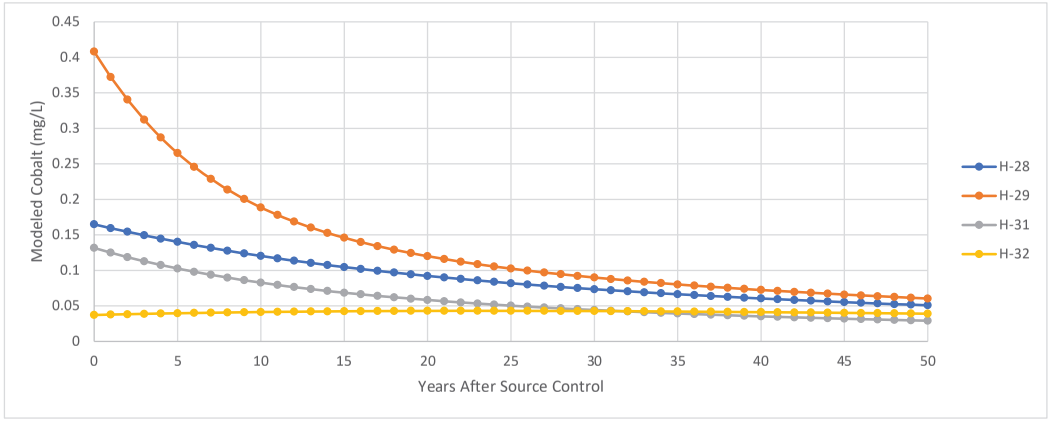

CLIENT
LUMINANT
MARTIN LAKE SES
ASH POND AREA

CONSULTANT
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PROJECT
TIER II AND TIER III MNA GEOCHEMICAL EVALUATION

TITLE
GEOCHEMICAL MODELING RESULTS FOR (3) BERYLLIUM AND (4) COBALT

PROJECT NO.	PHASE	REV.	FIGURE
19134019	2000	A	3&4

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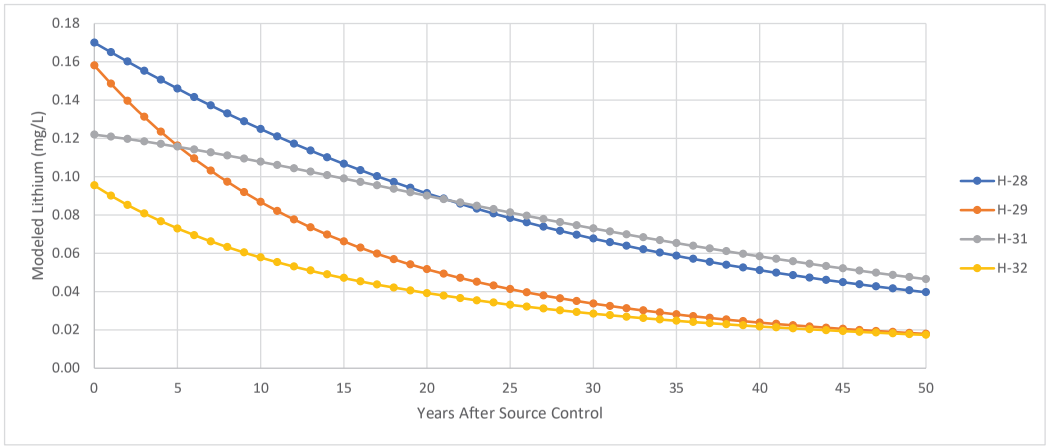

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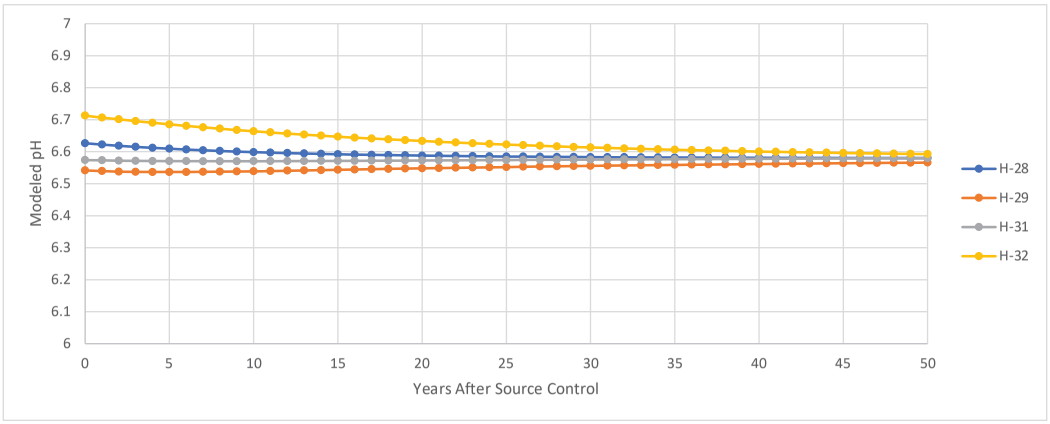

CLIENT
LUMINANT
MARTIN LAKE SES
ASH POND AREA

CONSULTANT
GOLDER

PROJECT
TIER II AND TIER III MNA GEOCHEMICAL EVALUATION

TITLE
GEOCHEMICAL MODELING RESULTS FOR (5) LITHIUM AND (6) pH

PROJECT NO.	PHASE	REV.	FIGURE
19134019	2000	A	**5&6**

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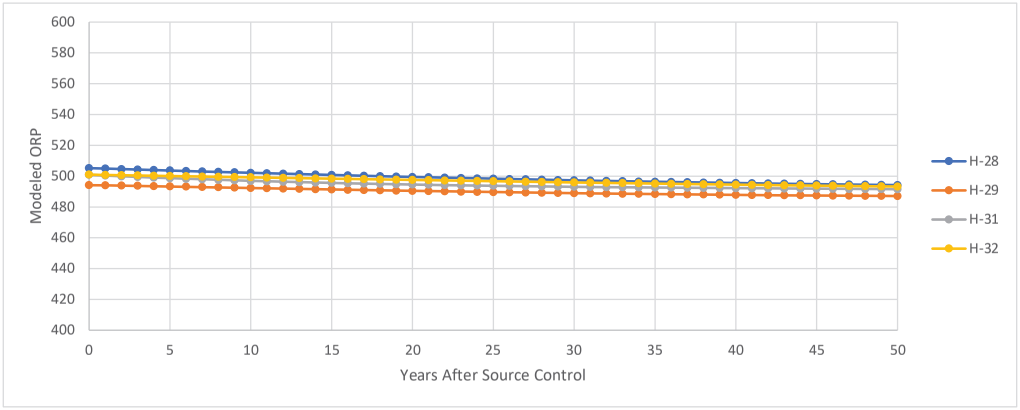

CLIENT
LUMINANT
MARTIN LAKE SES
ASH POND AREA

CONSULTANT
GOLDER

PROJECT
TIER II AND TIER III MNA GEOCHEMICAL EVALUATION

TITLE
GEOCHEMICAL MODELING RESULTS FOR REDOX

PROJECT NO.	PHASE	REV.	FIGURE
19134019	2000	A	7

APPENDIX A

Laboratory Analytical Reports

May 26, 2020

Will Vienne
Golder
2201 Double Creek Dr #4004
Round Rock, Texas 78664
TEL: (512) 671-3434
FAX: (512) 671-3446

Order No.: 2005111

RE: Luminant-MLSES-MNA

Dear Will Vienne:

DHL Analytical, Inc. received 7 sample(s) on 5/14/2020 for the analyses presented in the following report.

There were no problems with the analyses and all data met requirements of NELAP except where noted in the Case Narrative. All non-NELAP methods will be identified accordingly in the case narrative and all estimated uncertainties of test results are within method or EPA specifications.

If you have any questions regarding these tests results, please feel free to call. Thank you for using DHL Analytical.

Sincerely,

John DuPont
General Manager

This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211-20-25

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DHL ANALYTICAL
2300 Double Creek Dr. ■ Round Rock, TX 78664
Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

nelap

№ 68280

CHAIN-OF-CUSTODY

APPENDIX F Revision 2 February 27, 2024

CLIENT: GOLDER ASSOCIATES
ADDRESS: 2201 DOUBLE CREEK DR ROUND ROCK, TX 78664
PHONE: 512-671-3434 FAX/E-MAIL:
DATA REPORTED TO: WILL VIENNE
ADDITIONAL REPORT COPIES TO:

DATE: 5-13-20 PAGE 1 OF 1
PO #: DHL WORK ORDER #: 2005111
PROJECT LOCATION OR NAME: LUMINANT- MLSES -MNA
CLENT PROJECT #: 19134019 COLLECTOR: J. BRAYTON

Authorize 5% surcharge for TRRP Report? ❑ Yes ❑ No

S=SOIL P=PAINT
W=WATER SL=SLUDGE
A=AIR O=OTHER
L=LIQUID SO=SOLID
SE=SEDIMENT

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	HCl	HNO_3	H_2SO_4 ❑ NaOH ❑	ICE	UNPRESERVED	ANALYSES: BTEX ❑ MTBE ❑ [METHOD 8021]	TPH 1005 ❑ TPH 1006 ❑ HOLD 1006 ❑	GRO [METHOD 8015] ❑ DRO [METHOD 8105] ❑	VOC 8260 ❑ VOC 624 ❑ VOC 8260/5035 ❑	SVOC 8270 ❑ PAH 8270 ❑ HOLD PAH ❑ SVOC 625 ❑	8270 PEST ❑ 625 PEST/PCB ❑ 608 PCB ❑	8270 O-P PEST ❑ 8082 PCB ❑ 8270 PCB ❑	8321 HERB ❑ T PHOS, AMMONIA ❑	METALS 6020 ❑ METALS 200.8 ❑ DISS. METALS ❑	RCRA ❑ TX11 ❑	PH ❑ HEX CHROM ❑ ALKALINITY ❑ COD ❑	CHLORIDE ❑ ANIONS	TCLP-SVOC ❑ VOC ❑ PEST ❑ HERB ❑	TCLP-METALS ❑ RCRA 8 ❑ TX-11 ❑ Pb ❑	RCI ❑ FLASHPOINT ❑ DGAS ❑	TDS ❑ TSS ❑ % MOISTURE ❑ CYANIDE ❑	NO_3, PO_4, Na, Mg, K, Ferrous Fe, Ferric Fe	FIELD NOTES
H-31	01	5-13-20	1010	W	P	5		X		X												X						X	X	
H-32	02		1100	W	P	5		X		X												X						X	X	
H-27	03		1150	W	P	5		X		X												X						X	X	
H-28	04		1240	W	P	5		X		X												X						X	X	
H-29	05		1330	W	P	5		X		X												X						X	X	
H-26	06		1535	W	P	5		X		X												X						X	X	
H-33	07		1630	W	P	5		X		X												X						X	X	

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
[signature]	5-13-20 1800	FedEx
FedEx	5-14-2020 0905	[signature]

❑ DHL DISPOSAL @ $5.00 each ❑ Return

TURN AROUND TIME
RUSH ❑ CALL FIRST
1 DAY ❑ CALL FIRST
2 DAY ❑
NORMAL ☒
OTHER ❑

LABORATORY USE ONLY:
RECEIVING TEMP: 3.1, 2.3, 4.1 THERM #: 78
CUSTODY SEALS: ❑ BROKEN ☒ INTACT ❑ NOT USED
CARRIER: ❑ LONE STAR ☒ FEDEX ❑ UPS ❑ OTHER
❑ COURIER DELIVERY
❑ HAND DELIVERED

DHL COC Rev 1 | FEB 2010

DHL Analytical, Inc.

Sample Receipt Checklist

Client Name **Golder**

Date Received: **5/14/2020**

Work Order Number **2005111**

Received by: **JH**

Checklist completed by: _____ (Signature) 5/14/2020 (Date)

Reviewed by _____ (Initials) 5/14/2020 (Date)

Carrier name: FedEx 1day

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	**3.1** °C
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH<2 acceptable upon receipt?	Yes ☑	No ☐	NA ☐ LOT # 13171
	Adjusted? no		Checked by EL
Water - ph>9 (S) or ph>10 (CN) acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted? _____		Checked by _____

Any No response must be detailed in the comments section below.

Client contacted: _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments: _____

Corrective Action _____

Laboratory Name: DHL Analytical, Inc.

Laboratory Review Checklist: Reportable Data

Project Name: Luminant-MLSES-MNA	**LRC Date:** 5/26/2020
Reviewer Name: Angie O'Donnell	**Laboratory Work Order: 2005111**
Prep Batch Number(s): See Prep Dates Report	**Run Batch:** See Analytical Dates Report

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
		Chain-of-Custody (C-O-C)					
R1	OI	**1)** Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				**R1-01**
		2) Were all departures from standard conditions described in an exception report?			X		
R2	OI	**Sample and Quality Control (QC) Identification**					
		1) Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		2) Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	OI	**Test Reports**					
		1) Were all samples prepared and analyzed within holding times?	X				
		2) Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
		3) Were calculations checked by a peer or supervisor?	X				
		4) Were all analyte identifications checked by a peer or supervisor?	X				
		5) Were sample detection limits reported for all analytes not detected?	X				
		6) Were all results for soil and sediment samples reported on a dry weight basis?			X		
		7) Were % moisture (or solids) reported for all soil and sediment samples?			X		
		8) Were bulk soils/solids samples for volatile analysis extracted with methanol per EPA Method 5035?			X		
		9) If required for the project, TICs reported?			X		
R4	O	**Surrogate Recovery Data**					
		1) Were surrogates added prior to extraction?			X		
		2) Were surrogate percent recoveries in all samples within the laboratory QC limits?			X		
R5	OI	**Test Reports/Summary Forms for Blank Samples**					
		1) Were appropriate type(s) of blanks analyzed?	X				
		2) Were blanks analyzed at the appropriate frequency?	X				
		3) Where method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		4) Were blank concentrations < MDL?	X				
		5) For analyte(s) detected in a blank sample, was the concentration, unadjusted for sample specific factors, in all associated field samples, **greater** than 10 times the concentration in the blank sample?			X		
R6	OI	**Laboratory Control Samples (LCS):**					
		1) Were all COCs included in the LCS?	X				
		2) Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		3) Were LCSs analyzed at the required frequency?	X				
		4) Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		5) Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		6) Was the LCSD RPD within QC limits (if applicable)?	X				
R7	OI	**Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Data**					
		1) Were the project/method specified analytes included in the MS and MSD?	X				
		2) Were MS/MSD analyzed at the appropriate frequency?	X				
		3) Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?		X			**R7-03**
		4) Were MS/MSD RPDs within laboratory QC limits?	X				
R8	OI	**Analytical Duplicate Data**					
		1) Were appropriate analytical duplicates analyzed for each matrix?	X				
		2) Were analytical duplicates analyzed at the appropriate frequency?	X				
		3) Were RPDs or relative standard deviations within the laboratory QC limits?	X				
R9	OI	**Method Quantitation Limits (MQLs):**					
		1) Are the MQLs for each method analyte included in the laboratory data package?	X				
		2) Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
		3) Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
R10	OI	**Other Problems/Anomalies**					
		1) Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				**R10-01**
		2) Was applicable and available technology used to lower the SDL to minimize the matrix interference affects on the sample results?	X				
		3) Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices and methods associated with this laboratory data package?	X				

Laboratory Name: DHL Analytical, Inc.

Laboratory Review Checklist (continued): Supporting Data

Project Name: Luminant-MLSES-MNA	**LRC Date:** 5/26/2020
Reviewer Name: Angie O'Donnell	**Laboratory Work Order: 2005111**
Prep Batch Number(s): See Prep Dates Report	**Run Batch:** See Analytical Dates Report

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
S1	OI	**Initial Calibration (ICAL)**					
		1) Were response factors and/or relative response factors for each analyte within QC limits?	X				
		2) Were percent RSDs or correlation coefficient criteria met?	X				
		3) Was the number of standards recommended in the method used for all analytes?	X				
		4) Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		5) Are ICAL data available for all instruments used?	X				
		6) Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	**Initial and Continuing calibration Verification (ICCV and CCV) and Continuing Calibration blank (CCB):**					
		1) Was the CCV analyzed at the method-required frequency?	X				
		2) Were percent differences for each analyte within the method-required QC limits?	X				
		3) Was the ICAL curve verified for each analyte?	X				
		4) Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	X				
S3	O	**Mass Spectral Tuning:**					
		1) Was the appropriate compound for the method used for tuning?	X				
		2) Were ion abundance data within the method-required QC limits?	X				
S4	O	**Internal Standards (IS):**					
		1) Were IS area counts and retention times within the method-required QC limits?	X				
S5	OI	**Raw Data (NELAC Section 5.5.10)**					
		1) Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		2) Were data associated with manual integrations flagged on the raw data?	X				
S6	O	**Dual Column Confirmation**					
		1) Did dual column confirmation results meet the method-required QC?			X		
S7	O	**Tentatively Identified Compounds (TICs):**					
		1) If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) Results:**					
		1) Were percent recoveries within method QC limits?	X				
S9	I	**Serial Dilutions, Post Digestion Spikes, and Method of Standard Additions**					
		1) Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	X				
S10	OI	**Method Detection Limit (MDL) Studies**					
		1) Was a MDL study performed for each reported analyte?	X				
		2) Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	**Proficiency Test Reports:**					
		1) Was the lab's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	**Standards Documentation**					
		1) Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound/Analyte Identification Procedures**					
		1) Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of Analyst Competency (DOC)**					
		1) Was DOC conducted consistent with NELAC Chapter 5 – Appendix C?	X				
		2) Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/Validation Documentation for Methods** (NELAC Chapter 5)					
		1) Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	**Laboratory Standard Operating Procedures (SOPs):**					
		1) Are laboratory SOPs current and on file for each method performed?	X				

1 Items identified by the letter "R" should be included in the laboratory data package submitted to the TCEQ in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.

2 O = organic analyses; I = inorganic analyses (and general chemistry, when applicable).

3 NA = Not applicable.

4 NR = Not Reviewed.

5 ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Data Package Signature Page – RG-366/TRRP-13

This data package consists of:

This signature page, the laboratory review checklist, and the following reportable data:

R1 Field chain-of-custody documentation;
R2 Sample identification cross-reference;
R3 Test reports (analytical data sheets) for each environmental sample that includes:
  a) Items consistent with NELAC Chapter 5,
  b) dilution factors,
  c) preparation methods,
  d) cleanup methods, and
  e) if required for the project, tentatively identified compounds (TICs).
R4 Surrogate recovery data including:
  a) Calculated recovery (%R), and
  b) The laboratory's surrogate QC limits.
R5 Test reports/summary forms for blank samples;
R6 Test reports/summary forms for laboratory control samples (LCSs) including:
  a) LCS spiking amounts,
  b) Calculated %R for each analyte, and
  c) The laboratory's LCS QC limits.
R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
  a) Samples associated with the MS/MSD clearly identified,
  b) MS/MSD spiking amounts,
  c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
  d) Calculated %Rs and relative percent differences (RPDs), and
  e) The laboratory's MS/MSD QC limits
R8 Laboratory analytical duplicate (if applicable) recovery and precision:
  a) The amount of analyte measured in the duplicate,
  b) The calculated RPD, and
  c) The laboratory's QC limits for analytical duplicates.
R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix;
R10 Other problems or anomalies.

The Exception Report for each "No" or "Not Reviewed (NR)" item in the Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory is not accredited under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature below, I affirm to the best of my knowledge that all problems/anomalies observed by the laboratory have been identified in the Laboratory Review Checklist, and no information or data affecting the quality of the data has been knowingly withheld.

This laboratory was last inspected by TCEQ on February 25-28, 2019. Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Name: John DuPont
Official Title: General Manager

Signature

05/26/20
Date

Name: Dr. Derhsing Luu
Official Title: Technical Director

DHL Analytical, Inc. **Date:** *26-May-20*

CLIENT: Golder
Project: Luminant-MLSES-MNA
Lab Order: 2005111

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Method SW6020B - Metals Analysis
Method E300 - Anions Analysis
Method M2320 B - Alkalinity Analysis
Method M3500-FE D - Ferrous Iron Analysis (This parameter is not NELAP Certified)
Method M3500-FE D - Ferrous Iron Analysis (Calculated) (This parameter is not NELAP Certified)
Method M4500-P E - Orthophosphate Analysis

Exception Report R1-01

The samples were received and log-in performed on 5/14/2020. A total of 7 samples were received and analyzed. The samples arrived in good condition and were properly packaged.

Exception Report R7-03

For Metals Analysis, the recovery of Sodium for the Matrix Spike and Matrix Spike Duplicate (2005111-01 MS/MSD) was above the method control limits. This is flagged accordingly in the QC Summary Report. This analyte was within method control limits in the associated LCS. No further corrective action was taken.

Exception Report R10-01

The Ferric Iron is calculated as the Total Iron minus the Ferrous Iron. The result of Ferrous Iron for Sample H-31 was slightly greater than the result of Total Iron. The result was within acceptable analytical variation limits. No further corrective action was taken.

DHL Analytical, Inc.

Date: *26-May-20*

CLIENT: Golder
Project: Luminant-MLSES-MNA
Lab Order: 2005111

Work Order Sample Summary

Lab Smp ID	Client Sample ID	Tag Number	Date Collected	Date Recved
2005111-01	H-31		05/13/20 10:10 AM	5/14/2020
2005111-02	H-32		05/13/20 11:00 AM	5/14/2020
2005111-03	H-27		05/13/20 11:50 AM	5/14/2020
2005111-04	H-28		05/13/20 12:40 PM	5/14/2020
2005111-05	H-29		05/13/20 01:30 PM	5/14/2020
2005111-06	H-26		05/13/20 03:35 PM	5/14/2020
2005111-07	H-33		05/13/20 04:30 PM	5/14/2020

DHL Analytical, Inc.

26-May-20

Lab Order: 2005111
Client: Golder
Project: Luminant-MLSES-MNA

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
2005111-01A	H-31	05/13/20 10:10 AM	Aqueous	M3500-Fe	Ferrous Iron Prep Water	05/18/20 09:50 AM	96388
	H-31	05/13/20 10:10 AM	Aqueous	M3500-Fe	Ferrous Iron Prep Water	05/18/20 09:50 AM	96388
2005111-01B	H-31	05/13/20 10:10 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/15/20 08:56 AM	96359
	H-31	05/13/20 10:10 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/15/20 08:56 AM	96359
2005111-01C	H-31	05/13/20 10:10 AM	Aqueous	M2320 B	Alkalinity Preparation	05/14/20 09:44 AM	96346
	H-31	05/13/20 10:10 AM	Aqueous	E300	Anion Preparation	05/14/20 10:14 AM	96350
	H-31	05/13/20 10:10 AM	Aqueous	M4500-P E	Orthophosphate Prep	05/14/20 10:50 AM	96353
2005111-02A	H-32	05/13/20 11:00 AM	Aqueous	M3500-Fe	Ferrous Iron Prep Water	05/18/20 09:50 AM	96388
	H-32	05/13/20 11:00 AM	Aqueous	M3500-Fe	Ferrous Iron Prep Water	05/18/20 09:50 AM	96388
2005111-02B	H-32	05/13/20 11:00 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/15/20 08:56 AM	96359
	H-32	05/13/20 11:00 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/15/20 08:56 AM	96359
2005111-02C	H-32	05/13/20 11:00 AM	Aqueous	M2320 B	Alkalinity Preparation	05/14/20 09:44 AM	96346
	H-32	05/13/20 11:00 AM	Aqueous	E300	Anion Preparation	05/14/20 10:14 AM	96350
	H-32	05/13/20 11:00 AM	Aqueous	M4500-P E	Orthophosphate Prep	05/14/20 10:50 AM	96353
2005111-03A	H-27	05/13/20 11:50 AM	Aqueous	M3500-Fe	Ferrous Iron Prep Water	05/18/20 09:50 AM	96388
2005111-03B	H-27	05/13/20 11:50 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/15/20 08:56 AM	96359
	H-27	05/13/20 11:50 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/15/20 08:56 AM	96359
2005111-03C	H-27	05/13/20 11:50 AM	Aqueous	M2320 B	Alkalinity Preparation	05/14/20 09:44 AM	96346
	H-27	05/13/20 11:50 AM	Aqueous	E300	Anion Preparation	05/14/20 10:14 AM	96350
	H-27	05/13/20 11:50 AM	Aqueous	M4500-P E	Orthophosphate Prep	05/14/20 10:50 AM	96353
2005111-04A	H-28	05/13/20 12:40 PM	Aqueous	M3500-Fe	Ferrous Iron Prep Water	05/18/20 09:50 AM	96388
2005111-04B	H-28	05/13/20 12:40 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/15/20 08:56 AM	96359
	H-28	05/13/20 12:40 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/15/20 08:56 AM	96359
2005111-04C	H-28	05/13/20 12:40 PM	Aqueous	M2320 B	Alkalinity Preparation	05/14/20 09:44 AM	96346
	H-28	05/13/20 12:40 PM	Aqueous	E300	Anion Preparation	05/14/20 10:14 AM	96350
	H-28	05/13/20 12:40 PM	Aqueous	M4500-P E	Orthophosphate Prep	05/14/20 10:50 AM	96353
2005111-05A	H-29	05/13/20 01:30 PM	Aqueous	M3500-Fe	Ferrous Iron Prep Water	05/18/20 09:50 AM	96388
2005111-05B	H-29	05/13/20 01:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/15/20 08:56 AM	96359

DHL Analytical, Inc. *26-May-20*

Lab Order: 2005111
Client: Golder
Project: Luminant-MLSES-MNA

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
2005111-05B	H-29	05/13/20 01:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/15/20 08:56 AM	96359
2005111-05C	H-29	05/13/20 01:30 PM	Aqueous	M2320 B	Alkalinity Preparation	05/14/20 09:44 AM	96346
	H-29	05/13/20 01:30 PM	Aqueous	E300	Anion Preparation	05/14/20 10:14 AM	96350
	H-29	05/13/20 01:30 PM	Aqueous	M4500-P E	Orthophosphate Prep	05/14/20 10:50 AM	96353
2005111-06A	H-26	05/13/20 03:35 PM	Aqueous	M3500-Fe	Ferrous Iron Prep Water	05/18/20 09:50 AM	96388
2005111-06B	H-26	05/13/20 03:35 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/15/20 08:56 AM	96359
	H-26	05/13/20 03:35 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/15/20 08:56 AM	96359
2005111-06C	H-26	05/13/20 03:35 PM	Aqueous	M2320 B	Alkalinity Preparation	05/14/20 09:44 AM	96346
	H-26	05/13/20 03:35 PM	Aqueous	E300	Anion Preparation	05/14/20 10:14 AM	96350
	H-26	05/13/20 03:35 PM	Aqueous	M4500-P E	Orthophosphate Prep	05/14/20 10:50 AM	96353
2005111-07A	H-33	05/13/20 04:30 PM	Aqueous	M3500-Fe	Ferrous Iron Prep Water	05/18/20 09:50 AM	96388
2005111-07B	H-33	05/13/20 04:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/15/20 08:56 AM	96359
	H-33	05/13/20 04:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/15/20 08:56 AM	96359
2005111-07C	H-33	05/13/20 04:30 PM	Aqueous	M2320 B	Alkalinity Preparation	05/14/20 09:44 AM	96346
	H-33	05/13/20 04:30 PM	Aqueous	E300	Anion Preparation	05/14/20 10:14 AM	96350
	H-33	05/13/20 04:30 PM	Aqueous	M4500-P E	Orthophosphate Prep	05/14/20 10:50 AM	96353

DHL Analytical, Inc. *26-May-20*

Lab Order: 2005111
Client: Golder
Project: Luminant-MLSES-MNA

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
2005111-01A	H-31	Aqueous	M3500-Fe D	Ferric Iron (Calculated)	96388	1	05/26/20	UV/VIS_2_200526A
	H-31	Aqueous	M3500-Fe D	Ferrous Iron	96388	1	05/18/20 02:09 PM	UV/VIS_2_200518B
	H-31	Aqueous	M3500-Fe D	Ferrous Iron	96388	100	05/18/20 02:30 PM	UV/VIS_2_200518B
2005111-01B	H-31	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	96359	1	05/19/20 12:46 PM	ICP-MS5_200519B
	H-31	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	96359	50	05/20/20 01:19 PM	ICP-MS5_200520B
2005111-01C	H-31	Aqueous	M2320 B	Alkalinity	96346	1	05/14/20 01:26 PM	TITRATOR_200514B
	H-31	Aqueous	E300	Anions by IC method - Water	96350	1	05/14/20 01:51 PM	IC2_200514A
	H-31	Aqueous	M4500-P E	Orthophosphate	96353	1	05/14/20 02:29 PM	UV/VIS_2_200514B
2005111-02A	H-32	Aqueous	M3500-Fe D	Ferric Iron (Calculated)	96388	1	05/26/20	UV/VIS_2_200526A
	H-32	Aqueous	M3500-Fe D	Ferrous Iron	96388	1	05/18/20 02:09 PM	UV/VIS_2_200518B
	H-32	Aqueous	M3500-Fe D	Ferrous Iron	96388	5	05/18/20 02:30 PM	UV/VIS_2_200518B
2005111-02B	H-32	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	96359	1	05/19/20 11:55 AM	ICP-MS5_200519B
	H-32	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	96359	10	05/20/20 01:42 PM	ICP-MS5_200520B
2005111-02C	H-32	Aqueous	M2320 B	Alkalinity	96346	1	05/14/20 01:29 PM	TITRATOR_200514B
	H-32	Aqueous	E300	Anions by IC method - Water	96350	1	05/14/20 03:27 PM	IC2_200514A
	H-32	Aqueous	M4500-P E	Orthophosphate	96353	1	05/14/20 02:30 PM	UV/VIS_2_200514B
2005111-03A	H-27	Aqueous	M3500-Fe D	Ferric Iron (Calculated)	96388	1	05/26/20	UV/VIS_2_200526A
	H-27	Aqueous	M3500-Fe D	Ferrous Iron	96388	1	05/18/20 02:10 PM	UV/VIS_2_200518B
2005111-03B	H-27	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	96359	1	05/19/20 11:57 AM	ICP-MS5_200519B
	H-27	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	96359	10	05/20/20 01:44 PM	ICP-MS5_200520B
2005111-03C	H-27	Aqueous	M2320 B	Alkalinity	96346	1	05/14/20 01:38 PM	TITRATOR_200514B
	H-27	Aqueous	E300	Anions by IC method - Water	96350	1	05/14/20 02:07 PM	IC2_200514A
	H-27	Aqueous	M4500-P E	Orthophosphate	96353	1	05/14/20 02:30 PM	UV/VIS_2_200514B
2005111-04A	H-28	Aqueous	M3500-Fe D	Ferric Iron (Calculated)	96388	1	05/26/20	UV/VIS_2_200526A
	H-28	Aqueous	M3500-Fe D	Ferrous Iron	96388	1	05/18/20 02:11 PM	UV/VIS_2_200518B
2005111-04B	H-28	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	96359	1	05/19/20 11:59 AM	ICP-MS5_200519B
	H-28	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	96359	10	05/20/20 01:46 PM	ICP-MS5_200520B
2005111-04C	H-28	Aqueous	M2320 B	Alkalinity	96346	1	05/14/20 01:41 PM	TITRATOR_200514B

DHL Analytical, Inc. *26-May-20*

Lab Order: 2005111
Client: Golder
Project: Luminant-MLSES-MNA

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
2005111-04C	H-28	Aqueous	E300	Anions by IC method - Water	96350	1	05/14/20 02:23 PM	IC2_200514A
	H-28	Aqueous	M4500-P E	Orthophosphate	96353	1	05/14/20 02:30 PM	UV/VIS_2_200514B
2005111-05A	H-29	Aqueous	M3500-Fe D	Ferric Iron (Calculated)	96388	1	05/26/20	UV/VIS_2_200526A
	H-29	Aqueous	M3500-Fe D	Ferrous Iron	96388	1	05/18/20 02:12 PM	UV/VIS_2_200518B
2005111-05B	H-29	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	96359	1	05/19/20 12:01 PM	ICP-MS5_200519B
	H-29	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	96359	10	05/20/20 02:16 PM	ICP-MS5_200520B
2005111-05C	H-29	Aqueous	M2320 B	Alkalinity	96346	1	05/14/20 01:44 PM	TITRATOR_200514B
	H-29	Aqueous	E300	Anions by IC method - Water	96350	1	05/14/20 02:39 PM	IC2_200514A
	H-29	Aqueous	M4500-P E	Orthophosphate	96353	1	05/14/20 02:31 PM	UV/VIS_2_200514B
2005111-06A	H-26	Aqueous	M3500-Fe D	Ferric Iron (Calculated)	96388	1	05/26/20	UV/VIS_2_200526A
	H-26	Aqueous	M3500-Fe D	Ferrous Iron	96388	1	05/18/20 02:12 PM	UV/VIS_2_200518B
2005111-06B	H-26	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	96359	10	05/20/20 02:18 PM	ICP-MS5_200520B
	H-26	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	96359	1	05/19/20 12:03 PM	ICP-MS5_200519B
2005111-06C	H-26	Aqueous	M2320 B	Alkalinity	96346	1	05/14/20 01:49 PM	TITRATOR_200514B
	H-26	Aqueous	E300	Anions by IC method - Water	96350	1	05/14/20 02:55 PM	IC2_200514A
	H-26	Aqueous	M4500-P E	Orthophosphate	96353	1	05/14/20 02:31 PM	UV/VIS_2_200514B
2005111-07A	H-33	Aqueous	M3500-Fe D	Ferric Iron (Calculated)	96388	1	05/26/20	UV/VIS_2_200526A
	H-33	Aqueous	M3500-Fe D	Ferrous Iron	96388	1	05/18/20 02:13 PM	UV/VIS_2_200518B
2005111-07B	H-33	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	96359	1	05/19/20 12:06 PM	ICP-MS5_200519B
	H-33	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	96359	10	05/20/20 02:20 PM	ICP-MS5_200520B
2005111-07C	H-33	Aqueous	M2320 B	Alkalinity	96346	1	05/14/20 01:55 PM	TITRATOR_200514B
	H-33	Aqueous	E300	Anions by IC method - Water	96350	1	05/14/20 03:11 PM	IC2_200514A
	H-33	Aqueous	M4500-P E	Orthophosphate	96353	1	05/14/20 02:31 PM	UV/VIS_2_200514B

DHL Analytical, Inc.

Date: *26-May-20*

CLIENT:	Golder	**Client Sample ID:**	H-31
Project:	Luminant-MLSES-MNA	**Lab ID:**	2005111-01
Project No:	19134019-2000	**Collection Date:**	05/13/20 10:10 AM
Lab Order:	2005111	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **RO**
Iron	39.1	1.50	5.00		mg/L	50	05/20/20 01:19 PM
Magnesium	170	5.00	15.0		mg/L	50	05/20/20 01:19 PM
Potassium	6.26	0.100	0.300		mg/L	1	05/19/20 12:46 PM
Sodium	682	5.00	15.0		mg/L	50	05/20/20 01:19 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Nitrate-N	<0.100	0.100	0.500		mg/L	1	05/14/20 01:51 PM
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	22.3	10.0	20.0		mg/L @ pH 4.51	1	05/14/20 01:26 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.51	1	05/14/20 01:26 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.51	1	05/14/20 01:26 PM
Alkalinity, Total (As CaCO3)	22.3	20.0	20.0		mg/L @ pH 4.51	1	05/14/20 01:26 PM
FERRIC IRON (CALCULATED)		**M3500-FE D**					Analyst: **AO**
Iron, Ferric	<0.0500	0.0500	0.100	N	mg/L	1	05/26/20
FERROUS IRON		**M3500-FE D**					Analyst: **BTJ**
Iron, Ferrous	39.4	5.00	10.0	N	mg/L	100	05/18/20 02:30 PM
ORTHOPHOSPHATE		**M4500-P E**					Analyst: **BTJ**
Phosphorus, Total Orthophosphate (As P)	0.0350	0.0300	0.100	J	mg/L	1	05/14/20 02:29 PM

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- See Final Page of Report for MQLs and MDLs
- S - Spike Recovery outside control limits
- C - Sample Result or QC discussed in Case Narrative
- RL - Reporting Limit (MQL adjusted for moisture and sample size)
- SDL - Sample Detection Limit
- E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *26-May-20*

CLIENT:	Golder	**Client Sample ID:**	H-32
Project:	Luminant-MLSES-MNA	**Lab ID:**	2005111-02
Project No:	19134019-2000	**Collection Date:**	05/13/20 11:00 AM
Lab Order:	2005111	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **RO**
Iron	1.84	0.0300	0.100		mg/L	1	05/19/20 11:55 AM
Magnesium	17.8	0.100	0.300		mg/L	1	05/19/20 11:55 AM
Potassium	2.54	0.100	0.300		mg/L	1	05/19/20 11:55 AM
Sodium	153	1.00	3.00		mg/L	10	05/20/20 01:42 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Nitrate-N	<0.100	0.100	0.500		mg/L	1	05/14/20 03:27 PM
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.52	1	05/14/20 01:29 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.52	1	05/14/20 01:29 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.52	1	05/14/20 01:29 PM
Alkalinity, Total (As CaCO3)	<20.0	20.0	20.0		mg/L @ pH 4.52	1	05/14/20 01:29 PM
FERRIC IRON (CALCULATED)		**M3500-FE D**					Analyst: **AO**
Iron, Ferric	0.800	0.0500	0.100	N	mg/L	1	05/26/20
FERROUS IRON		**M3500-FE D**					Analyst: **BTJ**
Iron, Ferrous	1.07	0.250	0.500	N	mg/L	5	05/18/20 02:30 PM
ORTHOPHOSPHATE		**M4500-P E**					Analyst: **BTJ**
Phosphorus, Total Orthophosphate (As P)	0.0670	0.0300	0.100	J	mg/L	1	05/14/20 02:30 PM

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- C - Sample Result or QC discussed in Case Narrative
- RL - Reporting Limit (MQL adjusted for moisture and sample size)
- SDL - Sample Detection Limit
- E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *26-May-20*

CLIENT:	Golder	**Client Sample ID:**	H-27
Project:	Luminant-MLSES-MNA	**Lab ID:**	2005111-03
Project No:	19134019-2000	**Collection Date:**	05/13/20 11:50 AM
Lab Order:	2005111	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **RO**
Iron	0.0913	0.0300	0.100	J	mg/L	1	05/19/20 11:57 AM
Magnesium	28.4	1.00	3.00		mg/L	10	05/20/20 01:44 PM
Potassium	80.7	1.00	3.00		mg/L	10	05/20/20 01:44 PM
Sodium	105	1.00	3.00		mg/L	10	05/20/20 01:44 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Nitrate-N	0.639	0.100	0.500		mg/L	1	05/14/20 02:07 PM
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	166	10.0	20.0		mg/L @ pH 4.51	1	05/14/20 01:38 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.51	1	05/14/20 01:38 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.51	1	05/14/20 01:38 PM
Alkalinity, Total (As CaCO3)	166	20.0	20.0		mg/L @ pH 4.51	1	05/14/20 01:38 PM
FERRIC IRON (CALCULATED)		**M3500-FE D**					Analyst: **AO**
Iron, Ferric	0.0913	0.0500	0.100	JN	mg/L	1	05/26/20
FERROUS IRON		**M3500-FE D**					Analyst: **BTJ**
Iron, Ferrous	<0.0500	0.0500	0.100	N	mg/L	1	05/18/20 02:10 PM
ORTHOPHOSPHATE		**M4500-P E**					Analyst: **BTJ**
Phosphorus, Total Orthophosphate (As P)	0.0520	0.0300	0.100	J	mg/L	1	05/14/20 02:30 PM

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- S - Spike Recovery outside control limits
- C - Sample Result or QC discussed in Case Narrative
- RL - Reporting Limit (MQL adjusted for moisture and sample size)
- SDL - Sample Detection Limit
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DHL Analytical, Inc.

Date: *26-May-20*

CLIENT:	Golder	**Client Sample ID:**	H-28
Project:	Luminant-MLSES-MNA	**Lab ID:**	2005111-04
Project No:	19134019-2000	**Collection Date:**	05/13/20 12:40 PM
Lab Order:	2005111	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **RO**
Iron	0.346	0.0300	0.100		mg/L	1	05/19/20 11:59 AM
Magnesium	58.5	1.00	3.00		mg/L	10	05/20/20 01:46 PM
Potassium	1.45	0.100	0.300		mg/L	1	05/19/20 11:59 AM
Sodium	175	1.00	3.00		mg/L	10	05/20/20 01:46 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Nitrate-N	<0.100	0.100	0.500		mg/L	1	05/14/20 02:23 PM
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.49	1	05/14/20 01:41 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.49	1	05/14/20 01:41 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.49	1	05/14/20 01:41 PM
Alkalinity, Total (As CaCO3)	<20.0	20.0	20.0		mg/L @ pH 4.49	1	05/14/20 01:41 PM
FERRIC IRON (CALCULATED)		**M3500-FE D**					Analyst: **AO**
Iron, Ferric	0.346	0.0500	0.100	N	mg/L	1	05/26/20
FERROUS IRON		**M3500-FE D**					Analyst: **BTJ**
Iron, Ferrous	<0.0500	0.0500	0.100	N	mg/L	1	05/18/20 02:11 PM
ORTHOPHOSPHATE		**M4500-P E**					Analyst: **BTJ**
Phosphorus, Total Orthophosphate (As P)	0.0490	0.0300	0.100	J	mg/L	1	05/14/20 02:30 PM

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- S - Spike Recovery outside control limits
- C - Sample Result or QC discussed in Case Narrative
- RL - Reporting Limit (MQL adjusted for moisture and sample size)
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DHL Analytical, Inc.

Date: *26-May-20*

CLIENT:	Golder	**Client Sample ID:**	H-29
Project:	Luminant-MLSES-MNA	**Lab ID:**	2005111-05
Project No:	19134019-2000	**Collection Date:**	05/13/20 01:30 PM
Lab Order:	2005111	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **RO**
Iron	0.270	0.0300	0.100		mg/L	1	05/19/20 12:01 PM
Magnesium	71.0	1.00	3.00		mg/L	10	05/20/20 02:16 PM
Potassium	1.82	0.100	0.300		mg/L	1	05/19/20 12:01 PM
Sodium	165	1.00	3.00		mg/L	10	05/20/20 02:16 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Nitrate-N	<0.100	0.100	0.500		mg/L	1	05/14/20 02:39 PM
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.51	1	05/14/20 01:44 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.51	1	05/14/20 01:44 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.51	1	05/14/20 01:44 PM
Alkalinity, Total (As CaCO3)	<20.0	20.0	20.0		mg/L @ pH 4.51	1	05/14/20 01:44 PM
FERRIC IRON (CALCULATED)		**M3500-FE D**					Analyst: **AO**
Iron, Ferric	0.211	0.0500	0.100	N	mg/L	1	05/26/20
FERROUS IRON		**M3500-FE D**					Analyst: **BTJ**
Iron, Ferrous	0.0589	0.0500	0.100	JN	mg/L	1	05/18/20 02:12 PM
ORTHOPHOSPHATE		**M4500-P E**					Analyst: **BTJ**
Phosphorus, Total Orthophosphate (As P)	<0.0300	0.0300	0.100		mg/L	1	05/14/20 02:31 PM

Qualifiers:

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- S - Spike Recovery outside control limits
- C - Sample Result or QC discussed in Case Narrative
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DHL Analytical, Inc.

Date: *26-May-20*

CLIENT:	Golder	**Client Sample ID:**	H-26
Project:	Luminant-MLSES-MNA	**Lab ID:**	2005111-06
Project No:	19134019-2000	**Collection Date:**	05/13/20 03:35 PM
Lab Order:	2005111	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **RO**
Iron	1.57	0.0300	0.100		mg/L	1	05/19/20 12:03 PM
Magnesium	17.2	0.100	0.300		mg/L	1	05/19/20 12:03 PM
Potassium	6.87	0.100	0.300		mg/L	1	05/19/20 12:03 PM
Sodium	27.1	1.00	3.00		mg/L	10	05/20/20 02:18 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Nitrate-N	<0.100	0.100	0.500		mg/L	1	05/14/20 02:55 PM
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	29.9	10.0	20.0		mg/L @ pH 4.51	1	05/14/20 01:49 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.51	1	05/14/20 01:49 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.51	1	05/14/20 01:49 PM
Alkalinity, Total (As CaCO3)	29.9	20.0	20.0		mg/L @ pH 4.51	1	05/14/20 01:49 PM
FERRIC IRON (CALCULATED)		**M3500-FE D**					Analyst: **AO**
Iron, Ferric	1.57	0.0500	0.100	N	mg/L	1	05/26/20
FERROUS IRON		**M3500-FE D**					Analyst: **BTJ**
Iron, Ferrous	<0.0500	0.0500	0.100	N	mg/L	1	05/18/20 02:12 PM
ORTHOPHOSPHATE		**M4500-P E**					Analyst: **BTJ**
Phosphorus, Total Orthophosphate (As P)	<0.0300	0.0300	0.100		mg/L	1	05/14/20 02:31 PM

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DHL Analytical, Inc.

Date: *26-May-20*

CLIENT:	Golder	**Client Sample ID:**	H-33
Project:	Luminant-MLSES-MNA	**Lab ID:**	2005111-07
Project No:	19134019-2000	**Collection Date:**	05/13/20 04:30 PM
Lab Order:	2005111	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **RO**
Iron	0.353	0.0300	0.100		mg/L	1	05/19/20 12:06 PM
Magnesium	11.1	0.100	0.300		mg/L	1	05/19/20 12:06 PM
Potassium	11.7	0.100	0.300		mg/L	1	05/19/20 12:06 PM
Sodium	77.0	1.00	3.00		mg/L	10	05/20/20 02:20 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Nitrate-N	0.215	0.100	0.500	J	mg/L	1	05/14/20 03:11 PM
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	59.3	10.0	20.0		mg/L @ pH 4.5	1	05/14/20 01:55 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.5	1	05/14/20 01:55 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.5	1	05/14/20 01:55 PM
Alkalinity, Total (As CaCO3)	59.3	20.0	20.0		mg/L @ pH 4.5	1	05/14/20 01:55 PM
FERRIC IRON (CALCULATED)		**M3500-FE D**					Analyst: **AO**
Iron, Ferric	0.353	0.0500	0.100	N	mg/L	1	05/26/20
FERROUS IRON		**M3500-FE D**					Analyst: **BTJ**
Iron, Ferrous	<0.0500	0.0500	0.100	N	mg/L	1	05/18/20 02:13 PM
ORTHOPHOSPHATE		**M4500-P E**					Analyst: **BTJ**
Phosphorus, Total Orthophosphate (As P)	<0.0300	0.0300	0.100		mg/L	1	05/14/20 02:31 PM

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CLIENT: Golder
Work Order: 2005111
Project: Luminant-MLSES-MNA

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_200408C

Sample ID: **DCS2-95814** Batch ID: **95814** TestNo: **SW6020B** Units: **mg/L**
SampType: **DCS2** Run ID: **ICP-MS5_200408C** Analysis Date: **4/8/2020 11:19:00 AM** Prep Date: **4/7/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron	0.0591	0.100	0.0500	0	118	70	130	0	0	
Magnesium	0.298	0.300	0.300	0	99.3	70	130	0	0	
Potassium	0.285	0.300	0.300	0	95.1	70	130	0	0	
Sodium	0.295	0.300	0.300	0	98.4	70	130	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005111
Project: Luminant-MLSES-MNA

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_200519B

The QC data in batch 96359 applies to the following samples: 2005111-01B, 2005111-02B, 2005111-03B, 2005111-04B, 2005111-05B, 2005111-06B, 2005111-07B

Sample ID: **MB-96359** Batch ID: **96359** TestNo: **SW6020B** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS5_200519B** Analysis Date: **5/19/2020 12:37:00 PM** Prep Date: **5/15/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron	<0.0300	0.100								
Magnesium	<0.100	0.300								
Potassium	<0.100	0.300								
Sodium	<0.100	0.300								

Sample ID: **LCS-96359** Batch ID: **96359** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS5_200519B** Analysis Date: **5/19/2020 12:40:00 PM** Prep Date: **5/15/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron	5.24	0.100	5.00	0	105	80	120			
Magnesium	5.15	0.300	5.00	0	103	80	120			
Potassium	5.14	0.300	5.00	0	103	80	120			
Sodium	5.06	0.300	5.00	0	101	80	120			

Sample ID: **LCSD-96359** Batch ID: **96359** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS5_200519B** Analysis Date: **5/19/2020 12:42:00 PM** Prep Date: **5/15/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron	5.26	0.100	5.00	0	105	80	120	0.447	15	
Magnesium	5.14	0.300	5.00	0	103	80	120	0.149	15	
Potassium	5.17	0.300	5.00	0	103	80	120	0.538	15	
Sodium	5.07	0.300	5.00	0	101	80	120	0.105	15	

Sample ID: **2005111-01B SD** Batch ID: **96359** TestNo: **SW6020B** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS5_200519B** Analysis Date: **5/19/2020 12:53:00 PM** Prep Date: **5/15/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Potassium	6.35	1.50	0	6.26				1.44	20	

Sample ID: **2005111-01B PDS** Batch ID: **96359** TestNo: **SW6020B** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS5_200519B** Analysis Date: **5/19/2020 1:20:00 PM** Prep Date: **5/15/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Potassium	10.9	0.300	5.00	6.26	93.7	75	125			

Sample ID: **2005111-01B MS** Batch ID: **96359** TestNo: **SW6020B** Units: **mg/L**
SampType: **MS** Run ID: **ICP-MS5_200519B** Analysis Date: **5/19/2020 1:22:00 PM** Prep Date: **5/15/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Qualifiers:

B	Analyte detected in the associated Method Blank
J	Analyte detected between MDL and RL
ND	Not Detected at the Method Detection Limit
RL	Reporting Limit
J	Analyte detected between SDL and RL
DF	Dilution Factor
MDL	Method Detection Limit
R	RPD outside accepted control limits
S	Spike Recovery outside control limits
N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005111
Project: Luminant-MLSES-MNA

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_200519B

Sample ID: **2005111-01B MS** Batch ID: **96359** TestNo: **SW6020B** Units: **mg/L**
SampType: **MS** Run ID: **ICP-MS5_200519B** Analysis Date: **5/19/2020 1:22:00 PM** Prep Date: **5/15/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron	43.4	0.100	5.00	38.9	90.4	75	125			
Magnesium	173	0.300	5.00	167	111	75	125			
Potassium	11.4	0.300	5.00	6.26	102	75	125			
Sodium	664	0.300	5.00	656	169	75	125			S

Sample ID: **2005111-01B MSD** Batch ID: **96359** TestNo: **SW6020B** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS5_200519B** Analysis Date: **5/19/2020 1:24:00 PM** Prep Date: **5/15/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron	43.4	0.100	5.00	38.9	90.2	75	125	0.021	15	
Magnesium	171	0.300	5.00	167	83.6	75	125	0.788	15	
Potassium	11.3	0.300	5.00	6.26	101	75	125	0.335	15	
Sodium	663	0.300	5.00	656	142	75	125	0.206	15	S

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005111
Project: Luminant-MLSES-MNA

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_200519B

Sample ID: **ICV-200519** Batch ID: **R110549** TestNo: **SW6020B** Units: **mg/L**
SampType: **ICV** Run ID: **ICP-MS5_200519B** Analysis Date: **5/19/2020 10:48:00 AM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron	2.57	0.100	2.50	0	103	90	110			
Magnesium	2.47	0.300	2.50	0	98.6	90	110			
Potassium	2.52	0.300	2.50	0	101	90	110			
Sodium	2.49	0.300	2.50	0	99.4	90	110			

Sample ID: **LCVL-200519** Batch ID: **R110549** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS5_200519B** Analysis Date: **5/19/2020 11:00:00 AM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron	0.101	0.100	0.100	0	101	80	120			
Magnesium	0.101	0.300	0.100	0	101	80	120			
Potassium	0.102	0.300	0.100	0	102	80	120			
Sodium	0.103	0.300	0.100	0	103	80	120			

Sample ID: **CCV2-200519** Batch ID: **R110549** TestNo: **SW6020B** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS5_200519B** Analysis Date: **5/19/2020 12:26:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron	5.14	0.100	5.00	0	103	90	110			
Magnesium	5.09	0.300	5.00	0	102	90	110			
Potassium	5.11	0.300	5.00	0	102	90	110			
Sodium	5.02	0.300	5.00	0	100	90	110			

Sample ID: **CCV3-200519** Batch ID: **R110549** TestNo: **SW6020B** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS5_200519B** Analysis Date: **5/19/2020 1:44:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron	5.17	0.100	5.00	0	103	90	110			
Magnesium	5.17	0.300	5.00	0	103	90	110			
Potassium	5.10	0.300	5.00	0	102	90	110			
Sodium	5.13	0.300	5.00	0	103	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005111
Project: Luminant-MLSES-MNA

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_200520B

The QC data in batch 96359 applies to the following samples: 2005111-01B, 2005111-02B, 2005111-03B, 2005111-04B, 2005111-05B, 2005111-06B, 2005111-07B

Sample ID: **2005111-01B SD** Batch ID: **96359** TestNo: **SW6020B** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS5_200520B** Analysis Date: **5/20/2020 1:26:00 PM** Prep Date: **5/15/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron	39.2	25.0	0	39.1				0.310	20	
Magnesium	169	75.0	0	170				0.507	20	
Sodium	661	75.0	0	682				3.22	20	

Sample ID: **2005111-01B PDS** Batch ID: **96359** TestNo: **SW6020B** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS5_200520B** Analysis Date: **5/20/2020 1:53:00 PM** Prep Date: **5/15/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron	300	5.00	250	39.1	104	75	125			
Magnesium	420	15.0	250	170	100	75	125			
Sodium	949	15.0	250	682	107	75	125			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005111
Project: Luminant-MLSES-MNA

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_200520B

Sample ID: **ICV-200520**	Batch ID: **R110581**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS5_200520B**	Analysis Date: **5/20/2020 10:52:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron	2.54	0.100	2.50	0	102	90	110			
Magnesium	2.47	0.300	2.50	0	98.6	90	110			
Potassium	2.51	0.300	2.50	0	101	90	110			
Sodium	2.50	0.300	2.50	0	99.9	90	110			

Sample ID: **LCVL-200520**	Batch ID: **R110581**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_200520B**	Analysis Date: **5/20/2020 11:04:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron	0.0988	0.100	0.100	0	98.8	80	120			
Magnesium	0.0961	0.300	0.100	0	96.1	80	120			
Potassium	0.103	0.300	0.100	0	103	80	120			
Sodium	0.100	0.300	0.100	0	100	80	120			

Sample ID: **CCV2-200520**	Batch ID: **R110581**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_200520B**	Analysis Date: **5/20/2020 12:52:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron	5.06	0.100	5.00	0	101	90	110			
Magnesium	5.00	0.300	5.00	0	99.9	90	110			
Potassium	4.96	0.300	5.00	0	99.2	90	110			
Sodium	4.98	0.300	5.00	0	99.5	90	110			

Sample ID: **CCV3-200520**	Batch ID: **R110581**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_200520B**	Analysis Date: **5/20/2020 2:09:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron	5.09	0.100	5.00	0	102	90	110			
Magnesium	5.09	0.300	5.00	0	102	90	110			
Potassium	5.00	0.300	5.00	0	100	90	110			
Sodium	5.01	0.300	5.00	0	100	90	110			

Sample ID: **CCV4-200520**	Batch ID: **R110581**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_200520B**	Analysis Date: **5/20/2020 2:38:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Magnesium	5.03	0.300	5.00	0	101	90	110			
Sodium	4.96	0.300	5.00	0	99.2	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005111
Project: Luminant-MLSES-MNA

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_200421A

Sample ID: **DCS2-96036** Batch ID: **96036** TestNo: **E300** Units: **mg/L**
SampType: **DCS2** Run ID: **IC2_200421A** Analysis Date: **4/21/2020 11:47:08 AM** Prep Date: **4/21/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Nitrate-N	0.246	0.0500	0.2500	0	98.5	70	130	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005111
Project: Luminant-MLSES-MNA

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_200514A

The QC data in batch 96350 applies to the following samples: 2005111-01C, 2005111-02C, 2005111-03C, 2005111-04C, 2005111-05C, 2005111-06C, 2005111-07C

Sample ID: **MB-96350** Batch ID: **96350** TestNo: **E300** Units: **mg/L**
SampType: **MBLK** Run ID: **IC2_200514A** Analysis Date: **5/14/2020 12:07:19 PM** Prep Date: **5/14/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Nitrate-N	<0.100	0.500								

Sample ID: **LCS-96350** Batch ID: **96350** TestNo: **E300** Units: **mg/L**
SampType: **LCS** Run ID: **IC2_200514A** Analysis Date: **5/14/2020 12:23:19 PM** Prep Date: **5/14/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Nitrate-N	5.07	0.500	5.000	0	101	90	110			

Sample ID: **LCSD-96350** Batch ID: **96350** TestNo: **E300** Units: **mg/L**
SampType: **LCSD** Run ID: **IC2_200514A** Analysis Date: **5/14/2020 12:39:19 PM** Prep Date: **5/14/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Nitrate-N	5.05	0.500	5.000	0	101	90	110	0.311	20	

Sample ID: **2005110-01CMS** Batch ID: **96350** TestNo: **E300** Units: **mg/L**
SampType: **MS** Run ID: **IC2_200514A** Analysis Date: **5/14/2020 5:42:45 PM** Prep Date: **5/14/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Nitrate-N	4.31	0.500	4.516	0	95.4	90	110			

Sample ID: **2005110-01CMSD** Batch ID: **96350** TestNo: **E300** Units: **mg/L**
SampType: **MSD** Run ID: **IC2_200514A** Analysis Date: **5/14/2020 5:58:45 PM** Prep Date: **5/14/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Nitrate-N	4.31	0.500	4.516	0	95.4	90	110	0.076	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005111
Project: Luminant-MLSES-MNA

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_200514A

Sample ID: **ICV-200514**	Batch ID: **R110500**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC2_200514A**	Analysis Date: **5/14/2020 11:35:19 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Nitrate-N	13.2	0.500	12.50	0	106	90	110			

Sample ID: **CCV1-200514**	Batch ID: **R110500**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_200514A**	Analysis Date: **5/14/2020 7:02:46 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Nitrate-N	5.09	0.500	5.000	0	102	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005111
Project: Luminant-MLSES-MNA

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_200514B

The QC data in batch 96346 applies to the following samples: 2005111-01C, 2005111-02C, 2005111-03C, 2005111-04C, 2005111-05C, 2005111-06C, 2005111-07C

Sample ID: **MB-96346** Batch ID: **96346** TestNo: **M2320 B** Units: **mg/L @ pH 4.23**
SampType: **MBLK** Run ID: **TITRATOR_200514B** Analysis Date: **5/14/2020 11:22:00 AM** Prep Date: **5/14/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	<10.0	20.0								
Alkalinity, Carbonate (As CaCO3)	<10.0	20.0								
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0								
Alkalinity, Total (As CaCO3)	<20.0	20.0								

Sample ID: **LCS-96346** Batch ID: **96346** TestNo: **M2320 B** Units: **mg/L @ pH 4.22**
SampType: **LCS** Run ID: **TITRATOR_200514B** Analysis Date: **5/14/2020 11:26:00 AM** Prep Date: **5/14/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)	53.2	20.0	50.00	0	106	74	129			

Sample ID: **2005076-01C-DUP** Batch ID: **96346** TestNo: **M2320 B** Units: **mg/L @ pH 4.53**
SampType: **DUP** Run ID: **TITRATOR_200514B** Analysis Date: **5/14/2020 11:46:00 AM** Prep Date: **5/14/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	130	20.0	0	133.8				3.11	20	
Alkalinity, Carbonate (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Total (As CaCO3)	130	20.0	0	133.8				3.11	20	

Sample ID: **2005110-01C-DUP** Batch ID: **96346** TestNo: **M2320 B** Units: **mg/L @ pH 4.5**
SampType: **DUP** Run ID: **TITRATOR_200514B** Analysis Date: **5/14/2020 1:18:00 PM** Prep Date: **5/14/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	32.0	20.0	0	32.90				2.77	20	
Alkalinity, Carbonate (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Total (As CaCO3)	32.0	20.0	0	32.90				2.77	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005111
Project: Luminant-MLSES-MNA

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_200514B

Sample ID: **ICV-200514**	Batch ID: **R110504**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.36**
SampType: **ICV**	Run ID: **TITRATOR_200514B**	Analysis Date: **5/14/2020 11:20:00 AM**	Prep Date: **5/14/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	31.5	20.0	0							
Alkalinity, Carbonate (As CaCO3)	67.8	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	99.4	20.0	100.0	0	99.4	98	102			

Sample ID: **CCV1-200514**	Batch ID: **R110504**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.33**
SampType: **CCV**	Run ID: **TITRATOR_200514B**	Analysis Date: **5/14/2020 1:10:00 PM**	Prep Date: **5/14/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	39.8	20.0	0							
Alkalinity, Carbonate (As CaCO3)	60.2	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	99.9	20.0	100.0	0	99.9	90	110			

Sample ID: **CCV2-200514**	Batch ID: **R110504**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.32**
SampType: **CCV**	Run ID: **TITRATOR_200514B**	Analysis Date: **5/14/2020 2:01:00 PM**	Prep Date: **5/14/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	42.2	20.0	0							
Alkalinity, Carbonate (As CaCO3)	58.1	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	100	20.0	100.0	0	100	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank
J	Analyte detected between MDL and RL
ND	Not Detected at the Method Detection Limit
RL	Reporting Limit
J	Analyte detected between SDL and RL
DF	Dilution Factor
MDL	Method Detection Limit
R	RPD outside accepted control limits
S	Spike Recovery outside control limits
N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005111
Project: Luminant-MLSES-MNA

ANALYTICAL QC SUMMARY REPORT

RunID: **UV/VIS_2_200323B**

Sample ID: **DCS-95613**	Batch ID: **95613**	TestNo: **M3500-Fe D**	Units: **mg/L**		
SampType: **DCS**	Run ID: **UV/VIS_2_200323B**	Analysis Date: **3/23/2020 1:30:00 PM**	Prep Date: **3/23/2020**		

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	0.0580	0.100	0.05000	0	116	65	135	0	0	N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005111
Project: Luminant-MLSES-MNA

ANALYTICAL QC SUMMARY REPORT

RunID: UV/VIS_2_200507C

Sample ID: **DCS-96253** Batch ID: **96253** TestNo: **M4500-P E** Units: **mg/L**
SampType: **DCS** Run ID: **UV/VIS_2_200507C** Analysis Date: **5/7/2020 2:22:00 PM** Prep Date: **5/7/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Total Orthophosphate (As	0.0480	0.100	0.05000	0	96.0	50	200	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005111
Project: Luminant-MLSES-MNA

ANALYTICAL QC SUMMARY REPORT

RunID: UV/VIS_2_200514B

The QC data in batch 96353 applies to the following samples: 2005111-01C, 2005111-02C, 2005111-03C, 2005111-04C, 2005111-05C, 2005111-06C, 2005111-07C

Sample ID: **MB-96353**	Batch ID: **96353**	TestNo: **M4500-P E**	Units: **mg/L**
SampType: **MBLK**	Run ID: **UV/VIS_2_200514B**	Analysis Date: **5/14/2020 2:26:00 PM**	Prep Date: **5/14/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Total Orthophosphate (As	<0.0300	0.100								

Sample ID: **LCS-96353**	Batch ID: **96353**	TestNo: **M4500-P E**	Units: **mg/L**
SampType: **LCS**	Run ID: **UV/VIS_2_200514B**	Analysis Date: **5/14/2020 2:26:00 PM**	Prep Date: **5/14/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Total Orthophosphate (As	0.496	0.100	0.5000	0	99.2	80	120			

Sample ID: **LCSD-96353**	Batch ID: **96353**	TestNo: **M4500-P E**	Units: **mg/L**
SampType: **LCSD**	Run ID: **UV/VIS_2_200514B**	Analysis Date: **5/14/2020 2:27:00 PM**	Prep Date: **5/14/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Total Orthophosphate (As	0.495	0.100	0.5000	0	99.0	80	120	0.202	15	

Sample ID: **2005110-01CMS**	Batch ID: **96353**	TestNo: **M4500-P E**	Units: **mg/L**
SampType: **MS**	Run ID: **UV/VIS_2_200514B**	Analysis Date: **5/14/2020 2:28:00 PM**	Prep Date: **5/14/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Total Orthophosphate (As	0.474	0.100	0.5000	0	94.8	80	120			

Sample ID: **2005110-01CMSD**	Batch ID: **96353**	TestNo: **M4500-P E**	Units: **mg/L**
SampType: **MSD**	Run ID: **UV/VIS_2_200514B**	Analysis Date: **5/14/2020 2:28:00 PM**	Prep Date: **5/14/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Total Orthophosphate (As	0.482	0.100	0.5000	0	96.4	80	120	1.67	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005111
Project: Luminant-MLSES-MNA

ANALYTICAL QC SUMMARY REPORT

RunID: UV/VIS_2_200514B

Sample ID: **ICV-200514**	Batch ID: **R110494**	TestNo: **M4500-P E**	Units: **mg/L**
SampType: **ICV**	Run ID: **UV/VIS_2_200514B**	Analysis Date: **5/14/2020 2:25:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Total Orthophosphate (As	0.197	0.100	0.2000	0	98.5	85	115			

Sample ID: **CCV1-200514**	Batch ID: **R110494**	TestNo: **M4500-P E**	Units: **mg/L**
SampType: **CCV**	Run ID: **UV/VIS_2_200514B**	Analysis Date: **5/14/2020 2:32:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Total Orthophosphate (As	0.510	0.100	0.5000	0	102	85	115			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005111
Project: Luminant-MLSES-MNA

ANALYTICAL QC SUMMARY REPORT

RunID: UV/VIS_2_200518B

The QC data in batch 96388 applies to the following samples: 2005111-01A, 2005111-02A, 2005111-03A, 2005111-04A, 2005111-05A, 2005111-06A, 2005111-07A

Sample ID: **MB-96388**	Batch ID: **96388**	TestNo: **M3500-Fe D**	Units: **mg/L**
SampType: **MBLK**	Run ID: **UV/VIS_2_200518B**	Analysis Date: **5/18/2020 2:03:00 PM**	Prep Date: **5/18/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	<0.0500	0.100								N

Sample ID: **LCS-96388**	Batch ID: **96388**	TestNo: **M3500-Fe D**	Units: **mg/L**
SampType: **LCS**	Run ID: **UV/VIS_2_200518B**	Analysis Date: **5/18/2020 2:04:00 PM**	Prep Date: **5/18/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	0.108	0.100	0.1000	0	108	85	115			N

Sample ID: **LCSD-96388**	Batch ID: **96388**	TestNo: **M3500-Fe D**	Units: **mg/L**
SampType: **LCSD**	Run ID: **UV/VIS_2_200518B**	Analysis Date: **5/18/2020 2:05:00 PM**	Prep Date: **5/18/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	0.108	0.100	0.1000	0	108	85	115	0.343	15	N

Sample ID: **2005111-03AMS**	Batch ID: **96388**	TestNo: **M3500-Fe D**	Units: **mg/L**
SampType: **MS**	Run ID: **UV/VIS_2_200518B**	Analysis Date: **5/18/2020 2:10:00 PM**	Prep Date: **5/18/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	0.0981	0.100	0.1000	0	98.1	85	115			N

Sample ID: **2005111-03AMSD**	Batch ID: **96388**	TestNo: **M3500-Fe D**	Units: **mg/L**
SampType: **MSD**	Run ID: **UV/VIS_2_200518B**	Analysis Date: **5/18/2020 2:11:00 PM**	Prep Date: **5/18/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	0.0969	0.100	0.1000	0	96.9	85	115	1.30	15	N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005111
Project: Luminant-MLSES-MNA

ANALYTICAL QC SUMMARY REPORT

RunID: UV/VIS_2_200518B

Sample ID: **ICV-200518**	Batch ID: **R110544**	TestNo: **M3500-Fe D**	Units: **mg/L**
SampType: **ICV**	Run ID: **UV/VIS_2_200518B**	Analysis Date: **5/18/2020 2:01:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	0.0977	0.100	0.1000	0	97.7	85	115			N

Sample ID: **CCV1-200518**	Batch ID: **R110544**	TestNo: **M3500-Fe D**	Units: **mg/L**
SampType: **CCV**	Run ID: **UV/VIS_2_200518B**	Analysis Date: **5/18/2020 2:14:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	0.205	0.100	0.2000	0	102	85	115			N

Sample ID: **CCV2-200518**	Batch ID: **R110544**	TestNo: **M3500-Fe D**	Units: **mg/L**
SampType: **CCV**	Run ID: **UV/VIS_2_200518B**	Analysis Date: **5/18/2020 2:31:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	0.199	0.100	0.2000	0	99.7	85	115			N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005111
Project: Luminant-MLSES-MNA

MQL SUMMARY REPORT

TestNo: E300	MDL	MQL
Analyte	**mg/L**	**mg/L**
Nitrate-N	0.100	0.500

TestNo: SW6020B	MDL	MQL
Analyte	**mg/L**	**mg/L**
Iron	0.0300	0.100
Magnesium	0.100	0.300
Potassium	0.100	0.300
Sodium	0.100	0.300

TestNo: M2320 B	MDL	MQL
Analyte	**ıg/L @ pH 4.2**	**g/L @ pH 4.2**
Alkalinity, Bicarbonate (As CaCO3)	10.0	20.0
Alkalinity, Carbonate (As CaCO3)	10.0	20.0
Alkalinity, Hydroxide (As CaCO3)	10.0	20.0
Alkalinity, Total (As CaCO3)	20.0	20.0

TestNo: M3500-Fe D	MDL	MQL
Analyte	**mg/L**	**mg/L**
Iron, Ferrous	0.0500	0.100

TestNo: M4500-P E	MDL	MQL
Analyte	**mg/L**	**mg/L**
Phosphorus, Total Orthophosphate (	0.0300	0.100

Qualifiers: MQL -Method Quantitation Limit as defined by TRRP
MDL -Method Detection Limit as defined by TRRP

June 12, 2020

Will Vienne
Golder
2201 Double Creek Dr #4004
Round Rock, Texas 78664
TEL: (512) 671-3434
FAX (512) 671-3446

Order No.: 2005112

RE: Luminant-MLSES-CCR

Dear Will Vienne:

DHL Analytical, Inc. received 7 sample(s) on 5/14/2020 for the analyses presented in the following report.

There were no problems with the analyses and all data met requirements of NELAP except where noted in the Case Narrative. All non-NELAP methods will be identified accordingly in the case narrative and all estimated uncertainties of test results are within method or EPA specifications.

If you have any questions regarding these tests results, please feel free to call. Thank you for using DHL Analytical.

Sincerely,

John DuPont
General Manager

This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211-20-25

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DHL ANALYTICAL
2300 Double Creek Dr. ■ Round Rock, TX 78664
Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

APPROVED FOR Version 2 February 27, 2024

№ 68278
CHAIN-OF-CUSTODY

CLIENT: GOLDER ASSOCIATES
ADDRESS: 2201 DOUBLE CREEK DR ROUND ROCK, TX 78664
PHONE: 512-671-3434 FAX/E-MAIL:
DATA REPORTED TO: WILL VIENNE
ADDITIONAL REPORT COPIES TO:

DATE: 5-13-20 PAGE 1 OF 1
PO #: DHL WORK ORDER #: 2005112
PROJECT LOCATION OR NAME: LUMINANT - MLSES - CCR
CLENT PROJECT #: 19122262 COLLECTOR: J. BRAYTON

Authorize 5% surcharge for TRRP Report? ❑ Yes ❑ No

S=SOIL W=WATER A=AIR L=LIQUID SE=SEDIMENT
P=PAINT SL=SLUDGE O=OTHER SO=SOLID

PRESERVATION: HCl | HNO_3 | H_2SO_4 ❑ NaOH ❑ | ICE | UNPRESERVED

ANALYSES: BTEX ❑ MTBE ❑ [METHOD 8021] | TPH 1005 ❑ TPH 1006 ❑ HOLD 1006 ❑ | GRO [METHOD 8015] ❑ DRO [METHOD 8015] ❑ | VOC 8260 ❑ VOC 624 ❑ VOC 8260/5035 ❑ | SVOC 8270 ❑ PAH 8270 ❑ HOLD PAH ❑ SVOC 625 ❑ | 8270 PEST ❑ 625 PEST/PCB ❑ 608 PCB ❑ | 8270 O-P PEST ❑ 8082 PCB ❑ 8270 PCB ❑ | 8321 HERB ❑ T PHOS, AMMONIA ❑ | METALS 6020 ❑ METALS 200.8 ❑ DISS. METALS ❑ | RCRA ❑ TX11 ❑ | PH ❑ HEX CHROM ❑ ALKALINITY ❑ COD ❑ | CHLORIDE ❑ ANIONS ❑ | TCLP-SVOC ❑ VOC ❑ PEST ❑ HERB ❑ | TCLP-METALS ❑ RCRA 8 ❑ TX-11 ❑ Pb ❑ | RCI ❑ FLASHPOINT ❑ DGAS ❑ | TDS ❑ TSS ❑ % MOISTURE ❑ CYANIDE ❑ | APPENDIX III & IV

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	HCl	HNO_3	H_2SO_4 ❑ NaOH ❑	ICE	UNPRESERVED	APPENDIX III & IV	FIELD NOTES
H-31	01	5-13-20	1010	W	P	4		X		X		X	
H-32	02	"	1100	W	P	4		X		X		X	
H-27	03	"	1150	W	P	4		X		X		X	
H-28	04	"	1240	W	P	4		X		X		X	
H-29	05	"	1330	W	P	4		X		X		X	
H-26	06	"	1535	W	P	4		X		X		X	
H-33	07	"	1630	W	P	4		X		X		X	

RELINQUISHED BY: (Signature) DATE/TIME 5-13-20 1800 RECEIVED BY: (Signature) FedEX
RELINQUISHED BY: (Signature) FedEX DATE/TIME 5-14-2020 0905 RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature) DATE/TIME RECEIVED BY: (Signature)

❑ DHL DISPOSAL @ $5.00 each ❑ Return

TURN AROUND TIME
RUSH ❑ CALL FIRST
1 DAY ❑ CALL FIRST
2 DAY ❑
NORMAL ☒
OTHER ❑

LABORATORY USE ONLY:
RECEIVING TEMP: 3.1, 2.3, 4.1 THERM #: 78
CUSTODY SEALS: ❑ BROKEN ❑ INTACT ❑ NOT USED
CARRIER: ❑ LONE STAR ❑ FEDEX ❑ UPS ❑ OTHER
❑ COURIER DELIVERY
❑ HAND DELIVERED

DHL COC Rev 1 | FEB 2010

Eric Lau

From: John DuPont
Sent: Tuesday, May 28, 2019 11:35 AM
To: Eric Lau
Subject: FW: CCR Analysis

Appendix III Parameters:
Metals (Ca and B)
Anions (Cl, F, and SO4)
TDS

Appendix IV Parameters:

Metals (As, Ba, Be, Cd, Co, Cr, Hg, Li, Mo, Pb, Sb, Se, and Tl)
Ra-226
Ra-228

From: Vienne, Will [mailto:William_Vienne@golder.com]
Sent: Tuesday, April 09, 2019 12:48 PM
To: John DuPont <dupont@dhlanalytical.com>
Subject: CCR Analysis

3.1

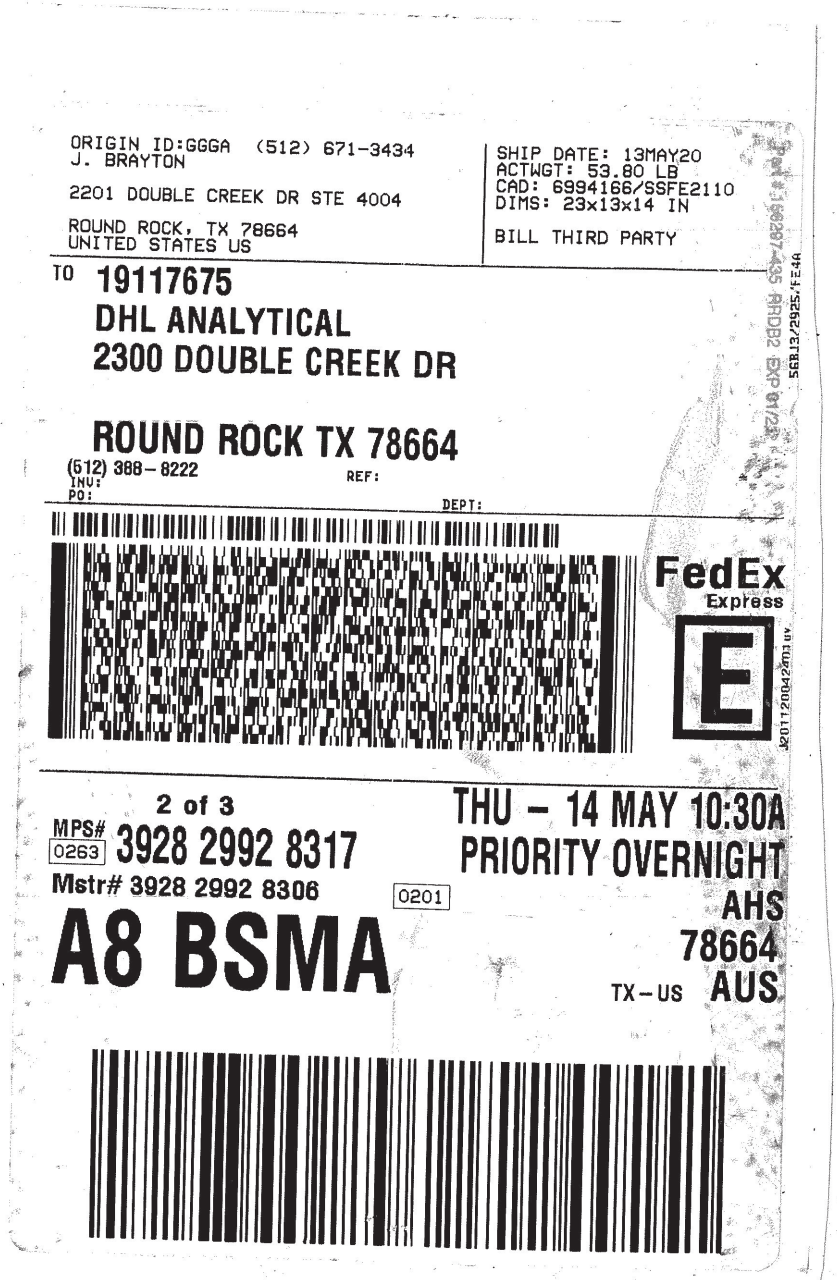
678

CUSTODY SEAL

DATE 5-13-20

SIGNATURE

DHL ANALYTICAL



ORIGIN ID:GGGA (512) 671-3434
J. BRAYTON

2201 DOUBLE CREEK DR STE 4004

ROUND ROCK, TX 78664
UNITED STATES US

SHIP DATE: 13MAY20
ACTWGT: 53.80 LB
CAD: 6994166/SSFE2110
DIMS: 23x13x14 IN

BILL THIRD PARTY

TO 19117675
DHL ANALYTICAL
2300 DOUBLE CREEK DR

ROUND ROCK TX 78664
(512) 388-8222 REF:
INV:
PO: DEPT:

FedEx Express

2 of 3
MPS# 0263 3928 2992 8317
Mstr# 3928 2992 8306

THU - 14 MAY 10:30A
PRIORITY OVERNIGHT
AHS
78664
TX-US AUS

0201

A8 BSMA

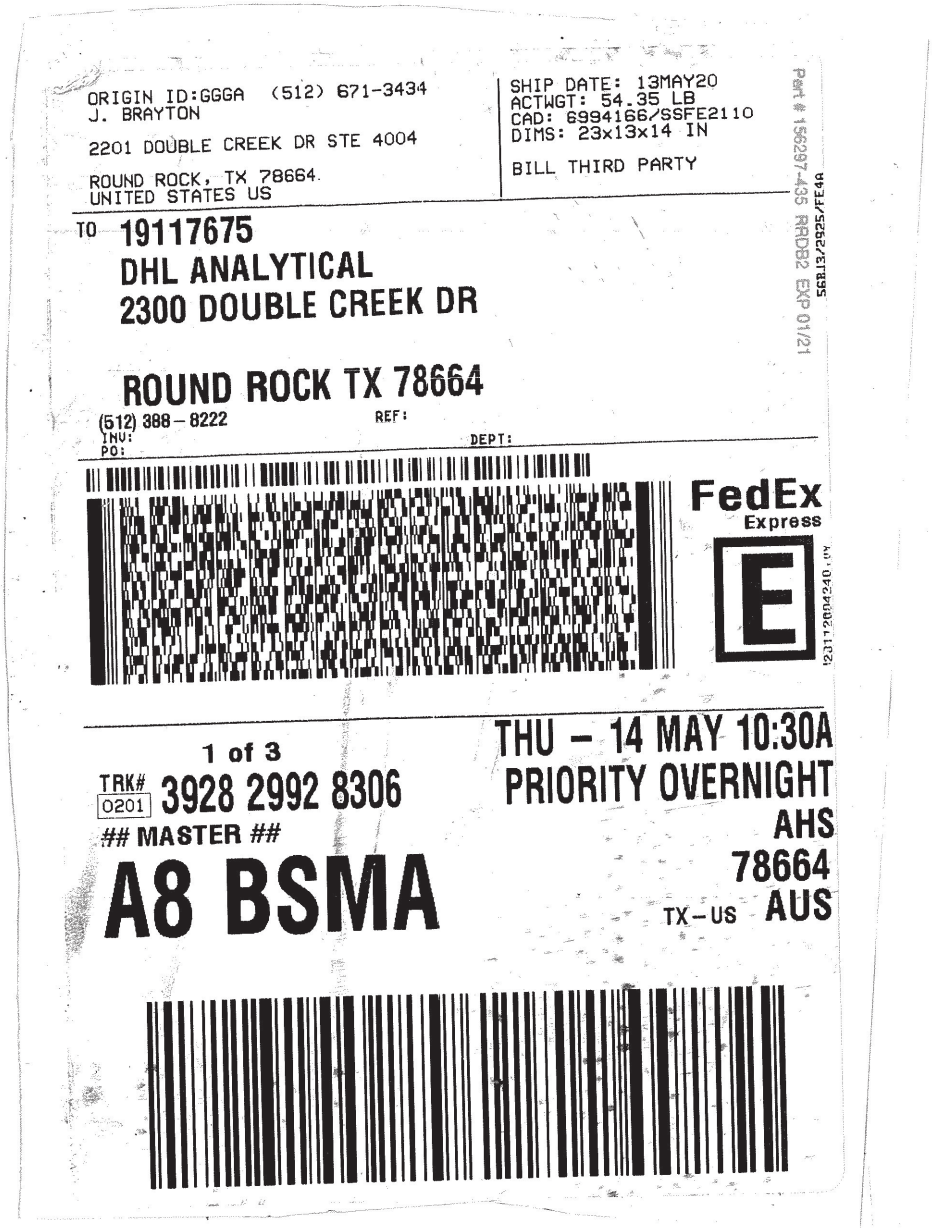
2.3

CUSTODY SEAL

DATE 5.13.20

SIGNATURE

DHL ANALYTICAL



ORIGIN ID:GGGA (512) 671-3434
J. BRAYTON
2201 DOUBLE CREEK DR STE 4004
ROUND ROCK, TX 78664
UNITED STATES US

SHIP DATE: 13MAY20
ACTWGT: 54.35 LB
CAD: 6994166/SSFE2110
DIMS: 23x13x14 IN
BILL THIRD PARTY

Part # 156297-435 RRDB2 EXP 01/21

TO 19117675
DHL ANALYTICAL
2300 DOUBLE CREEK DR

ROUND ROCK TX 78664
(512) 388-8222 REF:
INV: DEPT:
PO:

FedEx Express

1 of 3
TRK# 0201 3928 2992 8306
MASTER
A8 BSMA

THU - 14 MAY 10:30A
PRIORITY OVERNIGHT
AHS
78664
TX-US AUS

4.1

215

CUSTODY SEAL

DATE 5-13-20

SIGNATURE

DHL ANALYTICAL

DHL Analytical, Inc.

Sample Receipt Checklist

Client Name **Golder** Date Received: **5/14/2020**

Work Order Number **2005112** Received by: **JH**

Checklist completed by: _____ 5/14/2020 Reviewed by _____ 5/14/2020
Signature | Date | Initials | Date

Carrier name: FedEx 1day

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	**3.1** °C
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH<2 acceptable upon receipt?	Yes ☑	No ☐	NA ☐ LOT # 13171
	Adjusted? No		Checked by EL
Water - ph>9 (S) or ph>10 (CN) acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted? _____		Checked by _____

Any No response must be detailed in the comments section below.

Client contacted: _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments: _____

Corrective Action _____

Laboratory Name: DHL Analytical, Inc.

Laboratory Review Checklist: Reportable Data

Project Name: Luminant-MLSES-CCR	**LRC Date:** 6/12/20
Reviewer Name: Carlos Castro	**Laboratory Work Order:** 2005112
Prep Batch Number(s): See Prep Dates Report	**Run Batch:** See Analytical Dates Report

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
		Chain-of-Custody (C-O-C)					
R1	OI	**1)** Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				**R1-01**
		2) Were all departures from standard conditions described in an exception report?			X		
R2	OI	**Sample and Quality Control (QC) Identification**					
		1) Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		2) Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	OI	**Test Reports**					
		1) Were all samples prepared and analyzed within holding times?	X				
		2) Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
		3) Were calculations checked by a peer or supervisor?	X				
		4) Were all analyte identifications checked by a peer or supervisor?	X				
		5) Were sample detection limits reported for all analytes not detected?	X				
		6) Were all results for soil and sediment samples reported on a dry weight basis?			X		
		7) Were % moisture (or solids) reported for all soil and sediment samples?			X		
		8) Were bulk soils/solids samples for volatile analysis extracted with methanol per EPA Method 5035?			X		
		9) If required for the project, TICs reported?			X		
R4	O	**Surrogate Recovery Data**					
		1) Were surrogates added prior to extraction?			X		
		2) Were surrogate percent recoveries in all samples within the laboratory QC limits?			X		
R5	OI	**Test Reports/Summary Forms for Blank Samples**					
		1) Were appropriate type(s) of blanks analyzed?	X				
		2) Were blanks analyzed at the appropriate frequency?	X				
		3) Where method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		4) Were blank concentrations < MDL?	X				
		5) For analyte(s) detected in a blank sample, was the concentration, unadjusted for sample specific factors, in all associated field samples, **greater** than 10 times the concentration in the blank sample?			X		
R6	OI	**Laboratory Control Samples (LCS):**					
		1) Were all COCs included in the LCS?	X				
		2) Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		3) Were LCSs analyzed at the required frequency?	X				
		4) Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		5) Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		6) Was the LCSD RPD within QC limits (if applicable)?	X				
R7	OI	**Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Data**					
		1) Were the project/method specified analytes included in the MS and MSD?	X				
		2) Were MS/MSD analyzed at the appropriate frequency?	X				
		3) Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?		X			**R7-03**
		4) Were MS/MSD RPDs within laboratory QC limits?	X				
R8	OI	**Analytical Duplicate Data**					
		1) Were appropriate analytical duplicates analyzed for each matrix?	X				
		2) Were analytical duplicates analyzed at the appropriate frequency?	X				
		3) Were RPDs or relative standard deviations within the laboratory QC limits?	X				
R9	OI	**Method Quantitation Limits (MQLs):**					
		1) Are the MQLs for each method analyte included in the laboratory data package?	X				
		2) Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
		3) Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
R10	OI	**Other Problems/Anomalies**					
		1) Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				
		2) Was applicable and available technology used to lower the SDL to minimize the matrix interference affects on the sample results?	X				
		3) Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices and methods associated with this laboratory data package?	X				

Laboratory Name: DHL Analytical, Inc.

Laboratory Review Checklist (continued): Supporting Data

Project Name: Luminant-MLSES-CCR	**LRC Date:** 6/12/20
Reviewer Name: Carlos Castro	**Laboratory Work Order:** 2005112
Prep Batch Number(s): See Prep Dates Report	**Run Batch:** See Analytical Dates Report

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
S1	OI	**Initial Calibration (ICAL)**					
		1) Were response factors and/or relative response factors for each analyte within QC limits?	X				
		2) Were percent RSDs or correlation coefficient criteria met?	X				
		3) Was the number of standards recommended in the method used for all analytes?	X				
		4) Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		5) Are ICAL data available for all instruments used?	X				
		6) Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	**Initial and Continuing calibration Verification (ICCV and CCV) and Continuing Calibration blank (CCB):**					
		1) Was the CCV analyzed at the method-required frequency?	X				
		2) Were percent differences for each analyte within the method-required QC limits?	X				
		3) Was the ICAL curve verified for each analyte?	X				
		4) Was the absolute value of the analyte concentration in the inorganic CCB < MDL?		X			**S2-04**
S3	O	**Mass Spectral Tuning:**					
		1) Was the appropriate compound for the method used for tuning?	X				
		2) Were ion abundance data within the method-required QC limits?	X				
S4	O	**Internal Standards (IS):**					
		1) Were IS area counts and retention times within the method-required QC limits?	X				
S5	OI	**Raw Data (NELAC Section 5.5.10)**					
		1) Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		2) Were data associated with manual integrations flagged on the raw data?	X				
S6	O	**Dual Column Confirmation**					
		1) Did dual column confirmation results meet the method-required QC?			X		
S7	O	**Tentatively Identified Compounds (TICs):**					
		1) If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) Results:**					
		1) Were percent recoveries within method QC limits?	X				
S9	I	**Serial Dilutions, Post Digestion Spikes, and Method of Standard Additions**					
		1) Were percent differences, recoveries, and the linearity within the QC limits specified in the method?		X			**S9-09**
S10	OI	**Method Detection Limit (MDL) Studies**					
		1) Was a MDL study performed for each reported analyte?	X				
		2) Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	**Proficiency Test Reports:**					
		1) Was the lab's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	**Standards Documentation**					
		1) Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound/Analyte Identification Procedures**					
		1) Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of Analyst Competency (DOC)**					
		1) Was DOC conducted consistent with NELAC Chapter 5 – Appendix C?	X				
		2) Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/Validation Documentation for Methods** (NELAC Chapter 5)					
		1) Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	**Laboratory Standard Operating Procedures (SOPs):**					
		1) Are laboratory SOPs current and on file for each method performed?	X				

1 Items identified by the letter "R" should be included in the laboratory data package submitted to the TCEQ in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.

2 O = organic analyses; I = inorganic analyses (and general chemistry, when applicable).

3 NA = Not applicable.

4 NR = Not Reviewed.

5 ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Data Package Signature Page – RG-366/TRRP-13

This data package consists of:

This signature page, the laboratory review checklist, and the following reportable data:

R1 Field chain-of-custody documentation;
R2 Sample identification cross-reference;
R3 Test reports (analytical data sheets) for each environmental sample that includes:
  a) Items consistent with NELAC Chapter 5,
  b) dilution factors,
  c) preparation methods,
  d) cleanup methods, and
  e) if required for the project, tentatively identified compounds (TICs).
R4 Surrogate recovery data including:
  a) Calculated recovery (%R), and
  b) The laboratory's surrogate QC limits.
R5 Test reports/summary forms for blank samples;
R6 Test reports/summary forms for laboratory control samples (LCSs) including:
  a) LCS spiking amounts,
  b) Calculated %R for each analyte, and
  c) The laboratory's LCS QC limits.
R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
  a) Samples associated with the MS/MSD clearly identified,
  b) MS/MSD spiking amounts,
  c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
  d) Calculated %Rs and relative percent differences (RPDs), and
  e) The laboratory's MS/MSD QC limits
R8 Laboratory analytical duplicate (if applicable) recovery and precision:
  a) The amount of analyte measured in the duplicate,
  b) The calculated RPD, and
  c) The laboratory's QC limits for analytical duplicates.
R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix;
R10 Other problems or anomalies.

The Exception Report for each "No" or "Not Reviewed (NR)" item in the Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory is not accredited under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature below, I affirm to the best of my knowledge that all problems/anomalies observed by the laboratory have been identified in the Laboratory Review Checklist, and no information or data affecting the quality of the data has been knowingly withheld.

This laboratory was last inspected by TCEQ on February 25-28 2019. Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Name: John DuPont
Official Title: General Manager

Signature

06/12/20

Date

Name: Dr. Derhsing Luu
Official Title: Technical Director

DHL Analytical, Inc. **Date:** *12-Jun-20*

CLIENT: Golder
Project: Luminant-MLSES-CCR
Lab Order: 2005112

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Method SW6020B - Metals Analysis
Method SW7470A - Mercury Analysis
Method E300 - Anions Analysis
Method M2540C - TDS Analysis

Exception Report R1-01

The samples were received and log-in performed on 5/14/20. A total of 7 samples were received. The samples arrived in good condition and were properly packaged.

Exception Report R7-03

For Metals analysis performed on 5/21/20 the matrix spike and matrix spike duplicate recoveries were above control limits for Boron. These are flagged accordingly in the QC summary report. The sample selected for the matrix spike and matrix spike duplicate was from this work order. The LCS was within control limits for this analyte. No further corrective actions were taken.

Exception Report S2-04

For Metals analysis performed on 5/21/20 Boron was detected below the reporting limit in CCB1-200521. This was due to carryover from the previous samples. The associated samples were detected greater than 10 times the amount in the CCB. No further corrective actions were taken.

Exception Report S9-01

For Metals analysis performed on 5/21/20 the RPD for the serial dilution was above control limits for Boron. This is flagged accordingly in the QC summary report. The PDS was within control limits for this analyte. No further corrective actions were taken.

DHL Analytical, Inc.

Date: *12-Jun-20*

CLIENT: Golder
Project: Luminant-MLSES-CCR
Lab Order: 2005112

Work Order Sample Summary

Lab Smp ID	Client Sample ID	Tag Number	Date Collected	Date Recved
2005112-01	H-31		05/13/20 10:10 AM	5/14/2020
2005112-02	H-32		05/13/20 11:00 AM	5/14/2020
2005112-03	H-27		05/13/20 11:50 AM	5/14/2020
2005112-04	H-28		05/13/20 12:40 PM	5/14/2020
2005112-05	H-29		05/13/20 01:30 PM	5/14/2020
2005112-06	H-26		05/13/20 03:35 PM	5/14/2020
2005112-07	H-33		05/13/20 04:30 PM	5/14/2020

DHL Analytical, Inc.

12-Jun-20

Lab Order: 2005112
Client: Golder
Project: Luminant-MLSES-CCR

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
2005112-01A	H-31	05/13/20 10:10 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/19/20 08:03 AM	96393
	H-31	05/13/20 10:10 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/19/20 08:03 AM	96393
	H-31	05/13/20 10:10 AM	Aqueous	SW7470A	Mercury Aq Prep	05/19/20 12:26 PM	96414
2005112-01B	H-31	05/13/20 10:10 AM	Aqueous	E300	Anion Preparation	05/15/20 10:09 AM	96363
	H-31	05/13/20 10:10 AM	Aqueous	E300	Anion Preparation	05/15/20 10:09 AM	96363
	H-31	05/13/20 10:10 AM	Aqueous	E300	Anion Preparation	05/15/20 10:09 AM	96363
	H-31	05/13/20 10:10 AM	Aqueous	M2540C	TDS Preparation	05/19/20 09:13 AM	96403
2005112-02A	H-32	05/13/20 11:00 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/19/20 08:03 AM	96393
	H-32	05/13/20 11:00 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/19/20 08:03 AM	96393
	H-32	05/13/20 11:00 AM	Aqueous	SW7470A	Mercury Aq Prep	05/19/20 12:26 PM	96414
2005112-02B	H-32	05/13/20 11:00 AM	Aqueous	E300	Anion Preparation	05/15/20 10:09 AM	96363
	H-32	05/13/20 11:00 AM	Aqueous	E300	Anion Preparation	05/15/20 10:09 AM	96363
	H-32	05/13/20 11:00 AM	Aqueous	M2540C	TDS Preparation	05/19/20 09:13 AM	96403
2005112-03A	H-27	05/13/20 11:50 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/19/20 08:03 AM	96393
	H-27	05/13/20 11:50 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/19/20 08:03 AM	96393
	H-27	05/13/20 11:50 AM	Aqueous	SW7470A	Mercury Aq Prep	05/19/20 12:26 PM	96414
2005112-03B	H-27	05/13/20 11:50 AM	Aqueous	E300	Anion Preparation	05/15/20 10:09 AM	96363
	H-27	05/13/20 11:50 AM	Aqueous	E300	Anion Preparation	05/15/20 10:09 AM	96363
	H-27	05/13/20 11:50 AM	Aqueous	M2540C	TDS Preparation	05/19/20 09:13 AM	96403
2005112-04A	H-28	05/13/20 12:40 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/19/20 08:03 AM	96393
	H-28	05/13/20 12:40 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/19/20 08:03 AM	96393
	H-28	05/13/20 12:40 PM	Aqueous	SW7470A	Mercury Aq Prep	05/19/20 12:26 PM	96414
2005112-04B	H-28	05/13/20 12:40 PM	Aqueous	E300	Anion Preparation	05/15/20 10:09 AM	96363
	H-28	05/13/20 12:40 PM	Aqueous	E300	Anion Preparation	05/15/20 10:09 AM	96363
	H-28	05/13/20 12:40 PM	Aqueous	M2540C	TDS Preparation	05/19/20 09:13 AM	96403
2005112-05A	H-29	05/13/20 01:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/19/20 08:03 AM	96393
	H-29	05/13/20 01:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/19/20 08:03 AM	96393
	H-29	05/13/20 01:30 PM	Aqueous	SW7470A	Mercury Aq Prep	05/19/20 12:26 PM	96414

DHL Analytical, Inc. *12-Jun-20*

Lab Order: 2005112
Client: Golder
Project: Luminant-MLSES-CCR

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
2005112-05B	H-29	05/13/20 01:30 PM	Aqueous	E300	Anion Preparation	05/15/20 10:09 AM	96363
	H-29	05/13/20 01:30 PM	Aqueous	E300	Anion Preparation	05/15/20 10:09 AM	96363
	H-29	05/13/20 01:30 PM	Aqueous	M2540C	TDS Preparation	05/19/20 09:13 AM	96403
2005112-06A	H-26	05/13/20 03:35 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/19/20 08:03 AM	96393
	H-26	05/13/20 03:35 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/19/20 08:03 AM	96393
	H-26	05/13/20 03:35 PM	Aqueous	SW7470A	Mercury Aq Prep	05/19/20 12:26 PM	96414
2005112-06B	H-26	05/13/20 03:35 PM	Aqueous	E300	Anion Preparation	05/15/20 10:09 AM	96363
	H-26	05/13/20 03:35 PM	Aqueous	E300	Anion Preparation	05/15/20 10:09 AM	96363
	H-26	05/13/20 03:35 PM	Aqueous	M2540C	TDS Preparation	05/19/20 09:13 AM	96403
2005112-07A	H-33	05/13/20 04:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/19/20 08:03 AM	96393
	H-33	05/13/20 04:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/19/20 08:03 AM	96393
	H-33	05/13/20 04:30 PM	Aqueous	SW7470A	Mercury Aq Prep	05/19/20 12:26 PM	96414
2005112-07B	H-33	05/13/20 04:30 PM	Aqueous	E300	Anion Preparation	05/15/20 10:09 AM	96363
	H-33	05/13/20 04:30 PM	Aqueous	E300	Anion Preparation	05/15/20 10:09 AM	96363
	H-33	05/13/20 04:30 PM	Aqueous	M2540C	TDS Preparation	05/19/20 09:13 AM	96403

DHL Analytical, Inc. *12-Jun-20*

Lab Order: 2005112
Client: Golder
Project: Luminant-MLSES-CCR

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
2005112-01A	H-31	Aqueous	SW7470A	Mercury Total: Aqueous	96414	1	05/19/20 03:22 PM	CETAC2_HG_200519B
	H-31	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	96393	1	05/20/20 03:02 PM	ICP-MS5_200520B
	H-31	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	96393	100	05/21/20 11:55 AM	ICP-MS5_200521A
2005112-01B	H-31	Aqueous	E300	Anions by IC method - Water	96363	100	05/15/20 03:44 PM	IC2_200515A
	H-31	Aqueous	E300	Anions by IC method - Water	96363	10	05/15/20 04:32 PM	IC2_200515A
	H-31	Aqueous	E300	Anions by IC method - Water	96363	1	05/15/20 07:44 PM	IC2_200515A
	H-31	Aqueous	M2540C	Total Dissolved Solids	96403	1	05/19/20 04:40 PM	WC_200519E
2005112-02A	H-32	Aqueous	SW7470A	Mercury Total: Aqueous	96414	1	05/19/20 03:25 PM	CETAC2_HG_200519B
	H-32	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	96393	10	05/21/20 11:57 AM	ICP-MS5_200521A
	H-32	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	96393	1	05/20/20 03:04 PM	ICP-MS5_200520B
2005112-02B	H-32	Aqueous	E300	Anions by IC method - Water	96363	10	05/15/20 04:48 PM	IC2_200515A
	H-32	Aqueous	E300	Anions by IC method - Water	96363	1	05/15/20 08:00 PM	IC2_200515A
	H-32	Aqueous	M2540C	Total Dissolved Solids	96403	1	05/19/20 04:40 PM	WC_200519E
2005112-03A	H-27	Aqueous	SW7470A	Mercury Total: Aqueous	96414	1	05/19/20 03:27 PM	CETAC2_HG_200519B
	H-27	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	96393	1	05/20/20 03:06 PM	ICP-MS5_200520B
	H-27	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	96393	5	05/21/20 11:59 AM	ICP-MS5_200521A
2005112-03B	H-27	Aqueous	E300	Anions by IC method - Water	96363	10	05/15/20 05:04 PM	IC2_200515A
	H-27	Aqueous	E300	Anions by IC method - Water	96363	1	05/15/20 08:16 PM	IC2_200515A
	H-27	Aqueous	M2540C	Total Dissolved Solids	96403	1	05/19/20 04:40 PM	WC_200519E
2005112-04A	H-28	Aqueous	SW7470A	Mercury Total: Aqueous	96414	1	05/19/20 03:29 PM	CETAC2_HG_200519B
	H-28	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	96393	20	05/21/20 11:51 AM	ICP-MS5_200521A
	H-28	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	96393	1	05/20/20 02:53 PM	ICP-MS5_200520B
2005112-04B	H-28	Aqueous	E300	Anions by IC method - Water	96363	10	05/15/20 05:20 PM	IC2_200515A
	H-28	Aqueous	E300	Anions by IC method - Water	96363	1	05/15/20 08:32 PM	IC2_200515A
	H-28	Aqueous	M2540C	Total Dissolved Solids	96403	1	05/19/20 04:40 PM	WC_200519E
2005112-05A	H-29	Aqueous	SW7470A	Mercury Total: Aqueous	96414	1	05/19/20 03:31 PM	CETAC2_HG_200519B

DHL Analytical, Inc. *12-Jun-20*

Lab Order: 2005112
Client: Golder
Project: Luminant-MLSES-CCR

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
2005112-05A	H-29	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	96393	1	05/20/20 03:09 PM	ICP-MS5_200520B
	H-29	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	96393	20	05/21/20 12:02 PM	ICP-MS5_200521A
2005112-05B	H-29	Aqueous	E300	Anions by IC method - Water	96363	10	05/15/20 05:36 PM	IC2_200515A
	H-29	Aqueous	E300	Anions by IC method - Water	96363	1	05/15/20 08:48 PM	IC2_200515A
	H-29	Aqueous	M2540C	Total Dissolved Solids	96403	1	05/19/20 04:40 PM	WC_200519E
2005112-06A	H-26	Aqueous	SW7470A	Mercury Total: Aqueous	96414	1	05/19/20 03:34 PM	CETAC2_HG_200519B
	H-26	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	96393	1	05/20/20 03:11 PM	ICP-MS5_200520B
	H-26	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	96393	5	05/21/20 12:04 PM	ICP-MS5_200521A
2005112-06B	H-26	Aqueous	E300	Anions by IC method - Water	96363	10	05/15/20 05:52 PM	IC2_200515A
	H-26	Aqueous	E300	Anions by IC method - Water	96363	1	05/15/20 09:04 PM	IC2_200515A
	H-26	Aqueous	M2540C	Total Dissolved Solids	96403	1	05/19/20 04:40 PM	WC_200519E
2005112-07A	H-33	Aqueous	SW7470A	Mercury Total: Aqueous	96414	1	05/19/20 03:36 PM	CETAC2_HG_200519B
	H-33	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	96393	1	05/20/20 03:13 PM	ICP-MS5_200520B
	H-33	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	96393	1	05/21/20 01:39 PM	ICP-MS5_200521A
2005112-07B	H-33	Aqueous	E300	Anions by IC method - Water	96363	10	05/15/20 06:08 PM	IC2_200515A
	H-33	Aqueous	E300	Anions by IC method - Water	96363	1	05/15/20 09:20 PM	IC2_200515A
	H-33	Aqueous	M2540C	Total Dissolved Solids	96403	1	05/19/20 04:40 PM	WC_200519E

DHL Analytical, Inc.

Date: *12-Jun-20*

CLIENT:	Golder	**Client Sample ID:**	H-31
Project:	Luminant-MLSES-CCR	**Lab ID:**	2005112-01
Project No:	19122262-C2020	**Collection Date:**	05/13/20 10:10 AM
Lab Order:	2005112	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	05/20/20 03:02 PM
Arsenic	0.0110	0.00200	0.00500		mg/L	1	05/20/20 03:02 PM
Barium	0.0159	0.00300	0.0100		mg/L	1	05/20/20 03:02 PM
Beryllium	0.0331	0.000300	0.00100		mg/L	1	05/20/20 03:02 PM
Boron	22.9	1.00	3.00		mg/L	100	05/21/20 11:55 AM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	05/20/20 03:02 PM
Calcium	235	10.0	30.0		mg/L	100	05/21/20 11:55 AM
Chromium	0.00367	0.00200	0.00500	J	mg/L	1	05/20/20 03:02 PM
Cobalt	0.449	0.00300	0.00500		mg/L	1	05/20/20 03:02 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	05/20/20 03:02 PM
Lithium	0.249	0.00500	0.0100		mg/L	1	05/20/20 03:02 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	05/20/20 03:02 PM
Selenium	0.0792	0.00200	0.00500		mg/L	1	05/20/20 03:02 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	05/20/20 03:02 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	05/19/20 03:22 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	223	3.00	10.0		mg/L	10	05/15/20 04:32 PM
Fluoride	0.231	0.100	0.400	J	mg/L	1	05/15/20 07:44 PM
Sulfate	2340	100	300		mg/L	100	05/15/20 03:44 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	4150	50.0	50.0		mg/L	1	05/19/20 04:40 PM

Qualifiers:

ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *12-Jun-20*

CLIENT:	Golder	**Client Sample ID:**	H-32
Project:	Luminant-MLSES-CCR	**Lab ID:**	2005112-02
Project No:	19122262-C2020	**Collection Date:**	05/13/20 11:00 AM
Lab Order:	2005112	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	05/20/20 03:04 PM
Arsenic	0.00214	0.00200	0.00500	J	mg/L	1	05/20/20 03:04 PM
Barium	0.0166	0.00300	0.0100		mg/L	1	05/20/20 03:04 PM
Beryllium	0.00725	0.000300	0.00100		mg/L	1	05/20/20 03:04 PM
Boron	2.15	0.100	0.300		mg/L	10	05/21/20 11:57 AM
Cadmium	0.000389	0.000300	0.00100	J	mg/L	1	05/20/20 03:04 PM
Calcium	43.3	1.00	3.00		mg/L	10	05/21/20 11:57 AM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	05/20/20 03:04 PM
Cobalt	0.195	0.00300	0.00500		mg/L	1	05/20/20 03:04 PM
Lead	0.000743	0.000300	0.00100	J	mg/L	1	05/20/20 03:04 PM
Lithium	0.0978	0.00500	0.0100		mg/L	1	05/20/20 03:04 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	05/20/20 03:04 PM
Selenium	0.00401	0.00200	0.00500	J	mg/L	1	05/20/20 03:04 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	05/20/20 03:04 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	05/19/20 03:25 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	124	3.00	10.0		mg/L	10	05/15/20 04:48 PM
Fluoride	0.641	0.100	0.400		mg/L	1	05/15/20 08:00 PM
Sulfate	343	10.0	30.0		mg/L	10	05/15/20 04:48 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	791	10.0	10.0		mg/L	1	05/19/20 04:40 PM

Qualifiers:

ND - Not Detected at the SDL
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DF- Dilution Factor
N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *12-Jun-20*

CLIENT:	Golder	**Client Sample ID:**	H-27
Project:	Luminant-MLSES-CCR	**Lab ID:**	2005112-03
Project No:	19122262-C2020	**Collection Date:**	05/13/20 11:50 AM
Lab Order:	2005112	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	05/20/20 03:06 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	05/20/20 03:06 PM
Barium	0.0668	0.00300	0.0100		mg/L	1	05/20/20 03:06 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	05/20/20 03:06 PM
Boron	0.583	0.0500	0.150		mg/L	5	05/21/20 11:59 AM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	05/20/20 03:06 PM
Calcium	53.1	0.500	1.50		mg/L	5	05/21/20 11:59 AM
Chromium	0.0133	0.00200	0.00500		mg/L	1	05/20/20 03:06 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	05/20/20 03:06 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	05/20/20 03:06 PM
Lithium	0.170	0.00500	0.0100		mg/L	1	05/20/20 03:06 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	05/20/20 03:06 PM
Selenium	0.00671	0.00200	0.00500		mg/L	1	05/20/20 03:06 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	05/20/20 03:06 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	05/19/20 03:27 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	93.0	3.00	10.0		mg/L	10	05/15/20 05:04 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	05/15/20 08:16 PM
Sulfate	274	10.0	30.0		mg/L	10	05/15/20 05:04 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	786	10.0	10.0		mg/L	1	05/19/20 04:40 PM

Qualifiers:

ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *12-Jun-20*

CLIENT:	Golder	**Client Sample ID:**	H-28
Project:	Luminant-MLSES-CCR	**Lab ID:**	2005112-04
Project No:	19122262-C2020	**Collection Date:**	05/13/20 12:40 PM
Lab Order:	2005112	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	05/20/20 02:53 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	05/20/20 02:53 PM
Barium	0.0149	0.00300	0.0100		mg/L	1	05/20/20 02:53 PM
Beryllium	0.00252	0.000300	0.00100		mg/L	1	05/20/20 02:53 PM
Boron	7.03	0.200	0.600		mg/L	20	05/21/20 11:51 AM
Cadmium	0.00126	0.000300	0.00100		mg/L	1	05/20/20 02:53 PM
Calcium	88.9	2.00	6.00		mg/L	20	05/21/20 11:51 AM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	05/20/20 02:53 PM
Cobalt	0.159	0.00300	0.00500		mg/L	1	05/20/20 02:53 PM
Lead	0.000751	0.000300	0.00100	J	mg/L	1	05/20/20 02:53 PM
Lithium	0.171	0.00500	0.0100		mg/L	1	05/20/20 02:53 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	05/20/20 02:53 PM
Selenium	0.00320	0.00200	0.00500	J	mg/L	1	05/20/20 02:53 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	05/20/20 02:53 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	05/19/20 03:29 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	86.7	3.00	10.0		mg/L	10	05/15/20 05:20 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	05/15/20 08:32 PM
Sulfate	676	10.0	30.0		mg/L	10	05/15/20 05:20 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	1220	10.0	10.0		mg/L	1	05/19/20 04:40 PM

Qualifiers:

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DF- Dilution Factor
N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *12-Jun-20*

CLIENT:	Golder	**Client Sample ID:**	H-29
Project:	Luminant-MLSES-CCR	**Lab ID:**	2005112-05
Project No:	19122262-C2020	**Collection Date:**	05/13/20 01:30 PM
Lab Order:	2005112	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	05/20/20 03:09 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	05/20/20 03:09 PM
Barium	0.0117	0.00300	0.0100		mg/L	1	05/20/20 03:09 PM
Beryllium	0.00130	0.000300	0.00100		mg/L	1	05/20/20 03:09 PM
Boron	6.98	0.200	0.600		mg/L	20	05/21/20 12:02 PM
Cadmium	0.00129	0.000300	0.00100		mg/L	1	05/20/20 03:09 PM
Calcium	84.9	2.00	6.00		mg/L	20	05/21/20 12:02 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	05/20/20 03:09 PM
Cobalt	0.142	0.00300	0.00500		mg/L	1	05/20/20 03:09 PM
Lead	0.000684	0.000300	0.00100	J	mg/L	1	05/20/20 03:09 PM
Lithium	0.134	0.00500	0.0100		mg/L	1	05/20/20 03:09 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	05/20/20 03:09 PM
Selenium	0.00281	0.00200	0.00500	J	mg/L	1	05/20/20 03:09 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	05/20/20 03:09 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	05/19/20 03:31 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	70.7	3.00	10.0		mg/L	10	05/15/20 05:36 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	05/15/20 08:48 PM
Sulfate	769	10.0	30.0		mg/L	10	05/15/20 05:36 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	1340	50.0	50.0		mg/L	1	05/19/20 04:40 PM

Qualifiers:

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DF- Dilution Factor
N - Parameter not NELAP certified
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S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *12-Jun-20*

CLIENT:	Golder	**Client Sample ID:**	H-26
Project:	Luminant-MLSES-CCR	**Lab ID:**	2005112-06
Project No:	19122262-C2020	**Collection Date:**	05/13/20 03:35 PM
Lab Order:	2005112	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	05/20/20 03:11 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	05/20/20 03:11 PM
Barium	0.129	0.00300	0.0100		mg/L	1	05/20/20 03:11 PM
Beryllium	0.00166	0.000300	0.00100		mg/L	1	05/20/20 03:11 PM
Boron	0.644	0.0500	0.150		mg/L	5	05/21/20 12:04 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	05/20/20 03:11 PM
Calcium	30.4	0.500	1.50		mg/L	5	05/21/20 12:04 PM
Chromium	0.00314	0.00200	0.00500	J	mg/L	1	05/20/20 03:11 PM
Cobalt	0.0241	0.00300	0.00500		mg/L	1	05/20/20 03:11 PM
Lead	0.000798	0.000300	0.00100	J	mg/L	1	05/20/20 03:11 PM
Lithium	0.0218	0.00500	0.0100		mg/L	1	05/20/20 03:11 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	05/20/20 03:11 PM
Selenium	0.0147	0.00200	0.00500		mg/L	1	05/20/20 03:11 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	05/20/20 03:11 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	05/19/20 03:34 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	71.0	3.00	10.0		mg/L	10	05/15/20 05:52 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	05/15/20 09:04 PM
Sulfate	58.4	1.00	3.00		mg/L	1	05/15/20 09:04 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	280	10.0	10.0		mg/L	1	05/19/20 04:40 PM

Qualifiers:

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J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
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S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *12-Jun-20*

CLIENT:	Golder	**Client Sample ID:**	H-33
Project:	Luminant-MLSES-CCR	**Lab ID:**	2005112-07
Project No:	19122262-C2020	**Collection Date:**	05/13/20 04:30 PM
Lab Order:	2005112	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	05/20/20 03:13 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	05/20/20 03:13 PM
Barium	0.0784	0.00300	0.0100		mg/L	1	05/20/20 03:13 PM
Beryllium	0.000530	0.000300	0.00100	J	mg/L	1	05/20/20 03:13 PM
Boron	0.103	0.0100	0.0300		mg/L	1	05/21/20 01:39 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	05/20/20 03:13 PM
Calcium	24.0	0.100	0.300		mg/L	1	05/20/20 03:13 PM
Chromium	0.00755	0.00200	0.00500		mg/L	1	05/20/20 03:13 PM
Cobalt	0.0312	0.00300	0.00500		mg/L	1	05/20/20 03:13 PM
Lead	0.00191	0.000300	0.00100		mg/L	1	05/20/20 03:13 PM
Lithium	0.173	0.00500	0.0100		mg/L	1	05/20/20 03:13 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	05/20/20 03:13 PM
Selenium	0.00243	0.00200	0.00500	J	mg/L	1	05/20/20 03:13 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	05/20/20 03:13 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	05/19/20 03:36 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	84.3	3.00	10.0		mg/L	10	05/15/20 06:08 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	05/15/20 09:20 PM
Sulfate	113	1.00	3.00		mg/L	1	05/15/20 09:20 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	439	10.0	10.0		mg/L	1	05/19/20 04:40 PM

Qualifiers:

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DF- Dilution Factor
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S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

CLIENT: Golder
Work Order: 2005112
Project: Luminant-MLSES-CCR

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_200304C

Sample ID: **DCS-95289**	Batch ID: **95289**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **DCS**	Run ID: **CETAC2_HG_200304C**	Analysis Date: **3/4/2020 12:11:09 PM**	Prep Date: **3/4/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.000175	0.000200	0.000200	0	87.5	82	119	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005112
Project: Luminant-MLSES-CCR

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_200519B

The QC data in batch 96414 applies to the following samples: 2005112-01A, 2005112-02A, 2005112-03A, 2005112-04A, 2005112-05A, 2005112-06A, 2005112-07A

Sample ID: **MB-96414** Batch ID: **96414** TestNo: **SW7470A** Units: **mg/L**
SampType: **MBLK** Run ID: **CETAC2_HG_200519B** Analysis Date: **5/19/2020 3:11:32 PM** Prep Date: **5/19/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.0000800	0.000200								

Sample ID: **LCS-96414** Batch ID: **96414** TestNo: **SW7470A** Units: **mg/L**
SampType: **LCS** Run ID: **CETAC2_HG_200519B** Analysis Date: **5/19/2020 3:13:48 PM** Prep Date: **5/19/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00206	0.000200	0.00200	0	103	85	115			

Sample ID: **LCSD-96414** Batch ID: **96414** TestNo: **SW7470A** Units: **mg/L**
SampType: **LCSD** Run ID: **CETAC2_HG_200519B** Analysis Date: **5/19/2020 3:16:04 PM** Prep Date: **5/19/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00205	0.000200	0.00200	0	103	85	115	0.487	15	

Sample ID: **2005114-01A MS** Batch ID: **96414** TestNo: **SW7470A** Units: **mg/L**
SampType: **MS** Run ID: **CETAC2_HG_200519B** Analysis Date: **5/19/2020 3:40:59 PM** Prep Date: **5/19/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00985	0.00100	0.0100	0	98.5	80	120			

Sample ID: **2005114-01A MSD** Batch ID: **96414** TestNo: **SW7470A** Units: **mg/L**
SampType: **MSD** Run ID: **CETAC2_HG_200519B** Analysis Date: **5/19/2020 3:43:16 PM** Prep Date: **5/19/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00960	0.00100	0.0100	0	96.0	80	120	2.57	15	

Sample ID: **2005114-01A SD** Batch ID: **96414** TestNo: **SW7470A** Units: **mg/L**
SampType: **SD** Run ID: **CETAC2_HG_200519B** Analysis Date: **5/19/2020 3:45:32 PM** Prep Date: **5/19/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.00200	0.00500	0	0				0	10	

Sample ID: **2005114-01A PDS** Batch ID: **96414** TestNo: **SW7470A** Units: **mg/L**
SampType: **PDS** Run ID: **CETAC2_HG_200519B** Analysis Date: **5/19/2020 3:47:48 PM** Prep Date: **5/19/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0120	0.00100	0.0125	0	96.0	85	115			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005112
Project: Luminant-MLSES-CCR

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_200519B

Sample ID: **ICV-200519**	Batch ID: **R110550**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **ICV**	Run ID: **CETAC2_HG_200519B**	Analysis Date: **5/19/2020 10:31:55 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00391	0.000200	0.00400	0	97.8	90	110			

Sample ID: **CCV5-200519**	Batch ID: **R110550**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_200519B**	Analysis Date: **5/19/2020 1:29:56 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00213	0.000200	0.00200	0	106	90	110			

Sample ID: **CCV6-200519**	Batch ID: **R110550**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_200519B**	Analysis Date: **5/19/2020 3:52:22 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00202	0.000200	0.00200	0	101	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005112
Project: Luminant-MLSES-CCR

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_200408C

Sample ID: **DCS1-95814**	Batch ID: **95814**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS**	Run ID: **ICP-MS5_200408C**	Analysis Date: **4/8/2020 11:16:00 AM**	Prep Date: **4/7/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.000932	0.00250	0.00100	0	93.2	70	130	0	0	
Beryllium	0.000472	0.00100	0.000500	0	94.4	70	130	0	0	
Cadmium	0.000492	0.00100	0.000500	0	98.4	70	130	0	0	
Lead	0.000496	0.00100	0.000500	0	99.2	70	130	0	0	
Thallium	0.000468	0.00150	0.000500	0	93.6	70	130	0	0	

Sample ID: **DCS2-95814**	Batch ID: **95814**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS2**	Run ID: **ICP-MS5_200408C**	Analysis Date: **4/8/2020 11:19:00 AM**	Prep Date: **4/7/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.310	0.300	0.300	0	103	70	130	0	0	

Sample ID: **DCS3-95814**	Batch ID: **95814**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS3**	Run ID: **ICP-MS5_200408C**	Analysis Date: **4/8/2020 11:21:00 AM**	Prep Date: **4/7/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.00466	0.00500	0.00500	0	93.2	70	130	0	0	
Barium	0.00478	0.0100	0.00500	0	95.6	70	130	0	0	
Chromium	0.00600	0.00500	0.00500	0	120	70	130	0	0	
Cobalt	0.00473	0.00500	0.00500	0	94.6	70	130	0	0	
Lithium	0.00473	0.0100	0.00500	0	94.6	70	130	0	0	
Molybdenum	0.00466	0.00500	0.00500	0	93.2	70	130	0	0	
Selenium	0.00517	0.00500	0.00500	0	103	70	130	0	0	

Sample ID: **DCS4-95814**	Batch ID: **95814**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS4**	Run ID: **ICP-MS5_200408C**	Analysis Date: **4/8/2020 11:28:00 AM**	Prep Date: **4/7/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0286	0.0300	0.0300	0	95.2	70	130	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005112
Project: Luminant-MLSES-CCR

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_200520B

The QC data in batch 96393 applies to the following samples: 2005112-01A, 2005112-02A, 2005112-03A, 2005112-04A, 2005112-05A, 2005112-06A, 2005112-07A

Sample ID: **MB-96393** Batch ID: **96393** TestNo: **SW6020B** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS5_200520B** Analysis Date: **5/20/2020 2:44:00 PM** Prep Date: **5/19/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.000800	0.00250								
Arsenic	<0.00200	0.00500								
Barium	<0.00300	0.0100								
Beryllium	<0.000300	0.00100								
Cadmium	<0.000300	0.00100								
Calcium	<0.100	0.300								
Chromium	<0.00200	0.00500								
Cobalt	<0.00300	0.00500								
Lead	<0.000300	0.00100								
Lithium	<0.00500	0.0100								
Molybdenum	<0.00200	0.00500								
Selenium	<0.00200	0.00500								
Thallium	<0.000500	0.00150								

Sample ID: **LCS-96393** Batch ID: **96393** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS5_200520B** Analysis Date: **5/20/2020 2:46:00 PM** Prep Date: **5/19/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.204	0.00250	0.200	0	102	80	120			
Arsenic	0.203	0.00500	0.200	0	102	80	120			
Barium	0.203	0.0100	0.200	0	102	80	120			
Beryllium	0.204	0.00100	0.200	0	102	80	120			
Cadmium	0.204	0.00100	0.200	0	102	80	120			
Calcium	5.10	0.300	5.00	0	102	80	120			
Chromium	0.199	0.00500	0.200	0	99.5	80	120			
Cobalt	0.202	0.00500	0.200	0	101	80	120			
Lead	0.198	0.00100	0.200	0	99.0	80	120			
Lithium	0.213	0.0100	0.200	0	106	80	120			
Molybdenum	0.201	0.00500	0.200	0	101	80	120			
Selenium	0.216	0.00500	0.200	0	108	80	120			
Thallium	0.198	0.00150	0.200	0	98.9	80	120			

Sample ID: **LCSD-96393** Batch ID: **96393** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS5_200520B** Analysis Date: **5/20/2020 2:49:00 PM** Prep Date: **5/19/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.206	0.00250	0.200	0	103	80	120	0.664	15	
Arsenic	0.204	0.00500	0.200	0	102	80	120	0.300	15	
Barium	0.205	0.0100	0.200	0	103	80	120	0.831	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005112
Project: Luminant-MLSES-CCR

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_200520B

Sample ID: **LCSD-96393**	Batch ID: **96393**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCSD**	Run ID: **ICP-MS5_200520B**	Analysis Date: **5/20/2020 2:49:00 PM**	Prep Date: **5/19/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.204	0.00100	0.200	0	102	80	120	0.169	15	
Cadmium	0.206	0.00100	0.200	0	103	80	120	0.649	15	
Calcium	5.22	0.300	5.00	0	104	80	120	2.22	15	
Chromium	0.202	0.00500	0.200	0	101	80	120	1.50	15	
Cobalt	0.202	0.00500	0.200	0	101	80	120	0.110	15	
Lead	0.200	0.00100	0.200	0	99.9	80	120	0.974	15	
Lithium	0.214	0.0100	0.200	0	107	80	120	0.361	15	
Molybdenum	0.200	0.00500	0.200	0	100	80	120	0.264	15	
Selenium	0.218	0.00500	0.200	0	109	80	120	0.773	15	
Thallium	0.200	0.00150	0.200	0	99.8	80	120	0.899	15	

Sample ID: **2005112-04A SD**	Batch ID: **96393**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS5_200520B**	Analysis Date: **5/20/2020 3:00:00 PM**	Prep Date: **5/19/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.00400	0.0125	0	0				0	20	
Arsenic	<0.0100	0.0250	0	0				0	20	
Barium	<0.0150	0.0500	0	0.0149				0	20	
Beryllium	0.00263	0.00500	0	0.00252				4.07	20	
Cadmium	<0.00150	0.00500	0	0.00126				0	20	
Chromium	<0.0100	0.0250	0	0				0	20	
Cobalt	0.164	0.0250	0	0.159				2.82	20	
Lead	<0.00150	0.00500	0	0.000751				0	20	
Lithium	0.164	0.0500	0	0.171				3.92	20	
Molybdenum	<0.0100	0.0250	0	0				0	20	
Selenium	<0.0100	0.0250	0	0.00320				0	20	
Thallium	<0.00250	0.00750	0	0				0	20	

Sample ID: **2005112-04A PDS**	Batch ID: **96393**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS5_200520B**	Analysis Date: **5/20/2020 3:26:00 PM**	Prep Date: **5/19/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.205	0.00250	0.200	0	103	75	125			
Arsenic	0.194	0.00500	0.200	0	97.1	75	125			
Barium	0.219	0.0100	0.200	0.0149	102	75	125			
Beryllium	0.198	0.00100	0.200	0.00252	97.7	75	125			
Cadmium	0.203	0.00100	0.200	0.00126	101	75	125			
Chromium	0.202	0.00500	0.200	0	101	75	125			
Cobalt	0.344	0.00500	0.200	0.159	92.3	75	125			
Lead	0.203	0.00100	0.200	0.000751	101	75	125			
Lithium	0.361	0.0100	0.200	0.171	95.2	75	125			

Qualifiers:

B	Analyte detected in the associated Method Blank
J	Analyte detected between MDL and RL
ND	Not Detected at the Method Detection Limit
RL	Reporting Limit
J	Analyte detected between SDL and RL
DF	Dilution Factor
MDL	Method Detection Limit
R	RPD outside accepted control limits
S	Spike Recovery outside control limits
N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005112
Project: Luminant-MLSES-CCR

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_200520B

Sample ID: **2005112-04A PDS**	Batch ID: **96393**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS5_200520B**	Analysis Date: **5/20/2020 3:26:00 PM**	Prep Date: **5/19/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Molybdenum	0.197	0.00500	0.200	0	98.5	75	125			
Selenium	0.204	0.00500	0.200	0.00320	100	75	125			
Thallium	0.201	0.00150	0.200	0	101	75	125			

Sample ID: **2005112-04A MS**	Batch ID: **96393**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS5_200520B**	Analysis Date: **5/20/2020 3:28:00 PM**	Prep Date: **5/19/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.201	0.00250	0.200	0	101	75	125			
Arsenic	0.196	0.00500	0.200	0	98.0	75	125			
Barium	0.217	0.0100	0.200	0.0149	101	75	125			
Beryllium	0.200	0.00100	0.200	0.00252	98.9	75	125			
Cadmium	0.202	0.00100	0.200	0.00126	100	75	125			
Calcium	102	0.300	5.00	95.7	120	75	125			
Chromium	0.194	0.00500	0.200	0	97.0	75	125			
Cobalt	0.351	0.00500	0.200	0.159	96.0	75	125			
Lead	0.200	0.00100	0.200	0.000751	99.4	75	125			
Lithium	0.380	0.0100	0.200	0.171	104	75	125			
Molybdenum	0.202	0.00500	0.200	0	101	75	125			
Selenium	0.201	0.00500	0.200	0.00320	99.1	75	125			
Thallium	0.200	0.00150	0.200	0	100	75	125			

Sample ID: **2005112-04A MSD**	Batch ID: **96393**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS5_200520B**	Analysis Date: **5/20/2020 3:31:00 PM**	Prep Date: **5/19/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.200	0.00250	0.200	0	100	75	125	0.563	15	
Arsenic	0.196	0.00500	0.200	0	98.1	75	125	0.036	15	
Barium	0.214	0.0100	0.200	0.0149	99.4	75	125	1.39	15	
Beryllium	0.197	0.00100	0.200	0.00252	97.2	75	125	1.67	15	
Cadmium	0.198	0.00100	0.200	0.00126	98.5	75	125	1.73	15	
Calcium	102	0.300	5.00	95.7	122	75	125	0.071	15	
Chromium	0.193	0.00500	0.200	0	96.5	75	125	0.449	15	
Cobalt	0.351	0.00500	0.200	0.159	96.2	75	125	0.064	15	
Lead	0.198	0.00100	0.200	0.000751	98.4	75	125	1.01	15	
Lithium	0.365	0.0100	0.200	0.171	96.9	75	125	4.00	15	
Molybdenum	0.199	0.00500	0.200	0	99.7	75	125	1.09	15	
Selenium	0.203	0.00500	0.200	0.00320	99.8	75	125	0.689	15	
Thallium	0.198	0.00150	0.200	0	99.0	75	125	1.19	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

Sample ID: **ICV-200520** Batch ID: **R110581** TestNo: **SW6020B** Units: **mg/L**
SampType: **ICV** Run ID: **ICP-MS5_200520B** Analysis Date: **5/20/2020 10:52:00 AM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.102	0.00250	0.100	0	102	90	110			
Arsenic	0.100	0.00500	0.100	0	100	90	110			
Barium	0.101	0.0100	0.100	0	101	90	110			
Beryllium	0.0975	0.00100	0.100	0	97.5	90	110			
Cadmium	0.102	0.00100	0.100	0	102	90	110			
Calcium	2.60	0.300	2.50	0	104	90	110			
Chromium	0.102	0.00500	0.100	0	102	90	110			
Cobalt	0.102	0.00500	0.100	0	102	90	110			
Lead	0.0987	0.00100	0.100	0	98.7	90	110			
Lithium	0.0991	0.0100	0.100	0	99.1	90	110			
Molybdenum	0.0965	0.00500	0.100	0	96.5	90	110			
Selenium	0.104	0.00500	0.100	0	104	90	110			
Thallium	0.0979	0.00150	0.100	0	97.9	90	110			

Sample ID: **LCVL-200520** Batch ID: **R110581** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS5_200520B** Analysis Date: **5/20/2020 11:04:00 AM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00201	0.00250	0.00200	0	101	80	120			
Arsenic	0.00521	0.00500	0.00500	0	104	80	120			
Barium	0.00504	0.0100	0.00500	0	101	80	120			
Beryllium	0.00104	0.00100	0.00100	0	104	80	120			
Cadmium	0.00101	0.00100	0.00100	0	101	80	120			
Calcium	0.106	0.300	0.100	0	106	80	120			
Chromium	0.00495	0.00500	0.00500	0	99.0	80	120			
Cobalt	0.00513	0.00500	0.00500	0	103	80	120			
Lead	0.000985	0.00100	0.00100	0	98.5	80	120			
Lithium	0.00988	0.0100	0.0100	0	98.8	80	120			
Molybdenum	0.00512	0.00500	0.00500	0	102	80	120			
Selenium	0.00489	0.00500	0.00500	0	97.8	80	120			
Thallium	0.000993	0.00150	0.00100	0	99.3	80	120			

Sample ID: **CCV4-200520** Batch ID: **R110581** TestNo: **SW6020B** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS5_200520B** Analysis Date: **5/20/2020 2:38:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.197	0.00250	0.200	0	98.7	90	110			
Arsenic	0.205	0.00500	0.200	0	102	90	110			
Barium	0.200	0.0100	0.200	0	99.9	90	110			
Beryllium	0.200	0.00100	0.200	0	100	90	110			
Cadmium	0.205	0.00100	0.200	0	102	90	110			

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_200520B

Sample ID: **CCV4-200520** Batch ID: **R110581** TestNo: **SW6020B** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS5_200520B** Analysis Date: **5/20/2020 2:38:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	5.00	0.300	5.00	0	100	90	110			
Chromium	0.198	0.00500	0.200	0	99.0	90	110			
Cobalt	0.202	0.00500	0.200	0	101	90	110			
Lead	0.194	0.00100	0.200	0	97.1	90	110			
Lithium	0.207	0.0100	0.200	0	103	90	110			
Molybdenum	0.199	0.00500	0.200	0	99.3	90	110			
Selenium	0.218	0.00500	0.200	0	109	90	110			
Thallium	0.195	0.00150	0.200	0	97.4	90	110			

Sample ID: **CCV5-200520** Batch ID: **R110581** TestNo: **SW6020B** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS5_200520B** Analysis Date: **5/20/2020 4:16:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.197	0.00250	0.200	0	98.5	90	110			
Arsenic	0.202	0.00500	0.200	0	101	90	110			
Barium	0.198	0.0100	0.200	0	99.1	90	110			
Beryllium	0.200	0.00100	0.200	0	100	90	110			
Cadmium	0.202	0.00100	0.200	0	101	90	110			
Calcium	5.05	0.300	5.00	0	101	90	110			
Chromium	0.198	0.00500	0.200	0	98.8	90	110			
Cobalt	0.201	0.00500	0.200	0	100	90	110			
Lead	0.193	0.00100	0.200	0	96.6	90	110			
Lithium	0.209	0.0100	0.200	0	105	90	110			
Molybdenum	0.198	0.00500	0.200	0	98.8	90	110			
Selenium	0.211	0.00500	0.200	0	106	90	110			
Thallium	0.194	0.00150	0.200	0	96.9	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005112
Project: Luminant-MLSES-CCR

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_200521A

The QC data in batch 96393 applies to the following samples: 2005112-01A, 2005112-02A, 2005112-03A, 2005112-04A, 2005112-05A, 2005112-06A, 2005112-07A

Sample ID: **2005112-04A SD**	Batch ID: **96393**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS5_200521A**	Analysis Date: **5/21/2020 11:53:00 AM**	Prep Date: **5/19/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	10.0	3.00	0	7.04				35.1	20	R
Calcium	86.8	30.0	0	88.9				2.45	20	

Sample ID: **2005112-04A PDS**	Batch ID: **96393**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS5_200521A**	Analysis Date: **5/21/2020 12:15:00 PM**	Prep Date: **5/19/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	11.0	0.600	4.00	7.03	99.9	75	125			
Calcium	189	6.00	100	88.9	100	75	125			

Sample ID: **MB-96393**	Batch ID: **96393**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MBLK**	Run ID: **ICP-MS5_200521A**	Analysis Date: **5/21/2020 1:30:00 PM**	Prep Date: **5/19/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	<0.0100	0.0300								

Sample ID: **LCS-96393**	Batch ID: **96393**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCS**	Run ID: **ICP-MS5_200521A**	Analysis Date: **5/21/2020 1:33:00 PM**	Prep Date: **5/19/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.192	0.0300	0.200	0	95.9	80	120			

Sample ID: **LCSD-96393**	Batch ID: **96393**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCSD**	Run ID: **ICP-MS5_200521A**	Analysis Date: **5/21/2020 1:35:00 PM**	Prep Date: **5/19/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.207	0.0300	0.200	0	103	80	120	7.65	15	

Sample ID: **2005112-04A MS**	Batch ID: **96393**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS5_200521A**	Analysis Date: **5/21/2020 1:46:00 PM**	Prep Date: **5/19/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	7.37	0.600	0.200	7.03	167	75	125			S

Sample ID: **2005112-04A MSD**	Batch ID: **96393**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS5_200521A**	Analysis Date: **5/21/2020 1:48:00 PM**	Prep Date: **5/19/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	7.82	0.600	0.200	7.03	391	75	125	5.91	15	S

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005112
Project: Luminant-MLSES-CCR

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_200521A

Sample ID: **ICV-200521**	Batch ID: **R110586**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS5_200521A**	Analysis Date: **5/21/2020 11:34:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.104	0.0300	0.100	0	104	90	110			
Calcium	2.42	0.300	2.50	0	97.0	90	110			

Sample ID: **LCVL-200521**	Batch ID: **R110586**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_200521A**	Analysis Date: **5/21/2020 11:41:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0236	0.0300	0.0200	0	118	80	120			
Calcium	0.100	0.300	0.100	0	100	80	120			

Sample ID: **CCV1-200521**	Batch ID: **R110586**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_200521A**	Analysis Date: **5/21/2020 12:26:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.198	0.0300	0.200	0	99.1	90	110			
Calcium	4.87	0.300	5.00	0	97.3	90	110			

Sample ID: **CCV2-200521**	Batch ID: **R110586**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_200521A**	Analysis Date: **5/21/2020 1:00:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.195	0.0300	0.200	0	97.3	90	110			

Sample ID: **CCV3-200521**	Batch ID: **R110586**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_200521A**	Analysis Date: **5/21/2020 1:59:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.197	0.0300	0.200	0	98.3	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005112
Project: Luminant-MLSES-CCR

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_200421A

Sample ID: **DCS2-96036**	Batch ID: **96036**	TestNo: **E300**	Units: **mg/L**
SampType: **DCS2**	Run ID: **IC2_200421A**	Analysis Date: **4/21/2020 11:47:08 AM**	Prep Date: **4/21/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	0.420	1.00	0.5000	0	84.1	70	130	0	0	
Fluoride	0.154	0.400	0.2000	0	77.1	70	130	0	0	
Sulfate	1.43	3.00	1.500	0	95.3	70	130	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005112
Project: Luminant-MLSES-CCR

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_200515A

The QC data in batch 96363 applies to the following samples: 2005112-01B, 2005112-02B, 2005112-03B, 2005112-04B, 2005112-05B, 2005112-06B, 2005112-07B

Sample ID: **MB-96363** Batch ID: **96363** TestNo: **E300** Units: **mg/L**
SampType: **MBLK** Run ID: **IC2_200515A** Analysis Date: **5/15/2020 11:51:21 AM** Prep Date: **5/15/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00								
Fluoride	<0.100	0.400								
Sulfate	<1.00	3.00								

Sample ID: **LCS-96363** Batch ID: **96363** TestNo: **E300** Units: **mg/L**
SampType: **LCS** Run ID: **IC2_200515A** Analysis Date: **5/15/2020 12:07:21 PM** Prep Date: **5/15/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.2	1.00	10.00	0	102	90	110			
Fluoride	3.77	0.400	4.000	0	94.2	90	110			
Sulfate	30.3	3.00	30.00	0	101	90	110			

Sample ID: **LCSD-96363** Batch ID: **96363** TestNo: **E300** Units: **mg/L**
SampType: **LCSD** Run ID: **IC2_200515A** Analysis Date: **5/15/2020 12:23:21 PM** Prep Date: **5/15/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.2	1.00	10.00	0	102	90	110	0.117	20	
Fluoride	3.76	0.400	4.000	0	94.0	90	110	0.191	20	
Sulfate	30.4	3.00	30.00	0	101	90	110	0.096	20	

Sample ID: **2005112-01BMS** Batch ID: **96363** TestNo: **E300** Units: **mg/L**
SampType: **MS** Run ID: **IC2_200515A** Analysis Date: **5/15/2020 4:00:25 PM** Prep Date: **5/15/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	2220	100	2000	206.2	101	90	110			
Fluoride	2010	40.0	2000	0	100	90	110			
Sulfate	4270	300	2000	2343	96.2	90	110			

Sample ID: **2005112-01BMSD** Batch ID: **96363** TestNo: **E300** Units: **mg/L**
SampType: **MSD** Run ID: **IC2_200515A** Analysis Date: **5/15/2020 4:16:25 PM** Prep Date: **5/15/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	2230	100	2000	206.2	101	90	110	0.373	20	
Fluoride	2020	40.0	2000	0	101	90	110	0.508	20	
Sulfate	4280	300	2000	2343	96.8	90	110	0.260	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005112
Project: Luminant-MLSES-CCR

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_200515A

Sample ID: **ICV-200515**	Batch ID: **R110519**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC2_200515A**	Analysis Date: **5/15/2020 11:19:21 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	26.2	1.00	25.00	0	105	90	110			
Fluoride	10.0	0.400	10.00	0	100	90	110			
Sulfate	79.1	3.00	75.00	0	105	90	110			

Sample ID: **CCV1-200515**	Batch ID: **R110519**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_200515A**	Analysis Date: **5/15/2020 7:12:25 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.3	1.00	10.00	0	103	90	110			
Fluoride	3.90	0.400	4.000	0	97.6	90	110			
Sulfate	30.5	3.00	30.00	0	102	90	110			

Sample ID: **CCV2-200515**	Batch ID: **R110519**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_200515A**	Analysis Date: **5/15/2020 10:40:25 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.3	1.00	10.00	0	103	90	110			
Fluoride	3.89	0.400	4.000	0	97.3	90	110			
Sulfate	30.6	3.00	30.00	0	102	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005112
Project: Luminant-MLSES-CCR

ANALYTICAL QC SUMMARY REPORT

RunID: WC_200519E

The QC data in batch 96403 applies to the following samples: 2005112-01B, 2005112-02B, 2005112-03B, 2005112-04B, 2005112-05B, 2005112-06B, 2005112-07B

Sample ID: **MB-96403**	Batch ID: **96403**	TestNo: **M2540C**	Units: **mg/L**
SampType: **MBLK**	Run ID: **WC_200519E**	Analysis Date: **5/19/2020 4:40:00 PM**	Prep Date: **5/19/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	<10.0	10.0								

Sample ID: **LCS-96403**	Batch ID: **96403**	TestNo: **M2540C**	Units: **mg/L**
SampType: **LCS**	Run ID: **WC_200519E**	Analysis Date: **5/19/2020 4:40:00 PM**	Prep Date: **5/19/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	751	10.0	745.6	0	101	90	113			

Sample ID: **2005112-01B-DUP**	Batch ID: **96403**	TestNo: **M2540C**	Units: **mg/L**
SampType: **DUP**	Run ID: **WC_200519E**	Analysis Date: **5/19/2020 4:40:00 PM**	Prep Date: **5/19/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	4150	50.0	0	4145				0	5	

Sample ID: **2005112-05B-DUP**	Batch ID: **96403**	TestNo: **M2540C**	Units: **mg/L**
SampType: **DUP**	Run ID: **WC_200519E**	Analysis Date: **5/19/2020 4:40:00 PM**	Prep Date: **5/19/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	1340	50.0	0	1340				0.374	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005112
Project: Luminant-MLSES-CCR

MQL SUMMARY REPORT

TestNo: E300	MDL	MQL
Analyte	**mg/L**	**mg/L**
Chloride	0.300	1.00
Fluoride	0.100	0.400
Sulfate	1.00	3.00

TestNo: SW6020B	MDL	MQL
Analyte	**mg/L**	**mg/L**
Antimony	0.000800	0.00250
Arsenic	0.00200	0.00500
Barium	0.00300	0.0100
Beryllium	0.000300	0.00100
Boron	0.0100	0.0300
Cadmium	0.000300	0.00100
Calcium	0.100	0.300
Chromium	0.00200	0.00500
Cobalt	0.00300	0.00500
Lead	0.000300	0.00100
Lithium	0.00500	0.0100
Molybdenum	0.00200	0.00500
Selenium	0.00200	0.00500
Thallium	0.000500	0.00150

TestNo: SW7470A	MDL	MQL
Analyte	**mg/L**	**mg/L**
Mercury	0.0000800	0.000200

TestNo: M2540C	MDL	MQL
Analyte	**mg/L**	**mg/L**
Total Dissolved Solids (Residue, Filt	10.0	10.0

Qualifiers: MQL -Method Quantitation Limit as defined by TRRP
MDL -Method Detection Limit as defined by TRRP

Pace Analytical®
National Center for Testing & Innovation

ANALYTICAL REPORT

June 12, 2020

DHL Analytical, Inc.

Sample Delivery Group:	L1219694
Samples Received:	05/18/2020
Project Number:	2005112
Description:	

Report To: John DuPont
2300 Double Creek Drive
Round Rock, TX 78664

Entire Report Reviewed By:

Donna Eidson
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.

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H-31 L1219694-01 Non-Potable Water

Collected by | Collected date/time 05/13/20 10:10 | Received date/time 05/18/20 09:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1478122	1	05/19/20 12:05	05/27/20 15:20	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1486283	1	06/04/20 09:38	06/05/20 15:28	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1486283	1	06/04/20 09:38	06/05/20 15:28	RGT	Mt. Juliet, TN

H-32 L1219694-02 Non-Potable Water

Collected by | Collected date/time 05/13/20 11:00 | Received date/time 05/18/20 09:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1478122	1	05/19/20 12:05	05/27/20 15:20	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1486283	1	06/04/20 09:38	06/05/20 15:28	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1486283	1	06/04/20 09:38	06/05/20 15:28	RGT	Mt. Juliet, TN

H-27 L1219694-03 Non-Potable Water

Collected by | Collected date/time 05/13/20 11:50 | Received date/time 05/18/20 09:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1478122	1	05/19/20 12:05	05/27/20 15:20	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1486283	1	06/04/20 09:38	06/05/20 15:28	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1486283	1	06/04/20 09:38	06/05/20 15:28	RGT	Mt. Juliet, TN

H-28 L1219694-04 Non-Potable Water

Collected by | Collected date/time 05/13/20 12:40 | Received date/time 05/18/20 09:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1478122	1	05/19/20 12:05	05/27/20 15:20	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1486283	1	06/04/20 09:38	06/05/20 15:28	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1486283	1	06/04/20 09:38	06/05/20 15:28	RGT	Mt. Juliet, TN

H-29 L1219694-05 Non-Potable Water

Collected by | Collected date/time 05/13/20 13:30 | Received date/time 05/18/20 09:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1478122	1	05/19/20 12:05	05/27/20 15:20	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1486283	1	06/04/20 09:38	06/05/20 15:28	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1486283	1	06/04/20 09:38	06/05/20 15:28	RGT	Mt. Juliet, TN

H-26 L1219694-06 Non-Potable Water

Collected by | Collected date/time 05/13/20 13:35 | Received date/time 05/18/20 09:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1478122	1	05/19/20 12:05	05/27/20 15:20	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1486283	1	06/04/20 09:38	06/05/20 15:28	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1486283	1	06/04/20 09:38	06/05/20 15:28	RGT	Mt. Juliet, TN

	Collected by	Collected date/time	Received date/time
H-33 L1219694-07 Non-Potable Water		05/13/20 14:30	05/18/20 09:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1478122	1	05/19/20 12:05	05/27/20 15:20	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1486283	1	06/04/20 09:38	06/05/20 15:28	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1486283	1	06/04/20 09:38	06/05/20 15:28	RGT	Mt. Juliet, TN

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Donna Eidson
Project Manager

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	1.70		0.537	0.869	05/27/2020 15:20	WG1478122
(T) Barium	*112*			*62.0-143*	*05/27/2020 15:20*	WG1478122
(T) Yttrium	*104*			*79.0-136*	*05/27/2020 15:20*	WG1478122

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	1.78		0.738	1.2	06/05/2020 15:28	WG1486283

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.0808		0.201	0.332	06/05/2020 15:28	WG1486283
(T) Barium-133	*102*			*30.0-143*	*06/05/2020 15:28*	WG1486283

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	1.15		0.568	0.978	05/27/2020 15:20	WG1478122
(T) Barium	*104*			*62.0-143*	*05/27/2020 15:20*	WG1478122
(T) Yttrium	*101*			*79.0-136*	*05/27/2020 15:20*	WG1478122

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	1.15		0.714	1.28	06/05/2020 15:28	WG1486283

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	-0.0142		0.146	0.304	06/05/2020 15:28	WG1486283
(T) Barium-133	*101*			*30.0-143*	*06/05/2020 15:28*	WG1486283

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	-0.0371		0.540	0.9	05/27/2020 15:20	WG1478122
(T) Barium	*106*			*62.0-143*	*05/27/2020 15:20*	WG1478122
(T) Yttrium	*104*			*79.0-136*	*05/27/2020 15:20*	WG1478122

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	0.166		0.744	1.19	06/05/2020 15:28	WG1486283

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.166		0.204	0.285	06/05/2020 15:28	WG1486283
(T) Barium-133	*96.4*			*30.0-143*	*06/05/2020 15:28*	WG1486283

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	0.984		0.615	0.961	05/27/2020 15:20	WG1478122
(T) Barium	*129*			*62.0-143*	*05/27/2020 15:20*	WG1478122
(T) Yttrium	*95.0*			*79.0-136*	*05/27/2020 15:20*	WG1478122

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	1.13		0.771	1.16	06/05/2020 15:28	WG1486283

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.151		0.156	0.199	06/05/2020 15:28	WG1486283
(T) Barium-133	*97.4*			*30.0-143*	*06/05/2020 15:28*	WG1486283

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	0.545		0.628	1.04	05/27/2020 15:20	WG1478122
(T) Barium	*121*			*62.0-143*	*05/27/2020 15:20*	WG1478122
(T) Yttrium	*97.0*			*79.0-136*	*05/27/2020 15:20*	WG1478122

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	0.791		0.875	1.37	06/05/2020 15:28	WG1486283

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.246		0.247	0.326	06/05/2020 15:28	WG1486283
(T) Barium-133	*96.2*			*30.0-143*	*06/05/2020 15:28*	WG1486283

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	0.585		0.502	0.862	05/27/2020 15:20	WG1478122
(T) Barium	*106*			*62.0-143*	*05/27/2020 15:20*	WG1478122
(T) Yttrium	*103*			*79.0-136*	*05/27/2020 15:20*	WG1478122

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	0.880		0.730	1.11	06/05/2020 15:28	WG1486283

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.295		0.228	0.243	06/05/2020 15:28	WG1486283
(T) Barium-133	*96.5*			*30.0-143*	*06/05/2020 15:28*	WG1486283

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	1.90		0.571	0.856	05/27/2020 15:20	WG1478122
(T) Barium	*102*			*62.0-143*	*05/27/2020 15:20*	WG1478122
(T) Yttrium	*95.1*			*79.0-136*	*05/27/2020 15:20*	WG1478122

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	2.29		0.863	1.21	06/05/2020 15:28	WG1486283

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.395		0.292	0.356	06/05/2020 15:28	WG1486283
(T) Barium-133	*100*			*30.0-143*	*06/05/2020 15:28*	WG1486283

APPENDIX F Revision 2 February 27, 2024

Method Blank (MB)

(MB) R3532575-1 05/27/20 10:15

Analyte	MB Result pCi/l	MB Qualifier	MB MDA pCi/l
Radium-228	-0.0177		0.386
(T) Barium	*99.9*		
(T) Yttrium	*114*		

Original Sample (OS) • Duplicate (DUP)

(OS) • (DUP) R3532575-5 05/27/20 10:15

Analyte	Original Result	DUP Result pCi/l	Dilution	DUP RPD %	DUP RER	DUP Qualifier	DUP RPD Limits %	DUP RER Limit
Radium-228		1.33	1	32.4	0.463		20	3
(T) Barium		*106*						
(T) Yttrium		*104*						

Laboratory Control Sample (LCS)

(LCS) R3532575-2 05/27/20 10:15

Analyte	Spike Amount pCi/l	LCS Result pCi/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Radium-228	5.00	5.43	109	80.0-120	
(T) Barium			*105*		
(T) Yttrium			*104*		

Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) • (MS) R3532575-3 05/27/20 10:15 • (MSD) R3532575-4 05/27/20 10:15

Analyte	Spike Amount pCi/l	Original Result	MS Result pCi/l	MSD Result pCi/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	MS RER	RPD Limits %
Radium-228	10.0		11.8	12.3	109	113	1	70.0-130			3.90		20
(T) Barium					*115*	*104*							
(T) Yttrium					*102*	*110*							

Method Blank (MB)

(MB) R3537637-1 06/05/20 15:28

Analyte	MB Result	MB Qualifier	MB MDA
	pCi/l		pCi/l
Radium-226	0.0208		0.0501
(T) Barium-133	*96.5*		

L1220442-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1220442-01 06/05/20 15:28 • (DUP) R3537637-5 06/05/20 15:28

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP RER	DUP Qualifier	DUP RPD Limits	DUP RER Limit
	pCi/l	pCi/l		%			%	
Radium-226	0.0484	-0.120	1	200	0.894		20	3
(T) Barium-133	*95.7*	*106*						

Laboratory Control Sample (LCS)

(LCS) R3537637-2 06/05/20 15:28

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	pCi/l	pCi/l	%	%	
Radium-226	5.02	5.31	106	80.0-120	
(T) Barium-133			*103*		

L1220442-13 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1220442-13 06/05/20 15:28 • (MS) R3537637-3 06/05/20 15:28 • (MSD) R3537637-4 06/05/20 15:28

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	MS RER	RPD Limits
	pCi/l	pCi/l	pCi/l	pCi/l	%	%		%			%		%
Radium-226	20.1	0.0976	20.9	20.9	103	103	1	75.0-125			0.192		20
(T) Barium-133		*101*			*102*	*107*							

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDA	Minimum Detectable Activity.
Rec.	Recovery.
RER	Replicate Error Ratio.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(T)	Tracer - A radioisotope of known concentration added to a solution of chemically equivalent radioisotopes at a known concentration to assist in monitoring the yield of the chemical separation.
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
	The remainder of this page intentionally left blank, there are no qualifiers applied to this SDG.

Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.
* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

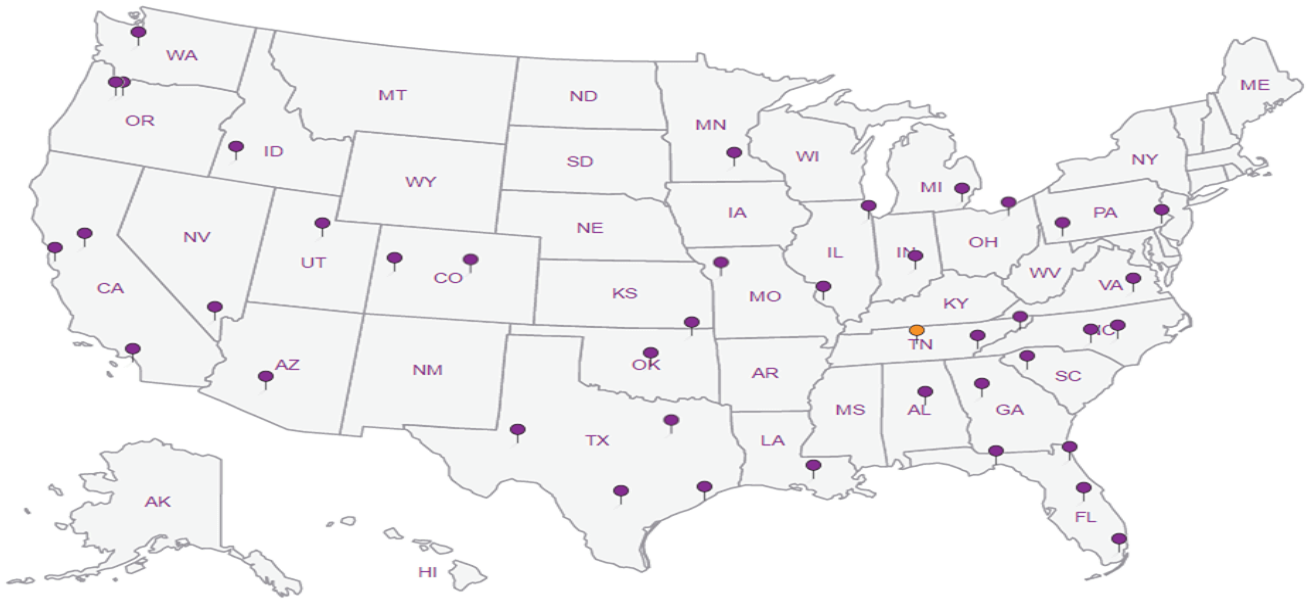
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



DHL Analytical, Inc.
2300 Double Creek Drive
Round Rock, TX 78664
TEL: *(512) 388-8222* FAX: *(512) 388-8229*

CHAIN-OF-CUSTODY RECORD

G110

Work Order: 2005112

Subcontractor:

Pace Analytical
12065 Lebanon Rd
Mt. Juliet, TN 37122

TEL: (615) 773-5923
FAX:
Acct #: DHLRRTX

1219694

14-May-20

Sample ID	Matrix	DHL#	Date Collected	Bottle Type	Requested Tests						
					Ra-228	Ra-226					
					E904.0	M7500 Ra B M					
H-31	Aqueous	01C	05/13/20 10:10 AM	1LHDPEHNO3	1						01
H-31	Aqueous	01D	05/13/20 10:10 AM	1LHDPEHNO3		1					01
H-32	Aqueous	02C	05/13/20 11:00 AM	1LHDPEHNO3	1						02
H-32	Aqueous	02D	05/13/20 11:00 AM	1LHDPEHNO3		1					02
H-27	Aqueous	03C	05/13/20 11:50 AM	1LHDPEHNO3	1						03
H-27	Aqueous	03D	05/13/20 11:50 AM	1LHDPEHNO3		1					03
H-28	Aqueous	04C	05/13/20 12:40 PM	1LHDPEHNO3	1						04
H-28	Aqueous	04D	05/13/20 12:40 PM	1LHDPEHNO3		1					04
H-29	Aqueous	05C	05/13/20 01:30 PM	1LHDPEHNO3	1						05
H-29	Aqueous	05D	05/13/20 01:30 PM	1LHDPEHNO3		1					05
H-26	Aqueous	06C	05/13/20 03:35 PM	1LHDPEHNO3	1						06
H-26	Aqueous	06D	05/13/20 03:35 PM	1LHDPEHNO3		1					06
H-33	Aqueous	07C	05/13/20 04:30 PM	1LHDPEHNO3	1						07
H-33	Aqueous	07D	05/13/20 04:30 PM	1LHDPEHNO3		1					07

General Comments:

Please analyze these samples with Normal Turnaround Time.
Report RA-226, Ra-228 & Combined per Specs.
Quality Control Package Needed: Standard - NELAC Rad Test compliant
Email to cac@dhlanalytical.com & dupont@dhlanalytical.com

		Date/Time			Date/Time
Relinquished by:	[signature]	5/14/20 1700	**Received by:**	Carol Kemp	5/18/20 8:45
Relinquished by:			**Received by:**		

Amb

Pace Analytical National Center for Testing & Innovation
Cooler Receipt Form

Client: DHLBRTX		12196944
Cooler Received/Opened On: 5/18/20	Temperature:	Amb
Received By: Carol Kemp		
Signature: Carol Kemp		

Receipt Check List	NP	Yes	No
COC Seal Present / Intact?	✓		
COC Signed / Accurate?		✓	
Bottles arrive intact?		✓	
Correct bottles used?		✓	
Sufficient volume sent?		✓	
If Applicable			
VOA Zero headspace?			
Preservation Correct / Checked?		✓	

June 10, 2020

Will Vienne
Golder
2201 Double Creek Dr #4004
Round Rock, Texas 78664
TEL: (512) 671-3434
FAX (512) 671-3446

Order No.: 2005110

RE: Luminant-MLSES CCR&MNA

Dear Will Vienne:

DHL Analytical, Inc. received 2 sample(s) on 5/14/2020 for the analyses presented in the following report.

There were no problems with the analyses and all data met requirements of NELAP except where noted in the Case Narrative. All non-NELAP methods will be identified accordingly in the case narrative and all estimated uncertainties of test results are within method or EPA specifications.

If you have any questions regarding these tests results, please feel free to call. Thank you for using DHL Analytical.

Sincerely,

John DuPont
General Manager

This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211-20-25

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DHL ANALYTICAL
2300 Double Creek Dr. ■ Round Rock, TX 78664
Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

nelap

№ 68279

CHAIN-OF-CUSTODY

APPENDIX D Revision 2 February 27, 2024

CLIENT: GOLDER ASSOCIATES
ADDRESS: 2201 DOUBLE CREEK DR ROUND ROCK, TX 78664
PHONE: 512-671-3434 FAX/E-MAIL:
DATA REPORTED TO: WILL VIENNE
ADDITIONAL REPORT COPIES TO:

DATE: 5-13-20 PAGE 1 OF 1
PO #: DHL WORK ORDER #: 2005110
PROJECT LOCATION OR NAME: LUMINANT- MLSES CCR'&MNA
CLENT PROJECT #: 19122262 COLLECTOR:

Authorize 5% surcharge for TRRP Report? ❑ Yes ❑ No

S=SOIL P=PAINT
W=WATER SL=SLUDGE
A=AIR O=OTHER
L=LIQUID SO=SOLID
SE=SEDIMENT

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	HCl	HNO_3	H_2SO_4 ❑ NaOH ❑	ICE	UNPRESERVED	ANALYSES: BTEX ❑ MTBE ❑ [METHOD 8021]	TPH 1005 ❑ TPH 1006 ❑ HOLD 1006 ❑	GRO [METHOD 8015] ❑ DRO [METHOD 8105] ❑	VOC 8260 ❑ VOC 624 ❑ VOC 8260/5035 ❑	SVOC 8270 ❑ PAH 8270 ❑ HOLD PAH ❑ SVOC 625 ❑	8270 PEST ❑ 625 PEST/PCB ❑ 608 PCB ❑	8270 O-P PEST ❑ 8082 PCB ❑ 8270 PCB ❑	8321 HERB ❑ T PHOS, AMMONIA ❑	METALS 6020 ❑ METALS 200.8 ❑ DISS. METALS ❑	RCRA ❑ TX11 ❑	PH ❑ HEX CHROM ❑ ALKALINITY X COD ❑	CHLORIDE ❑ ANIONS	TCLP-SVOC ❑ VOC ❑ PEST ❑ HERB ❑	TCLP-METALS ❑ RCRA 8 ❑ TX-11 ❑ Pb ❑	RCI ❑ FLASHPOINT ❑ DGAS ❑	TDS ❑ TSS ❑ % MOISTURE ❑ CYANIDE ❑	APPENDIX III & IV	NO_3, PO_4, Na, Mg, K	Ferrous Fe Ferric Fe	FIELD NOTES
LAKE SAMPLE	01	5-13-20	1400	W	P	9		X		X												X						X	X	X	
POND SAMPLE	02	5-13-20	1425	W	P	9		X		X												X						X	X	X	

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
[signature]	5-13-20 1800	FedEx
FedEx	5/14/20 0905	[signature]

❑ DHL DISPOSAL @ $5.00 each ❑ Return

TURN AROUND TIME
RUSH ❑ CALL FIRST
1 DAY ❑ CALL FIRST
2 DAY ❑
NORMAL ☒
OTHER ❑

LABORATORY USE ONLY:
RECEIVING TEMP: 3.1/2.3/4.1°C THERM #: 78
CUSTODY SEALS: ❑ BROKEN ☒ INTACT ❑ NOT USED
CARRIER: ❑ LONE STAR ☒ FEDEX ❑ UPS ❑ OTHER
❑ COURIER DELIVERY
❑ HAND DELIVERED

DHL COC Rev 1 | FEB 2010

Eric Lau

From: John DuPont
Sent: Tuesday, May 28, 2019 11:35 AM
To: Eric Lau
Subject: FW: CCR Analysis

Appendix III Parameters:
Metals (Ca and B)
Anions (Cl, F, and SO4)
TDS

Appendix IV Parameters:

Metals (As, Ba, Be, Cd, Co, Cr, Hg, Li, Mo, Pb, Sb, Se, and Tl)
Ra-226
Ra-228

From: Vienne, Will [mailto:William_Vienne@golder.com]
Sent: Tuesday, April 09, 2019 12:48 PM
To: John DuPont <dupont@dhlanalytical.com>
Subject: CCR Analysis

DHL Analytical, Inc.

Sample Receipt Checklist

Client Name **Golder**

Date Received: **5/14/2020**

Work Order Number **2005110**

Received by: **EL**

Checklist completed by: _____ (Signature) 5/14/2020 (Date)

Reviewed by _____ (Initials) 5/14/2020 (Date)

Carrier name: FedEx 1day

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	**3.1** °C
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH<2 acceptable upon receipt?	Yes ☑	No ☐	NA ☐ LOT # 13171
	Adjusted? no		Checked by EL
Water - ph>9 (S) or ph>10 (CN) acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted? _____		Checked by _____

Any No response must be detailed in the comments section below.

Client contacted: _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments: _____

Corrective Action _____

Laboratory Name: DHL Analytical, Inc.

Laboratory Review Checklist: Reportable Data

Project Name: Luminant-MLSES CCR&MNA	**LRC Date:** 6/10/20
Reviewer Name: Carlos Castro	**Laboratory Work Order:** 2005110
Prep Batch Number(s): See Prep Dates Report	**Run Batch:** See Analytical Dates Report

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
		Chain-of-Custody (C-O-C)					
R1	OI	**1)** Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				**R1-01**
		2) Were all departures from standard conditions described in an exception report?			X		
R2	OI	**Sample and Quality Control (QC) Identification**					
		1) Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		2) Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	OI	**Test Reports**					
		1) Were all samples prepared and analyzed within holding times?	X				
		2) Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
		3) Were calculations checked by a peer or supervisor?	X				
		4) Were all analyte identifications checked by a peer or supervisor?	X				
		5) Were sample detection limits reported for all analytes not detected?	X				
		6) Were all results for soil and sediment samples reported on a dry weight basis?			X		
		7) Were % moisture (or solids) reported for all soil and sediment samples?			X		
		8) Were bulk soils/solids samples for volatile analysis extracted with methanol per EPA Method 5035?			X		
		9) If required for the project, TICs reported?			X		
R4	O	**Surrogate Recovery Data**					
		1) Were surrogates added prior to extraction?			X		
		2) Were surrogate percent recoveries in all samples within the laboratory QC limits?			X		
R5	OI	**Test Reports/Summary Forms for Blank Samples**					
		1) Were appropriate type(s) of blanks analyzed?	X				
		2) Were blanks analyzed at the appropriate frequency?	X				
		3) Where method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		4) Were blank concentrations < MDL?	X				
		5) For analyte(s) detected in a blank sample, was the concentration, unadjusted for sample specific factors, in all associated field samples, **greater** than 10 times the concentration in the blank sample?			X		
R6	OI	**Laboratory Control Samples (LCS):**					
		1) Were all COCs included in the LCS?	X				
		2) Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		3) Were LCSs analyzed at the required frequency?	X				
		4) Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		5) Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		6) Was the LCSD RPD within QC limits (if applicable)?	X				
R7	OI	**Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Data**					
		1) Were the project/method specified analytes included in the MS and MSD?	X				
		2) Were MS/MSD analyzed at the appropriate frequency?	X				
		3) Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?		X			**R7-03**
		4) Were MS/MSD RPDs within laboratory QC limits?	X				
R8	OI	**Analytical Duplicate Data**					
		1) Were appropriate analytical duplicates analyzed for each matrix?	X				
		2) Were analytical duplicates analyzed at the appropriate frequency?	X				
		3) Were RPDs or relative standard deviations within the laboratory QC limits?	X				
R9	OI	**Method Quantitation Limits (MQLs):**					
		1) Are the MQLs for each method analyte included in the laboratory data package?	X				
		2) Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
		3) Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
R10	OI	**Other Problems/Anomalies**					
		1) Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				
		2) Was applicable and available technology used to lower the SDL to minimize the matrix interference affects on the sample results?	X				
		3) Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices and methods associated with this laboratory data package?	X				

Laboratory Name: DHL Analytical, Inc.

Laboratory Review Checklist (continued): Supporting Data

Project Name: Luminant-MLSES CCR&MNA	**LRC Date:** 6/10/20
Reviewer Name: Carlos Castro	**Laboratory Work Order:** 2005110
Prep Batch Number(s): See Prep Dates Report	**Run Batch:** See Analytical Dates Report

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
S1	OI	**Initial Calibration (ICAL)**					
		1) Were response factors and/or relative response factors for each analyte within QC limits?	X				
		2) Were percent RSDs or correlation coefficient criteria met?	X				
		3) Was the number of standards recommended in the method used for all analytes?	X				
		4) Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		5) Are ICAL data available for all instruments used?	X				
		6) Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	**Initial and Continuing calibration Verification (ICCV and CCV) and Continuing Calibration blank (CCB):**					
		1) Was the CCV analyzed at the method-required frequency?	X				
		2) Were percent differences for each analyte within the method-required QC limits?	X				
		3) Was the ICAL curve verified for each analyte?	X				
		4) Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	X				
S3	O	**Mass Spectral Tuning:**					
		1) Was the appropriate compound for the method used for tuning?	X				
		2) Were ion abundance data within the method-required QC limits?	X				
S4	O	**Internal Standards (IS):**					
		1) Were IS area counts and retention times within the method-required QC limits?	X				
S5	OI	**Raw Data (NELAC Section 5.5.10)**					
		1) Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		2) Were data associated with manual integrations flagged on the raw data?	X				
S6	O	**Dual Column Confirmation**					
		1) Did dual column confirmation results meet the method-required QC?			X		
S7	O	**Tentatively Identified Compounds (TICs):**					
		1) If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) Results:**					
		1) Were percent recoveries within method QC limits?	X				
S9	I	**Serial Dilutions, Post Digestion Spikes, and Method of Standard Additions**					
		1) Were percent differences, recoveries, and the linearity within the QC limits specified in the method?		X			**S9-01**
S10	OI	**Method Detection Limit (MDL) Studies**					
		1) Was a MDL study performed for each reported analyte?	X				
		2) Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	**Proficiency Test Reports:**					
		1) Was the lab's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	**Standards Documentation**					
		1) Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound/Analyte Identification Procedures**					
		1) Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of Analyst Competency (DOC)**					
		1) Was DOC conducted consistent with NELAC Chapter 5 – Appendix C?	X				
		2) Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/Validation Documentation for Methods** (NELAC Chapter 5)					
		1) Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	**Laboratory Standard Operating Procedures (SOPs):**					
		1) Are laboratory SOPs current and on file for each method performed?	X				

1 Items identified by the letter "R" should be included in the laboratory data package submitted to the TCEQ in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
2 O = organic analyses; I = inorganic analyses (and general chemistry, when applicable).
3 NA = Not applicable.
4 NR = Not Reviewed.
5 ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Data Package Signature Page – RG-366/TRRP-13

This data package consists of:

This signature page, the laboratory review checklist, and the following reportable data:

R1 Field chain-of-custody documentation;
R2 Sample identification cross-reference;
R3 Test reports (analytical data sheets) for each environmental sample that includes:
  a) Items consistent with NELAC Chapter 5,
  b) dilution factors,
  c) preparation methods,
  d) cleanup methods, and
  e) if required for the project, tentatively identified compounds (TICs).
R4 Surrogate recovery data including:
  a) Calculated recovery (%R), and
  b) The laboratory's surrogate QC limits.
R5 Test reports/summary forms for blank samples;
R6 Test reports/summary forms for laboratory control samples (LCSs) including:
  a) LCS spiking amounts,
  b) Calculated %R for each analyte, and
  c) The laboratory's LCS QC limits.
R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
  a) Samples associated with the MS/MSD clearly identified,
  b) MS/MSD spiking amounts,
  c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
  d) Calculated %Rs and relative percent differences (RPDs), and
  e) The laboratory's MS/MSD QC limits
R8 Laboratory analytical duplicate (if applicable) recovery and precision:
  a) The amount of analyte measured in the duplicate,
  b) The calculated RPD, and
  c) The laboratory's QC limits for analytical duplicates.
R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix;
R10 Other problems or anomalies.

The Exception Report for each "No" or "Not Reviewed (NR)" item in the Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory is not accredited under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature below, I affirm to the best of my knowledge that all problems/anomalies observed by the laboratory have been identified in the Laboratory Review Checklist, and no information or data affecting the quality of the data has been knowingly withheld.

This laboratory was last inspected by TCEQ on February 25-28 2019. Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Name: John DuPont
Official Title: General Manager

Signature

06/11/20
Date

Name: Dr. Derhsing Luu
Official Title: Technical Director

DHL Analytical, Inc. **Date:** *10-Jun-20*

CLIENT: Golder
Project: Luminant-MLSES CCR&MNA
Lab Order: 2005110

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Method SW6020B - Metals Analysis
Method SW7470A - Mercury Analysis
Method E300 - Anions Analysis
Method M2320 B - Alkalinity Analysis
M3500-Fe D - Ferrous Iron Analysis (this parameter is not NELAP certified)
M3500-Fe D - Ferric Iron (calculation) (this calculation is not NELAP certified)
Method M4500-P E - Orthophosphate Analysis
Method M2540C - TDS Analysis

Exception Report R1-01

The samples were received and log-in performed on 5/14/20. A total of 2 samples were received. The samples arrived in good condition and were properly packaged.

Exception Report R7-03

For Metals analysis performed on 5/19/20 and 5/20/20 the matrix spike and matrix spike duplicate recoveries were above control limits for Boron and Sodium. These are flagged accordingly in the QC summary report. The sample selected for the matrix spike and matrix spike duplicate was not from this work order. The LCS was within control limits for these analytes. No further corrective actions were taken.

Exception Report S9-01

For Metals analysis performed on 5/19/20 the PDS recovery was out of control limits for Calcium. This is flagged accordingly in the QC summary report. The serial dilution was within control limits for this analyte. No further corrective actions were taken.

DHL Analytical, Inc.

Date: *10-Jun-20*

CLIENT: Golder
Project: Luminant-MLSES CCR&MNA
Lab Order: 2005110

Work Order Sample Summary

Lab Smp ID	Client Sample ID	Tag Number	Date Collected	Date Recved
2005110-01	Lake Sample		05/13/20 02:00 PM	5/14/2020
2005110-02	Pond Sample		05/13/20 02:25 PM	5/14/2020

DHL Analytical, Inc.

10-Jun-20

Lab Order: 2005110
Client: Golder
Project: Luminant-MLSES CCR&MNA

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
2005110-01A	Lake Sample	05/13/20 02:00 PM	Aqueous	M3500-Fe	Ferrous Iron Prep Water	05/18/20 09:50 AM	96388
2005110-01B	Lake Sample	05/13/20 02:00 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/15/20 08:56 AM	96359
	Lake Sample	05/13/20 02:00 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/15/20 08:56 AM	96359
	Lake Sample	05/13/20 02:00 PM	Aqueous	SW7470A	Mercury Aq Prep	05/19/20 12:26 PM	96414
2005110-01C	Lake Sample	05/13/20 02:00 PM	Aqueous	M2320 B	Alkalinity Preparation	05/14/20 09:44 AM	96346
	Lake Sample	05/13/20 02:00 PM	Aqueous	E300	Anion Preparation	05/14/20 10:14 AM	96350
	Lake Sample	05/13/20 02:00 PM	Aqueous	M4500-P E	Orthophosphate Prep	05/14/20 10:50 AM	96353
	Lake Sample	05/13/20 02:00 PM	Aqueous	M2540C	TDS Preparation	05/14/20 01:43 PM	96355
2005110-02A	Pond Sample	05/13/20 02:25 PM	Aqueous	M3500-Fe	Ferrous Iron Prep Water	05/18/20 09:50 AM	96388
2005110-02B	Pond Sample	05/13/20 02:25 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/15/20 08:56 AM	96359
	Pond Sample	05/13/20 02:25 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	05/15/20 08:56 AM	96359
	Pond Sample	05/13/20 02:25 PM	Aqueous	SW7470A	Mercury Aq Prep	05/19/20 12:26 PM	96414
2005110-02C	Pond Sample	05/13/20 02:25 PM	Aqueous	M2320 B	Alkalinity Preparation	05/14/20 09:44 AM	96346
	Pond Sample	05/13/20 02:25 PM	Aqueous	E300	Anion Preparation	05/14/20 10:14 AM	96350
	Pond Sample	05/13/20 02:25 PM	Aqueous	E300	Anion Preparation	05/14/20 10:14 AM	96350
	Pond Sample	05/13/20 02:25 PM	Aqueous	M4500-P E	Orthophosphate Prep	05/14/20 10:50 AM	96353
	Pond Sample	05/13/20 02:25 PM	Aqueous	M2540C	TDS Preparation	05/14/20 01:43 PM	96355

DHL Analytical, Inc.

10-Jun-20

Lab Order: 2005110
Client: Golder
Project: Luminant-MLSES CCR&MNA

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
2005110-01A	Lake Sample	Aqueous	M3500-Fe D	Ferric Iron (Calculated)	96388	1	05/18/20 10:00 AM	UV/VIS_2_200518C
	Lake Sample	Aqueous	M3500-Fe D	Ferrous Iron	96388	1	05/18/20 02:07 PM	UV/VIS_2_200518B
2005110-01B	Lake Sample	Aqueous	SW7470A	Mercury Total: Aqueous	96414	1	05/19/20 03:18 PM	CETAC2_HG_200519B
	Lake Sample	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	96359	1	05/19/20 01:11 PM	ICP-MS5_200519B
	Lake Sample	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	96359	1	05/20/20 12:23 PM	ICP-MS5_200520B
2005110-01C	Lake Sample	Aqueous	M2320 B	Alkalinity	96346	1	05/14/20 01:14 PM	TITRATOR_200514B
	Lake Sample	Aqueous	E300	Anions by IC method - Water	96350	1	05/14/20 01:19 PM	IC2_200514A
	Lake Sample	Aqueous	M4500-P E	Orthophosphate	96353	1	05/14/20 02:27 PM	UV/VIS_2_200514B
	Lake Sample	Aqueous	M2540C	Total Dissolved Solids	96355	1	05/14/20 04:15 PM	WC_200514A
2005110-02A	Pond Sample	Aqueous	M3500-Fe D	Ferric Iron (Calculated)	96388	1	05/18/20 10:00 AM	UV/VIS_2_200518C
	Pond Sample	Aqueous	M3500-Fe D	Ferrous Iron	96388	1	05/18/20 02:08 PM	UV/VIS_2_200518B
2005110-02B	Pond Sample	Aqueous	SW7470A	Mercury Total: Aqueous	96414	1	05/19/20 03:20 PM	CETAC2_HG_200519B
	Pond Sample	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	96359	1	05/19/20 01:13 PM	ICP-MS5_200519B
	Pond Sample	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	96359	50	05/20/20 12:25 PM	ICP-MS5_200520B
2005110-02C	Pond Sample	Aqueous	M2320 B	Alkalinity	96346	1	05/14/20 01:21 PM	TITRATOR_200514B
	Pond Sample	Aqueous	E300	Anions by IC method - Water	96350	1	05/14/20 01:35 PM	IC2_200514A
	Pond Sample	Aqueous	E300	Anions by IC method - Water	96350	50	05/14/20 05:26 PM	IC2_200514A
	Pond Sample	Aqueous	M4500-P E	Orthophosphate	96353	1	05/14/20 02:29 PM	UV/VIS_2_200514B
	Pond Sample	Aqueous	M2540C	Total Dissolved Solids	96355	1	05/14/20 04:15 PM	WC_200514A

DHL Analytical, Inc.

Date: *10-Jun-20*

CLIENT:	Golder	**Client Sample ID:**	Lake Sample
Project:	Luminant-MLSES CCR&MNA	**Lab ID:**	2005110-01
Project No:	19122262-C2020	**Collection Date:**	05/13/20 02:00 PM
Lab Order:	2005110	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **RO**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	05/19/20 01:11 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	05/19/20 01:11 PM
Barium	0.0594	0.00300	0.0100		mg/L	1	05/19/20 01:11 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	05/19/20 01:11 PM
Boron	0.0971	0.0100	0.0300		mg/L	1	05/20/20 12:23 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	05/19/20 01:11 PM
Calcium	15.8	0.100	0.300		mg/L	1	05/19/20 01:11 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	05/19/20 01:11 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	05/19/20 01:11 PM
Iron	0.131	0.0300	0.100		mg/L	1	05/19/20 01:11 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	05/19/20 01:11 PM
Lithium	<0.00500	0.00500	0.0100		mg/L	1	05/19/20 01:11 PM
Magnesium	6.55	0.100	0.300		mg/L	1	05/19/20 01:11 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	05/19/20 01:11 PM
Potassium	2.88	0.100	0.300		mg/L	1	05/19/20 01:11 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	05/19/20 01:11 PM
Sodium	13.2	0.100	0.300		mg/L	1	05/19/20 01:11 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	05/19/20 01:11 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	05/19/20 03:18 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	14.7	0.300	1.00		mg/L	1	05/14/20 01:19 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	05/14/20 01:19 PM
Nitrate-N	<0.100	0.100	0.500		mg/L	1	05/14/20 01:19 PM
Sulfate	40.6	1.00	3.00		mg/L	1	05/14/20 01:19 PM
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	32.9	10.0	20.0		mg/L @ pH 4.48	1	05/14/20 01:14 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.48	1	05/14/20 01:14 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.48	1	05/14/20 01:14 PM
Alkalinity, Total (As CaCO3)	32.9	20.0	20.0		mg/L @ pH 4.48	1	05/14/20 01:14 PM
FERRIC IRON (CALCULATED)		**M3500-FE D**					Analyst: **CAC**
Iron, Ferric	0.131	0.0500	0.100	N	mg/L	1	05/18/20 10:00 AM
FERROUS IRON		**M3500-FE D**					Analyst: **BTJ**
Iron, Ferrous	<0.0500	0.0500	0.100	N	mg/L	1	05/18/20 02:07 PM

Qualifiers:

- ND - Not Detected at the SDL
- J - Analyte detected between SDL and RL
- B - Analyte detected in the associated Method Blank
- DF- Dilution Factor
- N - Parameter not NELAP certified
- See Final Page of Report for MQLs and MDLs
- S - Spike Recovery outside control limits
- C - Sample Result or QC discussed in Case Narrative
- RL - Reporting Limit (MQL adjusted for moisture and sample size)
- SDL - Sample Detection Limit
- E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *10-Jun-20*

CLIENT:	Golder	**Client Sample ID:**	Lake Sample
Project:	Luminant-MLSES CCR&MNA	**Lab ID:**	2005110-01
Project No:	19122262-C2020	**Collection Date:**	05/13/20 02:00 PM
Lab Order:	2005110	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ORTHOPHOSPHATE		**M4500-P E**					Analyst: **BTJ**
Phosphorus, Total Orthophosphate (As P)	<0.0300	0.0300	0.100		mg/L	1	05/14/20 02:27 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	140	10.0	10.0		mg/L	1	05/14/20 04:15 PM

Qualifiers:

- ND - Not Detected at the SDL
- J - Analyte detected between SDL and RL
- B - Analyte detected in the associated Method Blank
- DF- Dilution Factor
- N - Parameter not NELAP certified
- See Final Page of Report for MQLs and MDLs
- S - Spike Recovery outside control limits
- C - Sample Result or QC discussed in Case Narrative
- RL - Reporting Limit (MQL adjusted for moisture and sample size)
- SDL - Sample Detection Limit
- E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *10-Jun-20*

CLIENT:	Golder	**Client Sample ID:**	Pond Sample
Project:	Luminant-MLSES CCR&MNA	**Lab ID:**	2005110-02
Project No:	19122262-C2020	**Collection Date:**	05/13/20 02:25 PM
Lab Order:	2005110	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **RO**
Antimony	0.00210	0.000800	0.00250	J	mg/L	1	05/19/20 01:13 PM
Arsenic	0.00372	0.00200	0.00500	J	mg/L	1	05/19/20 01:13 PM
Barium	0.0899	0.00300	0.0100		mg/L	1	05/19/20 01:13 PM
Beryllium	<0.000300	0.000300	0.00100		mg/L	1	05/19/20 01:13 PM
Boron	24.1	0.500	1.50		mg/L	50	05/20/20 12:25 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	05/19/20 01:13 PM
Calcium	459	5.00	15.0		mg/L	50	05/20/20 12:25 PM
Chromium	0.00333	0.00200	0.00500	J	mg/L	1	05/19/20 01:13 PM
Cobalt	<0.00300	0.00300	0.00500		mg/L	1	05/19/20 01:13 PM
Iron	<0.0300	0.0300	0.100		mg/L	1	05/19/20 01:13 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	05/19/20 01:13 PM
Lithium	0.124	0.00500	0.0100		mg/L	1	05/19/20 01:13 PM
Magnesium	560	5.00	15.0		mg/L	50	05/20/20 12:25 PM
Molybdenum	0.0469	0.00200	0.00500		mg/L	1	05/19/20 01:13 PM
Potassium	36.3	5.00	15.0		mg/L	50	05/20/20 12:25 PM
Selenium	1.23	0.00200	0.00500		mg/L	1	05/19/20 01:13 PM
Sodium	280	5.00	15.0		mg/L	50	05/20/20 12:25 PM
Thallium	0.000585	0.000500	0.00150	J	mg/L	1	05/19/20 01:13 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **BM**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	05/19/20 03:20 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **SNM**
Chloride	526	15.0	50.0		mg/L	50	05/14/20 05:26 PM
Fluoride	19.1	0.100	0.400		mg/L	1	05/14/20 01:35 PM
Nitrate-N	20.2	0.100	0.500		mg/L	1	05/14/20 01:35 PM
Sulfate	3040	50.0	150		mg/L	50	05/14/20 05:26 PM
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	77.3	10.0	20.0		mg/L @ pH 4.39	1	05/14/20 01:21 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.39	1	05/14/20 01:21 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.39	1	05/14/20 01:21 PM
Alkalinity, Total (As CaCO3)	77.3	20.0	20.0		mg/L @ pH 4.39	1	05/14/20 01:21 PM
FERRIC IRON (CALCULATED)		**M3500-FE D**					Analyst: **CAC**
Iron, Ferric	<0.0500	0.0500	0.100	N	mg/L	1	05/18/20 10:00 AM
FERROUS IRON		**M3500-FE D**					Analyst: **BTJ**
Iron, Ferrous	<0.0500	0.0500	0.100	N	mg/L	1	05/18/20 02:08 PM

Qualifiers:

ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *10-Jun-20*

CLIENT:	Golder	**Client Sample ID:**	Pond Sample
Project:	Luminant-MLSES CCR&MNA	**Lab ID:**	2005110-02
Project No:	19122262-C2020	**Collection Date:**	05/13/20 02:25 PM
Lab Order:	2005110	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ORTHOPHOSPHATE		**M4500-P E**					Analyst: **BTJ**
Phosphorus, Total Orthophosphate (As P)	<0.0300	0.0300	0.100		mg/L	1	05/14/20 02:29 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	5540	50.0	50.0		mg/L	1	05/14/20 04:15 PM

Qualifiers:

- ND - Not Detected at the SDL
- J - Analyte detected between SDL and RL
- B - Analyte detected in the associated Method Blank
- DF- Dilution Factor
- N - Parameter not NELAP certified
- See Final Page of Report for MQLs and MDLs
- S - Spike Recovery outside control limits
- C - Sample Result or QC discussed in Case Narrative
- RL - Reporting Limit (MQL adjusted for moisture and sample size)
- SDL - Sample Detection Limit
- E - TPH pattern not Gas or Diesel Range Pattern

CLIENT: Golder
Work Order: 2005110
Project: Luminant-MLSES CCR&MNA

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_200304C

Sample ID: **DCS-95289**	Batch ID: **95289**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **DCS**	Run ID: **CETAC2_HG_200304C**	Analysis Date: **3/4/2020 12:11:09 PM**	Prep Date: **3/4/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.000175	0.000200	0.000200	0	87.5	82	119	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005110
Project: Luminant-MLSES CCR&MNA

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_200519B

The QC data in batch 96414 applies to the following samples: 2005110-01B, 2005110-02B

Sample ID: **MB-96414**	Batch ID: **96414**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **MBLK**	Run ID: **CETAC2_HG_200519B**	Analysis Date: **5/19/2020 3:11:32 PM**	Prep Date: **5/19/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.0000800	0.000200								

Sample ID: **LCS-96414**	Batch ID: **96414**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **LCS**	Run ID: **CETAC2_HG_200519B**	Analysis Date: **5/19/2020 3:13:48 PM**	Prep Date: **5/19/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00206	0.000200	0.00200	0	103	85	115			

Sample ID: **LCSD-96414**	Batch ID: **96414**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **LCSD**	Run ID: **CETAC2_HG_200519B**	Analysis Date: **5/19/2020 3:16:04 PM**	Prep Date: **5/19/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00205	0.000200	0.00200	0	103	85	115	0.487	15	

Sample ID: **2005114-01A MS**	Batch ID: **96414**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **MS**	Run ID: **CETAC2_HG_200519B**	Analysis Date: **5/19/2020 3:40:59 PM**	Prep Date: **5/19/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00985	0.00100	0.0100	0	98.5	80	120			

Sample ID: **2005114-01A MSD**	Batch ID: **96414**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **MSD**	Run ID: **CETAC2_HG_200519B**	Analysis Date: **5/19/2020 3:43:16 PM**	Prep Date: **5/19/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00960	0.00100	0.0100	0	96.0	80	120	2.57	15	

Sample ID: **2005114-01A SD**	Batch ID: **96414**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **SD**	Run ID: **CETAC2_HG_200519B**	Analysis Date: **5/19/2020 3:45:32 PM**	Prep Date: **5/19/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.00200	0.00500	0	0				0	10	

Sample ID: **2005114-01A PDS**	Batch ID: **96414**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **PDS**	Run ID: **CETAC2_HG_200519B**	Analysis Date: **5/19/2020 3:47:48 PM**	Prep Date: **5/19/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0120	0.00100	0.0125	0	96.0	85	115			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

Sample ID: **ICV-200519**	Batch ID: **R110550**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **ICV**	Run ID: **CETAC2_HG_200519B**	Analysis Date: **5/19/2020 10:31:55 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00391	0.000200	0.00400	0	97.8	90	110			

Sample ID: **CCV5-200519**	Batch ID: **R110550**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_200519B**	Analysis Date: **5/19/2020 1:29:56 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00213	0.000200	0.00200	0	106	90	110			

Sample ID: **CCV6-200519**	Batch ID: **R110550**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_200519B**	Analysis Date: **5/19/2020 3:52:22 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00202	0.000200	0.00200	0	101	90	110			

CLIENT: Golder
Work Order: 2005110
Project: Luminant-MLSES CCR&MNA

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_200408C

Sample ID: **DCS1-95814**	Batch ID: **95814**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS**	Run ID: **ICP-MS5_200408C**	Analysis Date: **4/8/2020 11:16:00 AM**	Prep Date: **4/7/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.000932	0.00250	0.00100	0	93.2	70	130	0	0	
Beryllium	0.000472	0.00100	0.000500	0	94.4	70	130	0	0	
Cadmium	0.000492	0.00100	0.000500	0	98.4	70	130	0	0	
Lead	0.000496	0.00100	0.000500	0	99.2	70	130	0	0	
Thallium	0.000468	0.00150	0.000500	0	93.6	70	130	0	0	

Sample ID: **DCS2-95814**	Batch ID: **95814**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS2**	Run ID: **ICP-MS5_200408C**	Analysis Date: **4/8/2020 11:19:00 AM**	Prep Date: **4/7/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.310	0.300	0.300	0	103	70	130	0	0	
Iron	0.0591	0.100	0.0500	0	118	70	130	0	0	
Magnesium	0.298	0.300	0.300	0	99.3	70	130	0	0	
Potassium	0.285	0.300	0.300	0	95.1	70	130	0	0	
Sodium	0.295	0.300	0.300	0	98.4	70	130	0	0	

Sample ID: **DCS3-95814**	Batch ID: **95814**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS3**	Run ID: **ICP-MS5_200408C**	Analysis Date: **4/8/2020 11:21:00 AM**	Prep Date: **4/7/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.00466	0.00500	0.00500	0	93.2	70	130	0	0	
Barium	0.00478	0.0100	0.00500	0	95.6	70	130	0	0	
Chromium	0.00600	0.00500	0.00500	0	120	70	130	0	0	
Cobalt	0.00473	0.00500	0.00500	0	94.6	70	130	0	0	
Lithium	0.00473	0.0100	0.00500	0	94.6	70	130	0	0	
Molybdenum	0.00466	0.00500	0.00500	0	93.2	70	130	0	0	
Selenium	0.00517	0.00500	0.00500	0	103	70	130	0	0	

Sample ID: **DCS4-95814**	Batch ID: **95814**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS4**	Run ID: **ICP-MS5_200408C**	Analysis Date: **4/8/2020 11:28:00 AM**	Prep Date: **4/7/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0286	0.0300	0.0300	0	95.2	70	130	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005110
Project: Luminant-MLSES CCR&MNA

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_200519B

The QC data in batch 96359 applies to the following samples: 2005110-01B, 2005110-02B

Sample ID: **MB-96359** Batch ID: **96359** TestNo: **SW6020B** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS5_200519B** Analysis Date: **5/19/2020 12:37:00 PM** Prep Date: **5/15/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.000800	0.00250								
Arsenic	<0.00200	0.00500								
Barium	<0.00300	0.0100								
Beryllium	<0.000300	0.00100								
Cadmium	<0.000300	0.00100								
Calcium	<0.100	0.300								
Chromium	<0.00200	0.00500								
Cobalt	<0.00300	0.00500								
Iron	<0.0300	0.100								
Lead	<0.000300	0.00100								
Lithium	<0.00500	0.0100								
Magnesium	<0.100	0.300								
Molybdenum	<0.00200	0.00500								
Potassium	<0.100	0.300								
Selenium	<0.00200	0.00500								
Sodium	<0.100	0.300								
Thallium	<0.000500	0.00150								

Sample ID: **LCS-96359** Batch ID: **96359** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS5_200519B** Analysis Date: **5/19/2020 12:40:00 PM** Prep Date: **5/15/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.204	0.00250	0.200	0	102	80	120			
Arsenic	0.208	0.00500	0.200	0	104	80	120			
Barium	0.202	0.0100	0.200	0	101	80	120			
Beryllium	0.201	0.00100	0.200	0	100	80	120			
Cadmium	0.206	0.00100	0.200	0	103	80	120			
Calcium	5.42	0.300	5.00	0	108	80	120			
Chromium	0.200	0.00500	0.200	0	100	80	120			
Cobalt	0.205	0.00500	0.200	0	102	80	120			
Iron	5.24	0.100	5.00	0	105	80	120			
Lead	0.201	0.00100	0.200	0	100	80	120			
Lithium	0.204	0.0100	0.200	0	102	80	120			
Magnesium	5.15	0.300	5.00	0	103	80	120			
Molybdenum	0.205	0.00500	0.200	0	102	80	120			
Potassium	5.14	0.300	5.00	0	103	80	120			
Selenium	0.213	0.00500	0.200	0	107	80	120			
Sodium	5.06	0.300	5.00	0	101	80	120			
Thallium	0.200	0.00150	0.200	0	99.9	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005110
Project: Luminant-MLSES CCR&MNA

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_200519B

Sample ID: **LCSD-96359** Batch ID: **96359** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS5_200519B** Analysis Date: **5/19/2020 12:42:00 PM** Prep Date: **5/15/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.204	0.00250	0.200	0	102	80	120	0.135	15	
Arsenic	0.207	0.00500	0.200	0	103	80	120	0.366	15	
Barium	0.206	0.0100	0.200	0	103	80	120	1.84	15	
Beryllium	0.202	0.00100	0.200	0	101	80	120	0.541	15	
Cadmium	0.209	0.00100	0.200	0	104	80	120	1.41	15	
Calcium	5.32	0.300	5.00	0	106	80	120	2.00	15	
Chromium	0.201	0.00500	0.200	0	100	80	120	0.209	15	
Cobalt	0.206	0.00500	0.200	0	103	80	120	0.548	15	
Iron	5.26	0.100	5.00	0	105	80	120	0.447	15	
Lead	0.199	0.00100	0.200	0	99.6	80	120	0.766	15	
Lithium	0.201	0.0100	0.200	0	100	80	120	1.71	15	
Magnesium	5.14	0.300	5.00	0	103	80	120	0.149	15	
Molybdenum	0.205	0.00500	0.200	0	103	80	120	0.262	15	
Potassium	5.17	0.300	5.00	0	103	80	120	0.538	15	
Selenium	0.212	0.00500	0.200	0	106	80	120	0.751	15	
Sodium	5.07	0.300	5.00	0	101	80	120	0.105	15	
Thallium	0.198	0.00150	0.200	0	99.2	80	120	0.704	15	

Sample ID: **2005111-01B SD** Batch ID: **96359** TestNo: **SW6020B** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS5_200519B** Analysis Date: **5/19/2020 12:53:00 PM** Prep Date: **5/15/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.00400	0.0125	0	0				0	20	
Arsenic	<0.0100	0.0250	0	0.00893				0	20	
Barium	0.0171	0.0500	0	0.0170				0.492	20	
Beryllium	0.0169	0.00500	0	0.0164				3.12	20	
Cadmium	<0.00150	0.00500	0	0				0	20	
Calcium	260	1.50	0	257				0.815	20	
Chromium	<0.0100	0.0250	0	0.00205				0	20	
Cobalt	0.449	0.0250	0	0.439				2.12	20	
Lead	<0.00150	0.00500	0	0				0	20	
Lithium	0.248	0.0500	0	0.249				0.282	20	
Molybdenum	<0.0100	0.0250	0	0				0	20	
Potassium	6.35	1.50	0	6.26				1.44	20	
Selenium	0.0328	0.0250	0	0.0299				9.36	20	
Thallium	<0.00250	0.00750	0	0				0	20	

Sample ID: **2005111-01B PDS** Batch ID: **96359** TestNo: **SW6020B** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS5_200519B** Analysis Date: **5/19/2020 1:20:00 PM** Prep Date: **5/15/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Qualifiers:

B	Analyte detected in the associated Method Blank
J	Analyte detected between MDL and RL
ND	Not Detected at the Method Detection Limit
RL	Reporting Limit
J	Analyte detected between SDL and RL
DF	Dilution Factor
MDL	Method Detection Limit
R	RPD outside accepted control limits
S	Spike Recovery outside control limits
N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005110
Project: Luminant-MLSES CCR&MNA

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_200519B

Sample ID: **2005111-01B PDS**	Batch ID: **96359**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS5_200519B**	Analysis Date: **5/19/2020 1:20:00 PM**	Prep Date: **5/15/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.204	0.00250	0.200	0	102	75	125			
Arsenic	0.200	0.00500	0.200	0.00893	95.3	75	125			
Barium	0.225	0.0100	0.200	0.0170	104	75	125			
Beryllium	0.203	0.00100	0.200	0.0164	93.4	75	125			
Cadmium	0.195	0.00100	0.200	0	97.5	75	125			
Calcium	248	0.300	5.00	257	-182	75	125			S
Chromium	0.202	0.00500	0.200	0.00205	99.7	75	125			
Cobalt	0.606	0.00500	0.200	0.439	83.3	75	125			
Lead	0.203	0.00100	0.200	0	102	75	125			
Lithium	0.417	0.0100	0.200	0.249	84.4	75	125			
Molybdenum	0.205	0.00500	0.200	0	103	75	125			
Potassium	10.9	0.300	5.00	6.26	93.7	75	125			
Selenium	0.217	0.00500	0.200	0.0299	93.6	75	125			
Thallium	0.201	0.00150	0.200	0	101	75	125			

Sample ID: **2005111-01B MS**	Batch ID: **96359**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS5_200519B**	Analysis Date: **5/19/2020 1:22:00 PM**	Prep Date: **5/15/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.202	0.00250	0.200	0	101	75	125			
Arsenic	0.203	0.00500	0.200	0.00893	97.3	75	125			
Barium	0.223	0.0100	0.200	0.0170	103	75	125			
Beryllium	0.206	0.00100	0.200	0.0164	94.7	75	125			
Cadmium	0.194	0.00100	0.200	0	96.8	75	125			
Calcium	263	0.300	5.00	257	118	75	125			
Chromium	0.194	0.00500	0.200	0.00205	96.1	75	125			
Cobalt	0.633	0.00500	0.200	0.439	96.8	75	125			
Iron	43.4	0.100	5.00	38.9	90.4	75	125			
Lead	0.198	0.00100	0.200	0	99.1	75	125			
Lithium	0.430	0.0100	0.200	0.249	90.6	75	125			
Magnesium	173	0.300	5.00	167	111	75	125			
Molybdenum	0.211	0.00500	0.200	0	106	75	125			
Potassium	11.4	0.300	5.00	6.26	102	75	125			
Selenium	0.225	0.00500	0.200	0.0299	97.4	75	125			
Sodium	664	0.300	5.00	656	169	75	125			S
Thallium	0.199	0.00150	0.200	0	99.4	75	125			

Sample ID: **2005111-01B MSD**	Batch ID: **96359**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS5_200519B**	Analysis Date: **5/19/2020 1:24:00 PM**	Prep Date: **5/15/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005110
Project: Luminant-MLSES CCR&MNA

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_200519B

Sample ID: **2005111-01B MSD** Batch ID: **96359** TestNo: **SW6020B** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS5_200519B** Analysis Date: **5/19/2020 1:24:00 PM** Prep Date: **5/15/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.200	0.00250	0.200	0	100	75	125	0.929	15	
Arsenic	0.203	0.00500	0.200	0.00893	97.0	75	125	0.261	15	
Barium	0.219	0.0100	0.200	0.0170	101	75	125	2.08	15	
Beryllium	0.206	0.00100	0.200	0.0164	95.0	75	125	0.323	15	
Cadmium	0.193	0.00100	0.200	0	96.5	75	125	0.269	15	
Calcium	262	0.300	5.00	257	92.8	75	125	0.471	15	
Chromium	0.193	0.00500	0.200	0.00205	95.7	75	125	0.411	15	
Cobalt	0.632	0.00500	0.200	0.439	96.4	75	125	0.138	15	
Iron	43.4	0.100	5.00	38.9	90.2	75	125	0.021	15	
Lead	0.200	0.00100	0.200	0	100	75	125	1.06	15	
Lithium	0.437	0.0100	0.200	0.249	94.3	75	125	1.66	15	
Magnesium	171	0.300	5.00	167	83.6	75	125	0.788	15	
Molybdenum	0.208	0.00500	0.200	0	104	75	125	1.36	15	
Potassium	11.3	0.300	5.00	6.26	101	75	125	0.335	15	
Selenium	0.227	0.00500	0.200	0.0299	98.3	75	125	0.785	15	
Sodium	663	0.300	5.00	656	142	75	125	0.206	15	S
Thallium	0.201	0.00150	0.200	0	100	75	125	0.951	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005110
Project: Luminant-MLSES CCR&MNA

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_200519B

Sample ID: **ICV-200519** Batch ID: **R110549** TestNo: **SW6020B** Units: **mg/L**
SampType: **ICV** Run ID: **ICP-MS5_200519B** Analysis Date: **5/19/2020 10:48:00 AM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.101	0.00250	0.100	0	101	90	110			
Arsenic	0.0990	0.00500	0.100	0	99.0	90	110			
Barium	0.102	0.0100	0.100	0	102	90	110			
Beryllium	0.0981	0.00100	0.100	0	98.1	90	110			
Cadmium	0.102	0.00100	0.100	0	102	90	110			
Calcium	2.60	0.300	2.50	0	104	90	110			
Chromium	0.101	0.00500	0.100	0	101	90	110			
Cobalt	0.100	0.00500	0.100	0	100	90	110			
Iron	2.57	0.100	2.50	0	103	90	110			
Lead	0.0993	0.00100	0.100	0	99.3	90	110			
Lithium	0.0998	0.0100	0.100	0	99.8	90	110			
Magnesium	2.47	0.300	2.50	0	98.6	90	110			
Molybdenum	0.0975	0.00500	0.100	0	97.5	90	110			
Potassium	2.52	0.300	2.50	0	101	90	110			
Selenium	0.103	0.00500	0.100	0	103	90	110			
Sodium	2.49	0.300	2.50	0	99.4	90	110			
Thallium	0.0973	0.00150	0.100	0	97.3	90	110			

Sample ID: **LCVL-200519** Batch ID: **R110549** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS5_200519B** Analysis Date: **5/19/2020 11:00:00 AM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00203	0.00250	0.00200	0	102	80	120			
Arsenic	0.00510	0.00500	0.00500	0	102	80	120			
Barium	0.00527	0.0100	0.00500	0	105	80	120			
Beryllium	0.00109	0.00100	0.00100	0	109	80	120			
Cadmium	0.00102	0.00100	0.00100	0	102	80	120			
Calcium	0.115	0.300	0.100	0	115	80	120			
Chromium	0.00502	0.00500	0.00500	0	100	80	120			
Cobalt	0.00510	0.00500	0.00500	0	102	80	120			
Iron	0.101	0.100	0.100	0	101	80	120			
Lead	0.00103	0.00100	0.00100	0	103	80	120			
Lithium	0.0100	0.0100	0.0100	0	100	80	120			
Magnesium	0.101	0.300	0.100	0	101	80	120			
Molybdenum	0.00524	0.00500	0.00500	0	105	80	120			
Potassium	0.102	0.300	0.100	0	102	80	120			
Selenium	0.00565	0.00500	0.00500	0	113	80	120			
Sodium	0.103	0.300	0.100	0	103	80	120			
Thallium	0.000986	0.00150	0.00100	0	98.6	80	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005110
Project: Luminant-MLSES CCR&MNA

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_200519B

Sample ID: **CCV2-200519** Batch ID: **R110549** TestNo: **SW6020B** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS5_200519B** Analysis Date: **5/19/2020 12:26:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.201	0.00250	0.200	0	101	90	110			
Arsenic	0.207	0.00500	0.200	0	103	90	110			
Barium	0.200	0.0100	0.200	0	99.8	90	110			
Beryllium	0.202	0.00100	0.200	0	101	90	110			
Cadmium	0.204	0.00100	0.200	0	102	90	110			
Calcium	5.20	0.300	5.00	0	104	90	110			
Chromium	0.198	0.00500	0.200	0	99.1	90	110			
Cobalt	0.204	0.00500	0.200	0	102	90	110			
Iron	5.14	0.100	5.00	0	103	90	110			
Lead	0.197	0.00100	0.200	0	98.3	90	110			
Lithium	0.206	0.0100	0.200	0	103	90	110			
Magnesium	5.09	0.300	5.00	0	102	90	110			
Molybdenum	0.204	0.00500	0.200	0	102	90	110			
Potassium	5.11	0.300	5.00	0	102	90	110			
Selenium	0.214	0.00500	0.200	0	107	90	110			
Sodium	5.02	0.300	5.00	0	100	90	110			
Thallium	0.196	0.00150	0.200	0	97.8	90	110			

Sample ID: **CCV3-200519** Batch ID: **R110549** TestNo: **SW6020B** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS5_200519B** Analysis Date: **5/19/2020 1:44:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.200	0.00250	0.200	0	99.8	90	110			
Arsenic	0.206	0.00500	0.200	0	103	90	110			
Barium	0.201	0.0100	0.200	0	101	90	110			
Beryllium	0.202	0.00100	0.200	0	101	90	110			
Cadmium	0.206	0.00100	0.200	0	103	90	110			
Calcium	5.19	0.300	5.00	0	104	90	110			
Chromium	0.199	0.00500	0.200	0	99.3	90	110			
Cobalt	0.206	0.00500	0.200	0	103	90	110			
Iron	5.17	0.100	5.00	0	103	90	110			
Lead	0.196	0.00100	0.200	0	98.0	90	110			
Lithium	0.206	0.0100	0.200	0	103	90	110			
Magnesium	5.17	0.300	5.00	0	103	90	110			
Molybdenum	0.205	0.00500	0.200	0	103	90	110			
Potassium	5.10	0.300	5.00	0	102	90	110			
Selenium	0.215	0.00500	0.200	0	107	90	110			
Sodium	5.13	0.300	5.00	0	103	90	110			
Thallium	0.196	0.00150	0.200	0	97.8	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005110
Project: Luminant-MLSES CCR&MNA

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_200520B

The QC data in batch 96359 applies to the following samples: 2005110-01B, 2005110-02B

Sample ID: **MB-96359**	Batch ID: **96359**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MBLK**	Run ID: **ICP-MS5_200520B**	Analysis Date: **5/20/2020 1:10:00 PM**	Prep Date: **5/15/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	<0.0100	0.0300								

Sample ID: **LCS-96359**	Batch ID: **96359**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCS**	Run ID: **ICP-MS5_200520B**	Analysis Date: **5/20/2020 1:13:00 PM**	Prep Date: **5/15/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.193	0.0300	0.200	0	96.4	80	120			

Sample ID: **LCSD-96359**	Batch ID: **96359**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCSD**	Run ID: **ICP-MS5_200520B**	Analysis Date: **5/20/2020 1:15:00 PM**	Prep Date: **5/15/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.208	0.0300	0.200	0	104	80	120	7.81	15	

Sample ID: **2005111-01B SD**	Batch ID: **96359**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **SD**	Run ID: **ICP-MS5_200520B**	Analysis Date: **5/20/2020 1:26:00 PM**	Prep Date: **5/15/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	20.5	7.50	0	19.0				7.43	20	
Iron	39.2	25.0	0	39.1				0.310	20	
Magnesium	169	75.0	0	170				0.507	20	
Sodium	661	75.0	0	682				3.22	20	

Sample ID: **2005111-01B PDS**	Batch ID: **96359**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS5_200520B**	Analysis Date: **5/20/2020 1:53:00 PM**	Prep Date: **5/15/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	28.5	1.50	10.0	19.0	95.5	75	125			
Iron	300	5.00	250	39.1	104	75	125			
Magnesium	420	15.0	250	170	100	75	125			
Sodium	949	15.0	250	682	107	75	125			

Sample ID: **2005111-01B MS**	Batch ID: **96359**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS5_200520B**	Analysis Date: **5/20/2020 1:55:00 PM**	Prep Date: **5/15/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	21.0	1.50	0.200	19.0	1020	75	125			S

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005110
Project: Luminant-MLSES CCR&MNA

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_200520B

Sample ID: **2005111-01B MSD** Batch ID: **96359** TestNo: **SW6020B** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS5_200520B** Analysis Date: **5/20/2020 1:57:00 PM** Prep Date: **5/15/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	21.3	1.50	0.200	19.0	1160	75	125	1.40	15	S

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005110
Project: Luminant-MLSES CCR&MNA

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_200520B

Sample ID: **ICV-200520**	Batch ID: **R110581**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS5_200520B**	Analysis Date: **5/20/2020 10:52:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0987	0.0300	0.100	0	98.7	90	110			
Calcium	2.60	0.300	2.50	0	104	90	110			
Iron	2.54	0.100	2.50	0	102	90	110			
Magnesium	2.47	0.300	2.50	0	98.6	90	110			
Potassium	2.51	0.300	2.50	0	101	90	110			
Sodium	2.50	0.300	2.50	0	99.9	90	110			

Sample ID: **LCVL-200520**	Batch ID: **R110581**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_200520B**	Analysis Date: **5/20/2020 11:04:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0216	0.0300	0.0200	0	108	80	120			
Calcium	0.106	0.300	0.100	0	106	80	120			
Iron	0.0988	0.100	0.100	0	98.8	80	120			
Magnesium	0.0961	0.300	0.100	0	96.1	80	120			
Potassium	0.103	0.300	0.100	0	103	80	120			
Sodium	0.100	0.300	0.100	0	100	80	120			

Sample ID: **CCV1-200520**	Batch ID: **R110581**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_200520B**	Analysis Date: **5/20/2020 12:00:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.200	0.0300	0.200	0	100	90	110			
Calcium	4.94	0.300	5.00	0	98.9	90	110			
Magnesium	5.05	0.300	5.00	0	101	90	110			
Potassium	5.01	0.300	5.00	0	100	90	110			
Sodium	5.01	0.300	5.00	0	100	90	110			

Sample ID: **CCV2-200520**	Batch ID: **R110581**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_200520B**	Analysis Date: **5/20/2020 12:52:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.195	0.0300	0.200	0	97.3	90	110			
Calcium	4.98	0.300	5.00	0	99.7	90	110			
Iron	5.06	0.100	5.00	0	101	90	110			
Magnesium	5.00	0.300	5.00	0	99.9	90	110			
Potassium	4.96	0.300	5.00	0	99.2	90	110			
Sodium	4.98	0.300	5.00	0	99.5	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005110
Project: Luminant-MLSES CCR&MNA

ANALYTICAL QC SUMMARY REPORT

RunID: **ICP-MS5_200520B**

Sample ID: **CCV3-200520** Batch ID: **R110581** TestNo: **SW6020B** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS5_200520B** Analysis Date: **5/20/2020 2:09:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.198	0.0300	0.200	0	98.9	90	110			
Iron	5.09	0.100	5.00	0	102	90	110			
Magnesium	5.09	0.300	5.00	0	102	90	110			
Potassium	5.00	0.300	5.00	0	100	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005110
Project: Luminant-MLSES CCR&MNA

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_200421A

Sample ID: **DCS2-96036** Batch ID: **96036** TestNo: **E300** Units: **mg/L**
SampType: **DCS2** Run ID: **IC2_200421A** Analysis Date: **4/21/2020 11:47:08 AM** Prep Date: **4/21/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	0.420	1.00	0.5000	0	84.1	70	130	0	0	
Fluoride	0.154	0.400	0.2000	0	77.1	70	130	0	0	
Nitrate-N	0.246	0.0500	0.2500	0	98.5	70	130	0	0	
Sulfate	1.43	3.00	1.500	0	95.3	70	130	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005110
Project: Luminant-MLSES CCR&MNA

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_200514A

The QC data in batch 96350 applies to the following samples: 2005110-01C, 2005110-02C

Sample ID: **MB-96350**	Batch ID: **96350**	TestNo: **E300**	Units: **mg/L**
SampType: **MBLK**	Run ID: **IC2_200514A**	Analysis Date: **5/14/2020 12:07:19 PM**	Prep Date: **5/14/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00								
Fluoride	<0.100	0.400								
Nitrate-N	<0.100	0.500								
Sulfate	<1.00	3.00								

Sample ID: **LCS-96350**	Batch ID: **96350**	TestNo: **E300**	Units: **mg/L**
SampType: **LCS**	Run ID: **IC2_200514A**	Analysis Date: **5/14/2020 12:23:19 PM**	Prep Date: **5/14/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.2	1.00	10.00	0	102	90	110			
Fluoride	3.76	0.400	4.000	0	94.1	90	110			
Nitrate-N	5.07	0.500	5.000	0	101	90	110			
Sulfate	30.3	3.00	30.00	0	101	90	110			

Sample ID: **LCSD-96350**	Batch ID: **96350**	TestNo: **E300**	Units: **mg/L**
SampType: **LCSD**	Run ID: **IC2_200514A**	Analysis Date: **5/14/2020 12:39:19 PM**	Prep Date: **5/14/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.2	1.00	10.00	0	102	90	110	0.428	20	
Fluoride	3.75	0.400	4.000	0	93.8	90	110	0.299	20	
Nitrate-N	5.05	0.500	5.000	0	101	90	110	0.311	20	
Sulfate	30.2	3.00	30.00	0	101	90	110	0.325	20	

Sample ID: **2005110-01CMS**	Batch ID: **96350**	TestNo: **E300**	Units: **mg/L**
SampType: **MS**	Run ID: **IC2_200514A**	Analysis Date: **5/14/2020 5:42:45 PM**	Prep Date: **5/14/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	33.8	1.00	20.00	14.65	95.6	90	110			
Fluoride	20.2	0.400	20.00	0	101	90	110			
Nitrate-N	4.31	0.500	4.516	0	95.4	90	110			
Sulfate	59.4	3.00	20.00	40.61	94.0	90	110			

Sample ID: **2005110-01CMSD**	Batch ID: **96350**	TestNo: **E300**	Units: **mg/L**
SampType: **MSD**	Run ID: **IC2_200514A**	Analysis Date: **5/14/2020 5:58:45 PM**	Prep Date: **5/14/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	33.8	1.00	20.00	14.65	95.7	90	110	0.067	20	
Fluoride	20.2	0.400	20.00	0	101	90	110	0.018	20	
Nitrate-N	4.31	0.500	4.516	0	95.4	90	110	0.076	20	
Sulfate	59.3	3.00	20.00	40.61	93.5	90	110	0.148	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005110
Project: Luminant-MLSES CCR&MNA

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_200514A

Sample ID: **ICV-200514** Batch ID: **R110500** TestNo: **E300** Units: **mg/L**
SampType: **ICV** Run ID: **IC2_200514A** Analysis Date: **5/14/2020 11:35:19 AM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	26.3	1.00	25.00	0	105	90	110			
Fluoride	9.97	0.400	10.00	0	99.7	90	110			
Nitrate-N	13.2	0.500	12.50	0	106	90	110			
Sulfate	78.9	3.00	75.00	0	105	90	110			

Sample ID: **CCV1-200514** Batch ID: **R110500** TestNo: **E300** Units: **mg/L**
SampType: **CCV** Run ID: **IC2_200514A** Analysis Date: **5/14/2020 7:02:46 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.3	1.00	10.00	0	103	90	110			
Fluoride	3.91	0.400	4.000	0	97.8	90	110			
Nitrate-N	5.09	0.500	5.000	0	102	90	110			
Sulfate	30.8	3.00	30.00	0	103	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005110
Project: Luminant-MLSES CCR&MNA

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_200514B

The QC data in batch 96346 applies to the following samples: 2005110-01C, 2005110-02C

Sample ID: **MB-96346** Batch ID: **96346** TestNo: **M2320 B** Units: **mg/L @ pH 4.23**
SampType: **MBLK** Run ID: **TITRATOR_200514B** Analysis Date: **5/14/2020 11:22:00 AM** Prep Date: **5/14/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	<10.0	20.0								
Alkalinity, Carbonate (As CaCO3)	<10.0	20.0								
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0								
Alkalinity, Total (As CaCO3)	<20.0	20.0								

Sample ID: **LCS-96346** Batch ID: **96346** TestNo: **M2320 B** Units: **mg/L @ pH 4.22**
SampType: **LCS** Run ID: **TITRATOR_200514B** Analysis Date: **5/14/2020 11:26:00 AM** Prep Date: **5/14/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)	53.2	20.0	50.00	0	106	74	129			

Sample ID: **2005076-01C-DUP** Batch ID: **96346** TestNo: **M2320 B** Units: **mg/L @ pH 4.53**
SampType: **DUP** Run ID: **TITRATOR_200514B** Analysis Date: **5/14/2020 11:46:00 AM** Prep Date: **5/14/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	130	20.0	0	133.8				3.11	20	
Alkalinity, Carbonate (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Total (As CaCO3)	130	20.0	0	133.8				3.11	20	

Sample ID: **2005110-01C-DUP** Batch ID: **96346** TestNo: **M2320 B** Units: **mg/L @ pH 4.5**
SampType: **DUP** Run ID: **TITRATOR_200514B** Analysis Date: **5/14/2020 1:18:00 PM** Prep Date: **5/14/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	32.0	20.0	0	32.90				2.77	20	
Alkalinity, Carbonate (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Total (As CaCO3)	32.0	20.0	0	32.90				2.77	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005110
Project: Luminant-MLSES CCR&MNA

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_200514B

Sample ID: **ICV-200514**	Batch ID: **R110504**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.36**
SampType: **ICV**	Run ID: **TITRATOR_200514B**	Analysis Date: **5/14/2020 11:20:00 AM**	Prep Date: **5/14/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	31.5	20.0	0							
Alkalinity, Carbonate (As CaCO3)	67.8	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	99.4	20.0	100.0	0	99.4	98	102			

Sample ID: **CCV1-200514**	Batch ID: **R110504**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.33**
SampType: **CCV**	Run ID: **TITRATOR_200514B**	Analysis Date: **5/14/2020 1:10:00 PM**	Prep Date: **5/14/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	39.8	20.0	0							
Alkalinity, Carbonate (As CaCO3)	60.2	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	99.9	20.0	100.0	0	99.9	90	110			

Sample ID: **CCV2-200514**	Batch ID: **R110504**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.32**
SampType: **CCV**	Run ID: **TITRATOR_200514B**	Analysis Date: **5/14/2020 2:01:00 PM**	Prep Date: **5/14/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	42.2	20.0	0							
Alkalinity, Carbonate (As CaCO3)	58.1	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	100	20.0	100.0	0	100	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005110
Project: Luminant-MLSES CCR&MNA

ANALYTICAL QC SUMMARY REPORT

RunID: **UV/VIS_2_200323B**

Sample ID: **DCS-95613**	Batch ID: **95613**	TestNo: **M3500-Fe D**	Units: **mg/L**		
SampType: **DCS**	Run ID: **UV/VIS_2_200323B**	Analysis Date: **3/23/2020 1:30:00 PM**	Prep Date: **3/23/2020**		

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	0.0580	0.100	0.05000	0	116	65	135	0	0	N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005110
Project: Luminant-MLSES CCR&MNA

ANALYTICAL QC SUMMARY REPORT

RunID: UV/VIS_2_200507C

Sample ID: **DCS-96253** Batch ID: **96253** TestNo: **M4500-P E** Units: **mg/L**
SampType: **DCS** Run ID: **UV/VIS_2_200507C** Analysis Date: **5/7/2020 2:22:00 PM** Prep Date: **5/7/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Total Orthophosphate (As	0.0480	0.100	0.05000	0	96.0	50	200	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005110
Project: Luminant-MLSES CCR&MNA

ANALYTICAL QC SUMMARY REPORT

RunID: **UV/VIS_2_200514B**

The QC data in batch 96353 applies to the following samples: 2005110-01C, 2005110-02C

Sample ID: **MB-96353** Batch ID: **96353** TestNo: **M4500-P E** Units: **mg/L**
SampType: **MBLK** Run ID: **UV/VIS_2_200514B** Analysis Date: **5/14/2020 2:26:00 PM** Prep Date: **5/14/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Total Orthophosphate (As	<0.0300	0.100								

Sample ID: **LCS-96353** Batch ID: **96353** TestNo: **M4500-P E** Units: **mg/L**
SampType: **LCS** Run ID: **UV/VIS_2_200514B** Analysis Date: **5/14/2020 2:26:00 PM** Prep Date: **5/14/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Total Orthophosphate (As	0.496	0.100	0.5000	0	99.2	80	120			

Sample ID: **LCSD-96353** Batch ID: **96353** TestNo: **M4500-P E** Units: **mg/L**
SampType: **LCSD** Run ID: **UV/VIS_2_200514B** Analysis Date: **5/14/2020 2:27:00 PM** Prep Date: **5/14/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Total Orthophosphate (As	0.495	0.100	0.5000	0	99.0	80	120	0.202	15	

Sample ID: **2005110-01CMS** Batch ID: **96353** TestNo: **M4500-P E** Units: **mg/L**
SampType: **MS** Run ID: **UV/VIS_2_200514B** Analysis Date: **5/14/2020 2:28:00 PM** Prep Date: **5/14/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Total Orthophosphate (As	0.474	0.100	0.5000	0	94.8	80	120			

Sample ID: **2005110-01CMSD** Batch ID: **96353** TestNo: **M4500-P E** Units: **mg/L**
SampType: **MSD** Run ID: **UV/VIS_2_200514B** Analysis Date: **5/14/2020 2:28:00 PM** Prep Date: **5/14/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Total Orthophosphate (As	0.482	0.100	0.5000	0	96.4	80	120	1.67	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005110
Project: Luminant-MLSES CCR&MNA

ANALYTICAL QC SUMMARY REPORT

RunID: UV/VIS_2_200514B

Sample ID: **ICV-200514**	Batch ID: **R110494**	TestNo: **M4500-P E**	Units: **mg/L**
SampType: **ICV**	Run ID: **UV/VIS_2_200514B**	Analysis Date: **5/14/2020 2:25:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Total Orthophosphate (As	0.197	0.100	0.2000	0	98.5	85	115			

Sample ID: **CCV1-200514**	Batch ID: **R110494**	TestNo: **M4500-P E**	Units: **mg/L**
SampType: **CCV**	Run ID: **UV/VIS_2_200514B**	Analysis Date: **5/14/2020 2:32:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Phosphorus, Total Orthophosphate (As	0.510	0.100	0.5000	0	102	85	115			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005110
Project: Luminant-MLSES CCR&MNA

ANALYTICAL QC SUMMARY REPORT

RunID: UV/VIS_2_200518B

The QC data in batch 96388 applies to the following samples: 2005110-01A, 2005110-02A

Sample ID: **MB-96388**	Batch ID: **96388**	TestNo: **M3500-Fe D**	Units: **mg/L**
SampType: **MBLK**	Run ID: **UV/VIS_2_200518B**	Analysis Date: **5/18/2020 2:03:00 PM**	Prep Date: **5/18/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	<0.0500	0.100								N

Sample ID: **LCS-96388**	Batch ID: **96388**	TestNo: **M3500-Fe D**	Units: **mg/L**
SampType: **LCS**	Run ID: **UV/VIS_2_200518B**	Analysis Date: **5/18/2020 2:04:00 PM**	Prep Date: **5/18/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	0.108	0.100	0.1000	0	108	85	115			N

Sample ID: **LCSD-96388**	Batch ID: **96388**	TestNo: **M3500-Fe D**	Units: **mg/L**
SampType: **LCSD**	Run ID: **UV/VIS_2_200518B**	Analysis Date: **5/18/2020 2:05:00 PM**	Prep Date: **5/18/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	0.108	0.100	0.1000	0	108	85	115	0.343	15	N

Sample ID: **2005111-03AMS**	Batch ID: **96388**	TestNo: **M3500-Fe D**	Units: **mg/L**
SampType: **MS**	Run ID: **UV/VIS_2_200518B**	Analysis Date: **5/18/2020 2:10:00 PM**	Prep Date: **5/18/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	0.0981	0.100	0.1000	0	98.1	85	115			N

Sample ID: **2005111-03AMSD**	Batch ID: **96388**	TestNo: **M3500-Fe D**	Units: **mg/L**
SampType: **MSD**	Run ID: **UV/VIS_2_200518B**	Analysis Date: **5/18/2020 2:11:00 PM**	Prep Date: **5/18/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	0.0969	0.100	0.1000	0	96.9	85	115	1.30	15	N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005110
Project: Luminant-MLSES CCR&MNA

ANALYTICAL QC SUMMARY REPORT

RunID: UV/VIS_2_200518B

Sample ID: **ICV-200518**	Batch ID: **R110544**	TestNo: **M3500-Fe D**	Units: **mg/L**
SampType: **ICV**	Run ID: **UV/VIS_2_200518B**	Analysis Date: **5/18/2020 2:01:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	0.0977	0.100	0.1000	0	97.7	85	115			N

Sample ID: **CCV1-200518**	Batch ID: **R110544**	TestNo: **M3500-Fe D**	Units: **mg/L**
SampType: **CCV**	Run ID: **UV/VIS_2_200518B**	Analysis Date: **5/18/2020 2:14:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron, Ferrous	0.205	0.100	0.2000	0	102	85	115			N

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005110
Project: Luminant-MLSES CCR&MNA

ANALYTICAL QC SUMMARY REPORT

RunID: **WC_200514A**

The QC data in batch 96355 applies to the following samples: 2005110-01C, 2005110-02C

Sample ID: **MB-96355**	Batch ID: **96355**	TestNo: **M2540C**	Units: **mg/L**
SampType: **MBLK**	Run ID: **WC_200514A**	Analysis Date: **5/14/2020 4:15:00 PM**	Prep Date: **5/14/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	<10.0	10.0								

Sample ID: **LCS-96355**	Batch ID: **96355**	TestNo: **M2540C**	Units: **mg/L**
SampType: **LCS**	Run ID: **WC_200514A**	Analysis Date: **5/14/2020 4:15:00 PM**	Prep Date: **5/14/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	755	10.0	745.6	0	101	90	113			

Sample ID: **2005082-09B-DUP**	Batch ID: **96355**	TestNo: **M2540C**	Units: **mg/L**
SampType: **DUP**	Run ID: **WC_200514A**	Analysis Date: **5/14/2020 4:15:00 PM**	Prep Date: **5/14/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	2400	50.0	0	2410				0.416	5	

Sample ID: **2005082-10B-DUP**	Batch ID: **96355**	TestNo: **M2540C**	Units: **mg/L**
SampType: **DUP**	Run ID: **WC_200514A**	Analysis Date: **5/14/2020 4:15:00 PM**	Prep Date: **5/14/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	1290	50.0	0	1340				3.80	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2005110
Project: Luminant-MLSES CCR&MNA

MQL SUMMARY REPORT

TestNo: E300	MDL	MQL
Analyte	**mg/L**	**mg/L**
Chloride	0.300	1.00
Fluoride	0.100	0.400
Nitrate-N	0.100	0.500
Sulfate	1.00	3.00

TestNo: SW6020B	MDL	MQL
Analyte	**mg/L**	**mg/L**
Antimony	0.000800	0.00250
Arsenic	0.00200	0.00500
Barium	0.00300	0.0100
Beryllium	0.000300	0.00100
Boron	0.0100	0.0300
Cadmium	0.000300	0.00100
Calcium	0.100	0.300
Chromium	0.00200	0.00500
Cobalt	0.00300	0.00500
Iron	0.0300	0.100
Lead	0.000300	0.00100
Lithium	0.00500	0.0100
Magnesium	0.100	0.300
Molybdenum	0.00200	0.00500
Potassium	0.100	0.300
Selenium	0.00200	0.00500
Sodium	0.100	0.300
Thallium	0.000500	0.00150

TestNo: M2320 B	MDL	MQL
Analyte	**ıg/L @ pH 4.2**	**g/L @ pH 4.2**
Alkalinity, Bicarbonate (As CaCO3)	10.0	20.0
Alkalinity, Carbonate (As CaCO3)	10.0	20.0
Alkalinity, Hydroxide (As CaCO3)	10.0	20.0
Alkalinity, Total (As CaCO3)	20.0	20.0

TestNo: M3500-Fe D	MDL	MQL
Analyte	**mg/L**	**mg/L**
Iron, Ferrous	0.0500	0.100

TestNo: SW7470A	MDL	MQL
Analyte	**mg/L**	**mg/L**
Mercury	0.0000800	0.000200

TestNo: M4500-P E	MDL	MQL
Analyte	**mg/L**	**mg/L**
Phosphorus, Total Orthophosphate	0.0300	0.100

TestNo: M2540C	MDL	MQL
Analyte	**mg/L**	**mg/L**
Total Dissolved Solids (Residue, Filt	10.0	10.0

Qualifiers: MQL -Method Quantitation Limit as defined by TRRP
MDL -Method Detection Limit as defined by TRRP

Pace Analytical®
National Center for Testing & Innovation

ANALYTICAL REPORT

June 10, 2020

DHL Analytical, Inc.

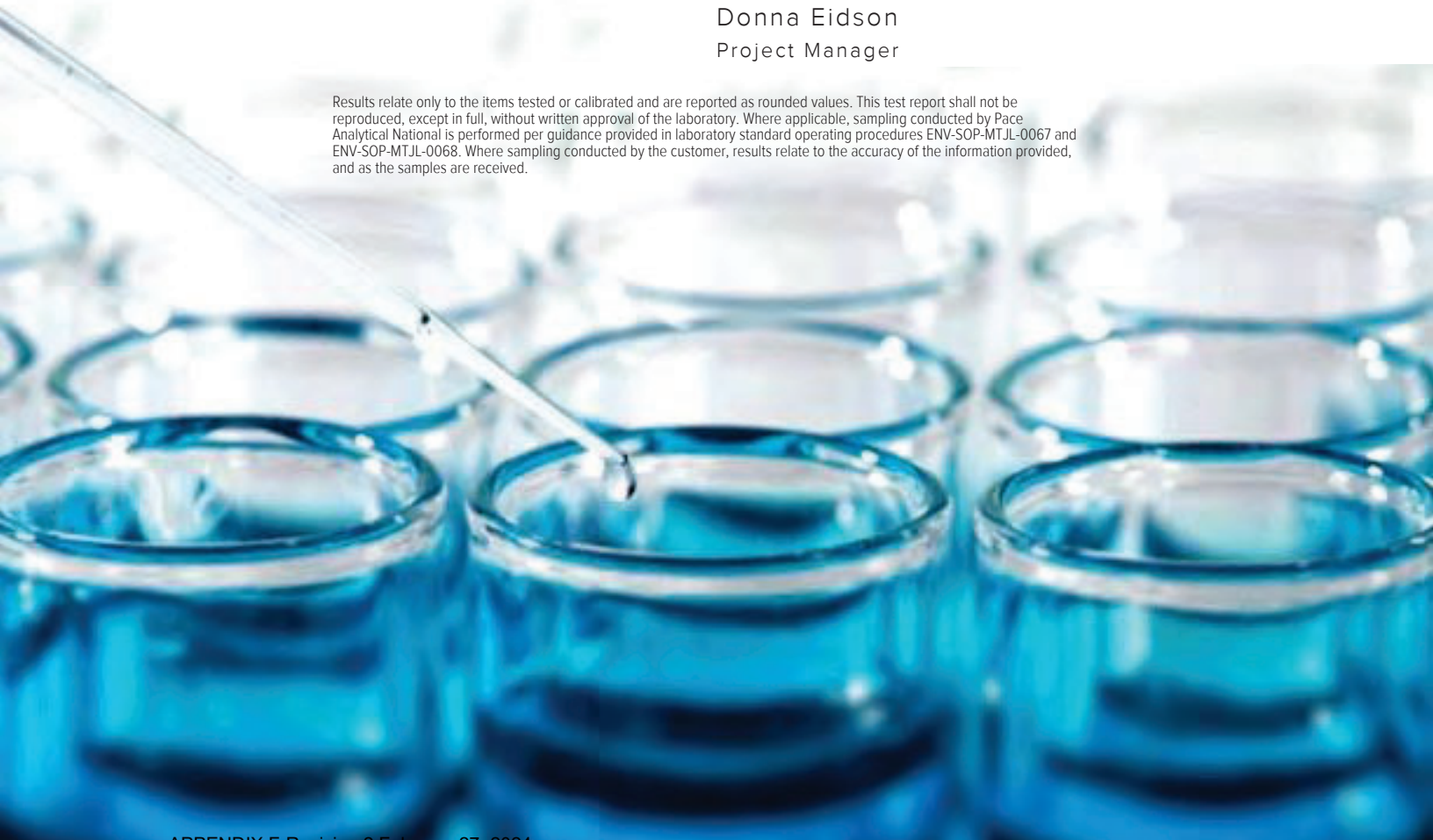
Sample Delivery Group:	L1219693
Samples Received:	05/18/2020
Project Number:	2005110
Description:	

Report To: John DuPont
2300 Double Creek Drive
Round Rock, TX 78664

Entire Report Reviewed By:

Donna Eidson
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.



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LAKE SAMPLE L1219693-01 Non-Potable Water

Collected by	Collected date/time	Received date/time
	05/13/20 14:00	05/18/20 09:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1478122	1	05/19/20 12:05	05/27/20 15:20	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1484198	1	06/01/20 10:19	06/03/20 10:28	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1484198	1	06/01/20 10:19	06/03/20 10:28	RGT	Mt. Juliet, TN

POND SAMPLE L1219693-02 Non-Potable Water

Collected by	Collected date/time	Received date/time
	05/13/20 14:25	05/18/20 09:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1478122	1	05/19/20 12:05	05/27/20 15:20	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1484198	1	06/01/20 10:19	06/03/20 10:28	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1484198	1	06/01/20 10:19	06/03/20 10:28	RGT	Mt. Juliet, TN

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Donna Eidson
Project Manager

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	-0.573		0.471	0.737	05/27/2020 15:20	WG1478122
(T) Barium	*108*			*62.0-143*	*05/27/2020 15:20*	WG1478122
(T) Yttrium	*101*			*79.0-136*	*05/27/2020 15:20*	WG1478122

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	0.191		0.719	1.09	06/03/2020 10:28	WG1484198

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.191		0.248	0.353	06/03/2020 10:28	WG1484198
(T) Barium-133	*106*			*30.0-143*	*06/03/2020 10:28*	WG1484198

Radiochemistry by Method 904

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	0.251		0.568	0.907	05/27/2020 15:20	WG1478122
(T) Barium	*105*			*62.0-143*	*05/27/2020 15:20*	WG1478122
(T) Yttrium	*102*			*79.0-136*	*05/27/2020 15:20*	WG1478122

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	0.337		0.717	1.15	06/03/2020 10:28	WG1484198

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.0861		0.149	0.243	06/03/2020 10:28	WG1484198
(T) Barium-133	*106*			*30.0-143*	*06/03/2020 10:28*	WG1484198

APPENDIX F Revision 2 February 27, 2024

Method Blank (MB)

(MB) R3532575-1 05/27/20 10:15

Analyte	MB Result pCi/l	MB Qualifier	MB MDA pCi/l
Radium-228	-0.0177		0.386
(T) Barium	*99.9*		
(T) Yttrium	*114*		

Original Sample (OS) • Duplicate (DUP)

(OS) • (DUP) R3532575-5 05/27/20 10:15

Analyte	Original Result	DUP Result pCi/l	Dilution	DUP RPD %	DUP RER	DUP Qualifier	DUP RPD Limits %	DUP RER Limit
Radium-228		1.33	1	32.4	0.463		20	3
(T) Barium		*106*						
(T) Yttrium		*104*						

Laboratory Control Sample (LCS)

(LCS) R3532575-2 05/27/20 10:15

Analyte	Spike Amount pCi/l	LCS Result pCi/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Radium-228	5.00	5.43	109	80.0-120	
(T) Barium			*105*		
(T) Yttrium			*104*		

Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) • (MS) R3532575-3 05/27/20 10:15 • (MSD) R3532575-4 05/27/20 10:15

Analyte	Spike Amount pCi/l	Original Result	MS Result pCi/l	MSD Result pCi/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	MS RER	RPD Limits %
Radium-228	10.0		11.8	12.3	109	113	1	70.0-130			3.90		20
(T) Barium					*115*	*104*							
(T) Yttrium					*102*	*110*							

APPENDIX-F Revision 2.0, February 27, 2024

Method Blank (MB)

(MB) R3535623-1 06/02/20 16:27

Analyte	MB Result pCi/l	MB Qualifier	MB MDA pCi/l
Radium-226	0.000		0.0602
(T) Barium-133	*98.3*		

Original Sample (OS) • Duplicate (DUP)

(OS) • (DUP) R3535623-5 06/02/20 16:27

Analyte	Original Result	DUP Result pCi/l	Dilution	DUP RPD %	DUP RER	DUP Qualifier	DUP RPD Limits %	DUP RER Limit
Radium-226		0.0737	1	50.8	0.193		20	3
(T) Barium-133		*99.1*						

Laboratory Control Sample (LCS)

(LCS) R3535623-2 06/02/20 16:27

Analyte	Spike Amount pCi/l	LCS Result pCi/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Radium-226	5.02	5.53	110	80.0-120	
(T) Barium-133			*101*		

Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) • (MS) R3535623-3 06/02/20 16:27 • (MSD) R3535623-4 06/02/20 16:27

Analyte	Spike Amount pCi/l	Original Result	MS Result pCi/l	MSD Result pCi/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	MS RER	RPD Limits %
Radium-226	20.1		18.6	19.5	91.0	95.4	1	75.0-125			4.73		20
(T) Barium-133					*97.5*	*102*							

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDA	Minimum Detectable Activity.
Rec.	Recovery.
RER	Replicate Error Ratio.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(T)	Tracer - A radioisotope of known concentration added to a solution of chemically equivalent radioisotopes at a known concentration to assist in monitoring the yield of the chemical separation.
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
	The remainder of this page intentionally left blank, there are no qualifiers applied to this SDG.

Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.
* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

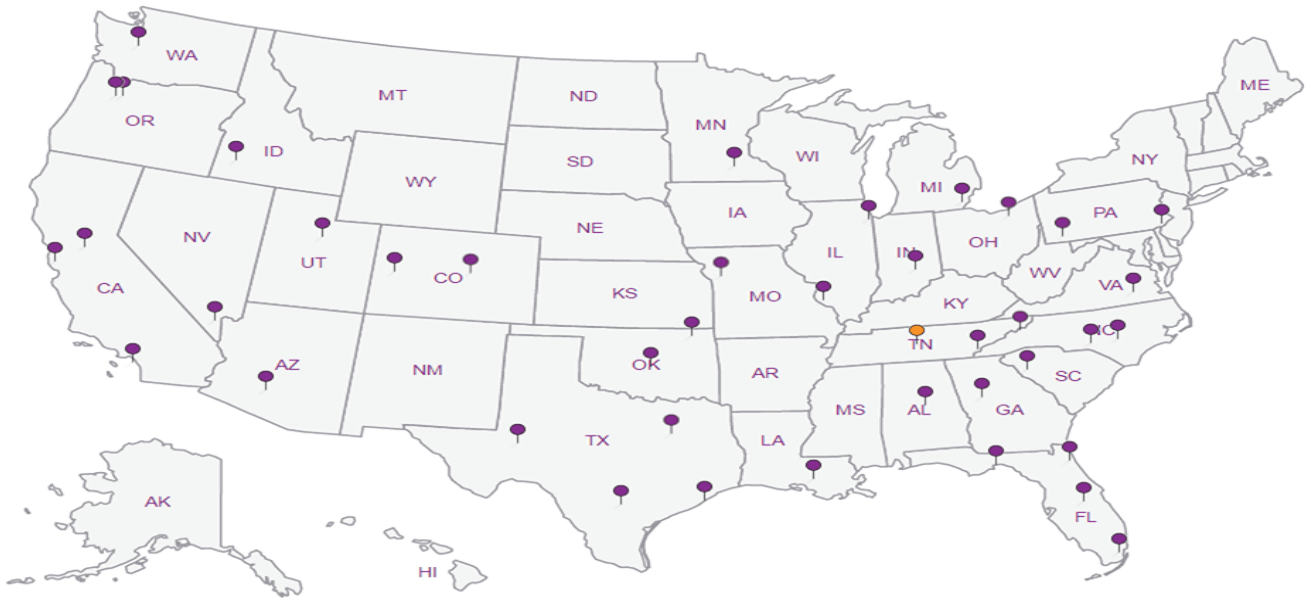
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



DHL Analytical, Inc.
2300 Double Creek Drive
Round Rock, TX 78664
TEL: *(512) 388-8222* FAX: *(512) 388-8229*

CHAIN-OF-CUSTODY RECORD

G111

Work Order: 2005110

Subcontractor:

Pace Analytical
12065 Lebanon Rd
Mt. Juliet, TN 37122

TEL: (615) 773-5923
FAX:
Acct #: DHLRRTX

1219693

14-May-20

Sample ID	Matrix	DHL#	Date Collected	Bottle Type	Requested Tests						
					Ra-228	Ra-226					
					E904.0	M7500 Ra B M					
Lake Sample	Aqueous	01D	05/13/20 02:00 PM	1LHDPEHNO3		1					01
Lake Sample	Aqueous	01E	05/13/20 02:00 PM	1LHDPEHNO3	1						01
Pond Sample	Aqueous	02D	05/13/20 02:25 PM	1LHDPEHNO3		1					02
Pond Sample	Aqueous	02E	05/13/20 02:25 PM	1LHDPEHNO3	1						02

General Comments:

Please analyze these samples with Normal Turnaround Time.
Report RA-226, Ra-228 & Combined per Specs.
Quality Control Package Needed: Standard - NELAC Rad Test compliant
Email to cac@dhlanalytical.com & dupont@dhlanalytical.com

		Date/Time		Date/Time
Relinquished by:	[signature]	5/14/20 1700	**Received by:** Carol Kemp	5/15/20 9:45
Relinquished by:			**Received by:**	

Amb

Pace Analytical National Center for Testing & Innovation
Cooler Receipt Form

Client: DHLRRTx		1219693	
Cooler Received/Opened On: 5 / 18 / 20	Temperature:	Amb	
Received By: Carol Kemp			
Signature: Carol Kemp			

Receipt Check List	NP	Yes	No
COC Seal Present / Intact?	✓		
COC Signed / Accurate?		✓	
Bottles arrive intact?		✓	
Correct bottles used?		✓	
Sufficient volume sent?		✓	
If Applicable			
VOA Zero headspace?			
Preservation Correct / Checked?		✓	

November 06, 2020

Will Vienne
Golder
2201 Double Creek Dr #4004
Round Rock, Texas 78664
TEL: (512) 671-3434
FAX (512) 671-3446

Order No.: 2010054

RE: Luminant-MLSES Ash Ponds

Dear Will Vienne:

DHL Analytical, Inc. received 8 sample(s) on 10/8/2020 for the analyses presented in the following report.

There were no problems with the analyses and all data met requirements of NELAP except where noted in the Case Narrative. All non-NELAP methods will be identified accordingly in the case narrative and all estimated uncertainties of test results are within method or EPA specifications.

If you have any questions regarding these tests results, please feel free to call. Thank you for using DHL Analytical.

Sincerely,

John DuPont
General Manager

This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211-20-25

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Subcontract Report 2010054 44

DHL ANALYTICAL
2300 Double Creek Dr. ■ Round Rock, TX 78664
Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

№ 69783

CHAIN-OF-CUSTODY

APPENDIX E Revision 2 February 27, 2024

CLIENT: GOLDER
ADDRESS: 2201 DOUBLE CREEK DR #4004 - ROUND ROCK, TX 78664
PHONE: 512-671-3434 FAX/E-MAIL:
DATA REPORTED TO: WILL VIENNE
ADDITIONAL REPORT COPIES TO:

DATE: 10-7-20 PAGE 1 OF 1
PO #: 1912-2262 DHL WORK ORDER #: 2010054
PROJECT LOCATION OR NAME: LUMINANT - MCSES ASH PONDS
CLENT PROJECT #: 19122262 - C2020 COLLECTOR: J. BRAYTON

Authorize 5% surcharge for TRRP Report? ❑ Yes ❑ No

S=SOIL W=WATER A=AIR L=LIQUID SE=SEDIMENT
P=PAINT SL=SLUDGE O=OTHER SO=SOLID

PRESERVATION: HCl | HNO_3 | H_2SO_4 ❑ NaOH ❑ | ICE | UNPRESERVED

ANALYSES: BTEX ❑ MTBE ❑ (METHOD 8021) | TPH 1005 ❑ TPH 1006 ❑ HOLD 1006 ❑ | GRO (METHOD 8015) ❑ DRO (METHOD 8105) ❑ | VOC 8260 ❑ VOC 624 ❑ VOC 8260/5035 ❑ | SVOC 8270 ❑ PAH 8270 ❑ HOLD PAH ❑ SVOC 625 ❑ | 8270 PEST ❑ 625 PEST/PCB ❑ 608 PCB ❑ | 8270 O-P PEST ❑ 8082 PCB ❑ 8270 PCB ❑ | 8321 HERB ❑ T PHOS, AMMONIA ❑ | METALS 6020 ❑ METALS 200.8 ❑ DISS. METALS ❑ | RCRA ❑ TX11 ❑ | PH ❑ HEX CHROM ❑ ALKALINITY ❑ COD ❑ | CHLORIDE ❑ ANIONS ❑ | TCLP-SVOC ❑ VOC ❑ PEST ❑ HERB ❑ | TCLP-METALS ❑ RCRA 8 ❑ TX-11 ❑ Pb ❑ | RCI ❑ FLASHPOINT ❑ DGAS ❑ | TDS ❑ TSS ❑ % MOISTURE ❑ CYANIDE ❑ | APPENDIX IV

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	HCl	HNO_3	H_2SO_4 ❑ NaOH ❑	ICE	UNPRESERVED	ANALYSES	FIELD NOTES
H-28	01	10-6-20	0950	W	P	4		X		X	X	X	ⓐ NO: Sb, Hg, Mo, Tl on any samples
H-29	02		1040	W	P	4		X		X	X	X	
H-31	03		1125	W	P	4		X		X	X	X	
H-32	04		1220	W	P	4		X		X	X	X	
H-33	05		1315	W	P	4		X		X	X	X	
DUP-01	06		1315	W	P	4		X		X	X	X	
H-26	07		1405	W	P	4		X		X	X	X	
H-27	08	"	1500	W	P	4		X		X	X	X	

RELINQUISHED BY: (Signature) DATE/TIME 10-7-20 1630 RECEIVED BY: (Signature) fedex
RELINQUISHED BY: (Signature) fedex DATE/TIME 10/8/20 0902 RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature) DATE/TIME RECEIVED BY: (Signature)

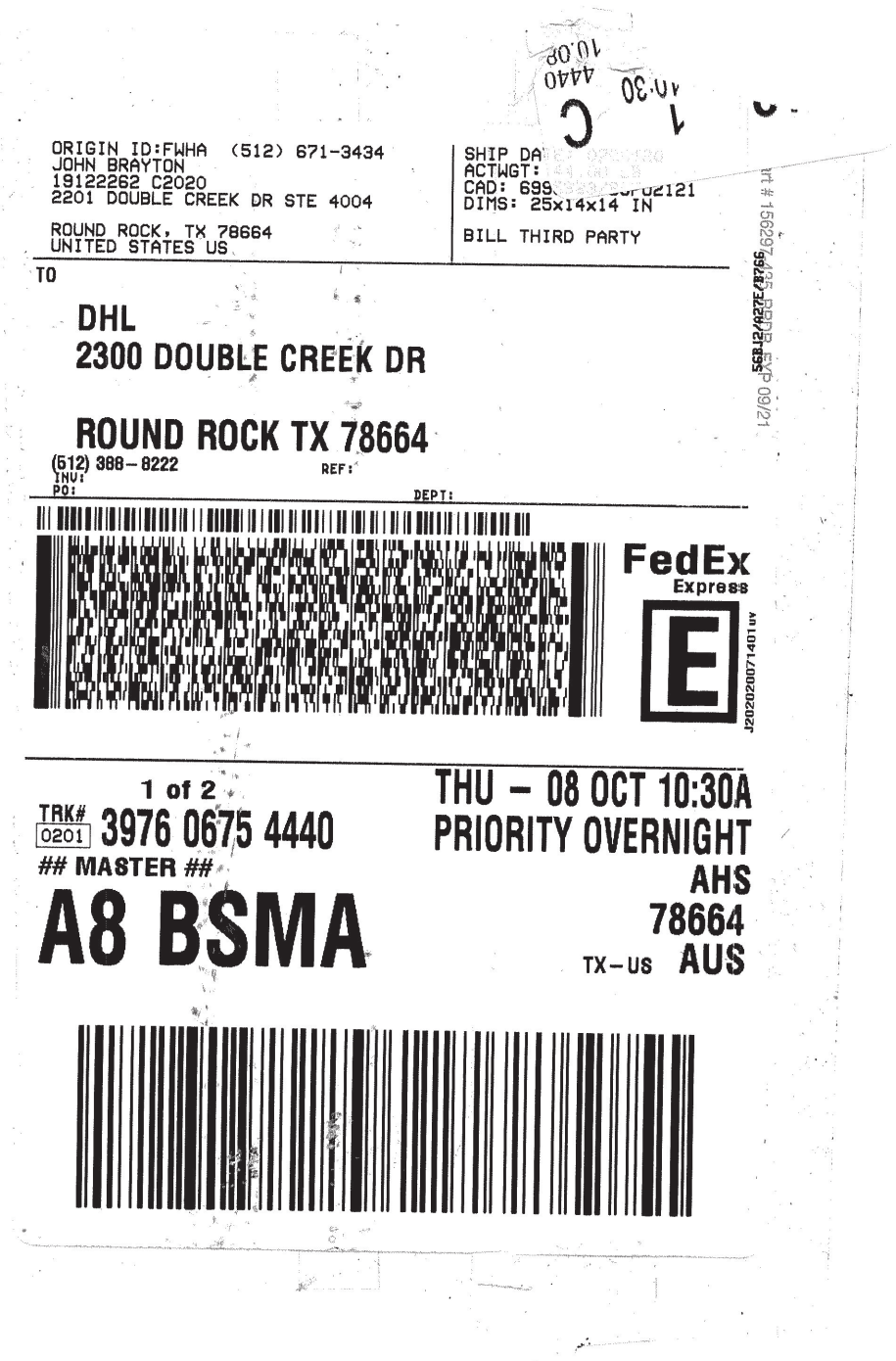
❑ DHL DISPOSAL @ $5.00 each ❑ Return

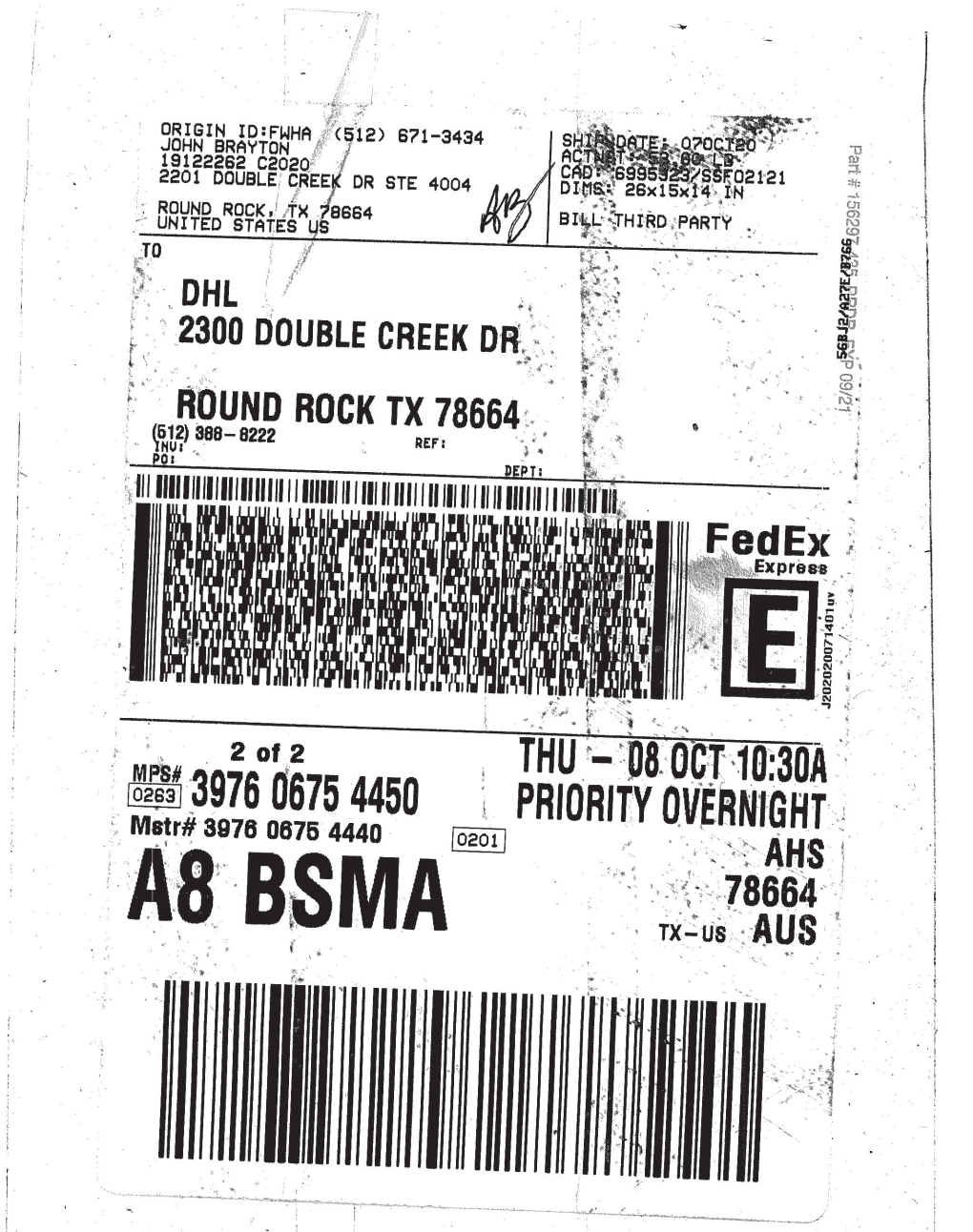
3

TURN AROUND TIME
RUSH ❑ CALL FIRST
1 DAY ❑ CALL FIRST
2 DAY ❑
NORMAL ☑
OTHER ❑

LABORATORY USE ONLY:
RECEIVING TEMP: 0.4°C/0.3°C THERM #: 78
CUSTODY SEALS: ❑ BROKEN ❑ INTACT ☑ NOT USED
CARRIER: ❑ LONE STAR ☑ FEDEX ❑ UPS ❑ OTHER
❑ COURIER DELIVERY
❑ HAND DELIVERED

DHL COC Rev 1 | FEB 2010


ORIGIN ID:FWHA (512) 671-3434
JOHN BRAYTON
19122262 C2020
2201 DOUBLE CREEK DR STE 4004
ROUND ROCK, TX 78664
UNITED STATES US
SHIP DA
ACTWGT:
CAD: 699
DIMS: 25x14x14 IN
BILL THIRD PARTY
TO
DHL
2300 DOUBLE CREEK DR
ROUND ROCK TX 78664
(512) 388-8222
INV:
PO:
REF:
DEPT:
FedEx
Express
1 of 2
TRK# 0201 3976 0675 4440
MASTER
A8 BSMA
THU - 08 OCT 10:30A
PRIORITY OVERNIGHT
AHS
78664
TX-US AUS


ORIGIN ID:FWHA (512) 671-3434
JOHN BRAYTON
19122262 C2020
2201 DOUBLE CREEK DR STE 4004
ROUND ROCK, TX 78664
UNITED STATES US
SHIP DATE: 07OCT20
ACTWGT: 58.00 LB
CAD: 6995923/SSFO2121
DIMS: 26x15x14 IN
BILL THIRD PARTY
TO
DHL
2300 DOUBLE CREEK DR
ROUND ROCK TX 78664
(512) 388-8222
INV:
PO:
REF:
DEPT:
FedEx
Express
2 of 2
MPS# 3976 0675 4450
0263
Mstr# 3976 0675 4440
0201
A8 BSMA
THU - 08 OCT 10:30A
PRIORITY OVERNIGHT
AHS
78664
TX-US AUS

DHL Analytical, Inc.

Sample Receipt Checklist

Client Name **Golder**

Date Received: **10/8/2020**

Work Order Number **2010054**

Received by: **RA**

Checklist completed by: _____ 10/8/2020
Signature | Date

Reviewed by DL 10/8/2020
Initials | Date

Carrier name: FedEx 1day

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	**0.4** °C
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH<2 acceptable upon receipt?	Yes ☑	No ☐	NA ☐ LOT # 13171
	Adjusted? no		Checked by EL
Water - ph>9 (S) or ph>10 (CN) acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted? _____		Checked by _____

Any No response must be detailed in the comments section below.

Client contacted: _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments: _____

Corrective Action: _____

Laboratory Name: DHL Analytical, Inc.

Laboratory Review Checklist: Reportable Data

Project Name: Luminant-MLSES Ash Ponds	**LRC Date:** 11/6/20
Reviewer Name: Carlos Castro	**Laboratory Work Order:** 2010054
Prep Batch Number(s): See Prep Dates Report	**Run Batch:** See Analytical Dates Report

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
		Chain-of-Custody (C-O-C)					
R1	OI	**1)** Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				**R1-01**
		2) Were all departures from standard conditions described in an exception report?			X		
R2	OI	**Sample and Quality Control (QC) Identification**					
		1) Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		2) Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	OI	**Test Reports**					
		1) Were all samples prepared and analyzed within holding times?	X				
		2) Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
		3) Were calculations checked by a peer or supervisor?	X				
		4) Were all analyte identifications checked by a peer or supervisor?	X				
		5) Were sample detection limits reported for all analytes not detected?	X				
		6) Were all results for soil and sediment samples reported on a dry weight basis?			X		
		7) Were % moisture (or solids) reported for all soil and sediment samples?			X		
		8) Were bulk soils/solids samples for volatile analysis extracted with methanol per EPA Method 5035?			X		
		9) If required for the project, TICs reported?			X		
R4	O	**Surrogate Recovery Data**					
		1) Were surrogates added prior to extraction?			X		
		2) Were surrogate percent recoveries in all samples within the laboratory QC limits?			X		
R5	OI	**Test Reports/Summary Forms for Blank Samples**					
		1) Were appropriate type(s) of blanks analyzed?	X				
		2) Were blanks analyzed at the appropriate frequency?	X				
		3) Where method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		4) Were blank concentrations < MDL?	X				
		5) For analyte(s) detected in a blank sample, was the concentration, unadjusted for sample specific factors, in all associated field samples, **greater** than 10 times the concentration in the blank sample?			X		
R6	OI	**Laboratory Control Samples (LCS):**					
		1) Were all COCs included in the LCS?	X				
		2) Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		3) Were LCSs analyzed at the required frequency?	X				
		4) Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		5) Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		6) Was the LCSD RPD within QC limits (if applicable)?	X				
R7	OI	**Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Data**					
		1) Were the project/method specified analytes included in the MS and MSD?	X				
		2) Were MS/MSD analyzed at the appropriate frequency?	X				
		3) Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?		X			**R7-03**
		4) Were MS/MSD RPDs within laboratory QC limits?	X				
R8	OI	**Analytical Duplicate Data**					
		1) Were appropriate analytical duplicates analyzed for each matrix?	X				
		2) Were analytical duplicates analyzed at the appropriate frequency?	X				
		3) Were RPDs or relative standard deviations within the laboratory QC limits?	X				
R9	OI	**Method Quantitation Limits (MQLs):**					
		1) Are the MQLs for each method analyte included in the laboratory data package?	X				
		2) Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
		3) Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
R10	OI	**Other Problems/Anomalies**					
		1) Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				**R10-01**
		2) Was applicable and available technology used to lower the SDL to minimize the matrix interference affects on the sample results?	X				
		3) Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices and methods associated with this laboratory data package?	X				

Laboratory Name: DHL Analytical, Inc.

Laboratory Review Checklist (continued): Supporting Data

Project Name: Luminant-MLSES Ash Ponds	**LRC Date:** 11/6/20
Reviewer Name: Carlos Castro	**Laboratory Work Order:** 2010054
Prep Batch Number(s): See Prep Dates Report	**Run Batch:** See Analytical Dates Report

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
S1	OI	**Initial Calibration (ICAL)**					
		1) Were response factors and/or relative response factors for each analyte within QC limits?	X				
		2) Were percent RSDs or correlation coefficient criteria met?	X				
		3) Was the number of standards recommended in the method used for all analytes?	X				
		4) Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		5) Are ICAL data available for all instruments used?	X				
		6) Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	**Initial and Continuing calibration Verification (ICCV and CCV) and Continuing Calibration blank (CCB):**					
		1) Was the CCV analyzed at the method-required frequency?	X				
		2) Were percent differences for each analyte within the method-required QC limits?	X				
		3) Was the ICAL curve verified for each analyte?	X				
		4) Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	X				
S3	O	**Mass Spectral Tuning:**					
		1) Was the appropriate compound for the method used for tuning?	X				
		2) Were ion abundance data within the method-required QC limits?	X				
S4	O	**Internal Standards (IS):**					
		1) Were IS area counts and retention times within the method-required QC limits?	X				
S5	OI	**Raw Data (NELAC Section 5.5.10)**					
		1) Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		2) Were data associated with manual integrations flagged on the raw data?	X				
S6	O	**Dual Column Confirmation**					
		1) Did dual column confirmation results meet the method-required QC?			X		
S7	O	**Tentatively Identified Compounds (TICs):**					
		1) If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) Results:**					
		1) Were percent recoveries within method QC limits?	X				
S9	I	**Serial Dilutions, Post Digestion Spikes, and Method of Standard Additions**					
		1) Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	X				
S10	OI	**Method Detection Limit (MDL) Studies**					
		1) Was a MDL study performed for each reported analyte?	X				
		2) Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	**Proficiency Test Reports:**					
		1) Was the lab's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	**Standards Documentation**					
		1) Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound/Analyte Identification Procedures**					
		1) Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of Analyst Competency (DOC)**					
		1) Was DOC conducted consistent with NELAC Chapter 5 – Appendix C?	X				
		2) Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/Validation Documentation for Methods** (NELAC Chapter 5)					
		1) Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	**Laboratory Standard Operating Procedures (SOPs):**					
		1) Are laboratory SOPs current and on file for each method performed?	X				

1 Items identified by the letter "R" should be included in the laboratory data package submitted to the TCEQ in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
2 O = organic analyses; I = inorganic analyses (and general chemistry, when applicable).
3 NA = Not applicable.
4 NR = Not Reviewed.
5 ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Data Package Signature Page – RG-366/TRRP-13

This data package consists of:

This signature page, the laboratory review checklist, and the following reportable data:

R1 Field chain-of-custody documentation;
R2 Sample identification cross-reference;
R3 Test reports (analytical data sheets) for each environmental sample that includes:
  a) Items consistent with NELAC Chapter 5,
  b) dilution factors,
  c) preparation methods,
  d) cleanup methods, and
  e) if required for the project, tentatively identified compounds (TICs).
R4 Surrogate recovery data including:
  a) Calculated recovery (%R), and
  b) The laboratory's surrogate QC limits.
R5 Test reports/summary forms for blank samples;
R6 Test reports/summary forms for laboratory control samples (LCSs) including:
  a) LCS spiking amounts,
  b) Calculated %R for each analyte, and
  c) The laboratory's LCS QC limits.
R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
  a) Samples associated with the MS/MSD clearly identified,
  b) MS/MSD spiking amounts,
  c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
  d) Calculated %Rs and relative percent differences (RPDs), and
  e) The laboratory's MS/MSD QC limits
R8 Laboratory analytical duplicate (if applicable) recovery and precision:
  a) The amount of analyte measured in the duplicate,
  b) The calculated RPD, and
  c) The laboratory's QC limits for analytical duplicates.
R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix;
R10 Other problems or anomalies.

The Exception Report for each "No" or "Not Reviewed (NR)" item in the Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory is not accredited under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature below, I affirm to the best of my knowledge that all problems/anomalies observed by the laboratory have been identified in the Laboratory Review Checklist, and no information or data affecting the quality of the data has been knowingly withheld.

This laboratory was last inspected by TCEQ on February 25-28 2019. Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Name: John DuPont
Official Title: General Manager

Signature

11/06/20
Date

Name: Dr. Derhsing Luu
Official Title: Technical Director

DHL Analytical, Inc. **Date:** *06-Nov-20*

CLIENT: Golder
Project: Luminant-MLSES Ash Ponds
Lab Order: 2010054

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Method SW6020B - Metals Analysis
Method SW7470A - Mercury Analysis
Method E300 - Anions Analysis
Method M2540C - TDS Analysis
Sub-contract - Radium-228 and Radium-226 analyses by methods E904 and SM 7500 Ra B M. Analyzed at Pace Analytical.

Exception Report R1-01

The samples were received and log-in performed on 10/8/20. A total of 8 samples were received. The samples arrived in good condition and were properly packaged.

Exception Report R7-03

For Anions analysis performed on 10/12/20 (batch 98167) the matrix spike and matrix spike duplicate recoveries (2010043-01 MS/MSD) were slightly below control limits for Sulfate. These are flagged accordingly in the QC summary report. The sample selected for the matrix spike and matrix spike duplicate was not from this work order. The LCS was within control limits for this analyte. No further corrective actions were taken.

For Metals analysis performed on 10/13/20 the matrix spike recovery was slightly above control limits for Boron. This is flagged accordingly. The sample selected for the matrix spike and matrix spike duplicate was not from this work order. The LCS was within control limits for this analyte. No further corrective actions were taken.

Exception Report R10-01

For Anions analysis (batch 98187) an MS/MSD was not performed. An LCS/LCSD was performed instead.

DHL Analytical, Inc.

Date: *06-Nov-20*

CLIENT: Golder
Project: Luminant-MLSES Ash Ponds
Lab Order: 2010054

Work Order Sample Summary

Lab Smp ID	Client Sample ID	Tag Number	Date Collected	Date Recved
2010054-01	H-28		10/06/20 09:50 AM	10/8/2020
2010054-02	H-29		10/06/20 10:40 AM	10/8/2020
2010054-03	H-31		10/06/20 11:25 AM	10/8/2020
2010054-04	H-32		10/06/20 12:20 PM	10/8/2020
2010054-05	H-33		10/06/20 01:15 PM	10/8/2020
2010054-06	Dup-01		10/06/20 01:15 PM	10/8/2020
2010054-07	H-26		10/06/20 02:05 PM	10/8/2020
2010054-08	H-27		10/06/20 03:00 PM	10/8/2020

DHL Analytical, Inc. *06-Nov-20*

Lab Order: 2010054
Client: Golder
Project: Luminant-MLSES Ash Ponds

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
2010054-01A	H-28	10/06/20 09:50 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/09/20 09:26 AM	98154
	H-28	10/06/20 09:50 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/09/20 09:26 AM	98154
	H-28	10/06/20 09:50 AM	Aqueous	SW7470A	Mercury Aq Prep	10/12/20 12:04 PM	98173
2010054-01B	H-28	10/06/20 09:50 AM	Aqueous	E300	Anion Preparation	10/12/20 09:16 AM	98167
	H-28	10/06/20 09:50 AM	Aqueous	E300	Anion Preparation	10/12/20 09:16 AM	98187
	H-28	10/06/20 09:50 AM	Aqueous	M2540C	TDS Preparation	10/09/20 11:19 AM	98156
2010054-02A	H-29	10/06/20 10:40 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/09/20 09:26 AM	98154
	H-29	10/06/20 10:40 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/09/20 09:26 AM	98154
	H-29	10/06/20 10:40 AM	Aqueous	SW7470A	Mercury Aq Prep	10/12/20 12:04 PM	98173
2010054-02B	H-29	10/06/20 10:40 AM	Aqueous	E300	Anion Preparation	10/12/20 09:16 AM	98167
	H-29	10/06/20 10:40 AM	Aqueous	E300	Anion Preparation	10/12/20 09:16 AM	98187
	H-29	10/06/20 10:40 AM	Aqueous	M2540C	TDS Preparation	10/09/20 11:19 AM	98156
2010054-03A	H-31	10/06/20 11:25 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/09/20 09:26 AM	98154
	H-31	10/06/20 11:25 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/09/20 09:26 AM	98154
	H-31	10/06/20 11:25 AM	Aqueous	SW7470A	Mercury Aq Prep	10/12/20 12:04 PM	98173
2010054-03B	H-31	10/06/20 11:25 AM	Aqueous	E300	Anion Preparation	10/12/20 09:16 AM	98167
	H-31	10/06/20 11:25 AM	Aqueous	E300	Anion Preparation	10/12/20 09:16 AM	98187
	H-31	10/06/20 11:25 AM	Aqueous	E300	Anion Preparation	10/12/20 09:16 AM	98187
	H-31	10/06/20 11:25 AM	Aqueous	M2540C	TDS Preparation	10/09/20 11:19 AM	98156
2010054-04A	H-32	10/06/20 12:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/09/20 09:26 AM	98154
	H-32	10/06/20 12:20 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/09/20 09:26 AM	98154
	H-32	10/06/20 12:20 PM	Aqueous	SW7470A	Mercury Aq Prep	10/12/20 12:04 PM	98173
2010054-04B	H-32	10/06/20 12:20 PM	Aqueous	E300	Anion Preparation	10/12/20 09:16 AM	98187
	H-32	10/06/20 12:20 PM	Aqueous	E300	Anion Preparation	10/12/20 09:16 AM	98167
	H-32	10/06/20 12:20 PM	Aqueous	M2540C	TDS Preparation	10/09/20 11:19 AM	98156
2010054-05A	H-33	10/06/20 01:15 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/09/20 09:26 AM	98154
	H-33	10/06/20 01:15 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/09/20 09:26 AM	98154
	H-33	10/06/20 01:15 PM	Aqueous	SW7470A	Mercury Aq Prep	10/12/20 12:04 PM	98173

DHL Analytical, Inc.

06-Nov-20

Lab Order: 2010054
Client: Golder
Project: Luminant-MLSES Ash Ponds

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
2010054-05B	H-33	10/06/20 01:15 PM	Aqueous	E300	Anion Preparation	10/12/20 09:16 AM	98167
	H-33	10/06/20 01:15 PM	Aqueous	E300	Anion Preparation	10/12/20 09:16 AM	98187
	H-33	10/06/20 01:15 PM	Aqueous	M2540C	TDS Preparation	10/09/20 11:19 AM	98156
2010054-06A	Dup-01	10/06/20 01:15 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/09/20 09:26 AM	98154
	Dup-01	10/06/20 01:15 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/09/20 09:26 AM	98154
	Dup-01	10/06/20 01:15 PM	Aqueous	SW7470A	Mercury Aq Prep	10/12/20 12:04 PM	98173
2010054-06B	Dup-01	10/06/20 01:15 PM	Aqueous	E300	Anion Preparation	10/12/20 09:16 AM	98187
	Dup-01	10/06/20 01:15 PM	Aqueous	E300	Anion Preparation	10/12/20 09:16 AM	98167
	Dup-01	10/06/20 01:15 PM	Aqueous	M2540C	TDS Preparation	10/09/20 11:19 AM	98156
2010054-07A	H-26	10/06/20 02:05 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/09/20 09:26 AM	98154
	H-26	10/06/20 02:05 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/09/20 09:26 AM	98154
	H-26	10/06/20 02:05 PM	Aqueous	SW7470A	Mercury Aq Prep	10/12/20 12:04 PM	98173
2010054-07B	H-26	10/06/20 02:05 PM	Aqueous	E300	Anion Preparation	10/12/20 09:16 AM	98167
	H-26	10/06/20 02:05 PM	Aqueous	E300	Anion Preparation	10/12/20 09:16 AM	98187
	H-26	10/06/20 02:05 PM	Aqueous	M2540C	TDS Preparation	10/09/20 11:19 AM	98156
2010054-08A	H-27	10/06/20 03:00 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/09/20 09:26 AM	98154
	H-27	10/06/20 03:00 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	10/09/20 09:26 AM	98154
	H-27	10/06/20 03:00 PM	Aqueous	SW7470A	Mercury Aq Prep	10/12/20 12:04 PM	98173
2010054-08B	H-27	10/06/20 03:00 PM	Aqueous	E300	Anion Preparation	10/12/20 09:16 AM	98167
	H-27	10/06/20 03:00 PM	Aqueous	E300	Anion Preparation	10/12/20 09:16 AM	98187
	H-27	10/06/20 03:00 PM	Aqueous	M2540C	TDS Preparation	10/09/20 11:19 AM	98156

DHL Analytical, Inc. *06-Nov-20*

Lab Order: 2010054
Client: Golder
Project: Luminant-MLSES Ash Ponds

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
2010054-01A	H-28	Aqueous	SW7470A	Mercury Total: Aqueous	98173	1	10/14/20 02:56 PM	CETAC2_HG_201014A
	H-28	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	98154	20	10/13/20 01:02 PM	ICP-MS4_201013A
	H-28	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	98154	1	10/12/20 12:05 PM	ICP-MS5_201012A
2010054-01B	H-28	Aqueous	E300	Anions by IC method - Water	98167	1	10/12/20 09:32 PM	IC2_201012A
	H-28	Aqueous	E300	Anions by IC method - Water	98187	10	10/13/20 05:42 PM	IC2_201013A
	H-28	Aqueous	M2540C	Total Dissolved Solids	98156	1	10/09/20 04:15 PM	WC_201009A
2010054-02A	H-29	Aqueous	SW7470A	Mercury Total: Aqueous	98173	1	10/14/20 02:58 PM	CETAC2_HG_201014A
	H-29	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	98154	50	10/13/20 01:04 PM	ICP-MS4_201013A
	H-29	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	98154	1	10/12/20 12:08 PM	ICP-MS5_201012A
2010054-02B	H-29	Aqueous	E300	Anions by IC method - Water	98167	1	10/12/20 09:48 PM	IC2_201012A
	H-29	Aqueous	E300	Anions by IC method - Water	98187	10	10/13/20 05:58 PM	IC2_201013A
	H-29	Aqueous	M2540C	Total Dissolved Solids	98156	1	10/09/20 04:15 PM	WC_201009A
2010054-03A	H-31	Aqueous	SW7470A	Mercury Total: Aqueous	98173	1	10/14/20 03:00 PM	CETAC2_HG_201014A
	H-31	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	98154	1	10/12/20 12:10 PM	ICP-MS5_201012A
	H-31	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	98154	50	10/13/20 01:06 PM	ICP-MS4_201013A
2010054-03B	H-31	Aqueous	E300	Anions by IC method - Water	98167	1	10/12/20 10:04 PM	IC2_201012A
	H-31	Aqueous	E300	Anions by IC method - Water	98187	100	10/13/20 07:34 PM	IC2_201013A
	H-31	Aqueous	E300	Anions by IC method - Water	98187	10	10/13/20 07:50 PM	IC2_201013A
	H-31	Aqueous	M2540C	Total Dissolved Solids	98156	1	10/09/20 04:15 PM	WC_201009A
2010054-04A	H-32	Aqueous	SW7470A	Mercury Total: Aqueous	98173	1	10/14/20 03:03 PM	CETAC2_HG_201014A
	H-32	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	98154	10	10/13/20 01:08 PM	ICP-MS4_201013A
	H-32	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	98154	1	10/12/20 12:12 PM	ICP-MS5_201012A
2010054-04B	H-32	Aqueous	E300	Anions by IC method - Water	98187	10	10/13/20 06:14 PM	IC2_201013A
	H-32	Aqueous	E300	Anions by IC method - Water	98167	1	10/12/20 10:20 PM	IC2_201012A
	H-32	Aqueous	M2540C	Total Dissolved Solids	98156	1	10/09/20 04:15 PM	WC_201009A
2010054-05A	H-33	Aqueous	SW7470A	Mercury Total: Aqueous	98173	1	10/14/20 03:05 PM	CETAC2_HG_201014A

DHL Analytical, Inc. *06-Nov-20*

Lab Order: 2010054
Client: Golder
Project: Luminant-MLSES Ash Ponds

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
2010054-05A	H-33	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	98154	1	10/13/20 01:23 PM	ICP-MS4_201013A
	H-33	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	98154	1	10/12/20 12:14 PM	ICP-MS5_201012A
2010054-05B	H-33	Aqueous	E300	Anions by IC method - Water	98167	1	10/12/20 10:36 PM	IC2_201012A
	H-33	Aqueous	E300	Anions by IC method - Water	98187	10	10/13/20 06:30 PM	IC2_201013A
	H-33	Aqueous	M2540C	Total Dissolved Solids	98156	1	10/09/20 04:15 PM	WC_201009A
2010054-06A	Dup-01	Aqueous	SW7470A	Mercury Total: Aqueous	98173	1	10/14/20 03:07 PM	CETAC2_HG_201014A
	Dup-01	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	98154	1	10/13/20 01:12 PM	ICP-MS4_201013A
	Dup-01	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	98154	1	10/12/20 12:16 PM	ICP-MS5_201012A
2010054-06B	Dup-01	Aqueous	E300	Anions by IC method - Water	98187	10	10/13/20 06:46 PM	IC2_201013A
	Dup-01	Aqueous	E300	Anions by IC method - Water	98167	1	10/13/20 12:12 AM	IC2_201012A
	Dup-01	Aqueous	M2540C	Total Dissolved Solids	98156	1	10/09/20 04:15 PM	WC_201009A
2010054-07A	H-26	Aqueous	SW7470A	Mercury Total: Aqueous	98173	1	10/14/20 03:10 PM	CETAC2_HG_201014A
	H-26	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	98154	2	10/13/20 01:17 PM	ICP-MS4_201013A
	H-26	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	98154	1	10/12/20 12:19 PM	ICP-MS5_201012A
2010054-07B	H-26	Aqueous	E300	Anions by IC method - Water	98167	1	10/13/20 12:28 AM	IC2_201012A
	H-26	Aqueous	E300	Anions by IC method - Water	98187	10	10/13/20 07:02 PM	IC2_201013A
	H-26	Aqueous	M2540C	Total Dissolved Solids	98156	1	10/09/20 04:15 PM	WC_201009A
2010054-08A	H-27	Aqueous	SW7470A	Mercury Total: Aqueous	98173	1	10/14/20 03:12 PM	CETAC2_HG_201014A
	H-27	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	98154	2	10/13/20 01:19 PM	ICP-MS4_201013A
	H-27	Aqueous	SW6020B	Trace Metals: ICP-MS - Water	98154	1	10/12/20 12:21 PM	ICP-MS5_201012A
2010054-08B	H-27	Aqueous	E300	Anions by IC method - Water	98167	1	10/13/20 12:44 AM	IC2_201012A
	H-27	Aqueous	E300	Anions by IC method - Water	98187	10	10/13/20 07:18 PM	IC2_201013A
	H-27	Aqueous	M2540C	Total Dissolved Solids	98156	1	10/09/20 04:15 PM	WC_201009A

DHL Analytical, Inc.

Date: *06-Nov-20*

CLIENT:	Golder	**Client Sample ID:**	H-28
Project:	Luminant-MLSES Ash Ponds	**Lab ID:**	2010054-01
Project No:	19122262-C2020	**Collection Date:**	10/06/20 09:50 AM
Lab Order:	2010054	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	10/12/20 12:05 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	10/12/20 12:05 PM
Barium	0.0166	0.00300	0.0100		mg/L	1	10/12/20 12:05 PM
Beryllium	0.00563	0.000300	0.00100		mg/L	1	10/12/20 12:05 PM
Boron	5.14	0.200	0.600		mg/L	20	10/13/20 01:02 PM
Cadmium	0.000835	0.000300	0.00100	J	mg/L	1	10/12/20 12:05 PM
Calcium	70.8	2.00	6.00		mg/L	20	10/13/20 01:02 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	10/12/20 12:05 PM
Cobalt	0.145	0.00300	0.00500		mg/L	1	10/12/20 12:05 PM
Lead	0.00106	0.000300	0.00100		mg/L	1	10/12/20 12:05 PM
Lithium	0.173	0.00500	0.0100		mg/L	1	10/12/20 12:05 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	10/12/20 12:05 PM
Selenium	0.00468	0.00200	0.00500	J	mg/L	1	10/12/20 12:05 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	10/12/20 12:05 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **JVR**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	10/14/20 02:56 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **BM**
Chloride	88.7	3.00	10.0		mg/L	10	10/13/20 05:42 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	10/12/20 09:32 PM
Sulfate	638	10.0	30.0		mg/L	10	10/13/20 05:42 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	1220	50.0	50.0		mg/L	1	10/09/20 04:15 PM

Qualifiers:

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N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *06-Nov-20*

CLIENT:	Golder	**Client Sample ID:**	H-29
Project:	Luminant-MLSES Ash Ponds	**Lab ID:**	2010054-02
Project No:	19122262-C2020	**Collection Date:**	10/06/20 10:40 AM
Lab Order:	2010054	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	10/12/20 12:08 PM
Arsenic	0.00696	0.00200	0.00500		mg/L	1	10/12/20 12:08 PM
Barium	0.0165	0.00300	0.0100		mg/L	1	10/12/20 12:08 PM
Beryllium	0.0256	0.000300	0.00100		mg/L	1	10/12/20 12:08 PM
Boron	11.0	0.500	1.50		mg/L	50	10/13/20 01:04 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	10/12/20 12:08 PM
Calcium	156	5.00	15.0		mg/L	50	10/13/20 01:04 PM
Chromium	0.00205	0.00200	0.00500	J	mg/L	1	10/12/20 12:08 PM
Cobalt	0.377	0.00300	0.00500		mg/L	1	10/12/20 12:08 PM
Lead	0.000438	0.000300	0.00100	J	mg/L	1	10/12/20 12:08 PM
Lithium	0.164	0.00500	0.0100		mg/L	1	10/12/20 12:08 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	10/12/20 12:08 PM
Selenium	0.0513	0.00200	0.00500		mg/L	1	10/12/20 12:08 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	10/12/20 12:08 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **JVR**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	10/14/20 02:58 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **BM**
Chloride	167	3.00	10.0		mg/L	10	10/13/20 05:58 PM
Fluoride	1.76	0.100	0.400		mg/L	1	10/12/20 09:48 PM
Sulfate	1400	10.0	30.0		mg/L	10	10/13/20 05:58 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	2440	50.0	50.0		mg/L	1	10/09/20 04:15 PM

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S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *06-Nov-20*

CLIENT:	Golder	**Client Sample ID:**	H-31
Project:	Luminant-MLSES Ash Ponds	**Lab ID:**	2010054-03
Project No:	19122262-C2020	**Collection Date:**	10/06/20 11:25 AM
Lab Order:	2010054	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	10/12/20 12:10 PM
Arsenic	0.00440	0.00200	0.00500	J	mg/L	1	10/12/20 12:10 PM
Barium	0.0345	0.00300	0.0100		mg/L	1	10/12/20 12:10 PM
Beryllium	0.00923	0.000300	0.00100		mg/L	1	10/12/20 12:10 PM
Boron	9.77	0.500	1.50		mg/L	50	10/13/20 01:06 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	10/12/20 12:10 PM
Calcium	148	5.00	15.0		mg/L	50	10/13/20 01:06 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	10/12/20 12:10 PM
Cobalt	0.208	0.00300	0.00500		mg/L	1	10/12/20 12:10 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	10/12/20 12:10 PM
Lithium	0.120	0.00500	0.0100		mg/L	1	10/12/20 12:10 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	10/12/20 12:10 PM
Selenium	0.0313	0.00200	0.00500		mg/L	1	10/12/20 12:10 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	10/12/20 12:10 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **JVR**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	10/14/20 03:00 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **BM**
Chloride	110	3.00	10.0		mg/L	10	10/13/20 07:50 PM
Fluoride	0.494	0.100	0.400		mg/L	1	10/12/20 10:04 PM
Sulfate	1150	10.0	30.0		mg/L	10	10/13/20 07:50 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	2000	50.0	50.0		mg/L	1	10/09/20 04:15 PM

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C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *06-Nov-20*

CLIENT:	Golder	**Client Sample ID:**	H-32
Project:	Luminant-MLSES Ash Ponds	**Lab ID:**	2010054-04
Project No:	19122262-C2020	**Collection Date:**	10/06/20 12:20 PM
Lab Order:	2010054	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	10/12/20 12:12 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	10/12/20 12:12 PM
Barium	0.0160	0.00300	0.0100		mg/L	1	10/12/20 12:12 PM
Beryllium	0.00676	0.000300	0.00100		mg/L	1	10/12/20 12:12 PM
Boron	1.79	0.100	0.300		mg/L	10	10/13/20 01:08 PM
Cadmium	0.000380	0.000300	0.00100	J	mg/L	1	10/12/20 12:12 PM
Calcium	49.0	1.00	3.00		mg/L	10	10/13/20 01:08 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	10/12/20 12:12 PM
Cobalt	0.179	0.00300	0.00500		mg/L	1	10/12/20 12:12 PM
Lead	0.000633	0.000300	0.00100	J	mg/L	1	10/12/20 12:12 PM
Lithium	0.0946	0.00500	0.0100		mg/L	1	10/12/20 12:12 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	10/12/20 12:12 PM
Selenium	0.00378	0.00200	0.00500	J	mg/L	1	10/12/20 12:12 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	10/12/20 12:12 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **JVR**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	10/14/20 03:03 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **BM**
Chloride	116	3.00	10.0		mg/L	10	10/13/20 06:14 PM
Fluoride	0.814	0.100	0.400		mg/L	1	10/12/20 10:20 PM
Sulfate	336	10.0	30.0		mg/L	10	10/13/20 06:14 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	777	10.0	10.0		mg/L	1	10/09/20 04:15 PM

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C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *06-Nov-20*

CLIENT:	Golder	**Client Sample ID:**	H-33
Project:	Luminant-MLSES Ash Ponds	**Lab ID:**	2010054-05
Project No:	19122262-C2020	**Collection Date:**	10/06/20 01:15 PM
Lab Order:	2010054	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	10/12/20 12:14 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	10/12/20 12:14 PM
Barium	0.0680	0.00300	0.0100		mg/L	1	10/12/20 12:14 PM
Beryllium	0.000721	0.000300	0.00100	J	mg/L	1	10/12/20 12:14 PM
Boron	0.0763	0.0100	0.0300		mg/L	1	10/13/20 01:23 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	10/12/20 12:14 PM
Calcium	19.7	0.100	0.300		mg/L	1	10/12/20 12:14 PM
Chromium	0.00317	0.00200	0.00500	J	mg/L	1	10/12/20 12:14 PM
Cobalt	0.0331	0.00300	0.00500		mg/L	1	10/12/20 12:14 PM
Lead	0.000358	0.000300	0.00100	J	mg/L	1	10/12/20 12:14 PM
Lithium	0.128	0.00500	0.0100		mg/L	1	10/12/20 12:14 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	10/12/20 12:14 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	10/12/20 12:14 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	10/12/20 12:14 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **JVR**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	10/14/20 03:05 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **BM**
Chloride	83.0	3.00	10.0		mg/L	10	10/13/20 06:30 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	10/12/20 10:36 PM
Sulfate	108	1.00	3.00		mg/L	1	10/12/20 10:36 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	417	10.0	10.0		mg/L	1	10/09/20 04:15 PM

Qualifiers:

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SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *06-Nov-20*

CLIENT:	Golder	**Client Sample ID:**	Dup-01
Project:	Luminant-MLSES Ash Ponds	**Lab ID:**	2010054-06
Project No:	19122262-C2020	**Collection Date:**	10/06/20 01:15 PM
Lab Order:	2010054	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	10/12/20 12:16 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	10/12/20 12:16 PM
Barium	0.0682	0.00300	0.0100		mg/L	1	10/12/20 12:16 PM
Beryllium	0.000663	0.000300	0.00100	J	mg/L	1	10/12/20 12:16 PM
Boron	0.0870	0.0100	0.0300		mg/L	1	10/13/20 01:12 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	10/12/20 12:16 PM
Calcium	20.0	0.100	0.300		mg/L	1	10/12/20 12:16 PM
Chromium	0.00292	0.00200	0.00500	J	mg/L	1	10/12/20 12:16 PM
Cobalt	0.0332	0.00300	0.00500		mg/L	1	10/12/20 12:16 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	10/12/20 12:16 PM
Lithium	0.128	0.00500	0.0100		mg/L	1	10/12/20 12:16 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	10/12/20 12:16 PM
Selenium	<0.00200	0.00200	0.00500		mg/L	1	10/12/20 12:16 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	10/12/20 12:16 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **JVR**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	10/14/20 03:07 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **BM**
Chloride	96.7	3.00	10.0		mg/L	10	10/13/20 06:46 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	10/13/20 12:12 AM
Sulfate	108	1.00	3.00		mg/L	1	10/13/20 12:12 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	428	10.0	10.0		mg/L	1	10/09/20 04:15 PM

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C - Sample Result or QC discussed in Case Narrative
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SDL - Sample Detection Limit
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DHL Analytical, Inc.

Date: *06-Nov-20*

CLIENT:	Golder	**Client Sample ID:**	H-26
Project:	Luminant-MLSES Ash Ponds	**Lab ID:**	2010054-07
Project No:	19122262-C2020	**Collection Date:**	10/06/20 02:05 PM
Lab Order:	2010054	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	10/12/20 12:19 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	10/12/20 12:19 PM
Barium	0.0528	0.00300	0.0100		mg/L	1	10/12/20 12:19 PM
Beryllium	0.00168	0.000300	0.00100		mg/L	1	10/12/20 12:19 PM
Boron	0.473	0.0200	0.0600		mg/L	2	10/13/20 01:17 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	10/12/20 12:19 PM
Calcium	10.9	0.100	0.300		mg/L	1	10/12/20 12:19 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	10/12/20 12:19 PM
Cobalt	0.0231	0.00300	0.00500		mg/L	1	10/12/20 12:19 PM
Lead	<0.000300	0.000300	0.00100		mg/L	1	10/12/20 12:19 PM
Lithium	0.0152	0.00500	0.0100		mg/L	1	10/12/20 12:19 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	10/12/20 12:19 PM
Selenium	0.00909	0.00200	0.00500		mg/L	1	10/12/20 12:19 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	10/12/20 12:19 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **JVR**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	10/14/20 03:10 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **BM**
Chloride	68.2	3.00	10.0		mg/L	10	10/13/20 07:02 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	10/13/20 12:28 AM
Sulfate	52.0	1.00	3.00		mg/L	1	10/13/20 12:28 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	252	10.0	10.0		mg/L	1	10/09/20 04:15 PM

Qualifiers:

ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAP certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *06-Nov-20*

CLIENT:	Golder	**Client Sample ID:**	H-27
Project:	Luminant-MLSES Ash Ponds	**Lab ID:**	2010054-08
Project No:	19122262-C2020	**Collection Date:**	10/06/20 03:00 PM
Lab Order:	2010054	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020B**					Analyst: **SP**
Antimony	<0.000800	0.000800	0.00250		mg/L	1	10/12/20 12:21 PM
Arsenic	<0.00200	0.00200	0.00500		mg/L	1	10/12/20 12:21 PM
Barium	0.0519	0.00300	0.0100		mg/L	1	10/12/20 12:21 PM
Beryllium	0.00167	0.000300	0.00100		mg/L	1	10/12/20 12:21 PM
Boron	0.465	0.0200	0.0600		mg/L	2	10/13/20 01:19 PM
Cadmium	<0.000300	0.000300	0.00100		mg/L	1	10/12/20 12:21 PM
Calcium	11.0	0.100	0.300		mg/L	1	10/12/20 12:21 PM
Chromium	<0.00200	0.00200	0.00500		mg/L	1	10/12/20 12:21 PM
Cobalt	0.0233	0.00300	0.00500		mg/L	1	10/12/20 12:21 PM
Lead	0.000390	0.000300	0.00100	J	mg/L	1	10/12/20 12:21 PM
Lithium	0.0152	0.00500	0.0100		mg/L	1	10/12/20 12:21 PM
Molybdenum	<0.00200	0.00200	0.00500		mg/L	1	10/12/20 12:21 PM
Selenium	0.00961	0.00200	0.00500		mg/L	1	10/12/20 12:21 PM
Thallium	<0.000500	0.000500	0.00150		mg/L	1	10/12/20 12:21 PM
MERCURY TOTAL: AQUEOUS		**SW7470A**					Analyst: **JVR**
Mercury	<0.0000800	0.0000800	0.000200		mg/L	1	10/14/20 03:12 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **BM**
Chloride	68.0	3.00	10.0		mg/L	10	10/13/20 07:18 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	10/13/20 12:44 AM
Sulfate	51.9	1.00	3.00		mg/L	1	10/13/20 12:44 AM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	253	10.0	10.0		mg/L	1	10/09/20 04:15 PM

Qualifiers:

- ND - Not Detected at the SDL
- J - Analyte detected between SDL and RL
- B - Analyte detected in the associated Method Blank
- DF- Dilution Factor
- N - Parameter not NELAP certified
- See Final Page of Report for MQLs and MDLs
- S - Spike Recovery outside control limits
- C - Sample Result or QC discussed in Case Narrative
- RL - Reporting Limit (MQL adjusted for moisture and sample size)
- SDL - Sample Detection Limit
- E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *06-Nov-20*

CLIENT: Golder
Work Order: 2010054
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_200826A

Sample ID: **DCS-97737**	Batch ID: **97737**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **DCS**	Run ID: **CETAC2_HG_200826A**	Analysis Date: **8/26/2020 2:34:35 PM**	Prep Date: **8/26/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.000194	0.000200	0.000200	0	97.0	82	119	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2010054
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_201014A

The QC data in batch 98173 applies to the following samples: 2010054-01A, 2010054-02A, 2010054-03A, 2010054-04A, 2010054-05A, 2010054-06A, 2010054-07A, 2010054-08A

Sample ID: **MB-98173** Batch ID: **98173** TestNo: **SW7470A** Units: **mg/L**
SampType: **MBLK** Run ID: **CETAC2_HG_201014A** Analysis Date: **10/14/2020 2:13:14 PM** Prep Date: **10/12/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.0000800	0.000200								

Sample ID: **LCS-98173** Batch ID: **98173** TestNo: **SW7470A** Units: **mg/L**
SampType: **LCS** Run ID: **CETAC2_HG_201014A** Analysis Date: **10/14/2020 2:15:30 PM** Prep Date: **10/12/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00205	0.000200	0.00200	0	103	85	115			

Sample ID: **LCSD-98173** Batch ID: **98173** TestNo: **SW7470A** Units: **mg/L**
SampType: **LCSD** Run ID: **CETAC2_HG_201014A** Analysis Date: **10/14/2020 2:17:46 PM** Prep Date: **10/12/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00203	0.000200	0.00200	0	102	85	115	0.980	15	

Sample ID: **2010043-03A MS** Batch ID: **98173** TestNo: **SW7470A** Units: **mg/L**
SampType: **MS** Run ID: **CETAC2_HG_201014A** Analysis Date: **10/14/2020 2:26:50 PM** Prep Date: **10/12/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00209	0.000200	0.00200	0	104	80	120			

Sample ID: **2010043-03A MSD** Batch ID: **98173** TestNo: **SW7470A** Units: **mg/L**
SampType: **MSD** Run ID: **CETAC2_HG_201014A** Analysis Date: **10/14/2020 2:29:06 PM** Prep Date: **10/12/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00209	0.000200	0.00200	0	104	80	120	0	15	

Sample ID: **2010043-03A SD** Batch ID: **98173** TestNo: **SW7470A** Units: **mg/L**
SampType: **SD** Run ID: **CETAC2_HG_201014A** Analysis Date: **10/14/2020 2:31:22 PM** Prep Date: **10/12/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	<0.000400	0.00100	0	0				0	10	

Sample ID: **2010043-03A PDS** Batch ID: **98173** TestNo: **SW7470A** Units: **mg/L**
SampType: **PDS** Run ID: **CETAC2_HG_201014A** Analysis Date: **10/14/2020 2:33:38 PM** Prep Date: **10/12/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00251	0.000200	0.00250	0	100	85	115			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2010054
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: CETAC2_HG_201014A

Sample ID: **ICV-201014**	Batch ID: **R112654**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **ICV**	Run ID: **CETAC2_HG_201014A**	Analysis Date: **10/14/2020 2:08:40 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00379	0.000200	0.00400	0	94.8	90	110			

Sample ID: **CCV1-201014**	Batch ID: **R112654**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_201014A**	Analysis Date: **10/14/2020 2:51:48 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00196	0.000200	0.00200	0	98.0	90	110			

Sample ID: **CCV2-201014**	Batch ID: **R112654**	TestNo: **SW7470A**	Units: **mg/L**
SampType: **CCV**	Run ID: **CETAC2_HG_201014A**	Analysis Date: **10/14/2020 3:25:57 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.00198	0.000200	0.00200	0	99.0	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2010054
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_200803A

Sample ID: **DCS2-97152**	Batch ID: **97152**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS2**	Run ID: **ICP-MS4_200803A**	Analysis Date: **8/3/2020 12:37:00 PM**	Prep Date: **7/16/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.342	0.300	0.300	0	114	70	130	0	0	

Sample ID: **DCS4-97152**	Batch ID: **97152**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS4**	Run ID: **ICP-MS4_200803A**	Analysis Date: **8/3/2020 12:43:00 PM**	Prep Date: **7/16/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0277	0.0300	0.0300	0	92.4	70	130	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2010054
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_201013A

The QC data in batch 98154 applies to the following samples: 2010054-01A, 2010054-02A, 2010054-03A, 2010054-04A, 2010054-05A, 2010054-06A, 2010054-07A, 2010054-08A

Sample ID: **MB-98154** Batch ID: **98154** TestNo: **SW6020B** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_201013A** Analysis Date: **10/13/2020 12:16:00 P** Prep Date: **10/9/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	<0.0100	0.0300								

Sample ID: **LCS-98154** Batch ID: **98154** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_201013A** Analysis Date: **10/13/2020 12:18:00 P** Prep Date: **10/9/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.199	0.0300	0.200	0	99.3	80	120			

Sample ID: **LCSD-98154** Batch ID: **98154** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_201013A** Analysis Date: **10/13/2020 12:20:00 P** Prep Date: **10/9/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.197	0.0300	0.200	0	98.7	80	120	0.659	15	

Sample ID: **2010043-04A SD** Batch ID: **98154** TestNo: **SW6020B** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS4_201013A** Analysis Date: **10/13/2020 12:29:00 P** Prep Date: **10/9/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	1.32	1.50	0	1.18				10.9	20	
Calcium	80.6	15.0	0	81.1				0.556	20	

Sample ID: **2010043-04A PDS** Batch ID: **98154** TestNo: **SW6020B** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS4_201013A** Analysis Date: **10/13/2020 12:49:00 P** Prep Date: **10/9/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	3.34	0.300	2.00	1.18	108	75	125			
Calcium	132	3.00	50.0	81.1	101	75	125			

Sample ID: **2010043-04A MS** Batch ID: **98154** TestNo: **SW6020B** Units: **mg/L**
SampType: **MS** Run ID: **ICP-MS4_201013A** Analysis Date: **10/13/2020 12:51:00 P** Prep Date: **10/9/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	1.44	0.300	0.200	1.18	131	75	125			S

Sample ID: **2010043-04A MSD** Batch ID: **98154** TestNo: **SW6020B** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS4_201013A** Analysis Date: **10/13/2020 12:53:00 P** Prep Date: **10/9/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	1.43	0.300	0.200	1.18	124	75	125	1.03	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2010054
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_201013A

Sample ID: **ICV-201013**	Batch ID: **R112627**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_201013A**	Analysis Date: **10/13/2020 11:41:00 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.104	0.0300	0.100	0	104	90	110			
Calcium	2.52	0.300	2.50	0	101	90	110			

Sample ID: **LCVL-201013**	Batch ID: **R112627**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_201013A**	Analysis Date: **10/13/2020 12:10:00 P**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.0216	0.0300	0.0200	0	108	80	120			
Calcium	0.0955	0.300	0.100	0	95.5	80	120			

Sample ID: **CCV1-201013**	Batch ID: **R112627**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_201013A**	Analysis Date: **10/13/2020 12:55:00 P**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.214	0.0300	0.200	0	107	90	110			
Calcium	5.18	0.300	5.00	0	104	90	110			

Sample ID: **CCV2-201013**	Batch ID: **R112627**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_201013A**	Analysis Date: **10/13/2020 1:25:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Boron	0.202	0.0300	0.200	0	101	90	110			
Calcium	5.19	0.300	5.00	0	104	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2010054
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_200717A

Sample ID: **DCS1-97152**	Batch ID: **97152**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS**	Run ID: **ICP-MS5_200717A**	Analysis Date: **7/17/2020 12:22:00 PM**	Prep Date: **7/16/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00106	0.00250	0.00100	0	106	70	130	0	0	
Beryllium	0.000512	0.00100	0.000500	0	102	70	130	0	0	
Cadmium	0.000506	0.00100	0.000500	0	101	70	130	0	0	
Lead	0.000499	0.00100	0.000500	0	99.8	70	130	0	0	
Thallium	0.000487	0.00150	0.000500	0	97.4	70	130	0	0	

Sample ID: **DCS2-97152**	Batch ID: **97152**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS2**	Run ID: **ICP-MS5_200717A**	Analysis Date: **7/17/2020 12:24:00 PM**	Prep Date: **7/16/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.316	0.300	0.300	0	105	70	130	0	0	

Sample ID: **DCS3-97152**	Batch ID: **97152**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **DCS3**	Run ID: **ICP-MS5_200717A**	Analysis Date: **7/17/2020 12:26:00 PM**	Prep Date: **7/16/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.00466	0.00500	0.00500	0	93.2	70	130	0	0	
Barium	0.00484	0.0100	0.00500	0	96.8	70	130	0	0	
Chromium	0.00496	0.00500	0.00500	0	99.2	70	130	0	0	
Cobalt	0.00479	0.00500	0.00500	0	95.8	70	130	0	0	
Lithium	0.00505	0.0100	0.00500	0	101	70	130	0	0	
Molybdenum	0.00482	0.00500	0.00500	0	96.4	70	130	0	0	
Selenium	0.00485	0.00500	0.00500	0	97.0	70	130	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2010054
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_201012A

The QC data in batch 98154 applies to the following samples: 2010054-01A, 2010054-02A, 2010054-03A, 2010054-04A, 2010054-05A, 2010054-06A, 2010054-07A, 2010054-08A

Sample ID: **MB-98154** Batch ID: **98154** TestNo: **SW6020B** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS5_201012A** Analysis Date: **10/12/2020 11:17:00 A** Prep Date: **10/9/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.000800	0.00250								
Arsenic	<0.00200	0.00500								
Barium	<0.00300	0.0100								
Beryllium	<0.000300	0.00100								
Cadmium	<0.000300	0.00100								
Calcium	<0.100	0.300								
Chromium	<0.00200	0.00500								
Cobalt	<0.00300	0.00500								
Lead	<0.000300	0.00100								
Lithium	<0.00500	0.0100								
Molybdenum	<0.00200	0.00500								
Selenium	<0.00200	0.00500								
Thallium	<0.000500	0.00150								

Sample ID: **LCS-98154** Batch ID: **98154** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS5_201012A** Analysis Date: **10/12/2020 11:19:00 A** Prep Date: **10/9/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.201	0.00250	0.200	0	100	80	120			
Arsenic	0.205	0.00500	0.200	0	103	80	120			
Barium	0.200	0.0100	0.200	0	100	80	120			
Beryllium	0.200	0.00100	0.200	0	99.9	80	120			
Cadmium	0.199	0.00100	0.200	0	99.4	80	120			
Calcium	5.06	0.300	5.00	0	101	80	120			
Chromium	0.202	0.00500	0.200	0	101	80	120			
Cobalt	0.203	0.00500	0.200	0	101	80	120			
Lead	0.195	0.00100	0.200	0	97.7	80	120			
Lithium	0.204	0.0100	0.200	0	102	80	120			
Molybdenum	0.198	0.00500	0.200	0	98.9	80	120			
Selenium	0.211	0.00500	0.200	0	105	80	120			
Thallium	0.195	0.00150	0.200	0	97.6	80	120			

Sample ID: **LCSD-98154** Batch ID: **98154** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS5_201012A** Analysis Date: **10/12/2020 11:21:00 A** Prep Date: **10/9/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.200	0.00250	0.200	0	100	80	120	0.265	15	
Arsenic	0.201	0.00500	0.200	0	100	80	120	2.16	15	
Barium	0.202	0.0100	0.200	0	101	80	120	0.834	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

Sample ID: **LCSD-98154** Batch ID: **98154** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS5_201012A** Analysis Date: **10/12/2020 11:21:00 A** Prep Date: **10/9/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Beryllium	0.201	0.00100	0.200	0	100	80	120	0.590	15	
Cadmium	0.201	0.00100	0.200	0	100	80	120	1.09	15	
Calcium	5.04	0.300	5.00	0	101	80	120	0.254	15	
Chromium	0.200	0.00500	0.200	0	99.8	80	120	1.38	15	
Cobalt	0.199	0.00500	0.200	0	99.7	80	120	1.74	15	
Lead	0.193	0.00100	0.200	0	96.7	80	120	1.01	15	
Lithium	0.205	0.0100	0.200	0	102	80	120	0.285	15	
Molybdenum	0.199	0.00500	0.200	0	99.4	80	120	0.515	15	
Selenium	0.206	0.00500	0.200	0	103	80	120	2.04	15	
Thallium	0.193	0.00150	0.200	0	96.4	80	120	1.19	15	

Sample ID: **2010043-04A SD** Batch ID: **98154** TestNo: **SW6020B** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS5_201012A** Analysis Date: **10/12/2020 11:29:00 A** Prep Date: **10/9/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	<0.00400	0.0125	0	0				0	20	
Arsenic	<0.0100	0.0250	0	0.00862				0	20	
Barium	0.0637	0.0500	0	0.0647				1.58	20	
Beryllium	<0.00150	0.00500	0	0				0	20	
Cadmium	<0.00150	0.00500	0	0				0	20	
Chromium	<0.0100	0.0250	0	0				0	20	
Cobalt	0.0162	0.0250	0	0.0162				0.197	20	
Lead	<0.00150	0.00500	0	0				0	20	
Lithium	<0.0250	0.0500	0	0.0106				0	20	
Molybdenum	0.0144	0.0250	0	0.0148				2.39	20	
Selenium	<0.0100	0.0250	0	0				0	20	
Thallium	<0.00250	0.00750	0	0				0	20	

Sample ID: **2010043-04A PDS** Batch ID: **98154** TestNo: **SW6020B** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS5_201012A** Analysis Date: **10/12/2020 11:51:00 A** Prep Date: **10/9/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.202	0.00250	0.200	0	101	75	125			
Arsenic	0.197	0.00500	0.200	0.00862	94.3	75	125			
Barium	0.266	0.0100	0.200	0.0647	101	75	125			
Beryllium	0.194	0.00100	0.200	0	97.2	75	125			
Cadmium	0.200	0.00100	0.200	0	99.8	75	125			
Chromium	0.207	0.00500	0.200	0	104	75	125			
Cobalt	0.205	0.00500	0.200	0.0162	94.5	75	125			
Lead	0.200	0.00100	0.200	0	100	75	125			
Lithium	0.208	0.0100	0.200	0.0107	98.8	75	125			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2010054
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_201012A

Sample ID: **2010043-04A PDS**	Batch ID: **98154**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **PDS**	Run ID: **ICP-MS5_201012A**	Analysis Date: **10/12/2020 11:51:00 A**	Prep Date: **10/9/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Molybdenum	0.206	0.00500	0.200	0.0148	95.6	75	125			
Selenium	0.189	0.00500	0.200	0	94.3	75	125			
Thallium	0.198	0.00150	0.200	0	99.1	75	125			

Sample ID: **2010043-04A MS**	Batch ID: **98154**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS5_201012A**	Analysis Date: **10/12/2020 11:53:00 A**	Prep Date: **10/9/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.202	0.00250	0.200	0	101	75	125			
Arsenic	0.203	0.00500	0.200	0.00862	97.4	75	125			
Barium	0.262	0.0100	0.200	0.0647	98.8	75	125			
Beryllium	0.194	0.00100	0.200	0	96.8	75	125			
Cadmium	0.195	0.00100	0.200	0	97.5	75	125			
Calcium	79.6	0.300	5.00	75.8	75.6	75	125			
Chromium	0.199	0.00500	0.200	0	99.3	75	125			
Cobalt	0.204	0.00500	0.200	0.0162	93.9	75	125			
Lead	0.193	0.00100	0.200	0	96.6	75	125			
Lithium	0.209	0.0100	0.200	0.0107	99.0	75	125			
Molybdenum	0.212	0.00500	0.200	0.0148	98.6	75	125			
Selenium	0.195	0.00500	0.200	0	97.3	75	125			
Thallium	0.194	0.00150	0.200	0	96.9	75	125			

Sample ID: **2010043-04A MSD**	Batch ID: **98154**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS5_201012A**	Analysis Date: **10/12/2020 11:55:00 A**	Prep Date: **10/9/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.202	0.00250	0.200	0	101	75	125	0.085	15	
Arsenic	0.202	0.00500	0.200	0.00862	96.6	75	125	0.809	15	
Barium	0.265	0.0100	0.200	0.0647	100	75	125	1.02	15	
Beryllium	0.195	0.00100	0.200	0	97.5	75	125	0.751	15	
Cadmium	0.197	0.00100	0.200	0	98.3	75	125	0.857	15	
Calcium	80.1	0.300	5.00	75.8	86.5	75	125	0.682	15	
Chromium	0.202	0.00500	0.200	0	101	75	125	1.62	15	
Cobalt	0.204	0.00500	0.200	0.0162	93.9	75	125	0.036	15	
Lead	0.197	0.00100	0.200	0	98.7	75	125	2.15	15	
Lithium	0.212	0.0100	0.200	0.0107	101	75	125	1.74	15	
Molybdenum	0.213	0.00500	0.200	0.0148	99.2	75	125	0.486	15	
Selenium	0.186	0.00500	0.200	0	93.0	75	125	4.55	15	
Thallium	0.197	0.00150	0.200	0	98.6	75	125	1.81	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2010054
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_201012A

Sample ID: **ICV-201012**	Batch ID: **R112617**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS5_201012A**	Analysis Date: **10/12/2020 10:47:00 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.0993	0.00250	0.100	0	99.3	90	110			
Arsenic	0.0982	0.00500	0.100	0	98.2	90	110			
Barium	0.100	0.0100	0.100	0	100	90	110			
Beryllium	0.0968	0.00100	0.100	0	96.8	90	110			
Cadmium	0.0982	0.00100	0.100	0	98.2	90	110			
Calcium	2.53	0.300	2.50	0	101	90	110			
Chromium	0.101	0.00500	0.100	0	101	90	110			
Cobalt	0.0985	0.00500	0.100	0	98.5	90	110			
Lead	0.0967	0.00100	0.100	0	96.7	90	110			
Lithium	0.0973	0.0100	0.100	0	97.3	90	110			
Molybdenum	0.0925	0.00500	0.100	0	92.5	90	110			
Selenium	0.101	0.00500	0.100	0	101	90	110			
Thallium	0.0958	0.00150	0.100	0	95.8	90	110			

Sample ID: **LCVL-201012**	Batch ID: **R112617**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS5_201012A**	Analysis Date: **10/12/2020 11:10:00 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.00203	0.00250	0.00200	0	102	80	120			
Arsenic	0.00509	0.00500	0.00500	0	102	80	120			
Barium	0.00529	0.0100	0.00500	0	106	80	120			
Beryllium	0.000986	0.00100	0.00100	0	98.6	80	120			
Cadmium	0.000920	0.00100	0.00100	0	92.0	80	120			
Calcium	0.0969	0.300	0.100	0	96.9	80	120			
Chromium	0.00504	0.00500	0.00500	0	101	80	120			
Cobalt	0.00504	0.00500	0.00500	0	101	80	120			
Lead	0.000908	0.00100	0.00100	0	90.8	80	120			
Lithium	0.00986	0.0100	0.0100	0	98.6	80	120			
Molybdenum	0.00493	0.00500	0.00500	0	98.6	80	120			
Selenium	0.00528	0.00500	0.00500	0	106	80	120			
Thallium	0.000970	0.00150	0.00100	0	97.0	80	120			

Sample ID: **CCV1-201012**	Batch ID: **R112617**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS5_201012A**	Analysis Date: **10/12/2020 11:58:00 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.200	0.00250	0.200	0	99.9	90	110			
Arsenic	0.204	0.00500	0.200	0	102	90	110			
Barium	0.199	0.0100	0.200	0	99.7	90	110			
Beryllium	0.197	0.00100	0.200	0	98.4	90	110			
Cadmium	0.201	0.00100	0.200	0	100	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2010054
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_201012A

Sample ID: **CCV1-201012** Batch ID: **R112617** TestNo: **SW6020B** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS5_201012A** Analysis Date: **10/12/2020 11:58:00 A** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	5.08	0.300	5.00	0	102	90	110			
Chromium	0.201	0.00500	0.200	0	101	90	110			
Cobalt	0.203	0.00500	0.200	0	101	90	110			
Lead	0.194	0.00100	0.200	0	97.2	90	110			
Lithium	0.203	0.0100	0.200	0	101	90	110			
Molybdenum	0.197	0.00500	0.200	0	98.4	90	110			
Selenium	0.213	0.00500	0.200	0	106	90	110			
Thallium	0.194	0.00150	0.200	0	97.1	90	110			

Sample ID: **CCV2-201012** Batch ID: **R112617** TestNo: **SW6020B** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS5_201012A** Analysis Date: **10/12/2020 12:23:00 P** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.199	0.00250	0.200	0	99.6	90	110			
Arsenic	0.205	0.00500	0.200	0	102	90	110			
Barium	0.202	0.0100	0.200	0	101	90	110			
Beryllium	0.198	0.00100	0.200	0	98.9	90	110			
Cadmium	0.199	0.00100	0.200	0	99.7	90	110			
Calcium	5.07	0.300	5.00	0	101	90	110			
Chromium	0.201	0.00500	0.200	0	101	90	110			
Cobalt	0.204	0.00500	0.200	0	102	90	110			
Lead	0.193	0.00100	0.200	0	96.7	90	110			
Lithium	0.202	0.0100	0.200	0	101	90	110			
Molybdenum	0.197	0.00500	0.200	0	98.4	90	110			
Selenium	0.208	0.00500	0.200	0	104	90	110			
Thallium	0.193	0.00150	0.200	0	96.5	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2010054
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_200923A

Sample ID: **DCS2-97986** Batch ID: **97986** TestNo: **E300** Units: **mg/L**
SampType: **DCS2** Run ID: **IC2_200923A** Analysis Date: **9/23/2020 11:59:34 AM** Prep Date: **9/23/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	0.529	1.00	0.5000	0	106	70	130	0	0	
Fluoride	0.219	0.400	0.2000	0	109	70	130	0	0	
Sulfate	1.52	3.00	1.500	0	101	70	130	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2010054
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_201012A

The QC data in batch 98167 applies to the following samples: 2010054-01B, 2010054-02B, 2010054-03B, 2010054-04B, 2010054-05B, 2010054-06B, 2010054-07B, 2010054-08B

Sample ID: **MB-98167** Batch ID: **98167** TestNo: **E300** Units: **mg/L**
SampType: **MBLK** Run ID: **IC2_201012A** Analysis Date: **10/12/2020 10:46:02 A** Prep Date: **10/12/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	<0.100	0.400								
Sulfate	<1.00	3.00								

Sample ID: **LCS-98167** Batch ID: **98167** TestNo: **E300** Units: **mg/L**
SampType: **LCS** Run ID: **IC2_201012A** Analysis Date: **10/12/2020 11:02:02 A** Prep Date: **10/12/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	3.72	0.400	4.000	0	93.1	90	110			
Sulfate	28.5	3.00	30.00	0	95.1	90	110			

Sample ID: **LCSD-98167** Batch ID: **98167** TestNo: **E300** Units: **mg/L**
SampType: **LCSD** Run ID: **IC2_201012A** Analysis Date: **10/12/2020 11:18:02 A** Prep Date: **10/12/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.47	1.00	10.00	0	94.7	90	110	0.435	20	
Fluoride	3.77	0.400	4.000	0	94.3	90	110	1.30	20	
Sulfate	28.7	3.00	30.00	0	95.7	90	110	0.631	20	

Sample ID: **2010054-03BMS** Batch ID: **98167** TestNo: **E300** Units: **mg/L**
SampType: **MS** Run ID: **IC2_201012A** Analysis Date: **10/13/2020 1:00:24 AM** Prep Date: **10/12/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	1960	40.0	2000	0	97.8	90	110			
Sulfate	2930	300	2000	1061	93.7	90	110			

Sample ID: **2010054-03BMSD** Batch ID: **98167** TestNo: **E300** Units: **mg/L**
SampType: **MSD** Run ID: **IC2_201012A** Analysis Date: **10/13/2020 1:16:24 AM** Prep Date: **10/12/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	1970	40.0	2000	0	98.3	90	110	0.521	20	
Sulfate	2930	300	2000	1061	93.4	90	110	0.218	20	

Sample ID: **2010043-01BMS** Batch ID: **98167** TestNo: **E300** Units: **mg/L**
SampType: **MS** Run ID: **IC2_201012A** Analysis Date: **10/13/2020 1:32:24 AM** Prep Date: **10/12/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	197	4.00	200.0	0	98.7	90	110			
Sulfate	332	30.0	200.0	154.6	88.7	90	110			S

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2010054
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_201012A

Sample ID: **2010043-01BMSD** Batch ID: **98167** TestNo: **E300** Units: **mg/L**
SampType: **MSD** Run ID: **IC2_201012A** Analysis Date: **10/13/2020 1:48:24 AM** Prep Date: **10/12/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	197	4.00	200.0	0	98.5	90	110	0.113	20	
Sulfate	332	30.0	200.0	154.6	88.5	90	110	0.135	20	S

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2010054
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_201012A

Sample ID: **ICV-201012**	Batch ID: **R112622**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC2_201012A**	Analysis Date: **10/12/2020 10:14:02 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	9.82	0.400	10.00	0	98.2	90	110			
Sulfate	74.4	3.00	75.00	0	99.1	90	110			

Sample ID: **CCV2-201012**	Batch ID: **R112622**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_201012A**	Analysis Date: **10/12/2020 7:40:24 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	3.79	0.400	4.000	0	94.9	90	110			
Sulfate	28.5	3.00	30.00	0	95.1	90	110			

Sample ID: **CCV3-201012**	Batch ID: **R112622**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_201012A**	Analysis Date: **10/12/2020 11:40:24 P**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	3.79	0.400	4.000	0	94.8	90	110			
Sulfate	28.6	3.00	30.00	0	95.3	90	110			

Sample ID: **CCV4-201012**	Batch ID: **R112622**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_201012A**	Analysis Date: **10/13/2020 2:52:24 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	3.93	0.400	4.000	0	98.3	90	110			
Sulfate	28.6	3.00	30.00	0	95.3	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2010054
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_201013A

The QC data in batch 98187 applies to the following samples: 2010054-01B, 2010054-02B, 2010054-03B, 2010054-04B, 2010054-05B, 2010054-06B, 2010054-07B, 2010054-08B

Sample ID: **MB-98187**	Batch ID: **98187**	TestNo: **E300**	Units: **mg/L**
SampType: **MBLK**	Run ID: **IC2_201013A**	Analysis Date: **10/13/2020 11:31:02 A**	Prep Date: **10/13/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00								
Sulfate	<1.00	3.00								

Sample ID: **LCS-98187**	Batch ID: **98187**	TestNo: **E300**	Units: **mg/L**
SampType: **LCS**	Run ID: **IC2_201013A**	Analysis Date: **10/13/2020 11:47:02 A**	Prep Date: **10/13/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.61	1.00	10.00	0	96.1	90	110			
Sulfate	28.7	3.00	30.00	0	95.7	90	110			

Sample ID: **LCSD-98187**	Batch ID: **98187**	TestNo: **E300**	Units: **mg/L**
SampType: **LCSD**	Run ID: **IC2_201013A**	Analysis Date: **10/13/2020 1:10:15 PM**	Prep Date: **10/13/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.65	1.00	10.00	0	96.5	90	110	0.402	20	
Sulfate	29.1	3.00	30.00	0	97.0	90	110	1.38	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2010054
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_201013A

Sample ID: **ICV-201013**	Batch ID: **R112633**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC2_201013A**	Analysis Date: **10/13/2020 10:59:03 A**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	24.6	1.00	25.00	0	98.3	90	110			
Sulfate	74.1	3.00	75.00	0	98.8	90	110			

Sample ID: **CCV1-201013**	Batch ID: **R112633**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_201013A**	Analysis Date: **10/13/2020 4:54:15 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.57	1.00	10.00	0	95.7	90	110			
Sulfate	28.7	3.00	30.00	0	95.6	90	110			

Sample ID: **CCV2-201013**	Batch ID: **R112633**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_201013A**	Analysis Date: **10/13/2020 8:54:15 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	95.8	10.0	100.0	0	95.8	90	110			
Sulfate	287	30.0	300.0	0	95.7	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2010054
Project: Luminant-MLSES Ash Ponds

ANALYTICAL QC SUMMARY REPORT

RunID: WC_201009A

The QC data in batch 98156 applies to the following samples: 2010054-01B, 2010054-02B, 2010054-03B, 2010054-04B, 2010054-05B, 2010054-06B, 2010054-07B, 2010054-08B

Sample ID: **MB-98156** Batch ID: **98156** TestNo: **M2540C** Units: **mg/L**
SampType: **MBLK** Run ID: **WC_201009A** Analysis Date: **10/9/2020 4:15:00 PM** Prep Date: **10/9/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	<10.0	10.0								

Sample ID: **LCS-98156** Batch ID: **98156** TestNo: **M2540C** Units: **mg/L**
SampType: **LCS** Run ID: **WC_201009A** Analysis Date: **10/9/2020 4:15:00 PM** Prep Date: **10/9/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	751	10.0	745.6	0	101	90	113			

Sample ID: **2010054-02B-DUP** Batch ID: **98156** TestNo: **M2540C** Units: **mg/L**
SampType: **DUP** Run ID: **WC_201009A** Analysis Date: **10/9/2020 4:15:00 PM** Prep Date: **10/9/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	2430	50.0	0	2435				0.206	5	

Sample ID: **2010054-03B-DUP** Batch ID: **98156** TestNo: **M2540C** Units: **mg/L**
SampType: **DUP** Run ID: **WC_201009A** Analysis Date: **10/9/2020 4:15:00 PM** Prep Date: **10/9/2020**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	1980	50.0	0	2000				1.01	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Golder
Work Order: 2010054
Project: Luminant-MLSES Ash Ponds

MQL SUMMARY REPORT

TestNo: E300	MDL	MQL
Analyte	**mg/L**	**mg/L**
Chloride	0.300	1.00
Fluoride	0.100	0.400
Sulfate	1.00	3.00

TestNo: SW6020B	MDL	MQL
Analyte	**mg/L**	**mg/L**
Antimony	0.000800	0.00250
Arsenic	0.00200	0.00500
Barium	0.00300	0.0100
Beryllium	0.000300	0.00100
Boron	0.0100	0.0300
Cadmium	0.000300	0.00100
Calcium	0.100	0.300
Chromium	0.00200	0.00500
Cobalt	0.00300	0.00500
Lead	0.000300	0.00100
Lithium	0.00500	0.0100
Molybdenum	0.00200	0.00500
Selenium	0.00200	0.00500
Thallium	0.000500	0.00150

TestNo: SW7470A	MDL	MQL
Analyte	**mg/L**	**mg/L**
Mercury	0.0000800	0.000200

TestNo: M2540C	MDL	MQL
Analyte	**mg/L**	**mg/L**
Total Dissolved Solids (Residue, Filt	10.0	10.0

Qualifiers: MQL -Method Quantitation Limit as defined by TRRP
MDL -Method Detection Limit as defined by TRRP

Pace Analytical®
National Center for Testing & Innovation

ANALYTICAL REPORT

November 06, 2020

DHL Analytical, Inc.

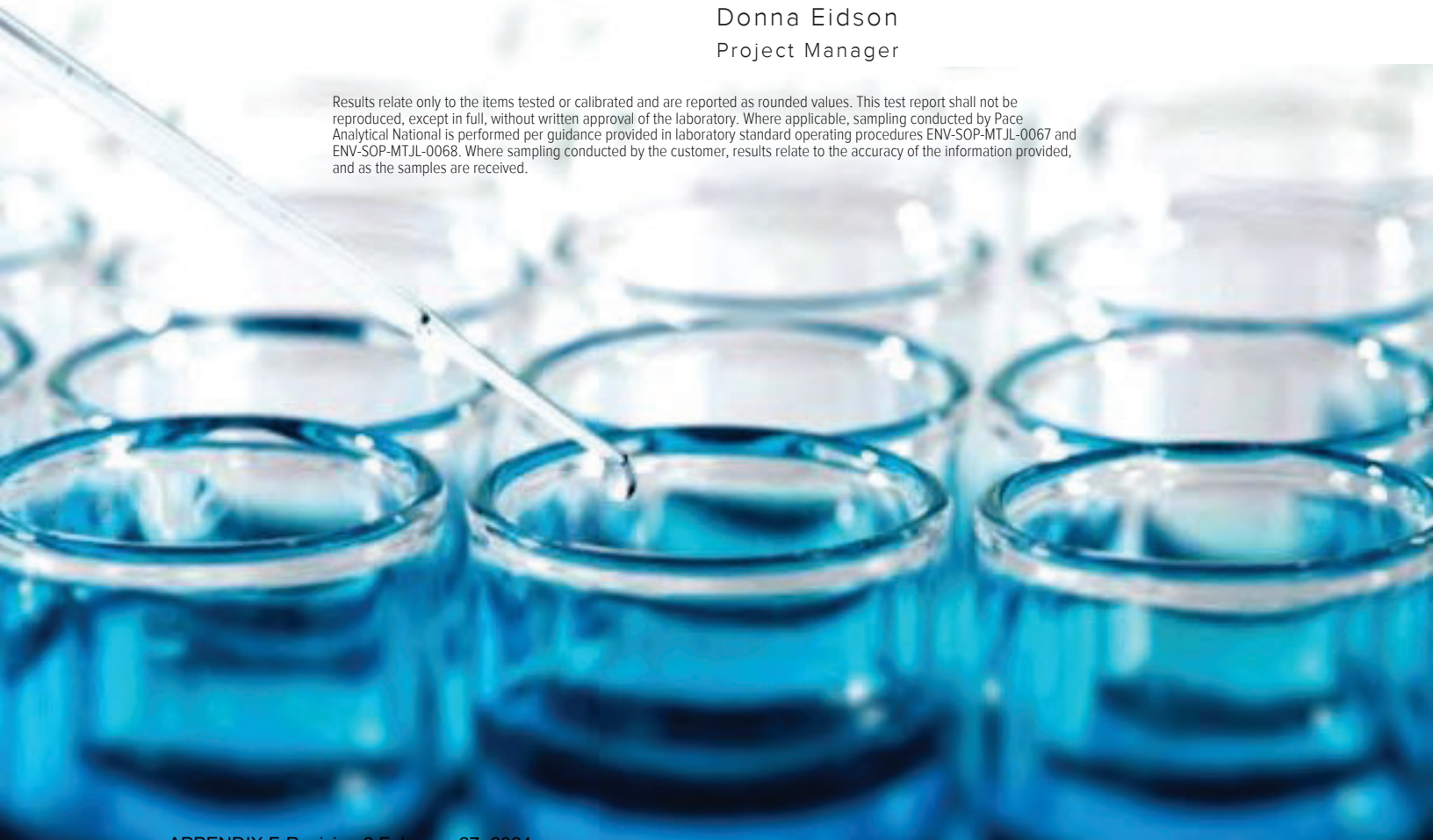
Sample Delivery Group:	L1272419
Samples Received:	10/12/2020
Project Number:	2010054
Description:	

Report To: John DuPont
2300 Double Creek Drive
Round Rock, TX 78664

Entire Report Reviewed By:

Donna Eidson
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.



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H-28 L1272419-01 Non-Potable Water

Collected by	Collected date/time	Received date/time
	10/06/20 09:50	10/12/20 10:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1558903	1	10/15/20 13:49	11/02/20 09:50	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1563522	1	10/27/20 14:22	11/02/20 09:50	JMR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1563522	1	10/27/20 14:22	10/28/20 14:24	RGT	Mt. Juliet, TN

H-29 L1272419-02 Non-Potable Water

Collected by	Collected date/time	Received date/time
	10/06/20 10:40	10/12/20 10:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1558903	1	10/15/20 13:49	11/02/20 09:50	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1563522	1	10/27/20 14:22	11/02/20 09:50	JMR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1563522	1	10/27/20 14:22	10/28/20 14:24	RGT	Mt. Juliet, TN

H-31 L1272419-03 Non-Potable Water

Collected by	Collected date/time	Received date/time
	10/06/20 11:25	10/12/20 10:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1558903	1	10/15/20 13:49	11/02/20 09:50	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1563522	1	10/27/20 14:22	11/02/20 09:50	JMR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1563522	1	10/27/20 14:22	10/28/20 14:24	RGT	Mt. Juliet, TN

H-32 L1272419-04 Non-Potable Water

Collected by	Collected date/time	Received date/time
	10/06/20 12:20	10/12/20 10:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1558903	1	10/15/20 13:49	11/02/20 09:50	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1563522	1	10/27/20 14:22	11/02/20 09:50	JMR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1563522	1	10/27/20 14:22	10/28/20 14:24	RGT	Mt. Juliet, TN

H-33 L1272419-05 Non-Potable Water

Collected by	Collected date/time	Received date/time
	10/06/20 13:15	10/12/20 10:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1558903	1	10/15/20 13:49	11/02/20 09:50	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1563522	1	10/27/20 14:22	11/02/20 09:50	JMR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1563522	1	10/27/20 14:22	10/28/20 14:09	RGT	Mt. Juliet, TN

DUP-01 L1272419-06 Non-Potable Water

Collected by	Collected date/time	Received date/time
	10/06/20 13:15	10/12/20 10:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1558903	1	10/15/20 13:49	11/02/20 09:50	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1563522	1	10/27/20 14:22	11/02/20 09:50	JMR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1563522	1	10/27/20 14:22	10/28/20 14:09	RGT	Mt. Juliet, TN

H-26 L1272419-07 Non-Potable Water

Collected by	Collected date/time	Received date/time
	10/06/20 14:05	10/12/20 10:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1558903	1	10/15/20 13:49	11/02/20 09:50	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1563522	1	10/27/20 14:22	11/02/20 09:50	JMR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1563522	1	10/27/20 14:22	10/28/20 14:09	RGT	Mt. Juliet, TN

H-27 L1272419-08 Non-Potable Water

Collected by	Collected date/time	Received date/time
	10/06/20 15:00	10/12/20 10:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904	WG1558903	1	10/15/20 13:49	11/02/20 09:50	JMR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1563522	1	10/27/20 14:22	11/02/20 09:50	JMR	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1563522	1	10/27/20 14:22	10/28/20 14:09	RGT	Mt. Juliet, TN

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Donna Eidson
Project Manager

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	0.293	U	0.434	0.818	11/02/2020 09:50	WG1558903
(T) Barium	*91.3*			*62.0-143*	*11/02/2020 09:50*	WG1558903
(T) Yttrium	*102*			*79.0-136*	*11/02/2020 09:50*	WG1558903

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	1.19		0.865	1.15	11/02/2020 09:50	WG1563522

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.898		0.431	0.332	10/28/2020 14:24	WG1563522
(T) Barium-133	*82.8*			*30.0-143*	*10/28/2020 14:24*	WG1563522

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	0.741	J	0.662	1.23	11/02/2020 09:50	WG1558903
(T) Barium	*90.5*			*62.0-143*	*11/02/2020 09:50*	WG1558903
(T) Yttrium	*102*			*79.0-136*	*11/02/2020 09:50*	WG1558903

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	0.769	J	0.869	1.62	11/02/2020 09:50	WG1563522

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.0273		0.207	0.391	10/28/2020 14:24	WG1563522
(T) Barium-133	*78.7*			*30.0-143*	*10/28/2020 14:24*	WG1563522

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	0.992	J	0.656	1.21	11/02/2020 09:50	WG1558903
(T) Barium	*95.3*			*62.0-143*	*11/02/2020 09:50*	WG1558903
(T) Yttrium	*102*			*79.0-136*	*11/02/2020 09:50*	WG1558903

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	0.992	J	0.779	1.5	11/02/2020 09:50	WG1563522

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.000		0.123	0.293	10/28/2020 14:24	WG1563522
(T) Barium-133	*93.2*			*30.0-143*	*10/28/2020 14:24*	WG1563522

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	0.348	U	0.586	1.1	11/02/2020 09:50	WG1558903
(T) Barium	*88.8*			*62.0-143*	*11/02/2020 09:50*	WG1558903
(T) Yttrium	*107*			*79.0-136*	*11/02/2020 09:50*	WG1558903

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	0.417	U	0.741	1.38	11/02/2020 09:50	WG1563522

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.0686		0.155	0.284	10/28/2020 14:24	WG1563522
(T) Barium-133	*86.5*			*30.0-143*	*10/28/2020 14:24*	WG1563522

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	0.737	J	0.553	1.03	11/02/2020 09:50	WG1558903
(T) Barium	*94.0*			*62.0-143*	*11/02/2020 09:50*	WG1558903
(T) Yttrium	*106*			*79.0-136*	*11/02/2020 09:50*	WG1558903

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	1.07	J	0.790	1.23	11/02/2020 09:50	WG1563522

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.330		0.237	0.195	10/28/2020 14:09	WG1563522
(T) Barium-133	*83.9*			*30.0-143*	*10/28/2020 14:09*	WG1563522

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	0.755	J	0.674	1.26	11/02/2020 09:50	WG1558903
(T) Barium	*84.8*			*62.0-143*	*11/02/2020 09:50*	WG1558903
(T) Yttrium	*108*			*79.0-136*	*11/02/2020 09:50*	WG1558903

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	1.68		1.07	1.56	11/02/2020 09:50	WG1563522

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.926		0.391	0.3	10/28/2020 14:09	WG1563522
(T) Barium-133	*92.5*			*30.0-143*	*10/28/2020 14:09*	WG1563522

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	-0.303	U	0.518	0.997	11/02/2020 09:50	WG1558903
(T) Barium	*100*			*62.0-143*	*11/02/2020 09:50*	WG1558903
(T) Yttrium	*102*			*79.0-136*	*11/02/2020 09:50*	WG1558903

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	0.616	J	0.844	1.27	11/02/2020 09:50	WG1563522

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.616		0.326	0.271	10/28/2020 14:09	WG1563522
(T) Barium-133	*88.3*			*30.0-143*	*10/28/2020 14:09*	WG1563522

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Radiochemistry by Method 904

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-228	0.789	J	0.451	0.833	11/02/2020 09:50	WG1558903
(T) Barium	*100*			*62.0-143*	*11/02/2020 09:50*	WG1558903
(T) Yttrium	*105*			*79.0-136*	*11/02/2020 09:50*	WG1558903

Radiochemistry by Method Calculation

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
Combined Radium	1.20		0.754	1.16	11/02/2020 09:50	WG1563522

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/l	Qualifier	Uncertainty + / -	MDA pCi/l	Analysis Date date / time	Batch
RADIUM-226	0.409		0.303	0.329	10/28/2020 14:09	WG1563522
(T) Barium-133	*87.9*			*30.0-143*	*10/28/2020 14:09*	WG1563522

APPENDIX F Revision 2 February 27, 2024

Method Blank (MB)

(MB) R3590128-1 10/30/20 13:30

Analyte	MB Result pCi/l	MB Qualifier	MB MDA pCi/l
Radium-228	0.381	J	0.486
(T) Barium	*83.8*		
(T) Yttrium	*107*		

L1271751-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1271751-01 10/30/20 13:30 • (DUP) R3590128-5 10/30/20 13:30

Analyte	Original Result pCi/l	DUP Result pCi/l	Dilution	DUP RPD %	DUP RER	DUP Qualifier	DUP RPD Limits %	DUP RER Limit
Radium-228	0.709	-0.0846	1	200	0.770	U	20	3
(T) Barium	*81.7*	*82.6*						
(T) Yttrium	*105*	*109*						

Laboratory Control Sample (LCS)

(LCS) R3590128-2 10/30/20 13:30

Analyte	Spike Amount pCi/l	LCS Result pCi/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Radium-228	5.00	5.18	104	80.0-120	
(T) Barium			*81.9*		
(T) Yttrium			*100*		

L1271756-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1271756-01 11/02/20 09:50 • (MS) R3590128-3 10/30/20 13:30 • (MSD) R3590128-4 10/30/20 13:30

Analyte	Spike Amount pCi/l	Original Result pCi/l	MS Result pCi/l	MSD Result pCi/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	MS RER	RPD Limits %
Radium-228	10.0	0.756	11.8	11.0	110	103	1	70.0-130			6.23		20
(T) Barium		*99.4*			*88.2*	*89.5*							
(T) Yttrium		*99.4*			*112*	*113*							

Method Blank (MB)

(MB) R3588851-1 10/28/20 14:12

Analyte	MB Result pCi/l	MB Qualifier	MB MDA pCi/l
Radium-226	-0.0102		0.0673
(T) Barium-133	*87.9*		

L1272419-08 Original Sample (OS) • Duplicate (DUP)

(OS) L1272419-08 10/28/20 14:09 • (DUP) R3588851-5 10/28/20 14:12

Analyte	Original Result pCi/l	DUP Result pCi/l	Dilution	DUP RPD %	DUP RER	DUP Qualifier	DUP RPD Limits %	DUP RER Limit
Radium-226	0.409	0.476	1	15.0	0.165		20	3
(T) Barium-133	*87.9*	*88.8*						

Laboratory Control Sample (LCS)

(LCS) R3588851-2 10/28/20 14:12

Analyte	Spike Amount pCi/l	LCS Result pCi/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Radium-226	5.02	5.85	117	80.0-120	
(T) Barium-133			*93.2*		

L1271751-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1271751-01 10/28/20 14:20 • (MS) R3588851-3 10/28/20 14:12 • (MSD) R3588851-4 10/28/20 14:12

Analyte	Spike Amount pCi/l	Original Result pCi/l	MS Result pCi/l	MSD Result pCi/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	MS RER	RPD Limits %
Radium-226	20.1	0.293	23.0	21.3	113	105	1	75.0-125			7.54		20
(T) Barium-133		*88.2*			*72.8*	*72.2*							

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDA	Minimum Detectable Activity.
Rec.	Recovery.
RER	Replicate Error Ratio.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(T)	Tracer - A radioisotope of known concentration added to a solution of chemically equivalent radioisotopes at a known concentration to assist in monitoring the yield of the chemical separation.
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
J	The identification of the analyte is acceptable; the reported value is an estimate.
U	Below Detectable Limits: Indicates that the analyte was not detected.

Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.
* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

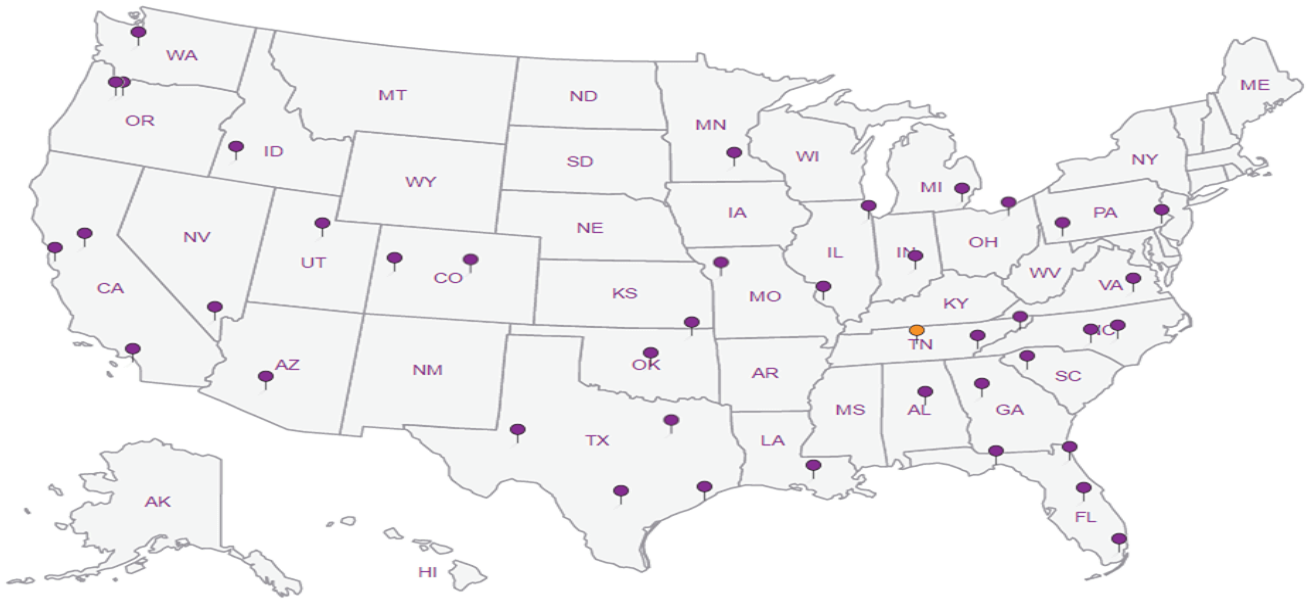
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



DHL Analytical, Inc.
2300 Double Creek Drive
Round Rock, TX 78664
TEL: *(512) 388-8222* FAX: *(512) 388-8229*

CHAIN-OF-CUSTODY RECORD

G175

Work Order: 2010054

Sample Receipt Checklist

COC Seal Present/Intact:	Y N	If Applicable	
COC Signed/Accurate:	Y N	VOA Zero Headspace:	Y N
Bottles arrive intact:	Y N	Pres.Correct/Check:	Y N
Correct bottles used:	Y N		
Sufficient volume sent:	Y N		
RAD Screen <0.5 mR/hr:	Y N		

12 12 19

Subcontractor:

Pace Analytical
12065 Lebanon Rd
Mt. Juliet, TN 37122

TEL: (615) 773-5923
FAX:
Acct #: DHLRRTX

08-Oct-20

Sample ID	Matrix	DHL#	Date Collected	Bottle Type	Requested Tests					
					Ra-228	Ra-226				
					E904.0	M7500 Ra B M				
H-28	Aqueous	01C	10/06/20 09:50 AM	1LHDPEHNO3	1					01
H-28	Aqueous	01D	10/06/20 09:50 AM	1LHDPEHNO3		1				01
H-29	Aqueous	02C	10/06/20 10:40 AM	1LHDPEHNO3	1					02
H-29	Aqueous	02D	10/06/20 10:40 AM	1LHDPEHNO3		1				02
H-31	Aqueous	03C	10/06/20 11:25 AM	1LHDPEHNO3	1					03
H-31	Aqueous	03D	10/06/20 11:25 AM	1LHDPEHNO3		1				03
H-32	Aqueous	04C	10/06/20 12:20 PM	1LHDPEHNO3	1					04
H-32	Aqueous	04D	10/06/20 12:20 PM	1LHDPEHNO3		1				04
H-33	Aqueous	05C	10/06/20 01:15 PM	1LHDPEHNO3	1					05
H-33	Aqueous	05D	10/06/20 01:15 PM	1LHDPEHNO3		1				05
Dup-01	Aqueous	06C	10/06/20 01:15 PM	1LHDPEHNO3	1					06
Dup-01	Aqueous	06D	10/06/20 01:15 PM	1LHDPEHNO3		1				06
H-26	Aqueous	07C	10/06/20 02:05 PM	1LHDPEHNO3	1					07
H-26	Aqueous	07D	10/06/20 02:05 PM	1LHDPEHNO3		1				07
H-27	Aqueous	08C	10/06/20 03:00 PM	1LHDPEHNO3	1					08
H-27	Aqueous	08D	10/06/20 03:00 PM	1LHDPEHNO3		1				08

General Comments:

Please analyze these samples with Normal Turnaround Time.
Report RA-226, Ra-228 & Combined per Specs.
Quality Control Package Needed: Standard - NELAC Rad Test compliant
Email to cac@dhlanalytical.com & dupont@dhlanalytical.com

		Date/Time		Date/Time
Relinquished by:	[signature]	10/8/20 1700	**Received by:** [signature]	10/12/20 10:30
Relinquished by:			**Received by:**	

APPENDIX B

Groundwater Modeling

APPENDIX B: GROUNDWATER MODELING DOCUMENTATION - MARTIN LAKE ASH PONDS

By: William Vienne, Golder

Date: December 2020

Objective: Create a groundwater model using Visual MODFLOW (Version 4.6) to set up steady-state hydrogeological conditions for use in geochemical reactive transport model.

Units

length:	feet	pumping rate:	gal/min
time:	day	recharge:	in/year
concentration:	mg/L	mass:	kg
conductivity:	cm/s		

Default Parameters

Kx:	4E-5 cm/s	(From APAR slug test data (PBW 2011))	Sy:	0.22	(assumed based on typical sand value)
Ky:	4E-5 cm/s		eff. Porosity:	0.25	(assumed based on typical sand value)
Kz:	4E-6 cm/s		tot. porosity:	0.40	(assumed based on typical sand value)
Ss:	2.3E-4 ft^{-1}	(assumed based on typical sand value)	SS simulation time :	1 day	

No recharge or evapotranspiration
(input for geochemical reactive transport model)

Base Map

Base map: September 2019 CCR groundwater potentiometric surface map

Two-point georeference:

Model Coordinates	Georeferenced Coordinates	
Model origin (0, 0 ft)	N6798900/E3183300	Coordinate System: Texas State Plane, N-Central, NAD83
H-26	N6800853/E3184441	
H-31	N6801110/E3185967	

Model Setup

2 layers:

Layer 1: Upper sandy silt/clay. Thickness varies with ground elevation -- generally ~30 feet thick; 315-285 feet amsl (PBW 2011)
- Kxy = 4E-5 cm/s; Kz = 4E-6 cm/s (based on 2011 APAR slug tests in upper sandy silt/clay)
- All other hydro parameters set to default values
- All ponds are completed in this layer

Layer 2: Lower sand (uppermost GWBU). ~10 feet thick; set at 275 feet to 285 feet amsl in model (PBW 2011).
- All CCR monitoring wells are completed in this layer.
- Kxy = 9E-4 cm/s; Kz = 9E-5 cm/s (based on 2011 APAR slug tests in primary groundwater bearing-unit (lower sand) (PBW 2011))

Model extent: 3700 ft x 3700 ft

Columns	Rows	
74	74	(50-ft grid cells)

- Generated ground surface elevation grid using monitoring well ground surface elevations (PBW 2017), berm elevation (B&M 2015), and bathymetric map of Martin Lake (TWDB 2015).
  - Imported excel file with model coordinates and elevations. Used Natural Neigbor function for interpolation.

Boundary Conditions

- Constant head boundary of 310 feet set in Layer 2 on western side of West Ash Pond and 303 feet in Martin Lake east of Ash Ponds (approximately based on normal pool elevation).

- Constant head boundaries created gw gradient similar to that shown on September 2019 pot map, with groundwater flowing toward Martin Lake reservoir.
- Lake Package used for WAP, EAP, and New Scrubber Pond (the Ash Ponds). Assumed constant water levels of 10 feet above bottom of ponds. Pond bottoms based on design criteria summarized in B&M (2015) report. Lake Package parameters:

Pond ID	Start	Stop (days)	Lake Stage (ft amsl)	Bottom (ft amsl)	Precip	Runoff	Evap	Lake Bed (ft)	K of Lake Bed (cm/s)
WAP	0	10950	319	309	0	0	0	3	1E-07
EAP	0	10950	320	310	0	0	0	3	1E-07
NSP	0	10950	316	306	0	0	0	3	1E-07

Calibration

Model vs.Observed Head in CCR wells (Septemeber 2019):

Residual Mean: 0.252 ft
Standard Error of the Estimate: 0.212 ft
Correlation Coefficient: 0.979

Outputs for Geochem Model

1. VMOD head files (x, y, z, and head)
2. Surface elevation grid
3. Shapefile showing pond outlines

References

Burns & McDonnell Engineering Company, Inc (BM), 2015. CCR Study for Martin Lake Steam Electric Station – Final Draft. June 2015.

Pastor, Behling & Wheeler, LLC (PBW), 2011. Revised Affected Property Assessment Report, Martin Lake Steam Electric Station – Ash Pond Area.

Pastor, Behling & Wheeler, LLC (PBW), 2017. Coal Combustion Residual Rule Groundwater Monitoring System Certification, Martin Lake Steam Electric Station – Ash Pond Area. October 16.

Texas Water Development Board (TWDB), 2015. Volumetric Survey of Marting Lake, August 2014 Survey. April.

APPENDIX C

Geochemical Modeling Saturation Indices

MINERAL PHASES - Saturation Indices		H-26 05-2019	H-27 05-2019	H-28 05-2019	H-29 05-2019	H-31 05-2019	H-32 05-2019	H-33 05-2019	Pond Sample 05-2019	Lake Sample 05-2019	H-26 05-2020	H-27 05-2020	H-28 05-2020	H-29 05-2020	H-31 05-2020	H-32 05-2020	H-33 05-2020	Pond Sample 05-2020	Lake Sample 05-2020
Otavite	$CdCO_3$	-2.91	-3.63	-3.74	-3.49	-4.54	-4.72	-2.88	-4.21	-3.25	-3.54	-2.92	-3.66	-3.54	-4.34	-3.75	-3.59	-4.01	-4.00
Ferrihydrite	$Fe(OH)_3$	**4.27**	**2.10**	**1.67**	**1.72**	**1.56**	**2.30**	**4.22**	**1.68**	**2.86**	**3.51**	**2.28**	**2.54**	**2.39**	**1.88**	**3.19**	**2.52**	**1.81**	**1.79**
Siderite	$FeCO_3$	-2.15	-2.86	-3.85	-3.62	-0.79	-2.66	-2.11	-3.40	-2.51	-2.77	-2.17	-3.55	-3.39	-0.71	-1.78	-2.83	-3.24	-3.28
Melanterite	$FeSO_4 7H_2O$	-7.37	-6.87	-6.71	-6.75	-3.66	-5.62	-7.31	-6.74	-7.49	-7.39	-6.95	-6.74	-6.62	-3.74	-5.50	-7.13	-6.73	-7.41
Anglesite	$PbSO_4$	-4.66	-4.36	-3.79	-3.87	-4.04	-4.07	-4.73	-4.15	-5.08	-4.46	-4.76	-3.73	-3.74	-4.03	-3.89	-3.86	-4.15	-4.83
Gypsum	$CaSO_4{\cdot}2H_2O$	-1.59	-1.22	-0.84	-0.90	**-0.35**	-1.48	-1.62	**-0.26**	-2.56	-2.09	-1.40	-0.94	-0.93	**-0.36**	-1.38	-1.95	**-0.10**	-2.43
Jarosite-H	$(H_3O)Fe_3(SO_4)_2(OH)_6$	**0.54**	-4.52	-3.40	-4.19	-3.55	-1.04	**0.64**	-3.44	-3.99	-2.23	-4.84	-2.05	-2.95	-4.20	-1.92	-3.45	-4.04	-5.27
Jarosite-K	$KFe_3(SO_4)_2(OH)_6$	**6.63**	**0.93**	**1.38**	**0.80**	**1.81**	**3.56**	**6.71**	**2.60**	**1.42**	**3.82**	**2.28**	**2.95**	**2.38**	**1.64**	**3.77**	**2.60**	**2.40**	**-0.05**
Jarosite-Na	$NaFe_3(SO_4)_2(OH)_6$	**4.01**	-0.85	**0.00**	-0.58	**0.45**	**1.93**	**4.10**	**0.06**	-1.31	**0.99**	-1.02	**1.62**	**0.90**	**0.26**	**2.12**	**-0.01**	**-0.11**	-2.83
Calcite	$CaCO_3$	-0.51	-1.33	-2.10	-1.88	-1.61	-2.64	-0.56	-1.07	-1.71	-1.57	-0.71	-1.85	-1.77	-1.42	-1.73	-1.72	-0.72	-2.36
Magnesite	$MgCO_3$	-2.22	-2.18	-2.92	-2.70	-2.47	-3.76	-2.14	-1.59	-2.78	-2.54	-1.69	-2.74	-2.53	-2.26	-2.81	-2.76	-1.36	-3.44
Barite	$BaSO_4$	**0.66**	**0.28**	**0.35**	**0.28**	**0.60**	**0.01**	**0.64**	**1.07**	**-0.04**	**0.45**	**0.67**	**0.31**	**0.27**	**0.59**	**0.21**	**0.52**	**1.28**	**0.09**
Witherite	$BaCO_3$	-3.55	-5.12	-6.20	-6.00	-5.96	-6.44	-3.59	-5.03	-4.48	-4.33	-3.94	-5.90	-5.88	-5.78	-5.45	-4.57	-4.65	-5.17
Fluorite	CaF_2	-2.78	-3.00	-3.37	-3.32	-1.31	-1.41	-2.74	**1.34**	-3.46	-3.44	-3.39	-3.32	-3.36	-2.53	-1.84	-3.57	**1.30**	-3.63
CoCO3	$CoCO_3$	-2.28	-4.35	-3.53	-3.31	-3.15	-3.70	-2.33	-4.90	-4.03	-3.37	-3.70	-3.31	-3.26	-2.90	-2.78	-3.32	-4.73	-4.79
Cerrusite	$PbCO_3$	-2.07	-2.96	-3.55	-3.36	-3.79	-3.74	-2.18	-3.48	-2.73	-2.41	-2.54	-3.12	-3.04	-3.57	-2.70	-2.09	-3.25	-3.22
Carbon Dioxide	$pCO2(g)$ [b]	-1.59	-2.05	-2.00	-2.20	-1.91	-1.67	-1.50	-1.60	-1.97	-2.36	-1.67	-2.26	-2.41	-2.50	-2.60	-1.78	-1.88	-1.74

Notes:

[a] Saturation indices >0.5 identified by bold type and grey

[b] pCO2(g) values presented at $10^{\wedge value}$ atm

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APPENDIX C

Tier IV Monitored Natural Attenuation Evaluation Performance Monitoring Plan

REPORT

Tier IV MNA Performance Monitoring Plan

Martin Lake Steam Electric Station - Ash Pond Area

Rusk County, Texas

Submitted to:

Luminant Generation Company LLC

Submitted by:

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January 7, 2022

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FIGURES

Figure 1 Detailed Site Plan

1.0 INTRODUCTION

On behalf of Luminant Generation Company LLC (Luminant), Golder Associates Inc. (Golder), Member of WSP, has prepared this Tier IV Monitored Natural Attenuation (MNA) Performance Monitoring Plan for the West Ash Pond (WAP), East Ash Pond (EAP), and New Scrubber Pond (NSP) (collectively referred to as the "Ash Pond Area") located at the Martin Lake Steam Electric Station (MLSES) in Rusk County, Texas (hereafter, the "Site") (**Figure 1)**. Luminant manages coal combustion residuals (CCR) generated from the MLSES in the Ash Pond Area per the applicable requirements of 40 Code of Federal Regulations (CFR) Part 257 as amended (CCR Final Rule).

Statistically significant levels (SSLs) of beryllium, cobalt, and lithium above groundwater protection standards (GWPSs) were detected in the uppermost groundwater-bearing unit (GWBU) hydraulically downgradient of the Ash Pond Area during 2018 assessment monitoring. SSLs of lithium were not observed in subsequent semi-annual assessment monitoring events completed from 2019 to 2021; therefore, lithium is not currently considered a constituent with SSLs. SSLs of beryllium (in monitoring wells H-29, H-31, and H-32) and cobalt (in monitoring wells H-28, H-31, and H-32) were observed in subsequent semi-annual assessment monitoring events completed from 2019 to 2021 and are currently considered constituents with SSLs.

In response to the SSLs identified in 2018, an Assessment of Corrective Measures (ACM) Report was completed for the Ash Pond Area in September 2019 as required by 40 CFR § 257.96 (Golder 2019a). The ACM demonstrated that groundwater concentrations of beryllium, cobalt, and lithium were stable or decreasing at all CCR monitoring wells and that the extent of beryllium, cobalt, and lithium SSLs was delineated on-site (i.e., no offsite migration was indicated). The ACM evaluated various source control and groundwater response technologies to address the beryllium, cobalt, and lithium SSLs.

As documented in the Remedy Selection Report for the Ash Pond Area (Golder 2021a), MNA in conjunction with source control measures was selected as the remedy to address beryllium, cobalt, and lithium SSLs at the Site. MNA refers to the reliance on natural attenuation processes (within the context of a carefully controlled and monitored approach) to achieve site-specific groundwater remediation objectives. MNA relies on a range of natural processes, including sorption, (co)precipitation, radioactive decay, dispersion, dilution, and abiotic degradation/transformation to achieve remediation objectives.

A Tier I MNA evaluation report was completed in December 2019 (Golder 2019b) and a Tier II/III MNA evaluation report was completed in June 2021 (Golder 2021b). Based on the results of these MNA evaluations, the following was concluded regarding the Appendix IV constituents identified at SSLs:

- Physical and chemical attenuation of beryllium, cobalt, and lithium is occurring at the Site. Concentrations of these constituents in groundwater are stable and the aquifer has adequate capacity to attenuate these constituents in a reasonable timeframe. Geochemical modeling indicates that attenuation will be efficient and stable in the long term. Therefore, MNA with source control measures is considered an effective corrective measure for the Ash Pond Area.

The purpose of this Tier IV MNA Performance and Monitoring Plan is to describe the groundwater monitoring network, sampling and analysis methods, procedures for assessing long-term MNA effectiveness, and reporting for the MNA monitoring program.

2.0 SITE SETTING

The MLSES is located approximately 5 miles southeast of Tatum, Rusk County, Texas. The Ash Pond Area is located immediately east of the MLSES power units and adjacent to the Martin Lake Reservoir (**Figure 1**). The MLSES is expected to remain in operation for the foreseeable future, depending on future power demands.

2.1 Site Hydrogeology and CCR Monitoring Well Network

The Site lies in the outcrop area of the Eocene-aged Wilcox Group (Barnes 1965). The Wilcox Group in the vicinity of the Site consists mostly of unconsolidated to moderately consolidated clay and silt, with various amounts of interbedded sand and lignite. The Wilcox Group is overlain by sands of the Carrizo Formation at higher elevations in the area; however, the Carrizo Formation is not present at the Site.

Soil borings completed at the Site indicate the geology near the CCR units generally consists of an upper zone composed of an approximately 30- to 40-foot thick low- to medium-plasticity, lean clay unit with minor clayey sand. The upper zone is underlain by an intermediate zone composed of poorly-graded fine sand and silty sand that is generally about 5 to 20 feet thick. The intermediate zone is underlain by a laterally-continuous, silty to sandy confining clay unit. The uppermost aquifer occurs in the intermediate sand and silty sand unit (PBW 2017). Groundwater elevations are generally highest near the western side of the Ash Pond Area with an inferred groundwater flow direction to the east toward Martin Lake Reservoir (PBW, 2017).

The CCR groundwater monitoring well network at the Ash Pond Area was established in 2015 using monitoring wells H-26, H-27, H-28, H-29, H-31, H-32, AND H-33 (**Figure 1**). The CCR monitoring wells are completed in the intermediate sand and silty sand zone that is the uppermost aquifer at the Site.

3.0 CCR GROUNDWATER SAMPLING AND ANALYSIS PROGRAM

The CCR Rule establishes groundwater sampling and analysis criteria that are designed to create consistency and ensure that monitoring results provide accurate representations of groundwater quality at the CCR groundwater monitoring wells. The groundwater monitoring program at the Ash Pond Area consists of a combination of detection monitoring of Appendix III constituents in accordance with 40 CFR §257.94 and assessment monitoring of Appendix IV constituents in accordance with 40 CFR §257.95. The current CCR groundwater monitoring program includes the sampling and analysis of beryllium, cobalt, and lithium as part of the assessment monitoring program and satisfies the sampling and analysis requirements of the MNA monitoring program.

4.0 MNA MONITORING PROGRAM

Routine groundwater monitoring is required to verify that the MNA component of the selected Site remedy is achieving the site-specific groundwater remediation objectives. The MNA monitoring well network will be the same as the CCR monitoring network, and includes the CCR wells listed in Section 2.1 and shown on **Figure 1**. The assessment monitoring program groundwater samples, which are collected semi-annually, will be used to assess the effectiveness of the MNA remedy in addressing SSLs observed at the Site.

4.1 MNA Groundwater Sampling Procedures

This section describes groundwater sampling and analysis procedures to comply with the requirements of 40 CFR §257.90 - §257.95 of the CCR Rule and to satisfy requirements of the MNA monitoring program.

4.1.1 General Groundwater Sampling Procedures

Prior to collecting groundwater samples, each well is inspected for signs of damage to the well protective casing and well pad. Each field instrument is calibrated according to the manufacturer's instructions prior to use. Special care should be exercised to prevent contamination of the groundwater and extracted samples during the sampling activities. The primary way in which such contamination can occur is contact with improperly cleaned equipment. To prevent such contamination, all non-dedicated sampling equipment is thoroughly cleaned before and between use at different sampling locations.

4.1.2 Groundwater Level Measurements

Groundwater levels are measured prior to purging the wells. Using a pre-cleaned water level meter, the groundwater surface is measured from the casing datum to the nearest 0.01-foot. Total depth measurements should also be collected periodically to assess potential occlusion of the well screen.

4.1.3 Well Purging and Sampling

Well purging and sampling are conducted using either a submersible pump, peristaltic pump, or other similar device in accordance with standard low-flow sampling procedures. The sampler withdraws water in a manner that minimizes stress (drawdown) to the system to the extent practicable. When the pump intake is located within the screened interval, the water pumped is drawn in directly from the formation with little mixing of casing water or disturbance to the sampling zone. Thus, sample results are more representative of the constituents present in the groundwater than when pumping at higher rates.

Purging rates during sample collection are generally performed at 0.5 liters per minute (L/min) or less. Field parameters (pH, temperature, conductivity, turbidity, dissolved oxygen (DO), and oxidation-reduction potential (ORP)) are measured to evaluate when the well is adequately purged. pH, DO, and ORP are also considered key MNA parameters important for evaluating geochemical conditions in the groundwater-bearing unit. Turbidity in the samples should be minimized as much as possible by using minimal pumping rates, dedicated equipment whenever possible, and positioning the intake for the sample tubing or submersible pump off of the bottom of the well.

At least three field measurements should be taken during the course of purging the well. If the parameters have not stabilized at that time, field measurements and purging will continue until two consecutive readings have stabilized to within the following limits:

- Temperature: +/-1° C
- pH: +/-0.1 pH units
- Conductivity: +/-10%
- Turbidity: +/- 10%
- Dissolved oxygen: +/- 10%
- Oxidation-reduction potential: +/- 10%

Sample extraction is accomplished by using the pump that was previously used to purge the well. The sample bottle is filled directly from the pump line. The pumping rate and parameter measurements are recorded on groundwater sampling forms in the field. If a well goes dry during purging, sampling is performed after the well has sufficiently recharged to allow sample collection. Groundwater samples are not filtered in the field prior to collection in accordance with Section 257.93(i) of the CCR Rule.

4.1.4 Chain-of-Custody Control

Samples are collected in laboratory-supplied containers and chain-of-custody procedures are followed to establish a written record concerning sample movement between the sampling site and the testing laboratory. Each shipping container has a chain-of-custody form completed by the sampling personnel packing the samples. The chain-of-custody form for each container is completed and sealed in the shipping container.

4.2 MNA Analytical Procedures

The laboratory analytical methods are appropriate and commonly utilized U.S. Environmental Protection Agency (EPA) methodologies, or other similar standard methodologies. Typical methodologies used to analyze the MNA constituents are presented below:

- Beryllium, cobalt, and lithium by EPA Method SW6010/6020 (evaluated during each MNA sampling event).
- General geochemical parameters (evaluated periodically):
  - Major cations: calcium, magnesium, potassium, and sodium by EPA Method SW6010/6020;
  - Major anions: chloride and sulfate by Standard Method E300; and
  - Alkalinity (bicarbonate, carbonate, hydroxide, and total) by Standard Method M2320.

4.3 MNA Data Assessment

The MNA monitoring program is a long-term performance monitoring program designed to confirm concentration reductions and document trends due to attenuation mechanisms. The MNA program will assess the effectiveness of the remedy by:

- Evaluating whether beryllium, cobalt, and lithium concentrations are present in groundwater at SSLs above the GWPS;
- Evaluating long-term trends in beryllium, cobalt, and lithium concentrations in CCR wells where SSLs have been identified to demonstrate that the groundwater plume is stable or decreasing and not expanding; and
- Evaluating geochemical parameters measured in the field (e.g., pH, DO, and ORP) during each sampling event and periodically collecting the general geochemistry parameter data listed in Section 4.2 to assess changes to the general geochemical conditions of the aquifer.

Per 40 CFR §257.98(c), the selected remedy will be considered complete when: (1) The owner or operator of the CCR unit demonstrates compliance with the GWPS established under 40 CFR § 257.95(h) has been achieved at all points within the plume of contamination that lie beyond the groundwater monitoring well system established under 40 CFR § 257.91, (2) Compliance with the GWPS established under 40 CFR § 257.95(h) has been achieved by demonstrating that concentrations of constituents listed in appendix IV to this part have not exceeded the GWPSs for a period of three consecutive years using the statistical procedures and performance standards in 40 CFR § 257.93(f) and (g), and (3) All actions required to complete the remedy have been satisfied.

4.4 Reporting

A summary of the MNA data assessment will be included in the *Annual Groundwater Monitoring and Corrective Action Report* each year. The report will: 1) confirm whether the groundwater plume is stable, shrinking, or expanding; 2) contain data summaries including Appendix III and Appendix IV constituent concentrations and geochemical data summaries, and 3) evaluate the general effectiveness of attenuation processes with trend analysis and other statistical evaluations of the data, as appropriate.

5.0 REFERENCES

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Signature Page

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FIGURES

LEGEND

- DOWNGRADIENT CCR MONITORING WELL
- UPGRADIENT CCR MONITORING WELL

REFERENCE(S)

BASE MAP TAKEN FROM GOOGLE EARTH IMAGERY DATED 2019.

CLIENT
LUMINANT

PROJECT
MARTIN LAKE STEAM ELECTRIC STATION
TATUM, TEXAS

TITLE
DETAILED SITE PLAN - ASH POND AREA

CONSULTANT
GOLDER

YYYY-MM-DD	2020-01-23
DESIGNED	AJD
PREPARED	AJD
REVIEWED	WFV
APPROVED	WFV

PROJECT NO. 19134019 | REV. 0 | FIGURE 1

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Path: \\texarkanadata\Projects - Round Rock_2019\19122262 - Luminant\C - MLSES-Ash Pond Area\ | File Name: FIG 1 - Detailed Site Plan (Ash Pond Area).dwg
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